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CC: E. W. Holtzscheiter, 773-A
D. A. Crowley, 704-1T
M. J. Plodinec, 773-A
C. T. Randall, 704-T
W. G. Ramsey, 773-A
R. F. Schumacher, 773-42A
TIM, 703-A, Rm. 26 (4)*

September 28, 1993

MEMORANDUM

TO: L. F. LANDON, 704-T*

FROM: A. S. CHOI, 704-1T* *asc*

**DWPF COUPLED FEED FLOWSHEET MATERIAL BALANCE
WITH BATCH ONE SLUDGE AND COPPER NITRATE CATALYST (U)**

INTRODUCTION

The SRTC has formally transmitted a recommendation to DWPF to replace copper formate with copper nitrate as the catalyst form during precipitate hydrolysis [1]. The SRTC was subsequently requested to formally document the technical bases for the recommendation. A memorandum was issued on August 23, 1993 detailing the activities (and responsible individuals) necessary to address the impact of this change in catalyst form on process compatibility, safety, processibility, environmental impact and product glass quality [2].

One of the activities identified was the preparation of a material balance in which copper nitrate is substituted for copper formate and the identification of key comparisons between this material balance and the current Batch 1 sludge - Late Wash material balance [3].

SUMMARY

The DWPF coupled feed flowsheet material balance recently issued for Batch 1 sludge feed has been recalculated substituting copper nitrate for copper formate as the catalyst for precipitate hydrolysis. The principal impact of this change is on the reducing potential of the melter feed and the atmospheric emission of oxides of nitrogen. An assessment is addressed in the following discussion.

* Material Balance Attached

C. T. Randall, 704-T
Authorized Derivative Classifier

MASTER

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DISCUSSION

Impact on Reducing Potential of Melter Feed

The reducing potential of a melter feed is primarily determined by the contents of formates and nitrates in the feed and is expressed as the ratio of Fe^{+2} to total iron ($\text{Fe}^{+2}/\Sigma \text{Fe}$). An extensive investigation by Ramsey and Schumacher has demonstrated that a satisfactory glass quality can be assured when the $\text{Fe}^{+2}/\Sigma \text{Fe}$ ratio is less than 0.10 for glass products containing up to 0.50 wt% Cu [4]. Further, they have developed a correlation between the $\text{Fe}^{+2}/\Sigma \text{Fe}$ ratio and the difference between molar concentrations of formates and nitrates in the melter feed (F - N). They have recommended that the (F - N) difference be maintained below 0.50 M.

A comparison of the (F - N) differences between the current DWPF Batch 1 Sludge - Late Wash Material Balance and the attached copper nitrate material balance is shown in Table 1. With copper nitrate, the (F - N) difference of 0.147 M compares with 0.217 M for the current reference material balance, which indicates that the melter feed will in fact be slightly more oxidizing if copper nitrate is substituted for copper formate during precipitate hydrolysis.

Atmospheric Emission of Oxides of Nitrogen

The substitution of copper nitrate for copper formate as the catalyst form during precipitate hydrolysis will result in an additional release of oxides of nitrogen to the atmosphere by about 1.5 tons/year at 75% DWPF attainment.

CONCLUSIONS

Based on the attached material balance, in which copper nitrate was substituted for the reference catalyst copper formate, the impact on the reducing potential of the resulting melter feed and the atmospheric emission of oxides of nitrogen is minimal and acceptable.

This report completes the action item identified in Reference 2 for which I was responsible.

QUALITY ASSURANCE

The bases used to calculate the attached material balance are exactly the same as those used to calculate the current Batch 1 sludge - Late Wash material balance [3], except that copper formate was replaced by copper nitrate as the catalyst for precipitate hydrolysis. Therefore, the degree of accuracy of the attached material balance should be identical to that of the current Batch 1 sludge - Late Wash material balance. The accuracy of the spreadsheet calculations to check the (F - N) differences was reviewed by both W. G. Ramsey and L. F. Landon of SRTC - DWPT.

REFERENCES

1. D. P. Lambert - R. E. Edwards to J. T. Carter, "Demonstration of Cupric Nitrate as Catalyst Compound in the Precipitate Hydrolysis Experimental Facility", WSRC-RP-93-1030, July 19, 1993.
2. E. W. Holtzscheiter to D. A. Crowley, et. al., "Technical Bases Supporting Recommendation to Replace Copper Formate with Copper Nitrate as the Catalyst Form for Precipitate Hydrolysis", WSRC-RP-93-1188, August 23, 1993.
3. A. S. Choi to C. T. Randall, "Material Balance Tables for the DWPF Coupled Feed Flowsheet with Batch 1 Sludge (U)", WSRC-TR-93-203 (Rev. 0), August 19, 1993.
4. W. G. Ramsey - R. F. Schumacher to M. J. Plodinec, "Effects of Formate and Nitrate Concentration on Waste Glass Redox at High Copper Concentration", WSRC-TR-92-484, October 23, 1992.

**TABLE 1. Comparison of Projected Redox of Melter Feed
for Batch 1 Sludge - Late Wash Flowsheet**

PROJECTED REDOX OF MELTER FEED - BATCH 1 SLUDGE - LATE WASH						
Hydrolysis Catalyst - Copper Formate (WSRC-TR-93-203, Rev. 0)			Hydrolysis Catalyst - Copper Nitrate (WSRC-TR-93-526, Rev. 0)			
Component	Lbs/hr	COOH-, ppb	NO3-, ppb	Lbs/hr	COOH-, ppb	NO3-, ppb
Ca(COOH)2	3.90E-02	2.70E-02		3.97E-02	2.75E-02	
Ca(NO3)2	2.61E+00		1.97E+00	2.61E+00		1.97E+00
Co(COOH)2	2.05E-04	1.24E-04		2.08E-04	1.26E-04	
Co(NO3)2	0.00E+00		0.00E+00	0.00E+00		0.00E+00
CsCOOH	2.14E-01	5.40E-02		2.17E-01	5.49E-02	
CsNO3	5.31E-04		1.69E-04	5.31E-04		1.69E-04
Cu(COOH)2	1.55E+00	9.09E-01		5.42E-03	3.17E-03	
Cu(NO3)2	0.00E+00		0.00E+00	1.88E+00		1.24E+00
KCOOH	9.48E+00	5.07E+00		9.64E+00	5.16E+00	
KNO3	3.15E-02		1.93E-02	3.15E-02		1.93E-02
Mg(COOH)2	3.25E+00	2.56E+00		3.25E+00	2.56E+00	
Mg(NO3)2	0.00E+00		0.00E+00	0.00E+00		0.00E+00
Mn(COOH)2	2.35E+00	1.46E+00		2.35E+00	1.46E+00	
Mn(NO3)2	0.00E+00		0.00E+00	0.00E+00		0.00E+00
NH4COOH	0.00E+00	0.00E+00		0.00E+00	0.00E+00	
NH4NO3	2.44E-03		1.89E-03	2.44E-03		1.89E-03
NaCOOH	6.21E+00	4.11E+00		6.44E+00	4.26E+00	
NaNO3	1.58E+01		1.16E+01	1.56E+01		1.14E+01
Ni(COOH)2	4.17E-02	2.52E-02		4.20E-02	2.54E-02	
Ni(NO3)2	0.00E+00		0.00E+00	0.00E+00		0.00E+00
Pb(NO3)2	4.22E-05		1.58E-05	4.22E-05		1.58E-05
Pd(NO3)2	0.00E+00		0.00E+00	0.00E+00		0.00E+00
Sr(COOH)2	1.79E-03	9.06E-04		1.82E-03	9.22E-04	
Sr(NO3)2	2.80E-02		1.64E-02	2.80E-02		1.64E-02
UO2(COOH)2	7.92E-08	1.98E-08		8.06E-08	2.01E-08	
UO2(NO3)2	9.60E-05		3.02E-05	9.60E-05		3.02E-05
Y(COOH)3	7.19E-04	4.33E-04		7.31E-04	4.41E-04	
Y(NO3)3	1.00E-02		6.79E-03	1.00E-02		6.79E-03
Zn(COOH)2	6.10E-02	3.53E-02		6.10E-02	3.53E-02	
Zn(NO3)2	0.00E+00		0.00E+00	0.00E+00		0.00E+00
Total, ppb		14.248	13.568		13.584	14.617
Flow, gpm	0.9005			0.9016		
Conc., M		0.703	0.486		0.669	0.523
COOH - NO3	0.217			0.147		

APPENDIX

**Table A-1. DWPF Coupled Feed Flowsheet Material Balance with Batch 1 Sludge and
Copper Nitrate Catalyst**

SECTION 0. MAJOR STREAMS IN THE INTEGRATED FLOWSHEET MODEL

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

DESCRIPTION	PAGE
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1. STREAM NUMBERS 401, 402, 403, 404, 410, 420, 411	2
2. STREAM NUMBERS 407, 409, 414, 418, 457, 458, 417	6
3. STREAM NUMBERS 303, 309, 316, 306, 308, 310, 311	10
4. STREAM NUMBERS 322, 317, 318, 325, 326, 601, 603	14
5. STREAM NUMBERS 610, 615, 618, 619, 201, 657, 658	18
6. STREAM NUMBERS 632, 620, 247, 3, 1, 678, 679	22
7. STREAM NUMBERS 8, 15, 106, 250, 40, 26, 27	26
8. STREAM NUMBERS 44, 60, 69, 70, 200, 145, 177	30
9. STREAM NUMBERS 338, 348, 354, 245	34

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	403 NaTPB Additions	404 NaI ₂ O ₅ H Additions	410 Inhibited Wash Water	420 Spent Late Wash Recycle	411 Spent Wash to Storage
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	0.1676E+01	0.2929E+01	ZERO	ZERO	0.1514E+01	0.1618E+00
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	0.1026E-03	ZERO	ZERO	ZERO	0.6487E-02	0.1035E-03
155 (CH ₃) ₂ CHOH	ZERO	0.3956E-05	ZERO	0.1655E+00	ZERO	0.4966E-09	0.6670E-05
154 (CH ₃ OH)	ZERO	0.3287E-06	ZERO	0.8863E-02	ZERO	0.6221E-10	0.5074E-06
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	0.1414E+00	0.9174E-07	ZERO	ZERO	ZERO	0.2269E-12	0.9174E-07
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	0.1161E-01	0.4319E-03	ZERO	ZERO	ZERO	0.1066E-04	0.4212E-03
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1830E+00	0.1452E-03	ZERO	ZERO	ZERO	0.1451E-03	0.5713E-07
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	403 NaTPB Additions	404 NaTi2O5H Additions	410 Inhibited Wash Water	420 Spent Late Wash Recycle	411 Spent Wash to Storage
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1204E+00	0.4480E-02	ZERO	ZERO	ZERO	0.1106E-03	0.4369E-02
103 Group B	0.2908E-03	0.1435E-04	ZERO	ZERO	ZERO	0.3543E-06	0.1400E-04
25 H ₂	ZERO	0.1080E-11	ZERO	ZERO	ZERO	0.6387E-10	0.8225E-08
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.6428E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	ZERO	0.3837E-01	ZERO	ZERO	ZERO	0.2612E-01	0.4792E-02
74 N ₂ O	ZERO	0.9747E-11	ZERO	ZERO	ZERO	0.3987E-08	0.4868E-15
182 NH ₃	0.1198E+00	0.1499E-02	ZERO	ZERO	ZERO	0.3439E-07	0.4154E-02
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	403 NaTPB Additions	404 NaTi2O5H Additions	410 Inhibited Wash Water	420 Spent Late Wash Recycle	411 Spent Wash to Storage
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2753E+00	0.9953E-05	ZERO	ZERO	ZERO	0.2732E-09	0.9952E-05
94 Na2B4O7	ZERO	0.7245E+00	ZERO	ZERO	ZERO	0.6992E+00	0.2535E-01
109 Na2C2O4	0.8872E+01	0.1512E+01	ZERO	ZERO	ZERO	0.1149E+01	0.3633E+00
5 Na2CO3	0.1435E+03	0.1063E+02	ZERO	ZERO	ZERO	0.5234E+01	0.5393E+01
143 Na2CO3 (C14)	0.1440E-06	0.5359E-08	ZERO	ZERO	ZERO	0.1323E-09	0.5227E-08
89 Na2CrO4	0.4409E+01	0.1641E+00	ZERO	ZERO	ZERO	0.4049E-02	0.1600E+00
115 Na2MoO4	0.7267E+00	0.2704E-01	ZERO	ZERO	ZERO	0.6675E-03	0.2638E-01
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.1426E-03	0.1678E-06	ZERO	ZERO	ZERO	0.5809E-10	0.1678E-06
73 Na2RhO4	0.1834E-01	0.6824E-03	ZERO	ZERO	ZERO	0.1684E-04	0.6655E-03
72 Na2RuO4	0.7882E-01	0.2933E-02	ZERO	ZERO	ZERO	0.7239E-04	0.2861E-02
6 Na2SO4	0.1636E+03	0.6082E+01	ZERO	ZERO	ZERO	0.1501E+00	0.5932E+01
88 Na2SiO3	0.3848E+01	0.1432E+00	ZERO	ZERO	ZERO	0.3534E-02	0.1396E+00
87 Na3PO4	0.1160E+02	0.4315E+00	ZERO	ZERO	ZERO	0.1065E-01	0.4209E+00
91 NaAg(OH)2	0.6334E-02	0.4127E-06	ZERO	ZERO	ZERO	0.2041E-10	0.4126E-06
75 NaAl(OH)4	0.2779E+03	0.1034E+02	ZERO	ZERO	ZERO	0.2552E+00	0.1008E+02
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1021E+02	0.4389E+00	0.2349E+00	ZERO	ZERO	0.5851E-01	0.3804E+00
69 NaF	0.5104E+01	0.1899E+00	ZERO	ZERO	ZERO	0.4688E-02	0.1852E+00
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2582E-02	0.9623E-04	ZERO	ZERO	ZERO	0.2375E-05	0.9385E-04
3 NaNO2	0.3366E+03	0.3863E+02	ZERO	0.1195E-02	ZERO	0.3412E+01	0.3522E+02
2 NaNO3	0.1362E+04	0.4945E+02	ZERO	ZERO	ZERO	0.6898E-01	0.4938E+02
4 NaOH	0.3364E+03	0.1401E+03	0.1171E+01	0.2951E-01	0.7592E+00	0.7639E+02	0.6367E+02
149 NaTPB	ZERO	0.2348E+01	0.5011E+02	ZERO	ZERO	0.1961E+01	0.3873E+00
160 NaTcO4	0.7525E-01	0.2800E-02	ZERO	ZERO	ZERO	0.6911E-04	0.2731E-02
152 NaTi2O5H	ZERO	ZERO	ZERO	0.9231E+00	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
82 O2	ZERO	0.2245E-01	ZERO	ZERO	ZERO	0.1166E-02	0.5730E-03
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.4200E-05	0.1563E-06	ZERO	ZERO	ZERO	0.3857E-08	0.1524E-06
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	403 NaTPB Additions	404 NaTi2O5H Additions	410 Inhibited Wash Water	420 Spent Late Wash Recycle	411 Spent Wash to Storage
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.1722E-04	0.3928E-08	ZERO	ZERO	ZERO	0.2913E-12	0.3927E-08
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.1964E-07	0.7173E-09	ZERO	ZERO	ZERO	0.1430E-10	0.7064E-09
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.1005E-02	0.3738E-04	ZERO	ZERO	ZERO	0.9227E-06	0.3646E-04
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.1736E-04	0.1573E-08	ZERO	ZERO	ZERO	0.2776E-12	0.1572E-08
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.5304E+04	0.2789E+04	0.2384E+03	0.6842E+01	0.1265E+04	0.1528E+04	0.1265E+04
TOTAL FLOW, LB/HR	0.7976E+04	0.3052E+04	0.2929E+03	0.7970E+01	0.1265E+04	0.1619E+04	0.1437E+04
TEMPERATURE, DEG C	0.2691E+02	0.3979E+02	0.3500E+02	0.3500E+02	0.2500E+02	0.3980E+02	0.2616E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01
PRESSURE, PSIG	ZERO	-0.5055E+00	ZERO	ZERO	ZERO	-0.5055E+00	ZERO
PRESSURE, MM HG		0.7339E+03				0.7339E+03	
ENTHALPY, PCU/HR	0.1609E+06	0.1141E+06	0.8382E+04	0.2440E+03	0.3174E+05	0.6204E+05	0.3441E+05
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.1260E+02	0.5753E+01	0.5743E+00	0.1598E-01	0.2526E+01	0.3115E+01	0.2647E+01
DENSITY, LBS/FT3	0.7894E+02	0.6613E+02	0.6358E+02	0.6217E+02	0.6246E+02	0.6482E+02	0.6768E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	407 Decon SN to Storage	409 Proc Tnk Vnt to Atmos	414 Washed Prec to Storage	418 Prec Storage Tank bottoms	457 Late Wash H ₂ O Add w/NaTPB	458 NaTPB add to Prec Pump Tk	417 Precip Strg Vnt to Atmos
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	0.8500E+00	ZERO	ZERO	0.5571E-06
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	0.1029E+00	ZERO	ZERO	0.6747E-07
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	0.2019E-10	0.3439E+00	0.3624E+00	ZERO	ZERO	0.2375E-09
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.4603E+01	0.1421E-09	0.4396E-02	0.9705E+00	0.9495E-01	0.5808E+00	0.6361E-09
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	0.3155E-02	0.3538E+00	0.2812E-05	0.1334E+00	ZERO	ZERO	0.1986E+01
155 (CH ₃) ₂ CHOH	0.7443E-01	0.9107E-01	0.1812E-06	0.6604E-08	ZERO	ZERO	0.1746E-06
154 (CH ₃ OH)	0.4499E-02	0.4363E-02	0.1379E-07	0.6221E-09	ZERO	ZERO	0.1316E-07
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	0.2507E-12	0.4443E-02	0.4443E-02	ZERO	ZERO	0.2912E-11
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	0.2631E-10	0.3077E+00	0.3077E+00	ZERO	ZERO	0.2017E-09
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	0.2604E-05	0.8030E-16	0.2493E-08	0.2493E-08	ZERO	ZERO	0.1634E-17
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	0.1241E-10	0.2179E+00	0.2179E+00	ZERO	ZERO	0.1428E-09
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	0.1160E-01	0.3577E-12	0.1145E-04	0.1145E-04	ZERO	ZERO	0.7502E-14
113 Ca ₃ (PO ₄) ₂	ZERO	0.1700E-12	0.1988E-02	0.1988E-02	ZERO	ZERO	0.1303E-11
20 CaC ₂ O ₄	ZERO	0.7232E-12	0.8457E-02	0.8457E-02	ZERO	ZERO	0.5543E-11
18 CaCO ₃	ZERO	0.5662E-11	0.6621E-01	0.6621E-01	ZERO	ZERO	0.4340E-10
64 CaCO ₃ (C ₁₄)	ZERO	0.3398E-18	0.3974E-08	0.3974E-08	ZERO	ZERO	0.2605E-17
78 CaF ₂	ZERO	0.2447E-12	0.2862E-02	0.2862E-02	ZERO	ZERO	0.1876E-11
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	0.4835E-12	0.5654E-02	0.5654E-02	ZERO	ZERO	0.3706E-11
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.1275E-13	0.1491E-03	0.1491E-03	ZERO	ZERO	0.9776E-13
98 Cr ₂ O ₃	ZERO	0.3315E-12	0.3877E-02	0.3877E-02	ZERO	ZERO	0.2541E-11
42 Cs ₂ O	ZERO	0.6316E-14	0.7385E-04	0.7385E-04	ZERO	ZERO	0.4840E-13
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1503E-05	0.4632E-16	0.1552E-08	0.2380E-01	ZERO	ZERO	0.1560E-10
151 CsTPB	ZERO	0.3116E-10	0.5522E+00	0.4804E+00	ZERO	ZERO	0.3149E-09

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	407 Decon SN to Storage	409 Prc Proc Tnk Vnt to Atmos	414 Washed Prec to Storage	418 Prec Storage Tank bottoms	457 Late Wash H2O Adj'd w/NaTPB	458 NaTPB add to Prec Pump Tk	417 Precip Strg Vnt to Atmo
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	0.1671E-12	0.1954E-02	0.1954E-02	ZERO	ZERO	0.1281E-11
80 Fe2O3	ZERO	0.4147E-10	0.4850E+00	0.4850E+00	ZERO	ZERO	0.3179E-09
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1219E+00	0.3759E-11	0.1187E-03	0.1187E-03	ZERO	ZERO	0.7781E-13
103 Group B	0.8967E-02	0.2789E-12	0.3804E-06	0.3804E-06	ZERO	ZERO	0.2493E-15
25 H2	0.2591E-06	0.3533E-02	0.2235E-09	0.1705E-06	ZERO	ZERO	0.5451E-01
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	0.2145E-10	0.3802E+00	0.3802E+00	ZERO	ZERO	0.2492E-09
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.1866E-11	0.2182E-01	0.2182E-01	ZERO	ZERO	0.1430E-10
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.3628E-12	0.4242E-02	0.4242E-02	ZERO	ZERO	0.2780E-11
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	0.8341E+00	ZERO	ZERO	0.5467E-09
150 KTPB	ZERO	0.2316E-08	0.4106E+02	0.3573E+02	ZERO	ZERO	0.2342E-07
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.3295E-12	0.3853E-02	0.3853E-02	ZERO	ZERO	0.2525E-11
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	0.8376E-11	0.9794E-01	0.9794E-01	ZERO	ZERO	0.6420E-10
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.1323E+00	0.2207E+04	0.1302E-03	0.5698E-02	ZERO	ZERO	0.2207E+04
74 N2O	0.1344E-13	0.9726E-11	0.1323E-16	0.7300E-04	ZERO	ZERO	0.1184E+01
182 NH3	0.1144E+00	0.2607E-02	0.1129E-03	0.1561E-05	ZERO	ZERO	0.1113E-03
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	0.4043E+00	ZERO	ZERO	0.2650E-06
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	407 Decon SN to Storage	409 Prc Proc Tnk Vnt to Atmos	414 Washed Prec to Storage	418 Prec Storage Tank bottoms	457 Late Wash H2O Adj'd w/NaTPB	458 NaTPB add to Prec Pump Tk	417 Precip Strg Vnt to Atmo
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2825E-03	0.8711E-14	0.2704E-06	0.2704E-06	ZERO	ZERO	0.1773E-15
94 Na ₂ B ₄ O ₇	0.6985E+00	0.2153E-10	0.6889E-03	0.7507E+00	ZERO	ZERO	0.4920E-09
109 Na ₂ C ₂ O ₄	0.1001E+02	0.3086E-09	0.9873E-02	0.6959E+00	ZERO	ZERO	0.4561E-09
5 Na ₂ CO ₃	0.1486E+03	0.4580E-08	0.1465E+00	0.5620E+01	ZERO	ZERO	0.3683E-08
143 Na ₂ CO ₃ (C14)	0.1440E-06	0.4439E-17	0.1420E-09	0.1420E-09	ZERO	ZERO	0.9309E-19
89 Na ₂ CrO ₄	0.4409E+01	0.1359E-09	0.4348E-02	0.4348E-02	ZERO	ZERO	0.2850E-11
115 Na ₂ MoO ₄	0.7267E+00	0.2240E-10	0.7167E-03	0.7167E-03	ZERO	ZERO	0.4697E-12
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	0.3340E-05	0.1028E-15	0.4558E-08	0.4558E-08	ZERO	ZERO	0.2988E-17
73 Na ₂ RhO ₄	0.1834E-01	0.5652E-12	0.1808E-04	0.1808E-04	ZERO	ZERO	0.1185E-13
72 Na ₂ RuO ₄	0.7881E-01	0.2430E-11	0.7773E-04	0.7773E-04	ZERO	ZERO	0.5095E-13
6 Na ₂ SO ₄	0.1634E+03	0.5038E-08	0.1612E+00	0.1612E+00	ZERO	ZERO	0.1056E-09
88 Na ₂ SiO ₃	0.3847E+01	0.1186E-09	0.3794E-02	0.3794E-02	ZERO	ZERO	0.2487E-11
87 Na ₃ PO ₄	0.1160E+02	0.3575E-09	0.1144E-01	0.1144E-01	ZERO	ZERO	0.7496E-11
91 NaAg(OH) ₂	0.1171E-04	0.3611E-15	0.1121E-07	0.1121E-07	ZERO	ZERO	0.7349E-17
75 NaAl(OH) ₄	0.2779E+03	0.8565E-08	0.2740E+00	0.2740E+00	ZERO	ZERO	0.1796E-09
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1051E+02	0.3241E-09	0.1034E-01	0.1034E-01	0.7615E-02	0.4658E-01	0.6775E-11
69 NaF	0.5104E+01	0.1573E-09	0.5033E-02	0.5033E-02	ZERO	ZERO	0.3299E-11
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2907E-02	0.8970E-13	0.2550E-05	0.2550E-05	ZERO	ZERO	0.1671E-14
3 NaNO ₂	0.3617E+03	0.1115E-07	0.7144E+01	0.3664E+01	ZERO	ZERO	0.2401E-08
2 NaNO ₃	0.1361E+04	0.4194E-07	0.1342E+01	0.7407E-01	ZERO	ZERO	0.4855E-10
4 NaOH	0.4653E+03	0.1434E-07	0.4207E+01	0.1983E+01	0.3798E-01	0.2323E+00	0.1300E-08
149 NaTPB	0.1147E+02	0.5560E-09	0.1052E-01	ZERO	0.1625E+01	0.9938E+01	ZERO
160 NaTcO ₄	0.7524E-01	ZERO	0.7421E-04	0.7421E-04	ZERO	ZERO	ZERO
152 NaTl ₂ O ₅ H	ZERO	0.7893E-10	0.9229E+00	0.9229E+00	ZERO	ZERO	0.6049E-09
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.2492E-11	0.2914E-01	0.2914E-01	ZERO	ZERO	0.1910E-10
82 O ₂	0.1582E-01	0.1362E+03	0.1557E-04	0.5756E-03	ZERO	ZERO	0.1148E+03
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	0.2440E-13	0.2853E-03	0.2853E-03	ZERO	ZERO	0.1870E-12
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	0.4916E-12	0.5749E-02	0.5749E-02	ZERO	ZERO	0.3768E-11
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	0.4199E-05	0.1294E-15	0.4142E-08	0.4142E-08	ZERO	ZERO	0.2715E-17
110 PdO	ZERO	0.3006E-13	0.3515E-03	0.3515E-03	ZERO	ZERO	0.2304E-12
76 PuO ₂	ZERO	0.8217E-14	0.9609E-04	0.9609E-04	ZERO	ZERO	0.6298E-13
156 PuO ₂ (NaTl ₂ O ₅) ₂	ZERO	0.1376E-13	0.2430E-03	0.2430E-03	ZERO	ZERO	0.1593E-12
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	0.1611E-13	0.1884E-03	0.1884E-03	ZERO	ZERO	0.1235E-12
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	0.9172E-13	0.1073E-02	0.1073E-02	ZERO	ZERO	0.7030E-12
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	407 Decon SN to Storage	409 Prc Proc Tnk Vnt to Atmos	414 Washed Prec to Storage	418 Prec Storage Tank bottoms	457 Late Wsh H2O Adj'd w/NaTPB	458 NaTPB add to Prec Pump Tk	417 Precip Strg Vnt to Atmo
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.2934E-11	0.3431E-01	0.3431E-01	ZERO	ZERO	0.2249E-10
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	0.3859E-14	0.6835E-04	0.6835E-04	ZERO	ZERO	0.4480E-13
127 Sr(OH)2	0.8050E-07	0.2477E-17	0.1067E-09	0.1067E-09	ZERO	ZERO	0.6995E-19
30 SrCO3	ZERO	0.1293E-12	0.1512E-02	0.1512E-02	ZERO	ZERO	0.9909E-12
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	0.3303E-13	0.3862E-03	0.3862E-03	ZERO	ZERO	0.2532E-12
92 ThO2	ZERO	0.1198E-11	0.1401E-01	0.1401E-01	ZERO	ZERO	0.9186E-11
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.1946E-07	0.1644E-09	0.1920E-10	0.1599E-10	ZERO	ZERO	0.3204E-11
17 U3O8	ZERO	0.1739E-11	0.2034E-01	0.2034E-01	ZERO	ZERO	0.1333E-10
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.1005E-02	0.3097E-13	0.9907E-06	0.9907E-06	ZERO	ZERO	0.6494E-15
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.8181E-07	0.2527E-17	0.4273E-10	0.4273E-10	ZERO	ZERO	0.2801E-19
31 Y2(CO3)3	ZERO	0.4995E-13	0.5841E-03	0.5841E-03	ZERO	ZERO	0.3829E-12
47 Y2O3	ZERO	0.7859E-15	0.1394E-04	0.1394E-04	ZERO	ZERO	0.9137E-14
100 Zeolite	ZERO	0.1902E-12	0.2224E-02	0.2224E-02	ZERO	ZERO	0.1458E-11
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.2941E-12	0.3440E-02	0.3440E-02	ZERO	ZERO	0.2254E-11
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.2949E-10	0.3448E+00	0.3448E+00	ZERO	ZERO	0.2260E-09
1 water	0.8028E+04	0.6527E+02	0.3912E+03	0.3843E+03	0.1185E+04	0.4729E+02	0.1620E+02
TOTAL FLOW, LB/HR	0.1087E+05	0.2409E+04	0.4495E+03	0.4405E+03	0.1187E+04	0.5808E+02	0.2342E+04
TEMPERATURE, DEG C	0.3000E+02	0.4000E+02	0.3000E+02	0.3837E+02	0.2507E+02	0.3500E+02	0.4000E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.1000E+01	0.9656E+00	0.1000E+01	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	-0.5055E+00	ZERO	-0.5055E+00	ZERO	ZERO	-0.5055E+00
PRESSURE, MM HG		0.7339E+03		0.7339E+03			0.7339E+03
ENTHALPY, PCU/HR	0.2627E+06	0.6419E+05	0.1188E+05	0.1495E+05	0.2982E+05	0.1662E+04	0.3401E+05
VAPOR FLOW, CFM		0.6155E+03					0.5919E+03
LIQUID FLOW, GPM	0.1816E+02		0.8703E+00	0.8533E+00	0.2371E+01	0.1139E+00	
DENSITY, LBS/FT3	0.7460E+02	0.6524E-01	0.6439E+02	0.6436E+02	0.6244E+02	0.6358E+02	0.6593E-01
PHASE	LIQUID	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	303 Tk 42 Contnt prior to Wash	309 Wash/Aux H2O dur Tk42 Wash	316 Makeup H2O Add to Tk 51	306 Tk 51 Contnt prior to Wash	308 Unwshd Suprnt to 43	310 Tk 51 Tot 50% dur Tk42 Wash	311 NaOH 40% NaNO ₂ Ad dur Tk42 Wash
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.4022E-02	ZERO	ZERO	0.4907E-02	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.4224E+01	ZERO	ZERO	0.5590E+01	ZERO	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.4162E-03	ZERO	ZERO	0.1574E-02	0.1391E-02	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.1077E-01	ZERO	ZERO	0.7764E-02	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.1443E-02	ZERO	ZERO	0.1188E-03	0.1050E-03	ZERO	ZERO
113 Ca3(PO4)2	0.1358E+01	ZERO	ZERO	0.1046E+01	ZERO	ZERO	ZERO
20 CaC2O4	0.1040E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	0.2225E+00	ZERO	ZERO	0.1366E+01	ZERO	ZERO	ZERO
64 CaCO3 (C14)	0.5996E-07	ZERO	ZERO	0.7632E-07	ZERO	ZERO	ZERO
78 CaF2	0.4704E-02	ZERO	ZERO	0.8931E-02	ZERO	ZERO	ZERO
41 CaO	0.1139E-02	ZERO	ZERO	0.1990E-02	ZERO	ZERO	ZERO
19 CaSO4	0.3150E-01	ZERO	ZERO	0.1764E-01	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	0.5463E-01	ZERO	ZERO	0.1018E+00	ZERO	ZERO	ZERO
42 Cs2O	0.1068E-03	ZERO	ZERO	0.6879E-04	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.5419E-03	ZERO	ZERO	0.6085E-04	0.5379E-04	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -->	303	309	316	306	308	310	311	
STREAM NAME	Tk 42 Contnt prior to Wash	Wash/Aux H2O dur Tk42 Wash	Makeup H2O Add to Tk 51	Tk 51 Contnt prior to Wash	Unwshd Tk 51 Suprnt to 43	Tk 51 Tot 50% dur Tk42 Wash	NaOH 40% dur Tk42 Wash	NaNO2 Ad
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.7188E-02	ZERO	ZERO	0.1715E-01	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	0.8733E+01	ZERO	ZERO	0.1451E+02	0.6045E-03	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1993E-01	ZERO	ZERO	0.3296E-02	0.1184E-02	ZERO	ZERO	ZERO
103 Group B	0.1074E+00	ZERO	ZERO	0.9277E-04	0.2859E-05	ZERO	ZERO	ZERO
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.2928E+00	ZERO	ZERO	0.8236E-02	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.1043E+00	ZERO	ZERO	0.3995E-02	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.8198E-02	ZERO	ZERO	0.8409E-01	0.7433E-01	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.5856E+00	ZERO	ZERO	0.8411E+00	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.1605E+01	ZERO	ZERO	0.1732E+01	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.8530E-03	ZERO	ZERO	0.3226E-02	0.2851E-02	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) ->	303	309	316	306	308	310	311
STREAM NAME	Tk 42 Contnt prior to Wash	Wash/Aux H2O dur Tk42 Wash	Makeup H2O Add to Tk 51	Tk 51 Contnt prior to Wash	Unwshd Tk 51 Suprnt to 43	Tot 50% dur Tk42 Wash	NaOH 40% NaNO2 Ad dur Tk42 Wash
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.4999E-03	ZERO	ZERO	0.1047E-02	0.9259E-03	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	0.1175E+00	ZERO	ZERO	0.1906E+00	0.1685E+00	ZERO	ZERO
5 Na2CO3	0.1343E+01	ZERO	ZERO	0.4131E+01	0.3652E+01	ZERO	ZERO
143 Na2CO3 (C14)	0.4315E-09	ZERO	ZERO	0.1631E-08	0.1442E-08	ZERO	ZERO
89 Na2CrO4	0.3156E-01	ZERO	ZERO	0.4902E-01	0.4334E-01	ZERO	ZERO
115 Na2MoO4	0.2136E-02	ZERO	ZERO	0.8077E-02	0.7139E-02	ZERO	ZERO
32 Na2O	0.9431E+00	ZERO	ZERO	0.1797E+01	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.1876E-06	ZERO	ZERO	0.4089E-07	0.3614E-07	ZERO	ZERO
73 Na2RhO4	0.5419E-04	ZERO	ZERO	0.2049E-03	0.1811E-03	ZERO	ZERO
72 Na2RuO4	0.2316E-03	ZERO	ZERO	0.8760E-03	0.7743E-03	ZERO	ZERO
6 Na2SO4	0.4152E+00	ZERO	ZERO	0.7947E+00	0.7024E+00	ZERO	ZERO
88 Na2SiO3	0.1132E-01	ZERO	ZERO	0.4279E-01	0.3782E-01	ZERO	ZERO
87 Na3PO4	0.1278E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH)2	0.1885E-04	ZERO	ZERO	0.5958E-03	0.5266E-03	ZERO	ZERO
75 NaAl(OH)4	0.1724E+00	ZERO	ZERO	0.1566E+01	0.1385E+01	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1139E-01	ZERO	ZERO	0.1441E+00	0.1274E+00	ZERO	ZERO
69 NaF	0.1636E-01	ZERO	ZERO	0.1553E+00	0.1373E+00	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.7592E-05	ZERO	ZERO	0.2872E-04	0.2539E-04	ZERO	ZERO
3 NaNO2	0.3697E+01	ZERO	ZERO	0.1138E+02	0.1006E+02	ZERO	0.2568E+01
2 NaNO3	0.1822E+01	ZERO	ZERO	0.5968E+01	0.5276E+01	ZERO	ZERO
4 NaOH	0.1864E+00	0.1197E+00	0.1674E-01	0.5164E+01	0.4564E+01	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	0.2198E-03	ZERO	ZERO	0.8315E-03	0.7350E-03	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1247E+00	ZERO	ZERO	0.1561E+00	ZERO	ZERO	ZERO
82 O2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	0.3109E-03	0.2748E-03	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.2614E-01	ZERO	ZERO	0.6686E-01	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.1235E-07	ZERO	ZERO	0.4669E-07	0.4127E-07	ZERO	ZERO
110 PdO	0.4307E-03	ZERO	ZERO	0.2102E-03	ZERO	ZERO	ZERO
76 PuO2	0.3266E-02	ZERO	ZERO	0.5180E-02	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	0.1586E-02	ZERO	ZERO	0.4791E-03	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.6447E-02	ZERO	ZERO	0.3007E-02	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	303 Tk 42 Contnt prior to Wash	309 Wash/Aux H2O dur Tk42 Wash	316 Makeup H2O Add to Tk 51	306 Tk 51 Contnt prior to Wash	308 Unwshd Suprnt to Tk 43	310 Tot 50% NaOH dur Tk42 Wash	311 40% NaNO2 Ad dur Tk42 Wash
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.7410E+00	ZERO	ZERO	0.4257E+00	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.5066E-07	ZERO	ZERO	0.1915E-06	0.1693E-06	ZERO	ZERO
30 SrCO3	0.8736E-02	ZERO	ZERO	0.1077E-01	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO2	0.4956E-03	ZERO	ZERO	0.1814E-02	ZERO	ZERO	ZERO
92 ThO2	0.1049E+00	ZERO	ZERO	0.1559E-01	ZERO	ZERO	ZERO
107 TiO2	0.7603E-02	ZERO	ZERO	0.3048E-01	ZERO	ZERO	ZERO
119 Tritium	0.1434E-08	ZERO	ZERO	0.5422E-08	0.4793E-08	ZERO	ZERO
17 U3O8	0.9030E+00	ZERO	ZERO	0.1404E+01	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NG3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.4740E-04	ZERO	ZERO	0.2882E-03	0.2548E-03	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.5105E-07	ZERO	ZERO	0.1931E-06	0.1707E-06	ZERO	ZERO
31 Y2(CO3)3	0.3819E-02	ZERO	ZERO	0.2712E-02	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3048E-01	ZERO	ZERO	0.7017E-01	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.2508E+01	ZERO	ZERO	0.3915E+01	0.2046E-03	ZERO	ZERO
1 water	0.9474E+02	0.2990E+03	0.4182E+02	0.8710E+02	0.7699E+02	ZERO	0.3851E+01
TOTAL FLOW, LB/HR	0.1254E+03	0.2991E+03	0.4184E+02	0.1500E+03	0.1032E+03	ZERO	0.6419E+01
TEMPERATURE, DEG C	0.3581E+02	0.4800E+02	0.4800E+02	0.3689E+02	0.3621E+02	0.4800E+02	0.4800E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
ENTHALPY, PCU/HR	0.3585E+04	0.1437E+05	0.2010E+04	0.3675E+04	0.3035E+04	ZERO	0.2137E+03
VAPOR FLOW, CFM	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
LIQUID FLOW, GPM	0.2094E+00	0.5972E+00	0.8354E-01	0.2168E+00	0.1727E+00	ZERO	0.9498E-02
DENSITY, LBS/FT3	0.7466E+02	0.6245E+02	0.6245E+02	0.8625E+02	0.7454E+02	ZERO	0.8426E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	322 Tot Spnt Wash frm Tank 51	317 50% NaOH dur Tk51 Wash	318 40% NaNO2 dur Tk51 Wash	325 Wshd Batch 1 Slldg to Stor	326 Dilution H2O to Slldg Btch	601 Concentrate from ETF	603 Dcon Str Tk Vnt to Atm
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4213E-10
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3061E-02
155 (CH3)2CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1937E-01
154 (CH3OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.9810E-03
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.2678E-07	ZERO	ZERO	0.8929E-02	ZERO	0.1757E-02	0.1608E-13
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.2998E-04	ZERO	ZERO	0.9814E+01	ZERO	0.8794E-01	0.8049E-12
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.2117E-02	ZERO	ZERO	0.5204E-03	ZERO	ZERO	0.2384E-16
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.4879E-07	ZERO	ZERO	0.1853E-01	ZERO	0.2780E-02	0.2545E-13
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.2726E-02	ZERO	ZERO	0.1081E-02	ZERO	ZERO	0.1062E-12
113 Ca3(PO4)2	0.6439E-05	ZERO	ZERO	0.2404E+01	ZERO	0.2178E+00	0.1994E-11
20 CaC2O4	0.1516E-07	ZERO	ZERO	0.1040E-01	ZERO	ZERO	ZERO
18 CaCO3	0.6144E-05	ZERO	ZERO	0.1588E+01	ZERO	0.4990E+00	0.4568E-11
64 CaCO3 (C14)	0.4127E-12	ZERO	ZERO	0.1363E-06	ZERO	ZERO	ZERO
78 CaF2	0.4492E-07	ZERO	ZERO	0.1363E-01	ZERO	ZERO	ZERO
41 CaO	0.1014E-07	ZERO	ZERO	0.3129E-02	ZERO	ZERO	ZERO
19 CaSO4	0.1211E-06	ZERO	ZERO	0.4913E-01	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	0.5134E-06	ZERO	ZERO	0.1564E+00	ZERO	ZERO	ZERO
42 Cs2O	0.4488E-09	ZERO	ZERO	0.1756E-03	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1037E-02	ZERO	ZERO	0.4080E-03	ZERO	0.4011E-08	0.1379E-16
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) ->	322	317	318	325	326	601	603
STREAM NAME	Tot Spnt Wash frm Tank 51	Tot 50% NaOH dur Tk51 Wash	40% NaNO2 dur Tk51 Wash	Wshd Batch 1 Sltdg to Stor	Dilution H2O to Sltdg Btch	Concentrate from ETF	Dcon Str Tk Vnt to Atm
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.8359E-07	ZERO	ZERO	0.2434E-01	ZERO	0.3968E-02	0.3632E-13
80 Fe2O3	0.2079E-02	ZERO	ZERO	0.2324E+02	ZERO	0.1181E+00	0.1081E-11
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1801E-02	ZERO	ZERO	0.2198E-01	ZERO	0.3951E-01	0.1478E-11
103 Group B	0.4507E-05	ZERO	ZERO	0.1075E+00	ZERO	0.5292E-08	0.8208E-13
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2591E-06
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.4620E-06	ZERO	ZERO	0.3011E+00	ZERO	0.1005E-02	0.9203E-14
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.1691E-06	ZERO	ZERO	0.1083E+00	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.8759E-01	ZERO	ZERO	0.1745E-01	ZERO	0.2293E-01	0.2099E-12
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4438E-05	ZERO	ZERO	0.1427E+01	ZERO	0.2271E-01	0.2078E-12
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	0.7533E-02	0.6895E-13
14 MnO2	0.9720E-05	ZERO	ZERO	0.3337E+01	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5411E+03
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1338E-13
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	0.3649E-01	0.7181E-01
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.4338E-02	ZERO	ZERO	0.1067E-02	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	322 Tot Spnt Wsh frm Tank 51	317 Tot 50% NaOH dur Tk51	318 40% NaNO2 dur Tk51	325 Wshd Batch 1 Sldg to Stor	326 Dilution H2O to Sldg Btch	601 Concentrate from ETF	603 Dcon Str Tk Vnt to Atm
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.1814E-02	ZERO	ZERO	0.5108E-03	ZERO	ZERO	0.2586E-14
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6393E-11
109 Na2C2O4	0.3783E+00	ZERO	ZERO	0.1125E+00	ZERO	0.7128E+00	0.9815E-10
5 Na2CO3	0.6011E+01	ZERO	ZERO	0.1551E+01	ZERO	0.2971E+01	0.1387E-08
143 Na2CO3 (C14)	0.2194E-08	ZERO	ZERO	0.5395E-09	ZERO	ZERO	0.1318E-17
89 Na2CrO4	0.9973E-01	ZERO	ZERO	0.2993E-01	ZERO	0.5974E-02	0.4041E-10
115 Na2MoO4	0.1086E-01	ZERO	ZERO	0.2671E-02	ZERO	ZERO	0.6651E-11
32 Na2O	0.9033E-05	ZERO	ZERO	0.2740E+01	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.3762E-06	ZERO	ZERO	0.1439E-06	ZERO	0.6451E-07	0.3116E-16
73 Na2RhO4	0.2756E-03	ZERO	ZERO	0.6775E-04	ZERO	0.1665E-12	0.1678E-12
72 Na2RuO4	0.1178E-02	ZERO	ZERO	0.2897E-03	ZERO	0.3364E-10	0.7214E-12
6 Na2SO4	0.1441E+01	ZERO	ZERO	0.4140E+00	ZERO	0.1252E+00	0.1497E-08
88 Na2SiO3	0.5755E-01	ZERO	ZERO	0.1415E-01	ZERO	ZERO	0.3521E-10
87 Na3PO4	0.2322E-01	ZERO	ZERO	0.9427E-02	ZERO	ZERO	0.1061E-09
91 NaAg(OH)2	0.5492E-03	ZERO	ZERO	0.9467E-04	ZERO	ZERO	0.1072E-15
75 NaAl(OH)4	0.1667E+01	ZERO	ZERO	0.3396E+00	ZERO	ZERO	0.2543E-08
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1452E+00	ZERO	ZERO	0.2793E-01	ZERO	0.1494E+00	0.9760E-10
69 NaF	0.1640E+00	ZERO	ZERO	0.3312E-01	ZERO	0.4444E-01	0.4712E-10
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.3862E-04	ZERO	ZERO	0.9494E-05	ZERO	0.1337E-13	0.2661E-13
3 NaNO2	0.2353E+02	ZERO	0.7537E+01	0.7405E+01	ZERO	0.4455E-01	0.3311E-08
2 NaNO3	0.8470E+01	ZERO	ZERO	0.2153E+01	ZERO	0.4485E+02	0.1286E-07
4 NaOH	0.1024E+02	0.6222E+01	ZERO	0.1761E+01	0.4341E-01	0.1105E+02	0.4360E-08
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1050E-09
160 NaTcO4	0.1118E-02	ZERO	ZERO	0.2749E-03	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.8471E-06	ZERO	ZERO	0.2808E+00	ZERO	0.3657E-02	0.3347E-13
82 O2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1634E+03
175 Pb(NO3)2	0.2688E-03	ZERO	ZERO	0.4215E-04	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1762E-02	0.1613E-13
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.3231E-06	ZERO	ZERO	0.9300E-01	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.6280E-07	ZERO	ZERO	0.1544E-07	ZERO	ZERO	0.3843E-16
110 PdO	0.1524E-08	ZERO	ZERO	0.6409E-03	ZERO	ZERO	ZERO
76 PuO2	0.2684E-07	ZERO	ZERO	0.8446E-02	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	0.4354E-08	ZERO	ZERO	0.2065E-02	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.2222E-07	ZERO	ZERO	0.9455E-02	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	322 Tot Spnt Wash frm Tank 51	317 Tot 50% NaOH dur Tk51 Wash	318 40% NaNO2 dur Tk51 Wash	325 Wshd Batch 1 Slldg to Stor	326 Dilution H2O to Slldg Btch	601 Concentrate from ETF	603 Dcon Str Tk Vnt to Atm
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.2894E-05	ZERO	ZERO	0.1167E+01	ZERO	0.4069E+00	0.3724E-11
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.2576E-06	ZERO	ZERO	0.6334E-07	ZERO	0.8811E-09	0.7448E-18
30 SrCO3	0.5865E-07	ZERO	ZERO	0.1951E-01	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO2	0.8453E-08	ZERO	ZERO	0.2309E-02	ZERO	ZERO	ZERO
92 ThO2	0.2194E-06	ZERO	ZERO	0.1205E+00	ZERO	ZERO	ZERO
107 TiO2	0.1410E-06	ZERO	ZERO	0.3808E-01	ZERO	ZERO	ZERO
119 Tritium	0.7294E-08	ZERO	ZERO	0.1793E-08	ZERO	0.1193E-08	0.5022E-10
17 U3O8	0.7300E-05	ZERO	ZERO	0.2307E+01	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.3353E-03	ZERO	ZERO	0.7404E-04	ZERO	0.5626E-01	0.5242E-12
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.2597E-06	ZERO	ZERO	0.6384E-07	ZERO	0.2521E-12	0.7488E-18
31 Y2(CO3)3	0.1712E-07	ZERO	ZERO	0.6530E-02	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3435E-06	ZERO	ZERO	0.1007E+00	ZERO	0.4492E-01	0.4111E-12
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.6990E-03	ZERO	ZERO	0.6423E+01	ZERO	0.1106E+00	0.1012E-11
1 water	0.4042E+03	0.6222E+01	0.1131E+02	0.2872E+03	0.1085E+03	0.1448E+03	0.1919E+02
TOTAL FLOW, LB/HR	0.4565E+03	0.1244E+02	0.1884E+02	0.3570E+03	0.1085E+03	0.2064E+03	0.7238E+03
TEMPERATURE, DEG C	0.4606E+02	0.4800E+02	0.4800E+02	0.4800E+02	0.2500E+02	0.3000E+02	0.4000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	-0.5055E+00
PRESSURE, MM HG							0.7339E+03
ENTHALPY, PCU/HR	0.1926E+05	0.3965E+03	0.6274E+03	0.1436E+05	0.2722E+04	0.4841E+04	0.2039E+05
VAPOR FLOW, CFM							0.1810E+03
LIQUID FLOW, GPM	0.8446E+00	0.1627E-01	0.2788E-01	0.6194E+00	0.2167E+00	0.3340E+00	
DENSITY, LBS/FT3	0.6739E+02	0.9533E+02	0.8426E+02	0.7186E+02	0.6245E+02	0.7705E+02	0.6664E-01
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	610 LPFT SN to Mixr. Fd Tk	615 Cement Pre-mix	618 Saltstone to Trench	619 Hardened Washd Saltstone Feed	201 Precip frm LWF	657 Prec Feed Solubles	658 Prec Feed Insolubles
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	0.8500E+00	ZERO	0.8500E+00
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	0.1029E+00	ZERO	0.1029E+00
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	0.3637E+00	ZERO	0.3637E+00
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.4603E+01	ZERO	0.4603E+01	0.4603E+01	0.1329E+00	0.1329E+00	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.7327E-05	ZERO	0.5313E-07	ZERO	0.9281E-02	0.9281E-02	0.5684E-09
155 (CH3)2CHOH	0.4876E-01	ZERO	0.3903E-01	0.3903E-01	0.1375E-09	0.1375E-09	ZERO
154 (CH3OH)	0.3192E-02	ZERO	0.2670E-02	0.2670E-02	0.1514E-10	0.1514E-10	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.1757E-02	ZERO	0.1757E-02	0.1757E-02	0.4443E-02	ZERO	0.4443E-02
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.8794E-01	ZERO	0.8794E-01	0.8794E-01	0.3077E+00	ZERO	0.3077E+00
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.2604E-05	ZERO	0.2604E-05	0.2604E-05	0.1673E-13	0.1673E-13	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.2780E-02	ZERO	0.2780E-02	0.2780E-02	0.2179E+00	ZERO	0.2179E+00
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.1160E-01	ZERO	0.1160E-01	0.1160E-01	0.7860E-06	0.7860E-06	ZERO
113 Ca3(PO4)2	0.2178E+00	ZERO	0.2178E+00	0.2178E+00	0.1988E-02	ZERO	0.1988E-02
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	0.8457E-02	ZERO	0.8457E-02
18 CaCO3	0.4990E+00	ZERO	0.4990E+00	0.4990E+00	0.6621E-01	ZERO	0.6621E-01
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	0.3974E-08	ZERO	0.3974E-08
78 CaF2	ZERO	ZERO	ZERO	ZERO	0.2862E-02	ZERO	0.2862E-02
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	ZERO	0.5654E-02	ZERO	0.5654E-02
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	0.1669E+05	0.1669E+05	0.1669E+05	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	0.1491E-03	ZERO	0.1491E-03
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	0.3877E-02	ZERO	0.3877E-02
42 Cs2O	ZERO	ZERO	ZERO	ZERO	0.7385E-04	ZERO	0.7385E-04
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1507E-05	ZERO	0.1507E-05	0.1507E-05	0.1070E-04	0.1070E-04	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	0.5517E+00	ZERO	0.5517E+00

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	610 LPPT SN to Mixr Pd Tk	615 Cement Pre-mix	618 Saltstone to Trench	619 Hardened Saltstone	201 Washd Precip Feed frm LWF	657 Prec Feed Solubles	658 Prec Feed Insolubles
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.3968E-02	ZERO	0.3968E-02	0.3968E-02	0.1954E-02	ZERO	0.1954E-02
80 Fe2O3	0.1181E+00	ZERO	0.1181E+00	0.1181E+00	0.4850E+00	ZERO	0.4850E+00
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1614E+00	ZERO	0.1614E+00	0.1614E+00	0.8153E-05	ZERO	0.8153E-05
103 Group B	0.8967E-02	ZERO	0.8967E-02	0.8967E-02	0.2612E-07	ZERO	0.2612E-07
25 H2	0.4563E-13	ZERO	0.2686E-19	0.2686E-19	0.5901E-10	0.5901E-10	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	0.3802E+00	ZERO	0.3802E+00
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.1005E-02	ZERO	0.1005E-02	0.1005E-02	0.2182E-01	ZERO	0.2182E-01
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	0.4242E-02	ZERO	0.4242E-02
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.2293E-01	ZERO	0.2293E-01	0.2293E-01	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	0.4106E+02	ZERO	0.4106E+02
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.2271E-01	ZERO	0.2271E-01	0.2271E-01	0.3853E-02	ZERO	0.3853E-02
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.7533E-02	ZERO	0.7533E-02	0.7533E-02	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO	ZERO	0.9794E-01	ZERO	0.9794E-01
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.1122E+00	ZERO	0.1130E+00	0.1130E+00	0.6946E-03	0.6946E-03	ZERO
74 N2O	0.8223E-18	ZERO	0.1663E-21	0.1663E-21	0.3658E-08	0.3658E-08	ZERO
182 NH3	0.5936E-01	ZERO	0.3503E-01	ZERO	0.1564E-07	0.1564E-07	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	0.3891E+01	ZERO	0.3891E+01
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	610 LPPT SN to Mixr Pd Tk	615 Cement Pre-mix	618 Saltstone to Trench	619 Hardened Washd Saltstone Feed frm LWF	201 Precip	657 Prec Feed Solubles	658 Prec Feed Insolubles
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2825E-03	ZERO	0.2825E-03	0.2825E-03	0.2014E-10	0.2014E-10	ZERO
94 Na ₂ B ₄ O ₇	0.6985E+00	ZERO	0.6985E+00	0.6985E+00	0.5155E-01	0.5155E-01	ZERO
109 Na ₂ C ₂ O ₄	0.1072E+02	ZERO	0.1072E+02	0.1072E+02	0.4779E-01	0.4779E-01	ZERO
5 Na ₂ CO ₃	0.1516E+03	ZERO	0.1516E+03	0.1516E+03	0.3859E+00	0.3859E+00	ZERO
143 Na ₂ CO ₃ (C14)	0.1440E-06	ZERO	0.1440E-06	0.1440E-06	0.9753E-11	0.9753E-11	ZERO
89 Na ₂ CrO ₄	0.4415E+01	ZERO	0.4415E+01	0.4415E+01	0.2986E-03	0.2986E-03	ZERO
115 Na ₂ MoO ₄	0.7267E+00	ZERO	0.7267E+00	0.7267E+00	0.4922E-04	0.4922E-04	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	0.3404E-05	ZERO	0.3404E-05	0.3404E-05	0.4283E-11	0.4283E-11	ZERO
73 Na ₂ RhO ₄	0.1834E-01	ZERO	0.1834E-01	0.1834E-01	0.1242E-05	0.1242E-05	ZERO
72 Na ₂ RuO ₄	0.7881E-01	ZERO	0.7881E-01	0.7881E-01	0.5338E-05	0.5338E-05	0.3749E-12
6 Na ₂ SO ₄	0.1636E+03	ZERO	0.1636E+03	0.1636E+03	0.1107E-01	0.1107E-01	ZERO
88 Na ₂ SiO ₃	0.3847E+01	ZERO	0.3847E+01	0.3847E+01	0.2606E-03	0.2606E-03	ZERO
87 Na ₃ PO ₄	0.1160E+02	ZERO	0.1160E+02	0.1160E+02	0.7854E-03	0.7854E-03	ZERO
91 NaAg(OH) ₂	0.1171E-04	ZERO	0.1171E-04	0.1171E-04	0.1505E-11	0.1505E-11	ZERO
75 NaAl(OH) ₄	0.2779E+03	ZERO	0.2779E+03	0.2779E+03	0.1882E-01	0.1882E-01	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1066E+02	ZERO	0.1066E+02	0.1066E+02	0.6015E-02	0.6015E-02	0.4253E-09
69 NaF	0.5149E+01	ZERO	0.5149E+01	0.5149E+01	0.3456E-03	0.3456E-03	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2907E-02	ZERO	0.2907E-02	0.2907E-02	0.1751E-06	0.1751E-06	ZERO
3 NaNO ₂	0.3618E+03	ZERO	0.3618E+03	0.3618E+03	0.2516E+00	0.2516E+00	ZERO
2 NaNO ₃	0.1405E+04	ZERO	0.1405E+04	0.1405E+04	0.5086E-02	0.5086E-02	ZERO
4 NaOH	0.4763E+03	ZERO	0.4763E+03	0.4763E+03	0.2357E+00	0.2357E+00	ZERO
149 NaTPB	0.1147E+02	ZERO	0.1147E+02	0.1147E+02	0.5074E+00	0.5074E+00	ZERO
160 NaTcO ₄	0.7524E-01	ZERO	0.7524E-01	0.7524E-01	0.5096E-05	0.5096E-05	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	0.9230E+00	ZERO	0.9230E+00
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.3657E-02	ZERO	0.3657E-02	0.3657E-02	0.2914E-01	ZERO	0.2914E-01
82 O ₂	0.6569E-01	ZERO	0.6611E-01	0.6611E-01	0.7888E-04	0.7888E-04	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	0.2853E-03	ZERO	0.2853E-03
67 PbO	0.1762E-02	ZERO	0.1762E-02	0.1762E-02	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	ZERO	0.5749E-02	ZERO	0.5749E-02
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	0.4199E-05	ZERO	0.4199E-05	0.4199E-05	0.2844E-09	0.2844E-09	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	0.3515E-03	ZERO	0.3515E-03
76 PuO ₂	ZERO	ZERO	ZERO	ZERO	0.9609E-04	ZERO	0.9609E-04
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	0.2430E-03	ZERO	0.2430E-03
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	0.1884E-03	ZERO	0.1884E-03
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	0.1073E-02	ZERO	0.1073E-02
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	610 LPPT SM to Mixr Fd Tk	615 Cement Pre-mix	618 Saltstone to Trench	619 Hardened Washd Precip Saltstone	201 Feed frm LWF	657 Prec Feed Solubles	658 Prec Feed Insolubles
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.4069E+00	ZERO	0.4069E+00	0.4069E+00	0.3431E-01	ZERO	0.3431E-01
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	0.6835E-04	ZERO	0.6835E-04
127 Sr(OH)2	0.8138E-07	ZERO	0.8138E-07	0.8138E-07	0.2148E-13	0.2148E-13	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	0.1512E-02	ZERO	0.1512E-02
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	0.3862E-03	ZERO	0.3862E-03
92 ThO2	ZERO	ZERO	ZERO	ZERO	0.1401E-01	ZERO	0.1401E-01
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.2059E-07	ZERO	0.2057E-07	0.2014E-07	0.1081E-11	0.1081E-11	ZERO
17 U3O8	ZERO	ZERO	ZERO	ZERO	0.2034E-01	ZERO	0.2034E-01
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.5727E-01	ZERO	0.5727E-01	0.5727E-01	0.6803E-07	0.6803E-07	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.8181E-07	ZERO	0.8181E-07	0.8181E-07	0.2047E-13	0.2047E-13	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	0.5841E-03	ZERO	0.5841E-03
47 Y2O3	ZERO	ZERO	ZERO	ZERO	0.1394E-04	ZERO	0.1394E-04
100 Zeolite	ZERO	ZERO	ZERO	ZERO	0.2224E-02	ZERO	0.2224E-02
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.4492E-01	ZERO	0.4492E-01	0.4492E-01	0.3440E-02	ZERO	0.3440E-02
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1106E+00	ZERO	0.1106E+00	0.1106E+00	0.3448E+00	ZERO	0.3448E+00
1 water	0.8163E+04	ZERO	0.8247E+04	0.6803E+04	0.3636E+03	0.3636E+03	ZERO
TOTAL FLOW, LB/HR	0.1107E+05	0.1669E+05	0.2784E+05	0.2639E+05	0.4151E+03	0.3653E+03	0.4981E+02
TEMPERATURE, DEG C	0.3992E+02	0.2500E+02	0.3873E+02	0.3873E+02	0.2974E+02	0.2974E+02	0.2974E+02
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	-0.5055E+00	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG	0.7339E+03		0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.3555E+06	0.7760E+05	0.4683E+06	0.4123E+06	0.1087E+05	0.1086E+05	0.1931E+02
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.1848E+02		0.3147E+02	0.2859E+02	0.8180E+00	0.7281E+00	0.8988E-01
DENSITY, LBS/FT3	0.7464E+02	0.1622E+03	0.1103E+03	0.1151E+03	0.6327E+02	0.6255E+02	0.6910E+02
PHASE	LIQUID	SOLID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	532 Slitston Stack	620 Proc Rels Vapor Release	247 Saltstone PR Bottoms to PRBT	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWPFF	678 Sludge Feed Solubles	679 Sludge Feed Insolubles
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	0.8447E-02	0.8447E-02	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	0.6469E-01	0.6469E-01	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	0.6015E-02	0.5943E-02	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	0.4872E-01	0.4872E-01	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	0.6263E-01	0.6070E-01	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	0.1816E+00	0.1816E+00	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	0.2968E-02	0.2968E-02	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	0.6023E-02	0.6023E-02	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.2222E-10	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	0.8467E+00	0.8338E+00	ZERO	ZERO	ZERO
121 (C6H6)	0.7274E-05	0.5313E-07	0.1200E-01	0.2480E-03	ZERO	ZERO	ZERO
155 (CH3)2CHOH	0.9728E-02	ZERO	0.1339E-09	0.1320E-09	ZERO	ZERO	ZERO
154 (CH3OH)	0.5220E-03	ZERO	0.1440E-10	0.1392E-10	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	0.4136E-02	0.4136E-02	ZERO	ZERO	ZERO
116 Ag2O	0.8483E-14	ZERO	ZERO	ZERO	0.8929E-02	ZERO	0.8929E-02
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.4245E-12	ZERO	0.3158E+00	0.3158E+00	0.9814E+01	ZERO	0.9814E+01
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.1257E-16	ZERO	ZERO	ZERO	0.5204E-03	0.5204E-03	0.3510E-10
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.1342E-13	ZERO	0.2179E+00	0.2179E+00	0.1853E-01	ZERO	0.1853E-01
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	0.3070E-06	0.1565E-08	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	0.8080E-16	0.4119E-18	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	0.3968E-01	0.3968E-01	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.5602E-13	ZERO	ZERO	ZERO	0.1081E-02	0.1081E-02	ZERO
113 Ca3(PO4)2	0.1052E-11	ZERO	0.1988E-02	0.1988E-02	0.2404E+01	ZERO	0.2404E+01
20 CaC2O4	ZERO	ZERO	0.5413E-01	0.5413E-01	0.1040E-01	ZERO	0.1040E-01
18 CaCO3	0.2409E-11	ZERO	ZERO	ZERO	0.1588E+01	ZERO	0.1588E+01
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	0.1363E-06	ZERO	0.1363E-06
78 CaF2	ZERO	ZERO	0.2861E-02	0.2861E-02	0.1363E-01	ZERO	0.1363E-01
41 CaO	ZERO	ZERO	ZERO	ZERO	0.3129E-02	ZERO	0.3129E-02
19 CaSO4	ZERO	ZERO	0.5654E-02	0.5654E-02	0.4913E-01	ZERO	0.4913E-01
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	0.2997E-07	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	0.2079E-03	0.2079E-03	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	0.4454E-04	0.4454E-04	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	0.4017E-02	0.4017E-02	0.1564E+00	ZERO	0.1564E+00
42 Cs2O	ZERO	ZERO	0.7385E-04	0.7385E-04	0.1756E-03	ZERO	0.1756E-03
53 CsCOOH	ZERO	ZERO	0.2171E+00	0.2171E+00	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.7274E-17	ZERO	ZERO	ZERO	0.4080E-03	0.4080E-03	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	632 Slitston Proc Stack Rel	620 Saltstone Vapor Release	247 PR Bottoms to PRBT	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWP	678 Sludge Feed Solubles	679 Sludge Feed Insolubles
54 Cu(COOH)2	ZERO	ZERO	0.3793E-03	0.3793E-03	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	0.1876E+01	0.1876E+01	ZERO	ZERO	ZERO
55 CuO	0.1916E-13	ZERO	0.1757E-02	0.1757E-02	0.2434E-01	ZERO	0.2434E-01
80 Fe2O3	0.5704E-12	ZERO	0.4850E+00	0.4850E+00	0.2324E+02	ZERO	0.2324E+02
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.7794E-12	ZERO	0.8152E-05	0.8152E-05	0.2198E-01	ZERO	0.2198E-01
103 Group B	0.4329E-13	ZERO	0.2612E-07	0.2612E-07	0.1075E+00	ZERO	0.1075E+00
25 H2	0.4563E-13	ZERO	0.1590E-23	TRACE	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	TRACE	TRACE	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	0.8213E+01	0.8213E+01	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	0.7717E+01	0.7701E+01	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	0.3499E-01	0.3499E-01	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.4854E-14	ZERO	ZERO	ZERO	0.3011E+00	ZERO	0.3011E+00
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	0.4242E-02	0.4242E-02	0.1083E+00	ZERO	0.1083E+00
51 KCOOH	ZERO	ZERO	0.9637E+01	0.9637E+01	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.1107E-12	ZERO	ZERO	ZERO	0.1745E-01	0.1745E-01	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	0.8752E-02	0.8752E-02	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.1096E-12	ZERO	0.7666E-03	0.7666E-03	0.1427E+01	ZERO	0.1427E+01
60 Mn(COOH)2	ZERO	ZERO	0.9826E-01	0.9826E-01	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.3637E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	0.3903E-01	0.3903E-01	0.3337E+01	ZERO	0.3337E+01
145 MoO2	ZERO	ZERO	0.3058E-04	0.3058E-04	ZERO	ZERO	ZERO
81 N2	0.5411E+03	ZERO	0.5530E-07	0.8231E-02	ZERO	ZERO	ZERO
74 N2O	0.8221E-18	ZERO	0.9215E-18	0.2894E-20	ZERO	ZERO	ZERO
182 NH3	0.2432E-01	0.3503E-01	0.8944E-09	0.3753E-09	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	0.7274E+00	0.7274E+00	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	0.1067E-02	0.1067E-02	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	0.2393E-11	0.1055E-14	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	632 Saltstn Proc Stack Rel	620 Saltstone Vapor Release	247 PR Bottoms to PRBT	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWP	678 Sludge Feed Solubles	679 Sludge Feed Insolubles
84 NO2	ZERO	ZERO	0.1061E-19	0.4677E-23	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.1364E-14	ZERO	ZERO	ZERO	0.5108E-03	0.5108E-03	ZERO
94 Na2B4O7	0.3372E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	0.5177E-10	ZERO	ZERO	ZERO	0.1125E+00	0.1125E+00	ZERO
5 Na2CO3	0.7316E-09	ZERO	ZERO	ZERO	0.1551E+01	0.1551E+01	ZERO
143 Na2CO3 (C14)	0.6952E-18	ZERO	ZERO	ZERO	0.5395E-09	0.5395E-09	ZERO
89 Na2CrO4	0.2131E-10	ZERO	ZERO	ZERO	0.2993E-01	0.2993E-01	ZERO
115 Na2MoO4	0.3508E-11	ZERO	ZERO	ZERO	0.2671E-02	0.2671E-02	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	0.2740E+01	ZERO	0.2740E+01
71 Na2PuO2(OH)4	0.1643E-16	ZERO	ZERO	ZERO	0.1439E-06	0.1439E-06	ZERO
73 Na2RhO4	0.8852E-13	ZERO	ZERO	ZERO	0.6775E-04	0.6775E-04	ZERO
72 Na2RuO4	0.3805E-12	ZERO	ZERO	ZERO	0.2897E-03	0.2897E-03	ZERO
6 Na2SO4	0.7896E-09	ZERO	0.1107E-01	0.1107E-01	0.4140E+00	0.4140E+00	ZERO
88 Na2SiO3	0.1857E-10	ZERO	ZERO	ZERO	0.1415E-01	0.1415E-01	ZERO
87 Na3PO4	0.5598E-10	ZERO	0.7853E-03	0.7853E-03	0.9427E-02	0.9427E-02	0.5965E-09
91 NaAg(OH)2	0.5654E-16	ZERO	ZERO	ZERO	0.9467E-04	0.9467E-04	ZERO
75 NaAl(OH)4	0.1341E-08	ZERO	ZERO	ZERO	0.3396E+00	0.3396E+00	ZERO
50 NaCOOH	ZERO	ZERO	0.1654E+01	0.1654E+01	ZERO	ZERO	ZERO
7 NaCl	0.5148E-10	ZERO	0.6015E-02	0.6015E-02	0.2793E-01	0.2793E-01	ZERO
69 NaF	0.2486E-10	ZERO	0.3456E-03	0.3456E-03	0.3312E-01	0.3312E-01	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.1403E-13	ZERO	0.1751E-06	0.1751E-06	0.9494E-05	0.9494E-05	ZERO
3 NaNO2	0.1747E-08	ZERO	ZERO	ZERO	0.8978E+01	0.8978E+01	ZERO
2 NaNO3	0.6785E-08	ZERO	0.5086E-02	0.5086E-02	0.2153E+00	0.2153E+00	ZERO
4 NaOH	0.2300E-08	ZERO	ZERO	ZERO	0.1804E+01	0.1804E+01	ZERO
149 NaTPB	0.5537E-10	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	0.2749E-03	0.2749E-03	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	0.1166E-01	0.1166E-01	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1765E-13	ZERO	0.2328E-01	0.2328E-01	0.2808E+00	ZERO	0.2808E+00
82 O2	0.1634E+03	ZERO	0.5739E-07	0.4781E-02	0.3647E+00	0.3647E+00	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	0.4215E-04	0.4215E-04	ZERO
86 PbCO3	ZERO	ZERO	0.2853E-03	0.2853E-03	ZERO	ZERO	ZERO
67 PbO	0.8507E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	0.5749E-02	0.5749E-02	0.9300E-01	ZERO	0.9300E-01
124 Pd	ZERO	ZERO	0.3056E-03	0.3056E-03	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.2027E-16	ZERO	ZERO	ZERO	0.1544E-07	0.1544E-07	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	0.6409E-03	ZERO	0.6409E-03
76 PuO2	ZERO	ZERO	0.9608E-04	0.9608E-04	0.8446E-02	ZERO	0.8446E-02
156 PuO2(NaTi2O5)2	ZERO	ZERO	0.2430E-03	0.2430E-03	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	0.1443E-03	0.1443E-03	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	0.2065E-02	ZERO	0.2065E-02
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	0.1076E-02	0.1076E-02	0.9455E-02	ZERO	0.9455E-02
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	632 Saltstone Proc Stack Rele	620 Saltstone Vapor Release	247 PR Bottoms to PRBT	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWPF	678 Sludge Feed Solubles	679 Sludge Feed Insolubles
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.1964E-11	ZERO	0.3443E-01	0.3443E-01	0.1167E+01	ZERO	0.1167E+01
48 Sr(COOH)2	ZERO	ZERO	0.1819E-02	0.1819E-02	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	0.6835E-04	0.6835E-04	ZERO	ZERO	ZERO
127 Sr(OH)2	0.3929E-18	ZERO	ZERO	ZERO	0.6334E-07	0.6334E-07	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	0.1951E-01	ZERO	0.1951E-01
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	0.3898E-03	0.3898E-03	0.2309E-02	ZERO	0.2309E-02
92 ThO2	ZERO	ZERO	0.1401E-01	0.1401E-01	0.1205E+00	ZERO	0.1205E+00
107 TiO2	ZERO	ZERO	0.7382E+00	0.7382E+00	0.3808E-01	ZERO	0.3808E-01
119 Tritium	0.1949E-10	0.4288E-09	0.1080E-11	0.1072E-11	0.1793E-08	0.1793E-08	ZERO
17 U3O8	ZERO	ZERO	0.2034E-01	0.2034E-01	0.2307E+01	ZERO	0.2307E+01
62 UO2(COOH)2	ZERO	ZERO	0.8057E-07	0.8057E-07	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.2765E-12	ZERO	ZERO	ZERO	0.7404E-04	0.7404E-04	ZERO
27 Y(COOH)3	ZERO	ZERO	0.7311E-03	0.7311E-03	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.3949E-18	ZERO	ZERO	ZERO	0.6384E-07	0.6384E-07	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	0.6530E-02	ZERO	0.6530E-02
47 Y2O3	ZERO	ZERO	0.1394E-04	0.1394E-04	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	0.2224E-02	0.2224E-02	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	0.1979E-02	0.1979E-02	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.2168E-12	ZERO	0.2403E-02	0.2403E-02	0.1007E+00	ZERO	0.1007E+00
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.5337E-12	ZERO	0.3457E+00	0.3457E+00	0.6423E+01	ZERO	0.6423E+01
1 water	0.3194E+02	0.1443E+04	0.6300E+03	0.6343E+03	0.3956E+03	0.3956E+03	ZERO
TOTAL FLOW, LB/HR	0.7365E+03	0.1443E+04	0.6639E+03	0.6681E+03	0.4655E+03	0.4096E+03	0.5595E+02
TEMPERATURE, DEG C	0.3836E+02	0.3873E+02	0.5000E+02	0.4508E+02	0.6000E+02	0.6000E+02	0.6000E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	ZERO	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03			
ENTHALPY, PCU/HR	0.2788E+05	0.8815E+06	0.3191E+05	0.2897E+05	0.2445E+05	0.2396E+05	0.4888E+03
VAPOR FLOW, CFM	0.1851E+03	0.5665E+03					
LIQUID FLOW, GPM			0.1307E+01	0.1315E+01	0.8365E+00	0.8006E+00	0.3588E-01
DENSITY, LBS/FT3	0.6633E-01	0.4246E-01	0.6335E+02	0.6334E+02	0.6938E+02	0.6378E+02	0.1944E+03
PHASE	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	8 50 wt% HNO3 addn to SRAT	15 SRAT Trans- fer to SME	106 HNO3 Add to SMECT	250 SCVC HEME Vnt to PVVS	40 FAVC HEME Vnt to PVVS	26 Decon Frit Slrry to SME	27 Fresh Frit Slrry to SME
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	0.1002E-08	ZERO	0.4427E-02	0.8444E-02	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	0.6469E-01	ZERO	0.5306E-15	0.1842E-08	ZERO	ZERO
118 (C6H5)2NH	ZERO	0.2879E-04	ZERO	0.3882E-10	0.1090E-02	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	0.4872E-01	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	0.2378E-02	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	0.1816E+00	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	0.2968E-02	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	0.6023E-02	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	0.1501E-14	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	0.1602E+00	ZERO	ZERO	0.2342E-10	ZERO	ZERO
121 (C6H6)	ZERO	0.2547E-10	ZERO	0.9382E-05	0.1052E+00	ZERO	ZERO
155 (CH3)2CHOH	ZERO	0.1968E-10	ZERO	0.4326E+01	0.1196E-01	ZERO	ZERO
154 (CH3OH)	ZERO	0.7513E-12	ZERO	0.4429E-12	0.1944E-10	ZERO	ZERO
45 Ag	ZERO	0.1251E-01	ZERO	0.1780E-12	0.4650E-11	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	0.2975E-11	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	0.3029E-17	ZERO	ZERO
77 Al2O3	ZERO	0.1028E+02	ZERO	ZERO	ZERO	ZERO	ZERO
106 B2O3	ZERO	0.2889E-10	ZERO	ZERO	0.2447E-08	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	0.3084E-08	0.8542E+00	0.1209E+02
15 BaO	ZERO	0.3948E-18	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	0.2372E+00	ZERO	ZERO	0.5657E-14	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	0.5649E-10	ZERO	ZERO
37 CO2	ZERO	0.2288E-07	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	0.4599E-15	ZERO	0.2670E+02	0.3723E+01	ZERO	ZERO
63 Ca(COOH)2	ZERO	0.3968E-01	ZERO	0.1795E-08	0.6165E-07	ZERO	ZERO
167 Ca(NO3)2	ZERO	0.2606E+01	ZERO	ZERO	0.9434E-11	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	0.2406E+01	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	0.6453E-01	ZERO	ZERO	0.5731E-09	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	0.1535E-10	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	0.1650E-01	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	0.3129E-02	ZERO	ZERO	0.3923E-11	ZERO	ZERO
19 CaSO4	ZERO	0.5479E-01	ZERO	ZERO	0.1090E-11	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	0.1305E-10	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	0.2079E-03	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	0.4945E-13	ZERO	ZERO
59 CoO	ZERO	0.4454E-04	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	0.1745E+00	ZERO	ZERO	0.1065E-13	ZERO	ZERO
42 Cs2O	ZERO	0.2494E-03	ZERO	ZERO	0.4185E-10	0.1254E-02	ZERO
53 CsCOOH	ZERO	0.2171E+00	ZERO	ZERO	0.1157E-12	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	0.5163E-10	ZERO	ZERO
169 CsNO3	ZERO	0.5305E-03	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	0.6658E-12	ZERO	ZERO
					ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	8 50 wt% HNO3 addn to SRAT	15 SRAT Trans- fer to SME	106 HNO3 Add to SMECT	250 SCVC HEME Vnt to PVVS	40 FAVC HEME Vnt to PVVE	26 Decon Frit Slrry to SME	27 Fresh Frit Slrry to SME
54 Cu(COOH)2	ZERO	0.5418E-02	ZERO	ZERO	0.1288E-11	ZERO	ZERO
170 Cu(NO3)2	ZERO	0.1876E+01	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	0.2349E-01	ZERO	ZERO	0.5884E-11	ZERO	ZERO
80 Fe2O3	ZERO	0.2373E+02	ZERO	ZERO	0.5650E-08	0.4880E-03	ZERO
101 FeO	ZERO	0.5408E-16	ZERO	ZERO	0.7749E-12	ZERO	ZERO
102 Group A	ZERO	0.2198E-01	ZERO	ZERO	0.5275E-11	ZERO	ZERO
103 Group B	ZERO	0.1075E+00	ZERO	ZERO	0.2560E-10	ZERO	ZERO
25 H2	ZERO	0.8910E-12	ZERO	0.5901E-10	0.4213E-01	ZERO	ZERO
158 H2C2O4	ZERO	0.7559E-01	ZERO	ZERO	0.1798E-10	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	0.8213E+01	ZERO	ZERO	0.1953E-08	ZERO	ZERO
34 HCOOH	ZERO	0.6158E+00	ZERO	0.3537E-04	0.1053E-02	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.9340E+01	0.1142E-22	0.5123E+01	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	0.3142E+00	ZERO	0.3583E-14	0.8194E-02	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	0.6603E-12	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.1126E+00	ZERO	ZERO	0.2877E-10	ZERO	ZERO
51 KCOOH	ZERO	0.9637E+01	ZERO	ZERO	0.2291E-08	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	0.3144E-01	ZERO	ZERO	0.7477E-11	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	0.3972E-11	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	0.2528E-10	ZERO	ZERO	0.2697E-08	0.7474E+00	0.1058E+02
65 Hg(COOH)2	ZERO	0.3247E+01	ZERO	ZERO	0.7722E-09	ZERO	ZERO
171 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 HgO	ZERO	0.2855E+00	ZERO	ZERO	0.8390E-09	0.2135E+00	0.3023E+01
60 Mn(COOH)2	ZERO	0.2350E+01	ZERO	ZERO	0.5588E-09	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	0.7100E-16	ZERO	ZERO	0.1017E-11	ZERO	ZERO
14 MnO2	ZERO	0.2025E+01	ZERO	ZERO	0.4878E-09	ZERO	ZERO
145 MoO2	ZERO	0.1690E-02	ZERO	ZERO	0.4025E-12	ZERO	ZERO
81 N2	ZERO	0.1221E-07	ZERO	0.4532E+01	0.1330E+04	0.3223E-02	ZERO
74 N2O	ZERO	TRACE	ZERO	0.3658E-08	0.9215E-18	ZERO	ZERO
182 NH3	ZERO	0.7858E-01	ZERO	0.1450E-07	0.1060E-01	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	0.2437E-02	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	0.8916E-01	ZERO	ZERO	0.2079E-06	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	0.2113E-09	ZERO	0.2558E-01	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) ->	6	15	106	250	40	26	27
STREAM NAME	50 wt% HNO3 addn to SRAT	SRAT Trans- fer to SME	HNO3 Add to SMECT	SCVC HEME Vnt to PVVS	FVVC HEME Vnt to PVVS	Decon Frit Slrry to SME	Fresh Frit Slrry to SME
84 NO2	ZERO	TRACE	ZERO	0.1134E-09	0.3816E+01	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	0.4605E-11	ZERO	ZERO
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	0.2871E-09	ZERO	ZERO
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	0.1097E-23	ZERO	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	0.2740E+01	ZERO	ZERO	0.2652E-08	0.5687E+00	0.8052E+01
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	0.4246E+00	ZERO	ZERO	0.1050E-09	ZERO	ZERO
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	0.1021E-01	ZERO	ZERO	0.2432E-11	ZERO	ZERO
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	0.3618E+01	ZERO	ZERO	0.5914E-08	0.1579E+00	0.2235E+01
7 NaCl	ZERO	0.3395E-01	ZERO	ZERO	0.8695E-11	ZERO	ZERO
69 NaF	ZERO	0.3347E-01	ZERO	ZERO	0.8474E-11	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.9669E-05	ZERO	ZERO	0.2650E-14	ZERO	ZERO
3 NaNO2	ZERO	ZERO	ZERO	ZERO	0.3235E-09	ZERO	ZERO
2 NaNO3	ZERO	0.1559E+02	ZERO	ZERO	0.4157E-08	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	0.4194E-01	ZERO	ZERO	0.9972E-11	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.2889E+00	ZERO	ZERO	0.7000E-10	0.5036E-02	ZERO
82 O2	ZERO	0.1266E-07	ZERO	0.1368E+01	0.4004E+03	0.1916E-02	ZERO
175 Pb(NO3)2	ZERO	0.4215E-04	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	0.2853E-03	ZERO	ZERO	0.6784E-13	ZERO	ZERO
67 PbO	ZERO	0.9881E-19	ZERO	ZERO	0.1416E-14	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	0.9875E-01	ZERO	ZERO	0.2352E-10	ZERO	ZERO
124 Pd	ZERO	0.8630E-03	ZERO	ZERO	0.2052E-12	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	0.2242E-18	ZERO	ZERO
76 PuO2	ZERO	0.8543E-02	ZERO	ZERO	0.2034E-11	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	0.2430E-03	ZERO	ZERO	0.5778E-13	ZERO	ZERO
58 Rh	ZERO	0.1753E-02	ZERO	ZERO	0.4167E-12	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	0.5061E-18	ZERO	ZERO
95 Ru	ZERO	0.8139E-02	ZERO	ZERO	0.1935E-11	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) ->	8	15	106	250	40	26	27
STREAM NAME	50 wt% HNO3 addn to SRAT	SRAT Trans- fer to SME	HNO3 Add to SNECT	SCVC HEME Vnt to PVVS	PAVC HEME Vnt to PVVS	Decon Frit Slrry to SME	Fresh Frit Slrry to SME
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.1208E+01	ZERO	ZERO	0.2996E-07	0.8221E+01	0.1164E+03
48 Sr(COOH)2	ZERO	0.1819E-02	ZERO	ZERO	0.4326E-12	ZERO	ZERO
176 Sr(NO3)2	ZERO	0.2797E-01	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	0.6835E-04	ZERO	ZERO	0.1625E-13	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	0.3742E-18	ZERO	ZERO	0.5361E-14	ZERO	ZERO
159 TcO2	ZERO	0.2893E-02	ZERO	ZERO	0.6889E-12	ZERO	ZERO
92 ThO2	ZERO	0.1345E+00	ZERO	ZERO	0.3203E-10	ZERO	ZERO
107 TiO2	ZERO	0.7763E+00	ZERO	ZERO	0.1849E-09	ZERO	ZERO
119 Tritium	ZERO	0.6025E-09	ZERO	0.3020E-15	0.1157E-09	ZERO	ZERO
17 U3O8	ZERO	0.2327E+01	ZERO	ZERO	0.5542E-09	ZERO	ZERO
62 UO2(COOH)2	ZERO	0.8057E-07	ZERO	ZERO	0.1916E-16	ZERO	ZERO
177 UO2(NO3)2	ZERO	0.9596E-04	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	0.7311E-03	ZERO	ZERO	0.1739E-12	ZERO	ZERO
178 Y(NO3)3	ZERO	0.1003E-01	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.1394E-04	ZERO	ZERO	0.4949E-14	ZERO	ZERO
100 Zeolite	ZERO	0.2224E-02	ZERO	ZERO	0.5289E-12	ZERO	ZERO
44 Zn(COOH)2	ZERO	0.6102E-01	ZERO	ZERO	0.1451E-10	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.7214E-01	ZERO	ZERO	0.1719E-10	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.6329E+01	ZERO	ZERO	0.1505E-08	ZERO	ZERO
1 water	0.9340E+01	0.3578E+03	0.5123E+01	0.1839E+00	0.1283E+02	0.2152E+03	0.1011E+03
TOTAL FLOW, LB/HR	0.1868E+02	0.4611E+03	0.1025E+02	0.3714E+02	0.1751E+04	0.2260E+03	0.2535E+03
TEMPERATURE, DEG C	0.2500E+02	0.4961E+02	0.2500E+02	0.1000E+02	0.1000E+02	0.2980E+02	0.3000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.9263E+00	0.9656E+00	0.1340E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	-0.5055E+00	-0.1083E+01	-0.5055E+00	0.4997E+01
PRESSURE, MM HG				0.7339E+03	0.7040E+03	0.7339E+03	
ENTHALPY, PCU/HR	0.3011E+03	0.1865E+05	0.1651E+03	0.2272E+04	0.1752E+05	0.6497E+04	0.3959E+04
VAPOR FLOW, CFM				0.5636E+01	0.4075E+03		
LIQUID FLOW, GPM	0.3107E-01	0.8048E+00	0.1704E-01			0.4394E+00	0.3377E+00
DENSITY, LBS/FT3	0.7495E+02	0.7143E+02	0.7495E+02	0.1098E+00	0.7160E-01	0.6412E+02	0.9360E+02
PHASE	LIQUID	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	44 SME Concen- trate to MFT	60 Melter Feed	69 Sludge Blend Waste Glass	70 Melter Offgas	200 Stack Exhaust	145 Purified Hg from MVS	177 Neutr Waste to Tank Farm
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	0.1009E-17	0.1342E-20	ZERO	ZERO	0.1287E-01	0.8015E-21	0.1060E-05
123 (C ₆ H ₅) ₂ C ₆ H ₄	0.6469E-01	0.6469E-01	ZERO	ZERO	0.1842E-08	0.3063E-18	0.2918E-05
118 (C ₆ H ₅) ₂ NH	0.4297E-08	0.4061E-08	ZERO	ZERO	0.1090E-02	0.3686E-15	0.4741E-02
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	0.4872E-01	0.4872E-01	ZERO	ZERO	ZERO	0.1075E-23	0.1928E-06
162 (C ₆ H ₅ NH ₂)	0.1801E-03	0.1660E-03	ZERO	ZERO	ZERO	0.3507E-20	0.4592E-01
163 (C ₆ H ₅ NHCHO)	0.1816E+00	0.1816E+00	ZERO	ZERO	ZERO	0.5605E-23	0.7188E-06
165 (C ₆ H ₅ NO)	0.2968E-02	0.2968E-02	ZERO	ZERO	ZERO	TRACE	0.1172E-07
164 (C ₆ H ₅ NO ₂)	0.6023E-02	0.6023E-02	ZERO	0.3012E-03	ZERO	TRACE	0.2384E-07
131 (C ₆ H ₅ OH salt)	0.1501E-14	0.1501E-14	ZERO	0.1501E-14	0.1522E-16	0.1034E-24	0.6684E+00
130 (C ₆ H ₅ OH)	0.5289E-01	0.5092E-01	ZERO	0.2546E-02	0.1052E+00	0.4352E-16	ZERO
121 (C ₆ H ₆)	0.8011E-23	TRACE	ZERO	ZERO	0.4338E+01	0.7721E-22	0.4428E-04
155 (CH ₃) ₂ CHOH	0.5253E-11	0.5065E-11	ZERO	ZERO	0.1988E-10	TRACE	0.1055E-09
154 (CH ₃ OH)	0.8641E-13	0.7956E-13	ZERO	ZERO	0.4828E-11	TRACE	0.9316E-11
45 Ag	0.1251E-01	0.1251E-01	0.1251E-01	ZERO	0.1934E-17	0.7826E-14	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	0.1969E-23	TRACE	0.8407E-07
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	0.2166E-15	ZERO
77 Al ₂ O ₃	0.1028E+02	0.1028E+02	0.1017E+02	0.1028E+00	0.4270E-13	0.5367E-20	0.1028E+00
106 B ₂ O ₃	0.1295E+02	0.1295E+02	0.1731E+02	0.1748E+00	0.3286E-12	0.1963E-20	0.1748E+00
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.3948E-18	0.3948E-18	0.1543E-01	0.1559E-03	0.6235E-16	TRACE	0.1558E-03
24 BaSO ₄	0.2372E+00	0.2372E+00	0.2114E+00	0.2135E-02	0.8907E-15	0.1240E-21	0.2136E-02
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.1365E-15	0.3150E-18	ZERO	0.1445E+02	0.4486E+02	ZERO	0.1795E-03
142 CO ₂ (C ₁₄)	TRACE	TRACE	ZERO	TRACE	0.6344E-07	ZERO	0.2599E-14
63 Ca(COOH) ₂	0.3968E-01	0.3968E-01	ZERO	ZERO	0.6132E-17	0.2073E-22	ZERO
167 Ca(NO ₃) ₂	0.2606E+01	0.2606E+01	ZERO	ZERO	ZERO	0.1361E-20	0.1030E-04
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.2406E+01	0.2406E+01	0.2382E+01	0.2406E-01	0.9998E-14	0.1257E-20	0.2407E-01
20 CaC ₂ O ₄	0.6453E-01	0.6453E-01	ZERO	ZERO	0.9975E-17	0.3372E-22	0.2553E-06
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	0.1650E-01	0.1650E-01	ZERO	ZERO	0.2550E-17	0.8616E-23	0.6522E-07
41 CaO	0.3129E-02	0.3129E-02	0.9438E+00	0.9533E-02	0.3814E-14	0.1636E-23	0.9532E-02
19 CaSO ₄	0.5479E-01	0.5479E-01	0.4882E-01	0.4931E-03	0.2057E-15	0.2862E-22	0.4933E-03
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	0.2079E-03	0.2079E-03	ZERO	ZERO	0.3214E-19	0.1087E-24	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.4454E-04	0.4454E-04	0.1477E-03	0.1491E-05	0.6035E-18	TRACE	0.1492E-05
98 Cr ₂ O ₃	0.1757E+00	0.1757E+00	0.1740E+00	0.1757E-02	0.1054E-14	0.9131E-22	0.1758E-02
42 Cs ₂ O	0.2494E-03	0.2494E-03	0.1538E+00	0.1553E-02	0.6214E-15	0.1306E-24	0.1553E-02
53 CsCOOH	0.2171E+00	0.2171E+00	ZERO	ZERO	0.3356E-16	0.1135E-21	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	0.2578E-10	ZERO	ZERO
169 CsNO ₃	0.5305E-03	0.5305E-03	ZERO	ZERO	ZERO	0.2770E-24	0.2097E-08
8 CsOH	ZERO	ZERO	ZERO	ZERO	0.4328E-18	TRACE	0.1834E-01
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) ->	44	60	69	70	200	145	177
STREAM NAME	SME Concen- trate to MFT	Melter Feed	Sldge Blend Waste Glass	Melter Offgas	Stack Exhaust	Purified Hg from MVS	Neutr Waste to Tank Farm
54 Cu(COOH)2	0.5418E-02	0.5418E-02	ZERO	ZERO	0.8374E-18	0.2830E-23	ZERO
170 Cu(NO3)2	0.1876E+01	0.1876E+01	ZERO	ZERO	ZERO	0.9798E-21	0.7417E-05
55 CuO	0.2349E-01	0.2349E-01	0.8138E+00	0.8220E-02	0.3292E-14	0.1227E-22	0.8219E-02
80 Fe2O3	0.2373E+02	0.2373E+02	0.2114E+02	0.2135E+00	0.8921E-13	0.1239E-19	0.2136E+00
101 FeO	0.5408E-16	0.5408E-16	0.2114E+01	0.2135E-01	0.8540E-14	TRACE	0.2135E-01
102 Group A	0.2198E-01	0.2198E-01	0.2068E-01	0.2088E-03	0.1374E-11	0.1148E-22	0.1307E-02
103 Group B	0.1075E+00	0.1075E+00	0.1064E+00	0.1075E-02	0.4466E-15	0.5614E-22	0.1075E-02
25 H2	0.5075E-22	TRACE	ZERO	ZERO	0.1369E+00	ZERO	0.1443E-12
158 H2C2O4	0.7559E-01	0.7559E-01	ZERO	ZERO	0.1168E-16	0.3948E-22	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.8213E+01	0.8213E+01	ZERO	ZERO	0.1269E-14	0.4292E-20	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	0.1089E-02	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	0.4237E-03	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	0.2013E-02	0.1445E-02	ZERO	ZERO
49 HNO3	0.3665E-23	0.3486E-23	ZERO	0.3486E-23	0.2308E-01	ZERO	ZERO
36 Hg	0.2514E+00	0.2416E+00	ZERO	0.2416E+00	0.1671E-01	0.3005E+00	0.1766E+00
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.8679E-13	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	0.1586E-13	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	0.8365E-19	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	0.2398E-19	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	0.5365E-16	TRACE	0.1819E-01
97 I2	ZERO	ZERO	ZERO	0.8186E-07	0.8186E-09	ZERO	ZERO
39 K2O	0.1126E+00	0.1126E+00	0.5468E+01	0.5523E-01	0.2211E-13	0.5879E-22	0.5522E-01
51 KCOOH	0.9637E+01	0.9637E+01	ZERO	ZERO	0.1489E-14	0.5036E-20	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.3144E-01	0.3144E-01	ZERO	ZERO	0.4860E-17	0.1642E-22	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	0.2582E-17	TRACE	0.1094E+00
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.1133E+02	0.1133E+02	0.1122E+02	0.1133E+00	0.2221E-12	0.1717E-20	0.1133E+00
65 Mg(COOH)2	0.3247E+01	0.3247E+01	ZERO	ZERO	0.5019E-15	0.1696E-20	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.3522E+01	0.3522E+01	0.4621E+01	0.4668E-01	0.7436E-13	0.6397E-21	0.4668E-01
60 Mn(COOH)2	0.2350E+01	0.2350E+01	ZERO	ZERO	0.3632E-15	0.1227E-20	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.7100E-16	0.7100E-16	0.2774E+01	0.2802E-01	0.1121E-13	TRACE	0.2803E-01
14 MnO2	0.2025E+01	0.2025E+01	ZERO	ZERO	0.3170E-15	0.1058E-20	0.1695E+00
145 MoO2	0.1690E-02	0.1690E-02	0.1673E-02	0.1690E-04	0.7021E-17	0.8826E-24	0.1690E-04
81 N2	0.1032E-23	0.3985E-02	ZERO	0.4622E+03	0.3656E+06	ZERO	0.3477E-01
74 N2O	ZERO	ZERO	ZERO	ZERO	0.3658E-08	ZERO	TRACE
182 NH3	ZERO	ZERO	ZERO	ZERO	0.3446E-01	TRACE	0.1799E+00
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.2437E-02	0.2437E-02	ZERO	ZERO	ZERO	0.8871E-16	ZERO
68 NH4OH	0.8916E-01	0.8916E-01	ZERO	0.8916E-01	0.6757E-06	0.1544E-19	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	TRACE	TRACE	ZERO	0.1826E+01	ZERO	ZERO	0.8750E-07

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) --> STREAM NAME	44 SWE Concen- trate to MFT	60 Melter Feed	69 Sludge Blend Waste Glass	70 Melter Offgas	200 Stack Exhaust	145 Purified Hg from MVS	177 Neutr Waste to Tank Farm
84 NO ₂	ZERO	ZERO	ZERO	0.3713E+01	0.1011E+02	ZERO	0.1068E-05
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	0.1587E-09	TRACE	0.1268E+00
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	0.1866E-15	0.1370E-23	0.7909E+01
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO	0.3128E-13
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.1113E+02	0.1113E+02	0.1957E+02	0.2046E+00	0.2755E-12	0.2702E-20	0.2046E+00
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.4246E+00	0.4246E+00	0.3363E+00	0.3397E-02	0.5868E-14	0.2218E-21	0.1108E+00
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.1021E-01	0.1021E-01	0.1011E-01	0.1021E-03	0.4243E-16	0.5334E-23	0.1022E-03
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.6526E+01	0.6526E+01	ZERO	ZERO	0.4461E-13	0.2356E-20	0.7353E-04
7 NaCl	0.3395E-01	0.3395E-01	0.1680E-01	0.1697E-03	0.7355E-16	0.1774E-22	0.1714E-01
69 NaF	0.3347E-01	0.3347E-01	0.3397E-01	0.3431E-03	0.1585E-10	0.1748E-22	0.1420E-01
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.9669E-05	0.9669E-05	ZERO	ZERO	0.1197E-13	TRACE	0.9658E-05
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	0.2103E-15	0.1543E-23	0.8913E+01
2 NaNO ₃	0.1559E+02	0.1559E+02	ZERO	ZERO	0.2702E-14	0.8138E-20	0.1245E+02
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.7069E+02
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.4194E-01	0.4194E-01	ZERO	ZERO	0.6482E-17	0.2191E-22	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2939E+00	0.2939E+00	0.3118E+00	0.3150E-02	0.2606E-14	0.1516E-21	0.3151E-02
82 O ₂	0.1157E-22	0.2299E-02	ZERO	0.1400E+03	0.1104E+06	ZERO	0.2006E-01
175 Pb(NO ₃) ₂	0.4215E-04	0.4215E-04	ZERO	ZERO	ZERO	TRACE	0.1666E-09
86 PbCO ₃	0.2853E-03	0.2853E-03	ZERO	ZERO	0.4410E-19	0.1491E-24	0.1129E-08
67 PbO	0.9881E-19	0.9881E-19	0.3862E-02	0.3901E-04	0.1560E-16	TRACE	0.3900E-04
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.9875E-01	0.9875E-01	0.9287E-01	0.9381E-03	0.3905E-15	0.5157E-22	0.9384E-03
124 Pd	0.8630E-03	0.8630E-03	0.8630E-03	ZERO	0.1334E-18	0.5410E-15	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.2068E-16	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	0.1457E-24	TRACE	0.6222E-08
76 PuO ₂	0.8543E-02	0.8543E-02	0.8555E-02	0.8642E-04	0.3589E-16	0.4461E-23	0.8644E-04
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.2430E-03	0.2430E-03	ZERO	ZERO	0.3756E-19	0.1270E-24	0.9613E-09
58 Rh	0.1753E-02	0.1753E-02	0.1753E-02	ZERO	0.2709E-18	0.1071E-14	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	0.3289E-24	0.2481E-16	0.1404E-07
95 Ru	0.8139E-02	0.8139E-02	0.8139E-02	ZERO	0.1258E-17	0.4251E-23	0.3218E-07
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	0.4843E-01	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	44 SME Concen- trate to MFT	60 Melter Feed	69 Sludge Blend Waste Glass	70 Melter Offgas	200 Stack Exhaust	145 Purified Hg from MVS	177 Neutr Waste to Tank Farm
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	0.2062E-01	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	0.1099E-02	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	0.1270E+00	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	0.9137E-02	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	0.1268E-01	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	0.9573E-05	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.1258E+03	0.1258E+03	0.1246E+03	0.1258E+01	0.2583E-11	0.1952E-19	0.1258E+01
48 Sr(COOH) ₂	0.1819E-02	0.1819E-02	ZERO	ZERO	0.2812E-18	0.9508E-24	ZERO
176 Sr(NO ₃) ₂	0.2797E-01	0.2797E-01	ZERO	ZERO	ZERO	0.1461E-22	0.1106E-06
153 Sr(Na ₂ CO ₃) ₂	0.6835E-04	0.6835E-04	ZERO	ZERO	0.1056E-19	TRACE	0.2704E-09
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.3742E-18	0.3742E-18	0.1462E-01	0.1477E-03	0.5909E-16	TRACE	0.1477E-03
159 TeO ₂	0.2893E-02	0.2893E-02	0.2864E-02	0.2893E-04	0.4880E-16	0.1511E-23	0.2894E-04
92 ThO ₂	0.1345E+00	0.1345E+00	0.1332E+00	0.1345E-02	0.5588E-15	0.7025E-22	0.1345E-02
107 TiO ₂	0.7763E+00	0.7763E+00	0.7687E+00	0.7764E-02	0.3226E-14	0.4057E-21	0.7766E-02
119 Tritium	0.2911E-09	0.2857E-09	ZERO	0.2857E-09	0.3787E-09	TRACE	0.1625E-08
17 U ₃ O ₈	0.2327E+01	0.2327E+01	0.2304E+01	0.2327E-01	0.9670E-14	0.1215E-20	0.2328E-01
62 UO ₂ (COOH) ₂	0.8057E-07	0.8057E-07	ZERO	ZERO	0.1245E-22	TRACE	ZERO
177 UO ₂ (NO ₃) ₂	0.9596E-04	0.9596E-04	ZERO	ZERO	ZERO	TRACE	0.3794E-09
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	0.7311E-03	0.7311E-03	ZERO	ZERO	0.1130E-18	0.3821E-24	ZERO
178 Y(NO ₃) ₃	0.1003E-01	0.1003E-01	ZERO	ZERO	ZERO	0.5240E-23	0.3967E-07
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.1394E-04	0.1394E-04	0.4458E-02	0.4503E-04	0.1802E-16	TRACE	0.4503E-04
100 Zeolite	0.2224E-02	0.2224E-02	ZERO	ZERO	0.3438E-18	0.1162E-23	0.8800E-08
44 Zn(COOH) ₂	0.6102E-01	0.6102E-01	ZERO	ZERO	0.9432E-17	0.3187E-22	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.7214E-01	0.7214E-01	0.1030E+00	0.1041E-02	0.4275E-15	0.3767E-22	0.1041E-02
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.6329E+01	0.6329E+01	ZERO	ZERO	0.9783E-15	0.3306E-20	0.2828E-04
1 water	0.3256E+03	0.3343E+03	ZERO	0.3572E+03	0.7965E+04	ZERO	0.2922E+04
TOTAL FLOW, LB/HR	0.5914E+03	0.6001E+03	0.2280E+03	0.9823E+03	0.4840E+06	0.3005E+00	0.3026E+04
TEMPERATURE, DEG C	0.5000E+02	0.4988E+02	0.1050E+04	0.6050E+03	0.3873E+02	-0.3000E+02	0.4999E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.9840E+00	0.9840E+00	0.1000E+01	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	-0.5055E+00	-0.2351E+00	-0.2351E+00	ZERO	ZERO	-0.5055E+00
PRESSURE, MM HG		0.7339E+03	0.7478E+03	0.7478E+03			0.7339E+03
ENTHALPY, PCU/HR	0.1883E+05	0.1922E+05	0.7072E+05	0.4116E+06	0.1056E+08	-0.2971E+00	0.1478E+06
VAPOR FLOW, CFM				0.8053E+03	0.1157E+06		
LIQUID FLOW, GPM	0.8845E+00	0.9019E+00	0.1815E+00			0.4430E-04	0.5906E+01
DENSITY, LBS/FT ³	0.8336E+02	0.8296E+02	0.1566E+03	0.2033E-01	0.6972E-01	0.8457E+03	0.6388E+02
PHASE	LIQUID	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS -> STREAM NAME	338 Tnk Frm Evap Aq to ETF	348 Insol frm DWPFF Recycl	354 DWPFF Recycl Salt Cake	245 Organic to Org Strg Tk
COMPONENT FLOWS, LB/HR				
122 (C6H5)2	ZERO	0.5172E-09	ZERO	0.8367E+00
123 (C6H5)2C6H4	ZERO	0.2918E-05	ZERO	0.3824E-01
118 (C6H5)2NH	ZERO	0.4164E-02	ZERO	0.6121E-01
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	0.1928E-06	ZERO	0.1076E-01
162 (C6H5NH2)	0.3458E-01	ZERO	0.3709E-02	0.1340E-01
163 (C6H5NHCHO)	ZERO	0.7188E-06	ZERO	0.2518E-23
165 (C6H5NO)	ZERO	0.1172E-07	ZERO	0.8142E-23
164 (C6H5NO2)	0.1943E-07	ZERO	0.4412E-08	0.5951E-24
131 (C6H5OH salt)	ZERO	ZERO	0.6684E+00	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	0.1270E+00
121 (C6H6)	0.1636E-06	ZERO	0.5840E-09	0.3530E+02
155 (CH3)2CHOH	0.9673E-10	ZERO	0.3195E-12	0.1662E-11
154 (CH3OH)	0.7739E-11	ZERO	0.1429E-13	0.3377E-12
45 Ag	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	0.8407E-07	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	0.1028E-00	ZERO	0.3740E-23
106 B2O3	ZERO	0.1748E+00	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	0.1558E-03	ZERO	ZERO
24 BaSO4	ZERO	0.2136E-02	ZERO	0.2581E-23
66 CO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.1773E-06	ZERO	0.1563E-12	0.6047E-01
142 CO2 (C14)	0.2566E-17	ZERO	0.2263E-23	0.8698E-18
63 Ca(COOH)2	ZERO	ZERO	ZERO	0.4699E-24
167 Ca(NO3)2	ZERO	ZERO	0.1030E-04	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	0.2407E-01	ZERO	TRACE
20 CaC2O4	ZERO	0.2553E-06	ZERO	0.6411E-24
18 CaCO3	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	0.6522E-07	ZERO	TRACE
41 CaO	ZERO	0.9532E-02	ZERO	ZERO
19 CaSO4	ZERO	0.4933E-03	ZERO	TRACE
29 Carbon	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	TRACE
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.1492E-05	ZERO	TRACE
98 Cr2O3	ZERO	0.1758E-02	ZERO	TRACE
42 Cs2O	ZERO	0.1553E-02	ZERO	TRACE
53 CsCOOH	ZERO	ZERO	ZERO	0.2571E-23
96 CsCl	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	0.2097E-08	ZERO
8 CsOH	ZERO	ZERO	0.1834E-01	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) ->	338	348	354	245
STREAM NAME	Tnk Frm Evap	Insol frm	DWPF Recycl	Organic to
	Aq to ETP	DWPF Recyc	Salt Cake	Org Strg Tk
54 Cu(COOH)2	ZERO	ZERO	ZERO	TRACE
170 Cu(NO3)2	ZERO	ZERO	0.7417E-05	0.2219E-22
55 CuO	ZERO	0.8219E-02	ZERO	TRACE
80 Fe2O3	ZERO	0.2136E+00	ZERO	0.5744E-23
101 FeO	ZERO	0.2135E-01	ZERO	ZERO
102 Group A	ZERO	0.1307E-02	ZERO	TRACE
103 Group B	ZERO	0.1075E-02	ZERO	TRACE
25 H2	0.5843E-17	ZERO	0.5011E-24	TRACE
158 H2C2O4	ZERO	ZERO	ZERO	TRACE
93 H2SO4	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	0.9726E-22
34 HCOOH	ZERO	ZERO	ZERO	0.3065E-05
43 HCl	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	0.1156E-02
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.2088E+00	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.5522E-01	ZERO	TRACE
51 KCOOH	ZERO	ZERO	ZERO	0.1141E-21
157 KMnO4	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	0.1094E+00	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	0.1133E+00	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	0.1036E-24
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.4668E-01	ZERO	TRACE
60 Mn(COOH)2	ZERO	ZERO	ZERO	0.1164E-23
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	0.2803E-01	ZERO	ZERO
14 MnO2	ZERO	0.1695E+00	ZERO	0.4622E-24
145 MoO2	ZERO	0.1690E-04	ZERO	TRACE
81 N2	0.3360E-01	ZERO	0.1704E-08	0.3177E-03
74 N2O	TRACE	ZERO	TRACE	0.1769E-18
182 NH3	0.2166E-01	ZERO	0.2239E-05	0.1430E-09
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	0.8615E-23
173 NH4NO3	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO
35 NO	0.7934E-11	ZERO	0.1116E-17	0.1477E-15

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) ->	338	348	354	245
STREAM NAME	Tnk Frm Evap Aq to ETF	Insol frm DWPFF Recyc	DWPFF Recycl Salt Cake	Organic to Org Strg Tk
84 NO2	0.9683E-10	ZERO	0.1363E-16	0.6551E-24
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	0.1268E+00	ZERO
109 Na2C2O4	ZERO	ZERO	0.7909E+01	ZERO
5 Na2CO3	ZERO	ZERO	0.3128E-13	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	0.2046E+00	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	ZERO	0.1108E+00	0.1311E-24
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	ZERO	0.1022E-03	TRACE
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	0.7353E-04	0.1958E-22
7 NaCl	ZERO	ZERO	0.1714E-01	TRACE
69 NaF	ZERO	ZERO	0.1420E-01	TRACE
11 NaHCO3	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.9658E-05	TRACE
3 NaNO2	ZERO	ZERO	0.8973E+01	ZERO
2 NaNO3	ZERO	ZERO	0.1237E+02	TRACE
4 NaOH	ZERO	ZERO	0.7069E+02	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	0.1381E-24
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.3151E-02	ZERO	0.2757E-24
82 O2	0.1939E-01	ZERO	0.1767E-08	0.1907E-03
175 Pb(NO3)2	ZERO	ZERO	0.1666E-09	ZERO
86 PbCO3	ZERO	0.1129E-08	ZERO	TRACE
67 PbO	ZERO	0.3900E-04	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	0.9384E-03	ZERO	TRACE
124 Pd	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	0.6222E-08	ZERO	ZERO
76 PuO2	ZERO	0.8644E-04	ZERO	TRACE
156 PuO2(NaTi2O5)2	ZERO	0.9613E-09	ZERO	TRACE
58 Rh	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	0.1404E-07	ZERO	ZERO
95 Ru	ZERO	0.3218E-07	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	TRACE
83 RuO4	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 0. Major Streams in the Flowsheet Model

STREAM NUMBERS (CONT'D) -> STREAM NAME	338 Tnk Frm Evap Aq to STF	348 Insol frm DWPF Recyc	354 DWPF Recycl Salt Cake	245 Organic to Org Strg Tk
141 SO3	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.1258E+01	ZERO	0.4078E-24
48 Sr(COOH)2	ZERO	ZERO	ZERO	TRACE
176 Sr(NO3)2	ZERO	ZERO	0.1106E-06	ZERO
153 Sr(NaTi2O5)2	ZERO	0.2704E-09	ZERO	TRACE
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	0.1477E-03	ZERO	ZERO
159 TcO2	ZERO	0.2894E-04	ZERO	TRACE
92 ThO2	ZERO	0.1345E-02	ZERO	0.1660E-24
107 TiO2	ZERO	0.7766E-02	ZERO	0.8743E-23
119 Tritium	0.1546E-08	ZERO	0.9876E-11	0.3556E-19
17 U3O8	ZERO	0.2328E-01	ZERO	0.2408E-24
62 UO2(COOH)2	ZERO	ZERO	ZERO	TRACE
177 UO2(NO3)2	ZERO	ZERO	0.3794E-09	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	TRACE
178 Y(NO3)3	ZERO	ZERO	0.3967E-07	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.4503E-04	ZERO	TRACE
100 Zeolite	ZERO	0.8800E-08	ZERO	TRACE
44 Zn(COOH)2	ZERO	ZERO	ZERO	TRACE
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.1041E-02	ZERO	TRACE
104 ZrO2	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.2828E-04	ZERO	0.4094E-23
1 water	0.2803E+04	ZERO	0.1791E+02	0.7774E+01
TOTAL FLOW, LB/HR	0.2803E+04	0.2689E+01	0.1189E+03	0.4423E+02
TEMPERATURE, DEG C	0.1000E+03	0.6000E+02	0.1000E+03	0.2366E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	ZERO	-0.5055E+00
PRESSURE, MM HG				0.7339E+03
ENTHALPY, PCU/HR	0.2806E+06	0.2979E+02	0.4857E+04	0.5413E+03
VAPOR FLOW, CFM				
LIQUID FLOW, GPM	0.5598E+01	0.1949E-02	0.1044E+00	0.9842E-01
DENSITY, LBS/FT3	0.6243E+02	0.1721E+03	0.1419E+03	0.5603E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID

SECTION 1A. IN-TANK PRECIPITATION / SALT DECONTAMINATION

WSRC-TR-93-527 (Revision 0)

Date: September 1993

Section 1A, Page 0 of 21

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

DESCRIPTION		PAGE
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1. STREAM NUMBERS	651, 652, 653, 654, 401, 402, 451	2
2. STREAM NUMBERS	403, 404, 405, 406, 415, 409, 407	6
3. STREAM NUMBERS	408, 410, 411, 452, 453, 414, 454	10
4. STREAM NUMBERS	416, 417, 420, 672, 673, 412, 413	14
5. STREAM NUMBERS	462, 463, 418, 655, 656	18

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS -> STREAM NAME	651 Salt Cake Slurry Water	652 Salt Cake fm Inventory	653 Recyc Sludge fm ESP	654 DWPF Recycl Salt to ITP	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	451 Salt Transfr Line Flush
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	0.1676E+01	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	0.1026E-03	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.3956E-05	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	0.3287E-06	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	0.1414E+00	ZERO	ZERO	0.1414E+00	0.9174E-07	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	0.1161E-01	ZERO	ZERO	0.1161E-01	0.4319E-03	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cu ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	0.1830E+00	ZERO	ZERO	0.1830E+00	0.1452E-03	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	651 Salt Cake Slurry Water	652 Salt Cake fm Inventory	653 Recyc Sludge frm MSP	654 DWPf Recycl Salt to ITP	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	451 Salt Transfr Line Flush
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	0.1204E+00	ZERO	ZERO	0.1204E+00	0.4480E-02	ZERO
103 Group B	ZERO	0.2908E-03	ZERO	ZERO	0.2908E-03	0.1435E-04	ZERO
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	0.1080E-11	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	0.6428E+01	ZERO	ZERO	0.6428E+01	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	ZERO	ZERO	ZERO	0.3837E-01	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	0.9747E-11	ZERO
182 NH3	ZERO	0.1198E+00	ZERO	ZERO	0.1198E+00	0.1499E-02	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	651 Salt Cake Slurry Water	652 Salt Cake fm Inventory	653 Recyc Sludge frm ESP	654 DWWF Recycl Salt to ITP	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	451 Salt Transfr Line Flush
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	0.2753E+00	ZERO	ZERO	0.2753E+00	0.9953E-05	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	0.7245E+00	ZERO
109 Na ₂ C ₂ O ₄	ZERO	0.8872E+01	ZERO	ZERO	0.8872E+01	0.1512E+01	ZERO
5 Na ₂ CO ₃	ZERO	0.1435E+03	ZERO	ZERO	0.1435E+03	0.1063E+02	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	0.1440E-06	ZERO	ZERO	0.1440E-06	0.5359E-08	ZERO
89 Na ₂ CrO ₄	ZERO	0.4409E+01	ZERO	ZERO	0.4409E+01	0.1641E+00	ZERO
115 Na ₂ MoO ₄	ZERO	0.7267E+00	ZERO	ZERO	0.7267E+00	0.2704E-01	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	0.1426E-03	ZERO	ZERO	0.1426E-03	0.1678E-06	ZERO
73 Na ₂ RhO ₄	ZERO	0.1834E-01	ZERO	ZERO	0.1834E-01	0.6824E-03	ZERO
72 Na ₂ RuO ₄	ZERO	0.7882E-01	ZERO	ZERO	0.7882E-01	0.2933E-02	ZERO
6 Na ₂ SO ₄	ZERO	0.1636E+03	ZERO	ZERO	0.1636E+03	0.6082E+01	ZERO
88 Na ₂ SiO ₃	ZERO	0.3848E+01	ZERO	ZERO	0.3848E+01	0.1432E+00	ZERO
87 Na ₃ PO ₄	ZERO	0.1160E+02	ZERO	ZERO	0.1160E+02	0.4315E+00	ZERO
91 NaAg(OH) ₂	ZERO	0.6334E-02	ZERO	ZERO	0.6334E-02	0.4127E-06	ZERO
75 NaAl(OH) ₄	ZERO	0.2779E+03	ZERO	ZERO	0.2779E+03	0.1034E+02	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	0.1021E+02	ZERO	ZERO	0.1021E+02	0.4389E+00	ZERO
69 NaF	ZERO	0.5104E+01	ZERO	ZERO	0.5104E+01	0.1899E+00	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.2582E-02	ZERO	ZERO	0.2582E-02	0.9623E-04	ZERO
3 NaNO ₂	ZERO	0.3366E+03	ZERO	ZERO	0.3366E+03	0.3863E+02	ZERO
2 NaNO ₃	ZERO	0.1362E+04	ZERO	ZERO	0.1362E+04	0.4945E+02	ZERO
4 NaOH	0.2902E+01	0.3335E+03	ZERO	ZERO	0.3364E+03	0.1401E+03	0.1542E-01
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	0.2348E+01	ZERO
160 NaTcO ₄	ZERO	0.7525E-01	ZERO	ZERO	0.7525E-01	0.2800E-02	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
82 O ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.2245E-01	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	0.4200E-05	ZERO	ZERO	0.4200E-05	0.1563E-06	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	651 Salt Cake Slurry Water	652 Salt Cake fm Inventory	653 Recyc Sludge fm ESP	654 DMPF Recycl Salt to ITP	401 Salt Sol'n Feed to ITP	402 Total Spent Wash Recycle	451 Salt Transfr Line Flush
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	0.1722E-04	ZERO	ZERO	0.1722E-04	0.3928E-08	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	0.1964E-07	ZERO	ZERO	0.1964E-07	0.7173E-09	ZERO
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	0.1005E-02	ZERO	ZERO	0.1005E-02	0.3738E-04	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	0.1736E-04	ZERO	ZERO	0.1736E-04	0.1573E-08	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.4833E+04	0.4710E+03	ZERO	ZERO	0.5304E+04	0.2789E+04	0.2568E+02
TOTAL FLOW, LB/HR	0.4836E+04	0.3140E+04	ZERO	ZERO	0.7976E+04	0.3052E+04	0.2570E+02
TEMPERATURE, DEG C	0.2500E+02	0.3500E+02	0.3500E+02	0.1000E+03	0.2691E+02	0.3979E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	-0.5055E+00	ZERO
PRESSURE, MM HG						0.7339E+03	
ENTHALPY, PCU/HR	0.1213E+06	0.3957E+05	ZERO	ZERO	0.1609E+06	0.1141E+06	0.6446E+03
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.9653E+01	0.2948E+01			0.1260E+02	0.5753E+01	0.5130E-01
DENSITY, LBS/FT3	0.6246E+02	0.1328E+03	ZERO	ZERO	0.7894E+02	0.6613E+02	0.6246E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS -> STREAM NAME	403 NaTPB Additions	404 NaTi ₂ O ₅ H Additions	405 Total Pump Leakage	406 Gas Purge In-tnk Pptn	415 Entrnd Sludge in Preci Pd Vnt	409 Proc Tnk to Atmos	407 Decon SM to Storage
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	0.2019E-10	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.2929E+01	ZERO	ZERO	ZERO	ZERO	0.1421E-09	0.4603E+01
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	0.3538E+00	0.3155E-02
155 (CH ₃) ₂ CHOH	ZERO	0.1655E+00	ZERO	ZERO	ZERO	0.9107E-01	0.7443E-01
154 (CH ₃ OH)	ZERO	0.8863E-02	ZERO	ZERO	ZERO	0.4363E-02	0.4499E-02
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	0.2507E-12	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.3077E+00	0.2631E-10	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.8030E-16	0.2604E-05
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	ZERO	ZERO	ZERO	0.4127E-02	0.1241E-10	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.3577E-12	0.1160E-01
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	ZERO	0.1988E-02	0.1700E-12	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	0.8457E-02	0.7232E-12	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	0.6621E-01	0.5662E-11	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	0.3974E-08	0.3398E-18	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	0.2862E-02	0.2447E-12	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	ZERO	ZERO	ZERO	0.5654E-02	0.4835E-12	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	0.1491E-03	0.1275E-13	ZERO
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.3877E-02	0.3315E-12	ZERO
42 Cs ₂ O	ZERO	ZERO	ZERO	ZERO	0.7385E-04	0.6316E-14	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.4632E-16	0.1503E-05
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	0.3116E-10	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) ->	403	404	405	406	415	409	407
STREAM NAME	NaTPB Additions	NaTi2O5H Additions	Total Pump Leakage	Gas Purge In-tnk Pptn	Entrnd Sludge in Preci Pd	Prc Proc Tnk Vnt to Atmos	Decon SW to Storage
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	ZERO	0.1954E-02	0.1671E-12	ZERO
80 Fe ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.4850E+00	0.4147E-10	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	ZERO	ZERO	0.1570E-02	0.3759E-11	0.1219E+00
103 Group B	ZERO	ZERO	ZERO	ZERO	0.8677E-02	0.2789E-12	0.8967E-02
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.3533E-02	0.2591E-06
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.2145E-10	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	0.2182E-01	0.1866E-11	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO	ZERO	0.4242E-02	0.3628E-12	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	0.2316E-08	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	0.3853E-02	0.3295E-12	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	0.9794E-01	0.8376E-11	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	ZERO	ZERO	ZERO	0.2207E+04	ZERO	0.2207E+04	0.1323E+00
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	0.9726E-11	0.1344E-13
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	0.2607E-02	0.1144E+00
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	403 NaTPB Additions	404 NaTi2O5H Additions	405 Total Pump Leakage	406 Gas Purge In-tank Pptn	415 Entrnd Sludge in Preci Pd	409 Proc Proc Tnk Vnt to Atmos	407 Decon SW to Storage
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	0.0711E-14	0.2025E-03
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	0.2153E-10	0.6905E+00
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	0.3086E-09	0.1001E+02
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	0.4580E-08	0.1486E+03
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	0.4439E-17	0.1440E-06
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	0.1359E-09	0.4409E+01
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	0.2240E-10	0.7267E+00
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	0.1020E-15	0.3340E-05
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	0.5652E-12	0.1834E-01
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	0.2430E-11	0.7881E-01
6 Na2SO4	ZERO	ZERO	ZERO	ZERO	0.1269E-02	0.5038E-08	0.1634E+03
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	0.1186E-09	0.3847E+01
87 Na3PO4	ZERO	ZERO	ZERO	ZERO	0.1163E-03	0.3575E-09	0.1160E+02
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.3611E-15	0.1171E-04
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	0.0565E-08	0.2779E+03
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.2349E+00	ZERO	ZERO	ZERO	0.2397E-01	0.3241E-09	0.1051E+02
69 NaF	ZERO	ZERO	ZERO	ZERO	0.9294E-03	0.1573E-09	0.5104E+01
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	0.3247E-03	0.8970E-13	0.2907E-02
3 NaNO2	ZERO	0.1195E-02	ZERO	ZERO	ZERO	0.1115E-07	0.3617E+03
2 NaNO3	ZERO	ZERO	ZERO	ZERO	0.3529E-01	0.4194E-07	0.1361E+04
4 NaOH	0.1171E+01	0.2951E-01	0.1112E-01	ZERO	0.5589E-01	0.1434E-07	0.4653E+03
149 NaTPB	0.5011E+02	ZERO	ZERO	ZERO	ZERO	0.5560E-09	0.1147E+02
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.7524E-01
152 NaTi2O5H	ZERO	0.9231E+00	ZERO	ZERO	ZERO	0.7893E-10	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	0.2914E-01	0.2492E-11	ZERO
82 O2	ZERO	ZERO	ZERO	0.1362E+03	ZERO	0.1362E+03	0.1582E-01
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	0.2853E-03	0.2440E-13	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	ZERO	0.5749E-02	0.4916E-12	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.1294E-15	0.4199E-05
110 PdO	ZERO	ZERO	ZERO	ZERO	0.3515E-03	0.3006E-13	ZERO
76 PuO2	ZERO	ZERO	ZERO	ZERO	0.9609E-04	0.8217E-14	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.1376E-13	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	0.1884E-03	0.1611E-13	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	0.1073E-02	0.9172E-13	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	403	404	405	406	415	409	407
	NaTPB Additions	NaTi2O5H Additions	Total Pump Leakage	Gas Purge In-tnk Pptn	Entrnd Sludge in Preci Pd	Prc Proc Tnk Vnt to Atmos	Decon SN to Storage
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Ca2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	0.3431E-01	0.2934E-11	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.3859E-14	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	0.2477E-17	0.8050E-07
46 SrO	ZERO	ZERO	ZERO	ZERO	0.1512E-02	0.1293E-12	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	0.3862E-03	0.3303E-13	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	0.1401E-01	0.1198E-11	ZERO
119 Tritium	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	0.1644E-09	0.1946E-07
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	0.2034E-01	0.1739E-11	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	0.3097E-13	0.1005E-02
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	0.2527E-17	0.8181E-07
100 Zeolite	ZERO	ZERO	ZERO	ZERO	0.5841E-03	0.4995E-13	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.7859E-15	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	0.2224E-02	0.1902E-12	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	0.3440E-02	0.2941E-12	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.2384E+03	0.6842E+01	0.1852E+02	0.9863E+01	0.3448E+00	0.2949E-10	ZERO
TOTAL FLOW, LB/HR	0.2929E+03	0.7970E+01	0.1853E+02	0.2353E+04	0.1602E+01	0.6527E+02	0.8028E+04
						0.2409E+04	0.1087E+05
TEMPERATURE, DEG C	0.3500E+02	0.3500E+02	0.2500E+02	0.3500E+02	0.6000E+02	0.4000E+02	0.3000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	-0.5055E+00	ZERO
PRESSURE, MM HG						0.7339E+03	
ENTHALPY, PCU/HR	0.8382E+04	0.2440E+03	0.4647E+03	0.2742E+05	0.1320E+02	0.6419E+05	0.2627E+06
VAPOR FLOW, CFM				0.5641E+03		0.6155E+03	
LIQUID FLOW, GPM	0.5743E+00	0.1598E-01	0.3698E-01		0.1280E-02		0.1816E+02
DENSITY, LBS/FT3	0.6358E+02	0.6217E+02	0.6246E+02	0.6954E-01	0.1561E+03	0.6524E-01	0.7460E+02
PHASE	LIQUID	LIQUID	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS -> STREAM NAME	408 Precipitated Slids Slurry	410 Inhibited Wash Water	411 Spent Wash to Storage	452 NaOH add'n to TK 48	453 NaNO ₂ add'n to TK 48	414 Washed Prec to Storage	454 40% NaNO ₂ add to TK49
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	0.3439E+00	ZERO	ZERO	ZERO	ZERO	0.3439E+00	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.1662E+00	ZERO	0.1618E+00	ZERO	ZERO	0.4396E-02	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	0.1063E-03	ZERO	0.1035E-03	ZERO	ZERO	0.2812E-05	ZERO
155 (CH ₃) ₂ CHOH	0.6851E-05	ZERO	0.6670E-05	ZERO	ZERO	0.1812E-06	ZERO
154 (CH ₃ OH)	0.5211E-06	ZERO	0.5074E-06	ZERO	ZERO	0.1379E-07	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	0.4443E-02	ZERO	ZERO	ZERO	ZERO	0.4443E-02	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.3077E+00	ZERO	ZERO	ZERO	ZERO	0.3077E+00	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	0.9424E-07	ZERO	0.9174E-07	ZERO	ZERO	0.2493E-08	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	0.2179E+00	ZERO	ZERO	ZERO	ZERO	0.2179E+00	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	0.4327E-03	ZERO	0.4212E-03	ZERO	ZERO	0.1145E-04	ZERO
113 Ca ₃ (PO ₄) ₂	0.1988E-02	ZERO	ZERO	ZERO	ZERO	0.1988E-02	ZERO
20 CaC ₂ O ₄	0.8457E-02	ZERO	ZERO	ZERO	ZERO	0.8457E-02	ZERO
18 CaCO ₃	0.6621E-01	ZERO	ZERO	ZERO	ZERO	0.6621E-01	ZERO
64 CaCO ₃ (C ₁₄)	0.3974E-08	ZERO	ZERO	ZERO	ZERO	0.3974E-08	ZERO
78 CaF ₂	0.2862E-02	ZERO	ZERO	ZERO	ZERO	0.2862E-02	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	0.5654E-02	ZERO	ZERO	ZERO	ZERO	0.5654E-02	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1491E-03	ZERO	ZERO	ZERO	ZERO	0.1491E-03	ZERO
98 Cr ₂ O ₃	0.3877E-02	ZERO	ZERO	ZERO	ZERO	0.3877E-02	ZERO
42 Cs ₂ O	0.7385E-04	ZERO	ZERO	ZERO	ZERO	0.7385E-04	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.5868E-07	ZERO	0.5713E-07	ZERO	ZERO	0.1552E-08	ZERO
151 CsTPB	0.5522E+00	ZERO	ZERO	ZERO	ZERO	0.5522E+00	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	408 Precipitated Slids Slurry	410 Inhibited Wash Water	411 Spent Wash to Storage	452 NaOH add'n to TK 48	453 NaNO ₂ add'n to TK 48	414 Washed Prec to Storage	454 40% NaNO ₂ add to TK49
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.1954E-02	ZERO	ZERO	ZERO	ZERO	0.1954E-02	ZERO
80 Fe ₂ O ₃	0.4850E+00	ZERO	ZERO	ZERO	ZERO	0.4850E+00	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.4488E-02	ZERO	0.4369E-02	ZERO	ZERO	0.1187E-03	ZERO
103 Group B	0.1438E-04	ZERO	0.1400E-04	ZERO	ZERO	0.3804E-06	ZERO
25 H ₂	0.8448E-08	ZERO	0.8225E-08	ZERO	ZERO	0.2235E-09	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	0.3802E+00	ZERO	ZERO	ZERO	ZERO	0.3802E+00	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ C ₁₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.2182E-01	ZERO	ZERO	ZERO	ZERO	0.2182E-01	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	0.4242E-02	ZERO	ZERO	ZERO	ZERO	0.4242E-02	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	0.4106E+02	ZERO	ZERO	ZERO	ZERO	0.4106E+02	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.3853E-02	ZERO	ZERO	ZERO	ZERO	0.3853E-02	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	0.9794E-01	ZERO	ZERO	ZERO	ZERO	0.9794E-01	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	0.4922E-02	ZERO	0.4792E-02	ZERO	ZERO	0.1302E-03	ZERO
74 N ₂ O	0.5000E-15	ZERO	0.4868E-15	ZERO	ZERO	0.1323E-16	ZERO
182 NH ₃	0.4267E-02	ZERO	0.4154E-02	ZERO	ZERO	0.1129E-03	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	408 Precipitated Slids Slurry	410 Inhibited Wash Water	411 Spent Wash to Storage	452 NaOH add'n to TK 48	453 NaNO2 add'n to TK 48	414 Washed Prec to Storage	454 40% NaNO2 add to TK49
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.1022E-04	ZERO	0.9952E-05	ZERO	ZERO	0.2704E-06	ZERO
94 Na2B4O7	0.2604E-01	ZERO	0.2535E-01	ZERO	ZERO	0.6889E-03	ZERO
109 Na2C2O4	0.3732E+00	ZERO	0.3633E+00	ZERO	ZERO	0.9873E-02	ZERO
5 Na2CO3	0.5539E+01	ZERO	0.5393E+01	ZERO	ZERO	0.1465E+00	ZERO
143 Na2CO3 (C14)	0.5369E-08	ZERO	0.5227E-08	ZERO	ZERO	0.1420E-09	ZERO
89 Na2CrO4	0.1644E+00	ZERO	0.1600E+00	ZERO	ZERO	0.4348E-02	ZERO
115 Na2MoO4	0.2709E-01	ZERO	0.2638E-01	ZERO	ZERO	0.7167E-03	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.1723E-06	ZERO	0.1678E-06	ZERO	ZERO	0.4558E-08	ZERO
73 Na2RhO4	0.6836E-03	ZERO	0.6655E-03	ZERO	ZERO	0.1808E-04	ZERO
72 Na2RuO4	0.2938E-02	ZERO	0.2861E-02	ZERO	ZERO	0.7773E-04	ZERO
6 Na2SO4	0.6093E+01	ZERO	0.5932E+01	ZERO	ZERO	0.1612E+00	ZERO
88 Na2SiO3	0.1434E+00	ZERO	0.1396E+00	ZERO	ZERO	0.3794E-02	ZERO
87 Na3PO4	0.4323E+00	ZERO	0.4209E+00	ZERO	ZERO	0.1144E-01	ZERO
91 NaAg(OH)2	0.4238E-06	ZERO	0.4126E-06	ZERO	ZERO	0.1121E-07	ZERO
75 NaAl(OH)4	0.1036E+02	ZERO	0.1008E+02	ZERO	ZERO	0.2740E+00	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.3907E+00	ZERO	0.3804E+00	ZERO	ZERO	0.1034E-01	ZERO
69 NaF	0.1903E+00	ZERO	0.1852E+00	ZERO	ZERO	0.5033E-02	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.9640E-04	ZERO	0.9385E-04	ZERO	ZERO	0.2550E-05	ZERO
3 NaNO2	0.1349E+02	ZERO	0.3522E+02	ZERO	0.2888E+02	0.7144E+01	ZERO
2 NaNO3	0.5072E+02	ZERO	0.4938E+02	ZERO	ZERO	0.1342E+01	ZERO
4 NaOH	0.1734E+02	0.7592E+00	0.6367E+02	0.4979E+02	ZERO	0.4207E+01	ZERO
149 NaTPB	0.3978E+00	ZERO	0.3873E+00	ZERO	ZERO	0.1052E-01	ZERO
160 NaTcO4	0.2805E-02	ZERO	0.2731E-02	ZERO	ZERO	0.7421E-04	ZERO
152 NaTi2O5H	0.9229E+00	ZERO	ZERO	ZERO	ZERO	0.9229E+00	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2914E-01	ZERO	ZERO	ZERO	ZERO	0.2914E-01	ZERO
82 O2	0.5886E-03	ZERO	0.5730E-03	ZERO	ZERO	0.1557E-04	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	0.2853E-03	ZERO	ZERO	ZERO	ZERO	0.2853E-03	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.5749E-02	ZERO	ZERO	ZERO	ZERO	0.5749E-02	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.1566E-06	ZERO	0.1524E-06	ZERO	ZERO	0.4142E-08	ZERO
110 PdO	0.3515E-03	ZERO	ZERO	ZERO	ZERO	0.3515E-03	ZERO
76 PuO2	0.9609E-04	ZERO	ZERO	ZERO	ZERO	0.9609E-04	ZERO
156 PuO2(NaTi2O5)2	0.2430E-03	ZERO	ZERO	ZERO	ZERO	0.2430E-03	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	0.1884E-03	ZERO	ZERO	ZERO	ZERO	0.1884E-03	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.1073E-02	ZERO	ZERO	ZERO	ZERO	0.1073E-02	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	408 Precipitated Slids Slurry	410 Inhibited Wash Water	411 Spent Wash to Storage	452 NaOH add'n to TK 48	453 NaNO2 add'n to TK 48	414 Washed Prec to Storage	454 40% NaNO2 add to TK49
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.3431E-01	ZERO	ZERO	ZERO	ZERO	0.3431E-01	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	0.6835E-04	ZERO	ZERO	ZERO	ZERO	0.6835E-04	ZERO
127 Sr(OH)2	0.4034E-08	ZERO	0.3927E-08	ZERO	ZERO	0.1067E-09	ZERO
30 SrCO3	0.1512E-02	ZERO	ZERO	ZERO	ZERO	0.1512E-02	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.3862E-03	ZERO	ZERO	ZERO	ZERO	0.3862E-03	ZERO
92 ThO2	0.1401E-01	ZERO	ZERO	ZERO	ZERO	0.1401E-01	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.7256E-09	ZERO	0.7064E-09	ZERO	ZERO	0.1920E-10	ZERO
17 U3O8	0.2034E-01	ZERO	ZERO	ZERO	ZERO	0.2034E-01	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.3745E-04	ZERO	0.3646E-04	ZERO	ZERO	0.9907E-06	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.1615E-08	ZERO	0.1572E-08	ZERO	ZERO	0.4273E-10	ZERO
31 Y2(CO3)3	0.5841E-03	ZERO	ZERO	ZERO	ZERO	0.5841E-03	ZERO
47 Y2O3	0.1394E-04	ZERO	ZERO	ZERO	ZERO	0.1394E-04	ZERO
100 Zeolite	0.2224E-02	ZERO	ZERO	ZERO	ZERO	0.2224E-02	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3440E-02	ZERO	ZERO	ZERO	ZERO	0.3440E-02	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.3448E+00	ZERO	ZERO	ZERO	ZERO	0.3448E+00	ZERO
1 water	0.2987E+03	0.1265E+04	0.1265E+04	0.4978E+02	0.4331E+02	0.3912E+03	ZERO
TOTAL FLOW, LB/HR	0.4495E+03	0.1265E+04	0.1437E+04	0.9955E+02	0.7219E+02	0.4495E+03	ZERO
TEMPERATURE, DEG C	0.3000E+02	0.2500E+02	0.2616E+02	0.2500E+02	0.2500E+02	0.3000E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
ENTHALPY, PCU/HR	0.9782E+04	0.3174E+05	0.3441E+05	0.1653E+04	0.1254E+04	0.1188E+05	ZERO
VAPOR FLOW, CFM	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
LIQUID FLOW, GPM	0.7559E+00	0.2526E+01	0.2647E+01	0.1302E+00	0.1057E+00	0.8703E+00	ZERO
DENSITY, LBS/FT3	0.7414E+02	0.6246E+02	0.6768E+02	0.9533E+02	0.8519E+02	0.6439E+02	ZERO
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS -> STREAM NAME	416 Prec Strg Tk Air Purge	417 Precip Strg Vnt to Atmo	420 Spent Late Wash Recycle	672 Spent Late Wash Soluble	673 Spent Late Wash Insolbl	412 Spnt Wash Strge Purge	413 Ppt Wash Strg Vnt to Atmo
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	0.5571E-06	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	0.6747E-07	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	0.2375E-09	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	0.6361E-09	0.1514E+01	0.1514E+01	ZERO	ZERO	0.3287E-10
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	0.1986E+01	0.6487E-02	0.6487E-02	ZERO	ZERO	0.6488E-02
155 (CH ₃) ₂ CHOH	ZERO	0.1746E-06	0.4966E-09	0.4966E-09	ZERO	ZERO	0.2715E-05
154 (CH ₃ OH)	ZERO	0.1316E-07	0.6221E-10	0.6221E-10	ZERO	ZERO	0.1787E-06
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	0.2912E-11	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	0.2017E-09	ZERO	ZERO	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	0.1634E-17	0.2269E-12	0.2269E-12	ZERO	ZERO	0.1799E-17
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	0.1428E-09	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	0.7502E-14	0.1066E-04	0.1066E-04	ZERO	ZERO	0.8469E-14
113 Ca ₃ (PO ₄) ₂	ZERO	0.1303E-11	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	0.5543E-11	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	0.4340E-10	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	0.2605E-17	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	0.1876E-11	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	0.3706E-11	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.9776E-13	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	0.2541E-11	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs ₂ O	ZERO	0.4840E-13	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	0.1560E-10	0.1451E-03	0.1451E-03	ZERO	ZERO	0.2847E-14
151 CsTPB	ZERO	0.3149E-09	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) ->	416	417	420	672	673	412	413
STREAM NAME	Prec Strg Tk	Precip Strg	Spent Late	Spent Late	Spent Late	Spnt Wash	Ppt Wash
	Air Purge	Vnt to Atmo	Wash Recycle	Wash Soluble	Wash Insolbl	Strge Purge	Vnt to Atmo
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	0.1281E-11	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	ZERO	0.3179E-09	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	0.7781E-13	0.1106E-03	ZERO	0.1106E-03	ZERO	0.8784E-13
103 Group B	ZERO	0.2493E-15	0.3543E-06	ZERO	0.3543E-06	ZERO	0.2815E-15
25 H ₂	ZERO	0.5451E-01	0.6387E-10	0.6387E-10	ZERO	ZERO	0.8288E-08
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	0.2492E-09	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.1430E-10	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	0.2780E-11	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	0.5467E-09	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	0.2342E-07	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.2525E-11	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	0.6420E-10	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	0.2207E+04	0.2207E+04	0.2612E-01	0.2612E-01	ZERO	0.3607E+03	0.3607E+03
74 N ₂ O	ZERO	0.1184E+01	0.3987E-08	0.3987E-08	ZERO	ZERO	0.3977E-08
182 NH ₃	ZERO	0.1113E-03	0.3439E-07	0.3439E-07	ZERO	ZERO	0.2654E-02
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	0.2650E-06	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) ->	416	417	420	672	673	412	413
STREAM NAME	Prec Strg Tk Air Purge	Precip Strg Vnt to Atmo	Spent Late Wash Recycle	Spent Late Wash Soluble	Spent Late Wash Insolbl	Spnt Wash Strge Purge	Ppt Wash Strg Vnt to Atmo
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	0.1773E-15	0.2732E-09	0.2732E-09	ZERO	ZERO	0.1952E-15
94 Na2B4O7	ZERO	0.4920E-09	0.6992E+00	0.6992E+00	ZERO	ZERO	0.1421E-10
109 Na2C2O4	ZERO	0.4561E-09	0.1149E+01	0.1149E+01	ZERO	ZERO	0.2965E-10
5 Na2CO3	ZERO	0.3683E-08	0.5234E+01	0.5234E+01	0.3949E-06	ZERO	0.2084E-09
143 Na2CO3 (C14)	ZERO	0.9309E-19	0.1323E-09	0.1323E-09	ZERO	ZERO	0.1051E-18
89 Na2CrO4	ZERO	0.2850E-11	0.4049E-02	0.4049E-02	ZERO	ZERO	0.3217E-11
115 Na2MoO4	ZERO	0.4697E-12	0.6675E-03	0.6675E-03	ZERO	ZERO	0.5303E-12
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	0.2988E-17	0.5809E-10	0.5809E-10	ZERO	ZERO	0.3291E-17
73 Na2RhO4	ZERO	0.1185E-13	0.1684E-04	0.1684E-04	ZERO	ZERO	0.1338E-13
72 Na2RuO4	ZERO	0.5095E-13	0.7239E-04	0.7239E-04	0.5998E-11	ZERO	0.5751E-13
6 Na2SO4	ZERO	0.1056E-09	0.1501E+00	0.1501E+00	ZERO	ZERO	0.1193E-09
88 Na2SiO3	ZERO	0.2487E-11	0.3534E-02	0.3534E-02	ZERO	ZERO	0.2808E-11
87 Na3PO4	ZERO	0.7496E-11	0.1065E-01	0.1065E-01	ZERO	ZERO	0.8462E-11
91 NaAg(OH)2	ZERO	0.7349E-17	0.2041E-10	0.2041E-10	ZERO	ZERO	0.8092E-17
75 NaAl(OH)4	ZERO	0.1796E-09	0.2552E+00	0.2552E+00	ZERO	ZERO	0.2028E-09
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	0.6775E-11	0.5851E-01	0.5851E-01	ZERO	ZERO	0.8607E-11
69 NaF	ZERO	0.3299E-11	0.4688E-02	0.4688E-02	ZERO	ZERO	0.3724E-11
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.1671E-14	0.2375E-05	0.2375E-05	ZERO	ZERO	0.1887E-14
3 NaNO2	ZERO	0.2401E-08	0.3412E+01	0.3412E+01	ZERO	ZERO	0.7575E-09
2 NaNO3	ZERO	0.4855E-10	0.6898E-01	0.6898E-01	ZERO	ZERO	0.9697E-09
4 NaOH	ZERO	0.1300E-08	0.7639E+02	0.7639E+02	ZERO	ZERO	0.2746E-08
149 NaTPB	ZERO	ZERO	0.1961E+01	0.1961E+01	ZERO	ZERO	0.4605E-10
160 NaTcO4	ZERO	ZERO	0.6911E-04	0.6911E-04	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	0.6049E-09	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.1910E-10	ZERO	ZERO	ZERO	ZERO	ZERO
82 O2	0.1136E+03	0.1148E+03	0.1166E-02	0.1166E-02	ZERO	0.1090E+03	0.1089E+03
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	0.1870E-12	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	0.3768E-11	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	0.2715E-17	0.3857E-08	0.3857E-08	ZERO	ZERO	0.3064E-17
110 PdO	ZERO	0.2304E-12	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	0.6298E-13	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	0.1593E-12	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	0.1235E-12	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	0.7030E-12	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) ->	416	417	420	672	673	412	413
STREAM NAME	Prec Strg Tk Air Purge	Precip Strg Vnt to Atmo	Spent Late Wash Recycle	Spent Late Wash Soluble	Spent Late Wash Insolbl	Spnt Wash Strge Purge	Ppt Wash Strg Vnt to Atmo
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	ZERO	0.2249E-10	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO	0.4480E-13	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH) ₂	ZERO	0.6995E-19	0.2913E-12	0.2913E-12	ZERO	ZERO	0.7702E-19
30 SrCO ₃	ZERO	0.9909E-12	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO ₂	ZERO	0.2532E-12	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO ₂	ZERO	0.9186E-11	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	0.3204E-11	0.1430E-10	0.1430E-10	ZERO	ZERO	0.3412E-11
17 U ₃ O ₈	ZERO	0.1333E-10	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	0.6494E-15	0.9227E-06	0.9227E-06	ZERO	ZERO	0.7331E-15
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	0.2801E-19	0.2776E-12	0.2776E-12	ZERO	ZERO	0.3084E-19
31 Y ₂ (CO ₃) ₃	ZERO	0.3829E-12	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	ZERO	0.9137E-14	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	0.1458E-11	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.2254E-11	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	0.2260E-09	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.9863E+01	0.1620E+02	0.1528E+04	0.1528E+04	ZERO	0.7891E+01	0.1279E+02
TOTAL FLOW, LB/HR	0.2331E+04	0.2342E+04	0.1619E+04	0.1619E+04	0.1113E-03	0.4776E+03	0.4824E+03
TEMPERATURE, DEG C	0.3500E+02	0.4000E+02	0.3980E+02	0.3980E+02	0.3980E+02	0.3500E+02	0.4000E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	-0.5055E+00
PRESSURE, MM HG		0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03		0.7339E+03
ENTHALPY, PCU/HR	0.2742E+05	0.3401E+05	0.6204E+05	0.6204E+05	0.2732E-03	0.1002E+05	0.1358E+05
VAPOR FLOW, CFM	0.5593E+03	0.5919E+03				0.1128E+03	0.1207E+03
LIQUID FLOW, GPM			0.3115E+01	0.3115E+01	0.3024E-07		
DENSITY, LBS/FT ³	0.6946E-01	0.6593E-01	0.6482E+02	0.6482E+02	0.4589E+03	0.7055E-01	0.6664E-01
PHASE	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS -> STREAM NAME	462 50 wt% NaOH addn to TK22	463 40 wt% NaNO ₂ addn to TK22	418 Prec Storage Tank bottoms	655 Late Wash Pd Prec Soluble	656 Late Wash Pd Prec Insolub
COMPONENT FLOWS, LB/HR					
122 (C ₆ H ₅) ₂	ZERO	ZERO	0.8500E+00	ZERO	0.8500E+00
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	0.1029E+00	ZERO	0.1029E+00
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	0.3624E+00	ZERO	0.3624E+00
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	0.9705E+00	0.9705E+00	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	0.1334E+00	0.1334E+00	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	0.6604E-08	0.6604E-08	ZERO
154 (CH ₃ OH)	ZERO	ZERO	0.6221E-09	0.6221E-09	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	0.4443E-02	ZERO	0.4443E-02
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	0.3077E+00	ZERO	0.3077E+00
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	0.2493E-08	0.2493E-08	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	ZERO	0.2179E+00	ZERO	0.2179E+00
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	0.1145E-04	0.1145E-04	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	0.1988E-02	ZERO	0.1988E-02
20 CaC ₂ O ₄	ZERO	ZERO	0.8457E-02	ZERO	0.8457E-02
18 CaCO ₃	ZERO	ZERO	0.6621E-01	ZERO	0.6621E-01
64 CaCO ₃ (C14)	ZERO	ZERO	0.3974E-08	ZERO	0.3974E-08
78 CaF ₂	ZERO	ZERO	0.2862E-02	ZERO	0.2862E-02
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	ZERO	0.5654E-02	ZERO	0.5654E-02
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	0.1491E-03	ZERO	0.1491E-03
98 Cr ₂ O ₃	ZERO	ZERO	0.3877E-02	ZERO	0.3877E-02
42 Cs ₂ O	ZERO	ZERO	0.7385E-04	ZERO	0.7385E-04
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	0.2380E-01	0.2380E-01	ZERO
151 CsTPB	ZERO	ZERO	0.4804E+00	ZERO	0.4804E+00

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) ->	462	463	418	655	656
STREAM NAME	50 wt% NaOH addn to TK22	40 wt% NaNO ₂ addn to TK22	Prec Storage Tank bottoms	Late Wash Fd Prec Soluble	Late Wash Fd Prec Insolub
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	0.1954E-02	ZERO	0.1954E-02
80 Fe ₂ O ₃	ZERO	ZERO	0.4850E+00	ZERO	0.4850E+00
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	0.1187E-03	ZERO	0.1187E-03
103 Group B	ZERO	ZERO	0.3804E-06	ZERO	0.3804E-06
25 H ₂	ZERO	ZERO	0.1705E-06	0.1705E-06	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	0.3802E+00	ZERO	0.3802E+00
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	0.2182E-01	ZERO	0.2182E-01
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	0.4242E-02	ZERO	0.4242E-02
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	0.8341E+00	0.8341E+00	ZERO
150 KTPB	ZERO	ZERO	0.3573E+02	ZERO	0.3573E+02
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	0.3853E-02	ZERO	0.3853E-02
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	0.9794E-01	ZERO	0.9794E-01
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	ZERO	ZERO	0.5698E-02	0.5698E-02	ZERO
74 N ₂ O	ZERO	ZERO	0.7300E-04	0.7300E-04	ZERO
182 NH ₃	ZERO	ZERO	0.1581E-05	0.1581E-05	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	0.4043E+00	0.4043E+00	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	462 50 wt% NaOH addn to TK22	463 40 wt% NaNO2 addn to TK22	418 Prec Storage Tank bottoms	655 Late Wash Pd Prec Soluble	656 Late Wash Pd Prec Insolub
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	0.2704E-06	0.2704E-06	ZERO
94 Na2B4O7	ZERO	ZERO	0.7507E+00	0.7507E+00	ZERO
109 Na2C2O4	ZERO	ZERO	0.6959E+00	0.6959E+00	ZERO
5 Na2CO3	ZERO	ZERO	0.5620E+01	0.5620E+01	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	0.1420E-09	0.1420E-09	ZERO
89 Na2CrO4	ZERO	ZERO	0.4348E-02	0.4348E-02	ZERO
115 Na2MoO4	ZERO	ZERO	0.7167E-03	0.7167E-03	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	0.4558E-08	0.4558E-08	ZERO
73 Na2RhO4	ZERO	ZERO	0.1808E-04	0.1808E-04	ZERO
72 Na2RuO4	ZERO	ZERO	0.7773E-04	0.7773E-04	ZERO
6 Na2SO4	ZERO	ZERO	0.1612E+00	0.1612E+00	ZERO
88 Na2SiO3	ZERO	ZERO	0.3794E-02	0.3794E-02	ZERO
87 Na3PO4	ZERO	ZERO	0.1144E-01	0.1144E-01	ZERO
91 NaAg(OH)2	ZERO	ZERO	0.1121E-07	0.1121E-07	ZERO
75 NaAl(OH)4	ZERO	ZERO	0.2740E+00	0.2740E+00	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	0.1034E-01	0.1034E-01	ZERO
69 NaF	ZERO	ZERO	0.5033E-02	0.5033E-02	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.2550E-05	0.2550E-05	ZERO
3 NaNO2	ZERO	ZERO	0.3664E+01	0.3664E+01	ZERO
2 NaNO3	ZERO	ZERO	0.7407E-01	0.7407E-01	ZERO
4 NaOH	ZERO	ZERO	0.1983E+01	0.1983E+01	ZERO
149 NaTPE	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	0.7421E-04	0.7421E-04	ZERO
152 NaTi2O5H	ZERO	ZERO	0.9229E+00	ZERO	0.9229E+00
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.2914E-01	ZERO	0.2914E-01
82 O2	ZERO	ZERO	0.5756E-03	0.5756E-03	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	0.2853E-03	ZERO	0.2853E-03
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	0.5749E-02	ZERO	0.5749E-02
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	0.4142E-08	0.4142E-08	ZERO
110 PdO	ZERO	ZERO	0.3515E-03	ZERO	0.3515E-03
76 PuO2	ZERO	ZERO	0.9609E-04	ZERO	0.9609E-04
156 PuO2(NaTi2O5)2	ZERO	ZERO	0.2430E-03	ZERO	0.2430E-03
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	0.1884E-03	ZERO	0.1884E-03
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	0.1073E-02	ZERO	0.1073E-02
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1A. In-Tank Precipitation and Salt Decontamination

STREAM NUMBERS (CONT'D) ->	462	463	418	655	656
STREAM NAME	50 wt% NaOH addn to TK22	40 wt% NaNO ₂ addn to TK22	Prec Storage Tank bottoms	Late Wash Fd Prec Soluble	Late Wash Fd Prec Insolub
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Ca ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CaCl	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	ZERO	ZERO	0.3431E-01	ZERO	0.3431E-01
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
153 Ar(NaTi ₂ O ₅) ₂	ZERO	ZERO	0.6835E-04	ZERO	0.6835E-04
127 Sr(OH) ₂	ZERO	ZERO	0.1067E-09	0.1067E-09	ZERO
30 SrCO ₃	ZERO	ZERO	0.1512E-02	ZERO	0.1512E-02
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO ₂	ZERO	ZERO	0.3862E-03	ZERO	0.3862E-03
92 ThO ₂	ZERO	ZERO	0.1401E-01	ZERO	0.1401E-01
107 TiO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	0.1599E-10	0.1599E-10	ZERO
17 U ₃ O ₈	ZERO	ZERO	0.2034E-01	ZERO	0.2034E-01
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	0.9907E-06	0.9907E-06	ZERO
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	0.4273E-10	0.4273E-10	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	0.5841E-03	ZERO	0.5841E-03
47 Y ₂ O ₃	ZERO	ZERO	0.1394E-04	ZERO	0.1394E-04
100 Zeolite	ZERO	ZERO	0.2224E-02	ZERO	0.2224E-02
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	0.3440E-02	ZERO	0.3440E-02
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	ZERO	0.3448E+00	ZERO	0.3448E+00
1 water	ZERO	ZERO	0.3843E+03	0.3843E+03	ZERO
TOTAL FLOW, LB/HR	ZERO	ZERO	0.4405E+03	0.4000E+03	0.4052E+02
TEMPERATURE, DEG C	0.2500E+02	0.2500E+02	0.3837E+02	0.3837E+02	0.3837E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG			0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	ZERO	ZERO	0.1495E+05	0.1493E+05	0.2481E+02
VAPOR FLOW, CFM					
LIQUID FLOW, GPM			0.8533E+00	0.7811E+00	0.7223E-01
DENSITY, LBS/FT ³	ZERO	ZERO	0.6436E+02	0.6384E+02	0.6994E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

SECTION 1B. RE-PRECIPITATION / LATE WASHING IN AUXILIARY PUMP PIT

WSRC-TR-93-527 (Revision 0)

Date: September 1993

Section 1B, Page 0 of 21

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

DESCRIPTION	PAGE
-----	----
1. STREAM NUMBERS 418, 655, 656, 458, 661, 662, 663	2
2. STREAM NUMBERS 664, 665, 419, 666, 660, 457, 667	6
3. STREAM NUMBERS 455, 456, 668, 669, 670, 671, 459	10
4. STREAM NUMBERS 420, 672, 673, 201, 657, 658, 460	14
5. STREAM NUMBERS 461	18

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS --> STREAM NAME	418 Prec Storage Tank bottoms	655 Late Wash Pd Prec Soluble	656 Late Wash Pd Prec Insolub	458 MatPB add to Prec Pump Tk	661 Precip Pump Tank Heel	662 Precip Trnsf Line Flush	663 X-Filtr Tube Perme to PPT
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.8500E+00	ZERO	0.8500E+00	ZERO	0.2260E+00	ZERO	ZERO
123 (C6H5)2C6H4	0.1029E+00	ZERO	0.1029E+00	ZERO	0.2737E-01	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	0.3624E+00	ZERO	0.3624E+00	ZERO	0.9672E-01	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.9705E+00	0.9705E+00	ZERO	0.5808E+00	0.3533E-01	ZERO	0.8650E-02
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.1334E+00	0.1334E+00	ZERO	ZERO	0.2468E-02	ZERO	0.7141E-03
155 (CH3)2CHOH	0.6604E-08	0.6604E-08	ZERO	ZERO	0.3656E-10	ZERO	0.1058E-10
154 (CH3OH)	0.6221E-09	0.6221E-09	ZERO	ZERO	0.4024E-11	ZERO	0.1165E-11
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.4443E-02	ZERO	0.4443E-02	ZERO	0.1181E-02	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.3077E+00	ZERO	0.3077E+00	ZERO	0.8181E-01	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.2493E-08	0.2493E-08	ZERO	ZERO	0.4448E-14	ZERO	0.1287E-14
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.2179E+00	ZERO	0.2179E+00	ZERO	0.5794E-01	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.1145E-04	0.1145E-04	ZERO	ZERO	0.2090E-06	ZERO	0.6048E-07
113 Ca3(PO4)2	0.1988E-02	ZERO	0.1988E-02	ZERO	0.5285E-03	ZERO	ZERO
20 CaC2O4	0.8457E-02	ZERO	0.8457E-02	ZERO	0.2249E-02	ZERO	ZERO
18 CaCO3	0.6621E-01	ZERO	0.6621E-01	ZERO	0.1760E-01	ZERO	ZERO
64 CaCO3 (C14)	0.3974E-08	ZERO	0.3974E-08	ZERO	0.1057E-08	ZERO	ZERO
78 CaF2	0.2862E-02	ZERO	0.2862E-02	ZERO	0.7609E-03	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	0.5654E-02	ZERO	0.5654E-02	ZERO	0.1503E-02	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1491E-03	ZERO	0.1491E-03	ZERO	0.3966E-04	ZERO	ZERO
98 Cr2O3	0.3877E-02	ZERO	0.3877E-02	ZERO	0.1031E-02	ZERO	ZERO
42 Cs2O	0.7385E-04	ZERO	0.7385E-04	ZERO	0.1964E-04	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.2380E-01	0.2380E-01	ZERO	ZERO	0.2845E-05	ZERO	0.8234E-06
151 CsTPB	0.4804E+00	ZERO	0.4804E+00	ZERO	0.1467E+00	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) -> STREAM NAME	418 Prec Storage Tank bottoms	655 Late Wash Pd Prec Soluble	656 Late Wash Pd Prec Insolub	458 NatPB add to Prec Pump Tk	661 Precip Pump Tank Heel	662 Precip Line Flush	663 Trnsf X-Filtr Perme to PPT
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.1954E-02	ZERO	0.1954E-02	ZERO	0.5195E-03	ZERO	ZERO
80 Fe2O3	0.4850E+00	ZERO	0.4850E+00	ZERO	0.1290E+00	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1187E-03	ZERO	0.1187E-03	ZERO	0.2168E-05	ZERO	0.6273E-06
103 Group B	0.3804E-06	ZERO	0.3804E-06	ZERO	0.6946E-08	ZERO	0.2010E-08
25 H2	0.1705E-06	0.1705E-06	ZERO	ZERO	0.1569E-10	ZERO	0.4541E-11
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	0.3802E+00	ZERO	0.3802E+00	ZERO	0.1011E+00	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.2182E-01	ZERO	0.2182E-01	ZERO	0.5801E-02	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.4242E-02	ZERO	0.4242E-02	ZERO	0.1128E-02	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.8341E+00	0.8341E+00	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	0.3573E+02	ZERO	0.3573E+02	ZERO	0.1092E+02	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.3853E-02	ZERO	0.3853E-02	ZERO	0.1024E-02	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.9794E-01	ZERO	0.9794E-01	ZERO	0.2604E-01	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.5698E-02	0.5698E-02	ZERO	ZERO	0.1847E-03	ZERO	0.5345E-04
74 N2O	0.7300E-04	0.7300E-04	ZERO	ZERO	0.9728E-09	ZERO	0.2815E-09
182 NH3	0.1581E-05	0.1581E-05	ZERO	ZERO	0.4159E-08	ZERO	0.1204E-08
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.4043E+00	0.4043E+00	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	0.1035E+01	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	418	655	656	458	661	662	663
STREAM NAME	Prec Storage Tank bottoms	Late Wash Pd Prec Soluble	Late Wash Pd Prec Insolub	NaTPB add to Prec Pump Tk	Precip Pump Tank Heel	Precip Line Flush	X-Filter Tube Perme to PPT
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2704E-06	0.2704E-06	ZERO	ZERO	0.5355E-11	ZERO	0.1550E-11
94 Na ₂ B ₄ O ₇	0.7507E+00	0.7507E+00	ZERO	ZERO	0.1371E-01	ZERO	0.3967E-02
109 Na ₂ C ₂ O ₄	0.6959E+00	0.6959E+00	ZERO	ZERO	0.1271E-01	ZERO	0.3677E-02
5 Na ₂ CO ₃	0.5620E+01	0.5620E+01	ZERO	ZERO	0.1026E+00	ZERO	0.2970E-01
143 Na ₂ CO ₃ (C14)	0.1420E-09	0.1420E-09	ZERO	ZERO	0.2593E-11	ZERO	0.7505E-12
89 Na ₂ CrO ₄	0.4348E-02	0.4348E-02	ZERO	ZERO	0.7939E-04	ZERO	0.2298E-04
115 Na ₂ MoO ₄	0.7167E-03	0.7167E-03	ZERO	ZERO	0.1309E-04	ZERO	0.3787E-05
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	0.4558E-08	0.4558E-08	ZERO	ZERO	0.1139E-11	ZERO	0.3296E-12
73 Na ₂ RhO ₄	0.1808E-04	0.1808E-04	ZERO	ZERO	0.3302E-06	ZERO	0.9556E-07
72 Na ₂ RuO ₄	0.7773E-04	0.7773E-04	ZERO	ZERO	0.1419E-05	ZERO	0.4107E-06
6 Na ₂ SO ₄	0.1612E+00	0.1612E+00	ZERO	ZERO	0.2943E-02	ZERO	0.8517E-03
88 Na ₂ SiO ₃	0.3794E-02	0.3794E-02	ZERO	ZERO	0.6929E-04	ZERO	0.2005E-04
87 Na ₃ PO ₄	0.1144E-01	0.1144E-01	ZERO	ZERO	0.2088E-03	ZERO	0.6043E-04
91 NaAg(OH) ₂	0.1121E-07	0.1121E-07	ZERO	ZERO	0.4001E-12	ZERO	0.1158E-12
75 NaAl(OH) ₄	0.2740E+00	0.2740E+00	ZERO	ZERO	0.5004E-02	ZERO	0.1448E-02
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1034E-01	0.1034E-01	ZERO	0.4658E-01	0.1599E-02	ZERO	0.3366E-03
69 NaF	0.5033E-02	0.5033E-02	ZERO	ZERO	0.9190E-04	ZERO	0.2660E-04
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2550E-05	0.2550E-05	ZERO	ZERO	0.4657E-07	ZERO	0.1348E-07
3 NaNO ₂	0.3664E+01	0.3664E+01	ZERO	ZERO	0.6690E-01	ZERO	0.1936E-01
2 NaNO ₃	0.7407E-01	0.7407E-01	ZERO	ZERO	0.1352E-02	ZERO	0.3914E-03
4 NaOH	0.1983E+01	0.1983E+01	ZERO	0.2323E+00	0.6266E-01	ZERO	0.1750E-01
149 NaTPB	ZERO	ZERO	ZERO	0.9938E+01	0.1349E+00	ZERO	0.1211E-01
160 Na ₂ CO ₄	0.7421E-04	0.7421E-04	ZERO	ZERO	0.1355E-05	ZERO	0.3921E-06
152 NaTi ₂ O ₅ H	0.9229E+00	ZERO	0.9229E+00	ZERO	0.2454E+00	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2914E-01	ZERO	0.2914E-01	ZERO	0.7748E-02	ZERO	ZERO
82 O ₂	0.5756E-03	0.5756E-03	ZERO	ZERO	0.2097E-04	ZERO	0.6069E-05
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	0.2853E-03	ZERO	0.2853E-03	ZERO	0.7586E-04	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.5749E-02	ZERO	0.5749E-02	ZERO	0.1529E-02	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	0.4142E-08	0.4142E-08	ZERO	ZERO	0.7562E-10	ZERO	0.2188E-10
110 PdO	0.3515E-03	ZERO	0.3515E-03	ZERO	0.9345E-04	ZERO	ZERO
76 PuO ₂	0.9609E-04	ZERO	0.9609E-04	ZERO	0.2555E-04	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.2430E-03	ZERO	0.2430E-03	ZERO	0.6461E-04	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	0.1884E-03	ZERO	0.1884E-03	ZERO	0.5010E-04	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	0.1073E-02	ZERO	0.1073E-02	ZERO	0.2852E-03	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	418	655	656	458	661	662	663
STREAM NAME	Prec Storage Tank bottoms	Late Wash Pd Prec Soluble	Late Wash Pd Prec Insolub	NaTPB add to Prec Pump Tk	Precip Tank	Pump Reel Line	Trnsf X-Filtr Tube Perme to PPT
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Ca ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.3431E-01	ZERO	0.3431E-01	ZERO	0.9122E-02	ZERO	ZERO
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.6835E-04	ZERO	0.6835E-04	ZERO	0.1817E-04	ZERO	ZERO
127 Sr(OH) ₂	0.1067E-09	0.1067E-09	ZERO	ZERO	0.5712E-14	ZERO	0.1653E-14
30 SrCO ₃	0.1512E-02	ZERO	0.1512E-02	ZERO	0.4020E-03	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO ₂	0.3862E-03	ZERO	0.3862E-03	ZERO	0.1027E-03	ZERO	ZERO
92 ThO ₂	0.1401E-01	ZERO	0.1401E-01	ZERO	0.3726E-02	ZERO	ZERO
107 TiO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.1599E-10	0.1599E-10	ZERO	ZERO	0.2874E-12	ZERO	0.8317E-13
17 U ₃ O ₈	0.2034E-01	ZERO	0.2034E-01	ZERO	0.5407E-02	ZERO	ZERO
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	0.9907E-06	0.9907E-06	ZERO	ZERO	0.1809E-07	ZERO	0.5235E-08
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	0.4273E-10	0.4273E-10	ZERO	ZERO	0.5444E-14	ZERO	0.1575E-14
31 Y ₂ (CO ₃) ₃	0.5841E-03	ZERO	0.5841E-03	ZERO	0.1553E-03	ZERO	ZERO
47 Y ₂ O ₃	0.1394E-04	ZERO	0.1394E-04	ZERO	0.3707E-05	ZERO	ZERO
100 Zeolite	0.2224E-02	ZERO	0.2224E-02	ZERO	0.5915E-03	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3440E-02	ZERO	0.3440E-02	ZERO	0.9146E-03	ZERO	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.3448E+00	ZERO	0.3448E+00	ZERO	0.9169E-01	ZERO	ZERO
1 water	0.3843E+03	0.3843E+03	ZERO	0.4729E+02	0.9669E+02	0.5027E+02	0.8329E+01
TOTAL FLOW, LB/HR	0.4405E+03	0.4000E+03	0.4052E+02	0.5808E+02	0.1104E+03	0.5027E+02	0.8428E+01
TEMPERATURE, DEG C	0.3837E+02	0.3837E+02	0.3837E+02	0.3500E+02	0.2974E+02	0.3500E+02	0.2972E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.9656E+00	0.1000E+01	0.9656E+00
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	-0.5055E+00	ZERO	-0.5055E+00
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03		0.7339E+03		0.7339E+03
ENTHALPY, PCU/HR	0.1495E+05	0.1493E+05	0.2481E+02	0.1662E+04	0.2892E+04	0.1764E+04	0.2490E+03
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.8533E+00	0.7811E+00	0.7223E-01	0.1139E+00	0.2175E+00	0.1004E+00	0.1673E-01
DENSITY, LBS/FT ³	0.6436E+02	0.6384E+02	0.6994E+02	0.6358E+02	0.6327E+02	0.6243E+02	0.6281E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS -> STREAM NAME	664 X-Filtr Tube H2O Flush	665 X-Flow Filtr H2O Inventory	419 Precip slrry b4 Late Wash	666 Permeate dur Concentrat'n	660 NatPB add to Late Wash H2O	457 Adj'd w/NatPB	667 Permeate frm Late Wash
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	0.1076E+01	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	0.1303E+00	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	0.4604E+00	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	0.1392E+01	0.2040E+00	0.9495E-01	0.9495E-01	0.1310E+01
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	0.1206E+00	0.1768E-01	ZERO	ZERO	0.1082E+00
155 (CH3)2CHOH	ZERO	ZERO	0.1787E-08	0.8502E-09	ZERO	ZERO	0.1603E-08
154 (CH3OH)	ZERO	ZERO	0.1968E-09	0.8018E-10	ZERO	ZERO	0.1764E-09
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	0.5625E-02	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	0.3895E+00	ZERO	ZERO	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	0.2174E-12	0.3187E-13	ZERO	ZERO	0.1950E-12
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	ZERO	0.2758E+00	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	0.1022E-04	0.1497E-05	ZERO	ZERO	0.9162E-05
113 Ca3(PO4)2	ZERO	ZERO	0.2516E-02	ZERO	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	ZERO	0.1071E-01	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	0.8381E-01	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	0.5031E-08	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	0.3622E-02	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	0.7157E-02	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	0.1888E-03	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	0.4908E-02	ZERO	ZERO	ZERO	ZERO
42 Cs2O	ZERO	ZERO	0.9349E-04	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	0.1391E-03	0.2039E-04	ZERO	ZERO	0.1247E-03
151 CsTPB	ZERO	ZERO	0.6984E+00	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	664	665	419	666	660	457	667
STREAM NAME	X-Filtr Tube H2O Flush	X-Flow Filtr H2O Inventory	Precip slrry b4 Late Wash	Permeate dur Concentrat'n	MatPB add to Late Wash	H2O Adjd w/MatPB	Permeate frm Late Wash
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	0.2473E-02	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	ZERO	ZERO	0.6139E+00	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	0.1060E-03	0.1553E-04	ZERO	ZERO	0.9503E-04
103 Group B	ZERO	ZERO	0.3396E-06	0.4977E-07	ZERO	ZERO	0.3045E-06
25 H2	ZERO	ZERO	0.7671E-09	0.2837E-05	ZERO	ZERO	0.6879E-09
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	0.4813E+00	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	0.2762E-01	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	0.5370E-02	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	0.5197E+02	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	0.4877E-02	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	0.1240E+00	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	0.9030E-02	0.7588E-03	ZERO	ZERO	0.8097E-02
74 N2O	ZERO	ZERO	0.4756E-07	0.9331E-05	ZERO	ZERO	0.4265E-07
182 NH3	ZERO	ZERO	0.2033E-06	0.2028E-06	ZERO	ZERO	0.1823E-06
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	0.4925E+01	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) -> STREAM NAME	664 X-Filtr Tube H2O Flush	665 X-Flow Filtr H2O Inventory	419 Precip slrry b4 Late Wash	666 Permeate dur Concentrat'n	660 NaTPB add to Late Wash H2O	457 Late Wash H2O Adj'd w/NaTPB	667 Permeate frm Late Wash
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	0.2618E-09	0.3837E-10	ZERO	ZERO	0.2348E-09
94 Na2B4O7	ZERO	ZERO	0.6702E+00	0.9822E-01	ZERO	ZERO	0.6009E+00
109 Na2C2O4	ZERO	ZERO	0.6212E+00	0.9104E-01	ZERO	ZERO	0.5570E+00
5 Na2CO3	ZERO	ZERO	0.5017E+01	0.7352E+00	ZERO	ZERO	0.4499E+01
143 Na2CO3 (C14)	ZERO	ZERO	0.1268E-09	0.1858E-10	ZERO	ZERO	0.1137E-09
89 Na2CrO4	ZERO	ZERO	0.3882E-02	0.5689E-03	ZERO	ZERO	0.3481E-02
115 Na2MoO4	ZERO	ZERO	0.6398E-03	0.9377E-04	ZERO	ZERO	0.5737E-03
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	0.5568E-10	0.8160E-11	ZERO	ZERO	0.4993E-10
73 Na2RhO4	ZERO	ZERO	0.1614E-04	0.2366E-05	ZERO	ZERO	0.1448E-04
72 Na2RuO4	ZERO	ZERO	0.6939E-04	0.1017E-04	ZERO	ZERO	0.6222E-04
6 Na2SO4	ZERO	ZERO	0.1439E+00	0.2109E-01	ZERO	ZERO	0.1290E+00
88 Na2SiO3	ZERO	ZERO	0.3387E-02	0.4964E-03	ZERO	ZERO	0.3037E-02
87 Na3PO4	ZERO	ZERO	0.1021E-01	0.1496E-02	ZERO	ZERO	0.9155E-02
91 NaAg(OH)2	ZERO	ZERO	0.1956E-10	0.2867E-11	ZERO	ZERO	0.1754E-10
75 NaAl(OH)4	ZERO	ZERO	0.2446E+00	0.3585E-01	ZERO	ZERO	0.2194E+00
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	0.5133E-01	0.7522E-02	0.7615E-02	0.7615E-02	0.5099E-01
69 NaF	ZERO	ZERO	0.4493E-02	0.6585E-03	ZERO	ZERO	0.4029E-02
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.2277E-05	0.3336E-06	ZERO	ZERO	0.2041E-05
3 NaNO2	ZERO	ZERO	0.3271E+01	0.4793E+00	ZERO	ZERO	0.2933E+01
2 NaNO3	ZERO	ZERO	0.6612E-01	0.9691E-02	ZERO	ZERO	0.5929E-01
4 NaOH	ZERO	ZERO	0.2929E+01	0.4293E+00	0.3798E-01	0.3798E-01	0.2652E+01
149 NaTPB	ZERO	ZERO	0.8643E+00	0.1267E+00	0.1625E+01	0.1625E+01	0.1835E+01
160 NaTcO4	ZERO	ZERO	0.6625E-04	0.9709E-05	ZERO	ZERO	0.5940E-04
152 NaTi2O5H	ZERO	ZERO	0.1168E+01	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.3689E-01	ZERO	ZERO	ZERO	ZERO
82 O2	ZERO	ZERO	0.1025E-02	0.7702E-04	ZERO	ZERO	0.9194E-03
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	0.3612E-03	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	0.7278E-02	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	0.3697E-08	0.5418E-09	ZERO	ZERO	0.3315E-08
110 PdO	ZERO	ZERO	0.4449E-03	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	0.1216E-03	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	0.3076E-03	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	0.2385E-03	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	0.1358E-02	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) -> STREAM NAME	664 X-Filtr Tube H2O Flush	665 X-Flow Filtr H2O Inventory	419 Precip slrry b4 Late Wash	666 Permeate dur Concentrat'n	660 NatPB add to Late Wash H2O	457 Late Wash H2O Adj'd w/NatPB	667 Permeate frm Late Wash
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	0.4343E-01	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	0.8652E-04	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	0.2793E-12	0.4093E-13	ZERO	ZERO	0.2504E-12
30 SrCO3	ZERO	ZERO	0.1914E-02	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO2	ZERO	ZERO	0.4889E-03	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	0.1774E-01	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	0.1405E-10	0.2092E-11	ZERO	ZERO	0.1260E-10
17 U3O8	ZERO	ZERO	0.2574E-01	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	0.8844E-06	0.1296E-06	ZERO	ZERO	0.7931E-06
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	0.2661E-12	0.3900E-13	ZERO	ZERO	0.2386E-12
31 Y2(CO3)3	ZERO	ZERO	0.7395E-03	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	0.1765E-04	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	0.2816E-02	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	0.4354E-02	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	0.4365E+00	ZERO	ZERO	ZERO	ZERO
1 water	0.1676E+02	0.2932E+02	0.5450E+03	0.8091E+02	0.7730E+01	0.1185E+04	0.1262E+04
TOTAL FLOW, LB/HR	0.1676E+02	0.2932E+02	0.6235E+03	0.8317E+02	0.9496E+01	0.1187E+04	0.1277E+04
TEMPERATURE, DEG C	0.3500E+02	0.3500E+02	0.3980E+02	0.3000E+02	0.3500E+02	0.2507E+02	0.2972E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	-0.5055E+00	ZERO	ZERO	ZERO	-0.5055E+00
PRESSURE, MM HG			0.7339E+03				0.7339E+03
ENTHALPY, PCU/HR	0.5879E+03	0.1029E+04	0.2191E+05	0.2450E+04	0.2718E+03	0.2982E+05	0.3771E+05
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.3346E-01	0.5856E-01	0.1216E+01	0.1636E+00	0.1862E-01	0.2371E+01	0.2535E+01
DENSITY, LBS/FT3	0.6243E+02	0.6243E+02	0.6391E+02	0.6337E+02	0.6358E+02	0.6244E+02	0.6281E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS -> STREAM NAME	455 Air/N ₂ Purge Prec Pump Tk	456 Prec Pump Tk vnt to Stack	668 Permeate Hld 1 Tank Heel	669 Hld 1 wt% H ₂ C ₂ O ₄ add'n to RPT	670 1 wt% NaOH add'n to RPT	671 X-Flow Filtr H ₂ O Flush	459 50% NaOH to Recyc Pmp Tk
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	0.6287E-07	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	0.7614E-08	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	0.2690E-10	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	0.8135E-10	0.2115E+00	ZERO	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	0.7050E-08	0.9060E-03	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	0.4014E-08	0.6936E-10	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	0.3503E-09	0.8688E-11	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	0.3286E-12	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	0.2276E-10	ZERO	ZERO	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	0.1271E-22	0.3168E-13	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	0.1612E-10	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	0.5970E-15	0.1489E-05	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	0.1470E-12	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	0.6255E-12	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	0.4897E-11	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	0.2939E-18	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	0.2117E-12	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	0.4182E-12	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.1103E-13	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	0.2868E-12	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs ₂ O	ZERO	0.5463E-14	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	0.8128E-14	0.2027E-04	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	0.4081E-10	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	455	456	668	669	670	671	459
STREAM NAME	Air/N ₂ Purge Prec Pump Tk	Prec Pump Tk vnt to Stack	Permeate Hld Tank Heel	1 wt% H ₂ C ₂ O ₄ add'n to RPT	1 wt% NaOH add'n to RPT	X-Flow Filtr H ₂ O Flush	50% NaOH to Recyc Pmp Tk
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	0.1445E-12	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	ZERO	0.3587E-10	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	0.6193E-14	0.1544E-04	ZERO	ZERO	ZERO	ZERO
103 Group B	ZERO	0.1984E-16	0.4948E-07	ZERO	ZERO	ZERO	ZERO
25 H ₂	ZERO	0.1936E-04	0.8921E-11	ZERO	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	0.3364E+00	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	0.2812E-10	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.1614E-11	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	0.3138E-12	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	0.3037E-08	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.2850E-12	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	0.7245E-11	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	0.2789E+03	0.2789E+03	0.3648E-02	ZERO	ZERO	ZERO	ZERO
74 N ₂ O	ZERO	0.6362E-04	0.5568E-09	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	0.1180E-05	0.4803E-08	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	0.2878E-09	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	455	456	668	669	670	671	459
STREAM NAME	Air/N ₂ Purge Prec Pump Tk	Prec Pump Tk vnt to Stack	Permeate Hld Tank Heel	1 wt% H ₂ C ₂ O ₄ add'n to RPT	1 wt% NaOH add'n to RPT	X-Flow Filter H ₂ O Flush	50% NaOH to Recyc Pmp Tk
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	0.1530E-19	0.3815E-10	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	0.3916E-10	0.9765E-01	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	0.3630E-10	0.1605E+00	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	0.2931E-09	0.7310E+00	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	0.7408E-20	0.1847E-10	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	0.2268E-12	0.5656E-03	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	0.3738E-13	0.9323E-04	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	0.3253E-20	0.8113E-11	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	0.9433E-15	0.2352E-05	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	0.4055E-14	0.1011E-04	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	0.8408E-11	0.2097E-01	ZERO	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	0.1979E-12	0.4936E-03	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	0.5966E-12	0.1488E-02	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	0.1143E-20	0.2850E-11	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	0.1429E-10	0.3565E-01	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	0.2999E-11	0.8172E-02	ZERO	ZERO	ZERO	ZERO
69 NaF	ZERO	0.2625E-12	0.6547E-03	ZERO	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.1330E-15	0.3317E-06	ZERO	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	0.1911E-09	0.4766E+00	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	0.3864E-11	0.9635E-02	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	0.1712E-09	0.1067E+02	ZERO	0.3374E+00	ZERO	0.7327E+02
149 NaTPB	ZERO	0.5050E-10	0.2739E+00	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	0.9653E-05	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	0.6827E-10	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.2155E-11	ZERO	ZERO	ZERO	ZERO	ZERO
82 O ₂	0.1634E+02	0.1634E+02	0.1628E-03	ZERO	ZERO	ZERO	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	0.2110E-13	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	0.4252E-12	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	0.2160E-18	0.5387E-09	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	0.2600E-13	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	0.7107E-14	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	0.1797E-13	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	0.1394E-13	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	0.7934E-13	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) -> STREAM NAME	455 Air/N ₂ Purge Prec Pump Tk	456 Prec Pump Tk vnt to Stack	668 Permeate Hld Tank Heel	669 1 wt% H ₂ C ₂ O ₄ add'n to RPT	670 1 wt% NaOH add'n to RPT	671 K-Flow Filtr H ₂ O Flush	459 50% NaOH to Recyc Pmp Tk
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	ZERO	0.2538E-11	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO	0.5056E-14	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH) ₂	ZERO	0.1632E-22	0.4069E-13	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	0.1118E-12	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO ₂	ZERO	0.2857E-13	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO ₂	ZERO	0.1037E-11	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	0.2199E-12	0.1997E-11	ZERO	ZERO	ZERO	ZERO
17 U ₃ O ₈	ZERO	0.1504E-11	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	0.5168E-16	0.1289E-06	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	0.1555E-22	0.3878E-13	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	0.4321E-13	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	ZERO	0.1031E-14	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	0.1645E-12	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.2544E-12	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	0.2551E-10	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.1184E+01	0.8227E+01	0.2135E+03	0.3331E+02	0.3341E+02	0.8378E+02	0.7327E+02
TOTAL FLOW, LB/HR	0.2965E+03	0.3035E+03	0.2262E+03	0.3364E+02	0.3374E+02	0.8378E+02	0.1465E+03
TEMPERATURE, DEG C	0.3500E+02	ZERO	0.3980E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	-0.5055E+00	-0.5055E+00	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG		0.7339E+03	0.7339E+03				
ENTHALPY, PCU/HR	0.3409E+04	0.5089E+04	0.8665E+04	0.1172E+04	0.1176E+04	0.2939E+04	0.2433E+04
VAPOR FLOW, CFM	0.7107E+02	0.6767E+02					
LIQUID FLOW, GPM			0.4350E+00	0.6692E-01	0.6692E-01	0.1673E+00	0.1916E+00
DENSITY, LBS/FT ³	0.6952E-01	0.7476E-01	0.6482E+02	0.6268E+02	0.6286E+02	0.6243E+02	0.9533E+02
PHASE	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS -> STREAM NAME	420 Spent Late Wash Recycle	672 Spent Late Wash Soluble	673 Spent Late Wash Insolbl	201 Washd Precip Feed frm LWF	657 Prec Feed Solubles	658 Prec Feed Insolubles	460 Air/M2 Sparg Rcycl Pmp Tk
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	0.8500E+00	ZERO	0.8500E+00	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	0.1029E+00	ZERO	0.1029E+00	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	0.3637E+00	ZERO	0.3637E+00	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.1514E+01	0.1514E+01	ZERO	0.1329E+00	0.1329E+00	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.6487E-02	0.6487E-02	ZERO	0.9281E-02	0.9281E-02	0.5684E-09	ZERO
155 (CH3)2CHOH	0.4966E-09	0.4966E-09	ZERO	0.1375E-09	0.1375E-09	ZERO	ZERO
154 (CH3OH)	0.6221E-10	0.6221E-10	ZERO	0.1514E-10	0.1514E-10	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	0.4443E-02	ZERO	0.4443E-02	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	ZERO	0.3077E+00	ZERO	0.3077E+00	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.2269E-12	0.2269E-12	ZERO	0.1673E-13	0.1673E-13	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	ZERO	ZERO	0.2179E+00	ZERO	0.2179E+00	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.1066E-04	0.1066E-04	ZERO	0.7860E-06	0.7860E-06	ZERO	ZERO
113 Ca3(PO4)2	ZERO	ZERO	ZERO	0.1988E-02	ZERO	0.1988E-02	ZERO
20 CaC2O4	ZERO	ZERO	ZERO	0.8457E-02	ZERO	0.8457E-02	ZERO
18 CaCO3	ZERO	ZERO	ZERO	0.6621E-01	ZERO	0.6621E-01	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	0.3974E-08	ZERO	0.3974E-08	ZERO
78 CaF2	ZERO	ZERO	ZERO	0.2862E-02	ZERO	0.2862E-02	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	0.5654E-02	ZERO	0.5654E-02	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	0.1491E-03	ZERO	0.1491E-03	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	0.3877E-02	ZERO	0.3877E-02	ZERO
42 Cs2O	ZERO	ZERO	ZERO	0.7385E-04	ZERO	0.7385E-04	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1451E-03	0.1451E-03	ZERO	0.1070E-04	0.1070E-04	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	0.5517E+00	ZERO	0.5517E+00	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	420	672	673	201	657	658	460
STREAM NAME	Spent Late Wash Recycle	Spent Late Wash Soluble	Spent Late Wash Insolbl	Washd Precip Feed frm LWF	Prec Feed Solubles	Prec Feed Insolubles	Air/M2 Sparg Rcycl Pmp Tk
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	0.1954E-02	ZERO	0.1954E-02	ZERO
80 Fe ₂ O ₃	ZERO	ZERO	ZERO	0.4850E+00	ZERO	0.4850E+00	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1106E-03	ZERO	0.1106E-03	0.8153E-05	ZERO	0.8153E-05	ZERO
103 Group B	0.3543E-06	ZERO	0.3543E-06	0.2612E-07	ZERO	0.2612E-07	ZERO
25 H ₂	0.6387E-10	0.6387E-10	ZERO	0.5901E-10	0.5901E-10	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	0.3802E+00	ZERO	0.3802E+00	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	0.2182E-01	ZERO	0.2182E-01	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO	0.4242E-02	ZERO	0.4242E-02	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	0.4106E+02	ZERO	0.4106E+02	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	0.3853E-02	ZERO	0.3853E-02	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	ZERO	0.9794E-01	ZERO	0.9794E-01	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	0.2612E-01	0.2612E-01	ZERO	0.6946E-03	0.6946E-03	ZERO	0.1420E+04
74 N ₂ O	0.3987E-08	0.3987E-08	ZERO	0.3658E-08	0.3658E-08	ZERO	ZERO
182 NH ₃	0.3439E-07	0.3439E-07	ZERO	0.1564E-07	0.1564E-07	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	0.3891E+01	ZERO	0.3891E+01	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) -> STREAM NAME	420 Spent Late Wash Recycle	672 Spent Late Wash Soluble	673 Spent Late Wash Insolbl	201 Washd Precip Feed frm LWF	657 Prec Feed Solubles	658 Prec Feed Insolubles	460 Air/N2 Sparg Rcycl Pmp Tk
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2732E-09	0.2732E-09	ZERO	0.2014E-10	0.2014E-10	ZERO	ZERO
94 Na2B4O7	0.6992E+00	0.6992E+00	ZERO	0.5155E-01	0.5155E-01	ZERO	ZERO
109 Na2C2O4	0.1149E+01	0.1149E+01	ZERO	0.4779E-01	0.4779E-01	ZERO	ZERO
5 Na2CO3	0.5234E+01	0.5234E+01	0.3949E-06	0.3859E+00	0.3859E+00	ZERO	ZERO
143 Na2CO3 (C14)	0.1323E-09	0.1323E-09	ZERO	0.9753E-11	0.9753E-11	ZERO	ZERO
89 Na2CrO4	0.4049E-02	0.4049E-02	ZERO	0.2986E-03	0.2986E-03	ZERO	ZERO
115 Na2MoO4	0.6675E-03	0.6675E-03	ZERO	0.4922E-04	0.4922E-04	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.5809E-10	0.5809E-10	ZERO	0.4283E-11	0.4283E-11	ZERO	ZERO
73 Na2RhO4	0.1684E-04	0.1684E-04	ZERO	0.1242E-05	0.1242E-05	ZERO	ZERO
72 Na2RuO4	0.7239E-04	0.7239E-04	0.5998E-11	0.5338E-05	0.5338E-05	0.3749E-12	ZERO
6 Na2SO4	0.1501E+00	0.1501E+00	ZERO	0.1107E-01	0.1107E-01	ZERO	ZERO
88 Na2SiO3	0.3534E-02	0.3534E-02	ZERO	0.2606E-03	0.2606E-03	ZERO	ZERO
87 Na3PO4	0.1065E-01	0.1065E-01	ZERO	0.7854E-03	0.7854E-03	ZERO	ZERO
91 NaAg(OH)2	0.2041E-10	0.2041E-10	ZERO	0.1505E-11	0.1505E-11	ZERO	ZERO
75 NaAl(OH)4	0.2552E+00	0.2552E+00	ZERO	0.1882E-01	0.1882E-01	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.5851E-01	0.5851E-01	ZERO	0.6015E-02	0.6015E-02	0.4253E-09	ZERO
69 NaF	0.4688E-02	0.4688E-02	ZERO	0.3456E-03	0.3456E-03	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2375E-05	0.2375E-05	ZERO	0.1751E-06	0.1751E-06	ZERO	ZERO
3 NaNO2	0.3412E+01	0.3412E+01	ZERO	0.2516E+00	0.2516E+00	ZERO	ZERO
2 NaNO3	0.6898E-01	0.6898E-01	ZERO	0.5086E-02	0.5086E-02	ZERO	ZERO
4 NaOH	0.7639E+02	0.7639E+02	ZERO	0.2357E+00	0.2357E+00	ZERO	ZERO
149 NaTPE	0.1961E+01	0.1961E+01	ZERO	0.5074E+00	0.5074E+00	ZERO	ZERO
160 NaTcO4	0.6911E-04	0.6911E-04	ZERO	0.5096E-05	0.5096E-05	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	0.9230E+00	ZERO	0.9230E+00	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	0.2914E-01	ZERO	0.2914E-01	ZERO
82 O2	0.1166E-02	0.1166E-02	ZERO	0.7888E-04	0.7888E-04	ZERO	0.3269E+02
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	0.2853E-03	ZERO	0.2853E-03	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	0.5749E-02	ZERO	0.5749E-02	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.3857E-08	0.3857E-08	ZERO	0.2844E-09	0.2844E-09	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	0.3515E-03	ZERO	0.3515E-03	ZERO
76 PuO2	ZERO	ZERO	ZERO	0.9609E-04	ZERO	0.9609E-04	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	0.2430E-03	ZERO	0.2430E-03	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	0.1884E-03	ZERO	0.1884E-03	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	0.1073E-02	ZERO	0.1073E-02	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	420	672	673	201	657	658	460
STREAM NAME	Spent Late	Spent Late	Spent Late	Washd Precip	Prec Feed	Prec Feed	Air/N2 Sparg
	Wash Recycle	Wash Soluble	Wash Insolbl	Feed frm LWP	Solubles	Insolubles	Rcycl Pmp Tk
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	0.3431E-01	ZERO	0.3431E-01	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	0.6835E-04	ZERO	0.6835E-04	ZERO
127 Sr(OH)2	0.2913E-12	0.2913E-12	ZERO	0.2148E-13	0.2148E-13	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	0.1512E-02	ZERO	0.1512E-02	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	0.3862E-03	ZERO	0.3862E-03	ZERO
92 ThO2	ZERO	ZERO	ZERO	0.1401E-01	ZERO	0.1401E-01	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.1430E-10	0.1430E-10	ZERO	0.1081E-11	0.1081E-11	ZERO	ZERO
17 U3O8	ZERO	ZERO	ZERO	0.2034E-01	ZERO	0.2034E-01	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.9227E-06	0.9227E-06	ZERO	0.6803E-07	0.6803E-07	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.2776E-12	0.2776E-12	ZERO	0.2047E-13	0.2047E-13	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	0.5841E-03	ZERO	0.5841E-03	ZERO
47 Y2O3	ZERO	ZERO	ZERO	0.1394E-04	ZERO	0.1394E-04	ZERO
100 Zeolite	ZERO	ZERO	ZERO	0.2224E-02	ZERO	0.2224E-02	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	0.3440E-02	ZERO	0.3440E-02	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	0.3448E+00	ZERO	0.3448E+00	ZERO
1 water	0.1528E+04	0.1528E+04	ZERO	0.3636E+03	0.3636E+03	ZERO	0.2367E+01
TOTAL FLOW, LB/HR	0.1619E+04	0.1619E+04	0.1113E-03	0.4151E+03	0.3653E+03	0.4981E+02	0.1455E+04
TEMPERATURE, DEG C	0.3980E+02	0.3980E+02	0.3980E+02	0.2974E+02	0.2974E+02	0.2974E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	ZERO
ENTHALPY, PCU/HR	0.6204E+05	0.6204E+05	0.2732E-03	0.1087E+05	0.1086E+05	0.1931E+02	0.1413E+05
VAPOR FLOW, CFM							0.3497E+03
LIQUID FLOW, GPM	0.3115E+01	0.3115E+01	0.3024E-07	0.8180E+00	0.7281E+00	0.8988E-01	
DENSITY, LBS/FT3	0.6482E+02	0.6482E+02	0.4589E+03	0.6327E+02	0.6255E+02	0.6910E+02	0.6933E-01
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS -> STREAM NAME	461 Recyc Pmp Tk Htr HEPA vnt
COMPONENT FLOWS, LB/HR	
122 (C ₆ H ₅) ₂	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO
165 (C ₆ H ₅ NO)	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO
131 (C ₆ H ₅ OH salt)	0.1700E-09
130 (C ₆ H ₅ OH)	ZERO
121 (C ₆ H ₆)	0.1194E+00
155 (CH ₃) ₂ CHOH	0.1956E-08
154 (CH ₃ OH)	0.1944E-09
45 Ag	ZERO
116 Ag ₂ O	ZERO
134 AgNO ₃	ZERO
77 Al ₂ O ₃	ZERO
106 B ₂ O ₃	ZERO
9 Ba(OH) ₂	0.2547E-22
15 BaO	ZERO
24 BaSO ₄	ZERO
66 CO	ZERO
37 CO ₂	ZERO
142 CO ₂ (C14)	ZERO
63 Ca(COOH) ₂	ZERO
167 Ca(NO ₃) ₂	ZERO
120 Ca(OH) ₂	0.1197E-14
113 Ca ₃ (PO ₄) ₂	ZERO
20 CaC ₂ O ₄	ZERO
18 CaCO ₃	ZERO
64 CaCO ₃ (C14)	ZERO
78 CaF ₂	ZERO
41 CaO	ZERO
19 CaSO ₄	ZERO
29 Carbon	ZERO
99 Cement	ZERO
26 Co(COOH) ₂	ZERO
168 Co(NO ₃) ₂	ZERO
59 CoO	ZERO
98 Cr ₂ O ₃	ZERO
42 Cs ₂ O	ZERO
53 CsCOOH	ZERO
96 CsCl	ZERO
169 CsNO ₃	ZERO
8 CsOH	0.1630E-13
151 CsTPB	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) -->	461
STREAM NAME	Recyc Pmp Tk str HEPA vnt
54 Cu(COOH) ₂	ZERO
170 Cu(NO ₃) ₂	ZERO
55 CuO	ZERO
80 Fe ₂ O ₃	ZERO
101 FeO	ZERO
102 Group A	0.1242E-13
103 Group B	0.3978E-16
25 H ₂	0.2638E-05
158 H ₂ C ₂ O ₄	ZERO
93 H ₂ SO ₄	ZERO
90 H ₃ BO ₃	ZERO
34 HCOOH	ZERO
43 HCl	ZERO
85 HF	ZERO
49 HNO ₃	ZERO
36 Hg	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO
135 Hg(NO ₃) ₂	ZERO
144 Hg ₂ Cl ₂	ZERO
117 Hg ₂ I ₂	ZERO
146 HgCl ₂	ZERO
21 HgO	ZERO
97 I ₂	ZERO
39 K ₂ O	ZERO
51 KCOOH	ZERO
157 KMnO ₄	ZERO
161 KNO ₃	ZERO
10 KOH	ZERO
150 KTPB	ZERO
105 La ₂ O ₃	ZERO
108 Li ₂ O	ZERO
65 Mg(COOH) ₂	ZERO
171 Mg(NO ₃) ₂	ZERO
33 MgO	ZERO
60 Mn(COOH) ₂	ZERO
172 Mn(NO ₃) ₂	ZERO
180 Mn ₃ O ₄	ZERO
56 MnO	ZERO
14 MnO ₂	ZERO
145 MoO ₂	ZERO
81 N ₂	0.1420E+04
74 N ₂ O	0.9370E-05
182 NH ₃	0.3507E-06
114 NH ₃ OHNO ₃	ZERO
52 NH ₄ COOH	ZERO
173 NH ₄ NO ₃	ZERO
68 NH ₄ OH	ZERO
148 NH ₄ TPB	ZERO
35 NO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) ->	461
STREAM NAME	Recyc Pmp Tk Htr HEPA vnt
84 NO ₂	ZERO
70 Na(HgO(OH))	0.3067E-19
94 Na ₂ B ₄ O ₇	0.7851E-10
109 Na ₂ C ₂ O ₄	0.1290E-09
5 Na ₂ CO ₃	0.5877E-09
143 Na ₂ CO ₃ (Cl ₄)	0.1485E-19
89 Na ₂ CrO ₄	0.4547E-12
115 Na ₂ MoO ₄	0.7495E-13
32 Na ₂ O	ZERO
71 Na ₂ PuO ₂ (OH) ₄	0.6522E-20
73 Na ₂ RhO ₄	0.1891E-14
72 Na ₂ RuO ₄	0.8129E-14
6 Na ₂ SO ₄	0.1686E-10
88 Na ₂ SiO ₃	0.3968E-12
87 Na ₃ PO ₄	0.1196E-11
91 NaAg(OH) ₂	0.2291E-20
75 NaAl(OH) ₄	0.2866E-10
50 NaCOOH	ZERO
7 NaCl	0.6570E-11
69 NaF	0.5263E-12
11 NaHCO ₃	ZERO
12 NaI	0.2667E-15
3 NaNO ₂	0.3831E-09
2 NaNO ₃	0.7746E-11
4 NaOH	0.8577E-08
149 NaPF ₆	0.2202E-09
160 NaTcO ₄	ZERO
152 NaTi ₂ O ₅ H	ZERO
181 Nd ₂ O ₃	ZERO
61 Ni(COOH) ₂	ZERO
174 Ni(NO ₃) ₂	ZERO
43 NiO	ZERO
82 O ₂	0.3269E+02
175 Pb(NO ₃) ₂	ZERO
86 PbCO ₃	ZERO
67 PbO	ZERO
147 PbS	ZERO
28 PbSO ₄	ZERO
124 Pd	ZERO
112 Pd(NO ₃) ₂	0.4331E-18
110 P ₂ O	ZERO
76 PuO ₂	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO
58 Rh	ZERO
22 RhO ₂	ZERO
95 Ru	ZERO
79 RuO ₂	ZERO
83 RuO ₄	ZERO
38 SO ₂	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1B. Re-precipitation and Late Washing

STREAM NUMBERS (CONT'D) -->	461
STREAM NAME	Recyc Pmp Tk Htr HEPA vnt
141 SO ₃	ZERO
137 Semi Vol Cs ₂ O	ZERO
136 Semi Vol CsCl	ZERO
126 Semi Vol Group A	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO
138 Semi Vol NaCl	ZERO
139 Semi Vol NaF	ZERO
125 Semi Vol NaI	ZERO
23 Semi Vol RuO ₂	ZERO
111 SiO ₂	ZERO
48 Sr(COOH) ₂	ZERO
176 Sr(NO ₃) ₂	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO
127 Sr(OH) ₂	0.3271E-22
30 SrCO ₃	ZERO
46 SrO	ZERO
159 TcO ₂	ZERO
92 ThO ₂	ZERO
107 TiO ₂	ZERO
119 Tritium	0.3941E-12
17 U ₃ O ₈	ZERO
62 UO ₂ (COOH) ₂	ZERO
177 UO ₂ (NO ₃) ₂	ZERO
16 UO ₂ (OH) ₂	0.1036E-15
27 Y(COOH) ₃	ZERO
178 Y(NO ₃) ₃	ZERO
128 Y(OH) ₃	0.3118E-22
31 Y ₂ (CO ₃) ₃	ZERO
47 Y ₂ O ₃	ZERO
100 Zeolite	ZERO
44 Zn(COOH) ₂	ZERO
179 Zn(NO ₃) ₂	ZERO
57 ZnO	ZERO
104 ZrO ₂	ZERO
13 hydrate H ₂ O	ZERO
1 water	0.4062E+02
TOTAL FLOW, LB/HR	0.1493E+04
TEMPERATURE, DEG C	ZERO
PRESSURE, ATM	0.9656E+00
PRESSURE, PSIG	-0.5055E+00
PRESSURE, MM HG	0.7339E+03
ENTHALPY, PCU/HR	0.2452E+05
VAPOR FLOW, CFM	0.3342E+03
LIQUID FLOW, GPM	
DENSITY, LBS/FT ³	0.7446E-01
PHASE	VAPOR

SECTION 1C. EXTENDED SLUDGE PROCESSING (BATCH 1)

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

DESCRIPTION	PAGE
1. STREAM NUMBERS 301, 302, 303, 304, 305, 306, 307	2
2. STREAM NUMBERS 308, 309, 310, 311, 312, 313, 314	6
3. STREAM NUMBERS 315, 316, 317, 318, 319, 320, 321	10
4. STREAM NUMBERS 322, 323, 324, 325, 326, 327, 1	14
5. STREAM NUMBERS 678, 679	18

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS -> STREAM NAME	301 Insol Sld Pd 1st Tk42 Wash	302 Suprnte Feed 1st Tk42 Wash	303 Tk 42 Contnt prior to Wash	304 Insol Sld Pd 1st Tk51 Wash	305 Suprnte Feed 1st Tk51 Wash	306 Tk 51 Contnt prior to Wash	307 Tk42 Suprnte Feed to Tk51
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4CH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.4022E-02	ZERO	0.4022E-02	0.4907E-02	ZERO	0.4907E-02	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.4224E+01	ZERO	0.4224E+01	0.5590E+01	ZERO	0.5590E+01	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	0.4162E-03	0.4162E-03	ZERO	0.1574E-02	0.1574E-02	0.6472E-03
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.1077E-01	ZERO	0.1077E-01	0.7764E-02	ZERO	0.7764E-02	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	0.1443E-02	0.1443E-02	ZERO	0.1188E-03	0.1188E-03	0.2244E-02
113 Ca3(PO4)2	0.1358E+01	ZERO	0.1358E+01	0.1046E+01	ZERO	0.1046E+01	ZERO
20 CaC2O4	0.1040E-01	ZERO	0.1040E-01	ZERO	ZERO	ZERO	ZERO
18 CaCO3	0.2225E+00	ZERO	0.2225E+00	0.1366E+01	ZERO	0.1366E+01	ZERO
64 CaCO3 (C14)	0.5996E-07	ZERO	0.5996E-07	0.7632E-07	ZERO	0.7632E-07	ZERO
78 CaF2	0.4704E-02	ZERO	0.4704E-02	0.8931E-02	ZERO	0.8931E-02	ZERO
41 CaO	0.1139E-02	ZERO	0.1139E-02	0.1990E-02	ZERO	0.1990E-02	ZERO
19 CaSO4	0.3150E-01	ZERO	0.3150E-01	0.1764E-01	ZERO	0.1764E-01	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	0.5463E-01	ZERO	0.5463E-01	0.1018E+00	ZERO	0.1018E+00	ZERO
42 Cs2O	0.1068E-03	ZERO	0.1068E-03	0.6879E-04	ZERO	0.6879E-04	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	0.5419E-03	0.5419E-03	ZERO	0.6085E-04	0.6085E-04	0.8426E-03
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) ->	301	302	303	304	305	306	307
STREAM NAME	Insol Slid Pd 1st Tk42 Wash	Suprnte Feed 1st Tk42 Wash	Tk 42 Contnt prior to Wash	Insol Slid Pd 1st Tk51 Wash	Suprnte Feed 1st Tk51 Wash	Tk 51 Contnt prior to Wash	Tk42 Suprnte Feed to Tk51
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.7188E-02	ZERO	0.7188E-02	0.1715E-01	ZERO	0.1715E-01	ZERO
80 Fe2O3	0.8732E+01	0.7779E-03	0.8733E+01	0.1451E+02	0.6838E-03	0.1451E+02	0.1210E-02
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1958E-01	0.3541E-07	0.1993E-01	0.1957E-02	0.1339E-02	0.3296E-02	0.5506E-03
103 Group B	0.1074E+00	0.8552E-06	0.1074E+00	0.8954E-04	0.3234E-05	0.9277E-04	0.1330E-05
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.2928E+00	ZERO	0.2928E+00	0.8236E-02	ZERO	0.8236E-02	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.1043E+00	ZERO	0.1043E+00	0.3995E-02	ZERO	0.3995E-02	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	0.8198E-02	0.8198E-02	ZERO	0.8409E-01	0.8409E-01	0.1275E-01
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.5856E+00	ZERO	0.5856E+00	0.8411E+00	ZERO	0.8411E+00	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.1605E+01	ZERO	0.1605E+01	0.1732E+01	ZERO	0.1732E+01	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	0.8530E-03	0.8530E-03	ZERO	0.3226E-02	0.3226E-02	0.1326E-02
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -->	301	302	303	304	305	306	307
STREAM NAME	Insol Slid Pd 1st Tk42 Wash	Suprnte Feed 1st Tk42 Wash	Tk 42 Contnt prior to Wash	Insol Slid Pd 1st Tk51 Wash	Suprnte Feed 1st Tk51 Wash	Tk 51 Contnt prior to Wash	Tk42 Suprnte Feed to Tk51
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	0.4999E-03	0.4999E-03	ZERO	0.1047E-02	0.1047E-02	0.7773E-03
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	ZERO	0.1175E+00	0.1175E+00	ZERO	0.1906E+00	0.1906E+00	0.1827E+00
5 Na2CO3	ZERO	0.1343E+01	0.1343E+01	ZERO	0.4131E+01	0.4131E+01	0.2087E+01
143 Na2CO3 (C14)	ZERO	0.4315E-09	0.4315E-09	ZERO	0.1631E-08	0.1631E-08	0.6709E-09
89 Na2CrO4	ZERO	0.3156E-01	0.3156E-01	ZERO	0.4902E-01	0.4902E-01	0.4907E-01
115 Na2MoO4	ZERO	0.2136E-02	0.2136E-02	ZERO	0.8077E-02	0.8077E-02	0.3321E-02
32 Na2O	0.9431E+00	ZERO	0.9431E+00	0.1797E+01	ZERO	0.1797E+01	ZERO
71 Na2PuO2(OH)4	ZERO	0.1876E-06	0.1876E-06	ZERO	0.4089E-07	0.4089E-07	0.2917E-07
73 Na2RhO4	ZERO	0.5419E-04	0.5419E-04	ZERO	0.2049E-03	0.2049E-03	0.8426E-04
72 Na2RuO4	ZERO	0.2316E-03	0.2316E-03	ZERO	0.8760E-03	0.8760E-03	0.3602E-03
6 Na2SO4	ZERO	0.4152E+00	0.4152E+00	ZERO	0.7947E+00	0.7947E+00	0.6455E+00
88 Na2SiO3	ZERO	0.1132E-01	0.1132E-01	ZERO	0.4279E-01	0.4279E-01	0.1759E-01
87 Na3PO4	ZERO	0.1278E-01	0.1278E-01	ZERO	ZERO	ZERO	0.1987E-01
91 NaAg(OH)2	ZERO	0.1885E-04	0.1885E-04	ZERO	0.5958E-03	0.5958E-03	0.2930E-04
75 NaAl(OH)4	ZERO	0.1724E+00	0.1724E+00	ZERO	0.1566E+01	0.1566E+01	0.2681E+00
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	0.1139E-01	0.1139E-01	ZERO	0.1441E+00	0.1441E+00	0.1771E-01
69 NaF	ZERO	0.1636E-01	0.1636E-01	ZERO	0.1553E+00	0.1553E+00	0.2544E-01
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.7592E-05	0.7592E-05	ZERO	0.2872E-04	0.2872E-04	0.1180E-04
3 N2NO2	ZERO	0.3697E+01	0.3697E+01	ZERO	0.1138E+02	0.1138E+02	0.5749E+01
2 NaNO3	ZERO	0.1822E+01	0.1822E+01	ZERO	0.5968E+01	0.5968E+01	0.2833E+01
4 NaOH	ZERO	0.1864E+00	0.1864E+00	ZERO	0.5164E+01	0.5164E+01	0.2899E+00
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	0.2198E-03	0.2198E-03	ZERO	0.8315E-03	0.8315E-03	0.3418E-03
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1247E+00	ZERO	0.1247E+00	0.1561E+00	ZERO	0.1561E+00	ZERO
82 O2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	0.3109E-03	0.3109E-03	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.2614E-01	ZERO	0.2614E-01	0.6686E-01	ZERO	0.6686E-01	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	0.1235E-07	0.1235E-07	ZERO	0.4669E-07	0.4669E-07	0.1920E-07
110 PdO	0.4307E-03	ZERO	0.4307E-03	0.2102E-03	ZERO	0.2102E-03	ZERO
76 PuO2	0.3266E-02	ZERO	0.3266E-02	0.5180E-02	ZERO	0.5180E-02	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	0.1586E-02	ZERO	0.1586E-02	0.4791E-03	ZERO	0.4791E-03	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.6447E-02	ZERO	0.6447E-02	0.3007E-02	ZERO	0.3007E-02	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. MSP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -> STREAM NAME	301 Insol Slid Fd 1st Tk42 Wash	302 Suprnte Feed 1st Tk42 Wash	303 Tk 42 Contnt prior to Wash	304 Insol Slid Fd 1st Tk51 Wash	305 Suprnte Feed 1st Tk51 Wash	306 Tk 51 Contnt prior to Wash	307 Tk42 Suprnte Feed to Tk51
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.7410E+00	ZERO	0.7410E+00	0.4257E+00	ZERO	0.4257E+00	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	0.5066E-07	0.5066E-07	ZERO	0.1915E-06	0.1915E-06	0.7877E-07
30 SrCO3	0.8736E-02	ZERO	0.8736E-02	0.1077E-01	ZERO	0.1077E-01	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.4956E-03	ZERO	0.4956E-03	0.1814E-02	ZERO	0.1814E-02	ZERO
92 ThO2	0.1049E+00	ZERO	0.1049E+00	0.1559E-01	ZERO	0.1559E-01	ZERO
107 TiO2	0.7603E-02	ZERO	0.7603E-02	0.3048E-01	ZERO	0.3048E-01	ZERO
119 Tritium	ZERO	0.1434E-08	0.1434E-08	ZERO	0.5422E-08	0.5422E-08	0.2230E-08
17 U3O8	0.9030E+00	ZERO	0.9030E+00	0.1404E+01	ZERO	0.1404E+01	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	0.4740E-04	0.4740E-04	ZERO	0.2882E-03	0.2882E-03	0.7370E-04
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	0.5105E-07	0.5105E-07	ZERO	0.1931E-06	0.1931E-06	0.7937E-07
31 Y2(CO3)3	0.3819E-02	ZERO	0.3819E-02	0.2712E-02	ZERO	0.2712E-02	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3048E-01	ZERO	0.3048E-01	0.7017E-01	ZERO	0.7017E-01	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.2508E+01	0.2633E-03	0.2508E+01	0.3915E+01	0.2315E-03	0.3915E+01	0.4095E-03
1 water	ZERO	0.9474E+02	0.9474E+02	ZERO	0.8710E+02	0.8710E+02	0.1473E+03
TOTAL FLOW, LB/HR	0.2279E+02	0.1026E+03	0.1254E+03	0.3316E+02	0.1168E+03	0.1500E+03	0.1595E+03
TEMPERATURE, DEG C	0.5000E+02	0.3532E+02	0.3581E+02	0.5000E+02	0.3621E+02	0.3689E+02	0.3532E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG							
ENTHALPY, PCU/HR	0.1637E+03	0.3422E+04	0.3585E+04	0.2414E+03	0.3433E+04	0.3675E+04	0.5320E+04
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.1447E-01	0.1949E+00	0.2094E+00	0.2141E-01	0.1953E+00	0.2168E+00	0.3031E+00
DENSITY, LBS/FT3	0.1963E+03	0.6562E+02	0.7466E+02	0.1931E+03	0.7454E+02	0.8625E+02	0.6562E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS -> STREAM NAME	308 Unwshd Tk 51 Suprt to 43	309 Wash/Aux H2O dur Tk42 Wsh	310 Tot 50% NaOH dur Tk42 Wsh	311 40% NaNO2 Ad dur Tk42 Wsh	312 Tank 42 Wshd Sludge Solid	313 Tank 42 Wshd Supernate	314 Tank 42 Wshd Sludge Slurry
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	0.4022E-02	0.6211E-08	0.4022E-02
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	ZERO	ZERO	0.4224E+01	0.6523E-05	0.4224E+01
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.1391E-02	ZERO	ZERO	ZERO	ZERO	0.1170E-03	0.1170E-03
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	ZERO	ZERO	ZERO	0.1077E-01	0.1663E-07	0.1077E-01
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.1050E-03	ZERO	ZERO	ZERO	ZERO	0.4057E-03	0.4057E-03
113 Ca3(PO4)2	ZERO	ZERO	ZERO	ZERO	0.1358E+01	0.2097E-05	0.1358E+01
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	0.1040E-01	0.1606E-07	0.1040E-01
18 CaCO3	ZERO	ZERO	ZERO	ZERO	0.2225E+00	0.3435E-06	0.2225E+00
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	0.5996E-07	0.9259E-13	0.5996E-07
78 CaF2	ZERO	ZERO	ZERO	ZERO	0.4704E-02	0.7263E-08	0.4704E-02
41 CaO	ZERO	ZERO	ZERO	ZERO	0.1139E-02	0.1759E-08	0.1139E-02
19 CaS74	ZERO	ZERO	ZERO	ZERO	0.3150E-01	0.4063E-07	0.3150E-01
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	0.5463E-01	0.8435E-07	0.5463E-01
42 Cs2O	ZERO	ZERO	ZERO	ZERO	0.1068E-03	0.1649E-09	0.1068E-03
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.5379E-04	ZERO	ZERO	ZERO	ZERO	0.1523E-03	0.1523E-03
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) ->	308	309	310	311	312	313	314
STREAM NAME	Unwshd Tk 51 Suprnt to 43	Wash/Aux H2O dur Tk42 Wsh	Tot 50% NaOH dur Tk42 Wsh	40% NaNO2 Ad dur Tk42 Wsh	Tank 42 Wshd Sludge Solid	Tank 42 Wshd Supernate	Tank 42 Wshd Sludge Slurry
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	ZERO	0.7188E-02	0.1110E-07	0.7188E-02
80 Fe2O3	0.6045E-03	ZERO	ZERO	ZERO	0.8732E+01	0.2321E-03	0.8732E+01
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1184E-02	ZERO	ZERO	ZERO	0.1958E-01	0.9957E-04	0.1968E-01
103 Group B	0.2859E-05	ZERO	ZERO	ZERO	0.1074E+00	0.4062E-06	0.1074E+00
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	0.2928E+00	0.4521E-06	0.2928E+00
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	0.1043E+00	0.1611E-06	0.1043E+00
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.7433E-01	ZERO	ZERO	ZERO	ZERO	0.2304E-02	0.2304E-02
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	0.5856E+00	0.9042E-06	0.5856E+00
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO	ZERO	0.1605E+01	0.2478E-05	0.1605E+01
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.2851E-02	ZERO	ZERO	ZERO	ZERO	0.2398E-03	0.2398E-03
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) ->	308	309	310	311	312	313	314
STREAM NAME	Unwshd Tk 51 Suprnt to 43	Wash/Aux H2O dur Tk42 Wsh	Tot 50% NaOH dur Tk42 Wsh	40% NaNO ₂ Ad dur Tk42 Wsh	Tank 42 Wshd Sludge Solid	Tank 42 Wshd Supernate	Tank 42 Wshd Sludge Slurry
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.9259E-03	ZERO	ZERO	ZERO	ZERO	0.1405E-03	0.1405E-03
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	0.1685E+00	ZERO	ZERO	ZERO	ZERO	0.3302E-01	0.3302E-01
5 Na ₂ CO ₃	0.3652E+01	ZERO	ZERO	ZERO	ZERO	0.3773E+00	0.3773E+00
143 Na ₂ CO ₃ (C14)	0.1442E-08	ZERO	ZERO	ZERO	ZERO	0.1213E-09	0.1213E-09
89 Na ₂ CrO ₄	0.4334E-01	ZERO	ZERO	ZERO	ZERO	0.8871E-02	0.8871E-02
115 Na ₂ MoO ₄	0.7139E-02	ZERO	ZERO	ZERO	ZERO	0.6003E-03	0.6003E-03
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	0.9431E+00	0.1456E-05	0.9431E+00
71 Na ₂ PuO ₂ (OH) ₄	0.3614E-07	ZERO	ZERO	ZERO	ZERO	0.5272E-07	0.5272E-07
73 Na ₂ RhO ₄	0.1811E-03	ZERO	ZERO	ZERO	ZERO	0.1523E-04	0.1523E-04
72 Na ₂ RuO ₄	0.7743E-03	ZERO	ZERO	ZERO	ZERO	0.6511E-04	0.6511E-04
6 Na ₂ SO ₄	0.7024E+00	ZERO	ZERO	ZERO	ZERO	0.1167E+00	0.1167E+00
88 Na ₂ SiO ₃	0.3782E-01	ZERO	ZERO	ZERO	ZERO	0.3181E-02	0.3181E-02
87 Na ₃ PO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	0.3592E-02	0.3592E-02
91 NaAg(OH) ₂	0.5266E-03	ZERO	ZERO	ZERO	ZERO	0.5297E-05	0.5297E-05
75 NaAl(OH) ₄	0.1385E+01	ZERO	ZERO	ZERO	ZERO	0.4847E-01	0.4847E-01
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1274E+00	ZERO	ZERO	ZERO	ZERO	0.3201E-02	0.3201E-02
69 NaF	0.1373E+00	ZERO	ZERO	ZERO	ZERO	0.4599E-02	0.4599E-02
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2539E-04	ZERO	ZERO	ZERO	ZERO	0.2134E-05	0.2134E-05
3 NaNO ₂	0.1006E+02	ZERO	ZERO	0.2568E+01	ZERO	0.1761E+01	0.1761E+01
2 NaNO ₃	0.5276E+01	ZERO	ZERO	ZERO	ZERO	0.5121E+00	0.5121E+00
4 NaOH	0.4564E+01	0.1197E+00	ZERO	ZERO	ZERO	0.9859E-01	0.9859E-01
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	0.7350E-03	ZERO	ZERO	ZERO	ZERO	0.6179E-04	0.6179E-04
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	0.1247E+00	0.1925E-06	0.1247E+00
82 O ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
175 Pb(NO ₃) ₂	0.2748E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	ZERO	0.2614E-01	0.4036E-07	0.2614E-01
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	0.4127E-07	ZERO	ZERO	ZERO	ZERO	0.3471E-08	0.3471E-08
110 PdO	ZERO	ZERO	ZERO	ZERO	0.4307E-03	0.6651E-09	0.4307E-03
76 PuO ₂	ZERO	ZERO	ZERO	ZERO	0.3266E-02	0.5044E-08	0.3266E-02
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	0.1586E-02	0.2449E-08	0.1586E-02
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	0.6447E-02	0.9955E-08	0.6447E-02
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. WSP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -> STREAM NAME	308 Unwshd Tk 51 Suprant to 43	309 Wash/Aux H2O dur Tk42 Wsh	310 Tot 50% NaOH dur Tk42 Wsh	311 40% NaNO2 Ad dur Tk42 Wsh	312 Tank 42 Wshd Sludge Solid	313 Tank 42 Wshd Supernate	314 Tank 42 Wshd Sludge Slurry
141 S03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	0.7410E+00	0.1144E-05	0.7410E+00
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.1693E-06	ZERO	ZERO	ZERO	ZERO	0.1424E-07	0.1424E-07
30 SrCO3	ZERO	ZERO	ZERO	ZERO	0.8736E-02	0.1349E-07	0.8736E-02
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	0.4956E-03	0.7652E-09	0.4956E-03
92 ThO2	ZERO	ZERO	ZERO	ZERO	0.1049E+00	0.1620E-06	0.1049E+00
107 TiO2	ZERO	ZERO	ZERO	ZERO	0.7603E-02	0.1174E-07	0.7603E-02
119 Tritium	0.4793E-08	ZERO	ZERO	ZERO	ZERO	0.4032E-09	0.4032E-09
17 U3O8	ZERO	ZERO	ZERO	ZERO	0.9030E+00	0.1394E-05	0.9030E+00
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.2548E-03	ZERO	ZERO	ZERO	ZERO	0.1332E-04	0.1332E-04
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.1707E-06	ZERO	ZERO	ZERO	ZERO	0.1435E-07	0.1435E-07
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	0.3819E-02	0.5896E-08	0.3819E-02
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	0.3048E-01	0.4706E-07	0.3048E-01
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.2046E-03	ZERO	ZERO	ZERO	0.2508E+01	0.7789E-04	0.2508E+01
1 water	0.7699E+02	0.2990E+03	ZERO	0.3851E+01	ZERO	0.1431E+03	0.1431E+03
TOTAL FLOW, LB/HR	0.1032E+03	0.2991E+03	ZERO	0.6419E+01	0.2279E+02	0.1461E+03	0.1689E+03
TEMPERATURE, DEG C	0.3621E+02	0.4800E+02	0.4800E+02	0.4800E+02	0.4800E+02	0.4800E+02	0.4800E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG							
ENTHALPY, PCU/HR	0.3035E+04	0.1437E+05	ZERO	0.2137E+03	0.1569E+03	0.6913E+04	0.7070E+04
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.1727E+00	0.5972E+00		0.9498E-02	0.1447E-01	0.2880E+00	0.3025E+00
DENSITY, LBS/FT3	0.7454E+02	0.6245E+02	ZERO	0.8426E+02	0.1963E+03	0.6325E+02	0.6962E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS -> STREAM NAME	315 Tot Spnt Wash dur Tk42 Wash	316 Makeup H ₂ O Add to Tk 51	317 Tot 50% NaOH dur Tk51 Wash	318 40% NaNO ₂ dur Tk51 Wash	319 Tank 51 Washd Sludge Solid	320 Tank 51 Washd Supernate	321 Tank 51 Washd Sludge Slurry
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	0.9879E-08	ZERO	ZERO	ZERO	0.4907E-02	0.1254E-07	0.4907E-02
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.1037E-04	ZERO	ZERO	ZERO	0.5590E+01	0.1393E-04	0.5590E+01
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	0.2992E-03	ZERO	ZERO	ZERO	ZERO	0.4034E-03	0.4034E-03
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	0.2645E-07	ZERO	ZERO	ZERO	0.7764E-02	0.2424E-07	0.7764E-02
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	0.1038E-02	ZERO	ZERO	ZERO	ZERO	0.6753E-03	0.6753E-03
113 Ca ₃ (PO ₄) ₂	0.3335E-05	ZERO	ZERO	ZERO	0.1046E+01	0.3174E-05	0.1046E+01
20 CaC ₂ O ₄	0.2554E-07	ZERO	ZERO	ZERO	ZERO	0.1038E-07	0.1038E-07
18 CaCO ₃	0.5464E-06	ZERO	ZERO	ZERO	0.1366E+01	0.2596E-05	0.1366E+01
64 CaCO ₃ (C14)	0.1473E-12	ZERO	ZERO	ZERO	0.7632E-07	0.1925E-12	0.7632E-07
78 CaF ₂	0.1155E-07	ZERO	ZERO	ZERO	0.8931E-02	0.2022E-07	0.8931E-02
41 CaO	0.2798E-08	ZERO	ZERO	ZERO	0.1990E-02	0.4596E-08	0.1990E-02
19 CaSO ₄	0.7735E-07	ZERO	ZERO	ZERO	0.1764E-01	0.6210E-07	0.1764E-01
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	0.1342E-06	ZERO	ZERO	ZERO	0.1018E+00	0.2315E-06	0.1018E+00
42 Cs ₂ O	0.2623E-09	ZERO	ZERO	ZERO	0.6879E-04	0.2262E-09	0.6879E-04
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.3896E-03	ZERO	ZERO	ZERO	ZERO	0.2557E-03	0.2557E-03
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) ->	315	316	317	318	319	320	321
STREAM NAME	Tot Spnt Wash dur Tk42 Wash	Makeup H2O Add to Tk 51	Tot 50% NaOH dur Tk51 Wash	40% NaNO2 dur Tk51 Wash	Tank 51 Wash Sludge Solid	Tank 51 Wash Supernate	Tank 51 Wash Sludge Slurry
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.1765E-07	ZERO	ZERO	ZERO	0.1715E-01	0.3699E-07	0.1715E-01
80 Fe2O3	0.5807E-03	ZERO	ZERO	ZERO	0.1451E+02	0.4819E-03	0.1451E+02
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.2546E-03	ZERO	ZERO	ZERO	0.1957E-02	0.3433E-03	0.2300E-02
103 Group B	0.8786E-06	ZERO	ZERO	ZERO	0.8954E-04	0.9364E-06	0.9048E-04
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.7191E-06	ZERO	ZERO	ZERO	0.8236E-02	0.3066E-06	0.8236E-02
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.2562E-06	ZERO	ZERO	ZERO	0.3995E-02	0.1111E-06	0.3995E-02
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.5894E-02	ZERO	ZERO	ZERO	ZERO	0.1514E-01	0.1514E-01
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.1438E-05	ZERO	ZERO	ZERO	0.8411E+00	0.2047E-05	0.8411E+00
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.3941E-05	ZERO	ZERO	ZERO	0.1732E+01	0.4612E-05	0.1732E+01
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.6133E-03	ZERO	ZERO	ZERO	ZERO	0.8269E-03	0.8269E-03
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) ->	315	316	317	318	319	320	321
STREAM NAME	Tot Spnt Wsh dur Tk42 Wsh	Makeup H ₂ O Add to Tk 51	Tot 50% NaOH dur Tk51 Wsh	40% NaNO ₂ dur Tk51 Wsh	Tank 51 Wshd Sludge Solid	Tank 51 Wshd Supernate	Tank 51 Wshd Sludge Slurry
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.3594E-03	ZERO	ZERO	ZERO	ZERO	0.3703E-03	0.3703E-03
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	0.8447E-01	ZERO	ZERO	ZERO	ZERO	0.7950E-01	0.7950E-01
5 Na ₂ CO ₃	0.9652E+00	ZERO	ZERO	ZERO	ZERO	0.1173E+01	0.1173E+01
143 Na ₂ CO ₃ (C14)	0.3102E-09	ZERO	ZERO	ZERO	ZERO	0.4182E-09	0.4182E-09
89 Na ₂ CrO ₄	0.2269E-01	ZERO	ZERO	ZERO	ZERO	0.2106E-01	0.2106E-01
115 Na ₂ MoO ₄	0.1536E-02	ZERO	ZERO	ZERO	ZERO	0.2070E-02	0.2070E-02
32 Na ₂ O	0.2316E-05	ZERO	ZERO	ZERO	0.1797E+01	0.4065E-05	0.1797E+01
71 Na ₂ PuO ₂ (OH) ₄	0.1349E-06	ZERO	ZERO	ZERO	ZERO	0.9121E-07	0.9121E-07
73 Na ₂ RhO ₄	0.3896E-04	ZERO	ZERO	ZERO	ZERO	0.5252E-04	0.5252E-04
72 Na ₂ RuO ₄	0.1665E-03	ZERO	ZERO	ZERO	ZERO	0.2245E-03	0.2245E-03
6 Na ₂ SO ₄	0.2985E+00	ZERO	ZERO	ZERO	ZERO	0.2973E+00	0.2973E+00
88 Na ₂ SiO ₃	0.8135E-02	ZERO	ZERO	ZERO	ZERO	0.1097E-01	0.1097E-01
87 Na ₃ PO ₄	0.9186E-02	ZERO	ZERO	ZERO	ZERO	0.5836E-02	0.5836E-02
91 NaAg(OH) ₂	0.1355E-04	ZERO	ZERO	ZERO	ZERO	0.8937E-04	0.8937E-04
75 NaAl(OH) ₄	0.1240E+00	ZERO	ZERO	ZERO	ZERO	0.2911E+00	0.2911E+00
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.8187E-02	ZERO	ZERO	ZERO	ZERO	0.2473E-01	0.2473E-01
69 NaF	0.1176E-01	ZERO	ZERO	ZERO	ZERO	0.2852E-01	0.2852E-01
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.5458E-05	ZERO	ZERO	ZERO	ZERO	0.7361E-05	0.7361E-05
3 NaNO ₂	0.4504E+01	ZERO	ZERO	0.7537E+01	ZERO	0.5644E+01	0.5644E+01
2 NaNO ₃	0.1310E+01	ZERO	ZERO	ZERO	ZERO	0.1641E+01	0.1641E+01
4 NaOH	0.2075E+00	0.1674E-01	0.6222E+01	ZERO	ZERO	0.1662E+01	0.1662E+01
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	0.1581E-03	ZERO	ZERO	ZERO	ZERO	0.2131E-03	0.2131E-03
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.3062E-06	ZERO	ZERO	ZERO	0.1561E+00	0.3958E-06	0.1561E+00
82 O ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.4215E-04	0.4215E-04
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.6420E-07	ZERO	ZERO	ZERO	0.6686E-01	0.1423E-06	0.6686E-01
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	0.8878E-08	ZERO	ZERO	ZERO	ZERO	0.1197E-07	0.1197E-07
110 PdO	0.1058E-08	ZERO	ZERO	ZERO	0.2102E-03	0.7953E-09	0.2102E-03
76 PuO ₂	0.8022E-08	ZERO	ZERO	ZERO	0.5180E-02	0.1226E-07	0.5180E-02
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	0.3895E-08	ZERO	ZERO	ZERO	0.4791E-03	0.2416E-08	0.4791E-03
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	0.1583E-07	ZERO	ZERO	ZERO	0.3007E-02	0.1166E-07	0.3007E-02
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -> STREAM NAME	315 Tot Spnt Wash dur Tk42 Wash	316 Makeup H2O Add to Tk 51	317 Tot 50% NaOH dur Tk51 Wash	318 40% NaNO2 dur Tk51 Wash	319 Tank 51 Washd Sludge Solid	320 Tank 51 Washd Supernate	321 Tank 51 Washd Sludge Slurry
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.1820E-05	ZERO	ZERO	ZERO	0.4257E+00	0.1480E-05	0.4257E+00
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.3642E-07	ZERO	ZERO	ZERO	ZERO	0.4910E-07	0.4910E-07
30 SrCO3	0.2145E-07	ZERO	ZERO	ZERO	0.1077E-01	0.2745E-07	0.1077E-01
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.1217E-08	ZERO	ZERO	ZERO	0.1814E-02	0.3648E-08	0.1814E-02
92 ThO2	0.2576E-06	ZERO	ZERO	ZERO	0.1559E-01	0.1318E-06	0.1559E-01
107 TiO2	0.1867E-07	ZERO	ZERO	ZERO	0.3048E-01	0.6057E-07	0.3048E-01
119 Tritium	0.1031E-08	ZERO	ZERO	ZERO	ZERO	0.1390E-08	0.1390E-08
17 U3O8	0.2218E-05	ZERO	ZERO	ZERO	0.1404E+01	0.3342E-05	0.1404E+01
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.3407E-04	ZERO	ZERO	ZERO	ZERO	0.6072E-04	0.6072E-04
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.3670E-07	ZERO	ZERO	ZERO	ZERO	0.4949E-07	0.4949E-07
31 Y2(CO3)3	0.9378E-08	ZERO	ZERO	ZERO	0.2712E-02	0.8525E-08	0.2712E-02
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.7485E-07	ZERO	ZERO	ZERO	0.7017E-01	0.1524E-06	0.7017E-01
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1955E-03	ZERO	ZERO	ZERO	0.3915E+01	0.1610E-03	0.3915E+01
1 water	0.2545E+03	0.4182E+02	0.6222E+01	0.1131E+02	ZERO	0.1440E+03	0.1440E+03
TOTAL FLOW, LB/HR	0.2620E+03	0.4184E+02	0.1244E+02	0.1884E+02	0.3316E+02	0.1549E+03	0.1881E+03
TEMPERATURE, DEG C	0.4800E+02	0.4800E+02	0.4800E+02	0.4800E+02	0.4800E+02	0.4800E+02	0.4800E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
ENTHALPY, PCU/HR	0.1232E+05	0.2010E+04	0.3965E+03	0.6274E+03	0.2315E+03	0.7054E+04	0.7285E+04
VAPOR FLOW, CFM	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
LIQUID FLOW, GPM	0.5137E+00	0.8354E-01	0.1627E-01	0.2788E-01	0.2141E-01	0.2955E+00	0.3169E+00
DENSITY, LBS/FT3	0.6360E+02	0.6245E+02	0.9533E+02	0.8426E+02	0.1931E+03	0.6538E+02	0.7401E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS -> STREAM NAME	322 Tot Spnt frm Tank 51	323 Wsh Evap Rcyc	324 85% Saltcake Wshd Batch 1	325 Dilution H2O Batch 1 Sltdg	326 Batch 1 Sltdg Diltn	327 Batch 1 Sltdg Diltn	1 Sludge Feed to DWPF
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.2678E-07	ZERO	0.2678E-07	0.8929E-02	ZERO	0.8929E-02	0.8929E-02
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.2998E-04	ZERO	0.2998E-04	0.9814E+01	ZERO	0.9814E+01	0.9814E+01
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.2117E-02	ZERO	0.3508E-02	0.5204E-03	ZERO	0.5204E-03	0.5204E-03
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.4879E-07	ZERO	0.4879E-07	0.1853E-01	ZERO	0.1853E-01	0.1853E-01
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.2726E-02	ZERO	0.2831E-02	0.1081E-02	ZERO	0.1081E-02	0.1081E-02
113 Ca3(PO4)2	0.6439E-05	ZERO	0.6439E-05	0.2404E+01	ZERO	0.2404E+01	0.2404E+01
20 CaC2O4	0.1516E-07	ZERO	0.1516E-07	0.1040E-01	ZERO	0.1040E-01	0.1040E-01
18 CaCO3	0.6144E-05	ZERO	0.6144E-05	0.1588E+01	ZERO	0.1588E+01	0.1588E+01
64 CaCO3 (C14)	0.4127E-12	ZERO	0.4127E-12	0.1363E-06	ZERO	0.1363E-06	0.1363E-06
78 CaF2	0.4492E-07	ZERO	0.4492E-07	0.1363E-01	ZERO	0.1363E-01	0.1363E-01
41 CaO	0.1014E-07	ZERO	0.1014E-07	0.3129E-02	ZERO	0.3129E-02	0.3129E-02
19 CaSO4	0.1211E-06	ZERO	0.1211E-06	0.4913E-01	ZERO	0.4913E-01	0.4913E-01
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	0.5134E-06	ZERO	0.5134E-06	0.1564E+00	ZERO	0.1564E+00	0.1564E+00
42 Cs2O	0.4488E-09	ZERO	0.4488E-09	0.1756E-03	ZERO	0.1756E-03	0.1756E-03
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1037E-02	ZERO	0.1091E-02	0.4080E-03	ZERO	0.4080E-03	0.4080E-03
151 CsTPE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -> STREAM NAME	322 Tot Spnt Wash frm Tank 51	323 Evap Ovrhead frm ESP Rcyc	324 85% Saltcake frm ESP Wash	325 Wshd Batch 1 Sltdg to Stor	326 Dilution H2O to Sltdg Btch	327 Batch 1 Sltdg Fd b4 Dilutn	1 Sludge Feed to DWPF
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.8359E-07	ZERO	0.8359E-07	0.2434E-01	ZERO	0.2434E-01	0.2434E-01
80 Fe2O3	0.2079E-02	ZERO	0.2684E-02	0.2324E+02	ZERO	0.2324E+02	0.2324E+02
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1801E-02	ZERO	0.2985E-02	0.2198E-01	ZERO	0.2198E-01	0.2198E-01
103 Group B	0.4507E-05	ZERO	0.7365E-05	0.1075E+00	ZERO	0.1075E+00	0.1075E+00
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.4620E-06	ZERO	0.4620E-06	0.3011E+00	ZERO	0.3011E+00	0.3011E+00
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.1691E-06	ZERO	0.1691E-06	0.1083E+00	ZERO	0.1083E+00	0.1083E+00
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.8759E-01	ZERO	0.1619E+00	0.1745E-01	ZERO	0.1745E-01	0.1745E-01
150 KTFB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4438E-05	ZERO	0.4438E-05	0.1427E+01	ZERO	0.1427E+01	0.1427E+01
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.9720E-05	ZERO	0.9720E-05	0.3337E+01	ZERO	0.3337E+01	0.3337E+01
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.4338E-02	ZERO	0.7190E-02	0.1067E-02	ZERO	0.1067E-02	0.1067E-02
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) ->	322	323	324	325	326	327	1
STREAM NAME	Tot Spnt Wash frm Tank 51	Evap Overhead frm ESP Rcyd	85% Saltcake frm ESP Wash	Wshd Batch 1 Slidg to Stor	Dilution H2O to Slidg Btch	Batch 1 Slidg Pd b4 Dilutn	Sludge Feed to DWPF
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.1814E-02	ZERO	0.2740E-02	0.5108E-03	ZERO	0.5108E-03	0.5108E-03
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	0.3783E+00	ZERO	0.5467E+00	0.1125E+00	ZERO	0.1125E+00	0.1125E+00
5 Na2CO3	0.6011E+01	ZERO	0.9662E+01	0.1551E+01	ZERO	0.1551E+01	0.1551E+01
143 Na2CO3 (Cl4)	0.2194E-08	ZERO	3636E-08	0.5395E-09	ZERO	0.5395E-09	0.5395E-09
89 Na2CrO4	0.9973E-01	ZERO	0.1E+00	0.2993E-01	ZERO	0.2993E-01	0.2993E-01
115 Na2MoO4	0.1086E-01	ZERO	0.1800E-01	0.2671E-02	ZERO	0.2671E-02	0.2671E-02
32 Na2O	0.9033E-05	ZERO	0.9033E-05	0.2740E+01	ZERO	0.2740E+01	0.2740E+01
71 Na2PuO2(OH)4	0.3762E-06	ZERO	0.4123E-06	0.1439E-06	ZERO	0.1439E-06	0.1439E-06
73 Na2RhO4	0.2756E-03	ZERO	0.4566E-03	0.6775E-04	ZERO	0.6775E-04	0.6775E-04
72 Na2RuO4	0.1178E-02	ZERO	0.1952E-02	0.2897E-03	ZERO	0.2897E-03	0.2897E-03
6 Na2SO4	0.1441E+01	ZERO	0.2144E+01	0.4140E+00	ZERO	0.4140E+00	0.4140E+00
88 Na2S1O3	0.5755E-01	ZERO	0.9537E-01	0.1415E-01	ZERO	0.1415E-01	0.1415E-01
87 Na3PO4	0.2322E-01	ZERO	0.2322E-01	0.9427E-02	ZERO	0.9427E-02	0.9427E-02
91 NaAg(OH)2	0.5492E-03	ZERO	0.1076E-02	0.9467E-04	ZERO	0.9467E-04	0.9467E-04
75 NaAl(OH)4	0.1667E+01	ZERO	0.3052E+01	0.3396E+00	ZERO	0.3396E+00	0.3396E+00
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1452E+00	ZERO	0.2726E+00	0.2793E-01	ZERO	0.2793E-01	0.2793E-01
69 NaF	0.1640E+00	ZERO	0.3012E+00	0.3312E-01	ZERO	0.3312E-01	0.3312E-01
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.3862E-04	ZERO	0.6401E-04	0.9494E-05	ZERO	0.9494E-05	0.9494E-05
3 NaNO2	0.2353E+02	ZERO	0.3359E+02	0.7405E+01	ZERO	0.8978E+01	0.8978E+01
2 NaNO3	0.8470E+01	ZERO	0.1375E+02	0.2153E+01	ZERO	0.2153E+00	0.2153E+00
4 NaOH	0.1024E+02	ZERO	0.1480E+02	0.1761E+01	0.4341E-01	0.1761E+01	0.1804E+01
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	0.1118E-02	ZERO	0.1853E-02	0.2749E-03	ZERO	0.2749E-03	0.2749E-03
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.8471E-06	ZERO	0.8471E-06	0.2808E+00	ZERO	0.2808E+00	0.2808E+00
82 O2	ZERO	ZERO	ZERO	ZERO	ZERO	0.3647E+00	0.3647E+00
175 Pb(NO3)2	0.2688E-03	ZERO	0.5436E-03	0.4215E-04	ZERO	0.4215E-04	0.4215E-04
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.3231E-06	ZERO	0.3231E-06	0.9300E-01	ZERO	0.9300E-01	0.9300E-01
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.6280E-07	ZERO	0.1041E-06	0.1544E-07	ZERO	0.1544E-07	0.1544E-07
110 PdO	0.1524E-08	ZERO	0.1524E-08	0.6409E-03	ZERO	0.6409E-03	0.6409E-03
76 PuO2	0.2684E-07	ZERO	0.2684E-07	0.8446E-02	ZERO	0.8446E-02	0.8446E-02
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	0.4354E-08	ZERO	0.4354E-08	0.2065E-02	ZERO	0.2065E-02	0.2065E-02
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.2222E-07	ZERO	0.2222E-07	0.9455E-02	ZERO	0.9455E-02	0.9455E-02
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -> STREAM NAME	322 Tot Spnt Wsh frm Tank 51	323 Evap Overhead frm ESP Rcyc	324 85% Saltcake frm ESP Wash	325 Wshd Batch 1 Slgd to Stor	326 Dilution H2O to Slgd Btch	327 Batch 1 Slgd Fd b4 Dilutn	1 Sludge Feed to DWPF
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.2894E-05	ZERO	0.2894E-05	0.1167E+01	ZERO	0.1167E+01	0.1167E+01
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.2576E-06	ZERO	0.4269E-06	0.6334E-07	ZERO	0.6334E-07	0.6334E-07
30 SrCO3	0.5865E-07	ZERO	0.5865E-07	0.1951E-01	ZERO	0.1951E-01	0.1951E-01
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.8453E-08	ZERO	0.8453E-08	0.2309E-02	ZERO	0.2309E-02	0.2309E-02
92 ThO2	0.2194E-06	ZERO	0.2194E-06	0.1205E+00	ZERO	0.1205E+00	0.1205E+00
107 TiO2	0.1410E-06	ZERO	0.1410E-06	0.3808E-01	ZERO	0.3808E-01	0.3808E-01
119 Tritium	0.7294E-08	ZERO	0.1209E-07	0.1793E-08	ZERO	0.1793E-08	0.1793E-08
17 U3O8	0.7300E-05	ZERO	0.7300E-05	0.2307E+01	ZERO	0.2307E+01	0.2307E+01
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.3353E-03	ZERO	0.5901E-03	0.7404E-04	ZERO	0.7404E-04	0.7404E-04
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.2597E-06	ZERO	0.4304E-06	0.6384E-07	ZERO	0.6384E-07	0.6384E-07
31 Y2(CO3)3	0.1712E-07	ZERO	0.1712E-07	0.6530E-02	ZERO	0.6530E-02	0.6530E-02
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3435E-06	ZERO	0.3435E-06	0.1007E+00	ZERO	0.1007E+00	0.1007E+00
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.6990E-03	ZERO	0.9036E-03	0.6423E+01	ZERO	0.6423E+01	0.6423E+01
1 water	0.4042E+03	0.4673E+03	0.1387E+02	0.2872E+03	0.1085E+03	0.2872E+03	0.3956E+03
TOTAL FLOW, LB/HR	0.4565E+03	0.4673E+03	0.9246E+02	0.3570E+03	0.1085E+03	0.3570E+03	0.4655E+03
TEMPERATURE, DEG C	0.4606E+02	0.3500E+02	0.3500E+02	0.4800E+02	0.2500E+02	0.3500E+02	0.6000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG							
ENTHALPY, PCU/HR	0.1926E+05	0.1640E+05	0.1186E+04	0.1436E+05	0.2722E+04	0.1048E+05	0.2445E+05
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.8446E+00	0.9333E+00	0.8355E-01	0.6194E+00	0.2167E+00	0.6195E+00	0.8365E+00
DENSITY, LBS/FT3	0.6739E+02	0.6243E+02	0.1380E+03	0.7186E+02	0.6245E+02	0.7185E+02	0.6938E+0
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS -> STREAM NAME	678 Sludge Feed Solubles	679 Sludge Feed Insolubles
COMPONENT FLOWS, LB/HR		
122 (C ₆ H ₅) ₂	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO
45 Ag	ZERO	ZERO
116 Ag ₂ O	ZERO	0.8929E-02
134 AgNO ₃	ZERO	ZERO
77 Al ₂ O ₃	ZERO	0.9814E+01
106 B ₂ O ₃	ZERO	ZERO
9 Ba(OH) ₂	0.5204E-03	0.3510E-10
15 BaO	ZERO	ZERO
24 BaSO ₄	ZERO	0.1853E-01
66 CO	ZERO	ZERO
37 CO ₂	ZERO	ZERO
142 CO ₂ (C ₁₄)	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO
120 Ca(OH) ₂	0.1081E-02	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	0.2404E+01
20 CaC ₂ O ₄	ZERO	0.1040E-01
18 CaCO ₃	ZERO	0.1588E+01
64 CaCO ₃ (C ₁₄)	ZERO	0.1363E-06
78 CaF ₂	ZERO	0.1363E-01
41 CaO	ZERO	0.3129E-02
19 CaSO ₄	ZERO	0.4913E-01
29 Carbon	ZERO	ZERO
99 Cement	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO
59 CoO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	0.1564E+00
42 Cs ₂ O	ZERO	0.1756E-03
53 CsCOOH	ZERO	ZERO
96 CsCl	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO
8 CsOH	0.4080E-03	ZERO
151 CsTPB	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) ->	678	679
STREAM NAME	Sludge Feed	Sludge Feed
	Solubles	Insolubles
54 Cu(COOH) ₂	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO
55 CuO	ZERO	0.2434E-01
80 Fe ₂ O ₃	ZERO	0.2324E+02
101 FeO	ZERO	ZERO
102 Group A	ZERO	0.2198E-01
103 Group B	ZERO	0.1075E+00
25 H ₂	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO
34 HCOOH	ZERO	ZERO
43 HCl	ZERO	ZERO
85 HF	ZERO	ZERO
49 HNO ₃	ZERO	ZERO
36 Hg	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO
21 HgO	ZERO	0.3011E+00
97 I ₂	ZERO	ZERO
39 K ₂ O	ZERO	0.1083E+00
51 KCOOH	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO
161 KNO ₃	ZERO	ZERO
10 KOH	0.1745E-01	ZERO
150 KTPB	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO
33 MgO	ZERO	0.1427E+01
60 Mn(COOH) ₂	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO
56 MnO	ZERO	ZERO
14 MnO ₂	ZERO	0.3337E+01
145 MoO ₂	ZERO	ZERO
81 N ₂	ZERO	ZERO
74 N ₂ O	ZERO	ZERO
182 NH ₃	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO
68 NH ₄ OH	0.1067E-02	ZERO
148 NH ₄ TPB	ZERO	ZERO
35 NO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. ESP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -> STREAM NAME	678 Sludge Feed Solubles	679 Sludge Feed Insolubles
84 NO ₂	ZERO	ZERO
70 Na(HgO(OH))	0.5108E-03	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO
109 Na ₂ C ₂ O ₄	0.1125E+00	ZERO
5 Na ₂ CO ₃	0.1551E+01	ZERO
143 Na ₂ CO ₃ (C14)	0.5395E-09	ZERO
89 Na ₂ CrO ₄	0.2993E-01	ZERO
115 Na ₂ MoO ₄	0.2671E-02	ZERO
32 Na ₂ O	ZERO	0.2740E+01
71 Na ₂ PuO ₂ (OH) ₄	0.1439E-06	ZERO
73 Na ₂ RhO ₄	0.6775E-04	ZERO
72 Na ₂ RuO ₄	0.2897E-03	ZERO
6 Na ₂ SO ₄	0.4140E+00	ZERO
88 Na ₂ SiO ₃	0.1415E-01	ZERO
87 Na ₃ PO ₄	0.9427E-02	0.5965E-09
91 NaAg(OH) ₂	0.9467E-04	ZERO
75 NaAl(OH) ₄	0.3396E+00	ZERO
50 NaCOOH	ZERO	ZERO
7 NaCl	0.2793E-01	ZERO
69 NaF	0.3312E-01	ZERO
11 NaHCO ₃	ZERO	ZERO
12 NaI	0.9494E-05	ZERO
3 NaNO ₂	0.8978E+01	ZERO
2 NaNO ₃	0.2153E+00	ZERO
4 NaOH	0.1804E+01	ZERO
149 NaTPB	ZERO	ZERO
160 NaTcO ₄	0.2749E-03	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO
40 NiO	ZERO	0.2808E+00
82 O ₂	0.3647E+00	ZERO
175 Pb(NO ₃) ₂	0.4215E-04	ZERO
86 PbCO ₃	ZERO	ZERO
67 PbO	ZERO	ZERO
147 PbS	ZERO	ZERO
28 PbSO ₄	ZERO	0.9300E-01
124 Pd	ZERO	ZERO
112 Pd(NO ₃) ₂	0.1544E-07	ZERO
110 PdO	ZERO	0.6409E-03
76 PuO ₂	ZERO	0.8446E-02
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO
58 Rh	ZERO	ZERO
22 RhO ₂	ZERO	0.2065E-02
95 Ru	ZERO	ZERO
79 RuO ₂	ZERO	0.9455E-02
83 RuO ₄	ZERO	ZERO
38 SO ₂	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 1C. MSP Washing of Batch 1 Sludge

STREAM NUMBERS (CONT'D) -> STREAM NAME	678 Sludge Feed Solubles	679 Sludge Feed Insolubles
141 SO ₃	ZERO	ZERO
137 Semi Vol Ca ₂ O	ZERO	ZERO
136 Semi Vol CaCl	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO
111 SiO ₂	ZERO	0.1167E+01
48 Sr(COOH) ₂	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO	ZERO
127 Sr(OH) ₂	0.6334E-07	ZERO
30 SrCO ₃	ZERO	0.1951E-01
46 SrO	ZERO	ZERO
159 TcO ₂	ZERO	0.2309E-02
92 ThO ₂	ZERO	0.1205E+00
107 TiO ₂	ZERO	0.3808E-01
119 Tritium	0.1793E-08	ZERO
17 U ₃ O ₈	ZERO	0.2307E+01
62 UO ₂ (COOH) ₂	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO
16 UO ₂ (OH) ₂	0.7404E-04	ZERO
27 Y(COOH) ₃	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO
128 Y(OH) ₃	0.6384E-07	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	0.6530E-02
47 Y ₂ O ₃	ZERO	ZERO
100 Zeolite	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO
57 ZnO	ZERO	0.1007E+00
104 ZrO ₂	ZERO	ZERO
13 hydrate H ₂ O	ZERO	0.6423E+01
1 water	0.3956E+03	ZERO
TOTAL FLOW, LB/HR	0.4096E+03	0.5595E+02
TEMPERATURE, DEG C	0.6000E+02	0.6000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO
PRESSURE, MM HG		
ENTHALPY, PCU/HR	0.2396E+05	0.4888E+03
VAPOR FLOW, CFM		
LIQUID FLOW, GPM	0.8006E+00	0.3588E-01
DENSITY, LBS/FT ³	0.6378E+02	0.1944E+03
PHASE	LIQUID	LIQUID

SECTION 2. SALTSTONE PRODUCTION

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 2. Saltstone Production

DESCRIPTION	PAGE
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1. STREAM NUMBERS 407, 601, 602, 603, 605, 606, 607	2
2. STREAM NUMBERS 610, 611, 612, 613, 614, 615, 616	6
3. STREAM NUMBERS 617, 618, 619, 620, 625, 626, 627	10
4. STREAM NUMBERS 628, 629, 630, 631, 632	14

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 2. Saltstone Production

STREAM NUMBERS -> STREAM NAME	407 Decon SN to Storage	601 Concentrate from RTF	602 Decon Strg Tank Purge	603 Decon Str Tk Vnt to Atm	605 Decon Sn to LP Pmp Tnk	606 LPPT Air Purge	607 LPPT Vent to Atmos
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.4603E+01	ZERO	ZERO	0.4213E-10	0.4603E+01	ZERO	0.1545E-10
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.3155E-02	ZERO	ZERO	0.3061E-02	0.9447E-04	ZERO	0.8715E-04
155 (CH3)2CHOH	0.7443E-01	ZERO	ZERO	0.1937E-01	0.5506E-01	ZERO	0.6299E-02
154 (CH3OH)	0.4499E-02	ZERO	ZERO	0.9810E-03	0.3518E-02	ZERO	0.3266E-03
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	0.1757E-02	ZERO	0.1608E-13	0.1757E-02	ZERO	0.5899E-14
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	0.8794E-01	ZERO	0.8049E-12	0.8794E-01	ZERO	0.2952E-12
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.2604E-05	ZERO	ZERO	0.2384E-16	0.2604E-05	ZERO	0.8743E-17
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	0.2780E-02	ZERO	0.2545E-13	0.2780E-02	ZERO	0.9333E-14
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.1160E-01	ZERO	ZERO	0.1062E-12	0.1160E-01	ZERO	0.3896E-13
113 Ca3(PO4)2	ZERO	0.2178E+00	ZERO	0.1994E-11	0.2178E+00	ZERO	0.7313E-12
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	0.4990E+00	ZERO	0.4568E-11	0.4990E+00	ZERO	0.1675E-11
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1503E-05	0.4011E-08	ZERO	0.1379E-16	0.1507E-05	ZERO	0.5058E-17
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	407 Decon SN to Storage	601 Concentrate from ETF	602 Dcon Strg Tank Purge	603 Dcon Str Tk Vnt to Atm	605 Dcon Sn to LP Pmp Tnk	606 LPPT Air Purge	607 LPPT Vent to Atmos
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	0.3968E-02	ZERO	0.3632E-13	0.3968E-02	ZERO	0.1332E-13
80 Fe2O3	ZERO	0.1181E+00	ZERO	0.1081E-11	0.1181E+00	ZERO	0.3966E-12
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1219E+00	0.3951E-01	ZERO	0.1478E-11	0.1614E+00	ZERO	0.5419E-12
103 Group B	0.8967E-02	0.5292E-08	ZERO	0.8208E-13	0.8967E-02	ZERO	0.3010E-13
25 H2	0.2591E-06	ZERO	ZERO	0.2591E-06	0.6588E-10	ZERO	0.6583E-10
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.1005E-02	ZERO	0.9203E-14	0.1005E-02	ZERO	0.3375E-14
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	0.2293E-01	ZERO	0.2099E-12	0.2293E-01	ZERO	0.7697E-13
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.2271E-01	ZERO	0.2078E-12	0.2271E-01	ZERO	0.7622E-13
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	0.7533E-02	ZERO	0.6895E-13	0.7533E-02	ZERO	0.2529E-13
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.1323E+00	ZERO	0.5411E+03	0.5411E+03	0.1123E+00	0.1984E+03	0.1984E+03
74 N2O	0.1344E-13	ZERO	ZERO	0.1338E-13	0.6394E-16	ZERO	0.6312E-16
182 NH3	0.1144E+00	0.3649E-01	ZERO	0.7181E-01	0.7912E-01	ZERO	0.1977E-01
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	407 Decon SN to Storage	601 Concentrate from BTF	602 Dcon Strg Tank Purge	603 Dcon Str Tk Vnt to Atm	605 Dcon Sn to LP Pmp Tnk	606 LPPT Air Purge	607 LPPT Vent to Atmos
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2825E-03	ZERO	ZERO	0.2586E-14	0.2825E-03	ZERO	0.9484E-15
94 Na2B4O7	0.6985E+00	ZERO	ZERO	0.6393E-11	0.6985E+00	ZERO	0.2345E-11
109 Na2C2O4	0.1001E+02	0.7128E+00	ZERO	0.9815E-10	0.1072E+02	ZERO	0.3600E-10
5 Na2CO3	0.1486E+03	0.2971E+01	ZERO	0.1387E-08	0.1516E+03	ZERO	0.5087E-09
143 Na2CO3 (C14)	0.1440E-06	ZERO	ZERO	0.1318E-17	0.1440E-06	ZERO	0.4834E-18
89 Na2CrO4	0.4409E+01	0.5974E-02	ZERO	0.4041E-10	0.4415E+01	ZERO	0.1482E-10
115 Na2MoO4	0.7267E+00	ZERO	ZERO	0.6651E-11	0.7267E+00	ZERO	0.2439E-11
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.3340E-05	0.6451E-07	ZERO	0.3116E-16	0.3404E-05	ZERO	0.1143E-16
73 Na2RhO4	0.1834E-01	0.1665E-12	ZERO	0.1678E-12	0.1834E-01	ZERO	0.6155E-13
72 Na2RuO4	0.7881E-01	0.3364E-10	ZERO	0.7214E-12	0.7881E-01	ZERO	0.2646E-12
6 Na2SO4	0.1634E+03	0.1252E+00	ZERO	0.1497E-08	0.1636E+03	ZERO	0.5491E-09
88 Na2SiO3	0.3847E+01	ZERO	ZERO	0.3521E-10	0.3847E+01	ZERO	0.1292E-10
87 Na3PO4	0.1160E+02	ZERO	ZERO	0.1061E-09	0.1160E+02	ZERO	0.3893E-10
91 NaAg(OH)2	0.1171E-04	ZERO	ZERO	0.1072E-15	0.1171E-04	ZERO	0.3932E-16
75 NaAl(OH)4	0.2779E+03	ZERO	ZERO	0.2543E-08	0.2779E+03	ZERO	0.9327E-09
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1051E+02	0.1494E+00	ZERO	0.9760E-10	0.1066E+02	ZERO	0.3580E-10
69 NaF	0.5104E+01	0.4444E-01	ZERO	0.4712E-10	0.5149E+01	ZERO	0.1728E-10
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2907E-02	0.1337E-13	ZERO	0.2661E-13	0.2907E-02	ZERO	0.9758E-14
3 NaNO2	0.3617E+03	0.4455E-01	ZERO	0.3311E-08	0.3618E+03	ZERO	0.1214E-08
2 NaNO3	0.1361E+04	0.4485E+02	ZERO	0.1286E-07	0.1405E+04	ZERO	0.4718E-08
4 NaOH	0.4653E+03	0.1105E+02	ZERO	0.4360E-08	0.4763E+03	ZERO	0.1599E-08
149 NaTPB	0.1147E+02	ZERO	ZERO	0.1050E-09	0.1147E+02	ZERO	0.3850E-10
160 NaTcO4	0.7524E-01	ZERO	ZERO	ZERO	0.7524E-01	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.3657E-02	ZERO	0.3347E-13	0.3657E-02	ZERO	0.1228E-13
82 O2	0.1582E-01	ZERO	0.1634E+03	0.1634E+03	0.6571E-01	0.5993E+02	0.5993E+02
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	0.1762E-02	ZERO	0.1613E-13	0.1762E-02	ZERO	0.5915E-14
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.4199E-05	ZERO	ZERO	0.3843E-16	0.4199E-05	ZERO	0.1410E-16
110 Pdo	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	407 Decon SN to Storage	601 Concentrate from ETF	602 Dcon Strg Tank Purge	603 Dcon Str Tk Vnt to Atm	605 Dcon Sn to LP Pmp Tnk	606 LPPT Air Purge	607 LPPT Vent to Atmos
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	0.4069E+00	ZERO	0.3724E-11	0.4069E+00	ZERO	0.1366E-11
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.8050E-07	0.8811E-09	ZERO	0.7448E-18	0.8138E-07	ZERO	0.2732E-18
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.1946E-07	0.1193E-08	ZERO	0.5022E-10	0.2061E-07	ZERO	0.1840E-10
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.1005E-02	0.5626E-01	ZERO	0.5242E-12	0.5727E-01	ZERO	0.1922E-12
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.8181E-07	0.2521E-12	ZERO	0.7488E-18	0.8181E-07	ZERO	0.2746E-18
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.4492E-01	ZERO	0.4111E-12	0.4492E-01	ZERO	0.1508E-12
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.1106E+00	ZERO	0.1012E-11	0.1106E+00	ZERO	0.3711E-12
1 water	0.8028E+04	0.1448E+03	0.1184E+02	0.1919E+02	0.8165E+04	0.4340E+01	0.7037E+01
TOTAL FLOW, LB/HR	0.1087E+05	0.2064E+03	0.7163E+03	0.7238E+03	0.1107E+05	0.2627E+03	0.2654E+03
TEMPERATURE, DEG C	0.3000E+02	0.3000E+02	0.3500E+02	0.4000E+02	0.3915E+02	0.3500E+02	0.4000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.9656E+00	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	ZERO	-0.5055E+00	-0.5055E+00	ZERO	-0.5055E+00
PRESSURE, MM HG				0.7339E+03	0.7339E+03		0.7339E+03
ENTHALPY, PCU/HR	0.2627E+06	0.4841E+04	0.1502E+05	0.2039E+05	0.3487E+06	0.5509E+04	0.7475E+04
VAPOR FLOW, CFM			0.1692E+03	0.1810E+03		0.6205E+02	0.6637E+02
LIQUID FLOW, GPM	0.1816E+02	0.3340E+00			0.1849E+02		
DENSITY, LBS/FT3	0.7460E+02	0.7705E+02	0.7055E-01	0.6664E-01	0.7464E+02	0.7055E-01	0.6664E-01
PHASE	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS -> STREAM NAME	610 LPPT SN to Mixr Fd Tk	611 Recycled Flush Watr	612 Feed Tank Air Purge	613 Feed Tank Vnt to HEPA	614 Aqueous Fd To Mixer	615 Cement Pre-mix	616 Mixer Air Purge
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.4603E+01	ZERO	ZERO	0.1396E-07	0.4603E+01	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.7327E-05	ZERO	ZERO	0.6703E-05	0.6243E-06	ZERO	ZERO
155 (CH3)2CHOH	0.4876E-01	ZERO	ZERO	0.5132E-02	0.4363E-01	ZERO	ZERO
154 (CH3OH)	0.3192E-02	ZERO	ZERO	0.2725E-03	0.2919E-02	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.1757E-02	ZERO	ZERO	0.5328E-11	0.1757E-02	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.8794E-01	ZERO	ZERO	0.2666E-09	0.8794E-01	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.2604E-05	ZERO	ZERO	0.7896E-14	0.2604E-05	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.2780E-02	ZERO	ZERO	0.8429E-11	0.2780E-02	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.1160E-01	ZERO	ZERO	0.3519E-10	0.1160E-01	ZERO	ZERO
113 Ca3(PO4)2	0.2178E+00	ZERO	ZERO	0.6605E-09	0.2178E+00	ZERO	ZERO
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	0.4990E+00	ZERO	ZERO	0.1513E-08	0.4990E+00	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	0.1669E+05	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1507E-05	ZERO	ZERO	0.4568E-14	0.1507E-05	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	610 LPPT SN to Mixr Fd Tk	611 Recycled Flush Watr	612 Feed Tank Air Purge	613 Feed Tank Vnt to HEPA	614 Aqueous Fd To Mixer	615 Cement Pre-mix	616 Mixer Air Purge
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.3968E-02	ZERO	ZERO	0.1203E-10	0.3968E-02	ZERO	ZERO
80 Fe2O3	0.1181E+00	ZERO	ZERO	0.3582E-09	0.1181E+00	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.1614E+00	ZERO	ZERO	0.4895E-09	0.1614E+00	ZERO	ZERO
103 Group B	0.8967E-02	ZERO	ZERO	0.2719E-10	0.8967E-02	ZERO	ZERO
25 H2	0.4563E-13	ZERO	ZERO	0.4560E-13	0.3503E-16	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.1005E-02	ZERO	ZERO	0.3048E-11	0.1005E-02	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.2293E-01	ZERO	ZERO	0.6952E-10	0.2293E-01	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.2271E-01	ZERO	ZERO	0.6884E-10	0.2271E-01	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.7533E-02	ZERO	ZERO	0.2284E-10	0.7533E-02	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.1122E+00	0.1000E-02	0.1804E+03	0.1804E+03	0.1131E+00	ZERO	0.1804E+03
74 N2O	0.8223E-18	ZERO	ZERO	0.8106E-18	0.1170E-19	ZERO	ZERO
182 NH3	0.5936E-01	ZERO	ZERO	0.1375E-01	0.4561E-01	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	610 LPPT SN to Mixr Fd Tk	611 Recycled Flush Watr	612 Feed Tank Air Purge	613 Feed Tank Vn' to HEPA	614 Aqueous Fd To Mixer	615 Cement Pre-mix	616 Mixer Air Purge
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2825E-03	ZERO	ZERO	0.8565E-12	0.2825E-03	ZERO	ZERO
94 Na2B4O7	0.6985E+00	ZERO	ZERO	0.2118E-08	0.6985E+00	ZERO	ZERO
109 Na2C2O4	0.1072E+02	ZERO	ZERO	0.3251E-07	0.1072E+02	ZERO	ZERO
5 Na2CO3	0.1516E+03	ZERO	ZERO	0.4595E-06	0.1516E+03	ZERO	ZERO
143 Na2CO3 (Cl4)	0.1440E-06	ZERO	ZERO	0.4366E-15	0.1440E-06	ZERO	ZERO
89 Na2CrO4	0.4415E+01	ZERO	ZERO	0.1338E-07	0.4415E+01	ZERO	ZERO
115 Na2MoO4	0.7267E+00	ZERO	ZERO	0.2203E-08	0.7267E+00	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.3404E-05	ZERO	ZERO	0.1032E-13	0.3404E-05	ZERO	ZERO
73 Na2RhO4	0.1834E-01	ZERO	ZERO	0.5559E-10	0.1834E-01	ZERO	ZERO
72 Na2RuO4	0.7881E-01	ZERO	ZERO	0.2390E-09	0.7881E-01	ZERO	ZERO
6 Na2SO4	0.1636E+03	ZERO	ZERO	0.4959E-06	0.1636E+03	ZERO	ZERO
88 Na2SiO3	0.3847E+01	ZERO	ZERO	0.1166E-07	0.3847E+01	ZERO	ZERO
87 Na3PO4	0.1160E+02	ZERO	ZERO	0.3516E-07	0.1160E+02	ZERO	ZERO
91 NaAg(OH)2	0.1171E-04	ZERO	ZERO	0.3551E-13	0.1171E-04	ZERO	ZERO
75 NaAl(OH)4	0.2779E+03	ZERO	ZERO	0.8424E-06	0.2779E+03	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1066E+02	ZERO	ZERO	0.3233E-07	0.1066E+02	ZERO	ZERO
69 NaF	0.5149E+01	ZERO	ZERO	0.1561E-07	0.5149E+01	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2907E-02	ZERO	ZERO	0.8813E-11	0.2907E-02	ZERO	ZERO
3 NaNO2	0.3618E+03	ZERO	ZERO	0.1097E-05	0.3618E+03	ZERO	ZERO
2 NaNO3	0.1405E+04	ZERO	ZERO	0.4261E-05	0.1405E+04	ZERO	ZERO
4 NaOH	0.4763E+03	ZERO	ZERO	0.1444E-05	0.4763E+03	ZERO	ZERO
149 NaTPB	0.1147E+02	ZERO	ZERO	0.3477E-07	0.1147E+02	ZERO	ZERO
160 NaTcO4	0.7524E-01	ZERO	ZERO	0.2281E-09	0.7524E-01	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.3657E-02	ZERO	ZERO	0.1109E-10	0.3657E-02	ZERO	ZERO
82 O2	0.6569E-01	0.5899E-03	0.5448E+02	0.5448E+02	0.6617E-01	ZERO	0.5448E+02
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.1762E-02	ZERO	ZERO	0.5343E-11	0.1762E-02	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.4199E-05	ZERO	ZERO	0.1273E-13	0.4199E-05	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	610 LPPT SN to Mixr Fd Tk	611 Recycled Flush Watr	612 Feed Tank Air Purge	613 Feed Tank Vnt to HEPA	614 Aqueous Fd To Mixer	615 Cement Pre-mix	616 Mixer Air Purge
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.4069E+00	ZERO	ZERO	0.1234E-08	0.4069E+00	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.8138E-07	ZERO	ZERO	0.2467E-15	0.8138E-07	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.2059E-07	ZERO	ZERO	0.6242E-16	0.2059E-07	ZERO	ZERO
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.5727E-01	ZERO	ZERO	0.1736E-09	0.5727E-01	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.8181E-07	ZERO	ZERO	0.2480E-15	0.8181E-07	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.4492E-01	ZERO	ZERO	0.1362E-09	0.4492E-01	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1106E+00	ZERO	ZERO	0.3352E-09	0.1106E+00	ZERO	ZERO
1 water	0.8163E+04	0.6817E+02	0.3945E+01	0.1164E+02	0.8223E+04	ZERO	0.3945E+01
TOTAL FLOW, LB/HR	0.1107E+05	0.6818E+02	0.2388E+03	0.2465E+03	0.1113E+05	0.1669E+05	0.2388E+03
TEMPERATURE, DEG C	0.3992E+02	0.3500E+02	0.3500E+02	0.4000E+02	0.3999E+02	0.2500E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.1000E+01	0.9656E+00	0.9656E+00	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	ZERO	-0.5055E+00	-0.5055E+00	ZERO	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03		0.7339E+03	0.7339E+03		
ENTHALPY, PCU/HR	0.3555E+06	0.2392E+04	0.5008E+04	0.1000E+05	0.3585E+06	0.7760E+05	0.5008E+04
VAPOR FLOW, CFM			0.5641E+02	0.6240E+02			0.5641E+02
LIQUID FLOW, GPM	0.1848E+02	0.1362E+00			0.1860E+02		
DENSITY, LBS/FT3	0.7464E+02	0.6243E+02	0.7055E-01	0.6583E-01	0.7456E+02	0.1622E+03	0.7055E-01
PHASE	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	SOLID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS -> STREAM NAME	617 Mixer Vent to HEPA	618 Saltstone to Trench	619 Hardened Saltstone	620 Saltstone Vapor Release	625 Mixer Feed Line Flush	626 Flush H2O to Slitston	627 Flush H2O to Hld Tnk
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.8266E-08	0.4603E+01	0.4603E+01	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.5711E-06	0.5313E-07	ZERO	0.5313E-07	ZERO	ZERO	ZERO
155 (CH3)2CHOH	0.4596E-02	0.3903E-01	0.3903E-01	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	0.2495E-03	0.2670E-02	0.2670E-02	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.3155E-11	0.1757E-02	0.1757E-02	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.1579E-09	0.8794E-01	0.8794E-01	ZERO	ZERO	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.4677E-14	0.2604E-05	0.2604E-05	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.4992E-11	0.2780E-02	0.2780E-02	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.2084E-10	0.1160E-01	0.1160E-01	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.3912E-09	0.2178E+00	0.2178E+00	ZERO	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	0.8961E-09	0.4990E+00	0.4990E+00	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	0.2997E-04	0.1669E+05	0.1669E+05	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.2706E-14	0.1507E-05	0.1507E-05	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	617 Mixer Vent to HEPA	618 Saltstone to Trench	619 Hardened Saltstone	620 Saltstone Vapor Release	625 Mixer Feed Line Flush	626 Flush H2O to Slitston	627 Flush H2O to Hld Tnk
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.7126E-11	0.3968E-02	0.3968E-02	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	0.2122E-09	0.1181E+00	0.1181E+00	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.2899E-09	0.1614E+00	0.1614E+00	ZERO	ZERO	ZERO	ZERO
103 Group B	0.1610E-10	0.8967E-02	0.8967E-02	ZERO	ZERO	ZERO	ZERO
25 H2	0.3500E-16	0.2686E-19	0.2686E-19	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.1805E-11	0.1005E-02	0.1005E-02	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.4117E-10	0.2293E-01	0.2293E-01	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
103 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4077E-10	0.2271E-01	0.2271E-01	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.1353E-10	0.7533E-02	0.7533E-02	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.1804E+03	0.1130E+00	0.1130E+00	ZERO	ZERO	ZERO	ZERO
74 N2O	0.1153E-19	0.1663E-21	0.1663E-21	ZERO	ZERO	ZERO	ZERO
182 NH3	0.1057E-01	0.3503E-01	ZERO	0.3503E-01	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	617 Mixer Vent to HEPA ZERO	618 Saltstone to Trench ZERO	619 Hardened Saltstone ZERO	620 Saltstone Vapor Release ZERO	625 Mixer Feed Line Flush ZERO	626 Flush H2O to Slitston ZERO	627 Flush H2O to Hld Tnk ZERO
84 NO2							
70 Na(HgO(OH))	0.5073E-12	0.2825E-03	0.2825E-03	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.1254E-08	0.6985E+00	0.6985E+00	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	0.1926E-07	0.1072E+02	0.1072E+02	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	0.2721E-06	0.1516E+03	0.1516E+03	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (C14)	0.2586E-15	0.1440E-06	0.1440E-06	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	0.7927E-08	0.4415E+01	0.4415E+01	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	0.1305E-08	0.7267E+00	0.7267E+00	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.6113E-14	0.3404E-05	0.3404E-05	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	0.3293E-10	0.1834E-01	0.1834E-01	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	0.1415E-09	0.7881E-01	0.7881E-01	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.2937E-06	0.1636E+03	0.1636E+03	ZERO	ZERO	ZERO	ZERO
88 Na2SiO3	0.6909E-08	0.3847E+01	0.3847E+01	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.2082E-07	0.1160E+02	0.1160E+02	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH)2	0.2103E-13	0.1171E-04	0.1171E-04	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	0.4989E-06	0.2779E+03	0.2779E+03	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1915E-07	0.1066E+02	0.1066E+02	ZERO	ZERO	ZERO	ZERO
69 NaF	0.9245E-08	0.5149E+01	0.5149E+01	ZERO	ZERO	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.5220E-11	0.2907E-02	0.2907E-02	ZERO	ZERO	ZERO	ZERO
3 NaNO2	0.6496E-06	0.3618E+03	0.3618E+03	ZERO	ZERO	ZERO	ZERO
2 NaNO3	0.2524E-05	0.1405E+04	0.1405E+04	ZERO	ZERO	ZERO	ZERO
4 NaOH	0.8554E-06	0.4763E+03	0.4763E+03	ZERO	ZERO	ZERO	ZERO
149 NaTPB	0.2059E-07	0.1147E+02	0.1147E+02	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	0.1351E-09	0.7524E-01	0.7524E-01	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.6567E-11	0.3657E-02	0.3657E-02	ZERO	ZERO	ZERO	ZERO
82 O2	0.5448E+02	0.6611E-01	0.6611E-01	ZERO	ZERO	ZERO	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.3164E-11	0.1762E-02	0.1762E-02	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.7541E-14	0.4199E-05	0.4199E-05	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	617 Mixer Vent to HEPA	618 Saltstone to Trench	619 Hardened Saltstone	620 Saltstone Vapor Release	625 Mixer Feed Line Flush	626 Flush H2O to Slitston	627 Flush H2O to Hld Tnk
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.7307E-09	0.4069E+00	0.4069E+00	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.1461E-15	0.8138E-07	0.8138E-07	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.1949E-10	0.2057E-07	0.2014E-07	0.4288E-09	ZERO	ZERO	ZERO
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.1028E-09	0.5727E-01	0.5727E-01	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.1469E-15	0.8181E-07	0.8181E-07	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.8065E-10	0.4492E-01	0.4492E-01	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1985E-09	0.1106E+00	0.1106E+00	ZERO	ZERO	ZERO	ZERO
1 water	0.1164E+02	0.8247E+04	0.6803E+04	0.1443E+04	0.1041E+03	0.3124E+02	0.7289E+02
TOTAL FLOW, LB/HR	0.2465E+03	0.2784E+05	0.2639E+05	0.1443E+04	0.1041E+03	0.3124E+02	0.7289E+02
TEMPERATURE, DEG C	0.4000E+02	0.3873E+02	0.3873E+02	0.3873E+02	0.2500E+02	0.2500E+02	0.2500E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	ZERO	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03			
ENTHALPY, PCU/HR	0.9999E+04	0.4683E+06	0.4123E+06	0.8815E+06	0.2613E+04	0.7838E+03	0.1829E+04
VAPOR FLOW, CFM	0.6240E+02			0.5665E+03			
LIQUID FLOW, GPM		0.3147E+02	0.2859E+02		0.2079E+00	0.6238E-01	0.1456E+00
DENSITY, LBS/FT3	0.6583E-01	0.1103E+03	0.1151E+03	0.4246E-01	0.6243E+02	0.6243E+02	0.6243E+02
PHASE	VAPOR	LIQUID	LIQUID	VAPOR	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS -> STREAM NAME	628 Flush Tnk Air Purge	629 Flush Tnk Vnt to HEPA	630 Inlet Vap to HEPA	631 Saltone Proc HEPA Accum	632 Saltstone Proc Stack Rel
COMPONENT FLOWS, LB/HR					
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	0.2222E-07	0.2220E-07	0.2222E-10
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	0.7274E-05	ZERO	0.7274E-05
155 (CH3)2CHOH	ZERO	ZERO	0.9728E-02	ZERO	0.9728E-02
154 (CH3OH)	ZERO	ZERO	0.5220E-03	ZERO	0.5220E-03
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	0.8483E-11	0.8475E-11	0.8483E-14
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	0.4245E-09	0.4241E-09	0.4245E-12
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	0.1257E-13	0.1256E-13	0.1257E-16
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	ZERO	0.1342E-10	0.1341E-10	0.1342E-13
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	0.5602E-10	0.5597E-10	0.5602E-13
113 Ca3(PO4)2	ZERO	ZERO	0.1052E-08	0.1051E-08	0.1052E-11
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	0.2409E-08	0.2407E-08	0.2409E-11
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	0.2997E-04	0.2994E-04	0.2997E-07
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	0.7274E-14	0.7267E-14	0.7274E-17
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	628 Flush Tnk Air Purge	629 Flush Tnk Vnt to HEPA	630 Inlet Vapr to HEPA	631 Stone Proc HEPA Accum	632 Slitston Proc Stack Rel
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	0.1916E-10	0.1914E-10	0.1916E-13
80 Fe2O3	ZERO	ZERO	0.5704E-09	0.5698E-09	0.5704E-12
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	0.7794E-09	0.7786E-09	0.7794E-12
103 Group B	ZERO	ZERO	0.4329E-10	0.4325E-10	0.4329E-13
25 H2	ZERO	ZERO	0.4563E-13	ZERO	0.4563E-13
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	0.4854E-11	0.4849E-11	0.4854E-14
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	0.1107E-09	0.1106E-09	0.1107E-12
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	0.1096E-09	0.1095E-09	0.1096E-12
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	0.3637E-10	0.3633E-10	0.3637E-13
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.1804E+03	0.1804E+03	0.5411E+03	ZERO	0.5411E+03
74 N2O	ZERO	ZERO	0.8221E-18	ZERO	0.8221E-18
182 NH3	ZERO	ZERO	0.2432E-01	ZERO	0.2432E-01
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	628 Flush Tnk Air Purge	629 Flush Tnk Vnt to HEPA	630 Inlet Vap to HEPA	631 Stone Proc HEPA Accum	632 Saltston Proc Stack Rel
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	0.1364E-11	0.1362E-11	0.1364E-14
94 Na ₂ B ₄ O ₇	ZERO	ZERO	0.3372E-08	0.3369E-08	0.3372E-11
109 Na ₂ C ₂ O ₄	ZERO	ZERO	0.5177E-07	0.5172E-07	0.5177E-10
5 Na ₂ CO ₃	ZERO	ZERO	0.7316E-06	0.7309E-06	0.7316E-09
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	0.6952E-15	0.6945E-15	0.6952E-18
89 Na ₂ CrO ₄	ZERO	ZERO	0.2131E-07	0.2129E-07	0.2131E-10
115 Na ₂ MoO ₄	ZERO	ZERO	0.3508E-08	0.3505E-08	0.3508E-11
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	0.1643E-13	0.1642E-13	0.1643E-16
73 Na ₂ RhO ₄	ZERO	ZERO	0.8852E-10	0.8843E-10	0.8852E-13
72 Na ₂ RuO ₄	ZERO	ZERO	0.3805E-09	0.3801E-09	0.3805E-12
6 Na ₂ SO ₄	ZERO	ZERO	0.7896E-06	0.7888E-06	0.7896E-09
88 Na ₂ SiO ₃	ZERO	ZERO	0.1857E-07	0.1855E-07	0.1857E-10
87 Na ₃ PO ₄	ZERO	ZERO	0.5598E-07	0.5592E-07	0.5598E-10
91 NaAg(OH) ₂	ZERO	ZERO	0.5654E-13	0.5649E-13	0.5654E-16
75 NaAl(OH) ₄	ZERO	ZERO	0.1341E-05	0.1340E-05	0.1341E-08
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	0.5148E-07	0.5143E-07	0.5148E-10
69 NaF	ZERO	ZERO	0.2486E-07	0.2483E-07	0.2486E-10
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.1403E-10	0.1402E-10	0.1403E-13
3 NaNO ₂	ZERO	ZERO	0.1747E-05	0.1745E-05	0.1747E-08
2 NaNO ₃	ZERO	ZERO	0.6785E-05	0.6778E-05	0.6785E-08
4 NaOH	ZERO	ZERO	0.2300E-05	0.2297E-05	0.2300E-08
149 NaTPB	ZERO	ZERO	0.5537E-07	0.5531E-07	0.5537E-10
160 NaTcO ₄	ZERO	ZERO	0.3632E-09	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.1765E-10	0.1764E-10	0.1765E-13
82 O ₂	0.5448E+02	0.5448E+02	0.1634E+03	ZERO	0.1634E+03
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	0.8507E-11	0.8499E-11	0.8507E-14
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	0.2027E-13	0.2025E-13	0.2027E-16
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 2. Saltstone Production

STREAM NUMBERS (CONT'D) -> STREAM NAME	628 Flush Tnk Air Purge	629 Flush Tnk Vnt to HEPA	630 Inlet Vap to HEPA	631 Stone Proc HEPA Accum	632 Slitston Proc Stack Rel
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	0.1964E-08	0.1962E-08	0.1964E-11
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	0.3929E-15	0.3925E-15	0.3929E-18
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	0.1949E-10	ZERO	0.1949E-10
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	0.2765E-09	0.2762E-09	0.2765E-12
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	0.3949E-15	0.3945E-15	0.3949E-18
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	0.2168E-09	0.2166E-09	0.2168E-12
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	0.5337E-09	0.5332E-09	0.5337E-12
1 water	0.3945E+01	0.8659E+01	0.3194E+02	ZERO	0.3194E+02
TOTAL FLOW, LB/HR	0.2388E+03	0.2435E+03	0.7365E+03	0.4393E-04	0.7365E+03
TEMPERATURE, DEG C	0.3500E+02	0.3500E+02	0.3836E+02	0.3836E+02	0.3836E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG		0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.5008E+04	0.7879E+04	0.2788E+05	0.3477E-03	0.2788E+05
VAPOR FLOW, CFM	0.5641E+02	0.6024E+02	0.1851E+03		0.1851E+03
LIQUID FLOW, GPM					
DENSITY, LBS/FT3	0.7055E-01	0.6736E-01	0.6633E-01	0.1634E+03	0.6633E-01
PHASE	VAPOR	VAPOR	VAPOR	SOLID	VAPOR

SECTION 3A. PRECIPITATE HYDROLYSIS IN SALT CELL

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3A. Precipitate Hydrolysis in Salt Cell

DESCRIPTION	PAGE
-----	----
1. STREAM NUMBERS 657, 658, 201, 202, 203, 204, 216	2
2. STREAM NUMBERS 205, 206, 209, 217, 220, 228, 207	6
3. STREAM NUMBERS 265, 266, 211, 215, 212, 214, 210	10
4. STREAM NUMBERS 213	14

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS --> STREAM NAME	657 Prec Feed Solubles	658 Prec Feed Insolubles	201 Washd Precip Feed frm LWF	202 PRFT CO2 Purge	203 PRFT Air Inlkg	204 PRFT vent to SCVC	216 PRFT Transfer Pump Prime
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	0.8500E+00	0.8500E+00	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	0.1029E+00	0.1029E+00	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	0.3637E+00	0.3637E+00	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.1329E+00	ZERO	0.1329E+00	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.9281E-02	0.5684E-09	0.9281E-02	ZERO	ZERO	0.7564E-02	ZERO
155 (CH3)2CHOH	0.1375E-09	ZERO	0.1375E-09	ZERO	ZERO	0.6390E-11	ZERO
154 (CH3OH)	0.1514E-10	ZERO	0.1514E-10	ZERO	ZERO	0.5645E-12	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	0.4443E-02	0.4443E-02	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	0.3077E+00	0.3077E+00	ZERO	ZERO	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.1673E-13	ZERO	0.1673E-13	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	0.2179E+00	0.2179E+00	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	0.4599E+01	ZERO	0.4357E+01	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.7860E-06	ZERO	0.7860E-06	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	0.1988E-02	0.1988E-02	ZERO	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	0.8457E-02	0.8457E-02	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	0.6621E-01	0.6621E-01	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	0.3974E-08	0.3974E-08	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	0.2862E-02	0.2862E-02	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	0.5654E-02	0.5654E-02	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.1491E-03	0.1491E-03	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	0.3877E-02	0.3877E-02	ZERO	ZERO	ZERO	ZERO
42 Cs2O	ZERO	0.7385E-04	0.7385E-04	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1070E-04	ZERO	0.1070E-04	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	0.5517E+00	0.5517E+00	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	657 Prec Feed Solubles	658 Prec Feed Insolubles	201 Washd Precip Feed frm LWF	202 PRFT CO2 Purge	203 PRFT Air Inlkg	204 PRFT vent to SCVC	216 PRFT Trnsfer Pump Prime
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	0.1954E-02	0.1954E-02	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	ZERO	0.4850E+00	0.4850E+00	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	0.8153E-05	0.8153E-05	ZERO	ZERO	ZERO	ZERO
103 Group B	ZERO	0.2612E-07	0.2612E-07	ZERO	ZERO	ZERO	ZERO
25 H2	0.5901E-10	ZERO	0.5901E-10	ZERO	ZERO	0.5890E-10	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	0.3802E+00	0.3802E+00	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.2182E-01	0.2182E-01	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.4242E-02	0.4242E-02	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	0.4106E+02	0.4106E+02	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.3853E-02	0.3853E-02	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	0.9794E-01	0.9794E-01	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.6946E-03	ZERO	0.6946E-03	ZERO	0.1133E+01	0.1132E+01	ZERO
74 N2O	0.3658E-08	ZERO	0.3658E-08	ZERO	ZERO	0.3536E-08	ZERO
182 NH3	0.1564E-07	ZERO	0.1564E-07	ZERO	ZERO	0.1741E-08	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	0.3891E+01	0.3891E+01	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	657 Prec Feed Solubles	658 Prec Feed Insolubles	201 Washd Precip Feed frm LWF	202 PRFT CO2 Purge	203 PRFT Air Inlkg	204 PRFT vent to SCVC	216 PRFT Transfer Pump Prime
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	0.2014E-10	ZERO	0.2014E-10	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.5155E-01	ZERO	0.5155E-01	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	0.4779E-01	ZERO	0.4779E-01	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	0.3859E+00	ZERO	0.3859E+00	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (Cl4)	0.9753E-11	ZERO	0.9753E-11	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	0.2986E-03	ZERO	0.2986E-03	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	0.4922E-04	ZERO	0.4922E-04	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.4283E-11	ZERO	0.4283E-11	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	0.1242E-05	ZERO	0.1242E-05	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	0.5338E-05	0.3749E-12	0.5338E-05	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.1107E-01	ZERO	0.1107E-01	ZERO	ZERO	ZERO	ZERO
88 Na2SiO3	0.2606E-03	ZERO	0.2606E-03	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.7854E-03	ZERO	0.7854E-03	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH)2	0.1505E-11	ZERO	0.1505E-11	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	0.1882E-01	ZERO	0.1882E-01	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.6015E-02	0.4253E-09	0.6015E-02	ZERO	ZERO	ZERO	ZERO
69 NaF	0.3456E-03	ZERO	0.3456E-03	ZERO	ZERO	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.1751E-06	ZERO	0.1751E-06	ZERO	ZERO	ZERO	ZERO
3 NaNO2	0.2516E+00	ZERO	0.2516E+00	ZERO	ZERO	ZERO	ZERO
2 NaNO3	0.5086E-02	ZERO	0.5086E-02	ZERO	ZERO	ZERO	ZERO
4 NaOH	0.2357E+00	ZERO	0.2357E+00	ZERO	ZERO	ZERO	ZERO
149 NaTPB	0.5074E+00	ZERO	0.5074E+00	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	0.5096E-05	ZERO	0.5096E-05	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	0.9230E+00	0.9230E+00	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.2914E-01	0.2914E-01	ZERO	ZERO	ZERO	ZERO
82 O2	0.7888E-04	ZERO	0.7888E-04	ZERO	0.3423E+00	0.3413E+00	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	0.2853E-03	0.2853E-03	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	0.5749E-02	0.5749E-02	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.2844E-09	ZERO	0.2844E-09	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	0.3515E-03	0.3515E-03	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	0.9609E-04	0.9609E-04	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	0.2430E-03	0.2430E-03	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	0.1884E-03	0.1884E-03	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	0.1073E-02	0.1073E-02	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	657 Prec Feed Solubles	658 Prec Feed Insolubles	201 Washd Precip Feed frm LWF	202 PRFT CO2 Purge	203 PRFT Air Inlkg	204 PRFT vent to SCVC	216 PRFT Transfer Pump Prime
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.3431E-01	0.3431E-01	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	0.6835E-04	0.6835E-04	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	0.2148E-13	ZERO	0.2148E-13	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	0.1512E-02	0.1512E-02	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	0.3862E-03	0.3862E-03	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	0.1401E-01	0.1401E-01	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.1081E-11	ZERO	0.1081E-11	ZERO	ZERO	0.6465E-15	ZERO
17 U3O8	ZERO	0.2034E-01	0.2034E-01	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	0.6803E-07	ZERO	0.6803E-07	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	0.2047E-13	ZERO	0.2047E-13	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	0.5841E-03	0.5841E-03	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.1394E-04	0.1394E-04	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	0.2224E-02	0.2224E-02	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.3440E-02	0.3440E-02	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.3448E+00	0.3448E+00	ZERO	ZERO	ZERO	ZERO
1 water	0.3636E+03	ZERO	0.3636E+03	ZERO	0.2478E-01	0.2161E+00	0.3900E+01
TOTAL FLOW, LB/HR	0.3653E+03	0.4981E+02	0.4151E+03	0.4599E+01	0.1500E+01	0.6054E+01	0.3900E+01
TEMPERATURE, DEG C	0.2974E+02	0.2974E+02	0.2974E+02	0.3500E+02	0.3500E+02	0.4000E+02	0.2500E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	ZERO	-0.5055E+00	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03			0.7339E+03	
ENTHALPY, PCU/HR	0.1086E+05	0.1931E+02	0.1087E+05	0.3078E+03	0.3146E+02	0.4471E+03	0.9786E+02
VAPOR FLOW, CFM				0.7052E+00	0.3543E+00	0.1152E+01	
LIQUID FLOW, GPM	0.7281E+00	0.8988E-01	0.8180E+00				0.7788E-02
DENSITY, LBS/FT3	0.6255E+02	0.6910E+02	0.6327E+02	0.1087E+00	0.7055E-01	0.8761E-01	0.6243E+02
PHASE	LIQUID	LIQUID	LIQUID	VAPOR	VAPOR	VAPOR	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS -> STREAM NAME	205 Slurry frm PRFT to PR	206 Formic Acid to PR	209 PR Heel to Hydrolysis	217 H2O addn to PR	220 Cu Catalyst addn to PR	228 OH Bottoms to PR	207 PR CO2 Purge
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.8500E+00	ZERO	0.5408E-04	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	0.1029E+00	ZERO	0.4142E-03	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	0.3851E-04	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	0.3637E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	0.3120E-03	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	0.4010E-03	ZERO	ZERO	0.1082E-02	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	0.1163E-02	ZERO	ZERO	0.9322E-15	ZERO
165 (C6H5NO)	ZERO	ZERO	0.1901E-04	ZERO	ZERO	0.1523E-16	ZERO
164 (C6H5NO2)	ZERO	ZERO	0.3857E-04	ZERO	ZERO	0.3092E-16	ZERO
131 (C6H5OH salt)	0.1329E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	0.5421E-02	ZERO	ZERO	0.3091E-02	ZERO
121 (C6H6)	0.1717E-02	ZERO	0.7687E-04	ZERO	ZERO	0.6626E-04	ZERO
155 (CH3)2CHOH	0.1311E-09	ZERO	0.8574E-12	ZERO	ZERO	0.6214E-11	ZERO
154 (CH3OH)	0.1457E-10	ZERO	0.9223E-13	ZERO	ZERO	0.6918E-12	ZERO
45 Ag	ZERO	ZERO	0.2648E-04	ZERO	ZERO	0.2077E-16	ZERO
116 Ag2O	0.4443E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.3077E+00	ZERO	0.2022E-02	ZERO	ZERO	0.1620E-14	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	0.1673E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.2179E+00	ZERO	0.1395E-02	ZERO	ZERO	0.1118E-14	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.2417E+00	ZERO	0.1966E-08	ZERO	ZERO	0.2631E-06	0.1236E+02
142 CO2 (C14)	ZERO	ZERO	0.5173E-18	ZERO	ZERO	0.5771E-19	ZERO
63 Ca(COOH)2	ZERO	ZERO	0.2540E-03	ZERO	ZERO	0.2035E-15	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	0.7860E-06	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.1988E-02	ZERO	0.1273E-04	ZERO	ZERO	0.1020E-16	ZERO
20 CaC2O4	0.8457E-02	ZERO	0.3466E-03	ZERO	ZERO	0.2778E-15	ZERO
18 CaCO3	0.6621E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	0.3974E-08	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.2862E-02	ZERO	0.1832E-04	ZERO	ZERO	0.1468E-16	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	0.5654E-02	ZERO	0.3620E-04	ZERO	ZERO	0.2901E-16	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	0.1331E-05	ZERO	ZERO	0.1067E-17	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1491E-03	ZERO	0.2852E-06	ZERO	ZERO	0.2285E-18	ZERO
98 Cr2O3	0.3877E-02	ZERO	0.2572E-04	ZERO	ZERO	0.2061E-16	ZERO
42 Cs2O	0.7385E-04	ZERO	0.4729E-06	ZERO	ZERO	0.3789E-18	ZERO
53 CsCOOH	ZERO	ZERO	0.1390E-02	ZERO	ZERO	0.1114E-14	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1070E-04	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	0.5517E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	205 Slurry frm PRFT to PR	206 Formic Acid to PR	209 PR Heel to Hydrolysis	217 H2O addn to PR	220 Cu Catalyst addn to PR	228 OE Bottoms to PR	207 PR CO2 Purge
54 Cu(COOH)2	ZERO	ZERO	0.2429E-05	ZERO	ZERO	0.1946E-17	ZERO
170 Cu(NO3)2	ZERO	ZERO	0.1201E-01	ZERO	0.1876E+01	0.9611E-14	ZERO
55 CuO	0.1954E-02	ZERO	0.1125E-04	ZERO	ZERO	0.9015E-17	ZERO
80 Fe2O3	0.4850E+00	ZERO	0.3105E-02	ZERO	ZERO	0.2488E-14	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.8153E-05	ZERO	0.5220E-07	ZERO	ZERO	0.4183E-19	ZERO
103 Group B	0.2612E-07	ZERO	0.1673E-09	ZERO	ZERO	0.1340E-21	ZERO
25 H2	0.1089E-12	ZERO	TRACE	ZERO	ZERO	TRACE	ZERO
158 H2C2O4	ZERO	ZERO	TRACE	ZERO	ZERO	0.3343E-23	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	0.5258E-01	ZERO	ZERO	0.4213E-13	ZERO
34 HCOOH	ZERO	0.1530E+02	0.4941E-01	ZERO	ZERO	0.2371E-02	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	0.2240E-03	ZERO	ZERO	0.5136E-06	ZERO
129 Hg(C6H5)2	0.3802E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.2182E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.4242E-02	ZERO	0.2716E-04	ZERO	ZERO	0.2176E-16	ZERO
51 KCOOH	ZERO	ZERO	0.6170E-01	ZERO	ZERO	0.4944E-13	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	0.4106E+02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	0.5604E-04	ZERO	ZERO	0.4490E-16	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.3853E-02	ZERO	0.4908E-05	ZERO	ZERO	0.3933E-17	ZERO
60 Mn(COOH)2	ZERO	ZERO	0.6291E-03	ZERO	ZERO	0.5041E-15	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.9794E-01	ZERO	0.2499E-03	ZERO	ZERO	0.2002E-15	ZERO
145 MoO2	ZERO	ZERO	0.1958E-06	ZERO	ZERO	0.1569E-18	ZERO
81 N2	0.1708E-02	ZERO	0.3540E-09	ZERO	ZERO	0.3906E-09	ZERO
74 N2O	0.1228E-09	ZERO	0.5901E-20	ZERO	ZERO	0.9081E-20	ZERO
182 NH3	0.1390E-07	ZERO	0.5727E-11	ZERO	ZERO	0.2222E-10	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	0.4657E-02	ZERO	ZERO	0.3732E-14	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	0.3891E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	0.1532E-13	ZERO	ZERO	0.2385E-16	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	205 Slurry frm PRFT to PR	206 Formic Acid to PR	209 PR Heel to Hydrolysis	217 H2O addn to PR	220 Cu Catalyst addn to PR	228 OE Bottoms to PR	207 PR CO2 Purge
84 NO2	ZERO	ZERO	0.6794E-22	ZERO	ZERO	0.1058E-24	ZERO
70 Na(HgO(OH))	0.2014E-10	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.5155E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	0.4779E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	0.3859E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (C14)	0.9753E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	0.2986E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	0.4922E-04	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	0.4283E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	0.1242E-05	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	0.5338E-05	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.1107E-01	ZERO	0.7087E-04	ZERO	ZERO	0.5679E-16	ZERO
88 Na2SiO3	0.2606E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.7854E-03	ZERO	0.5028E-05	ZERO	ZERO	0.4029E-17	ZERO
91 NaAg(OH)2	0.1505E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	0.1882E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	0.1059E-01	ZERO	ZERO	0.8484E-14	ZERO
7 NaCl	0.6015E-02	ZERO	0.3851E-04	ZERO	ZERO	0.3086E-16	ZERO
69 NaF	0.3456E-03	ZERO	0.2213E-05	ZERO	ZERO	0.1773E-17	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.1751E-06	ZERO	0.1121E-08	ZERO	ZERO	0.8985E-21	ZERO
3 NaNO2	0.2516E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO3	0.5086E-02	ZERO	0.3257E-04	ZERO	ZERO	0.2610E-16	ZERO
4 NaOH	0.2357E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	0.5074E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	0.5096E-05	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	0.9230E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	0.7468E-04	ZERO	ZERO	0.5984E-16	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2914E-01	ZERO	0.1491E-03	ZERO	ZERO	0.1194E-15	ZERO
82 O2	0.9979E-03	ZERO	0.3675E-09	ZERO	ZERO	0.7174E-09	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	0.2853E-03	ZERO	0.1827E-05	ZERO	ZERO	0.1464E-17	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.5749E-02	ZERO	0.3681E-04	ZERO	ZERO	0.2950E-16	ZERO
124 Pd	ZERO	ZERO	0.1957E-05	ZERO	ZERO	0.1535E-17	ZERO
112 Pd(NO3)2	0.2844E-09	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.3515E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	0.9609E-04	ZERO	0.6152E-06	ZERO	ZERO	0.4930E-18	ZERO
156 PuO2(NaTi2O5)2	0.2430E-03	ZERO	0.1556E-05	ZERO	ZERO	0.1247E-17	ZERO
58 Rh	ZERO	ZERO	0.9241E-06	ZERO	ZERO	0.7247E-18	ZERO
22 RhO2	0.1884E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.1073E-02	ZERO	0.6889E-05	ZERO	ZERO	0.5520E-17	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	205 Slurry from PRFT to PR	206 Formic Acid to PR	209 PR Heel to Hydrolysis	217 H ₂ O addn to PR	220 Cu Catalyst addn to PR	228 GE Bottoms to PR	207 PR CO ₂ Purge
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.3431E-01	ZERO	0.2205E-03	ZERO	ZERO	0.1767E-15	ZERO
48 Sr(COOH) ₂	ZERO	ZERO	0.1165E-04	ZERO	ZERO	0.9334E-17	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.6835E-04	ZERO	0.4376E-06	ZERO	ZERO	0.3507E-18	ZERO
127 Sr(OH) ₂	0.2148E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	0.1512E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO ₂	0.3862E-03	ZERO	0.2496E-05	ZERO	ZERO	0.2000E-17	ZERO
92 ThO ₂	0.1401E-01	ZERO	0.8973E-04	ZERO	ZERO	0.7190E-16	ZERO
107 TiO ₂	ZERO	ZERO	0.4727E-02	ZERO	ZERO	0.3787E-14	ZERO
119 Tritium	0.1080E-11	ZERO	0.6914E-14	ZERO	ZERO	0.2306E-14	ZERO
17 U ₃ O ₈	0.2034E-01	ZERO	0.1302E-03	ZERO	ZERO	0.1043E-15	ZERO
62 UO ₂ (COOH) ₂	ZERO	ZERO	0.5159E-09	ZERO	ZERO	0.4134E-21	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	0.6803E-07	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	0.4681E-05	ZERO	ZERO	0.3751E-17	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	0.2047E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	0.5841E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.1394E-04	ZERO	0.8926E-07	ZERO	ZERO	0.7152E-19	ZERO
100 Zeolite	0.2224E-02	ZERO	0.1424E-04	ZERO	ZERO	0.1141E-16	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	0.1267E-04	ZERO	ZERO	0.1016E-16	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3440E-02	ZERO	0.1539E-04	ZERO	ZERO	0.1233E-16	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.3448E+00	ZERO	0.2213E-02	ZERO	ZERO	0.1774E-14	ZERO
1 water	0.3673E+03	0.1663E+01	0.4034E+01	0.1816E+03	0.1097E+02	0.6674E+02	ZERO
TOTAL FLOW, LB/HR	0.4190E+03	0.1696E+02	0.4251E+01	0.1816E+03	0.1285E+02	0.6675E+02	0.1236E+02
TEMPERATURE, DEG C	0.3997E+02	0.2500E+02	0.5000E+02	0.3500E+02	0.2500E+02	0.5000E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.9656E+00	0.1000E+01	0.9690E+00	0.9656E+00	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	ZERO	-0.5055E+00	ZERO	-0.4556E+00	-0.5055E+00	ZERO
PRESSURE, MM HG	0.7339E+03		0.7339E+03		0.7364E+03	0.7339E+03	
ENTHALPY, PCU/HR	0.1476E+05	0.2379E+03	0.2043E+03	0.6371E+04	0.2753E+03	0.3341E+04	0.8275E+03
VAPOR FLOW, CFM							0.1896E+01
LIQUID FLOW, GPM	0.8258E+00	0.2837E-01	0.8365E-02	0.3626E+00	0.2353E-01	0.1333E+00	
DENSITY, LBS/FT ³	0.6326E+02	0.7454E+02	0.6335E+02	0.6243E+02	0.6807E+02	0.6243E+02	0.1087E+00
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS --> STREAM NAME	265 PR Transfer Pump Prime	266 PR Sampler Pump Prime	211 Hydroly/CO2 Purge / PR	215 Hydroly/PR vnt to SCVC	212 Hydroly/PRC Cndst to PRD	214 Hydroly/PRD Org to OW	210 Hydrolysis PRD aq to PR
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	0.8133E+00	0.2646E-01	0.7869E+00	0.7868E+00	0.8688E-04
123 (C6H5)2C6H4	ZERO	ZERO	0.8566E-07	0.4096E-14	0.8566E-07	0.1262E-07	0.7304E-07
118 (C6H5)2NH	ZERO	ZERO	0.3403E-01	0.2906E-06	0.3403E-01	0.3403E-01	0.3398E-05
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	0.1611E-01	0.2633E-03	0.1584E-01	0.1418E-01	0.1659E-02
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	0.8386E-01	0.1319E-02	0.8254E-01	0.6423E-01	0.1831E-01
121 (C6H6)	ZERO	ZERO	0.3943E+02	0.1601E+02	0.2342E+02	0.2334E+02	0.7775E-01
155 (CH3)2CHOH	ZERO	ZERO	0.1485E-10	0.8414E-12	0.1401E-10	0.2064E-11	0.1194E-10
154 (CH3OH)	ZERO	ZERO	0.2984E-11	0.3645E-12	0.2620E-11	0.3860E-12	0.2234E-11
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	0.1320E+02	0.1319E+02	0.1887E-01	0.2782E-02	0.1609E-01
142 CO2 (C14)	ZERO	ZERO	0.1794E-08	0.1791E-08	0.2564E-11	0.3778E-12	0.2186E-11
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	265 PR Transfer Pump Prime	266 PR Sampler Pump Prime	211 Hydroly/CO2 Purge / PR	215 Hydrolys/PR vnt to SCVC	212 Hydroly/PRC Cndst to PRD	214 Hydroly/PRD Org to OR	210 Hydrolysis PRD aq to PR
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
103 Group B	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
25 H2	ZERO	ZERO	0.1089E-12	0.1089E-12	0.6384E-17	0.9409E-18	0.5444E-17
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	0.1832E+00	0.1901E-02	0.1813E+00	0.6543E-03	0.1806E+00
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	0.4001E-05	0.1699E-10	0.4001E-05	0.5897E-06	0.3412E-05
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	0.1708E-02	0.1708E-02	0.7681E-07	0.1132E-07	0.6549E-07
74 N2O	ZERO	ZERO	0.1228E-09	0.1227E-09	0.1061E-12	0.1563E-13	0.9043E-13
182 NH3	ZERO	ZERO	0.1265E-07	0.1056E-07	0.2093E-08	0.3084E-09	0.1784E-08
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	0.2557E-01	0.2557E-01	0.3358E-05	0.4949E-06	0.2863E-05

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	265 PR Transfer Pump Prime	266 PR Sampler Pump Prime	211 Hydroly/CO2 Purge / PR	215 Hydrolys/PR vnt to SCVC	212 Hydroly/PRC Cndst to PRD	214 Hydroly/PRD Org to OE	210 Hydrolysis PRD aq to PR
84 NO2	ZERO	ZERO	0.1134E-09	0.1134E-09	0.1489E-13	0.2195E-14	0.1270E-13
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (Cl4)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
69 NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
3 NaNO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
82 O2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	265 PR Transfer Pump Prime	266 PR Sampler Pump Prime	211 Hydroly/CO2 Purge / PR	215 Hydrolys/PR vnt to SCVC	212 Hydroly/PRC Cndst to PRD	214 Hydroly/PRD Org to OE	210 Hydrolysis PRD aq to PR
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	0.6002E-13	0.2109E-14	0.5791E-13	0.1202E-17	0.5791E-13
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.3900E+01	0.7800E+01	0.3635E+02	0.1286E+01	0.3507E+02	0.3805E-01	0.3503E+02
TOTAL FLOW, LB/HR	0.3900E+01	0.7800E+01	0.9015E+02	0.3054E+02	0.5961E+02	0.2428E+02	0.3532E+02
TEMPERATURE, DEG C	0.2500E+02	0.2500E+02	0.8597E+02	0.5000E+02	0.5000E+02	0.5000E+02	0.5000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG			0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.9786E+02	0.1957E+03	0.2934E+05	0.3639E+04	0.2273E+04	0.5121E+03	0.1761E+04
VAPOR FLOW, CFM			0.2308E+02	0.4230E+01			
LIQUID FLOW, GPM	0.7788E-02	0.1558E-01			0.1275E+00	0.5698E-01	0.7050E-01
DENSITY, LBS/FT3	0.6243E+02	0.6243E+02	0.6510E-01	0.1203E+00	0.5829E+02	0.5313E+02	0.6247E+02
PHASE	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS ->	213
STREAM NAME	PR Liq after
COMPONENT FLOWS, LB/HR	Rxn/CO ₂ Pur
122 (C ₆ H ₅) ₂	0.3682E-01
123 (C ₆ H ₅) ₂ C ₆ H ₄	0.1033E+00
118 (C ₆ H ₅) ₂ NH	0.3324E-01
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	0.5980E-01
162 (C ₆ H ₅ NH ₂)	0.6334E-01
163 (C ₆ H ₅ NHCHO)	0.1828E+00
165 (C ₆ H ₅ NO)	0.2987E-02
164 (C ₆ H ₅ NO ₂)	0.6062E-02
131 (C ₆ H ₅ OH salt)	ZERO
130 (C ₆ H ₅ OH)	0.9168E+00
121 (C ₆ H ₆)	0.2919E+00
155 (CH ₃) ₂ CHOH	0.1350E-09
154 (CH ₃ OH)	0.1457E-10
45 Ag	0.4163E-02
116 Ag ₂ O	ZERO
134 AgNO ₃	ZERO
77 Al ₂ O ₃	0.3178E+00
106 B ₂ O ₃	ZERO
9 Ba(OH) ₂	ZERO
15 BaO	ZERO
24 BaSO ₄	0.2193E+00
66 CO	ZERO
37 CO ₂	0.1366E-01
142 CO ₂ (C14)	0.3594E-11
63 Ca(COOH) ₂	0.3993E-01
167 Ca(NO ₃) ₂	ZERO
120 Ca(OH) ₂	ZERO
113 Ca ₃ (PO ₄) ₂	0.2000E-02
20 CaC ₂ O ₄	0.5448E-01
18 CaCO ₃	ZERO
64 CaCO ₃ (C14)	ZERO
78 CaF ₂	0.2880E-02
41 CaO	ZERO
19 CaSO ₄	0.5690E-02
29 Carbon	ZERO
99 Cement	ZERO
26 Co(COOH) ₂	0.2093E-03
168 Co(NO ₃) ₂	ZERO
59 CoO	0.4483E-04
98 Cr ₂ O ₃	0.4043E-02
42 Cs ₂ O	0.7432E-04
53 CsCOOH	0.2185E+00
96 CsCl	ZERO
169 CsNO ₃	ZERO
8 CsOH	ZERO
151 CsTPB	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) ->	213
STREAM NAME	PR Liq after Rxn/CO ₂ Pur
54 Cu(COOH) ₂	0.3818E-03
170 Cu(NO ₃) ₂	0.1888E+01
55 CuO	0.1768E-02
80 Fe ₂ O ₃	0.4881E+00
101 FeO	ZERO
102 Group A	0.8205E-05
103 Group B	0.2629E-07
25 H ₂	0.1819E-16
158 H ₂ C ₂ O ₄	ZERO
93 H ₂ SO ₄	ZERO
90 H ₃ BO ₃	0.8265E+01
34 HCOOH	0.7767E+01
43 HCl	ZERO
85 HF	ZERO
49 HNO ₃	ZERO
36 Hg	0.2348E+00
129 Hg(C ₆ H ₅) ₂	0.1156E-02
135 Hg(NO ₃) ₂	ZERO
144 Hg ₂ Cl ₂	ZERO
117 Hg ₂ I ₂	ZERO
146 HgCl ₂	ZERO
21 HgO	ZERO
97 I ₂	ZERO
39 K ₂ O	0.4269E-02
51 KCOOH	0.9698E+01
157 KMnO ₄	ZERO
161 KNO ₃	ZERO
10 KOH	ZERO
150 KTPB	ZERO
105 La ₂ O ₃	ZERO
108 Li ₂ O	ZERO
65 Mg(COOH) ₂	0.8808E-02
171 Mg(NO ₃) ₂	ZERO
33 MgO	0.7715E-03
60 Mn(COOH) ₂	0.9889E-01
172 Mn(NO ₃) ₂	ZERO
180 Mn ₃ O ₄	ZERO
56 MnO	ZERO
14 MnO ₂	0.3928E-01
145 MoO ₂	0.3077E-04
81 N ₂	0.1767E-06
74 N ₂ O	0.1311E-12
182 NH ₃	0.3063E-08
114 NH ₃ OHNO ₃	ZERO
52 NH ₄ COOH	0.7321E+00
173 NH ₄ NO ₃	ZERO
68 NH ₄ OH	ZERO
148 NH ₄ TPB	ZERO
35 NO	0.7410E-05

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) ->	213
STREAM NAME	PR Liq after Rxn/CO ₂ Pur
84 NO ₂	0.3286E-13
70 Na(HgO(OH))	ZERO
94 Na ₂ B ₄ O ₇	ZERO
109 Na ₂ C ₂ O ₄	ZERO
5 Na ₂ CO ₃	ZERO
143 Na ₂ CO ₃ (C14)	ZERO
89 Na ₂ CrO ₄	ZERO
115 Na ₂ MoO ₄	ZERO
32 Na ₂ O	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO
73 Na ₂ RhO ₄	ZERO
72 Na ₂ RuO ₄	ZERO
6 Na ₂ SO ₄	0.1114E-01
88 Na ₂ SiO ₃	ZERO
87 Na ₃ PO ₄	0.7904E-03
91 NaAg(OH) ₂	ZERO
75 NaAl(OH) ₄	ZERO
50 NaCOOH	0.1664E+01
7 NaCl	0.6053E-02
69 NaF	0.3478E-03
11 NaHCO ₃	ZERO
12 NaI	0.1762E-06
3 NaNO ₂	ZERO
2 NaNO ₃	0.5119E-02
4 NaOH	ZERO
149 NaTPB	ZERO
160 NaTcO ₄	ZERO
152 NaTi ₂ O ₅ H	ZERO
181 Nd ₂ O ₃	ZERO
61 Ni(COOH) ₂	0.1174E-01
174 Ni(NO ₃) ₂	ZERO
40 NiO	0.2343E-01
82 O ₂	ZERO
175 Pb(NO ₃) ₂	ZERO
86 PbCO ₃	0.2871E-03
67 PbO	ZERO
147 PbS	ZERO
28 PbSO ₄	0.5786E-02
124 Pd	0.3076E-03
112 Pd(NO ₃) ₂	ZERO
110 PdO	ZERO
76 PuO ₂	0.9670E-04
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.2445E-03
58 Rh	0.1452E-03
22 RhO ₂	ZERO
95 Ru	ZERO
79 RuO ₂	0.1083E-02
83 RuO ₄	ZERO
38 SO ₂	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3A. Precipitate Hydrolysis in Salt Cell

STREAM NUMBERS (CONT'D) ->	213
STREAM NAME	PR Liq after Rxn/CO ₂ Pur
141 SO ₃	ZERO
137 Semi Vol Cs ₂ O	ZERO
136 Semi Vol CsCl	ZERO
126 Semi Vol Group A	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO
138 Semi Vol NaCl	ZERO
139 Semi Vol NaF	ZERO
125 Semi Vol NaI	ZERO
23 Semi Vol RuO ₂	ZERO
111 SiO ₂	0.3466E-01
48 Sr(COOH) ₂	0.1831E-02
176 Sr(NO ₃) ₂	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.6878E-04
127 Sr(OH) ₂	ZERO
30 SrCO ₃	ZERO
46 SrO	ZERO
159 TcO ₂	0.3923E-03
92 ThO ₂	0.1410E-01
107 TiO ₂	0.7429E+00
119 Tritium	0.1087E-11
17 U ₃ O ₈	0.2047E-01
62 UO ₂ (COOH) ₂	0.8109E-07
177 UO ₂ (NO ₃) ₂	ZERO
16 UO ₂ (OH) ₂	ZERO
27 Y(COOH) ₃	0.7358E-03
178 Y(NO ₃) ₃	ZERO
128 Y(OH) ₃	ZERO
31 Y ₂ (CO ₃) ₃	ZERO
47 Y ₂ O ₃	0.1403E-04
100 Zeolite	0.2239E-02
44 Zn(COOH) ₂	0.1992E-02
179 Zn(NO ₃) ₂	ZERO
57 ZnO	0.2418E-02
104 ZrO ₂	ZERO
13 hydrate H ₂ O	0.3479E+00
1 water	0.6342E+03
TOTAL FLOW, LB/HR	0.6689E+03
TEMPERATURE, DEG C	0.8999E+02
PRESSURE, ATM	0.9656E+00
PRESSURE, PSIG	-0.5055E+00
PRESSURE, MM HG	0.7339E+03
ENTHALPY, PCU/HR	0.5779E+05
VAPOR FLOW, CFM	
LIQUID FLOW, GPM	0.1316E+01
DENSITY, LBS/FT ³	0.6335E+02
PHASE	LIQUID

SECTION 3B. BOILUP OF PRECIPITATE HYDROLYSIS PRODUCTS IN SALT CELL

WSRC-TR-93-527 (Revision 0)

Date: September 1993

Section 3B, Page 0 of 29

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

DESCRIPTION	PAGE
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1. STREAM NUMBERS 204, 209, 213, 214, 215, 253, 228	2
2. STREAM NUMBERS 221, 222, 223, 224, 225, 226, 227	6
3. STREAM NUMBERS 229, 230, 231, 232, 233, 234, 235	10
4. STREAM NUMBERS 236, 237, 238, 239, 240, 241, 242	14
5. STREAM NUMBERS 243, 244, 245, 246, 247, 248, 249	18
6. STREAM NUMBERS 250, 251, 252, 260, 261, 262, 263	22
7. STREAM NUMBERS 264, 267, 268	26

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NH₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS -> STREAM NAME	204 PRFT vent to SCVC	209 PR Heel to Hydrolysis	213 PR Liq after Rxn/CO ₂ Pur	214 Hydroly/PRD Org to OE	215 Hydrolys/PR vnt to SCVC	253 OE Aqueous Inventory	228 OE Bottoms to PR
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	0.5408E-04	0.3682E-01	0.7868E+00	0.2646E-01	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	0.4142E-03	0.1033E+00	0.1262E-07	0.4096E-14	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	0.3851E-04	0.3324E-01	0.3403E-01	0.2906E-06	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	0.3120E-03	0.5980E-01	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	0.4010E-03	0.6334E-01	0.1418E-01	0.2633E-03	0.5515E-02	0.1082E-02
163 (C ₆ H ₅ NHCHO)	ZERO	0.1163E-02	0.1828E+00	ZERO	ZERO	0.4749E-14	0.9322E-15
165 (C ₆ H ₅ NO)	ZERO	0.1901E-04	0.2987E-02	ZERO	ZERO	0.7761E-16	0.1523E-16
164 (C ₆ H ₅ NO ₂)	ZERO	0.3857E-04	0.6062E-02	ZERO	ZERO	0.1575E-15	0.3092E-16
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	ZERO	0.5421E-02	0.9168E+00	0.6423E-01	0.1319E-02	0.1575E-01	0.3091E-02
121 (C ₆ H ₆)	0.7564E-02	0.7687E-04	0.2919E+00	0.2334E+02	0.1601E+02	0.3376E-03	0.6626E-04
155 (CH ₃) ₂ CHOH	0.6390E-11	0.8574E-12	0.1350E-09	0.2064E-11	0.8414E-12	0.3166E-10	0.6214E-11
154 (CH ₃ OH)	0.5645E-12	0.9223E-13	0.1457E-10	0.3860E-12	0.3645E-12	0.3525E-11	0.6918E-12
45 Ag	ZERO	0.2648E-04	0.4163E-02	ZERO	ZERO	0.1058E-15	0.2077E-16
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	0.2022E-02	0.3178E+00	ZERO	ZERO	0.8254E-14	0.1620E-14
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	0.1395E-02	0.2193E+00	ZERO	ZERO	0.5696E-14	0.1118E-14
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.4357E+01	0.1966E-08	0.1366E-01	0.2782E-02	0.1319E+02	0.1340E-05	0.2631E-06
142 CO ₂ (C14)	ZERO	0.5173E-18	0.3594E-11	0.3778E-12	0.1791E-08	0.2940E-18	0.5771E-19
63 Ca(COOH) ₂	ZERO	0.2540E-03	0.3993E-01	ZERO	ZERO	0.1037E-14	0.2035E-15
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	0.1273E-04	0.2000E-02	ZERO	ZERO	0.5195E-16	0.1020E-16
20 CaC ₂ O ₄	ZERO	0.3466E-03	0.5448E-01	ZERO	ZERO	0.1415E-14	0.2778E-15
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	0.1832E-04	0.2880E-02	ZERO	ZERO	0.7480E-16	0.1468E-16
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	0.3620E-04	0.5690E-02	ZERO	ZERO	0.1478E-15	0.2901E-16
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	0.1331E-05	0.2093E-03	ZERO	ZERO	0.5435E-17	0.1067E-17
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.2852E-06	0.4483E-04	ZERO	ZERO	0.1164E-17	0.2285E-18
98 Cr ₂ O ₃	ZERO	0.2572E-04	0.4043E-02	ZERO	ZERO	0.1050E-15	0.2061E-16
42 Cs ₂ O	ZERO	0.4729E-06	0.7432E-04	ZERO	ZERO	0.1930E-17	0.3789E-18
53 CsCOOH	ZERO	0.1390E-02	0.2185E+00	ZERO	ZERO	0.5675E-14	0.1114E-14
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTfB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	204 PRFT vent to SCVC	209 PR Heel to Hydrolysis	213 PR Liq after Rxn/CO2 Pur	214 Hydroly/PRD Org to OE	215 Hydrolys/PR vnt to SCVC	253 OE Aqueous Inventory	228 OE Bottoms to PR
54 Cu(COOH)2	ZERO	0.2429E-05	0.3818E-03	ZERO	ZERO	0.9915E-17	0.1946E-17
170 Cu(NO3)2	ZERO	0.1201E-01	0.1888E+01	ZERO	ZERO	0.4897E-13	0.9611E-14
55 CuO	ZERO	0.1125E-04	0.1768E-02	ZERO	ZERO	0.4593E-16	0.9015E-17
80 Fe2O3	ZERO	0.3105E-02	0.4881E+00	ZERO	ZERO	0.1268E-13	0.2488E-14
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	0.5220E-07	0.8205E-05	ZERO	ZERO	0.2131E-18	0.4183E-19
103 Group B	ZERO	0.1673E-09	0.2629E-07	ZERO	ZERO	0.6828E-21	0.1340E-21
25 H2	0.5890E-10	TRACE	0.1819E-16	0.9409E-18	0.1089E-12	TRACE	TRACE
158 H2C2O4	ZERO	TRACE	ZERO	ZERO	ZERO	0.1703E-22	0.3343E-23
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	0.5258E-01	0.8265E+01	ZERO	ZERO	0.2147E-12	0.4213E-13
34 HCOOH	ZERO	0.4941E-01	0.7767E+01	0.6543E-03	0.1901E-02	0.1208E-01	0.2371E-02
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	0.2240E-03	0.2348E+00	0.5897E-06	0.1699E-10	0.2617E-05	0.5136E-06
129 Hg(C6H5)2	ZERO	ZERO	0.1156E-02	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.2716E-04	0.4269E-02	ZERO	ZERO	0.1109E-15	0.2176E-16
51 KCOOH	ZERO	0.6170E-01	0.9698E+01	ZERO	ZERO	0.2519E-12	0.4944E-13
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	0.5604E-04	0.8808E-02	ZERO	ZERO	0.2288E-15	0.4490E-16
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.4908E-05	0.7715E-03	ZERO	ZERO	0.2004E-16	0.3933E-17
60 Mn(COOH)2	ZERO	0.6291E-03	0.9889E-01	ZERO	ZERO	0.2568E-14	0.5041E-15
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	0.2499E-03	0.3928E-01	ZERO	ZERO	0.1020E-14	0.2002E-15
145 MoO2	ZERO	0.1958E-06	0.3077E-04	ZERO	ZERO	0.7993E-18	0.1569E-18
81 N2	0.1132E+01	0.3540E-09	0.1767E-06	0.1132E-07	0.1708E-02	0.1990E-08	0.3906E-09
74 N2O	0.3536E-08	0.5901E-20	0.1311E-12	0.1563E-13	0.1227E-09	0.4627E-19	0.9081E-20
182 NH3	0.1741E-08	0.5727E-11	0.3063E-08	0.3084E-09	0.1056E-07	0.1132E-09	0.2222E-10
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	0.4657E-02	0.7321E+00	ZERO	ZERO	0.1901E-13	0.3732E-14
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	0.1532E-13	0.7410E-05	0.4949E-06	0.2557E-01	0.1215E-15	0.2385E-16

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	204 PRFT vent to SCVC	209 PR Heel to Hydrolysis	213 PR Liq after Rxn/CO ₂ Pur	214 Hydroly/PRD Org to OE	215 Hydrolys/PR vnt to SCVC	253 OE Aqueous Inventory	228 OE Bottoms to PR
84 NO ₂	ZERO	0.6794E-22	0.3286E-13	0.2195E-14	0.1134E-09	0.5389E-24	0.1058E-24
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	0.7087E-04	0.1114E-01	ZERO	ZERO	0.2893E-15	0.5679E-16
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	0.5028E-05	0.7904E-03	ZERO	ZERO	0.2053E-16	0.4029E-17
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	0.1059E-01	0.1664E+01	ZERO	ZERO	0.4322E-13	0.8484E-14
7 NaCl	ZERO	0.3851E-04	0.6053E-02	ZERO	ZERO	0.1572E-15	0.3086E-16
69 NaF	ZERO	0.2213E-05	0.3478E-03	ZERO	ZERO	0.9034E-17	0.1773E-17
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.1121E-08	0.1762E-06	ZERO	ZERO	0.4577E-20	0.8985E-21
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	0.3257E-04	0.5119E-02	ZERO	ZERO	0.1330E-15	0.2610E-16
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	0.7468E-04	0.1174E-01	ZERO	ZERO	0.3049E-15	0.5984E-16
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.1491E-03	0.2343E-01	ZERO	ZERO	0.6085E-15	0.1194E-15
82 O ₂	0.3413E+00	0.3675E-09	ZERO	ZERO	ZERO	0.3655E-08	0.7174E-09
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	0.1827E-05	0.2871E-03	ZERO	ZERO	0.7457E-17	0.1464E-17
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	0.3681E-04	0.5786E-02	ZERO	ZERO	0.1503E-15	0.2950E-16
124 Pd	ZERO	0.1957E-05	0.3076E-03	ZERO	ZERO	0.7819E-17	0.1535E-17
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	0.6152E-06	0.9670E-04	ZERO	ZERO	0.2512E-17	0.4930E-18
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	0.1556E-05	0.2445E-03	ZERO	ZERO	0.6351E-17	0.1247E-17
58 Rh	ZERO	0.9241E-06	0.1452E-03	ZERO	ZERO	0.3692E-17	0.7247E-18
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	0.6889E-05	0.1083E-02	ZERO	ZERO	0.2812E-16	0.5520E-17
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	204 PRFT vent to SCVC	209 PR Heel to Hydrolysis	213 PR Liq after Rxn/CO2 Pur	214 Hydroly/PRD Org to OE	215 Hydrolys/PR vnt to SCVC	253 OE Aqueous Inventory	228 OE Bottoms to PR
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.2205E-03	0.3466E-01	ZERO	ZERO	0.9001E-15	0.1767E-15
48 Sr(COOH)2	ZERO	0.1165E-04	0.1831E-02	ZERO	ZERO	0.4755E-16	0.9334E-17
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	0.4376E-06	0.6878E-04	ZERO	ZERO	0.1786E-17	0.3507E-18
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	0.2496E-05	0.3923E-03	ZERO	ZERO	0.1019E-16	0.2000E-17
92 ThO2	ZERO	0.8973E-04	0.1410E-01	ZERO	ZERO	0.3663E-15	0.7190E-16
107 TiO2	ZERO	0.4727E-02	0.7429E+00	ZERO	ZERO	0.1930E-13	0.3787E-14
119 Tritium	0.6465E-15	0.6914E-14	0.1087E-11	0.1202E-17	0.2109E-14	0.1175E-13	0.2306E-14
17 U3O8	ZERO	0.1302E-03	0.2047E-01	ZERO	ZERO	0.5315E-15	0.1043E-15
62 UO2(COOH)2	ZERO	0.5159E-09	0.8109E-07	ZERO	ZERO	0.2106E-20	0.4134E-21
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	0.4681E-05	0.7358E-03	ZERO	ZERO	0.1911E-16	0.3751E-17
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.8926E-07	0.1403E-04	ZERO	ZERO	0.3644E-18	0.7152E-19
100 Zeolite	ZERO	0.1424E-04	0.2239E-02	ZERO	ZERO	0.5814E-16	0.1141E-16
44 Zn(COOH)2	ZERO	0.1267E-04	0.1992E-02	ZERO	ZERO	0.5174E-16	0.1016E-16
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.1539E-04	0.2418E-02	ZERO	ZERO	0.6281E-16	0.1233E-16
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.2213E-02	0.3479E+00	ZERO	ZERO	0.9036E-14	0.1774E-14
1 water	0.2161E+00	0.4034E+01	0.6342E+03	0.380 E-01	0.1286E+01	0.3400E+03	0.6674E+02
TOTAL FLOW, LB/HR	0.6054E+21	0.4251E+01	0.6689E+03	0.2428E+02	0.3054E+02	0.3401E+03	0.6675E+02
TEMPERATURE, DEG C	0.4000E+02	0.5000E+02	0.8999E+02	0.5000E+02	0.5000E+02	0.5000E+02	0.5000E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.4471E+03	0.2043E+02	0.5779E+05	0.5121E+03	0.3639E+04	0.1702E+05	0.3341E+04
VAPOR FLOW, CFM	0.1152E+01				0.4230E+01		
LIQUID FLOW, GPM		0.8365E-02	0.1316E+01	0.5698E-01		0.6791E+00	0.1333E+00
DENSITY, LBS/FT3	0.8761E-01	0.6335E+02	0.6335E+02	0.5313E+02	0.1203E+00	0.6243E+02	0.6243E+02
PHASE	VAPOR	LIQUID	LIQUID	LIQUID	VAPOR	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS --> STREAM NAME	221 PR Air Inleakage	222 PR Boilup to Cndnr	223 PRC Cndnste to PRD	224 PRD Aqueous to PR	225 PRD Organic to OE	226 PRD Air Inleakage	227 PRD Vent to SCVC
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	0.2831E-01	0.1333E-01	ZERO	0.1333E-01	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	0.3824E-01	0.3824E-01	ZERO	0.3824E-01	ZERO	ZERO
118 (C6H5)2NH	ZERO	0.2718E-01	0.2712E-01	ZERO	0.2712E-01	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	0.1076E-01	0.1076E-01	ZERO	0.1076E-01	ZERO	ZERO
162 (C6H5NH2)	ZERO	0.8415E-01	0.8389E-01	0.8389E-01	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	0.1100E-06	0.1100E-06	0.1100E-06	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	0.1797E-08	0.1797E-08	0.1797E-08	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	0.3647E-08	0.3647E-08	0.3647E-08	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	0.4271E+00	0.4265E+00	0.3626E+00	0.6398E-01	ZERO	ZERO
121 (C6H6)	ZERO	0.3389E+00	0.5904E-01	0.5904E-01	ZERO	ZERO	ZERO
155 (CH3)2CHOH	ZERO	0.8143E-10	0.8131E-10	0.8131E-10	ZERO	ZERO	ZERO
154 (CH3OH)	ZERO	0.1573E-10	0.1568E-10	0.1568E-10	ZERO	ZERO	ZERO
45 Ag	ZERO	0.2505E-08	0.2505E-08	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	0.1912E-06	0.1912E-06	0.1912E-06	ZERO	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	0.1319E-06	0.1319E-06	0.1319E-06	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	0.1437E-01	0.7110E-03	0.7110E-03	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	0.3781E-11	0.1871E-12	0.1871E-12	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	0.2402E-07	0.2402E-07	0.2402E-07	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	0.1203E-08	0.1203E-08	0.1203E-08	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	0.3278E-07	0.3278E-07	0.3278E-07	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	0.1733E-08	0.1733E-08	0.1733E-08	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	0.3424E-08	0.3424E-08	0.3424E-08	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	0.1259E-09	0.1259E-09	0.1259E-09	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.2697E-10	0.2697E-10	0.2697E-10	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	0.2432E-08	0.2432E-08	0.2432E-08	ZERO	ZERO	ZERO
42 Cs2O	ZERO	0.4472E-10	0.4472E-10	0.4472E-10	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	0.1315E-06	0.1315E-06	0.1315E-06	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	221 PR Air Inleakage	222 PR Boilup to Cndnsr	223 PRC Cndnste to PRD	224 PRD Aqueous to PR	225 PRD Organic to OE	226 PRD Air Inleakage	227 PRD Vent to SCVC
54 Cu(COOH)2	ZERO	0.2297E-09	0.2297E-09	0.2297E-09	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	0.1136E-05	0.1136E-05	0.1136E-05	ZERO	ZERO	ZERO
55 CuO	ZERO	0.1064E-08	0.1064E-08	0.1064E-08	ZERO	ZERO	ZERO
80 Fe2O3	ZERO	0.2937E-06	0.2937E-06	0.2937E-06	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	0.4936E-11	0.4936E-11	0.4936E-11	ZERO	ZERO	ZERO
103 Group B	ZERO	0.1582E-13	0.1582E-13	0.1582E-13	ZERO	ZERO	ZERO
25 H2	ZERO	0.1823E-16	0.3837E-19	0.3837E-19	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	0.4973E-05	0.4973E-05	0.4973E-05	ZERO	ZERO	ZERO
34 HCOOH	ZERO	0.1066E+01	0.1066E+01	0.1066E+01	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	0.1995E+00	0.1995E+00	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	0.1156E-02	0.1156E-02	ZERO	0.1156E-02	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.2569E-08	0.2569E-08	0.2569E-08	ZERO	ZERO	ZERO
51 KCOOH	ZERO	0.5835E-05	0.5835E-05	0.5835E-05	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	0.5299E-08	0.5299E-08	0.5299E-08	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.4642E-09	0.4642E-09	0.4642E-09	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	0.5950E-07	0.5950E-07	0.5950E-07	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	0.2363E-07	0.2363E-07	0.2363E-07	ZERO	ZERO	ZERO
145 MoO2	ZERO	0.1852E-10	0.1852E-10	0.1852E-10	ZERO	ZERO	ZERO
81 N2	0.1133E+01	0.1135E+01	0.2248E-02	0.2248E-02	ZERO	ZERO	ZERO
74 N2O	ZERO	0.1352E-12	0.4104E-14	0.4104E-14	ZERO	ZERO	ZERO
182 NH3	ZERO	0.1977E-07	0.1769E-07	0.1769E-07	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	0.4405E-06	0.4405E-06	0.4405E-06	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	0.7445E-05	0.3503E-07	0.3503E-07	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	221 PR Air Inleakage	222 PR Boilup to Cndnsr	223 PRC Cndnsr to PRD	224 PRD Aqueous to PR	225 PRD Organic to OE	226 PRD Air Inleakage	227 PRD Vent to SCVC
84 NO ₂	ZERO	0.3302E-13	0.1553E-15	0.1553E-15	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	0.6702E-08	0.6702E-08	0.6702E-08	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	0.4755E-09	0.4755E-09	0.4755E-09	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	0.1001E-05	0.1001E-05	0.1001E-05	ZERO	ZERO	ZERO
7 NaCl	ZERO	0.3642E-08	0.3642E-08	0.3642E-08	ZERO	ZERO	ZERO
69 NaF	ZERO	0.2093E-09	0.2093E-09	0.2093E-09	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.1060E-12	0.1060E-12	0.1060E-12	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	0.3080E-08	0.3080E-08	0.3080E-08	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	0.7062E-08	0.7062E-08	0.7062E-08	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.1410E-07	0.1410E-07	0.1410E-07	ZERO	ZERO	ZERO
82 O ₂	0.3423E+00	0.3435E+00	0.1297E-02	0.1297E-02	ZERO	ZERO	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	0.1728E-09	0.1728E-09	0.1728E-09	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	0.3481E-08	0.3481E-08	0.3481E-08	ZERO	ZERO	ZERO
124 Pd	ZERO	0.1851E-09	0.1851E-09	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	0.5818E-10	0.5818E-10	0.5818E-10	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	0.1471E-09	0.1471E-09	0.1471E-09	ZERO	ZERO	ZERO
58 Rh	ZERO	0.8739E-10	0.8739E-10	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	0.6515E-09	0.6515E-09	0.6515E-09	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAK NAME	221 PR Air Inleakage	222 PR Boilup to Cndnsr	223 PRC Cndnste to PRD	224 PRD Aqueous to PR	225 PRD Organic to OR	226 PRD Air Inleakage	227 PRD Vent to SCVC
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.2085E-07	0.2085E-07	0.2085E-07	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	0.1102E-08	0.1102E-08	0.1102E-08	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	0.4139E-10	0.4139E-10	0.4139E-10	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	0.2361E-09	0.2361E-09	0.2361E-09	ZERO	ZERO	ZERO
92 ThO2	ZERO	0.8486E-08	0.8486E-08	0.8486E-08	ZERO	ZERO	ZERO
107 TiO2	ZERO	0.4470E-06	0.4470E-06	0.4470E-06	ZERO	ZERO	ZERO
119 Tritium	ZERO	0.3298E-12	0.3298E-12	0.3298E-12	ZERO	ZERO	ZERO
17 U3O8	ZERO	0.1231E-07	0.1231E-07	0.1231E-07	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	0.4879E-13	0.4879E-13	0.4879E-13	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	0.4427E-09	0.4427E-09	0.4427E-09	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.8441E-11	0.8441E-11	0.8441E-11	ZERO	ZERO	ZERO
100 Zeolite	ZERO	0.1347E-08	0.1347E-08	0.1347E-08	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	0.1199E-08	0.1199E-08	0.1199E-08	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.1455E-08	0.1455E-08	0.1455E-08	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.2093E-06	0.2093E-06	0.2093E-06	ZERO	ZERO	ZERO
1 water	0.2478E-01	0.1988E+03	0.1988E+03	0.1988E+03	ZERO	ZERO	ZERO
TOTAL FLOW, LB/HR	0.1500E+01	0.2025E+03	0.2006E+03	0.2002E+03	0.1546E+00	ZERO	ZERO
TEMPERATURE, DEG C	0.3500E+02	0.9884E+02	0.5000E+02	0.5000E+02	ZERO	0.3500E+02	ZERO
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	-0.5055E+00
PRESSURE, MM HG		0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03		0.7339E+03
ENTHALPY, PCU/HR	0.3145E+02	0.1274E+06	0.9986E+04	0.9982E+04	ZERO	ZERO	ZERO
VAPOR FLOW, CFM	0.3543E+00	0.9379E+02					
LIQUID FLOW, GPM			0.3998E+00	0.3994E+00	0.2905E-03		
DENSITY, LBS/FT3	0.7055E-01	0.3598E-01	0.6255E+02	0.6249E+02	0.6636E+02	ZERO	ZERO
PHASE	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS -- STREAM NAME	229 PRC Vent to SCVC	230 SCVC Cndnstr to OE	231 CO2 Purge to OE	232 H2O Addtn to Org Evap	233 OE Air Inleakage	234 OE CO2 Purge Vapor to OFC	235 Boilup to OE Cndnstr
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.1499E-01	0.5641E-01	ZERO	ZERO	ZERO	0.6173E-04	0.8561E+00
123 (C6H5)2C6H4	0.3673E-09	0.1835E-08	ZERO	ZERO	ZERO	0.2205E-10	0.3824E-01
118 (C6H5)2NH	0.6201E-04	0.1343E-03	ZERO	ZERO	ZERO	0.7620E-09	0.6128E-01
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.1034E-09	0.2919E-09	ZERO	ZERO	ZERO	0.2403E-08	0.1076E-01
162 (C6H5NH2)	0.2605E-03	0.5848E-03	ZERO	ZERO	ZERO	0.3158E-06	0.1793E-01
163 (C6H5NHCHO)	0.1056E-14	0.1056E-14	ZERO	ZERO	ZERO	0.9808E-21	0.5762E-20
165 (C6H5NO)	0.1727E-16	0.1770E-16	ZERO	ZERO	ZERO	0.4513E-18	0.9416E-22
164 (C6H5NO2)	0.3504E-16	0.3504E-16	ZERO	ZERO	ZERO	0.1422E-20	0.1911E-21
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	0.6005E-03	0.2080E-02	ZERO	ZERO	ZERO	0.2406E-05	0.1695E+00
121 (C6H6)	0.2799E+00	0.1554E+02	ZERO	ZERO	ZERO	0.5743E-01	0.3915E+02
155 (CH3)2CHOH	0.1118E-12	0.6994E-11	ZERO	ZERO	ZERO	0.3742E-13	0.2947E-10
154 (CH3OH)	0.4995E-13	0.8430E-12	ZERO	ZERO	ZERO	0.1037E-13	0.6035E-11
45 Ag	0.2406E-16	0.2406E-16	ZERO	ZERO	ZERO	ZERO	0.1290E-21
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.1837E-14	0.1837E-14	ZERO	ZERO	ZERO	ZERO	0.1001E-19
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.1268E-14	0.1268E-14	ZERO	ZERO	ZERO	ZERO	0.6910E-20
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.1366E-01	0.9441E-02	0.4599E+01	ZERO	ZERO	0.4263E+01	0.3535E+00
142 CO2 (C14)	0.3594E-11	0.6348E-12	ZERO	ZERO	ZERO	0.9356E-12	0.7759E-13
63 Ca(COOH)2	0.2308E-15	0.2308E-15	ZERO	ZERO	ZERO	ZERO	0.1258E-20
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.1156E-16	0.1156E-16	ZERO	ZERO	ZERO	ZERO	0.6303E-22
20 CaC2O4	0.3149E-15	0.3149E-15	ZERO	ZERO	ZERO	ZERO	0.1717E-20
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.1665E-16	0.1665E-16	ZERO	ZERO	ZERO	ZERO	0.9074E-22
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	0.3289E-16	0.3289E-16	ZERO	ZERO	ZERO	ZERO	0.1793E-21
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.1210E-17	0.1210E-17	ZERO	ZERO	ZERO	ZERO	0.6594E-23
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.2591E-18	0.2591E-18	ZERO	ZERO	ZERO	ZERO	0.1413E-23
98 Cr2O3	0.2337E-16	0.2337E-16	ZERO	ZERO	ZERO	ZERO	0.1274E-21
42 Cs2O	0.4296E-18	0.4296E-18	ZERO	ZERO	ZERO	ZERO	0.2342E-23
53 CsCOOH	0.1263E-14	0.1263E-14	ZERO	ZERO	ZERO	ZERO	0.6886E-20
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	229 PRC Vent to SCVC	230 SCVC Cndnste to OM	231 CO2 Purge to OM	232 H2O Addtn to Org Evap	233 OM Air Inleakage	234 OM CO2 Purge Vapor to OMC	235 Boilup to OM Cndnstr
54 Cu(COOH)2	0.2207E-17	0.2207E-17	ZERO	ZERO	ZERO	ZERO	0.1203E-22
170 Cu(NO3)2	0.1091E-13	0.1091E-13	ZERO	ZERO	ZERO	ZERO	0.5941E-19
55 CuO	0.1022E-16	0.1022E-16	ZERO	ZERO	ZERO	ZERO	0.5572E-22
80 Fe2O3	0.2821E-14	0.2821E-14	ZERO	ZERO	ZERO	ZERO	0.1538E-19
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.4742E-19	0.4742E-19	ZERO	ZERO	ZERO	ZERO	0.2585E-24
103 Group B	0.1520E-21	0.1520E-21	ZERO	ZERO	ZERO	ZERO	TRACE
25 H2	0.1819E-16	0.3436E-15	ZERO	ZERO	ZERO	0.3432E-15	0.1064E-17
158 H2C2O4	ZERO	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.4777E-13	0.4777E-13	ZERO	ZERO	ZERO	ZERO	0.2604E-18
34 HCOOH	0.2185E-03	0.2088E-02	ZERO	ZERO	ZERO	0.6485E-05	0.2450E-02
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	0.1920E-08	0.1936E-08	ZERO	ZERO	ZERO	0.1927E-12	0.4247E-09
129 Hg(C6H5)2	0.1111E-10	0.3125E-10	ZERO	ZERO	ZERO	ZERO	0.1156E-02
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.2468E-16	0.2468E-16	ZERO	ZERO	ZERO	ZERO	0.1345E-21
51 KCOOH	0.5606E-13	0.5606E-13	ZERO	ZERO	ZERO	ZERO	0.3056E-18
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	0.5091E-16	0.5091E-16	ZERO	ZERO	ZERO	ZERO	0.2775E-21
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4459E-17	0.4459E-17	ZERO	ZERO	ZERO	ZERO	0.2431E-22
60 Mn(COOH)2	0.5716E-15	0.5716E-15	ZERO	ZERO	ZERO	ZERO	0.3116E-20
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.2270E-15	0.2270E-15	ZERO	ZERO	ZERO	ZERO	0.1238E-20
145 MoO2	0.1779E-18	0.1779E-18	ZERO	ZERO	ZERO	ZERO	0.9697E-24
81 N2	0.1133E+01	0.2663E-04	ZERO	ZERO	0.1133E+01	0.2656E-04	0.1133E+01
74 N2O	0.1311E-12	0.9175E-12	ZERO	ZERO	ZERO	0.8879E-12	0.4478E-13
182 NH3	0.2076E-08	0.8399E-09	ZERO	ZERO	ZERO	0.1006E-09	0.4553E-08
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	0.4231E-14	0.4231E-14	ZERO	ZERO	ZERO	ZERO	0.2307E-19
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.7410E-05	0.4631E-06	ZERO	ZERO	ZERO	0.9508E-06	0.6792E-08

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	229 PRC Vent to SCVC	230 SCVC Cndnste to OE	231 CO2 Purge to OE	232 H2O Addtn to Org Evap	233 OE Air Inleakage	234 OE CO2 Purge Vapor to OEC	235 Boilup to OE Cndnstr
84 NO2	0.3286E-13	0.2054E-14	ZERO	ZERO	ZERO	0.4216E-14	0.3012E-16
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (Cl4)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.6439E-16	0.6439E-16	ZERO	ZERO	ZERO	ZERO	0.3510E-21
88 Na2S1O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.4568E-17	0.4568E-17	ZERO	ZERO	ZERO	ZERO	0.2491E-22
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.9619E-14	0.9619E-14	ZERO	ZERO	ZERO	ZERO	0.5244E-19
7 NaCl	0.3499E-16	0.3499E-16	ZERO	ZERO	ZERO	ZERO	0.1907E-21
69 NaF	0.2011E-17	0.2011E-17	ZERO	ZERO	ZERO	ZERO	0.1096E-22
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.1019E-20	0.1019E-20	ZERO	ZERO	ZERO	ZERO	TRACE
3 NaNO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO3	0.2959E-16	0.2959E-16	ZERO	ZERO	ZERO	ZERO	0.1613E-21
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.6785E-16	0.6785E-16	ZERO	ZERO	ZERO	ZERO	0.3699E-21
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1354E-15	0.1354E-15	ZERO	ZERO	ZERO	ZERO	0.7383E-21
82 O2	0.3423E+00	0.1636E-04	ZERO	ZERO	0.3423E+00	0.1628E-04	0.3424E+00
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	0.1660E-17	0.1660E-17	ZERO	ZERO	ZERO	ZERO	0.9047E-23
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.3344E-16	0.3344E-16	ZERO	ZERO	ZERO	ZERO	0.1823E-21
124 Pd	0.1778E-17	0.1778E-17	ZERO	ZERO	ZERO	ZERO	0.9533E-23
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	0.5589E-18	0.5589E-18	ZERO	ZERO	ZERO	ZERO	0.3047E-23
156 PuO2(NaTi2O5)2	0.1413E-17	0.1413E-17	ZERO	ZERO	ZERO	ZERO	0.7706E-23
58 Rh	0.8395E-18	0.8395E-18	ZERO	ZERO	ZERO	ZERO	0.4502E-23
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.6259E-17	0.6259E-17	ZERO	ZERO	ZERO	ZERO	0.3412E-22
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	229 PRC Vent to SCVC	230 SCVC Cndnste to OE	231 CO2 Purge to OE	232 H2O Addtn to Org Evap	233 OE Air Inleakage	234 OE CO2 Purge Vapor to OEC	235 Boilup to OE Cndnstr
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.2003E-15	0.2003E-15	ZERO	ZERO	ZERO	ZERO	0.1092E-20
48 Sr(COOH)2	0.1058E-16	0.1058E-16	ZERO	ZERO	ZERO	ZERO	0.5769E-22
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	0.3976E-18	0.3976E-18	ZERO	ZERO	ZERO	ZERO	0.2167E-23
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.2268E-17	0.2268E-17	ZERO	ZERO	ZERO	ZERO	0.1236E-22
92 ThO2	0.8152E-16	0.8152E-16	ZERO	ZERO	ZERO	ZERO	0.4444E-21
107 TiO2	0.4294E-14	0.4294E-14	ZERO	ZERO	ZERO	ZERO	0.2341E-19
119 Tritium	0.2332E-15	0.2697E-14	ZERO	ZERO	ZERO	0.6776E-17	0.5527E-14
17 U3O8	0.1183E-15	0.1183E-15	ZERO	ZERO	ZERO	ZERO	0.6449E-21
62 UO2(COOH)2	0.4687E-21	0.4687E-21	ZERO	ZERO	ZERO	ZERO	TRACE
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.4253E-17	0.4253E-17	ZERO	ZERO	ZERO	ZERO	0.2319E-22
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.8109E-19	0.8109E-19	ZERO	ZERO	ZERO	ZERO	0.4421E-24
100 Zeolite	0.1294E-16	0.1294E-16	ZERO	ZERO	ZERO	ZERO	0.7054E-22
44 Zn(COOH)2	0.1151E-16	0.1151E-16	ZERO	ZERO	ZERO	ZERO	0.6277E-22
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1398E-16	0.1398E-16	ZERO	ZERO	ZERO	ZERO	0.7621E-22
104 ZnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.2011E-14	0.2011E-14	ZERO	ZERO	ZERO	ZERO	0.1096E-19
1 water	0.1419E+00	0.1872E+01	ZERO	0.7121E+02	0.2478E-01	0.1949E+00	0.1603E+03
TOTAL FLOW, LB/HR	0.1927E+01	0.1748E+02	0.4599E+01	0.7121E+02	0.1500E+01	0.4515E+01	0.2024E+03
TEMPERATURE, DEG C	0.5000E+02	0.1000E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.4617E+02	0.9644E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.9656E+00
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	ZERO	ZERO	ZERO	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG	0.7339E+03	0.7339E+03	ZERO	ZERO	ZERO	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.1454E+03	0.8255E+02	0.3078E+03	0.2498E+04	0.3146E+02	0.4214E+03	0.1077E+06
VAPOR FLOW, CFM	0.4618E+00	ZERO	0.7052E+00	ZERO	0.3543E+00	0.7851E+00	0.7933E+02
LIQUID FLOW, GPM	ZERO	0.3876E-01	ZERO	0.1422E+00	ZERO	ZERO	ZERO
DENSITY, LBS/FT3	0.6954E-01	0.5622E+02	0.1087E+00	0.6243E+02	0.7055E-01	0.9584E-01	0.4253E-01
PHASE	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS --> STREAM NAME	236 OED Aqueous to OE	237 OED Air Inleakage	238 OED Vent to SCVC	239 OEC Cndnste to OED	240 OEC Vent to SCVC	241 OED Organic to OECT	242 OECT Air Inleakage
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	0.3455E-04	0.8392E+00	0.1694E-01	0.8392E+00	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	0.8580E-12	0.3824E-01	0.6672E-09	0.3824E-01	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	0.6349E-09	0.6121E-01	0.7195E-04	0.6121E-01	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	0.1076E-01	0.1885E-09	0.1076E-01	ZERO
162 (C ₆ H ₅ NH ₂)	0.4474E-02	ZERO	0.3044E-06	0.1788E-01	0.5695E-04	0.1340E-01	ZERO
163 (C ₆ H ₅ NHCHO)	0.6740E-20	ZERO	ZERO	0.6742E-20	0.2540E-24	0.2518E-23	ZERO
165 (C ₆ H ₅ NO)	0.2179E-19	ZERO	ZERO	0.2180E-19	0.4296E-18	0.8142E-23	ZERO
164 (C ₆ H ₅ NO ₂)	0.1593E-20	ZERO	ZERO	0.1593E-20	0.1998E-22	0.5951E-24	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	0.4235E-01	ZERO	0.2349E-05	0.1694E+00	0.1254E-03	0.1271E+00	ZERO
121 (C ₆ H ₆)	0.3464E+00	ZERO	0.3123E-01	0.3773E+02	0.1510E+01	0.3735E+02	ZERO
155 (CH ₃) ₂ CHOH	0.2775E-10	ZERO	0.8310E-15	0.2942E-10	0.8894E-13	0.1667E-11	ZERO
154 (CH ₃ OH)	0.5666E-11	ZERO	0.3932E-15	0.6007E-11	0.3919E-13	0.3404E-12	ZERO
45 Ag	ZERO	ZERO	ZERO	0.1290E-21	TRACE	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.1001E-19	ZERO	ZERO	0.1001E-19	TRACE	0.3740E-23	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	0.6908E-20	ZERO	ZERO	0.6910E-20	TRACE	0.2581E-23	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.5017E-02	ZERO	0.1749E-02	0.7067E-02	0.4611E+01	0.3014E-03	ZERO
142 CO ₂ (C ₁₄)	0.1101E-14	ZERO	0.3839E-15	0.1551E-14	0.1012E-11	0.6615E-16	ZERO
63 Ca(COOH) ₂	0.1258E-20	ZERO	ZERO	0.1258E-20	TRACE	0.4699E-24	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.6301E-22	ZERO	ZERO	0.6303E-22	TRACE	TRACE	ZERO
20 CaC ₂ O ₄	0.1716E-20	ZERO	ZERO	0.1717E-20	TRACE	0.6411E-24	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	0.9071E-22	ZERO	ZERO	0.9074E-22	TRACE	TRACE	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	0.1792E-21	ZERO	ZERO	0.1793E-21	TRACE	TRACE	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	0.6592E-23	ZERO	ZERO	0.6594E-23	TRACE	TRACE	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1412E-23	ZERO	ZERO	0.1413E-23	TRACE	TRACE	ZERO
98 Cr ₂ O ₃	0.1273E-21	ZERO	ZERO	0.1274E-21	TRACE	TRACE	ZERO
42 Cs ₂ O	0.2341E-23	ZERO	ZERO	0.2342E-23	TRACE	TRACE	ZERO
53 CsCOOH	0.6883E-20	ZERO	ZERO	0.6886E-20	TRACE	0.2571E-23	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	236 OED Aqueous to OE	237 OED Air Inleakage	238 OED Vent to SCVC	239 OEC Cndnste to OED	240 OEC Vent to SCVC	241 OED Organic to OECT	242 OECT Air Inleakage
54 Cu(COOH) ₂	0.1202E-22	ZERO	ZERO	0.1203E-22	TRACE	TRACE	ZERO
170 Cu(NO ₃) ₂	0.5938E-19	ZERO	ZERO	0.5941E-19	TRACE	0.2219E-22	ZERO
55 CuO	0.5570E-22	ZERO	ZERO	0.5572E-22	TRACE	TRACE	ZERO
80 Fe ₂ O ₃	0.1537E-19	ZERO	ZERO	0.1538E-19	TRACE	0.5744E-23	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.2584E-24	ZERO	ZERO	0.2585E-24	TRACE	TRACE	ZERO
103 Group B	TRACE	ZERO	ZERO	TRACE	TRACE	TRACE	ZERO
25 H ₂	0.1176E-21	ZERO	0.1002E-20	0.1127E-20	0.3442E-15	0.7065E-23	ZERO
158 H ₂ C ₂ O ₄	TRACE	ZERO	ZERO	TRACE	TRACE	TRACE	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	0.2603E-18	ZERO	ZERO	0.2604E-18	TRACE	0.9726E-22	ZERO
34 HCOOH	0.2450E-02	ZERO	0.1092E-07	0.2453E-02	0.4124E-05	0.3074E-05	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	0.4249E-09	0.8978E-16	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	0.1156E-02	0.2015E-10	0.1156E-02	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	0.1345E-21	ZERO	ZERO	0.1345E-21	TRACE	TRACE	ZERO
51 KCOOH	0.3055E-18	ZERO	ZERO	0.3056E-18	TRACE	0.1141E-21	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 K ₂ PO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	0.2774E-21	ZERO	ZERO	0.2775E-21	TRACE	0.1036E-24	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.2430E-22	ZERO	ZERO	0.2431E-22	TRACE	TRACE	ZERO
60 Mn(COOH) ₂	0.3115E-20	ZERO	ZERO	0.3116E-20	TRACE	0.1164E-23	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	0.1237E-20	ZERO	ZERO	0.1238E-20	TRACE	0.4622E-24	ZERO
145 MoO ₂	0.9693E-24	ZERO	ZERO	0.9697E-24	TRACE	TRACE	ZERO
81 N ₂	0.1298E-03	ZERO	0.1441E-02	0.1579E-02	0.1133E+01	0.7795E-05	0.1133E+01
74 N ₂ O	0.3338E-15	ZERO	0.1927E-15	0.5465E-15	0.9323E-12	0.2006E-16	ZERO
182 NH ₃	0.3541E-08	ZERO	0.8913E-11	0.3763E-08	0.8999E-09	0.2127E-09	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	0.2306E-19	ZERO	ZERO	0.2307E-19	TRACE	0.8615E-23	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.2905E-11	ZERO	0.1105E-10	0.1413E-10	0.9576E-06	0.1745E-12	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	236 OED Aqueous to OE	237 OED Air Inleakage	238 OED Vent to SCVC	239 OEC Cndnste to OED	240 OEC Vent to SCVC	241 OED Organic to OECT	242 OECT Air Inleakage
84 NO ₂	0.1288E-19	ZERO	0.4900E-19	0.6266E-19	0.4246E-14	0.7739E-21	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ FuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.3509E-21	ZERO	ZERO	0.3510E-21	TRACE	0.1311E-24	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.2450E-22	ZERO	ZERO	0.2491E-22	TRACE	TRACE	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.5242E-19	ZERO	ZERO	0.5244E-19	TRACE	0.1958E-22	ZERO
7 NaCl	0.1907E-21	ZERO	ZERO	0.1907E-21	TRACE	TRACE	ZERO
69 NaF	0.1096E-22	ZERO	ZERO	0.1096E-22	TRACE	TRACE	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	TRACE	ZERO	ZERO	TRACE	TRACE	TRACE	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	0.1612E-21	ZERO	ZERO	0.1613E-21	TRACE	TRACE	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.3697E-21	ZERO	ZERO	0.3699E-21	TRACE	0.1381E-24	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.7380E-21	ZERO	ZERO	0.7383E-21	TRACE	0.2757E-24	ZERO
82 O ₂	0.1323E-03	ZERO	0.7695E-03	0.9098E-03	0.3423E+00	0.7951E-05	0.3423E+00
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	0.9044E-23	ZERO	ZERO	0.9047E-23	TRACE	TRACE	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.1822E-21	ZERO	ZERO	0.1823E-21	TRACE	TRACE	ZERO
124 Pd	ZERO	ZERO	ZERO	0.9533E-23	TRACE	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.3046E-23	ZERO	ZERO	0.3047E-23	TRACE	TRACE	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.7703E-23	ZERO	ZERO	0.7706E-23	TRACE	TRACE	ZERO
58 Rh	ZERO	ZERO	ZERO	0.4502E-23	TRACE	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	0.3411E-22	ZERO	ZERO	0.3412E-22	TRACE	TRACE	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	236 OED Aqueous to OE	237 OED Air Inleakage	238 OED Vent to SCVC	239 OEC Cndnste to OED	240 OEC Vent to SCVC	241 OED Organic to OECT	242 OECT Air Inleakage
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.1092E-20	ZERO	ZERO	0.1092E-20	TRACE	0.4078E-24	ZERO
48 Sr(COOH) ₂	0.5767E-22	ZERO	ZERO	0.5769E-22	TRACE	TRACE	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.2167E-23	ZERO	ZERO	0.2167E-23	TRACE	TRACE	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO ₂	0.1236E-22	ZERO	ZERO	0.1236E-22	TRACE	TRACE	ZERO
92 ThO ₂	0.4443E-21	ZERO	ZERO	0.4444E-21	TRACE	0.1660E-24	ZERO
107 TiO ₂	0.2340E-19	ZERO	ZERO	0.2341E-19	TRACE	0.8743E-23	ZERO
119 Tritium	0.5524E-14	ZERO	0.8609E-19	0.5524E-14	0.1043E-16	0.3590E-19	ZERO
17 U ₃ O ₈	0.6446E-21	ZERO	ZERO	0.6449E-21	TRACE	0.2408E-24	ZERO
62 UO ₂ (COOH) ₂	TRACE	ZERO	ZERO	TRACE	TRACE	TRACE	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	0.2318E-22	ZERO	ZERO	0.2319E-22	TRACE	TRACE	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.4419E-24	ZERO	ZERO	0.4421E-24	TRACE	TRACE	ZERO
100 Zeolite	0.7051E-22	ZERO	ZERO	0.7054E-22	TRACE	TRACE	ZERO
44 Zn(COOH) ₂	0.6275E-22	ZERO	ZERO	0.6277E-22	TRACE	TRACE	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.7618E-22	ZERO	ZERO	0.7621E-22	TRACE	TRACE	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.1096E-19	ZERO	ZERO	0.1096E-19	TRACE	0.4094E-23	ZERO
1 water	0.1601E+03	ZERO	0.2497E-02	0.1602E+03	0.3004E+00	0.5982E-01	0.2478E-01
TOTAL FLOW, LB/HR	0.1605E+03	ZERO	0.3773E-01	0.1991E+03	0.7913E+01	0.3850E+02	0.1500E+01
TEMPERATURE, DEG C	0.4997E+02	0.3500E+02	0.4997E+02	0.4999E+02	0.4245E+02	0.4997E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO
PRESSURE, MM HG	0.7339E+03		0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	
ENTHALPY, PCU/HR	0.8018E+04	ZERO	0.5445E+01	0.8835E+04	0.6985E+03	0.8111E+03	0.1520E+02
VAPOR FLOW, CFM			0.4792E-02		0.1374E+01		
LIQUID FLOW, GPM	0.3207E+00			0.4112E+00		0.9043E-01	0.3449E-02
DENSITY, LBS/FT ³	0.6241E+02	ZERO	0.1312E+00	0.6035E+02	0.9596E-01	0.5308E+02	0.5422E+02
PHASE	LIQUID	VAPOR	VAPOR	LIQUID	VAPOR	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS --> STREAM NAME	243 OECT CO2 Purge	244 OECT Vent to SCVC	245 Organic to Org Strg Tk	246 PR Bottoms bfor Trnsfr	247 PR Bottoms to PRBT	248 SCVC Vent to HEME	249 SCVC HEME Accumulatn
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	0.2449E-02	0.8367E+00	0.8501E-02	0.8447E-02	0.4427E-02	ZERO
123 (C6H5)2C6H4	ZERO	0.8002E-09	0.3824E-01	0.6511E-01	0.6469E-01	0.5306E-15	ZERO
118 (C6H5)2NH	ZERO	0.1349E-08	0.6121E-01	0.6054E-02	0.6015E-02	0.3882E-10	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	0.1076E-01	0.4903E-01	0.4872E-01	ZERO	ZERO
162 (C6H5NH2)	ZERO	0.5284E-05	0.1340E-01	0.6303E-01	0.6263E-01	0.1259E-05	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	0.2518E-23	0.1828E+00	0.1816E+00	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	0.8142E-23	0.2987E-02	0.2968E-02	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	0.5951E-24	0.6062E-02	0.6023E-02	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	0.4423E-04	0.1270E+00	0.8521E+00	0.8467E+00	0.9382E-05	ZERO
121 (C6H6)	ZERO	0.2050E+01	0.3530E+02	0.1208E-01	0.1200E-01	0.4326E+01	ZERO
155 (CH3)2CHOH	ZERO	0.4696E-14	0.1662E-11	0.1348E-09	0.1339E-09	0.4429E-12	ZERO
154 (CH3OH)	ZERO	0.2745E-14	0.3377E-12	0.1450E-10	0.1440E-10	0.1780E-12	ZERO
45 Ag	ZERO	ZERO	ZERO	0.4163E-02	0.4136E-02	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	0.3740E-23	0.3178E+00	0.3158E+00	ZERO	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	ZERO	0.2581E-23	0.2193E+00	0.2179E+00	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.4599E+01	0.4539E+01	0.6047E-01	0.3090E-06	0.3070E-06	0.2670E+02	ZERO
142 CO2 (C14)	ZERO	0.6528E-16	0.8698E-18	0.8132E-16	0.8080E-16	0.1795E-08	ZERO
63 Ca(COOH)2	ZERO	ZERO	0.4699E-24	0.3993E-01	0.3968E-01	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	ZERO	TRACE	0.2000E-02	0.1988E-02	ZERO	ZERO
20 CaC2O4	ZERO	ZERO	0.6411E-24	0.5448E-01	0.5413E-01	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	TRACE	0.2880E-02	0.2861E-02	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	TRACE	0.5690E-02	0.5654E-02	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	TRACE	0.2093E-03	0.2079E-03	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	TRACE	0.4483E-04	0.4454E-04	ZERO	ZERO
98 Cr2O3	ZERO	ZERO	TRACE	0.4043E-02	0.4017E-02	ZERO	ZERO
42 Cs2O	ZERO	ZERO	TRACE	0.7432E-04	0.7385E-04	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	0.2571E-23	0.2185E+00	0.2171E+00	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -->	243	244	245	246	247	248	249
STREAM NAME	OECT CO2	OECT Vent	Organic to	PR Bottoms	PR Bottoms	SCVC Vent	SCVC H2ME
	Purge	to SCVC	Org Strg Tk	bfor Trnsfr	to PRBT	to H2ME	Accumulatn
54 Cu(COOH)2	ZERO	ZERO	TRACE	0.3818E-03	0.3793E-03	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	0.2219E-22	0.1888E+01	0.1876E+01	ZERO	ZERO
55 CuO	ZERO	ZERO	TRACE	0.1768E-02	0.1757E-02	ZERO	ZERO
80 Fe2O3	ZERO	ZERO	0.5744E-23	0.4881E+00	0.4850E+00	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	TRACE	0.8205E-05	0.8152E-05	ZERO	ZERO
103 Group B	ZERO	ZERO	TRACE	0.2629E-07	0.2612E-07	ZERO	ZERO
25 H2	ZERO	0.7063E-23	TRACE	0.1600E-23	0.1590E-23	0.5901E-10	ZERO
158 H2C2O4	ZERO	ZERO	TRACE	TRACE	TRACE	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	0.9726E-22	0.8265E+01	0.8213E+01	ZERO	ZERO
34 HCOOH	ZERO	0.8948E-08	0.3065E-05	0.7766E+01	0.7717E+01	0.3537E-04	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	0.3521E-01	0.3499E-01	0.3583E-14	ZERO
129 Hg(C6H5)2	ZERO	ZERO	0.1156E-02	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	TRACE	0.4269E-02	0.4242E-02	ZERO	ZERO
51 KCOOH	ZERO	ZERO	0.1141E-21	0.9698E+01	0.9637E+01	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	0.1036E-24	0.8808E-02	0.8752E-02	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	TRACE	0.7715E-03	0.7666E-03	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	0.1164E-23	0.9889E-01	0.9826E-01	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	0.4622E-24	0.3928E-01	0.3903E-01	ZERO	ZERO
145 MoO2	ZERO	ZERO	TRACE	0.3077E-04	0.3058E-04	ZERO	ZERO
81 N2	ZERO	0.1133E+01	0.3177E-03	0.5565E-07	0.5530E-07	0.4532E+01	ZERO
74 N2O	ZERO	0.1988E-16	0.1769E-18	0.9274E-18	0.9215E-18	0.3658E-08	ZERO
182 NH3	ZERO	0.6970E-10	0.1430E-09	0.9002E-09	0.8944E-09	0.1450E-07	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	0.8615E-23	0.7321E+00	0.7274E+00	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	0.1744E-12	0.1477E-15	0.2408E-11	0.2393E-11	0.2558E-01	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	243 OECT CO2 Purge	244 OECT Vent to SCVC	245 Organic to Org Strg Tk	246 PR Bottoms bfor Trnsfr	247 PR Bottoms to PRBT	248 SCVC Vent to HEME	249 SCVC HEME Accumulatn
84 NO2	ZERO	0.7732E-21	0.6551E-24	0.1068E-19	0.1061E-19	0.1134E-09	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	ZERO	0.1311E-24	0.1114E-01	0.1107E-01	ZERO	ZERO
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	ZERO	TRACE	0.7904E-03	0.7853E-03	ZERO	ZERO
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	0.1958E-22	0.1664E+01	0.1654E+01	ZERO	ZERO
7 NaCl	ZERO	ZERO	TRACE	0.6053E-02	0.6015E-02	ZERO	ZERO
69 NaF	ZERO	ZERO	TRACE	0.3478E-03	0.3456E-03	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	TRACE	0.1762E-06	0.1751E-06	ZERO	ZERO
3 NaNO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO3	ZERO	ZERO	TRACE	0.5119E-02	0.5086E-02	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	0.1381E-24	0.1174E-01	0.1166E-01	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.2757E-24	0.2343E-01	0.2328E-01	ZERO	ZERO
82 O2	ZERO	0.3421E+00	0.1907E-03	0.5776E-07	0.5739E-07	0.1368E+01	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	TRACE	0.2871E-03	0.2853E-03	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	TRACE	0.5786E-02	0.5749E-02	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	0.3076E-03	0.3056E-03	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	TRACE	0.9670E-04	0.9608E-04	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	TRACE	0.2445E-03	0.2430E-03	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	0.1452E-03	0.1443E-03	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	TRACE	0.1083E-02	0.1076E-02	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	243 OECT CO2 Purge	244 OECT Vent to SCVC	245 Organic to Org Strg Tk	246 PR Bottoms bfor Transfr	247 PR Bottoms to PRBT	248 SCVC Vent to HEME	249 SCVC HEME Accumulatn
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	0.4078E-24	0.3466E-01	0.3443E-01	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	TRACE	0.1831E-02	0.1819E-02	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	TRACE	0.6878E-04	0.6835E-04	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO2	ZERO	ZERO	TRACE	0.3923E-03	0.3898E-03	ZERO	ZERO
92 ThO2	ZERO	ZERO	0.1660E-24	0.1410E-01	0.1401E-01	ZERO	ZERO
107 TiO2	ZERO	ZERO	0.8743E-23	0.7429E+00	0.7382E+00	ZERO	ZERO
119 Tritium	ZERO	0.3421E-21	0.3556E-19	0.1087E-11	0.1080E-11	0.3020E-15	ZERO
17 U3O8	ZERO	ZERO	0.2408E-24	0.2047E-01	0.2034E-01	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	TRACE	0.8109E-07	0.8057E-07	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	TRACE	0.7358E-03	0.7311E-03	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	TRACE	0.1403E-04	0.1394E-04	ZERO	ZERO
100 Zeolite	ZERO	ZERO	TRACE	0.2239E-02	0.2224E-02	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	TRACE	0.1992E-02	0.1979E-02	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	TRACE	0.2418E-02	0.2403E-02	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	0.4094E-23	0.3479E+00	0.3457E+00	ZERO	ZERO
1 water	ZERO	0.1110E+00	0.7774E+01	0.6341E+03	0.6300E+03	0.1839E+00	ZERO
TOTAL FLOW, LB/HR	0.4599E+01	0.8177E+01	0.4423E+02	0.6681E+03	0.6639E+03	0.3714E+02	ZERO
TEMPERATURE, DEG C	0.3500E+02	0.2306E+02	0.2366E+02	0.5000E+02	0.5000E+02	0.1000E+02	0.1000E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG		0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.1235E+03	0.6042E+03	0.5413E+03	0.3211E+05	0.3191E+05	0.2272E+04	ZERO
VAPOR FLOW, CFM		0.1254E+01				0.5636E+01	
LIQUID FLOW, GPM	0.8341E-02		0.9842E-01	0.1315E+01	0.1307E+01		
DENSITY, LBS/FT3	0.6874E+02	0.1087E+00	0.5603E+02	0.6335E+02	0.6335E+02	0.1098E+00	ZERO
PHASE	LIQUID	VAPOR	LIQUID	LIQUID	LIQUID	VAPOR	SOLID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS -> STREAM NAME	250 SCVC HEME Vnt to PVVS	251 Hg Accum in PRD - PR	252 Hg Accum in ORD	260 N2 Purge of OWST	261 OWST Vent to HEPA	262 Incinerator Fd frm OST	263 OWS Vent to Atmosphere
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.4427E-02	ZERO	ZERO	ZERO	0.2096E-04	0.8367E+00	0.2096E-04
123 (C6H5)2C6H4	0.5306E-15	ZERO	ZERO	ZERO	0.6237E-11	0.3824E-01	0.6237E-11
118 (C6H5)2NH	0.3882E-10	ZERO	ZERO	ZERO	0.9984E-11	0.6121E-01	0.9984E-11
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	0.1358E-09	0.1076E-01	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	0.1341E-07	0.1340E-01	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	TRACE	0.2518E-23	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	TRACE	0.8129E-23	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	TRACE	0.5951E-24	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	0.9382E-05	ZERO	ZERO	ZERO	0.1823E-06	0.1270E+00	0.1823E-06
121 (C6H6)	0.4326E+01	ZERO	ZERO	ZERO	0.6990E-02	0.3530E+02	0.6990E-02
155 (CH3)2CHOH	0.4429E-12	ZERO	ZERO	ZERO	0.1512E-15	0.1662E-11	0.1512E-15
154 (CH3OH)	0.1780E-12	ZERO	ZERO	ZERO	0.8848E-16	0.3376E-12	0.8848E-16
45 Ag	ZERO	0.2505E-08	0.1290E-21	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	ZERO	ZERO	ZERO	0.3740E-23	ZERO
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	ZERO	ZERO	ZERO	ZERO	ZERO	0.2581E-23	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.2670E+02	ZERO	ZERO	ZERO	0.4283E-01	0.1764E-01	0.4283E-01
142 CO2 (C14)	0.1795E-08	ZERO	ZERO	ZERO	0.6160E-18	0.2538E-18	0.6160E-18
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.4699E-24	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO	0.6411E-24	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
98 Cr2O3	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
42 Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.2571E-23	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	250 SCVC HEME Vnt to	251 Hg Accum in PRD - PR	252 Hg Accum in OED	260 N2 Purge of OWST	261 OWST Vent to HEPA	262 Incinerator Fd frm OST	263 OWS Vent to Atmosphere
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.2219E-22	ZERO
55 CuO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
80 Fe ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	0.5744E-23	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
103 Group B	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
25 H ₂	0.5901E-10	ZERO	ZERO	ZERO	TRACE	TRACE	TRACE
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	0.9726E-22	ZERO
34 HCOOH	0.3537E-04	ZERO	ZERO	ZERO	0.1381E-09	0.3065E-05	0.1381E-09
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	0.3583E-14	0.1995E+00	0.4249E-09	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.1156E-02	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.1141E-21	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.1036E-24	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.1164E-23	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.4622E-24	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
81 N ₂	0.4532E+01	ZERO	ZERO	0.1000E-01	0.1023E-01	0.8854E-04	0.1023E-01
74 N ₂ O	0.3658E-08	ZERO	ZERO	ZERO	0.1387E-18	0.3820E-19	0.1387E-18
182 NH ₃	0.1450E-07	ZERO	ZERO	ZERO	0.2218E-11	0.1408E-09	0.2218E-11
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.8615E-23	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.2558E-01	ZERO	ZERO	ZERO	0.1440E-15	0.3764E-17	0.1440E-15

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	250 SCVC HEME Vnt to PVVS 0.1134E-09	251 Hg Accum in PRD - PR ZERO	252 Hg Accum in OED ZERO	260 N2 Purge of OWST ZERO	261 OWST Vent to HEPA 0.6384E-24	262 Incinerator Fd frm OST TRACE	263 OWS Vent to Atmosphere 0.6384E-24
84 NO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	0.1311E-24	ZERO
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.1958E-22	ZERO
7 NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
69 NaF	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
3 NaNO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO3	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.1381E-24	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2757E-24	ZERO
82 O2	0.1368E+01	ZERO	ZERO	ZERO	0.1875E-03	0.3227E-05	0.1875E-03
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
124 Pd	ZERO	0.1851E-09	0.9533E-23	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
58 Rh	ZERO	0.8739E-10	0.4502E-23	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	250 SCVC HEME Vnt to PVVS	251 Hg Accum in PRD - PR	252 Hg Accum in OMD	260 N2 Purge of OWST	261 OWST Vent to HEPA	262 Incinerator Fd frm OST	263 OWS Vent to Atmosphere
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	ZERO	0.4078E-24	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	ZERO	0.1660E-24	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	ZERO	0.8743E-23	ZERO
119 Tritium	0.3020E-15	ZERO	ZERO	ZERO	0.1751E-23	0.3556E-19	0.1751E-23
17 U3O8	ZERO	ZERO	ZERO	ZERO	ZERO	0.2408E-24	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	0.4094E-23	ZERO
1 water	0.1839E+00	ZERO	ZERO	ZERO	0.3587E-03	0.7773E+01	0.3587E-03
TOTAL FLOW, LB/HR	0.3714E+02	0.1995E+00	0.4249E-09	0.1000E-01	0.6061E-01	0.4417E+02	0.6061E-01
TEMPERATURE, DEG C	0.1000E+02	0.5000E+02	0.4999E+02	0.3500E+02	0.2353E+02	0.2353E+02	0.2353E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03		0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.2272E+04	0.3288E+00	0.6998E-09	0.8482E-01	0.3840E+01	0.5376E+03	0.3840E+01
VAPOR FLOW, CFM	0.5636E+01			0.2409E-02	0.9781E-02		0.9781E-02
LIQUID FLOW, GPM		0.2942E-04	0.6263E-13			0.9831E-01	
DENSITY, LBS/FT3	0.1098E+00	0.8457E+03	0.8457E+03	0.6920E-01	0.1033E+00	0.5602E+02	0.1033E+00
PHASE	VAPOR	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
 Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS --> STREAM NAME	264 OE Transfer Pump Prime	267 OECT Transfer Pump Prime	268 OECT Sampler Pump Prime
COMPONENT FLOWS, LB/HR			
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NNH ₂)	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	ZERO	ZERO
42 Cs ₂ O	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
 Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	264	267	268
	OE Transfer Pump Prime	OECT Transfer Pump Prime	OECT Sampler Pump Prime
54 Cu(COOH) ₂	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	ZERO
103 Group B	ZERO	ZERO	ZERO
25 H ₂	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	ZERO	ZERO
81 N ₂	ZERO	ZERO	ZERO
74 N ₂ O	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
 Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	264	267	268
	OE Transfer Pump Prime	OECT Transfer Pump Prime	OECT Sampler Pump Prime
84 NO ₂	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	ZERO
69 NaF	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO
82 O ₂	ZERO	ZERO	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3B. Boilup of Precipitate Hydrolysis Products

STREAM NUMBERS (CONT'D) -> STREAM NAME	264 OE Transfer Pump Prime	267 OECT Transfer Pump Prime	268 OECT Sampler Pump Prime
141 SO ₃	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO
111 SiO ₂	ZERO	ZERO	ZERO
48 Sr(COOH) ₂	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO
159 TcO ₂	ZERO	ZERO	ZERO
92 ThO ₂	ZERO	ZERO	ZERO
107 TiO ₂	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	ZERO
17 U ₃ O ₈	ZERO	ZERO	ZERO
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO
47 Y ₂ O ₃	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	ZERO	ZERO
1 water	0.3900E+01	0.3900E+01	0.3900E+01
TOTAL FLOW, LB/HR	0.3900E+01	0.3900E+01	0.3900E+01
TEMPERATURE, DEG C	0.2500E+02	0.2500E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO
PRESSURE, MM HG			
ENTHALPY, PCU/HR	0.9786E+02	0.9786E+02	0.9786E+02
VAPOR FLOW, CFM			
LIQUID FLOW, GPM	0.7788E-02	0.7788E-02	0.7788E-02
DENSITY, LBS/FT ³	0.6243E+02	0.6243E+02	0.6243E+02
PHASE	LIQUID	LIQUID	LIQUID

SECTION 4A. MELTER FEED RECEIPT, BLENDING AND ADJUSTMENT

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

DESCRIPTION		PAGE
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1. STREAM NUMBERS	247, 2, 4, 107, 108, 3, 1	2
2. STREAM NUMBERS	6, 7, 8, 10, 11, 12, 13	6
3. STREAM NUMBERS	52, 53, 54, 14, 15, 16, 17	10
4. STREAM NUMBERS	18, 19, 20, 21, 22, 23, 24	14
5. STREAM NUMBERS	25, 50, 51	18

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS -> STREAM NAME	247 PR Bottoms to PRBT	2 PRBT Air Inleakage	4 PRBT Vent to FAVC	107 PHA Solubles	108 PHA Insolubles	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWPF
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.8447E-02	ZERO	ZERO	ZERO	0.8447E-02	0.8447E-02	ZERO
123 (C6H5)2C6H4	0.6469E-01	ZERO	0.5337E-09	ZERO	0.6469E-01	0.6469E-01	ZERO
118 (C6H5)2NH	0.6015E-02	ZERO	0.7163E-04	ZERO	0.5943E-02	0.5943E-02	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.4872E-01	ZERO	ZERO	ZERO	0.4872E-01	0.4872E-01	ZERO
162 (C6H5NH2)	0.6263E-01	ZERO	0.1928E-02	0.6070E-01	ZERO	0.6070E-01	ZERO
163 (C6H5NHCHO)	0.1816E+00	ZERO	ZERO	ZERO	0.1816E+00	0.1816E+00	ZERO
165 (C6H5NO)	0.2968E-02	ZERO	ZERO	ZERO	0.2968E-02	0.2968E-02	ZERO
164 (C6H5NO2)	0.6023E-02	ZERO	ZERO	0.6023E-02	ZERO	0.6023E-02	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	0.8467E+00	ZERO	0.1283E-01	0.8338E+00	ZERO	0.8338E+00	ZERO
121 (C6H6)	0.1200E-01	ZERO	0.1176E-01	0.2480E-03	ZERO	0.2480E-03	ZERO
155 (CH3)2CHOH	0.1339E-09	ZERO	0.1926E-11	0.1320E-09	ZERO	0.1320E-09	ZERO
154 (CH3OH)	0.1440E-10	ZERO	0.4873E-12	0.1392E-10	ZERO	0.1392E-10	ZERO
45 Ag	0.4136E-02	ZERO	ZERO	ZERO	0.4136E-02	0.4136E-02	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.8929E-02
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.3158E+00	ZERO	ZERO	ZERO	0.3158E+00	0.3158E+00	0.9814E+01
106 B2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5204E-03
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.2179E+00	ZERO	ZERO	ZERO	0.2179E+00	0.2179E+00	0.1853E-01
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.3070E-06	ZERO	0.3055E-06	0.1565E-08	ZERO	0.1565E-08	ZERO
142 CO2 (C14)	0.8080E-16	ZERO	0.8039E-16	0.4119E-18	ZERO	0.4119E-18	ZERO
63 Ca(COOH)2	0.3968E-01	ZERO	ZERO	0.3968E-01	ZERO	0.3968E-01	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1081E-02
113 Ca3(PO4)2	0.1988E-02	ZERO	ZERO	ZERO	0.1988E-02	0.1988E-02	0.2404E+01
20 CaC2O4	0.5413E-01	ZERO	ZERO	ZERO	0.5413E-01	0.5413E-01	0.1040E-01
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1588E+01
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1363E-06
78 CaF2	0.2861E-02	ZERO	ZERO	ZERO	0.2861E-02	0.2861E-02	0.1363E-01
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3129E-02
19 CaSO4	0.5654E-02	ZERO	ZERO	ZERO	0.5654E-02	0.5654E-02	0.4913E-01
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.2079E-03	ZERO	ZERO	0.2079E-03	ZERO	0.2079E-03	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.4454E-04	ZERO	ZERO	ZERO	0.4454E-04	0.4454E-04	ZERO
98 Cr2O3	0.4017E-02	ZERO	ZERO	ZERO	0.4017E-02	0.4017E-02	0.1564E+00
42 Cs2O	0.7385E-04	ZERO	ZERO	ZERO	0.7385E-04	0.7385E-04	0.1756E-03
53 CsCOOH	0.2171E+00	ZERO	ZERO	0.2171E+00	ZERO	0.2171E+00	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4080E-03
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	247 PR Bottoms to PRBT	2 PRBT Air Inleakage	4 PRBT Vent to FAVC	107 PHA Solubles	108 PHA Insolubles	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWPF
54 Cu(COOH)2	0.3793E-03	ZERO	ZERO	0.3793E-03	ZERO	0.3793E-03	ZERO
170 Cu(NO3)2	0.1876E+01	ZERO	ZERO	0.1876E+01	ZERO	0.1876E+01	ZERO
55 CuO	0.1757E-02	ZERO	ZERO	ZERO	0.1757E-02	0.1757E-02	0.2434E-01
80 Fe2O3	0.4850E+00	ZERO	ZERO	ZERO	0.4850E+00	0.4850E+00	0.2324E+02
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.8152E-05	ZERO	ZERO	ZERO	0.8152E-05	0.8152E-05	0.2198E-01
103 Group B	0.2612E-07	ZERO	ZERO	ZERO	0.2612E-07	0.2612E-07	0.1075E+00
25 H2	0.1590E-23	ZERO	0.1589E-23	TRACE	ZERO	TRACE	ZERO
158 H2C2O4	TRACE	ZERO	ZERO	TRACE	ZERO	TRACE	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.8213E+01	ZERO	ZERO	0.8213E+01	ZERO	0.8213E+01	ZERO
34 HCOOH	0.7717E+01	ZERO	0.1573E-01	0.7701E+01	ZERO	0.7701E+01	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	0.3499E-01	ZERO	0.07	ZERO	0.3499E-01	0.3499E-01	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3011E+00
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.4242E-02	ZERO	ZERO	ZERO	0.4242E-02	0.4242E-02	0.1083E+00
51 KCOOH	0.9637E+01	ZERO	ZERO	0.9637E+01	ZERO	0.9637E+01	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1745E-01
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	0.8752E-02	ZERO	ZERO	0.8752E-02	ZERO	0.8752E-02	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.7666E-03	ZERO	ZERO	ZERO	0.7666E-03	0.7666E-03	0.1427E+01
60 Mn(COOH)2	0.9826E-01	ZERO	ZERO	0.9826E-01	ZERO	0.9826E-01	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.3903E-01	ZERO	ZERO	ZERO	0.3903E-01	0.3903E-01	0.3337E+01
145 MoO2	0.3058E-04	ZERO	ZERO	ZERO	0.3058E-04	0.3058E-04	ZERO
81 N2	0.5530E-07	0.5484E+02	0.5483E+02	0.8231E-02	ZERO	0.8231E-02	ZERO
74 N2O	0.9215E-18	ZERO	0.9187E-18	0.2894E-20	ZERO	0.2894E-20	ZERO
182 NH3	0.8944E-09	ZERO	0.5191E-09	0.3753E-09	ZERO	0.3753E-09	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	0.7274E+00	ZERO	ZERO	0.7274E+00	ZERO	0.7274E+00	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1067E-02
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.2393E-11	ZERO	0.2392E-11	0.1055E-14	ZERO	0.1055E-14	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	247 PR Bottoms to PRBT	2 PRBT Air Inleakage	4 PRBT Vent to FAVC	107 PHA Solubles	108 PHA Insolubles	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWPF
84 NO2	0.1061E-19	ZERO	0.1061E-19	0.4677E-23	ZERO	0.4677E-23	ZERO
70 Na(H ₂ O)(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5108E-03
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1125E+00
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1551E+01
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5395E-09
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2993E-01
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2671E-02
32 Na2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2740E+01
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1439E-06
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6775E-04
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2897E-03
6 Na2SO4	0.1107E-01	ZERO	ZERO	0.1107E-01	ZERO	0.1107E-01	0.4140E+00
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1415E-01
87 Na3PO4	0.7853E-03	ZERO	ZERO	0.7853E-03	ZERO	0.7853E-03	0.9427E-02
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.9467E-04
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3396E+00
50 NaCOOH	0.1654E+01	ZERO	ZERO	0.1654E+01	ZERO	0.1654E+01	ZERO
7 NaCl	0.6015E-02	ZERO	ZERO	0.6015E-02	ZERO	0.6015E-02	0.2793E-01
69 NaF	0.3456E-03	ZERO	ZERO	0.3456E-03	ZERO	0.3456E-03	0.3312E-01
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.1751E-06	ZERO	ZERO	0.1751E-06	ZERO	0.1751E-06	0.9494E-05
3 NaNO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.8978E+01
2 NaNO3	0.5086E-02	ZERO	ZERO	0.5086E-02	ZERO	0.5086E-02	0.2153E+00
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1804E+01
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2749E-03
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.1166E-01	ZERO	ZERO	0.1166E-01	ZERO	0.1166E-01	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2328E-01	ZERO	ZERO	ZERO	0.2328E-01	0.2328E-01	0.2808E+00
82 O2	0.5739E-07	0.1656E+02	0.1656E+02	0.4781E-02	ZERO	0.4781E-02	0.3647E+00
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4215E-04
86 PbCO3	0.2853E-03	ZERO	ZERO	ZERO	0.2853E-03	0.2853E-03	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.5749E-02	ZERO	ZERO	ZERO	0.5749E-02	0.5749E-02	0.9300E-01
124 Pd	0.3056E-03	ZERO	ZERO	ZERO	0.3056E-03	0.3056E-03	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1544E-07
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6409E-03
76 PuO2	0.9608E-04	ZERO	ZERO	ZERO	0.9608E-04	0.9608E-04	0.8446E-02
156 PuO2(NaTi2O5)2	0.2430E-03	ZERO	ZERO	ZERO	0.2430E-03	0.2430E-03	ZERO
58 Rh	0.1443E-03	ZERO	ZERO	ZERO	0.1443E-03	0.1443E-03	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2065E-02
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	0.1076E-02	ZERO	ZERO	ZERO	0.1076E-02	0.1076E-02	0.9455E-02
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	247 PR Bottoms to PRBT	2 PRBT Air Inleakage	4 PRBT Vent to FAVC	107 PHA Solubles	108 PHA Insolubles	3 Salt Cell Feed to SRAT	1 Sludge Feed to DWPF
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Ca ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.3443E-01	ZERO	ZERO	ZERO	0.3443E-01	0.3443E-01	0.1167E+01
48 Sr(COOH) ₂	0.1819E-02	ZERO	ZERO	0.1819E-02	ZERO	0.1819E-02	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.6835E-04	ZERO	ZERO	ZERO	0.6835E-04	0.6835E-04	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6334E-07
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1951E-01
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO ₂	0.3898E-03	ZERO	ZERO	ZERO	0.3898E-03	0.3898E-03	0.2309E-02
92 ThO ₂	0.1401E-01	ZERO	ZERO	ZERO	0.1401E-01	0.1401E-01	0.1205E+00
107 TiO ₂	0.7382E+00	ZERO	ZERO	ZERO	0.7382E+00	0.7382E+00	0.3808E-01
119 Tritium	0.1080E-11	ZERO	0.7916E-14	0.1072E-11	ZERO	0.1072E-11	0.1793E-08
17 U ₃ O ₈	0.2034E-01	ZERO	ZERO	ZERO	0.2034E-01	0.2034E-01	0.2307E+01
62 UO ₂ (COOH) ₂	0.8057E-07	ZERO	ZERO	0.8057E-07	ZERO	0.8057E-07	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.7404E-04
27 Y(COOH) ₃	0.7311E-03	ZERO	ZERO	0.7311E-03	ZERO	0.7311E-03	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6384E-07
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6530E-02
47 Y ₂ O ₃	0.1394E-04	ZERO	ZERO	ZERO	0.1394E-04	0.1394E-04	ZERO
100 Zeolite	0.2224E-02	ZERO	ZERO	ZERO	0.2224E-02	0.2224E-02	ZERO
44 Zn(COOH) ₂	0.1979E-02	ZERO	ZERO	0.1979E-02	ZERO	0.1979E-02	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.2403E-02	ZERO	ZERO	ZERO	0.2403E-02	0.2403E-02	0.1007E+00
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.3457E+00	ZERO	ZERO	ZERO	0.3457E+00	0.3457E+00	0.6423E+01
1 water	0.6300E+03	0.1200E+01	0.4728E+01	0.6343E+03	ZERO	0.6343E+03	0.3956E+03
TOTAL FLOW, LB/HR	0.6639E+03	0.7260E+02	0.7616E+02	0.6654E+03	0.2674E+01	0.6681E+03	0.4655E+03
TEMPERATURE, DEG C	0.5000E+02	0.3500E+02	0.4507E+02	0.4508E+02	0.4508E+02	0.4508E+02	0.6000E+02
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.3191E+05	0.7358E+03	0.3867E+04	0.2895E+05	0.1959E+02	0.2897E+05	0.2445E+05
VAPOR FLOW, CFM			0.1976E+02				
LIQUID FLOW, GPM	0.1307E+01	0.1670E+00		0.1313E+01	0.2215E-02	0.1315E+01	0.8365E+00
DENSITY, LBS/FT ³	0.6335E+02	0.5422E+02	0.6425E-01	0.6320E+02	0.1505E+03	0.6334E+02	0.6938E+02
PHASE	LIQUID	LIQUID	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS -> STREAM NAME	6 SRAT Transfer Pump Prime	7 SRAT Sample Pump Prime	8 50 wt% HNO ₃ addn to SRAT	10 SRAT Air Inleakage	11 MWT Spent Wsh to SRAT	12 SRAT Recycle Condensate	13 SRAC Cndnste to MWT
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	0.1879E-09	0.1140E-05	0.2791E-05
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	0.5707E-11	0.1265E-05	0.3099E-05
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	0.9329E-08	0.2705E-02	0.6625E-02
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	0.3772E-12	0.9778E-07	0.2394E-06
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	0.8929E-07	0.2287E-01	0.5600E-01
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	0.1406E-11	0.3645E-06	0.8925E-06
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	0.2215E-13	0.5957E-08	0.1459E-07
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	0.4661E-13	0.1209E-07	0.2960E-07
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	ZERO	0.1531E-14	0.3013E-20	0.7378E-20
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	0.1291E-05	0.3463E+00	0.8481E+00
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	0.7366E-09	0.1642E-06	0.4022E-06
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	0.1964E-15	0.5823E-10	0.1426E-09
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	0.1669E-16	0.5134E-11	0.1257E-10
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6149E-07
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	0.2107E-21	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.7946E-10	0.2062E-04	0.5050E-04
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.2906E-10	0.5797E-16	0.1420E-15
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	0.3996E-18	0.7923E-24	0.1940E-23
24 BaSO ₄	ZERO	ZERO	ZERO	ZERO	0.1835E-11	0.4760E-06	0.1166E-05
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	0.1398E-10	0.5337E-03	0.1307E-02
142 CO ₂ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	0.7243E-21	0.1073E-10	0.2627E-10
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	0.3070E-12	0.7962E-07	0.1950E-06
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	0.2015E-10	0.5230E-05	0.1281E-04
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	ZERO	0.1861E-10	0.4829E-05	0.1183E-04
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	0.4993E-12	0.1295E-06	0.3172E-06
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	0.1276E-12	0.3310E-07	0.8107E-07
41 CaO	ZERO	ZERO	ZERO	ZERO	0.2422E-13	0.6280E-08	0.1538E-07
19 CaSO ₄	ZERO	ZERO	ZERO	ZERO	0.4237E-12	0.1099E-06	0.2693E-06
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	0.1609E-14	0.4173E-09	0.1022E-08
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	0.3447E-15	0.8939E-10	0.2189E-09
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.1352E-11	0.3501E-06	0.8574E-06
42 Cs ₂ O	ZERO	ZERO	ZERO	ZERO	0.1933E-14	0.5006E-09	0.1226E-08
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	0.1680E-11	0.4357E-06	0.1067E-05
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	0.4102E-14	0.1065E-08	0.2607E-08
8 CsOH	ZERO	ZERO	ZERO	ZERO	0.4703E-16	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	6 SRAT Transfer Pump Prime	7 SRAT Sample Pump Prime	8 50 wt% HNO ₃ addn to SRAT	10 SRAT Air Inleakage	11 MWT Spent Wsh to SRAT	12 SRAT Recycle Condensate	13 SRAC Cndnste to MWT
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	0.4190E-13	0.1087E-07	0.2663E-07
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	0.1451E-10	0.3764E-05	0.9217E-05
55 CuO	ZERO	ZERO	ZERO	ZERO	0.1817E-12	0.4714E-07	0.1154E-06
80 Fe ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.1835E-09	0.4761E-04	0.1166E-03
101 FeO	ZERO	ZERO	ZERO	ZERO	0.5473E-16	0.1085E-21	0.2658E-21
102 Group A	ZERO	ZERO	ZERO	ZERO	0.1700E-12	0.4412E-07	0.1080E-06
103 Group B	ZERO	ZERO	ZERO	ZERO	0.8312E-12	0.2157E-06	0.5283E-06
25 H ₂	ZERO	ZERO	ZERO	ZERO	0.3963E-19	0.2168E-06	0.5311E-06
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	0.5845E-12	0.1517E-06	0.3715E-06
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	0.6354E-10	0.1648E-04	0.4036E-04
34 HCOOH	ZERO	ZERO	ZERO	ZERO	0.6738E-12	0.2614E+00	0.6401E+00
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	0.9340E+01	ZERO	0.7526E-08	0.1212E-22	0.2968E-22
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1544E-05
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	0.4664E-16	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO	ZERO	0.8705E-12	0.2259E-06	0.5531E-06
51 KCOOH	ZERO	ZERO	ZERO	ZERO	0.7456E-10	0.1934E-04	0.4736E-04
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	0.2431E-12	0.6310E-07	0.1545E-06
10 KOH	ZERO	ZERO	ZERO	ZERO	0.2805E-15	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	0.2542E-10	0.5073E-16	0.1242E-15
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	0.2511E-10	0.6517E-05	0.1596E-04
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	0.9472E-11	0.5729E-06	0.1403E-05
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	0.1817E-10	0.4716E-05	0.1155E-04
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	0.7185E-16	0.1425E-21	0.3489E-21
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	0.1566E-10	0.4064E-05	0.9954E-05
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	0.1307E-13	0.3391E-08	0.8305E-08
81 N ₂	ZERO	ZERO	ZERO	0.8857E+03	0.8857E-06	0.5004E-02	0.1225E-01
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	TRACE	0.3041E-24	0.7448E-24
182 NH ₃	ZERO	ZERO	ZERO	ZERO	0.4276E-11	0.1577E-06	0.3862E-06
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	0.1313E-05	0.4891E-08	0.1198E-07
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	0.2309E-12	0.8916E-01	0.2183E+00
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	0.1437E-16	0.3117E-04	0.7634E-04

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	6 SRAT Transfer Pump Prime	7 SRAT Sample Pump Prime	8 50 wt% HNO ₃ addn to SRAT	10 SRAT Air Inleakage	11 MWT Spent Wash to SRAT	12 SRAT Recycle Condensate	13 SRAC Cndnste to MWT
84 NO ₂	ZERO	ZERO	ZERO	ZERO	0.1212E-15	0.1925E-20	0.4713E-20
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	0.3252E-15	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	0.2028E-13	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	0.4001E-10	0.5499E-05	0.1347E-04
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	0.3284E-11	0.8521E-06	0.2087E-05
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	ZERO	ZERO	0.7897E-13	0.2049E-07	0.5019E-07
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	0.3488E-10	0.7260E-05	0.1778E-04
7 NaCl	ZERO	ZERO	ZERO	ZERO	0.2626E-12	0.6813E-07	0.1668E-06
69 NaF	ZERO	ZERO	ZERO	ZERO	0.2588E-12	0.6717E-07	0.1645E-06
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	0.7479E-16	0.1940E-10	0.4752E-10
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	0.2285E-13	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO	ZERO	0.1205E-09	0.3128E-04	0.7661E-04
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	0.3243E-12	0.8416E-07	0.2061E-06
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	0.2245E-11	0.5797E-06	0.1420E-05
82 O ₂	ZERO	ZERO	ZERO	0.2675E+03	0.5109E-06	0.2884E-02	0.7062E-02
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	0.3259E-15	0.8458E-10	0.2071E-09
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	0.2208E-14	0.5725E-09	0.1402E-08
67 PbO	ZERO	ZERO	ZERO	ZERO	0.1000E-18	0.1983E-24	0.4856E-24
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	ZERO	0.7636E-12	0.1982E-06	0.4853E-06
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4241E-08
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	0.1559E-22	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	ZERO	ZERO	0.6606E-13	0.1714E-07	0.4198E-07
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	0.1880E-14	0.4876E-09	0.1194E-08
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.8613E-08
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	0.6294E-13	0.1633E-07	0.4000E-07
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	6 SRAT Transfer Pump Prime	7 SRAT Sample Pump Prime	8 50 wt% HNO3 addn to SRAT	10 SRAT Air Inleakage	11 MWT Spent Wsh to SRAT	12 SRAT Recycle Condensate	13 SRAC Cndnste to MWT
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	0.2890E-09	0.2424E-05	0.5937E-05
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	0.1408E-13	0.3651E-08	0.8941E-08
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	0.2162E-12	0.5612E-07	0.1374E-06
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	0.5288E-15	0.1372E-09	0.3359E-09
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	0.3787E-18	0.7509E-24	0.1839E-23
159 TcO2	ZERO	ZERO	ZERO	ZERO	0.2237E-13	0.5805E-08	0.1422E-07
92 ThO2	ZERO	ZERO	ZERO	ZERO	0.1040E-11	0.2699E-06	0.6610E-06
107 TiO2	ZERO	ZERO	ZERO	ZERO	0.6006E-11	0.1558E-05	0.3815E-05
119 Tritium	ZERO	ZERO	ZERO	ZERO	0.2546E-14	0.7043E-09	0.1725E-08
17 U3O8	ZERO	ZERO	ZERO	ZERO	0.1800E-10	0.4670E-05	0.1144E-04
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	0.6234E-18	0.1617E-12	0.3960E-12
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	0.7420E-15	0.1926E-09	0.4716E-09
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	0.5657E-14	0.1467E-08	0.3593E-08
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	0.7758E-13	0.2013E-07	0.4931E-07
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	0.1080E-15	0.2798E-10	0.6851E-10
100 Zeolite	ZERO	ZERO	ZERO	ZERO	0.1721E-13	0.4464E-08	0.1093E-07
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	0.4719E-12	0.1225E-06	0.2999E-06
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	0.5578E-12	0.1448E-06	0.3545E-06
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	0.4894E-10	0.1270E-04	0.3110E-04
1 water	0.1950E+01	0.3890E+01	0.9340E+01	0.1937E+02	0.5070E-01	0.4197E+03	0.1028E+04
TOTAL FLOW, LB/HR	0.1950E+01	0.3890E+01	0.1868E+02	0.1173E+04	0.5071E-01	0.4204E+03	0.1030E+04
TEMPERATURE, DEG C	0.2500E+02	0.2500E+02	0.2500E+02	0.3500E+02	0.3500E+02	0.5000E+02	0.5000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG						0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.4893E+02	0.9761E+02	0.3011E+03	0.2459E+05	0.1779E+01	0.2102E+05	0.5149E+05
VAPOR FLOW, CFM				0.2770E+03			
LIQUID FLOW, GPM	0.3894E-02	0.7768E-02	0.3107E-01		0.1013E-03	0.8394E+00	0.2056E+01
DENSITY, LBS/FT3	0.6243E+02	0.6243E+02	0.7495E+02	0.7055E-01	0.6243E+02	0.6244E+02	0.6244E+02
PHASE	LIQUID	LIQUID	LIQUID	VAPOR	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS -> STREAM NAME	52 SRATC Vent to Scrubbr	53 Liquid to SRAT Scrubbr	54 Spnt Liq frm SRAT Scrubbr	14 SRAT Scrubbr Vent to FAVC	15 SRAT Trans- fer to SNE	16 MWWT Vent to SNECT	17 MWWT Air Purge
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.8445E-02	0.6954E-03	0.6950E-03	0.8445E-02	0.1002E-08	0.6952E-11	ZERO
123 (C6H5)2C6H4	0.4226E-11	0.2040E-04	0.2034E-04	0.4226E-11	0.6469E-01	0.4902E-16	ZERO
118 (C6H5)2NH	0.1995E-02	0.3338E-01	0.3326E-01	0.1995E-02	0.2879E-04	0.6214E-11	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.2932E-12	0.1348E-05	0.1344E-05	0.2932E-12	0.4872E-01	0.7115E-17	ZERO
162 (C6H5NH2)	0.2519E-01	0.3242E+00	0.3232E+00	0.2519E-01	0.2378E-02	0.1466E-08	ZERO
163 (C6H5NHCHO)	0.1093E-11	0.5026E-05	0.5011E-05	0.1093E-11	0.1816E+00	0.2221E-16	ZERO
165 (C6H5NO)	0.1786E-13	0.8195E-07	0.8169E-07	0.1786E-13	0.2968E-02	0.8002E-15	ZERO
164 (C6H5NO2)	0.3625E-13	0.1667E-06	0.1662E-06	0.3625E-13	0.6023E-02	0.1765E-16	ZERO
131 (C6H5OH salt)	TRACE	0.5474E-08	0.5381E-08	TRACE	0.1501E-14	0.1300E-19	ZERO
130 (C6H5OH)	0.1718E+00	0.4656E+01	0.4641E+01	0.1718E+00	0.1602E+00	0.1166E-07	ZERO
121 (C6H6)	0.2478E-03	0.4375E-02	0.4374E-02	0.2478E-03	0.2547E-10	0.5084E-09	ZERO
155 (CH3)2CHOH	0.2793E-10	0.7408E-09	0.7384E-09	0.2793E-10	0.1968E-10	0.1124E-16	ZERO
154 (CH3OH)	0.5727E-11	0.6578E-10	0.6557E-10	0.5727E-11	0.7513E-12	0.1787E-17	ZERO
45 Ag	0.7529E-13	0.1173E-06	0.1169E-06	0.7529E-13	0.1251E-01	0.6328E-12	ZERO
116 Ag2O	ZERO	0.7532E-15	0.7451E-15	ZERO	ZERO	TRACE	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.6184E-10	0.2841E-03	0.2832E-03	0.6184E-10	0.1028E+02	0.6757E-15	ZERO
106 B2O3	0.1738E-21	0.1039E-03	0.1035E-03	0.1738E-21	0.2889E-10	0.2471E-15	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	TRACE	0.1428E-11	0.1415E-11	TRACE	0.3948E-18	0.3395E-23	ZERO
24 BaSO4	0.1427E-11	0.6562E-05	0.6541E-05	0.1427E-11	0.2372E+00	0.1561E-16	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.3067E+01	0.1774E-01	0.1774E-01	0.3067E+01	0.2288E-07	0.5164E-08	ZERO
142 CO2 (C14)	0.6163E-07	0.9187E-12	0.9187E-12	0.6163E-07	0.4599E-15	0.2675E-18	ZERO
63 Ca(COOH)2	0.2388E-12	0.1097E-05	0.1094E-05	0.2388E-12	0.3968E-01	0.2610E-17	ZERO
167 Ca(NO3)2	0.1568E-10	0.7204E-04	0.7181E-04	0.1568E-10	0.2606E+01	0.1713E-15	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.1448E-10	0.6652E-04	0.6631E-04	0.1448E-10	0.2406E+01	0.1582E-15	ZERO
20 CaC2O4	0.3883E-12	0.1785E-05	0.1780E-05	0.3883E-12	0.6453E-01	0.4246E-17	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCu3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.9927E-13	0.4561E-06	0.4546E-06	0.9927E-13	0.1650E-01	0.1085E-17	ZERO
41 CaO	0.1883E-13	0.8659E-07	0.8632E-07	0.1883E-13	0.3129E-02	0.2060E-18	ZERO
19 CaSO4	0.3297E-12	0.1515E-05	0.1510E-05	0.3297E-12	0.5479E-01	0.3603E-17	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.1251E-14	0.5752E-08	0.5734E-08	0.1251E-14	0.2079E-03	0.1368E-19	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.2680E-15	0.1232E-08	0.1228E-08	0.2680E-15	0.4454E-04	0.2931E-20	ZERO
98 Cr2O3	0.1050E-11	0.4833E-05	0.4818E-05	0.1050E-11	0.1745E+00	0.1150E-16	ZERO
42 Cs2O	0.1501E-14	0.6911E-08	0.6889E-08	0.1501E-14	0.2494E-03	0.1644E-19	ZERO
53 CsCOOH	0.1307E-11	0.6006E-05	0.5988E-05	0.1307E-11	0.2171E+00	0.1429E-16	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	0.3192E-14	0.1466E-07	0.1462E-07	0.3192E-14	0.5305E-03	0.3488E-19	ZERO
8 CsOH	ZERO	0.1681E-09	0.1666E-09	ZERO	ZERO	0.3996E-21	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	52 SRATC Vent to Scrubber	53 Liquid to SRAT Scrubber	54 Spnt Liq frm SRAT Scrubber	14 SRAT Scrubber Vent to FAVC	15 SRAT Trans- fer to SME	16 MWWT Vent to SMECT	17 MWWT Air Purge
54 Cu(COOH)2	0.3260E-13	0.1498E-03	0.1493E-06	0.3260E-13	0.5418E-02	0.3563E-18	ZERO
170 Cu(NO3)2	0.1129E-10	0.5186E-04	0.5170E-04	0.1129E-10	0.1876E+01	0.1234E-15	ZERO
55 CuO	0.1413E-12	0.6494E-06	0.6474E-06	0.1413E-12	0.2349E-01	0.1545E-17	ZERO
80 Fe2O3	0.1428E-09	0.6559E-03	0.6538E-03	0.1428E-09	0.2373E+02	0.1560E-14	ZERO
101 FeO	TRACE	0.1957E-09	0.1938E-09	TRACE	0.5408E-16	0.4651E-21	ZERO
102 Group A	0.1323E-12	0.6077E-06	0.6058E-06	0.1323E-12	0.2198E-01	0.1445E-17	ZERO
103 Group B	0.6469E-12	0.2972E-05	0.2962E-05	0.6469E-12	0.1075E+00	0.7068E-17	ZERO
25 H2	0.3042E-01	0.1222E-08	0.1222E-08	0.3042E-01	0.8910E-12	0.3572E-15	ZERO
158 H2C2O4	0.4549E-12	0.2090E-05	0.2083E-05	0.4549E-12	0.7559E-01	0.4970E-17	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.4942E-10	0.2272E-03	0.2265E-03	0.4942E-10	0.8213E+01	0.5403E-15	ZERO
34 HCOOH	0.1829E-01	0.1815E-14	0.1815E-14	0.1829E-01	0.6158E+00	0.3251E-14	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.7955E-23	0.2409E+02	0.2408E+02	0.7955E-23	0.1142E-22	0.7025E-05	ZERO
36 Hg	0.1891E-11	0.2102E+01	0.2097E+01	0.1891E-11	0.3142E+00	0.4849E-04	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.1667E-09	0.1652E-09	ZERO	ZERO	0.3963E-21	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.6773E-12	0.3112E-05	0.3102E-05	0.6773E-12	0.1126E+00	0.7402E-17	ZERO
51 KCOOH	0.5799E-10	0.2666E-03	0.2657E-03	0.5799E-10	0.9637E+01	0.6340E-15	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.1892E-12	0.8693E-06	0.8665E-06	0.1892E-12	0.3144E-01	0.2067E-17	ZERO
10 KOH	ZERO	0.1003E-08	0.9936E-09	ZERO	ZERO	0.2384E-20	ZERO
150 K2S2O8	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.1521E-21	0.9089E-04	0.9060E-04	0.1521E-21	0.2528E-10	0.2162E-15	ZERO
65 Mg(COOH)2	0.1954E-10	0.8977E-04	0.8949E-04	0.1954E-10	0.3247E+01	0.2135E-15	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.1718E-11	0.3386E-04	0.3375E-04	0.1718E-11	0.2855E+00	0.8054E-16	ZERO
60 Mn(COOH)2	0.1414E-10	0.6497E-04	0.6476E-04	0.1414E-10	0.2350E+01	0.1545E-15	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	TRACE	0.2569E-09	0.2545E-09	TRACE	0.7100E-16	0.6106E-21	ZERO
14 MnO2	0.1219E-10	0.5599E-04	0.5581E-04	0.1219E-10	0.2025E+01	0.1332E-15	ZERO
145 MoO2	0.1017E-13	0.4672E-07	0.4657E-07	0.1017E-13	0.1690E-02	0.1111E-18	ZERO
81 N2	0.8857E+03	0.8775E-01	0.8774E-01	0.8857E+03	0.1221E-07	0.3621E+01	0.3607E+01
74 N2O	0.2893E-20	0.1176E-23	0.1176E-23	0.2893E-20	TRACE	TRACE	ZERO
182 NH3	0.1179E-01	0.5496E-04	ZERO	0.7799E-02	0.7858E-01	0.1158E-10	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.1467E-13	0.4696E+01	0.4698E+01	0.1467E-13	0.2437E-02	0.1117E-10	ZERO
68 NH4OH	0.2673E-06	0.1100E-17	0.1103E-17	0.2673E-06	0.8916E-01	0.1965E-17	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.1952E+01	0.1978E-06	0.1978E-06	0.1952E+01	0.2113E-09	0.5782E-13	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	52 SRATC Vent to Scrubber	53 Liquid to SRAT Scrubber	54 Spnt Liq frm SRAT Scrubber	14 SRAT Scrubbr Vent to FAVC	15 SRAT Trans- fer to SME	16 MWWT Vent to SMECT	17 MWWT Air Purge
84 NO ₂	0.1205E-15	0.3414E-02	0.3414E-02	0.1205E-15	TRACE	0.9966E-09	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	0.1163E-08	0.1152E-08	ZERO	ZERO	0.2763E-20	ZERO
109 Na ₂ C ₂ O ₄	ZERO	0.7249E-07	0.7181E-07	ZERO	ZERO	0.1723E-18	ZERO
5 Na ₂ CO ₃	ZERO	0.2574E-21	0.2531E-21	ZERO	ZERO	TRACE	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.1649E-10	0.1430E-03	0.1426E-03	0.1649E-10	0.2740E+01	0.3402E-15	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.2555E-11	0.1174E-04	0.1170E-04	0.2555E-11	0.4246E+00	0.2792E-16	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.6145E-13	0.2823E-06	0.2814E-06	0.6145E-13	0.1021E-01	0.6715E-18	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.2177E-10	0.1247E-03	0.1243E-03	0.2177E-10	0.3618E+01	0.2966E-15	ZERO
7 NaCl	0.2043E-12	0.9388E-06	0.9358E-06	0.2043E-12	0.3395E-01	0.2233E-17	ZERO
69 NaF	0.2014E-12	0.9254E-06	0.9224E-06	0.2014E-12	0.3347E-01	0.2201E-17	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.5819E-16	0.2674E-09	0.2665E-09	0.5819E-16	0.9669E-05	0.6360E-21	ZERO
3 NaNO ₂	ZERO	0.8169E-07	0.8092E-07	ZERO	ZERO	0.1942E-18	ZERO
2 NaNO ₃	0.9380E-10	0.4308E-03	0.4294E-03	0.9380E-10	0.1559E+02	0.1025E-14	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.2524E-12	0.1160E-05	0.1156E-05	0.2524E-12	0.4194E-01	0.2758E-17	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1738E-11	0.8027E-05	0.8001E-05	0.1738E-11	0.2889E+00	0.1909E-16	ZERO
82 O ₂	0.2673E+03	0.5062E-01	0.5062E-01	0.2673E+03	0.1266E-07	0.1094E+01	0.1090E+01
175 Pb(NO ₃) ₂	0.2536E-15	0.1165E-08	0.1161E-08	0.2536E-15	0.4215E-04	0.2771E-20	ZERO
86 PbCO ₃	0.1717E-14	0.7892E-08	0.7868E-08	0.1717E-14	0.2853E-03	0.1877E-19	ZERO
67 PbO	TRACE	0.3575E-12	0.3542E-12	TRACE	0.9881E-19	0.8497E-24	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.5942E-12	0.2730E-05	0.2721E-05	0.5942E-12	0.9875E-01	0.6493E-17	ZERO
124 Pd	0.5193E-14	0.8175E-08	0.8149E-08	0.5193E-14	0.8630E-03	0.4374E-13	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	0.5574E-16	0.5513E-16	ZERO	ZERO	TRACE	ZERO
76 PuO ₂	0.5141E-13	0.2362E-06	0.2354E-06	0.5141E-13	0.8543E-02	0.5617E-18	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.1462E-14	0.6722E-08	0.6701E-08	0.1462E-14	0.2430E-03	0.1599E-19	ZERO
58 Rh	0.1055E-13	0.1465E-07	0.1461E-07	0.1055E-13	0.1753E-02	0.8658E-13	ZERO
22 RhO ₂	ZERO	0.1260E-15	0.1247E-15	ZERO	ZERO	0.3678E-22	ZERO
95 Ru	0.4898E-13	0.2250E-06	0.2243E-06	0.4898E-13	0.8139E-02	0.5352E-18	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	52 SRATC Vent to Scrubber	53 Liquid to SRAT Scrubbr	54 Sptd Liq frm SRAT Scrubbr	14 SRAT Scrubbr Vent to FAVC	15 SRAT Trans- fer to SME	16 MWWT Vent to SMECT	17 MWWT Air Purge
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.7270E-11	0.1033E-02	0.1030E-02	0.7270E-11	0.1208E+01	0.2457E-14	ZERO
48 Sr(COOH)2	0.1095E-13	0.5033E-07	0.5017E-07	0.1095E-13	0.1819E-02	0.1197E-18	ZERO
176 Sr(NO3)2	0.1683E-12	0.7731E-06	0.7707E-06	0.1683E-12	0.2797E-01	0.1839E-17	ZERO
153 Sr(NaTi2O5)2	0.4113E-15	0.1891E-08	0.1885E-08	0.4113E-15	0.6835E-04	0.4497E-20	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	TRACE	0.1354E-11	0.1341E-11	TRACE	0.3742E-18	0.3218E-23	ZERO
159 TcO2	0.1741E-13	0.7998E-07	0.7973E-07	0.1741E-13	0.2893E-02	0.1902E-18	ZERO
92 ThO2	0.8094E-12	0.3718E-05	0.3707E-05	0.8094E-12	0.1345E+00	0.8844E-17	ZERO
107 TiO2	0.4671E-11	0.2147E-04	0.2141E-04	0.4671E-11	0.7763E+00	0.5107E-16	ZERO
119 Tritium	0.1715E-09	0.9405E-08	0.9373E-08	0.1715E-09	0.6025E-09	0.8779E-16	ZERO
17 U3O8	0.1400E-10	0.6434E-04	0.6413E-04	0.1400E-10	0.2327E+01	0.1530E-15	ZERO
62 UO2(COOH)2	0.4848E-18	0.2222E-11	0.2222E-11	0.4848E-18	0.8057E-07	0.5301E-23	ZERO
177 UO2(NO3)2	0.5775E-15	0.2653E-08	0.2644E-08	0.5775E-15	0.9596E-04	0.6309E-20	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.4400E-14	0.2023E-07	0.2016E-07	0.4400E-14	0.7311E-03	0.4810E-19	ZERO
178 Y(NO3)3	0.6038E-13	0.2774E-06	0.2765E-06	0.6038E-13	0.1003E-01	0.6597E-18	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.8389E-16	0.3861E-09	0.3848E-09	0.8389E-16	0.1394E-04	0.9182E-21	ZERO
100 Zeolite	0.1339E-13	0.6153E-07	0.6134E-07	0.1339E-13	0.2224E-02	0.1464E-18	ZERO
44 Zn(COOH)2	0.3672E-12	0.1687E-05	0.1682E-05	0.3672E-12	0.6102E-01	0.4012E-17	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.4341E-12	0.1994E-05	0.1988E-05	0.4341E-12	0.7214E-01	0.4743E-17	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.3809E-10	0.1750E-03	0.1744E-03	0.3809E-10	0.6329E+01	0.4162E-15	ZERO
1 water	0.1023E+03	0.7553E+04	0.7553E+04	0.1023E+03	0.3578E+03	0.9729E-01	0.7891E-01
TOTAL FLOW, LB/HR	0.1261E+04	0.7589E+04	0.7589E+04	0.1261E+04	0.4611E+03	0.4812E+01	0.4776E+01
TEMPERATURE, DEG C	0.5000E+02	0.4900E+02	0.5000E+02	0.5000E+02	0.4961E+02	0.3500E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	ZERO	ZERO	-0.5055E+00	ZERO	ZERO	ZERO
PRESSURE, MM HG	0.7339E+03			0.7339E+03			
ENTHALPY, PCU/HR	0.8013E+05	0.3710E+06	0.3786E+06	0.8013E+05	0.1865E+05	0.1116E+03	0.1002E+03
VAPOR FLOW, CFM	0.3356E+03			0.3356E+03		0.1139E+01	0.1128E+01
LIQUID FLOW, GPM		0.1513E+02	0.1513E+02		0.8048E+00		
DENSITY, LBS/FT3	0.6260E-01	0.6253E+02	0.6252E+02	0.6260E-01	0.7143E+02	0.7040E-01	0.7055E-01
PHASE	VAPOR	LIQUID	LIQUID	VAPOR	LIQUID	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS --> STREAM NAME	18 Air Sparge to MWWT	19 Hg Cell Vent to MWWT	20 Water Wash to MWWT	21 Water for MWWT Hg Pump	22 SRAT Hg Accumulation	23 Cond fr MWWT to SMECT	24 SMECT Hg to MWWT
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	0.6553E-11	ZERO	ZERO	ZERO	0.1651E-05	0.2030E-09
123 (C6H5)2C6H4	ZERO	0.8440E-18	ZERO	ZERO	ZERO	0.1834E-05	0.5956E-11
118 (C6H5)2NH	ZERO	0.6173E-11	ZERO	ZERO	ZERO	0.3920E-02	0.9743E-08
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	0.4015E-17	ZERO	ZERO	ZERO	0.1417E-06	0.3936E-12
162 (C6H5NH2)	ZERO	0.1045E-08	ZERO	ZERO	ZERO	0.3313E-01	0.9465E-07
163 (C6H5NHCHO)	ZERO	0.1057E-16	ZERO	ZERO	ZERO	0.5281E-06	0.1467E-11
165 (C6H5NO)	ZERO	0.8767E-15	ZERO	ZERO	ZERO	0.8631E-08	0.2392E-13
164 (C6H5NO2)	ZERO	0.1759E-16	ZERO	ZERO	ZERO	0.1751E-07	0.4866E-13
131 (C6H5OH salt)	ZERO	0.1308E-21	ZERO	ZERO	ZERO	0.4365E-20	0.1598E-14
130 (C6H5OH)	ZERO	0.9187E-08	ZERO	ZERO	ZERO	0.5116E+00	0.1359E-05
121 (C6F5)	ZERO	0.3210E-10	ZERO	ZERO	ZERO	0.2380E-06	0.1277E-08
155 (CH3)2CHOH	ZERO	0.5357E-17	ZERO	ZERO	ZERO	0.8438E-10	0.2162E-15
154 (CH3OH)	ZERO	0.6098E-18	ZERO	ZERO	ZERO	0.7439E-11	0.1920E-16
45 Ag	ZERO	0.1323E-14	ZERO	ZERO	ZERO	ZERO	0.1678E-07
116 Ag2O	ZERO	TRACE	ZERO	ZERO	ZERO	ZERO	0.2199E-21
134 AgNO3	ZERO	0.2380E-12	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	0.6790E-17	ZERO	ZERO	ZERO	0.2988E-04	0.8293E-10
106 B2O3	ZERO	0.2483E-17	ZERO	ZERO	ZERO	0.8400E-16	0.3032E-10
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	TRACE	ZERO	ZERO	ZERO	0.1148E-23	0.4170E-18
24 BaSO4	ZERO	0.1568E-18	ZERO	ZERO	ZERO	0.6898E-06	0.1915E-11
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	0.6380E-12	ZERO	ZERO	ZERO	0.7734E-03	0.5179E-08
142 CO2 (C14)	ZERO	0.3159E-22	ZERO	ZERO	ZERO	0.1554E-10	0.2682E-18
63 Ca(COOH)2	ZERO	0.2623E-19	ZERO	ZERO	ZERO	0.1154E-06	0.3204E-12
167 Ca(NO3)2	ZERO	0.1722E-17	ZERO	ZERO	ZERO	0.7577E-05	0.2103E-10
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	0.1590E-17	ZERO	ZERO	ZERO	0.6997E-05	0.1942E-10
20 CaC2O4	ZERO	0.4267E-19	ZERO	ZERO	ZERO	0.1876E-06	0.5211E-12
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	0.1090E-19	ZERO	ZERO	ZERO	0.4797E-07	0.1331E-12
41 CaO	ZERO	0.2070E-20	ZERO	ZERO	ZERO	0.9099E-08	0.2528E-13
19 CaSO4	ZERO	0.3620E-19	ZERO	ZERO	ZERO	0.1593E-06	0.4422E-12
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	0.1375E-21	ZERO	ZERO	ZERO	0.6046E-09	0.1679E-14
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.2945E-22	ZERO	ZERO	ZERO	0.1295E-09	0.3597E-15
98 Cr2O3	ZERO	0.1155E-18	ZERO	ZERO	ZERO	0.5073E-06	0.1411E-11
42 Cs2O	ZERO	0.1652E-21	ZERO	ZERO	ZERO	0.7253E-09	0.2017E-14
53 CsCOOH	ZERO	0.1436E-18	ZERO	ZERO	ZERO	0.6313E-06	0.1753E-11
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	0.3505E-21	ZERO	ZERO	ZERO	0.1542E-08	0.4281E-14
8 CsOH	ZERO	0.4019E-23	ZERO	ZERO	ZERO	ZERO	0.4908E-16
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	18 Air Sparge to MWWT	19 Hg Cell Vent to MWWT	20 Water Wash to MWWT	21 Water for MWWT Hg Pump	22 SRAT Hg Accumulation	23 Cond fr MWWT to SMCCT	24 SMCCT Hg to MWWT
54 Cu(COOH)2	ZERO	0.3580E-20	ZERO	ZERO	ZERO	0.1575E-07	0.4372E-13
170 Cu(NO3)2	ZERO	0.1240E-17	ZERO	ZERO	ZERO	0.5454E-05	0.1514E-10
55 CuO	ZERO	0.1552E-19	ZERO	ZERO	ZERO	0.6830E-07	0.1896E-12
80 Fe2O3	ZERO	0.1568E-16	ZERO	ZERO	ZERO	0.6899E-04	0.1915E-09
101 FeO	ZERO	0.4677E-23	ZERO	ZERO	ZERO	0.1573E-21	0.5712E-16
102 Group A	ZERO	0.1453E-19	ZERO	ZERO	ZERO	0.6392E-07	0.1774E-12
103 Group B	ZERO	0.7103E-19	ZERO	ZERO	ZERO	0.3126E-06	0.8675E-12
25 H2	ZERO	0.1728E-20	ZERO	ZERO	ZERO	0.3142E-06	0.3567E-15
158 H2C2O4	ZERO	0.4995E-19	ZERO	ZERO	ZERO	0.2198E-06	0.6100E-12
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	0.5430E-17	ZERO	ZERO	ZERO	0.2388E-04	0.6632E-10
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.3787E+00	0.5299E-21
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	0.6128E-02	ZERO	ZERO	ZERO	0.1756E-22	0.7033E-05
36 Hg	ZERO	0.4611E-04	ZERO	ZERO	ZERO	ZERO	0.3006E+00
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	0.7754E-11	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.3985E-23	ZERO	ZERO	ZERO	ZERO	0.4867E-16
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.7438E-19	ZERO	ZERO	ZERO	0.3273E-06	0.9084E-12
51 KCOOH	ZERO	0.6372E-17	ZERO	ZERO	ZERO	0.2802E-04	0.7782E-10
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	0.2078E-19	ZERO	ZERO	ZERO	0.9143E-07	0.2537E-12
10 KOH	ZERO	0.2397E-22	ZERO	ZERO	ZERO	ZERO	0.2928E-15
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	0.2173E-17	ZERO	ZERO	ZERO	0.7350E-16	0.2653E-10
65 Mg(COOH)2	ZERO	0.2146E-17	ZERO	ZERO	ZERO	0.9443E-05	0.2621E-10
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.8094E-18	ZERO	ZERO	ZERO	0.8301E-06	0.9885E-11
60 Mn(COOH)2	ZERO	0.1553E-17	ZERO	ZERO	ZERO	0.6834E-05	0.1897E-10
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	0.6140E-23	ZERO	ZERO	ZERO	0.2065E-21	0.7499E-16
14 MnO2	ZERO	0.1338E-17	ZERO	ZERO	ZERO	0.5889E-05	0.1634E-10
145 MoO2	ZERO	0.1117E-20	ZERO	ZERO	ZERO	0.4914E-08	0.1364E-13
81 N2	0.1356E-01	0.1096E+01	ZERO	ZERO	ZERO	0.7250E-02	0.2561E-07
74 N2O	ZERO	TRACE	ZERO	ZERO	ZERO	0.4407E-24	TRACE
182 NH3	ZERO	0.1864E-12	ZERO	ZERO	ZERO	0.2285E-06	0.1604E-10
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	0.1122E-12	ZERO	ZERO	ZERO	0.7086E-08	0.1371E-05
68 NH4OH	ZERO	0.1973E-19	ZERO	ZERO	ZERO	0.1292E+00	0.3211E-24
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4517E-04	0.5775E-13

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)?)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	18 Air Sparge to MWWT	19 Hg Cell Vent to MWWT	20 Water Wash to MWWT	21 Water for MWWT Hg Pump	22 SRAT Hg Accumulation	23 Cond fr MWWT to SMECT	24 SMECT Hg to MWWT
84 NO2	ZERO	0.2104E-05	ZERO	ZERO	ZERO	0.2789E-20	0.9966E-09
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	0.2779E-22	ZERO	ZERO	ZERO	ZERO	0.3394E-15
109 Na2C2O4	ZERO	0.1733E-20	ZERO	ZERO	ZERO	ZERO	0.2116E-13
5 Na2CO3	ZERO	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	0.3419E-17	ZERO	ZERO	ZERO	0.7968E-05	0.4175E-10
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	0.2806E-18	ZERO	ZERO	ZERO	0.1235E-05	0.3427E-11
98 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	0.6748E-20	ZERO	ZERO	ZERO	0.2970E-07	0.8242E-13
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	0.2980E-17	ZERO	ZERO	ZERO	0.1052E-04	0.3640E-10
7 NaCl	ZERO	0.2244E-19	ZERO	ZERO	ZERO	0.9872E-07	0.2740E-12
69 NaF	ZERO	0.2212E-19	ZERO	ZERO	ZERO	0.9732E-07	0.2701E-12
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.6391E-23	ZERO	ZERO	ZERO	0.2812E-10	0.7805E-16
3 NaNO2	ZERO	0.1952E-20	ZERO	ZERO	ZERO	ZERO	0.2384E-13
2 NaNO3	ZERO	0.1030E-16	ZERO	ZERO	ZERO	0.4533E-04	0.1257E-09
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	0.2772E-19	ZERO	ZERO	ZERO	0.1219E-06	0.3385E-12
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.1919E-18	ZERO	ZERO	ZERO	0.8400E-06	0.2343E-11
82 O2	0.4096E-02	0.3310E+00	ZERO	ZERO	ZERO	0.4179E-02	0.1478E-07
175 Pb(NO3)2	ZERO	0.2785E-22	ZERO	ZERO	ZERO	0.1226E-09	0.3401E-15
86 PbCO3	ZERO	0.1886E-21	ZERO	ZERO	ZERO	0.8296E-09	0.2304E-14
67 PbO	ZERO	TRACE	ZERO	ZERO	ZERO	0.2873E-24	0.1044E-18
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	0.6525E-19	ZERO	ZERO	ZERO	0.2871E-06	0.7969E-12
124 Pd	ZERO	0.9148E-16	ZERO	ZERO	ZERO	ZERO	0.1169E-08
112 Pd(NO3)2	ZERO	0.2272E-13	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	TRACE	ZERO	ZERO	ZERO	ZERO	0.1627E-22
76 PuO2	ZERO	0.5645E-20	ZERO	ZERO	ZERO	0.2484E-07	0.6894E-13
156 PuO2(NaTi2O5)2	ZERO	0.1607E-21	ZERO	ZERO	ZERO	0.7065E-09	0.1962E-14
58 Rh	ZERO	0.1811E-15	ZERO	ZERO	ZERO	ZERO	0.2096E-08
22 RhO2	ZERO	0.2727E-13	ZERO	ZERO	ZERO	ZERO	0.3678E-22
95 Ru	ZERO	0.5378E-20	ZERO	ZERO	ZERO	0.2367E-07	0.6569E-13
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	18 Air Sparge to MWWT	19 Hg Cell Vent to MWWT	20 Water Wash to MWWT	21 Water for MWWT Hg Pump	22 SRAT Hg Accumulation	23 Cond fr MWWT to SNECT	24 SNECT Hg to MWWT
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.2470E-16	ZERO	ZERO	ZERO	0.3513E-05	0.3016E-09
48 Sr(COOH)2	ZERO	0.1203E-20	ZERO	ZERO	ZERO	0.5290E-08	0.1469E-13
176 Sr(NO3)2	ZERO	0.1848E-19	ZERO	ZERO	ZERO	0.8132E-07	0.2257E-12
153 Sr(NaTi2O5)2	ZERO	0.4519E-22	ZERO	ZERO	ZERO	0.1987E-09	0.5519E-15
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	ZERO	0.1912E-20	ZERO	ZERO	ZERO	0.1088E-23	0.3952E-18
92 ThO2	ZERO	0.8888E-19	ZERO	ZERO	ZERO	0.8412E-08	0.2335E-13
107 TiO2	ZERO	0.5133E-18	ZERO	ZERO	ZERO	0.3911E-06	0.1085E-11
119 Tritium	ZERO	0.4950E-16	ZERO	ZERO	ZERO	0.2257E-05	0.6268E-11
17 U3O8	ZERO	0.1538E-17	ZERO	ZERO	ZERO	0.1020E-08	0.2745E-14
62 UO2(COOH)2	ZERO	TRACE	ZERO	ZERO	ZERO	0.6767E-05	0.1878E-10
177 UO2(NO3)2	ZERO	0.6341E-22	ZERO	ZERO	ZERO	0.2343E-12	0.6506E-18
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.2790E-09	0.7744E-15
27 Y(COOH)3	ZERO	0.4834E-21	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	0.6629E-20	ZERO	ZERO	ZERO	0.2126E-08	0.5904E-14
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	0.2917E-07	0.8096E-13
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.9227E-23	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	0.1471E-20	ZERO	ZERO	ZERO	0.4054E-10	0.1127E-15
44 Zn(COOH)2	ZERO	0.4032E-19	ZERO	ZERO	ZERO	0.6468E-08	0.1796E-13
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.1774E-06	0.4924E-12
57 ZnO	ZERO	0.4767E-19	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	0.2098E-06	0.5821E-12
13 hydrate H2O	ZERO	0.4182E-17	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.2966E-03	0.4912E-01	0.6635E-01	0.2440E-02	ZERO	0.1840E-04	0.5108E-10
TOTAL FLOW, LB/HR	0.1795E-01	0.1482E+01	0.6635E-01	0.2440E-02	ZERO	0.6081E+03	0.4645E-02
						0.6091E+03	0.3053E+00
TEMPERATURE, DEG C	0.3500E+02	0.3800E+02	0.2500E+02	0.3500E+02	0.5000E+02	0.5000E+02	0.4666E+02
PRESSURE, ATM	0.1000E+01	0.9950E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01
PRESSURE, PSIG	ZERO	-0.7348E-01	ZERO	ZERO	ZERO	-0.5055E+00	ZERO
PRESSURE, MM HG		0.7562E+03				0.7339E+03	
ENTHALPY, PCU/HR	0.3765E+00	0.4763E+02	0.1665E+01	0.8561E-01	ZERO	0.3046E+05	0.6793E+00
VAPOR FLOW, CFM	0.4240E-02	0.3580E+00					
LIQUID FLOW, GPM			0.1325E-03	0.4873E-05		0.1216E+01	0.5361E-04
DENSITY, LBS/FT3	0.7055E-01	0.6900E-01	0.6243E+02	0.6243E+02	ZERO	0.6244E+02	0.7100E+03
PHASE	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS -> STREAM NAME	25 Hg frm MWWT to MAWT	50 PRBT Transfer Pump Prime	51 PRBT Sampler Pump Prime
COMPONENT FLOWS, LB/HR			
122 (C ₆ H ₅) ₂	0.8192E-11	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	0.2489E-12	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	0.4069E-09	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	0.1645E-13	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	0.3894E-08	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	0.6131E-13	ZERO	ZERO
165 (C ₆ H ₅ NO)	0.9662E-15	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	0.2033E-14	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.6678E-16	ZERO	ZERO
130 (C ₆ H ₅ OH)	0.5631E-07	ZERO	ZERO
121 (C ₆ H ₆)	0.3212E-10	ZERO	ZERO
155 (CH ₃) ₂ CHOH	0.8567E-17	ZERO	ZERO
154 (CH ₃ OH)	0.7278E-18	ZERO	ZERO
45 Ag	0.7826E-07	ZERO	ZERO
116 Ag ₂ O	0.9188E-23	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.3466E-11	ZERO	ZERO
106 B ₂ O ₃	0.1267E-11	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO
15 BaO	0.1743E-19	ZERO	ZERO
24 BaSO ₄	0.8004E-13	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO
37 CO ₂	0.6099E-12	ZERO	ZERO
142 CO ₂ (C14)	0.3159E-22	ZERO	ZERO
63 Ca(COOH) ₂	0.1339E-13	ZERO	ZERO
167 Ca(NO ₃) ₂	0.8788E-12	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.8114E-12	ZERO	ZERO
20 CaC ₂ O ₄	0.2178E-13	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO
78 CaF ₂	0.5563E-14	ZERO	ZERO
41 CaO	0.1056E-14	ZERO	ZERO
19 CaSO ₄	0.1848E-13	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO
26 Co(COOH) ₂	0.7017E-16	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO
59 CoO	0.1503E-16	ZERO	ZERO
98 Cr ₂ O ₃	0.5896E-13	ZERO	ZERO
42 Cs ₂ O	0.8430E-16	ZERO	ZERO
53 CsCOOH	0.7327E-13	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO
169 CsNO ₃	0.1789E-15	ZERO	ZERO
8 CsOH	0.2051E-17	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) ->	25	50	51
STREAM NAME	Hg frm MWWT to MAWT	PRBT Transfer Pump Prime	PRBT Sampler Pump Prime
54 Cu(COOH) ₂	0.1827E-14	ZERO	ZERO
170 Cu(NO ₃) ₂	0.6326E-12	ZERO	ZERO
55 CuO	0.7922E-14	ZERO	ZERO
80 Fe ₂ O ₃	0.8001E-11	ZERO	ZERO
101 FeO	0.2387E-17	ZERO	ZERO
102 Group A	0.7413E-14	ZERO	ZERO
103 Group B	0.3625E-13	ZERO	ZERO
25 H ₂	0.1728E-20	ZERO	ZERO
158 H ₂ C ₂ O ₄	0.2549E-13	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO
90 H ₃ BO ₃	0.2771E-11	ZERO	ZERO
34 HCOOH	0.2939E-13	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO
49 HNO ₃	0.3282E-09	ZERO	ZERO
36 Hg	0.3006E+00	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO
21 HgO	0.2034E-17	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO
39 K ₂ O	0.3796E-13	ZERO	ZERO
51 KCOOH	0.3252E-11	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO
161 KNO ₃	0.1060E-13	ZERO	ZERO
10 KOH	0.1223E-16	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO
108 Li ₂ O	0.1109E-11	ZERO	ZERO
65 Mg(COOH) ₂	0.1095E-11	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO
33 MgO	0.4131E-12	ZERO	ZERO
60 Mn(COOH) ₂	0.7925E-12	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO
56 MnO	0.3134E-17	ZERO	ZERO
14 MnO ₂	0.6830E-12	ZERO	ZERO
145 MoO ₂	0.5699E-15	ZERO	ZERO
91 N ₂	0.3863E-07	ZERO	ZERO
74 N ₂ O	TRACE	ZERO	ZERO
182 NH ₃	0.1865E-12	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	0.5728E-07	ZERO	ZERO
68 NH ₄ OH	0.1007E-13	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO
35 NO	0.6266E-18	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) ->	25	50	51
STREAM NAME	Hg frm MWWT to MAWT	PRBT Transfer Pump Prime	PRBT Sampler Pump Prime
84 NO ₂	0.5284E-17	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	0.1418E-16	ZERO	ZERO
109 Na ₂ C ₂ O ₄	0.8843E-15	ZERO	ZERO
5 Na ₂ CO ₃	TRACE	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO
32 Na ₂ O	0.1745E-11	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.1432E-12	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.3444E-14	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO
50 NaCOOH	0.1521E-11	ZERO	ZERO
7 NaCl	0.1145E-13	ZERO	ZERO
69 NaF	0.1129E-13	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO
12 NaI	0.3262E-17	ZERO	ZERO
3 NaNO ₂	0.9964E-15	ZERO	ZERO
2 NaNO ₃	0.5255E-11	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.1415E-13	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO
40 NiO	0.9791E-13	ZERO	ZERO
82 O ₂	0.2228E-07	ZERO	ZERO
175 Pb(NO ₃) ₂	0.1421E-16	ZERO	ZERO
86 PbCO ₃	0.9627E-16	ZERO	ZERO
67 PbO	0.4361E-20	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO
28 PbSO ₄	0.3330E-13	ZERO	ZERO
124 Pd	0.5410E-08	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO
110 PdO	0.6799E-24	ZERO	ZERO
76 PuO ₂	0.2881E-14	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.8199E-16	ZERO	ZERO
58 Rh	0.1071E-07	ZERO	ZERO
22 RhO ₂	TRACE	ZERO	ZERO
95 Ru	0.2745E-14	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4A. Melter Feed Receipt, Blending and Adjustment

STREAM NUMBERS (CONT'D) -> STREAM NAME	25 Hg frm MWT to MAWT	50 PRBT Transfer Pump Prime	51 PRBT Sampler Pump Prime
141 SO ₃	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO
111 SiO ₂	0.1260E-10	ZERO	ZERO
48 Sr(COOH) ₂	0.6139E-15	ZERO	ZERO
176 Sr(NO ₃) ₂	0.9431E-14	ZERO	ZERO
153 Sr(NaTiO ₅) ₂	0.2306E-16	ZERO	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO
46 SrO	0.1651E-19	ZERO	ZERO
159 TeO ₂	0.9756E-15	ZERO	ZERO
92 ThO ₂	0.4536E-13	ZERO	ZERO
107 TiO ₂	0.2619E-12	ZERO	ZERO
119 Tritium	0.1111E-15	ZERO	ZERO
17 U ₃ O ₈	0.7848E-12	ZERO	ZERO
62 UO ₂ (COOH) ₂	0.2719E-19	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	0.3236E-16	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO
27 Y(COOH) ₃	0.2467E-15	ZERO	ZERO
178 Y(NO ₃) ₃	0.3383E-14	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.4709E-17	ZERO	ZERO
100 Zeolite	0.7506E-15	ZERO	ZERO
44 Zn(COOH) ₂	0.2058E-13	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO
57 ZnO	0.2433E-13	ZERO	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.2134E-11	ZERO	ZERO
1 water	0.4652E-02	0.3900E+01	0.3900E+01
TOTAL FLOW, LB/HR	0.3052E+00	0.3900E+01	0.3900E+01
TEMPERATURE, DEG C	0.3500E+02	0.2500E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO
PRESSURE, MM HG			
ENTHALPY, PCU/HR	0.5099E+00	0.9786E+02	0.9786E+02
VAPOR FLOW, CFM			
LIQUID FLOW, GPM	0.5361E-04	0.7788E-02	0.7788E-02
DENSITY, LBS/FT ³	0.7099E+03	0.6243E+02	0.6243E+02
PHASE	LIQUID	LIQUID	LIQUID

SECTION 4B. FRIT ADJUSTMENT OF MELTER FEED

WSRC-TR-93-527 (Revision 0)

Date: September 1993

Section 4B, Page 0 of 29

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

DESCRIPTION		PAGE
-----		----
1. STREAM NUMBERS	4, 14, 105, 15, 26, 27, 28	2
2. STREAM NUMBERS	29, 30, 55, 32, 33, 39, 152	6
3. STREAM NUMBERS	56, 57, 53, 54, 153, 34, 35	10
4. STREAM NUMBERS	36, 37, 251, 16, 23, 42, 106	14
5. STREAM NUMBERS	38, 40, 41, 43, 24, 44, 45	18
6. STREAM NUMBERS	46, 47, 48, 49, 58, 59, 60	22

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS -> STREAM NAME	4 PRBT Vent to FAVC	14 SRAT Scrubbr Vent to FAVC	105 MFT Scrubber Vent to FAVC	15 SRAT Trans- fer to SME	26 Decon Frit Slrry to SME	27 Fresh Frit Slrry to SME	28 SME Air Inleakage
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	0.8445E-02	0.9759E-04	0.1002E-08	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	0.5337E-09	0.4226E-11	0.3144E-08	0.6469E-01	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	0.7163E-04	0.1995E-02	0.3074E-04	0.2879E-04	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	0.2932E-12	0.9265E-09	0.4872E-01	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	0.1928E-02	0.2519E-01	161E-03	0.2378E-02	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	0.1093E-11	0.1093E-08	0.1816E+00	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	0.1786E-13	0.5645E-10	0.2968E-02	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	0.3625E-13	0.1145E-09	0.6023E-02	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	TRACE	0.1873E-08	0.1501E-14	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	0.1283E-01	0.1718E+00	0.1965E-02	0.1602E+00	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	0.1176E-01	0.2478E-03	0.5794E-03	0.2547E-10	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	0.1926E-11	0.2793E-10	0.6220E-12	0.1968E-10	ZERO	ZERO	ZERO
154 (CH ₃ OH)	0.4873E-12	0.5727E-11	0.9550E-13	0.7513E-12	ZERO	ZERO	ZERO
45 Ag	ZERO	0.7529E-13	0.2379E-09	0.1251E-01	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	0.2423E-15	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	0.6184E-10	0.1957E-06	0.1028E+02	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	0.1738E-21	0.2467E-06	0.2889E-10	0.8542E+00	0.1209E+02	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	TRACE	0.4526E-12	0.3948E-18	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	0.1427E-11	0.4517E-08	0.2372E+00	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.3055E-06	0.3067E+01	0.8892E-02	0.2288E-07	ZERO	ZERO	ZERO
142 CO ₂ (C ₁₄)	0.8035E-16	0.6163E-07	0.1285E-12	0.4599E-15	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	0.2388E-12	0.7545E-09	0.3968E-01	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	0.1568E-10	0.4955E-07	0.2606E+01	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	0.1448E-10	0.4583E-07	0.2406E+01	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	0.3883E-12	0.1227E-08	0.6453E-01	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	0.9927E-13	0.3137E-09	0.1650E-01	ZERO	ZERO	ZERO
41 CaO	ZERO	0.1883E-13	0.8719E-10	0.3129E-02	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	0.3297E-12	0.1043E-08	0.5479E-01	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	0.1251E-14	0.3954E-11	0.2079E-03	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.2680E-15	0.8514E-12	0.4454E-04	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	0.1050E-11	0.3347E-08	0.1745E+00	0.1254E-02	ZERO	ZERO
42 Cs ₂ O	ZERO	0.1501E-14	0.9253E-11	0.2494E-03	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	0.1307E-11	0.4129E-08	0.2171E+00	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	0.3192E-14	0.1009E-10	0.5305E-03	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	0.5327E-10	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	4 PRET Vent to FAVC	14 SRAT Scrubbr Vent to FAVC	105 MFT Scrubber Vent to FAVC	15 SRAT Trans- fer to SME	26 Decon Frit Slurry to SME	27 Fresh Frit Slurry to SME	28 SME Air Inleakage
54 Cu(COOH)2	ZERO	0.3260E-13	0.1030E-09	0.5418E-02	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	0.1129E-10	0.3567E-07	0.1876E+01	ZERO	ZERO	ZERO
55 CuO	ZERO	0.1413E-12	0.4705E-09	0.2349E-01	ZERO	ZERO	ZERO
80 Fe2O3	ZERO	0.1428E-09	0.4518E-06	0.2373E+02	0.4880E-03	ZERO	ZERO
101 FeO	ZERO	TRACE	0.6199E-10	0.5408E-16	ZERO	ZERO	ZERO
102 Group A	ZERO	0.1323E-12	0.4218E-09	0.2198E-01	ZERO	ZERO	ZERO
103 Group B	ZERO	0.6469E-12	0.2047E-08	0.1075E+00	ZERO	ZERO	ZERO
25 H2	0.1589E-23	0.3042E-01	0.1742E-09	0.8910E-12	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	0.4549E-12	0.1438E-08	0.7559E-01	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	0.4942E-10	0.1562E-06	0.8213E+01	ZERO	ZERO	ZERO
34 HCOOH	0.1573E-01	0.1829E-01	ZERO	0.6158E+00	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	0.7955E-23	0.1787E-24	0.1142E-22	ZERO	ZERO	ZERO
36 Hg	0.3253E-07	0.1891E-11	0.5533E-01	0.3142E+00	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	0.5283E-10	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	0.6773E-12	0.2301E-08	0.1126E+00	ZERO	ZERO	ZERO
51 KCOOH	ZERO	0.5799E-10	0.1832E-06	0.9637E+01	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	0.1892E-12	0.5980E-09	0.3144E-01	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	0.3178E-09	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	0.1521E-21	0.2158E-06	0.2528E-10	0.7474E+00	0.1058E+02	ZERO
65 Mg(COOH)2	ZERO	0.1954E-10	0.6175E-07	0.3247E+01	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.1718E-11	0.6712E-07	0.2855E+00	0.2135E+00	0.3023E+01	ZERO
60 Mn(COOH)2	ZERO	0.1414E-10	0.4469E-07	0.2350E+01	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	TRACE	0.8139E-10	0.7100E-16	ZERO	ZERO	ZERO
14 MnO2	ZERO	0.1219E-10	0.3901E-07	0.2025E+01	ZERO	ZERO	ZERO
145 MoO2	ZERO	0.1017E-13	0.3218E-10	0.1690E-02	ZERO	ZERO	ZERO
81 N2	0.5483E+02	0.8857E+03	0.1097E+03	0.1221E-07	0.3223E-02	ZERO	0.2210E+03
74 N2O	0.9187E-18	0.2893E-20	0.1656E-24	TRACE	ZERO	ZERO	ZERO
182 NH3	0.5191E-09	0.7799E-02	0.9623E-03	0.7858E-01	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	0.1467E-13	0.4634E-10	0.2437E-02	ZERO	ZERO	ZERO
68 NH4OH	ZERO	0.2673E-06	0.1695E-08	0.8916E-01	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.2392E-11	0.1952E+01	0.4725E-04	0.2113E-09	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	4 PRBT Vent to FAVC	14 SRAT Scrubbr Vent to FAVC	105 MFT Scrubbr Vent to FAVC	15 SRAT Trans- fer to SME	26 Decon Frit Slrry to SME	27 Fresh Frit Slrry to SME	28 SME Air Inleakage
84 NO ₂	0.1061E-19	0.1205E-15	0.5760E-03	TRACE	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	0.3684E-09	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	0.2297E-07	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	0.8776E-22	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	0.1649E-10	0.2122E-06	0.2740E+01	0.5687E+00	0.8052E+01	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	0.2555E-11	0.8396E-08	0.4246E+00	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	0.6145E-13	0.1945E-09	0.1021E-01	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	0.2177E-10	0.1241E-06	0.3618E+01	0.1579E+00	0.2235E+01	ZERO
7 NaCl	ZERO	0.2043E-12	0.6953E-09	0.3395E-01	ZERO	ZERO	ZERO
69 NaF	ZERO	0.2014E-12	0.6777E-09	0.3347E-01	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.5819E-16	0.2119E-12	0.9669E-05	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	0.2588E-07	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	0.9380E-10	0.3324E-06	0.1559E+02	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	0.2053E-06	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	0.2524E-12	0.7975E-09	0.4194E-01	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.1738E-11	0.5598E-08	0.2889E+00	0.5036E-02	ZERO	ZERO
82 O ₂	0.1656E+02	0.2673E+03	0.3313E+02	0.1266E-07	0.1916E-02	ZERO	0.6676E+02
175 Pb(NO ₃) ₂	ZERO	0.2536E-15	0.8015E-12	0.4215E-04	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	0.1717E-14	0.5425E-11	0.2853E-03	ZERO	ZERO	ZERO
67 PbO	ZERO	TRACE	0.1133E-12	0.9881E-19	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	0.5942E-12	0.1881E-08	0.9875E-01	ZERO	ZERO	ZERO
124 Pd	ZERO	0.5193E-14	0.1641E-10	0.8630E-03	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	0.1793E-16	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	0.5141E-13	0.1627E-09	0.8543E-02	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	0.1462E-14	0.4621E-11	0.2430E-03	ZERO	ZERO	ZERO
58 Rh	ZERO	0.1055E-13	0.3333E-10	0.1753E-02	ZERO	ZERO	ZERO
22 RhC ₂	ZERO	ZERO	0.4049E-16	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	0.4898E-13	0.1548E-09	0.8139E-02	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	4 PRBT Vent to FAVC	14 SRAT Scrubbr Vent to FAVC	105 MFT Scrubber Vent to FAVC	15 SRAT Trans- fer to SME	26 Decon Frit Slrry to SME	27 Fresh Frit Slrry to SME	28 SME Air Inleakage
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.7270E-11	0.2396E-05	0.1208E+01	0.8221E+01	0.1164E+03	ZERO
48 Sr(COOH)2	ZERO	0.1095E-13	0.3460E-10	0.1819E-02	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	0.1683E-12	0.5318E-09	0.2797E-01	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	0.4113E-15	0.1300E-11	0.6835E-04	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	TRACE	0.4289E-12	0.3742E-18	ZERO	ZERO	ZERO
159 TcO2	ZERO	0.1741E-13	0.5510E-10	0.2893E-02	ZERO	ZERO	ZERO
92 ThO2	ZERO	0.8094E-12	0.2562E-08	0.1345E+00	ZERO	ZERO	ZERO
107 TiO2	ZERO	0.4671E-11	0.1478E-07	0.7763E+00	ZERO	ZERO	ZERO
119 Tritium	0.7916E-14	0.1715E-09	0.8806E-11	0.6025E-09	ZERO	ZERO	ZERO
17 U3O8	ZERO	0.1400E-10	0.4432E-07	0.2327E+01	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	0.4848E-18	0.1532E-14	0.8057E-07	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	0.5775E-15	0.1825E-11	0.9596E-04	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	0.4400E-14	0.1390E-10	0.7311E-03	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	0.6038E-13	0.1908E-09	0.1003E-01	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.8389E-16	0.3959E-12	0.1394E-04	ZERO	ZERO	ZERO
100 Zeolite	ZERO	0.1339E-13	0.4230E-10	0.2224E-02	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	0.3672E-12	0.1160E-08	0.6102E-01	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.4341E-12	0.1375E-08	0.7214E-01	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.3809E-10	0.1204E-06	0.6329E+01	ZERO	ZERO	ZERO
1 water	0.4728E+01	0.1023E+03	0.1263E+02	0.3578E+03	0.2152E+03	0.1011E+03	0.4834E+01
TOTAL FLOW, LB/HR	0.7616E+02	0.1261E+04	0.1555E+03	0.4611E+03	0.2260E+03	0.2535E+03	0.2926E+03
TEMPERATURE, DEG C	0.4507E+02	0.5000E+02	0.5000E+02	0.4961E+02	0.2980E+02	0.3000E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.9656E+00	0.1340E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	-0.5055E+00	0.4997E+01	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03		0.7339E+03		
ENTHALPY, PCU/HR	0.3867E+04	0.8013E+05	0.9870E+04	0.1865E+05	0.6497E+04	0.3959E+04	0.6137E+04
VAPOR FLOW, CFM	0.1976E+02	0.3356E+03	0.4142E+02				0.6912E+02
LIQUID FLOW, GPM				0.8048E+00	0.4394E+00	0.3377E+00	
DENSITY, LBS/FT3	0.6425E-01	0.6260E-01	0.6257E-01	0.7143E+02	0.6412E+02	0.9360E+02	0.7055E-01
PHASE	VAPOR	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS -> STREAM NAME	29 SME Sample Pump Prime	30 SME Transfer Pump Prime	55 SMEC Vent to Scrubber	32 SMEC Cndnste to SMECT	33 SME Scrubber Vent to FAVC	39 Inlet Vapor to FAVC	152 Liquid to MFT Scrubber
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	0.1002E-08	0.3349E-12	0.1002E-08	0.1524E-01	0.9932E-04
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	0.1269E-11	0.1187E-05	0.1269E-11	0.3684E-08	0.2914E-05
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	0.5573E-05	0.2321E-04	0.5573E-05	0.2180E-02	0.4767E-02
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	0.5496E-13	0.5753E-07	0.5496E-13	0.9269E-09	0.1926E-06
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	0.5706E-03	0.1627E-02	0.5706E-03	0.2945E-01	0.4631E-01
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	0.2049E-12	0.2144E-06	0.2049E-12	0.3455E-08	0.7179E-06
165 (C ₆ H ₅ NO)	ZERO	ZERO	0.3348E-14	0.3505E-08	0.3348E-14	0.5647E-10	0.1170E-07
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	0.6794E-14	0.7112E-08	0.6794E-14	0.1146E-09	0.2381E-07
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	TRACE	0.1773E-20	TRACE	0.1873E-08	0.7818E-09
130 (C ₆ H ₅ OH)	ZERO	ZERO	0.1471E-01	0.9259E-01	0.1471E-01	0.2099E+00	0.6650E+00
121 (C ₆ H ₆)	ZERO	ZERO	0.2542E-10	0.5361E-13	0.2542E-10	0.3580E-01	0.6248E-03
155 (CH ₃) ₂ CHOH	ZERO	ZERO	0.1914E-11	0.1252E-10	0.1914E-11	0.3372E-10	0.1058E-09
154 (CH ₃ OH)	ZERO	ZERO	0.1741E-12	0.4908E-12	0.1741E-12	0.6758E-11	0.9395E-11
45 Ag	ZERO	ZERO	0.1411E-13	0.1477E-07	0.1411E-13	0.2380E-09	0.1676E-07
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	0.2423E-15	0.1076E-15
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	0.1159E-10	0.1213E-04	0.1159E-10	0.1958E-06	0.4058E-04
106 B ₂ O ₃	ZERO	ZERO	0.1460E-10	0.1529E-04	0.1460E-10	0.2467E-06	0.1484E-04
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	TRACE	0.4662E-24	TRACE	0.4526E-12	0.2040E-12
24 BaSO ₄	ZERO	ZERO	0.2676E-12	0.2801E-06	0.2676E-12	0.4519E-08	0.9372E-06
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	0.2551E+00	0.1421E-03	0.2551E+00	0.3723E+01	0.2534E-02
142 CO ₂ (C14)	ZERO	ZERO	0.4597E-15	0.2561E-18	0.4597E-15	0.6165E-07	0.1312E-12
63 Ca(COOH) ₂	ZERO	ZERO	0.4475E-13	0.4685E-07	0.4475E-13	0.7548E-09	0.1567E-06
167 Ca(NO ₃) ₂	ZERO	ZERO	0.2939E-11	0.3077E-05	0.2939E-11	0.4957E-07	0.1029E-04
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	0.2714E-11	0.2841E-05	0.2714E-11	0.4585E-07	0.9501E-05
20 CaC ₂ O ₄	ZERO	ZERO	0.7279E-13	0.7620E-07	0.7279E-13	0.1228E-08	0.2550E-06
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	0.1861E-13	0.1948E-07	0.1861E-13	0.3138E-09	0.6514E-07
41 CaO	ZERO	ZERO	0.3530E-14	0.3695E-08	0.3530E-14	0.8721E-10	0.1237E-07
19 CaSO ₄	ZERO	ZERO	0.6180E-13	0.6469E-07	0.6180E-13	0.1044E-08	0.2163E-06
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	0.2345E-15	0.2455E-09	0.2345E-15	0.3956E-11	0.8216E-09
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	0.5024E-16	0.5259E-10	0.5024E-16	0.8517E-12	0.1760E-09
98 Cr ₂ O ₃	ZERO	ZERO	0.1982E-12	0.2075E-06	0.1982E-12	0.3348E-08	0.6903E-06
42 Cs ₂ O	ZERO	ZERO	0.2813E-15	0.2945E-09	0.2813E-15	0.9255E-11	0.9871E-09
53 CsCOOH	ZERO	ZERO	0.2449E-12	0.2564E-06	0.2449E-12	0.4130E-08	0.8579E-06
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	0.5983E-15	0.6264E-09	0.5983E-15	0.1009E-10	0.2094E-08
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.5327E-10	0.2401E-10
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	29 SME Sample Pump Prime	30 SME Transfer Pump Prime	55 SMEC Vent to Scrubber	32 SMEC Cndnste to SMECT	33 SME Scrubber Vent to FAVC	39 Inlet Vapor to FAVC	152 Liquid to MFT Scrubber
54 Cu(COOH) ₂	ZERO	ZERO	0.6111E-14	0.6397E-08	0.6111E-14	0.1031E-09	0.2139E-07
170 Cu(NO ₃) ₂	ZERO	ZERO	0.2115E-11	0.2215E-05	0.2115E-11	0.3568E-07	0.7407E-05
55 CuO	ZERO	ZERO	0.2649E-13	0.2773E-07	0.2649E-13	0.4707E-09	0.9276E-07
80 Fe ₂ O ₃	ZERO	ZERO	0.2676E-10	0.2801E-04	0.2676E-10	0.4520E-06	0.9368E-04
101 FeO	ZERO	ZERO	TRACE	0.6386E-22	TRACE	0.6199E-10	0.2795E-10
102 Group A	ZERO	ZERO	0.2480E-13	0.2596E-07	0.2480E-13	0.4220E-09	0.8680E-07
103 Group B	ZERO	ZERO	0.1212E-12	0.1269E-06	0.1212E-12	0.2048E-08	0.4244E-06
25 H ₂	ZERO	ZERO	0.1172E-01	0.2674E-06	0.1172E-01	0.4213E-01	0.1745E-09
158 H ₂ C ₂ O ₄	ZERO	ZERO	0.8527E-13	0.8926E-07	0.8527E-13	0.1438E-08	0.2985E-06
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	0.9263E-11	0.9697E-05	0.9263E-11	0.1562E-06	0.3245E-04
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.1218E-01	0.2593E-15
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	0.1351E-23	0.6404E-23	0.1351E-23	ZERO	0.3441E+01
36 Hg	ZERO	ZERO	0.7385E-06	0.6284E-01	0.7385E-06	0.2381E+00	0.3002E+00
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5283E-10	0.2381E-10
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	0.1270E-12	0.1329E-06	0.1270E-12	0.2301E-08	0.4445E-06
51 KCOOH	ZERO	ZERO	0.1087E-10	0.1138E-04	0.1087E-10	0.1833E-06	0.3807E-04
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	0.3547E-13	0.3713E-07	0.3547E-13	0.5982E-09	0.1242E-06
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	0.3178E-09	0.1432E-09
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	0.1278E-10	0.1338E-04	0.1278E-10	0.2158E-06	0.1298E-04
65 Mg(COOH) ₂	ZERO	ZERO	0.3663E-11	0.3834E-05	0.3663E-11	0.6178E-07	0.1282E-04
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	0.3973E-11	0.4159E-05	0.3973E-11	0.6712E-07	0.4836E-05
60 Mn(COOH) ₂	ZERO	ZERO	0.2651E-11	0.2775E-05	0.2651E-11	0.4471E-07	0.9279E-05
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	TRACE	0.8383E-22	TRACE	0.8139E-10	0.3669E-10
14 MnO ₂	ZERO	ZERO	0.2284E-11	0.2391E-05	0.2284E-11	0.3902E-07	0.7997E-05
145 MoO ₂	ZERO	ZERO	0.1906E-14	0.1995E-08	0.1906E-14	0.3220E-10	0.6672E-08
81 N ₂	ZERO	ZERO	0.2210E+03	0.3906E-02	0.2210E+03	0.1330E+04	0.1253E-01
74 N ₂ O	ZERO	ZERO	TRACE	TRACE	TRACE	0.9216E-18	0.1679E-24
182 NH ₃	ZERO	ZERO	0.3929E-02	ZERO	0.1941E-02	0.1071E-01	0.7849E-05
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	0.2749E-14	0.2877E-08	0.2749E-14	0.5722E-08	0.6706E+00
68 NH ₄ OH	ZERO	ZERO	0.1468E-06	0.1536E+00	0.1468E-06	0.4158E-06	0.1571E-18
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	0.2113E-09	0.1080E-13	0.2113E-09	ZERO	0.2826E-07

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	29 SME Sample Pump Prime	30 SME Transfer Pump Prime	55 SMEC Vent to Scrubber	32 SMEC Cndnste to SMECT	33 SME Scrubber Vent to FAVC	39 Inlet Vapor to FAVC	152 Liquid to MFT Scrubber
84 NO2	ZERO	ZERO	TRACE	TRACE	TRACE	0.3816E+01	0.4876E-03
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	0.3684E-09	0.1661E-09
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	0.2297E-07	0.1035E-07
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	0.8776E-22	0.3676E-22
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	0.1255E-10	0.1314E-04	0.1255E-10	0.2122E-06	0.2043E-04
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	ZERO	0.4789E-12	0.5013E-06	0.4789E-12	0.8399E-08	0.1677E-05
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	ZERO	0.1152E-13	0.1206E-07	0.1152E-13	0.1946E-09	0.4032E-07
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	0.7361E-11	0.7705E-05	0.7361E-11	0.4732E-06	0.1781E-04
7 NaCl	ZERO	ZERO	0.3829E-13	0.4008E-07	0.3829E-13	0.6956E-09	0.1341E-06
69 NaF	ZERO	ZERO	0.3775E-13	0.3952E-07	0.3775E-13	0.6779E-09	0.1322E-06
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.1091E-16	0.1142E-10	0.1091E-16	0.2120E-12	0.3819E-10
3 NaNO2	ZERO	ZERO	ZERO	ZERO	ZERO	0.2588E-07	0.1167E-07
2 NaNO3	ZERO	ZERO	0.1758E-10	0.1841E-04	0.1758E-10	0.3325E-06	0.6152E-04
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	0.4730E-13	0.4952E-07	0.4730E-13	0.7978E-09	0.1656E-06
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.3315E-12	0.3470E-06	0.3315E-12	0.5600E-08	0.1146E-05
82 O2	ZERO	ZERO	0.6676E+02	0.2253E-02	0.6676E+02	0.4004E+03	0.7230E-02
175 Pb(NO3)2	ZERO	ZERO	0.4754E-16	0.4977E-10	0.4754E-16	0.8018E-12	0.1664E-09
86 PbCO3	ZERO	ZERO	0.3218E-15	0.3369E-09	0.3218E-15	0.5427E-11	0.1127E-08
67 PbO	ZERO	ZERO	TRACE	0.1167E-24	TRACE	0.1133E-12	0.5106E-13
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	0.1114E-12	0.1166E-06	0.1114E-12	0.1881E-08	0.3899E-06
124 Pd	ZERO	ZERO	0.9734E-15	0.1019E-08	0.9734E-15	0.1642E-10	0.1168E-08
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1793E-16	0.7960E-17
76 PuO2	ZERO	ZERO	0.9636E-14	0.1009E-07	0.9636E-14	0.1628E-09	0.3373E-07
156 PuO2(NaTi2O5)2	ZERO	ZERO	0.2741E-15	0.2869E-09	0.2741E-15	0.4622E-11	0.9600E-09
58 Rh	ZERO	ZERO	0.1977E-14	0.2069E-08	0.1977E-14	0.3334E-10	0.2093E-08
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	0.4049E-16	0.1800E-16
95 Ru	ZERO	ZERO	0.9181E-14	0.9610E-08	0.9181E-14	0.1548E-09	0.3214E-07
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	29 SME Sample Pump Prime	30 SME Transfer Pump Prime	55 SMEC Vent to Scrubber	32 SMEC Cndnste to SMECT	33 SME Scrubber Vent to FAVC	39 Inlet Vapor to FAVC	152 Liquid to MFT Scrubber
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	ZERO	ZERO	0.1419E-09	0.1486E-03	0.1419E-09	0.2397E-05	0.1476E-03
48 Sr(COOH) ₂	ZERO	ZERO	0.2052E-14	0.2148E-08	0.2052E-14	0.3461E-10	0.7188E-08
176 Sr(NO ₃) ₂	ZERO	ZERO	0.3154E-13	0.3302E-07	0.3154E-13	0.5320E-09	0.1104E-06
153 Sr(NaTi ₂ O ₅) ₂	ZERO	ZERO	0.7709E-16	0.8070E-10	0.7709E-16	0.1300E-11	0.2700E-09
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	TRACE	0.4418E-24	TRACE	0.4289E-12	0.1934E-12
159 TcO ₂	ZERO	ZERO	0.3263E-14	0.3416E-08	0.3263E-14	0.5512E-10	0.1142E-07
92 ThO ₂	ZERO	ZERO	0.1517E-12	0.1588E-06	0.1517E-12	0.2563E-08	0.5311E-06
107 TiO ₂	ZERO	ZERO	0.8756E-12	0.9166E-06	0.8756E-12	0.1479E-07	0.3067E-05
119 Tritium	ZERO	ZERO	0.2245E-10	0.2889E-09	0.2245E-10	0.2114E-09	0.1343E-08
17 U ₃ O ₈	ZERO	ZERO	0.2625E-11	0.2748E-05	0.2625E-11	0.4434E-07	0.9189E-05
62 UO ₂ (COOH) ₂	ZERO	ZERO	0.9088E-19	0.9513E-13	0.9088E-19	0.1533E-14	0.3183E-12
177 U ₆ (NO ₃) ₂	ZERO	ZERO	0.1082E-15	0.1133E-09	0.1082E-15	0.1825E-11	0.3789E-09
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	0.8247E-15	0.8633E-09	0.8247E-15	0.1391E-10	0.2889E-08
178 Y(NO ₃) ₃	ZERO	ZERO	0.1132E-13	0.1185E-07	0.1132E-13	0.1909E-09	0.3961E-07
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	ZERO	ZERO	0.1572E-16	0.1646E-10	0.1572E-16	0.3960E-12	0.5514E-10
100 Zeolite	ZERO	ZERO	0.2509E-14	0.2626E-08	0.2509E-14	0.4231E-10	0.8788E-08
44 Zn(COOH) ₂	ZERO	ZERO	0.6883E-13	0.7205E-07	0.6883E-13	0.1161E-08	0.2409E-06
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	0.8137E-13	0.8517E-07	0.8137E-13	0.1375E-08	0.2848E-06
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	ZERO	0.7139E-11	0.7473E-05	0.7139E-11	0.1204E-06	0.2499E-04
1 water	0.1950E+01	0.1950E+01	0.2549E+02	0.3279E+03	0.2549E+02	0.1521E+03	0.1079E+04
TOTAL FLOW, LB/HR	0.1950E+01	0.1950E+01	0.3135E+03	0.3282E+03	0.3135E+03	0.1890E+04	0.1084E+04
TEMPERATURE, DEG C	0.2500E+02	0.2500E+02	0.5000E+02	0.5000E+02	0.5000E+02	0.4914E+02	0.4900E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00	0.9607E+00	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00	-0.5776E+00	ZERO
PRESSURE, MM HG			0.7339E+03	0.7339E+03	0.7339E+03	0.7301E+03	
ENTHALPY, PCU/HR	0.4893E+02	0.4893E+02	0.1992E+05	0.1642E+05	0.1992E+05	0.1193E+06	0.5300E+05
VAPOR FLOW, CFM			0.8356E+02		0.8356E+02	0.5040E+03	
LIQUID FLOW, GPM	0.3894E-02	0.3894E-02		0.6553E+00			0.2161E+01
DENSITY, LBS/FT ³	0.6243E+02	0.6243E+02	0.6254E-01	0.6245E+02	0.6254E-01	0.6251E-01	0.6253E+02
PHASE	LIQUID	LIQUID	VAPOR	LIQUID	VAPOR	VAPOR	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS -> STREAM NAME	56 Liquid to SME Scrubber	57 Spnt Liq frm SME Scrubber	53 Liquid to SRAT Scrubbr	54 Spnt Liq frm SRAT Scrubbr	153 Spnt Liq frm MFT Scrubber	34 SMECT Sample Pump Prime	35 SMECT Transfr Pump Prime
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.3511E-03	0.3509E-03	0.6954E-03	0.6950E-03	0.9926E-04	ZERO	ZERO
123 (C6H5)2C6H4	0.1030E-04	0.1027E-04	0.2040E-04	0.2034E-04	0.2905E-05	ZERO	ZERO
118 (C6H5)2NH	0.1685E-01	0.1679E-01	0.3338E-01	0.3326E-01	0.4751E-02	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.6808E-06	0.6787E-06	0.1348E-05	0.1344E-05	0.1920E-06	ZERO	ZERO
162 (C6H5NH2)	0.1637E+00	0.1632E+00	0.3242E+00	0.3232E+00	0.4616E-01	ZERO	ZERO
163 (C6H5NHCHO)	0.2538E-05	0.2530E-05	0.5026E-05	0.5011E-05	0.7157E-06	ZERO	ZERO
165 (C6H5NO)	0.4137E-07	0.4124E-07	0.8195E-07	0.8169E-07	0.1167E-07	ZERO	ZERO
164 (C6H5NO2)	0.8417E-07	0.8391E-07	0.1667E-06	0.1662E-06	0.2374E-07	ZERO	ZERO
131 (C6H5OH salt)	0.2764E-08	0.2717E-08	0.5474E-08	0.5381E-08	0.7685E-09	ZERO	ZERO
130 (C6H5OH)	0.2351E+01	0.2343E+01	0.4656E+01	0.4641E+01	0.6628E+00	ZERO	ZERO
121 (C6H6)	0.2209E-02	0.2208E-02	0.4375E-02	0.4374E-02	0.6248E-03	ZERO	ZERO
155 (CH3)2CHOH	0.3740E-09	0.3728E-09	0.7408E-09	0.7384E-09	0.1055E-09	ZERO	ZERO
154 (CH3OH)	0.3321E-10	0.3310E-10	0.6578E-10	0.6557E-10	0.9365E-11	ZERO	ZERO
45 Ag	0.5923E-07	0.5904E-07	0.1173E-06	0.1169E-06	0.1670E-07	ZERO	ZERO
116 Ag2O	0.3803E-15	0.3762E-15	0.7532E-15	0.7451E-15	0.1064E-15	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.1434E-03	0.1430E-03	0.2841E-03	0.2832E-03	0.4045E-04	ZERO	ZERO
106 B2O3	0.5245E-04	0.5228E-04	0.1039E-03	0.1035E-03	0.1479E-04	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.7212E-12	0.7145E-12	0.1428E-11	0.1415E-11	0.2021E-12	ZERO	ZERO
24 BaSO4	0.3313E-05	0.3303E-05	0.6562E-05	0.6541E-05	0.9343E-06	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.8957E-02	0.8956E-02	0.1774E-01	0.1774E-01	0.2534E-02	ZERO	ZERO
142 CO2 (C14)	0.4639E-12	0.4638E-12	0.9187E-12	0.9187E-12	0.1312E-12	ZERO	ZERO
63 Ca(COOH)2	0.5541E-06	0.5524E-06	0.1097E-05	0.1094E-05	0.1563E-06	ZERO	ZERO
167 Ca(NO3)2	0.3637E-04	0.3626E-04	0.7204E-04	0.7181E-04	0.1026E-04	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.3359E-04	0.3348E-04	0.6652E-04	0.6631E-04	0.9471E-05	ZERO	ZERO
20 CaC2O4	0.9013E-06	0.8985E-06	0.1785E-05	0.1780E-05	0.2542E-06	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.2303E-06	0.2295E-06	0.4561E-06	0.4546E-06	0.6493E-07	ZERO	ZERO
41 CaO	0.4372E-07	0.4358E-07	0.8659E-07	0.8632E-07	0.1233E-07	ZERO	ZERO
19 CaSO4	0.7648E-06	0.7623E-06	0.1515E-05	0.1510E-05	0.2157E-06	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.2904E-08	0.2895E-08	0.5752E-08	0.5734E-08	0.8190E-09	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.6221E-09	0.6202E-09	0.1232E-08	0.1228E-08	0.1754E-09	ZERO	ZERO
98 Cr2O3	0.2440E-05	0.2433E-05	0.4833E-05	0.4818E-05	0.6881E-06	ZERO	ZERO
42 Cs2O	0.3489E-08	0.3478E-08	0.6911E-08	0.6889E-08	0.9839E-09	ZERO	ZERO
53 CsCOOH	0.3033E-05	0.3023E-05	0.6006E-05	0.5988E-05	0.8552E-06	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	0.7404E-08	0.7381E-08	0.1466E-07	0.1462E-07	0.2088E-08	ZERO	ZERO
8 CsOH	0.8489E-10	0.8409E-10	0.1681E-09	0.1666E-09	0.2379E-10	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	56 Liquid to SME Scrubber	57 Spnt Liq frm SME Scrubber	53 Liquid to SRAT Scrubbr	54 Spnt Liq frm SRAT Scrubbr	153 Spnt Liq frm MFT Scrubber	34 SMECT Sample Pump Prime	35 SMECT Transfr Pump Prime
54 Cu(COOH)2	0.7562E-07	0.7539E-07	0.1498E-06	0.1493E-06	0.2133E-07	ZERO	ZERO
170 Cu(NO3)2	0.2618E-04	0.2610E-04	0.5186E-04	0.5170E-04	0.7384E-05	ZERO	ZERO
55 CuO	0.3279E-06	0.3269E-06	0.6494E-06	0.6474E-06	0.9246E-07	ZERO	ZERO
80 Fe2O3	0.3312E-03	0.3301E-03	0.6559E-03	0.6538E-03	0.9338E-04	ZERO	ZERO
101 FeO	0.9879E-10	0.9787E-10	0.1957E-09	0.1938E-09	0.2769E-10	ZERO	ZERO
102 Group A	0.3068E-06	0.3059E-06	0.6077E-06	0.6058E-06	0.8652E-07	ZERO	ZERO
103 Group B	0.1500E-05	0.1496E-05	0.2972E-05	0.2962E-05	0.4231E-06	ZERO	ZERO
25 H2	0.6169E-09	0.6169E-09	0.1222E-08	0.1222E-08	0.1745E-09	ZERO	ZERO
158 H2C2O4	0.1055E-05	0.1052E-05	0.2090E-05	0.2083E-05	0.2975E-06	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.1147E-03	0.1143E-03	0.2272E-03	0.2265E-03	0.3235E-04	ZERO	ZERO
34 HCOOH	0.9166E-15	0.9166E-15	0.1815E-14	0.1815E-14	0.2593E-15	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.1216E+02	0.1216E+02	0.2409E+02	0.2408E+02	0.3422E+01	ZERO	ZERO
36 Hg	0.1061E+01	0.1059E+01	0.2102E+01	0.2097E+01	0.2995E+00	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.8418E-10	0.8340E-10	0.1667E-09	0.1652E-09	0.2359E-10	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.1571E-05	0.1566E-05	0.3112E-05	0.3102E-05	0.4431E-06	ZERO	ZERO
51 KCOOH	0.1346E-03	0.1342E-03	0.2666E-03	0.2657E-03	0.3796E-04	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.4389E-06	0.4375E-06	0.8693E-06	0.8665E-06	0.1238E-06	ZERO	ZERO
10 KOH	0.5064E-09	0.5016E-09	0.1003E-08	0.9936E-09	0.1419E-09	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.4589E-04	0.4574E-04	0.9089E-04	0.9060E-04	0.1294E-04	ZERO	ZERO
65 Mg(COOH)2	0.4533E-04	0.4518E-04	0.8977E-04	0.8949E-04	0.1278E-04	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.1710E-04	0.1704E-04	0.3386E-04	0.3375E-04	0.4821E-05	ZERO	ZERO
60 Mn(COOH)2	0.3280E-04	0.3270E-04	0.6497E-04	0.6476E-04	0.9250E-05	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.1297E-09	0.1285E-09	0.2569E-09	0.2545E-09	0.3635E-10	ZERO	ZERO
14 MnO2	0.2827E-04	0.2818E-04	0.5599E-04	0.5581E-04	0.7972E-05	ZERO	ZERO
145 MoO2	0.2359E-07	0.2351E-07	0.4672E-07	0.4657E-07	0.6651E-08	ZERO	ZERO
81 N2	0.4430E-01	0.4430E-01	0.8775E-01	0.8774E-01	0.1253E-01	ZERO	ZERO
74 N2O	0.5937E-24	0.5937E-24	0.1176E-23	0.1176E-23	0.1679E-24	ZERO	ZERO
182 NH3	0.2775E-04	ZERO	0.5496E-04	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.2371E+01	0.2372E+01	0.4696E+01	0.4698E+01	0.6925E+00	ZERO	ZERO
68 NH4OH	0.5553E-18	0.5568E-18	0.1100E-17	0.1103E-17	0.1575E-18	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.9989E-07	0.9989E-07	0.1978E-06	0.1978E-06	0.2826E-07	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) ->	56	57	53	54	153	34	35
STREAM NAME	Liquid to SME Scrubber	Spnt Liq frm SME Scrubber	Liquid to SRAT Scrubber	Spnt Liq frm SRAT Scrubber	Spnt Liq frm MFT Scrubber	SMECT Sample Pump Prime	SMECT Trnsfr Pump Prime
84 NO2	0.1724E-02	0.1724E-02	0.3414E-02	0.3414E-02	0.4876E-03	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.5870E-09	0.5815E-09	0.1163E-08	0.1152E-08	0.1645E-09	ZERO	ZERO
109 Na2C2O4	0.3660E-07	0.3626E-07	0.7249E-07	0.7181E-07	0.1026E-07	ZERO	ZERO
5 Na2CO3	0.1299E-21	0.1278E-21	0.2574E-21	0.2531E-21	0.3615E-22	ZERO	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	0.7221E-04	0.7198E-04	0.1430E-03	0.1426E-03	0.2036E-04	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.5927E-05	0.5908E-05	0.1174E-04	0.1170E-04	0.1671E-05	ZERO	ZERO
88 Na2S1O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.1425E-06	0.1421E-06	0.2823E-06	0.2814E-06	0.4020E-07	ZERO	ZERO
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.6295E-04	0.6276E-04	0.1247E-03	0.1243E-03	0.1775E-04	ZERO	ZERO
7 NaCl	0.4740E-06	0.4725E-06	0.9388E-06	0.9358E-06	0.1337E-06	ZERO	ZERO
69 NaF	0.4672E-06	0.4657E-06	0.9254E-06	0.9224E-06	0.1317E-06	ZERO	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.1350E-09	0.1346E-09	0.2674E-09	0.2665E-09	0.3807E-10	ZERO	ZERO
3 NaNO2	0.4124E-07	0.4086E-07	0.8169E-07	0.8092E-07	0.1156E-07	ZERO	ZERO
2 NaNO3	0.2175E-03	0.2168E-03	0.4308E-03	0.4294E-03	0.6133E-04	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.5855E-06	0.5836E-06	0.1160E-05	0.1156E-05	0.1651E-06	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.4053E-05	0.4040E-05	0.8027E-05	0.8001E-05	0.1143E-05	ZERO	ZERO
82 O2	0.2556E-01	0.2556E-01	0.5062E-01	0.5062E-01	0.7230E-02	ZERO	ZERO
175 Pb(NO3)2	0.5883E-09	0.5864E-09	0.1165E-08	0.1161E-08	0.1659E-09	ZERO	ZERO
86 PbCO3	0.3985E-08	0.3972E-08	0.7892E-08	0.7868E-08	0.1124E-08	ZERO	ZERO
67 PbO	0.1805E-12	0.1788E-12	0.3575E-12	0.3542E-12	0.5058E-13	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.1378E-05	0.1374E-05	0.2730E-05	0.2721E-05	0.3887E-06	ZERO	ZERO
124 Pd	0.4127E-08	0.4114E-08	0.8175E-08	0.8149E-08	0.1164E-08	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.2814E-16	0.2784E-16	0.5574E-16	0.5513E-16	0.7874E-17	ZERO	ZERO
76 PuO2	0.1192E-06	0.1189E-06	0.2362E-06	0.2354E-06	0.3362E-07	ZERO	ZERO
156 PuO2(NaTi2O5)2	0.3394E-08	0.3383E-08	0.6722E-08	0.6701E-08	0.9570E-09	ZERO	ZERO
58 Rh	0.7398E-08	0.7374E-08	0.1465E-07	0.1461E-07	0.2086E-08	ZERO	ZERO
22 RhO2	0.6362E-16	0.6294E-16	0.1260E-15	0.1247E-15	0.1780E-16	ZERO	ZERO
95 Ru	0.1136E-06	0.1133E-06	0.2250E-06	0.2243E-06	0.3204E-07	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	56 Liquid to SME Scrubber	57 Spnt Liq frm SME Scrubber	53 Liquid to SRAT Scrubber	54 Spnt Liq frm SRAT Scrubber	153 Spnt Liq frm MFT Scrubber	34 SMECT Sample Pump Prime	35 SMECT Trnsfr Pump Prime
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.5217E-03	0.5200E-03	0.1033E-02	0.1030E-02	0.1471E-03	ZERO	ZERO
48 Sr(COOH) ₂	0.2541E-07	0.2533E-07	0.5033E-07	0.5017E-07	0.7165E-08	ZERO	ZERO
176 Sr(NO ₃) ₂	0.3903E-06	0.3891E-06	0.7731E-06	0.7707E-06	0.1101E-06	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.9546E-09	0.9516E-09	0.1891E-08	0.1885E-08	0.2692E-09	ZERO	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.6835E-12	0.6771E-12	0.1354E-11	0.1341E-11	0.1915E-12	ZERO	ZERO
159 TeO ₂	0.4038E-07	0.4025E-07	0.7998E-07	0.7973E-07	0.1139E-07	ZERO	ZERO
92 ThO ₂	0.1877E-05	0.1871E-05	0.3718E-05	0.3707E-05	0.5294E-06	ZERO	ZERO
107 TiO ₂	0.1084E-04	0.1081E-04	0.2147E-04	0.2141E-04	0.3057E-05	ZERO	ZERO
119 Tritium	0.4748E-08	0.4733E-08	0.9405E-08	0.9373E-08	0.1339E-08	ZERO	ZERO
17 U ₃ O ₈	0.3248E-04	0.3238E-04	0.6434E-04	0.6413E-04	0.9160E-05	ZERO	ZERO
62 UO ₂ (COOH) ₂	0.1125E-11	0.1122E-11	0.2229E-11	0.2222E-11	0.3173E-12	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	0.1339E-08	0.1335E-08	0.2653E-08	0.2644E-08	0.3777E-09	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	0.1021E-07	0.1018E-07	0.2023E-07	0.2016E-07	0.2880E-08	ZERO	ZERO
178 Y(NO ₃) ₃	0.1400E-06	0.1396E-06	0.2774E-06	0.2765E-06	0.3949E-07	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.1949E-09	0.1943E-09	0.3861E-09	0.3848E-09	0.5497E-10	ZERO	ZERO
100 Zeolite	0.3107E-07	0.3097E-07	0.6153E-07	0.6134E-07	0.8761E-08	ZERO	ZERO
44 Zn(COOH) ₂	0.8517E-06	0.8490E-06	0.1687E-05	0.1682E-05	0.2402E-06	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1007E-05	0.1004E-05	0.1994E-05	0.1988E-05	0.2839E-06	ZERO	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.8834E-04	0.8806E-04	0.1750E-03	0.1744E-03	0.2491E-04	ZERO	ZERO
1 water	0.3813E+04	0.3813E+04	0.7553E+04	0.7553E+04	0.1079E+04	0.3890E+01	0.9800E+00
TOTAL FLOW, LB/HR	0.3831E+04	0.3831E+04	0.7589E+04	0.7589E+04	0.1084E+04	0.3890E+01	0.9800E+00
TEMPERATURE, DEG C	0.4900E+02	0.5000E+02	0.4900E+02	0.5000E+02	0.5000E+02	0.2500E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
ENTHALPY, PCU/HR	0.1873E+06	0.1911E+06	0.3710E+06	0.3786E+06	0.5407E+05	0.9761E+02	0.2459E+02
VAPOR FLOW, CFM	0.7640E+01	0.7640E+01	0.1513E+02	0.1513E+02	0.2161E+01	0.7768E-02	0.1957E-02
LIQUID FLOW, GPM	0.6253E+02	0.6252E+02	0.6253E+02	0.6252E+02	0.6253E+02	0.6243E+02	0.6243E+02
DENSITY, LBS/FT ³	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS --> STREAM NAME	36 SMECT Hg Pump Water	37 SMECT Air Inleakage	251 Hg Accum in PRD - PR	16 MWT Vent to SMECT	23 Cond fr MWT to SMECT	42 FAVC Condensate	106 HNO ₃ Add to SMECT
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	0.6952E-11	0.1651E-05	0.6794E-02	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	0.4902E-16	0.1834E-05	0.1842E-08	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	0.6214E-11	0.3920E-02	0.1090E-02	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	0.7115E-17	0.1417E-06	0.4634E-09	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	0.1466E-08	0.3313E-01	0.1471E-01	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	0.2221E-16	0.5281E-06	0.1727E-08	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	0.8002E-15	0.8631E-08	0.3072E-11	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	0.1765E-16	0.1751E-07	0.5725E-10	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	0.1300E-19	0.4365E-20	0.9367E-09	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	0.1166E-07	0.5018E+00	0.1046E+00	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	0.5084E-09	0.2380E-06	0.2385E-01	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	0.1124E-16	0.8438E-10	0.1428E-10	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	0.1787E-17	0.7439E-11	0.2108E-11	ZERO
45 Ag	ZERO	ZERO	0.2505E-08	0.6328E-12	ZERO	0.1190E-09	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	TRACE	ZERO	0.1212E-15	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	0.6757E-15	0.2988E-04	0.9790E-07	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	0.2471E-15	0.8400E-16	0.1234E-06	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	0.3395E-23	0.1148E-23	0.2263E-12	ZERO
24 BaSO ₄	ZERO	ZERO	ZERO	0.1561E-16	0.6898E-06	0.2259E-08	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	0.5164E-08	0.7734E-03	0.2306E-03	ZERO
142 CO ₂ (C ₁₄)	ZERO	ZERO	ZERO	0.2675E-18	0.1554E-10	0.3818E-11	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	0.2610E-17	0.1154E-06	0.3774E-09	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	0.1713E-15	0.7577E-05	0.2479E-07	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	0.1582E-15	0.6997E-05	0.2292E-07	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	0.4246E-17	0.1876E-06	0.6138E-09	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	0.1085E-17	0.4797E-07	0.1569E-09	ZERO
41 CaO	ZERO	ZERO	ZERO	0.2060E-18	0.9099E-08	0.4360E-10	ZERO
19 CaSO ₄	ZERO	ZERO	ZERO	0.3603E-17	0.1593E-06	0.5218E-09	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Co(COOH) ₂	ZERO	ZERO	ZERO	0.1368E-19	0.6046E-09	0.1978E-11	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	0.2931E-20	0.1295E-09	0.4259E-12	ZERO
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	0.1150E-16	0.5073E-06	0.1674E-08	ZERO
42 Cs ₂ O	ZERO	ZERO	ZERO	0.1644E-19	0.7253E-09	0.4628E-11	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	0.1429E-16	0.6313E-06	0.2065E-08	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	0.3488E-19	0.1542E-08	0.5046E-11	ZERO
8 CsOH	ZERO	ZERO	ZERO	0.3996E-21	ZERO	0.2663E-10	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	36 SMECT Hg Pump Water	37 SMECT Air Inleakage	251 Hg Accum in PRD - PR	16 MWT Vent to SMECT	23 Cond fr MWT to SMECT	42 FAVC Condensate	106 HNO3 Add to SMECT
54 Cu(COOH)2	ZERO	ZERO	ZERO	0.3563E-18	0.1575E-07	0.5153E-10	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	0.1234E-15	0.5454E-05	0.1784E-07	ZERO
55 CuO	ZERO	ZERO	ZERO	0.1545E-17	0.6830E-07	0.2353E-09	ZERO
80 Fe2O3	ZERO	ZERO	ZERO	0.1560E-14	0.6899E-04	0.2260E-06	ZERO
101 FeO	ZERO	ZERO	ZERO	0.4651E-21	0.1573E-21	0.3100E-10	ZERO
102 Group A	ZERO	ZERO	ZERO	0.1445E-17	0.6392E-07	0.2110E-09	ZERO
103 Group B	ZERO	ZERO	ZERO	0.7068E-17	0.3126E-06	0.1024E-08	ZERO
25 H2	ZERO	ZERO	ZERO	0.3572E-15	0.3142E-06	0.4297E-07	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	0.4970E-17	0.2198E-06	0.7190E-09	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	0.5403E-15	0.2388E-04	0.7811E-07	ZERO
34 HCOOH	ZERO	ZERO	ZERO	0.3251E-14	0.3787E+00	0.1112E-01	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	0.7025E-05	0.1756E-22	ZERO	0.5123E+01
36 Hg	ZERO	ZERO	0.1995E+00	0.4849E-04	ZERO	0.2299E+00	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	0.3963E-21	ZERO	0.2641E-10	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO	0.7402E-17	0.3273E-06	0.1151E-08	ZERO
51 KCOOH	ZERO	ZERO	ZERO	0.6340E-15	0.2802E-04	0.9166E-07	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	0.2067E-17	0.9143E-07	0.2991E-09	ZERO
10 KOH	ZERO	ZERO	ZERO	0.2384E-20	ZERO	0.1589E-09	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	0.2162E-15	0.7350E-16	0.1079E-06	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	0.2135E-15	0.9443E-05	0.3089E-07	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	0.8054E-16	0.8301E-06	0.3356E-07	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	0.1545E-15	0.6834E-05	0.2235E-07	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	0.6106E-21	0.2065E-21	0.4069E-10	ZERO
14 MnO2	ZERO	ZERO	ZERO	0.1332E-15	0.5889E-05	0.1951E-07	ZERO
145 MoO2	ZERO	ZERO	ZERO	0.1111E-18	0.4914E-08	0.1610E-10	ZERO
81 N2	ZERO	0.5484E+02	ZERO	0.3621E+01	0.7250E-02	0.1368E-02	ZERO
74 N2O	ZERO	ZERO	ZERO	TRACE	0.4407E-24	0.4048E-22	ZERO
182 NH3	ZERO	ZERO	ZERO	0.1158E-10	0.2285E-06	0.1065E-03	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	0.1117E-10	0.7086E-08	0.2861E-08	ZERO
68 NH4OH	ZERO	ZERO	ZERO	0.1965E-17	0.1292E+00	0.2079E-06	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	0.5782E-13	0.4517E-04	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	36 SMECT Hg Pump Water	37 SMECT Air Inleakage	251 Hg Accum in PRD - PR	16 MWT Vent to SMECT	23 Cond fr MWT to SMECT	42 FAVC Condensate	106 HNO ₃ Add to SMECT
84 NO ₂	ZERO	ZERO	ZERO	0.9966E-09	0.2789E-20	0.1210E-04	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	0.2763E-20	ZERO	0.1842E-09	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	0.1723E-18	ZERO	0.1148E-07	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	TRACE	ZERO	0.4388E-22	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	0.3402E-15	0.7968E-05	0.1061E-06	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	ZERO	0.2792E-16	0.1235E-05	0.4199E-08	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	ZERO	0.6715E-18	0.2970E-07	0.9729E-10	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	0.2966E-15	0.1052E-04	0.2366E-06	ZERO
7 NaCl	ZERO	ZERO	ZERO	0.2233E-17	0.9872E-07	0.3478E-09	ZERO
69 NaF	ZERO	ZERO	ZERO	0.2201E-17	0.9732E-07	0.3390E-09	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	0.6360E-21	0.2812E-10	0.1060E-12	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	0.1942E-18	ZERO	0.1294E-07	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO	0.1025E-14	0.4533E-04	0.1663E-06	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	0.2758E-17	0.1219E-06	0.3989E-09	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	0.1909E-16	0.8400E-06	0.2800E-08	ZERO
82 O ₂	ZERO	0.1656E+02	ZERO	0.1094E+01	0.4179E-02	0.8388E-03	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	0.2771E-20	0.1226E-09	0.4009E-12	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	0.1877E-19	0.8296E-09	0.2714E-11	ZERO
67 PbO	ZERO	ZERO	ZERO	0.8497E-24	0.2873E-24	0.5663E-13	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	0.6493E-17	0.2871E-06	0.9406E-09	ZERO
124 Pd	ZERO	ZERO	0.1851E-09	0.4374E-13	ZERO	0.8208E-11	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	TRACE	ZERO	0.8966E-17	ZERO
76 PuO ₂	ZERO	ZERO	ZERO	0.5617E-18	0.2484E-07	0.8138E-10	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	0.1599E-19	0.7065E-09	0.2311E-11	ZERO
58 Rh	ZERO	ZERO	0.8739E-10	0.8658E-13	ZERO	0.1667E-10	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	0.3678E-22	ZERO	0.2024E-16	ZERO
95 Ru	ZERO	ZERO	ZERO	0.5352E-18	0.2367E-07	0.7742E-10	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	36 SMECT Hg Pump Water	37 SMECT Air Inleakage	251 Hg Accum in PRD - PR	16 MWWT Vent to SMECT	23 Cond fr MWWT to SMECT	42 FAVC Condensate	106 HNO3 Add to SMECT
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	0.2457E-14	0.3513E-05	0.1198E-05	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	0.1197E-18	0.5290E-08	0.1730E-10	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	0.1839E-17	0.8132E-07	0.2660E-09	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	0.4497E-20	0.1987E-03	0.6501E-12	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	0.3218E-23	0.1088E-23	0.2144E-12	ZERO
159 TcO2	ZERO	ZERO	ZERO	0.1902E-18	0.8412E-08	0.2756E-10	ZERO
92 ThO2	ZERO	ZERO	ZERO	0.8844E-17	0.3911E-06	0.1281E-08	ZERO
107 TiO2	ZERO	ZERO	ZERO	0.5107E-16	0.2257E-05	0.7395E-08	ZERO
119 Tritium	ZERO	ZERO	ZERO	0.8779E-16	0.1020E-08	0.9568E-10	ZERO
17 U3O8	ZERO	ZERO	ZERO	0.1530E-15	0.6767E-05	0.2217E-07	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	0.5301E-23	0.2343E-12	0.7663E-15	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	0.6309E-20	0.2790E-09	0.9127E-12	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	0.4810E-19	0.2126E-08	0.6954E-11	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	0.6597E-18	0.2917E-07	0.9543E-10	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	0.9182E-21	0.4054E-10	0.1980E-12	ZERO
100 Zeolite	ZERO	ZERO	ZERO	0.1464E-18	0.6468E-08	0.2116E-10	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	0.4012E-17	0.1774E-06	0.5804E-09	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	0.4743E-17	0.2098E-06	0.6876E-09	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	0.4162E-15	0.1840E-04	0.6020E-07	ZERO
1 water	0.2441E-02	0.1200E+01	ZERO	0.9729E-01	0.6081E+03	0.1393E+03	0.5123E+01
TOTAL FLOW, LB/HR	0.2441E-02	0.7260E+02	0.1995E+00	0.4812E+01	0.6091E+03	0.1397E+03	0.1025E+02
TEMPERATURE, DEG C	0.3500E+02	0.3500E+02	0.5000E+02	0.3500E+02	0.5000E+02	0.1000E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01	0.9656E+00	0.9607E+00	0.1000E+01
PRESSURE, PSIG	ZERO	ZERO	-0.5055E+00	ZERO	-0.5055E+00	-0.5776E+00	ZERO
PRESSURE, MM HG			0.7339E+03		0.7339E+03	0.7301E+03	
ENTHALPY, PCU/HR	0.8563E-01	0.1523E+04	0.3288E+00	0.1116E+03	0.3046E+05	0.1402E+04	0.1651E+03
VAPOR FLOW, CFM		0.1715E+02		0.1139E+01			
LIQUID FLOW, GPM	0.4874E-05		0.2942E-04		0.1216E+01	0.2785E+00	0.1704E-01
DENSITY, LBS/FT3	0.6243E+02	0.7055E-01	0.8457E+03	0.7040E-01	0.6244E+02	0.6253E+02	0.7495E+02
PHASE	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS -> STREAM NAME	38 SMECT Vent to FAVC	40 FAVC HEME Vnt to PVVS	41 FAVC HEME Accumulatn	43 SMECT Liq to RCT	24 SMECT Hg to MWT	44 SME Concen- trate to MFT	45 Melter Loop Water Flush
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.6695E-02	0.8444E-02	ZERO	0.9945E-04	0.2030E-09	0.1009E-17	ZERO
123 (C6H5)2C6H4	0.5388E-13	0.1842E-08	ZERO	0.2918E-05	0.5956E-11	0.6469E-01	ZERO
118 (C6H5)2NH	0.7732E-04	0.1090E-02	ZERO	0.4773E-02	0.9743E-08	0.4297E-08	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.1630E-14	ZERO	ZERO	0.1928E-06	0.3936E-12	0.4872E-01	ZERO
162 (C6H5NH2)	0.1316E-02	ZERO	ZERO	0.4637E-01	0.9465E-07	0.1801E-03	ZERO
163 (C6H5NHCHO)	0.6075E-14	ZERO	ZERO	0.7188E-06	0.1467E-11	0.1816E+00	ZERO
165 (C6H5NO)	0.9904E-16	ZERO	ZERO	0.1172E-07	0.2392E-13	0.2968E-02	ZERO
164 (C6H5NO2)	0.2015E-15	ZERO	ZERO	0.2384E-07	0.4866E-13	0.6023E-02	ZERO
131 (C6H5OH salt)	0.6616E-17	0.2342E-10	0.9133E-09	0.7829E-09	0.1598E-14	0.1501E-14	ZERO
130 (C6H5OH)	0.8507E-02	0.1052E+00	ZERO	0.6659E+00	0.1359E-05	0.5289E-01	ZERO
121 (C6H6)	0.2322E-01	0.1196E-01	ZERO	0.6257E-03	0.1277E-08	0.8011E-23	ZERO
155 (CH3)2CHOH	0.1333E-11	0.1944E-10	ZERO	0.1059E-09	0.2162E-15	0.5253E-11	ZERO
154 (CH3OH)	0.2742E-12	0.4650E-11	ZERO	0.9408E-11	0.1920E-16	0.8641E-13	ZERO
45 Ag	0.1418E-15	0.2975E-11	0.1160E-09	ZERO	0.1678E-07	0.1251E-01	ZERO
116 Ag2O	0.9104E-24	0.3029E-17	0.1181E-15	0.1077E-15	0.2199E-21	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.3434E-12	0.2447E-08	0.9545E-07	0.4063E-04	0.8293E-10	0.1028E+02	ZERO
106 B2O3	0.1256E-12	0.3084E-08	0.1203E-06	0.1486E-04	0.3032E-10	0.1295E+02	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.1727E-20	0.5657E-14	0.2206E-12	0.2043E-12	0.4170E-18	0.3948E-18	ZERO
24 BaSO4	0.7931E-14	0.5649E-10	0.2203E-08	0.9384E-06	0.1915E-11	0.2372E+00	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.3713E+00	0.3723E+01	ZERO	0.2537E-02	0.5179E-08	0.1365E-15	ZERO
142 CO2 (C14)	0.1923E-10	0.6165E-07	ZERO	0.1314E-12	0.2682E-18	TRACE	ZERO
63 Ca(COOH)2	0.1326E-14	0.9434E-11	0.3679E-09	0.1570E-06	0.3204E-12	0.3968E-01	ZERO
167 Ca(NO3)2	0.8707E-13	ZERO	ZERO	0.1030E-04	0.2103E-10	0.2606E+01	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.8040E-13	0.5731E-09	0.2235E-07	0.9513E-05	0.1942E-10	0.2406E+01	ZERO
20 CaC2O4	0.2158E-14	0.1535E-10	0.5985E-09	0.2553E-06	0.5211E-12	0.6453E-01	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.5512E-15	0.3923E-11	0.1530E-09	0.6522E-07	0.1331E-12	0.1650E-01	ZERO
41 CaO	0.1047E-15	0.1090E-11	0.4251E-10	0.1238E-07	0.2528E-13	0.3129E-02	ZERO
19 CaSO4	0.1831E-14	0.1305E-10	0.5088E-09	0.2166E-06	0.4422E-12	0.5479E-01	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.6953E-17	0.4945E-13	0.1928E-11	0.8227E-09	0.1679E-14	0.2079E-03	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1489E-17	0.1065E-13	0.4152E-12	0.1762E-09	0.3597E-15	0.4454E-04	ZERO
98 Cr2O3	0.5842E-14	0.4185E-10	0.1632E-08	0.6912E-06	0.1411E-11	0.1757E+00	ZERO
42 Cs2O	0.8353E-17	0.1157E-12	0.4512E-11	0.9884E-09	0.2017E-14	0.2494E-03	ZERO
53 CsCOOH	0.7260E-14	0.5163E-10	0.2014E-08	0.8590E-06	0.1753E-11	0.2171E+00	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	0.1772E-16	ZERO	ZERO	0.2097E-08	0.4281E-14	0.5305E-03	ZERO
8 CsOH	0.2032E-18	0.6658E-12	0.2597E-10	0.2405E-10	0.4908E-16	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	38 SMECT Vent to FAVC	40 FAVC HEME Vnt to PVVS	41 FAVC HEME Accumulatn	43 SMECT Liq to RCT	24 SMECT Hg to MWT	44 SME Concen- trate to MFT	45 Melter Loop Water Flush
54 Cu(COOH)2	0.1810E-15	0.1288E-11	0.5024E-10	0.2142E-07	0.4372E-13	0.5418E-02	ZERO
170 Cu(NO3)2	0.6268E-13	ZERO	ZERO	0.7417E-05	0.1514E-10	0.1876E+01	ZERO
55 CuO	0.7850E-15	0.5884E-11	0.2295E-09	0.9288E-07	0.1896E-12	0.2349E-01	ZERO
80 Fe2O3	0.7928E-12	0.5650E-08	0.2203E-06	0.9380E-04	0.1915E-09	0.2373E+02	ZERO
101 FeO	0.2365E-18	0.7749E-12	0.3022E-10	0.2798E-10	0.5712E-16	0.5408E-16	ZERO
102 Group A	0.7345E-15	0.5275E-11	0.2057E-09	0.8691E-07	0.1774E-12	0.2198E-01	ZERO
103 Group B	0.3592E-14	0.2560E-10	0.9984E-09	0.4250E-06	0.8675E-12	0.1075E+00	ZERO
25 H2	0.6244E-06	0.4213E-01	ZERO	0.1748E-09	0.3567E-15	0.5075E-22	ZERO
158 H2C2O4	0.2526E-14	0.1798E-10	0.7010E-09	0.2989E-06	0.6100E-12	0.7559E-01	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.2746E-12	0.1953E-08	0.7616E-07	0.3249E-04	0.6632E-10	0.8213E+01	ZERO
34 HCOOH	0.4781E-18	0.1053E-02	ZERO	0.2596E-15	0.5299E-21	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.5980E-01	ZERO	ZERO	0.3445E+01	0.7033E-05	0.3665E-23	ZERO
36 Hg	0.1828E+00	0.8194E-02	ZERO	ZERO	0.3006E+00	0.2514E+00	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.2015E-18	0.6603E-12	0.2575E-10	0.2385E-10	0.4867E-16	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.3761E-14	0.2877E-10	0.1122E-08	0.4451E-06	0.9084E-12	0.1126E+00	ZERO
51 KCOOH	0.3222E-12	0.2291E-08	0.8937E-07	0.3812E-04	0.7782E-10	0.9637E+01	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.1051E-14	0.7477E-11	0.2916E-09	0.1243E-06	0.2537E-12	0.3144E-01	ZERO
10 KOH	0.1212E-17	0.3972E-11	0.1549E-09	0.1434E-09	0.2928E-15	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.1099E-12	0.2697E-08	0.1052E-06	0.1300E-04	0.2653E-10	0.1133E+02	ZERO
65 Mg(COOH)2	0.1085E-12	0.7722E-09	0.3012E-07	0.1284E-04	0.2621E-10	0.3247E+01	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4093E-13	0.8390E-09	0.3272E-07	0.4843E-05	0.9885E-11	0.3522E+01	ZERO
60 Mn(COOH)2	0.7853E-13	0.5588E-09	0.2179E-07	0.9292E-05	0.1897E-10	0.2350E+01	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.3105E-18	0.1017E-11	0.3968E-10	0.3674E-10	0.7499E-16	0.7100E-16	ZERO
14 MnO2	0.6767E-13	0.4878E-09	0.1902E-07	0.8008E-05	0.1634E-10	0.2025E+01	ZERO
145 MoO2	0.5646E-16	0.4025E-12	0.1570E-10	0.6681E-08	0.1364E-13	0.1690E-02	ZERO
81 N2	0.5846E+02	0.1330E+04	ZERO	0.1255E-01	0.2561E-07	0.1032E-23	ZERO
74 N2O	0.4075E-22	0.9215E-18	ZERO	0.1682E-24	TRACE	ZERO	ZERO
182 NH3	0.8305E-05	0.1060E-01	ZERO	0.7859E-05	0.1604E-10	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.5675E-08	ZERO	ZERO	0.6715E+00	0.1371E-05	0.2437E-02	ZERO
68 NH4OH	TRACE	0.2079E-06	ZERO	0.1573E-18	0.3211E-24	0.8916E-01	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.4514E-04	ZERO	ZERO	0.2830E-07	0.5775E-13	TRACE	ZERO

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Section 4B. Frit Adjustment of Melter Feed

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84 NO2	0.7789E+00	0.3816E+01	ZERO	0.4883E-03	0.9966E-09	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.1405E-17	0.4605E-11	0.1796E-09	0.1663E-09	0.3394E-15	ZERO	ZERO
109 Na2C2O4	0.8762E-16	0.2871E-09	0.1120E-07	0.1037E-07	0.2116E-13	ZERO	ZERO
5 Na2CO3	TRACE	0.1097E-23	0.4278E-22	0.3681E-22	TRACE	ZERO	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	0.1729E-12	0.2652E-08	0.1034E-06	0.2046E-04	0.4175E-10	0.1113E+02	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.1419E-13	0.1050E-09	0.4094E-08	0.1679E-05	0.3427E-11	0.4246E+00	ZERO
88 Na2S1O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.3412E-15	0.2432E-11	0.9485E-10	0.4038E-07	0.8242E-13	0.1021E-01	ZERO
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.1507E-12	0.5914E-08	0.2307E-06	0.1783E-04	0.3640E-10	0.6526E+01	ZERO
7 NaCl	0.1135E-14	0.8695E-11	0.3391E-09	0.1343E-06	0.2740E-12	0.3395E-01	ZERO
69 NaF	0.1118E-14	0.8474E-11	0.3305E-09	0.1323E-06	0.2701E-12	0.3347E-01	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.3232E-18	0.2650E-14	0.1033E-12	0.3824E-10	0.7805E-16	0.9669E-05	ZERO
3 NaNO2	0.9873E-16	0.3235E-09	0.1262E-07	0.1168E-07	0.2384E-13	ZERO	ZERO
2 NaNO3	0.5206E-12	0.4157E-08	0.1621E-06	0.6161E-04	0.1257E-09	0.1559E+02	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.1402E-14	0.9972E-11	0.3889E-09	0.1658E-06	0.3385E-12	0.4194E-01	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.9701E-14	0.7000E-10	0.2730E-08	0.1148E-05	0.2343E-11	0.2939E+00	ZERO
82 O2	0.1766E+02	0.4004E+03	ZERO	0.7239E-02	0.1478E-07	0.1157E-22	ZERO
175 Pb(NO3)2	0.1408E-17	ZERO	ZERO	0.1666E-09	0.3401E-15	0.4215E-04	ZERO
86 PbCO3	0.9539E-17	0.6784E-13	0.2646E-11	0.1129E-08	0.2304E-14	0.2853E-03	ZERO
67 PbO	0.4321E-21	0.1416E-14	0.5522E-13	0.5113E-13	0.1044E-18	0.9881E-19	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.3300E-14	0.2352E-10	0.9171E-09	0.3904E-06	0.7969E-12	0.9875E-01	ZERO
124 Pd	0.9881E-17	0.2052E-12	0.8003E-11	ZERO	0.1169E-08	0.8630E-03	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	TRACE	0.2242E-18	0.8742E-17	0.7971E-17	0.1627E-22	ZERO	ZERO
76 PuO2	0.2854E-15	0.2034E-11	0.7934E-10	0.3377E-07	0.6894E-13	0.8543E-02	ZERO
156 PuO2(NaTi2O5)2	0.8124E-17	0.5778E-13	0.2253E-11	0.9613E-09	0.1962E-14	0.2430E-03	ZERO
58 Rh	0.1771E-16	0.4167E-12	0.1625E-10	ZERO	0.2096E-08	0.1753E-02	ZERO
22 RhO2	0.1523E-24	0.5061E-18	0.1974E-16	0.1802E-16	0.3678E-22	ZERO	ZERO
95 Ru	0.2720E-15	0.1935E-11	0.7548E-10	0.3218E-07	0.6569E-13	0.8139E-02	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

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STREAM NUMBERS (CONT'D) -> STREAM NAME	38 SMECT Vent to FAVC	40 FAVC HEME Vnt to PVVS	41 FAVC HEME Accumulatn	43 SMECT Liq to RCT	24 SMECT Hg to HWT	44 SME Concen- trate to MFT	45 Melter Loop Water Flush
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.1249E-11	0.2996E-07	0.1168E-05	0.1478E-03	0.3016E-09	0.1258E+03	ZERO
48 Sr(COOH)2	0.6083E-16	0.4326E-12	0.1687E-10	0.7197E-08	0.1469E-13	0.1819E-02	ZERO
176 Sr(NO3)2	0.9344E-15	ZERO	ZERO	0.1106E-06	0.2257E-12	0.2797E-01	ZERO
153 Sr(Na12O5)2	0.2285E-17	0.1625E-13	0.6338E-12	0.2704E-09	0.5519E-15	0.6835E-04	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.1636E-20	0.5361E-14	0.2091E-12	0.1936E-12	0.3952E-18	0.3742E-18	ZERO
159 TcO2	0.9667E-16	0.6889E-12	0.2687E-10	0.1144E-07	0.2335E-13	0.2893E-02	ZERO
92 ThO2	0.4494E-14	0.3203E-10	0.1249E-08	0.5318E-06	0.1085E-11	0.1345E+00	ZERO
107 TiO2	0.2595E-13	0.1849E-09	0.7210E-08	0.3071E-05	0.6268E-11	0.7763E+00	ZERO
119 Tritium	0.8618E-11	0.1157E-09	ZERO	0.1345E-08	0.2745E-14	0.2911E-09	ZERO
17 U3O8	0.7776E-13	0.5542E-09	0.2162E-07	0.9201E-05	0.1878E-10	0.2327E+01	ZERO
62 UO2(COOH)2	0.2694E-20	0.1916E-16	0.7472E-15	0.3187E-12	0.6506E-18	0.8057E-07	ZERO
177 UO2(NO3)2	0.3206E-17	ZERO	ZERO	0.3794E-09	0.7744E-15	0.9596E-04	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.2444E-16	0.1739E-12	0.6780E-11	0.2892E-08	0.5904E-14	0.7311E-03	ZERO
178 Y(NO3)3	0.3352E-15	ZERO	ZERO	0.3967E-07	0.8096E-13	0.1003E-01	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.4666E-18	0.4949E-14	0.1930E-12	0.5521E-10	0.1127E-15	0.1394E-04	ZERO
100 Zeolite	0.7437E-16	0.5289E-12	0.2063E-10	0.8800E-08	0.1796E-13	0.2224E-02	ZERO
44 Zn(COOH)2	0.2039E-14	0.1451E-10	0.5659E-09	0.2413E-06	0.4924E-12	0.6102E-01	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.2410E-14	0.1719E-10	0.6705E-09	0.2852E-06	0.5821E-12	0.7214E-01	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.2115E-12	0.1505E-08	0.5870E-07	0.2502E-04	0.5108E-10	0.6329E+01	ZERO
1 water	0.6922E+01	0.1283E+02	ZERO	0.1080E+04	0.4645E-02	0.3256E+03	0.6960E+01
TOTAL FLOW, LB/HR	0.8447E+02	0.1751E+04	0.2633E-05	0.1085E+04	0.3053E+00	0.5914E+03	0.6960E+01
TEMPERATURE, DEG C	0.4900E+02	0.1000E+02	0.1000E+02	0.4900E+02	0.4666E+02	0.5000E+02	0.2500E+02
PRESSURE, ATM	0.1000E+01	0.9263E+00	0.9263E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	-0.1083E+01	-0.1083E+01	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG		0.7040E+03	0.7040E+03				
ENTHALPY, PCU/HR	0.5491E+04	0.1752E+05	0.4981E-05	0.5307E+05	0.6793E+00	0.1883E+05	0.1746E+03
VAPOR FLOW, CFM	0.2152E+02	0.4075E+03					
LIQUID FLOW, GPM				0.2164E+01	0.5361E-04	0.8845E+00	0.1390E-01
DENSITY, LBS/FT3	0.6543E-01	0.7160E-01	0.1401E+03	0.6251E+02	0.7100E+03	0.8336E+02	0.6243E+02
PHASE	VAPOR	VAPOR	SOLID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS -> STREAM NAME	46 MFT Sample Pump Prime	47 MFT Air Inleakage	48 MFT Vent to Scrubber	49 Mltr Fd tube H2O Flush	58 Melter Feed Solubles	59 Melter Feed Insolubles	60 Melter Feed
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	0.1008E-17	ZERO	ZERO	0.1342E-20	0.1342E-20
123 (C6H5)2C6H4	ZERO	ZERO	0.3144E-08	ZERO	ZERO	0.6469E-01	0.6469E-01
118 (C6H5)2NH	ZERO	ZERO	0.2359E-09	ZERO	ZERO	0.4061E-08	0.4061E-08
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	0.9265E-09	ZERO	ZERO	0.4872E-01	0.4872E-01
162 (C6H5NH2)	ZERO	ZERO	0.1412E-04	ZERO	0.1660E-03	ZERO	0.1660E-03
163 (C6H5NHCHO)	ZERO	ZERO	0.3454E-08	ZERO	ZERO	0.1816E+00	0.1816E+00
165 (C6H5NO)	ZERO	ZERO	0.5645E-10	ZERO	ZERO	0.2968E-02	0.2968E-02
164 (C6H5NO2)	ZERO	ZERO	0.1145E-09	ZERO	0.6023E-02	ZERO	0.6023E-02
131 (C6H5OH salt)	ZERO	ZERO	0.2855E-22	ZERO	0.1501E-14	ZERO	0.1501E-14
130 (C6H5OH)	ZERO	ZERO	0.1965E-02	ZERO	0.5092E-01	ZERO	0.5092E-01
121 (C6H6)	ZERO	ZERO	0.7941E-23	ZERO	TRACE	ZERO	TRACE
155 (CH3)2CHOH	ZERO	ZERO	0.1882E-12	ZERO	0.5065E-11	ZERO	0.5065E-11
154 (CH3OH)	ZERO	ZERO	0.6850E-14	ZERO	0.7956E-13	ZERO	0.7956E-13
45 Ag	ZERO	ZERO	0.2379E-09	ZERO	ZERO	0.1251E-01	0.1251E-01
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	ZERO	0.1954E-06	ZERO	ZERO	0.1028E+02	0.1028E+02
106 B2O3	ZERO	ZERO	0.2462E-06	ZERO	ZERO	0.1295E+02	0.1295E+02
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	TRACE	ZERO	ZERO	0.3948E-18	0.3948E-18
24 BaSO4	ZERO	ZERO	0.4511E-08	ZERO	ZERO	0.2372E+00	0.2372E+00
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	0.1362E-15	ZERO	0.3150E-18	ZERO	0.3150E-18
142 CO2 (C14)	ZERO	ZERO	TRACE	ZERO	TRACE	ZERO	TRACE
63 Ca(COOH)2	ZERO	ZERO	0.7545E-09	ZERO	0.3968E-01	ZERO	0.3968E-01
167 Ca(NO3)2	ZERO	ZERO	0.4955E-07	ZERO	0.2606E+01	ZERO	0.2606E+01
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	ZERO	0.4576E-07	ZERO	ZERO	0.2406E+01	0.2406E+01
20 CaC2O4	ZERO	ZERO	0.1227E-08	ZERO	ZERO	0.6453E-01	0.6453E-01
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	0.3137E-09	ZERO	ZERO	0.1650E-01	0.1650E-01
41 CaO	ZERO	ZERO	0.5951E-10	ZERO	ZERO	0.3129E-02	0.3129E-02
19 CaSO4	ZERO	ZERO	0.1042E-08	ZERO	ZERO	0.5479E-01	0.5479E-01
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	0.3954E-11	ZERO	0.2079E-03	ZERO	0.2079E-03
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	0.8470E-12	ZERO	ZERO	0.4454E-04	0.4454E-04
98 Cr2O3	ZERO	ZERO	0.3342E-08	ZERO	ZERO	0.1757E+00	0.1757E+00
42 Cs2O	ZERO	ZERO	0.4743E-11	ZERO	ZERO	0.2494E-03	0.2494E-03
53 CsCOOH	ZERO	ZERO	0.4129E-08	ZERO	0.2171E+00	ZERO	0.2171E+00
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	0.1009E-10	ZERO	0.5305E-03	ZERO	0.5305E-03
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	46 MFT Sample Pump Prime	47 MFT Air Inleakage	48 MFT Vent to Scrubber	49 Mltr Fd tube H ₂ O Flush	58 Melter Feed Solubles	59 Melter Feed Insolubles	60 Melter Feed
54 Cu(COOH) ₂	ZERO	ZERO	0.1030E-09	ZERO	0.5418E-02	ZERO	0.5418E-02
170 Cu(NO ₃) ₂	ZERO	ZERO	0.3567E-07	ZERO	0.1876E+01	ZERO	0.1876E+01
55 CuO	ZERO	ZERO	0.4467E-09	ZERO	ZERO	0.2349E-01	0.2349E-01
80 Fe ₂ O ₃	ZERO	ZERO	0.4512E-06	ZERO	ZERO	0.2373E+02	0.2373E+02
101 FeO	ZERO	ZERO	0.1028E-23	ZERO	ZERO	0.5408E-16	0.5408E-16
102 Group A	ZERO	ZERO	0.4180E-09	ZERO	ZERO	0.2198E-01	0.2198E-01
103 Group B	ZERO	ZERO	0.2044E-08	ZERO	ZERO	0.1075E+00	0.1075E+00
25 H ₂	ZERO	ZERO	0.5075E-22	ZERO	TRACE	ZERO	TRACE
158 H ₂ C ₂ O ₄	ZERO	ZERO	0.1438E-08	ZERO	0.7559E-01	ZERO	0.7559E-01
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	0.1562E-06	ZERO	0.8213E+01	ZERO	0.8213E+01
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	0.1787E-24	ZERO	0.3486E-23	ZERO	0.3486E-23
36 Hg	ZERO	ZERO	0.9784E-02	ZERO	ZERO	0.2416E+00	0.2416E+00
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	0.2140E-08	ZERO	ZERO	0.1126E+00	0.1126E+00
51 KCOOH	ZERO	ZERO	0.1832E-06	ZERO	0.9637E+01	ZERO	0.9637E+01
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	0.5980E-09	ZERO	0.3144E-01	ZERO	0.3144E-01
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	0.2154E-06	ZERO	ZERO	0.1133E+02	0.1133E+02
65 Mg(COOH) ₂	ZERO	ZERO	0.6175E-07	ZERO	0.3247E+01	0.2130E-06	0.3247E+01
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	0.6698E-07	ZERO	ZERO	0.3522E+01	0.3522E+01
60 Mn(COOH) ₂	ZERO	ZERO	0.4469E-07	ZERO	0.2350E+01	ZERO	0.2350E+01
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	0.1350E-23	ZERO	ZERO	0.7100E-16	0.7100E-16
14 MnO ₂	ZERO	ZERO	0.3851E-07	ZERO	ZERO	0.2025E+01	0.2025E+01
145 MoO ₂	ZERO	ZERO	0.3214E-10	ZERO	ZERO	0.1690E-02	0.1690E-02
81 N ₂	ZERO	0.5484E+02	0.5483E+02	ZERO	0.3985E-02	ZERO	0.3985E-02
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	0.4634E-10	ZERO	0.2437E-02	ZERO	0.2437E-02
68 NH ₄ OH	ZERO	ZERO	0.1695E-08	ZERO	0.8916E-01	ZERO	0.8916E-01
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	TRACE	ZERO	TRACE	ZERO	TRACE

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	46 MFT Sample Pump Prime	47 MFT Air Inleakage	48 MFT Vent to Scrubber	49 Mltr Fd tube H ₂ O Flush	58 Melter Feed Solubles	59 Melter Feed Insolubles	60 Melter Feed
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	0.2116E-06	ZERO	ZERO	0.1113E+02	0.1113E+02
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	0.8074E-08	ZERO	0.4246E+00	ZERO	0.4246E+00
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	0.1942E-09	ZERO	0.1021E-01	ZERO	0.1021E-01
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	0.1241E-06	ZERO	0.6526E+01	ZERO	0.6526E+01
7 NaCl	ZERO	ZERO	0.6456E-09	ZERO	0.3395E-01	ZERO	0.3395E-01
69 NaF	ZERO	ZERO	0.6365E-09	ZERO	0.3347E-01	0.2445E-08	0.3347E-01
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.1839E-12	ZERO	0.9669E-05	ZERO	0.9669E-05
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	0.2964E-06	ZERO	0.1559E+02	ZERO	0.1559E+02
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	0.7975E-09	ZERO	0.4194E-01	ZERO	0.4194E-01
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.5589E-08	ZERO	ZERO	0.2939E+00	0.2939E+00
82 O ₂	ZERO	0.1656E+02	0.1656E+02	ZERO	0.2299E-02	ZERO	0.2299E-02
175 Pb(NO ₃) ₂	ZERO	ZERO	0.8015E-12	ZERO	0.4215E-04	ZERO	0.4215E-04
86 PbCO ₃	ZERO	ZERO	0.5425E-11	ZERO	ZERO	0.2853E-03	0.2853E-03
67 PbO	ZERO	ZERO	TRACE	ZERO	ZERO	0.9881E-19	0.9881E-19
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	0.1878E-08	ZERO	ZERO	0.9875E-01	0.9875E-01
124 Pd	ZERO	ZERO	0.1641E-10	ZERO	ZERO	0.8630E-03	0.8630E-03
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	0.1624E-09	ZERO	ZERO	0.8543E-02	0.8543E-02
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	0.4621E-11	ZERO	ZERO	0.2430E-03	0.2430E-03
58 Rh	ZERO	ZERO	0.3333E-10	ZERO	ZERO	0.1753E-02	0.1753E-02
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	0.1548E-09	ZERO	ZERO	0.8139E-02	0.8139E-02
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(MO3)2)
Section 4B. Frit Adjustment of Melter Feed

STREAM NUMBERS (CONT'D) -> STREAM NAME	46 MFT Sample Pump Prime	47 MFT Air Inleakage	48 MFT Vent to Scrubber	49 Mltr Pd tube H2O Flush	58 Melter Feed Solubles	59 Melter Feed Insolubles	60 Melter Feed
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	0.2393E-05	ZERO	ZERO	0.1258E+03	0.1258E+03
48 Sr(COOH)2	ZERO	ZERO	0.3460E-10	ZERO	0.1819E-02	ZERO	0.1819E-02
176 Sr(NO3)2	ZERO	ZERO	0.5318E-09	ZERO	0.2797E-01	ZERO	0.2797E-01
153 Sr(NaTi2O5)2	ZERO	ZERO	0.1300E-11	ZERO	ZERO	0.6835E-04	0.6835E-04
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	TRACE	ZERO	ZERO	0.3742E-18	0.3742E-18
159 TeO2	ZERO	ZERO	0.5501E-10	ZERO	ZERO	0.2893E-02	0.2893E-02
92 ThO2	ZERO	ZERO	0.2558E-08	ZERO	ZERO	0.1345E+00	0.1345E+00
107 TiO2	ZERO	ZERO	0.1476E-07	ZERO	ZERO	0.7763E+00	0.7763E+00
119 Tritium	ZERO	ZERO	0.5397E-11	ZERO	0.2857E-09	ZERO	0.2857E-09
17 U3O8	ZERO	ZERO	0.4425E-07	ZERO	ZERO	0.2327E+01	0.2327E+01
62 UO2(COOH)2	ZERO	ZERO	0.1532E-14	ZERO	0.8057E-07	ZERO	0.8057E-07
177 UO2(NO3)2	ZERO	ZERO	0.1825E-11	ZERO	0.9596E-04	ZERO	0.9596E-04
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	0.1390E-10	ZERO	0.7311E-03	ZERO	0.7311E-03
178 Y(NO3)3	ZERO	ZERO	0.1908E-09	ZERO	0.1003E-01	ZERO	0.1003E-01
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	0.2651E-12	ZERO	ZERO	0.1394E-04	0.1394E-04
100 Zeolite	ZERO	ZERO	0.4230E-10	ZERO	ZERO	0.2224E-02	0.2224E-02
44 Zn(COOH)2	ZERO	ZERO	0.1160E-08	ZERO	0.6102E-01	ZERO	0.6102E-01
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	0.1372E-08	ZERO	ZERO	0.7214E-01	0.7214E-01
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	0.1204E-06	ZERO	ZERO	0.6329E+01	0.6329E+01
1 water	0.1950E+01	0.1200E+01	0.6313E+01	0.1000E+01	0.3343E+03	ZERO	0.3343E+03
TOTAL FLOW, LB/HR	0.1950E+01	0.7260E+02	0.7772E+02	0.1000E+01	0.3855E+03	0.2146E+03	0.6001E+03
TEMPERATURE, DEG C	0.2500E+02	0.3500E+02	0.5000E+02	0.2500E+02	0.4988E+02	0.4988E+02	0.4988E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01	0.9656E+00	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	-0.5055E+00	ZERO	-0.5055E+00	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG			0.7339E+03		0.7339E+03	0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.4893E+02	0.1523E+04	0.4931E+04	0.2509E+02	0.1721E+05	0.2011E+04	0.1922E+05
VAPOR FLOW, CFM		0.1715E+02	0.2070E+02				
LIQUID FLOW, GPM	0.3894E-02			0.1997E-02	0.7243E+00	0.1776E+00	0.9019E+00
DENSITY, LBS/FT3	0.6243E+02	0.7055E-01	0.6256E-01	0.6243E+02	0.6636E+02	0.1507E+03	0.8296E+02
PHASE	LIQUID	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID

SECTION 5. VITRIFICATION AND MELTER OFF-GAS TREATMENT

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

DESCRIPTION	PAGE
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1. STREAM NUMBERS 60, 61, 62, 63, 64, 65, 66	2
2. STREAM NUMBERS 67, 68, 69, 70, 71, 72, 73	6
3. STREAM NUMBERS 74, 75, 76, 77, 78, 79, 80	10
4. STREAM NUMBERS 81, 82, 83, 84, 85, 86, 87	14
5. STREAM NUMBERS 88, 89, 90, 91, 92, 93, 94	18
6. STREAM NUMBERS 95, 96, 97, 98, 99, 100, 101	22
7. STREAM NUMBERS 102, 103, 104, 110, 111, 112, 113	26
8. STREAM NUMBERS 114, 115, 116, 117, 118, 119, 120	30
9. STREAM NUMBERS 121	34

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	60 Melter Feed	61 Backup Cooler	62 Film Flow	62 Melter CCTV Lens Purges	63 Melter Air Inleakage	64 Seal Pot Purge	65 Melter Bubbler	66 Dump Can Air Inleakage
COMPONENT FLOWS, LB/HR								
122 (C ₆ H ₅) ₂	0.1342E-20		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	0.6469E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	0.4061E-08		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	0.4872E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	0.1660E-03		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	0.1816E+00		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	0.2968E-02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	0.6023E-02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.1501E-14		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	0.5092E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	TRACE		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	0.5065E-11		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	0.7956E-13		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	0.1251E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.1028E+02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
106 B ₂ O ₃	0.1295E+02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.3948E-18		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	0.2372E+00		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.3150E-18		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C14)	TRACE		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	0.3968E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	0.2606E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.2406E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	0.6453E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	0.1650E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	0.3129E-02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	0.5479E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	0.2079E-03		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.4454E-04		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	0.1757E+00		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs ₂ O	0.2494E-03		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	0.2171E+00		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	0.5305E-03		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	60 Melter Feed	61 Backup Cooler	62 Film Flow	62 Melter CCTV Lens Purges	63 Melter Air Inleakage	64 Seal Pot Purge	65 Melter Bubbler	66 Dump Can Air Inleakage
54 Cu(COOH)2	0.5418E-02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	0.1876E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.2349E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	0.2373E+02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	0.5408E-16		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.2198E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
103 Group B	0.1075E+00		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
25 H2	TRACE		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	0.7559E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.8213E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.3486E-23		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	0.2416E+00		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.1126E+00		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	0.9637E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.3144E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.1133E+02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	0.3247E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.3522E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	0.2350E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.7100E-16		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.2025E+01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	0.1690E-02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.3985E-02	0.3248E+03	0.4532E+02	0.7553E+02	0.1511E+02	0.1500E+00	ZERO	ZERO
74 N2O	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.2437E-02		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.8916E-01		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	TRACE		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	60 Melter Feed	61 Backup Cooler	62 Film Flow	62 Melter CCTV Lens Purges	63 Melter Air Inleakage	64 Seal Pot Purge	65 Melter Bubbler	66 Dump Can Air Inleakage
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.1113E+02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.4246E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.1021E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.6526E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.3395E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
69 NaF	0.3347E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.9669E-05	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	0.1559E+02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.4194E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2939E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
82 O ₂	0.2299E-02	0.9811E+02	0.1369E+02	0.2282E+02	0.4563E+01	ZERO	ZERO	ZERO
175 Pb(NO ₃) ₂	0.4215E-04	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	0.2853E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.9881E-19	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.9875E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	0.8630E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.8543E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.2430E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	0.1753E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	0.8139E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	60	61	62	63	64	65	66
	Melter Feed	Backup Film Cooler Flow	Melter CCTV Lens Purges	Melter Air Inleakage	Seal Pot Purge	Melter Bubbler	Dump Can Air Inleakage
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.1250E+03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH) ₂	0.1819E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	0.2797E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.6835E-04	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.3742E-18	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO ₂	0.2893E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO ₂	0.1345E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO ₂	0.7763E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.2857E-09	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
17 U ₃ O ₈	0.2327E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO ₂ (COOH) ₂	0.8057E-07	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	0.9596E-04	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	0.7311E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	0.1003E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.1394E-04	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	0.2224E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH) ₂	0.6102E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.7214E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.6329E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.3343E+03	0.7105E+01	0.9413E+00	0.1652E+01	0.3304E+00	ZERO	ZERO
TOTAL FLOW, LB/HR	0.6001E+03	0.4300E+03	0.6000E+02	0.1000E+03	0.2000E+02	0.1500E+00	ZERO
TEMPERATURE, DEG C	0.4988E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.9632E+00
PRESSURE, PSIG	-0.5055E+00	ZERO	ZERO	ZERO	ZERO	ZERO	-0.5408E+00
PRESSURE, MM HG	0.7339E+03						0.7320E+03
ENTHALPY, PCU/HR	0.1922E+05	0.9018E+04	0.1258E+04	0.2097E+04	0.4195E+03	0.1272E+01	ZERO
VAPOR FLOW, CFM		0.1016E+03	0.1417E+02	0.2362E+02	0.4725E+01	0.3613E-01	
LIQUID FLOW, GPM	0.9019E+00						
DENSITY, LBS/FT ³	0.8296E+02	0.7055E-01	0.7055E-01	0.7055E-01	0.7055E-01	0.6920E-01	ZERO
PHASE	LIQUID	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vittrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	67 Canister Air Inleakage	68 Pour Spout Siphon Break	69 Slidge Blend Waste Glass	70 Melter Offgas	71 Cooling Air to OGFC	72 Off-Gas Steam Spray	73 Dilution Air to OGFC
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	0.3012E-03	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	0.1501E-14	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	0.2546E-02	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	0.1251E-01	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	0.1017E+02	0.1028E+00	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	ZERO	0.1731E+02	0.1748E+00	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	0.1543E-01	0.1559E-03	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	ZERO	0.2114E+00	0.2135E-02	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	0.1445E+02	ZERO	ZERO	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO	TRACE	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	0.2382E+01	0.2406E-01	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	0.9438E+00	0.9533E-02	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	ZERO	0.4882E-01	0.4931E-03	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	0.1477E-03	0.1491E-05	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	ZERO	0.1740E+00	0.1757E-02	ZERO	ZERO	ZERO
42 Cs ₂ O	ZERO	ZERO	0.1538E+00	0.1553E-02	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	67 Canister Air Inleakage	68 Pour Spout Siphon Break	69 Slidge Blend Waste Glass	70 Melter Offgas	71 Cooling Air to OGFC	72 Off-Gas Steam Spray	73 Dilution Air to OGFC
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	0.8138E+00	0.8220E-02	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	ZERO	ZERO	0.2114E+02	0.2135E+00	ZERO	ZERO	ZERO
101 FeO	ZERO	ZERO	0.2114E+01	0.2135E-01	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	0.2068E-01	0.2088E-03	ZERO	ZERO	ZERO
103 Group B	ZERO	ZERO	0.1064E+00	0.1075E-02	ZERO	ZERO	ZERO
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	0.4237E-03	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	0.2013E-02	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	0.3486E-23	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	0.2416E+00	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	0.8186E-07	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	0.5468E+01	0.5523E-01	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 K ₂ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	0.1122E+02	0.1133E+00	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	0.4621E+01	0.4668E-01	ZERO	ZERO	ZERO
60 Mn(COC ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	0.2774E+01	0.2802E-01	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	ZERO	0.1673E-02	0.1690E-04	ZERO	ZERO	ZERO
81 N ₂	0.3021E+02	0.1500E+00	ZERO	0.4622E+03	0.4154E+03	ZERO	0.7680E-03
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	0.8916E-01	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	0.1826E+01	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) ->	67	68	69	70	71	72	73
STREAM NAME	Canister Air Inleakage	Pour Spout Siphon Break	Sldge Blend Waste Glass	Melter Offgas	Cooling Air to OGFC	Off-Gas Steam Spray	Dilution Air to OGFC
84 NO ₂	ZERO	ZERO	ZERO	0.3713E+01	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	0.1957E+02	0.2046E+00	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	0.3363E+00	0.3397E-02	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	0.1011E-01	0.1021E-03	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	0.1680E-01	0.1697E-03	ZERO	ZERO	ZERO
69 NaF	ZERO	ZERO	0.3397E-01	0.3431E-03	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.3118E+00	0.3150E-02	ZERO	ZERO	ZERO
82 O ₂	0.9127E+01	ZERO	ZERO	0.1400E+03	0.1255E+03	ZERO	0.2320E-03
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	0.3862E-02	0.3901E-04	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	0.9287E-01	0.9381E-03	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	0.8630E-03	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	0.8555E-02	0.8642E-04	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	0.1753E-02	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	0.8139E-02	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	0.4843E-01	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	67 Canister Air Inleakage	68 Pour Spout Siphon Break	69 Sludge Blend Waste Glass	70 Melter Offgas	71 Cooling Air to OGFC	72 Off-Gas Steam Spray	73 Dilution Air to OGFC
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	0.2062E-01	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	0.1099E-02	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	0.1270E+00	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	0.9137E-02	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	0.1268E-01	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	0.9573E-05	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	0.1246E+03	0.1258E+01	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	0.1462E-01	0.1477E-03	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	0.2864E-02	0.2893E-04	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	0.1332E+00	0.1345E-02	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	0.7687E+00	0.7764E-02	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	ZERO	0.2857E-09	ZERO	ZERO	ZERO
17 U3O8	ZERO	ZERO	0.2304E+01	0.2327E-01	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	0.4458E-02	0.4503E-04	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	0.1030E+00	0.1041E-02	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.6609E+00	ZERO	ZERO	0.3572E+03	0.9087E+01	0.2500E+03	0.1680E-04
TOTAL FLOW, LB/HR	0.4000E+02	0.1500E+00	0.2280E+03	0.9823E+03	0.5500E+03	0.2500E+03	0.1017E-02
TEMPERATURE, DEG C	0.3500E+02	0.3500E+02	0.1050E+04	0.6050E+03	0.3500E+02	0.1643E+03	0.3500E+02
PRESSURE, ATM	0.9632E+00	0.1000E+01	0.9840E+00	0.9840E+00	0.3720E+01	0.6784E+01	0.3720E+01
PRESSURE, PSIG	-0.5408E+00	ZERO	-0.2351E+00	-0.2351E+00	0.3997E+02	0.8500E+02	0.3997E+02
PRESSURE, MM HG	0.7320E+03		0.7478E+03	0.7478E+03			
ENTHALPY, PCU/HR	0.8389E+03	0.1272E+01	0.7072E+05	0.4116E+06	0.1154E+05	0.1674E+06	0.2133E-01
VAPOR FLOW, CFM	0.9810E+01	0.3613E-01		0.8053E+03	0.3493E+02	0.1959E+02	0.6457E-04
LIQUID FLOW, GPM			0.1815E+00				
DENSITY, LBS/FT3	0.6796E-01	0.6920E-01	0.1566E+03	0.2033E-01	0.2625E+00	0.2127E+00	0.2625E+00
PHASE	VAPOR	VAPOR	LIQUID	VAPOR	VAPOR	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	74 Cooled Offgas	75 Melter Con- trol Air	76 Control Air to Ejector	77 Inlet Air to Ejector	78 Scrub Liquid to Ejector	79 Ejector Exit Vapor	80 Ejector Exit Liquid
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ SC ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NNHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	0.3012E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.1501E-14	ZERO	ZERO	ZERO	0.1262E-13	ZERO	0.1229E-13
130 (C ₆ H ₅ OH)	0.2546E-02	ZERO	ZERO	ZERO	0.6743E-01	0.2535E-06	0.6743E-01
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.1028E+00	ZERO	ZERO	ZERO	0.2721E+01	ZERO	0.2722E+01
106 B ₂ O ₃	0.1748E+00	ZERO	ZERO	ZERO	0.4630E+01	ZERO	0.4630E+01
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.1559E-03	ZERO	ZERO	ZERO	0.4127E-02	ZERO	0.4127E-02
24 BaSO ₄	0.2135E-02	ZERO	ZERO	ZERO	0.5654E-01	ZERO	0.5654E-01
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.1445E+02	ZERO	ZERO	ZERO	0.1159E+00	0.8989E-01	0.2600E-01
142 CO ₂ (C ₁₄)	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.2406E-01	ZERO	ZERO	ZERO	0.6372E+00	ZERO	0.6372E+00
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	0.9533E-02	ZERO	ZERO	ZERO	0.2524E+00	ZERO	0.2524E+00
19 CaSO ₄	0.4931E-03	ZERO	ZERO	ZERO	0.1306E-01	ZERO	0.1306E-01
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1491E-05	ZERO	ZERO	ZERO	0.3950E-04	ZERO	0.3950E-04
98 Cr ₂ O ₃	0.1757E-02	ZERO	ZERO	ZERO	0.4653E-01	ZERO	0.4654E-01
42 Cs ₂ O	0.1553E-02	ZERO	ZERO	ZERO	0.4113E-01	ZERO	0.4113E-01
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	0.5455E+00	ZERO	0.5456E+00
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	74 Cooled Offgas	75 Melter Con- trol Air	76 Control Air to Ejector	77 Inlet Air to Ejector	78 Scrub Liquid to Ejector	79 Ejector Exit Vapor	80 Ejector Exit Liquid
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.8220E-02	ZERO	ZERO	ZERO	0.2177E+00	ZERO	0.2177E+00
80 Fe2O3	0.2135E+00	ZERO	ZERO	ZERO	0.5655E+01	ZERO	0.5655E+01
101 FeO	0.2135E-01	ZERO	ZERO	ZERO	0.5654E+00	ZERO	0.5654E+00
102 Group A	0.2088E-03	ZERO	ZERO	ZERO	0.3461E-01	ZERO	0.3461E-01
103 Group B	0.1075E-02	ZERO	ZERO	ZERO	0.2847E-01	ZERO	0.2847E-01
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	0.6648E-01	ZERO	ZERO	ZERO	0.2025E+01	ZERO	0.2025E+01
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	0.2013E-02	ZERO	ZERO	ZERO	0.1503E-01	0.4550E-04	0.1498E-01
49 HNO3	0.3486E-23	ZERO	ZERO	ZERO	0.8216E+01	0.2782E-02	0.8212E+01
36 Hg	0.2079E+00	ZERO	ZERO	ZERO	0.5280E+01	0.5155E-02	0.5275E+01
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	0.3964E-01	ZERO	ZERO	ZERO	0.1050E+01	ZERO	0.1050E+01
117 Hg2I2	0.2091E-06	ZERO	ZERO	ZERO	0.5538E-05	ZERO	0.5538E-05
146 HgCl2	0.1976E-08	ZERO	ZERO	ZERO	0.5223E-07	0.1425E-12	0.5223E-07
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	0.8186E-09	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.5523E-01	ZERO	ZERO	ZERO	0.1463E+01	ZERO	0.1463E+01
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTFB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.1133E+00	ZERO	ZERO	ZERO	0.3000E+01	ZERO	0.3000E+01
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4668E-01	ZERO	ZERO	ZERO	0.1236E+01	ZERO	0.1236E+01
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.2802E-01	ZERO	ZERO	ZERO	0.7421E+00	ZERO	0.7421E+00
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	0.1690E-04	ZERO	ZERO	ZERO	0.4475E-03	ZERO	0.4475E-03
81 N2	0.8777E+03	0.3777E+03	0.3021E+02	0.6057E+02	0.4506E+00	0.6055E+02	0.4762E+00
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.8916E-01	ZERO	ZERO	ZERO	0.2361E+01	ZERO	0.2361E+01
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.1826E+01	ZERO	ZERO	ZERO	0.1253E-02	0.1225E-02	0.2847E-04

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	74	75	76	77	78	79	80
	Cooled Offgas	Melter Con- trol Air	Control Air to Ejector	Inlet Air to Ejector	Scrub Liquid to Ejector	Ejector Exit Vapor	Ejector Exit Liquid
84 NO ₂	0.3713E+01	ZERO	ZERO	ZERO	0.2373E-02	0.2320E-02	0.5393E-04
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	0.3359E+01	ZERO	0.3360E+01
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.2046E+00	ZERO	ZERO	ZERO	0.5418E+01	ZERO	0.5418E+01
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.1450E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.1021E-03	ZERO	ZERO	ZERO	0.2704E-02	ZERO	0.2704E-02
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1697E-03	ZERO	ZERO	ZERO	0.4495E-02	ZERO	0.4495E-02
69 NaF	0.3431E-03	ZERO	ZERO	ZERO	0.3444E+00	ZERO	0.3445E+00
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	0.2532E-03	ZERO	0.2533E-03
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	0.2164E+00	ZERO	0.2160E+00
2 NaNO ₃	ZERO	ZERO	ZERO	ZERO	0.1342E+00	ZERO	0.1339E+00
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.3150E-02	ZERO	ZERO	ZERO	0.8341E-01	ZERO	0.8341E-01
82 O ₂	0.2654E+03	0.1141E+03	0.9127E+01	0.1825E+02	0.2611E+00	0.1824E+02	0.2779E+00
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.3901E-04	ZERO	ZERO	ZERO	0.1033E-02	ZERO	0.1033E-02
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.9381E-03	ZERO	ZERO	ZERO	0.2484E-01	ZERO	0.2484E-01
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.8642E-04	ZERO	ZERO	ZERO	0.2288E-02	ZERO	0.2288E-02
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	74 Cooled Offgas	75 Melter Con- trol Air	76 Control Air to Ejector	77 Inlet Air to Ejector	78 Scrub Liquid to Ejector	79 Ejector Exit Vapor	80 Ejector Exit Liquid
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	0.2062E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	0.1099E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	0.1270E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	0.1268E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	0.9573E-05	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.1258E+01	ZERO	ZERO	ZERO	0.3332E+02	ZERO	0.3332E+02
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.1477E-03	ZERO	ZERO	ZERO	0.3911E-02	ZERO	0.3911E-02
159 TeO ₂	0.2893E-04	ZERO	ZERO	ZERO	0.7660E-03	ZERO	0.7661E-03
92 ThO ₂	0.1345E-02	ZERO	ZERO	ZERO	0.3562E-01	ZERO	0.3562E-01
107 TiO ₂	0.7764E-02	ZERO	ZERO	ZERO	0.2056E+00	ZERO	0.2056E+00
119 Tritium	0.2857E-09	ZERO	ZERO	ZERO	0.7498E-08	0.8589E-12	0.7497E-08
17 U ₃ O ₈	0.2327E-01	ZERO	ZERO	ZERO	0.6163E+00	ZERO	0.6163E+00
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.4503E-04	ZERO	ZERO	ZERO	0.1192E-02	ZERO	0.1192E-02
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1041E-02	ZERO	ZERO	ZERO	0.2756E-01	ZERO	0.2756E-01
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.6163E+03	0.8261E+01	0.6609E+00	0.1322E+01	0.3652E+05	0.4112E+01	0.3651E+05
TOTAL FLOW, LB/HR	0.1782E+04	0.5000E+03	0.4000E+02	0.8015E+02	0.3660E+05	0.8300E+02	0.3660E+05
TEMPERATURE, DEG C	0.3865E+03	0.3500E+02	0.3500E+02	0.3500E+02	0.4000E+02	0.3995E+02	0.3995E+02
PRESSURE, ATM	0.9827E+00	0.3720E+01	0.9632E+00	0.9190E+00	0.3720E+01	0.9190E+00	0.9190E+00
PRESSURE, PSIG	-0.2542E+00	0.3997E+02	-0.5408E+00	-0.1190E+01	0.3997E+02	-0.1190E+01	-0.1190E+01
PRESSURE, MM HG	0.7469E+03	0.6984E+03	0.7320E+03	0.6984E+03	0.6984E+03	0.6984E+03	0.6984E+03
ENTHALPY, PCU/HR	0.5906E+06	0.1049E+05	0.8389E+03	0.1679E+04	0.1464E+07	0.3485E+04	0.1462E+07
VAPOR FLOW, CFM	0.1093E+04	0.3175E+02	0.9810E+01	0.2060E+02		0.2210E+02	
LIQUID FLOW, GPM					0.7300E+02		0.7299E+02
DENSITY, LBS/FT ³	0.2718E-01	0.2625E+00	0.6796E-01	0.6484E-01	0.6251E+02	0.6261E-01	0.6251E+02
PHASE	VAPOR	VAPOR	VAPOR	VAPOR	LIQUID	VAPOR	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	81 Inlet Gas to Quencher	82 Liquid to Quencher	83 Quencher Exit Liquid	84 Quencher Exit Vapor	85 Offgas to Scrubbers	86 Liquid to Scrbbr Nos's	87 Liquid to Scrbbr Nos's
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	0.3012E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.1501E-14	0.2074E-13	0.2155E-13	0.1501E-15	0.1501E-15	0.5699E-14	0.2850E-14
130 (C ₆ H ₅ OH)	0.2546E-02	0.1108E+00	0.1134E+00	0.8188E-05	0.8442E-05	0.3046E-01	0.1523E-01
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.1028E+00	0.4474E+01	0.4566E+01	0.1028E-01	0.1028E-01	0.1229E+01	0.6147E+00
106 B ₂ O ₃	0.1748E+00	0.7611E+01	0.7769E+01	0.1748E-01	0.1748E-01	0.2092E+01	0.1046E+01
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.1559E-03	0.6785E-02	0.6925E-02	0.1559E-04	0.1559E-04	0.1865E-02	0.9323E-03
24 BaSO ₄	0.2135E-02	0.9294E-01	0.9486E-01	0.2135E-03	0.2135E-03	0.2554E-01	0.1277E-01
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.1445E+02	0.1905E+00	0.2841E+00	0.1435E+02	0.1444E+02	0.5235E-01	0.2618E-01
142 CO ₂ (C14)	TRACE	ZERO	ZERO	TRACE	TRACE	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.2406E-01	0.1047E+01	0.1069E+01	0.2406E-02	0.2406E-02	0.2879E+00	0.1439E+00
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	0.9533E-02	0.4150E+00	0.4236E+00	0.9533E-03	0.9533E-03	0.1140E+00	0.5702E-01
19 CaSO ₄	0.4931E-03	0.2146E-01	0.2191E-01	0.4931E-04	0.4931E-04	0.5899E-02	0.2949E-02
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1491E-05	0.6492E-04	0.6627E-04	0.1491E-06	0.1491E-06	0.1784E-04	0.8921E-05
98 Cr ₂ O ₃	0.1757E-02	0.7649E-01	0.7808E-01	0.1757E-03	0.1757E-03	0.2102E-01	0.1051E-01
42 Cs ₂ O	0.1553E-02	0.6761E-01	0.6901E-01	0.1553E-03	0.1553E-03	0.1858E-01	0.9291E-02
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	0.8967E+00	0.8969E+00	ZERO	ZERO	0.2464E+00	0.1232E+00
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	81 Inlet Gas to Quencher	82 Liquid to Quencher	83 Quencher Exit Liquid	84 Quencher Exit Vapor	85 Offgas to Scrubbers	86 Liquid to Scrbbr Nox's	87 Liquid to Scrbbr Nox 1
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.8220E-02	0.3578E+00	0.3652E+00	0.8220E-03	0.8220E-03	0.9833E-01	0.4917E-01
80 Fe ₂ O ₃	0.2135E+00	0.9296E+01	0.9488E+01	0.2135E-01	0.2135E-01	0.2555E+01	0.1277E+01
101 FeO	0.2135E-01	0.9294E+00	0.9486E+00	0.2135E-02	0.2135E-02	0.2554E+00	0.1277E+00
102 Group A	0.2088E-03	0.5689E-01	0.5709E-01	0.2088E-04	0.2088E-04	0.1563E-01	0.7817E-02
103 Group B	0.1075E-02	0.4679E-01	0.4776E-01	0.1075E-03	0.1075E-03	0.1286E-01	0.6430E-02
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	0.6648E-01	0.3329E+01	0.3405E+01	ZERO	ZERO	0.9149E+00	0.4575E+00
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	0.2013E-02	0.2470E-01	0.2550E-01	0.1214E-02	0.1260E-02	0.6788E-02	0.3394E-02
49 HNO ₃	0.3486E-23	0.1351E+02	0.1376E+02	0.7946E-01	0.8223E-01	0.3712E+01	0.1856E+01
36 Hg	0.2079E+00	0.8680E+01	0.8701E+01	0.1869E+00	0.1921E+00	0.2385E+01	0.1193E+01
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	0.3964E-01	0.1726E+01	0.1761E+01	0.3964E-02	0.3964E-02	0.4742E+00	0.2371E+00
117 Hg ₂ I ₂	0.2091E-06	0.9104E-05	0.9292E-05	0.2091E-07	0.2091E-07	0.2502E-05	0.1251E-05
146 HgCl ₂	0.1976E-08	0.8586E-07	0.8764E-07	0.2019E-09	0.2020E-09	0.2360E-07	0.1180E-07
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	0.8186E-09	ZERO	ZERO	0.8186E-09	0.8186E-09	ZERO	ZERO
39 K ₂ O	0.5523E-01	0.2404E+01	0.2454E+01	0.5523E-02	0.5523E-02	0.6607E+00	0.3304E+00
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	0.1133E+00	0.4932E+01	0.5034E+01	0.1133E-01	0.1133E-01	0.1355E+01	0.6777E+00
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4668E-01	0.2032E+01	0.2074E+01	0.4668E-02	0.4668E-02	0.5584E+00	0.2792E+00
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.2802E-01	0.1220E+01	0.1245E+01	0.2802E-02	0.2802E-02	0.3353E+00	0.1676E+00
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	0.1690E-04	0.7356E-03	0.7509E-03	0.1690E-05	0.1690E-05	0.2022E-03	0.1011E-03
81 N ₂	0.1255E+04	0.7406E+00	0.7583E+00	0.1255E+04	0.1395E+04	0.2035E+00	0.1018E+00
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	0.8916E-01	0.3881E+01	0.3971E+01	ZERO	ZERO	0.1067E+01	0.5333E+00
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.1826E+01	0.2060E-02	0.3227E-02	0.1825E+01	0.1826E+01	0.5662E-03	0.2831E-03

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	81 Inlet Gas to Quencher	82 Liquid to Quencher	83 Quencher Exit Liquid	84 Quencher Exit Vapor	85 Offgas to Scrubbers	86 Liquid to Scrbbr Nos's	87 Liquid to Scrbbr Nos 1
84 NO ₂	0.3713E+01	0.3901E-02	0.6111E-02	0.3456E+01	0.3459E+01	0.1072E-02	0.5361E-03
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	0.5521E+01	0.5523E+01	ZERO	ZERO	0.1517E+01	0.7587E+00
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.2046E+00	0.8906E+01	0.9091E+01	0.2046E-01	0.2046E-01	0.2448E+01	0.1224E+01
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.1450E-01	ZERO	ZERO	0.1450E-02	0.1450E-02	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.1021E-03	0.4446E-02	0.4538E-02	0.1021E-04	0.1021E-04	0.1222E-02	0.6109E-03
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1697E-03	0.7389E-02	0.7542E-02	0.1697E-04	0.1697E-04	0.2031E-02	0.1015E-02
69 NaF	0.3431E-03	0.5662E+00	0.5666E+00	0.3431E-04	0.3431E-04	0.1556E+00	0.7780E-01
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.4163E-03	0.4164E-03	ZERO	ZERO	0.1144E-03	0.5720E-04
3 NaNO ₂	ZERO	0.3557E+00	0.3643E+00	ZERO	ZERO	0.9774E-01	0.4887E-01
2 NaNO ₃	ZERO	0.2206E+00	0.2244E+00	ZERO	ZERO	0.6063E-01	0.3031E-01
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.3150E-02	0.1371E+00	0.1399E+00	0.3150E-03	0.3150E-03	0.3768E-01	0.1884E-01
82 O ₂	0.3795E+03	0.4292E+00	0.4391E+00	0.3795E+03	0.4217E+03	0.1180E+00	0.5898E-01
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.3901E-04	0.1698E-02	0.1733E-02	0.3901E-05	0.3901E-05	0.4666E-03	0.2333E-03
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.9381E-03	0.4084E-01	0.4168E-01	0.9381E-04	0.9381E-04	0.1122E-01	0.5611E-02
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.8642E-04	0.3762E-02	0.3840E-02	0.8642E-05	0.8642E-05	0.1034E-02	0.5169E-03
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	81 Inlet Gas to Quencher	82 Liquid to Quencher	83 Quencher Exit Liquid	84 Quencher Exit Vapor	85 Offgas to Scrubbers	86 Liquid to Scrbbr Nos's	87 Liquid to Scrbbr Nos 1
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	0.2062E-01	ZERO	ZERO	0.2062E-01	0.2062E-01	ZERO	ZERO
126 Semi Vol Group A	0.1099E-02	ZERO	ZERO	0.1099E-02	0.1099E-02	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	0.1270E+00	ZERO	ZERO	0.1270E+00	0.1270E+00	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	0.1268E-01	ZERO	ZERO	0.1268E-01	0.1268E-01	ZERO	ZERO
125 Semi Vol NaI	0.9573E-05	ZERO	ZERO	0.9573E-05	0.9573E-05	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.1258E+01	0.5478E+02	0.5591E+02	0.1258E+00	0.1258E+00	0.1505E+02	0.7527E+01
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.1477E-03	0.6430E-02	0.6563E-02	0.1477E-04	0.1477E-04	0.1767E-02	0.8835E-03
159 TcO ₂	0.2893E-04	0.1259E-02	0.1284E-02	0.4195E-05	0.4195E-05	0.3461E-03	0.1730E-03
92 ThO ₂	0.1345E-02	0.5855E-01	0.5976E-01	0.1345E-03	0.1345E-03	0.1609E-01	0.8045E-02
107 TiO ₂	0.7764E-02	0.3380E+00	0.3450E+00	0.7764E-03	0.7764E-03	0.9289E-01	0.4644E-01
119 Tritium	0.2857E-09	0.1232E-07	0.1258E-07	0.2626E-10	0.2712E-10	0.3387E-08	0.1694E-08
17 U ₃ O ₈	0.2327E-01	0.1013E+01	0.1034E+01	0.2327E-02	0.2327E-02	0.2784E+00	0.1392E+00
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.4503E-04	0.1960E-02	0.2001E-02	0.4503E-05	0.4503E-05	0.5387E-03	0.2694E-03
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1041E-02	0.4531E-01	0.4625E-01	0.1041E-03	0.1041E-03	0.1245E-01	0.6226E-02
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.6246E+03	0.6003E+05	0.6053E+05	0.1259E+03	0.1318E+03	0.1650E+05	0.8248E+04
TOTAL FLOW, LB/HR	0.2282E+04	0.6017E+05	0.6067E+05	0.1781E+04	0.1969E+04	0.1654E+05	0.8268E+04
TEMPERATURE, DEG C	0.3266E+03	0.4000E+02	0.4793E+02	0.4799E+02	0.4699E+02	0.4000E+02	0.4000E+02
PRESSURE, ATM	0.9754E+00	0.3720E+01	0.9890E+00	0.9754E+00	0.9866E+00	0.3180E+01	0.3180E+01
PRESSURE, PSIG	-0.3615E+00	0.3997E+02	-0.1617E+00	-0.3615E+00	-0.1969E+00	0.3204E+02	0.3204E+02
PRESSURE, MM HG	0.7413E+03		0.7516E+03	0.7413E+03	0.7498E+03		
ENTHALPY, PCU/HR	0.6011E+06	0.2407E+07	0.2906E+07	0.1020E+06	0.1077E+06	0.6614E+06	0.3307E+06
VAPOR FLOW, CFM	0.1237E+04			0.4623E+03	0.5028E+03		
LIQUID FLOW, GPM		0.1200E+03	0.1210E+03			0.3298E+02	0.1649E+02
DENSITY, LBS/FT ³	0.3076E-01	0.6251E+02	0.6251E+02	0.6421E-01	0.6527E-01	0.6251E+02	0.6251E+02
PHASE	VAPOR	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	88 Steam Flow to SAS 1	89 Liquid to Scrbbr Nos 2	90 Steam Flow to SAS 2	91 SAS 1 & 2 Drain Liquid	92 SAS 2 Exit Gas	93 OGCTC Condensate	94 Exit Gas From OGCTC
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	0.2850E-14	ZERO	0.5697E-14	0.3002E-17	ZERO	0.3002E-17
130 (C6H5OH)	ZERO	0.1523E-01	ZERO	0.3045E-01	0.2159E-04	0.2156E-04	0.2755E-07
121 (C6H6)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	0.6147E+00	ZERO	0.1240E+01	0.2055E-03	ZERO	0.2055E-03
106 B2O3	ZERO	0.1046E+01	ZERO	0.2109E+01	0.3497E-03	ZERO	0.3497E-03
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	0.9323E-03	ZERO	0.1880E-02	0.3117E-06	ZERO	0.3117E-06
24 BaSO4	ZERO	0.1277E-01	ZERO	0.2575E-01	0.4270E-05	ZERO	0.4270E-05
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	0.2618E-01	ZERO	0.4917E-01	0.1445E+02	0.3838E-02	0.1444E+02
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO	TRACE
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	0.1439E+00	ZERO	0.2902E+00	0.4813E-04	ZERO	0.4813E-04
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	0.5702E-01	ZERO	0.1150E+00	0.1907E-04	ZERO	0.1907E-04
19 CaSO4	ZERO	0.2949E-02	ZERO	0.5947E-02	0.9862E-06	ZERO	0.9862E-06
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.8921E-05	ZERO	0.1799E-04	0.2983E-08	ZERO	0.2983E-08
98 Cr2O3	ZERO	0.1051E-01	ZERO	0.2120E-01	0.3515E-05	ZERO	0.3515E-05
42 Cs2O	ZERO	0.9291E-02	ZERO	0.1873E-01	0.3106E-05	ZERO	0.3106E-05
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	0.1232E+00	ZERO	0.2667E+00	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	88 Steam Flow to SAS 1	89 Liquid to Scrbbr Nox 2	90 Steam Flow to SAS 2	91 SAS 1 & 2 Drain Liquid	92 SAS 2 Exit Gas	93 OGCTC Condensate	94 Exit Gas From OGCTC
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	0.4917E-01	ZERO	0.9914E-01	0.1644E-04	ZERO	0.1644E-04
80 Fe ₂ O ₃	ZERO	0.1277E+01	ZERO	0.2576E+01	0.4271E-03	ZERO	0.4271E-03
101 FeO	ZERO	0.1277E+00	ZERO	0.2575E+00	0.4270E-04	ZERO	0.4270E-04
102 Group A	ZERO	0.7817E-02	ZERO	0.1674E-01	0.4177E-06	ZERO	0.4177E-06
103 Group B	ZERO	0.6430E-02	ZERO	0.1297E-01	0.2150E-05	ZERO	0.2150E-05
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	0.4575E+00	ZERO	0.9149E+00	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	0.3394E-02	ZERO	0.6016E-02	0.2033E-02	0.5841E-03	0.1449E-02
49 HNO ₃	ZERO	0.1856E+01	ZERO	0.3628E+01	0.1656E+00	0.1418E+00	0.2385E-01
36 Hg	ZERO	0.1193E+01	ZERO	0.1934E+01	0.6430E+00	0.6345E+00	0.8520E-02
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	0.2371E+00	ZERO	0.4781E+00	0.7928E-04	ZERO	0.7928E-04
117 Hg ₂ I ₂	ZERO	0.1251E-05	ZERO	0.2522E-05	0.4183E-09	ZERO	0.4183E-09
146 HgCl ₂	ZERO	0.1180E-07	ZERO	0.2378E-07	0.1572E-10	ZERO	0.1572E-10
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	0.8186E-09	ZERO	0.8186E-09
39 K ₂ O	ZERO	0.3304E+00	ZERO	0.6661E+00	0.1105E-03	ZERO	0.1105E-03
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	0.6777E+00	ZERO	0.1366E+01	0.2266E-03	ZERO	0.2266E-03
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.2792E+00	ZERO	0.5630E+00	0.9335E-04	ZERO	0.9335E-04
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	0.1676E+00	ZERO	0.3380E+00	0.5605E-04	ZERO	0.5605E-04
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	0.1011E-03	ZERO	0.2038E-03	0.3380E-07	ZERO	0.3380E-07
81 N ₂	ZERO	0.1018E+00	ZERO	0.1710E+00	0.1395E+04	0.6161E-02	0.1395E+04
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	0.5333E+00	ZERO	0.1067E+01	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	0.2831E-03	ZERO	0.6462E-03	0.1826E+01	0.2484E-04	0.1826E+01

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	88 Steam Flow to SAS 1	89 Liquid to Scribbler No. 2	90 Steam Flow to SAS 2	91 SAS 1 & 2 Drain Liquid	92 SAS 2 Exit Gas	93 OGCTC Condensate	94 Exit Gas From OGCTC
84 NO ₂	ZERO	0.5361E-03	ZERO	0.1224E-02	0.3459E+01	0.4705E-04	0.3459E+01
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	0.7587E+00	ZERO	0.1642E+01	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	0.1224E+01	ZERO	0.2468E+01	0.4092E-03	ZERO	0.4092E-03
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	ZERO	0.1421E-02	0.2900E-04	ZERO	0.2900E-04
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	0.6109E-03	ZERO	0.1232E-02	0.2043E-06	ZERO	0.2043E-06
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	0.1015E-02	ZERO	0.2047E-02	0.3395E-06	ZERO	0.3395E-06
69 NaF	ZERO	0.7780E-01	ZERO	0.1681E+00	0.6863E-06	ZERO	0.6863E-06
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	0.5720E-04	ZERO	0.1238E-03	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	0.4887E-01	ZERO	0.9759E-01	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	0.3031E-01	ZERO	0.6050E-01	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.1884E-01	ZERO	0.3799E-01	0.6300E-05	ZERO	0.6300E-05
82 O ₂	ZERO	0.5898E-01	ZERO	0.9738E-01	0.4217E+03	0.3790E-02	0.4217E+03
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	0.2333E-03	ZERO	0.4705E-03	0.7801E-07	ZERO	0.7801E-07
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	0.5611E-02	ZERO	0.1131E-01	0.1876E-05	ZERO	0.1876E-05
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	0.5169E-03	ZERO	0.1042E-02	0.1728E-06	ZERO	0.1728E-06
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	88 Steam Flow to SAS 1	89 Liquid to Scrbbr Nox 2	90 Steam Flow to SAS 2	91 SAS 1 & 2 Drain Liquid	92 SAS 2 Exit Gas	93 OGCTC Condensate	94 Exit Gas From OGCTC
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	0.4124E-03	ZERO	0.4124E-03
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	0.2198E-04	ZERO	0.2198E-04
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	0.2539E-02	ZERO	0.2539E-02
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	0.2535E-03	ZERO	0.2535E-03
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	0.1915E-06	ZERO	0.1915E-06
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	ZERO	0.7527E+01	ZERO	0.1518E+02	0.2517E-02	ZERO	0.2517E-02
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	0.8835E-03	ZERO	0.1782E-02	0.2954E-06	ZERO	0.2954E-06
159 TcO ₂	ZERO	0.1730E-03	ZERO	0.3502E-03	0.8389E-07	ZERO	0.8389E-07
92 ThO ₂	ZERO	0.8045E-02	ZERO	0.1622E-01	0.2690E-05	ZERO	0.2690E-05
107 TiO ₂	ZERO	0.4644E-01	ZERO	0.9365E-01	0.1553E-04	ZERO	0.1553E-04
119 Tritium	ZERO	0.1694E-08	ZERO	0.3351E-08	0.6301E-10	0.6008E-10	0.2933E-11
17 U ₃ O ₈	ZERO	0.1392E+00	ZERO	0.2807E+00	0.4655E-04	ZERO	0.4655E-04
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	ZERO	0.2693E-03	ZERO	0.5431E-03	0.9006E-07	ZERO	0.9006E-07
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.6226E-02	ZERO	0.1255E-01	0.2082E-05	ZERO	0.2082E-05
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.3675E+03	0.8248E+04	0.3675E+03	0.1704E+05	0.3242E+03	0.3108E+03	0.1334E+02
TOTAL FLOW, LB/HR	0.3675E+03	0.8268E+04	0.3675E+03	0.1708E+05	0.2162E+04	0.3116E+03	0.1850E+04
TEMPERATURE, DEG C	0.1643E+03	0.4000E+02	0.1643E+03	0.6019E+02	0.6217E+02	0.1000E+02	0.1000E+02
PRESSURE, ATM	0.6784E+01	0.3180E+01	0.6784E+01	0.9743E+00	0.9743E+00	0.9743E+00	0.9743E+00
PRESSURE, PSIG	0.8500E+02	0.3204E+02	0.8500E+02	-0.3777E+00	-0.3777E+00	-0.3777E+00	-0.3777E+00
PRESSURE, MM HG				0.7405E+03	0.7405E+03	0.7405E+03	0.7405E+03
ENTHALPY, PCU/HR	0.2461E+06	0.3307E+06	0.2461E+06	0.1027E+07	0.2347E+06	0.3128E+04	0.1891E+05
VAPOR FLOW, CFM	0.2880E+02		0.2880E+02		0.6138E+03		0.4085E+03
LIQUID FLOW, GPM		0.1649E+02		0.3406E+02		0.6210E+00	
DENSITY, LBS/FT ³	0.2127E+00	0.6251E+02	0.2127E+00	0.6251E+02	0.5870E-01	0.6256E+02	0.7549E-01
PHASE	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	95 Water Flush to HEME	96 Atomizing Air to HEME	97 HEME Solids Accumulation	98 HEME Exit Liquid	99 HEME Exit Vapor	100 OGCT Liquid to RCT	101 OGCT Sample Pump Prime
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	ZERO	0.7506E-19	0.4763E-15	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	0.5123E-08	0.2546E-02	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.5138E-05	0.1028E+00	ZERO
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.8742E-05	0.1748E+00	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	0.7793E-08	0.1558E-03	ZERO
24 BaSO ₄	ZERO	ZERO	ZERO	ZERO	0.1067E-06	0.2135E-02	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	0.1444E+02	0.4376E-02	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO	ZERO	TRACE	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	ZERO	0.1203E-05	0.2406E-01	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	ZERO	0.4766E-06	0.9532E-02	ZERO
19 CaSO ₄	ZERO	ZERO	ZERO	ZERO	0.2465E-07	0.4930E-03	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	0.7457E-10	0.1491E-05	ZERO
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.8786E-07	0.1757E-02	ZERO
42 Cs ₂ O	ZERO	ZERO	ZERO	ZERO	0.7766E-07	0.1553E-02	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	0.2060E-01	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	95 Water Flush to HEME	96 Atomizing Air to HEME	97 HEME Solids Accumulation	98 HEME Exit Liquid	99 HEME Exit Vapor	100 OGCT Liquid to RCT	101 OGCT Sample Pump Prime
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	ZERO	0.4110E-06	0.8219E-02	ZERO
80 Fe ₂ O ₃	ZERO	ZERO	ZERO	ZERO	0.1068E-04	0.2135E+00	ZERO
101 FeO	ZERO	ZERO	ZERO	ZERO	0.1067E-05	0.2135E-01	ZERO
102 Group A	ZERO	ZERO	ZERO	ZERO	0.1044E-07	0.1307E-02	ZERO
103 Group B	ZERO	ZERO	ZERO	ZERO	0.5375E-07	0.1075E-02	ZERO
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	0.7647E-01	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	0.1445E-02	0.5674E-03	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	0.2308E-01	0.3102E+00	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	0.8520E-02	0.1994E+00	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	0.1982E-05	0.3964E-01	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	0.1046E-10	0.2091E-06	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	0.2998E-11	0.1972E-08	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	0.8186E-09	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO	ZERO	0.2761E-05	0.5522E-01	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 K ₂ PO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	0.5665E-05	0.1133E+00	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	0.2334E-05	0.4667E-01	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	0.1401E-05	0.2802E-01	ZERO
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	0.8450E-09	0.1690E-04	ZERO
81 N ₂	ZERO	0.1753E+00	ZERO	ZERO	0.1395E+04	0.1701E-01	ZERO
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	0.8915E-01	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	0.1826E+01	0.4732E-04	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 3. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	95 Water Flush to HEME	96 Atomizing Air to HEME	97 HEME Solids Accumulation	98 HEME Exit Liquid	99 HEME Exit Vapor	100 OGCT Liquid to RCT	101 OGCT Sample Pump Prime
84 NO ₂	ZERO	ZERO	ZERO	ZERO	0.3459E+01	0.8961E-04	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	0.1268E+00	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	0.1023E-04	0.2046E+00	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	0.7250E-06	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	ZERO	ZERO	0.5106E-08	0.1021E-03	ZERO
91 NaAg(CH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	ZERO	ZERO	0.8487E-08	0.1697E-03	ZERO
69 NaF	ZERO	ZERO	ZERO	ZERO	0.1716E-07	0.1300E-01	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	0.9562E-05	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.8169E-02	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	0.5067E-02	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	0.1575E-06	0.3149E-02	ZERO
82 O ₂	ZERO	0.5296E-01	ZERO	ZERO	0.4218E+03	0.9859E-02	ZERO
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	ZERO	0.1950E-08	0.3900E-04	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	ZERO	0.4691E-07	0.9380E-03	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	ZERO	ZERO	0.4321E-08	0.8641E-04	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	95 Water Flush to HEME	96 Atomizing Air to HEME	97 HEME Solids Accumulation	98 HEME Exit Liquid	99 HEME Exit Vapor	100 OGCT Liquid to RCT	101 OGCT Sample Pump Prime
141 S03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	0.1031E-04	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	0.5496E-06	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	0.6348E-04	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	0.6338E-05	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	0.4786E-08	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	ZERO	0.6292E-04	0.1258E+01	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	0.7385E-08	0.1477E-03	ZERO
159 TcO2	ZERO	ZERO	ZERO	ZERO	0.2097E-08	0.2892E-04	ZERO
92 ThO2	ZERO	ZERO	ZERO	ZERO	0.6725E-07	0.1345E-02	ZERO
107 TiO2	ZERO	ZERO	ZERO	ZERO	0.3882E-06	0.7763E-02	ZERO
119 Tritium	ZERO	ZERO	ZERO	ZERO	0.2632E-11	0.2831E-09	ZERO
17 U3O8	ZERO	ZERO	ZERO	ZERO	0.1164E-05	0.2327E-01	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	ZERO	0.2252E-08	0.4502E-04	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	0.5204E-07	0.1041E-02	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.2698E+01	0.3835E-02	ZERO	0.1849E+01	0.1419E+02	0.1379E+04	0.6940E+01
TOTAL FLOW, LB/HR	0.2698E+01	0.2321E+00	ZERO	0.1849E+01	0.1851E+04	0.1382E+04	0.6940E+01
TEMPERATURE, DEG C	0.4000E+02	0.3500E+02	0.1000E+02	0.1000E+02	0.1000E+02	0.4000E+02	0.2500E+02
PRESSURE, ATM	0.3180E+01	0.3720E+01	0.9165E+00	0.9165E+00	0.9165E+00	0.9650E+00	0.1000E+01
PRESSURE, PSIG	0.3204E+02	0.3997E+02	-0.1227E+01	-0.1227E+01	-0.1227E+01	-0.5144E+00	ZERO
PRESSURE, MM HG			0.6965E+03	0.6965E+03	0.6965E+03	0.7334E+03	
ENTHALPY, PCU/HR	0.1081E+03	0.4868E+01	ZERO	0.1860E+02	0.1942E+05	0.5528E+05	0.1741E+03
VAPOR FLOW, CFM		0.1474E-01			0.4346E+03		
LIQUID FLOW, GPM	0.5389E-02			0.3692E-02		0.2756E+01	0.1386E-01
DENSITY, LBS/FT3	0.6243E+02	0.2625E+00	ZERO	0.6243E+02	0.7099E-01	0.6251E+02	0.6243E+02
PHASE	LIQUID	VAPOR	SOLID	LIQUID	VAPOR	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	102 OGCT Trnsfr Pump Prime	103 OGCT Air Inleakage	104 NaOH Add'n to OGCT	110 Prim HEPA#1 Gas Feed	111 Prim HEPA#1 Accumulation	112 Prim HEPA#2 Gas Feed	113 Prim HEPA#2 Accumulation
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	0.7506E-19	0.7491E-19	0.1501E-21	0.1471E-21
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	0.5123E-08	ZERO	0.5123E-08	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	0.5138E-05	0.5128E-05	0.1028E-07	0.1007E-07
106 B ₂ O ₃	ZERO	ZERO	ZERO	0.8742E-05	0.8725E-05	0.1748E-07	0.1713E-07
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	0.7793E-08	0.7777E-08	0.1559E-10	0.1527E-10
24 BaSO ₄	ZERO	ZERO	ZERO	0.1067E-06	0.1065E-06	0.2135E-09	0.2092E-09
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	0.1444E+02	ZERO	0.1444E+02	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO	TRACE	ZERO	TRACE	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	0.1203E-05	0.1201E-05	0.2406E-08	0.2358E-08
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO	0.4766E-06	0.4757E-06	0.9533E-09	0.9342E-09
19 CaSO ₄	ZERO	ZERO	ZERO	0.2465E-07	0.2461E-07	0.4931E-10	0.4832E-10
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	0.7457E-10	0.7442E-10	0.1491E-12	0.1462E-12
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	0.8786E-07	0.8769E-07	0.1757E-09	0.1722E-09
42 Cs ₂ O	ZERO	ZERO	ZERO	0.7766E-07	0.7751E-07	0.1553E-09	0.1522E-09
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	102 OGCT Transfr Pump Prime	103 OGCT Air Inleakage	104 NaOH Add'n to OGCT	110 Prim HEPA#1 Gas Feed	111 Prim HEPA#1 Accumulation	112 Prim HEPA#2 Gas Feed	113 Prim HEPA#2 Accumulation
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO	0.4110E-06	0.4102E-06	0.8220E-09	0.8055E-09
80 Fe2O3	ZERO	ZERO	ZERO	0.1068E-04	0.1066E-04	0.2135E-07	0.2093E-07
101 FeO	ZERO	ZERO	ZERO	0.1067E-05	0.1065E-05	0.2135E-08	0.2092E-08
102 Group A	ZERO	ZERO	ZERO	0.1044E-07	0.1042E-07	0.2088E-10	0.2047E-10
103 Group B	ZERO	ZERO	ZERO	0.5375E-07	0.5364E-07	0.1075E-09	0.1053E-09
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	0.1445E-02	ZERO	0.1445E-02	ZERO
49 HNO3	ZERO	ZERO	ZERO	0.2308E-01	ZERO	0.2308E-01	ZERO
36 Hg	ZERO	ZERO	ZERO	0.8520E-02	ZERO	0.8520E-02	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	0.1982E-05	0.1978E-05	0.3964E-08	0.3885E-08
117 Hg2I2	ZERO	ZERO	ZERO	0.1046E-10	0.1044E-10	0.2091E-13	0.2050E-13
146 HgCl2	ZERO	ZERO	ZERO	0.2998E-11	0.2992E-11	0.5996E-14	0.5876E-14
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	0.8186E-09	ZERO	0.8186E-09	ZERO
39 K2O	ZERO	ZERO	ZERO	0.2761E-05	0.2756E-05	0.5523E-08	0.5413E-08
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	ZERO	0.5665E-05	0.5653E-05	0.1133E-07	0.1110E-07
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	0.2334E-05	0.2329E-05	0.4668E-08	0.4574E-08
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	0.1401E-05	0.1398E-05	0.2802E-08	0.2746E-08
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO	0.8450E-09	0.8433E-09	0.1690E-11	0.1656E-11
81 N2	ZERO	0.7936E+02	ZERO	0.1395E+04	ZERO	0.1395E+04	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	0.1826E+01	ZERO	0.1826E+01	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) --> STREAM NAME	102 OGCT Transfr Pump Prime	103 OGCT Air Inleakage	104 NaOH Add'n to OGCT	110 Prim HEPA#1 Gas Feed	111 Prim HEPA#1 Accumulation	112 Prim HEPA#2 Gas Feed	113 Prim HEPA#2 Accumulation
84 NO2	ZERO	ZERO	ZERO	0.3459E+01	ZERO	0.3459E+01	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	ZERO	ZERO	0.1023E-04	0.1021E-04	0.2046E-07	0.2005E-07
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	ZERO	ZERO	0.7250E-06	0.7235E-06	0.1450E-08	0.1421E-08
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	ZERO	ZERO	0.5106E-08	0.5096E-08	0.1021E-10	0.1001E-10
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	ZERO	ZERO	ZERO	0.8487E-08	0.8470E-08	0.1697E-10	0.1664E-10
69 NaF	ZERO	ZERO	ZERO	0.1716E-07	0.1712E-07	0.3431E-10	0.3363E-10
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
3 NaNO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	0.1575E-06	0.1572E-06	0.3150E-09	0.3087E-09
82 O2	ZERO	0.2397E+02	ZERO	0.4218E+03	ZERO	0.4218E+03	ZERO
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO	0.1950E-08	0.1946E-08	0.3901E-11	0.3823E-11
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	ZERO	ZERO	0.4691E-07	0.4681E-07	0.9381E-10	0.9193E-10
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO2	ZERO	ZERO	ZERO	0.4321E-08	0.4312E-08	0.8642E-11	0.8469E-11
156 PuO2(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	102 OGCT Trnsfr Pump Prime	103 OGCT Air Inleakage	104 NaOH Add'n to OGCT	110 Prim HEPA#1 Gas Feed	111 Prim HEPA#1 Accumulation	112 Prim HEPA#2 Gas Feed	113 Prim HEPA#2 Accumulation
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	0.1031E-04	0.1026E-04	0.5155E-07	0.4640E-07
126 Semi Vol Group A	ZERO	ZERO	ZERO	0.5496E-06	0.5466E-06	0.2748E-08	0.2473E-08
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	0.6348E-04	0.6317E-04	0.3174E-06	0.2857E-06
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	0.6338E-05	0.6306E-05	0.3169E-07	0.2852E-07
125 Semi Vol NaI	ZERO	ZERO	ZERO	0.4786E-08	0.4762E-08	0.2393E-10	0.2154E-10
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	ZERO	0.6292E-04	0.6279E-04	0.1258E-06	0.1233E-06
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	0.7385E-08	0.7370E-08	0.1477E-10	0.1447E-10
159 TcO2	ZERO	ZERO	ZERO	0.2097E-08	0.2093E-08	0.4509E-11	0.4401E-11
92 ThO2	ZERO	ZERO	ZERO	0.6725E-07	0.6712E-07	0.1345E-09	0.1318E-09
107 TiO2	ZERO	ZERO	ZERO	0.3882E-06	0.3874E-06	0.7764E-09	0.7609E-09
119 Tritium	ZERO	ZERO	ZERO	0.2632E-11	ZERO	0.2632E-11	ZERO
17 U3O8	ZERO	ZERO	ZERO	0.1164E-05	0.1161E-05	0.2327E-08	0.2281E-08
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO	0.2252E-08	0.2247E-08	0.4503E-11	0.4413E-11
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	0.5204E-07	0.5194E-07	0.1041E-09	0.1020E-09
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.2090E+02	0.1736E+01	ZERO	0.1419E+02	ZERO	0.1419E+02	ZERO
TOTAL FLOW, LB/HR	0.2090E+02	0.1051E+03	ZERO	0.1851E+04	0.1981E-03	0.1851E+04	0.5944E-06
TEMPERATURE, DEG C	0.2500E+02	0.3500E+02	0.2500E+02	0.2000E+02	0.2000E+02	0.2000E+02	0.2000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.9263E+00	0.9263E+00	0.9263E+00	0.9263E+00
PRESSURE, PSIG	ZERO	ZERO	ZERO	-0.1083E+01	-0.1083E+01	-0.1083E+01	-0.1083E+01
PRESSURE, MM HG				0.7040E+03	0.7040E+03	0.7040E+03	0.7040E+03
ENTHALPY, PCU/HR	0.5244E+03	0.2204E+04	ZERO	0.2371E+05	0.7990E-03	0.2371E+05	0.2466E-05
VAPOR FLOW, CFM		0.2482E+02		0.4452E+03		0.4452E+03	
LIQUID FLOW, GPH	0.4174E-01						
DENSITY, LBS/FT3	0.6243E+02	0.7055E-01	ZERO	0.6930E-01	0.1584E+03	0.6930E-01	0.1585E+03
PHASE	LIQUID	VAPOR	LIQUID	VAPOR	SOLID	VAPOR	SOLID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	114 Prim HEPA#2 Exit Gas	115 Prim Exhstr Gas to Tunnel	116 Bckup Qunchr Inlet Air	117 BUOGCT Air Inleakge	118 Air to Backup HEME	119 Water to Backup HEME	120 Backup OGCT Liq to RCT
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	0.3002E-23	0.3002E-23	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	0.5123E-08	0.5123E-08	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	0.2055E-09	0.2055E-09	ZERO	ZERO	ZERO	ZERO	ZERO
106 B ₂ O ₃	0.3497E-09	0.3497E-09	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.3117E-12	0.3117E-12	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO ₄	0.4270E-11	0.4270E-11	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.1444E+02	0.1444E+02	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO ₂ (C ₁₄)	TRACE	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.4813E-10	0.4813E-10	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	0.1907E-10	0.1907E-10	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO ₄	0.9862E-12	0.9862E-12	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.2983E-14	0.2983E-14	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	0.3515E-11	0.3515E-11	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs ₂ O	0.3106E-11	0.3106E-11	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	114 Prim HEPA#2 Exit Gas	115 Prim Exhstr Gas to Tunnel	116 Bckup Qunchr Inlet Air	117 BUOQCT Air Inleakge	118 Air to Backup HEME	119 Water to Backup HEME	120 Backup OGCT Liq to RCT
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.1644E-10	0.1644E-10	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	0.4271E-09	0.4271E-09	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	0.4270E-10	0.4270E-10	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.4177E-12	0.4177E-12	ZERO	ZERO	ZERO	ZERO	ZERO
103 Group B	0.2150E-11	0.2150E-11	ZERO	ZERO	ZERO	ZERO	ZERO
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	0.1445E-02	0.1445E-02	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	0.2308E-01	0.2308E-01	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	0.8520E-02	0.8520E-02	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	0.7928E-10	0.7928E-10	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	0.4183E-15	0.4183E-15	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	0.1199E-15	0.1199E-15	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	0.8186E-09	0.8186E-09	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	0.1105E-09	0.1105E-09	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 K ₂ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	0.2266E-09	0.2266E-09	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.9335E-10	0.9335E-10	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.5605E-10	0.5605E-10	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	0.3380E-13	0.3380E-13	ZERO	ZERO	ZERO	ZERO	ZERO
81 N ₂	0.1395E+04	0.1395E+04	0.6042E+03	0.7936E+02	0.3023E-02	ZERO	0.1359E-03
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.1826E+01	0.1826E+01	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	114 Prim HEPA#2 Exit Gas	115 Prim Exhstr Gas to Tunnl	116 Bckup Qunchr Inlet Air	117 BUOGCT Air Inleakge	118 Air to Backup HEME	119 Water to Backup HEME	120 Backup OGCT Liq to RCT
84 NO ₂	0.3459E+01	0.3459E+01	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.4092E-09	0.4092E-09	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.2900E-10	0.2900E-10	ZERO	ZERO	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.2043E-12	0.2043E-12	ZERO	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.3395E-12	0.3395E-12	ZERO	ZERO	ZERO	ZERO	ZERO
69 NaF	0.6863E-12	0.6863E-12	ZERO	ZERO	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.6300E-11	0.6300E-11	ZERO	ZERO	ZERO	ZERO	ZERO
82 O ₂	0.4218E+03	0.4218E+03	0.1825E+03	0.2397E+02	0.9132E-03	ZERO	0.7959E-04
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.7801E-13	0.7801E-13	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.1876E-11	0.1876E-11	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.1728E-12	0.1728E-12	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) -> STREAM NAME	114 Prim HEPA#2 Exit Gas	115 Prim Exhstr Gas to Tunnel	116 Bckup Qunchr Inlet Air	117 BUOUCT Air Inleakage	118 Air to Backup HEME	119 Water to Backup HEME	120 Backup OGCT Liq to RCT
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	0.5155E-08	0.5155E-08	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	0.2748E-09	0.2748E-09	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	0.3174E-07	0.3174E-07	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	0.3169E-08	0.3169E-08	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	0.2393E-11	0.2393E-11	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.2517E-08	0.2517E-08	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.2954E-12	0.2954E-12	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.1082E-12	0.1082E-12	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	0.2690E-11	0.2690E-11	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	0.1553E-10	0.1553E-10	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.2632E-11	0.2632E-11	ZERO	ZERO	ZERO	ZERO	ZERO
17 U3O8	0.4655E-10	0.4655E-10	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.9006E-13	0.9006E-13	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.2082E-11	0.2082E-11	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.1419E+02	0.1419E+02	0.1322E+02	0.1736E+01	0.6613E-04	0.1329E+01	0.9646E+01
TOTAL FLOW, LB/HR	0.1851E+04	0.1851E+04	0.8000E+03	0.1051E+03	0.4003E-02	0.1329E+01	0.9646E+01
TEMPERATURE, DEG C	0.2000E+02	0.2762E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.4000E+02	0.4000E+02
PRESSURE, ATM	0.9263E+00	0.9928E+00	0.9853E+00	0.1000E+01	0.3720E+01	0.3180E+01	0.1000E+01
PRESSURE, PSIG	-0.1083E+01	-0.1058E+00	-0.2160E+00	ZERO	0.3997E+02	0.3204E+02	ZERO
PRESSURE, MM HG	0.7040E+03	0.7545E+03	0.7488E+03				
ENTHALPY, PCU/HR	0.2371E+05	0.2699E+05	0.1678E+05	0.2204E+04	0.8395E-01	0.5327E+02	0.3866E+03
VAPOR FLOW, CFM	0.4452E+03	0.4262E+03	0.1918E+03	0.2482E+02	0.2542E-03		
LIQUID FLOW, GPM						0.2655E-02	0.1926E-01
DENSITY, LBS/FT3	0.6930E-01	0.7239E-01	0.6952E-01	0.7055E-01	0.2625E+00	0.6243E+02	0.6243E+02
PHASE	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS -> STREAM NAME	121 Bkup Exhstr Gas to Tunnel
COMPONENT FLOWS, LB/HR	
122 (C ₆ H ₅) ₂	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO
165 (C ₆ H ₅ NO)	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO
131 (C ₆ H ₅ OH salt)	ZERO
130 (C ₆ H ₅ OH)	ZERO
121 (C ₆ H ₆)	ZERO
155 (CH ₃) ₂ CHOH	ZERO
154 (CH ₃ OH)	ZERO
45 Ag	ZERO
116 Ag ₂ O	ZERO
134 AgNO ₃	ZERO
77 Al ₂ O ₃	ZERO
106 B ₂ O ₃	ZERO
9 Ba(OH) ₂	ZERO
15 BaO	ZERO
24 BaSO ₄	ZERO
66 CO	ZERO
37 CO ₂	ZERO
142 CO ₂ (C14)	ZERO
63 Ca(COOH) ₂	ZERO
167 Ca(NO ₃) ₂	ZERO
120 Ca(OH) ₂	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO
20 CaC ₂ O ₄	ZERO
18 CaCO ₃	ZERO
64 CaCO ₃ (C14)	ZERO
78 CaF ₂	ZERO
41 CaO	ZERO
19 CaSO ₄	ZERO
29 Carbon	ZERO
99 Cement	ZERO
26 Co(COOH) ₂	ZERO
168 Co(NO ₃) ₂	ZERO
59 CoO	ZERO
98 Cr ₂ O ₃	ZERO
42 Cs ₂ O	ZERO
53 CsCOOH	ZERO
96 CsCl	ZERO
169 CsNO ₃	ZERO
8 CsOH	ZERO
151 CsTPB	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) ->	121
STREAM NAME	Skup Exhstr Gas to Tunnel
54 Cu(COOH) ₂	ZERO
170 Cu(NO ₃) ₂	ZERO
55 CuO	ZERO
80 Fe ₂ O ₃	ZERO
101 FeO	ZERO
102 Group A	ZERO
103 Group B	ZERO
25 H ₂	ZERO
158 H ₂ C ₂ O ₄	ZERO
93 H ₂ SO ₄	ZERO
90 H ₃ BO ₃	ZERO
34 HCOOH	ZERO
43 HCl	ZERO
85 HF	ZERO
49 HNO ₃	ZERO
36 Hg	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO
135 Hg(NO ₃) ₂	ZERO
144 Hg ₂ Cl ₂	ZERO
117 Hg ₂ I ₂	ZERO
146 HgCl ₂	ZERO
21 HgO	ZERO
97 I ₂	ZERO
39 K ₂ O	ZERO
51 KCOOH	ZERO
157 KMnO ₄	ZERO
161 KNO ₃	ZERO
10 KOH	ZERO
150 KTPB	ZERO
105 La ₂ O ₃	ZERO
108 Li ₂ O	ZERO
65 Mg(COOH) ₂	ZERO
171 Mg(NO ₃) ₂	ZERO
33 MgO	ZERO
60 Mn(COOH) ₂	ZERO
172 Mn(NO ₃) ₂	ZERO
180 Mn ₃ O ₄	ZERO
56 MnO	ZERO
14 Mn ₂ O ₃	ZERO
145 MoO ₂	ZERO
81 N ₂	0.6836E+03
74 N ₂ O	ZERO
182 NH ₃	ZERO
114 NH ₃ OHNO ₃	ZERO
52 NH ₄ COOH	ZERO
173 NH ₄ NO ₃	ZERO
68 NH ₄ OH	ZERO
148 NH ₄ TPB	ZERO
35 NO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) ->	121
STREAM NAME	Bkup Exhstr Gas to Tunnel
84 NO ₂	ZERO
70 Na(HgO(OH))	ZERO
94 Na ₂ B ₄ O ₇	ZERO
109 Na ₂ C ₂ O ₄	ZERO
5 Na ₂ CO ₃	ZERO
143 Na ₂ CO ₃ (C14)	ZERO
89 Na ₂ CrO ₄	ZERO
115 Na ₂ MoO ₄	ZERO
32 Na ₂ O	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO
73 Na ₂ RhO ₄	ZERO
72 Na ₂ RuO ₄	ZERO
6 Na ₂ SO ₄	ZERO
88 Na ₂ SiO ₃	ZERO
87 Na ₃ PO ₄	ZERO
91 NaAg(OH) ₂	ZERO
75 NaAl(OH) ₄	ZERO
50 NaCOOH	ZERO
7 NaCl	ZERO
69 NaF	ZERO
11 NaHCO ₃	ZERO
12 NaI	ZERO
3 NaNO ₂	ZERO
2 NaNO ₃	ZERO
4 NaOH	ZERO
149 NaTPB	ZERO
160 NaTcO ₄	ZERO
152 NaTi ₂ O ₅ H	ZERO
181 Nd ₂ O ₃	ZERO
61 Ni(COOH) ₂	ZERO
174 Ni(NO ₃) ₂	ZERO
40 NiO	ZERO
82 O ₂	0.2065E+03
175 Pb(NO ₃) ₂	ZERO
86 PbCO ₃	ZERO
67 PbO	ZERO
147 PbS	ZERO
28 PbSO ₄	ZERO
124 Pd	ZERO
112 Pd(NO ₃) ₂	ZERO
110 PdO	ZERO
76 PuO ₂	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO
58 Rh	ZERO
22 RhO ₂	ZERO
95 Ru	ZERO
79 RuO ₂	ZERO
83 RuO ₄	ZERO
38 SO ₂	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Vitrification and Melter Off-Gas Treatment

STREAM NUMBERS (CONT'D) ->	121
STREAM NAME	Bkup Exhstr Gas to Tunnel
141 SO ₃	ZERO
137 Semi Vol Cs ₂ O	ZERO
136 Semi Vol CsCl	ZERO
126 Semi Vol Group A	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO
138 Semi Vol NaCl	ZERO
139 Semi Vol NaF	ZERO
125 Semi Vol NaI	ZERO
23 Semi Vol RuO ₂	ZERO
111 SiO ₂	ZERO
48 Sr(COOH) ₂	ZERO
176 Sr(NO ₃) ₂	ZERO
153 Sr(NaTi ₂ O ₅) ₂	ZERO
127 Sr(OH) ₂	ZERO
30 SrCO ₃	ZERO
46 SrO	ZERO
159 TcO ₂	ZERO
92 ThO ₂	ZERO
107 TiO ₂	ZERO
119 Tritium	ZERO
17 U ₃ O ₈	ZERO
62 UO ₂ (COOH) ₂	ZERO
177 UO ₂ (NO ₃) ₂	ZERO
16 UO ₂ (OH) ₂	ZERO
27 Y(COOH) ₃	ZERO
178 Y(NO ₃) ₃	ZERO
128 Y(OH) ₃	ZERO
31 Y ₂ (CO ₃) ₃	ZERO
47 Y ₂ O ₃	ZERO
100 Zeolite	ZERO
44 Zn(COOH) ₂	ZERO
179 Zn(NO ₃) ₂	ZERO
57 ZnO	ZERO
104 ZrO ₂	ZERO
13 hydrate H ₂ O	ZERO
1 water	0.6641E+01
TOTAL FLOW, LB/HR	0.8968E+03
TEMPERATURE, DEG C	0.2515E+02
PRESSURE, ATM	0.9928E+00
PRESSURE, PSIG	-0.1058E+00
PRESSURE, MM HG	0.7545E+03
ENTHALPY, PCU/HR	0.1186E+05
VAPOR FLOW, CFM	0.2054E+03
LIQUID FLOW, GPM	
DENSITY, LBS/FT ³	0.7275E-01
PHASE	VAPOR

SECTION 6. MERCURY PURIFICATION CELL

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 6. Mercury Purification Cell

DESCRIPTION	PAGE
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1. STREAM NUMBERS 19, 25, 126, 127, 128, 129, 130	2
2. STREAM NUMBERS 131, 132, 133, 134, 135, 136, 137	6
3. STREAM NUMBERS 138, 139, 140, 141, 142, 143, 144	10
4. STREAM NUMBERS 145, 146, 147, 148, 149, 150, 151	14

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS -> STREAM NAME	19 Hg Cell Vent to MWT	25 Hg frm MWT to MWT	126 HNO3 Wash to MWT	127 MAWT Air Purge	128 Air Sparge to MWT	129 HNO3 Wash frm MAWT to SWT	130 MAWT Vent
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.6553E-11	0.8192E-11	ZERO	ZERO	ZERO	0.6686E-11	0.1039E-11
123 (C6H5)2C6H4	0.8440E-18	0.2489E-12	ZERO	ZERO	ZERO	0.2326E-12	0.6633E-18
118 (C6H5)2NH	0.6173E-11	0.4069E-09	ZERO	ZERO	ZERO	0.3803E-09	0.3616E-14
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.4015E-17	0.1645E-13	ZERO	ZERO	ZERO	0.1537E-13	0.3986E-17
162 (C6H5NH2)	0.1045E-08	0.3894E-08	ZERO	ZERO	ZERO	0.3575E-08	0.6855E-10
163 (C6H5NHCHO)	0.1057E-16	0.6131E-13	ZERO	ZERO	ZERO	0.5729E-13	0.1046E-16
165 (C6H5NO)	0.8767E-15	0.9662E-15	ZERO	ZERO	ZERO	0.8366E-16	0.8767E-15
164 (C6H5NO2)	0.1759E-16	0.2033E-14	ZERO	ZERO	ZERO	0.1883E-14	0.1759E-16
131 (C6H5OH salt)	0.1308E-21	0.6678E-16	ZERO	ZERO	ZERO	0.6241E-16	0.1129E-21
130 (C6H5OH)	0.9187E-08	0.5631E-07	ZERO	ZERO	ZERO	0.5156E-07	0.1138E-08
121 (C6H6)	0.3210E-10	0.3212E-10	ZERO	ZERO	ZERO	0.9532E-11	0.2192E-10
155 (CH3)2CHOH	0.5357E-17	0.8567E-17	ZERO	ZERO	ZERO	0.3592E-17	0.4724E-17
154 (CH3OH)	0.6098E-18	0.7278E-18	ZERO	ZERO	ZERO	0.1653E-18	0.5509E-18
45 Ag	0.1323E-14	0.7826E-07	ZERO	ZERO	ZERO	ZERO	0.1323E-14
116 Ag2O	TRACE	0.9188E-23	ZERO	ZERO	ZERO	0.8588E-23	TRACE
134 AgNO3	0.2380E-12	ZERO	ZERO	ZERO	ZERO	0.1134E-06	0.2051E-12
77 Al2O3	0.6790E-17	0.3466E-11	ZERO	ZERO	ZERO	0.3239E-11	0.5860E-17
106 B2O3	0.2483E-17	0.1267E-11	ZERO	ZERO	ZERO	0.1184E-11	0.2143E-17
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	TRACE	0.1743E-19	ZERO	ZERO	ZERO	0.1629E-19	TRACE
24 BaSO4	0.1568E-18	0.8004E-13	ZERO	ZERO	ZERO	0.7481E-13	0.1353E-18
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.6380E-12	0.6099E-12	ZERO	ZERO	ZERO	0.2935E-16	0.6379E-12
142 CO2 (C14)	0.3159E-22	0.3159E-22	ZERO	ZERO	ZERO	TRACE	0.3159E-22
63 Ca(COOH)2	0.2623E-19	0.1339E-13	ZERO	ZERO	ZERO	0.1251E-13	0.2264E-19
167 Ca(NO3)2	0.1722E-17	0.8788E-12	ZERO	ZERO	ZERO	0.8213E-12	0.1486E-17
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.1590E-17	0.8114E-12	ZERO	ZERO	ZERO	0.7584E-12	0.1372E-17
20 CaC2O4	0.4267E-19	0.2178E-13	ZERO	ZERO	ZERO	0.2035E-13	0.3682E-19
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.1090E-19	0.5563E-14	ZERO	ZERO	ZERO	0.5200E-14	0.9407E-20
41 CaO	0.2070E-20	0.1056E-14	ZERO	ZERO	ZERO	0.9872E-15	0.1786E-20
19 CaSO4	0.3620E-19	0.1848E-13	ZERO	ZERO	ZERO	0.1727E-13	0.3124E-19
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.1375E-21	0.7017E-16	ZERO	ZERO	ZERO	0.6558E-16	0.1186E-21
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.2945E-22	0.1503E-16	ZERO	ZERO	ZERO	0.1405E-16	0.2542E-22
98 Cr2O3	0.1155E-18	0.5896E-13	ZERO	ZERO	ZERO	0.5510E-13	0.9969E-19
42 Cs2O	0.1652E-21	0.8430E-16	ZERO	ZERO	ZERO	0.7879E-16	0.1425E-21
53 CsCOOH	0.1436E-18	0.7327E-13	ZERO	ZERO	ZERO	0.6848E-13	0.1239E-18
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	0.3505E-21	0.1789E-15	ZERO	ZERO	ZERO	0.1672E-15	0.3025E-21
8 CsOH	0.4019E-23	0.2051E-17	ZERO	ZERO	ZERO	0.1917E-17	0.3468E-23
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	19 Hg Cell Vent to MWT	25 Hg frm MWT to MWT	126 HNO3 Wash to MWT	127 MWT Air Purge	128 Air Sparge to MWT	129 HNO3 Wash frm MWT to SWT	130 MWT Vent
54 Cu(COOH)2	0.3580E-20	0.1827E-14	ZERO	ZERO	ZERO	0.1708E-14	0.3089E-20
170 Cu(NO3)2	0.1240E-17	0.6326E-12	ZERO	ZERO	ZERO	0.5913E-12	0.1070E-17
55 CuO	0.1552E-19	0.7922E-14	ZERO	ZERO	ZERO	0.7404E-14	0.1340E-19
80 Fe2O3	0.1568E-16	0.8001E-11	ZERO	ZERO	ZERO	0.7478E-11	0.1353E-16
101 FeO	0.4677E-23	0.2387E-17	ZERO	ZERO	ZERO	0.2231E-17	0.4036E-23
102 Group A	0.1453E-19	0.7413E-14	ZERO	ZERO	ZERO	0.6929E-14	0.1253E-19
103 Group B	0.7103E-19	0.3625E-13	ZERO	ZERO	ZERO	0.3388E-13	0.6129E-19
25 H2	0.1728E-20	0.1728E-20	ZERO	ZERO	ZERO	TRACE	0.1728E-20
158 H2C2O4	0.4995E-19	0.2549E-13	ZERO	ZERO	ZERO	0.2383E-13	0.4310E-19
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.5430E-17	0.2771E-11	ZERO	ZERO	ZERO	0.2590E-11	0.4686E-17
34 HCOOH	ZERO	0.2939E-13	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.6128E-02	0.3282E-09	0.5529E-02	ZERO	ZERO	0.1774E-02	0.3629E-02
36 Hg	0.4611E-04	0.3006E+00	ZERO	ZERO	ZERO	ZERO	0.2506E-04
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	0.7754E-11	ZERO	ZERO	ZERO	ZERO	0.3214E-05	0.5815E-11
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.3985E-23	0.2034E-17	ZERO	ZERO	ZERO	0.1901E-17	0.3439E-23
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.7438E-19	0.3796E-13	ZERO	ZERO	ZERO	0.3548E-13	0.6419E-19
51 KCOOH	0.6372E-17	0.3252E-11	ZERO	ZERO	ZERO	0.3039E-11	0.5498E-17
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.2078E-19	0.1060E-13	ZERO	ZERO	ZERO	0.9911E-14	0.1793E-19
10 KOH	0.2397E-22	0.1223E-16	ZERO	ZERO	ZERO	0.1143E-16	0.2069E-22
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.2173E-17	0.1109E-11	ZERO	ZERO	ZERO	0.1036E-11	0.1875E-17
65 Mg(COOH)2	0.2146E-17	0.1095E-11	ZERO	ZERO	ZERO	0.1024E-11	0.1852E-17
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.8094E-18	0.4131E-12	ZERO	ZERO	ZERO	0.3861E-12	0.6984E-18
60 Mn(COOH)2	0.1553E-17	0.7925E-12	ZERO	ZERO	ZERO	0.7407E-12	0.1340E-17
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.6140E-23	0.3134E-17	ZERO	ZERO	ZERO	0.2929E-17	0.5298E-23
14 MnO2	0.1338E-17	0.6830E-12	ZERO	ZERO	ZERO	0.6384E-12	0.1155E-17
145 MoO2	0.1117E-20	0.5699E-15	ZERO	ZERO	ZERO	0.5326E-15	0.9636E-21
81 N2	0.1096E+01	0.3863E-07	ZERO	0.3607E+00	0.1356E-01	0.4546E-06	0.3743E+00
74 N2O	TRACE	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE
182 NH3	0.1864E-12	0.1865E-12	ZERO	ZERO	ZERO	0.1236E-14	0.1852E-12
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.1122E-12	0.5728E-07	ZERO	ZERO	ZERO	0.5353E-07	0.9685E-13
68 NH4OH	0.1973E-19	0.1007E-13	ZERO	ZERO	ZERO	0.9412E-14	0.1703E-19
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	0.6266E-18	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 5. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	19 Hg Cell Vent to MWT	25 Hg frm MWT to MWT	126 HNO ₃ Wash to MWT	127 MAWT Air Purge	128 Air Sparge to MWT	129 HNO ₃ Wash frm MAWT to SWT	130 MAWT Vent
84 NO ₂	0.2104E-05	0.5284E-17	ZERO	ZERO	ZERO	0.3713E-11	0.1032E-05
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	0.2779E-22	0.1418E-16	ZERO	ZERO	ZERO	0.1326E-16	0.2398E-22
109 Na ₂ C ₂ O ₄	0.1733E-20	0.8843E-15	ZERO	ZERO	ZERO	0.8265E-15	0.1495E-20
5 Na ₂ CO ₃	TRACE	TRACE	ZERO	ZERO	ZERO	TRACE	TRACE
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.3419E-17	0.1745E-11	ZERO	ZERO	ZERO	0.1631E-11	0.2950E-17
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.2806E-18	0.1432E-12	ZERO	ZERO	ZERO	0.1338E-12	0.2421E-18
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.6748E-20	0.3444E-14	ZERO	ZERO	ZERO	0.3219E-14	0.5823E-20
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.2980E-17	0.1521E-11	ZERO	ZERO	ZERO	0.1422E-11	0.2572E-17
7 NaCl	0.2244E-19	0.1145E-13	ZERO	ZERO	ZERO	0.1070E-13	0.1936E-19
69 NaF	0.2212E-19	0.1129E-13	ZERO	ZERO	ZERO	0.1055E-13	0.1909E-19
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.6391E-23	0.3262E-17	ZERO	ZERO	ZERO	0.3049E-17	0.5515E-23
3 NaNO ₂	0.1952E-20	0.9964E-15	ZERO	ZERO	ZERO	0.9313E-15	0.1685E-20
2 NaNO ₃	0.1030E-16	0.5255E-11	ZERO	ZERO	ZERO	0.4911E-11	0.8885E-17
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.2772E-19	0.1415E-13	ZERO	ZERO	ZERO	0.1322E-13	0.2392E-19
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1919E-18	0.9791E-13	ZERO	ZERO	ZERO	0.9151E-13	0.1656E-18
82 O ₂	0.3310E+00	0.2228E-07	ZERO	0.1090E+00	0.4095E-02	0.2669E-06	0.1131E+00
175 Pb(NO ₃) ₂	0.2785E-22	0.1421E-16	ZERO	ZERO	ZERO	0.1328E-16	0.2403E-22
86 PbCO ₃	0.1886E-21	0.9627E-16	ZERO	ZERO	ZERO	0.8998E-16	0.1628E-21
67 PbO	TRACE	0.4361E-20	ZERO	ZERO	ZERO	0.4076E-20	TRACE
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.6525E-19	0.3330E-13	ZERO	ZERO	ZERO	0.3112E-13	0.5631E-19
124 Pd	0.9148E-16	0.5410E-08	ZERO	ZERO	ZERO	ZERO	0.9148E-16
112 Pd(NO ₃) ₂	0.2272E-13	ZERO	ZERO	ZERO	ZERO	0.1082E-07	0.1958E-13
110 PdO	TRACE	0.6799E-24	ZERO	ZERO	ZERO	0.6354E-24	TRACE
76 PuO ₂	0.5645E-20	0.2881E-14	ZERO	ZERO	ZERO	0.2692E-14	0.4871E-20
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.1607E-21	0.8199E-16	ZERO	ZERO	ZERO	0.7663E-16	0.1386E-21
58 Rh	0.1811E-15	0.1071E-07	ZERO	ZERO	ZERO	ZERO	0.1811E-15
22 RhO ₂	0.2727E-13	TRACE	ZERO	ZERO	ZERO	0.1299E-07	0.2350E-13
95 Ru	0.5378E-20	0.2745E-14	ZERO	ZERO	ZERO	0.2565E-14	0.4641E-20
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	19 Hg Cell Vent to MWWT	25 Hg frm MWWT to MAWT	126 HNO3 Wash to MAWT	127 MAWT Air Purge	128 Air Sparge to MAWT	129 HNO3 Wash frm MAWT to SWT	130 MAWT Vent
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.2470E-16	0.1260E-10	ZERO	ZERO	ZERO	0.1178E-10	0.2131E-16
48 Sr(COOH)2	0.1203E-20	0.6139E-15	ZERO	ZERO	ZERO	0.5738E-15	0.1038E-20
176 Sr(NO3)2	0.1848E-19	0.9431E-14	ZERO	ZERO	ZERO	0.8814E-14	0.1595E-19
153 Sr(NaTi2O5)2	0.4519E-22	0.2306E-16	ZERO	ZERO	ZERO	0.2156E-16	0.3900E-22
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	TRACE	0.1651E-19	ZERO	ZERO	ZERO	0.1543E-19	TRACE
159 TcO2	0.1912E-20	0.9756E-15	ZERO	ZERO	ZERO	0.9118E-15	0.1650E-20
92 ThO2	0.8888E-19	0.4536E-13	ZERO	ZERO	ZERO	0.4239E-13	0.7669E-19
107 TlO2	0.5133E-18	0.2619E-12	ZERO	ZERO	ZERO	0.2448E-12	0.4429E-18
119 Tritium	0.4950E-16	0.1111E-15	ZERO	ZERO	ZERO	0.6341E-16	0.4321E-16
17 U3O8	0.1538E-17	0.7848E-12	ZERO	ZERO	ZERO	0.7335E-12	0.1327E-17
62 UO2(COOH)2	TRACE	0.2719E-19	ZERO	ZERO	ZERO	0.2541E-19	TRACE
177 UO2(NO3)2	0.6341E-22	0.3236E-16	ZERO	ZERO	ZERO	0.3024E-16	0.5472E-22
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.4834E-21	0.2467E-15	ZERO	ZERO	ZERO	0.2306E-15	0.4172E-21
178 Y(NO3)3	0.6629E-20	0.3383E-14	ZERO	ZERO	ZERO	0.3162E-14	0.5721E-20
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.9227E-23	0.4709E-17	ZERO	ZERO	ZERO	0.4401E-17	0.7963E-23
100 Zeolite	0.1471E-20	0.7506E-15	ZERO	ZERO	ZERO	0.7015E-15	0.1269E-20
44 Zn(COOH)2	0.4032E-19	0.2058E-13	ZERO	ZERO	ZERO	0.1923E-13	0.3480E-19
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.4767E-19	0.2433E-13	ZERO	ZERO	ZERO	0.2274E-13	0.4113E-19
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.4182E-17	0.2134E-11	ZERO	ZERO	ZERO	0.1995E-11	0.3609E-17
1 water	0.4912E-01	0.4652E-02	0.4055E-01	0.7891E-02	0.2965E-03	0.3075E-01	0.2051E-01
TOTAL FLOW, LB/HR	0.1482E+01	0.3052E+00	0.4608E-01	0.4776E+00	0.1795E-01	0.3253E-01	0.5115E+00
TEMPERATURE, DEG C	0.3800E+02	0.3500E+02	0.2500E+02	0.3500E+02	0.3500E+02	0.3800E+02	0.3800E+02
PRESSURE, ATM	0.9950E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.9950E+00	0.9950E+00
PRESSURE, PSIG	-0.7348E-01	ZERO	ZERO	ZERO	ZERO	-0.7348E-01	-0.7348E-01
PRESSURE, MM HG	0.7562E+03					0.7562E+03	0.7562E+03
ENTHALPY, PCU/HR	0.4763E+02	0.5099E+00	0.1057E+01	0.1002E+02	0.3764E+00	0.1190E+01	0.1875E+02
VAPOR FLOW, CFM	0.3580E+00			0.1128E+00	0.4240E-02		0.1239E+00
LIQUID FLOW, GPM		0.5361E-04	0.8833E-04			0.6377E-04	
DENSITY, LBS/FT3	0.6900E-01	0.7099E+03	0.6504E+02	0.7055E-01	0.7055E-01	0.6359E+02	0.6882E-01
PHASE	VAPOR	LIQUID	LIQUID	VAPOR	VAPOR	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 6. Mercury Purification Cell

STREAM NUMBERS -> STREAM NAME	131 Hg Feed to MASC	132 HNO ₃ Wash to MASCFT	133 HNO ₃ Wash from MASC	134 Hg Feed to MWVC	135 Water Wash to MWVC	136 Water Wash from MWVC	137 Washed Hg from MWVC
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	0.4676E-12	ZERO	0.4654E-12	0.2227E-14	ZERO	0.2216E-14	0.1108E-16
123 (C ₆ H ₅) ₂ C ₆ H ₄	0.1627E-13	ZERO	0.1619E-13	0.7747E-16	ZERO	0.7709E-16	0.3854E-18
118 (C ₆ H ₅) ₂ NH	0.2660E-10	ZERO	0.2647E-10	0.1267E-12	ZERO	0.1260E-12	0.6301E-15
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	0.1075E-14	ZERO	0.1070E-14	0.5119E-17	ZERO	0.5094E-17	0.2547E-19
162 (C ₆ H ₅ NH ₂)	0.2501E-09	ZERO	0.2489E-09	0.1191E-11	ZERO	0.1185E-11	0.5925E-14
163 (C ₆ H ₅ NHCHO)	0.4007E-14	ZERO	0.3988E-14	0.1908E-16	ZERO	0.1899E-16	0.9494E-19
165 (C ₆ H ₅ NO)	0.5852E-17	ZERO	0.5824E-17	0.2786E-19	ZERO	0.2773E-19	0.1386E-21
164 (C ₆ H ₅ NO ₂)	0.1317E-15	ZERO	0.1311E-15	0.6273E-18	ZERO	0.6242E-18	0.3121E-20
131 (C ₆ H ₅ OH salt)	0.4365E-17	ZERO	0.4344E-17	0.2079E-19	ZERO	0.2068E-19	0.1034E-21
130 (C ₆ H ₅ OH)	0.3607E-08	ZERO	0.3589E-08	0.1717E-10	ZERO	0.1709E-10	0.8544E-13
121 (C ₆ H ₆)	0.6667E-12	ZERO	0.6636E-12	0.3175E-14	ZERO	0.3159E-14	0.1580E-16
155 (CH ₃) ₂ CHOH	0.2512E-18	ZERO	0.2500E-18	0.1196E-20	ZERO	0.1190E-20	0.5952E-23
154 (CH ₃ OH)	0.1156E-19	ZERO	0.1151E-19	0.5506E-22	ZERO	0.5478E-22	0.2739E-24
45 Ag	0.7826E-09	ZERO	ZERO	0.7826E-11	ZERO	ZERO	0.7826E-11
116 Ag ₂ O	0.6007E-24	ZERO	0.5978E-24	TRACE	ZERO	TRACE	TRACE
134 AgNO ₃	0.7929E-08	ZERO	0.9099E-08	0.4354E-10	ZERO	0.4332E-10	0.2166E-12
77 Al ₂ O ₃	0.2265E-12	ZERO	0.2255E-12	0.1079E-14	ZERO	0.1073E-14	0.5367E-17
106 B ₂ O ₃	0.8284E-13	ZERO	0.8244E-13	0.3945E-15	ZERO	0.3925E-15	0.1963E-17
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.1139E-20	ZERO	0.1134E-20	0.5424E-23	ZERO	0.5397E-23	TRACE
24 BaSO ₄	0.5233E-14	ZERO	0.5208E-14	0.2492E-16	ZERO	0.2479E-16	0.1240E-18
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	0.2053E-17	ZERO	0.2043E-17	0.9775E-20	ZERO	0.9726E-20	0.4863E-22
142 CO ₂ (C14)	TRACE	ZERO	TRACE	TRACE	ZERO	TRACE	TRACE
63 Ca(COOH) ₂	0.8752E-15	ZERO	0.8710E-15	0.4167E-17	ZERO	0.4147E-17	0.2073E-19
167 Ca(NO ₃) ₂	0.5745E-13	ZERO	0.5717E-13	0.2736E-15	ZERO	0.2722E-15	0.1361E-17
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	0.5305E-13	ZERO	0.5279E-13	0.2526E-15	ZERO	0.2513E-15	0.1257E-17
20 CaC ₂ O ₄	0.1423E-14	ZERO	0.1417E-14	0.6778E-17	ZERO	0.6745E-17	0.3372E-19
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	0.3637E-15	ZERO	0.3620E-15	0.1732E-17	ZERO	0.1723E-17	0.8616E-20
41 CaO	0.6905E-16	ZERO	0.6872E-16	0.3288E-18	ZERO	0.3272E-18	0.1636E-20
19 CaSO ₄	0.1208E-14	ZERO	0.1202E-14	0.5752E-17	ZERO	0.5723E-17	0.2862E-19
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	0.4587E-17	ZERO	0.4565E-17	0.2184E-19	ZERO	0.2173E-19	0.1087E-21
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.9826E-18	ZERO	0.9779E-18	0.4679E-20	ZERO	0.4656E-20	0.2328E-22
98 Cr ₂ O ₃	0.3854E-14	ZERO	0.3836E-14	0.1835E-16	ZERO	0.1826E-16	0.9131E-19
42 Cs ₂ O	0.5511E-17	ZERO	0.5485E-17	0.2624E-19	ZERO	0.2611E-19	0.1306E-21
53 CsCOOH	0.4790E-14	ZERO	0.4767E-14	0.2281E-16	ZERO	0.2269E-16	0.1135E-18
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	0.1169E-16	ZERO	0.1164E-16	0.5569E-19	ZERO	0.5541E-19	0.2770E-21
8 CsOH	0.1341E-18	ZERO	0.1334E-18	0.6384E-21	ZERO	0.6353E-21	0.3176E-23
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) --> STREAM NAME	131 Hg Feed to MASC	132 HNO3 Wash to MASCFT	133 HNO3 Wash from MASC	134 Hg Feed to MWVC	135 Water Wash to MWVC	136 Water Wash from MWVC	137 Washed Hg from MWVC
54 Cu(COOH)2	0.1194E-15	ZERO	0.1189E-15	0.5688E-18	ZERO	0.5659E-18	0.2830E-20
170 Cu(NO3)2	0.4136E-13	ZERO	0.4116E-13	0.1969E-15	ZERO	0.1960E-15	0.9798E-18
55 CuO	0.5179E-15	ZERO	0.5154E-15	0.2466E-17	ZERO	0.2454E-17	0.1227E-19
80 Fe2O3	0.5230E-12	ZERO	0.5206E-12	0.2491E-14	ZERO	0.2478E-14	0.1239E-16
101 FeO	0.1560E-18	ZERO	0.1553E-18	0.7430E-21	ZERO	0.7393E-21	0.3697E-23
102 Group A	0.4846E-15	ZERO	0.4823E-15	0.2308E-17	ZERO	0.2296E-17	0.1148E-19
103 Group B	0.2370E-14	ZERO	0.2358E-14	0.1128E-16	ZERO	0.1123E-16	0.5614E-19
25 H2	TRACE	ZERO	TRACE	TRACE	ZERO	TRACE	TRACE
158 H2C2O4	0.1666E-14	ZERO	0.1659E-14	0.7935E-17	ZERO	0.7896E-17	0.3948E-19
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.1812E-12	ZERO	0.1803E-12	0.8627E-15	ZERO	0.8584E-15	0.4292E-17
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.1241E-03	0.5585E-02	0.5679E-02	0.2717E-04	ZERO	0.2704E-04	0.1352E-06
36 Hg	0.3036E+00	ZERO	ZERO	0.3036E+00	ZERO	ZERO	0.3036E+00
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	0.2248E-06	ZERO	0.3646E-05	0.1744E-07	ZERO	0.1736E-07	0.8679E-10
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.1330E-18	ZERO	0.1323E-18	0.6331E-21	ZERO	0.6300E-21	0.3150E-23
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.2482E-14	ZERO	0.2470E-14	0.1182E-16	ZERO	0.1176E-16	0.5879E-19
51 KCOOH	0.2126E-12	ZERO	0.2116E-12	0.1012E-14	ZERO	0.1007E-14	0.5036E-17
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.6932E-15	ZERO	0.6899E-15	0.3301E-17	ZERO	0.3284E-17	0.1642E-19
10 KOH	0.7998E-18	ZERO	0.7960E-18	0.3808E-20	ZERO	0.3789E-20	0.1895E-22
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.7248E-13	ZERO	0.7214E-13	0.3452E-15	ZERO	0.3434E-15	0.1717E-17
65 Mg(COOH)2	0.7159E-13	ZERO	0.7125E-13	0.3409E-15	ZERO	0.3392E-15	0.1696E-17
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.2700E-13	ZERO	0.2687E-13	0.1286E-15	ZERO	0.1279E-15	0.6397E-18
60 Mn(COOH)2	0.5181E-13	ZERO	0.5156E-13	0.2467E-15	ZERO	0.2455E-15	0.1227E-17
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.2048E-18	ZERO	0.2039E-18	0.9755E-21	ZERO	0.9706E-21	0.4853E-23
14 MnO2	0.4465E-13	ZERO	0.4444E-13	0.2126E-15	ZERO	0.2116E-15	0.1058E-17
145 MoO2	0.3725E-16	ZERO	0.3708E-16	0.1774E-18	ZERO	0.1765E-18	0.8826E-21
81 N2	0.3180E-07	ZERO	0.3165E-07	0.1514E-09	ZERO	0.1507E-09	0.7533E-12
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	0.8645E-16	ZERO	0.8604E-16	0.4117E-18	ZERO	0.4096E-18	0.2048E-20
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.3744E-08	ZERO	0.3727E-08	0.1783E-10	ZERO	0.1774E-10	0.8871E-13
68 NH4OH	0.6583E-15	ZERO	0.6552E-15	0.3135E-17	ZERO	0.3119E-17	0.1560E-19
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	131 Hg Feed to MASC	132 HNO3 Wash to MASCFT	133 HNO3 Wash from MASC	134 Hg Feed to MWVC	135 Water Wash to MWVC	136 Water Wash from MWVC	137 Washed Hg from MWVC
84 NO2	0.2597E-12	ZERO	0.9708E-06	0.4645E-08	ZERO	0.4622E-08	0.2311E-10
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.9271E-18	ZERO	0.9227E-18	0.4415E-20	ZERO	0.4393E-20	0.2196E-22
109 Na2C2O4	0.5781E-16	ZERO	0.5753E-16	0.2753E-18	ZERO	0.2739E-18	0.1370E-20
5 Na2CO3	TRACE	ZERO	TRACE	TRACE	ZERO	TRACE	TRACE
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	0.1141E-12	ZERO	0.1135E-12	0.5431E-15	ZERO	0.5404E-15	0.2702E-17
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.9361E-14	ZERO	0.9317E-14	0.4458E-16	ZERO	0.4435E-16	0.2218E-18
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.2251E-15	ZERO	0.2241E-15	0.1072E-17	ZERO	0.1067E-17	0.5334E-20
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.9943E-13	ZERO	0.9895E-13	0.4735E-15	ZERO	0.4711E-15	0.2356E-17
7 NaCl	0.7486E-15	ZERO	0.7450E-15	0.3565E-17	ZERO	0.3547E-17	0.1774E-19
69 NaF	0.7379E-15	ZERO	0.7344E-15	0.3514E-17	ZERO	0.3496E-17	0.1748E-19
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2132E-18	ZERO	0.2122E-18	0.1015E-20	ZERO	0.1010E-20	0.5052E-23
3 NaNO2	0.6514E-16	ZERO	0.6483E-16	0.3102E-18	ZERO	0.3086E-18	0.1543E-20
2 NaNO3	0.3435E-12	ZERO	0.3419E-12	0.1636E-14	ZERO	0.1628E-14	0.8138E-17
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.9247E-15	ZERO	0.9203E-15	0.4403E-17	ZERO	0.4381E-17	0.2191E-19
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.6401E-14	ZERO	0.6370E-14	0.3048E-16	ZERO	0.3033E-16	0.1516E-18
82 O2	0.1867E-07	ZERO	0.1858E-07	0.8889E-10	ZERO	0.8845E-10	0.4422E-12
175 Pb(NO3)2	0.9291E-18	ZERO	0.9247E-18	0.4424E-20	ZERO	0.4402E-20	0.2201E-22
86 PbCO3	0.6293E-17	ZERO	0.6264E-17	0.2997E-19	ZERO	0.2982E-19	0.1491E-21
67 PbO	0.2851E-21	ZERO	0.2837E-21	0.1358E-23	ZERO	0.1351E-23	TRACE
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.2177E-14	ZERO	0.2167E-14	0.1037E-16	ZERO	0.1031E-16	0.5157E-19
124 Pd	0.5410E-10	ZERO	ZERO	0.5410E-12	ZERO	ZERO	0.5410E-12
112 Pd(NO3)2	0.7571E-09	ZERO	0.8688E-09	0.4157E-11	ZERO	0.4136E-11	0.2068E-13
110 PdO	TRACE	ZERO	TRACE	TRACE	ZERO	TRACE	TRACE
76 PuO2	0.1883E-15	ZERO	0.1874E-15	0.8968E-18	ZERO	0.8923E-18	0.4461E-20
156 PuO2(NaTi2O5)2	0.5360E-17	ZERO	0.5335E-17	0.2552E-19	ZERO	0.2540E-19	0.1270E-21
58 Rh	0.1071E-09	ZERO	ZERO	0.1071E-11	ZERO	ZERO	0.1071E-11
22 RhO2	0.9084E-09	ZERO	0.1042E-08	0.4988E-11	ZERO	0.4963E-11	0.2481E-13
95 Ru	0.1794E-15	ZERO	0.1786E-15	0.8545E-18	ZERO	0.8502E-18	0.4251E-20
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	131 Hg Feed to MASC	132 HNO3 Wash to MASCFT	133 HNO3 Wash from MASC	134 Hg Feed to MWVC	135 Water Wash to MWVC	136 Water Wash from MWVC	137 Washed Hg from MWVC
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.8239E-12	ZERO	0.8200E-12	0.3924E-14	ZERO	0.3904E-14	0.1952E-16
48 Sr(COOH)2	0.4013E-16	ZERO	0.3994E-16	0.1911E-18	ZERO	0.1902E-18	0.9508E-21
176 Sr(NO3)2	0.6165E-15	ZERO	0.6136E-15	0.2936E-17	ZERO	0.2921E-17	0.1461E-19
153 Sr(NaTi2O5)2	0.1508E-17	ZERO	0.1501E-17	0.7179E-20	ZERO	0.7144E-20	0.3572E-22
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.1080E-20	ZERO	0.1074E-20	0.5141E-23	ZERO	0.5115E-23	TRACE
159 TcO2	0.6378E-16	ZERO	0.6347E-16	0.3037E-18	ZERO	0.3022E-18	0.1511E-20
92 ThO2	0.2965E-14	ZERO	0.2951E-14	0.1412E-16	ZERO	0.1405E-16	0.7025E-19
107 TiO2	0.1712E-13	ZERO	0.1704E-13	0.8154E-16	ZERO	0.8114E-16	0.4057E-18
119 Tritium	0.4435E-17	ZERO	0.4414E-17	0.2112E-19	ZERO	0.2102E-19	0.1051E-21
17 U3O8	0.5130E-13	ZERO	0.5106E-13	0.2443E-15	ZERO	0.2431E-15	0.1215E-17
62 UO2(COOH)2	0.1777E-20	ZERO	0.1769E-20	0.8463E-23	ZERO	0.8421E-23	TRACE
177 UO2(NO3)2	0.2115E-17	ZERO	0.2105E-17	0.1007E-19	ZERO	0.1002E-19	0.5012E-22
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.1613E-16	ZERO	0.1605E-16	0.7680E-19	ZERO	0.7642E-19	0.3821E-21
178 Y(NO3)3	0.2212E-15	ZERO	0.2201E-15	0.1053E-17	ZERO	0.1048E-17	0.5240E-20
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.3079E-18	ZERO	0.3064E-18	0.1466E-20	ZERO	0.1459E-20	0.7293E-23
100 Zeolite	0.4907E-16	ZERO	0.4883E-16	0.2337E-18	ZERO	0.2325E-18	0.1162E-20
44 Zn(COOH)2	0.1345E-14	ZERO	0.1339E-14	0.6406E-17	ZERO	0.6374E-17	0.3187E-19
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1590E-14	ZERO	0.1583E-14	0.7573E-17	ZERO	0.7535E-17	0.3767E-19
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1395E-12	ZERO	0.1389E-12	0.6644E-15	ZERO	0.6611E-15	0.3306E-17
1 water	0.2151E-02	0.4095E-01	0.4290E-01	0.2053E-03	0.4467E-01	0.4465E-01	0.2233E-03
TOTAL FLOW, LB/HR	0.3059E+00	0.4654E-01	0.4858E-01	0.3038E+00	0.4467E-01	0.4468E-01	0.3038E+00
TEMPERATURE, DEG C	0.3800E+02	0.2500E+02	0.3800E+02	0.3800E+02	0.2500E+02	0.2742E+02	0.2742E+02
PRESSURE, ATM	0.9950E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1340E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.7348E-01	ZERO	ZERO	ZERO	0.4997E+01	ZERO	ZERO
PRESSURE, MM HG	0.7562E+03						
ENTHALPY, PCU/HR	0.4634E+00	0.1067E+01	0.1695E+01	0.3882E+00	0.1121E+01	0.1229E+01	0.2804E+00
VAPOR FLOW, CFM							
LIQUID FLOW, GPM	0.4922E-04	0.8921E-04	0.9323E-04	0.4520E-04	0.8921E-04	0.8921E-04	0.4520E-04
DENSITY, LBS/FT3	0.7748E+03	0.6504E+02	0.6497E+02	0.8380E+03	0.6243E+02	0.6244E+02	0.8380E+03
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 6. Mercury Purification Cell

STREAM NUMBERS -> STREAM NAME	138 MHT Air Purge	139 Hg Hold Tank Vent	140 Washed Hg to MFF	141 Water Rinse to MFF	142 HNO ₃ Rinse to MFF	143 MFF Rinses to SWT	144 MFF Bottoms to MANT
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	0.1108E-16	0.8096E-21	ZERO	ZERO	0.8094E-23	TRACE
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	0.7602E-19	0.3094E-18	ZERO	ZERO	0.3093E-20	0.6818E-24
118 (C ₆ H ₅) ₂ NH	ZERO	0.2578E-15	0.3723E-15	ZERO	ZERO	0.3722E-17	0.8204E-21
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	0.2439E-19	0.1075E-20	ZERO	ZERO	0.1074E-20	0.2366E-24
162 (C ₆ H ₅ NH ₂)	ZERO	0.5921E-14	0.3507E-17	ZERO	ZERO	0.3503E-17	0.7721E-21
163 (C ₆ H ₅ NHCHO)	ZERO	0.8933E-19	0.5605E-20	ZERO	ZERO	0.5599E-20	0.1234E-23
165 (C ₆ H ₅ NO)	ZERO	0.1386E-21	TRACE	ZERO	ZERO	TRACE	TRACE
164 (C ₆ H ₅ NO ₂)	ZERO	0.3117E-20	0.3791E-23	ZERO	ZERO	0.3786E-23	TRACE
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	0.1034E-21	ZERO	ZERO	0.1033E-21	TRACE
130 (C ₆ H ₅ OH)	ZERO	0.8540E-13	0.4396E-16	ZERO	ZERO	0.4395E-18	0.9687E-22
121 (C ₆ H ₆)	ZERO	0.1580E-16	0.7799E-22	ZERO	ZERO	0.7797E-24	TRACE
155 (CH ₃) ₂ CHOH	ZERO	0.5952E-23	TRACE	ZERO	ZERO	TRACE	TRACE
154 (CH ₃ OH)	ZERO	0.2739E-24	TRACE	ZERO	ZERO	TRACE	TRACE
45 Ag	ZERO	ZERO	0.7826E-11	ZERO	ZERO	ZERO	0.7818E-13
116 Ag ₂ O	ZERO	ZERO	TRACE	ZERO	ZERO	TRACE	TRACE
134 AgNO ₃	ZERO	ZERO	0.2166E-12	ZERO	ZERO	0.1233E-10	0.2718E-14
77 Al ₂ O ₃	ZERO	ZERO	0.5367E-17	ZERO	ZERO	0.5361E-17	0.1182E-20
106 B ₂ O ₃	ZERO	ZERO	0.1963E-17	ZERO	ZERO	0.1960E-17	0.4320E-21
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	TRACE	ZERO	ZERO	TRACE	TRACE
24 BaSO ₄	ZERO	ZERO	0.1240E-18	ZERO	ZERO	0.1238E-18	0.2729E-22
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	0.4863E-22	TRACE	ZERO	ZERO	TRACE	ZERO
142 CO ₂ (C ₁₄)	ZERO	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	0.2073E-19	ZERO	ZERO	0.2071E-19	0.4564E-23
167 Ca(NO ₃) ₂	ZERO	ZERO	0.1361E-17	ZERO	ZERO	0.1359E-17	0.2996E-21
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	0.1257E-17	ZERO	ZERO	0.1255E-17	0.2767E-21
20 CaC ₂ O ₄	ZERO	ZERO	0.3372E-19	ZERO	ZERO	0.3368E-19	0.7424E-23
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C ₁₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	0.8616E-20	ZERO	ZERO	0.8606E-20	0.1897E-23
41 CaO	ZERO	ZERO	0.1636E-20	ZERO	ZERO	0.1634E-20	0.3601E-24
19 CaSO ₄	ZERO	ZERO	0.2862E-19	ZERO	ZERO	0.2858E-19	0.6300E-23
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	0.1087E-21	ZERO	ZERO	0.1085E-21	TRACE
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	0.2328E-22	ZERO	ZERO	0.2325E-22	TRACE
98 Cr ₂ O ₃	ZERO	ZERO	0.9131E-19	ZERO	ZERO	0.9120E-19	0.2010E-22
42 Cs ₂ O	ZERO	ZERO	0.1306E-21	ZERO	ZERO	0.1304E-21	TRACE
53 CsCOOH	ZERO	ZERO	0.1135E-18	ZERO	ZERO	0.1133E-18	0.2498E-22
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	0.2770E-21	ZERO	ZERO	0.2767E-21	TRACE
8 CsOH	ZERO	ZERO	0.3176E-23	ZERO	ZERO	0.3172E-23	TRACE
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) ->	138	139	140	141	142	143	144
STREAM NAME	MHT Air	Hg Hold	Washed Hg	Water Rinse	HNO3 Rinse	MFF Rinses	MFF Bottoms
	Purge	Tank Vent	to MFF	to MFF	to MFF	to SWT	to MAWT
54 Cu(COOH)2	ZERO	ZERO	0.2830E-20	ZERO	ZERO	0.2826E-20	0.6230E-24
170 Cu(NO3)2	ZERO	ZERO	0.9798E-18	ZERO	ZERO	0.9786E-18	0.2157E-21
55 CuO	ZERO	ZERO	0.1227E-19	ZERO	ZERO	0.1225E-19	0.2701E-23
80 Fe2O3	ZERO	ZERO	0.1239E-16	ZERO	ZERO	0.1238E-16	0.2728E-20
101 FeO	ZERO	ZERO	0.3697E-23	ZERO	ZERO	0.3692E-23	TRACE
102 Group A	ZERO	ZERO	0.1148E-19	ZERO	ZERO	0.1147E-19	0.2528E-23
103 Group B	ZERO	ZERO	0.5614E-19	ZERO	ZERO	0.5607E-19	0.1236E-22
25 H2	ZERO	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	0.3948E-19	ZERO	ZERO	0.3943E-19	0.8691E-23
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	0.4292E-17	ZERO	ZERO	0.4287E-17	0.9449E-21
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	0.1352E-06	0.7506E-12	ZERO	0.3167E-02	0.3166E-02	0.6979E-06
36 Hg	ZERO	0.2105E-04	0.3036E+00	ZERO	ZERO	ZERO	0.3036E-02
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	0.8679E-10	ZERO	ZERO	0.3438E-06	0.7579E-10
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	0.3150E-23	ZERO	ZERO	0.3146E-23	TRACE
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	0.5879E-19	ZERO	ZERO	0.5872E-19	0.1294E-22
51 KCOOH	ZERO	ZERO	0.5036E-17	ZERO	ZERO	0.5030E-17	0.1109E-20
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	0.1642E-19	ZERO	ZERO	0.1640E-19	0.3615E-23
10 KOH	ZERO	ZERO	0.1895E-22	ZERO	ZERO	0.1892E-22	TRACE
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	ZERO	ZERO	0.1717E-17	ZERO	ZERO	0.1715E-17	0.3780E-21
65 Mg(COOH)2	ZERO	ZERO	0.1696E-17	ZERO	ZERO	0.1694E-17	0.3734E-21
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	0.6397E-18	ZERO	ZERO	0.6389E-18	0.1408E-21
60 Mn(COOH)2	ZERO	ZERO	0.1227E-17	ZERO	ZERO	0.1226E-17	0.2702E-21
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	0.4853E-23	ZERO	ZERO	0.4847E-23	TRACE
14 MnO2	ZERO	ZERO	0.1058E-17	ZERO	ZERO	0.1057E-17	0.2329E-21
145 MoO2	ZERO	ZERO	0.8826E-21	ZERO	ZERO	0.8815E-21	0.1943E-24
81 N2	0.3607E+00	0.3607E+00	0.4976E-11	ZERO	ZERO	0.4975E-13	0.1096E-16
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	0.2048E-20	TRACE	ZERO	ZERO	TRACE	TRACE
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	0.8871E-13	ZERO	ZERO	0.8860E-13	0.1953E-16
68 NH4OH	ZERO	ZERO	0.1560E-19	ZERO	ZERO	0.1559E-21	TRACE
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	138 MHT Air Purge	139 Hg Hold Tank Vent	140 Washed Hg to MFF	141 Water Rinse to MFF	142 HNO ₃ Rinse to MFF	143 MFF Rinses to SWT	144 MFF Bottoms to MWT
84 NO ₂	ZERO	0.2311E-10	0.9445E-21	ZERO	ZERO	0.9746E-07	0.2148E-10
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	0.2196E-22	ZERO	ZERO	0.2194E-22	TRACE
109 Na ₂ C ₂ O ₄	ZERO	ZERO	0.1370E-20	ZERO	ZERO	0.1368E-20	0.3015E-24
5 Na ₂ CO ₃	ZERO	ZERO	TRACE	ZERO	ZERO	TRACE	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	0.2702E-17	ZERO	ZERO	0.2699E-17	0.5949E-21
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	0.2218E-18	ZERO	ZERO	0.2215E-18	0.4882E-22
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	0.5334E-20	ZERO	ZERO	0.5327E-20	0.1174E-23
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	0.2356E-17	ZERO	ZERO	0.2353E-17	0.5186E-21
7 NaCl	ZERO	ZERO	0.1774E-19	ZERO	ZERO	0.1771E-19	0.3904E-23
69 NaF	ZERO	ZERO	0.1748E-19	ZERO	ZERO	0.1746E-19	0.3849E-23
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.5052E-23	ZERO	ZERO	0.5045E-23	TRACE
3 NaNO ₂	ZERO	ZERO	0.1543E-20	ZERO	ZERO	0.1541E-20	0.3397E-24
2 NaNO ₃	ZERO	ZERO	0.8138E-17	ZERO	ZERO	0.8128E-17	0.1792E-20
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	0.2191E-19	ZERO	ZERO	0.2188E-19	0.4823E-23
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	0.1516E-18	ZERO	ZERO	0.1515E-18	0.3338E-22
82 O ₂	0.1090E+00	0.1090E+00	0.2921E-11	ZERO	ZERO	0.2920E-13	0.6437E-17
175 Pb(NO ₃) ₂	ZERO	ZERO	0.2201E-22	ZERO	ZERO	0.2199E-22	TRACE
86 PbCO ₃	ZERO	ZERO	0.1491E-21	ZERO	ZERO	0.1489E-21	TRACE
67 PbO	ZERO	ZERO	TRACE	ZERO	ZERO	TRACE	TRACE
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	0.5157E-19	ZERO	ZERO	0.5151E-19	0.1135E-22
124 Pd	ZERO	ZERO	0.5410E-12	ZERO	ZERO	ZERO	0.5405E-14
112 Pd(NO ₃) ₂	ZERO	ZERO	0.2068E-13	ZERO	ZERO	0.1177E-11	0.2595E-15
110 PdO	ZERO	ZERO	TRACE	ZERO	ZERO	TRACE	TRACE
76 PuO ₂	ZERO	ZERO	0.4461E-20	ZERO	ZERO	0.4456E-20	0.9822E-24
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	0.1270E-21	ZERO	ZERO	0.1268E-21	TRACE
58 Rh	ZERO	ZERO	0.1071E-11	ZERO	ZERO	ZERO	0.1070E-13
22 RhO ₂	ZERO	ZERO	0.2481E-13	ZERO	ZERO	0.1413E-11	0.3114E-15
95 Ru	ZERO	ZERO	0.4251E-20	ZERO	ZERO	0.4246E-20	0.9359E-24
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 S ₁₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	138 MHT Air	139 Hg Hold	140 Washed Hg	141 Water Rinse	142 HNO3 Rinse	143 MFF Rinses	144 MFF Bottoms
	Purge	Tank Vent	to MFF	to MFF	to MFF	to SWT	to MWT
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	ZERO	0.1952E-16	ZERO	ZERO	0.1950E-16	0.4297E-20
48 Sr(COOH)2	ZERO	ZERO	0.9508E-21	ZERO	ZERO	0.9496E-21	0.2093E-24
176 Sr(NO3)2	ZERO	ZERO	0.1461E-19	ZERO	ZERO	0.1459E-19	0.3215E-23
153 Sr(NaTi2O5)2	ZERO	ZERO	0.3572E-22	ZERO	ZERO	0.3567E-22	TRACE
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	TRACE	ZERO	ZERO	TRACE	TRACE
159 TcO2	ZERO	ZERO	E-20	ZERO	ZERO	0.1509E-20	0.3326E-24
92 ThO2	ZERO	ZERO	E-19	ZERO	ZERO	0.7016E-19	0.1546E-22
107 TiO2	ZERO	ZERO	E-18	ZERO	ZERO	0.4052E-18	0.8931E-22
119 Tritium	ZERO	0.1051E-21	TRACE	ZERO	ZERO	TRACE	TRACE
17 U3O8	ZERO	ZERO	0.1215E-17	ZERO	ZERO	0.1214E-17	0.2676E-21
62 UO2(COOH)2	ZERO	ZERO	TRACE	ZERO	ZERO	TRACE	TRACE
177 UO2(NO3)2	ZERO	ZERO	0.5012E-22	ZERO	ZERO	0.5006E-22	TRACE
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	0.3821E-21	ZERO	ZERO	0.3816E-21	TRACE
178 Y(NO3)3	ZERO	ZERO	0.5240E-20	ZERO	ZERO	0.5233E-20	0.1154E-23
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	0.7293E-23	ZERO	ZERO	0.7284E-23	TRACE
100 Zeolite	ZERO	ZERO	0.1162E-20	ZERO	ZERO	0.1161E-20	0.2559E-24
44 Zn(COOH)2	ZERO	ZERO	0.3187E-19	ZERO	ZERO	0.3183E-19	0.7016E-23
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	0.3767E-19	ZERO	ZERO	0.3763E-19	0.8294E-23
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	0.3306E-17	ZERO	ZERO	0.3302E-17	0.7277E-21
1 water	0.7891E-02	0.8114E-02	0.1382E-06	0.7601E-01	0.2323E-01	0.9921E-01	0.2187E-04
TOTAL FLOW, LB/HR	0.4776E+00	0.4778E+00	0.3036E+00	0.7601E-01	0.2639E-01	0.1024E+00	0.3058E-02
TEMPERATURE, DEG C	0.3500E+02	0.3800E+02	0.3800E+02	0.2500E+02	0.2500E+02	0.3800E+02	0.3800E+02
PRESSURE, ATM	0.1000E+01	0.9950E+00	0.9950E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	ZERO	-0.7348E-01	-0.7348E-01	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG		0.7562E+03	0.7562E+03				
ENTHALPY, PCU/HR	0.1002E+02	0.1049E+02	0.3801E+00	0.1907E+01	0.6054E+00	0.3812E+01	0.4641E-02
VAPOR FLOW, CFM	0.1128E+00	0.1146E+00					
LIQUID FLOW, GPM			0.4476E-04	0.1518E-03	0.5060E-04	0.2023E-03	0.4921E-06
DENSITY, LBS/FT3	0.7055E-01	0.6951E-01	0.8457E+03	0.6243E+02	0.6504E+02	0.6308E+02	0.7748E+03
PHASE	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS -> STREAM NAME	145 Purified Hg from MVS	146 MVS Vent to Vacuum Pump	147 Hg Accum at Vacuum Pump	148 MVS Vacuum Pump Exhaust	149 SWT Air Purge	150 SWT Vent	151 SWT Hg Wash to DWT
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.8015E-21	ZERO	ZERO	ZERO	ZERO	0.5514E-11	0.1639E-11
123 (C6H5)2C6H4	0.3063E-18	ZERO	ZERO	ZERO	ZERO	0.1046E-18	0.2489E-12
118 (C6H5)2NH	0.3686E-15	ZERO	ZERO	ZERO	ZERO	0.6169E-11	0.4007E-09
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.1075E-23	ZERO	ZERO	ZERO	ZERO	0.4416E-20	0.1644E-13
162 (C6H5NH2)	0.3507E-20	ZERO	ZERO	ZERO	ZERO	0.9769E-09	0.2849E-08
163 (C6H5NHCHO)	0.5605E-23	ZERO	ZERO	ZERO	ZERO	0.1646E-19	0.6130E-13
165 (C6H5NO)	TRACE	ZERO	ZERO	ZERO	ZERO	0.2404E-22	0.8951E-16
164 (C6H5NO2)	TRACE	ZERO	ZERO	ZERO	ZERO	0.5412E-21	0.2015E-14
131 (C6H5OH salt)	0.1034E-24	ZERO	ZERO	ZERO	ZERO	0.1793E-22	0.6678E-16
130 (C6H5OH)	0.4352E-16	ZERO	ZERO	ZERO	ZERO	0.8049E-08	0.4712E-07
121 (C6H6)	0.7721E-22	ZERO	ZERO	ZERO	ZERO	0.1018E-10	0.2142E-13
155 (CH3)2CHOH	TRACE	ZERO	ZERO	ZERO	ZERO	0.6333E-18	0.3210E-17
154 (CH3OH)	TRACE	ZERO	ZERO	ZERO	ZERO	0.5895E-19	0.1179E-18
45 Ag	0.7826E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE	0.9188E-23
134 AgNO3	0.2166E-15	ZERO	ZERO	ZERO	ZERO	0.3291E-13	0.1225E-06
77 Al2O3	0.5367E-20	ZERO	ZERO	ZERO	ZERO	0.9307E-18	0.3466E-11
106 B2O3	0.1963E-20	ZERO	ZERO	ZERO	ZERO	0.3403E-18	0.1267E-11
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE	0.1743E-19
24 BaSO4	0.1240E-21	ZERO	ZERO	ZERO	ZERO	0.2150E-19	0.8004E-13
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	TRACE	ZERO	TRACE	ZERO	0.3139E-16	0.9627E-20
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	TRACE
63 Ca(COOH)2	0.2073E-22	ZERO	ZERO	ZERO	ZERO	0.3595E-20	0.1339E-13
167 Ca(NO3)2	0.1361E-20	ZERO	ZERO	ZERO	ZERO	0.2360E-18	0.8788E-12
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.1257E-20	ZERO	ZERO	ZERO	ZERO	0.2179E-18	0.8114E-12
20 CaC2O4	0.3372E-22	ZERO	ZERO	ZERO	ZERO	0.5848E-20	0.2178E-13
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.8616E-23	ZERO	ZERO	ZERO	ZERO	0.1494E-20	0.5563E-14
41 CaO	0.1636E-23	ZERO	ZERO	ZERO	ZERO	0.2837E-21	0.1056E-14
19 CaSO4	0.2862E-22	ZERO	ZERO	ZERO	ZERO	0.4962E-20	0.1848E-13
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.1087E-24	ZERO	ZERO	ZERO	ZERO	0.1885E-22	0.7017E-16
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	TRACE	ZERO	ZERO	ZERO	ZERO	0.4037E-23	0.1503E-16
98 Cr2O3	0.9131E-22	ZERO	ZERO	ZERO	ZERO	0.1583E-19	0.5896E-13
42 Cs2O	0.1306E-24	ZERO	ZERO	ZERO	ZERO	0.2264E-22	0.8430E-16
53 CsCOOH	0.1135E-21	ZERO	ZERO	ZERO	ZERO	0.1968E-19	0.7327E-13
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	0.2770E-24	ZERO	ZERO	ZERO	ZERO	0.4804E-22	0.1789E-15
8 CsOH	TRACE	ZERO	ZERO	ZERO	ZERO	0.5508E-24	0.2051E-17
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	145 Purified Hg from MVS	146 MVS Vent to Vacuum Pump	147 Hg Accum at Vacuum Pump	148 MVS Vacuum Pump Exhaust	149 SWT Air Purge	150 SWT Vent	151 SWT Hg Wash to DWT
54 Cu(COOH) ₂	0.2830E-23	ZERO	ZERO	ZERO	ZERO	0.4907E-21	0.1827E-14
170 Cu(NO ₃) ₂	0.9798E-21	ZERO	ZERO	ZERO	ZERO	0.1699E-18	0.6326E-12
55 CuO	0.1227E-22	ZERO	ZERO	ZERO	ZERO	0.2128E-20	0.7922E-14
80 Fe ₂ O ₃	0.1239E-19	ZERO	ZERO	ZERO	ZERO	0.2149E-17	0.8001E-11
101 FeO	TRACE	ZERO	ZERO	ZERO	ZERO	0.6410E-24	0.2387E-17
102 Group A	0.1148E-22	ZERO	ZERO	ZERO	ZERO	0.1991E-20	0.7413E-14
103 Group B	0.5614E-22	ZERO	ZERO	ZERO	ZERO	0.9735E-20	0.3625E-13
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	TRACE
158 H ₂ C ₂ O ₄	0.3948E-22	ZERO	ZERO	ZERO	ZERO	0.6846E-20	0.2549E-13
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	0.4292E-20	ZERO	ZERO	ZERO	ZERO	0.7443E-18	0.2771E-11
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	0.2499E-02	0.8147E-02
36 Hg	0.3005E+00	0.2887E-04	0.2887E-04	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	0.8679E-13	ZERO	ZERO	ZERO	ZERO	0.1939E-11	0.7221E-05
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	TRACE	ZERO	ZERO	ZERO	ZERO	0.5462E-24	0.2034E-17
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	0.5879E-22	ZERO	ZERO	ZERO	ZERO	0.1020E-19	0.3796E-13
51 KCOOH	0.5036E-20	ZERO	ZERO	ZERO	ZERO	0.8733E-18	0.3252E-11
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	0.1642E-22	ZERO	ZERO	ZERO	ZERO	0.2848E-20	0.1060E-13
10 KOH	TRACE	ZERO	ZERO	ZERO	ZERO	0.3286E-23	0.1223E-16
150 KTFB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	0.1717E-20	ZERO	ZERO	ZERO	ZERO	0.2978E-18	0.1109E-11
65 Mg(COOH) ₂	0.1696E-20	ZERO	ZERO	ZERO	ZERO	0.2941E-18	0.1095E-11
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.6397E-21	ZERO	ZERO	ZERO	ZERO	0.1109E-18	0.4131E-12
60 Mn(COOH) ₂	0.1227E-20	ZERO	ZERO	ZERO	ZERO	0.2129E-18	0.7925E-12
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	TRACE	ZERO	ZERO	ZERO	ZERO	0.8416E-24	0.3134E-17
14 MnO ₂	0.1058E-20	ZERO	ZERO	ZERO	ZERO	0.1834E-18	0.6830E-12
145 MoO ₂	0.8826E-24	ZERO	ZERO	ZERO	ZERO	0.1531E-21	0.5699E-15
81 N ₂	ZERO	0.4926E-11	ZERO	0.4926E-11	0.3607E+00	0.3607E+00	0.2921E-05
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	TRACE	ZERO	ZERO	ZERO	ZERO	0.1266E-14	0.5634E-16
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	0.8871E-16	ZERO	ZERO	ZERO	ZERO	0.1538E-13	0.5728E-07
68 NH ₄ OH	0.1544E-19	ZERO	ZERO	ZERO	ZERO	0.2704E-20	0.1007E-13
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	145 Purified Hg from MVS	146 MVS Vent to Vacuum Pump	147 Hg Accum at Vacuum Pump	148 MVS Vacuum Pump Exhst	149 SWT Air Purge	150 SWT Vent	151 SWT Hg Wash to DWT
84 NO2	ZERO	0.9351E-21	ZERO	0.9351E-21	ZERO	0.1073E-05	0.2574E-10
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	TRACE	ZERO	ZERO	ZERO	ZERO	0.3809E-23	0.1416E-16
109 Na2C2O4	0.1370E-23	ZERO	ZERO	ZERO	ZERO	0.2375E-21	0.8843E-15
5 Na2CO3	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE	TRACE
143 Na2CO3 (Cl4)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	0.2702E-20	ZERO	ZERO	ZERO	ZERO	0.4686E-18	0.1745E-11
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.2218E-21	ZERO	ZERO	ZERO	ZERO	0.3846E-19	0.1432E-12
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.5334E-23	ZERO	ZERO	ZERO	ZERO	0.9249E-21	0.3444E-14
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.2356E-20	ZERO	ZERO	ZERO	ZERO	0.4085E-18	0.1521E-11
7 NaCl	0.1774E-22	ZERO	ZERO	ZERO	ZERO	0.3075E-20	0.1145E-13
69 NaF	0.1748E-22	ZERO	ZERO	ZERO	ZERO	0.3032E-20	0.1129E-13
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	TRACE	ZERO	ZERO	ZERO	ZERO	0.8760E-24	0.3262E-17
3 NaNO2	0.1543E-23	ZERO	ZERO	ZERO	ZERO	0.2676E-21	0.9964E-15
2 NaNO3	0.8138E-20	ZERO	ZERO	ZERO	ZERO	0.1411E-17	0.5255E-11
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTfB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.2191E-22	ZERO	ZERO	ZERO	ZERO	0.3799E-20	0.1415E-13
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1516E-21	ZERO	ZERO	ZERO	ZERO	0.2630E-19	0.9791E-13
82 O2	ZERO	0.2892E-11	ZERO	0.2892E-11	0.1090E+00	0.1090E+00	0.1715E-05
175 Pb(NO3)2	TRACE	ZERO	ZERO	ZERO	ZERO	0.3817E-23	0.1421E-16
86 PbCO3	0.1491E-24	ZERO	ZERO	ZERO	ZERO	0.2586E-22	0.9627E-16
67 PbO	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE	0.4361E-20
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.5157E-22	ZERO	ZERO	ZERO	ZERO	0.8944E-20	0.3330E-13
124 Pd	0.5410E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	0.2068E-16	ZERO	ZERO	ZERO	ZERO	0.3142E-14	0.1170E-07
110 PdO	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE	0.6799E-24
76 PuO2	0.4461E-23	ZERO	ZERO	ZERO	ZERO	0.7737E-21	0.2881E-14
156 PuO2(NaTi2O5)2	0.1270E-24	ZERO	ZERO	ZERO	ZERO	0.2202E-22	0.8199E-16
58 Rh	0.1071E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	0.2481E-16	ZERO	ZERO	ZERO	ZERO	0.3770E-14	0.1404E-07
95 Ru	0.4251E-23	ZERO	ZERO	ZERO	ZERO	0.7372E-21	0.2745E-14
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 6. Mercury Purification Cell

STREAM NUMBERS (CONT'D) -> STREAM NAME	145 Purified Hg from MVS	146 MVS Vent to Vacuum Pump	147 Hg Accum at Vacuum Pump	148 MVS Vacuum Pump Exhaust	149 SWT Air Purge	150 SWT Vent	151 SWT Hg Wash to DWTT
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.1952E-19	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	0.9508E-24	ZERO	ZERO	ZERO	ZERO	0.3385E-17	0.1260E-10
176 Sr(NO3)2	0.1461E-22	ZERO	ZERO	ZERO	ZERO	0.1649E-21	0.6139E-15
153 Sr(NaTi2O5)2	TRACE	ZERO	ZERO	ZERO	ZERO	0.2533E-20	0.9431E-14
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.6194E-23	0.2306E-16
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TeO2	0.1511E-23	ZERO	ZERO	ZERO	ZERO	TRACE	0.1651E-19
92 ThO2	0.7025E-22	ZERO	ZERO	ZERO	ZERO	0.2620E-21	0.9756E-15
107 TiO2	0.4057E-21	ZERO	ZERO	ZERO	ZERO	0.1218E-19	0.4536E-13
119 Tritium	TRACE	ZERO	ZERO	ZERO	ZERO	0.7035E-19	0.2619E-12
17 U3O8	0.1215E-20	ZERO	ZERO	ZERO	ZERO	0.6292E-17	0.6155E-16
62 UO2(COOH)2	TRACE	ZERO	ZERO	ZERO	ZERO	0.2108E-18	0.7848E-12
177 UO2(NO3)2	TRACE	ZERO	ZERO	ZERO	ZERO	TRACE	0.2719E-19
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.8691E-23	0.3236E-16
27 Y(COOH)3	0.3821E-24	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	0.5240E-23	ZERO	ZERO	ZERO	ZERO	0.6626E-22	0.2467E-15
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	0.9087E-21	0.3383E-14
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	0.1162E-23	ZERO	ZERO	ZERO	ZERO	0.1265E-23	0.4709E-17
44 Zn(COOH)2	0.3187E-22	ZERO	ZERO	ZERO	ZERO	0.2016E-21	0.7506E-15
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	0.5527E-20	0.2058E-13
57 ZnO	0.3767E-22	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	0.6533E-20	0.2433E-13
13 hydrate H2O	0.3306E-20	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	ZERO	ZERO	ZERO	ZERO	ZERO	0.5732E-18	0.2134E-11
TOTAL FLOW, LB/HR	0.3005E+00	0.2887E-04	0.2887E-04	0.7818E-11	0.7891E-02	0.2050E-01	0.2049E+00
TEMPERATURE, DEG C	-0.3000E+02	-0.3000E+02	-0.3000E+02	-0.3000E+02	0.3500E+02	0.3800E+02	0.3800E+02
PRESSURE, ATM	0.1000E+01	0.6579E-04	0.9950E+00	0.9950E+00	0.1000E+01	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	-0.1470E+02	-0.7348E-01	-0.7348E-01	ZERO	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG		0.5000E-01	0.7562E+03	0.7562E+03		0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	-0.2971E+00	0.2076E-02	ZERO	-0.1460E-10	0.1002E+02	0.1838E+02	0.7891E+01
VAPOR FLOW, CFM		0.1165E-01		0.1425E-11	0.1128E+00	0.1232E+00	
LIQUID FLOW, GPM	0.4430E-04						
DENSITY, LBS/FT3	0.8457E+03	0.4131E-04	ZERO	0.9147E-01	0.7055E-01	0.6666E-01	0.4201E-03
PHASE	LIQUID	VAPOR	N/A	VAPOR	VAPOR	VAPOR	LIQUID

SECTION 7. COLLECTION AND TREATMENT OF WASTE STREAMS

WSRC-TR-93-527 (Revision 0)

Date: September 1993

Section 7, Page 0 of 21

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

DESCRIPTION	PAGE
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1. STREAM NUMBERS 151, 160, 161, 162, 163, 164, 165	2
2. STREAM NUMBERS 166, 167, 43, 100, 120, 170, 171	6
3. STREAM NUMBERS 173, 174, 175, 196, 199, 172, 48	10
4. STREAM NUMBERS 176, 168, 105, 152, 153, 177, 186	14
5. STREAM NUMBERS 339, 348, 340, 338, 354	18

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS -> STREAM NAME	151 SWT Hg Wash to DWTT	160 Warm Decon Hdr to DWTT	161 Hot Decon Hdr to DWTT	162 DWT Sample Pump Prime	163 DWT Transfer Pump Prime	164 DWT Air Inleakage	165 50 Wt% NaOH to DWTT
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.1639E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	0.2489E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	0.4007E-09	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.1644E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	0.2849E-08	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	0.6130E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	0.8951E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	0.2015E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.6678E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	0.4712E-07	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.2142E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CHOH	0.3210E-17	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	0.1179E-18	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 Ag2O	0.9188E-23	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	0.1225E-06	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.3466E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
106 B2O3	0.1267E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.1743E-19	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.8004E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.9627E-20	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	0.1339E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	0.8788E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.8114E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC2O4	0.2178E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.5563E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	0.1056E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	0.1848E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.7017E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1503E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	0.5896E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
42 Cs2O	0.8430E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	0.7327E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	0.1789E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.2051E-17	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	151 SWT Hg Wash to DWT	160 Warm Decon Hdr to DWT	161 Hot Decon Hdr to DWT	162 DWT Sample Pump Prime	163 DWT Transfer Pump Prime	164 DWT Air Inleakage	165 50 Wt% NaOH to DWT
54 Cu(COOH)2	0.1827E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	0.6326E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.7922E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	0.8001E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
101 FeO	0.2387E-17	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.7413E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
103 Group B	0.3625E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
25 H2	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	0.2549E-13	ZERO	0.5752E+01	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.2771E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	0.8147E-02	ZERO	0.4931E+01	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	0.7221E-05	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.2034E-17	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2C	0.3796E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	0.3252E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	0.3082E+00	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.1060E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	0.1223E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.1109E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	0.1095E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4131E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	0.7925E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.3134E-17	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	0.6830E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	0.5699E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	0.2921E-05	ZERO	ZERO	ZERO	ZERO	0.5484E+02	ZERO
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	0.5634E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	0.5728E-07	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.1007E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	151 SWT Hg Wash to DWT	160 Warm Decon Hdr to DWT	161 Hot Decon Hdr to DWT	162 DWT Sample Pump Prime	163 DWT Trnsfer Pump Prime	164 DWT Air Inleakage	165 50 Wt% NaOH to DWT
84 NO ₂	0.2574E-10	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	0.1418E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	0.8843E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	TRACE	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.1745E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.1432E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.3444E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.1521E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1145E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
69 NaF	0.1129E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.3262E-17	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
3 NaNO ₂	0.9964E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	0.5255E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.8251E+01
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.1415E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.9791E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
82 O ₂	0.1715E-05	ZERO	ZERO	ZERO	ZERO	0.1656E+02	ZERO
175 Pb(NO ₃) ₂	0.1421E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	0.9627E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.4361E-20	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.3330E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	0.1170E-07	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.6799E-24	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.2881E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.8199E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	0.1404E-07	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	0.2745E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	151 SWT Hg Wash to DWTT	160 Warm Decon Hdr to DWTT	161 Hot Decon Hdr to DWTT	162 DWT Sample Pump Prime	163 DWT Transfer Pump Prime	164 DWT Air Inleakage	165 50 Wt% NaOH to DWTT
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.1260E-10	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	0.6139E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	0.9431E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	0.2306E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.1651E-19	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.9756E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	0.4536E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	0.2619E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	0.6156E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
17 U3O8	0.7848E-12	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	0.2719E-19	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	0.3236E-16	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.2467E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	0.3383E-14	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.4709E-17	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	0.7506E-15	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	0.2058E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.2433E-13	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.2134E-11	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	0.2049E+00	0.2840E+01	0.3200E+03	0.1670E+01	0.8400E+00	0.1200E+01	0.8251E+01
TOTAL FLOW, LB/HR	0.2131E+00	0.2840E+01	0.3310E+03	0.1670E+01	0.8400E+00	0.7260E+02	0.1650E+02
TEMPERATURE, DEG C	0.3800E+02	0.3500E+02	0.3500E+02	0.2500E+02	0.2500E+02	0.3500E+02	0.2500E+02
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG	0.7339E+03						
ENTHALPY, PCU/HR	0.7891E+01	0.9964E+02	0.1133E+05	0.4190E+02	0.2108E+02	0.1523E+04	0.2740E+03
VAPOR FLOW, CFM						0.1715E+02	
LIQUID FLOW, GPM	0.4201E-03	0.5672E-02	0.6528E+00	0.3335E-02	0.1678E-02		0.2158E-01
DENSITY, LBS/FT3	0.6324E+02	0.6243E+02	0.6322E+02	0.6243E+02	0.6243E+02	0.7055E-01	0.9533E+02
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	VAPOR	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS -> STREAM NAME	166 DWTG Vent to PVVS	167 DWTG Liquid to RCT	43 SMECT Liq to RCT	100 OGCT Liquid to RCT	120 Backup OGCT Liq to RCT	170 RCT Sample Pump Prime	171 RCT Transfer Pump Prime
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.3423E-14	0.1636E-11	0.9945E-04	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	0.5491E-19	0.2489E-12	0.2918E-05	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	0.8841E-16	0.4007E-09	0.4773E-02	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.1925E-19	0.1644E-13	0.1928E-06	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	0.2190E-12	0.2848E-08	0.4637E-01	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	0.4578E-19	0.6130E-13	0.7188E-06	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	0.1107E-16	0.7844E-16	0.1172E-07	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	0.7939E-19	0.2015E-14	0.2384E-07	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.9755E-14	0.4712E-07	0.7829E-09	0.4763E-15	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	0.6659E+00	0.2546E-02	ZERO	ZERO	ZERO
121 (C6H6)	0.3328E-15	0.2109E-13	0.6257E-03	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CF3H	0.2271E-19	0.3187E-17	0.1059E-09	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	0.2396E-20	0.1155E-18	0.9408E-11	ZERO	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	0.1740E-13	0.8407E-07	0.1077E-15	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.7174E-18	0.3466E-11	0.4063E-04	0.1028E+00	ZERO	ZERO	ZERO
106 B2O3	0.2623E-18	0.1267E-11	0.1486E-04	0.1748E+00	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	TRACE	0.1743E-19	0.2043E-12	0.1558E-03	ZERO	ZERO	ZERO
24 BaSO4	0.1657E-19	0.8004E-13	0.9384E-06	0.2135E-02	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.4269E+00	0.2164E-02	0.2537E-02	0.4376E-02	ZERO	ZERO	ZERO
142 CO2 (C14)	TRACE	TRACE	0.1314E-12	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	0.1570E-06	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	0.1819E-18	0.8788E-12	0.1030E-04	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.1680E-18	0.8114E-12	0.9513E-05	0.2406E-01	ZERO	ZERO	ZERO
20 CaC2O4	0.4508E-20	0.2178E-13	0.2553E-06	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.1152E-20	0.5563E-14	0.6522E-07	ZERO	ZERO	ZERO	ZERO
41 CaO	0.1413E-20	0.6826E-14	0.1238E-07	0.9532E-02	ZERO	ZERO	ZERO
19 CaSO4	0.3825E-20	0.1848E-13	0.2166E-06	0.4930E-03	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	0.8227E-09	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1042E-22	0.5033E-16	0.1762E-09	0.1491E-05	ZERO	ZERO	ZERO
98 Cr2O3	0.1221E-19	0.5896E-13	0.6912E-06	0.1757E-02	ZERO	ZERO	ZERO
42 Cs2O	0.1745E-22	0.8430E-16	0.9884E-09	0.1553E-02	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	0.8590E-06	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	0.2060E-01	ZERO	ZERO	ZERO
169 CsNO3	0.3703E-22	0.1789E-15	0.2097E-08	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.1278E-19	0.6174E-13	0.2405E-10	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	166 DWTC Vent to PVVS	167 DWT Liquid to RCT	43 SMECT Lig to RCT	100 OGCT Liquid to RCT	120 Backup OGCT Liq to RCT	170 RCT Sample Pump Prime	171 RCT Transfer Pump Prime
54 Cu(COOH) ₂	ZERO	ZERO	0.2142E-07	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	0.1310E-18	0.6326E-12	0.7417E-05	ZERO	ZERO	ZERO	ZERO
55 CuO	0.1836E-20	0.8869E-14	0.9288E-07	0.8219E-02	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	0.1656E-17	0.8001E-11	0.9380E-04	0.2135E+00	ZERO	ZERO	ZERO
101 FeO	0.4941E-24	0.2387E-17	0.2798E-10	0.2135E-01	ZERO	ZERO	ZERO
102 Group A	0.1535E-20	0.7413E-14	0.8691E-07	0.1307E-02	ZERO	ZERO	ZERO
103 Group B	0.7504E-20	0.3625E-13	0.4250E-06	0.1075E-02	ZERO	ZERO	ZERO
25 H ₂	TRACE	TRACE	0.1748E-09	ZERO	ZERO	ZERO	ZERO
158 H ₂ C ₂ O ₄	ZERO	ZERO	0.2989E-06	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	0.7647E-01	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	0.3249E-04	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	0.2595E-15	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	0.5674E-03	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	0.3445E+01	0.3102E+00	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	0.1994E+00	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	0.3964E-01	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	0.2091E-06	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	0.1972E-08	ZERO	ZERO	ZERO
21 HgO	0.9977E-12	0.4819E-05	0.2385E-10	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	0.7859E-20	0.3796E-13	0.4451E-06	0.5522E-01	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	0.3812E-04	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	0.2195E-20	0.1060E-13	0.1243E-06	ZERO	ZERO	ZERO	ZERO
10 KOH	0.2265E-07	0.1094E+00	0.1434E-09	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	0.2295E-18	0.1109E-11	0.1300E-04	0.1133E+00	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	0.1284E-04	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.1655E-18	0.7992E-12	0.4843E-05	0.4667E-01	ZERO	ZERO	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	0.9292E-05	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.8027E-19	0.3877E-12	0.3670E-10	0.2802E-01	ZERO	ZERO	ZERO
14 MnO ₂	0.3509E-07	0.1695E+00	0.8008E-05	ZERO	ZERO	ZERO	ZERO
145 MoO ₂	0.1180E-21	0.5699E-15	0.6681E-08	0.1690E-04	ZERO	ZERO	ZERO
81 N ₂	0.5483E+02	0.5741E-02	0.1255E-01	0.1701E-01	0.1359E-03	ZERO	ZERO
74 N ₂ O	ZERO	ZERO	0.1682E-24	ZERO	ZERO	ZERO	ZERO
182 NH ₃	0.3157E-16	0.2477E-16	0.7859E-05	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	0.1186E-13	0.5728E-07	0.6715E+00	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	0.2085E-20	0.1007E-13	0.1573E-18	0.8915E-01	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	0.2830E-07	0.4732E-04	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	166 DWTC Vent to PVVS	167 DWTT Liquid to RCT	43 SMECT Liq to RCT	100 OGCT Liquid to RCT	120 Backup OGCT Liq to RCT	170 RCT Sample Pump Prime	171 RCT Transfer Pump Prime
84 NO ₂	0.2573E-10	0.8151E-14	0.4883E-03	0.8961E-04	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	0.4669E-18	0.2255E-11	0.1663E-09	0.1268E+00	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	0.1637E-05	0.7909E+01	0.1037E-07	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	TRACE	0.2668E-20	0.3681E-22	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.3612E-18	0.1745E-11	0.2046E-04	0.2046E+00	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.2965E-19	0.1432E-12	0.1679E-05	ZERO	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.7130E-21	0.3444E-14	0.4038E-07	0.1021E-03	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.1298E-17	0.6272E-11	0.1783E-04	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.2371E-20	0.1145E-13	0.1343E-06	0.1697E-03	ZERO	ZERO	ZERO
69 NaF	0.2337E-20	0.1129E-13	0.1323E-06	0.1300E-01	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.6753E-24	0.3262E-17	0.3824E-10	0.9562E-05	ZERO	ZERO	ZERO
3 NaNO ₂	0.2063E-21	0.9964E-15	0.1168E-07	0.8169E-02	ZERO	ZERO	ZERO
2 NaNO ₃	0.1379E-05	0.6663E+01	0.6161E-04	0.5067E-02	ZERO	ZERO	ZERO
4 NaOH	0.8177E-07	0.3950E+00	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	0.1658E-06	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2174E-19	0.1050E-12	0.1148E-05	0.3149E-02	ZERO	ZERO	ZERO
82 O ₂	0.1653E+02	0.3447E-02	0.7239E-02	0.9859E-02	0.7959E-04	ZERO	ZERO
175 Pb(NO ₃) ₂	0.2942E-23	0.1421E-16	0.1666E-09	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	0.1993E-22	0.9627E-16	0.1129E-08	ZERO	ZERO	ZERO	ZERO
67 PbO	TRACE	0.4361E-20	0.5113E-13	0.3900E-04	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.6894E-20	0.3330E-13	0.3904E-06	0.9380E-03	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.1288E-14	0.6222E-08	0.7971E-17	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.5964E-21	0.2881E-14	0.3377E-07	0.8641E-04	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.1697E-22	0.8199E-16	0.9613E-09	ZERO	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	0.2906E-14	0.1404E-07	0.1802E-16	ZERO	ZERO	ZERO	ZERO
95 Ru	0.5683E-21	0.2745E-14	0.3218E-07	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	166 DWTC Vent to PVVS	167 DWT Liquid to RCT	43 SMECT Lig to RCT	100 OGCT Liquid to RCT	120 Backup OGCT Liq to RCT	170 RCT Sample Pump Prime	171 RCT Transfer Pump Prime
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.2609E-17	0.1260E-10	0.1478E-03	0.1258E+01	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	0.7197E-08	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	0.1952E-20	0.9431E-14	0.1106E-06	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	0.4775E-23	0.2306E-16	0.2704E-09	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.7414E-22	0.3581E-15	0.1936E-12	0.1477E-03	ZERO	ZERO	ZERO
159 TcO2	0.2020E-21	0.9756E-15	0.1144E-07	0.2892E-04	ZERO	ZERO	ZERO
92 ThO2	0.9390E-20	0.4536E-13	0.5318E-06	0.1345E-02	ZERO	ZERO	ZERO
107 TiO2	0.5423E-19	0.2619E-12	0.3071E-05	0.7763E-02	ZERO	ZERO	ZERO
119 Tritium	0.2375E-18	0.6132E-16	0.1345E-08	0.2831E-09	ZERO	ZERO	ZERO
17 U3O8	0.1625E-18	0.7848E-12	0.9201E-05	0.2327E-01	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	0.3187E-12	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	0.6699E-23	0.3236E-16	0.3794E-09	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	0.2892E-08	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	0.7004E-21	0.3383E-14	0.3967E-07	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.2672E-22	0.1291E-15	0.5521E-10	0.4502E-04	ZERO	ZERO	ZERO
100 Zeolite	0.1554E-21	0.7506E-15	0.8800E-08	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	0.2413E-06	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.7267E-20	0.3510E-13	0.2852E-06	0.1041E-02	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1547E-14	0.7453E-08	0.2502E-04	ZERO	ZERO	ZERO	ZERO
1 water	0.1220E+01	0.3374E+03	0.1080E+04	0.1379E+04	0.9646E+01	0.4180E+01	0.2090E+01
TOTAL FLOW, LB/HR	0.7301E+02	0.3527E+03	0.1085E+04	0.1382E+04	0.9646E+01	0.4180E+01	0.2090E+01
TEMPERATURE, DEG C	0.2250E+02	0.2250E+02	0.4900E+02	0.4000E+02	0.4000E+02	0.2500E+02	0.2500E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.1000E+01	0.9650E+00	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	ZERO	-0.5144E+00	ZERO	ZERO	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03	0.7334E+03	0.7334E+03	0.7334E+03	0.7334E+03
ENTHALPY, PCU/HR	0.1348E+04	0.7701E+04	0.5307E+05	0.5528E+05	0.3866E+03	0.1049E+03	0.5244E+02
VAPOR FLOW, CFM	0.1710E+02						
LIQUID FLOW, GPM		0.6860E+00	0.2164E+01	0.2756E+01	0.1926E-01	0.8348E-02	0.4174E-02
DENSITY, LBS/FT3	0.7114E-01	0.6410E+02	0.6251E+02	0.6251E+02	0.6243E+02	0.6243E+02	0.6243E+02
PHASE	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS -> STREAM NAME	173 40 wt% NaNO ₂ to RCT	174 50 wt% NaOH to RCT	175 Formic Acid Hdr to RCT	196 Sand Filter Inlet Sump	199 Sand Filter Exit Sump	172 RCT Air Inleakage	48 MFT Vent to Scrubber
COMPONENT FLOWS, LB/HR							
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1008E-17
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3144E-08
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2359E-09
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.9265E-09
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1412E-04
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3454E-08
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5645E-10
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1145E-09
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2855E-22
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1965E-02
121 (C ₆ H ₆)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.7941E-23
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1882E-12
154 (CH ₃ OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6850E-14
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2379E-09
116 Ag ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1954E-06
106 B ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2462E-06
9 Ba(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE
24 BaSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4511E-08
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1362E-15
142 CO ₂ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE
63 Ca(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.7545E-09
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4955E-07
120 Ca(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4576E-07
20 CaC ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1227E-08
18 CaCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3137E-09
41 CaO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5951E-10
19 CaSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1042E-08
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3954E-11
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.8470E-12
98 Cr ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3342E-08
42 Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4743E-11
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4129E-08
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1009E-10
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) ->	173	174	175	196	199	172	48
STREAM NAME	40 wt% NaNO ₂ to RCT	50 wt% NaOH to RCT	Formic Acid Hdr to RCT	Sand Filter Inlet Sump	Sand Filter Exit Sump	RCT Air Inleakage	MFT Vent to Scrubber
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1030E-09
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3567E-07
55 CuO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4467E-09
80 Fe ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4512E-06
101 FeO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1028E-23
102 Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4180E-09
103 Group B	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2044E-08
25 H ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5075E-22
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1438E-08
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1562E-06
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1787E-24
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.9784E-02
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ C ₁₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2140E-08
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1832E-06
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5980E-09
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2154E-06
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6175E-07
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6698E-07
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4469E-07
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1350E-23
14 MnO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3851E-07
145 MoO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3214E-16
81 N ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.5484E+02	0.5483E+02
74 N ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4634E-10
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1695E-08
148 NE ₄ TP ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) ->	173	174	175	196	199	172	48
STREAM NAME	40 wt% NaNO ₂ to RCT	50 wt% NaOH to RCT	Formic Acid Hdr to RCT	Sand Filter Inlet Sump	Sand Filter Exit Sump	RCT Air Inleakage	MFT Vent to Scrubber
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2116E-06
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.8074E-08
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1942E-09
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1241E-06
7 NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6456E-09
69 NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.6365E-02
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1839E-12
3 NaNO ₂	0.8904E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2964E-06
4 NaOH	ZERO	0.7309E+02	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.7975E-09
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5589E-08
82 O ₂	ZERO	ZERO	ZERO	ZERO	ZERO	0.1656E+02	0.1656E+02
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.8015E-12
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5425E-11
67 PbO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1878E-08
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1641E-10
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1624E-09
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4621E-11
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3333E-10
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1548E-09
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) ->	173	174	175	196	199	172	48
STREAM NAME	40 wt% NaNO ₂ to RCT	50 wt% NaOH to RCT	Formic Acid Hdr to RCT	Sand Filter Inlet Sump	Sand Filter Exit Sump	RCT Air Inleakage	MFT Vent to Scrubber
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2393E-05
48 Sr(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.3460E-10
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5318E-09
153 Sr(NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1300E-11
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	TRACE
159 TeO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5501E-10
92 ThO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2558E-08
107 TiO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1476E-07
119 Tritium	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.5397E-11
17 U ₃ O ₈	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4425E-07
62 UO ₂ (COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1532E-14
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1825E-11
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1390E-10
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1908E-09
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.2651E-12
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.4230E-10
44 Zn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1160E-08
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1372E-08
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	0.1204E-06
1 water	0.1336E+02	0.7309E+02	0.2600E+02	0.4750E+00	0.4750E+00	0.1200E+01	0.6313E+01
TOTAL FLOW, LB/HR	0.2226E+02	0.1462E+03	0.2600E+02	0.4750E+00	0.4750E+00	0.7260E+02	0.7772E+02
TEMPERATURE, DEG C	0.2500E+02	0.2500E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.3500E+02	0.5000E+02
PRESSURE, ATM	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01	0.9656E+00
PRESSURE, PSIG	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	-0.5055E+00
PRESSURE, MM HG							0.7339E+03
ENTHALPY, PCU/HR	0.3866E+03	0.2427E+04	0.9122E+03	0.1667E+02	0.1667E+02	0.1523E+04	0.4931E+04
VAPOR FLOW, CFM						0.1715E+02	0.2070E+02
LIQUID FLOW, GPM	0.3258E-01	0.1912E+00	0.5192E-01	0.9486E-03	0.9486E-03		
DENSITY, LBS/FT ³	0.8519E+02	0.9533E+02	0.6243E+02	0.6243E+02	0.6243E+02	0.7055E-01	0.6256E-01
PHASE	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS -> STREAM NAME	176 RCT Vent to Scrubber	168 MFT/RCT Vent to Scrubber	105 MFT Scrubber Vent to FAVC	152 Liquid to MFT Scrubber	153 Spnt Liq frm MFT Scrubber	177 Neutr Waste to Tank Farm	186 Air Purge to Recyc Hld Tk
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.9839E-04	0.9759E-04	0.9759E-04	0.9932E-04	0.9926E-04	0.1060E-05	ZERO
123 (C6H5)2C6H4	0.1837E-13	0.3144E-08	0.3144E-08	0.2914E-05	0.2905E-05	0.2918E-05	ZERO
118 (C6H5)2NH	0.3189E-04	0.3074E-04	0.3074E-04	0.4767E-02	0.4751E-02	0.4741E-02	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	0.5600E-15	0.9265E-09	0.9265E-09	0.1926E-06	0.1920E-06	0.1928E-06	ZERO
162 (C6H5NH2)	0.4483E-03	0.4461E-03	0.4461E-03	0.4631E-01	0.4616E-01	0.4592E-01	ZERO
163 (C6H5NHCHO)	0.2088E-14	0.3454E-08	0.3454E-08	0.7179E-06	0.7157E-06	0.7188E-06	ZERO
165 (C6H5NO)	0.3403E-16	0.5645E-10	0.5645E-10	0.1170E-07	0.1167E-07	0.1172E-07	ZERO
164 (C6H5NO2)	0.6923E-16	0.1145E-09	0.1145E-09	0.2381E-07	0.2374E-07	0.2384E-07	ZERO
131 (C6H5OH salt)	0.1941E-08	0.1873E-08	0.1873E-08	0.7818E-09	0.7685E-09	0.6684E+00	ZERO
130 (C6H5OH)	ZERO	0.1965E-02	0.1965E-02	0.6650E+00	0.6628E+00	ZERO	ZERO
121 (C6H6)	0.5814E-03	0.5794E-03	0.5794E-03	0.6248E-03	0.6248E-03	0.4428E-04	ZERO
155 (CH3)2CHOH	0.4495E-12	0.6220E-12	0.6220E-12	0.1058E-09	0.1055E-09	0.1055E-09	ZERO
154 (CH3OH)	0.9195E-13	0.9550E-13	0.9550E-13	0.9395E-11	0.9365E-11	0.9316E-11	ZERO
45 Ag	ZERO	0.2379E-09	0.2379E-09	0.1676E-07	0.1670E-07	ZERO	ZERO
116 Ag2O	0.2441E-15	0.2423E-15	0.2423E-15	0.1076E-15	0.1064E-15	0.8407E-07	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.2985E-09	0.1957E-06	0.1957E-06	0.4058E-04	0.4045E-04	0.1028E+00	ZERO
106 B2O3	0.5077E-09	0.2467E-06	0.2467E-06	0.1484E-04	0.1479E-04	0.1748E+00	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.4526E-12	0.4526E-12	0.4526E-12	0.2040E-12	0.2021E-12	0.1558E-03	ZERO
24 BaSO4	0.6202E-11	0.4517E-08	0.4517E-08	0.9372E-06	0.9343E-06	0.2136E-02	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.8898E-02	0.8892E-02	0.8892E-02	0.2534E-02	0.2534E-02	0.1795E-03	ZERO
142 CO2 (C14)	0.1288E-12	0.1285E-12	0.1285E-12	0.1312E-12	0.1312E-12	0.2599E-14	ZERO
63 Ca(COOH)2	ZERO	0.7545E-09	0.7545E-09	0.1567E-06	0.1563E-06	ZERO	ZERO
167 Ca(NO3)2	0.2992E-13	0.4955E-07	0.4955E-07	0.1029E-04	0.1026E-04	0.1030E-04	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.6990E-10	0.4583E-07	0.4583E-07	0.9501E-05	0.9471E-05	0.2407E-01	ZERO
20 CaC2O4	0.7414E-15	0.1227E-08	0.1227E-08	0.2550E-06	0.2542E-06	0.2553E-06	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.1894E-15	0.3137E-09	0.3137E-09	0.6514E-07	0.6493E-07	0.6522E-07	ZERO
41 CaO	0.2768E-10	0.8719E-10	0.8719E-10	0.1237E-07	0.1233E-07	0.9532E-02	ZERO
19 CaSO4	0.1432E-11	0.1043E-08	0.1043E-08	0.2163E-06	0.2157E-06	0.4933E-03	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	0.3954E-11	0.3954E-11	0.8216E-09	0.8190E-09	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.4332E-14	0.8514E-12	0.8514E-12	0.1760E-09	0.1754E-09	0.1492E-05	ZERO
98 Cr2O3	0.5105E-11	0.3347E-08	0.3347E-08	0.6903E-06	0.6881E-06	0.1758E-02	ZERO
42 Cs2O	0.4510E-11	0.9253E-11	0.9253E-11	0.9871E-09	0.9839E-09	0.1553E-02	ZERO
53 CsCOOH	ZERO	0.4129E-08	0.4129E-08	0.8579E-06	0.8552E-06	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	0.6090E-17	0.1009E-10	0.1009E-10	0.2094E-08	0.2088E-08	0.2097E-08	ZERO
8 CsOH	0.5327E-10	0.5327E-10	0.5327E-10	0.2401E-10	0.2379E-10	0.1834E-01	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	176 RCT Vent to Scrubber	168 MFT/RCT Vent to Scrubber	105 MFT Scrubber Vent to FAVC	152 Liquid to MFT Scrubber	153 Spnt Liq frm MFT Scrubber	177 Neutr Waste to Tank Farm	186 Air Purge to Recyc Hld Tk
54 Cu(COOH)2	ZERO	0.1030E-09	0.1030E-09	0.2139E-07	0.2133E-07	ZERO	ZERO
170 Cu(NO3)2	0.2154E-13	0.3567E-07	0.3567E-07	0.7407E-05	0.7384E-05	0.7417E-05	ZERO
55 CuO	0.2387E-10	0.4705E-09	0.4705E-09	0.9276E-07	0.9246E-07	0.8219E-02	ZERO
80 Fe2O3	0.6203E-09	0.4518E-06	0.4518E-06	0.9368E-04	0.9338E-04	0.2136E+00	ZERO
101 FeO	0.6199E-10	0.6199E-10	0.6199E-10	0.2795E-10	0.2769E-10	0.2135E-01	ZERO
102 Group A	0.3795E-11	0.4218E-09	0.4218E-09	0.8680E-07	0.8652E-07	0.1307E-02	ZERO
103 Group B	0.3123E-11	0.2047E-08	0.2047E-08	0.4244E-06	0.4231E-06	0.1075E-02	ZERO
25 H2	0.1746E-09	0.1742E-09	0.1742E-09	0.1745E-09	0.1745E-09	0.1443E-12	ZERO
158 H2C2O4	ZERO	0.1438E-08	0.1438E-08	0.2985E-06	0.2975E-06	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	0.1562E-06	0.1562E-06	0.3245E-04	0.3235E-04	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	0.2593E-15	0.2593E-15	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	0.1787E-24	0.1787E-24	0.3441E+01	0.3422E+01	ZERO	ZERO
36 Hg	0.3965E-01	0.5533E-01	0.5533E-01	0.3002E+00	0.2995E+00	0.1766E+00	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.5283E-10	0.5283E-10	0.5283E-10	0.2381E-10	0.2359E-10	0.1819E-01	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.1604E-09	0.2301E-08	0.2301E-08	0.4445E-06	0.4431E-06	0.5522E-01	ZERO
51 KCOOH	ZERO	0.1832E-06	0.1832E-06	0.3807E-04	0.3796E-04	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	0.5980E-09	0.5980E-09	0.1242E-06	0.1238E-06	ZERO	ZERO
10 KOH	0.3178E-09	0.3178E-09	0.3178E-09	0.1432E-09	0.1419E-09	0.1094E+00	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.3290E-09	0.2158E-06	0.2158E-06	0.1298E-04	0.1294E-04	0.1133E+00	ZERO
65 Mg(COOH)2	ZERO	0.6175E-07	0.6175E-07	0.1282E-04	0.1278E-04	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.1356E-09	0.6712E-07	0.6712E-07	0.4836E-05	0.4821E-05	0.4668E-01	ZERO
60 Mn(COOH)2	ZERO	0.4469E-07	0.4469E-07	0.9279E-05	0.9250E-05	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.8139E-10	0.8139E-10	0.8139E-10	0.3669E-10	0.3635E-10	0.2803E-01	ZERO
14 MnO2	0.4923E-09	0.3901E-07	0.3901E-07	0.7997E-05	0.7972E-05	0.1695E+00	ZERO
145 MoO2	0.4909E-13	0.3218E-10	0.3218E-10	0.6672E-08	0.6651E-08	0.1690E-04	ZERO
81 N2	0.5484E+02	0.1097E+03	0.1097E+03	0.1253E-01	0.1253E-01	0.3477E-01	0.1082E+04
74 N2O	0.1661E-24	0.1656E-24	0.1656E-24	0.1679E-24	0.1679E-24	TRACE	ZERO
182 NH3	0.6293E-02	0.6110E-02	0.9623E-03	0.7849E-05	ZERO	0.1799E+00	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	0.4634E-10	0.4634E-10	0.6706E+00	0.6925E+00	ZERO	ZERO
68 NH4OH	ZERO	0.1695E-08	0.1695E-08	0.1571E-18	0.1575E-18	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.4726E-04	0.4725E-04	0.4725E-04	0.2826E-07	0.2826E-07	0.8750E-07	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	176 RCT Vent to Scrubber	168 MFT/RCT Vent to Scrubber	105 MFT Scrubber Vent to FAVC	152 Liquid to MFT Scrubber	153 Spnt Liq frm MFT Scrubber	177 Neutr Waste to Tank Farm	186 Air Purge to Recyc Hld Tk
84 NO2	0.5768E-03	0.5760E-03	0.5760E-03	0.4876E-03	0.4876E-03	0.1068E-05	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.3684E-09	0.3684E-09	0.3684E-09	0.1661E-09	0.1645E-09	0.1268E+00	ZERO
109 Na2C2O4	0.2297E-07	0.2297E-07	0.2297E-07	0.1035E-07	0.1026E-07	0.7909E+01	ZERO
5 Na2CO3	0.9084E-22	0.8776E-22	0.8776E-22	0.3676E-22	0.3615E-22	0.3128E-13	ZERO
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	0.5942E-09	0.2122E-06	0.2122E-06	0.2043E-04	0.2036E-04	0.2046E+00	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.3216E-09	0.8396E-08	0.396E-08	0.1677E-05	0.1671E-05	0.1108E+00	ZERO
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.2967E-12	0.1945E-09	0.1945E-09	0.4032E-07	0.4020E-07	0.1022E-03	ZERO
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.2135E-12	0.1241E-06	0.1241E-06	0.1781E-04	0.1775E-04	0.7353E-04	ZERO
7 NaCl	0.4976E-10	0.6953E-09	0.6953E-09	0.1341E-06	0.1337E-06	0.1714E-01	ZERO
69 NaF	0.4122E-10	0.6777E-09	0.6777E-09	0.1322E-06	0.1317E-06	0.1420E-01	ZERO
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2805E-13	0.2119E-12	0.2119E-12	0.3819E-10	0.3807E-10	0.9658E-05	ZERO
3 NaNO2	0.2588E-07	0.2588E-07	0.2588E-07	0.1167E-07	0.1156E-07	0.8913E+01	ZERO
2 NaNO3	0.3615E-07	0.3324E-06	0.3324E-06	0.6152E-04	0.6133E-04	0.1245E+02	ZERO
4 NaOH	0.2053E-06	0.2053E-06	0.2053E-06	ZERO	ZERO	0.7069E+02	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	0.7975E-09	0.7975E-09	0.1656E-06	0.1651E-06	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.9150E-11	0.5598E-08	0.5598E-08	0.1146E-05	0.1143E-05	0.3151E-02	ZERO
82 O2	0.1657E+02	0.3313E+02	0.3313E+02	0.7230E-02	0.7230E-02	0.2006E-01	0.3269E+03
175 Pb(NO3)2	0.4839E-18	0.8015E-12	0.8015E-12	0.1664E-09	0.1659E-09	0.1666E-09	ZERO
86 PbCO3	0.3278E-17	0.5425E-11	0.5425E-11	0.1127E-08	0.1124E-08	0.1129E-08	ZERO
67 PbO	0.1133E-12	0.1133E-12	0.1133E-12	0.5106E-13	0.5058E-13	0.3900E-04	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.2725E-11	0.1881E-08	0.1881E-08	0.3899E-06	0.3887E-06	0.9384E-03	ZERO
124 Pd	ZERO	0.1641E-10	0.1641E-10	0.1168E-08	0.1164E-08	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.1807E-16	0.1793E-16	0.1793E-16	0.7960E-17	0.7874E-17	0.6222E-08	ZERO
76 PuO2	0.2510E-12	0.1627E-09	0.1627E-09	0.3373E-07	0.3362E-07	0.8644E-04	ZERO
156 PuO2(NaTi2O5)2	0.2792E-17	0.4621E-11	0.4621E-11	0.9600E-09	0.9570E-09	0.9613E-09	ZERO
58 Rh	ZERO	0.3333E-10	0.3333E-10	0.2093E-08	0.2086E-08	ZERO	ZERO
22 RhO2	0.4076E-16	0.4049E-16	0.4049E-16	0.1800E-16	0.1780E-16	0.1404E-07	ZERO
95 Ru	0.9346E-16	0.1548E-09	0.1548E-09	0.3214E-07	0.3204E-07	0.3218E-07	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	176 RCT Vent to Scrubber	168 MFT/RCT Vent to Scrubber	105 MFT Scrubber Vent to FAVC	152 Liquid to Spnt MFT Scrubber	153 Liq frm MFT Scrubber	177 Neutr Waste to Tank Farm	166 Air Purge to Recyc Hld Tk
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.3654E-08	0.2396E-05	0.2396E-05	0.1476E-03	0.1471E-03	0.1258E+01	ZERO
48 Sr(COOH)2	ZERO	0.3460E-10	0.3460E-10	0.7188E-08	0.7165E-08	ZERO	ZERO
176 Sr(NO3)2	0.3211E-15	0.5318E-09	0.5218E-09	0.1104E-06	0.1101E-06	0.1106E-06	ZERO
153 Sr(NaTi2O5)2	0.7852E-18	0.1300E-11	0.1300E-11	0.2700E-09	0.2692E-09	0.2704E-09	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.4289E-12	0.4289E-12	0.4289E-12	0.1934E-12	0.1915E-12	0.1477E-03	ZERO
159 TcO2	0.8403E-13	0.5510E-10	0.5510E-10	0.1142E-07	0.1139E-07	0.2894E-04	ZERO
92 ThO2	0.3907E-11	0.2562E-08	0.2562E-08	0.5311E-06	0.5294E-06	0.1345E-02	ZERO
107 TiO2	0.2255E-10	0.1478E-07	0.1478E-07	0.3067E-05	0.3057E-05	0.7766E-02	ZERO
119 Tritium	0.3515E-11	0.8806E-11	0.8806E-11	0.1343E-08	0.1339E-08	0.1625E-08	ZERO
17 U3O8	0.6760E-10	0.4432E-07	0.4432E-07	0.9189E-05	0.9160E-05	0.2328E-01	ZERO
62 UO2(COOH)2	ZERO	0.1532E-14	0.1532E-14	0.3183E-12	0.3173E-12	ZERO	ZERO
177 UO2(NO3)2	0.1102E-17	0.1825E-11	0.1825E-11	0.3789E-09	0.3777E-09	0.3794E-09	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	0.1390E-10	0.1390E-10	0.2889E-08	0.2880E-08	ZERO	ZERO
178 Y(NO3)3	0.1152E-15	0.1908E-09	0.1908E-09	0.3961E-07	0.3949E-07	0.3967E-07	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.1308E-12	0.3959E-12	0.3959E-12	0.5514E-10	0.5497E-10	0.4503E-04	ZERO
100 Zeolite	0.2556E-16	0.4230E-10	0.4230E-10	0.8788E-08	0.8761E-08	0.8800E-08	ZERO
44 Zn(COOH)2	ZERO	0.1160E-08	0.1160E-08	0.2409E-06	0.2402E-06	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.3024E-11	0.1375E-08	0.1375E-08	0.2848E-06	0.2839E-06	0.1041E-02	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.8213E-13	0.1204E-06	0.1204E-06	0.2499E-04	0.2491E-04	0.2828E-04	ZERO
1 water	0.6322E+01	0.1263E+02	0.1263E+02	0.1079E+04	0.1079E+04	0.2922E+04	0.2367E+02
TOTAL FLOW, LB/HR	0.7778E+02	0.1555E+03	0.1555E+03	0.1084E+04	0.1084E+04	0.3026E+04	0.1433E+04
TEMPERATURE, DEG C	0.5000E+02	0.5000E+02	0.5000E+02	0.4900E+02	0.5000E+02	0.4999E+02	0.3500E+02
PRESSURE, ATM	0.9656E+00	0.9656E+00	0.9656E+00	0.1000E+01	0.1000E+01	0.9656E+00	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	-0.5055E+00	-0.5055E+00	ZERO	ZERO	-0.5055E+00	ZERO
PRESSURE, MM HG	0.7339E+03	0.7339E+03	0.7339E+03			0.7339E+03	
ENTHALPY, PCU/HR	0.4941E+04	0.9872E+04	0.9870E+04	0.5300E+05	0.5407E+05	0.1478E+06	0.3005E+05
VAPOR FLOW, CFM	0.2072E+02	0.4142E+02	0.4142E+02				0.3384E+03
LIQUID FLOW, GPM				0.2161E+01	0.2161E+01	0.5905E+01	
DENSITY, LBS/FT3	0.6258E-01	0.6257E-01	0.6257E-01	0.6253E+02	0.6253E+02	0.6388E+02	0.7055E-01
PHASE	VAPOR	VAPOR	VAPOR	LIQUID	LIQUID	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS -> STREAM NAME	339 Vent from Recyc Hld Tk	348 Insol frm DWPf Recyc	340 Recy Soln to Tnk Frm Evap	338 Tnk Frm Evap Aq to STF	354 DWPf Recycl Salt Cake
COMPONENT FLOWS, LB/HR					
122 (C6H5)2	0.1060E-05	0.5172E-09	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	0.2021E-12	0.2918E-05	ZERO	ZERO	ZERO
118 (C6H5)2NH	0.5776E-03	0.4164E-02	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	0.1928E-06	ZERO	ZERO	ZERO
162 (C6H5NH2)	0.7636E-02	ZERO	0.3829E-01	0.3458E-01	0.3709E-02
163 (C6H5NHCHO)	ZERO	0.7188E-06	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	0.1172E-07	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	0.2384E-07	0.1943E-07	0.4412E-08
131 (C6H5OH salt)	ZERO	ZERO	0.6684E+00	ZERO	0.6684E+00
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	0.4412E-04	ZERO	0.1642E-06	0.1636E-06	0.5840E-09
155 (CH3)2CHOH	0.8442E-11	ZERO	0.9705E-10	0.9673E-10	0.3195E-12
154 (CH3OH)	0.1562E-11	ZERO	0.7753E-11	0.7739E-11	0.1429E-13
45 Ag	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	0.8407E-07	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	ZERO	0.1028E+00	ZERO	ZERO	ZERO
106 B2O3	ZERO	0.1748E+00	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	ZERO	0.1558E-03	ZERO	ZERO	ZERO
24 BaSO4	ZERO	0.2136E-02	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.1794E-03	ZERO	0.1773E-06	0.1773E-06	0.1563E-12
142 CO2 (C14)	0.2596E-14	ZERO	0.2566E-17	0.2566E-17	0.2263E-23
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	0.1030E-04	ZERO	0.1030E-04
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	ZERO	0.2407E-01	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	0.2553E-06	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	0.6522E-07	ZERO	ZERO	ZERO
41 CaO	ZERO	0.9532E-02	ZERO	ZERO	ZERO
19 CaSO4	ZERO	0.4933E-03	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	ZERO	0.1492E-05	ZERO	ZERO	ZERO
98 Cr2O3	ZERO	0.1758E-02	ZERO	ZERO	ZERO
42 Cs2O	ZERO	0.1553E-02	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	0.2097E-08	ZERO	0.2097E-08
8 CsOH	ZERO	ZERO	0.1834E-01	ZERO	0.1834E-01
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) ->	339	340	340	338	354
STREAM NAME	Vent from Recyc Hld Tk	Insol frm DWPFF Recyc	Recy Soln to Tnk Frm Evap	Tnk Frm Evap Aq to MTF	DWPFF Recycl Salt Cake
54 Cu(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO ₃) ₂	ZERO	ZERO	0.7417E-05	ZERO	0.7417E-05
55 CuO	ZERO	0.8219E-02	ZERO	ZERO	ZERO
80 Fe ₂ O ₃	ZERO	0.2136E+00	ZERO	ZERO	ZERO
101 FeO	ZERO	0.2135E-01	ZERO	ZERO	ZERO
102 Group A	ZERO	0.1307E-02	ZERO	ZERO	ZERO
103 Group B	ZERO	0.1075E-02	ZERO	ZERO	ZERO
25 H ₂	0.1443E-12	ZERO	0.5843E-17	0.5843E-17	0.5011E-24
158 H ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ PO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg ₂ I ₂	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl ₂	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	0.2088E+00	ZERO	ZERO	ZERO
97 I ₂	ZERO	ZERO	ZERO	ZERO	ZERO
39 K ₂ O	ZERO	0.5522E-01	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	0.1094E+00	ZERO	0.1094E+00
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	ZERO	0.1133E+00	ZERO	ZERO	ZERO
65 Mg(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	ZERO	0.4668E-01	ZERO	ZERO	ZERO
60 Mn(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	ZERO	0.2803E-01	ZERO	ZERO	ZERO
14 MnO ₂	ZERO	0.1695E+00	ZERO	ZERO	ZERO
145 MoO ₂	ZERO	0.1690E-04	ZERO	ZERO	ZERO
81 N ₂	0.1082E+04	ZERO	0.3360E-01	0.3360E-01	0.1704E-08
74 N ₂ O	TRACE	ZERO	TRACE	TRACE	TRACE
182 NH ₃	0.1583E+00	ZERO	0.2166E-01	0.2166E-01	0.2239E-05
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	0.8749E-07	ZERO	0.7934E-11	0.7934E-11	0.1116E-17

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -> STREAM NAME	339 Vent from Recyc Hld Tk	348 Insol frm DWPFF Recyc	340 Recy Soln to Tnk Frm Evap	338 Tnk Frm Evap Aq to ETP	354 DWPFF Recycl Salt Cake
84 NO2	0.1068E-05	ZERO	0.9683E-10	0.9683E-10	0.1363E-16
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	ZERO	ZERO	0.1268E+00	ZERO	0.1268E+00
109 Na2C2O4	ZERO	ZERO	0.7909E+01	ZERO	0.7909E+01
5 Na2CO3	ZERO	ZERO	0.3128E-13	ZERO	0.3128E-13
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	ZERO	0.2046E+00	ZERO	ZERO	ZERO
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	ZERO	ZERO	0.1108E+00	ZERO	0.1108E+00
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	ZERO	ZERO	0.1022E-03	ZERO	0.1022E-03
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	ZERO	0.7353E-04	ZERO	0.7353E-04
7 NaCl	ZERO	ZERO	0.1714E-01	ZERO	0.1714E-01
69 NaF	ZERO	ZERO	0.1420E-01	ZERO	0.1420E-01
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	0.9658E-05	ZERO	0.9658E-05
3 NaNO2	ZERO	ZERO	0.8973E+01	ZERO	0.8973E+01
2 NaNO3	ZERO	ZERO	0.1237E+02	ZERO	0.1237E+02
4 NaOH	ZERO	ZERO	0.7069E+02	ZERO	0.7069E+02
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	ZERO	0.3151E-02	ZERO	ZERO	ZERO
82 O2	0.3269E+03	ZERO	0.1939E-01	0.1939E-01	0.1767E-08
175 Pb(NO3)2	ZERO	ZERO	0.1666E-09	ZERO	0.1666E-09
86 PbCO3	ZERO	0.1129E-08	ZERO	ZERO	ZERO
67 PbO	ZERO	0.3900E-04	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	ZERO	0.9384E-03	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	0.6222E-08	ZERO	ZERO	ZERO
76 PuO2	ZERO	0.8644E-04	ZERO	ZERO	ZERO
156 PuO2(NaTi2O5)2	ZERO	0.9613E-09	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO2	ZERO	0.1404E-07	ZERO	ZERO	ZERO
95 Ru	ZERO	0.3218E-07	ZERO	ZERO	ZERO
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 7. Collection and Treatment of Waste Streams

STREAM NUMBERS (CONT'D) -->	339	340	340	338	354
STREAM NAME	Vent from Recyc Hld Tk	Insol frm DWPFF Recyc	Recy Soln to Tnk Frm Evap	Tnk Frm Evap Aq to BTF	DWPFF Recycl Salt Cake
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.1258E+01	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	0.1106E-06	ZERO	0.1106E-06
153 Sr(NaTi2O5)2	ZERO	0.2704E-09	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	ZERO	0.1477E-03	ZERO	ZERO	ZERO
159 TcO2	ZERO	0.2894E-04	ZERO	ZERO	ZERO
92 ThO2	ZERO	0.1345E-02	ZERO	ZERO	ZERO
107 TiO2	ZERO	0.7766E-02	ZERO	ZERO	ZERO
119 Tritium	0.6873E-10	ZERO	0.1556E-08	0.1546E-08	0.9876E-11
17 U3O8	ZERO	0.2328E-01	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	0.3794E-09	ZERO	0.3794E-09
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	0.3967E-07	ZERO	0.3967E-07
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	ZERO	0.4503E-04	ZERO	ZERO	ZERO
100 Zeolite	ZERO	0.8800E-08	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	ZERO	0.1041E-02	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	0.2828E-04	ZERO	ZERO	ZERO
1 water	0.1246E+03	ZERO	0.2821E+04	0.2803E+04	0.1791E+02
TOTAL FLOW, LB/HR	0.1534E+04	0.2689E+01	0.2922E+04	0.2803E+04	0.1189E+03
TEMPERATURE, DEG C	0.5000E+02	0.6000E+02	0.6000E+02	0.1000E+03	0.1000E+03
PRESSURE, ATM	0.9656E+00	0.1000E+01	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.5055E+00	ZERO	ZERO	ZERO	ZERO
PRESSURE, MM HG	0.7339E+03				
ENTHALPY, PCU/HR	0.9736E+05	0.2979E+02	0.1712E+06	0.2806E+06	0.4857E+04
VAPOR FLOW, CFM	0.4087E+03				
LIQUID FLOW, GPM		0.1949E-02	0.5702E+01	0.5598E+01	0.1044E+00
DENSITY, LBS/FT3	0.6255E-01	0.1721E+03	0.6390E+02	0.6243E+02	0.1419E+03
PHASE	VAPOR	LIQUID	LIQUID	LIQUID	LIQUID

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 8. Canister Decontamination

DESCRIPTION	PAGE
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1. STREAM NUMBERS 69, 178, 179, 180, 181, 182, 183	2
2. STREAM NUMBERS 184, 185, 26	6

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 8. Canister Decontamination

STREAM NUMBERS -> STREAM NAME	69 Sludge Blend Waste Glass	178 Frit Slry to Can Decon	179 Atomsg Air to Can Decon	180 Spray Chambr Water Rinse	181 Oxide from Can Cleaning	182 Rinse H2O to Can Decon	183 Atomsg Air to Can Rinse
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
123 (C6H5)2C6H4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
118 (C6H5)2NH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
130 (C6H5OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
121 (C6H6)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
155 (CH3)2CHOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
154 (CH3OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
45 Ag	0.1251E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
116 Ag2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.1017E+02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
106 B2O2	0.1731E+02	0.8542E+00	ZERO	ZERO	ZERO	ZERO	ZERO
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.1543E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
24 BaSO4	0.2114E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
142 CO2 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
63 Ca(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.2382E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
20 CaC2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
41 CaO	0.9438E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
19 CaSO4	0.4882E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1477E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
98 Cr2O3	0.1740E+00	ZERO	ZERO	ZERO	0.1254E-02	ZERO	ZERO
42 Cs2O	0.1538E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 8. Canister Decontamination

STREAM NUMBERS (CONT'D) ->	69	178	179	180	181	182	183
STREAM NAME	Sldge Blend Waste Glass	Frit Slry to Can Decon	Atomsg Air to Can Decon	Spray Chambr Water Rinse	Oxide from Can Cleaning	Rinse H2O to Can Decon	Atomsg Air to Can Rinse
54 Cu(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.8138E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
80 Fe2O3	0.2114E+02	ZERO	ZERO	ZERO	0.4880E-03	ZERO	ZERO
101 FeO	0.2114E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
102 Group A	0.2068E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
103 Group B	0.1064E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
25 H2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.5468E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.1122E+02	0.7474E+00	ZERO	ZERO	ZERO	ZERO	ZERO
65 Mg(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.4621E+01	0.2135E+00	ZERO	ZERO	ZERO	ZERO	ZERO
60 Mn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.2774E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
145 MoO2	0.1673E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
81 N2	ZERO	ZERO	0.1424E+03	ZERO	ZERO	ZERO	0.1379E+02
74 N2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 8. Canister Decontamination

STREAM NUMBERS (CONT'D) -->	69	178	179	180	181	182	183
STREAM NAME	Sldge Blend Waste Glass	Frit Slry to Can Decon	Atomsg Air to Can Decon	Spray Chambr Water Rinse	Oxide from Can Cleaning	Rinse H ₂ O to Can Decon	Atomsg Air to Can Rinse
84 NO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.1957E+02	0.5687E+00	ZERO	ZERO	ZERO	ZERO	ZERO
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.3363E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.1011E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	0.1579E+00	ZERO	ZERO	ZERO	ZERO	ZERO
7 NaCl	0.1680E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
69 NaF	0.3397E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.3118E+00	ZERO	ZERO	ZERO	0.5036E-02	ZERO	ZERO
82 O ₂	ZERO	ZERO	0.4303E+02	ZERO	ZERO	ZERO	0.4166E+01
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
67 PbO	0.3862E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.9287E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
124 Pd	0.8630E-03	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
76 PuO ₂	0.8555E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
58 Rh	0.1753E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
95 Ru	0.8139E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 8. Canister Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	69 Sludge Blend Waste Glass	178 Frit Slry to Can Decon	179 Atomsg Air to Can Decon	180 Spray Chambr Water Rinse	181 Oxide from Can Cleaning	182 Rinse H2O to Can Decon	183 Atomsg Air to Can Rinse
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs20	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.1246E+03	0.8221E+01	ZERO	ZERO	ZERO	ZERO	ZERO
48 Sr(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.1462E-01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
159 TcO2	0.2864E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
92 ThO2	0.1332E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
107 TiO2	0.7687E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
17 U3O8	0.2304E+01	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.4458E-02	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1030E+00	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
1 water	ZERO	0.1081E+03	0.3116E+01	0.1286E+02	ZERO	0.9257E+02	0.3017E+00
TOTAL FLOW, LB/HR	0.2280E+03	0.1188E+03	0.1886E+03	0.1286E+02	0.6778E-02	0.9257E+02	0.1826E+02
TEMPERATURE, DEG C	0.1050E+04	0.3000E+02	0.3000E+02	0.3000E+02	0.3000E+02	0.3000E+02	0.3500E+02
PRESSURE, ATM	0.9840E+00	0.4060E+01	0.6780E+01	0.4060E+01	0.9656E+00	0.4060E+01	0.6780E+01
PRESSURE, PSIG	-0.2351E+00	0.4497E+02	0.8494E+02	0.4497E+02	-0.5055E+00	0.4497E+02	0.8494E+02
PRESSURE, MM HG	0.7478E+03				0.7339E+03		
ENTHALPY, PCU/HR	0.7072E+05	0.3317E+04	0.3733E+04	0.3869E+03	0.3302E-01	0.2785E+04	0.3830E+03
VAPOR FLOW, CFM			0.6464E+01				0.6362E+00
LIQUID FLOW, GPM	0.1815E+00	0.2254E+00		0.2568E-01	0.2017E-05	0.1849E+00	
DENSITY, LBS/FT3	0.1566E+03	0.6573E+02	0.4862E+00	0.6243E+02	0.4189E+03	0.6243E+02	0.4784E+00
PHASE	LIQUID	LIQUID	VAPOR	LIQUID	LIQUID	LIQUID	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 8. Canister Decontamination

STREAM NUMBERS -> STREAM NAME	184 FCT Air Inleakage	185 FCT Vent to PVVS	26 Decon Frit Slrry to SNE
COMPONENT FLOWS, LB/HR			
122 (C ₆ H ₅) ₂	ZERO	ZERO	ZERO
123 (C ₆ H ₅) ₂ C ₆ H ₄	ZERO	ZERO	ZERO
118 (C ₆ H ₅) ₂ NH	ZERO	ZERO	ZERO
133 (C ₆ H ₅ B(OH) ₂ salt)	ZERO	ZERO	ZERO
132 (C ₆ H ₅ B(OH) ₂)	ZERO	ZERO	ZERO
166 (C ₆ H ₅ C ₆ H ₄ OH)	ZERO	ZERO	ZERO
162 (C ₆ H ₅ NH ₂)	ZERO	ZERO	ZERO
163 (C ₆ H ₅ NHCHO)	ZERO	ZERO	ZERO
165 (C ₆ H ₅ NO)	ZERO	ZERO	ZERO
164 (C ₆ H ₅ NO ₂)	ZERO	ZERO	ZERO
131 (C ₆ H ₅ OH salt)	ZERO	ZERO	ZERO
130 (C ₆ H ₅ OH)	ZERO	ZERO	ZERO
121 (C ₆ H ₆)	ZERO	ZERO	ZERO
155 (CH ₃) ₂ CHOH	ZERO	ZERO	ZERO
154 (CH ₃ OH)	ZERO	ZERO	ZERO
45 Ag	ZERO	ZERO	ZERO
116 Ag ₂ O	ZERO	ZERO	ZERO
134 AgNO ₃	ZERO	ZERO	ZERO
77 Al ₂ O ₃	ZERO	ZERO	ZERO
106 B ₂ O ₃	ZERO	0.2284E-06	0.8542E+00
9 Ba(OH) ₂	ZERO	ZERO	ZERO
15 BaO	ZERO	ZERO	ZERO
24 BaSO ₄	ZERO	ZERO	ZERO
66 CO	ZERO	ZERO	ZERO
37 CO ₂	ZERO	ZERO	ZERO
142 CO ₂ (C14)	ZERO	ZERO	ZERO
63 Ca(COOH) ₂	ZERO	ZERO	ZERO
167 Ca(NO ₃) ₂	ZERO	ZERO	ZERO
120 Ca(OH) ₂	ZERO	ZERO	ZERO
113 Ca ₃ (PO ₄) ₂	ZERO	ZERO	ZERO
20 CaC ₂ O ₄	ZERO	ZERO	ZERO
18 CaCO ₃	ZERO	ZERO	ZERO
64 CaCO ₃ (C14)	ZERO	ZERO	ZERO
78 CaF ₂	ZERO	ZERO	ZERO
41 CaO	ZERO	ZERO	ZERO
19 CaSO ₄	ZERO	ZERO	ZERO
29 Carbon	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO
26 Co(COOH) ₂	ZERO	ZERO	ZERO
168 Co(NO ₃) ₂	ZERO	ZERO	ZERO
59 CoO	ZERO	ZERO	ZERO
98 Cr ₂ O ₃	ZERO	0.3353E-09	0.1254E-02
42 Cs ₂ O	ZERO	ZERO	ZERO
53 CsCOOH	ZERO	ZERO	ZERO
96 CsCl	ZERO	ZERO	ZERO
169 CsNO ₃	ZERO	ZERO	ZERO
8 CsOH	ZERO	ZERO	ZERO
151 CsTPB	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 8. Canister Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	184 FCT Air Inleakage	185 FCT Vent to PVVS	26 Decon Frit Slurry to SME
54 Cu(COOH)2	ZERO	ZERO	ZERO
170 Cu(NO3)2	ZERO	ZERO	ZERO
55 CuO	ZERO	ZERO	ZERO
80 Fe2O3	ZERO	0.1305E-09	0.4880E-03
101 FeO	ZERO	ZERO	ZERO
102 Group A	ZERO	ZERO	ZERO
103 Group B	ZERO	ZERO	ZERO
25 H2	ZERO	ZERO	ZERO
158 H2C2O4	ZERO	ZERO	ZERO
93 H2SO4	ZERO	ZERO	ZERO
90 H3BO3	ZERO	ZERO	ZERO
34 HCOOH	ZERO	ZERO	ZERO
43 HCl	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO
36 Hg	ZERO	ZERO	ZERO
129 Hg(C6H5)2	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO
21 HgO	ZERO	ZERO	ZERO
97 I2	ZERO	ZERO	ZERO
39 K2O	ZERO	ZERO	ZERO
51 KCOOH	ZERO	ZERO	ZERO
157 KMnO4	ZERO	ZERO	ZERO
161 KNO3	ZERO	ZERO	ZERO
10 KOH	ZERO	ZERO	ZERO
150 KTPB	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO
108 Li2O	ZERO	0.1998E-06	0.7474E+00
65 Mg(COOH)2	ZERO	ZERO	ZERO
171 Mg(NO3)2	ZERO	ZERO	ZERO
33 MgO	ZERO	0.5710E-07	0.2135E+00
60 Mn(COOH)2	ZERO	ZERO	ZERO
172 Mn(NO3)2	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO
56 MnO	ZERO	ZERO	ZERO
14 MnO2	ZERO	ZERO	ZERO
145 MoO2	ZERO	ZERO	ZERO
81 N2	0.3607E+03	0.5169E+03	0.3223E-02
74 N2O	ZERO	ZERO	ZERO
182 NH3	ZERO	ZERO	ZERO
114 NH3OHNO3	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO
68 NH4OH	ZERO	ZERO	ZERO
148 NH4TPB	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 8. Canister Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	184 FCT Air Inleakage	185 FCT Vent to PVVS	26 Decon Frit Slurry to SNE
84 NO ₂	ZERO	ZERO	ZERO
70 Na(HgO(OH))	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	ZERO	ZERO	ZERO
109 Na ₂ C ₂ O ₄	ZERO	ZERO	ZERO
5 Na ₂ CO ₃	ZERO	ZERO	ZERO
143 Na ₂ CO ₃ (C14)	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO
32 Na ₂ O	ZERO	0.1521E-06	0.5687E+00
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	ZERO	ZERO	ZERO
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	ZERO	ZERO	ZERO
91 NaAg(OH) ₂	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO
50 NaCOOH	ZERO	0.4221E-07	0.1579E+00
7 NaCl	ZERO	ZERO	ZERO
69 NaF	ZERO	ZERO	ZERO
11 NaHCO ₃	ZERO	ZERO	ZERO
12 NaI	ZERO	ZERO	ZERO
3 NaNO ₂	ZERO	ZERO	ZERO
2 NaNO ₃	ZERO	ZERO	ZERO
4 NaOH	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	ZERO	ZERO	ZERO
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO
40 NiO	ZERO	0.1347E-08	0.5036E-02
82 O ₂	0.1090E+03	0.1562E+03	0.1916E-02
175 Pb(NO ₃) ₂	ZERO	ZERO	ZERO
86 PbCO ₃	ZERO	ZERO	ZERO
67 PbO	ZERO	ZERO	ZERO
147 PbS	ZERO	ZERO	ZERO
28 PbSO ₄	ZERO	ZERO	ZERO
124 Pd	ZERO	ZERO	ZERO
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO
110 PdO	ZERO	ZERO	ZERO
76 PuO ₂	ZERO	ZERO	ZERO
156 PuO ₂ (NaTi ₂ O ₅) ₂	ZERO	ZERO	ZERO
58 Rh	ZERO	ZERO	ZERO
22 RhO ₂	ZERO	ZERO	ZERO
95 Ru	ZERO	ZERO	ZERO
79 RuO ₂	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 8. Canister Decontamination

STREAM NUMBERS (CONT'D) -> STREAM NAME	184 FCT Air Inleakage	185 FCT Vent to PVVS	26 Decon Frit Slurry to SNE
141 SO3	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO
111 SiO2	ZERO	0.2198E-05	0.8221E+01
48 Sr(COOH)2	ZERO	ZERO	ZERO
176 Sr(NO3)2	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	ZERO	ZERO	ZERO
127 Sr(OH)2	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO
46 SrO	ZERO	ZERO	ZERO
159 TcO2	ZERO	ZERO	ZERO
92 ThO2	ZERO	ZERO	ZERO
107 TiO2	ZERO	ZERO	ZERO
119 Tritium	ZERO	ZERO	ZERO
17 U3O8	ZERO	ZERO	ZERO
62 UO2(COOH)2	ZERO	ZERO	ZERO
177 UO2(NO3)2	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO
27 Y(COOH)3	ZERO	ZERO	ZERO
178 Y(NO3)3	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO
47 Y2O3	ZERO	ZERO	ZERO
100 Zeolite	ZERO	ZERO	ZERO
44 Zn(COOH)2	ZERO	ZERO	ZERO
179 Zn(NO3)2	ZERO	ZERO	ZERO
57 ZnO	ZERO	ZERO	ZERO
104 ZrO2	ZERO	ZERO	ZERO
13 hydrate H2O	ZERO	ZERO	ZERO
1 water	0.7891E+01	0.1834E+02	0.2152E+03
TOTAL FLOW, LB/HR	0.4776E+03	0.6914E+03	0.2260E+03
TEMPERATURE, DEG C	0.3500E+02	0.3000E+02	0.2980E+02
PRESSURE, ATM	0.1000E+01	0.9656E+00	0.9656E+00
PRESSURE, PSIG	ZERO	-0.5055E+00	-0.5055E+00
PRESSURE, MM HG		0.7339E+03	0.7339E+03
ENTHALPY, PCU/HR	0.1002E+05	0.1781E+05	0.6497E+04
VAPOR FLOW, CFM	0.1128E+03	0.1674E+03	
LIQUID FLOW, GPM			0.4394E+00
DENSITY, LBS/FT3	0.7055E-01	0.6884E-01	0.6412E+02
PHASE	VAPOR	VAPOR	LIQUID

SECTION 9. PROCESS VESSEL VENT SYSTEM

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 9. Process Vessel Vent System

DESCRIPTION	PAGE
-----	----
1. STREAM NUMBERS 40, 166, 185, 187, 250, 188, 189	2
2. STREAM NUMBERS 190, 191, 192, 193, 115, 121, 194	6
3. STREAM NUMBERS 195, 196, 197, 198, 199, 200	10

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS -> STREAM NAME	40 FAVC HEME Vnt to PVVS	166 DWTC Vent to PVVS	185 FCT Vent to PVVS	187 Dil Air frm Crane Decon	250 SCVC HEME Vnt to PVVS	188 Tot Val Vnt to PVVH	189 PVVH Exit Gas
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	0.8444E-02	0.3423E-14	ZERO	ZERO	0.4427E-02	0.1287E-01	0.1287E-01
123 (C6H5)2C6H4	0.1842E-08	0.5491E-19	ZERO	ZERO	0.5306E-15	0.1842E-08	0.1842E-08
118 (C6H5)2NH	0.1090E-02	0.8841E-16	ZERO	ZERO	0.3882E-10	0.1090E-02	0.1090E-02
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	0.1925E-19	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	0.2190E-12	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	0.4578E-19	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	0.1107E-16	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	0.7939E-19	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.2342E-10	0.9755E-14	ZERO	ZERO	ZERO	0.2342E-10	0.2342E-10
130 (C6H5OH)	0.1052E+00	ZERO	ZERO	ZERO	0.9382E-05	0.1052E+00	0.1052E+00
121 (C6H6)	0.1196E-01	0.3328E-15	ZERO	ZERO	0.4326E+01	0.4338E+01	0.4338E+01
155 (CH3)2CHOH	0.1944E-10	0.2271E-19	ZERO	ZERO	0.4429E-12	0.1988E-10	0.1988E-10
154 (CH3OH)	0.4650E-11	0.2396E-20	ZERO	ZERO	0.1780E-12	0.4828E-11	0.4828E-11
45 Ag	0.2975E-11	ZERO	ZERO	ZERO	ZERO	0.2975E-11	0.2975E-11
116 Ag2O	0.3029E-17	0.1740E-13	ZERO	ZERO	ZERO	0.3029E-17	0.3029E-17
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.2447E-08	0.7174E-18	ZERO	ZERO	ZERO	0.2447E-08	0.2447E-08
106 B2O3	0.3084E-08	0.2623E-18	0.2284E-06	ZERO	ZERO	0.3980E-06	0.3980E-06
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.5657E-14	TRACE	ZERO	ZERO	ZERO	0.5657E-14	0.5657E-14
24 BaSO4	0.5649E-10	0.1657E-19	ZERO	ZERO	ZERO	0.5649E-10	0.5649E-10
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	0.3723E+01	0.4269E+00	ZERO	ZERO	0.2670E+02	0.3042E+02	0.3042E+02
142 CO2 (C14)	0.6165E-07	TRACE	ZERO	ZERO	0.1795E-08	0.6344E-07	0.6344E-07
63 Ca(COOH)2	0.9434E-11	ZERO	ZERO	ZERO	ZERO	0.9434E-11	0.9434E-11
167 Ca(NO3)2	ZERO	0.1819E-18	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.5731E-09	0.1680E-18	ZERO	ZERO	ZERO	0.5731E-09	0.5731E-09
20 CaC2O4	0.1535E-10	0.4508E-20	ZERO	ZERO	ZERO	0.1535E-10	0.1535E-10
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.3923E-11	0.1152E-20	ZERO	ZERO	ZERO	0.3923E-11	0.3923E-11
41 CaO	0.1090E-11	0.1413E-20	ZERO	ZERO	ZERO	0.1090E-11	0.1090E-11
19 CaSO4	0.1305E-10	0.3825E-20	ZERO	ZERO	ZERO	0.1305E-10	0.1305E-10
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.4945E-13	ZERO	ZERO	ZERO	ZERO	0.4945E-13	0.4945E-13
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1065E-13	0.1042E-22	ZERO	ZERO	ZERO	0.1065E-13	0.1065E-13
98 Cr2O3	0.4185E-10	0.1221E-19	0.3353E-09	ZERO	ZERO	0.5401E-09	0.5401E-09
42 Cs2O	0.1157E-12	0.1745E-22	ZERO	ZERO	ZERO	0.1157E-12	0.1157E-12
53 CsCOH	0.5163E-10	ZERO	ZERO	ZERO	ZERO	0.5163E-10	0.5163E-10
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	0.3703E-22	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.6658E-12	0.1278E-19	ZERO	ZERO	ZERO	0.6658E-12	0.6658E-12
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) -> STREAM NAME	40 FAVC HEME Vnt to PVVS	166 DWTC Vent to PVVS	185 FCT Vent to PVVS	187 Dil Air frm Crane Decon	250 SCVC HEME Vnt to PVVS	188 Tot Val Vnt to PVVH	189 PVVH Exit Gas
54 Cu(COOH)2	0.1288E-11	ZERO	ZERO	ZERO	ZERO	0.1288E-11	0.1288E-11
170 Cu(NO3)2	ZERO	0.1310E-18	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.5884E-11	0.1836E-20	ZERO	ZERO	ZERO	0.5884E-11	0.5884E-11
80 Fe2O3	0.5650E-08	0.1656E-17	0.1305E-09	ZERO	ZERO	0.5844E-08	0.5844E-08
101 FeO	0.7749E-12	0.4941E-24	ZERO	ZERO	ZERO	0.7749E-12	0.7749E-12
102 Group A	0.5275E-11	0.1535E-20	ZERO	ZERO	ZERO	0.5275E-11	0.5275E-11
103 Group B	0.2560E-10	0.7504E-20	ZERO	ZERO	ZERO	0.2560E-10	0.2560E-10
25 H2	0.4213E-01	TRACE	ZERO	ZERO	0.5901E-10	0.4213E-01	0.4213E-01
158 H2C2O4	0.1798E-10	ZERO	ZERO	ZERO	ZERO	0.1798E-10	0.1798E-10
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.1953E-08	ZERO	ZERO	ZERO	ZERO	0.1953E-08	0.1953E-08
34 HCOOH	0.1053E-02	ZERO	ZERO	ZERO	0.3537E-04	0.1089E-02	0.1089E-02
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
49 HNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
36 Hg	0.8194E-02	ZERO	ZERO	ZERO	0.3583E-14	0.8194E-02	0.8194E-02
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
146 HgCl2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
21 HgO	0.6603E-12	0.9977E-12	ZERO	ZERO	ZERO	0.6603E-12	0.6603E-12
97 I2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
39 K2O	0.2877E-10	0.7859E-20	ZERO	ZERO	ZERO	0.2877E-10	0.2877E-10
51 KCOOH	0.2291E-08	ZERO	ZERO	ZERO	ZERO	0.2291E-08	0.2291E-08
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.7477E-11	0.2195E-20	ZERO	ZERO	ZERO	0.7477E-11	0.7477E-11
10 KOH	0.3972E-11	0.2265E-07	ZERO	ZERO	ZERO	0.3972E-11	0.3972E-11
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.2697E-08	0.2295E-18	0.1998E-06	ZERO	ZERO	0.2719E-06	0.2719E-06
65 Mg(COOH)2	0.7722E-09	ZERO	ZERO	ZERO	ZERO	0.7722E-09	0.7722E-09
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.8390E-09	0.1655E-18	0.5710E-07	ZERO	ZERO	0.8568E-07	0.8568E-07
60 Mn(COOH)2	0.5588E-09	ZERO	ZERO	ZERO	ZERO	0.5588E-09	0.5588E-09
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.1017E-11	0.8027E-19	ZERO	ZERO	ZERO	0.1017E-11	0.1017E-11
14 MnO2	0.4878E-09	0.3509E-07	ZERO	ZERO	ZERO	0.4878E-09	0.4878E-09
145 MoO2	0.4025E-12	0.1180E-21	ZERO	ZERO	ZERO	0.4025E-12	0.4025E-12
81 N2	0.1330E+04	0.5483E+02	0.5169E+03	0.7138E+03	0.4532E+01	0.2763E+04	0.2763E+04
74 N2O	0.9215E-18	ZERO	ZERO	ZERO	0.3658E-08	0.3658E-08	0.3658E-08
182 NH3	0.1060E-01	0.3157E-16	ZERO	ZERO	0.1450E-07	0.1060E-01	0.1060E-01
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	0.1186E-13	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	0.2079E-06	0.2085E-20	ZERO	ZERO	ZERO	0.2079E-06	0.2079E-06
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	0.2558E-01	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) ->	40	166	185	187	250	188	189
STREAM NAME	FAVC HEME Vnt to PVVS	DWTC Vent to PVVS	FCT Vent to PVVS	Dil Air frm Crane Decon	SCVC HEME Vnt to PVVS	Tot Val Vnt to PVVH	PVVH Exit Gas
84 NO ₂	0.3816E+01	0.2573E-10	ZERO	ZERO	0.1134E-09	0.3855E+01	0.3855E+01
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na ₂ B ₄ O ₇	0.4605E-11	0.4669E-18	ZERO	ZERO	ZERO	0.4605E-11	0.4605E-11
109 Na ₂ C ₂ O ₄	0.2871E-09	0.1637E-05	ZERO	ZERO	ZERO	0.2871E-09	0.2871E-09
5 Na ₂ CO ₃	0.1097E-23	TRACE	ZERO	ZERO	ZERO	0.1097E-23	0.1097E-23
143 Na ₂ CO ₃ (Cl ₄)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na ₂ CrO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na ₂ MoO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na ₂ O	0.2652E-08	0.3612E-18	0.1521E-06	ZERO	ZERO	0.2980E-06	0.2980E-06
71 Na ₂ PuO ₂ (OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na ₂ RhO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na ₂ RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na ₂ SO ₄	0.1050E-09	0.2965E-19	ZERO	ZERO	ZERO	0.1050E-09	0.1050E-09
88 Na ₂ SiO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na ₃ PO ₄	0.2432E-11	0.7130E-21	ZERO	ZERO	ZERO	0.2432E-11	0.2432E-11
91 NaAg(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH) ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.5914E-08	0.1298E-17	0.4221E-07	ZERO	ZERO	0.6863E-07	0.6863E-07
7 NaCl	0.8695E-11	0.2371E-20	ZERO	ZERO	ZERO	0.8695E-11	0.8695E-11
69 NaF	0.8474E-11	0.2337E-20	ZERO	ZERO	ZERO	0.8474E-11	0.8474E-11
11 NaHCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2650E-14	0.6753E-24	ZERO	ZERO	ZERO	0.2650E-14	0.2650E-14
3 NaNO ₂	0.3235E-09	0.2063E-21	ZERO	ZERO	ZERO	0.3235E-09	0.3235E-09
2 NaNO ₃	0.4157E-08	0.1379E-05	ZERO	ZERO	ZERO	0.4157E-08	0.4157E-08
4 NaOH	ZERO	0.8177E-07	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi ₂ O ₅ H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH) ₂	0.9972E-11	ZERO	ZERO	ZERO	ZERO	0.9972E-11	0.9972E-11
174 Ni(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.7000E-10	0.2174E-19	0.1347E-08	ZERO	ZERO	0.2071E-08	0.2071E-08
82 O ₂	0.4004E+03	0.1653E+02	0.1562E+03	0.2156E+03	0.1368E+01	0.8334E+03	0.8334E+03
175 Pb(NO ₃) ₂	ZERO	0.2942E-23	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO ₃	0.6784E-13	0.1993E-22	ZERO	ZERO	ZERO	0.6784E-13	0.6784E-13
67 PbO	0.1416E-14	TRACE	ZERO	ZERO	ZERO	0.1416E-14	0.1416E-14
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO ₄	0.2352E-10	0.6894E-20	ZERO	ZERO	ZERO	0.2352E-10	0.2352E-10
124 Pd	0.2052E-12	ZERO	ZERO	ZERO	ZERO	0.2052E-12	0.2052E-12
112 Pd(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.2242E-18	0.1288E-14	ZERO	ZERO	ZERO	0.2242E-18	0.2242E-18
76 PuO ₂	0.2034E-11	0.5964E-21	ZERO	ZERO	ZERO	0.2034E-11	0.2034E-11
156 PuO ₂ (NaTi ₂ O ₅) ₂	0.5778E-13	0.1697E-22	ZERO	ZERO	ZERO	0.5778E-13	0.5778E-13
58 Rh	0.4167E-12	ZERO	ZERO	ZERO	ZERO	0.4167E-12	0.4167E-12
22 RhO ₂	0.5061E-18	0.2906E-14	ZERO	ZERO	ZERO	0.5061E-18	0.5061E-18
95 Ru	0.1935E-11	0.5683E-21	ZERO	ZERO	ZERO	0.1935E-11	0.1935E-11
79 RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) -> STREAM NAME	40 FAVC HEME Vnt to PVVS	166 DWTG Vent to PVVS	185 FCT Vent to PVVS	187 Dil Air frm Crane Decon	250 SCVC HEME Vnt to PVVS	188 Tot Vsl Vnt to PVVH	189 PVVH Exit Gas
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.2996E-07	0.2609E-17	0.2198E-05	ZERO	ZERO	0.3199E-05	0.3199E-05
48 Sr(COOH)2	0.4326E-12	ZERO	ZERO	ZERO	ZERO	0.4326E-12	0.4326E-12
176 Sr(NO3)2	ZERO	0.1952E-20	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	0.1625E-13	0.4775E-23	ZERO	ZERO	ZERO	0.1625E-13	0.1625E-13
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.5361E-14	0.7414E-22	ZERO	ZERO	ZERO	0.5361E-14	0.5361E-14
159 TcO2	0.6889E-12	0.2020E-21	ZERO	ZERO	ZERO	0.6889E-12	0.6889E-12
92 ThO2	0.3203E-10	0.9390E-20	ZERO	ZERO	ZERO	0.3203E-10	0.3203E-10
107 TiO2	0.1849E-09	0.5423E-19	ZERO	ZERO	ZERO	0.1849E-09	0.1849E-09
119 Tritium	0.1157E-09	0.2375E-18	ZERO	ZERO	0.3020E-15	0.1157E-09	0.1157E-09
17 U3O8	0.5542E-09	0.1625E-18	ZERO	ZERO	ZERO	0.5542E-09	0.5542E-09
62 UO2(COOH)2	0.1916E-16	ZERO	ZERO	ZERO	ZERO	0.1916E-16	0.1916E-16
177 UO2(NO3)2	ZERO	0.6699E-23	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.1739E-12	ZERO	ZERO	ZERO	ZERO	0.1739E-12	0.1739E-12
178 Y(NO3)3	ZERO	0.7004E-21	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.4949E-14	0.2672E-22	ZERO	ZERO	ZERO	0.4949E-14	0.4949E-14
100 Zeolite	0.5289E-12	0.1554E-21	ZERO	ZERO	ZERO	0.5289E-12	0.5289E-12
44 Zn(COOH)2	0.1451E-10	ZERO	ZERO	ZERO	ZERO	0.1451E-10	0.1451E-10
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1719E-10	0.7267E-20	ZERO	ZERO	ZERO	0.1719E-10	0.1719E-10
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1505E-08	0.1543E-14	ZERO	ZERO	ZERO	0.1505E-08	0.1505E-08
1 water	0.1283E+02	0.1220E+01	0.1834E+02	0.1561E+02	0.1839E+00	0.5400E+02	0.5400E+02
TOTAL FLOW, LB/HR	0.1751E+04	0.7301E+02	0.6914E+03	0.9450E+03	0.3714E+02	0.3689E+04	0.3689E+04
TEMPERATURE, DEG C	0.1000E+02	0.2250E+02	0.3000E+02	0.3500E+02	0.1000E+02	0.2169E+02	0.3169E+02
PRESSURE, ATM	0.9263E+00	0.9656E+00	0.9656E+00	0.9263E+00	0.9656E+00	0.9214E+00	0.9165E+00
PRESSURE, PSIG	-0.1083E+01	-0.5055E+00	-0.5055E+00	-0.1083E+01	-0.5055E+00	-0.1155E+01	-0.1227E+01
PRESSURE, MM HG	0.7040E+03	0.7339E+03	0.7339E+03	0.7040E+03	0.7339E+03	0.7003E+03	0.6965E+03
ENTHALPY, PCU/HR	0.1752E+05	0.1348E+04	0.1781E+05	0.1982E+05	0.2272E+04	0.6426E+05	0.7290E+05
VAPOR FLOW, CFM	0.4075E+03	0.1710E+02	0.1674E+03	0.2410E+03	0.5636E+01	0.9006E+03	0.9361E+03
LIQUID FLOW, GPM							
DENSITY, LBS/FT3	0.7160E-01	0.7114E-01	0.6884E-01	0.6535E-01	0.1098E+00	0.6828E-01	0.6569E-01
PHASE	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS -> STREAM NAME	190 PVVF Accumulation	191 PVVF Exit Gas	192 PVVF Exhaust to Tunnel	193 Process Cell Exh to Tunnel	115 Prim Exhaust Gas to Tunnel	121 Bkup Exhaust Gas to Tunnel	194 Inlet Gas to Sand Filter
COMPONENT FLOWS, LB/HR							
122 (C6H5)2	ZERO	0.1287E-01	0.1287E-01	ZERO	ZERO	ZERO	0.1287E-01
123 (C6H5)2C6H4	ZERO	0.1842E-08	0.1842E-08	ZERO	ZERO	ZERO	0.1842E-08
118 (C6H5)2NH	ZERO	0.1090E-02	0.1090E-02	ZERO	ZERO	ZERO	0.1090E-02
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.2339E-10	0.2342E-13	0.2342E-13	0.5269E-13	0.3002E-23	ZERO	0.7610E-13
130 (C6H5OH)	ZERO	0.1052E+00	0.1052E+00	ZERO	0.5123E-08	ZERO	0.1052E+00
121 (C6H6)	ZERO	0.4338E+01	0.4338E+01	ZERO	ZERO	ZERO	0.4338E+01
155 (CH3)2CHOH	ZERO	0.1988E-10	0.1988E-10	ZERO	ZERO	ZERO	0.1988E-10
154 (CH3OH)	ZERO	0.4828E-11	0.4828E-11	ZERO	ZERO	ZERO	0.4828E-11
45 Ag	0.2972E-11	0.2975E-14	0.2975E-14	0.6694E-14	ZERO	ZERO	0.9669E-14
116 Ag2O	0.3026E-17	0.3029E-20	0.3029E-20	0.6815E-20	ZERO	ZERO	0.9844E-20
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.2445E-08	0.2447E-11	0.2447E-11	0.5507E-11	0.2055E-09	ZERO	0.2135E-09
106 B2O3	0.3976E-06	0.3980E-09	0.3980E-09	0.8954E-09	0.3497E-09	ZERO	0.1643E-08
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.5651E-14	0.5657E-17	0.5657E-17	0.1273E-16	0.3117E-12	ZERO	0.3117E-12
24 BaSO4	0.5643E-10	0.5649E-13	0.5649E-13	0.1271E-12	0.4270E-11	ZERO	0.4454E-11
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	0.3042E+02	0.3042E+02	ZERO	0.1444E+02	ZERO	0.4486E+02
142 CO2 (C14)	ZERO	0.6344E-07	0.6344E-07	ZERO	TRACE	ZERO	0.6344E-07
63 Ca(COOH)2	0.9425E-11	0.9434E-14	0.9434E-14	0.2123E-13	ZERO	ZERO	0.3066E-13
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.5725E-09	0.5731E-12	0.5731E-12	0.1289E-11	0.4813E-10	ZERO	0.4999E-10
20 CaC2O4	0.1533E-10	0.1535E-13	0.1535E-13	0.3453E-13	ZERO	ZERO	0.4987E-13
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.3919E-11	0.3923E-14	0.3923E-14	0.8826E-14	ZERO	ZERO	0.1275E-13
41 CaO	0.1089E-11	0.1090E-14	0.1090E-14	0.2453E-14	0.1907E-10	ZERO	0.1907E-10
19 CaSO4	0.1303E-10	0.1305E-13	0.1305E-13	0.2935E-13	0.9862E-12	ZERO	0.1029E-11
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.4940E-13	0.4945E-16	0.4945E-16	0.1113E-15	ZERO	ZERO	0.1607E-15
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.1064E-13	0.1065E-16	0.1065E-16	0.2395E-16	0.2983E-14	ZERO	0.3017E-14
98 Cr2O3	0.5396E-09	0.5401E-12	0.5401E-12	0.1215E-11	0.3515E-11	ZERO	0.5270E-11
42 Cs2O	0.1156E-12	0.1157E-15	0.1157E-15	0.2603E-15	0.3106E-11	ZERO	0.3107E-11
53 CsCOOH	0.5158E-10	0.5163E-13	0.5163E-13	0.1162E-12	ZERO	ZERO	0.1678E-12
96 CsCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.6652E-12	0.6658E-15	0.6658E-15	0.1498E-14	ZERO	ZERO	0.2164E-14
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) -> STREAM NAME	190 PVVF Accumulation	191 PVVF Exit Gas	192 PVVF Exhst to Tunnel	193 Proces Cell Exh to Tunnl	115 Prim Exhstr Gas to Tunnl	121 Bkup Exhstr Gas to Tunnl	194 Inlet Gas to Sand Filter
54 Cu(COOH)2	0.1287E-11	0.1288E-14	0.1288E-14	0.2899E-14	ZERO	ZERO	0.4187E-14
170 Cu(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.5878E-11	0.5884E-14	0.5884E-14	0.1324E-13	0.1644E-10	ZERO	0.1646E-10
80 Fe2O3	0.5838E-08	0.5844E-11	0.5844E-11	0.1315E-10	0.4271E-09	ZERO	0.4461E-09
101 FeO	0.7741E-12	0.7749E-15	0.7749E-15	0.1744E-14	0.4270E-10	ZERO	0.4270E-10
102 Group A	0.5270E-11	0.5275E-14	0.5275E-14	0.1187E-13	0.4177E-12	ZERO	0.4348E-12
103 Group B	0.2557E-10	0.2560E-13	0.2560E-13	0.5760E-13	0.2150E-11	ZERO	0.2233E-11
25 H2	ZERO	0.4213E-01	0.4213E-01	0.9480E-01	ZERO	ZERO	0.1369E+00
158 H2C2O4	0.1796E-10	0.1798E-13	0.1798E-13	0.4045E-13	ZERO	ZERO	0.5842E-13
93 H2SO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H3BO3	0.1951E-08	0.1953E-11	0.1953E-11	0.4394E-11	ZERO	ZERO	0.6347E-11
34 HCOOH	ZERO	0.1089E-02	0.1089E-02	ZERO	ZERO	ZERO	0.1089E-02
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	ZERO	ZERO	0.1445E-02	ZERO	0.1445E-02
49 HNO3	ZERO	ZERO	ZERO	ZERO	0.2308E-01	ZERO	0.2308E-01
36 Hg	ZERO	0.8194E-02	0.8194E-02	ZERO	0.8520E-02	ZERO	0.1671E-01
129 Hg(C6H5)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg2Cl2	ZERO	ZERO	ZERO	ZERO	0.7928E-10	ZERO	0.7928E-10
117 Hg2I2	ZERO	ZERO	ZERO	ZERO	0.4183E-15	ZERO	0.4183E-15
146 HgCl2	ZERO	ZERO	ZERO	ZERO	0.1199E-15	ZERO	0.1199E-15
21 HgO	0.6570E-12	0.3302E-14	0.3302E-14	0.7429E-14	ZERO	ZERO	0.1073E-13
97 I2	ZERO	ZERO	ZERO	ZERO	0.8186E-09	ZERO	0.8186E-09
39 K2O	0.2874E-10	0.2877E-13	0.2877E-13	0.6473E-13	0.1105E-09	ZERO	0.1106E-09
51 KCOOH	0.2289E-08	0.2291E-11	0.2291E-11	0.5156E-11	ZERO	ZERO	0.7447E-11
157 KMnO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO3	0.7470E-11	0.7477E-14	0.7477E-14	0.1682E-13	ZERO	ZERO	0.2430E-13
10 KOH	0.3968E-11	0.3972E-14	0.3972E-14	0.8937E-14	ZERO	ZERO	0.1291E-13
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li2O	0.2716E-06	0.2719E-09	0.2719E-09	0.6118E-09	0.2266E-09	ZERO	0.1110E-08
65 Mg(COOH)2	0.7714E-09	0.7722E-12	0.7722E-12	0.1737E-11	ZERO	ZERO	0.2510E-11
171 Mg(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.8560E-07	0.8568E-10	0.8568E-10	0.1928E-09	0.9335E-10	ZERO	0.3718E-09
60 Mn(COOH)2	0.5583E-09	0.5588E-12	0.5588E-12	0.1257E-11	ZERO	ZERO	0.1816E-11
172 Mn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn3O4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.1016E-11	0.1017E-14	0.1017E-14	0.2289E-14	0.5605E-10	ZERO	0.5605E-10
14 MnO2	0.4873E-09	0.4878E-12	0.4878E-12	0.1097E-11	ZERO	ZERO	0.1585E-11
145 MoO2	0.4021E-12	0.4025E-15	0.4025E-15	0.9055E-15	0.3380E-13	ZERO	0.3511E-13
81 N2	ZERO	0.2763E+04	0.2763E+04	0.3607E+06	0.1395E+04	0.6836E+03	0.3656E+06
74 N2O	ZERO	0.3658E-08	0.3658E-08	ZERO	ZERO	ZERO	0.3658E-08
182 NH3	ZERO	0.1060E-01	0.1060E-01	0.2386E-01	ZERO	ZERO	0.3446E-01
114 NH3OHNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH4COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH4NO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH4OH	ZERO	0.2079E-06	0.2079E-06	0.4678E-06	ZERO	ZERO	0.6757E-06
148 NH4TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	0.1826E+01	ZERO	0.1826E+01

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) -> STREAM NAME	190 PVVF Accumulation	191 PVVF Exit Gas	192 PVVF Exhst to Tunnel	193 Proces Coll Exh to Tunnel	115 Prim Exhstr Gas to Tunnel	121 Bkup Exhstr Gas to Tunnel	194 Inlet Gas to Sand Filter
84 NO2	ZERO	0.3855E+01	0.3855E+01	ZERO	0.3459E+01	ZERO	0.7314E+01
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.4600E-11	0.4605E-14	0.4605E-14	0.1036E-13	ZERO	ZERO	0.1496E-13
109 Na2C2O4	0.2868E-09	0.2871E-12	0.2871E-12	0.6459E-12	ZERO	ZERO	0.9330E-12
5 Na2CO3	0.1096E-23	TRACE	TRACE	TRACE	ZERO	ZERO	TRACE
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	0.2977E-06	0.2980E-09	0.2980E-09	0.6704E-09	0.4092E-09	ZERO	0.1378E-08
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.1049E-09	0.1050E-12	0.1050E-12	0.2362E-12	0.2900E-10	ZERO	0.2934E-10
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.2430E-11	0.2432E-14	0.2432E-14	0.5472E-14	0.2043E-12	ZERO	0.2122E-12
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.6857E-07	0.6863E-10	0.6863E-10	0.1544E-09	ZERO	ZERO	0.2231E-09
7 NaCl	0.8686E-11	0.8695E-14	0.8695E-14	0.1956E-13	0.3395E-12	ZERO	0.3677E-12
69 NaF	0.8465E-11	0.8474E-14	0.8474E-14	0.1907E-13	0.6863E-12	ZERO	0.7138E-12
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.2647E-14	0.2650E-17	0.2650E-17	0.5962E-17	ZERO	ZERO	0.8612E-17
3 NaNO2	0.3232E-09	0.3235E-12	0.3235E-12	0.7279E-12	ZERO	ZERO	0.1051E-11
2 NaNO3	0.4153E-08	0.4157E-11	0.4157E-11	0.9353E-11	ZERO	ZERO	0.1351E-10
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Nd2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.9962E-11	0.9972E-14	0.9972E-14	0.2244E-13	ZERO	ZERO	0.3241E-13
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.2069E-08	0.2071E-11	0.2071E-11	0.4660E-11	0.6300E-11	ZERO	0.1303E-10
82 O2	ZERO	0.8334E+03	0.8334E+03	0.1090E+06	0.4218E+03	0.2065E+03	0.1104E+06
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	0.6777E-13	0.6784E-16	0.6784E-16	0.1526E-15	ZERO	ZERO	0.2205E-15
67 PbO	0.1414E-14	0.1416E-17	0.1416E-17	0.3186E-17	0.7801E-13	ZERO	0.7802E-13
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.2349E-10	0.2352E-13	0.2352E-13	0.5291E-13	0.1876E-11	ZERO	0.1953E-11
124 Pd	0.2050E-12	0.2052E-15	0.2052E-15	0.4617E-15	ZERO	ZERO	0.6669E-15
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.2239E-18	0.2242E-21	0.2242E-21	0.5043E-21	ZERO	ZERO	0.7285E-21
76 PuO2	0.2032E-11	0.2034E-14	0.2034E-14	0.4578E-14	0.1728E-12	ZERO	0.1794E-12
156 PuO2(NaTi2O5)2	0.5772E-13	0.5778E-16	0.5778E-16	0.1300E-15	ZERO	ZERO	0.1878E-15
58 Rh	0.4163E-12	0.4167E-15	0.4167E-15	0.9376E-15	ZERO	ZERO	0.1354E-14
22 RhO2	0.5056E-18	0.5061E-21	0.5061E-21	0.1139E-20	ZERO	ZERO	0.1645E-20
95 Ru	0.1934E-11	0.1935E-14	0.1935E-14	0.4355E-14	ZERO	ZERO	0.6290E-14
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) -> STREAM NAME	190 PVVF Accumulation	191 Exit Gas	192 Exhst to Tunnel	193 Proces Cell Exh to Tunnel	115 Prim Exhstr Gas to Tunnel	121 Bkup Exhstr Gas to Tunnel	194 Inlet Gas to Sand Filter
141 SO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs2O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	ZERO	ZERO	ZERO	ZERO	0.5155E-08	ZERO	0.5155E-08
126 Semi Vol Group A	ZERO	ZERO	ZERO	ZERO	0.2748E-09	ZERO	0.2748E-09
140 Semi Vol Na2B4O7	ZERO	ZERO	ZERO	ZERO	0.3174E-07	ZERO	0.3174E-07
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	ZERO	ZERO	ZERO	ZERO	0.3169E-08	ZERO	0.3169E-08
125 Semi Vol NaI	ZERO	ZERO	ZERO	ZERO	0.2393E-11	ZERO	0.2393E-11
23 Semi Vol RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO2	0.3196E-05	0.3199E-08	0.3199E-08	0.7199E-08	0.2517E-08	ZERO	0.1291E-07
48 Sr(COOH)2	0.4322E-12	0.4326E-15	0.4326E-15	0.9734E-15	ZERO	ZERO	0.1406E-14
176 Sr(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi2O5)2	0.1624E-13	0.1625E-16	0.1625E-16	0.3657E-16	ZERO	ZERO	0.5282E-16
127 Sr(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.5356E-14	0.5361E-17	0.5361E-17	0.1206E-16	0.2954E-12	ZERO	0.2954E-12
159 TcO2	0.6881E-12	0.8267E-15	0.8267E-15	0.1860E-14	0.1082E-12	ZERO	0.1109E-12
92 ThO2	0.3200E-10	0.3203E-13	0.3203E-13	0.7207E-13	0.2690E-11	ZERO	0.2794E-11
107 TiO2	0.1847E-09	0.1849E-12	0.1849E-12	0.4160E-12	0.1553E-10	ZERO	0.1613E-10
119 Tritium	ZERO	0.1157E-09	0.1157E-09	0.2604E-09	0.2632E-11	ZERO	0.3787E-09
17 U3O8	0.5537E-09	0.5542E-12	0.5542E-12	0.1247E-11	0.4655E-10	ZERO	0.4835E-10
62 UO2(COOH)2	0.1914E-16	0.1916E-19	0.1916E-19	0.4311E-19	ZERO	ZERO	0.6226E-19
177 UO2(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO2(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH)3	0.1737E-12	0.1739E-15	0.1739E-15	0.3912E-15	ZERO	ZERO	0.5650E-15
178 Y(NO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y2(CO3)3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y2O3	0.4944E-14	0.4949E-17	0.4949E-17	0.1114E-16	0.9006E-13	ZERO	0.9008E-13
100 Zeolite	0.5284E-12	0.5289E-15	0.5289E-15	0.1190E-14	ZERO	ZERO	0.1719E-14
44 Zn(COOH)2	0.1450E-10	0.1451E-13	0.1451E-13	0.3265E-13	ZERO	ZERO	0.4716E-13
179 Zn(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.1717E-10	0.1719E-13	0.1719E-13	0.3868E-13	0.2082E-11	ZERO	0.2138E-11
104 ZrO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H2O	0.1504E-08	0.1505E-11	0.1505E-11	0.3386E-11	ZERO	ZERO	0.4891E-11
1 water	ZERO	0.5400E+02	0.5400E+02	0.7891E+04	0.1419E+02	0.6641E+01	0.7965E+04
TOTAL FLOW, LB/HR	0.4342E-05	0.3689E+04	0.3689E+04	0.4776E+06	0.1851E+04	0.8968E+03	0.4840E+06
TEMPERATURE, DEG C	0.3169E+02	0.3169E+02	0.4265E+02	0.3500E+02	0.2762E+02	0.2515E+02	0.3501E+02
PRESSURE, ATM	0.9165E+00	0.9018E+00	0.9928E+00	0.9928E+00	0.9928E+00	0.9928E+00	0.9926E+00
PRESSURE, PSIG	-0.1227E+01	-0.1443E+01	-0.1058E+00	-0.1058E+00	-0.1058E+00	-0.1058E+00	-0.1088E+00
PRESSURE, MM HG	0.6965E+03	0.6854E+03	0.7545E+03	0.7545E+03	0.7545E+03	0.7545E+03	0.7544E+03
ENTHALPY, PCU/HR	0.2766E-04	0.7290E+05	0.8239E+05	0.1002E+08	0.2699E+05	0.1186E+05	0.1014E+08
VAPOR FLOW, CFM		0.9514E+03	0.8953E+03	0.1136E+06	0.4262E+03	0.2054E+03	0.1152E+06
LIQUID FLOW, GPM							
DENSITY, LBS/FT3	0.1397E+03	0.6463E-01	0.6869E-01	0.7005E-01	0.7239E-01	0.7275E-01	0.7003E-01
PHASE	SOLID	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR	VAPOR

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 9. Process Vessel Vent System

STREAM NUMBERS -> STREAM NAME	195 Sand Filter Accumulation	196 Sand Filter Inlet Sump	197 Sand Filter after SV rem	198 Fan Exhaust to Stack	199 Sand Filter Exit Sump	200 Stack Exhaust
COMPONENT FLOWS, LB/HR						
122 (C6H5)2	ZERO	ZERO	0.1287E-01	0.1287E-01	ZERO	0.1287E-01
123 (C6H5)2C6H4	ZERO	ZERO	0.1842E-08	0.1842E-08	ZERO	0.1842E-08
118 (C6H5)2NH	ZERO	ZERO	0.1090E-02	0.1090E-02	ZERO	0.1090E-02
133 (C6H5B(OH)2 salt)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
132 (C6H5B(OH)2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
166 (C6H5C6H4OH)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
162 (C6H5NH2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
163 (C6H5NHCHO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
165 (C6H5NO)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
164 (C6H5NO2)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
131 (C6H5OH salt)	0.7609E-13	ZERO	0.1522E-16	0.1522E-16	ZERO	0.1522E-16
130 (C6H5OH)	ZERO	ZERO	0.1052E+00	0.1052E+00	ZERO	0.1052E+00
121 (C6H6)	ZERO	ZERO	0.4338E+01	0.4338E+01	ZERO	0.4338E+01
155 (CH3)2CHOH	ZERO	ZERO	0.1988E-10	0.1988E-10	ZERO	0.1988E-10
154 (CH3OH)	ZERO	ZERO	0.4828E-11	0.4828E-11	ZERO	0.4828E-11
45 Ag	0.9667E-14	ZERO	0.1934E-17	0.1934E-17	ZERO	0.1934E-17
116 Ag2O	0.9842E-20	ZERO	0.1969E-23	0.1969E-23	ZERO	0.1969E-23
134 AgNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
77 Al2O3	0.2135E-09	ZERO	0.4270E-13	0.4270E-13	ZERO	0.4270E-13
106 B2O3	0.1643E-08	ZERO	0.3286E-12	0.3286E-12	ZERO	0.3286E-12
9 Ba(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
15 BaO	0.3117E-12	ZERO	0.6235E-16	0.6235E-16	ZERO	0.6235E-16
24 BaSO4	0.4453E-11	ZERO	0.8907E-15	0.8907E-15	ZERO	0.8907E-15
66 CO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
37 CO2	ZERO	ZERO	0.4486E+02	0.4486E+02	ZERO	0.4486E+02
142 CO2 (C14)	ZERO	ZERO	0.6344E-07	0.6344E-07	ZERO	0.6344E-07
63 Ca(COOH)2	0.3066E-13	ZERO	0.6132E-17	0.6132E-17	ZERO	0.6132E-17
167 Ca(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
120 Ca(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
113 Ca3(PO4)2	0.4998E-10	ZERO	0.9998E-14	0.9998E-14	ZERO	0.9998E-14
20 CaC2O4	0.4986E-13	ZERO	0.9975E-17	0.9975E-17	ZERO	0.9975E-17
18 CaCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
64 CaCO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
78 CaF2	0.1275E-13	ZERO	0.2550E-17	0.2550E-17	ZERO	0.2550E-17
41 CaO	0.1907E-10	ZERO	0.3814E-14	0.3814E-14	ZERO	0.3814E-14
19 CaSO4	0.1028E-11	ZERO	0.2057E-15	0.2057E-15	ZERO	0.2057E-15
29 Carbon	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
99 Cement	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
26 Co(COOH)2	0.1607E-15	ZERO	0.3214E-19	0.3214E-19	ZERO	0.3214E-19
168 Co(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
59 CoO	0.3017E-14	ZERO	0.6035E-18	0.6035E-18	ZERO	0.6035E-18
98 Cr2O3	0.5269E-11	ZERO	0.1054E-14	0.1054E-14	ZERO	0.1054E-14
42 Cs2O	0.3106E-11	ZERO	0.6214E-15	0.6214E-15	ZERO	0.6214E-15
53 CsCOOH	0.1678E-12	ZERO	0.3356E-16	0.3356E-16	ZERO	0.3356E-16
96 CsCl	ZERO	ZERO	0.2578E-10	0.2578E-10	ZERO	0.2578E-10
169 CsNO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
8 CsOH	0.2163E-14	ZERO	0.4328E-18	0.4328E-18	ZERO	0.4328E-18
151 CsTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) ->	195	196	197	198	199	200
STREAM NAME	Sand Filter Accumulation	Sand Filter Inlet Sump	Sand Filter after SV rem	Fan Exhaust to Stack	Sand Filter Exit Sump	Stack Exhaust
54 Cu(COOH) ₂	0.4186E-14	ZERO	0.8374E-18	0.8374E-18	ZERO	0.8374E-18
170 Cu(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
55 CuO	0.1646E-10	ZERO	0.3292E-14	0.3292E-14	ZERO	0.3292E-14
80 Fe ₂ O ₃	0.4460E-09	ZERO	0.8921E-13	0.8921E-13	ZERO	0.8921E-13
101 FeO	0.4269E-10	ZERO	0.8540E-14	0.8540E-14	ZERO	0.8540E-14
102 Group A	0.4347E-12	ZERO	0.1374E-11	0.1374E-11	ZERO	0.1374E-11
103 Group B	0.2233E-11	ZERO	0.4466E-15	0.4466E-15	ZERO	0.4466E-15
25 H ₂	ZERO	ZERO	0.1369E+00	0.1369E+00	ZERO	0.1369E+00
158 H ₂ C ₂ O ₄	0.5841E-13	ZERO	0.1168E-16	0.1168E-16	ZERO	0.1168E-16
93 H ₂ SO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
90 H ₃ BO ₃	0.6345E-11	ZERO	0.1269E-14	0.1269E-14	ZERO	0.1269E-14
34 HCOOH	ZERO	ZERO	0.1089E-02	0.1089E-02	ZERO	0.1089E-02
43 HCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
85 HF	ZERO	ZERO	0.1445E-02	0.1445E-02	ZERO	0.1445E-02
49 HNO ₃	ZERO	ZERO	0.2308E-01	0.2308E-01	ZERO	0.2308E-01
36 Hg	ZERO	ZERO	0.1671E-01	0.1671E-01	ZERO	0.1671E-01
129 Hg(C ₆ H ₅) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
135 Hg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
144 Hg ₂ Cl ₂	0.7927E-10	ZERO	0.1586E-13	0.1586E-13	ZERO	0.1586E-13
117 Hg ₂ I ₂	0.4182E-15	ZERO	0.8365E-19	0.8365E-19	ZERO	0.8365E-19
146 HgCl ₂	0.1199E-15	ZERO	0.2398E-19	0.2398E-19	ZERO	0.2398E-19
21 HgO	0.1068E-13	ZERO	0.5365E-16	0.5365E-16	ZERO	0.5365E-16
97 I ₂	ZERO	ZERO	0.8186E-09	0.8186E-09	ZERO	0.8186E-09
39 K ₂ O	0.1105E-09	ZERO	0.2211E-13	0.2211E-13	ZERO	0.2211E-13
51 KCOOH	0.7446E-11	ZERO	0.1489E-14	0.1489E-14	ZERO	0.1489E-14
157 KMnO ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
161 KNO ₃	0.2430E-13	ZERO	0.4860E-17	0.4860E-17	ZERO	0.4860E-17
10 KOH	0.1291E-13	ZERO	0.2582E-17	0.2582E-17	ZERO	0.2582E-17
150 KTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
105 La ₂ O ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
108 Li ₂ O	0.1110E-08	ZERO	0.2221E-12	0.2221E-12	ZERO	0.2221E-12
65 Mg(COOH) ₂	0.2509E-11	ZERO	0.5019E-15	0.5019E-15	ZERO	0.5019E-15
171 Mg(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
33 MgO	0.3717E-09	ZERO	0.7436E-13	0.7436E-13	ZERO	0.7436E-13
60 Mn(COOH) ₂	0.1816E-11	ZERO	0.3632E-15	0.3632E-15	ZERO	0.3632E-15
172 Mn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
180 Mn ₃ O ₄	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
56 MnO	0.5604E-10	ZERO	0.1121E-13	0.1121E-13	ZERO	0.1121E-13
14 MnO ₂	0.1585E-11	ZERO	0.3170E-15	0.3170E-15	ZERO	0.3170E-15
145 MoO ₂	0.3510E-13	ZERO	0.7021E-17	0.7021E-17	ZERO	0.7021E-17
81 N ₂	ZERO	ZERO	0.3656E+06	0.3656E+06	ZERO	0.3656E+06
74 N ₂ O	ZERO	ZERO	0.3658E-08	0.3658E-08	ZERO	0.3658E-08
182 NH ₃	ZERO	ZERO	0.3446E-01	0.3446E-01	ZERO	0.3446E-01
114 NH ₃ OHNO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
52 NH ₄ COOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
173 NH ₄ NO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
68 NH ₄ OH	ZERO	ZERO	0.6757E-06	0.6757E-06	ZERO	0.6757E-06
148 NH ₄ TPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
35 NO	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO3)2)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) -> STREAM NAME	195 Sand Filter Accumulation	196 Sand Filter Inlet Sump	197 Sand Filter after SV rem	198 Fan Exhaust to Stack	199 Sand Filter Exit Sump	200 Stack Exhaust
84 NO2	ZERO	ZERO	0.1011E+02	0.1011E+02	ZERO	0.1011E+02
70 Na(HgO(OH))	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
94 Na2B4O7	0.1496E-13	ZERO	0.1587E-09	0.1587E-09	ZERO	0.1587E-09
109 Na2C2O4	0.9328E-12	ZERO	0.1866E-15	0.1866E-15	ZERO	0.1866E-15
5 Na2CO3	TRACE	ZERO	TRACE	TRACE	ZERO	TRACE
143 Na2CO3 (C14)	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
89 Na2CrO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
115 Na2MoO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
32 Na2O	0.1377E-08	ZERO	0.2755E-12	0.2755E-12	ZERO	0.2755E-12
71 Na2PuO2(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
73 Na2RhO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
72 Na2RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
6 Na2SO4	0.2933E-10	ZERO	0.5868E-14	0.5868E-14	ZERO	0.5868E-14
88 Na2SiO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
87 Na3PO4	0.2121E-12	ZERO	0.4243E-16	0.4243E-16	ZERO	0.4243E-16
91 NaAg(OH)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
75 NaAl(OH)4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
50 NaCOOH	0.2230E-09	ZERO	0.4461E-13	0.4461E-13	ZERO	0.4461E-13
7 NaCl	0.3677E-12	ZERO	0.7355E-16	0.7355E-16	ZERO	0.7355E-16
69 NaF	0.7137E-12	ZERO	0.1585E-10	0.1585E-10	ZERO	0.1585E-10
11 NaHCO3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
12 NaI	0.8610E-17	ZERO	0.1197E-13	0.1197E-13	ZERO	0.1197E-13
3 NaNO2	0.1051E-11	ZERO	0.2103E-15	0.2103E-15	ZERO	0.2103E-15
2 NaNO3	0.1351E-10	ZERO	0.2702E-14	0.2702E-14	ZERO	0.2702E-14
4 NaOH	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
149 NaTPB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
160 NaTcO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
152 NaTi2O5H	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
181 Na2O3	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
61 Ni(COOH)2	0.3240E-13	ZERO	0.6482E-17	0.6482E-17	ZERO	0.6482E-17
174 Ni(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
40 NiO	0.1303E-10	ZERO	0.2606E-14	0.2606E-14	ZERO	0.2606E-14
82 O2	ZERO	ZERO	0.1104E+06	0.1104E+06	ZERO	0.1104E+06
175 Pb(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
86 PbCO3	0.2204E-15	ZERO	0.4410E-19	0.4410E-19	ZERO	0.4410E-19
67 PbO	0.7800E-13	ZERO	0.1560E-16	0.1560E-16	ZERO	0.1560E-16
147 PbS	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
28 PbSO4	0.1952E-11	ZERO	0.3905E-15	0.3905E-15	ZERO	0.3905E-15
124 Pd	0.6668E-15	ZERO	0.1334E-18	0.1334E-18	ZERO	0.1334E-18
112 Pd(NO3)2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
110 PdO	0.7283E-21	ZERO	0.1457E-24	0.1457E-24	ZERO	0.1457E-24
76 PuO2	0.1794E-12	ZERO	0.3589E-16	0.3589E-16	ZERO	0.3589E-16
156 PuO2(NaTi2O5)2	0.1877E-15	ZERO	0.3756E-19	0.3756E-19	ZERO	0.3756E-19
58 Rh	0.1354E-14	ZERO	0.2709E-18	0.2709E-18	ZERO	0.2709E-18
22 RhO2	0.1644E-20	ZERO	0.3289E-24	0.3289E-24	ZERO	0.3289E-24
95 Ru	0.6289E-14	ZERO	0.1258E-17	0.1258E-17	ZERO	0.1258E-17
79 RuO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
83 RuO4	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
38 SO2	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

Table A-1. Coupled Feed Flowsheet Material Balance (Batch 1/Cu(NO₃)₂)
Section 9. Process Vessel Vent System

STREAM NUMBERS (CONT'D) -> STREAM NAME	195 Sand Filter Accumulation	196 Sand Filter Inlet Sump	197 Sand Filter after SV rem	198 Fan Exhaust to Stack	199 Sand Filter Exit Sump	200 Stack Exhaust
141 SO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
137 Semi Vol Cs ₂ O	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
136 Semi Vol CsCl	0.5129E-08	ZERO	ZERO	ZERO	ZERO	ZERO
126 Semi Vol Group A	0.2734E-09	ZERO	ZERO	ZERO	ZERO	ZERO
140 Semi Vol Na ₂ B ₄ O ₇	0.3158E-07	ZERO	ZERO	ZERO	ZERO	ZERO
138 Semi Vol NaCl	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
139 Semi Vol NaF	0.3153E-08	ZERO	ZERO	ZERO	ZERO	ZERO
125 Semi Vol NaI	0.2381E-11	ZERO	ZERO	ZERO	ZERO	ZERO
23 Semi Vol RuO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
111 SiO ₂	0.1291E-07	ZERO	0.2583E-11	0.2583E-11	ZERO	0.2583E-11
48 Sr(COOH) ₂	0.1406E-14	ZERO	0.2812E-18	0.2812E-18	ZERO	0.2812E-18
176 Sr(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
153 Sr(NaTi ₂ O ₅) ₂	0.5281E-16	ZERO	0.1056E-19	0.1056E-19	ZERO	0.1056E-19
127 Sr(OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
30 SrCO ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
46 SrO	0.2954E-12	ZERO	0.5909E-16	0.5909E-16	ZERO	0.5909E-16
159 TcO ₂	0.1109E-12	ZERO	0.4880E-16	0.4880E-16	ZERO	0.4880E-16
92 ThO ₂	0.2794E-11	ZERO	0.5588E-15	0.5588E-15	ZERO	0.5588E-15
107 TiO ₂	0.1613E-10	ZERO	0.3226E-14	0.3226E-14	ZERO	0.3226E-14
119 Tritium	ZERO	ZERO	0.3787E-09	0.3787E-09	ZERO	0.3787E-09
17 U ₃ O ₈	0.4834E-10	ZERO	0.9670E-14	0.9670E-14	ZERO	0.9670E-14
62 UO ₂ (COOH) ₂	0.6225E-19	ZERO	0.1245E-22	0.1245E-22	ZERO	0.1245E-22
177 UO ₂ (NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
16 UO ₂ (OH) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
27 Y(COOH) ₃	0.5649E-15	ZERO	0.1130E-18	0.1130E-18	ZERO	0.1130E-18
178 Y(NO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
128 Y(OH) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
31 Y ₂ (CO ₃) ₃	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
47 Y ₂ O ₃	0.9006E-13	ZERO	0.1802E-16	0.1802E-16	ZERO	0.1802E-16
100 Zeolite	0.1719E-14	ZERO	0.3438E-18	0.3438E-18	ZERO	0.3438E-18
44 Zn(COOH) ₂	0.4715E-13	ZERO	0.9432E-17	0.9432E-17	ZERO	0.9432E-17
179 Zn(NO ₃) ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
57 ZnO	0.2137E-11	ZERO	0.4275E-15	0.4275E-15	ZERO	0.4275E-15
104 ZrO ₂	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
13 hydrate H ₂ O	0.4890E-11	ZERO	0.9783E-15	0.9783E-15	ZERO	0.9783E-15
1 water	ZERO	0.4750E+00	0.7965E+04	0.7965E+04	0.4750E+00	0.7965E+04
TOTAL FLOW, LB/HR	0.5899E-07	0.4750E+00	0.4840E+06	0.4840E+06	0.4750E+00	0.4840E+06
TEMPERATURE, DEG C	0.3501E+02	0.3500E+02	0.3501E+02	0.3873E+02	0.3500E+02	0.3873E+02
PRESSURE, ATM	0.9926E+00	0.1000E+01	0.9680E+00	0.1000E+01	0.1000E+01	0.1000E+01
PRESSURE, PSIG	-0.1088E+00	ZERO	-0.4703E+00	ZERO	ZERO	ZERO
PRESSURE, MM HG	0.7544E+03		0.7357E+03			
ENTHALPY, PCU/HR	0.4382E-06	0.1667E+02	0.1014E+08	0.1056E+08	0.1667E+02	0.1056E+08
VAPOR FLOW, CFM			0.1181E+06	0.1157E+06		0.1157E+06
LIQUID FLOW, GPM		0.9486E-03			0.9486E-03	
DENSITY, LBS/FT ³	0.1536E+03	0.6243E+02	0.6830E-01	0.6972E-01	0.6243E+02	0.6972E-01
PHASE	SOLID	LIQUID	VAPOR	VAPOR	LIQUID	VAPOR

DATE

FILMED

5/19/94

END