NDC-1780

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**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute**

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WFO-1780

C-361 Engineer's Flow Sketch and Process
Description UFW Conversion Facilities

J. M. Frame, C. G. Pragg

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Case re: Nossen et al
vs United States
Court of Claims
Docket # 350-61

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W3 Book-Scope

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Route List

1. ~~W. K. MacGready~~
2. ~~W. K. MacGready~~
3. ~~W. K. MacGready~~
4. ~~W. K. MacGready~~
5. ~~W. K. MacGready~~

DATE June 1, 1950

SUBJECT C-361, Engineers' Flow Sketch and Process Description UNH Conversion Facilities

To File

FROM J. M. Frame/C. G. Bragg

COPY No. 1

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J. R. Morrey 13531 325

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Izgulski 8-27-62

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MAY 1953

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7-28-94

This document consists of

10 Pages No. [redacted]

Richland, Washington
June 1, 1950

To: File

PROJECT C-361
ENGINEERS' FLOW SKETCH AND PROCESS DESCRIPTION
ONE CONVERSION FACILITIES

Supersedes HDC-1754.

Approved by:

R. E. Smith 6-13-50
R. E. Smith, Technical Division

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DECLASSIFIED**A. Introduction**

The Metal Conversion Process described herein is designed to handle the combined output of decontaminated uranium from both the Redox and T.B.P. processes. Thus the design rate is 13-1/8 short tons per day. The bulk of the equipment is to be installed in the presently unused 224-U Building.

B. Process Description**1. General**

The process has been divided into three steps.

- 1) Acid Recovery & Uranyl Nitrate Concentration.
- 2) Uranyl Nitrate Conversion.
- 3) Waste Metal Recovery Product Receivers.

The major items of equipment and flows thru the plant are shown on the attached Engineers' Flow Sketches, numbered SK-2-50005, SK-2-50006, and SK-2-50047.

2. Acid Recovery & Uranyl Nitrate Concentration

The products of this system are concentrated uranyl nitrate, 60% nitric acid, 40% nitric acid, and water. Since it will take about three years to exhaust the uranium bearing material now stored underground, after which time the plant will run at a reduced rate, this section of the plant has been split into two parallel and identical systems. The flow from the feed storage tanks and thru either half of the acid recovery and uranyl nitrate concentration system may be described as follows:

(See 4 below for sampling facilities on the RCU stream from T.B.P.)

Feed from Redox and T.B.P., composed of uranyl nitrate in dilute nitric acid, is received alternately in either of two 96,000 gallon working capacity, vertical cylindrical storage tanks. This is equivalent to a total storage of two days feed. These tanks are equipped with side-entering agitators and steam heating coils and are provided with recording instruments for temperature, specific gravity, and liquid level.

After required mixing and sampling, uranium-containing liquor is fed to the evaporator by horizontal centrifugal pumps. Liquor flow is regulated by a flow controller.

The evaporator effects concentration of uranyl nitrate by continuously boiling out water and nitric acid. Concentrated uranyl nitrate overflows from the evaporator system to a heated storage tank. The evaporator system consists of a vertical tube evaporator heated by steam on the shell side, a centrifugal separator to de-entrain liquid in the overhead from the evaporator and circulating lines between these vessels. Control of evaporator operation is by a temperature sensing element in the liquid return line from the

- 3 -

separator to the evaporator which resets a flow controller regulating steam to the evaporator shell. Vapors of water and nitric acid flow overhead from the separator to the nitric acid fractionator, where the nitric acid is concentrated to sixty weight per cent for re-use.

Uranyl nitrate bottoms are held in an agitated heated storage tank under temperature control. A submerged pump circulates uranyl nitrate thru a loop header to the decomposition pots (see (3) following.)

The nitric acid fractionator is a conventional bubble tray tower which produces 60% nitric acid as a bottom product. Overhead water vapor is condensed and part is returned to the tower as reflux. If the reflux pump fails, deionized water will be used for reflux. The excess condensate goes to cribbing. Control of bottoms product quality is maintained thru a specific gravity recorder resetting a flow controller regulating steam to the tower reboiler. Top and bottom tower temperatures are recorded.

Bottoms product from the fractionator flows to a 600 gallon working capacity cooling tank equipped with agitator and water coils. Record of specific gravity and temperature is provided, and flow out of the tank is by level controlled submerged pump.

Condensate required for reflux is pumped to the tower by a submerged pump in the condensate tank. Level control maintains this tank full and by-passes excess condensate directly to cribbing. The condensate tank has a working capacity of about 600 gallons.

Hot gases from the uranyl nitrate decomposition pots (see (3) following), consisting of water, nitric acid, air and oxides of nitrogen, are cooled in the gas cooler and partially converted to dilute nitric acid. Cooled uncondensed gases from the cooler flow to the nitric acid absorber. The gas cooler is equipped with a remote operated valve on the cooling water and a flow recorder to measure the uncondensed gases.

The absorber is a bubble tray tower, with cooling coils on each tray to remove the heat of formation of dilute nitric acid. Deionized water for this absorption is fed into the top of the tower, the rate of water feed being regulated by a specific gravity recorder in the absorber. The remaining oxides of nitrogen are converted to nitric acid here.

Dilute acid condensed in the gas cooler and dilute acid bottoms from the absorber are combined into one stream and pass downward thru a small packed stripping tower where they are stripped with air to remove traces of dissolved NO. The stripping air is returned to the bottom of the absorber. The quantity of stripping air is regulated by a flow controller.

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- 4 -

Bottoms from the stripping tower flow into the 40% nitric acid tank which is equipped with cooling coils, an agitator and a submerged pump, and has a working volume of 600 gallons. Nitric acid is pumped out under level control. Record of specific gravity and temperature is provided.

3. Uranyl Nitrate Conversion

This step of the Process involves the thermal decomposition of uranyl nitrate to the tri-oxide, and the subsequent handling and packaging of the product. Proper ventilation of the area where these operations take place must be provided. The majority of problems in this step are of a mechanical nature.

Uranyl nitrate pumped from the storage tank is circulated continuously through a loop with individual take-offs to each decomposition pot, and is drawn off to the individual pots as required.

Eighteen pots are provided, each pot being about 30" inside diameter by 30" deep overall. This size will allow adequate free-board for a charge having a net UO_2 content of about 600 pounds. Based on a 600 pound yield per batch and with a time cycle as described below, sixteen of the eighteen pots will be in operation, and the remaining two pots will be available for spares. Each pot is provided with an electric furnace, which will deliver 50 KW. Regulation of the decomposition of uranyl nitrate will be secured by variation of temperature with time.

One operation cycle for a pot is as follows:

<u>Operation</u>	<u>Time</u>
Load	10 min.
Heat Up	2 hr. - 40 min.
Decompose	3 hr. - 0 min.
Final Heat	20 min.
Cooling	40 min.
Unload	10 min.
	<hr/> 7 hr. - 0 min.

Calculation of the foregoing time cycle is based on reports of G. E. observers at Mallinckrodt, where a gas-fired furnace is used.

Decomposition pots are provided with anchor type agitators, turning at about 40 RPM. These agitators clear the pot wall by about 1/8", in order to aid in transfer of heat to the salt. The agitator is powered with a $7\frac{1}{2}$ HP drive, since just prior to complete conversion to UO_3 the mixture goes through a "plastic" stage where its consistency is that of a heavy dough.

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- 5 -

Gases evolved by the decomposition of U₃N₈ are drawn to the gas cooler, and treated as described in part (2) above.

The handling of uranium tri-oxide powder is discussed briefly below. It will be treated more fully in design instruction letters now in preparation, as it is primarily a mechanical problem.

UO₃ powder product is unloaded with a vacuum type pneumatic conveyor after shutting off the gas line to the gas cooler. The complete system is composed of unloading lines with flexible hose connections to each pot, a combination cyclone separator and product receiver, a "sock-type" bag dust collector and a centrifugal exhaust. The product receiver is emptied by a rotary valve since it is under a negative pressure of about 5 psi. The unloading system is designed to unload a maximum of two pots simultaneously. The discharge of the exhaust passes through the ventilation system dust collector as a final clean-up (see below).

In order to minimize dusting which will take place during unloading handling, and packaging of UO₃ powder, a separate ventilation system has been provided for the pot room and loading facilities. The system will produce an air velocity of 400 FPM across the pots during unloading, and is also used to produce a slight negative pressure in all material hoppers and lines. The ventilation system consists of the required dustwork, a combination cyclone separator and dust hopper, a continuously cleaned tube type bag house (Hersey patent), and an exhaust fan. The discharge of the exhaust fan is direct to atmosphere thru a stub stack. The dust hopper discharges through double dump valves.

Instrumentation of the pneumatic unloading and dust collecting systems consists of draft gauges, material level indicators and detectors to signal the presence of ruptured bags.

In case of UO₃ powder spills, a standard commercial type vacuum cleaner system has been provided. This system will be used as required for clean-up in the pot room and around the bag houses. Air discharged from this system will pass thru the ventilation system bag house as a final clean-up.

Dust collected in the ventilation system hoppers and in the vacuum cleaner system will be analyzed, packaged and stored until reprocessing method is determined.

UO₃ collected in the product receiver is fed out by rotary valves and drops by gravity through a crusher which reduces the particle size to 100% through 80 mesh. The UO₃ is now ready for packaging and a weight actuated packaging system is shown on the flow sheet. Final make-up of this system awaits information from the AEC as to the size and nature of containers desired.

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4. Waste Metal Recovery Product Receivers

Each of the two principal ROU lines from the T.B.P. process in Building 221-U is valved to feed alternately to one of two 12,000 gallon receivers, in which the stream is batch sampled and analyzed for plutonium and fission products prior to subsequent processing. Uranium inventory may be obtained here. Acceptable material is pumped to one of two outside feed storage tanks. Off-grade material is returned to the Utility Hold-Up Tank (TK-4-6) in 221-U. This allows about four hours for sampling analysis and return of results.

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FROM TBP	LBS	WT%
UNH	41340.	5.0
HNO ₃	13390.	1.6
TBP	100.	
H ₂ O	774380	93.4
TOTAL	829210	

99,150 GAL. SPGR. 1.056

FROM REDOX	LBS.	WT%
UNH	13088.	60.0
HNO ₃	124.	0.6
Al(NO ₃) ₃ 9H ₂ O	8.	
H ₂ O	8588.	39.4
TOTAL	21808.	

1588 GAL. SPGR. 1.64

CONCENTRATOR FE

UNH
HNO₃
TBP
Al(NO₃)₃ 9H₂O
H₂O
TOTAL

95,738 GAL

ACID VAPOR

HNO₃
UNH
TBP
H₂O
TOTAL

15,750,000 Ft³ (S)

WATER VAPOR

HNO₃
H₂O
TOTAL

18,800,000 Ft³ (STP)

REFLUX

HNO₃
H₂O
TOTAL

19,500 GAL.

UN CONCENTRATE

PROCESS STEP

IN PROCESS

CONDENSATE	93.500 GAL	SP. GR. 1.00
HNO ₃	10.721	
H ₂ O	778.366	
<	520	
0.05	778.366	
WT%	LBS.	

TRACES NO. 0.

AQUEOUS WASTE

GASEOUS W

WASTE

PRODUCT

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60% HNO_3	LBS.	WT %
HNO_3	12984	60.0
TBP	100.	0.5
UNH	55.	0.3
H_2O	8501	39.2
TOTAL	21640	
1890 GAL	SP. GR	1.37

UN CONCENT

UN · H₂O
HNO₃
AL(NO₃)₃ · 9H₂O
H₂O
TOTAL
2330 GAL

IN LEAKAGE
AIR MAXIMUM 60 CFM. (STP)

OFF GAS

NO₂
NO
O₂
HNO₃
H₂O
TOTAL
AIR
255,640 FT³ (S)
86,400 FT³ (S)

COOLED OFF
N₂O₄
NO₂
O₂
H₂O
TOTAL
AIR
47,065 FT³ (S)
86,400 FT³ (S)

ABSORBENT

H₂O 14 830 LBS
1800 GAL SF GR = 1.00

ABSORBER F
N₂O₄
NO₂
O₂
HNO₃
H₂O
TOTAL
AIR
52 160 FT³ (S)
194 000 FT³ (S)

ABSORBER NM

HNO₃
NO
H₂O

UN CONCENTRATE	LBS	WT%
UN · H ₂ O	44,625.	88.4
HNO ₃	12.	0.01
AL(NO ₃) ₃ · 9H ₂ O	8.	0.01
H ₂ O	5849.	11.6
TOTAL	50492.	
2330 GAL	HOT SP. GR. ~ 2.6 F.P. ~ 210°F	

UN DECOMPOSITION

OFF GAS	LBS	VOL%
NO ₂	9270.	21.1
NO	455.	1.6
O ₂	1976.	6.5
HNO ₃	10.	0.02
H ₂ O	7802.	45.5
TOTAL	19513.	
AIR	6977.	26.2
255,640 FT ³ (STP)	T ≈ 275°-500°F	
86,400 FT ³ (STP) AIR		

GAS COOLING

COOLED OFF GAS	LBS.	VOL%
N ₂ O ₄	5520.	16.2
NO ₂	825.	4.8
O ₂	1122.	9.5
H ₂ O	326.	4.9
TOTAL	7793.	
AIR	6977.	64.7
47,065 FT ³ (STP)	T ≈ 85°F	
86,400 FT ³ (STP) AIR		

NO₂ ABSORPTION

ABSORBER FEED	LBS	VOL%
N ₂ O ₄	5599	11.1
NO ₂	838	3.3
O ₂	1090	6.4
HNO ₃	11	.03
H ₂ O	562	5.7
TOTAL	8100.	
AIR	11628.	73.4
52,160 FT ³ (STP)	T ≈ 95°F	
144,000 FT ³ (STP) AIR		

ABSORBER HNO ₃	LBS.	WT%
HNO ₃	8720.	38.5
NO	40.	0.2

ION

STACK GAS
NO₂
H₂O
TOTAL
AIR
4700 FT³
144,000 FT³ (ST

UO_3	LBS.
Al_2O_3	1.
UO_3	30,978.
BULK DENSITY $\sim 250 \text{ LBS/FT}^3$	

NOTES

1. ALL VALUES ARE BASED ON AN INSTANTANEOUS PROCESSING RATE OF $13\frac{1}{8}$ TONS URANIUM PER DAY. AN AVERAGE RATE OF $10\frac{1}{2}$ TONS URANIUM PER DAY IS EXPECTED.
2. SPECIFIC GRAVITY OF ALL SOLUTIONS IS GIVEN AT $75^\circ F$ UNLESS OTHERWISE NOTED.

LBS.	Vol %
18.	0.1
227.	3.0
245.	
628.	96.9
$T \approx 75^\circ F$	

40% HNO_3	LBS.	WT %
HNO_3	13628.	40.0
H_2O	20459.	60.0

O_2
 HNO_3
 H_2O
TOTAL
AIR
52 160 FT^3 (S)
194 000 FT^3 (S)

ABSORBER HNO_3
 HNO_3
NO
 H_2O
TOTAL
2202 GAL

COOLER HNO_3
 HNO_3
NO
 H_2O
TOTAL
1115 GAL

AIR STRIP
AIR ~ 40 CFM

SCRUBBER AIR
 N_2O_4
 NO_2
 HNO_3
 H_2O
TOTAL
AIR
5500 FT^3 (STP)
57 600 FT^3 (STP)

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O ₂	1090	6.4
HNO ₃	11	0.3
H ₂ O	562	5.7
TOTAL	8100	
AIR	11628	73.4
52 160 FT ³ (STP)	T = 95°F	
144 000 FT ³ (STP) AIR		

ABSORBER HNO ₃	LBS.	WT %
HNO ₃	8720.	38.5
NO	40.	0.2
H ₂ O	13920.	61.3
TOTAL	22680.	
2202 GAL	SP. GR.	1.24

COOLER HNO ₃	LBS.	WT %
HNO ₃	4920.	42.0
NO	20.	0.2
H ₂ O	6770.	57.8
TOTAL	11717.	
1115 GAL	SP. GR.	1.26

HNO₃ SCRUB

SCRUBBER AIR	LBS.	VOL %
N ₂ O ₄	61.	0.9
NO ₂	11.	0.2
HNO ₃	11.	0.1
H ₂ O	236.	7.5
TOTAL	339.	
AIR	4619	91.3
5500 FT ³ (STP)	T = 120°F	
57.600 FT ³ (STP) AIR (LESS 32 LBS O ₂)		

A
4
74

SCRUB

SECRET

DWG.

7. 3.0
 5.
 8. 96.9
 = 75°F

40% HNO_3	LBS.	WT %
HNO_3	13628.	40.0
H_2O	20459.	60.0
TOTAL	34087.	
3280 GAL.	SF. GR.	1.24.

ED FOR G-E CO.
 Date _____
 Date _____
 Date _____
 VED FOR A. E. C.
 Date _____
 Date _____

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NO.	DESCRIPTION	BY	DATE	APPVD	DATE	APPVD
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REVISIONS

SCALE: NONE	APPROVALS		
	BY	DEPT.	DATE
DRAWN BY: RET. 4-22-50	J.M. Lamm	D & C	6-12-50
CHECKED BY: JOL. DATE 4/22	RE/mitts	Tick	6-12-50
	JO Holmback	"S"	6/12/50
ENG. REP. NO.			
PROJECT NO. C-361			

GENERAL ELECTRIC CO.
HANFORD WORKS

MATERIAL BALANCE FLOWSHEET
 METAL CONVERSION PLANT

TITLE	BLDG. NO'S.	224 U	DWG. NO.	SK-2-500004
DRAWINGS				

16
 JUN 1 1950
 HDC1780

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[REDACTED]

BLW-241 WH, TK.006

TH-

4.0
PH

UN RETURN (LOOP)
5' / SEC. MIN.

UN TO POTS (NET)

BASIS:-
50 GPM W/ 20 GPM DRAW-OFF
RETURN 30 GPM MIN.

GENERAL NOTES

1. LINES ①⑨, ②⑦ & ②① ARE TO BE JACKETED AS INDICATED.

SEE DWG. SK-2-50006

APPROVED

APPROVED

• GENERAL NOTES •

BASIS:-
50 GPM w/ 20 GPM DRAW-OFF
RETURN 30 GPM MIN.

1. LINES (19), (20) & (21) ARE TO BE STEAM
JACKETED AS INDICATED.

APPROVED FOR G-E CO.

By _____ Date _____
By _____ Date _____
By _____ Date _____

APPROVED FOR A. E. C.

LINE NUMBER	DESIGNATION	COMPONENT									
1	RCU	O ₂	AIR	UNH	HNO ₃	H ₂ O	TBP	ANU	UN-H ₂ O	NO ₂	NO
2	3EU										
3	EVAPORATOR										
4	FEED										
5	SEP.										
6	O.H.										
7	F										
1	RCU	41340	13068	54428	27214	27214	27	6752	393434	47	50
2	3EU	124	13514	6757	6757	6752	27	6752	393434	47	50
3	EVAPORATOR										
4	FEED										
5	SEP.										
6	O.H.										
7	F										
1	RCU	829210	21808	851018	425509	425509	400263	400263	47	215	7875M
2	3EU	94150	1589	95738	47869	47869	7875M	7875M	215	7875M	47
3	EVAPORATOR										
4	FEED										
5	SEP.										
6	O.H.										
7	F										
1	RCU	70	1056	1.64	1.07	1.07	70	1.07	1.07	70	1.07
2	3EU	70	1056	1.64	1.07	1.07	70	1.07	1.07	70	1.07
3	EVAPORATOR										
4	FEED										
5	SEP.										
6	O.H.										
7	F

• TK-E-1 •
• UN • TANK •
3000 GAL. W.V.

PIA

R
EGR.

SPL

ATA.

24
0' H₂O
5 GPM

T-D-1

T-D-6

TK-C-1

FLOOR DRAINS - ALL CELLS

• TK-C-2 •

SUMP TANK

3000 GAL. W.V.

(SCHEMATIC ONLY)

26	27	28	29	30	31
TE HNO ₃	40% HNO ₃	AIR	STR.O.H.	EX.GAS	H ₂ O
		4619	4619	11628	
8720	13628		11		
13920	20459		236	227	14890
			11	18	
40			81		
22680	34087	4619	4958	11873	14890
2202	3280	57.6M	63.1M	148.7M	1800
100 BF-120		70	120	75	70
1.24	1.24				1.00

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* CU. FT. / DAY @ 760 MM. HG. & 0°C.
GAL. / DAY @ 75°F.

• TK-E-1 •
• LIN • TANK •
3000 GAL. W.V.

SEE DWG.

23

GAS FROM POTS

Bldg 211, TK 313

TK-A-1

TK-B-2

TK-U-361 18 Bldg 241-U

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JUN 16 1950

• TK-C-2 •

SUMP TANK

3000 GAL. W.V.

(SCHEMATIC ONLY)

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@ 760 MM. HG, & 0°C.
75°F.

DWG. NO.	TITLE
REFERENCE DRAWINGS	

21

THESE LINES STEAM JACKETED, SEE NOTE 1, SK-2-50005

P-FG-1

P-FG-2

P-FG-3

P-FG-4

P-FG-5

?

FG-5

P-FG-6

CONTINUOUS VEN BAG FILTER

P-FG-11

P-FG-10

P-FG-12

P-FG-13

P-FG-14

P-FG-15

P-FG-7

P-FG-18

ROTARY AIR LOCK

54

VACL
54

MILL

51

56

MANOMETER

STORAGE BIN
16 TONS W.C.

HIGH LEVEL BIN CONTROL

THIS
ANAL
DISP

WAREHOUSE

LOW LEVEL BIN CONTROL

ROTARY AIR LOCK

PACKAGING

57

58

54

VACUUM CLEANER
SYSTEM

HOSE STATIONS
AS REQUIRED

THIS MATERIAL TO BE
ANALYZED AND APPROPRIATE
DISPOSAL MADE

WAREHOUSE

R.R. SPUR

LINE NUMBER	21	23	50	51	52	53
DESIGNATION						
AIR - SCFM	SEE DWG # JK-2-50005	SEE DWG # JK-2-50005	400		400	8000
AL ₂ O ₃						
UO ₃			30,978	30,978		
				SEE D.I.L.		
TOTAL LBS/DAY						
GAL'S. OR CU.FT./DAY						
TEMP °F			150			100
SP. GR.

52	53	54	55	56	57	58	59	6
400	8000	SEE D.I.L.	8000	50 (INTERMIT- TENT FLOW)	2000 (INTERMIT- TENT FLOW)	30978	1500 (MAXIMUM (SAM OF FOUR AS LINES USED SI- MULTANE- OUSLY)	
						30979		
						[250 #/CF]		
	100		100	100	75		100

60

100

(SAME
AS 59)

150

50 KW DECOMPOSITION POTS
P-FG-1 TO P-FG-18 INCL.

TYP.

WORKING CAPACITY EACH POT
EQUAL TO 600 LBS UO_3
PER CHARGE.

APPROVED FOR G-E CO.

By _____ Date _____

By _____ Date _____

By _____ Date _____

APPROVED FOR A.E.C.

By _____ Date _____

By _____ Date _____

APPROVED FOR G-E CO.

Date

Date

Date

APPROVED FOR A. E. C.

Date

Date

(33)

5th Dec 6-15-50

HDC1780

JUN 10 1950

DWG. NO.

TITLE

REFERENCE DRAWINGS

No.	Description	BY	DATE	APPD.	DATE	APPD.			
REVISIONS									
SCALE:		APPROVALS							
		BY	DEPT.	DATE					
DRAWN BY Ben Douglass 4/25/50		J.M. Fagan	B & C	6-12-50					
CHECKED BY G.B.PAGG 6-12-50		R.E. Smith	Tech	6-12-50					
		F.H. Hollenbeck	S	6/13/50					
		PRELIMINARY NOT APPROVED FOR CONSTRUCTION							
ENG. REP. NO.									
PROJECT NO. C-361									
GENERAL ELECTRIC CO. HANFORD WORKS ENGINEERS FLOW SKETCH CONVERSION FACILITIES									
BLDG. NO'S 224-U		DWG. NO. SK-2-50006

"CELL A"

LINE NUMBER	1	2	3	4
DESIGNATION	RCU	RCU

"CELL B"

12 HPC1

JUN

CAUTION

Information affecting the safety of the process is being controlled

page 10

By _____ D _____

DECLASSIFIED

[illegible]

FDC1780

JUN 16 1950

LINE NUMBER	1	2	3	4
DESIGNATION	RCU	RCU		
COMPONENT	UNH	20670	20670	
	HNO ₃	6695	6695	
	TBP	50	50	
	H ₂ O	387190	387190	
TOTAL LBS PER DAY		414605	414605	
GALLONS PER DAY		47075	47075	
TEMP °F		AMB.	AMB.	
SP. GR.		1.056	1.056	
PUMPING RATE			100 GPM	100 GPM

EACH 7

"CELL B"

12 RDC1780

JUN 16 19

CAUTION
 Information affecting the
 Defense of the United States
 disclosure of its contents in
 person is prohibited. Result in severe criminal
 applicable Federal laws.

DECLASSIFIED

DWG. NO.	TITLE
REFERENCE DRAWINGS	

RR

MK

WFR

SPGR

TR

SPL

EACH TANK ~ W.V. 12,000 GAL

DECLASSIFIED

FDC1780

REVISIONS

SCALE:

APPROVALS

BY

DEPT.

DATE _____

DRAWN BY CG BRAGG 5-25-50

DATE _____

CHECKED BY [Signature] DATE 6-2-50

DATE _____

PRELIMINARY

NOT APPROVED FOR CONSTRUCTION

ENG. REP. NO.

PROJECT NO. C-361

**GENERAL ELECTRIC CO.
HANFORD WORKS**

C-361 ~ ENGINEERS FLOW SKETCH

METAL WASTE RECOVERY
PRODUCT RECEIVERS

BLDG.

NO'S 224-U

DWG.

No. 5A-2-30047

3rd Dec 6-15-50

224.4