TID-4100 (Suppl. 42)

MASTER

Supplemental Insert Sheets for

ENGINEERING MATERIALS LIST

December 1967

United States Atomic Energy Commission
Division of Technical Information

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ENGINEERING MATERIALS LIST

Supplement 42

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Division of Technical Information Extension
Oak Ridge, Tennessee

~~RESTRICTED~~
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INTRODUCTION

The Engineering Materials List (EML) announces the availability of AEC engineering materials and is issued in the TID-4100 series at irregular intervals in the form of supplements. Materials announced in the EML are organized into sets of drawings, specifications, design criteria, and other data concerning individual instruments, devices, etc. Each set, or package, is identified by a CAPE number with each item in the set given a unique numerical identification.

For the most efficient use of the EML, recipients should file the information concerning each set of materials in CAPE-number sequence, preferably in a loose-leaf binder. This permits interfiling the description of each new or revised CAPE package in a base catalog. Interfiling is important since all cumulative indexes refer to CAPE numbers rather than to EML supplements or pages within supplements.

Cumulative indexes for the EML are identified and described as follows:

TID-4100(1st Rev., Index 2)
Contains subject and corporate author indexes
for TID-4100(1st Rev. through Suppl. 12).

TID-4102(1st Rev.)
Contains subject and corporate author indexes
for TID-4100(Suppls. 13 through 26) prepared
by a subsequently discontinued experimental
computer program; also contains an engineer-
ing category index for TID-4100(1st Rev.
through Suppl. 26).

TID-4100(Suppl. 36)
Contains a subject category index covering
TID-4100(1st Rev. through Suppl. 36). In
view of the existence of no complete
conventional index in one style, this index
should prove helpful in making subject
searches of all AEC engineering materials
made publicly available and announced in
the EML through TID-4100(Suppl. 36)

A cumulative index conforming to the style used in
Nuclear Science Abstracts will be issued annually
as a separate publication.

Purchase orders for and inquiries regarding prices of CAPE packages in full-size blueline print or microcopy forms should be sent to:

Clearinghouse for Federal Scientific
and Technical Information
U. S. Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22151

Blueline prints of drawings and specifications are priced at \$0.05 per square foot; the price for copies of photographic prints is \$0.50 each. Shipping charges and a handling charge of \$1.00 are added for each order. Approximate total square-foot area of drawings and specifications in each CAPE package is indicated in the supplements to the EML.

References given at the end of abstracts of CAPE packages identify reports or published literature containing additional information concerning the specific engineering materials. Abbreviations used in these references are explained as follows.

CFSTI	For sale by the Clearinghouse for Federal Scientific and Technical Information. Address is given above.
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The EML and indexes are available without charge. Requests for these publications and inquiries concerning AEC engineering materials not announced in the EML should be directed to:

Division of Technical Information Extension
U. S. Atomic Energy Commission
P. O. Box 62
Oak Ridge, Tennessee 37830

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SUBJECT INDEX

LISTS OF DEPOSITORY LIBRARIES

REVISION

FLUORINATION PLANT FOR MANUFACTURE OF UF_6

Union Carbide Corporation
Nuclear Division
Paducah Plant
Paducah, Kentucky

Uranium tetrafluoride (UF_4) is converted to uranium hexafluoride (UF_6) in a highly exothermic reaction, shown as follows: $UF_4 (s) + F_2 (g) = UF_6 (g) + 112,000 \text{ BTU/lb. Mol. U.}$ The UF_6 production line consists generally of a vertical, water-cooled flame reactor, sintered metal filters, heat exchangers, a fluorine cleanup reactor and an ejector for inert gas removal. Gaseous UF_6 is produced by treating UF_4 with pre-heated F_2 in the water cooled flame reactor. The gas is filtered and chilled to a solid in a refrigerated heat exchanger. The solid is liquefied under pressure and drained into ten-ton product cylinders. This is a relatively simple process lending itself to highly automated mass production techniques. Chemical efficiencies are high; the F_2 efficiency is 99% and the uranium yield is greater than 99%. The product is 99.9% pure UF_6 .

AEC Nos.	Other Nos.	Description
CAPE-54		<u>DRAWINGS</u>
		<u>UF_6 PROCESS BAY</u>
1	C410-301M	Equipment Layout
2	C420-9ME	Equipment Layout, Section "B"
3	C420-10ME	Equipment Layout, Sections "C" and "D"
4	C420-408B-E	Reactor Bank Panels, "A" and "B" Layout
5	C420-413E	Temperature Control Panel Layout
6	C420-424E	Powder Flow Control Schematic, Sheet 1
7	C420-427AE	Reactor Bank "A" Alarm and Control Schematic
8	EI-11073C	Green Salt Analyzer System Schematic
9	EI-11260A	HF Screw Reactor Temperature Control Schematic
10	EE-10931B	Powder Conveyor Panels and Mimic Layout

AEC Nos.	Other Nos.	Description
CAPE-54-		DRAWINGS (Cont'd)
11	EE-10931C	Alarm and Control Schematic, Sheet 1
12	EE-10931D	Alarm and Control Schematic, Sheet 2
13	EE-10931E	Alarm and Control Schematic, Sheet 3
14	EE-10931J	Weight System Schematic Diagram
15	DPI-P4978B	SO ₂ TYPE F ₂ ANALYZER Flow Diagram
16	EPI-P4978C	Piping Layout
17	EPI-P4978E	Electrical Details
18	EPI-P4978F	Capillary Details
19	EPI-P4978G	Reactor Details
20	EPI-P4978M	Control Room Panel
21	C410-424E	FLUORINE TOWERS
22	DE-10184A	FE-501E Control Schematic
23	DM-10237AE	Powder Disperser Electrical Details
24	EM-10561B	Cooling Water Flow Diagram
25	DM-10561D	Equipment Layout for FE 301 "A", "B", and "C"
26	DM-10561E	Upper Section Details
27	DM-10561G	Lower Section Details
28	DM-10561H	Cooler Leg Details
29	DM-10561J	Primary Cyclone Details
30	EI-6852E	Secondary Cyclone Details
31	EI-11094G	Instrument Application
32	CM-10561F	"A and B" Tower Panel No. 36
33	DM-10324A	Process Graphic
34	DM-10324B	F ₂ Tower Bellows Details
35	DM-10324C	F ₂ Tower Powder Stirrer Assembly
36	DM-10324D	Subassemblies
37	DM-10324E	Subassemblies
38	EI-11140A	Subassemblies
39	EI-11140B	Subassemblies
40	EI-11140C	Subassemblies
41	EI-10400A	TOWER SINTERED METAL FILTERS
42	EI-10400B	Instrument Plan and Details
43	EI-10400C	Piping and Equipment Plan
44	EM-11089B	Vessel Details
45	EI-11094R	FLUID BED ABSORBER
		Instrument Application
		Equipment Plan and Elevation
		Equipment Details, Sheet 1
		Filter and Piping Details
		Absorber Panel No. 45

AEC Nos.	Other Nos.	Description
CAPE-54-		DRAWINGS (Cont'd)
		FLUID BED CLEAN-UP REACTOR
46	EE-10733A	Reactor "C" Alarm and Control Schematic
47	EE-10733B	Reactor "C" Starter Control Schematic
48	EE-10733F	Mimic Control Panel
49	EM-10733P	Piping Plan
50	EM-10733R	Piping Elevation
51	EM-10733S	Piping Elevations
52	EM-10733Z	Flow Diagram
53	EI-10733A	Instrument Application Diagram
54	EI-11094P	Reactor "C" Panel No. 43
55	EE-11099E	Alarm and Control Schematic
56	EE-11099F	Reactors "A" and "B" Alarm and Control Schematics
57	EM-11099B	Reactor Equipment Plan
		FLUID BED REDUCTOR
58	EI-10133C	Area Control Room Panel
59	EI-10219A	Reductor and Reoxidizer Instrument Application
60	EI-11649A	Instrument Application, DA Preheaters
61	EI-10219B	Area Control Room Plan and Panel Details
62	EM-10219B	Flow Diagram
63	EM-10755B	Reduction Lines Plan Layout
64	D-PC4.2-24M	Reduction Filter Tube Sheet Assembly
65	C420-427N ₂ -E	Filters Alarm and Control Schematic
66	EM-11018B	Enlarged Reductor Installation and Detail
67	EM-11018C	Stage 2 Reductor "D" Line Installation
		COLD TRAP INSTALLATION
68	C410-734E	Cold Trap and Refrigeration Plant Conduit Layout
69	C410-735E	Conduit Layout at Elevation 11'-0"
70	EM-10669B	Secondary Modine Cold Trap Process Piping Plan
71	EI-11094M	Cold Trap Panel No. 41
		PRODUCT DRAIN POSITION
72	ES-11127A	Plan and Section
73	ES-11127B	Steel and Concrete Details
74	ES-11127C	Anchor and Framing Details

AEC Nos.	Other Nos.	Description
CAPE-54-		DRAWINGS(Cont'd)
75	EE-10969B	Process Control Schematic
76	EE-10969C	Starter Control Schematic
77	EE-10969F	Mimic Control Panel General Arrangement
78	EI-10969A	Instrument Application
79	EI-10969B	Reactor Furnace Controls Instrument Application
80	EM-10969B	Piping-Flow Diagram
81	EM-10969C	Equipment Plans
82	EM-10969D	Equipment Plans
83	EM-10969E	Equipment Elevation
84	EM-10969M	Reactor Assembly (HFE 1121 and HFE 1126)
85	EM-10969K	Filter HFE 1122
86	EM-10969L	Filter Tube Sheet
87	EM-10969N	Reactor Shell Details (HFE 1121 and HFE 1126)
88	EM-10969P	Reactor Head Assembly
89	EM-10969CCC	Reactor Head Assembly
90	EM-10969Q	Reactor Jacket Assembly
91	EM-10969JJJ	Reactor Agitator
92	EM-10969AAA	Agitator and Shaft Assembly
93	EM-10969R	Shaft Exterior Bearing Support
94	AM-10969FFF	Ball Seat Assembly
95	EM-10969LL	Cooling System, Section "A-A"
96	EM-10969MM	Cooling System, Section "B-B"
97	EM-10356B	Low Excess HF Recovery Flow Diagram
		ISOMETRIC VIEWS
98	EM-10969SS	Basic Equipment
99	EM-10969TT	Piping Details
100	EM-10969UU	Cooling and Heating System
		HEVI-DUTY ELECTRIC COMPANY MILWAUKEE, WISCONSIN
		DRAWINGS
101	L-6086U	Vertical Cylindrical Furnace No. 1, Plan
102	L-6086W	Furnace Elevations
103	H6086-1050	Furnace Wiring Diagram

REVISION

FLUORINE PLANT AND EQUIPMENT

Union Carbide Corporation
Nuclear Division
Paducah Plant
Paducah, Kentucky

Fluorine is produced by the electrolysis of hydrogen fluoride in a fused salt electrolyte (KF·2HF). The plant is capable of multi-ton daily output rates from 4,000 ampere and 6,000 ampere cells. The cells are medium temperature, water-cooled, and connected electrically in series. The cells are composed of a carbon anode assembly and a steel cathode assembly. Fluorine is generated at the carbon electrodes and collected in a gas chamber around the anode assembly. Hydrogen is evolved at the cathode surface and is collected in a gas chamber formed by the cell cover and inner shell walls. Both gases are piped to surge tanks and then purified by passing through Monel condensers to remove most of the entrained hydrogen fluoride. The average on-stream efficiency of the fluorine cells is about 95%.

AEC Nos.	Other Nos.	Description
CAPE-55		<u>DRAWINGS</u>
		<u>PROCESS PIPING</u>
1	C410-300M	Equipment Layout
2	C410-579M	Fluorine and Hydrogen General Piping Diagram
3	C410-573M	East Cell Room Process Piping Plan
4	C410-583M	Cell Process and Service Piping Plan and Elevation
5	C410-584M	Cell Sections Process and Service Piping
6	C410-904M	Instrument Piping Layout Details - East and West Cells
7	C410-653M	Cell Transfer Car
8	EI-700E	Main Power Single Line Diagram
9	EI-809E	Ground Detector and Cell Voltage Schematic Diagram
10	C410-809E	Wiring Diagram for Cells - East Cell Room

CAPE-55

AEC Nos.	Other Nos.	Description
CAPE-55		DRAWINGS (Cont'd)
11	C410A-6E	Modified DC Buswork Plan and West Room Details
		RECTIFIER AND ELECTRICAL CONTROL PANELS
12	EI-840E	Alarm Elementary Diagram
13	EI-854E	Control Panel Layout and Wiring Diagram
14	C410-728E	Control Panel Layout
15	C410-780E	Substation 3 Line Diagram
16	C410A-2E	Substation 5 - One Line Diagram and DC Connection Diagram
17	C410A-403E	ACR Control Panel Layout and Wiring Diagram
18	C410-404E	Substation 5 Schematic Wiring Diagram - Sheet 1
19	C410-407E	Substation 5 Schematic Wiring Diagram - Sheet 3
		C410 UF ₆ EXPANSION
20	DI-10237AA	Instrument Application
21	EE-10237AA	Cell Room Layout and Details
22	EE-10237DD	Wiring and Interconnection Diagrams for Cells 89 thru 98
23	EE-10237FF	Alarm Relay Cabinet 9 Wiring Diagram
24	EE-10237GG	Cell Panel Layout Assembly and Wiring Diagram
25	EE-10478G	Cell Pressure Alarms Schematic
		HF SUPERHEATER AND PREHEATER
26	CI-10651A	Instrument Application and Tabulation
27	EE-10651A	Relocation Plan
28	EM-10651B	Relocation Plan and Sections
29	EI-6852C	Hydrogen System Instrument Application
30	EI-6852D	Fluorine System Instrument Application
31	EI-6852F	Hydrogen-Fluorine Instrument Application
32	EM-10459C	F ₂ Cell Cooling Plan
33	EM-10459D	F ₂ Cell Cooling Sections and Details
		TYPE "E" F ₂ CELL
34	EM-10665J	Isometric View
35	EM-10665K	Installation

AEC Nos.	Other Nos.	Description
CAPE-55		DRAWINGS (Cont'd)
36	EM-10665B	Cell Tank
37	EM-10665C	Cell Tank Sections
38	EM-10665D	Head Details
39	EM-10665E	Purge Details
40	EM-10665F	Jacket Details
41	EM-10665H	Cover Details
42	EM-10665G	Miscellaneous Details

BAKEABLE VALVE, 8 IN.

University of California
Lawrence Radiation Laboratory
Livermore, California

This 8 in. bakeable valve is used in the Alice "C" thermonuclear device. The valve consists of a large hydraulic cylinder operating through a welded bellows which moves a carrier plate and gate in a simple rectilinear path. Closure is accomplished by rollers on ramps encountered near the end of the carrier-plate travel. The gate carries a Cu disk with a seal surface machined at its outer periphery. The seal must be effected against a surface provided on a mating member external to the valve assembly. A rectangular Al foil seal flange permits removal of all valve components for service or replacement without removing the valve from its system.

AEC Nos.	Other Nos.	Description
CAPE-1537		<u>DRAWINGS</u>
1	AAA66-103163	BAKEABLE VALVE, 8 IN. ASSEMBLY
2	AAA66-104400	Collar
3	AAA66-104468	Seat
4	AAA66-104454	Gate
5	AAA66-104812	Gate Insert
6	AAA66-104787	Compound Insert
7	AAA66-104721	Insert
8	AAA66-104764	Coplaner Insert
9	AAA66-104750	Roller
10	AAA66-100154	Roller Pin
11	AAA66-104593	Strip
12	AAA66-104739	Ramp
13	AAA66-104903	Pressure Plate
14	AAA66-104476	Bellows Plate
15	AAA66-104661	Clamp
16	AAA66-104581	Modified Cylinder
17	AAA66-104935	Support
18	AAA66-104380	Pressure Leaf
19	AAA66-100325	Retainer
20	AAA66-104433	Plate
21	AAA66-104697	Spring
22	AAA66-101071	Clip

CAPE-1537

AEC Nos.	Other Nos.	Description
CAPE-1537		<u>DRAWINGS</u> (Cont'd)
23	AAA66-107079	Stop
24	AAA66-103218	Block
25	AAA66-104679	Leaf
26	AAA66-104494	Carriage
27	AAA66-104506	Housing

CAPE-1550
~5657 sq. ft.

UF₄ TO UF₆ CONVERSION FACILITY AND EQUIPMENT

Goodyear Atomic Corporation
Piketon, Ohio

The 344 project described consists of the fluorination facility which is used to produce UF₆ from UF₄ (green salt). Architectural, mechanical, electrical, and piping drawings describe the facility including the building, ash storage facility, crane, monorail, tanks, exhaust stack tower, H.F. storage yard, cold traps, refrigeration and reactors. The building consists of a high bay 210 ft in length, 210 ft wide with a ground floor area of 62,678 sq ft, a second floor area of 13,015 sq ft, and a basement area or reactor pit area of 4,722 sq ft. The total volume of the building is ~2,509,000 cu ft. Four fluorination reactors are included each of which is capable of producing 4 tons of U as UF₆ in a 24 hr. day. Refrigerating equipment using Freon is provided for cooling cold traps and condensers. The ash storage facility provides inside storage for containers holding ash from the fluorination reactor.

- REFERENCES: GAT-P-40. PRELIMINARY OPERATIONS AND PROCEDURE FOR UF₆ FEED MANUFACTURING FACILITY: BUILDING X-344. Goodyear Atomic Corporation, Piketon, Ohio. Feb. 17, 1967. 150p. Dep. CFSTI \$3.00 cy \$0.65 mn.
- GAT-Z-439(Vol. 1)(Excerpt). X-344 FEED MANUFACTURING FACILITY. Goodyear Atomic Corporation, Piketon, Ohio. Feb. 17, 1967. 34p. Dep. CFSTI \$3.00 cy \$0.65 mn.
- TID-24014(Vol. 1 & 2). X-344 FEED MATERIAL FACILITY: MECHANICAL AND ELECTRICAL CONSTRUCTION SPECIFICATIONS. Giffels and Vallet, Inc., Detroit, Mich. 1956. 450p. Dep. CFSTI \$3.00 cy \$0.65 mn.
- TID-24015(Vol. 3). X-344 FEED MATERIAL FACILITY: MECHANICAL AND ELECTRICAL BILL OF MATERIALS. Giffel and Vallet, Inc., Detroit, Mich. 1956. 375p. Dep. CFSTI \$3.00 cy \$0.65 mn

CAPE-1550

AEC Nos.	Other Nos.	Description
CAPE-1550-		<u>DRAWINGS</u>
		<u>ARCHITECTURAL</u>
1	X344A	Architectural, Structural, Mechanical, Electrical, and Mechanical Equipment Drawing Index. 49p.
2	X344A1A	Doors Schedule - Material Schedule, Drawing Index
3	X344A2A	Types, Elevations and Details
4	X344A3A	Details
5	X344A4A	Details
6	X344A5A	Ground Floor-Key Plan
7	X344A6A	Second Floor-Key Plan
8	X344A7A	Roof Plan
9	X344A8A	Details
10	X344A9A	Elevations
11	X344A10A	Transverse & Longitudinal Sections
12	X344A11A	Details
13	X344A12A	1/4" Wall Sections
14	X344A13A	Exterior Wall Details
15	X344A14A	Details
16	X344A15A	Details
17	X344A16A	Expansion Joint Details
18	X344A17A	Office Area & Locker Room
19	X344A18A	Floor Plan
20	X344A19A	Ceiling Plans and Details
21	X344A20A	Sections
22	X344A21A	Sash Details
		Miscellaneous Details
		Maintenance Area Office
		and Stores
23	X344A22A	Floor Plan
24	X344A23A	Office, Sections & Details
		Cell Shops
25	X344A24A	Floor Plan
26	X344A25A	Sections
27	X344A26A	Sliding Doors & Miscellaneous Details
28	X344A27A	Wall Details
29	X344A28A	Pit & Miscellaneous Details
		Electrolyte Area
30	X344A29A	Plans and Details
31	X344A30A	Sections and Details
32	X344A31A	Stair No. 4 & Penthouse Details
33	X344A32A	Stairs No. 3 & No. 13 Details
34	X344A33A	Miscellaneous Details

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
35	X344A34A	North Cell Room Floor Plan and Details
36	X344A35A	South Cell Room Floor Plan and Details
		Control Room Laboratory - Mist Separator and Pump
38	X344A36A	Floor Plan
37	X344A37A	Ceiling Plans
39	X344A38A	Sections
40	X344A39A	Stairs No. 5 & No. 6 - Sections and Details
41	X344A40A	Platforms and Details
42	X344A41A	Bottle-Gas Station and Miscellaneous Details
		Powder Storage and Refrigeration Area
43	X344A42A	Floor Plan
44	X344A43A	Refrigeration Room No. 1 - Stair No. 7 Details
45	X344A44A	Stairs No. 8 & No. 9 Details
		Reactor Area
46	X344A45A	Reactor Pit Floor Plan & Details
47	X344A46A	Powder Handling Room & Filter Rooms Floor & Roof Plan
48	X344A48A	Section
49	X344A49A	Stairs No. 1 & No. 12 Sections and Details
50	X344A50A	Stair No. 2 and Details
51	X344A51A	Details
52	X344A53A	Room - Details
53	X344A47A	Filter Room Mezzanine Plan and Reactor Platform
54	X344A52A	Platform Plans & Sections
		Cold-Trap Area
55	X344A54A	Partial Ground Floor & Mezzanine Plans
56	X344A55A	Partial Ground Floor & Mezzanine Plans
57	X344A56A	Plan and Elevations
58	X344A57A	Sections
59	X344A58A	Stairs No. 10 & No. 11 Sections & Details
60	X344A59A	Details
61	X344A60A	Details
62	X344A61A	Details
63	X344A62A	Scale Pit - Plans and Details

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
		Condenser Room & Mechanical Equipment Area
64	X344A63A	Plan
65	X344A64A	Sections
66	X344A65A	Details
67	X344A66A	Plan and Details
68	X344A67A	Electrical Equipment Area Plan and Details
69	X344A68A	Mechanical Equipment Area - Plan and Details
70	X344A69A	Plan and Details
71	X344A70A	Air Filter Chamber Plans
72	X344A71A	Sections
73	X344A72A	Details
74	X344A73A	Details
75	X344A74A	Details
76	X344A75A	Ladder Details
77	X344A76A	Air Intake Housing
78	X344A77A	Line Recorder Manifold Plans, Sections & Elevations
79	X344A78A	Details
80	X344A79A	Local Sample Unit Cabinets, Elevations & Details
81	X344A80A	Transmitter Housings Elevations and Details
82	X344A81A	Sample Manifold Ducts Elevations and Details
83	X344A82A	Fire Extinguisher Layout Ground Floor
84	X344A83A	Fire Extinguisher Layout Second Floor
85	X344A84A	Support for Lower Reactors & Cyclone Collectors-Plan, Sections and Elevations
86	X344A85A	Clean-up Reactor Cooling Screw Platform
87	X344A86A	Duct Enclosure and Exhaust Pan Platforms A-B-C
88	X344A91A	X344B Building Floor Plan, Elevations & Sections
89	X344A92A	Elevations and Sections
90	X344A95A	Miscellaneous Details
91	X344A93A	X344C Area Service Platform Details
92	X344A94A	Loading Platform Plans, Sections and Details

AEC Nos.	Other Nos.	Description
CAPE-1550-93	X344A96A	DRAWINGS (Cont'd) Scrubber Equipment Supports STRUCTURAL
94	X344A1S	Foundation - Building 344A
95	X344A2S	Foundation Plan Footings Schedule Reactor Pit
96	X344A3S	Reactor Tower Pit
97	X344A4S	Details
98	X344A11S	Reactor Pit & Sludge Pit Details
99	X344A5S	Ground Floor Slab
100	X344A6S	Ground Floor Details Stairs No. 6, 8, and 9
101	X344A7S	Supported Concrete Slabs
102	X344A8S	Partial Second Floor Plan Concrete Slab El. 691'-0"
103	X344A9S	Miscellaneous Supported Concrete Slabs
104	X344A10S	Ground Floor Details
105	X344A12S	Electrical Manhole Transformer Slab
106	X344A13S	Mechanical Equip. Foundations Ground Floor Elev. 671'-00"
107	X344A14S	Sound Control Barrier
108	X344A15S	Concrete Pads for Refrigeration Equipment
109	X344A16S	Fluorine Booster Pump Foundation, X342A Bldg.
110	X344A101S	Roof Plan
111	X344A102S	Bottom Chord Plans and Details
112	X344A103S	Second Floor Framing at Elevation 691'-0"
113	X344A104S	Crane Girder Plan & Details
114	X344A105S	Mezzanine Framing Plan & Details
115	X344A106S	Ground Floor Plan & Column Anchor Bolt Layout
116	X344A107S	Column Schedule & Details - Part One
117	X344A108S	Column Schedule & Details - Part Two
118	X344A109S	Cross Sections
119	X344A110S	Longitudinal Sections
120	X344A111S	Longitudinal Sections
121	X344A112S	Elevations
122	X344A113S	Elevations
123	X344A114S	Elevations
124	X344A115S	Wall Sections (Large Scale)

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AEC Nos.	Other Nos.	Description
CAPE-1550-125	X344A116S	DRAWINGS(Cont'd) Roof Framing to Existing Building - Details & Wall Sections
126	X344A117S	Trusses Sway Frames & Details
127	X344A118S	Trusses Sway Frames & Details
128	X344A119S	Stack Details & Bracing
129	X344A122S	Miscellaneous Sections & Details
130	X344A123S	Bracing Details
131	X344A124S	Reactor Pit Framing & Details
132	X344A125S	Roof Openings
133	X344A126S	Roof Openings
134	X344A127S	Roof Openings & Penthouse Framing
135	X344A120S	Monorail
136	X344A121S	Monorail Plans & Sections
137	X344A130S	Monorail Plan - Sections
138	X344A131S	Monorail Plan Part Two
139	X344A140S	Monorail Plan Part Three
140	X344A141S	Pipe Stanchions & Foundations
141	X344A142S	Pipe Stanchions & Foundations
142	X344A21S	Pipe Stanchions & Foundations
143	X344A31S	Ash Storage Building Foundations & Details
144	X344A41S	HF Tank Storage Safety Shack & Loading Dock
145	X344A51S	Neutralization Pit X344D
146	X344A52S	Gas Ventilation Stack
147	X344A150S	Exhaust Stack Tower X344E Foundation
148	X344A1M	Ten Ton Cylinder Supports & Load Cell Mountings in Cold Trap Area
149	X344A2M	MECHANICAL
150	X344A3M	Outside Services Tie Line to Feed Manufacturing Plant
151	X344A4M	Sheet No. 1
152	X344A11M	Sheet No. 2
153	X344A12M	Sheet No. 3
154	X344A101M	Sheet No. 4
155	X344A102M	Outside Services Tie-Line to Hydrogen Fluoride Storage Yard X344C Bldg. Sheet No. 1
		Outside Services to Gas Ventilation Stack
		Plumbing - Drainage & Ventilation Piping
		Underground Drainage Key Plan
		Ground Floor Plan

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
156	X344A103M	Details
157	X344A104M	Details
		Sanitary Water Piping
158	X344A105M	Ground Floor Plan
159	X344A106M	Details
160	X344A107M	Details
161	X344A108M	Second Floor Plan
162	X344A109M	Roof Plan
163	X344A110M	Change House & Toilets
164	X344A111M	Details
165	X344A112M	Sections
166	X344A113M	Laboratory and Toilet
167	X344A114M	Miscellaneous Details
168	X344A115M	Riser Details
		Heating, Ventilating & Process Services
169	X344A201M	Key Plan
170	X344A202M	Ventilation Flow Diagram
171	X344A203M	Roof Plan
172	X344A204M	Roof Plan
173	X344A205M	Roof Plan
174	X344A206M	Second Floor Miscellaneous Plans
175	X344A207M	Second Floor Miscellaneous Plans
176	X344A208M	Ground Floor Miscellaneous Plans
177	X344A210M	Ground Floor Plan
		Miscellaneous Plans
178	X344A211M	Miscellaneous Plans
179	X344A212M	Miscellaneous Plans
180	X344A213M	Miscellaneous Plans
181	X344A214M	Miscellaneous Plans
182	X344A215M	Miscellaneous Plans
183	X344A217M	Miscellaneous Plans
184	X344A218M	Miscellaneous Plans
185	X344A219M	Miscellaneous Plans
186	X344A209M	F ₂ Cell Room Floor Plans
187	X344A216M	Tower Pit Floor Miscellaneous Plans
188	X344A220M	Section No. 1
189	X344A221M	Section No. 1
190	X344A222M	Section No. 2
191	X344A223M	Section No. 2
192	X344A224M	Section No. 3
193	X344A225M	Section No. 4
194	X344A226M	Section No. 5
195	X344A232M	Section No. 6
196	X344A230M	Section No. 7

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AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS (Cont'd)
197	X344A227M	Section No. 8
198	X344A228M	Section No. 10
199	X344A229M	Section No. 11
200	X344A231M	Section No. 13
201	X344A250M	Section No. 19
202	X344A234M	Section No. 20
203	X344A233M	Section No. 21
204	X344A253M	Miscellaneous Sections No. 22, 24, 37
205	X344A235M	Automatic Control Diagrams
206	X344A236M	Automatic Control Diagrams
207	X344A237M	Automatic Control Diagrams
208	X344A238M	Automatic Control Diagrams
209	X344A239M	Automatic Control Diagrams
210	X344A240M	Ventilation Flow Diagrams Cell Maintenance, Locker Area & Office Area
211	X344A241M	Control Area & F ₂ Cell Rooms
212	X344A242M	Reactor Area
213	X344A243M	Steam Flow Diagram
214	X344A244M	Process Ventilation & Vacuum Cleaning Flow Diagram
215	X344A118M	Process Services to Ash Storage Building
216	X344A245M	Miscellaneous Plan & Section
217	X344A246M	Miscellaneous Details
218	X344A247M	Miscellaneous Details
219	X344A248M	Miscellaneous Details
220	X344A249M	Miscellaneous Details
221	X344A254M	Miscellaneous Details
222	X344A255M	Miscellaneous Details
223	X344A256M	Steam Prv. Station
224	X344A251M	Valve Tabulation
225	X344A252M	Line Tabulation Refrigeration for HF Recovery & Process Gas Cold Trap System
226	X344A270M	Flow Diagram
227	X344A271M	Flow Diagram
228	X344A288M	Flow Diagram
229	X344A289M	Miscellaneous Flow Diagrams & Details
230	X344A272M	Miscellaneous Plans
231	X344A273M	Miscellaneous Plans
232	X344A274M	Miscellaneous Plans
233	X344A275M	Miscellaneous Plans
234	X344A276M	Miscellaneous Plans
235	X344A277M	Miscellaneous Section
236	X344A278M	Miscellaneous Section

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS (Cont'd)
237	X344A279M	Section
238	X344A280M	Sections
239	X344A281M	Sections
240	X344A285M	Miscellaneous Plans & Sections
241	X344A286M	Miscellaneous Plans & Sections
242	X344A287M	Sections
243	X344A282M	Miscellaneous Details
244	X344A294M	Miscellaneous Details & Sections
245	X344A290M	Equipment Layout - Ground Floor Plan
246	X344A291M	Equipment Layout - Mezzanine Plan
247	X344A292M	Equipment Supports
248	X344A293M	Gas Cold Trap System Line & Valve Tabulations
249	X344A283M	Line Tabulations
250	X344A284M	Valve Tabulations
		Process Flow Diagrams
251	X344A501M	Equipment Schedule - Sheet No. 1
252	X344A502M	Sheet No. 2
253	X344A503M	Hydrogen Fluoride Storage Area
254	X344A504M	Fluorine Cell Area - Sheet No. 1
255	X344A505M	Sheet No. 2
256	X344A507M	Auxiliary Services
257	X344A506M	Hydrogen Fluoride Recovery System
258	X344A508M	Fluorination System - Reactor Area
259	X344A509M	Fluorination System - Cold Trap Area
260	X344A510M	Powder Handling System
261	X344A511M	Auxiliary Services - Reactor Area
262	X344A512M	Process Flow Diagram Air, Nitrogen & Pyrofax Gas
263	X344A513M	Water, Steam & Lube Oil Line Nomenclature - Process Piping
264	X344A514M	Sheet No. 1
265	X344A515M	Sheet No. 2
266	X344A516M	Sheet No. 3
267	X344A517M	Sheet No. 4
268	X344A518M	Sheet No. 5

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AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
		Valve & Speciality
		Tabulation
269	X344A519M	Sheet No. 1
270	X344A520M	Sheet No. 2
271	X344A521M	Sheet No. 3
272	X344A522M	Sheet No. 4
273	X344A523M	Sheet No. 5
274	X344A528M	Sheet No. 6
275	X344A524M	Steam Tracing Tabulation
276	X344A525M	Orifice Assemblies & Details
277	X344A526M	Miscellaneous Details
		Sheet No. 1
278	X344A527M	Miscellaneous Details
		Sheet No. 2
279	X344A529M	Pipe Supports & Hangers
		Sheet No. 1
280	X344A530M	Pipe Supports & Hangers
		Sheet No. 2
281	X344A531M	Pipe Supports & Hangers
		Sheet No. 3
		Cell Rooms
282	X344A557M	Plan & Sections - Below El. 671' - 0"
283	X344A551M	Process Piping North Cell
		Room Plan & Sections
284	X344A552M	Process Piping North Cell
		Room Sections & Details
285	X344A553M	Process Piping North Cell
		Room Sections & Details
286	X344A554M	Process Piping South Cell
		Room Plan & Sections
287	X344A555M	Process Piping South Cell
		Sections & Details
288	X344A556M	Process Piping South Cell
		Room Sections & Details
289	X344A561M	Cell Neutralization Facilities
		Sheet No. 1 Plan & Sections
290	X344A562M	Sections & Details Sheet No. 2
291	X344A563M	Cell Purging Station
292	X344A564M	Electrolyte Make-up Room
		Sheet No. 1 Process Piping
		Plan and Sections
293	X344A565M	Sheet No. 2
294	X344A566M	Sheet No. 3
295	X344A567M	Maintenance Area Plan & Sections

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS (Cont'd)
		Process Piping
		Miscellaneous Details
296	X344A568M	Existing Facilities X342 Bldg.
297	X344A569M	Sheet No. 1 Plan & Sections, Tie-In
298	X344A570M	Sheet No. 2
299	X344A580M	Pump Installation - X342A Bldg.
300	X344A571M	X344C Building Sheet No. 1 Plan & Sections
301	X344A572M	Sheet No. 2
302	X344A573M	Sheet No. 3
		Process Piping - Cold Traps
303	X344A601M	Plan at Roughing Cold Traps Above El. 687' - 3"
304	X344A602M	Plan at Roughing Cold Traps Below El. 687' - 3"
305	X344A603M	Plan at Clean-up Cold Traps Above El. 687' - 3"
306	X344A604M	Plan at Clean-up Cold Traps Below El. 687' - 3"
307	X344A605M	Sections Through Cold Trap Area Sheet No. 1
308	X344A606M	Sheet No. 2
309	X344A607M	Sheet No. 3
310	X344A608M	Plan & Sections at Alumina Traps
311	X344A609M	Plan & Sections at Sample Bottle Stand
312	X344A610M	Details of Flexible Connectors & Emergency Water Spray at Drain Cylinders
313	X344A611M	Miscellaneous Details Sheet No. 1
		Process Piping - Reactor Area
314	X344A651M	Plan at Elevation 655' - 6"
315	X344A652M	Plan at Elevation 671' - 0"
316	X344A653M	Sections - Sheet No. 1
317	X344A654M	Sections - Sheet No. 2
318	X344A655M	Power Handling Area Plan
319	X344A656M	Sections
320	X344A657M	Miscellaneous Process Rooms Sheet No. 1 Plan
321	X344A658M	Sheet No. 2
322	X344A659M	Miscellaneous Process Rooms Sheet No. 1 Sections
323	X344A660M	Sheet No. 2
324	X344A671M	Sheet No. 3
325	X344A661M	Mechanical Equipment Area Sheet No. 1 Plan

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AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
326	X344A662M	Sheet No. 2
327	X344A663M	Sheet No. 3
328	X344A664M	Mechanical Equipment Area Sections
329	X344A665M	Pyrofax Bottle Gas Station
330	X344A666M	Nitrogen Bottle Gas Stations
331	X344A667M	Seal & Lube Oil Connections at Compressors FE-626 A and B and FE-720 A and B
332	X344A668M	Seal Connections at H ₂ Compressors HYE-623 A and 623B
333	X344A669M	Seal Exhaust Panel Details
334	X344A670M	Miscellaneous Details
		Instrument Installation Plans (Mechanical)
335	X344A701M	Instrument Application Diagram
		Hydrogen Fluoride Storage
336	X344A702M	Vaporization - Feed to Cells
		Fluoride Generation Cell
		Cooling Water System & Electrolyte Make-Up
337	X344A703M	Fluoride-Hydrogen Compressing & Distribution System
338	X344A704M	Fluorination Towers
339	X344A705M	Fluorination Recycle, Roughing Trap & Clean-Up Reactor Systems
340	X344A706M	Clean-Up Trap & Vent Systems
341	X344A707M	Line Recorder Sample System
342	X344A708M	Brine System
343	X344A709M	Revisions to X342 Building
344	X344A718M	Arrangement & Details X342 Building
345	X344A719M	General Arrangement 1st and 2nd Floor
		Instrument Application Tabulation
346	X344A711M	Sheet No. 1
347	X344A712M	Sheet No. 2
348	X344A713M	Sheet No. 3
349	X344A714M	Sheet No. 4
350	X344A715M	Sheet No. 5
351	X344A716M	Sheet No. 6
352	X344A717M	Sheet No. 7
353	X344A760M	Fluorine Recovery System

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
		Instrument Installation Plans
354	X344A720M	Control Room Area Arrangement & Details
355	X344A721M	Panel Board Piping Arrangement
356	X344A722M	Details
357	X344A723M	Transmitter Standard Heated Housing Details
358	X344A724M	Transmitter Housing Standard Heater Installation
359	X344A725M	Typical Instrument & Miscellaneous Connection Details
360	X344A726M	Cold Trap Area - General Arrangement
361	X344A727M	Miscellaneous Details
362	X344A728M	Panel Piping Details - Sheet No. 1
363	X344A729M	Sheet No. 2
364	X344A730M	Line Recorder Manifold Sample Piping - Sheet No. 1
365	X344A731M	Sheet No. 2
366	X344A732M	Single Manifold Duct Piping Details
367	X344A733M	Instrument Room - Sections & Details
368	X344A734M	Line Recorder Miscellaneous Details
369	X344A735M	Sample Ducts Arrangement & Details
370	X344A736M	Miscellaneous Details
371	X344A737M	Sample Duct Heaters Arrangement & Details
372	X344A738M	Electrolyte Make-up Area Arrangement & Details
373	X344A739M	Sections and Details
374	X344A741M	Condensing & Mechanical Equipment Area - General Arrangement
375	X344A742M	Sections and Details
376	X344A743M	Panel Piping Details
377	X344A744M	Storage Tank Bldg. General Arrangement & Details
378	X344A746M	Miscellaneous Process Room Arrangement & Details
379	X344A747M	Details Sheet No. 1
380	X344A748M	Details Sheet No. 2

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AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS (Cont'd)
381	X344A750M	Auxiliary Services
		Arrangement & Details
382	X344A751M	Cell Area Arrangement & Details
383	X344A752M	Miscellaneous Details
384	X344A753M	Reactor Area General Arrangement Ground Floor
385	X344A754M	General Arrangement Pit Floor
386	X344A755M	Panel Piping Details
		Sheet No. 1
387	X344A756M	Sheet No. 2
388	X344A757M	Thermocouple Installations
389	X344A758M	Brine System Arrangement & Details
390	X344A759M	Sections & Details
		ELECTRICAL
391	X344A1E	Drawing Index - Sheet No. 1
392	X344A2E	Sheet No. 2
393	X344A3E	Process Rectifier Unit, One Line Diagram
394	X344A8E	Rectifier Bus Connections Building 342A
395	X344A11E	Rectifier Bus Connections Electrical Equipment Room
396	X344A9E	Cell Bus Assembly & Line Switch Layouts
397	X344A4E	North & South Cell Rooms Bus Plan
398	X344A5E	Sections, Sheet No. 1
399	X344A6E	Sections, Sheet No. 2
400	X344A7E	Sections, Sheet No. 3
401	X344A12E	Partial Bus Plan Details
402	X344A10E	Copper Details
		Auxiliary Electrical Power
403	X344A101E	480 Volt Single Line Diagram
404	X344A116E	480 Volt Distribution - Key Plan - Sheet No. 1
405	X344A117E	Sheet No. 2
406	X344A102E	Ground Floor Plan "A"
407	X344A103E	Ground Floor Plan "B"
408	X344A104E	Ground Floor Plan "C"
409	X344A105E	Ground Floor Plan "D"
410	X344A106E	Ground Floor Plan "E"
411	X344A107E	Ground Floor Plan "F"
412	X344A109E	Ground Floor Plan "K"
413	X344A112E	Ground Floor & Mezzanine Area Part Plan "L"
414	X344A108E	Reactor Area Pit Plan "G"

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
415	X344A110E	2nd Floor Part Plan "H"
416	X344A111E	2nd Floor Part Plan "J"
		Building Sections
417	X344A123E	Sections B and C
418	X344A113E	Sections D, E, F, and H
419	X344A114E	Sections G
420	X344A115E	Sections J, K, and Q
421	X344A122E	Sections L and P
422	X344A124E	Section M
423	X344A125E	Section N
		Equipment
424	X344A118E	Cranes and Monorails
425	X344A119E	Electrical Sleeves Plan
426	X344A120E	Battery Room Layout
427	X344A121E	Pull Boxes and Miscellaneous Details
428	X344A126E	Miscellaneous Details
429	X344A127E	Electrical Wireway System A - A
430	X344A128E	Conditioning Rectifier Installation, Bldg. 342A
		Electrical Distribution
431	X344A201E	Underground Plot Plan No. 1
432	X344A202E	Underground Enlarged Plan
433	X344A203E	Duct Run Profiles
434	X344A204E	Underground, 90° Electrical Manhole JJ-3A
435	X344A205E	Electrical Room 13.8 K V Conduit Layout
436	X344A206E	Services to Bldgs. X344C, X344D, & X344E Plot Plan No. 2
437	X344A207E	Services to Bldg. X344B Plot Plan No. 3
		Grounding
438	X344A301E	Ground Floor Plan No. 1
439	X344A302E	Ground Floor Plan No. 2
440	X344A303E	Second Floor & Roof Plan
441	X344A304E	Details
442	X344A305E	X344C, HF Tank Storage Area
443	X344A306E	X344B, Ash Storage Area
444	X344A307E	X344B, Fume Stack Area and X344A Sub-Station Area
		Control and Instrumentation
445	X344A401E	Ground Floor Part "A" Plan
446	X344A402E	Ground Floor Part "B" Plan
447	X344A403E	Ground Floor Part "C" Plan
448	X344A404E	Ground Floor Part "D" Plan
449	X344A405E	Ground Floor Part "E" Plan

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AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS (Cont'd)
450	X344A406E	Ground Floor Part "F" Plan
451	X344A407E	Ground Floor Part "G" Plan
452	X344A408E	Powder Handling & Filter Disassembly Room Layout
453	X344A409E	Reactor Pit Floor Plan
454	X344A410E	Typical F ₂ Cell Installation & Wiring Diagram
455	X344A411E	Cable Tray - Details Sheet 1
456	X344A412E	Sheet 2
457	X344A413E	Cable Chart No. 1
458	X344A414E	Cable Chart No. 2
459	X344A415E	Cable Chart No. 3
460	X344A479E	Motor Control Center Control Center "H" Wiring Diagram Sheet 1
461	X344A480E	Sheet 2
462	X344A481E	Control Center "K" Wiring Diagram
463	X344A489E	Control Center "G" Wiring Diagram Sheet 1
464	X344A490E	Sheet 2
465	X344A491E	Sheet 3
466	X344A448E	480V Substation Control Room Process Panels
467	X344A419E	Panel No. 1, HF System Layout & Wiring Diagram
468	X344A420E	Panel No. 2, Cells 1-20 Recorder Layout & Wiring Diagram
469	X344A421E	Panel No. 3, Cells 21-40 Recorder Layout & Wiring Diagram
470	X344A423E	Cooking Rectifier Schematic Diagram
471	X344A424E	Panel No. 6, Cooking Rectifier Layout & Wiring Diagram
472	X344A425E	Panel No. 7, F ₂ Plant Graphic Layout
473	X344A426E	Panel No. 7, Wiring Diagram Sheet 1
474	X344A427E	Panel No. 7, Wiring Diagram Sheet 2
475	X344A428E	Panel No. 8, H ₂ Vent Layout & Wiring Diagram
476	X344A429E	Panel No. 9, Reactor Tower Recorder Layout & Wiring Diagram

AEC Nos.	Other Nos.	Description
CAPE-1550-477	X344A430E	DRAWINGS(Cont'd) Panel No. 10, Reactor Tower Recorder Layout & Wiring Diagram
478	X344A431E	Panel No. 11, Clean-up Reactor Tower Recorder Layout & Wiring Diagram
479	X344A432E	Panel No. 12, Reactor Tower Graphic Layout
480	X344A433E	Panel No. 12, Wiring Diagram
481	X344A435E	Panel No. 13, Reactor Tower Graphic Layout
482	X344A436E	Panel 13, Wiring Diagram
483	X344A437E	Panel No. 14, Gas Vent Graphic Layout
484	X344A438E	Panel No. 14, Wiring Diagram
485	X344A439E	Panel No. 15, Line Recorder No. 1 Layout & Wiring Diagram
486	X344A440E	Panel No. 16, Line Recorder No. 2 Layout & Wiring Diagram
487	X344A497E	Panel No. 17, F ₂ Recovery System Layout
488	X344A496E	F ₂ Recovery System Wiring Diagram
489	X344A497.5E	Panel No. 18, Freon 22 System
490	X344A495E	Refrigeration Room 2 Control Panel
491	X344A444E	Control Room Panels Details
492	X344A441E	Control Room Alarm Relay Racks Wiring
493	X344A449E	Schematic Wiring Diagrams Sheet 1
494	X344A450E	Sheet 2
495	X344A451E	Sheet 3
496	X344A452E	Sheet 4
497	X344A453E	Sheet 5
498	X344A454E	Sheet 6
499	X344A455E	Sheet 7
500	X344A456E	Sheet 8
501	X344A458E	Sheet 9
502	X344A463E	Sheet 10
503	X344A464E	Sheet 11
504	X344A494E	Sheet 12
505	X344A457E	Weight Recorder & Indicator Schematic
506	X344A460E	F ₂ Cells Voltage Schematic
507	X344A461E	Control Room Panels Details

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AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
		Local Control Panels and Cabinets
508	X344A417E	Refrigeration Room No. 1, Control Panel Layout & Wiring Diagram
509	X344A418E	Refrigeration Rooms No. 1 and 2 Mezzanine Floor Plan
510	X344A442E	Reactor Tower Control Panel Layout
511	X344A443E	Reactor Tower Control Panel Layout
512	X344A445E	UF ₄ and Ash Storage Hopper Panel Layout & Wiring Diagram
513	X344A446E	Ash Handling Layout & Wiring Diagram
514	X344A482E	HF Condenser System Control Panel & Wiring Diagram
515	X344A483E	H2-HF Control Panel & Wiring Diagram
516	X344A484E	Electrolyte Make-up Tank Control Panel & Wiring Diagram
517	X344A485E	Control Cabinets Layout & Wiring Diagram
518	X344A447E	UF ₄ Up-Ender Cabinet Wiring Diagram
519	X344A472E	Control Panel No. 1, Cold Trap Layout & Wiring Diagram
520	X344A471E	Panel No. 2, Layout & Wiring Diagram
521	X344A473E	Panels No. 2 and No. 4 Layout & Wiring Diagram
522	X344A475E	Panel No. 5 Layout & Wiring Diagram
523	X344A474E	Brine System Control Panel
524	X344A493E	Brine System Control Panel & Wiring Diagram
525	X344A476E	Line Recorder Power Panel Schematic
526	X344A477E	Line Recorder Power Panel Layout & Wiring Diagram
527	X344A462E	Instrumentation Room Plan
528	X344A459E	Conduit Schedule
529	X344A469E	Miscellaneous Details
530	X344A465E	Line Recorder Tube Rack & Inlet Heating Layout

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
531	X344A466E	Relay Racks No. 1 and No. 2 Layout and Wiring Diagram
532	X344A467E	Manifold Cabinet Layout & Wiring Diagram
533	X344A468E	Cable Details
534	X344A470E	HF Storage Tank Plan
535	X344A478E	HF Storage Panel Layout & Wiring Diagram
536	X344A486E	Constant Voltage Transformer Connection Cabinet Layout
537	X344A487E	Instrument Housing & Solenoid Valve Details - Sheet 1
538	X344A492E	Sheet 2
539	X344A498E	Process Rectifiers 1 and 2 Wire Connection Diagrams
540	X344A499E	Cell Conditioning Rectifiers 1 and 2 Wire Connection Diagrams
541	X344A501E	Lighting Plans Lighting Standards, Notes and Symbols
542	X344A502E	Ground Floor Part "A"
543	X344A503E	Part "B"
544	X344A504E	Part "C"
545	X344A505E	Part "D"
546	X344A506E	Part "E" - High Boy
547	X344A507E	Part "F" - High Boy
548	X344A508E	Part "G" - Beneath Platforms
549	X344A509E	Part "H" - Beneath Platforms
550	X344A510E	Second Floor Part "J"
551	X344A511E	Part "K"
552	X344A512E	HF Storage Area Lighting & Power Plan
553	X344A513E	Ash Storage Building Lighting & Power Plan
554	X344A514E	Lighting Details Sheet No. 1
555	X344A515E	Sheet No. 2
556	X344A516E	Panel Schedules Sheet No. 1
557	X344A517E	Sheet No. 2
558	X344A601E	Communications
559	X344A602E	Ground Floor Plan Part "A"
560	X344A603E	Part "B"
561	X344A604E	Part "C"
562	X344A605E	X344A - 2nd Floor - X344B and X344C Floor Plan
563	X344A606E	Control Room & Office Area Floor Plan
		Process & Evaluation P. A. System - Wiring & Schematic Diagrams

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
564	X344A607E	P.A.X. Tel. Term. Cab. Wiring Diagrams
565	X344A608E	Communications Details Fire Alarm
566	X344A701E	Ground Floor Plan Part A
567	X344A702E	Part B
568	X344A703E	Part C
569	X344A704E	Building X344A - 2nd Floor Plan and Buildings X344B and X344C Floor Plans
570	X344A705E	Schematic Diagrams
571	X344A706E	Details MECHANICAL - ELECTRICAL Equipment Layout
572	X344A1ME	Key Plans & General Notes Ground Floor Plan
573	X344A2ME	Cold Trap Area, Sheet No. 1
574	X344A3ME	Sheet No. 2
575	X344A16ME	Sections
576	X344A4ME	Reactor Area, Pit Floor Plan
577	X344A5ME	Reactor Area
578	X344A18ME	Sections
579	X344A6ME	Powder Handling Area
580	X344A19ME	Sections
581	X344A7ME	Miscellaneous Process Rooms Sheet No. 1
582	X344A8ME	Sheet No. 2
583	X344A20ME	Sections
584	X344A9ME	South Cell Room
585	X344A10ME	North Cell Room
586	X344A17ME	Cell Rooms & Maintenance Area Sections
587	X344A11ME	Maintenance Area Sheet No. 1
588	X344A12ME	Sheet No. 2 Second Floor Plan
589	X344A13ME	Mechanical Equipment Area, Sheet No. 1
590	X344A14ME	Sheet No. 2
591	X344A15ME	Sheet No. 3 Equipment Details
592	X344A101ME	Anhydrous Hydrogen Fluoride Storage Tank
593	X344A102ME	Electrolyte Blowcase
594	X344A103ME	Caustic Tank
595	X344A104ME	Dip Tank
596	X344A105ME	Electrolyte Make-up Tank HFE-670-A and B
597	X344A106ME	Electrolyte Settling Tank HFE-673-A and B

AEC Nos.	Other Nos.	Description
CAPE-1550-598	X344A107ME	DRAWINGS(Cont'd) Powder Feed Drum Dumper Me-671 Sheet No. 1
599	X344A108ME	Sheet No. 2
600	X344A109ME	Sheet No. 3
601	X344A110ME	Sheet No. 4
602	X344A111ME	Sheet No. 5
603	X344A112ME	Anode Assembly Cart ME-789
604	X344A113ME	Cell Cover Plate Assembly Fixture ME-790, Sheet No. 1
605	X344A114ME	Sheet No. 2
606	X344A115ME	Sheet No. 3
607	X344A116ME	Sheet No. 4
608	X344A117ME	Sheet No. 5
609	X344A118ME	Cell Cover Plate Transfer Cart, ME-791 Sheet No. 1
610	X344A119ME	Sheet No. 2
611	X344A120ME	Sheet No. 3
612	X344A121ME	Bus Bar Storage Cart ME-786
613	X344A122ME	Acid Seal Pot HYE-621-A & B
614	X344A123ME	Hydrogen Surge Drum HYE-619 and Fluorine Surge Drum HYE-620
615	X344A124ME	UF ₆ Surge Drum FE-726
616	X344A125ME	Feed Screw Assembly FE-681A Through D, FE-700 & FE-715
617	X344A126ME	Sheet No. 1
618	X344A127ME	Sheet No. 2
619	X344A128ME	Alumina Traps for Vent & Evacuation Systems FE-723A Through F and FE-724A Through D
620	X344A130ME	Collection Hopper HFE-756 & FE-767 Cyclone Collector FE-689A Through D
621	X344A131ME	Entrainment Separator HYE-617A Through D and FE-618A Through D
622	X344A132ME	Preheater Furnace - FE-676A Through D and FE-694 and Coil FE-677A Through D & FE-695
623	X344A133ME	Cooling Jacket FE-691A Through D and Air Bump Tank ME-712
624	X344A134ME	Filters HYE-622A Through CFE-625A Through C, FE-692A Through D, FE-711 and FE-718A Through C

CAPE-1550

AEC Nos.	Other Nos.	Description
CAPE-1550-625	X344A135ME	DRAWINGS(Cont'd) Feed Hoppers FE-678A Through D and FE-697
626	X344A136ME	UF ₄ Storage Hopper HFE-738
627	X344A137ME	Ash Storage Hopper FE-747
628	X344A138ME	Rundown Tank HFE-666A Through C
629	X344A140ME	Water Tank ME-674
630	X344A141ME	Cleanup Reactor Furnace FE-706
631	X344A142ME	Hydrogen Fluoride Vaporizer HFE-606 A and B
632	X344A143ME	Scrubbing Equipment -- HFE-607, HYE-667, HYE-668, and HYE-669
633	X344A144ME	Scrubbing Equipment -- HFE-604, HFE-605, F-761, FE-761, and FE-785
634	X344A145ME	Ash Receiver FE-624
635	X344A152ME	Ash Receiver Heaters ME-688
636	X344A146ME	Backup Filters HFE-758 and FE-769-A and B
637	X344A147ME	Conveyor Assemblies - Sheet No. 1
638	X344A158ME	Sheet No. 2
639	X344A148ME	Seal Hopper FE-713
640	X344A149ME	Roughing Cold Trap Installation
641	X344A150ME	Downcomers and Hoppers
642	X344A151ME	Filter Shields & Hopper Sampler
643	X344A153ME	Reactor Area Equipment Arrangement
644	X344A154ME	Ash Up-Ender - ME-661
645	X344A155ME	UF ₄ Up-Ender - ME-737
646	X344A156ME	UF ₄ Drum Handling System ME-696, M-736, and ME-743
647	X344A157ME	Flash Tanks ME-739, ME-780, ME-797
648	X344A159ME	Sample Bottle Evacuation Alumina Trap
649	X344A160ME	Desmoking Station Cart ME-710
650	X344A161ME	Ash Receiver Handling System ME-734, ME-746, ME-711 A & B
651	X344A162ME	Auxiliary Anode Assembly Fixture ME-792
652	X344A164ME	Line Recorder Dust Filter FE-804
653	X344A165ME	Cooling Screw Casket Assembly & Details FE-805

AEC Nos.	Other Nos.	Description
CAPE-1550-		DRAWINGS(Cont'd)
654	X344A166ME	Cooling Screw Dust Hoods
655	X344A167ME	Load Cell Installations
656	X344A169ME	Ash and UF ₄ Up-Enders
		ME-661 & ME-737, Details
657	X344A170ME	UF ₄ and Ash Up-Ender Housings
658	X344A163ME	Miscellaneous Items
		Sheet No. 1
659	X344A168ME	Sheet No. 2
		GOODYEAR MISCELLANEOUS
		DRAWINGS
660	820M96	Freon 22 System Refrigeration
661	820M97	Oil & Water Services
662	820M98	Freon-114 System - Brine
663	820M99	Powder System
		Instrument Installation Plan
		& Application Diagram
664	DX344CA1	Hydrogen Fluoride Storage -
		Vaporization Feed to Cells
665	DX344CA2	Fluorine Generation Cell
		Cooling Water System &
		Electrolyte Make-up
666	DX344CA3	Fluorine-Hydrogen Compressing
		& Distribution System
667	DX344CA4	Fluorination Towers
668	DX344CA5	Fluorination Recycle Roughing
		Trap & Clean-up Reactor
		System
669	DX344CA6	Clean-up Trap & Vent System
670	DX344CA7	Line Recorder Sample System
671	DX344CA8	Brine System
672	DX344A707E	Evacuation Horns - Relay
		Cabinet Wiring & Schematic
		Diagrams
673	DX344A708E	Ten Ton Cylinder Sampling
		Air Monitoring System
		Bubbler & Schematic Detail

CAPE-1580
~50 sq. ft.

WATER-COOLED RUBY LASER HEAD

University of California
Lawrence Radiation Laboratory
Livermore, California

This water-immersed Brewster-angle ruby laser head is used in a Brillouin scattering experiment. The device operates in a simple mode and repeats consistently owing to close temperature control of the ruby. Pressure of Xe with an addition of H₂ to the flash tube enables the tube to stand off full-bank voltage and prevents premature flashes. Flash-tube unwinding during flashing and subsequent breaking are prevented by limited tightening of the O-ring flange.

AEC Nos.	Other Nos.	Description
CAPE-1580		<u>DRAWINGS</u>
1	AAA67-103106	Assembly
2	AAA67-103448	Body
3	AAA67-103194	Body Cover
4	AAA67-103213	Body Flange
5	AAA67-105095	Body Flange MKI
6	AAA66-120467	Sleeve
7	AAA67-103155	Sleeve Cover
8	AAA67-103182	Sleeve Flange
9	AAA66-123253	Lamp-1 ¹ / ₄ I.D @ 1 ¹ / ₂ T/I
10	AAA67-103107	Gasket
11	AAA67-103168	Flange
12	AAA67-103205	Lamp Gasket
13	AAA67-103120	Insulator Tube
14	AAA67-107401	Insulator Top-Type I
15	AAA67-107370	Connector Type I
16	AAA67-103135	Receptacle (Modified)
17	AAA67-107363	Ground Strap
18	AAA64-126871	Flash Tube Connector, Model 3

SLAC PHASING SYSTEM

Stanford University
Stanford Linear Accelerator Center
Stanford, California

This system enables klystron power to be introduced into the Stanford Linear Accelerator at the proper time, so that the klystron power will be synchronized with the power induced by the beam inside the same accelerator section.

AEC Nos.	Other Nos.	Description
CAPE-1584		<u>DRAWINGS</u>
		PHASING PROGRAMMER
1	AD810-037	Assembly
2	ML810-037	Materials List (4 sheets)
3	SD810-037	Schematic Diagram
4	WD810-037	Wiring Diagram
		TIMING GENERATOR
5	AD136-076	Assembly
6	ML136-076	Materials List
7	PF140-136	Printed Circuit Board
8	GP140-136	Silkscreen (2 sheets)
9	SA140-077	Terminal Board Subassembly
10	PF140-230	Printed Circuit Board
11	GP140-230	Artwork
12	SA140-229	Relay Bracket Subassembly
13	PF140-103	Relay Bracket Detail
14	PF140-105	Chassis
15	PF140-106	Rear Plate
16	PF140-107	Front Plate
17	PF140-108	Top Cover
		ELECTRONICS UNIT
18	AD810-019	Assembly
19	ML810-019	Materials List (2 sheets)
20	SD810-019	Schematic Diagram
21	WD810-019	Wiring Diagram
22	PF140-264	Front Panel
23	GP140-264	Front Panel Silkscreen
24	PF140-266	Connector Strip
25	PF140-097	Top and Bottom Cover
26	PF140-098	Rear Cover

CAPE-1584

AEC Nos.	Other Nos.	Description
CAPE-1584		<u>DRAWINGS</u> (Cont'd)
27	PF140-099	Mounting Strip
28	PF140-100	Side Plate
29	PF140-200	Capacitor Bracket Details
30	PF140-454	Power Supply Connector Bracket
		<u>SERVO AMPLIFIER</u>
31	AD810-011	Assembly
32	ML810-011	Materials List (2 sheets)
33	SD810-011	Schematic Diagram
34	PF140-260	Printed Circuit Board
35	GP140-260-01	Artwork
36	GP140-260-02	Silkscreen
		<u>GATED VOLT METER</u>
37	AD810-001	Assembly
38	ML810-001	Materials List (3 sheets)
39	SD810-001	Schematic Diagram
40	PF140-137	Printed Circuit Board Fabrication
41	GP140-137	Artwork and Silkscreen (2 sheets)
		<u>NULL DETECTOR</u>
42	AD810-040	Assembly
43	ML810-040	Materials List
44	SD810-040	Schematic Diagram
45	PF140-135	Printed Circuit Board Fabrication
46	GP140-135	Artwork and Silkscreen (2 sheets)
		<u>*2 AND WOBBLER DRIVER</u>
47	AD810-013	Assembly
48	ML810-013	Materials List (2 sheets)
49	SD810-013	Schematic Diagram
50	PF140-138	Printed Circuit Board Fabrication
51	GP140-138	Artwork and Silkscreen (2 sheets)

AEC Nos.	Other Nos.	Description
CAPE-1584		<u>DRAWINGS</u> (Cont'd)
52	AD810-018	Assembly
53	ML810-018	Materials List (3 sheets)
54	SD810-018	Schematic Diagram
55	PF140-259	Printed Circuit Board Fabrication
56	GP140-259-01	Artwork
57	GP140-259-02	Silkscreen
58	PF 140-258	Main Harness Fabrication
59	PF140-261	Stepping Relay Harness
60	PF140-262	A.C. Wiring Harness
61	PF140-263	Main Harness Fabrication
		RF DETECTOR PANEL
62	AD810-041	Assembly
63	ML810-041	Materials List (4 sheets)
64	SD810-041	Control Circuit Schematic Diagram
65	WD810-041	Cable Harness Wiring Diagram
66	SA810-041-01	Cable Harness Subassembly
67	SA810-041-02	Detector Panel Cables
68	PF810-041XX	Panel Details
69	PF810-053-01	Balance Circuit Mounting Bracket
70	PF810-054-01	Balance Circuit RF Shield
71	SA810-036-01	Printed Circuit Board Components
72	ML810-036	Materials List
73	PF140-150	Printed Circuit Board
74	SA810-044	Detector Panel Coaxial Cable
75	ML810-044	Materials List
		REFERENCE DRAWINGS ONLY
76	WD810-043	Cabling System for 8 Klystrons

AIR BEARING SPINDLE

Union Carbide Corporation
Nuclear Division, Oak Ridge Gaseous Diffusion Plant
Oak Ridge, Tennessee

These externally pressurized air-lubricated spindles use porous-graphite compensation. Two nearly hemispherical self-aligning bearings simplify fabrication and assembly, making them competitive with ball-bearing spindles. The spindles are used on numerically controlled turning and boring machine tools. Spindle-performance measurements indicate accuracies of 12 microinches at a point 8 in. from the face for speeds up to 1,500 rpm, deflection-load characteristics of less than 1.5 microinches per pound, and bearing-housing temperature rise of less than 2°F from a cold start to steady state conditions at a speed of 1000 rpm. The spindles have optimum stiffness and thermal stability at low supply pressure and normal machining speeds. They can be altered to produce spindles with optimum performance characteristics for other applications.

REFERENCE: Y-1581. AIR-BEARING SPINDLE FOR MACHINE TOOLS:
SPHERICAL DESIGN. P. J. Steger. Sept. 29, 1967.
37p. Dep. CFSTI \$3.00 cy, \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1627		<u>DRAWINGS</u>
1	E-T62910	Assembly
2	E-T62911	Spindle Housing
3	E-T62682	Spindle Housing-Casting A
4	E-T62912	End Cap and Graphite Bearing
5	E-T62913	Bearings and Shaft Details
6	E-T62914	Miscellaneous Details
7	A-T29963	Air Bearing Spindle- Spherical Design. Special Fabrication and Assembly Procedure (8 sheets)

CERAMIC COMPONENTS USED IN PLUTONIUM ELECTROREFINING

Los Alamos Scientific Laboratory
Los Alamos, New Mexico

The components include an electrorefining cell, a stirring rod, and an anode sheath. The cell is $4 \frac{3}{4}$ in. in dia and 20 in. high; the anode chamber within the cell is $2 \frac{3}{8}$ in. in dia and $3 \frac{1}{2}$ in. high and cast of $\text{MgO}-2 \text{ wt } \% \text{Y}_2\text{O}_3$. The stirrers are a solid cast of $\text{MgO}-3 \text{ wt } \% \text{Y}_2\text{O}_3$ and are $8 \frac{3}{32}$ in. long and $\frac{5}{16}$ in. in dia. The anode sheaths are drain-cast MgO and are $6 \frac{1}{4}$ in. long, 0.370 in. OD, and 0.360 in. ID. The components have high thermodynamic stability, adequate thermal-shock resistance and high mechanical strength.

REFERENCE: LA-3707. FABRICATION OF CERAMIC COMPONENTS FOR USE IN PLUTONIUM ELECTROREFINING. S. D. Stoddard and D. E. Nuckolls. Mar. 1, 1967. 9p. Dep. CFSTI \$3.00 cy, \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1633		<u>DRAWINGS</u>
1	26Y-72325C8	Electrorefining Cell
2	26Y-72495D4	Details
3	26Y-72500C1	Ceramic Stirring Rod
4	26Y-75970	Anode Sheath

LIQUID CERENKOV COUNTER

Brookhaven National Laboratory
Upton, New York

A differential Cerenkov counter employing a liquid solution for a radiator is used for detecting low momentum particles. The velocity band to which the counter is sensitive is controlled by altering the relative position of the optical elements in the counter. Two Al plates 40 in. in dia and $\frac{3}{4}$ in. thick are mounted by means of 7 steel bars bolted to the inner faces of the plates. The steel bars are 1 in. in dia and 15 in. long. Two steel plates 26 in. in dia and $\frac{3}{8}$ in. thick are fixed to the inner surface of the Al plate forming a magnetic shield. Suitable ports allow beam entry. The sensitive dia of the counter is 5 in., which is the dia of the radiator. Light detection is accomplished by 2 groups of a high photo-cathode efficiency-type phototubes which were selected for low noise and even performances. Phototube high voltage is supplied through a medium-current voltage divider chain. A small fan cools the counter, and equilibrium temperature is maintained at approximately 40°C.

REFERENCE: BNL-50031. DIFFERENTIAL LIQUID CERENKOV COUNTER WITH CONTINUOUSLY VARIABLE VELOCITY RESPONSE. B. A. Leontic and J. Teiger. Dec. 1966. 18p. Dep. mn. CFSTI \$3.00 cy, \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1636		<u>DRAWINGS</u>
1	P10-30-32-6	Vessel Stand
2	P10-30-11-6	Vessel Body (Shop Drawing)
3	P10-30-10-5	Vessel Body (Sheet Metal and Welding)
4	P10-30-50-5	Vessel Body and Stand Assembly
5	P10-30-12-6	Vessel Liner
6	P10-30-30-1	Water Inlet
7	P10-30-31-1	Water Outlet
8	P10-30-2-5	Cover
9	P10-30-16-3	Strut Support
10	P10-30-3-3	Photomultiplier Tube and Shield Assembly
11	P30-10-5-2	Tube Clamp Ring
12	P10-30-42	Tube Window

AEC Nos.	Other Nos.	Description
CAPE-1636		<u>DRAWINGS</u> (Cont'd)
13	P10-30-9-2	Adaptor Ring
14	P10-30-7-2	Adjusting Ring
15	P10-30-6-2	Ring Mount Thrust Collar
16	P10-30-29-1	Mounting Flange
17	P10-30-8-2	End Cover
18	P30-10-20-1	Amplifier Terminal Disc
19	P30-10-21-1	Amplifier Base
20	P10-30-66-5	Cylindrical Light Guide Support Stand
21	P10-30-17-5	Light Guides, Rows "A", "B", and "C"
22	P10-30-17-3	Light Guides, Rows "A", "B", and "C"
23	P10-30-18-2	Light Guides, Rows "D" and "E"
24	P10-30-51-3	Bracket
25	P10-30-103-3	Diffusion Plate
		AGS COUNTER EXPERIMENT
26	P10-32-0-6	Main Assembly
27	P10-32-0 B/M	Bill of Materials (7 sheets)
28	P10-32-78-4	Spherical Lens
29	P10-32-77-4	Spherical Lens Subassembly
30	P10-32-22-2	Spherical Lens Spacer
31	P10-32-80-4	Adapter Ring Mount
32	P10-32-86-1	Adapter Ring Stud
33	P10-32-81-4	Lens Guard
34	P10-32-82-4	Spherical Mirror
35	P10-32-83-2	Handle
36	P10-32-84-1	Handle Yoke
37	P10-32-85-1	Guide Pin
38	P10-32-3-3	Reflector Lens
39	P10-32-5-5	Lens End Magnetic Shield
40	P10-32-10-5	Lens Outer End Plate
41	P10-32-2-2	Liquid Target Chamber
42	P10-32-4-4	Chamber Housing
43	P10-32-7-5	Housing End Magnetic Shield
44	P10-32-9-5	Housing Outer End Plate
45	P10-32-12-1	Idler Gear Shaft
46	P10-32-13-1	Pin Ring
47	P10-32-14-1	Miter Gear Plate
48	P10-32-15-1	Miter Gear Block
49	P10-32-16-1	Lead Screw
50	P10-32-17-2	Tie Rod and Ball Bushing Shaft
51	P10-32-19-1	Miter Gear and Sprocket Shaft Support
52	P10-32-20-2	Selsyn Mounting Plate
53	P10-32-30-1	Selsyn Clamp

AEC Nos.	Other Nos.	Description
CAPE-1636		<u>DRAWINGS (Cont'd)</u>
54	P10-32-34-1	Sprocket Shaft
55	P10-32-23-2	Sprocket Shaft Plate
56	P10-32-24-1	Sprocket Spacer
57	P10-32-25-2	Sprocket Plate
58	P10-32-26-2	Sprocket Upper Spacer
59	P10-32-27-1	Sprocket Idler Bracket
60	P10-32-28-1	Sprocket Idler Bracket
61	P10-32-29-1	Guide Rails
62	P10-32-31-1	Lead Screw Nut
63	P10-32-32-1	Retainer Pin
64	P10-32-33-1	Liquid Chamber Lead Screw
65	P10-32-35-1	Sprocket Drive Lead Screw
66	P10-32-36-1	Lead Screw Nut
67	P10-32-37-1	Spacer Ball Bushing
68	P10-32-38-1	Spur Gear Idler Shaft
69	P10-32-39-1	Miter Gear Drive Shaft
70	P10-32-40-1	Sprocket Idler Shaft
71	P10-32-41-1	Hand Wheel Miter Gear Drive Shaft
72	P10-32-42-1	Sprocket and Miter Gear Shaft
73	P10-32-43-1	Miter Gear Shaft
74	P10-32-21-1	Miter Gear Shaft Bearing
75	P10-32-44-1	Universal Drive
76	P10-32-45-2	Hand Wheel and Shaft Support
77	P10-32-47-1	Hand Wheel Support Bushing
78	P10-32-46-2	Base Legs
79	P10-32-67-2	Liquid Chamber Hand Wheel Drive
80	P10-32-49-1	Sprocket Shaft
81	P10-32-50-1	Hand Wheel Shaft
82	P10-32-6-5	Photomultiplier Tube Ring
83	P10-32-48-1	Photomultiplier Tube Support Bracket
84	P10-32-52-4	Photomultiplier Tube Light Shield Assembly
85	P10-32-51-1	Wedge
86	P10-32-53-1	Clamps
87	P10-32-65-1	Photomultiplier Tube Drive Universal Joint
88	P10-32-66-1	Universal Joint (altered)
89	P10-32-68-2	Photomultiplier Tube Hand Wheel Drive
90	P10-32-71-1	Stop Ring
91	P10-32-54-2	Ball Bushing Retainer (altered)
92	P10-32-55-1	Spur Gear Idler (altered)
93	P10-32-56-1	Spur Gear Idler (altered)
94	P10-32-57-1	Spur Gear Lead Screw Drive
95	P10-32-58-1	Spur Gear (altered)

CAPE-1636

AEC Nos.	Other Nos.	Description
CAPE-1636		<u>DRAWINGS</u> (Cont'd)
96	P10-32-59-1	Miter Gear (altered)
97	P10-32-60-1	Miter Gear Sprocket Drive
98	P10-32-61-1	Sprocket (altered)
99	P10-32-62-1	Sprocket Idler Assembly

ADJUSTABLE VOLUME VALVE

University of California
Lawrence Radiation Laboratory
Livermore, California

The automatic, variable-volume valve or gas dispenser is used for calibration of vacuum analytical systems by injecting into the system small, known volumes of a standard gas ranging from ~0.030 to 3 cc STP. The device consists of a brass body, two opposing air-operated valves for inlet and outlet control, and a cylindrical buret whose internal volume can be varied. The valves produce a minimum internal volume when closed. The $\frac{1}{2}$ in. dia piston can be moved 1 in. and its position determined to 0.0001 in. There is a small amount of leakage when the piston is adjusted to a new volume, but this leakage does not hinder the usefulness of the device.

REFERENCE: UCD-15138. AN AUTOMATIC, VARIABLE VOLUME GAS DISPENSER. R. W. Crawford. August 30, 1965. 6p.
Dep. CFSTI. \$3.00 cy. \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1637		<u>DRAWINGS</u>
1	AAA65-121146	Valve Subassembly
2	AAA65-121144	Valve Body
3	AAA65-121141	Piston
4	AAA65-121082	Diaphragm Actuated Head

CAPE-1638
~85 sq. ft.

PNEUMATIC HAMMER

Sandia Corporation
Albuquerque, New Mexico

Designed for producing low-level (1 to 20 kilobars) pressure pulses for calibrating and testing piezoresistive pressure transducers, the hammer consists of a gas-storage chamber, release mechanism, barrel, projectile, and impact area. The hammer is firmly mounted on a movable base which is filled with gravel to reduce acceleration of the system during operation. The projectile face and impact surface are designed so that a planar impact is obtained with an accompanying fast stress-wave rise time. Projectile velocity is measured immediately before impact by a parallel light-beam photo-diode detector system attached to an electronic circuit of extremely fast rise time. A honeycomb placed directly behind the test item is used to absorb the energy of the projectile. For safety, the release mechanism is fail-safe when closed. An electric signal to apply air pressure is provided with 3 interlocks and a key switch. Before the projectile can be released, the vacuum system must be at less than 4 mm of Hg, the hydraulic pressure greater than 2500 psi in the clamping portion of the cylinder, and the honeycomb block in position. A mechanical interlock ensures that the hydraulic closing cylinder valve remains in the clamped position when there is gas pressure in the storage chamber.

REFERENCE: SCL-DR-67-48. PNEUMATIC HAMMER DEVELOPMENT. R. A. Thompson. July 1967. 29p. Dep. CFSTI. \$3.00 cy, \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1638		<u>DRAWINGS</u>
1	CK40850	Schematic
2	DK44840	Electronic Component Board
3	DK44839	Circuit Board
4	AK56068	Hydraulic System Diagram
5	CK56325	Gas System Diagram
6	CK56330	Vacuum and Ventilation System Diagram
7	EK44160	Light Source (3 sheets)
8	EK44357	Mask Holder (3 sheets)

CAPE-1640
~24 sq. ft.

DATA RECORDING ACCESSORY CAMERA
FOR GRAFLEX 35 mm PHOTORECORD CAMERA

Los Alamos Scientific Laboratory
Los Alamos, New Mexico

The camera is used with the Graflex 35 mm photorecord camera to make badge photograph negatives containing the identification picture and three lines of typed information photographed from an IBM card.

AEC Nos.	Other Nos.	Description
CAPE-1640		<u>DRAWINGS</u>
1	21Y16447-1	Assembly
2	21Y16447-2	Subassemblies
3	21Y16447-3	Details
4	21Y16447-4	Details

CAPE-1641
~36 sq. ft.

DATA RECORDING ACCESSORY CAMERA
FOR MODIFIED POLAROID 95B CAMERA

Los Alamos Scientific Laboratory
Los Alamos, New Mexico

The camera is used with the modified Polaroid 95B in making Polaroid badge photographs containing the identification picture and three lines of typed information photographed from an IBM card.

AEC Nos.	Other Nos.	Description
CAPE-1641		<u>DRAWINGS</u>
1	21Y16448-1	Assembly
2	21Y16448-2	Subassembly
3	21Y16448-3	Subassemblies
4	21Y16448-4	Details
5	21Y16448-5	Details
6	21Y16448-6	Details

RADIO FREQUENCY SEALER

University of California
Lawrence Radiation Laboratory
Livermore, California

A portable unit weighing 14 lbs, this rf sealer is capable of welding polyvinyl chloride from 3 to 12 mils thick including wrinkles caused by bunching. If heat input and length of pulse are regulated, perfect welds are obtainable. A small portable hydraulic unit and rf generator are needed to operate the sealer. The hydraulic unit has a double-action trigger used to close the sealer jaws and to energize the electrodes. A pressure-switch interlock prevents pre-energizing the electrodes with accompanying arcing and burn-through. The lower jaw is full-floating and self-aligning to equalize pressure when wrinkles or bunching occur. Electrodes are mounted to allow for expansion and contraction, thereby eliminating warping. The upper electrode is faced with teflon tape to prevent arcing when small bags are welded. A light indicates when the rf generator is on and the sealer is ready for use.

AEC Nos.	Other Nos.	Description
CAPE-1642		<u>DRAWINGS</u>
1	AAA65-125709	Assembly
2	AAA65-125649	Side Panel
3	AAA65-125665	Connections Plate-Electrical
4	AAA65-125673	Light Indicator Spacer
5	AAA65-125693	Access Cover
		JAW AND ACTIVATOR
6	AAA65-125717	Subassembly
7	AAA65-125685	Lower Jaw
8	AAA65-125713	Upper Jaw
9	AAA65-125697	Lower Electrode
10	AAA65-125705	Lower Electrode Holder
11	AAA65-125705	Upper Electrode
12	AAA65-125701	Upper Electrode Insulator
13	AAA65-125657	Connector
14	AAA65-125661	Connector Insulator
15	AAA65-125653	Trunnion
16	AAA65-125677	Cylinder (Modified)
17	AAA65-125681	Air Fork Cylinder
18	AAA66-119921	Cylinder Subassembly

CAPE-1642

AEC Nos.	Other Nos.	Description
CAPE-1642		<u>DRAWINGS</u> (Cont'd)
19	AAA66-119946	Body
20	AAA66-119946	Piston
21	AAA66-119897	End Cap
		TRIGGER SWITCH
22	AAA65-121575	Subassembly
23	AAA65-121443	Body
24	AAA65-121522	Trigger
25	AAA65-121609	Microswitch Support L.H.
26	AAA65-121645	Microswitch Support R.H.
27	AAA65-121427	Guide Rod
28	AAA65-125669	Trigger Mechanism Cover
29	GLB677-4474	R.F. Sealer Tong Photograph

SEMICONDUCTOR DETECTOR CRYOSTAT

University of California
Lawrence Radiation Laboratory
Berkeley, California

This multipurpose standardized cryostat system is used with non-encapsulated Ge(Li) and Si(Li) semiconductor radiation detectors. Welding and vacuum-furnace brazing techniques are used to provide high-integrity joints and eliminate possible sources of solder-flux, chemical, and solvent contamination. Vacuum in the cryostat is maintained at 3×10^{-7} torr by a sputter-ion pump; gravity-feed liquid-N cooling is employed. End-cap removal permits access for installation and removal of detectors and wiring. The detector mount, which is electrically isolated, is fabricated of Al and other low-Z materials.

AEC Nos.	Other Nos.	Description
CAPE-1643		<u>DRAWINGS</u>
		<u>MECHANICAL DRAWINGS</u>
1	14K5636	Assembly
2	14J8156	Valve Cluster Assembly
3	14J8151	Blank Flange
4	14J8173	Tie Type Valve Body
5	14J8202	Flanged Ion Pump
6	14J8222	Flanged Half Union
7	14J9692	Flat Gasket
8	14K3163	Angle Type Valve Body
9	14K5743	Valve Body Male Port
10	14J9712	Valve Cluster Adapter
11	14K5721	Slit Ring
12	14K5731	Clamp Ring
13	14J9623	Conventional Detector Mount
14	14J9662	End Assembly Mount
15	14K4161	Linking Clamp
16	14K4171	Adjusting Clamp
17	14K4181	Detector Support Tape
18	14K4192	Copper Contact
19	14K5671	Modified Washer
20	14K1513	Feed-Through Mounting Ring
21	14K1524	Liquid Nitrogen Container
22	14J9652	Container Spacer
23	14J9641	Container Spacer Clip

AEC Nos.	Other Nos.	Description
CAPE-1643		<u>DRAWINGS</u> (Cont'd)
24	14J9722	Port Hole Cover
25	14J9952	Support Plate
26	14K1504	Support Bracket
27	15K2202	F.E.T. Heater
28	15K2222	High Voltage Feed-Through
29	15K2242	Feed-Through Connector
30	15K2232	Feed-Through Connector Adapter
31	15K3213	Vacuum Jacket with Welded Al Window
32	14K1353	Vacuum Jacket with Epon- Sealed Window
33	14K5532	Symmetrical Detector Mount
34	14K5542	Symmetrical Detector Mount Extension
35	14K5562	Symmetrical Detector Assembly Mount
36	14K5553	Symmetrical Detector F.E.T. Mount
37	14K5522	Symmetrical Detector Heater Sleeve
38	14K5572	Symmetrical Detector High Voltage Plate
39	14K5582	Symmetrical Detector Clamping Nut
40	14K5602	Slice Detector Mount
41	14K5591	Mounting Clamp
42	14K5612	Pair Spectrometer Detector Mount
43	14K5622	External F.E.T. Feed-Through
44	14K3433	Vacuum Jacket Extension
45	14K3443	End Cap
46	14K3134	Vacuum Jacket with Side Window
47	14K3143	End Assembly Mount
		ELECTRONIC DRAWINGS
		Preamplifier
48	11X5521P1	Print List
49	11X5521D1	Description (4 sheets)
50	11X5522S2	Schematic
51	11X5521C1	Component List (3 sheets)
52	11X5523L1	Component Layout
53	11X5521E1	Etched Wiring (Component Side)
54	11X5521E2	Etched Wiring (Wiring Side)
55	11X5523E3	Hole Schedule
56	11X5521M1	Board Outline
57	11X5521M4	Knob Modification

AEC Nos.	Other Nos.	Description
CAPE-1643		DRAWINGS (Cont'd)
58	11X5523M2	Shielded Box Modification
59	11X5521J1	Cover Stencil
60	11X5523A1	Assembly
61	11X5523T1	Test Specifications

CAPE-1644
~56 sq. ft.

MULTIBULB VISCOMETER

Union Carbide Corporation
Nuclear Division, Oak Ridge Gaseous Diffusion Plant
Oak Ridge, Tennessee

A three-bulb glass viscometer for semiautomatically determining the efflux times of a liquid at three different consecutive shear rates is described. Data are obtained by measuring the time required for the sample level to fall between a pair of meniscus detectors located above and below each bulb along a vertical tube. The meniscus detector assemblies utilize a common exciter lamp, flexible fiber-optics light pipes to transmit the optical signals, and photoconductive cell bridges. Solid-state amplifiers are employed to actuate precision timers which store the efflux time data until reset. The timer storage capacity is 1000 seconds in 0.1 second increments, and a readout resolution of ± 0.02 seconds can be attained by interpolation. A maximum overall error (95% C.I.) of 0.14 second was obtained using a distilled-water sample in a stirred but not temperature-controlled water bath. The sample requirement for the instrument is 4.5 to 5.5 ml.

REFERENCE: K-1696. MULTIBULB VISCOMETER. H. A. Kermicle.
June 13, 1967. 16p. Dep. CFSTI. \$3.00 cy,
\$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1644		<u>DRAWINGS</u>
1	D-I-E10817E3	Block Diagram
2	D-I-E10817E1	Control Circuit Schematic
3	D-I-E10817E2	Chassis and Rear Panel Details
4	E-M-E10817E	Front Panel
5	E-M-E10817B	Optical System Details
6	E-M-E10817C	Glassware
7	E-M-E10817D	Sheet Metal Details

POWERED AIR-PURIFYING RESPIRATOR

University of California
Lawrence Radiation Laboratory
Livermore, California

This personal respirator provides a protection factor of 1000 against particulates when used with half-masks, full-face masks, rigid helmets, or hoods. The apparatus consists of a motor-fan, power supply, air-purifying element, and an air-delivery hose. The centrifugal fan is powered by a dc 6 V motor. A "D" cell, Ni-Cd battery is used. Ultrahigh efficiency filters provide 5 cfm of air. The delivery hose is $7/8$ in. ID reinforced plastic.

REFERENCE: UCRL-50263. POWERED AIR-PURIFYING RESPIRATOR.
William A. Burgess and William Nettleton. May 23,
1967. 13p. Dep. CFSTI \$3.00 cy, \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1645		<u>DRAWINGS</u>
1	AAA66-117912	Assembly
2	AAA66-118005	Adapter Assembly
3	AAA66-118043	Housing Ring
4	AAA66-118079	Filter Ring
5	AAA66-118109	Slip Ring
6	AAA66-118114	Impeller Blower
7	AAA66-118365	Blower Housing
8	AAA66-118314	Housing Gasket
9	AAA66-118336	Blower End Plate
10	AAA66-118290	Motor Assembly
11	AAA66-118219	Tube
12	AAA66-118149	Tube Gasket
13	AAA66-118247	Switch Assembly
14	AAA66-118184	Switch Insulator
15	AAA66-118264	Conical Spring
16	AAA66-118176	End Cap

CAPE-1646
~14 sq. ft.

OPTICAL EXTENSOMETER

Oak Ridge National Laboratory
Oak Ridge, Tennessee

An automatic recording precision optical spectrometer was developed by Southern Research Institute (see CAPE-1103) for making strain measurements on test specimens at elevated temperatures where direct contact with the specimen is not possible. A null-balance servo system coupled to an x-y plotter produces stress-strain diagrams. Wiring diagrams are given for telescope and aperture drives and control.

AEC Nos.	Other Nos.	Description
CAPE-1646		<u>DRAWINGS</u>
1	Q-2880-1	Telescope and Aperature Drives Wiring Diagram
2	Q-2880-2	Telescope and Aperature Controls Wiring Diagram
		<u>PHOTOGRAPHS</u>
3	PHOTO-82005	Precision Optical Extensometer Servomechanism
4	ORNL-67-2269	Optical Extensometer Servomechanism Diagram
5	PHOTO-82001	Optical Extensometer Control Panel Assembly

MERCURY JET SWITCH

University of California
Lawrence Radiation Laboratory
Livermore, California

The switch is used to meet high-current, long-duration, series-switching requirement of the electrolytic capacitor banks used with the Levitron (see CAPE-893). The switch, which was to relieve a major share of the discharge load on the ignitrons following their initial switching and be capable of operating twice a minute, showed in tests that it can replace the series switching ignitrons. The switch is air operated with Hg being stored in a 2 in. I.D. stainless-steel bellows. Air pressure of 80 psia is abruptly applied to the outside of the bellows causing Hg to be ejected from the bottom electrode through a 1 cm dia orifice toward the top of the electrode. The electrodes are enclosed in evacuated pyrex glass. Initial load tests on the switch made with a capacitor bank-coil combination, capable of giving an 8000-A peak current with a $1/4$ -cycle, showed a rise time of 11 msec and a 25 msec L/R decay. The switch operated at the available peak of 8000 A repeatedly and indicated the ability to exceed this figure as inferred by the nominal 8 V drop across the switch at 8000 A. Closing time of the switch for the tests was 20 ± 0.2 msec.

REFERENCE: UCRL-70014. MERCURY-JET SWITCH. D. R. Branum and G. G. North. Sept. 23, 1966. 19p. Dep. CFSTI
\$3.00 cy, \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1649		<u>DRAWINGS</u>
1	AAA66-118399	Branum Mercury Switch Assembly
2	AAA66-118250	Coil
3	AAA66-118113	Valve Seat
4	AAA66-118360	Valve
5	AAA66-118302	Keeper
6	AAA66-118096	Limit Stop
7	AAA66-118268	Valve Guide
8	AAA66-118351	Accumulator Top
9	AAA66-118385	Accumulator
10	AAA66-118372	Pressure Pulse Housing
11	AAA66-118175	Sleeve and Stop

CAPE-1647

AEC Nos.	Other Nos.	Description
CAPE-1647		<u>DRAWINGS</u> (Cont'd)
12	AAA66-118326	Lower Terminal Plate and Bellows
13	AAA66-118379	Upper Terminal Plate
14	AAA66-118224	Top Electrode
15	AAA66-115031	Compression Spring
16	AAA66-118071	Keeper Bellows Spring
17	AAA66-118147	Gasket
18	AAA66-118201	Seal and Insulator
19	AAA66-118288	Accumulator Lock and Stop

CAPE-1648
~8 sq. ft.

WATER COOLING TUBES OF AN ACCELERATOR SECTION

Stanford University
Stanford Linear Accelerator Center
Stanford, California

Water is carried by cooling tubes to maintain a constant temperature in sections of the Stanford Linear Accelerator in order that the internal dimensions of the sections will remain unchanged.

AEG Nos.	Other Nos.	Description
CAPE-1648		<u>DRAWINGS</u>
1	PF751-043XX	Feed Tubes
2	PF751-044XX	Hair Pin Cooling Tubes

CAPE-1649
~126 sq. ft.

FUEL ELEMENT MONITOR

Brookhaven National Laboratory
Upton, New York

A compact portable gamma spectrometer is used in safeguarding inventories of ^{235}U contained in unirradiated reactor fuel elements. The apparatus can also be used as a general purpose gamma spectrometer. Main chassis solid-state circuitry includes a wide-range high voltage supply, double delay line pulse amplifier, split-window gain stabilizer, single channel pulse-height analyzer, six decade scaler, automatic timer, count-rate meter, low-voltage regulators, and a battery charger. Power is supplied by a 3.5 lb. 24 V, 2A-hr NiCd rechargeable battery which provides up to 20 hrs operation. Electronic circuits except the battery charger are plug-in modules 6 x 1.5 x 3 in. in size. The main chassis is mounted in a transit case 14 x 19 x 6 in. An identical case is provided for the probe, preamplifier, collimators, and probe stand.

REFERENCE: BNWL-SA-1023. DEVELOPMENT OF PORTABLE GAMMA SPECTROMETERS FOR SAFEGUARD USE. E. M. Sheen.
May 31, 1967. 16p. Dep. CFSTI. \$3.00 cy, \$0.65 mn.

AEC Nos.	Other Nos.	Description
CAPE-1649		<u>DRAWINGS</u>
1	H3-26955	Assembly and Details (4 sheets)
2	H3-26920	Elementary Diagram, Panel Cutouts and Transit Case (7 sheets)
3	H3-27944	Modules Arrangement and Details (5 sheets)

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