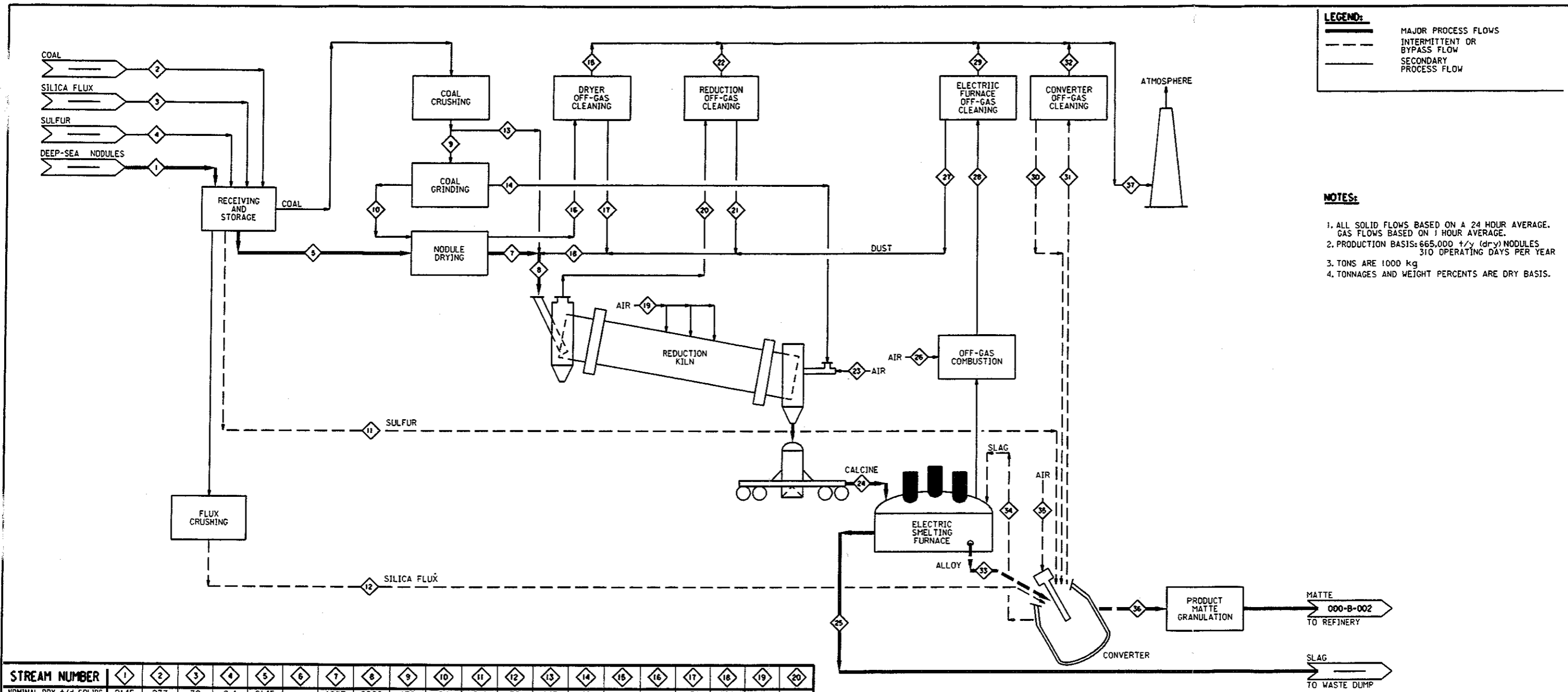


# APPENDIX A

## APPENDIX A

### DRAWINGS

<u>DRAWING NO.</u>	<u>REV.</u>	<u>TITLE</u>
000-B-001	A	Smelter Plant Block Flow Diagram
000-B-002	A	Hydrometallurgical Plant Block Flow Diagram- Sht.1
000-B-003	A	Hydrometallurgy Plant Block Flow Diagram- Sht.2
100-B-001	A	Marine and Portside Facilities Flow Diagram
200-B-001	A	Nodule Storage and Reclaim Flow Diagram
320-B-001	A	Nodule Drying Flow Diagram
330-B-001	A	Nodule Pre-Reduction Flow Diagram
340-B-001	A	Electric Smelting Furnace Flow Diagram
350-B-001	A	Converting & Matte Granulation Flow Diagram
400-B-001	A	Matte Grinding and Leaching Flow Diagram
400-B-002	A	Copper Electrowinning Flow Diagram
400-B-003	A	Solvent Extraction Flow Diagram
400-B-004	A	Nickel Electrowinning Flow Diagram
400-B-005	A	Cobalt Electrowinning Flow Diagram
510-B-001	A	Coal Receiving and Storage Flow Diagram
520-B-001	A	Silica Flux Receiving and Storage Flow Diagram
000-E-001	A	Main Substation Electrical One Line Diagram
100-E-001	A	Marine Facilities Electrical One Line Diagram
300-E-001	A	Drying/Smelting/Converting Electrical One Line Diagram
400-E-001	A	Hydrometallurgy Plant Electrical One Line Diagram
600-E-001	A	FA6 0600 - Utilities Electrical One Line Diagram
000-M-001	A	Site Plan
340-M-001	A	Smelter Plan
340-M-002	A	Smelter Sections Sheet1
340-M-003	A	Smelter Sections Sheet 2
400-M-001	A	Hydrometallurgy Plant Plans
400-M-002	A	Hydrometallurgy Plant Sections
510-M-001	A	Coal Handling Plan and Sections
520-M-001	A	Silica Handling & Misc. Plan and Sections
600-M-001	A	Plant Underground Piping Plan



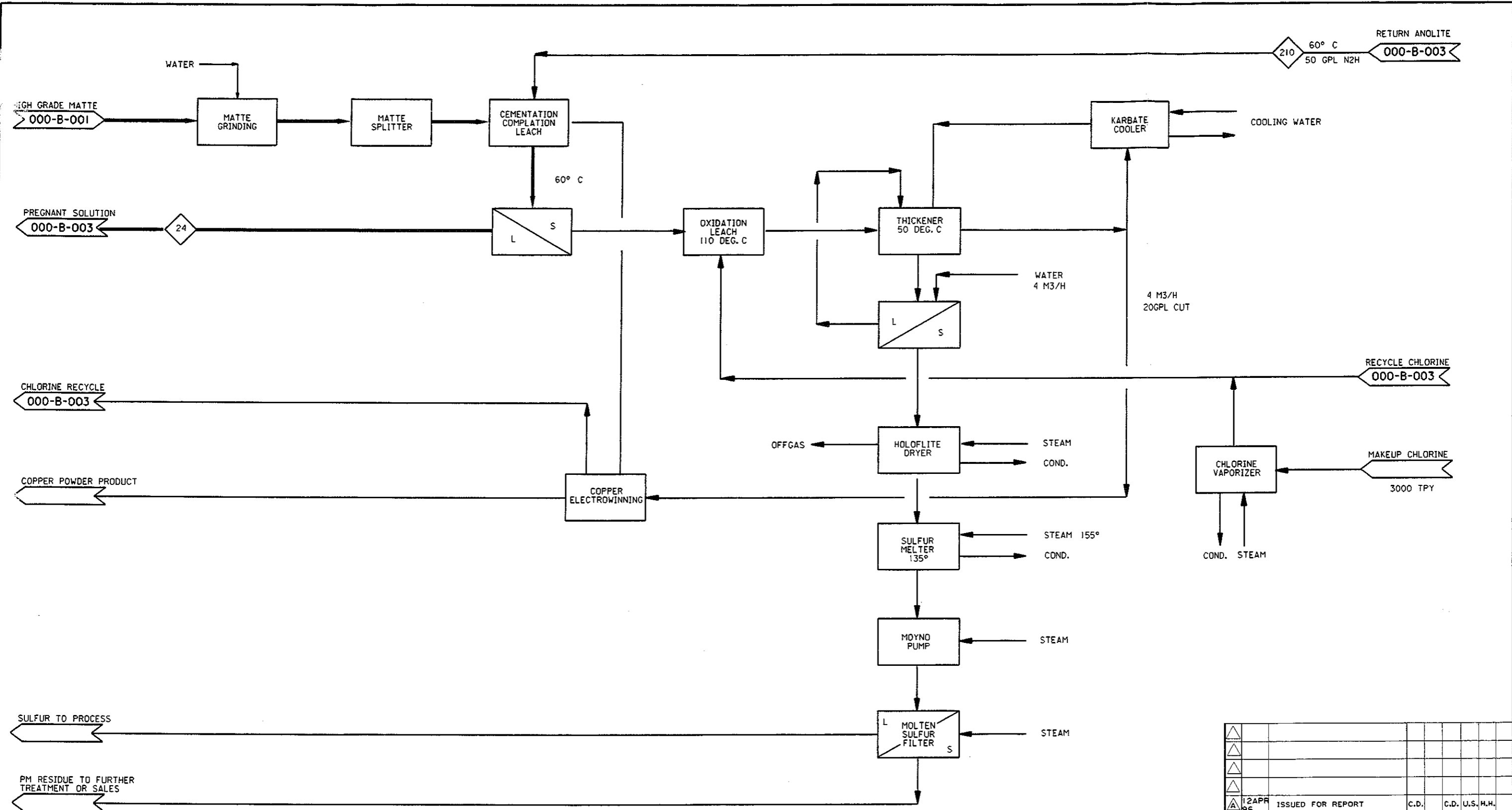
**LEGEND:**  
 — MAJOR PROCESS FLOWS  
 - - - - - INTERMITTENT OR BYPASS FLOW  
 - - - - - SECONDARY PROCESS FLOW

**NOTES:**  
 1. ALL SOLID FLOWS BASED ON A 24 HOUR AVERAGE. GAS FLOWS BASED ON 1 HOUR AVERAGE.  
 2. PRODUCTION BASIS: 665,000 t/y (dry) NODULES, 310 OPERATING DAYS PER YEAR.  
 3. TONS ARE 1000 kg  
 4. TONNAGES AND WEIGHT PERCENTS ARE DRY BASIS.

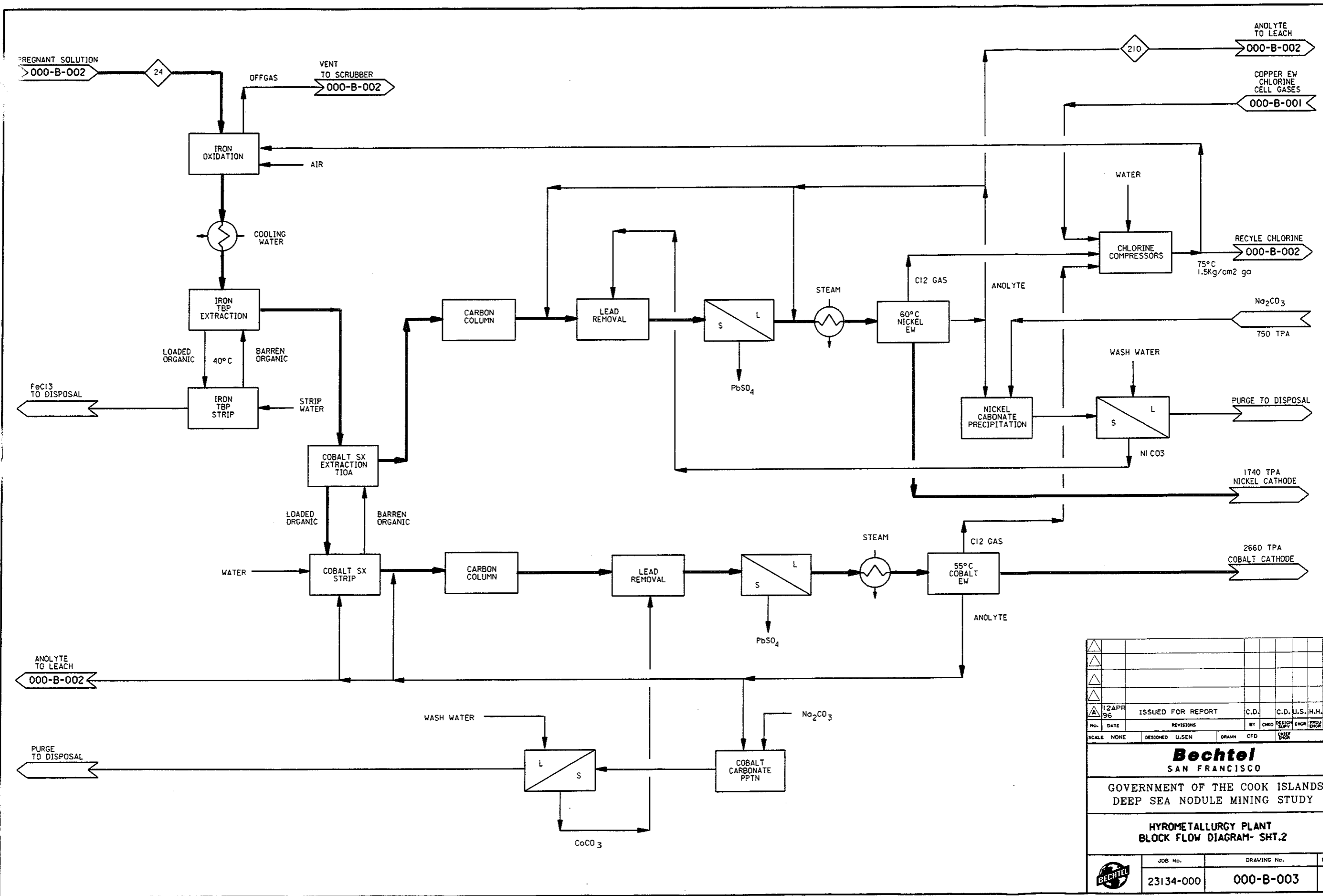
STREAM NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
NOMINAL DRY t/d SOLIDS	2145	277	30	8.4	2145		1987	2982	132	84	8.4	30	145	48	-	-	158	850	-	-		
NOMINAL Nm <sup>3</sup> /h GAS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	127,300	121,290	-	-	30,000	73,290	
COBALT, wt %	0.47	-	-	-	0.47		0.47	0.5	-	-	-	-	-	-	-	-	0.47	0.7	-	-	-	
NICKEL, wt %	0.27	-	-	-	0.27		0.27	0.3	-	-	-	-	-	-	-	-	0.27	0.4	-	-	-	
COPPER, wt %	0.15	-	-	-	0.15		0.15	0.16	-	-	-	-	-	-	-	-	0.15	0.2	-	-	-	
IRON, wt %	16.8	-	-	-	16.8		16.8	18.4	-	-	-	-	-	-	-	-	16.8	25.2	-	-	-	
MANGANESE, wt %	15.5	-	-	-	15.5		15.5	16.4	-	-	-	-	-	-	-	-	15.5	21.4	-	-	-	
SILICA, wt %	14.3	6.1	90.0	-	14.3		14.3	15.8	6.1	6.1	-	90.0	6.1	6.1	-	-	14.3	21.1	-	-	-	
SULFUR, wt %	-	0.7	-	100	-		-	0.05	0.7	0.7	100	-	0.7	0.7	-	-	-	0.06	-	-	-	
CARBON, wt %	-	71.7	-	-	-		-	3.5	71.7	71.7	-	-	71.7	71.7	-	-	-	0.7	-	-	-	
MOISTURE, wt %	39.4	5.0	3.0	-	35.6		18.1	13.3	5.0	0.2	-	3.0	5.0	0.2	29(vol)	30(vol)	18.1	3.4	-	-	35(vol)	
REMARKS	FREE H <sub>2</sub> O = 30%		-300mm		FREE H <sub>2</sub> O = 25%					-10mm			-10mm	-10mm	P <sub>80</sub> = 74 MICRON		35 g/m <sup>3</sup>					150 g/m <sup>3</sup>

STREAM NUMBER	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37				
NOMINAL DRY t/d SOLIDS	670	-	-	1489	1457	-	22	-	-	25	-	-	88	242	-	26.5	-				
NOMINAL Nm <sup>3</sup> /h GAS	-	77,000	16,670	-	-	2871	-	3490	3665	-	33,890	35,600	-	-	42,000	-	243,565				
COBALT, wt %	0.7	-	-	0.7	0.1	-	0.7	-	-	9.0	-	-	9.9	0.7	-	32.7	-				
NICKEL, wt %	0.4	-	-	0.4	0.01	-	0.4	-	-	6.0	-	-	6.5	0.1	-	21.4	-				
COPPER, wt %	0.2	-	-	0.2	-	-	0.2	-	-	3.0	-	-	3.6	0.04	-	12.1	-				
IRON, wt %	25.2	-	-	25.2	25.1	-	25.2	-	-	70.0	-	-	70.1	24.8	-	5.1	-				
MANGANESE, wt %	22.8	-	-	22.8	22.8	-	22.8	-	-	3.0	-	-	3.9	1.4	-	0.07	-				
SILICA, wt %	21.1	-	-	21.1	23.0	-	21.1	-	-	8.0	-	-	-	11.3	-	-	-				
SULFUR, wt %	0.07	-	-	0.07	-	-	0.07	-	-	1.0	-	-	1.2	-	-	28.7	-				
CARBON, wt %	0.9	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-				
MOISTURE, wt %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15(vol)				
REMARKS										40 g/m <sup>3</sup>											

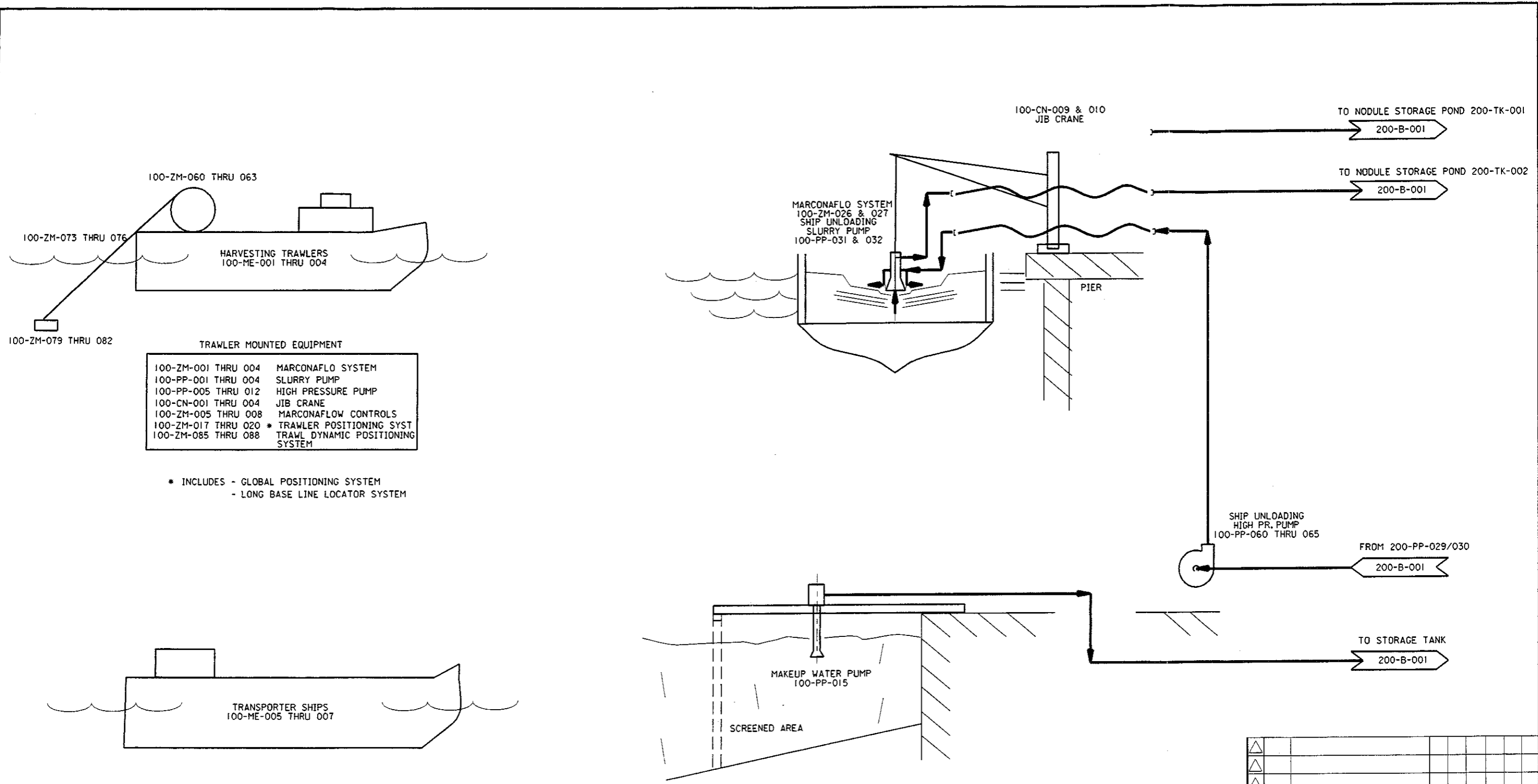
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<b>Bechtel</b> SAN FRANCISCO						
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY						
SMELTER PLANT BLOCK FLOW DIAGRAM						
JOB No.		DRAWING No.		REV.		
23134-000		000-B-001		A		



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No.	DATE	REVISIONS	BY	CHKD	DESIGN	ENGR	PROJ	ENGR	APPR	
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<b>Bechtel</b> SAN FRANCISCO										
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY										
HYROMETALLURGICAL PLANT BLOCK FLOW DIAGRAM- SHT.1										
	JOB No.	DRAWING No.		REV.						
	23134-000	000-B-002		A						



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No.	DATE	REVISIONS	BY	CHKD	DESIGN	ENGR	PROJ	APPR
SCALE	NONE	DESIGNED	U.SEN	DRAWN	CFD	ENGR		
<b>Bechtel</b> SAN FRANCISCO								
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY								
HYROMETALLURGY PLANT BLOCK FLOW DIAGRAM- SHT.2								
JOB No.		DRAWING No.		REV.				
23134-000		000-B-003		A				



100-ZM-060 THRU 063

100-ZM-073 THRU 076

HARVESTING TRAWLERS  
100-ME-001 THRU 004

100-ZM-079 THRU 082

TRAWLER MOUNTED EQUIPMENT

100-ZM-001 THRU 004	MARCONAFLO SYSTEM
100-PP-001 THRU 004	SLURRY PUMP
100-PP-005 THRU 012	HIGH PRESSURE PUMP
100-CN-001 THRU 004	JIB CRANE
100-ZM-005 THRU 008	MARCONAFLOW CONTROLS
100-ZM-017 THRU 020	* TRAWLER POSITIONING SYST
100-ZM-085 THRU 088	TRAWL DYNAMIC POSITIONING SYSTEM

\* INCLUDES - GLOBAL POSITIONING SYSTEM  
- LONG BASE LINE LOCATOR SYSTEM

TRANSPORTER SHIPS  
100-ME-005 THRU 007

TRANSPORTER SHIP MOUNTED EQUIPMENT

100-PP-021 THRU 026	DECANT PUMP
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MARCONAFLO SYSTEM  
100-ZM-026 & 027  
SHIP UNLOADING  
SLURRY PUMP  
100-PP-031 & 032

100-CN-009 & 010  
JIB CRANE

PIER

TO NODULE STORAGE POND 200-TK-001

200-B-001

TO NODULE STORAGE POND 200-TK-002

200-B-001

SHIP UNLOADING  
HIGH PR. PUMP  
100-PP-060 THRU 065

FROM 200-PP-029/030

200-B-001

TO STORAGE TANK

200-B-001

MAKEUP WATER PUMP  
100-PP-015

SCREENED AREA

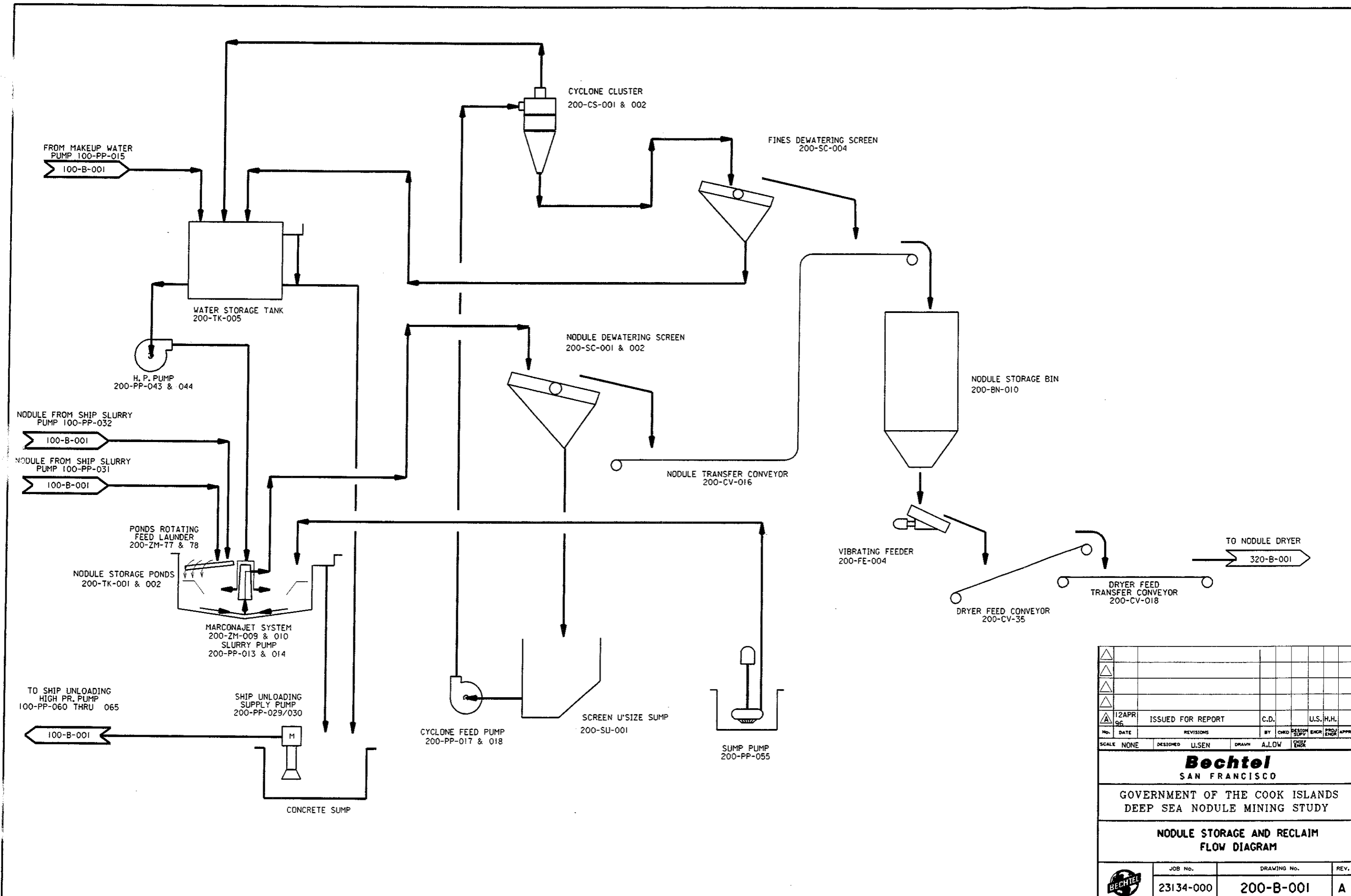
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DATE	REVISIONS	BY	CHKD	DESIGN	ENGR
SCALE	DESIGNED U.SEN	DRAWN A.LOW	ENGR		

**Bechtel**  
SAN FRANCISCO

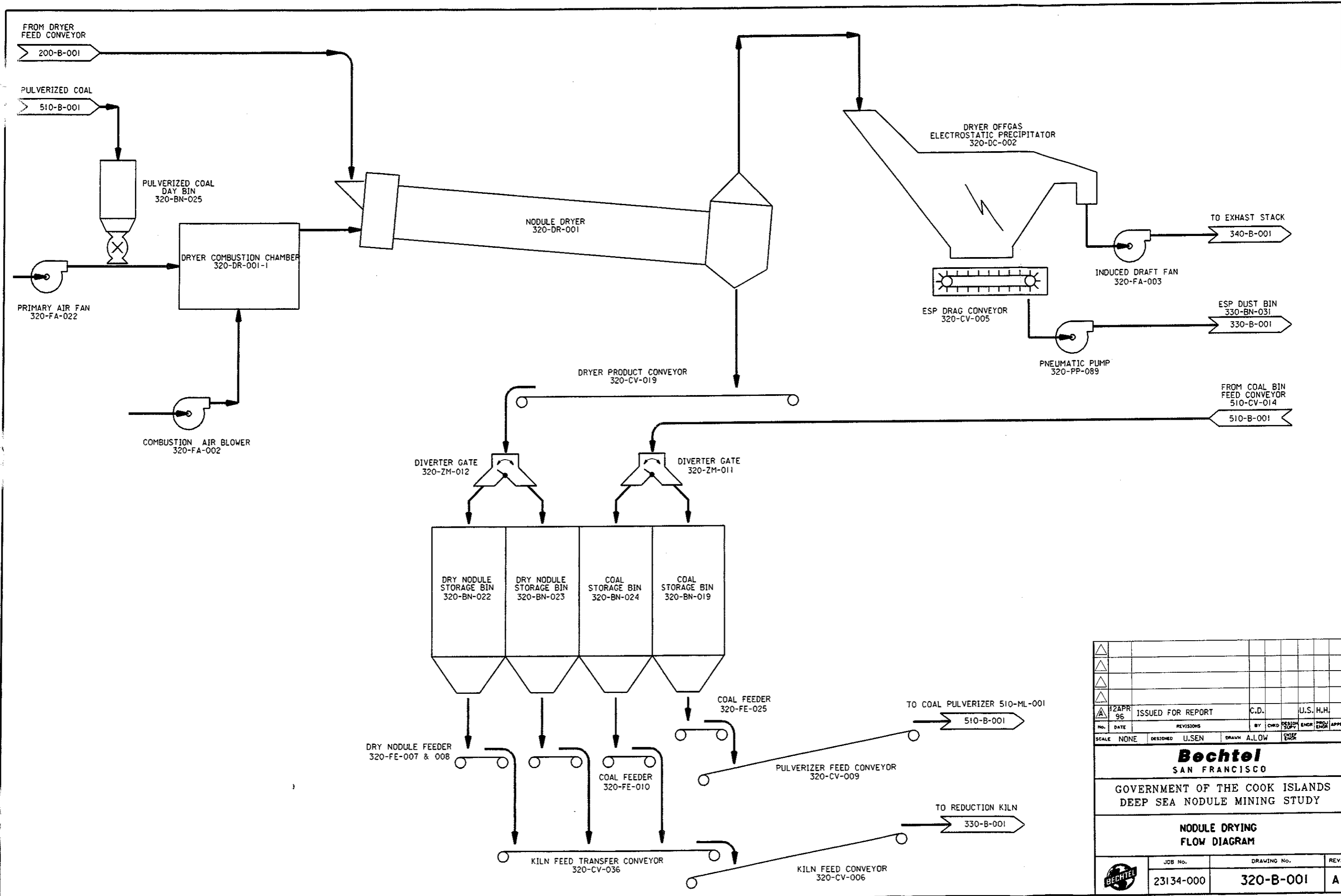
GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

MARINE AND PORTSIDE FACILITIES  
FLOW DIAGRAM

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23134-000	100-B-001	A

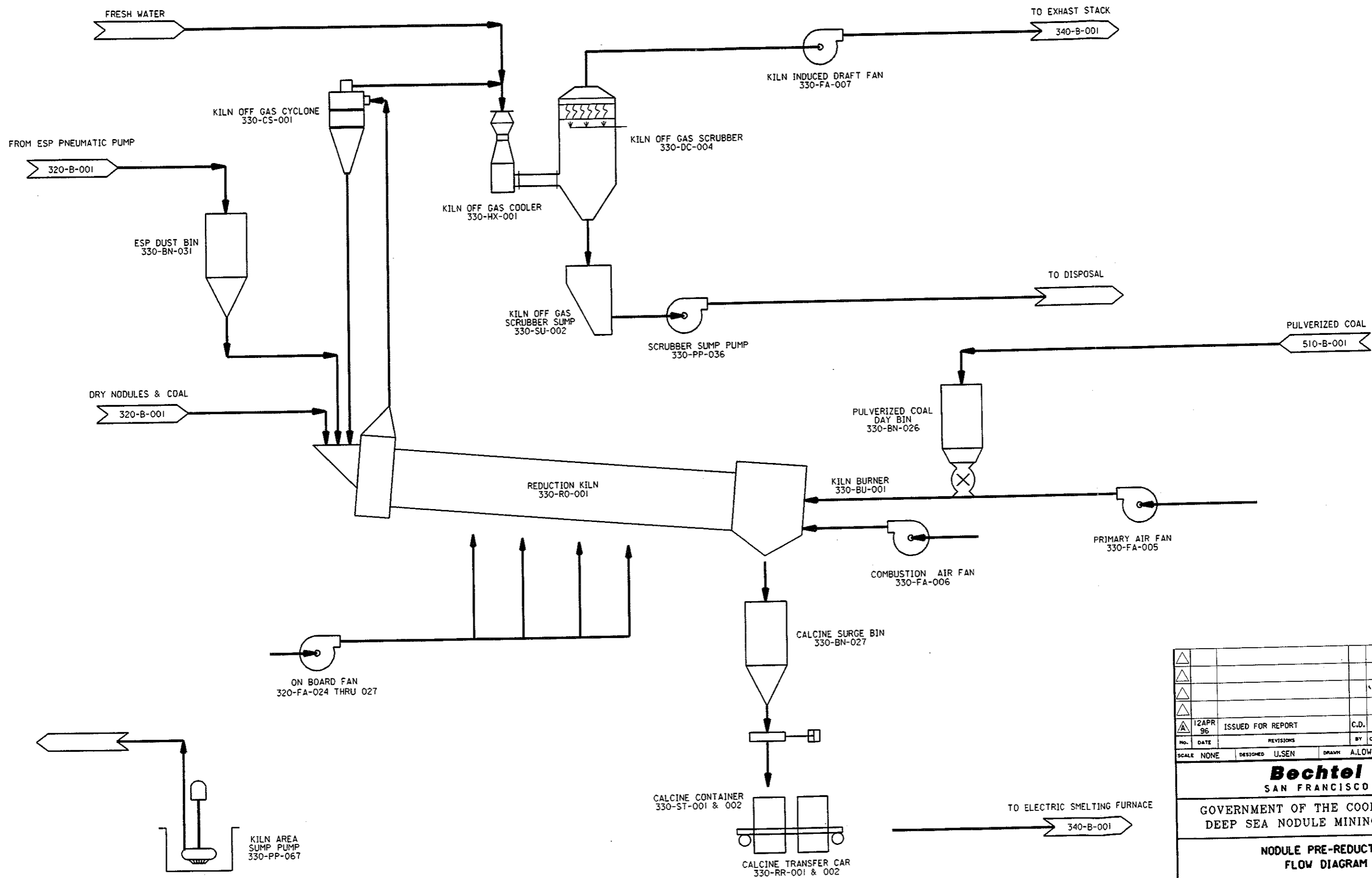


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SCALE	NONE	DESIGNED	U.SEN	DRAWN	A.LOW				
<b>Bechtel</b> SAN FRANCISCO									
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY									
NODULE STORAGE AND RECLAIM FLOW DIAGRAM									
JOB No.			DRAWING No.			REV.			
23134-000			200-B-001			A			



12 APR 96	ISSUED FOR REPORT	C.D.	U.S. H.H.
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SCALE NONE	DESIGNED U.SEN	DRAWN A.LOW	ENGR
<b>Bechtel</b> SAN FRANCISCO			
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY			
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JOB No.	DRAWING No.	REV.	
23134-000	320-B-001	A	





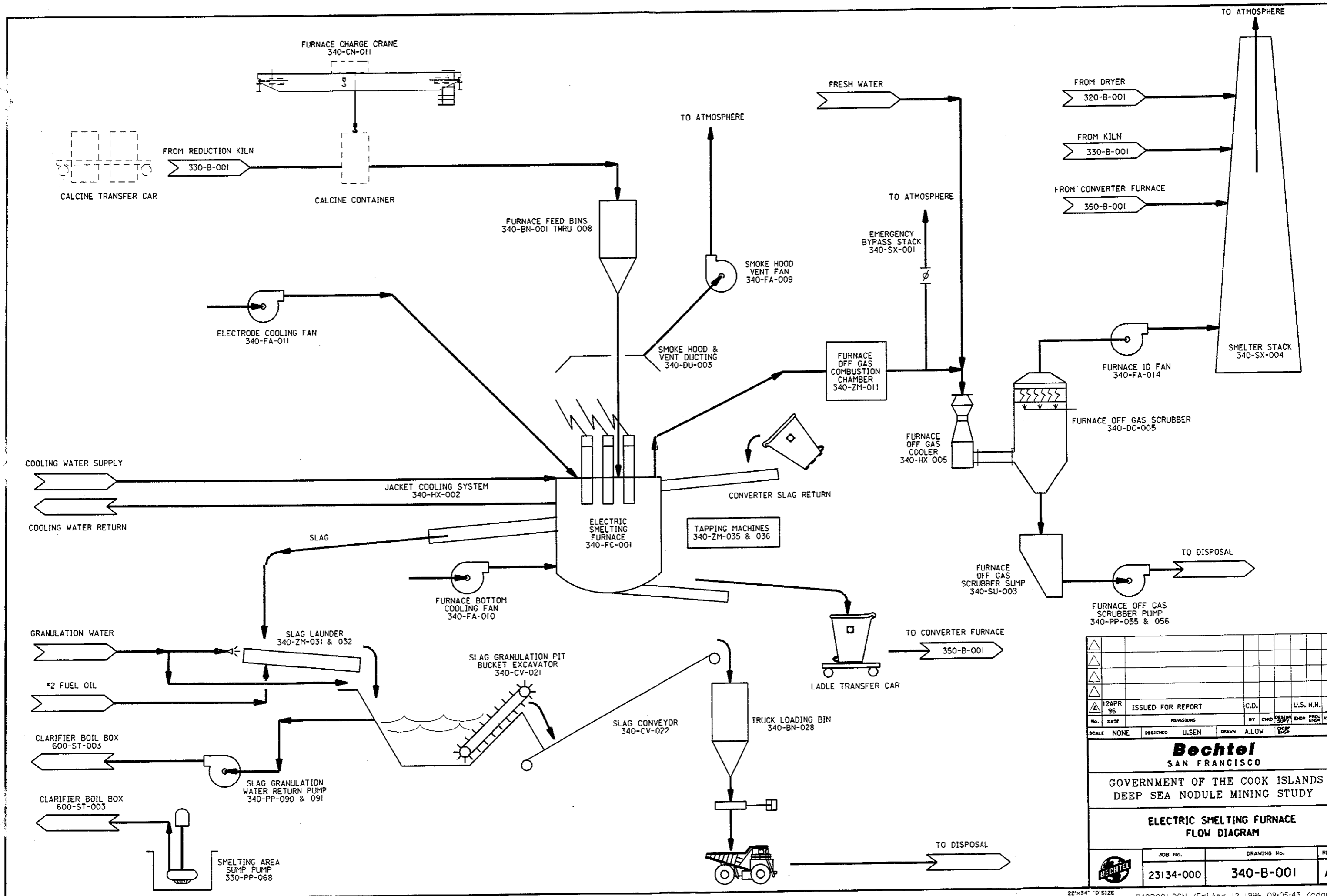
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No.	DATE	REVISIONS	BY	CHKD	DESIGN	ENGR	PROD	APPV	
SCALE	NONE	DESIGNED	U.SEN	DRAWN	A.LOW	CHKD			

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GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

**NODULE PRE-REDUCTION  
FLOW DIAGRAM**

JOB No.	DRAWING No.	REV
23134-000	330-B-001	A



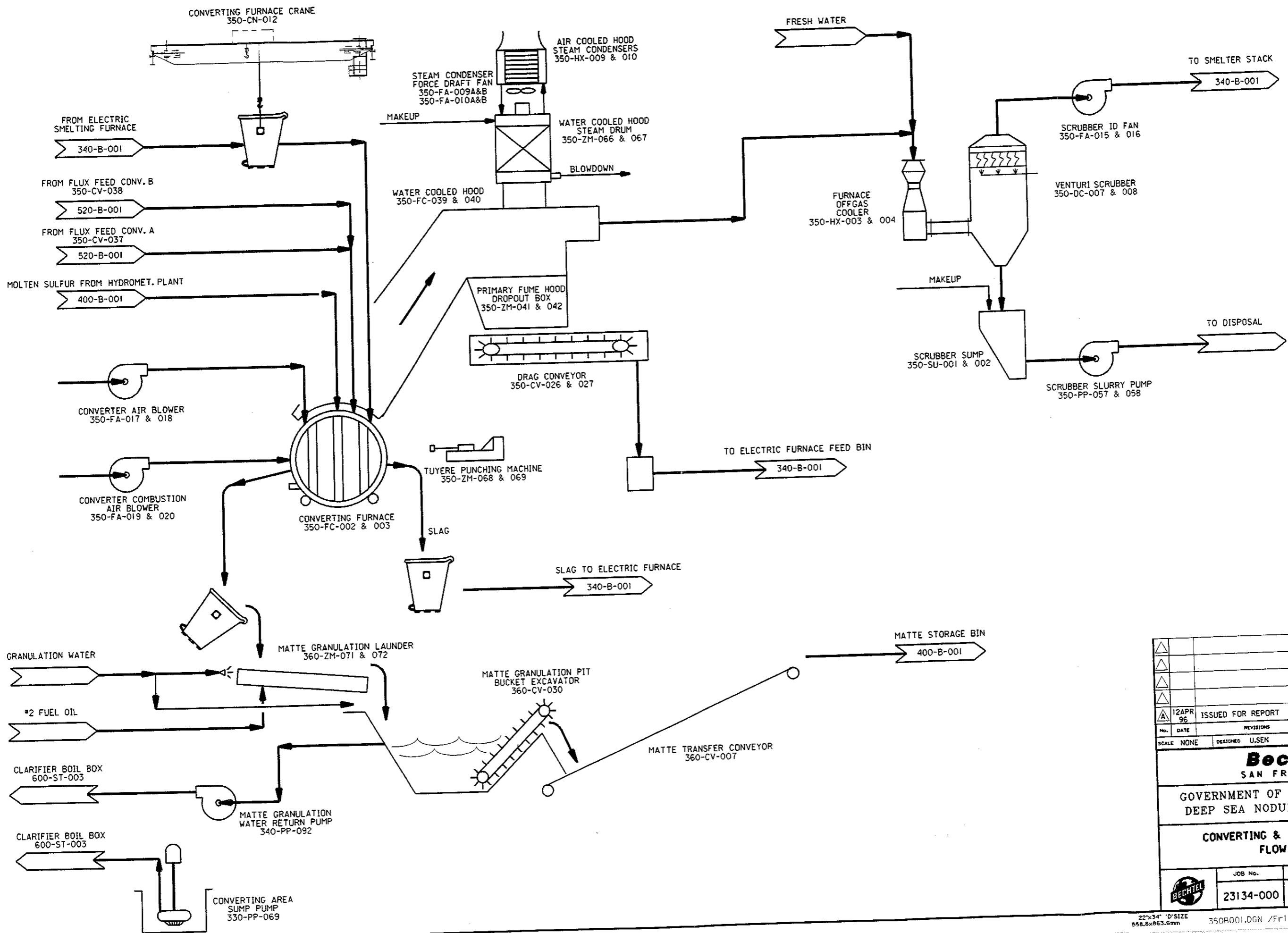
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NO.	DATE	REVISIONS	BY
SCALE	DESIGNED	U.SEN	DRAWN A.LOW

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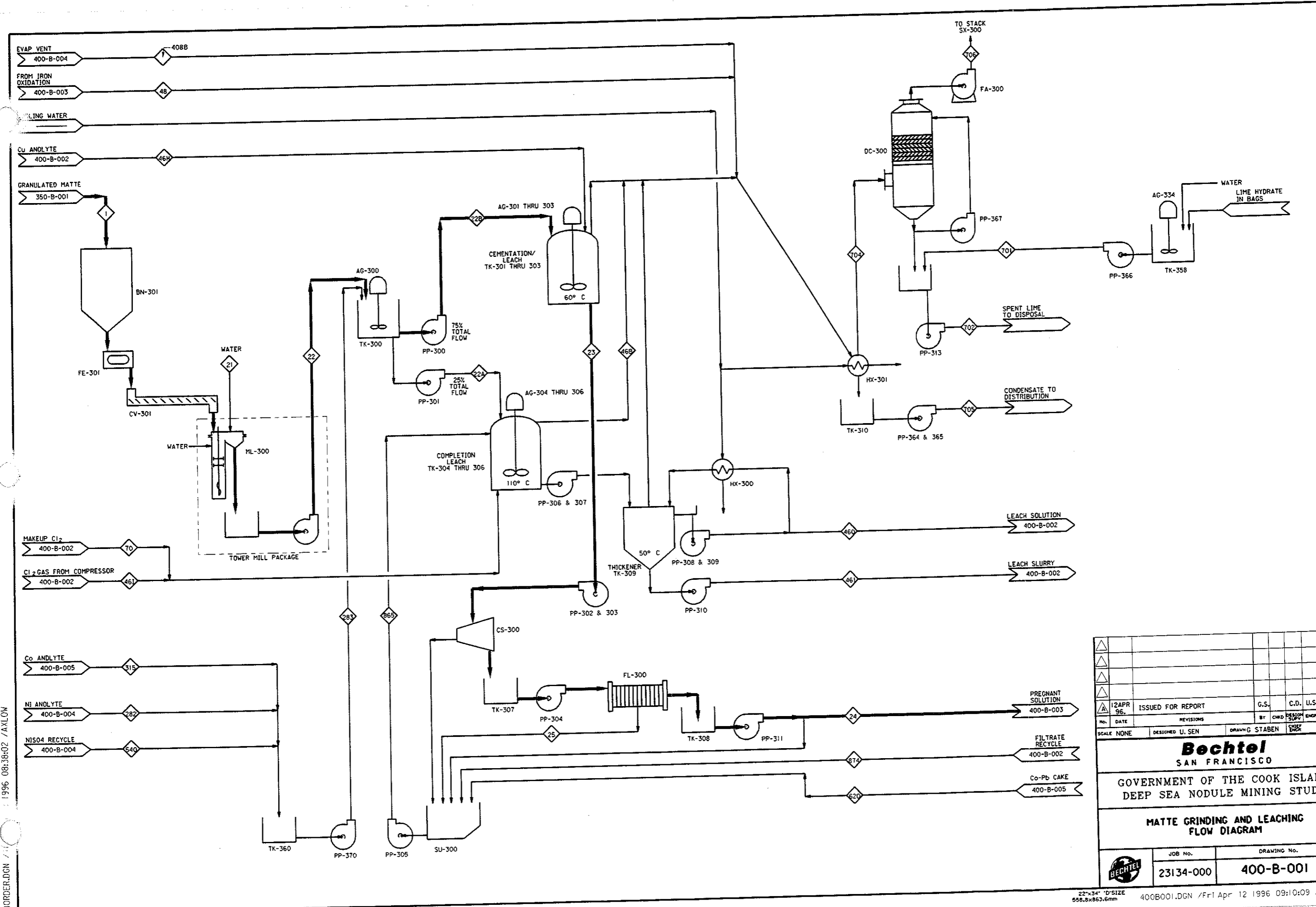
GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

**ELECTRIC SMELTING FURNACE  
FLOW DIAGRAM**

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23134-000	340-B-001	A

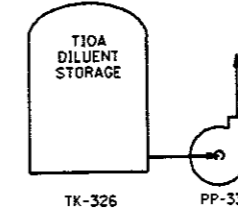
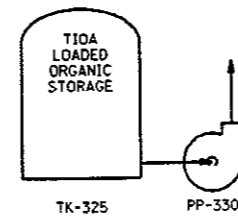
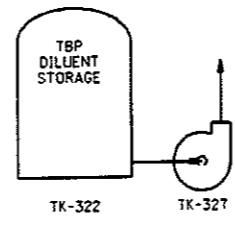
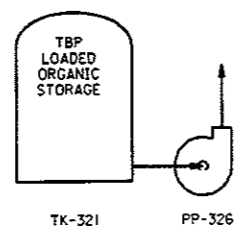
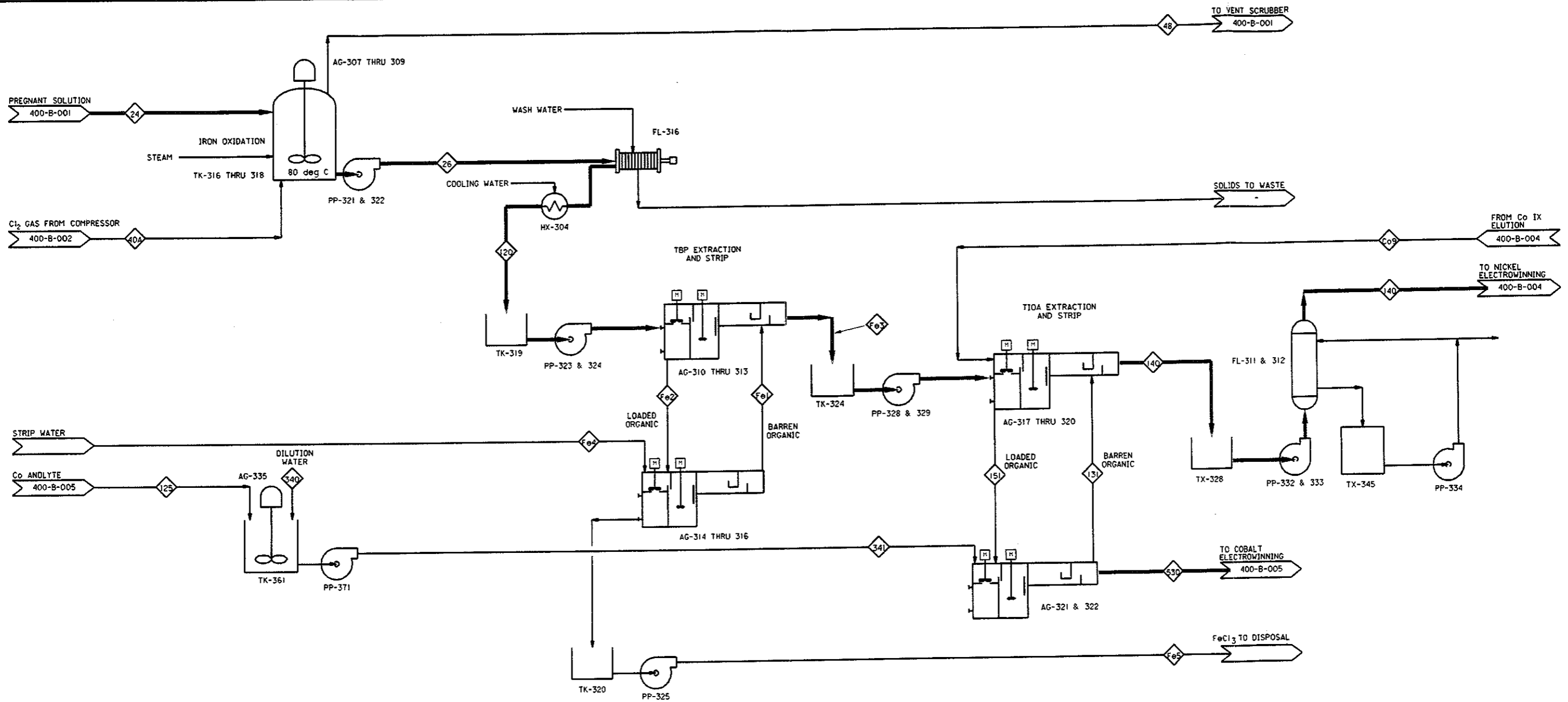


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NO.	DATE	REVISIONS	BY	CHKD	DESIGN
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<b>Bechtel</b> SAN FRANCISCO					
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY					
<b>CONVERTING &amp; MATTE GRANULATION FLOW DIAGRAM</b>					
JOB No.		DRAWING No.			
23134-000		350-B-001			



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No.	DATE	REVISIONS	BY	CHKD	DESIGN ENGR
SCALE NONE	DESIGNED U. SEN	DRAWING STABEN	DATE		
<b>Bechtel</b> SAN FRANCISCO					
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY					
MATTE GRINDING AND LEACHING FLOW DIAGRAM					
JOB No.	DRAWING No.	REV			
23134-000	400-B-001	A			



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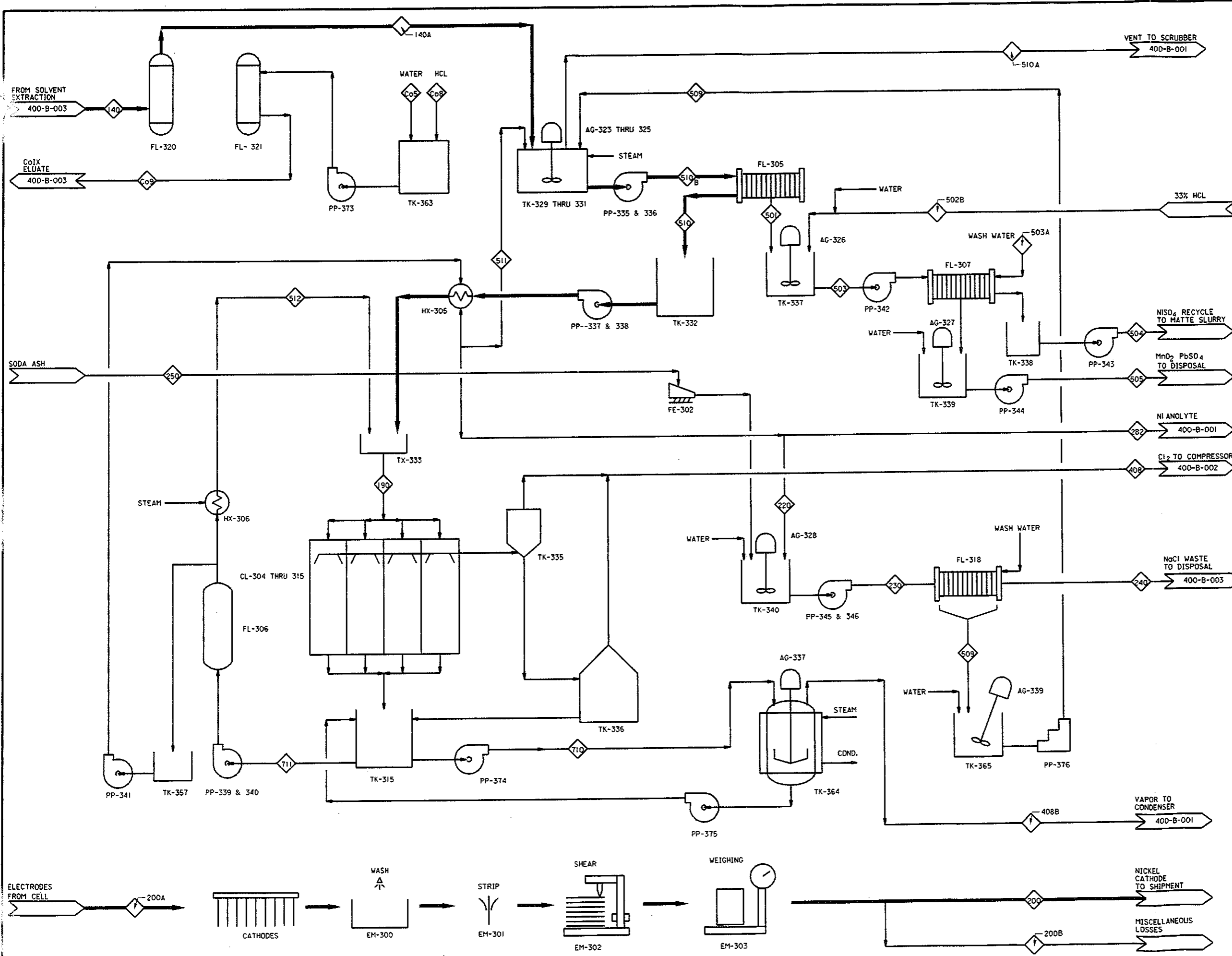
**Bechtel**  
SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

SOLVENT EXTRACTION  
FLOW DIAGRAM

JOB No.	DRAWING No.	REV.
23134-000	400-B-003	A

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12	APR	96	ISSUED FOR REPORT	G.S.	C.D.	U.S.	H.H.
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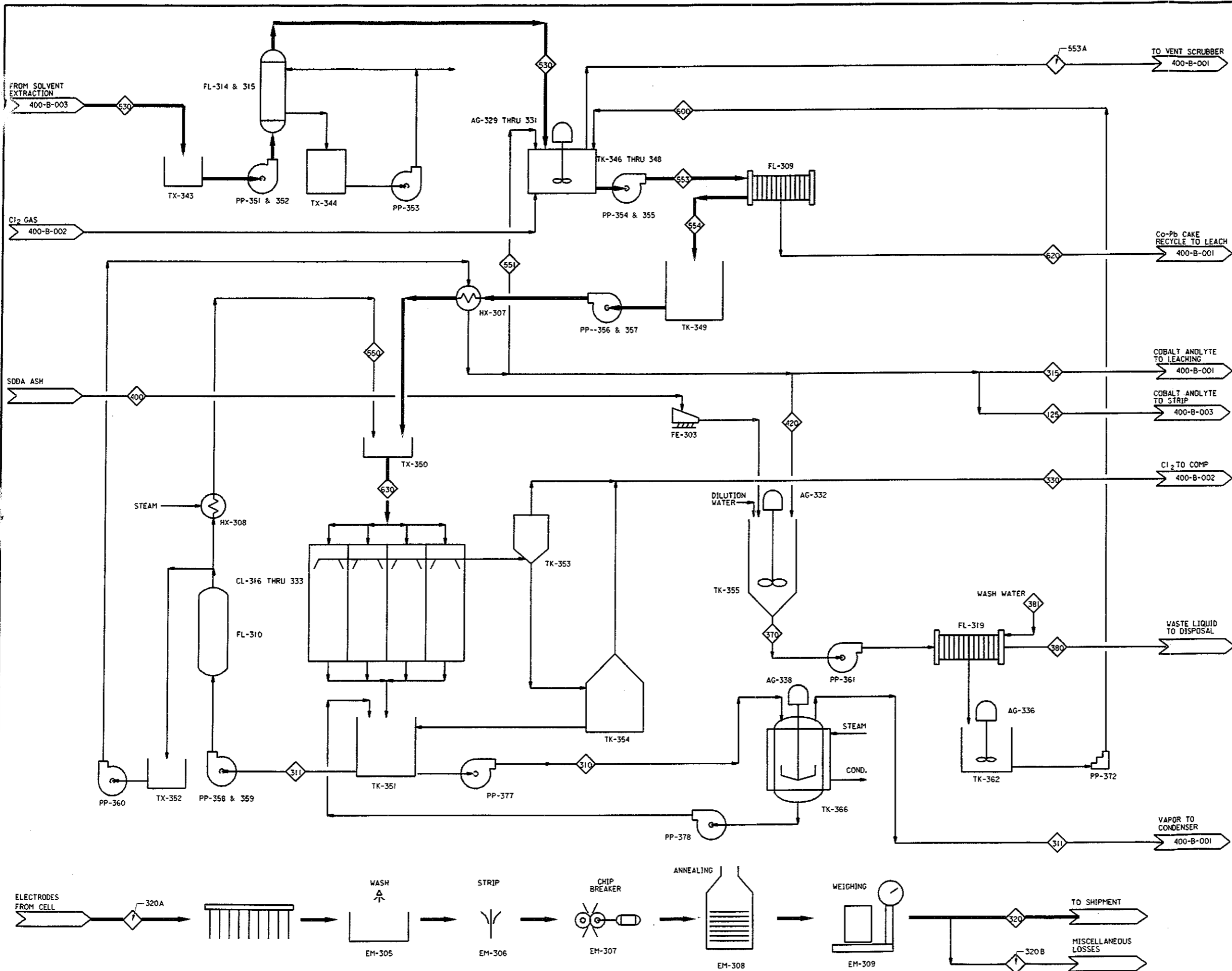
**Bechtel**  
SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

**NICKEL ELECTROWINNING  
FLOW DIAGRAM**

JOB No.	DRAWING No.	REV.
23134-000	400-B-004	A

1996 08:38:02 / AXLOW



12APR 96	ISSUED FOR REPORT	G.S.	C.D.	U.S.	H.H.			
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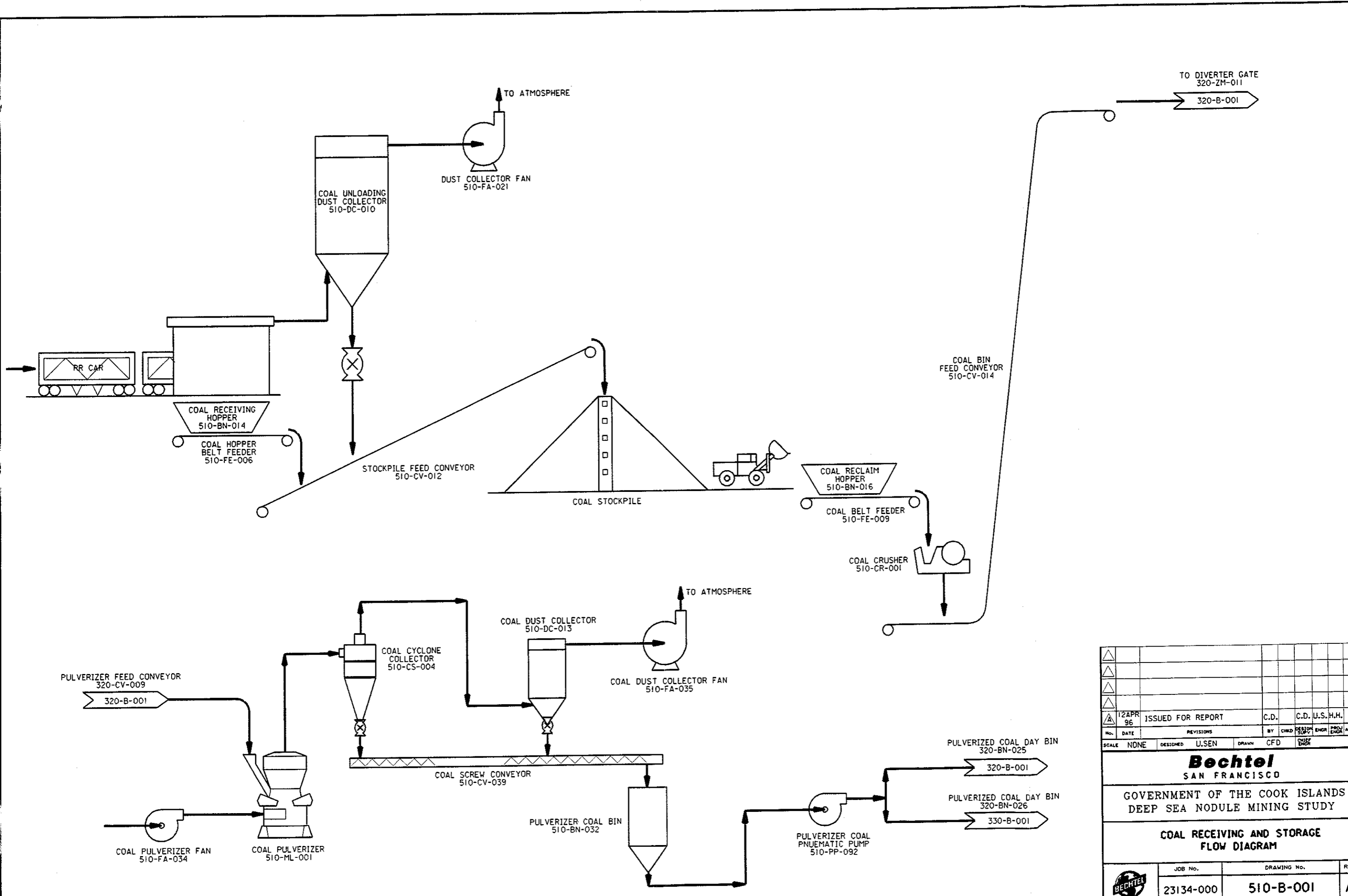
**Bechtel**  
SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

**COBALT ELECTROWINNING  
FLOW DIAGRAM**

JOB No.	DRAWING No.	REV.
23134-000	400-B-005	A

1996 08:38:02 / AXLOW



12 APR 96	ISSUED FOR REPORT	C.D.	C.D. U.S.H.H.
NO.	DATE	REVISIONS	BY CHD DESIGN ENGR PROJ APP
SCALE	NONE	DESIGNED U.SEN	DRAWN CFD

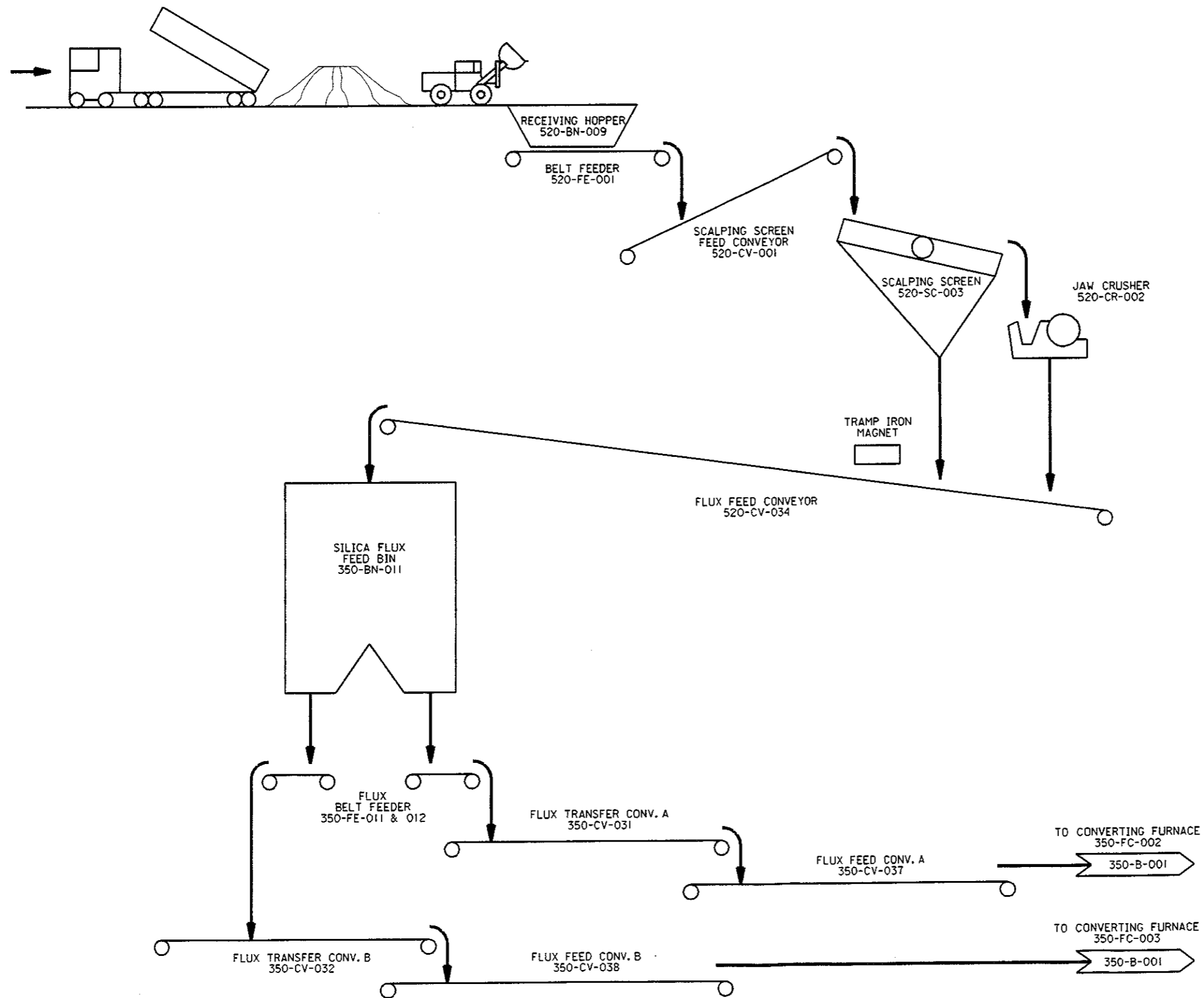
**Bechtel**  
SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

COAL RECEIVING AND STORAGE  
FLOW DIAGRAM

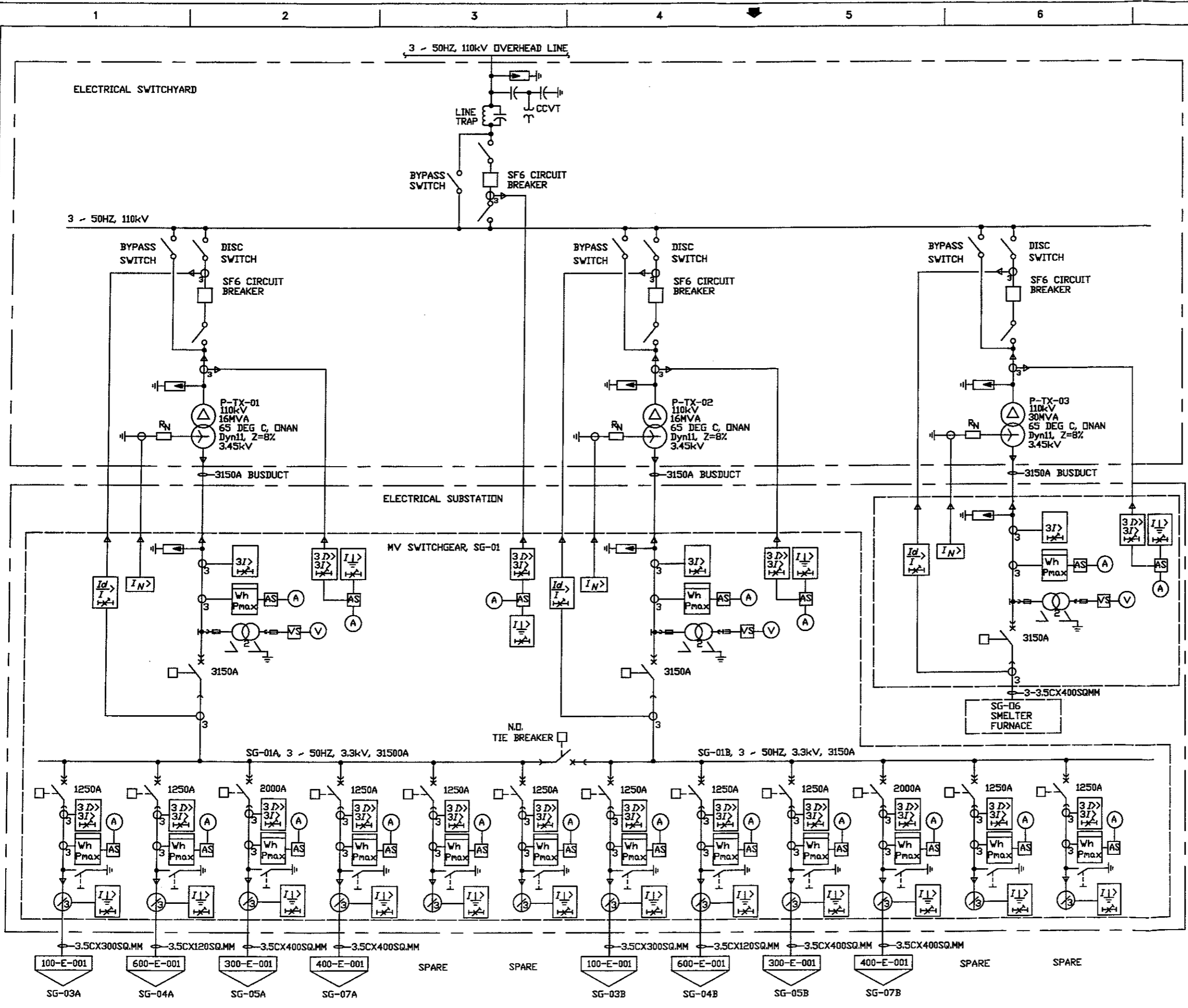
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23134-000	510-B-001	A





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No.	DATE	REVISIONS	BY	CHKD	DESIGN	ENGR	PROJ	ENGR	APPR				
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<b>Bechtel</b> SAN FRANCISCO													
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY													
SILICA FLUX RECEIVING AND STORAGE FLOW DIAGRAM													
JOB No.			DRAWING No.				REV.						
23134-000			520-B-001				A						

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**LEGEND**

- CIRCUIT BREAKER, DRAW-OUT
- 3 PHASE OVERCURRENT WITH INVERSE DEFINITE MINIMUM TIME
- INSTANTANEOUS OVERCURRENT & TIME OVERCURRENT RELAY GROUND FAULT RELAY
- UNDERVOLTAGE RELAY WITH DEFINITE TIME DELAY
- WATTHOUR METER
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- AMMETER WITH SEL. SW.
- VOLTMETER WITH SEL. SW.
- SURGE ARRESTER
- MV FUSED MOTOR STARTER DRAWOUT TYPE
- LOW VOLTAGE SWITCH DRAWOUT TYPE
- LOW VOLTAGE MOTOR STARTER, DRAWOUT TYPE

ISSUED FOR REPORT	RV								
NONE	RV	RV							

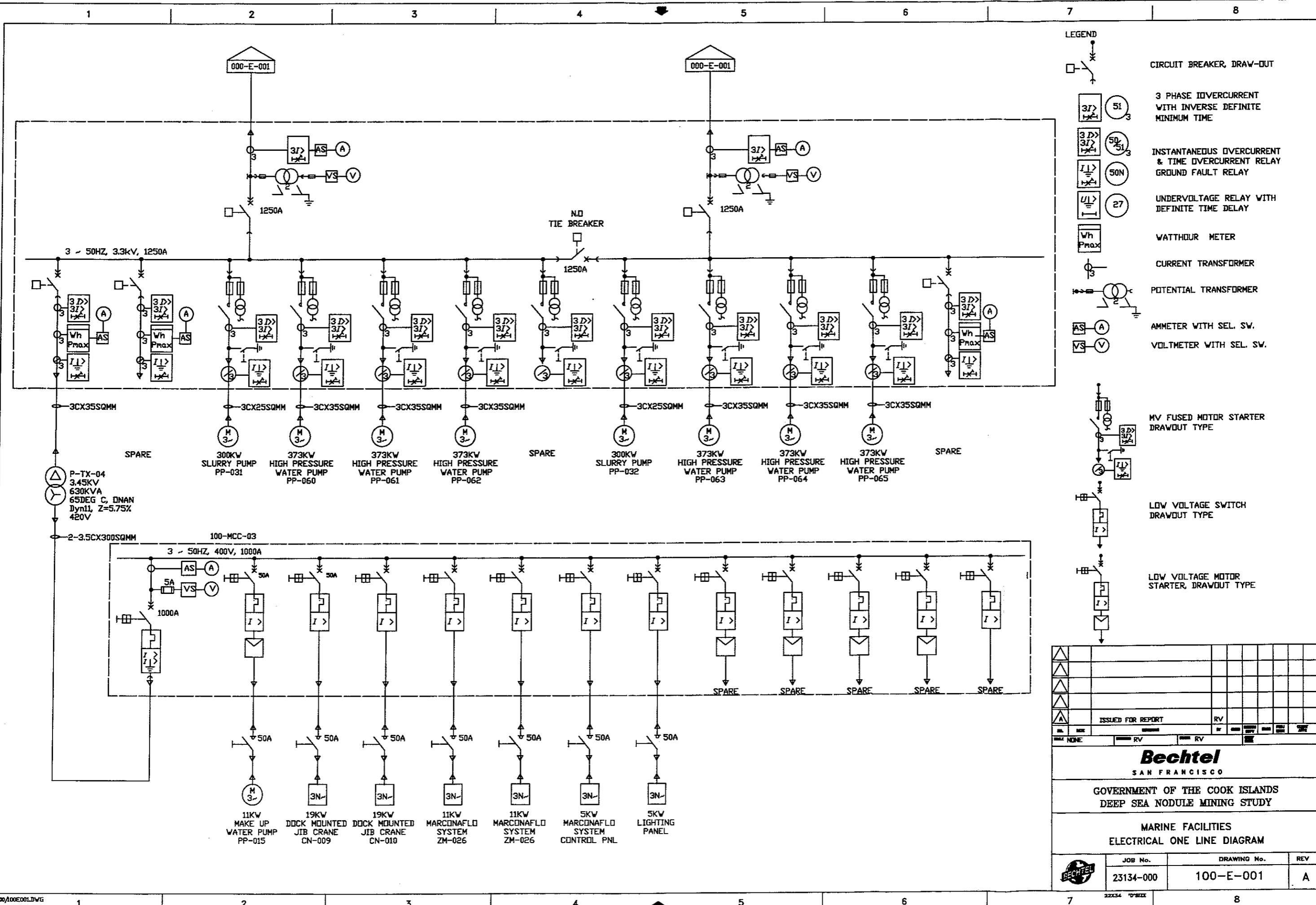
**Bechtel**  
SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

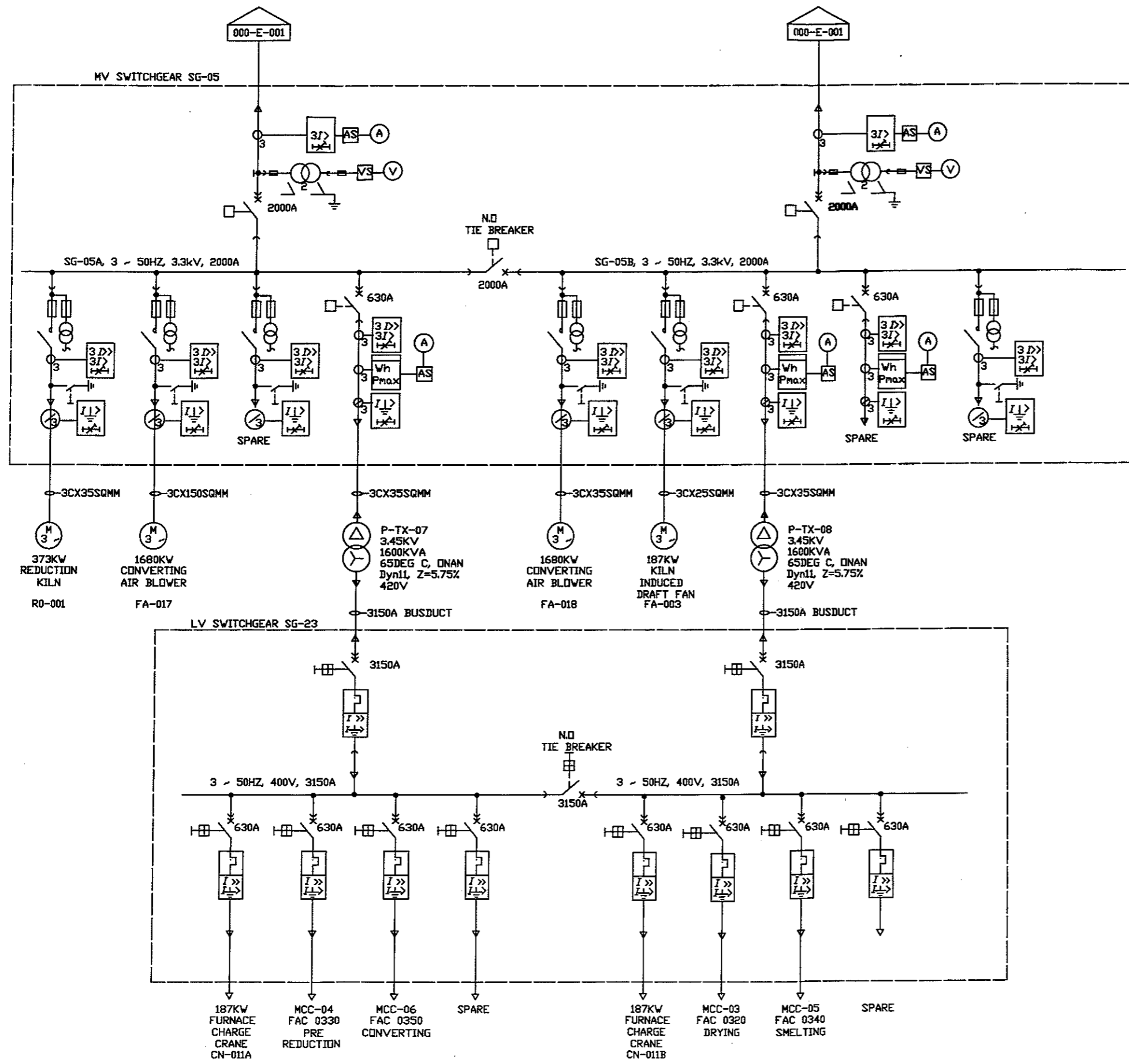
**MAIN SUBSTATION  
ELECTRICAL ONE LINE DIAGRAM**

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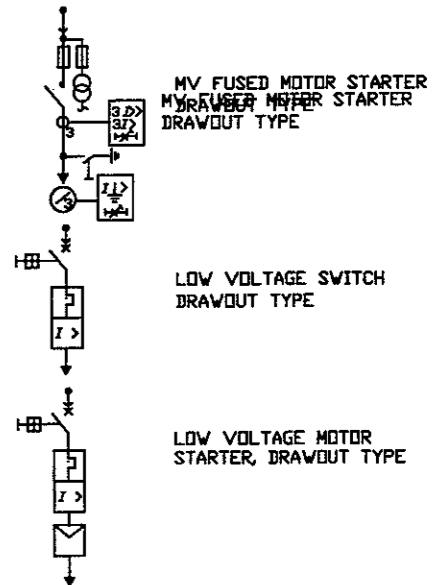
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- LEGEND**
- CIRCUIT BREAKER, DRAW-OUT
  - 3 PHASE OVERCURRENT WITH INVERSE DEFINITE MINIMUM TIME
  - INSTANTANEOUS OVERCURRENT & TIME OVERCURRENT RELAY
  - GROUND FAULT RELAY
  - UNDERVOLTAGE RELAY WITH DEFINITE TIME DELAY
  - WATT-HOUR METER
  - CURRENT TRANSFORMER
  - POTENTIAL TRANSFORMER
  - AMMETER WITH SEL. SW.
  - VOLTMETER WITH SEL. SW.



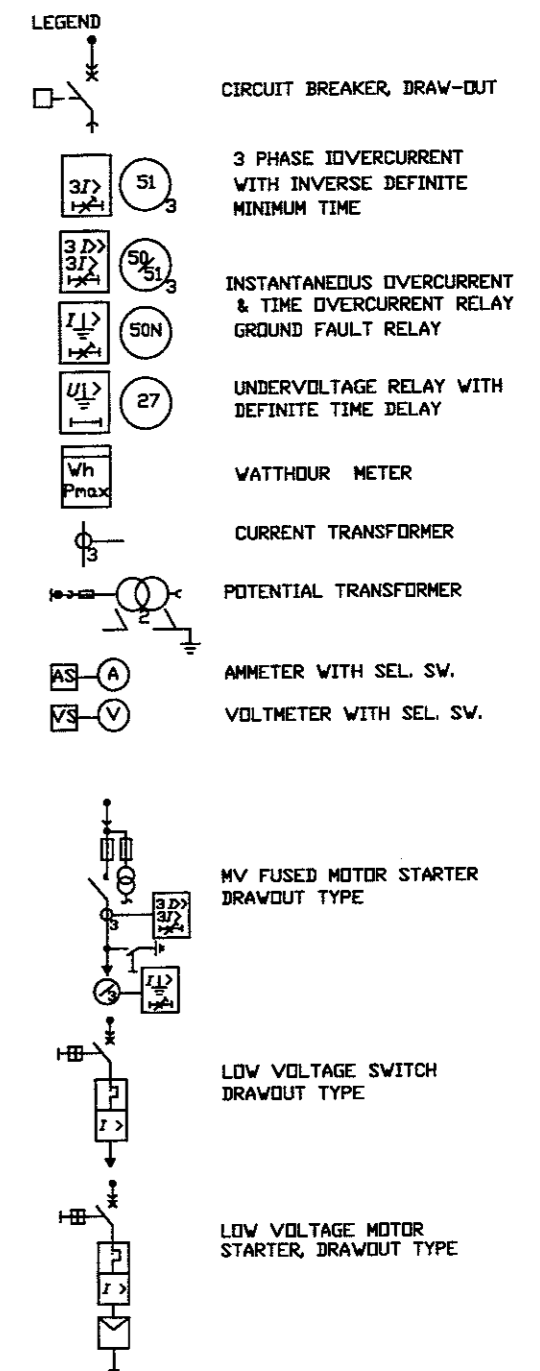
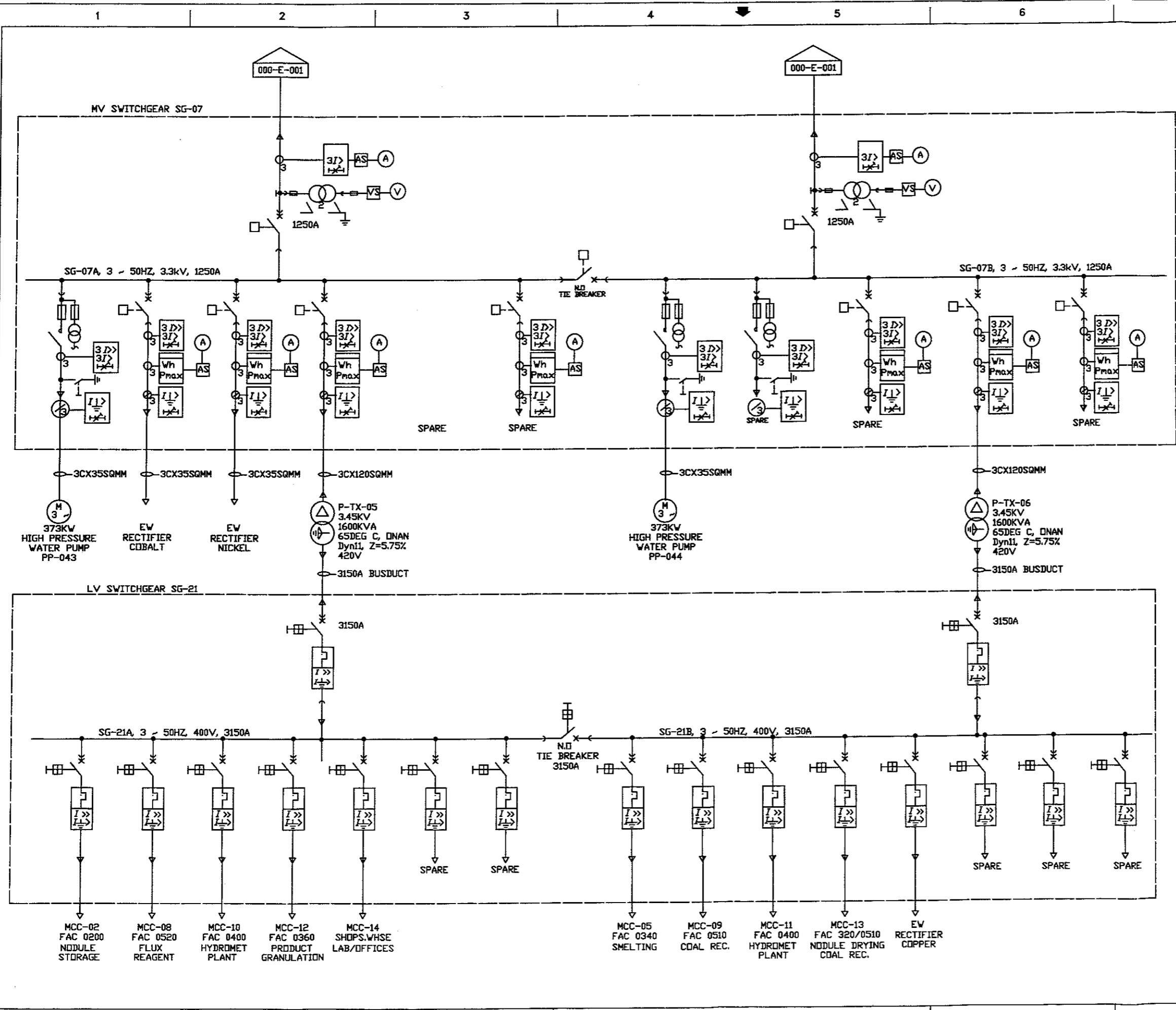

**Bechtel**  
SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

DRYING/SMELTING/CONVERTING  
ELECTRICAL ONE LINE DIAGRAM

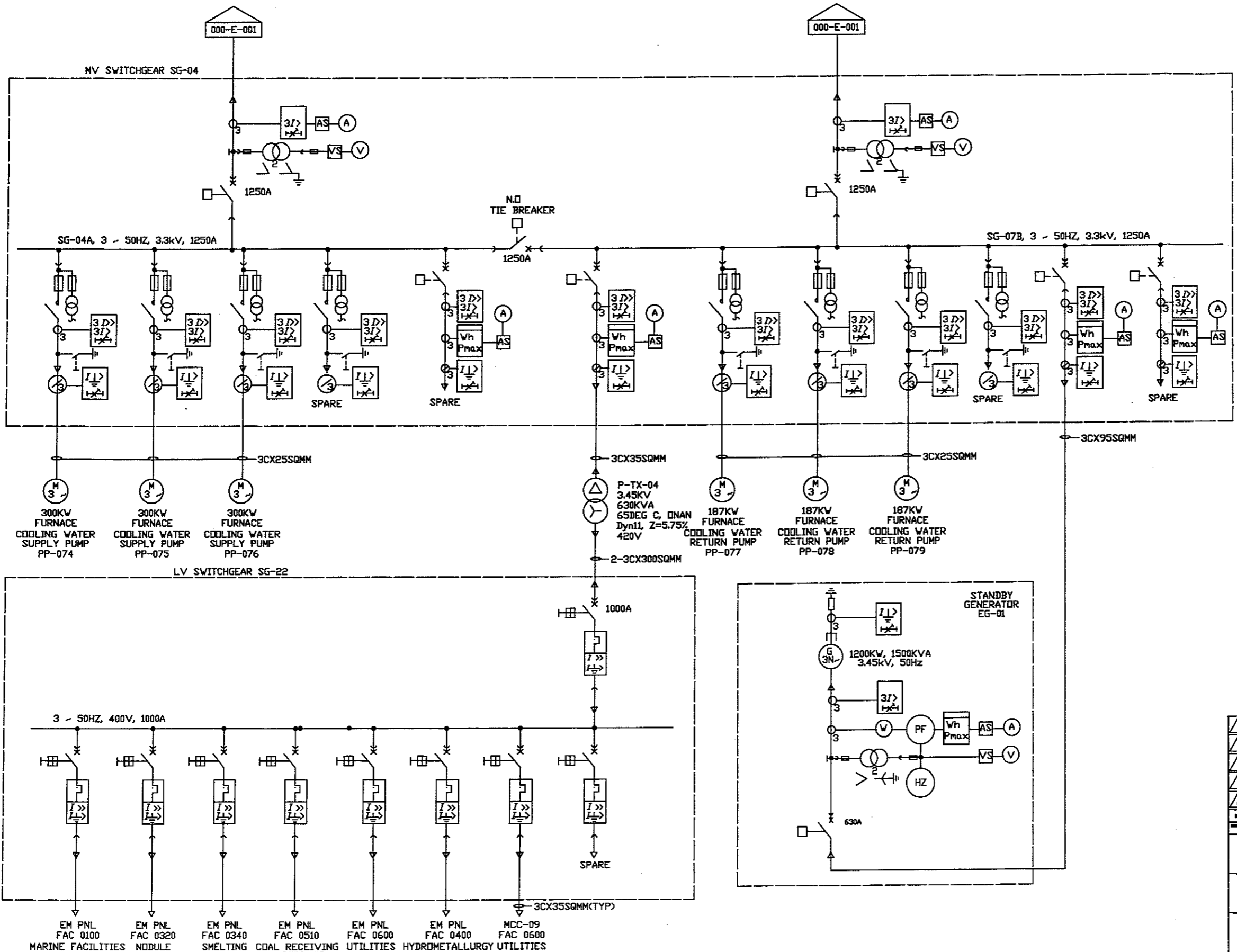
JOB No.	DRAWING No.	REV
23134-000	300-E-001	A

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GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY		
HYDROMETALLURGY PLANT ELECTRICAL ONE LINE DIAGRAM		
JOB No.	DRAWING No.	REV
23134-000	400-E-001	A

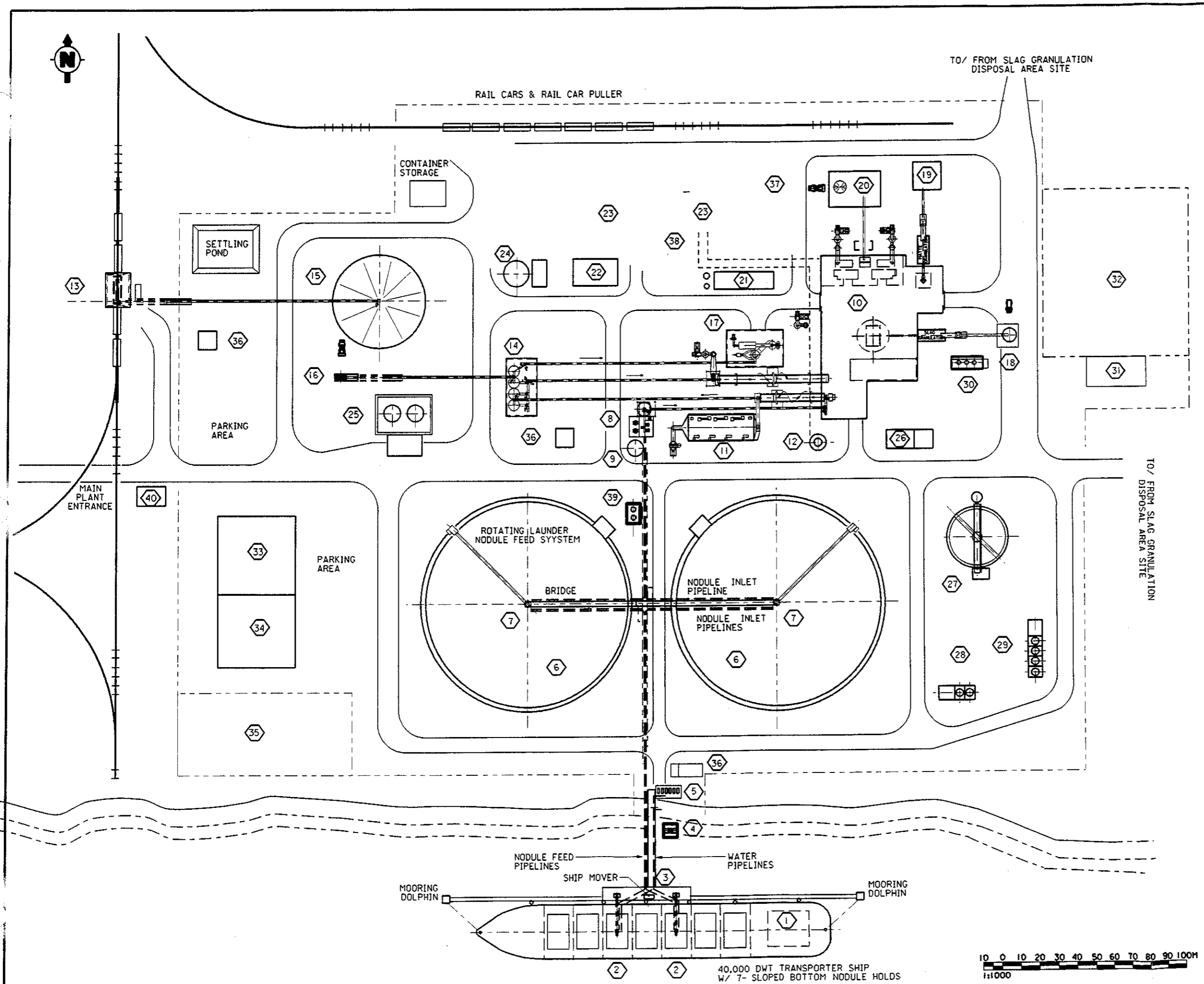
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**LEGEND**

- CIRCUIT BREAKER, DRAW-OUT
- 3 PHASE OVERCURRENT WITH INVERSE DEFINITE MINIMUM TIME
- INSTANTANEOUS OVERCURRENT & TIME OVERCURRENT RELAY GROUND FAULT RELAY
- UNDERVOLTAGE RELAY WITH DEFINITE TIME DELAY
- WATTHOUR METER
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- AMMETER WITH SEL. SW.
- VOLTMETER WITH SEL. SW.
- MV FUSED MOTOR STARTER DRAWOUT TYPE
- LOW VOLTAGE SWITCH DRAWOUT TYPE
- LOW VOLTAGE MOTOR STARTER, DRAWOUT TYPE

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GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY										
FAC 0600 - UTILITIES ELECTRICAL ONE LINE DIAGRAM										
JOB No.			DRAWING No.			REV				
23134-000			600-E-001			A				



LEGEND	
1	TRANSPORTER SHIP
2	MARCONAFLO SYSTEM-SHIP NODULE UNLOADING
3	PORTSIDE NODULE UNLOADING FACILITIES
4	SEA WATER PUMP AREA
5	HIGH PRESSURE WATER PUMPS
6	NODULE STORAGE PONDS
7	MARCONAJET SLURRY SYSTEM/FEED TROLLEY
8	NODULE DEWATERING BUILDING/STORAGE BIN
9	WATER STORAGE TANK
10	SMELTER BUILDING
11	ELECTROSTATIC PRECIPITATION
12	SMELTER STACK
13	COAL RAIL UNLOADING
14	DRY NODULE/COAL STORAGE BLDG.
15	COAL STOCKPILE
16	COAL CRUSHER
17	COAL PULVERIZER BUILDING
18	SLAG TRUCK LOADING BIN
19	MATTE STORAGE/ GRINDING
20	SILICA FLUX STORAGE /HANDLING
21	PLANT AIR/PROCESS AIR COMPRESSOR BUILDING
22	BOILER /WATER TREATMENT BUILDING
23	HYDROMETALLURGICAL PLANT
24	FIREWATER/ POTABLE WATER TANK & PUMPS
25	FUEL OIL STORAGE/UNLOADING
26	EMERGENCY GENERATOR / ELECT. RM.
27	GRANULATION CLARIFIER
28	GRANULATION COOLING TOWER
29	FURNACE COOLING TOWER
30	FURNACE COOLING WATER RETURN PUMPS
31	ELECTRICAL SUBSTATION
32	ELECTRICAL SWITCHYARD
33	ADIMINISTRATION/ LABORATORY/ CHANGE ROOMS
34	SHOPS/ WAREHOUSE
35	LAYDOWN / STORAGE
36	ELECTRICAL ROOM
37	REAGENTS AREA
38	HYDROMET PLANT- ELECT. /CONTR. RM.
39	SHIP UNLOADING SUPPLY PUMPS
40	GUARDHOUSE

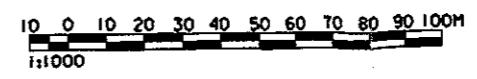
12 APR 96	ISSUED FOR REPORT	C.D.	C.D., U.S., H.H.					
No.	DATE	REVISIONS	BY	CHKD	DESIGN	ENGR	PROJ. ENGR	APPR
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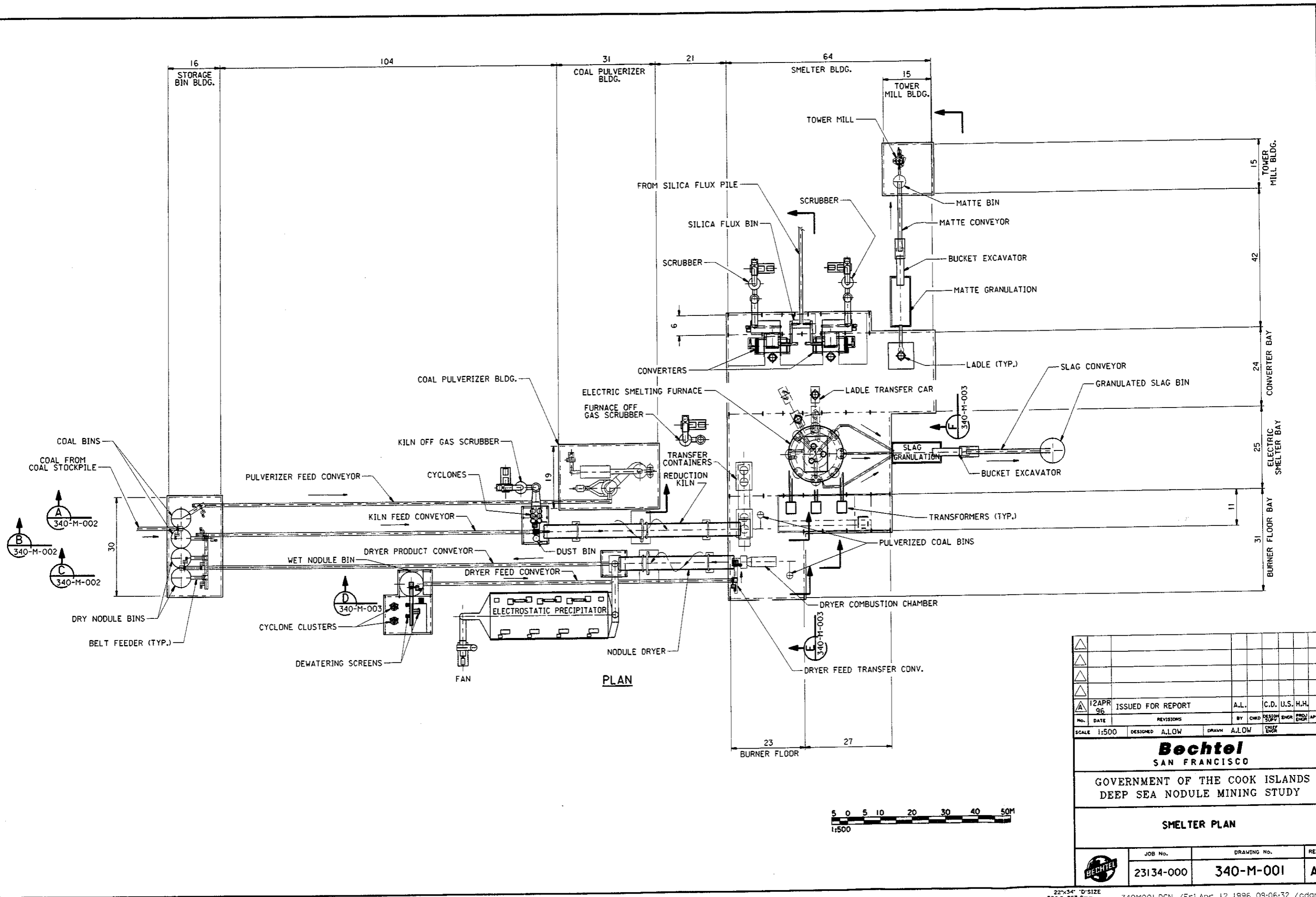
GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

**SITE PLAN**

JOB No.	DRAWING No.	REV.
23134-000	000-M-001	A



BORDER.DGN / 1996 08:38:02 / AXLOW



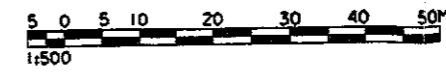
PLAN

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NO.	DATE	REVISIONS	BY	CHKD	DESIGN
SCALE 1:500	DESIGNED A.LOW	DRAWN A.LOW	CHKD	ENGR	APPR

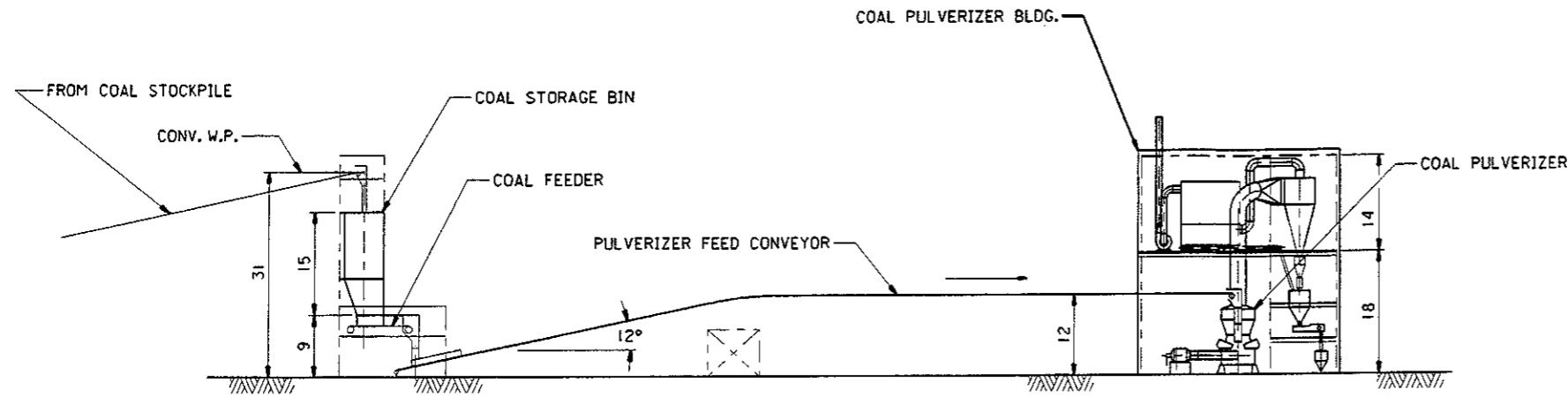
**Bechtel**  
 SAN FRANCISCO  
 GOVERNMENT OF THE COOK ISLANDS  
 DEEP SEA NODULE MINING STUDY

**SMELTER PLAN**

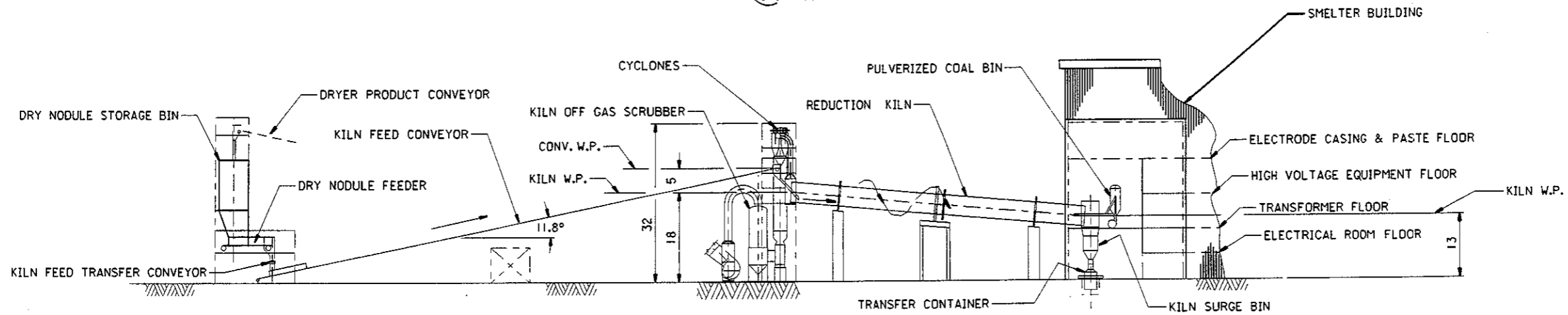
JOB No.	DRAWING No.	REV.
23134-000	340-M-001	A



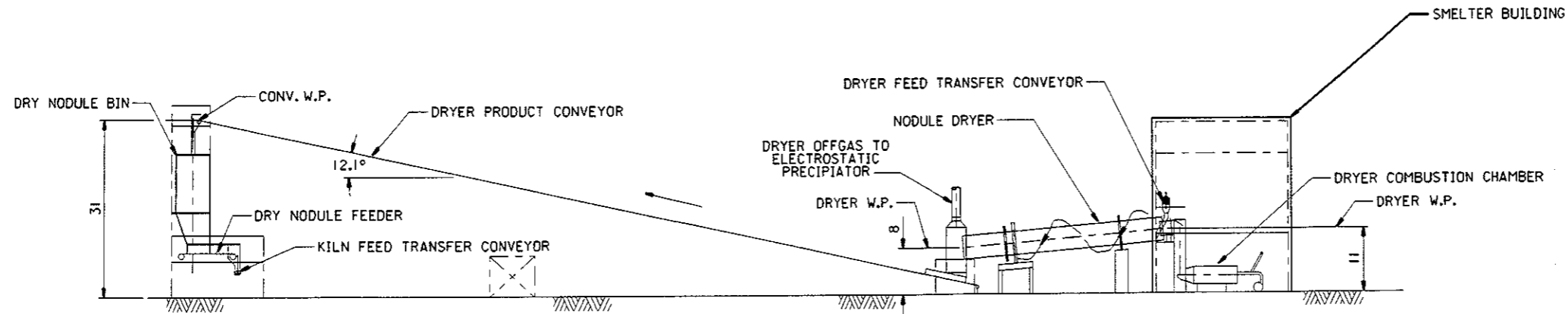




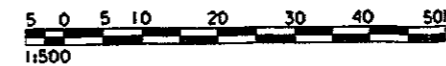
SECTION A  
340-M-001



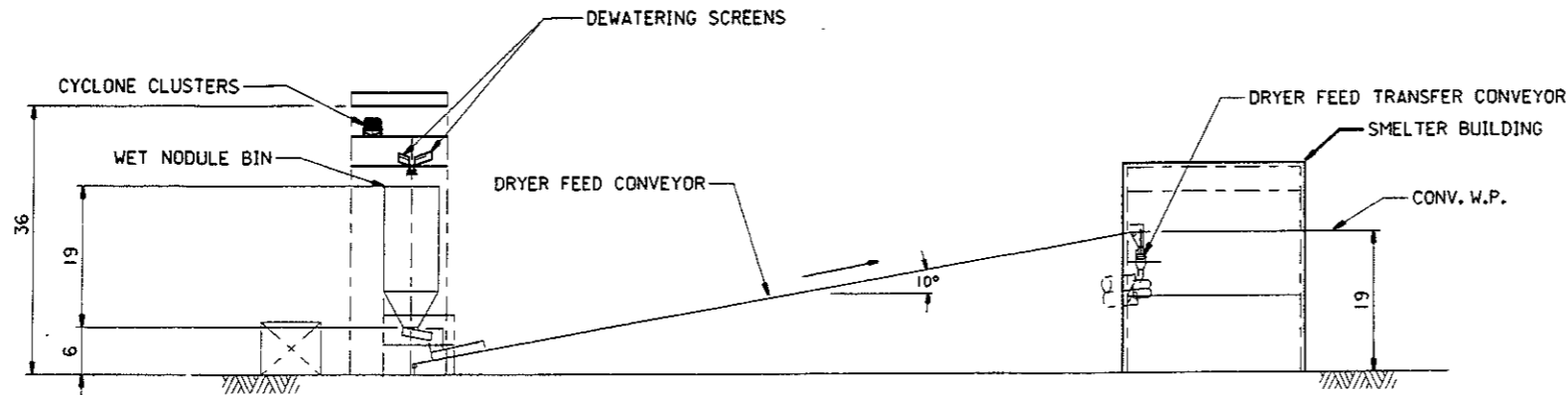
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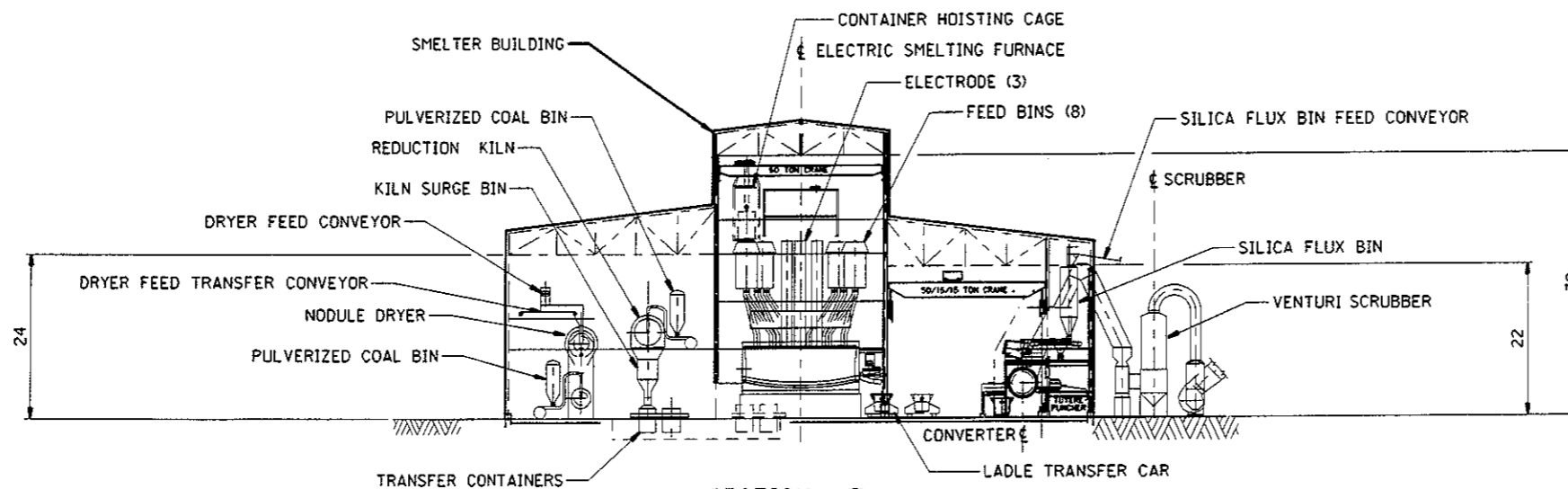
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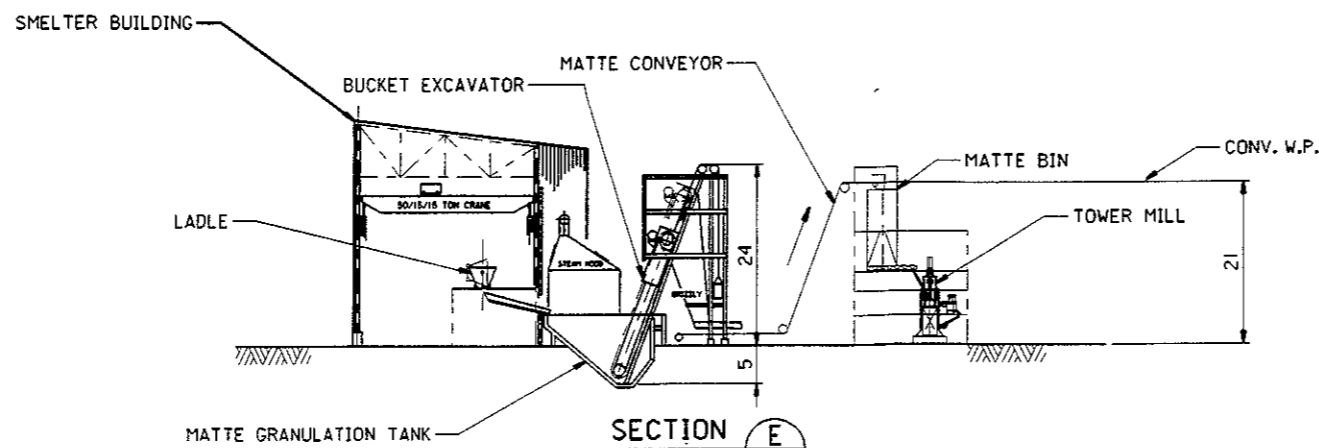
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NO.	DATE	REVISIONS	BY	CHKD
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1:500	AXLOW	A.LOW	ENR	
<b>Bechtel</b> SAN FRANCISCO				
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY				
SMELTER SECTIONS SHEET 1				
JOB No.		DRAWING No.		REV.
23134-000		340-M-002		A



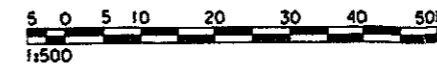
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SECTION E  
340-M-001



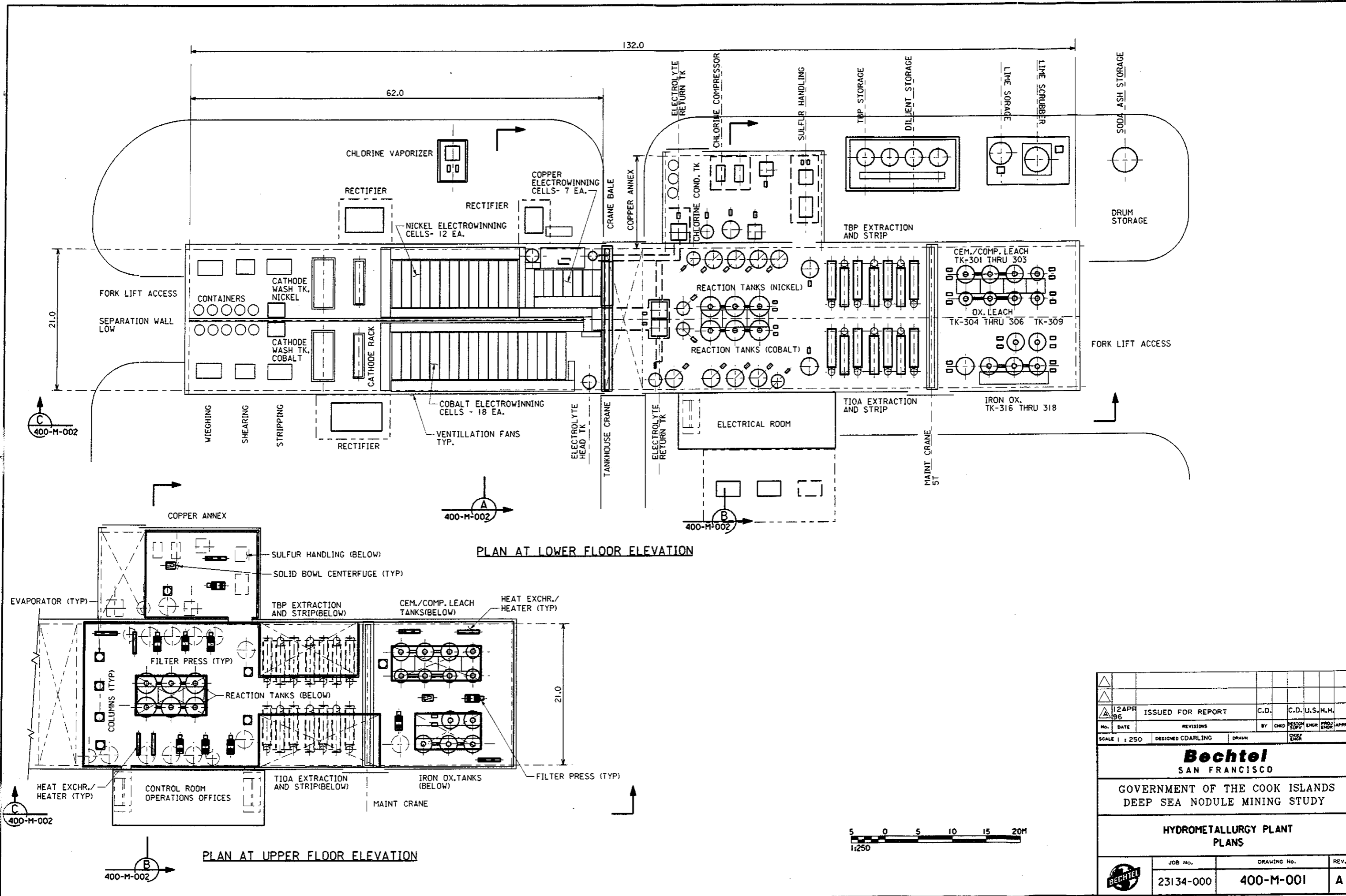
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No.	DATE	REVISIONS	BY	CHKD	DESIGN ENGR
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<b>Bechtel</b> SAN FRANCISCO					
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY					
SMELTER SECTIONS SHEET 2					
JOB No.		DRAWING No.		REV.	
23134-000		340-M-003		A	

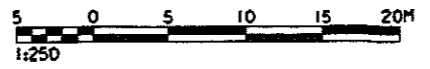
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BORDER.DGN

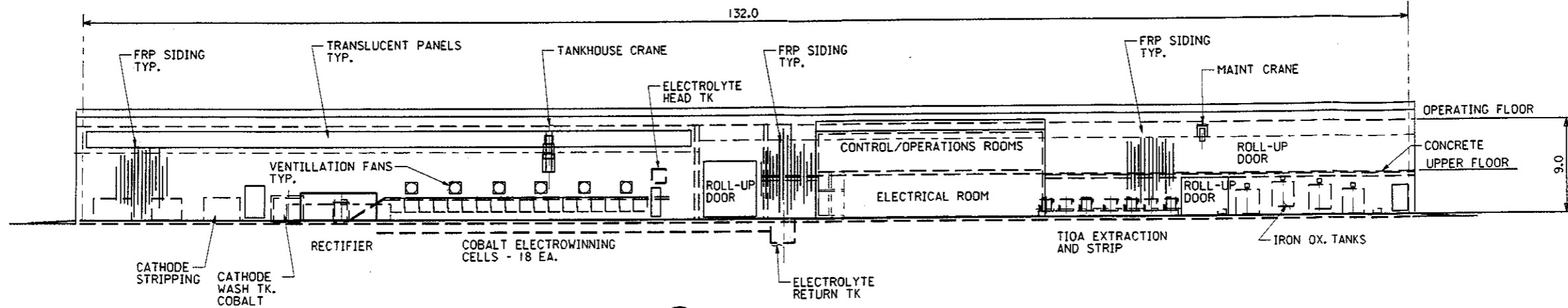


PLAN AT LOWER FLOOR ELEVATION

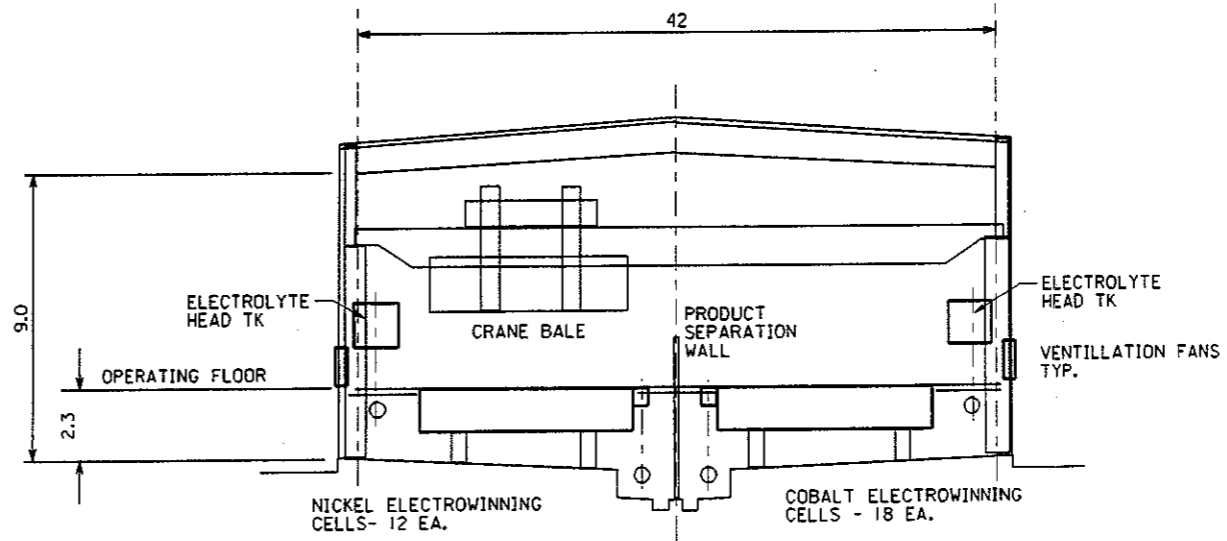
PLAN AT UPPER FLOOR ELEVATION



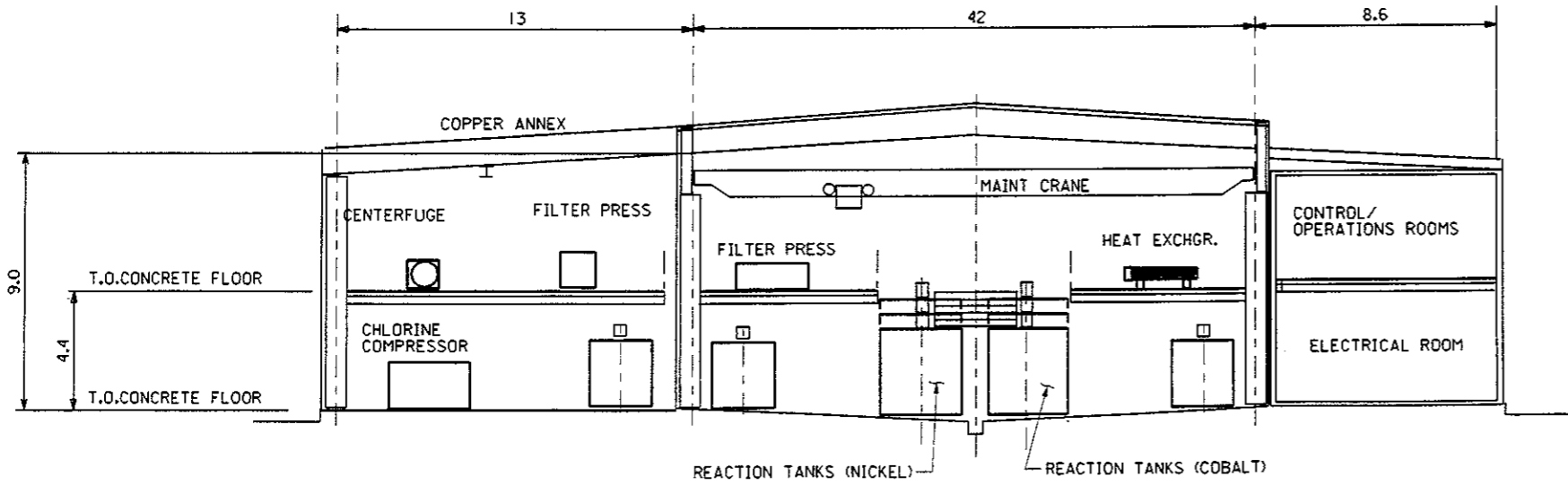
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No.	DATE	REVISIONS	BY	CHKD	DESIGN	ENGR	PROD	APPR
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<b>Bechtel</b> SAN FRANCISCO								
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY								
HYDROMETALLURGY PLANT PLANS								
JOB No.			DRAWING No.			REV.		
23134-000			400-M-001			A		



SECTION C  
1:250  
400-M-001



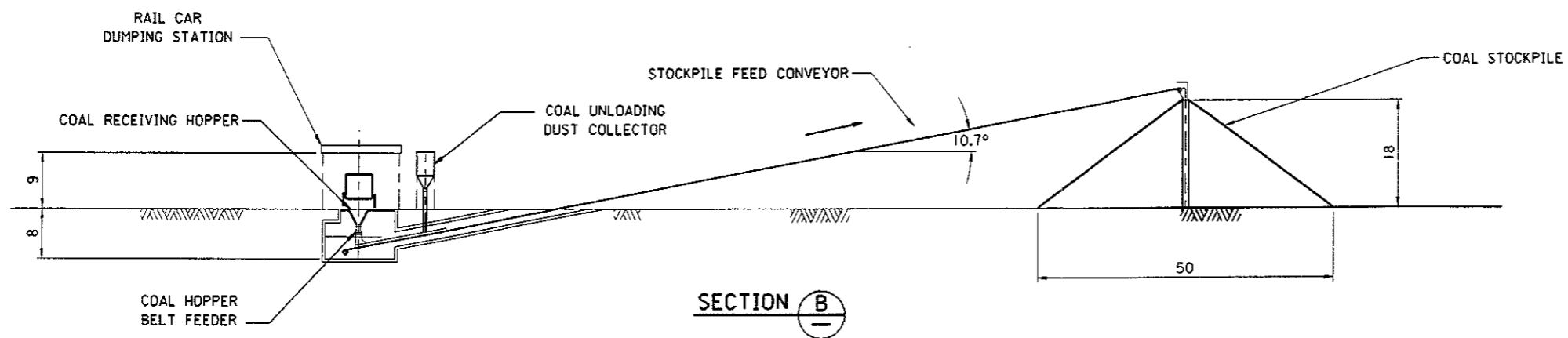
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1:125  
400-M-001



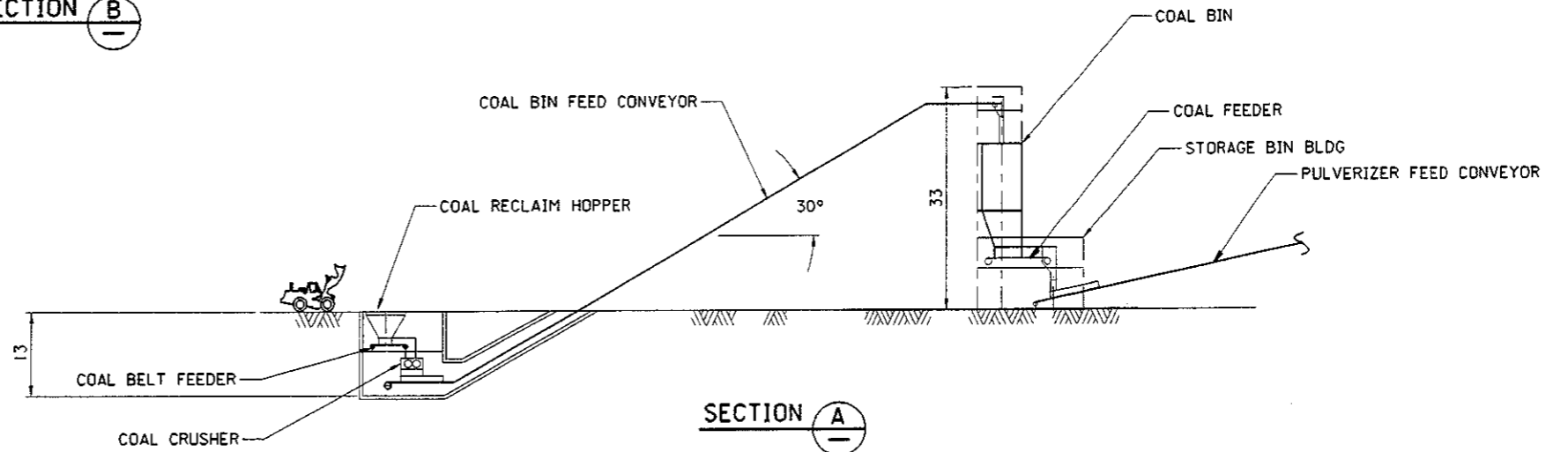
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1:125  
400-M-001



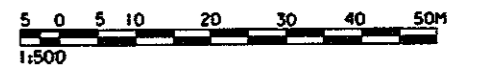
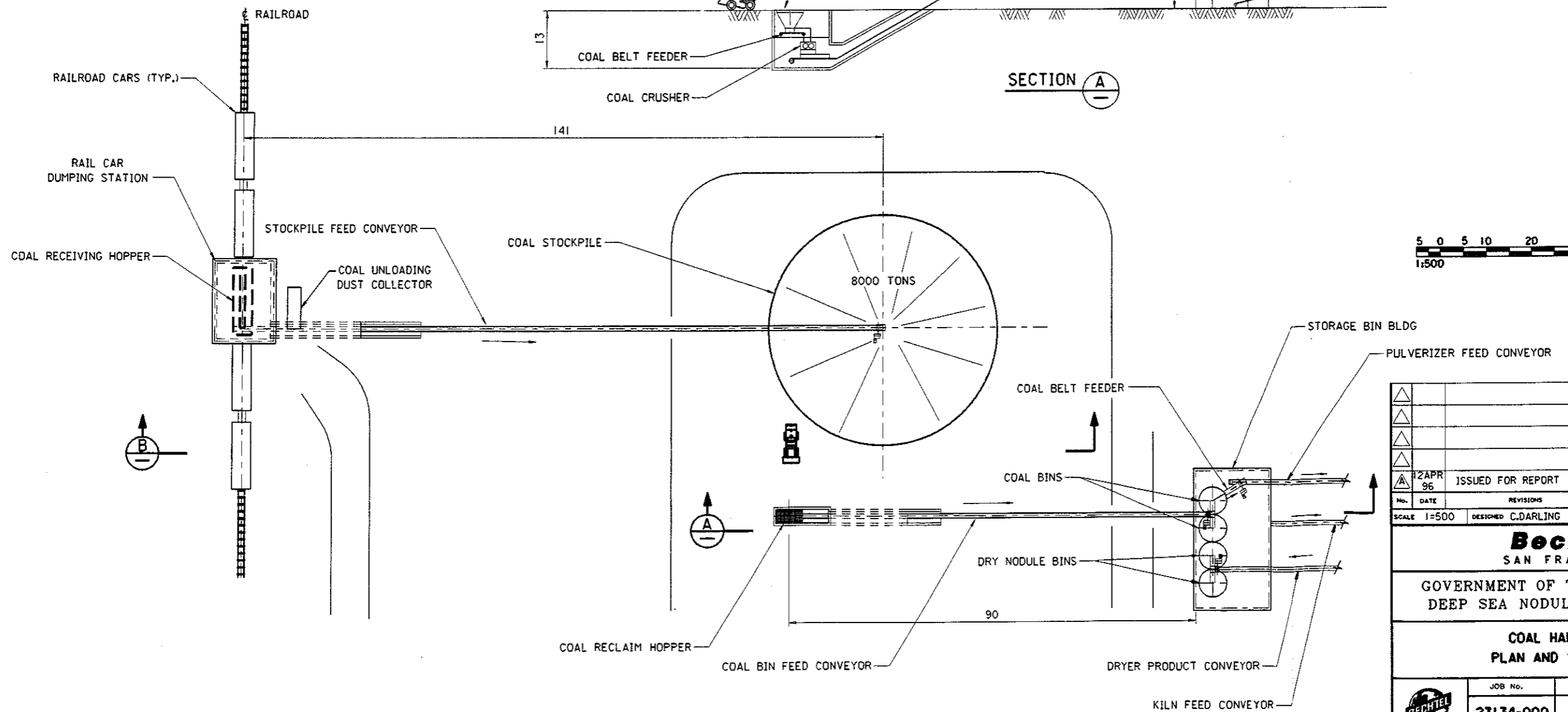
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NO.	DATE	REVISIONS	BY	CHKD
SCALE AS NOTED	DESIGNED CDARLING	DRAWN	ENGR	APPR
<b>Bechtel</b> SAN FRANCISCO				
GOVERNMENT OF THE COOK ISLANDS DEEP SEA NODULE MINING STUDY				
HYDROMETALLURGY PLANT SECTIONS				
JOB No.	DRAWING No.	REV.		
23134-000	400-M-002	A		



SECTION B



SECTION A



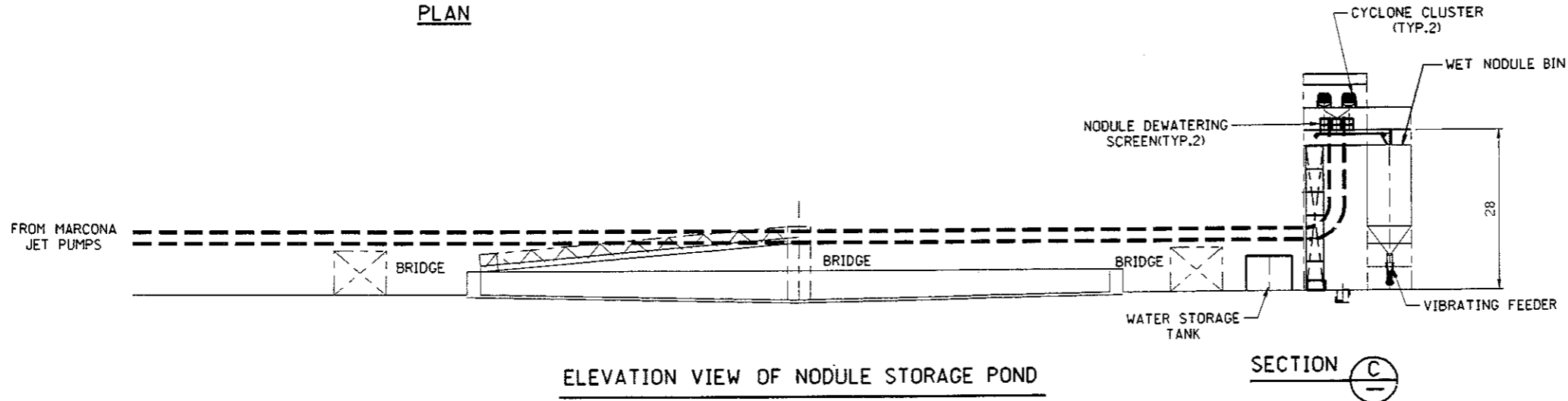
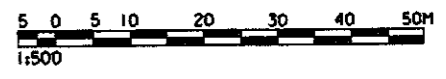
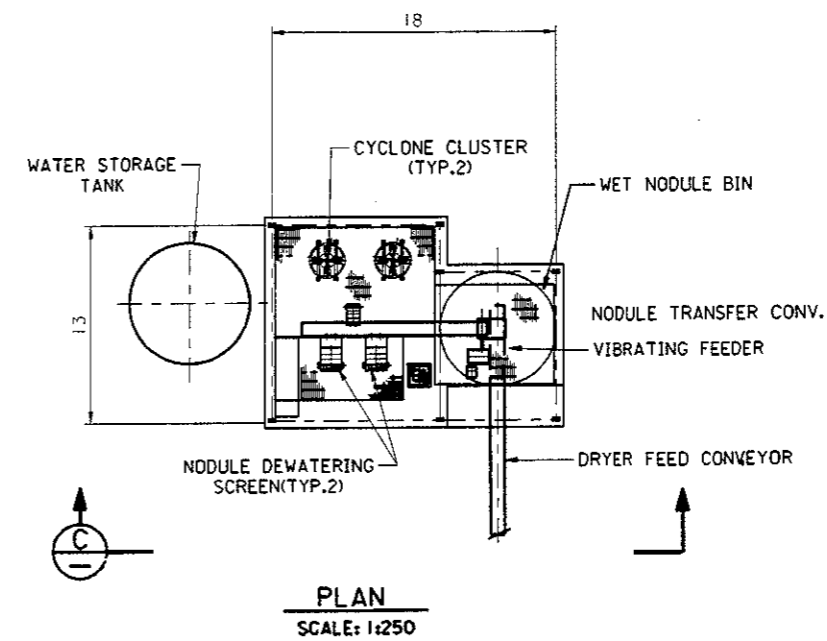
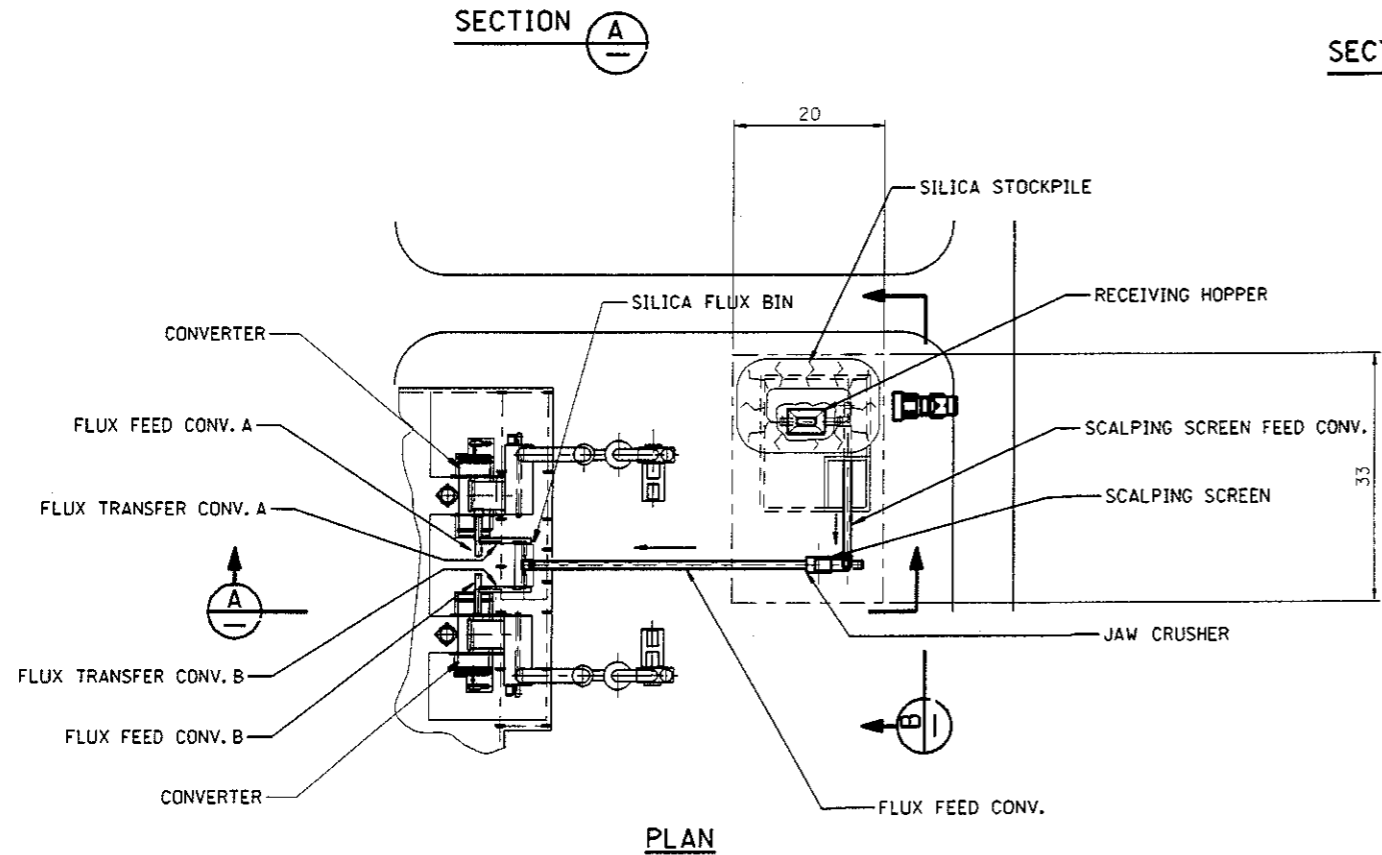
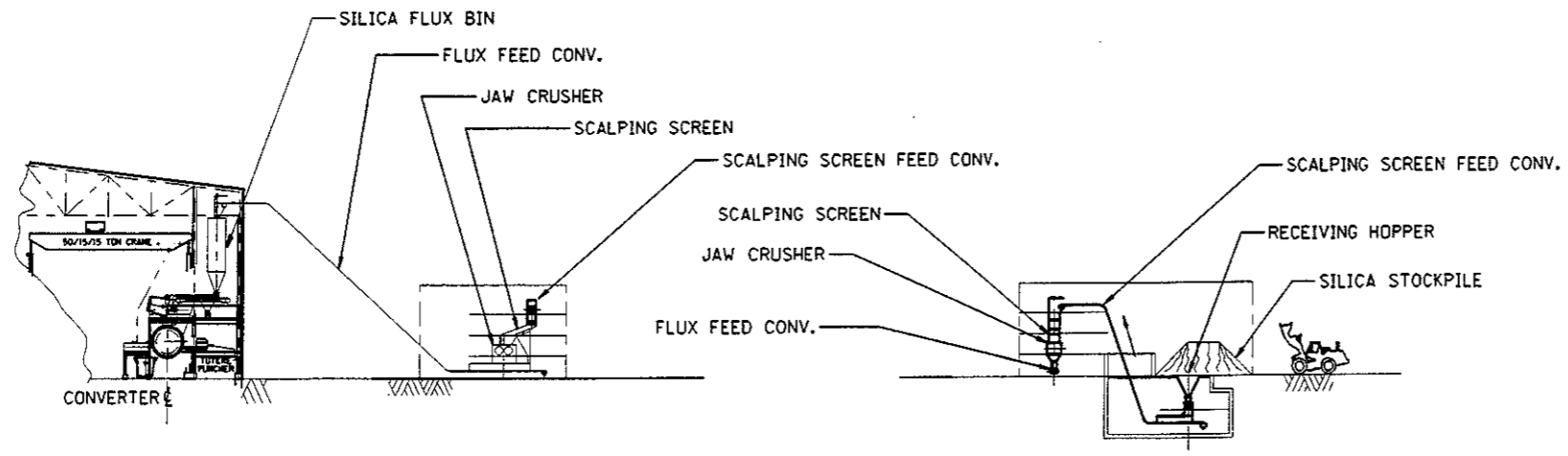
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No.	DATE	REVISIONS	BY	CHKD	DESIGN	ENGR	PROJ. APPR
SCALE	1=500	DESIGNED	C.DARLING	DRAWN	C.F.D.	CHEF	ENGR

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GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

**COAL HANDLING  
PLAN AND SECTIONS**

JOB No.	DRAWING No.	REV.
23134-000	510-M-001	A



NO.	DATE	REVISIONS	BY	CHKD.	DESIGN	ENGR.	PROJ.	APPR.
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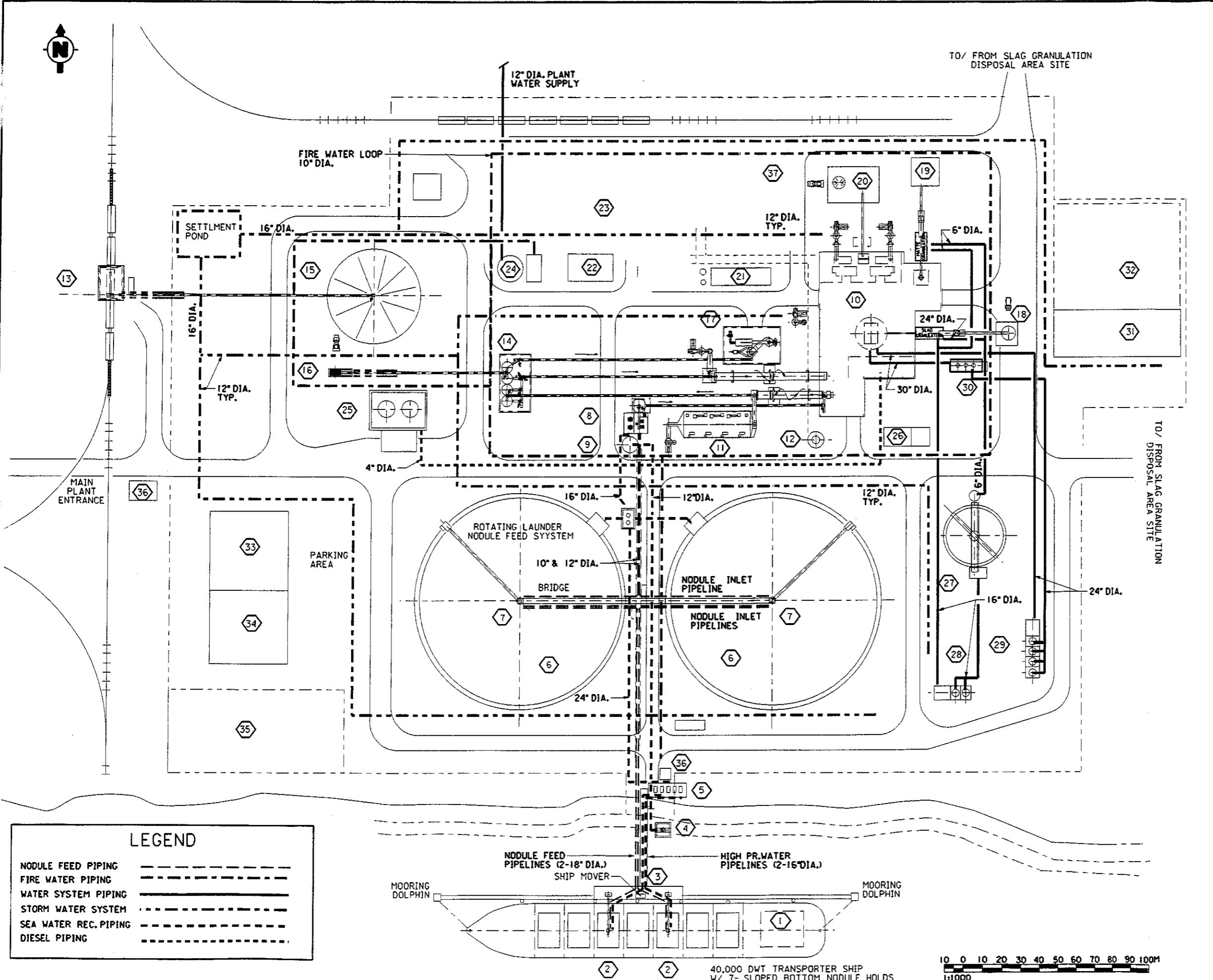
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DRAWN  
CHECK

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SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

SILICA HANDLING & MISC.  
PLAN AND SECTIONS

JOB No.	DRAWING No.	REV.
23134-000	520-M-001	A



LEGEND	
1	TRANSPORTER SHIP
2	MARCONAFLO SYSTEM-SHIP NODULE UNLOADING
3	PORTSIDE NODULE UNLOADING FACILITIES
4	SEA WATER PUMP AREA
5	HIGH PRESSURE WATER PUMPS
6	NODULE STORAGE PONDS
7	MARCONAJET SLURRY SYSTEM/FEED TROLLEY
8	NODULE DEWATERING BUILDING/STORAGE BIN
9	WATER STORAGE TANK
10	SMELTER BUILDING
11	ELECTROSTATIC PRECIPITATION
12	SMELTER STACK
13	COAL RAIL UNLOADING
14	DRY NODULE/COAL STORAGE BLDG.
15	COAL STOCKPILE
16	COAL CRUSHER
17	COAL PULVERIZER BUILDING
18	SLAG TRUCK LOADING BIN
19	MATTE STORAGE/ GRINDING
20	SILICA FLUX STORAGE /HANDLING
21	PLANT AIR/PROCESS AIR COMPRESSOR BUILDING
22	BOILER /WATER TREATMENT BUILDING
23	HYDROMETALLURGICAL PLANT
24	FIREWATER/ POTABLE WATER TANK & PUMPS
25	FUEL OIL STORAGE/UNLOADING
26	EMERGENCY GENERATOR / ELECT. RM.
27	GRANULATION CLARIFIER
28	GRANULATION COOLING TOWER
29	FURNACE COOLING TOWER
30	FURNACE COOLING WATER RETURN PUMPS
31	ELECTRICAL SUBSTATION
32	ELECTRICAL SWITCHYARD
33	ADIMINISTRATION/ LABORATORY/ CHANGE ROOMS
34	SHOPS/ WAREHOUSE
35	LAYDOWN / STORAGE
36	GUARDHOUSE
37	REAGENTS AREA

LEGEND	
NODULE FEED PIPING	---
FIRE WATER PIPING	---
WATER SYSTEM PIPING	---
STORM WATER SYSTEM	---
SEA WATER REC. PIPING	---
DIESEL PIPING	---

12 APR 96	ISSUED FOR REPORT	CD	CD	US	HH
No.	DATE	REVISIONS	BY	CHKD	DESIGN ENGR
SCALE 1:1000	DESIGNED C.DARLING	DRAWN			

**Bechtel**  
SAN FRANCISCO

GOVERNMENT OF THE COOK ISLANDS  
DEEP SEA NODULE MINING STUDY

**PLANT UNDERGROUND PIPING PLAN**

JOB No.	DRAWING No.	REV.
23134-000	600-M-001	A

