

## **APPENDIX-2**

### **Breakdown of Operation Cost**





## 1. MINING

## 2. GEOLOGY (inc. Surveying, Diamond drilling)

Item	Unit	Qty	Amount (\$1,000)		Remarks	Item	Unit	Qty	Amount (\$1,000)		Remarks	
			Total	\$ /					Total	\$ /		
(1) Labor Cost						(1) Labor Cost						
Staff	man	9	54.0	-	\$500/month	Staff	man	3	18.0	-	\$500/month	
Employee	"	11	26.4	-	200 "	Employee	"	4	9.6	-	200 "	
Worker	"	169	304.2	-	150 "	Worker	"	20	36.0	-	150 "	
Labor cost total		189	384.6	-		Labor cost total		27	63.6	-		
(2) Material Cost						(2) Material Cost						
Explosive	t	125	155.1	-	556 g/t, AN-FO,	Equipment parts	lot	1	20.0	-	Bit, rod etc.	
Fuse, detonator	lot	1	76.9	-	Dynamite	Others	"	1	15.0	-		
Rod	pc	1,211	144.2	-	7/8" x 1.0 m, 1.6 m,	Material cost total			35.0	-		
Fuel	kℓ	576	152.0	-	2.4 m	(3) Expenses	lot	1	50.0	-		
Lubricants	lot	1	101.3	-	2.6 ℓ/t							
Equipment parts	"	1	217.3	173.8								
Tire, tube	"	1	33.3	23.3								
Timber	"	1	10.0	-								
Pipe, hose etc.	"	1	20.0	-								
Steel products	"	1	30.0	-								
Steel pipe	"	1	5.0	-								
Rail etc.	"	1	10.0	-								
Safety fixtures	"	1	50.0	-								
Miscellaneous	"	1	50.0	-								
Material cost total			1,055.1	197.1								
(3) Expenses												
Power cost	MWh	2,981	298.1	-	13.2 kWh/t							
Maintenance cost	lot	1	200.0	-								
Repair cost	"	1	18.0	-	Outside repair							
Miscellaneous	"	1	50.0	-								
Expenses total			566.1	-								
MINING TOTAL			2,065.8	197.1	\$8.91/t ore	GEOLOGY TOTAL			148.6	-	\$0.66/t ore	
				1,808.7							148.5	\$0.66/t ore

3. CONCENTRATOR (inc. Tailing pond, Assay laboratory)

4. POWER PLANT

Item	Unit	Q'ty	Amount (\$1,000)		Remarks	Item	Unit	Q'ty	Amount (\$1,000)		Remarks	
			Total	%					Total	%		
(1) Labor Cost						(1) Labor Cost						
Staff	man	5	30.0	-	\$500/month	Staff	man	1	6.0	-	\$500/month	
Employee	"	13	31.2	-	200 "	Employee	"	4	9.6	-	200 "	
Worker	"	37	66.6	-	150 "	Worker	"	9	16.2	-	150 "	
Labor cost total		55	127.8	-		Labor cost total		14	31.8	-		
(2) Material Cost						(2) Material Cost						
Ball	t	270	236.8	-	3 1/2", 1,200 g/t	Fuel	kg	4,367	1,152.9	-	1,152.9	
Liner	lot	1	65.2	45.0	Rubber, metal liner	Lubricants	lot	1	115.0	-	115.0	
Sodium cyanide	t	18	36.0	36.0	80 g/t	Equipment parts	"	1	78.8	54.4	24.4	
KAX	"	32	77.0	-	140 "	Tools etc	"	1	10.0	-	10.0	
Copper sulphate	"	68	35.9	-	300 "	Others	"	1	15.0	-	15.0	
Slaked lime	"	900	122.4	-	4,000 "	Material cost total			1,371.7	54.4	1,317.3	
Frother	"	33	92.1	92.1	145 "	(3) Expenses			36.0	-	36.0	
Frocculant	"	1	9.4	9.4	5 "	Repair cost	lot	1	10.0	-	10.0	
Lubricants	lot	1	46.8	-		Others	"	1	10.0	-	10.0	
Equipment parts	"	1	180.6	126.4	37.3 kWh/t	Expenses total			46.0	-	46.0	
Others	"	1	42.0	12.6	Outside repair							
Material cost total			944.2	321.5								
(3) Expenses												
Power cost	MWh	8,402	840.2	-								
Repair cost	lot	1	24.0	-								
Expenses total			864.2	-								
CONCENTRATOR TOTAL			1,936.2	321.5	1,614.7	POWER PLANT TOTAL			1,449.5	54.4	1,395.1	

Note: 1) Unit power cost \$1,449,500 = 14,555 MWh = 410/kWh  
 2) Power plant cost allocated to each department

5. MAINTENANCE (Repair shop, Water supply, Power distribution)

6. CENTRAL OFFICE (Administration)

Item	Unit	Qty	Amount (\$1,000)		Remarks	Item	Unit	Qty	Amount (\$1,000)		Remarks	
			Total	\$ S/.					Total	\$ S/.		
(1) Labor Cost												
Staff	man	2	12.0	-	12.0	Mine manager	man	1	24.0	-	24.0	\$2,000/month
Employee	"	5	12.0	-	12.0	Ass. Mine manager	"	1	12.0	-	12.0	1,000 "
Worker	"	30	54.0	-	54.0	Staff	"	2	12.0	-	12.0	500 "
Labor cost total		37	66.0	-	66.0	Employee	"	7	16.8	-	16.8	200 "
						Worker	"	12	21.6	-	21.6	150 "
(2) Material Cost						Sub total		23	86.4	-	86.4	
Tools	lot	1	3.0	-	3.0	Expatriate	man	3	147.6	147.6	-	\$4,100/month
Supplies	"	1	6.5	-	6.5	Labor cost total		26	234.0	147.6	86.4	
Lubricants	"	1	9.5	-	9.5	Material Cost						
Steel product	"	1	4.0	-	4.0	Office supplies	lot	1	5.2	-	5.2	\$200/man
Equipment parts	"	1	8.0	-	8.0	Fuel, lubricants	"	1	10.0	-	10.0	
Material cost total			31.0	-	31.0	Others	"	1	5.0	-	5.0	
(3) Expenses						Material cost total			20.2	-	20.2	
Power cost	MWh	579	57.9	-	57.9	Expenses						
Repair cost	lot	1	10.0	-	10.0	Power cost	MWh	69	6.9	-	6.9	0.3 kWh/t
Others	"	1	7.0	-	7.0	Travel expenses	lot	1	21.0	9.0	12.0	Local, overseas
Expenses total			74.9	-	74.9	Communication	"	1	12.0	-	12.0	\$1,000/month
						Road expense	"	1	40.0	-	40.0	Sayan - Churin
						Others	"		16.0	-	16.0	20%
						Expenses total			95.9	9.0	86.9	
MAINTENANCE TOTAL			171.9	-	171.9				350.1	156.6	193.5	\$1.56/t ore
						CENTRAL OFFICE TOTAL						

7. WELFARE FACILITIES

8. LIMA HEAD OFFICE

Item	Unit	Qty	Amount (\$1,000)		Remarks	Item	Unit	Qty	Amount (\$1,000)		Remarks
			Total	\$					Total	\$	
(1) Labor Cost						(1) Labor Cost					
Staff	man	6	36.0	-	\$500/month	General manager	man	1	24.0	-	\$2,000/month
Employee	"	22	52.8	-	200 "	Staff	"	2	12.0	-	500 "
Worker	"	27	48.6	-	150 "	Employee	"	4	9.6	-	200 "
Labor cost total		55	137.4	-		Worker	"	4	7.2	-	150 "
(2) Material Cost						Sub total	"	11	52.8	-	52.8
Education mat.	lot	1	11.0	-	For elementary school	Expatriate	man	1	49.2	49.2	\$4,100/month
Medicine	"	1	15.0	-	1,500 men x \$10	Labor cost total			102.0	49.2	52.8
Mis. materials	"	1	10.0	-	For club, quarters	Material Cost					
Others	"	1	7.0	-		Office supplies	lot	1	12.0	-	\$1,000/man
Material cost total			43.0	-		Fuel etc.	"	1	5.0	-	5.0
(3) Expenses						Material cost total			17.0	-	17.0
Power cost	MWh	2,102	210.2	-	9.3 kWh/t	Expenses					
Repair cost	lot	1	6.0	-	300 houses x \$20	Office rental	lot	1	15.0	-	15.0
Expenses total			216.2	-		Rental	"	1	5.0	-	5.0
						Travel expenses	"	1	15.0	3.0	12.0
						Communication	"	1	10.0	-	10.0
						Bank charges	"	1	10.0	-	10.0
						Remuneration	"	1	6.0	-	6.0
						Various charges	"	1	12.0	-	12.0
						Miscellaneous	"	1	4.0	-	4.0
						Expenses total			77.0	3.0	74.0
WELFARE FACILITIES TOTAL			396.6	-	\$1.76/t ore	LIMA HEAD OFFICE TOTAL			196.0	52.2	143.8
											\$0.87/t ore

9. CONCENTRATE HAULING

11. TAX, COMMISSION

Item	Unit	Qty	Amount (\$1,000)		Remarks
			Total \$	S/.	
(1) Pb-Concentrate	wt	4,794	86.3	- 86.3	Mine - Callao, \$18/wt
(2) Zn-Concentrate	"	65,181	1,173.2	- 1,173.2	" "
HAULING TOTAL			1,259.5	- 1,259.5	\$5.60/t ore

Item	Unit	Qty	Amount (\$1,000)		Remarks
			Total \$	S/.	
(1) Tax	lot	1	256.6	- 256.6	FOE x 2%
(2) Commission	t	64,100	96.2	- 96.2	\$1.5/t
TAX, COMMISSION TOTAL			352.8	- 352.8	\$1.57/t ore

10. CONCENTRATE SHIP LOADING

Item	Unit	Qty	Amount (\$1,000)		Remarks
			Total \$	S/.	
(1) Loading Expenses	wt	69,275	464.1	- 464.1	\$6.7/wt, Port, Conveyor etc.
(2) Storage Expenses	"	69,275	34.6	- 34.6	\$0.5/wt
SHIP LOADING TOTAL			498.7	- 498.7	\$2.22/t ore



## **APPENDIX—3**

### **Breakdown of Additional Investment and Replacement Cost**



1. ADDITIONAL INVESTMENT

(\$1,000)

Item	2	3	4	5	6	7	8	9	Total
Tailing pond: Civil work	-	-	-	150	150	160	-	-	460
Pump etc.	-	-	-	-	-	15	-	-	15
<b>Total</b>	-	-	-	150	150	175	-	-	475

2. REPLACEMENT COST

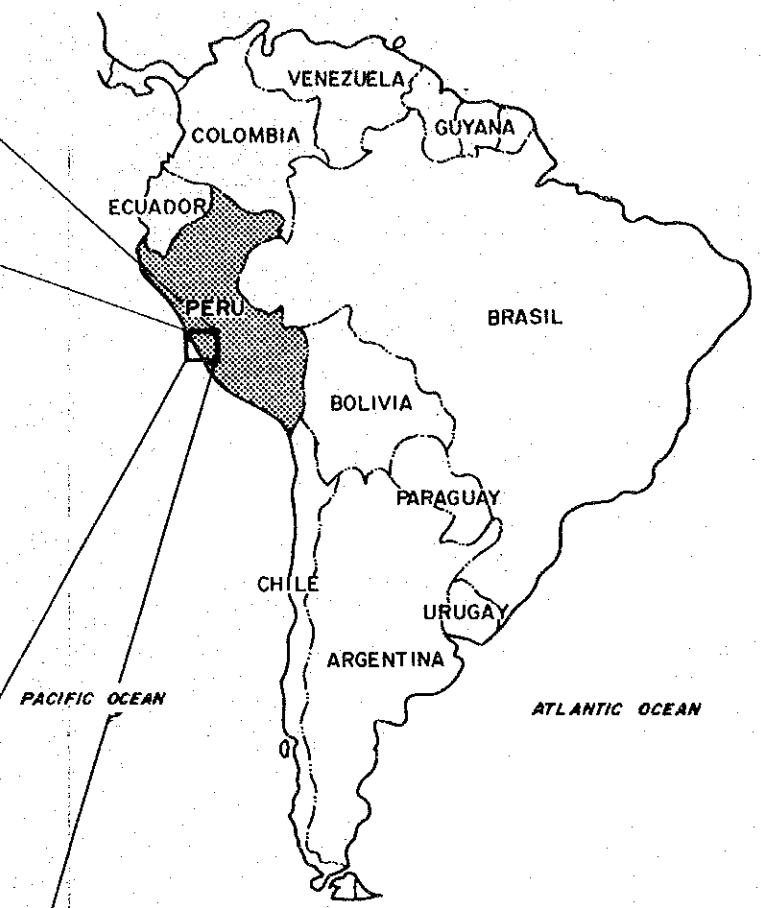
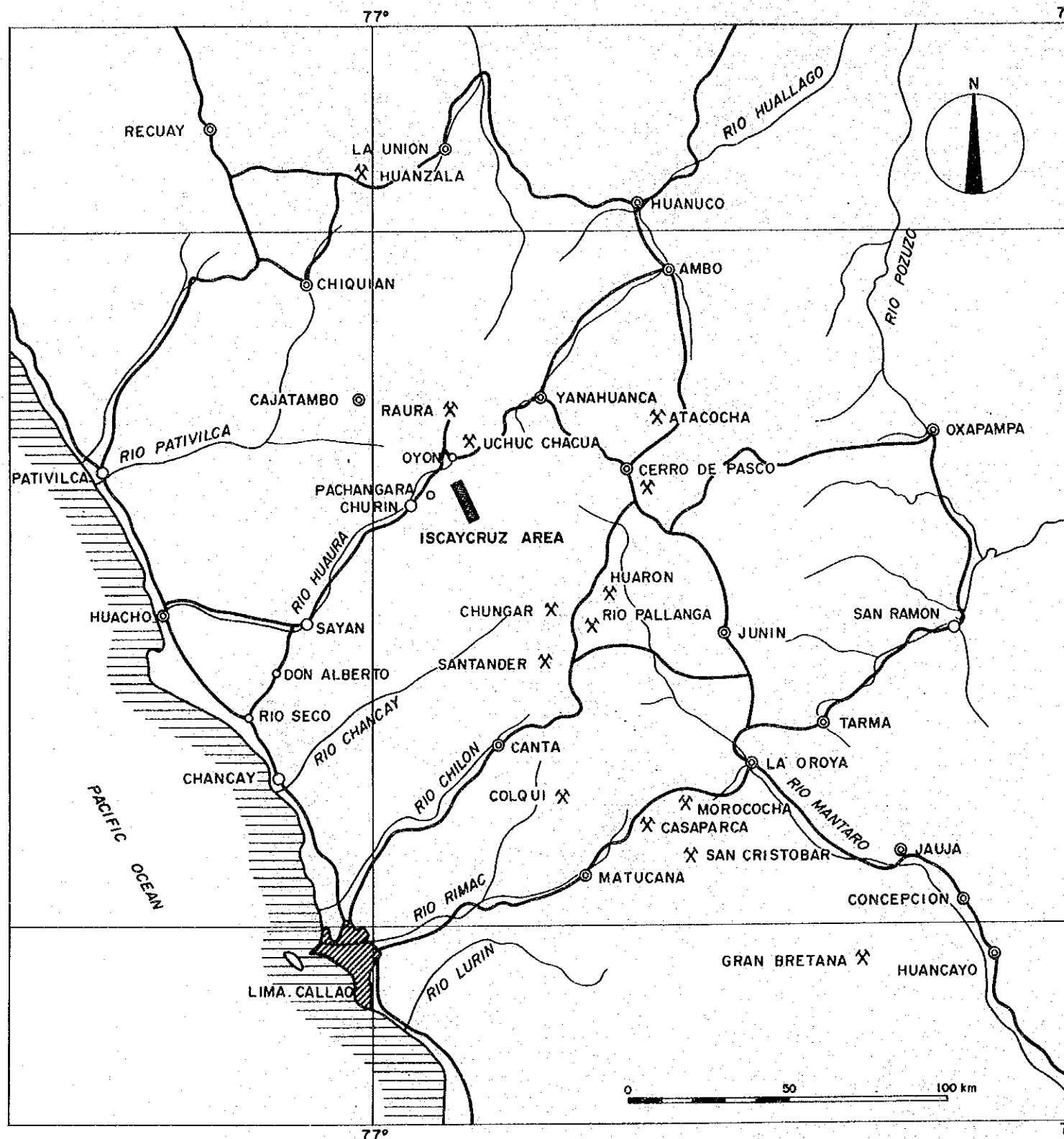
(\$1,000)

Item		2	3	4	5	6	7	8	9	Total
<b>1. Mining Equipment</b>										
3.5 yd <sup>3</sup> class LHD	230	-	-	-	(1) 230	(1) 230	(1) 230	-	-	690
Mobile jumbo	190	-	-	-	-	(1) 190	(1) 190	-	-	380
Leg rock drill	4	-	-	-	-	(6) 24	(6) 24	-	-	48
Stoper	4	-	-	-	-	(3) 12	(3) 12	-	-	24
Local fan	90	-	-	-	(1) 90	-	(1) 90	-	-	180
Mine car (5t)	9	-	-	-	-	(5) 45	(5) 45	-	-	90
Pickup truck	19	-	-	(1) 19	-	(1) 19	-	(1) 19	-	57
Jeep	20	(1) 20	-	(1) 20	-	(1) 20	-	(1) 20	-	80
Bulldozer (21t)	178	-	-	-	(1) 178	-	-	-	-	178
Dump truck (15 t)	134	-	-	(1) 134	-	-	-	-	-	134
Shovel loader	108	-	-	-	-	(1) 108	-	-	-	108
<b>Subtotal</b>		20		173	498	648	591	39	-	1969
<b>2. Common Vehicle</b>										
Pickup truck	19	-	19	-	(1) 19	-	(1) 19	-	-	57
Jeep	20	-	-	(1) 20	-	(1) 20	-	(1) 20	-	60
Bus	62	-	-	-	(1) 62	-	-	-	-	62
Bulldozer (14t)	134	-	-	-	(1) 134	-	-	-	-	134
Shovel loader	60	-	-	-	-	(1) 60	-	-	-	60
Forklift (1.5t)	20	-	-	-	-	(1) 20	-	-	-	20
Truck (8t)	40	-	-	-	(1) 40	-	-	-	-	40
<b>Subtotal</b>		-	19	20	255	100	19	20	-	433
<b>Total</b>		20	19	193	753	748	610	59	-	2402

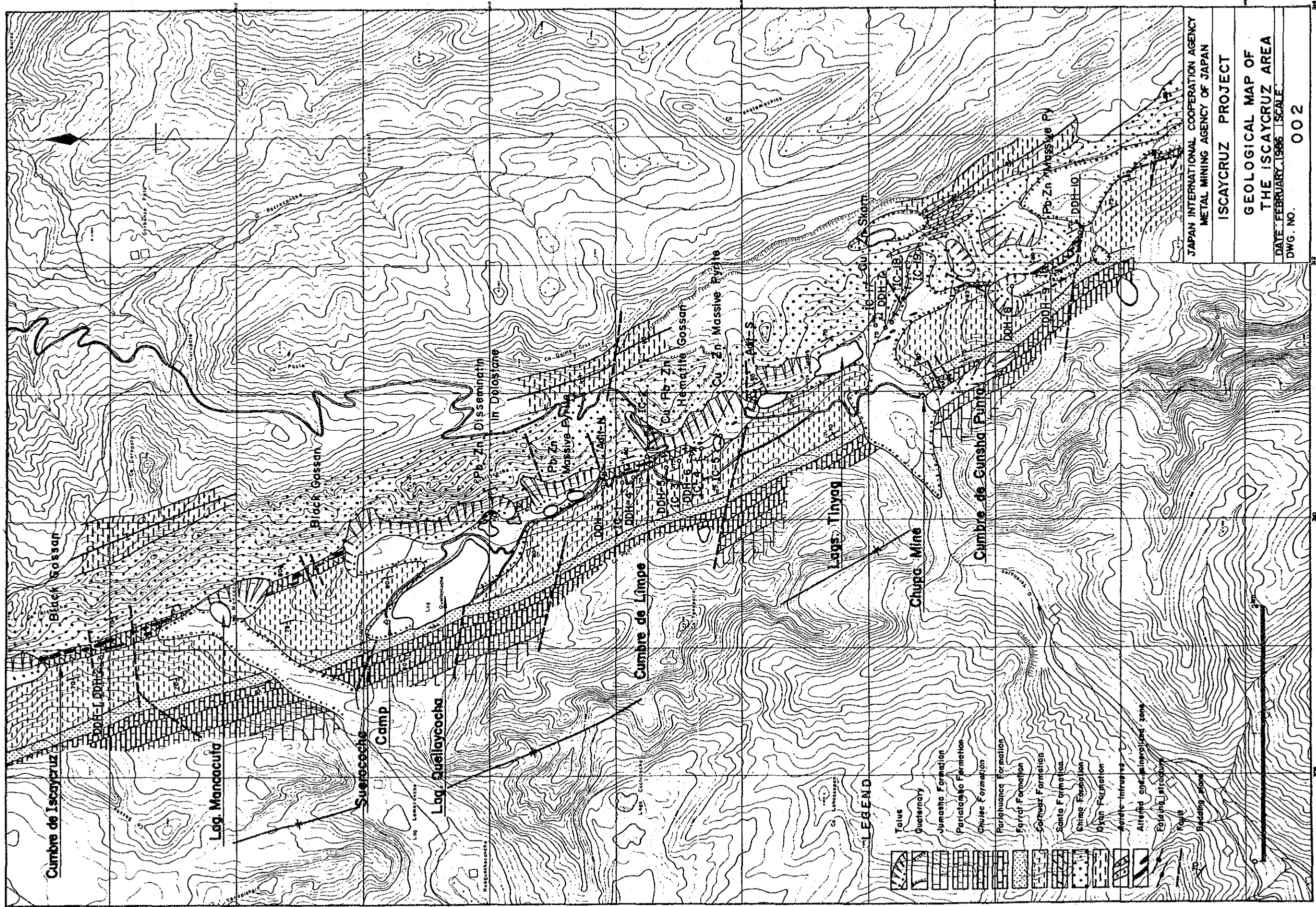


## **DRAWINGS**



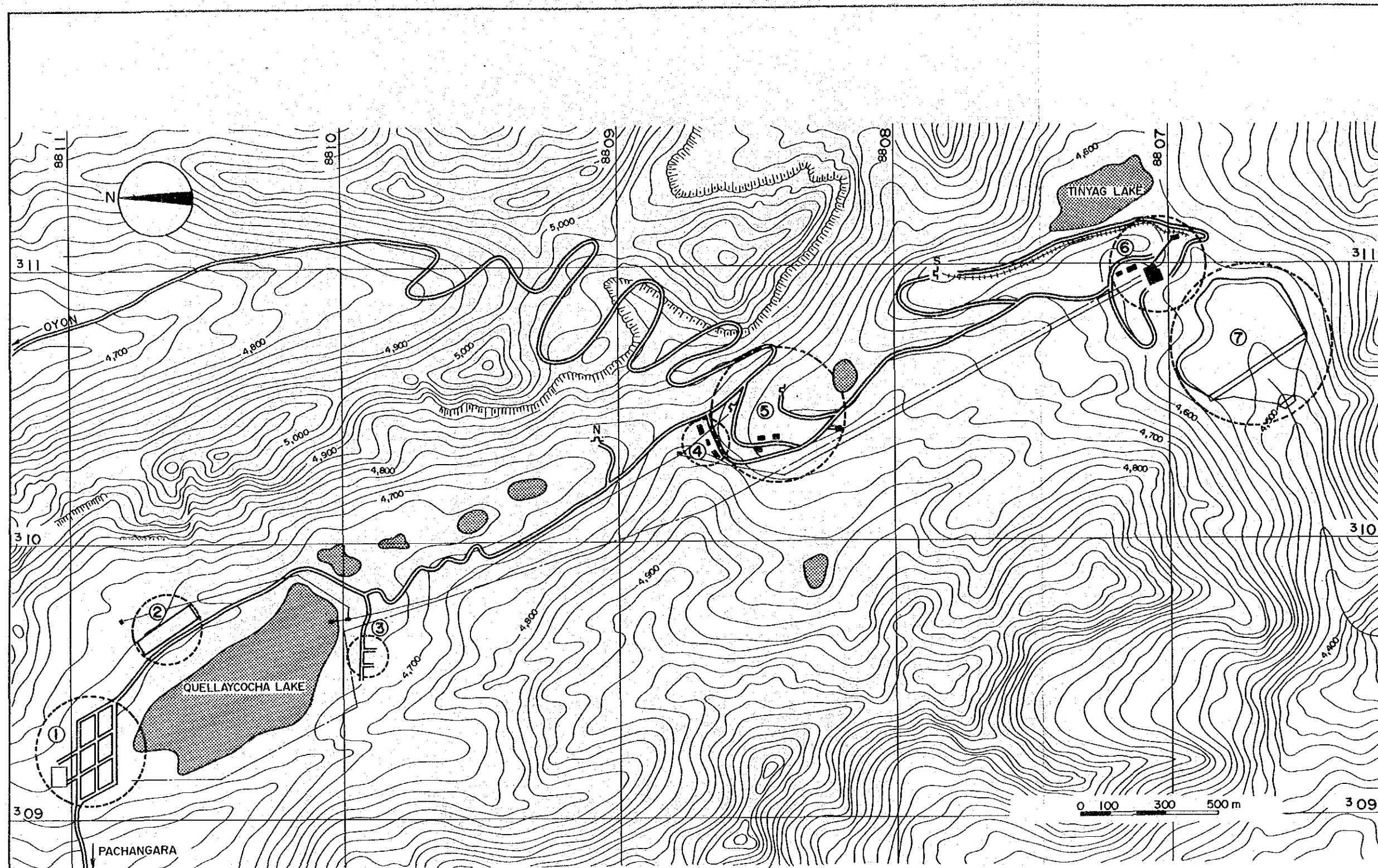


JAPAN INTERNATIONAL COOPERATION AGENCY	
METAL MINING AGENCY OF JAPAN	
ISCAYCRUZ PROJECT	
INDEX MAP	
DATE: FEBRUARY, 1986	SCALE:
DWG. NO.	001



JAPAN INTERNATIONAL COOPERATION AGENCY  
 METAL MINING AGENCY OF JAPAN  
 ISCAYCruz PROJECT  
 GEOLOGICAL MAP OF  
 THE ISCAYCruz AREA  
 DATE: FEBRUARY, 1966 SCALE  
 DWG. NO. 002





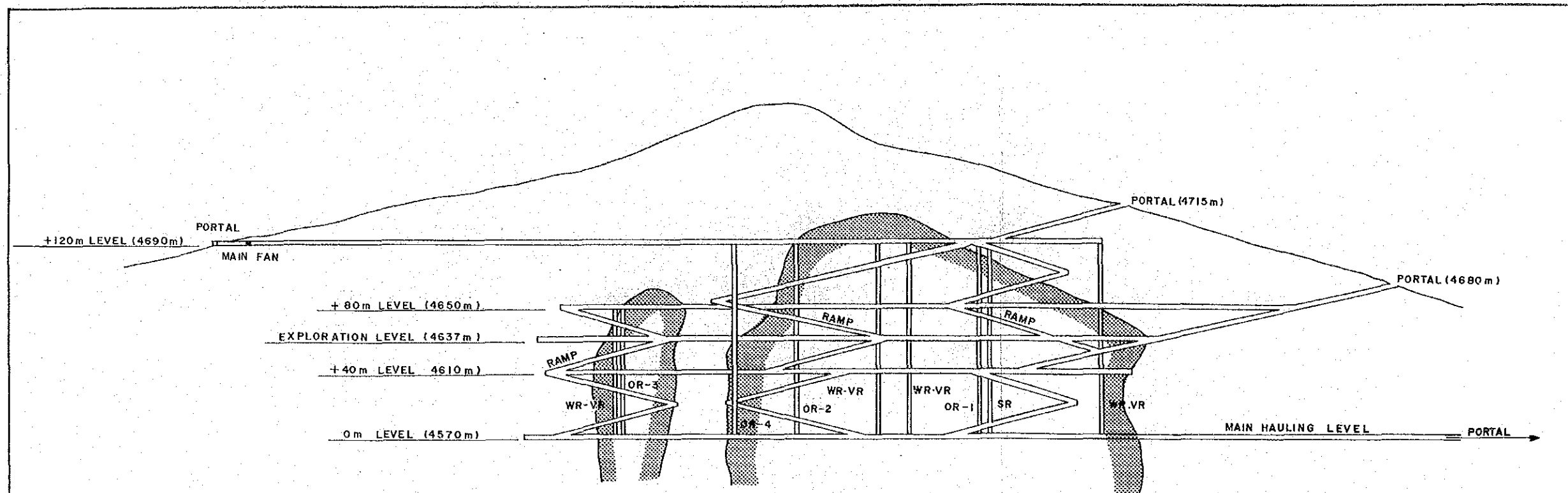
- 1. WORKER'S RESIDENTIAL AREA  
FAMILY HOUSE, BACHELOR QUARTER,  
CLUB HOUSE, SOCCER COURT ETC.
- 2. SOCIAL SERVICE AREA  
ELEMENTARY SCHOOL, KINDERGARTEN  
CANTEEN, CLINIC ECT.
- 3. STAFF'S RESIDENTIAL AREA  
FAMILY HOUSE, BACHELOR QUARTER,  
CLUB HOUSE, TENNIS COURT ETC.

- 4. ADMINISTRATION AREA  
CENTRAL OFFICE, CENTRAL WAREHOUSE,  
MESS, TRUCK SCALE ETC.
- 5. MINING SECTION AREA  
MINE OFFICE, REPAIR SHOP, POWDER  
MAGAGINE, COMPRESSOR ETC.
- 6. CONCENTRATOR AREA  
CONCENTRATOR, POWER PLANT, MAIN  
REPAIR SHOP, ASSAY LABORATORY ETC.

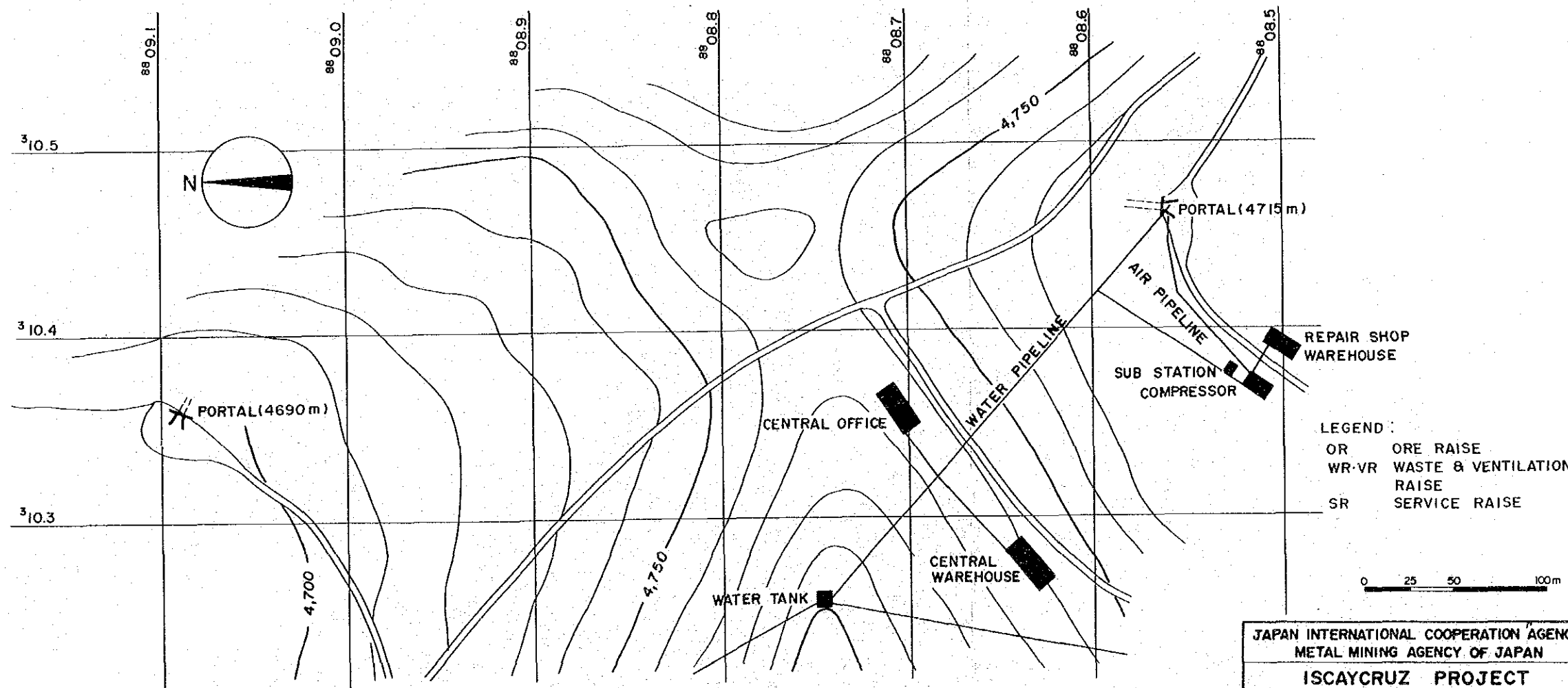
- 7. TAILING POND
- 8. OTHERS

— MAIN WATER SUPPLY PIPELINE  
 - - - MAIN TRANSMISSION LINE  
 JL PORTAL

JAPAN INTERNATIONAL COOPERATION AGENCY METAL MINING AGENCY OF JAPAN	
<b>ISCAYCRUZ PROJECT</b>	
<b>MINE SITE GENERAL LAYOUT</b>	
DATE: FEBRUARY, 1986	SCALE:
DWG. NO.	<b>003</b>



SECTION

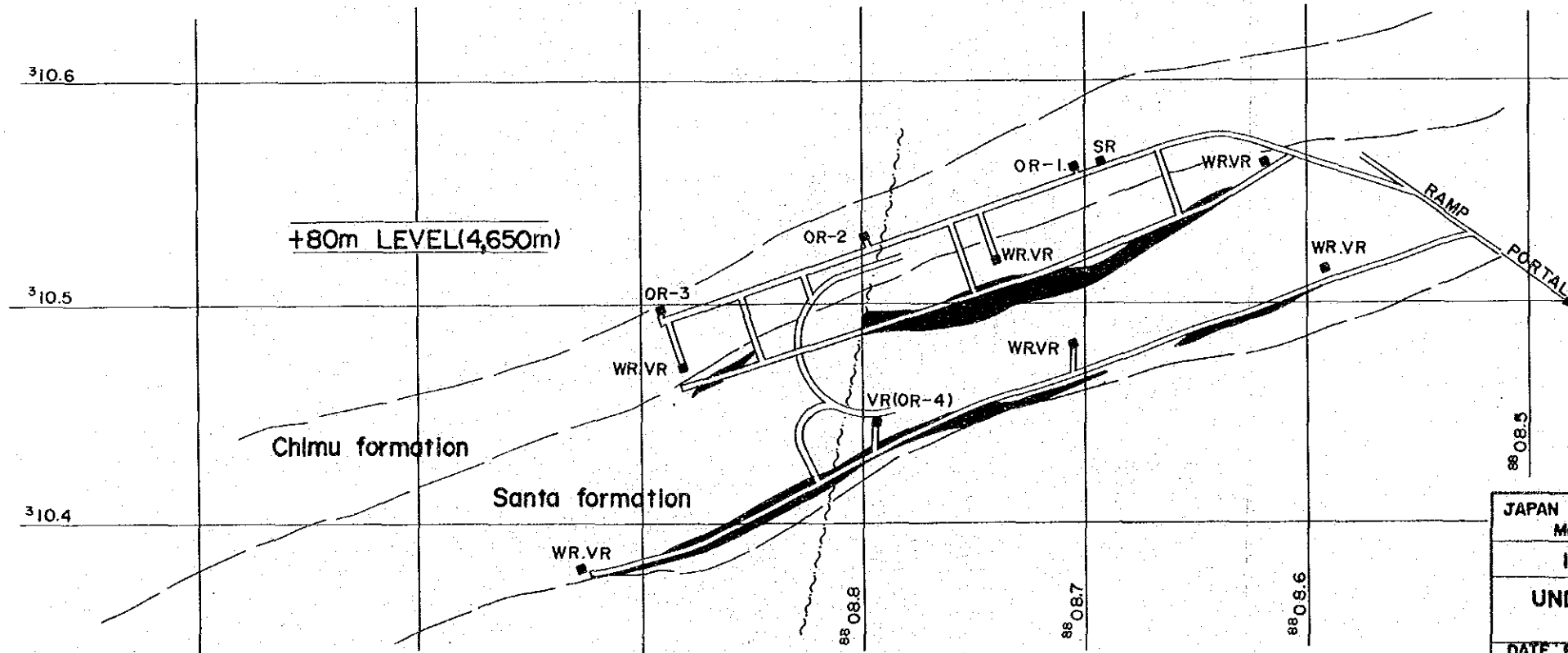
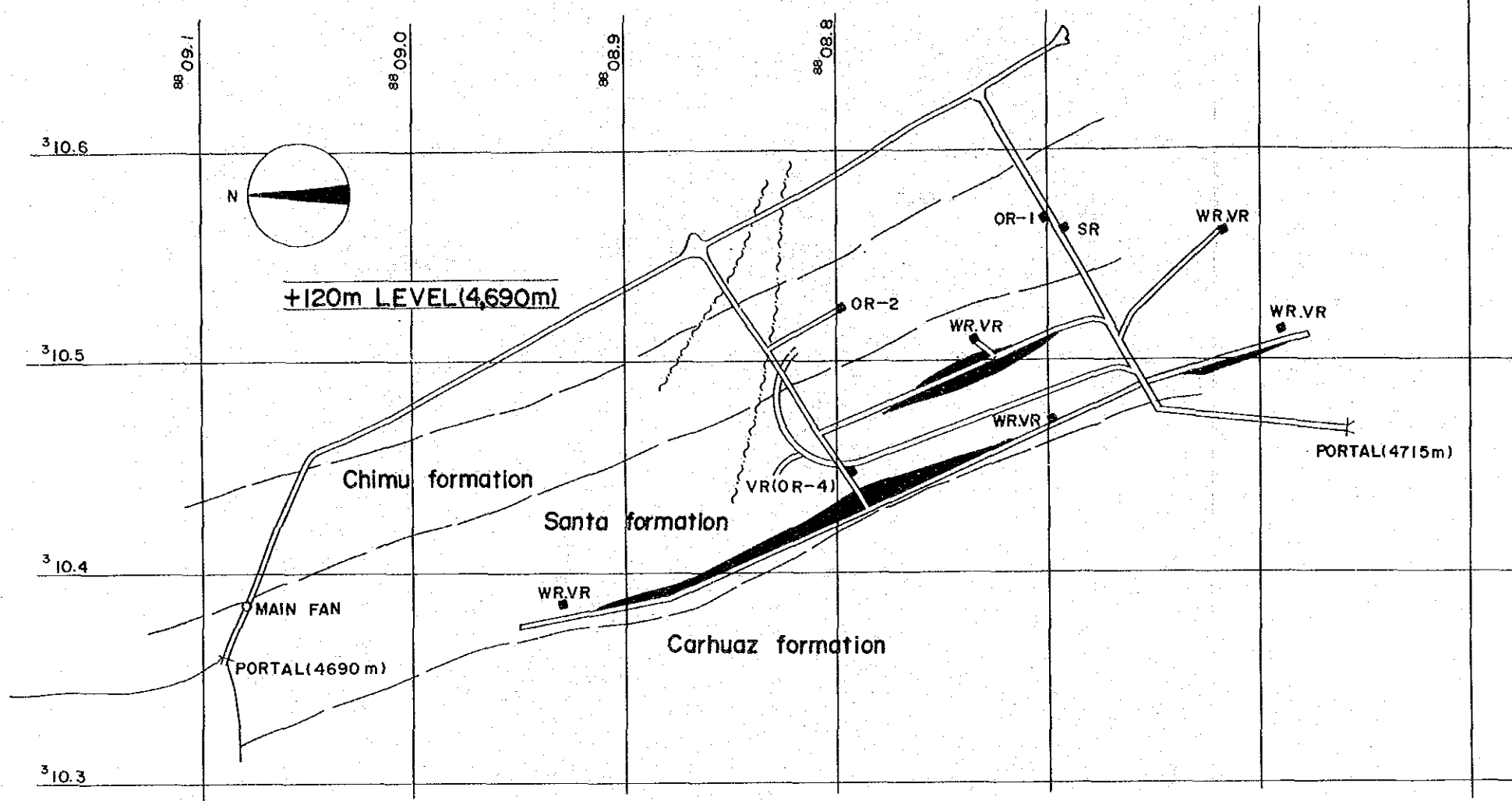


- LEGEND:
- OR ORE RAISE
  - WR-VR WASTE & VENTILATION RAISE
  - SR SERVICE RAISE

0 25 50 100m

JAPAN INTERNATIONAL COOPERATION AGENCY  
 METAL MINING AGENCY OF JAPAN  
**ISCAYCRUZ PROJECT**  
**UNDERGROUND STRUCTURE SECTION & SURFACE**  
 DATE: FEBRUARY, 1986 | SCALE:  
 DWG. NO. **004**

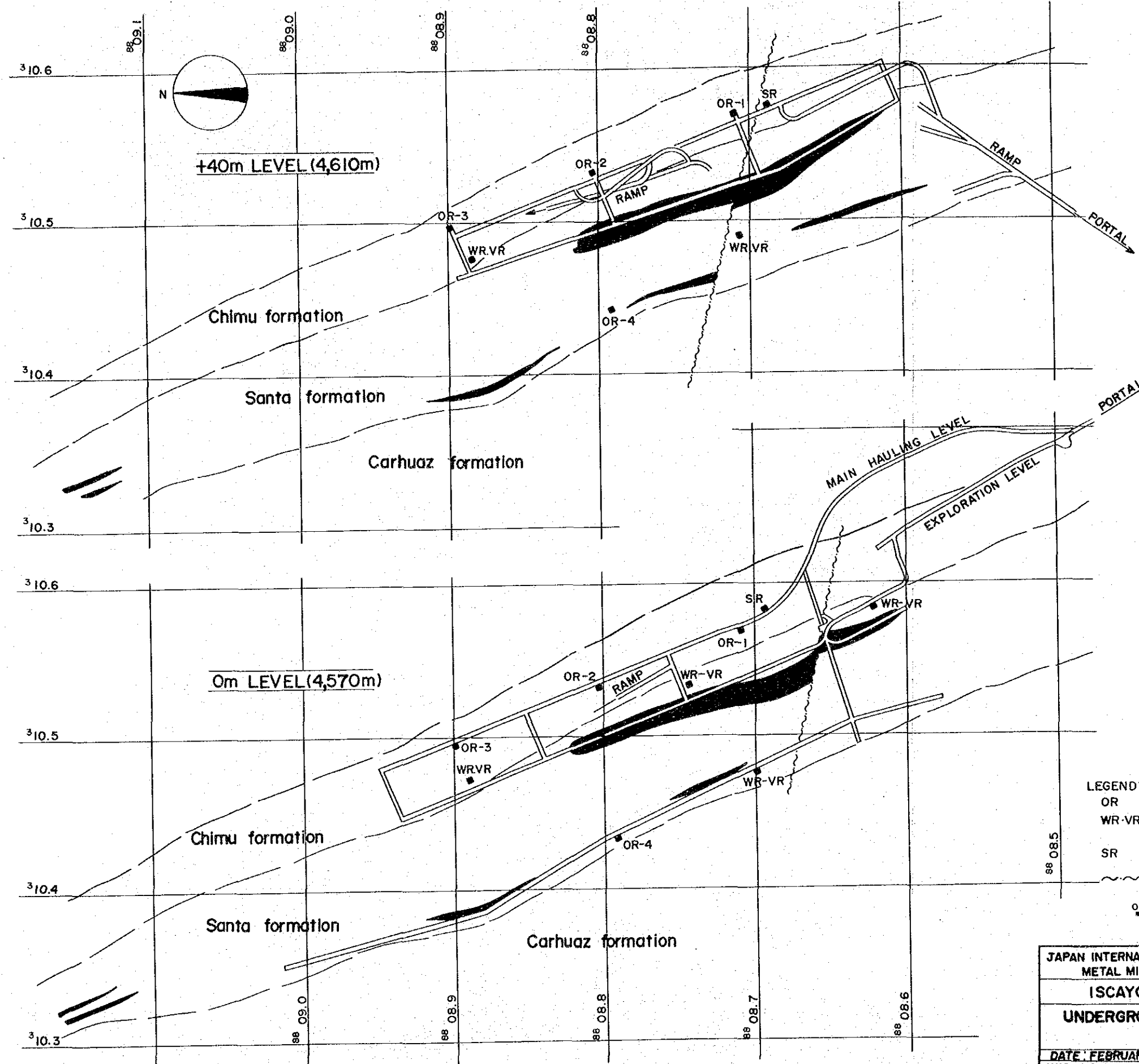
SURFACE



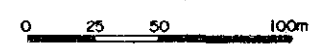
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 OR ORE RAISE  
 WR.VR WASTE & VENTILATION RAISE  
 SR SERVICE RAISE  
 FAULT

0 25 50 100m

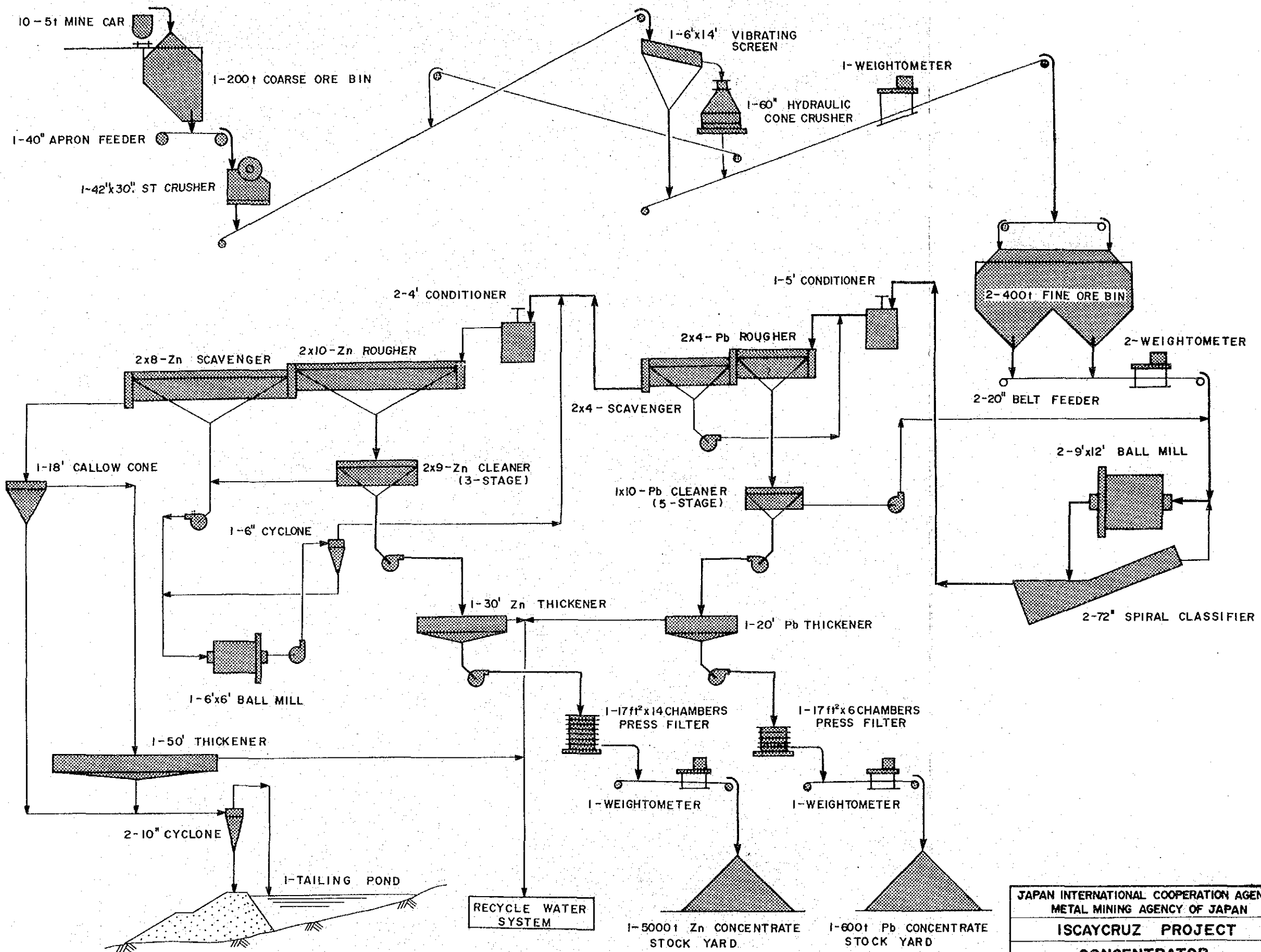
JAPAN INTERNATIONAL COOPERATION AGENCY  
 METAL MINING AGENCY OF JAPAN  
 ISCAYCRUZ PROJECT  
 UNDERGROUND STRUCTURE  
 PLAN  
 DATE: FEBRUARY, 1986 SCALE:  
 DWG. NO. 005



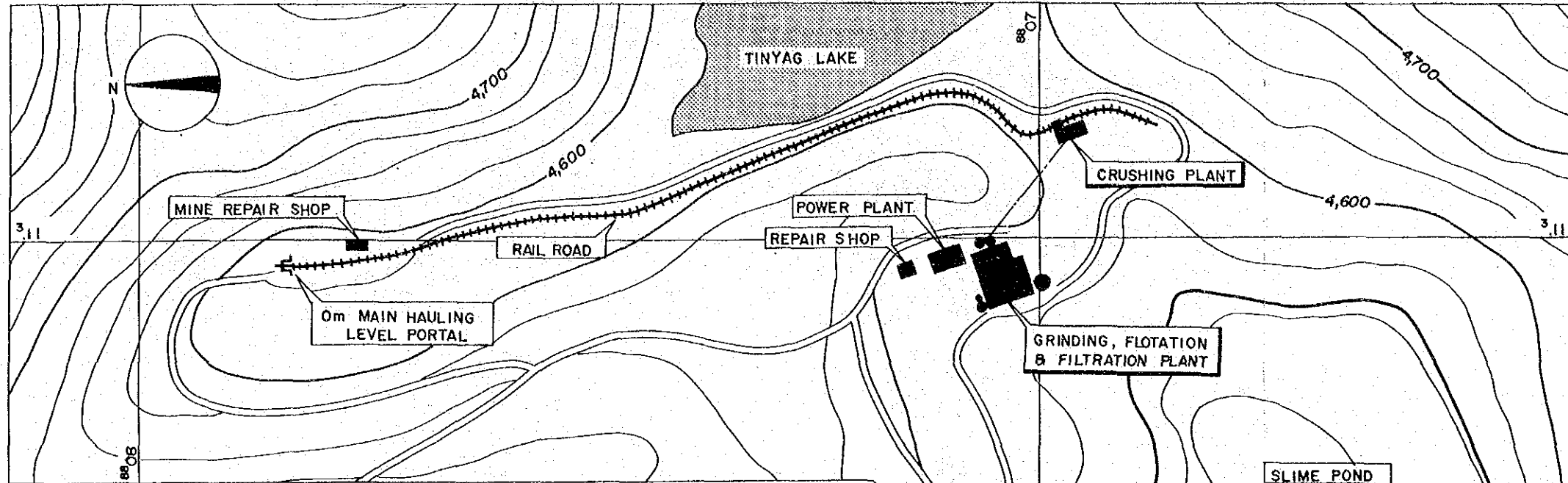
LEGEND:  
 OR ORE RAISE  
 WR-VR WASTE & VENTILATION RAISE  
 SR SERVICE RAISE  
 ~~~~~ FAULT



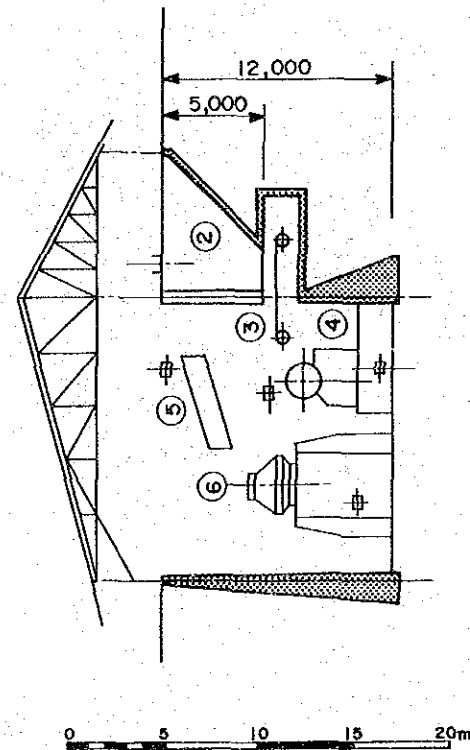
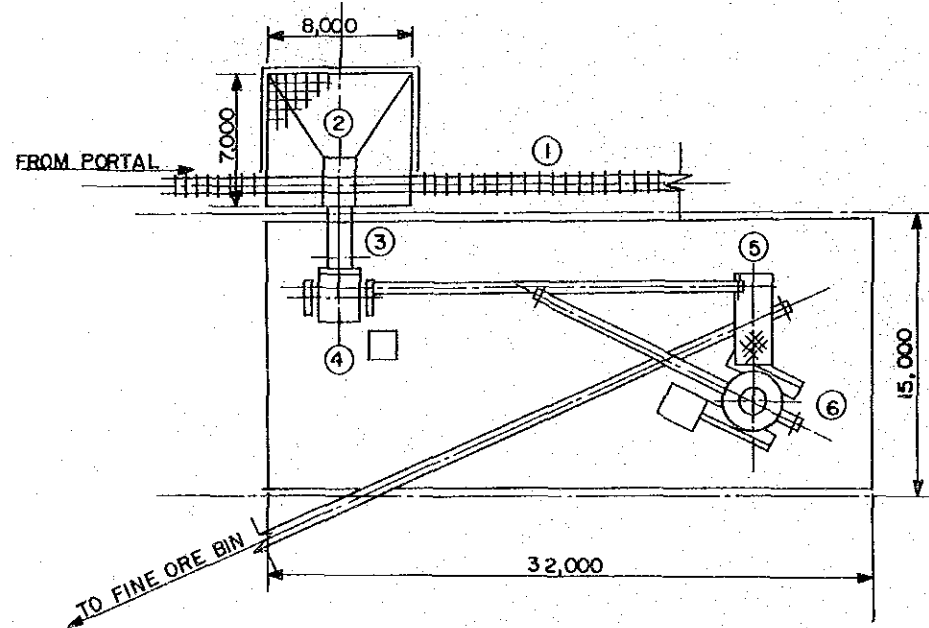
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| JAPAN INTERNATIONAL COOPERATION AGENCY<br>METAL MINING AGENCY OF JAPAN |        |
| ISCAYCRUZ PROJECT                                                      |        |
| UNDERGROUND STRUCTURE<br>PLAN                                          |        |
| DATE: FEBRUARY, 1986                                                   | SCALE: |
| DWG. NO.                                                               | 006    |



|                                                                        |
|------------------------------------------------------------------------|
| JAPAN INTERNATIONAL COOPERATION AGENCY<br>METAL MINING AGENCY OF JAPAN |
| ISCAYCRUZ PROJECT                                                      |
| CONCENTRATOR<br>BASIC FLOW DIAGRAM                                     |
| DATE: FEBRUARY, 1986   SCALE:                                          |
| DWG. NO. 007                                                           |

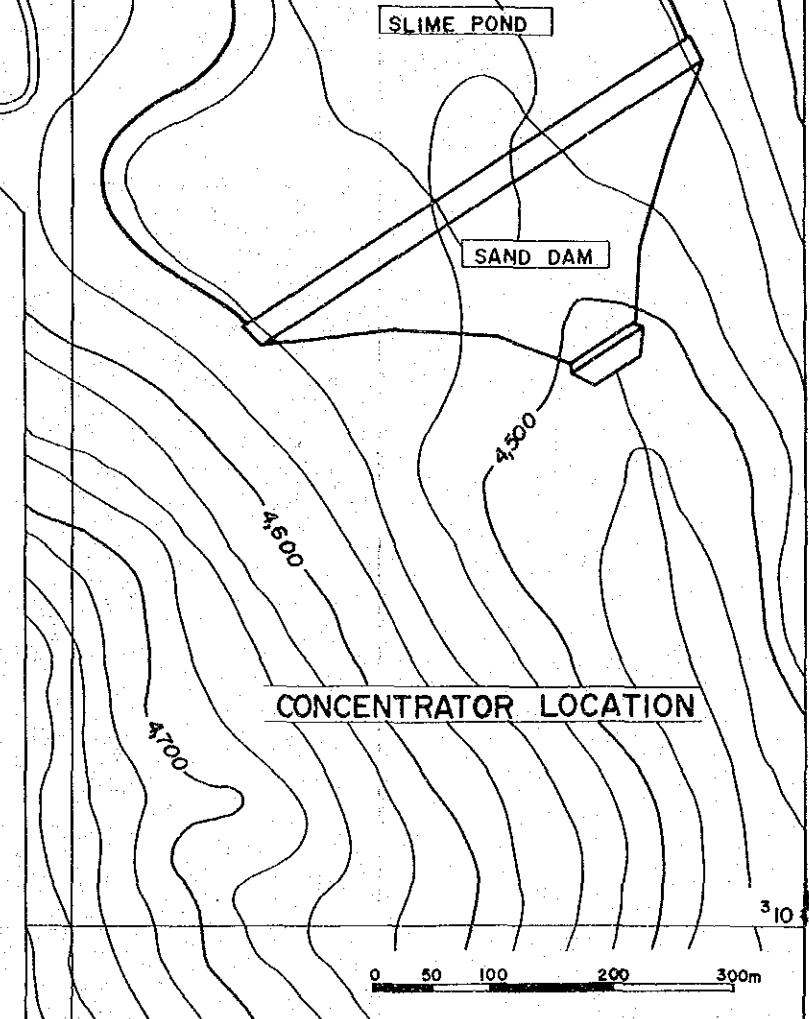


**CRUSHING PLANT**

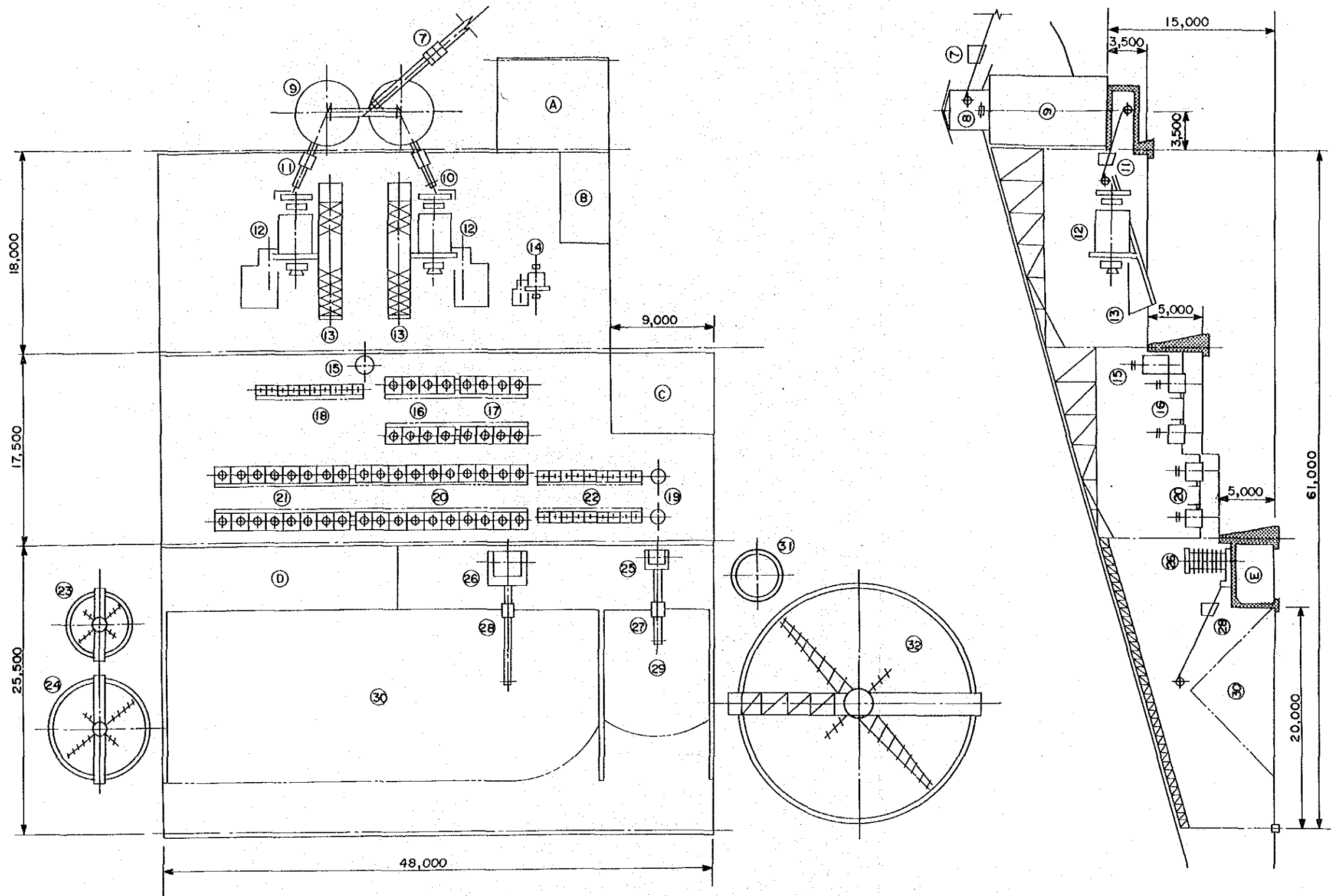


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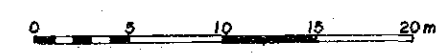
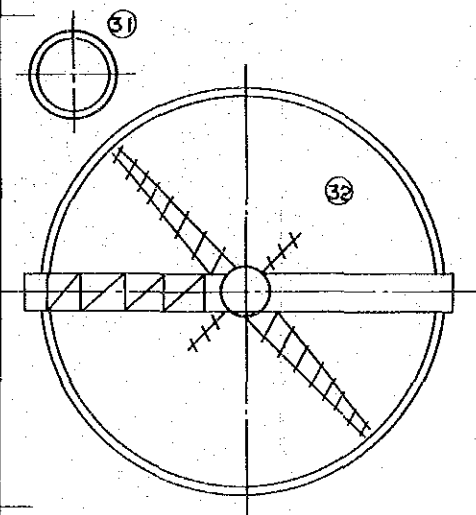
| ITEM | NAME             | NO. | SPEC.           |
|------|------------------|-----|-----------------|
| 1    | RAIL ROAD        | 1   | FOR MINE CAR    |
| 2    | COARSE ORE BIN   | 1   | Cap. 200t       |
| 3    | APRON FEEDER     | 1   | 40" x 5m        |
| 4    | ST CRUSHER       | 1   | 42" x 30"       |
| 5    | VIBRATING SCREEN | 1   | 6' x 14'        |
| 6    | CONE CRUSHER     | 1   | 5' s, HYDRAULIC |



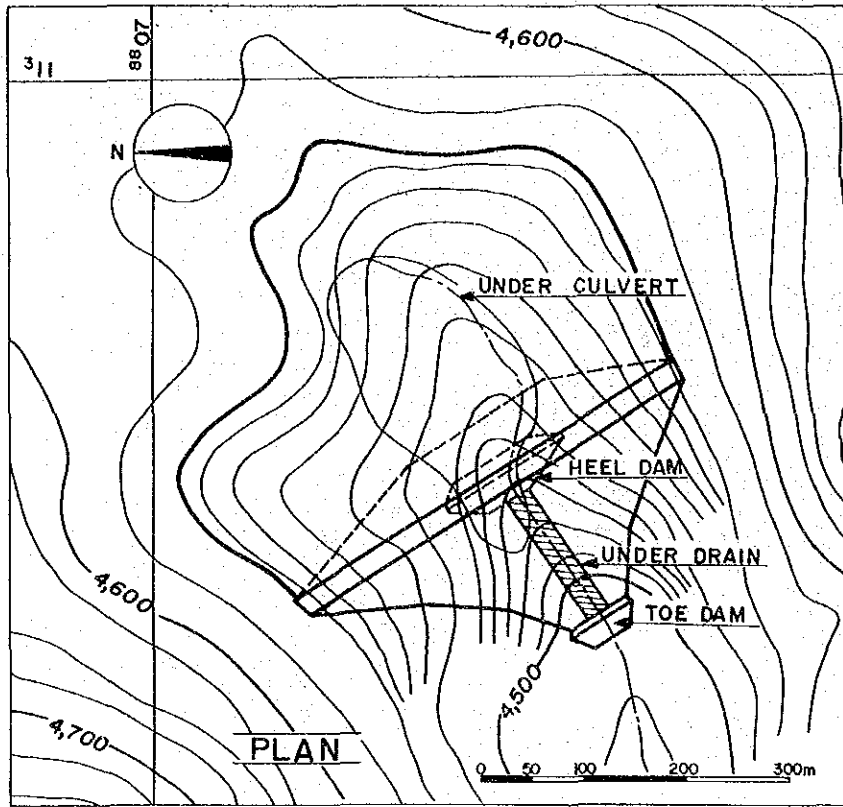
JAPAN INTERNATIONAL COOPERATION AGENCY  
 METAL MINING AGENCY OF JAPAN  
**ISCAYCRUZ PROJECT**  
**CONCENTRATOR LOCATION & CRUSHING PLANT**  
 DATE: FEBRUARY, 1986 | SCALE:  
 DWG. NO. **008**



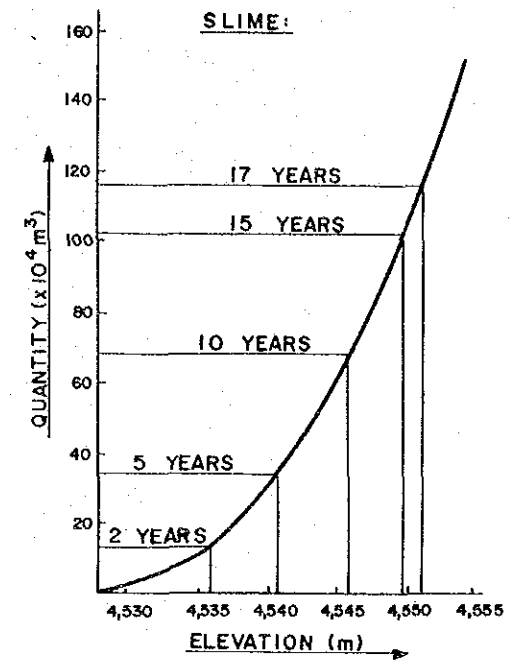
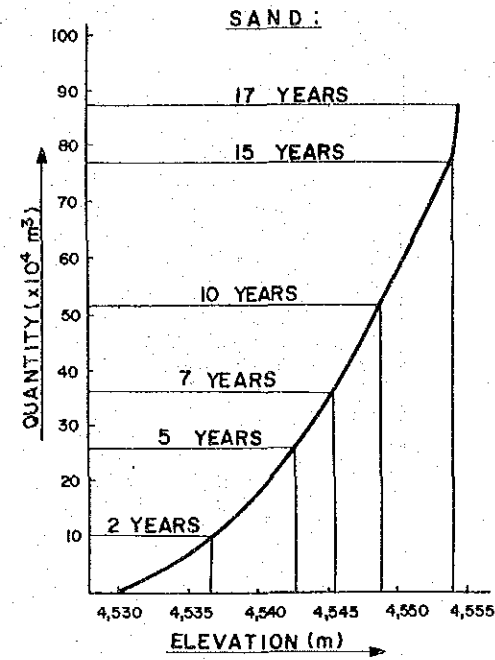
| ITEM | NAME              | NO.   | SPEC.                                | ITEM | NAME            | NO.    | SPEC.                               | ITEM | NAME              | NO. | SPEC.      |
|------|-------------------|-------|--------------------------------------|------|-----------------|--------|-------------------------------------|------|-------------------|-----|------------|
| 7    | WEIGHTOMETER      | 1     | Cap. 150 <sup>1</sup> / <sub>h</sub> | 18   | Pb CLEANER      | 10     | 21 ft <sup>3</sup> /cell.           | 29   | Pb STOCK YARD     | 1   | Cap 600t   |
| 8    | SHUTTLE CONVEYOR  | 1     | 24' x 6 m                            | 19   | Zn CONDITIONER  | 2      | 4' x 4'                             | 30   | Zn STOCK YARD     | 1   | Cap 5,000t |
| 9    | FINE ORE BIN      | 2     | 400 <sup>1</sup> / <sub>each</sub>   | 20   | Zn ROUGHER      | 2 x 10 | 60 ft <sup>3</sup> /cell            | 31   | CALLOW CONE       | 1   | 18 $\phi$  |
| 10   | BELT FEEDER       | 2     | 20' x 8 m                            | 21   | Zn SCAVENGER    | 2 x 8  | 60 ft <sup>3</sup> /cell            | 32   | TAILING THICKENER | 1   | 50' $\phi$ |
| 11   | WEIGHTOMETER      | 2     | Cap. 40 <sup>1</sup> / <sub>h</sub>  | 22   | Zn CLEANER      | 2 x 9  | 38 ft <sup>3</sup> /cell            |      |                   |     |            |
| 12   | BALL MILL         | 2     | 9' x 12'                             | 23   | Pb THICKENER    | 1      | 20' $\phi$                          |      |                   |     |            |
| 13   | SPIRAL CLASSIFIER | 2     | 72" $\phi$                           | 24   | Zn THICKENER    | 1      | 30' $\phi$                          |      |                   |     |            |
| 14   | REGRINDING MILL   | 1     | 6' x 6'                              | 25   | Pb PRESS FILTER | 1      | 17 ft <sup>2</sup> x 6 ch.          |      |                   |     |            |
| 15   | Pb CONDITIONER    | 1     | 5' x 5'                              | 26   | Zn PRESS FILTER | 1      | 17 ft <sup>2</sup> x 14 ch.         |      |                   |     |            |
| 16   | Pb ROUGHER        | 4 x 2 | 60 ft <sup>3</sup> /cell             | 27   | Pb WEIGHTOMETER | 1      | Cap. 2 <sup>1</sup> / <sub>h</sub>  |      |                   |     |            |
| 17   | Pb SCAVENGER      | 4 x 2 | 60 ft <sup>3</sup> /cell             | 28   | Zn WEIGHTOMETER | 1      | Cap. 20 <sup>1</sup> / <sub>h</sub> |      |                   |     |            |



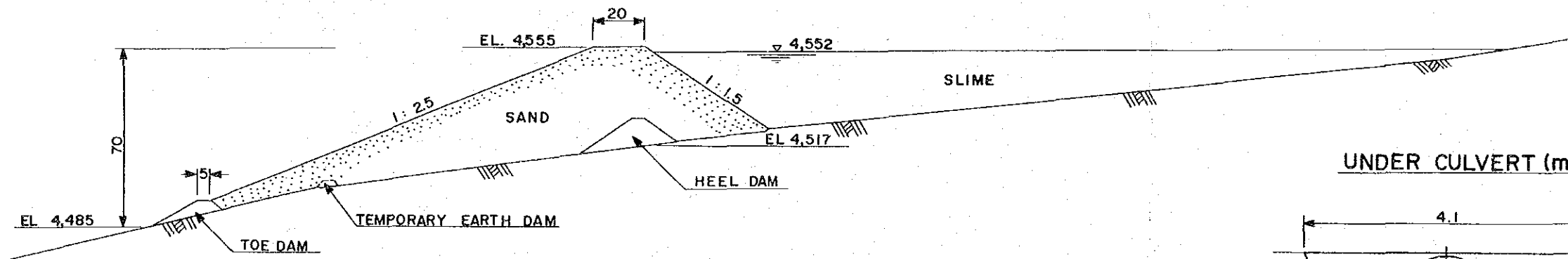
JAPAN INTERNATIONAL COOPERATION AGENCY  
 METAL MINING AGENCY OF JAPAN  
**ISCAICRUZ PROJECT**  
**CONCENTRATOR**  
**PLAN & SECTION**  
 DATE: FEBRUARY, 1986 SCALE:  
 DWG. NO. **009**



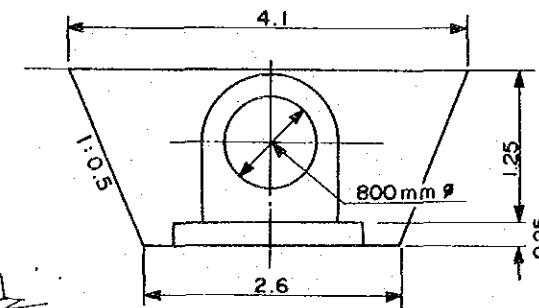
**STAGE-MASS CURVE**



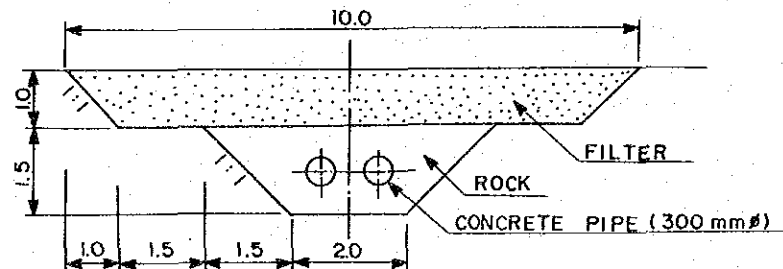
**LONGITUDINAL SECTION (m)**



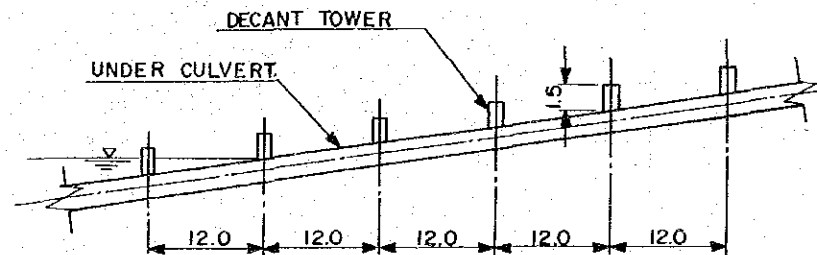
**UNDER CULVERT (m)**



**UNDER DRAIN (m)**

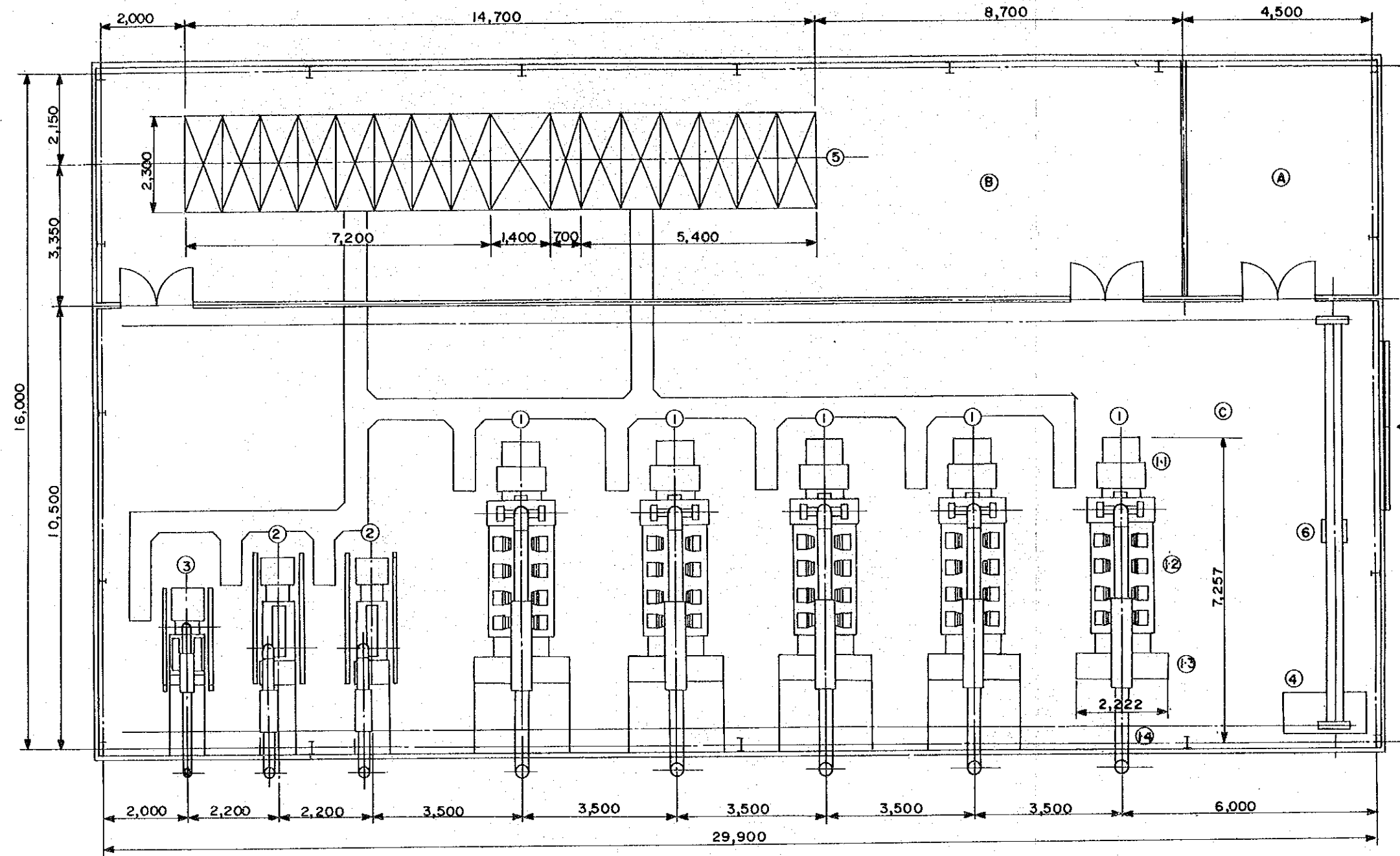


**DECANT TOWER (m)**



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**ISCAYCRUZ PROJECT**  
**TAILING POND**  
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 DWG. NO. 010





**LEGEND :**

- |     |                               |   |                                           |
|-----|-------------------------------|---|-------------------------------------------|
| 1   | 820KW DIESEL GENERATOR UNIT   | 5 | HIGH VOLTAGE SWITCHGEARS & CONTROL PANELS |
| 1-1 | GENERATOR                     | 6 | OVERHEAD CRANE                            |
| 1-2 | DIESEL ENGINE                 | A | STOCK ROOM                                |
| 1-3 | RADIATOR                      | B | CONTROL ROOM                              |
| 1-4 | EXHAUST DUCT                  | C | MAINTENANCE SPACE                         |
| 2   | 175 KW DIESEL GENERATOR UNIT. |   |                                           |
| 3   | 75KW DIESEL GENERATOR UNIT.   |   |                                           |
| 4   | FUEL OIL TANK                 |   |                                           |

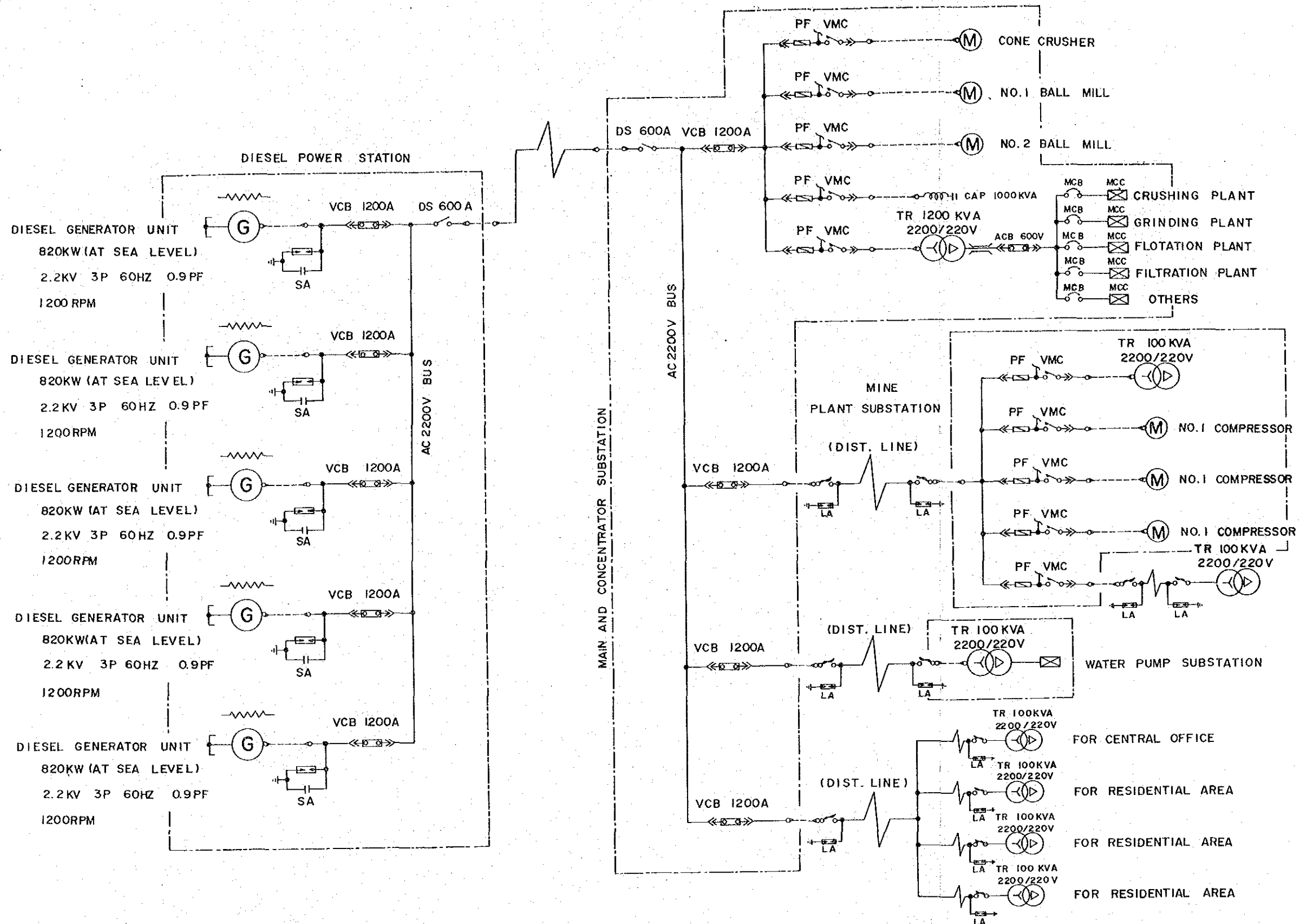
JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN

ISCAYCRUZ PROJECT

POWER PLANT  
GENERAL LAYOUT

DATE: FEBRUARY, 1966 | SCALE:  
DWG. NO.

011



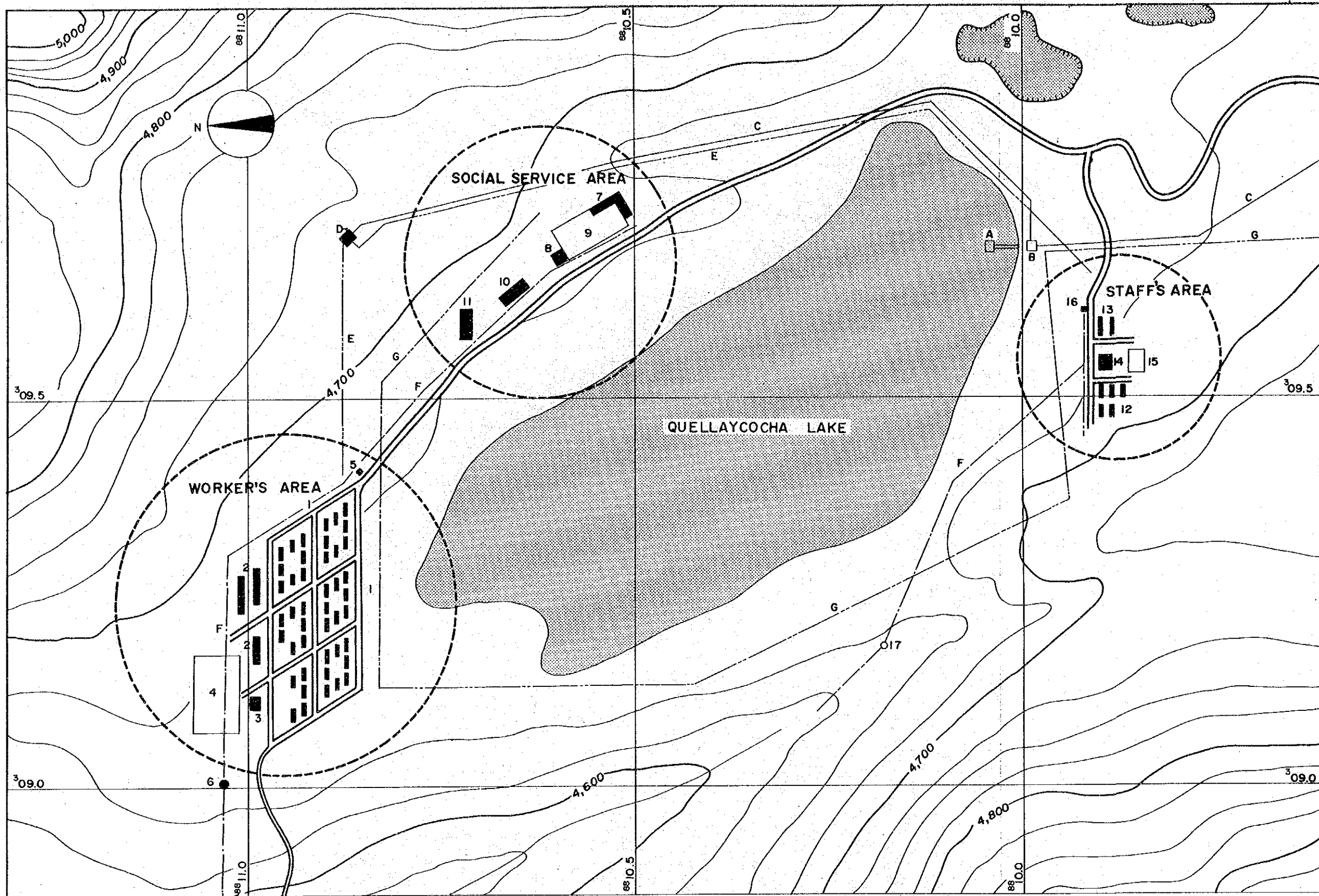
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METAL MINING AGENCY OF JAPAN

**ISCAYCRUZ PROJECT**

**ELECTRICAL POWER DISTRIBUTION SYSTEM**

DATE: FEBRUARY, 1986 | SCALE:

DWG. NO. 012



**WORKER'S AREA :**

- 1 FAMILY HOUSE
- 2 BACHELOR QUARTER
- 3 CLUB HOUSE
- 4 SOCCER COURT
- 5 GUARD HOUSE
- 6 SEPTIC TANK

**SOCIAL SERVICE AREA :**

- 7 ELEMENTARY SCHOOL
- 8 KINDERGARTEN
- 9 PLAYGROUND
- 10 CANTEEN
- 11 CLINIC

**STAFF'S AREA :**

- 12 FAMILY HOUSE
- 13 BACHELOR QUARTER
- 14 CLUB HOUSE
- 15 TENNIS COURT
- 16 GUARD HOUSE
- 17 SEPTIC TANK

**OTHERS :**

- A. PUMPING BOAT
- B. WATER PUMP STATION
- C. WATER TRANS. PIPELINE
- D. WATER TANK
- E. WATER DIST. PIPELINE
- F. SEWAGE MAIN PIPELINE
- G. POWER MAIN DIST. LINE

0 25 50 100 200 300m

JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN

**ISCAYCRUZ PROJECT**

**WELFARE FACILITIES  
RESIDENTIAL AREA**

DATE: FEBRUARY, 1966 SCALE:  
DWG. NO. **013**

79  
12  
1988