III-a (4) F/A-129 CHOSEN NITROGEN FERTILIZER

37

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PHOTO INTELLIGENCE SECTION
EVALUATION BRANCH
PHOTOGRAPHIC DIVISION
AC/AS, INTELLIGENCE

FUNCTIONAL ANALYSIS REPORT NO. F/A-129

Date 7 May 1945

TARGET NO: 84.2-1

NAME OF TARGET: CHOSEN NITROGEN FERTILIZER CO.

LOCATION: KONAN, KOREA COORDINATES: 39°51'N - 127°38' E

PHOTOGRAPHY:	Date	Mission	Prints
	21 Dec. 44	468BG/4MR44	2V:3-5 RV:92-95 LV:91-96

1. This report has been prepared from a study of aerial photographs and a consideration of evaluated ground information supplied by the Joint Target Group.

2. FUNCTION:

It is reported that the plant is the largest producer of basic war chemicals in the Japanese Empire; also, that the plant has a magnesium plant, and produces alumina, aluminum, small amounts of lead and copper, and some electric steel.

The photographs indicate the probable location of the reported installations with the exception of an electric steel plant.

The basic war chemicals manufactured include ammonia, nitric acid, sulphuric acid, glycerine and nitrogenous and phosphatic fertilizers.

3. LOCATION:

The plant is located on the east coast of KOREA adjoining the town of KONAN and approximately seven miles SSE of KANKO.

4. SERVICES:

The plant is serviced by the HAMGYONG MAIN LINE. There are three small marshalling yards nearby, and RR spurs run to different sections of the plant.

There are adequate highway connections to KONAN and KANKO.

Harbor facilities include a pier 2600 feet long with a 1500 foot warehouse. Large ships can be handled alongside and loaded by means of modern heavy cranes and conveyors. A RR spur runs along the pier.

The plant has electric power available from two nearby hydro-electric power systems.

5. IDENTIFICATION OF FACILITIES:

1. Lead smelters and concentrators
2. Lead refinery
3. Unidentified
4. Copper electrolysis
5. Probable contact sulphuric acid plant
6. Four 30' tanks
7-8. Unidentified
9. Building associated with No. 5
10-11. Smelters probably for copper
12. Unidentified
13. Roasting and sintering building probably for copper ore
14. Probably conditioning and roasting of lead ore
15. Ore concentration building
16. Unidentified

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5. IDENTIFICATION OF FACILITIES:

17-22. Storage
23. Warehouse in three sections totaling approximately 1500' long with four travelling cranes and a 40-ton crane near the south end.
24-27. Four 45' fuel storage tanks
28. Possible distillation towers
29. Unidentified
30. Unidentified, however it is connected by pipeline to the probable Sulphuric Acid Plant No. 55
31. Unidentified
32. Superphosphate manufacture and storage
33-34. Buildings associated with No. 35
35. Distillation and refinery of fish oils and glycerine
36-39. Buildings associated with No. 35
40. 20' storage tank with an adjoining smaller tank
41. Probable customs office building
42. Warehouse
43. 95' fish oil storage tank
44. Unidentified building with two 20' tanks alongside
45-48. Four 70' fish oil tanks
50. Probable water tank
51. Four 35' fish oil or glycerine storage tanks
52. Two 30' storage tanks for building No. 55
53. Building associated with No. 55
54. Two 30' storage tanks for building No. 55
55. Sulphuric acid manufacture
56. One 60' and two 30' storage tanks for building No. 55
57. Building associated with No. 55
58. One 60' and two 30' storage tanks for building No. 55
59. Two 30' storage tanks for building No. 62
60. Building associated with No. 62
61. Two 30' storage tanks for building No. 62
62. Sulphuric acid manufacture
63. Two 30' storage tanks for building No. 62
64. Building associated with No. 62
65. One 60' and two 30' storage tanks for building No. 62
66,68. Probable Phosphoric Acid Plant
67. Six 55' vats
69. 60' storage tanks for building No. 68
70. Group of four cooling towers for building No. 68
71. Building associated with No. 68
72-75. Unidentified
76. Warehouse
77-78. Unidentified
79. 40' gasholder
80. Unidentified
81a. Ammonium Sulphate production
b. Fertilizer drying and storage
82. Western end for fertilizer drying and storage; eastern end for Ammonium Sulphate production
83. Fertilizer manufacture and storage
84-85. Unidentified
86-87. Probable boiler house
88. 30' tank
89. 60' base of dismantled gas holder
90,91. Four 30' water tower tanks with open tops
92-96. Administrative offices and laboratories
97a. Ammonia convertor building
b. Compressor building
98-100. Unidentified
101-116. 16 gasholders each 70' diam. Some of these, most probably some of those adjacent to #120 (a) are for hydrogen storage, and some, most probably some of those adjacent to #98,99,100 are for nitro-
49. Unidentified

5. IDENTIFICATION OF FACILITIES:

gen storage. Amongst the group there must be some for oxygen storage, the gas coming from the activities of #120(a) and #117-119.

117-119.	Air liquefaction and nitrogen fractionation
120a.	Electrolysis building for hydrogen production
b.	Rotary convertors for obtaining direct current
121-125.	Unidentified
126.	Building under construction
127a.	Probable machine shop
b.	Extension under construction
128-130.	Shops
131-136.	Unidentified
137.	Storage
138-139.	Shops
140.	Storage
141.	Control house for transformer station
142.	Transformers
143.	Building connected with No. 141
144.	Probable carbon electrode casing plant
145.	Possible rolling mill
146.	Unidentified
147.	Eastern two bays originally reported to be carbon electrode plant. The building has been tripled in size and may now be used as a rolling mill.
148.	Probable machine shop
149-151.	Unidentified
152.	Probable machine shop
153-154.	Unidentified, possibly Synthetic Cryolite plant
155-157.	Storage
158.	55' gasholder probably for water gas
159-161.	85' gasholder probably for water gas
162-165.	Water gas plant
165.	Building reported to contain Winkler Generators
166-169.	Carbothermic Magnesium Plant
167a.	Rotary kiln
b.	Crushing and briquetting plant
c.	Electric reduction furnace building
d.	Area containing wool-bag filters
169.	Retort building and possibly alloying and casting
170a.	Aluminum pot rooms
b.	Rectifier building
c.	Probable alumina storage
d.	Remelt and alloying
e.	Probable pot room under construction
171.	Possible carbon paste building-east section of building under construction
172.	Probable cryolite recovery building
173.	New construction, possibility that foundations may be for furnaces
174-180.	Unidentified
181.	Leaching, filtering and clarifiers
182.	Precipitation, and filters, thickeners
183.	Unidentified
184.	Rotary kiln
185a.	Continuation of sintering process
b.	Coolers
186.	Possible boiler house
187.	Gasholder 55' diameter
188.	Probable crushing of the calcium aluminate
189.	Probable rotary kiln for calcining the compound to form alumina
190.	Preliminary driers

F/A-129 (Cont'd):

5. IDENTIFICATION OF FACILITIES:

191-192.	Storage
193.	Ore crushing and washing and preparation
194-199.	Secondary alumina plant under construction
200.	Transformers
201.	Control house for transformer station

6. DISCUSSION:

(a) #165 is reported to be a Winkler water-gas generator assembly; but no resemblance to known installations can be noted from either aerial or ground photos. Moreover, no coal handling equipment can be seen. The only apparent function for such an installation would be as an intermediate step in the production of hydrogen to supplement that electrolytically produced in case of power shortages.

(b) The reported nitric acid plant can not be identified as no absorption towers nor acid storage tanks can be seen. It is very logical that nitric acid be produced here particularly in view of requirements for it at the associated explosives plant (Target 84.2-2) located 1 mile to the W. The plant may therefore be entirely under cover and its most probable location is in the general vicinity of buildings #82, 83, 119.

(c) No evidence on the aerial photos can be found of the reported coke ovens, blast furnaces, nor electric furnaces.

7. ACTIVITY:

The plant appears very active for the following reasons:

1. Steam issuing from acid manufacturing and glycerine manufacturing plant.
2. Smoke from magnesium, alumina, copper and lead plants
3. Ore piles of alunite and limestone
4. Piles of coal
5. The movement of vehicles on the roads, the RR traffic including around 200 freight cars in and near the plant and four ships around 200 feet along the wharves.
6. The extent of new construction.

ENCL: 750.052

INTERPRETED BY:

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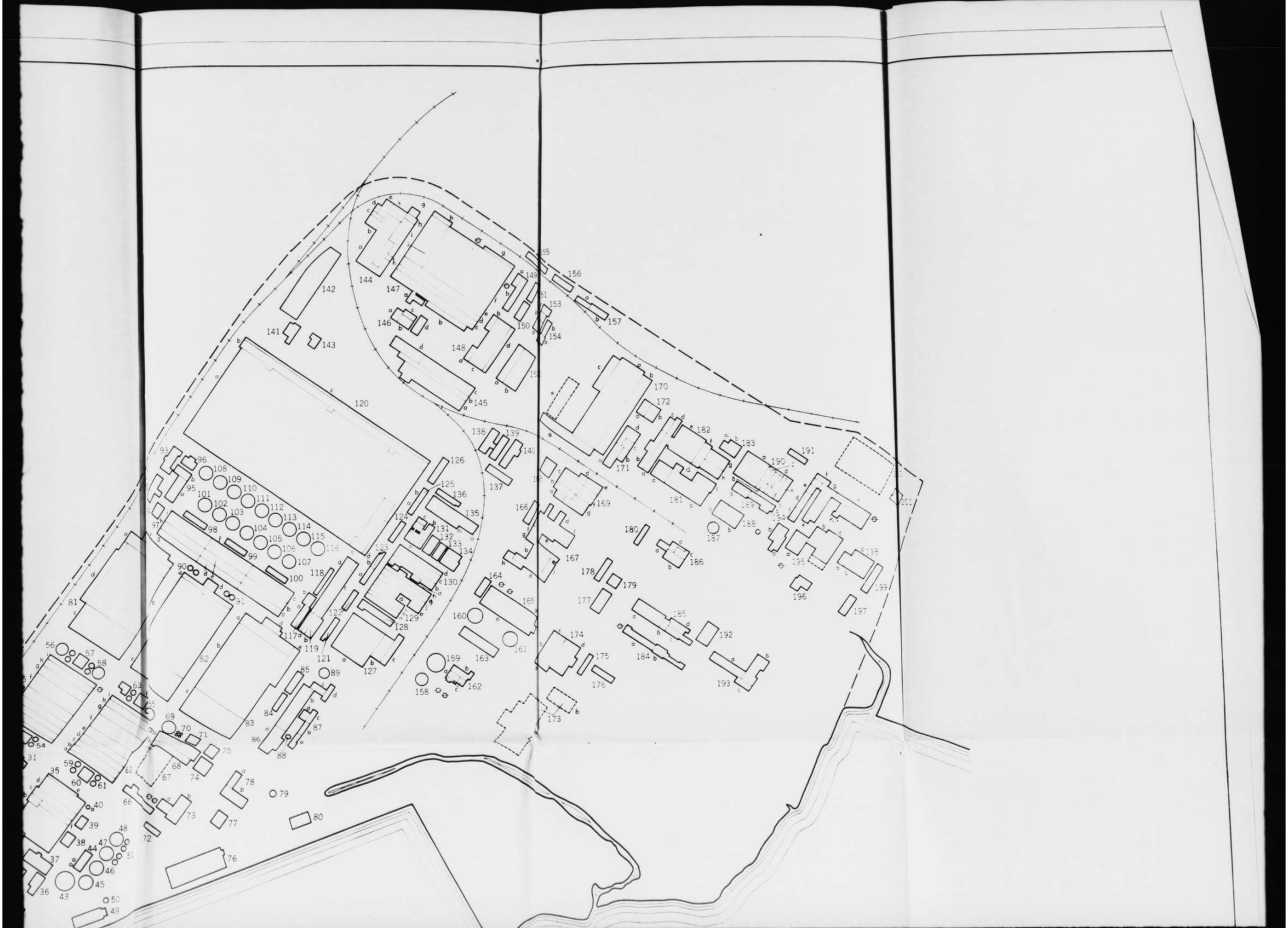

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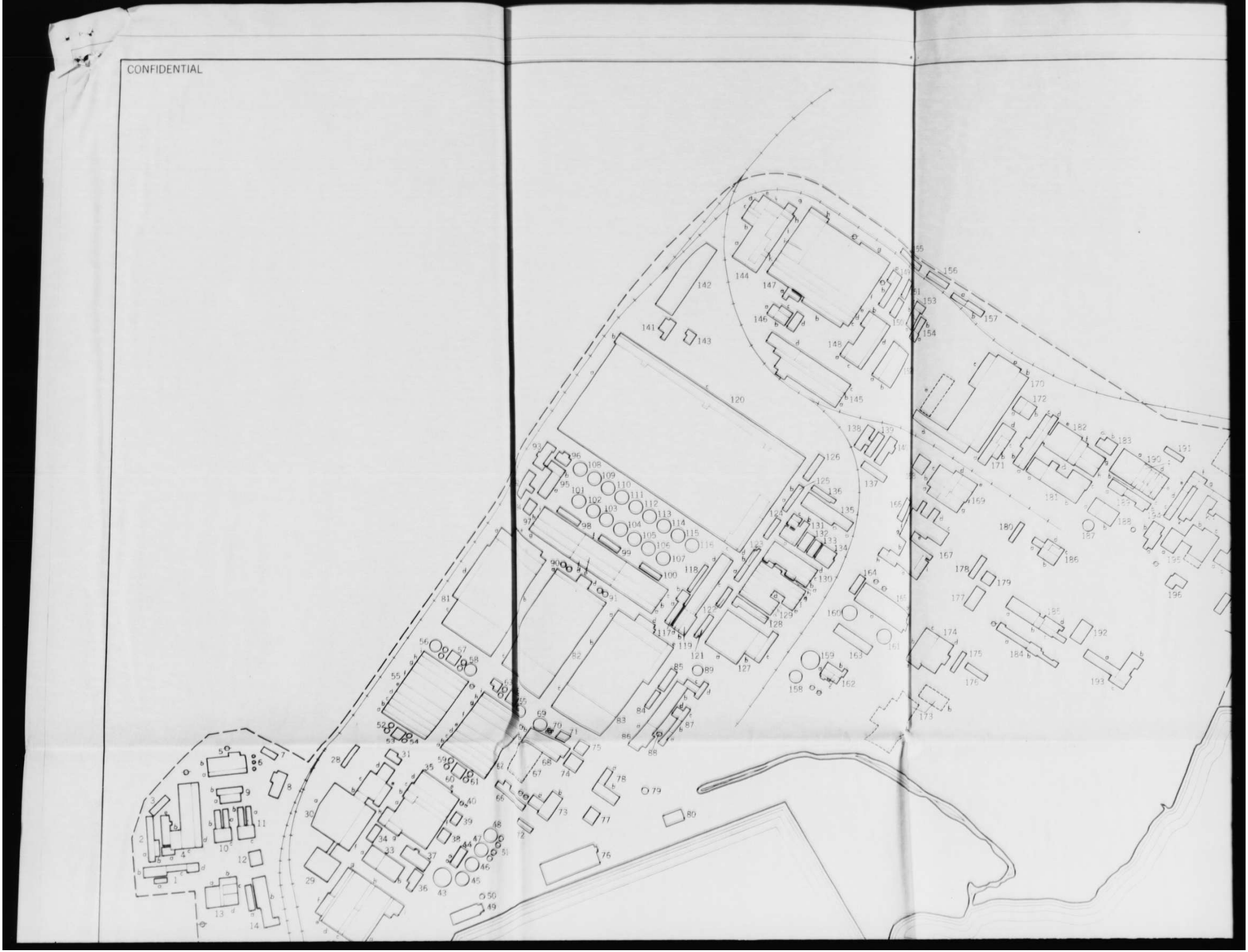

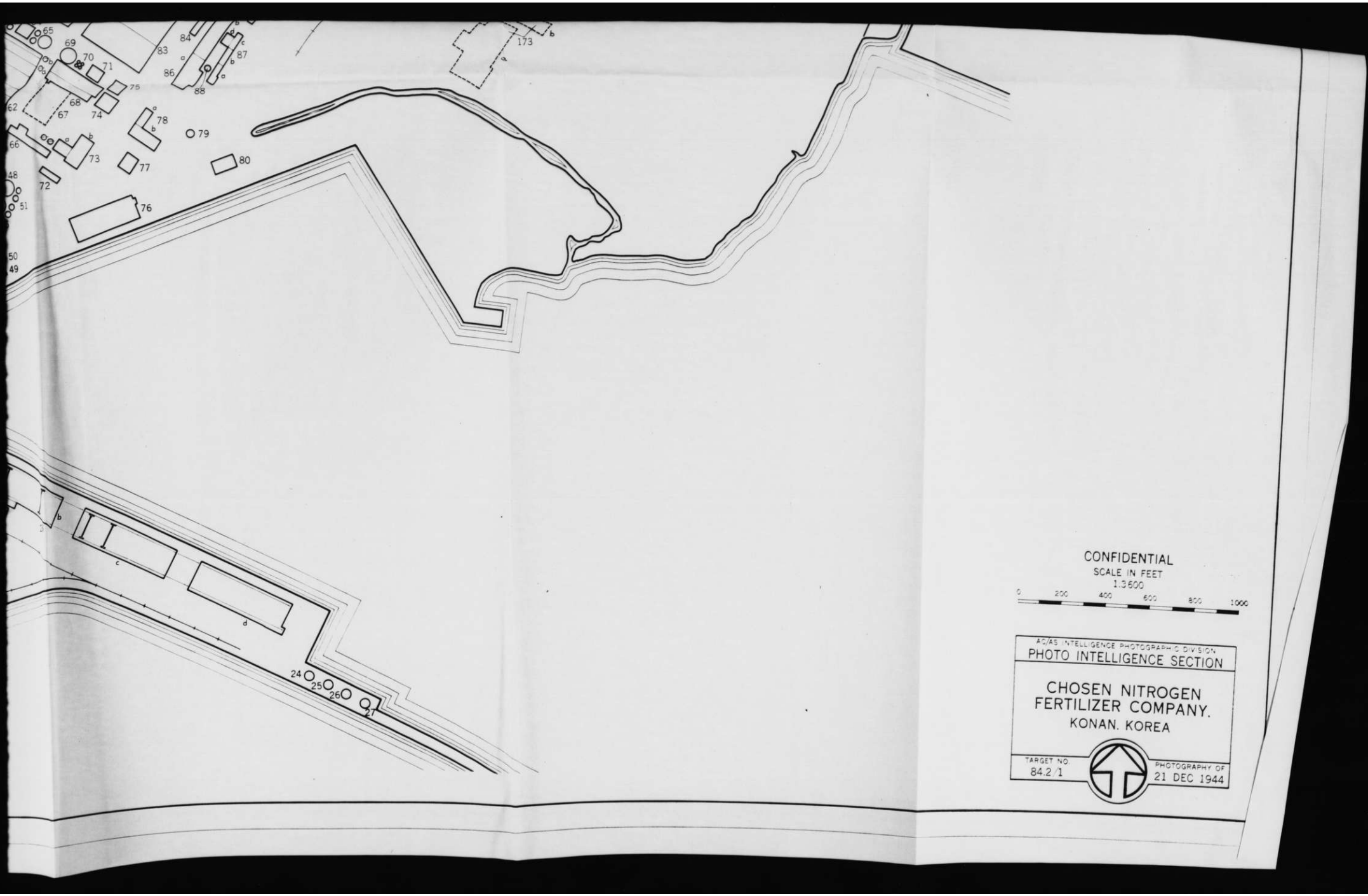
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FERTILIZER COMPANY.
KONAN. KOREA
TARGET NO.
84.2/1
PHOTOGRAPHY OF
21 DEC 1944

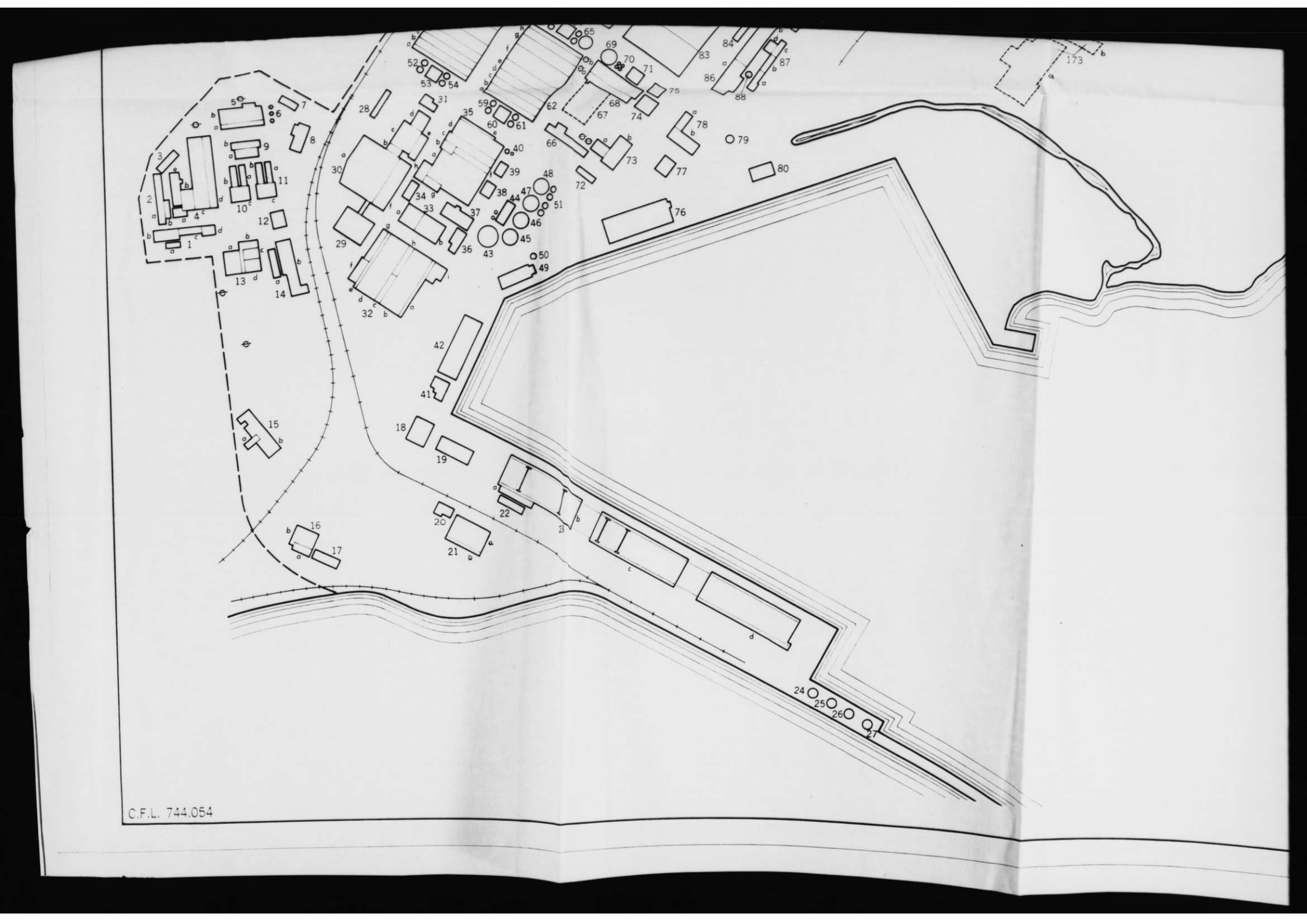

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PHOTO INTELLIGENCE SECTION

S/A-54

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PAGE 1 OF 19 PAGES
DATE: 22 MAY 1945
REVISED:

BUILDING CONSTRUCTION ANALYSIS

TARGET: CHOSEN NITROGEN FERTILIZER CO.
LOCATION: KONAN, KOREA. COORDINATES: 39°51'N 127°38'E

AREA & TARGET NO. 84.2-1

	DATE	MISSION	PRINT NOS	PLAN SCALE	SHADOW SCALE	QUALITY
PHOTOGRAPHY	2 Dec 944	468BG/4MRAG	2V 1-5	1:12,200		GOOD
	Do	Do	RV 92, 94-95			Do
	Do	Do	RV 93	1:7,300	1:3,500	Do
	Do	Do	LV 92, 95-96			Do
	Do	Do	LV 93&94	1:7,400	1:3,550	Do

SUMMARY
(SEE FOLLOWING PAGES FOR DETAILS)

26.2% BUILT-UP.

TOTALS

NO OF BLDGS	TOTAL PLAN AREA OF BUILDINGS	1000'S OF SQ FT	TOTAL FLOOR AREA OF BUILDINGS	1000'S OF SQ FT	TOTAL SITE AREA	1000'S OF SQ FT
201	4,686.2		4,734.9		17,800	

SUBTOTALS AND PERCENTAGES

REVISED ITEM	CLASSIFICATION FLOORS	H.E.VUL.	CONST. TYPE	COMBUSTIBILITY PLAN AREA, SUBTOTAL R	N	C	TOTAL	COMBUSTIBILITY PERCENT OF TOTAL PLAN AREA R	N	C	TOTAL
	1	V2	B1	480.3			480.3	10.3			10.3
			B2	388.9			388.9	8.3			8.3
		V4	A2.3	2724.1		1821	2906.2	58.3		39	62.2
			A24	207.7			207.7	4.4			4.4
			D			427.0	427.0			9.0	9.0
		SPL	S	234.2			234.2		5.0		5.0
	SUB TOTAL ONE STORY			207.7	3827.5	609.1	4644.3	4.4	81.9	12.9	99.2
	2	V3	E2	6.3	4.9		11.2	.1	.1		.2
		V3A	F2			25.5	25.5			.5	.5
	SUB TOTAL TWO STORY			6.3	4.9	25.5	36.7	.1	.1	.5	.7
	3	V3	E2			5.2	5.2			.1	.1
	SUB TOTAL THREE STORY					5.2	5.2			.1	.1
			TOTALS	214.0	3832.4	639.8	4686.2	4.5	82.0	13.5	100.0

PREPARED FROM A STUDY OF AERIAL PHOTOGRAPHS AND A CONSIDERATION OF EVALUATED GROUND INFORMATION SUPPLIED BY THE JOINT TARGET GROUP

INTERPRETER D ROWELL, Lt(jg) USNR | JTG CONSULTANT M. ATKIN

LEGEND: CONSTRUCTION TYPE SYMBOLS

1-STORY, AREA > 10,000 SQ FT, SPAN < 75 FT, NO CRANES	SAWTOOTH	ALL SAWTOOTH EXCEPT A1.2, A1.3, A1.4	A1.1	1-STORY, AREA > 10,000 SQ FT, SPAN > 75', NO CRANES		WITH HEAVY TRAV CRANE, EAVE HT > 30'	B1	1-STORY, < 10,000 SQ FT, ANY CONSTR'N			D
		R C FRAME & ROOF SLAB	A1.2			WITH LIGHT TRAV CRANE, EAVE HT < 30'	B2				
		TOP CHORDS EXPOSED	A1.3		2-WAY FRAME	COLUMNS 1 SIDE, LONG TRUSSES 3 SIDES	C1.1	MULTI-STORY	FRAMED, EARTHQUAKE RESISTANT		E1
		STRESSED SKIN R C	A1.4			TRUSSES CONTINUOUS, 1 OR 2 DIRECTIONS	C1.2		FRAMED, OTHER		E2
						SAWTOOTH, TOP CHORDS EXPOSED	C1.3				
	NON SAWTOOTH	BEAMS & COLUMNS	A2.1			DIAMOND MESH ARCH	C1.4		WALL-BEARING, EARTHQUAKE RESISTANT		F1
		ARCHES & RIGID FRAMES	A2.2		1-WAY	ARCHES	C2.1		WALL-BEARING, OTHER		F2
		TRUSSES	A2.3			TRIANGULAR & BOWSTRING TRUSSES	C2.2				
		R C FRAME & ROOF SLAB	A2.4			FLAT TRUSSES (INCL EXP CHORD SAWTOOTH)	C2.3		SPECIAL INDUSTRIAL STRUCTURES		S
		STRESSED SKIN INCL R C SHELL	A2.5			STRESSED SKIN INCL R C SHELL	C3				

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BUILDING CONSTRUCTION ANALYSIS CONTINUED

AREA & TARGET NO: 84.2-1

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DATE: 22 MAY 1945
REVISED:

R=REVISED	SECONDARY	REF NUMBER	REF SUBDIVISION	OCCUPANCY	LENGTH, FT	WIDTH, FT	PLAN AREA 1000'S OF SQ FT	NO OF FLOORS	FLOOR AREA 1000'S OF SQ FT	HEIGHT TO EAVES	HEIGHT TO RIDGE	SIZE OF BAY	ROOF MATERIAL	CONSTRUCTION TYPE	COMBUSTIBILITY*	H E VULNERABILITY**
		1		LEAD SMELTERS & CONCENTRATORS				1	14.2				LIGHT	A2.3	N	V4
			a	↓	65	30	1.9			30		30				
			b		120	50	6.0			25		50				
			c		100	30	3.0			25		30				
			d	↓	55	60	3.3			25		60				
		2		LEAD REFINERY				1	9.5				LIGHT	D	C	V4
			a	↓	250	30	7.5			15		30				
			b	↓	80	25	2.0			15		25				
		3		UNIDENTIFIED	120	40	4.8	1	4.8	12		40	LIGHT	D	C	V4
		4		COPPER ELECTROLYSIS				1	51.0				LIGHT	B2	N	V2
			a	↓	60	45	2.7			25		45				
			b		95	60	5.7			25		60				
			c		350	75	26.2			25		75				
			d		350	30	10.5			18		30				
			e	↓	170	35	5.9			30		35				
		5		PROBABLE CONTACT SULPHURIC ACID PLANT				1	20.0				LIGHT	A2.3	N	V4
			a	↓	200	30	6.0			20		30				
			b	↓	200	70	14.0			35		70				
		6		THREE 30' TANKS			2.1	1	2.1	20				S	N	SPL
		7		UNIDENTIFIED	95	35	3.3	1	3.3	25		35	LIGHT	D	C	V4
		8		↓	135	50	6.7	1	6.7	25		50	LIGHT	D	C	V4
		9		ASSOCIATED WITH #5				1	11.0				LIGHT	A2.3	N	V4
			a	↓	110	45	4.9			25		22				
			b	↓	135	45	6.1			25		22				
		10		PROBABLE COPPER SMELTERS				1	10.0				LIGHT	A2.3	N	V4
			a		100	20	2.0			25		20				
			b		100	20	2.0			25		20				
			c	↓	80	75	6.0			40		75				
							132.6		132.6	✓						

*R=FIRE-RESISTANT, N=NON-COMBUSTIBLE, C=COMBUSTIBLE; C/R (MULTI-STORY BLDGS ONLY) ="C" ROOF, REMAINDER "R"
**V1 IS LEAST VULNERABLE TO H E ATTACK, V2 IS MORE VULNERABLE AND SO ON. SEE JTG MEMO NO JTG/M/3/1, REVISED.

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BUILDING CONSTRUCTION ANALYSIS CONTINUED

AREA & TARGET NO: 84.2-1

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PAGE 3 OF 19 PAGES
DATE: 22 MAY 1945
REVISED:

R=REVISED	PRIMARY / SECONDARY	REF NUMBER	REF SUBDIVISION	OCCUPANCY	LENGTH, FT	WIDTH, FT	PLAN AREA 1000'S OF SQ FT	NO OF FLOORS	FLOOR AREA 1000'S OF SQ FT	HEIGHT TO EAVES	HEIGHT TO RIDGE	SIZE OF BAY	ROOF MATERIAL	CONSTRUCTION TYPE	COMBUSTIBILITY*	H E VULNERABILITY**
		11		PROBABLE COPPER SMELTER?				1	10.0				LIGHT	A2.3	N	V4
			a		100	20	2.0			25		20				
			b		100	20	2.0			25		20				
			c		80	75	6.0			40		75 ·				
		12		UNIDENTIFIED	75	60	4.5	1	4.5	25		60 ·	LIGHT	D	C	V4
		13		PROBABLE COPPER ORE ROASTING & SINTERING				1	19.0				LIGHT	A2.3	N	V4
			a		110	75	8.2					75 ·				
			b		80 110	30 15	4.0					30 ·				
			c		65	45	2.9					45 ·				
			d		65	60	3.9					30				
		14		PROBABLE LEAD ORE CONDITIONING & ROASTING				1	21.1				LIGHT	A2.3	N	V4
			a		140	35	4.9				15	35 ·				
			b		250	65	16.2				28	65 ·				
		15		ORE CONSENTRATION BUILDING				1	18.3				LIGHT	A2.3	N	V4
			a		70	30	2.1				15	15				
			b		250	65	16.2				15	32				
		16		UNIDENTIFIED				1	11.0				LIGHT	A2.3	N	V4
			a		80	35	2.8				15	35 ·				
			b		110	75	8.2				15	25				
		17		STORAGE	120	35	4.2	1	4.2	15		35 ·	LIGHT	D	C	V4
		18			120	90	10.8	1	10.8	15		30	LIGHT	A2.3	C	V4
		19			170	60	10.2	1	10.2	15		30 ·	LIGHT	A2.3	C	V4
		20			95	75	7.1	1	7.1	15		37 ·	LIGHT	D	C	V4
		21						1	20.7				LIGHT	A2.3	N	V4
			a		180	45	8.1				20	45				
			b		180	70	12.6				18	70				
							136.9		136.9							

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BUILDING CONSTRUCTION ANALYSIS CONTINUED

AREA & TARGET NO: 84.2-1

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PAGE 4 OF 19 PAGES
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	22		STORAGE	30	35	4.5	1	4.5	15		35.	LIGHT	D	C	V4
	23		WAREHOUSE				1	207.7				4"-6" Conc.	A24	R	V4
		a		175	30	5.2			15		15				
		b		450	150	67.5			25		15				
		c		450	150	67.5			25		15				
		d	"	450	150	67.5			25		15				
	24-27		FOUR 45' FUEL STORAGE TANKS			6.4	1	6.4	30				S	N	SPL
	28		POSSIBLE DISTILLATION TOWERS	110	20	2.2	1	2.2	15				S	N	SPL
	29		UNIDENTIFIED	150	110	16.5	1	16.5	25		27	LIGHT	A23	N	V4
	30						1	89.6				LIGHT	A23	N	V4
		a		200	250	50.0			25		35 ·				
		b		75	35	2.6			25		35				
		c		120	105	12.6			25		35 ·				
		d		75	60	4.5			15		30 ·				
		e		105	35	3.7			25		35 ·				
		f		65	250	16.2			25		35 ·				
	31		"	85	35	3.0	1	3.0	15		35 ·	LIGHT	D	C	V4
	32		SUPERPHOSPHATE MFG. & STORAGE.				1	105.7				LIGHT	A23	N	V4
		a		350	15	5.2			30		15				
		b		105	350	36.8					35 ·				
		c		175	30	5.2			30		30 ·				
		d		105	350	36.8			25		35 ·				
		e		350	15	5.2			30		15				
		f		125	45	5.6			30		45 ·				
		g		40	175	7.0			25		35 ·				
		h		175	15	2.6			30		15				
		i	"	65	60	3.9			40		60 ·				
						435.6		435.6							

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BUILDING CONSTRUCTION ANALYSIS CONTINUED

AREA & TARGET NO: 84.2-1

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PAGE 5 OF 19 PAGES
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		33		ASSOCIATED WITH #35			20.0	1	20.0				LIGHT	A23	N	V4
			a	"	90	95				40		47 ·				
			b	"	120	95				15		23 ·				
		34		"	90	45	4.0	1	4.0	15		45 ·	LIGHT	D	C	V4
		35		DISTILLATION OF FISH OILS & GLYCERINE				1	81.5				LIGHT	B1	N	V2
			a	"	260	140	36.4			30		46 ·				
			b	"	75	35	2.6			25		35 ·				
			c	"	265	35	9.3			25		35 ·				
			d	"	260	60	15.6			30		30 ·				
			e	"	200	15	3.0			30		15				
			f	"	190	35	6.6			25		35 ·				
			g	"	90	45	4.0			30		45 ·				
			h	"	90	45	4.0			30		45 ·				
		36		ASSOCIATED WITH #35	100 75	35 30	5.7	1	5.7	15		35 30	LIGHT	D	C	V4
		37			105	50	5.2	1	5.2	15		25	LIGHT	D	C	V4
		38			60	60	3.6	1	3.6	15		15	LIGHT	D	C	V4
		39		"	45	60	2.7	1	2.7	15		15	LIGHT	D	C	V4
		40		20' STORAGE TANK WITH ADJOINING TANK.			0.4	1	0.4	15				S	N	SPL
		41		PROBABLE CUSTOMS OFFICE BUILDING.	105	45	4.7	2	9.4	22		18	MILL CONST. BLT UP ON 2" SHEA	F2	C	V3A
		42		WAREHOUSE	300	95	28.5	1	28.5	15		31	LIGHT	A23	C	V4
		43		95' FISH OIL STORAGE TANK			7.1	1	7.1	35				S	N	SPL
		44		UNIDENTIFIED	110	60	6.6	1	6.6	15		60 ·	LIGHT	D	C	V4
		45-48		FOUR 70' FISH OIL STORAGE TANKS.			15.4	1	15.4	35				S	N	SPL
							185.4		190.1							

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		49		UNIDENTIFIED	195	50	9.2	1	9.2	15		50	LIGHT	D	C	V4
		50		PROBABLE WATER TANK		30'	0.7	1	0.7	35				S	C	SPL
		51		FOUR 35' FISH OIL TANKS			3.9	1	3.9	30				S	N	SPL
		52		TWO 30' STORAGE TANKS			1.4	1	1.4	15				S	N	SPL
		53		ASSOCIATED WITH #55	60	60	3.6	1	3.6	15		60	LIGHT	D	C	V4
		54		TWO 30' STORAGE TANKS			1.4	1	1.4	15				S	N	SPL
		55		SULPHURIC ACID MANUFACTURE.				1	14.0				LIGHT	A23	N	V4
			a		300	30	9.0			25		30				
			b		300	35	10.5			30		35				
			c		300	35	10.5			35		35				
			d		300	35	10.5			35		35				
			e		300	45	13.5			35		45				
			f		300	90	27.0			30		45				
			g		300	45	13.5			40		45				
			h		300	35	10.5			—		35				
			i		300	30	9.0			25		30				
		56		ONE 60' & TWO 30' STORAGE TANKS			11.2	1	11.2	25				S	N	SPL
		57		ASSOCIATED WITH #55	60	60	3.6	1	3.6	15		60	LIGHT	D	C	V4
		58		ONE 60' & TWO 30' STORAGE TANKS			4.2	1	4.2	25				S	N	SPL
		59		TWO 30' STORAGE TANKS			1.4	1	1.4	15				S	N	SPL
		60		ASSOCIATED WITH #62	60	60	3.6	1	3.6	15		60	LIGHT	D	C	V4
		61		TWO 30' STORAGE TANKS			1.4	1	1.4	25				S	N	SPL
							159.6		159.6							

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		62		SULPHURIC ACID MANUFACTURE				1	114.0				LIGHT	A23	N	V4
			a		300	30	9.0			25		30				
			b		300	35	10.5			30		35				
			c		300	35	10.5			35		35				
			d		300	35	10.5			35		35				
			e		300	45	13.5			35		45				
			f		300	90	27.0			30		45				
			g		300	45	13.5			40		45				
			h		300	35	10.5			—		35				
			i	"	300	30	9.0			25		30				
		63		TWO 30' STORAGE TANKS			1.4	1	1.4	25				S	N	SPL
		64		ASSOCIATED WITH #62	60	60	3.6	1	3.6	15		60°	LIGHT	D	C	V4
		65		ONE 60' & TWO 30' STORAGE TANKS.			4.2	1	4.2	25				S	N	SPL
		66		PROBABLE PHOSPHORIC ACID PLANT.	250	45	11.2	1	11.2	30		45°	LIGHT	A23	N	V4
		67		SIX 55' VATS			14.3	1	14.3	10				S	N	SPL
		68		PROBABLE PHOSPHORIC ACID PLANT.				1	27.0				LIGHT	A23	N	V4
			a		270	35	9.5			40		35°				
			b	"	270	50	13.5			40		50°				
		69		60' STORAGE TANK			2.8	1	2.8					S	N	SPL
		70		GROUP OF FOUR COOLING TOWERS.	45	45	2.0	1	2.0	40				S	N	SPL
		71		ASSOCIATED WITH #68	60	60	3.6	1	3.6	15		60°	LIGHT	D	C	V4
		72		UNIDENTIFIED	95	35	3.3	1	3.3	12		35°	LIGHT	D	C	V4
		73														
			a													
			b	"	140	45	6.3	1	6.3	20		45°	LIGHT	D	C	V4
							189.7		189.7							

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		74		UNIDENTIFIED	80	80	6.4	1	6.4	15		40.	LIGHT	D	C	V4
		75		"	65	60	3.9	1	3.9	15		60.	LIGHT	D	C	V4
		76		WAREHOUSE	300	135	40.5	1	40.5	15		33.	LIGHT	A23	C	V4
		77		UNIDENTIFIED	80	60	4.8	1	4.8	15		60.	LIGHT	D	C	V4
		78						1	5.7				LIGHT	D	C	V4
			a		60	25	1.5			40		25.				
			b	"	140	30	4.2			18		30.				
		79		40' GASOMETER			1.3	1	1.3	30				S	N	SPL
		80		UNIDENTIFIED	105	45	4.7	1	4.7	15		22	LIGHT	D	C	V4
		81						1	223.1				LIGHT	A23	N	V4
			a	AMMONIUM SULPHATE PRODUCTION	350	60	21.0			45		30x15				
			b	FERTILIZER DRYING & STORAGE.	410	325	133.3			40		36x12				
			c	"	145	325	47.2			40		36x12				
			d	"	260	30	7.8			20		30.				
			e	"	230	60	13.8			25		30				
		82						1	244.8				LIGHT	A23	N	V4
			a	AMMONIUM SULPHATE PRODUCTION	325	15	4.9			40		15				
			b	FERTILIZER DRYING & STORAGE.	585	325	190.1			40		36x12				
			c		145	325	47.2			40		36x12				
			d	"	75	35	2.6			15		35.				
		83		FERTILIZER MFG. & STORAGE.				1	220.2				LIGHT	A23	N	V4
			a		325	60	19.5			45		30x15				
			b		430	325	140.0			40		36x12				
			c		145	325	47.2			40		36x12				
			d		110	45	4.9			25		45.				
			e	"	245	35	8.6			25		35.				
							755.4		755.4							

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		84		UNIDENTIFIED	120	30	3.6	1	3.6	15		30	LIGHT	D	C	V4
		85		↓	135	35	4.7	1	4.7	25		35	LIGHT	D	C	V4
		86		PROBABLE BOILER HOUSE				1	38.0				LIGHT	A23	N	V4
			a		175	65	11.4			35		65				
			b		325	65	21.1			30		65				
			c		60	45	2.7			20		45				
			d		95	30	2.8			15		30				
		87						1	11.5				LIGHT	A23	N	V4
			a		95	30	2.8			15		30				
			b		80	45	3.6			20		45				
			c		80	45	3.6			20		45				
			d	↓	50	30	1.5			20		30				
		88		30' TANK			0.7	1	0.7	20				S	N	SPL
		89		60' BASE OF DISMANTLED GAS HOLDER												
		90		TWO 30' WATER TOWER TANKS WITH OPEN TOPS.			1.4	1	1.4	35				S	N	SPL
		91		↓			1.4	1	1.4	35				S	N	SPL
		92		ADMINISTRATIVE OFFICES & LABS.	160	45	7.2	2	14.4	28		18 x 12	MILL CONST TILE ON 1" SHG.	F2	C	V3A
		93		↓	140	45	6.3	2	12.6	28		18 x 12	4" TO 6" CONCRETE	E2	R	V3
		94		↓	75	60	4.5	1	4.5	18		15	LIGHT	D	C	V4
		95		↓									MILL CONST TILE ON 1" SH.			
			a	↓	140	65	9.1	2	18.2	28		22		F2	C	V3A
			b	↓	75	30	2.2	1	2.2	20		15		D	C	V4
		96		↓	80	45	3.6	1	3.6	18		22	LIGHT	D	C	V4
							94.2		116.8							

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		97						1	125.4				LIGHT	B1	N	V2
			a	AMMONIA CONVERTER BLDG	270	35	9.4			90		35 x 15				
			b	COMPRESSOR BLDG	270	60	16.2			35		60 x 15				
			c	"	270	60	16.2			35		60 x 15				
			d	AMMONIA CONVERTER BLDG	270	35	9.4			90		35 x 15				
			e	COMPRESSOR BLDG	270	60	16.2			35		60 x 15				
			f	"	270	60	16.2			35		60 x 15				
			g	AMMONIA CONVERTER BLDG	270	35	9.4			90		35 x 15				
			h	COMPRESSOR BLDG	270	60	16.2			35		60 x 15				
			i	"	270	60	16.2			35		60 x 15				
		98		UNIDENTIFIED	140	30	4.2	1	4.2	15		30'	LIGHT	D	C	V4
		99			140	30	4.2	1	4.2	15		30'	LIGHT	D	C	V4
		100		"	140	30	4.2	1	4.2	15		30'	LIGHT	D	C	V4
		101-116		16, 70' GASOMETERS FOR HYDROGEN & NITROGEN			61.6	1	61.6	45				S	N	SPL
		117		POSSIBLE AIR LIQUEFACTION BLDG				1	7.7				LIGHT	D	C	V4
			a		130	35	4.5	1		25		35'				
			b		65	50	3.2	1		25		50'				
		118			160	30	4.8	1	4.8	15		30'	LIGHT	D	C	V4
		119						1	42.6				LIGHT	A23	C	V4
			a		125	45	5.6					45 x 12				
			b	(UNDER CONST)	125	45	5.6					45 x 12				
			c		350	15	5.2					15				
			d	"	350	75	26.2					75'				
		120						1	750.3				LIGHT	A23	N	V4
			1	ELECTROLYSIS BLDG FOR HYDROGEN MFG	1210	560	677.6			25		27 x 15				
			b	ROTARY CONVERTERS	1210	45	54.5			40		45 x 15				
			c	"	1210	15	18.2			18		15 x 15				
			d	(PART OF SUBDIVISION "a")	210	25	—			40		27 x 15				
			e	"	320	55	—			40		27 x 15				
							1005.0		1005.0							

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		121		UNIDENTIFIED.	150	30	4.5	1	4.5	15		30 ·	LIGHT	D	C	V4
		122			120	30	3.6	1	3.6	30		30 ·		D	C	V4
		123						1	5.8					D	C	V4
			a		105	30	3.1			30		30 ·				
			b		90	30	2.7			30		30 ·				
		124			120	30	3.6	1	3.6	18		30 ·		D	C	V4
		125						1	4.9					D	C	V4
			a		75	30	2.2			18		30 ·				
			b		90	30	2.7			18		30 ·				
		126		(UNDER CONST.)	160	45	7.2	1	7.2	—		45 ·		D	C	V4
		127		PROBABLE MACHINE SHOP				1	59.9				LIGHT	B2	N	V2
			a		210	225	47.2			25		25 ·				
			b	(UNDER CONST.)	150	60	9.0			—		30×12				
			c		185	20	3.7			18		20×12				
		128		SHOPS	210	40	8.4	1	8.4	20		40 ·	LIGHT	D	C	V4
		129						1	53.6				LIGHT	B1	N	V2
			a		210	25	5.2			25		25×15				
			b		210	40	8.4			39		40×15				
			c		210	25	5.2			25		25×15				
			d		150	35	5.2			25		35×15				
			e		75	35	2.6			35		35×15				
			f		300	25	7.5			25		25×15				
			g		300	40	12.0			35		40×15				
			h		300	25	7.5			25		25×15				
							151.5		151.5							

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	130		SHOPS				1	27.7				LIGHT	B2	N	V2
		a		60	35	2.1			25		35x15				
		b		285	25	7.1			25		25x15				
		c		285	40	11.4			35		40x15				
		d		285	25	7.1			25		25x15				
	131		UNIDENTIFIED				1	15.7				LIGHT	A23	C	V4
		a		90	50	4.5			25		50 ·				
		b		150	45	6.7			20		45 ·				
		c		75	60	4.5			20		60 ·				
	132			105	50	5.2	1	5.2	20		50 ·	LIGHT	D	C	V4
	133			95	50	4.7	1	4.7	15		50 ·	LIGHT	D	C	V4
	134			95	90	8.5	1	8.5	15		45 ·	LIGHT	D	C	V4
	135						1	19.0				LIGHT	A23	N	V4
		a		200	20	4.0			25		20				
		b		300	50	15.0			35		25 ·				
	136			185	30	5.5	1	5.5	20		30 ·	LIGHT	D	C	V4
	137		STORAGE	155	35	5.4	1	5.4	18		35	LIGHT	D	C	V4
	138		SHOPS	150	45	6.7	1	6.7	25		45 ·	LIGHT	D	C	V4
	139			150	45	6.7	1	6.7	25		45 ·	LIGHT	D	C	V4
	140		STORAGE	125	45	5.6	1	5.6	18		45	LIGHT	D	C	V4
	141		CONTROL HOUSE FOR TRANSFORMER STATION	65 60	20 45	4.0	1	4.0	18 25		20 45	LIGHT	D	C	V4
	142		TRANSFORMERS.	415	100	41.5	1	41.5	25				S	N	SPL
	143		ASSOCIATED WITH #141	65	45	2.9	1	2.9	18		45 ·	LIGHT	D	C	V4
						159.1		159.1							

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		144		PROBABLE CARBON ELECTRODE CASING PLANT				1	72.0				LIGHT	A23	N	V4
			a		300	90	27.0			25		30 ·				
			b		50	75	3.7			25		25 ·				
			c		75	18	1.3			35		18				
			d		45	25	1.1			25		25 ·				
			e		95	50	4.7			25		25 ·				
			f		65	90	5.8			35		30 ·				
			g		50	45	2.2			30		45 ·				
			h		75	30	2.2			30		30 ·				
			i		320	75	24.0			25		35 ·				
			k	(PART OF Y SUBDIVISION)	190	35	—			30		35				
		145		POSSIBLE ROLLING MILL				1	68.4				LIGHT	B2	N	V2
			a		400	60	24.0			25		30 ·				
			b		450	30	13.5			25		30				
			c		335	60	20.1			25		30				
			d	Y	180	60	10.8			25		30				
		146		UNIDENTIFIED				1	12.1				LIGHT	A23	N	V4
			a		75	45	3.4			20		45 ·				
			b		75	50	3.7			20		50 ·				
			c		75	30	2.2			20		30 ·				
			d	Y	95	30	2.8			15		30 ·				
		147		POSSIBLE ROLLING MILL				1	219.8				LIGHT	B1	N	V2
			a		125	30	3.7			20 ·		30 ·				
			b		250	25	6.3			15		25 ·				
			c		525	50	26.2			20		50 ·				
			d		525	30	15.7			20		30 ·				
			e		525	50	26.2			20		50				
			f		410	260	106.5			20		43				
			g		200	15	3.0			15		15				
			h		115	20	2.3			25		20				
			i	Y	115	260	29.9			30		43 ·				
							372.3		372.3							

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		148		PROBABLE MACHINE SHOP				1	32.7				LIGHT	B2	N	V2
			a	↓	80	15	2.4			15		15				
			b		80	15				15		15				
			c		275	90	24.8			25		45 ·				
			d	↓	275	20	5.5			20		20				
		149		UNIDENTIFIED				1	7.9				LIGHT	D	C	V4
			a	↓	65	30	1.9			15		30 ·				
			b		200	30	6.0			15		30 ·				
		150		↓	100	45	4.5	2	9.0	20		22	LIGHT	F2	C	V4
		151		↓	110	45	4.9	2	9.8	20		22	WOOD	E2	C	V4
		152		PROBABLE MACHINE SHOP				1	26.0				LIGHT	B2	N	V2
			a	↓	200	50	10.0			18		25				
			b	↓	200	80	16.0			18		40 ·				
		153		UNIDENTIFIED POSSIBLY SYNTHETIC CRYOLITE PLT.				1	8.1				LIGHT	D	C	V4
			a	↓	55	50	2.7			25		50 ·				
			b		55	45	2.5			30		45 ·				
			c		65	45	2.9			30		45 ·				
		154		↓				1	5.3				LIGHT	D	C	V4
			a	↓	50	45	2.2			20		45 ·				
			b	↓	90	35	3.1			12		35 ·				
		155		STORAGE.	175	35	6.1	1	6.1	10		35	LIGHT	D	C	V4
		156		↓	130	30	3.9	1	3.9	10		30	LIGHT	D	C	V4
		157		↓				1	6.0				LIGHT	D	C	V4
			a	↓	85	30	2.5			10		30				
			b	↓	100	35	3.5			10		35				
							105.4		114.8							

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		158		55' GASHOLDER PROBABLY FOR WATER GAS.			2.4	1	2.4	45				S	N	SPL
		159		85' GASHOLDER PROBABLY FOR WATER GAS.			5.7	1	5.7	75				S	N	SPL
		160		↓			5.7	1	5.7	75				S	N	SPL
		161		↓			5.7	1	5.7	75				S	N	SPL
		162		WATER GAS PLANT				1	8.5				LIGHT	D	N	V4
			a	↓	65	35	2.3			35		35 ·				
			b		100	40	4.0			18		40 ·				
			c		65 30	20 30	2.2			12		20 30				
		163			235	50	11.7	1	11.7	40		50 ·	LIGHT	A23	N	V4
		164			110	30	3.3	1	3.3	10		30 ·	WOOD/C	D	C	V4
		165		BLD REPORTED TO CONTAIN WINKLER GENERATORS				1	34.1				LIGHT	A23	N	V4
			a	↓	325	75	24.4			30		75 ·				
			b	↓	325	30	9.7			25		30 ·				
		166		CARBOTHERMIC MAGNESIUM PLANT	125	35	4.4	1	4.4	10		35	WOOD/C	D	C	V4
		167		↓				1	63.4				LIGHT	A23	N	V4
			a	ROTARY KILN	245	35	8.6			30		35×18				
			b	CRUSHING & BRIQUETTING PLANT	135	90	12.1			20		30 ·				
			c	ELECTRIC REDUCTION FURNACE BUILDING.	250	75	18.7			30		75×15				
			d	WOOL-BAG FILTERS	75	45	3.4			15		45 ·				
			e	CARBOTHERMIC MAGNESIUM PLANT	165	20	3.3			25		20×15				
			f	↓	80	50	4.0			25		50×15				
			g		250	30	7.5			25		30 ·				
			h		50	45	2.2			30		45 ·				
			i		90	40	3.6			15		40 ·				
		168		↓	90	80	7.2	1	7.2	15		80 ·	LIGHT	D	C	V4
							152.1		152.1							

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		169		RETORT BLDG & POSSIBLY ALLOYING & CASTING.				1	37.4				LIGHT	A23	N	V4
			a	↓	35	60	2.1			25		60 ·				
			b		120	35	4.2			40		35×12				
			c		90	90	8.1			25		45 ·				
			d		110	45	4.9			25		45 ·				
			e		90	50	4.5			30		50 ·				
			f		90	65	5.8			30		65 ·				
			g	↓	120	65	7.8			25		65 ·				
		170						1	123.2				LIGHT	B2	N	V2
			a	ALUMINUM POT ROOMS	490	150	73.5			30		25 ·				
			b	RECTIFIER BUILDING	475	60	28.5			30		20 ·				
			c	PROBABLE ALUMINA STORAGE	200	45	9.0			25		22 ·				
			d	REMELT & ALLOYING	350	35	12.2			25	40	17 ·				
			e	PROBABLE POT ROOM (EXCAVATIONS ONLY)	250	65	—									
		171		POSSIBLE CARBON PASTE BUILDING.				1	16.8				LIGHT	A23	C	V4
			a	↓	135	45	6.1			25		45 ·				
			b		65	35	2.3			30		35 ·				
			c	↓	50	45	2.2			25		45 ·				
			d	(UNDER CONSTRUCTION)	80	65	5.2			25		65				
		172		PROBABLE CRYOLITE RECOVERY BUILDING				1	9.4				LIGHT	D	C	V4
			a	↓	90	45	4.0			25		45 ·				
			b	↓	90	60	5.4			20		30 ·				
		173		POSSIBLE FURNACES (EXCAVATIONS ONLY)												
			a	↓	250	170										
			b	↓	150	75										
		174		UNIDENTIFIED				1	31.6				LIGHT	A23	N	V4
			a	↓	90	30	2.7			25		30 ·				
			b	↓	155	80	12.4			25		40 ·				
			c	↓	20	80	1.6			25		40 ·				
			d	↓	175	85	14.9			25		42 ·				
							218.4		218.4							

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		175		UNIDENTIFIED	135	35	4.7	1	4.7	10		35 ·	LIGHT	D	C	V4
		176			150	35	5.2	3	15.6	30		35 ·	LIGHT	E2	C	V4
		177			135	70	9.5	1	9.5	10		35 ·	LIGHT	D	C	V4
		178			150	35	5.2	1	5.2	10		35 ·	LIGHT	D	C	V4
		179			75	70	5.2	1	5.2	10		35 ·	LIGHT	D	C	V4
		180		↓	135	35	4.7	1	4.7	10		35 ·	LIGHT	D	C	V4
		181		LEACHING, FILTERING & CLARIFIERS				1	40.5				LIGHT	A23	N	V4
			a	↓	90	95	8.6			30		95 ·				
			b		250	90	22.5			35		45 ·				
			c		130	60	7.8			30		60 ·				
			d	↓	45	35	1.6			20		35 ·				
		182		PERCIPITATION - FILTERS & THICKENERS.				1	71.7				LIGHT	A23	N	V4
			a	|	240	35	8.4			30		35×18				
			b	(UNDER CONSTRUCTION)	240	35	8.4			30		35×18				
			c	·	80	35	2.8			30		35×18				
			d		95	35	3.3			30		35×18				
			e		155	175	27.2			30		28 ·				
			f		145	45	6.5			30		45 ·				
			g		125	65	8.1			80		65 ·				
			h	↓	140	50	7.0			30		50 ·				
		183		UNIDENTIFIED				1	6.9				LIGHT	D	C	V4
			a	· ↓	50	35	1.7			20		35 ·				
			b	↓ ·	75	70	5.2			20		35 ·				
		184		ROTARY KILN												
			a	· ↓	200	45	9.0	1	9.0	25		—		S	N	SPL
			b	↓	190	35	6.6	1	6.6	50		35	LIGHT	D	C	V4
							169.2		179.6							

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		185														
			a	CONTINUATION OF SINTERING PROCESS	185	55	10.2	1	10.2	35		55 ·	LIGHT	A23	N	V4
			b	COOLERS.	55	35	1.9	1	1.9	50				S	N	SPL
			c	SINTERING PROCESS	90 75	30 20	4.2	1	4.2	15		30 20	LIGHT	D	N	V4
			d	↓	120	35	4.2	1	4.2	15		35 ·	LIGHT	D	N	V4
		186		POSSIBLE BOILER HOUSE				1	17.0				LIGHT	A23	C	V4
			a	↓	70	40	2.8			25		40 ·				
			b		125	50	6.2			50		50 ·				
			c		75	70	5.2			35		35 ·				
			d	↓	70	40	2.8			35		40 ·				
		187		55' GASHOLDER			2.4	1	2.4	25				S	N	SPL
		188		PROBABLE CRUSHING OF CALCIUM ALUMINATE				1	13.5				LIGHT	A23	N	V4
			a	↓	90	60	5.4			25		60 ·				
			b	↓	90	90	8.1			25		45 ·				
		189		PROBABLE ALUMINA ROTARY KILN.				1	10.3				LIGHT	A23	N	V4
			a	↓	95	50	4.7			30		50 ·				
			b	↓	160	35	5.6			30		35 ·				
		190		PRELIMINARY DRIERS				1	38.0				LIGHT	A23	N	V4
			a	↓	140	135	18.9			30		45 ·				
			b		45	45	2.0			35		45				
			c		120	25	3.0			30		25				
			d		125	45	5.6			30		45 ·				
			e		140	35	4.9			30		35 ·				
			f	↓	80	45	3.6			30 20		45 ·				
		191		STORAGE	110	35	3.8	1	3.8	10		35 ·	LIGHT	D	C	V4
		192		↓	110	70	7.7	1	7.7	15		35 ·	LIGHT	D	C	V4
							113.2		113.2							

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		193		ORE CRUSHING, WASHING, & PREPARATION				1	22.9				LIGHT	A23	N	V4
			a		190	45	8.5			30		45 ·				
			b		155	75	11.6			30		75 ·				
			c		95	30	2.8			10		30 ·				
		194		SECONDARY ALUMINA PLT (UNDER CONSTRUCTION)				1	52.3				LIGHT	A23	N	V4
			a		90	30	2.7			30		30 ·				
			b		140	35	4.9			15		35 ·				
			c		80	35	2.8			25		35 ·				
			d		110	35	3.8			25		35 ·				
			e		35	70	2.4			25		35 ·				
			f		80	30	2.4			35		30 ·				
			g		95	35	3.3			35		35 ·				
			h		210	35	7.3			35		35 ·				
			i		135	60	8.1			30		60 ·				
			k		75	30	2.2			30		30 ·				
			l		190	65	12.4			30		32				
		195						1	30.7				LIGHT	A23	N	V4
			a		105	75	7.9			30		18 75 ·				
			b		110	60	6.6			35		60 · ·				
			c		180	90	16.2			25		60 x 75				
		196			50 75	20 45	4.4	1	4.4	15 35		20 45 ·	LIGHT	D	C	V4
		197			110	45	4.9	1	4.9	30		45 ·	LIGHT	D	C	V4
		198						1	15.5				LIGHT	A23	N	V4
			a		65	45	2.9			35		45 ·				
			b		120	45	5.4			30		45 ·				
			c		120	60	7.2			30		60 ·				
		199			120	45	5.4	1	5.4	30		45 ·	LIGHT	D	C	V4
		200		TRANSFORMERS.	320	30	9.6	1	9.6	25		—		S	N	SPL
		201		CONTROL HOUSE FOR TRANSFORMER STATION.	75	65	4.9	1	4.9	25		20 45 ·	LIGHT	D	C	V4
							150.6		150.6							

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TARGET NO. 84.2-1 NAME CHOSEN NITROGEN FERTILIZER CO DATE 12 May 45 P/4
KONAN COMPLETED

APPROX. COORD. 39°51'N 127°38' E PHOTO DATE 13 Dec 44 SCALE 1/6,000

F/A NO. 129 SORTIE, PRINT NOS. 468BG/AMRAA 2V:3,4,5 CONFIDENTIAL
GFL 750.052

15259

TARGET NO.84.2-1 NAME CHOSEN NITROGEN FERTILIZER CO DATE 12 May 45 F/4
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