

## IDENTIFICATION OF FACILITIES (Cont'd)

- 9 (a) Ammonium sulphate storage  
 (b) Ammonium sulphate drying  
 (c) Ammonium sulphate preparation  
 (d) Fan room
- 10 The whole complex is a plant for manufacturing sulphuric acid by the lead chamber process. The following portions are identified.
- (a) Pump room  
 (b)(c)(d) Sulphuric acid towers  
 (e) Pyrites storage  
 (j) Pyrites burning  
 (g)(r)(s) Lead chambers  
 (t) Lead work shop
- 11 Sulphuric acid tank  
 12 Oxygen gas holder - gas probably used in #10 (j)  
 13 Electrolysis of water for production of hydrogen  
 14 D.C. rectifiers  
 15 Transformer yard

AREA B

The identifications attempted for this area must be regarded as tentative only. More over in many cases functions of groups of buildings have been suggested where an individual break down cannot be made. Only those installations for which a reasonable basis of accuracy exists have been recorded, the remainder which are not recorded are unidentified.

- 16,17,18,19 Tanks, some at least, for sulphuric acid.  
 20 Pile of material which is being cut into for further tank sites. This may be sulphur or pyrites for adjacent sulphuric acid plant.
- 21 thru 25 Sulphuric acid plant, believed to be a Contact Process Plant
- 28 Compressor house and ammonia synthesis  
 36 Gas holder - gas not identified  
 37 Gas conversion and CO<sub>2</sub> absorption  
 40 Steam plant - a conveyor leads past building #13 to the railway tracks where coal is probably taken directly from railway siding.
- 41 Gas plants - probably water gas  
 44,45,46 Gas holder for water gas  
 47 Fuel piles, probably coke, with handling equipment, conveyors, cranes etc.
- 49 Steam plant and water gas plant  
 50 12 sulphur removal towers and overhead crane. The tops of 2 are removed at the time of photography.
- 51 Gas conversion and CO<sub>2</sub> absorption  
 52,53,54 Gas holders for purified hydrogen  
 79 (a)(b)(c) Connected with ammonium sulphate manufacture and drying.  
 (f) Ammonium sulphate (and possibly other ammonium salt) storage  
 (e)(g) Connected with conveyors for loading
- 80, 81 Larger stock yards with overhead cranes.

6

NOTES:

(a) The older portion of the plant derives its hydrogen electrolytically from water, the newer section from water gas.

J-20  
op 16-FE  
Interpion Two  
Comphit for Pac  
CincPoa Adv.  
CincPoa .PH.

U.S. CONFIDENTIAL  
(British Confidential)

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

Mipi 57.571

FUNCTIONAL ANALYSIS REPORT NO. F/A-66

Date 28 February 1945

TARGET NO: 90.17 - 137 *Chemical*  
NAME OF TARGET: SHOWA FERTILIZER CO.  
LOCATION: KAWASAKI, HONSHU, JAPAN COORDINATES: 35° 30' N -139° 43' E  
PHOTOGRAPHY: Date 13 DEC 44 Mission 3PR/4M37A Prints 5R, 37, 38

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:  
The plant will be considered in two sections.  
AREA A - The original portion of the plant. Ground information as to the production of synthetic ammonia, sulphuric acid, and finally ammonium sulphate is amply confirmed by the photographs. More over, only these compounds appear to be manufactured here.  
AREA B - The post-war expansion to the W. The overall picture is not completely certain, There is little doubt that the main function is production of synthetic ammonia (with an estimated capacity up to twice that of the older portion). In addition it is thought that sulphuric acid and ammonium sulphate are also made here; but it cannot be stated whether or not other nitrogen compounds are manufactured e.g. nitric acid and ammonium nitrate which would be logical war time products for a plant of this nature.

3 LOCATION:  
In a highly industrialized region of the KAWASAKI water front on reclaimed land approximately 2 1/4 miles S.S.W. of KAWASAKI Railway Station. Plant site is irregularly shaped and has approximately 2000' waterfrontage.

4 SERVICES:  
Adequate facilities exist along the water front for loading and unloading. The dispatch of the ammonia fertilizers from the older portion appears to be mainly by water service; both rail and water service appears available for dispatch of fertilizer from the newer portion.  
Two longer and one shorter railway spurs enter the plant from the railway sidings which form the S.E. boundary of the plant. Fuel for the gas plants of the newer portion appears to enter chiefly by rail.

5 IDENTIFICATION OF FACILITIES:

AREA A

- 1 (a) Ammonia synthesis
- (b) Compressors and possibly synthesis as well
- (c) Air liquefaction and nitrogen separation plant
- 2 Nitrogen Gas Holder
- 3 Hydrogen Gas Holder
- 4 Possibly bottling liquid ammonia and ammonia liquor for external distribution.
- 5 Boiler House
- 6 Offices
- 7 Storage
- 8 Preparation of distilled water for #13 - a chimney shown on ground photos to have been associated with this building has been removed.

See note below  
See note below

U.S. CONFIDENTIAL  
(British Confidential)

U. S. CONFIDENTIAL  
(British Confidential)

NOTES (Cont'd)

(b) The source of nitrogen is obscure in the new portion. In the old portion, pre-war photographs do not show building #1 (c) interpreted to be a liquid air - nitrogen plant. A pipe bridge connects this area with the adjacent 90.17 - 52 and it is possible that nitrogen was obtained as a by product there and made available to the Showa Co.

(c) Although there may be doubt as to the exact distribution of functions between buildings #1 (a) and (b) it is believed that as a whole the block is concerned with compression and synthesis.

7

ACTIVITY:

The plant is judged to be highly active. Steam is seen issuing from the gas plants and other installations, the gas holders are partially filled, fuel stocks are evident and there is rolling stock on the site railway tracks.

ENCL: C.F.L. 743.902

INTERPRETED BY:

L. A. T. BALLARD  
S/Ldr. R.A.F.

J.T.G. CONSULTANT

RUSSEL TARR  
Maj., A. C.

APPROVED BY:

*Chas de Diep*

*for* LEWIS E. STEVENS  
Major, Air Corps  
Chief Photo Intelligence Section  
Evaluation Br., Photographic Division  
Office of Asst. Chief of Air Staff,  
Intelligence

U. S. CONFIDENTIAL  
(British Confidential)



UNIT NO. 1 - 1000

DATE 10/10/40 P/A  
COMPLETED

UNIT NO. 2 - 1000

DATE 10/10/40 P/A  
COMPLETED

2

SHOWA FERTILIZER CO., LTD.  
90.17-137  
LAT. 35° 30' N - LONG. 139° 43' E  
KAWASAKI, JAPAN

1. DESCRIPTION OF TARGET

a. Showa Fertilizer Co., Ltd. was one of the foremost chemical plants in Japan producing ammonium sulfate fertilizer. Other important products ~~made here~~ were sulfuric acid, nitric acid, and ammonium nitrate.

b. The plant is located on reclaimed land in the highly industrialized Kawasaki Waterfront area ~~and~~ about 2 1/4 miles SSW of Kawasaki Railroad Station.

c. The plant comprises 79 listed structures.

2. SUMMARY

a. The interpretation of building functions, <sup>for the entire plant was</sup> ~~was in the overall~~ only fair. ~~However~~ The plant was ~~broken into~~ two parts, and on one part the analysis was excellent, on the other part, ~~the analysis was~~ <sup>poor.</sup> ~~below fair.~~

Of a total of 79 buildings:

- (1) 33 <sup>were</sup> interpreted correctly.
- (2) 38 <sup>were</sup> unidentified
- (3) 6 <sup>were</sup> interpreted incorrectly.

3. GENERAL REMARKS

a. Functional analysis of Area "A", <sup>was based upon information</sup> ~~was~~ <sup>and excellent,</sup> ~~very reliable,~~ and accounts for the excellent scoring made on that part of the plant. The type of equipment housed in most of the important buildings, however, was such as to make any rearrangement of these buildings in order to discount our intelligence a very difficult thing. Very few changes, consequently were noted.

b. <sup>building identification in</sup> The ~~interpretation done on~~ Area "B", although not too definite in many <sup>cases</sup> ~~respects~~, indicates <sup>considerable</sup> ~~some~~ <sup>of process techniques</sup> study on the part of the interpreter, ~~into process techniques (and therefore, building identification).~~ Two instances,

however, stand out in which more definite statements ~~reasonably could~~ <sup>should</sup> have been made: ~~on~~ a large boiler house, ~~the other~~ <sup>and</sup> an outdoor transformer yard ~~e~~

both of ~~which~~ were unidentified.

**4.2 SOURCE OF DATA**  
~~REFERENCE TERMS~~

a.2 Reported.

(1) AC/AS, <sup>Intell.</sup> F/A Report #66, 28 February 1945

b.2 Field Data

(1) USSBS (G-2, PIC) field notes, including blue prints and other data obtained from Japanese plant officials.

**5.2 A - FUNCTIONAL ANALYSIS**

a.1. USE OF PLANT:

AREA "A"

Reported:

Manufacture of ammonium sulfate from synthetic ammonia and sulfuric acid.

Actual:

Manufacture of ammonium sulfate from synthetic ammonia and sulfuric acid.

AREA "B"

Reported:

Manufacture of ammonium sulfate from synthetic ammonia and sulfuric acid. Also suspected manufacture of nitric acid and ammonium nitrate.

Actual:

Manufacture of ammonium sulfate from synthetic ammonia and sulfuric acid. Also manufacture of nitric acid and ammonium nitrate.

b.1. BOUNDARIES:

Correct as reported.

c.1. BUILDINGS IDENTIFICATION: (See F/A Table)

d.1. SUMMARY OF TABULATION:

AREA "A"

Point score 85.3  
For primary bldgs 99.6  
All Buildings 85.3  
Primary Buildings 99.6

	AREA "A"			
	PRIMARY BUILDING		TOTAL Bldgs. %	
	No. Bldgs.	% Corr.	No. Bldgs.	% Corr.
Correct	5	100	13	93
Unidentified	0	-	0	-
Incorrect	0	-	1	7
TOTAL	5	100	14	100

see next sheet first

AREA "B"

Point Score ~~57.2~~

~~For Primary Bldgs~~ 62.2

All Buildings 57.2

Primary Building 62.2

~~TOTAL PLANT~~

Point Score ~~63.9~~

Total plant 63.9

Primary buildings 81

	AREA "B"			
	PRIMARY Buildings		TOTAL Buildings	
	No. Bldgs.	% Corr.	No. Bldgs.	% Corr.
Correct	7	41	20	32
Unidentified	10	59	38	60
Incorrect	0	-	5	8
TOTAL	17	100	63	100

TOTAL PLANT

	<del>TOTAL PLANT</del>	
	No. Bldgs.	% Corr.
Correct	33	43
Unidentified	38	49
Incorrect	6	8
TOTAL	77	100

place this block first

97.6  
 62.2  
 ---  
 2 161.8  
 80.4

(81)

(3)

SHOWA FERTILIZER CO., LTD.  
90.17-137  
Lat. 35° 30' N - Long. 139° 43' E  
KAWASAKI, JAPAN

1. DESCRIPTION OF TARGET

a. Showa Fertilizer Co., Ltd. was one of the foremost chemical plants in Japan producing ammonium sulfate fertilizer. Other important products were sulfuric acid, nitric acid, and ammonium nitrate.

b. The plant is located on reclaimed land in the highly industrialized Kawasaki Waterfront area about 2 1/2 miles SSW of Kawasaki Railroad Station.

c. The plant comprises 79 listed structures.

2. SUMMARY

a. The interpretation of building functions for the entire plant was only fair. The plant was in two parts, and on one part the analysis was excellent, on the other part, poor. Of a total of 79 buildings:

- (1) 33 were interpreted correctly
- (2) 38 were unidentified
- (3) 6 were interpreted incorrectly

3. SUMMARY OF REMARKS

a. Functional analysis of area "A", was based upon information prewar in origin and was excellent.

b. The building identification in area "B", although not too definite in many cases, indicates considerable study of process techniques on the part of the interpreter. Two instances, stand out however, in which more definite statements should have been made: a large boiler house and an outdoor transformer yard both <sup>OF WHICH</sup> were unidentified. 1

4. SOURCE OF DATA

a. Reported.

- (1) AC/AS Intell F/A Report #66, 28 February 1945

b. Field Data

(1) USSBS (G-2, PIC) field notes, including blue prints and other data obtained from Japanese plant officials.



5. FUNCTIONAL ANALYSIS

a. USE OF PLANT:

AREA "A"

Reported: Manufacture of ammonium sulfate from synthetic ammonia and sulfuric acid.

Actual: Manufacture of ammonium sulfate from synthetic ammonia and sulfuric acid.

AREA "B"

Reported: Manufacture of ammonium sulfate from synthetic ammonia and sulfuric acid. Also suspected manufacture of nitric acid and ammonium nitrate.

Actual: Manufacture of ammonia sulfate from synthetic ammonia and sulfuric acid. Also manufacture of nitric acid and ammonium nitrate.

b. BOUNDARIES:

Correct as reported.

c. BUILDING IDENTIFICATION: (See F/A Table)

d. SUMMARY OF TABULATION:

<u>POINT SCORE</u>	E	Correct
		Unidentified
Total Plant	63.9	Incorrect
Primary buildings	81	Total

TOTAL PLANT	
<del>TOTAL BUILDINGS</del>	
No.	%
Bldgs.	Corr.
33	43
38	49
6	8
77	100

AREA "A"		Correct
All Buildings	85.3	Unidentified
Primary Buildings	99.6	Incorrect
		Total

AREA "A"			
PRIMARY BUILDINGS		TOTAL BUILDINGS	
No.	%	No.	%
Bldgs.	Corr.	Bldgs.	Corr.
5	100	13	93
0		0	
0		1	7
5	100	14	100

AREA "B"		Correct
All Buildings	57.2	Unidentified
Primary Building	62.2	Incorrect
		Total

AREA "B"			
PRIMARY BUILDINGS		TOTAL BUILDINGS	
No.	%	No.	%
Bldgs.	Corr.	Bldgs.	Corr.
7	41	20	32
10	59	38	60
0		5	8
17	100	63	100