

Page Denied

Next 2 Page(s) In Document Denied

Copy **4**
16 Pages

TOP SECRET
NO FOREIGN DISSEM

11542

25X1

February 1965

PHOTOGRAPHIC INTERPRETATION REPORT

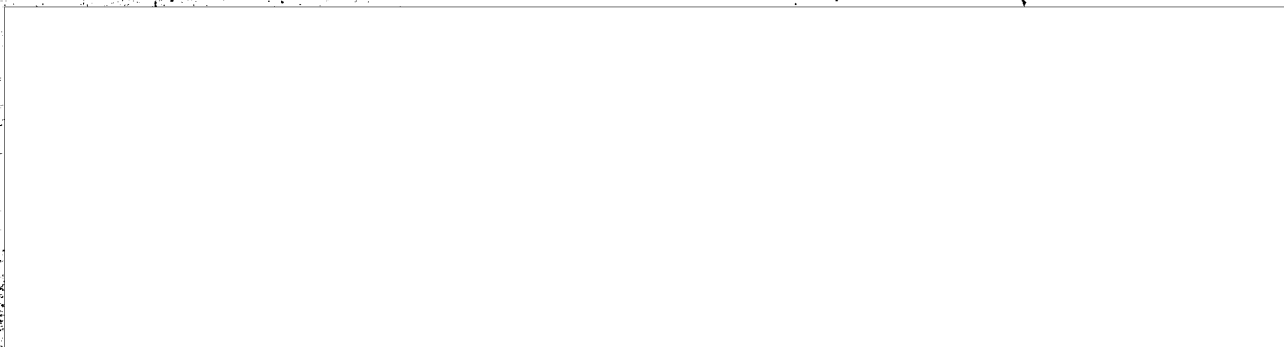
CAMP HUCKSTEP MUNITIONS PLANT (PLANT 81) CAIRO, EGYPT



CIA



DIA



25X1

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER



TOP SECRET
NO FOREIGN DISSEM

GROUP 1
Excluded from automatic
downgrading and declassification

4

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM

25X1
25X1

PHOTOGRAPHIC INTERPRETATION REPORT

CAMP HUCKSTEP MUNITIONS PLANT
(PLANT 81)
CAIRO, EGYPT

February 1965

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM

25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1
25X1

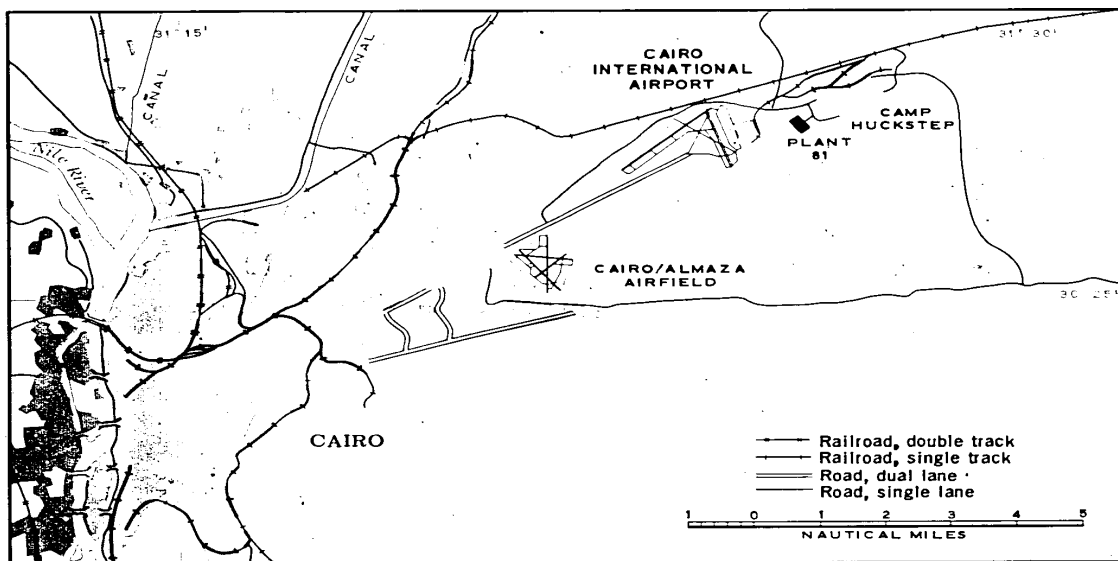


FIGURE 1. LOCATION MAP.

NP C 1-8004 2-65

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM



SUMMARY

The Camp Huckstep Munitions Plant (Plant 81) is one of the largest producers of munitions in the UAR.



The plant has undergone considerable expansion and diversification between 1956 and 1964. The principal additions during this period have been several shop and assembly buildings, a large nitrating facility associated with the manufacture of explosives, and a group of facilities probably used to produce small tactical rockets. Munitions loading, including that for small arms, artillery shells, mines, mortar shells, and possibly bombs, is probably carried out at Plant 81.



where in Egypt. Several unusual facilities are present in the plant area. Continuing expansion of the plant is indicated by several structures that have been erected during the period 1962-1964.

INTRODUCTION

The Camp Huckstep Munitions Plant [redacted] also known as Plant 81 and the Helipolis Military and Civil Chemical Company, is situated at 30-08N 31-26E, approximately 11 nautical miles (nm) northeast of the center of Cairo, Egypt (Figure 1). The plant area, about 395 acres, is 1 nm east of Cairo International Airport; excellent low-level oblique photography of the plant has been obtained from aircraft taking off or landing at the airport.

TALENT photography for the years 1956 through 1960, Navy photography of 1962 and RAF photography of 1964 (Figure 2) provide

good to excellent coverage of the plant and permit a detailed analysis of the chronological development of the various facilities. The chronological sequence of development is indicated by color code in Figure 3.

Collateral sources indicate that the following activities may be carried out by Plant 81: the manufacture of semiautomatic rifles, small arms ammunition, antitank and antipersonnel mines, and artillery shells. Collateral information also indicates that old shells are renovated and shell-filling operations are carried out. 1-4/



TOP SECRET CHESS RUFF
NO FOREIGN DISSEM



25X1
ZUA

25X1
25X1

25X1

25X1

25X1

25X1
25X1

25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

Table 1. Materials Received from Soviet Bloc and Nonbloc Countries at Plant 81 between 1957 and 1962

Electrical equipment	X-ray tubes
Selenium rectifier	Parts for fuse cord testing apparatus
Battery-powered vehicles	Parts for hexagine plant
Traveling conveyers (2)	Pentaerythritol (25 tons)
Spare parts for a press	Formaldehyde plant
Machine tools	Black powder
Glass demijohns for formaldehyde	Ammunition filters
"Khaki viggaste" (PVC*), 60 tons	"Vesuvit" (25 tons)
Mortars	Mortar shells
Polyvinyl chloride	Stainless anti-acid tubes
Detonators	Charge powder, fuses, primers
Measuring instruments and valves	Methanol

*Possibly polyvinyl chloride

ponent of explosives manufacturing plants) very few overhead steamlines or visible storage tanks.

Plant 81 is road served only. The main entrance to the plant is located in the north-western corner of the site; a secondary entrance is located on the east side.

A wall on the eastern, northern, and north-western sides of the site is continuous with a fence on the southern and southwestern sides (Figure 3). Guardhouses and towers are distributed along this fence-wall security line. The towers may be used for illumination, for observation, or for both. A tower and guardhouse are located at the northern end of the plant, east of Building 3. Three masts south of the tower may be communications antennae associated with the nearby airport.

All item numbers in the description of the plant are keyed to Figure 3. Certain building or item numbers are also keyed to specific structures on low-level oblique photography presented in Figures 4-10. Annotations of facilities or sections of the plant on Figure 2 have been limited in order to avoid unnecessary obliteration of buildings within the central part of the installation; this applies particularly to those structures in the northern part of the plant. Dimensions of principal buildings and structures at Plant 81 are presented in Table 2.

DESCRIPTION OF PLANT

GENERAL

Analysis of photography of Plant 81 (Figure 2) reveals that most of the buildings, explosives manufacturing, and production operations are concentrated in the northern half and that open storage and revetted explosives storage are located in the southern half. These 2 different activities enable the plant to be divided, for description purposes, into a northern and a southern part. The precise function of some structures in the plant area is unknown; the plant itself is unusual in that it has no recognizable steamplant (which is a standard com-

NORTHERN PART OF PLANT

The northern part of Plant 81 contains a large number of small, heavily revetted structures which are arranged in an apparently helter-skelter pattern. The arrangement and revetment of the buildings indicate the presence of several small diverse activities related to explosives blending, munitions filling, and possibly the manufacture of booster or detonator types of explosives.

- 2 -

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1

25X1

25X1

25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1

25X1

Administration and Service Facilities

Two buildings (item 5) in the northwestern corner of the site probably serve as administration buildings for the plant. They are located across the road from a possible shrine (item 1).

Four structures (item 2) have the appearance of water or sewage treatment facilities. The function of the small, separately secured area (containing 3 buildings) north of the swimming pool is unknown.

Probable Ammunition Production Facilities

Two large, light fabrication buildings (items 7 and 11) are located in the northwestern part of the plant; each building has a single large revetment which runs parallel to its length. The size of the buildings and the revetting suggest that these structures house probable munitions-loading lines, one for small arms and the other for antiaircraft and field artillery shells. The smaller revetted structures (items 6 and 10) in the area may be facilities for filling and assembling mines or other small munitions. However, other possible functions of these buildings are storage of explosives and explosives components, possible manufacture of initiator/booster-type explosives, or the blending and processing of various propellants received from outside sources.

Fabrication and Machine Shop Section

The group of buildings occupying the area between items 16 (Figure 5) and 22 (Figure 4) and extending northward to item 14 includes mainly storage, shop, and service buildings. Three buildings (item 22) may be light fabrication facilities where small arms and the machined parts of mines and other armaments are fabricated or where components of such munitions are assembled and stored prior to filling and final assembly. The large structure immediately west of Building 20 (Figures 4 and 5) is possibly a fabrication/assembly build-

ing for relatively small products such as small arms, mines, and the like. Building 18 (Figure 4) is a shop building with a high center section; the high center section suggests the presence of an overhead traveling crane which is usual equipment in a machine shop.

Possible Formaldehyde Plant

Building 15 may be a compressor building or possibly a diesel-electric plant. Five steel stacks adjacent to the building are equipped with probable mufflers; these mufflers are located at the upper end of each stack. A small revetted building north of Building 15 has 4 stacks on its roof. Access is provided by a ramp under the building. The 2 structures (Building 15 and the adjacent building) may be a formaldehyde plant; Building 15 could be the compressor house and the adjacent building could provide the heat for raising the temperature of the compressed air which would be used to oxidize methanol to produce formaldehyde.

Possible Melt-Loading Facility

Building 24 (Figure 6) and the 3 associated revetted storage buildings (item 23, Figure 3) may be a melt-loading facility. Building 24 has a slightly raised center section. A large horizontal cylindrical structure supported on a concrete cradle extends outward from the southeast side of the building. A number of pipes or chutes lead from the bottom of the horizontal tank and presumably re-enter the building. These factors suggest that the tank-like structure may be a melt-loading facility or a crushing, screening, or mixing device for explosive material. The explosive nature of the materials handled is suggested by the heavy revetments on each side. A large pipe extends from the end of the horizontal cylinder and enters the ground, possibly connecting with one or more buried tanks a short distance north of the building or with one or both of the buildings to the south (item 26).

- 3 -

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM



FIGURE 2. CAMP HUCKSTEP MUNITIONS PLANT (PLANT 81) NEAR CAIRO, EGYPT, OCTOBER 1964.

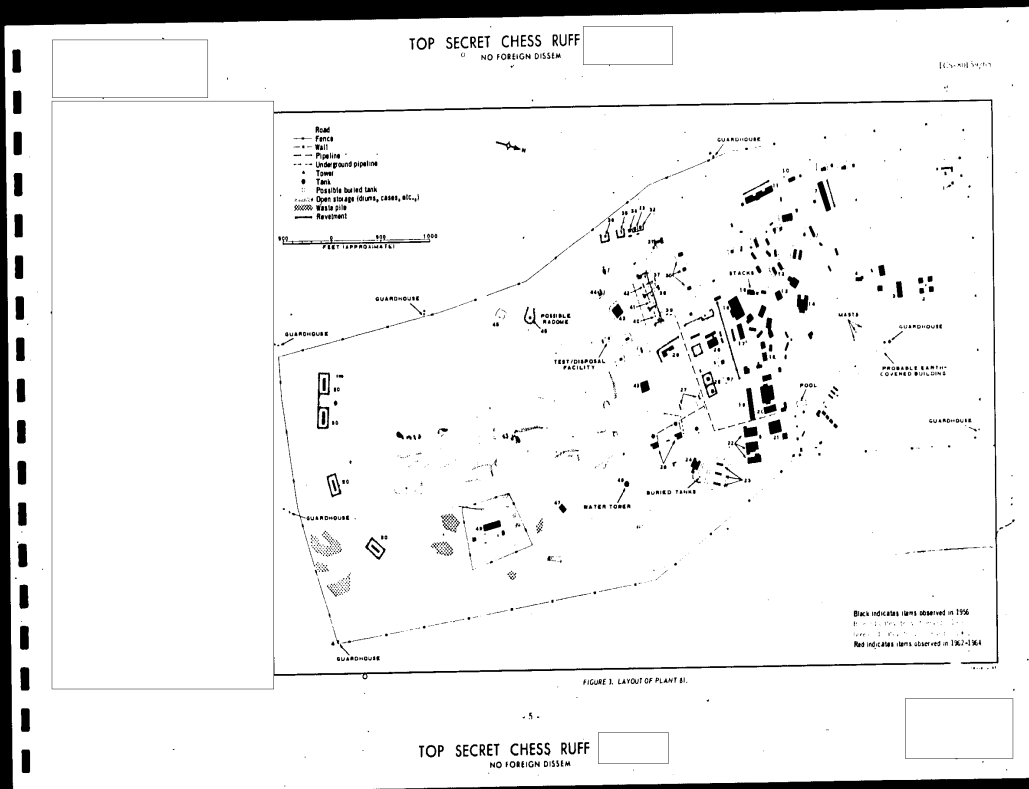
NPIC J-8208 (2/65)

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM

25X1

25X1

25X1



25X1
25X1

25X1

25X1

25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1

Possible Acid Preparation Buildings

Two buildings (item 26) appear to be the origin of the overhead pipeline that serves the nitrating facilities, items 40-42 (Figure 7) and may continue westward to a building (item 31), the precise function of which is obscure. Each of the 2 buildings near the possible melt-loading facility (item 26) has a large buried tank in its yard. A third, similar tank with an associated small building, possibly a pumphouse, is located north of the 2 structures. Figure 6 shows a portion of the northernmost building and a considerable number of small horizontal tanks and several drums or pressure bottles stored adjacent to it. The southern building is shown in Figure 7. All these factors taken together indicate that the 2 buildings (item 26) may be acid preparation or mixing facilities and that the pipeline conveys the acid (or acids) to the nitrating area.

Probable Munitions Filling Section

Buildings 25, 27, and 28, and the other structures between the longest-west revetment on the north and the pipeline to the south probably house an explosives processing section, possibly for the filling and assembly of mines or mortar shells. Two buildings (item 27) are probably explosives storage units and Building 28 is a possible machine shop for the fabrication of the metal components of the munitions loaded in the area. Buildings 25, 27, and 28 are shown in Figures 5 and 7.

Probable RDX or TNT Manufacturing Plant

Buildings 37 through 42 constitute a probable RDX or TNT manufacturing plant. The absence of visible storage tanks for toluene tends to negate the manufacture of TNT. However, toluene could be stored in underground tanks or shipped into the plant in drums; one or more of the tanks in the area of item 26 could be used for toluene storage. Buildings 37-39 are probably acid and fume recovery and acid fortification

facilities, while buildings 40-42 (Figure 7) are used for the actual nitration process. This group of buildings could be utilized to nitrate substances other than toluene, the most likely possibility in the light of present data being hexamethylenetetramine for the production of RDX which has supplanted TNT in many applications. The probable formaldehyde manufacturing facility in the Plant 81 area (possibly Building 15 and the building immediately to the north) suggests the possibility of RDX manufacture. Two of the 3 revetted structures east of the westernmost storage shed (item 43, Figures 7 and 8) and the 3 structures identified as item 30 (Figure 7) are probably explosives storage units.

Possible Test Facility

The area between the 2 storage sheds (item 43) is occupied by 3 revetted structures, one of which may be a test facility for small lots of explosive and the other 2 probably provide temporary storage for explosives. A test/disposal facility and possible small burn area are located southeast of the westernmost storage shed (Figure 8).

Probable Rocket Production Area

Buildings 31-36 probably constitute a production line for small tactical rockets. The precise function of Building 31 is obscure but it could be a drying house, a final assembly building, or both. This building is served by a large-diameter overhead pipeline which apparently originates at Building 37, the probable acid and fume recovery building. The pipeline appears to be too large for conveying reagents, but does not possess the expansion bends characteristic of steamlines. Accessways at both the east and west sides of the building lead under the structure. Escape chutes or possible ramps descend to ground level from the north and south ends of the building. This group of buildings resembles a known rocket

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

production facility in Greece; German rocket experts have been reported as having worked at Plant 81. 4/ Buildings 32 and 33 (Figures 7 and 9) are identical structures surrounded on 3 sides by extraordinarily thick vertical walls, probably constructed of concrete. These structures are probably utilized for loading propellant into the rocket casings. Buildings 35 and 36 are probably storage buildings for propellants and igniters. A subassembly function may be performed in the center building (item 34).

Possible Initiator Manufacturing Unit

Building 44, shown in an oblique view on Figure 7, is a possible initiator manufacturing unit. The building is similar in some respects to US facilities in which lead azide is produced. If lead azide is produced in the building, the 2 small structures west of it could be used to store the sodium azide from which lead azide is made.

SOUTHERN PART OF PLANT

As previously noted, the southern part of Plant 81 is used primarily for storage. Two structures, visible on photography of October 1964 (items 45 and 46, Figure 3) and on low-level oblique photography (Figure 10), are not used for storage purposes: they are described prior to a discussion of the storage in the southern part of the plant.

Possible Radome

Item 45, a spherical structure 15 feet in diameter, is a possible radome which may be associated with the nearby Cairo International Airport. The spherical structure could be a tank for holding fluid of some kind, but the lack of a road or any vehicle tracks and the distance from the structure to processing facilities militate against such an interpretation.

Weapons Test Cell (Baffle Grid)

The identification of item 46 as a weapons test cell may be inferred from the fact that it

is located in an explosives/munitions plant. Additional confirmation of the identification is supplied by a recent article that describes an analogous US facility recently put into operation in Florida. 8/ The article describes the test cell and reports that specific research program areas include the various concepts involved in the effectiveness of chemical, antipersonnel, antitank, antiaircraft, and antimissile munitions.

Seven other weapons test cells have been observed: 3 in the USSR, 3 in China, and 1 in Austria. They are similar in configuration to the test cell at Plant 81 and all the test cells, except the Austrian example, have a CW connotation. 9/

The weapons test cell at Plant 81 consists of 4 arcuate segments, all of which are arcs of circles having a common center. In Figure 10 the segments or walls of the test cell are lying flat on the ground. Each arc, from the innermost outward, is developed from radii that increase by nearly equal distances from the center, the first and shortest arc being approximately the same distance from the center as the second is from the first, and so on. Figure 11 is a dimensioned drawing of the weapons test cell at Plant 81.

It is thought that the test cells are used to test model and actual munitions with respect to distribution, range, and penetration of fragments or contained missiles in various types of fragmentation or missile dispersion devices. The arcuate segments of the weapons test cell are lined with, or consist of, witness plates which record the distribution and/or penetration of missiles produced when the test device is exploded. The data can then be collected and analyzed with a view toward producing more effective munitions as well as the determination of use-criteria. The design of the weapons test cell, although basically simple, suggests an in-

- 8 -

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1
20A1

25X1

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM

25X1
25X1

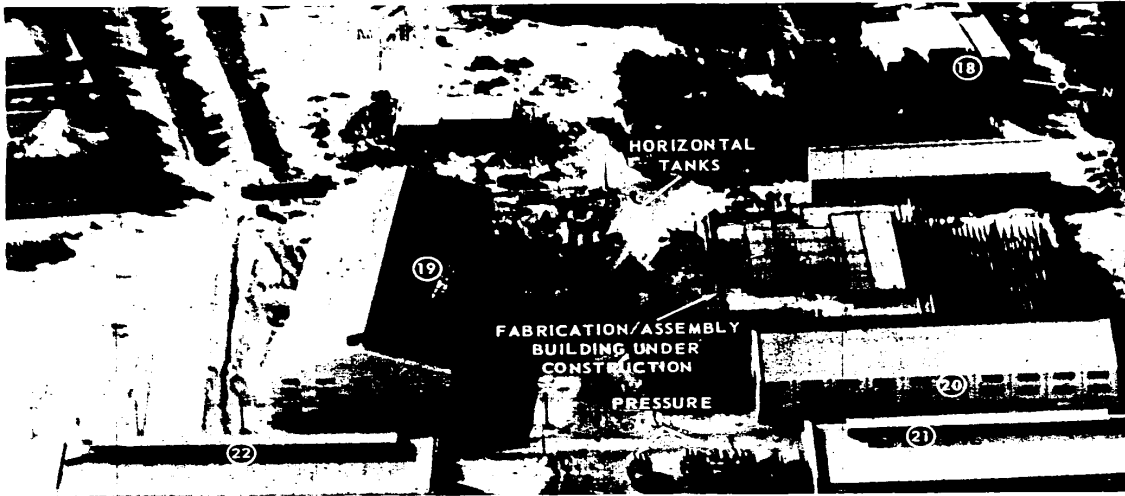


FIGURE 4. VIEW OF STRUCTURES IN CENTRAL PART OF PLANT.

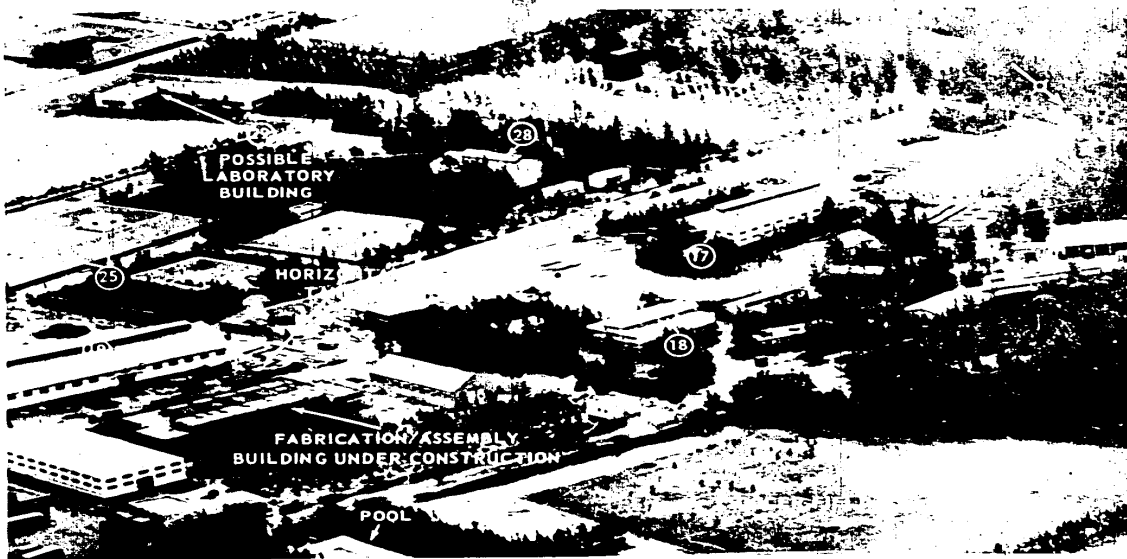


FIGURE 5. VIEW OF STRUCTURES IN CENTRAL PART OF PLANT.

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM

25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

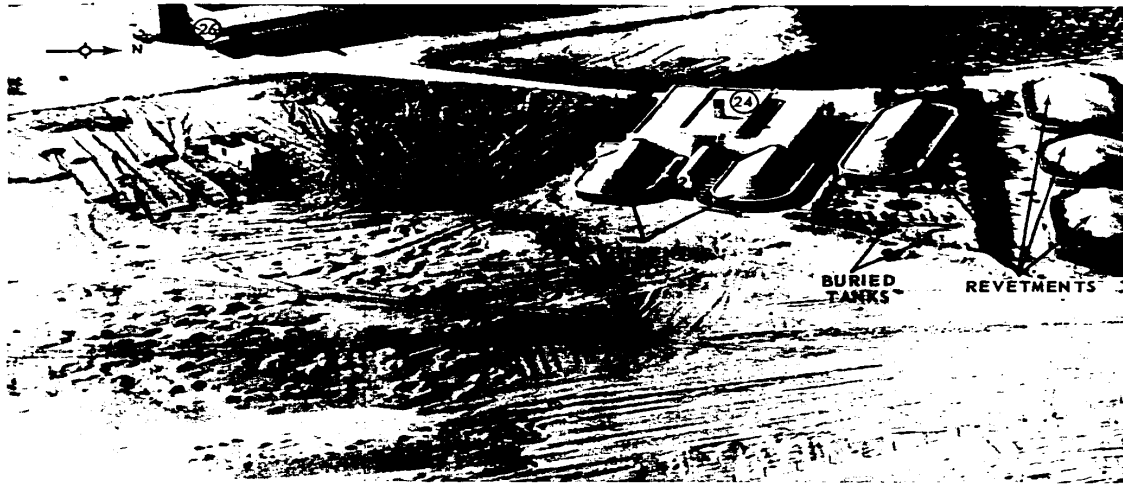


FIGURE 6. POSSIBLE MELT-LOADING FACILITY OR A CRUSHING, SCREENING, OR MIXING DEVICE FOR EXPLOSIVE MATERIALS (ITEM 24).

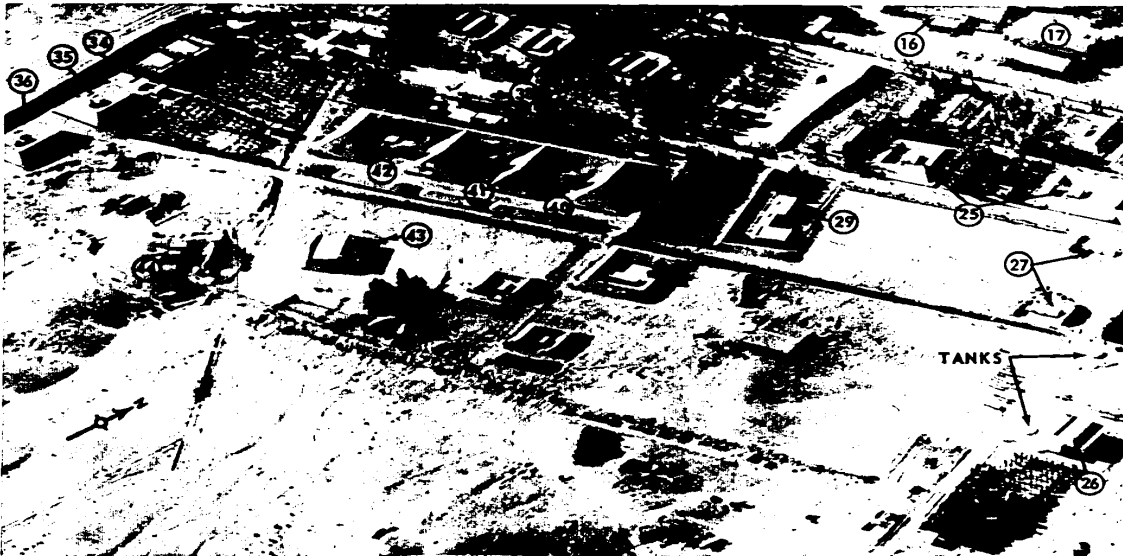


FIGURE 7. VIEW OF REVETTED STRUCTURES ON WESTERN SIDE OF PLANT. Items 40-42 are nitrating facilities; items 31-36 comprise a probable rocket production area.

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM

25X1
25X1

25X1

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM

25X1
25X1

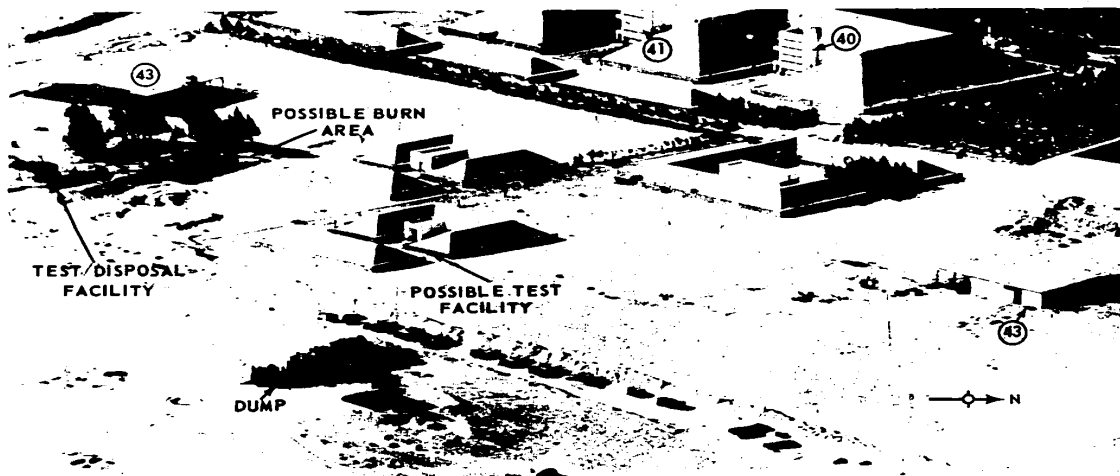


FIGURE 8. VIEW OF NITRATING BUILDINGS (ITEMS 40-41) AND POSSIBLE TEST FACILITY.

NP C J-8011 (2/65)

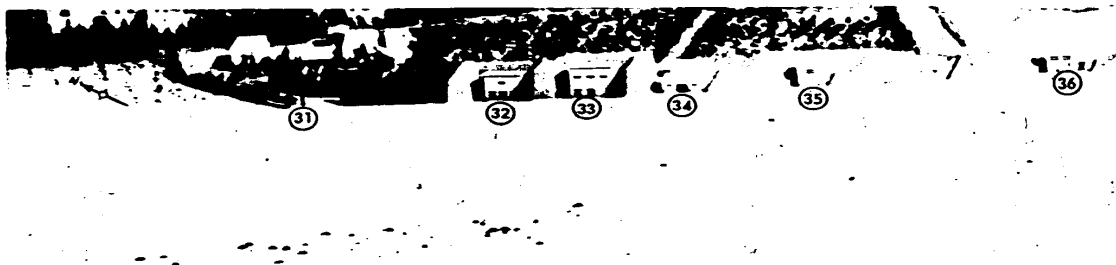


FIGURE 9. VIEW OF PROBABLE ROCKET PRODUCTION AREA.

NP C J-8012 (2/65)



FIGURE 10. VIEW OF POSSIBLE RADOME (ITEM 45), AND SITE OF WEAPONS TEST CELL (ITEM 46).

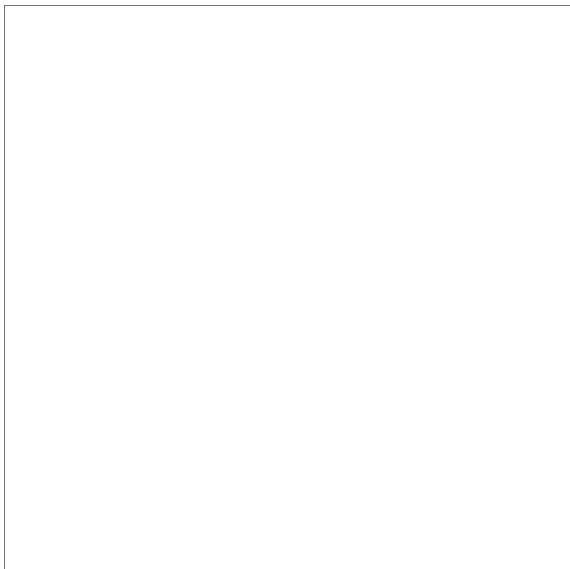
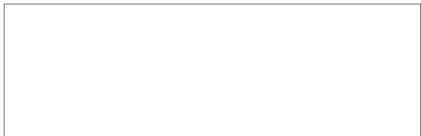
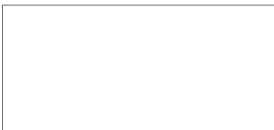
NP C J-8013 (2/65)

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM

25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM



Secured Storage. The fenced enclosure surrounding item 49 is primarily a storage yard for materials, much of which is apparently stored in drums. Item 49 is a shed-type building in which such functions as packing and unpacking, cleaning of empty containers, waste disposal, and similar operations may be performed.

Revetted Storage Buildings. The 4 heavily revetted buildings (item 50) are conventional explosives storage buildings. Three small service buildings are located near the 2 explosives storage structures at the southwest corner of plant area.

CONCLUSIONS

Significant additions to the Plant 81 facilities have been made since 1956. The more important additions are a large nitrating facility, a probable tactical rocket production facility, a probable formaldehyde plant, and several machine shop/fabrication structures. The new facilities, plus the pre-existing munitions loading plant, probably produce mortars, mines, small-arms and artillery ammunition, tactical rockets, and high explosives. Possible products within the inferred capabilities of the plant include bombs, munitions filled with CW agents, and rocket propellants for SAMs and possibly ballistic missiles as well.

tent to acquire the maximum quantity of data per detonation and in a form readily subject to various forms of analysis.

Storage

Open Storage. A large number of objects, which appear to be drums, crates, or packing cases, are scattered in the gullies in the southern part of the plant area. The locations of the various groups of these objects and the size of a representative object from each group are given in Figure 2.

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM



25X1

25X1

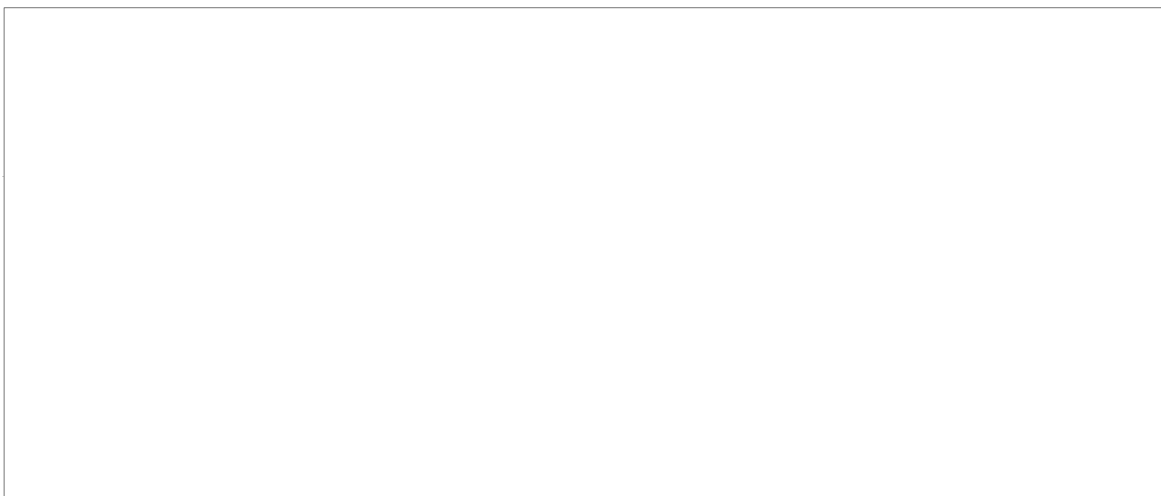
25X1

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM



25X1
25X1

REFERENCES



25X1

MAPS OR CHARTS

ACIC. US Air Target Chart, Series 200, Sheet 0447-12HL, 1st ed, May 62, scale 1:200,000 (SECRET)

DOCUMENTS

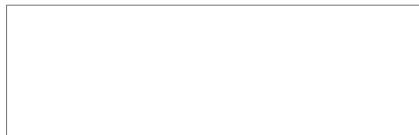
1. CIA. Industrial Register Firm No 4202500, *Output and Products of Certain Egyptian Region War Factories* (abstract of CS-3, 414,587), 7 Dec 59 (SECRET/Noform/Continued Control)
2. CIA. Industrial Register Firm No 4202500, Card No 5209147, *Egypt Small Arms Production* (abstract of Weekly Intelligence Summary No 30-55), undated (SECRET)
3. CIA. Industrial Register Firm No 4202500, *Munitions Plant* (abstract of Army Egypt R-45-58, CIA No 2069766), 4 Nov 58 (SECRET)
4. CIA. Industrial Register Firm No 4202500, Card No 4063456 (abstract of CS-13734), undated (SECRET)
5. DOD. IR 1 649 0038 64, *Gas Warfare*, 28 Apr 64 (SECRET/No Foreign Dissem)



25X1

6. No author given. "Martin-Orlando Begins Operation of Unique Armament Research Facility," *Missiles and Rockets*, Vol 15, No 25, 21 Dec 64, pp. 32-34 (UNCLASSIFIED)

TOP SECRET CHESS RUFF
NO FOREIGN DISSEM



25X1

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM



REFERENCES (Continued)

9. NPIC. B-1010 61, *Possible Chemical Warfare Research Center Near Chapayevsk, USSR*, Nov 61 (SECRET)



CIA. PIC/JR-1018 '61, *Central Chemical Proving Ground, Shikhany, USSR, Part 4, Field Test Complex*, May 61 (SECRET)



NPIC. [redacted] 65, *OAK-Part II, Mission 1015-2, 25, 28-30 December 1964*, Jan 65 (TOP SECRET CHESS RUFF)

REQUIREMENT



NPIC PROJECT

11753 '64

TOP SECRET CHESS RUFF

NO FOREIGN DISSEM



25X1
25X1

25X1

25X1

25X1

25X1

25X1