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SUPPLEMENT 8

TO

JOINT EVALUATION OF SOVIET MISSILE THREAT IN CUBA

PREPARED BY

Guided Missile and Astronautics Intelligence Committee
Joint Atomic Energy Intelligence Committee
National Photographic Interpretation Center

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0200 HOURS

28 OCTOBER 1962

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NOTICE

This report is based primarily on detailed analysis of low-altitude photography taken on [redacted] as well as preliminary evaluation of the results of similar missions from [redacted] (Figure 1). The primary emphasis is placed here on a technical evaluation of force readiness, pace of construction, and changes in the deployment program (Table 1). This report does not attempt to estimate Soviet intent to attack the United States. 25X1 25X1

SUMMARY

1. We still have no direct knowledge of thermonuclear warheads in Cuba, but believe it prudent to assume that the Soviet missile force there is so armed.

2. We estimate that all 24 MRBM launchers are now fully operational, representing a capability to salvo 24 1000-mile missiles within 6 to 8 hours of a decision to launch.

3. The present and estimated operational capability of all Soviet defensive missiles in Cuba is summarized in Figure 2.

4. No new MRBM or IRBM sites have been detected in the past day, although we have not had high-altitude coverage appropriate for search since [redacted] 25X1

5. Construction at the Soviet IRBM sites in Cuba continues at a rapid pace and missile support equipment is now being moved to the vicinity of Guanajay Site 1. No IRBM's per se have yet been observed.

6. The entire missile-launching force at the Soviet MRBM sites in Cuba is being checked out on a rapid basis. This provides an increasing, integrated, operational readiness posture.

7. Automatic anti-aircraft weapons and personnel trenches for protection against air attack are now evident at many of the MRBM sites. These weapons have been introduced in the last few days and probably account for the ground fire now being noted on the low-level photographic missions.

[redacted] 25X1

9. A missile propellant offloading and transhipping facility has now been identified at the double-fenced area at Punta Gerada in Bahia Honda. This was suspected formerly of being a port of entry for nuclear weapons.

10. We now estimate an integrated operational capability for the SA-2 air defense network in Cuba on the basis of sharply increased intercepts of C-Band Fruit Set guidance radar and Mercury Grass tracking data. The sudden, operational activation of the air defense system during the past 24 hours is probably a reaction to increased overflight activity.

11. An intercepted Cuba message of late Saturday night reads "By order of Prime Minister, you are to open fire on any enemy plane which violates our air space."

12. The loss of the U-2 over Banes was probably caused by intercept by an SA-2 from the Banes site, or pilot hypoxia, with the former appearing more likely on the basis of present information.

13. Microwave relay towers have been noted at some of the MRBM and IRBM site areas covered on [redacted] indicating that an integrated microwave command and control communication system will be utilized in Cuba. However, the use of high frequency radio is also indicated by the presence of high frequency antennae at Sagua La Grande sites 1 and 2. 25X1

DISCUSSION

OFFENSIVE MISSILE READINESS (Figures 2 and 3, Tables 2 and 3)

General

1. At all MRBM sites, photographic analysis clearly shows that the Soviets are working to achieve a full operational capability in the shortest time possible. It is also apparent that some of the sites are now in readiness condition 4; i.e., reaction time about 8 hours. At some of the sites, missiles are being moved about, implying a successive checking out of the missiles in the ready tents. While no specific indicators have been detected, warhead checkout may also be occurring in the ready tents. We repeat, however, that we have no direct knowledge that nuclear warheads are present in Cuba. Further, there is no way to detect mating of the nosecone to the missile because this would be done within the ready tent. When such warhead checkout and mating occurs, readiness condition 3 is achieved; i.e., reaction time 2 1/2 - 5 hours.

2. There is considerable movement of vehicles at all MRBM sites. In some cases, propellant transporters have been moved into launch areas. At other locations, missile transporters and other equipment are being shifted to make maximum use of natural concealment. Passive defense measures are being taken at San Cristobal for personnel and emplacements are being dug for automatic weapons (See Figure 5).

3. At the IRBM sites near Guanajay, there is no question that construction activity is progressing rapidly. With the exception of the missile-ready buildings, (which could prove to be tents as in the case of the MRBM sites) all of the integral site elements are present. However, cabling has not been laid from the control center to the launch pads.

4. Within a period of three days, [redacted] the Soviets have moved at least 50 vehicles and other missile-related support equipment into an area just south of Guanajay IRBM Site 1. This significant activity suggests that at least some IRBMs and associated ground support equipment are probably already in Cuba. 25X1

San Cristobal MRBM Area

5. Site 1 (22-40-05N 83-17-50W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

This site has a full operational capability.

b. Supporting Evidence

All four launch stands and erectors are placed at prepared launch positions and cabling has been laid. Some construction effort has been shifted to the housing area.

c. Significant Trends

Construction of more permanent accommodations for personnel continues and further action to cover and camouflage equipment is evident. Since [redacted] considerable movement of missile-associated equipment has been noted: (1) two missile trailers have moved to new locations, probably more for concealment than for nearness to erectors; (2) all of the fuel trailers and at least 10 of the oxidizer trailers have moved from their original location; (3) one fuel trailer is now parked in a wooded area near an erector; (4) two oxidizer trailers are still in the original parking area; (5) four additional oxidizer trailers may still be camouflaged; (6) the fuel trailers are probably under camouflage tarps at the edge of a wooded area; and (7) two vans have been moved from one of the groups of five which were near one erector. In addition, personnel trenches are being prepared within 25X1

the operational area, along the northeastern edge of the site, and within the tent area. Foxholes have also been dug inside the security fence on the eastern boundary of the site. In addition, an automatic weapons position has been constructed at this site (See Figure 5).

6. Site 2 (22-41-00N 83-15-00W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

This site has a full operational capability.

b. Supporting Evidence

All four erectors and launch stands are covered and are emplaced on prepared launch positions. Cabling is laid to the probable control vans and generators. Four of the original six missile transporters can be observed; the remainder are probably undergoing checkout in the missile-ready tents.

c. Significant Trends

A second perimeter security fence is now under construction, and foxholes have been dug inside the inner fence on the south and west boundary of the site. A missile-ready tent previously listed as under construction has been erected. Partial coverage precludes a complete analysis of activity at this site.

7. Site 3 (22-42-40N 83-08-25W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

This site is believed to have reached full operational capability. The readiness posutre, however, may have been adversely affected by recent heavy rains.

b. Supporting Evidence

Only three of the four launch areas are covered by good photography. One camouflaged missile transporter is located in a field adjacent to a launch position. This missile unit has had trouble with the ground conditions following heavy rains. Gravelled roadways are being constructed from two of the launch positions to at least two, and probably three, of the missile-ready tents. At least one of the two cables has been disconnected while the construction is being carried out, but the erectors and launch stands have not been moved. A total of five missile-ready tents have been observed at the launch site. Construction is continuing in the support area; six barracks buildings are complete.

c. Significant Trends

Heavy rains and mud conditions have caused some change in scheduled site improvements. Vehicle and personnel activity indicate continued efforts to improve the readiness posture of the site.

8. Site 4 (22-46-55N 82-58-50W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

This site will probably achieve full operational capability on 28 October.

b. Supporting Evidence

Oblique photography makes identification of specific equipment extremely difficult. The seven missile transporters seen on [redacted] 25X1 have been moved and cannot be detected. At least two erectors are in position but the cabling cannot be seen. The other two erectors cannot be detected. There are three probable oxidizer trailers in one launch area. Many items of equipment could be in the area and not observed. Construction activity is still continuing in the launch and support areas. Five mis-

sile-ready tents can be detected. In the support areas, at least two new foundations for buildings have been completed. There are at least six large fuel (POL) tanks in the support area and five silver-colored chemical tanks with hatches.

c. Significant Trends

A full complement of equipment has not been detected but the construction activity in the launch area is probably complete or nearly so. Although the oblique photography precludes a detailed analysis, the evidence supports the readiness date estimated above.

Sagua La Grande MRBM Area

9. Site 1 (22-43-44N 80-01-40W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

This site is considered to have reached a full operational status. At least four of the missiles could now be at readiness condition 4; i.e., reaction time about 8 hours. Evidence can not support or deny a higher readiness status.

b. Supporting Evidence

Three, and probably four, of the erectors and launch stands are emplaced on the four prepared launch positions. Three canvas-covered missile transporters and four missile-ready buildings are in the area. Three additional ready-building foundations have been prepared. Fuel and oxidizer transporters have been redeployed from the central motor pool to well-camouflaged locations near the launch positions. Cabling has been installed from the launch position to the launch control vans. Wide use of camouflage nets, natural cover, and canvas has been made throughout the site area. All significant equipment has been covered with canvas or camouflaged.

c. Significant Trends

Work continues on the permanent quarters to the rear of the site area with roof construction progressing since the last coverage. [redacted] 25X1
[redacted] 25X1
[redacted] The redeployment of the propellant 25X1 transporters to the vicinity of the launch position, the heavy trackage in the launch areas, and the wide use of camouflage suggests a vigorous, disciplined effort to achieve the highest degree of operational readiness.

10. Site 2 (22-39-10N 79-51-55W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

This site has a full operational capability.

b. Supporting Evidence

Four canvas-covered erectors and launch stands are emplaced on prepared launch positions with cabling in place. Two missile transporters and six missile-ready tents are in the area. Heavy trackage in the vicinity of the erectors and oxidizer and fuel trailers indicates that the system has been exercised, possibly at night.

The large ducts leading from vans to one of the missile-ready tents observed [redacted], suggest environmental control within 25X1 the tent. The purpose of the environmental control is unknown but may be provided for warhead checkout. Because warhead checkout and nosecone mating would be accomplished in the tent, a readiness condition 3 (reaction time of 2 1/2 - 5 hours) can be achieved without being detected in photography. A microwave relay tower, with two dish antennas oriented approximately 135°/315°, is located at the rear of the launch areas. The three communication vans associated with it are camouflaged.

c. Significant Trends

Two of the launch positions have been camouflaged. The erectors and launch platforms are now completely obscured by a pole-supported, opaque canvas. The transporter positions are obscured by camouflage nets. [redacted] 25X1
[redacted] Communications facilities for Command and 25X1
Control are operational; the location and orientation suggest linkage with Sagua La Grande Site 1 and Remedios Site 1. Exercising of the missile system and site improvement are definitely continuing.

Guanajay IRBM Area

11. General

A possible regimental headquarters area is located at 22-57-00N 82-38-25W, approximately midway between Guanajay IRBM Sites 1 and 2. The area contains approximately 10 buildings, all of which were present in May 1962. A known military camp, this facility may have been occupied by the Soviets; vehicles and personnel are visible. There is also evidence of vehicle movement between the area and Sites 1 and 2.

Adjacent to the headquarters area, a microwave communications station has been identified. It consists of an antenna tower with 2 parabolic antennas and 2 buildings near the base of the tower. One of the two parabolic antennas (approximately [redacted] n diameter) is oriented toward a 25X1
large, high-frequency radio station near Bauta; the orientation of the other has not been determined. One of the buildings near the antenna is complete while the second is under construction. Vehicles are parked at the base of the antenna tower.

12. Site 1 (22-57-00N 82-39-25W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

It is estimated that this IRBM site will have an emergency operational capability on 15 November and full operational capability by 1 December.

b. Supporting Evidence

Construction is continuing at this site and vehicle activity was noted throughout the area. Approximately 12 trucks were being used to provide fill for a ready-building foundation. Conduit has been placed at three of the launch pads and preparations for conduit at the fourth pad was in progress. Earth is being mounded against the blast shield at one launch position.

At least 44 missile-support vehicles now have been identified some 500 yards south of the open storage area. None were in the immediate area on [redacted] and only 6 could be seen on the [redacted] photography. 25X1 Some appear similar to that seen at MRBM sites, including 2 fuel trailers, 2 oxidizer trailers, 2 tracked prime movers, and 7 van-type trucks. These vehicles are located in the edge of a wooded area and other equipment may be hidden from view.

c. Significant Trends

Preparation of the site is continuing and missile-support equipment now has arrived at an assembly area south of the site. As yet, there is no missile-support equipment located in the immediate vicinity of the launch area.

13. Site 2 (22-57-25N 82-36-55W)
Last coverage: Low-level [redacted] 25X1

a. Readiness Status

It is estimated that this IRBM site will have an emergency operational capability by 1 December and full operational capability by 15 Decem-

ber, providing construction activity continues as currently observed.

b. Supporting Evidence

The large rectangular building near the pads is nearly complete. Construction vehicles are active throughout the area.

c. Significant Trends

Photography shows continuing activity and the presence of personnel at this site.

Remedios IRBM Area

14. Site 1 (22-25-00N 79-35-00W)
Last coverage: [redacted] 25X1

(No change since last report.)

[redacted] 25X1

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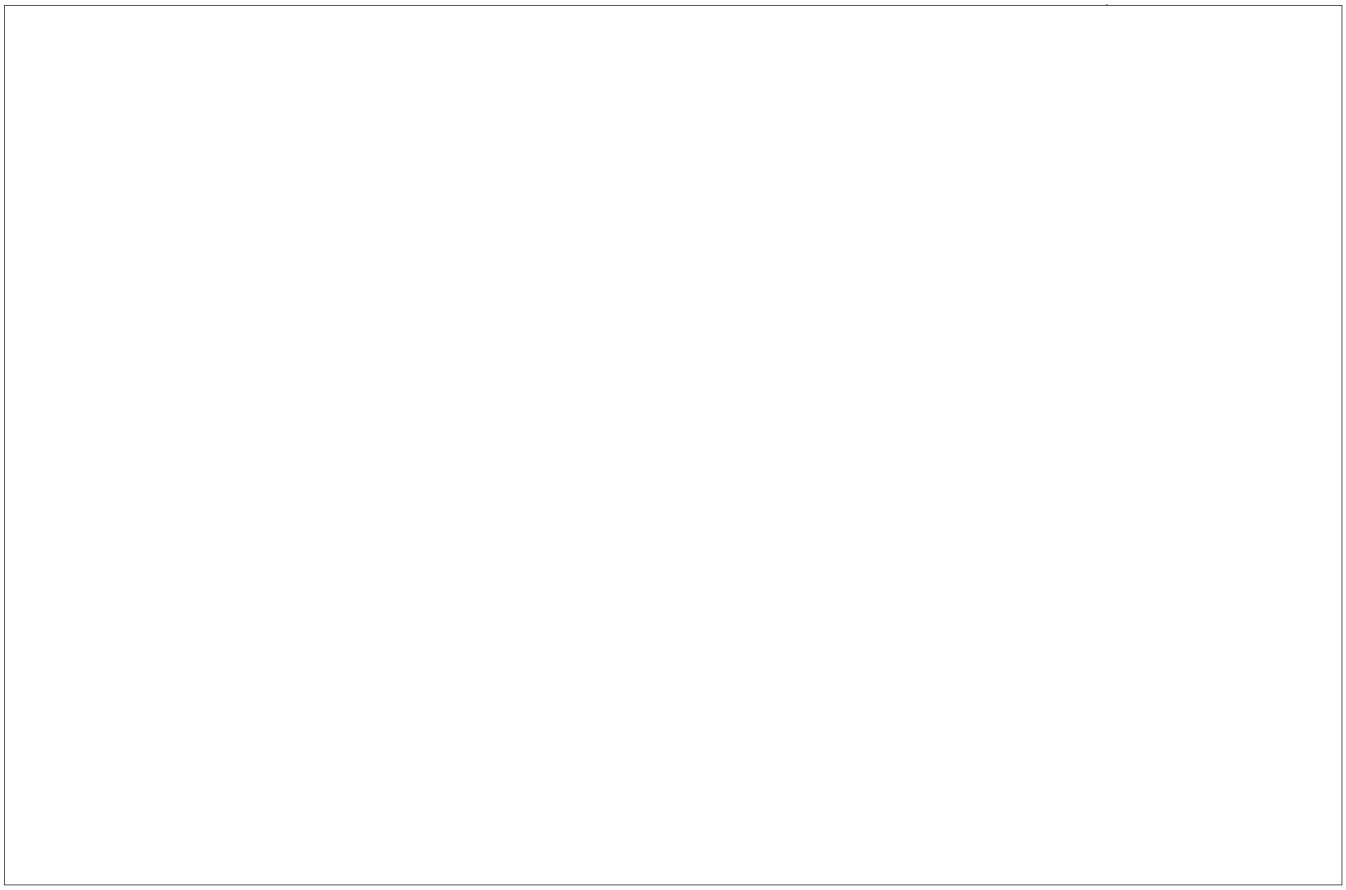

COMMAND AND CONTROL

22. Microwave communication facilities were identified on 25X1
in the Guanajay IRBM area and at Sagua La Grande MRBM Site 2. The 25X1
Guanajay facility is approximately midway between IRBM Sites 1 and 2 and may serve a regimental headquarters controling both launch sites. One of the two parabolic dish antennas (approximately in diameter) is 25X1
oriented toward a large high frequency radio installation near Bauta; the orientation of the other has not been determined.

23. The Sagua La Grande microwave antennas are also of the 25X1
parabolic dish type. One is on an approximate orientation to Sagua La Grande MRBM Site 1 and the other to Remedios. The orientation of the Guanajay microwave transmitters suggest that the command control of

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Soviet Forces in Cuba may be exercised from the USSR through a high-frequency radio link to the Bauta installation and relayed to individual sites or regimental headquarters through a microwave system. The microwave system probably also provides a capability to communicate between sites. Further, a high-frequency net within Cuba is apparent. High-frequency antennas are located at least at Sagua La Grande MRBM Sites 1 and 2.

24. It is known that a Cuban military, microwave radio relay network was installed by RCA during the Batista Regime. The Guanajay and Sagua La Grande microwave antennas may be part of this original system, but construction activity at the Guanajay terminal shows that the system is at least being modified or extended. The RCA equipment provides 24 telephone channels in the 1700 to 1985 megacycle frequency range.

SUPPLY AND LOGISTICS

25. The Punta Gerardo port facility (Figure 7) probably serves as the missile propellant supply point for Cuba. This facility is located within a defended bay and is accessible to the principal highway network.

26. Within a double-fenced, secure area, there are 11 oxidizer vehicles identical to those located at the MRBM sites. One of these vehicles is parked, probably in position for loading, near 24 large storage tanks, each in diameter. A pipe line leads from the storage tanks to the bay and is apparently used to transfer the oxidizer (probably RFNA) from ships. 25X1

27. Within the same secure area, there are four buildings under construction. There is no identifiable equipment visible. Common security for these buildings and the propellant storage and transfer facility suggests that they are to be used to support the missile systems.

COASTAL DEFENSE MISSILES (Figure 4)

28. Low-level photography of [redacted] has provided additional coverage of the coastal defense missile site at Banes. Despite extensive camouflage of significant elements of the installation, some features of the guidance system can be observed. Two van-mounted antennas, one associated with each launcher, are shaped like a section of a parabola. They are trainable in azimuth and may be associated with missile tracking/command. A third element appears to be a tower-mounted antenna which may be for target acquisition and tracking. The operating frequencies of the system cannot yet be determined. 25X1

29. This site appears to be fully operational. There is no further information on the other coastal defense sites in Cuba.

AIR DEFENSE (Figure 4)

Surface-to-Air Missile Readiness

30. Photography processed during the past 24 hours shows that construction activity is continuing on surface-to-air missile (SA-2) sites in Cuba. There is no change in the operational status of the 24 primary sites.

31. Considerable activity by SPOONREST and FRUITSET "C" band emitters was reported [redacted] Other than several SPOONREST signals and a single "C" band signal reported previously, this represents the first concentrated radar activity thus far noted at the Soviet SAM sites in Cuba. Single line D/F bearings of "C" band signals pass in the vicinity of 9 primary and 1 alternate SA-2 sites. There is insufficient information at this time, however, to permit firm assignment of these signals to particular sites. (A single line D/F bearing, until correlated with other D/F bearings, indicates only that the source of the signal is at an unknown distance along the D/F bearing.) 25X1

[redacted] 25X1

34. From low-level photography of [redacted] MERCURY GRASS antennas have been identified at the Senado and Caibaren SAM sites. The MERCURY GRASS communication system is used to transmit early warning data to the SA-2 sites and provides intersite command and control for SA-2 regiments. This brings the total of MERCURY GRASS antennas identified to 3. We should be able to identify these antennas at all remaining SAM sites as additional low-level photography becomes available. All elements of a standard SA-2 site have now been identified at one or more of the sites in Cuba including launchers, GUIDELINE missiles, FRUITSET guidance radar, SPOONREST acquisition radar, SCOREBOARD IFF antenna, and MERCURY GRASS communications equipment. Although we have not been able to firmly identify an integrated command and control net for SAM sites, it is highly probable that an integrated command and control net for SAM's is now in existence in Cuba. 25X1

[redacted] 25X1

TACTICAL MISSILES

(No change)

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TABLE 1

SUMMARY OF MRBM AND IRBM THREAT IN CUBA

Status as of 0200 hours on [redacted]

Locations	Sites		Launchers		Missiles	
	Total Identified	Probably Planned	Total Identified	Probably Deployed*	Total Identified	Prob Basic Load**
MRBM - Range 1020-nm (non-rotating earth)						
San Cristobal (2 regts)	4	4	15	16	23	32
Sagua La Grande (1 regt)	2	2	8	8	10	16
MRBM TOTAL	6	6	23	24	33	48
IRBM - Range 2200-nm (non-rotating earth)						
Guanajay (1 regt)	2	2	8 under construction	8	0	16

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TABLE 1 (Continued)

Locations	Sites		Launchers		Missiles	
	Total Identified	Probably Planned	Total Identified	Probably Deployed*	Total Identified	Prob Basic Load**
Remedios (1 regt)	1	2	4 under construction	8	0	16
IRBM TOTAL	3	4	12 under construction	16	0	32
GRAND TOTAL	9	10	35	40	33	80

* This reflects an estimate of 8 operational launchers authorized per regiment.

** This reflects an estimate of 16 operational missiles per regiment.

TABLE 2

TABULATION OF EQUIPMENT AT SOVIET MRBM SITES IN CUBA

Status as of 0200 hours

	Missile Transporters	Erectors	Launch Stands	Fuel Trailers	Oxidizer Trailers	Missile-Ready Tents	Theodalite Stations	Electronics Vans	Generators
Authorized Equipment (Estimated)	8	4	4	8	16	8	4		
San Cristobal Area									
Site 1	8/4	4/4	4/4	8/1	16/6	7/7	4/0	10/0	6/4
Site 2									
Site 2	6/4	4/2	4/3	6/6	16/1	5/5	4/3	0/0	1/0
Site 3	2/1	4/4	4/4	0/0	0/0	5/5	4/4	7/7	2/2
Site 4	7/0	4/2	1/1	0/0	7/3	5/5	0/0	0/0	0/0
Sagua La Grande Area									
Site 1	6/3	4/4	4/4	8/5	16/10	4/4	4/4	3/0	0/0
Site 2	4/2	4/4	3/3	8/4	16/9	6/6	3/3	1/1	5/4
TOTALS	33/14	24/20	20/19	30/16	71/29	32/32	19/14	21/8	14/10

NOTE: a/b a - Highest number observed at any one time.
b - Number observed last time site was covered (see Figure 1).

Dense foliage and camouflage precludes the positive identifiecation of some vehicles.

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TABLE 3

PROGRESS OF CONSTRUCTION AT SOVIET IRBM SITES IN CUBA

Status as of 0200 hours

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	Launch Pads	Control Buildings	Fuel Storage Tanks	Warhead Bunkers	Missiles	Erectors	Missile Ready Buildings	Cable Trenches	Fencing
Guanajay Site 1	4 u/c	2 c	8	1 u/c	-	-	2 u/c	c	c
Guanajay Site 2	4 u/c	2 u/c	-	-	-	-	-	u/c	c
Remedios Site 1	4 u/c	2 u/c	8	1 u/c	-	-	-	u/c	u/c

u/c - Under construction
c - Complete

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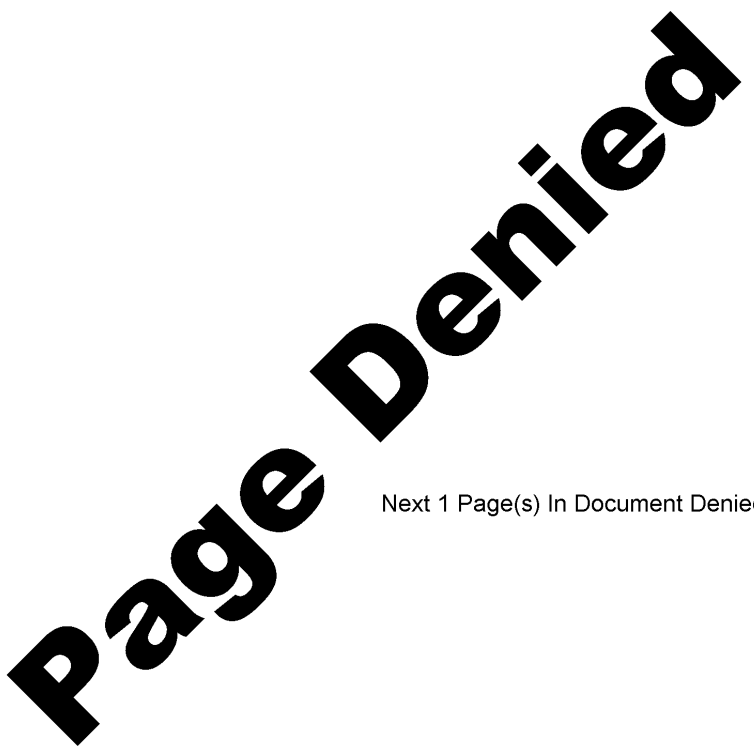

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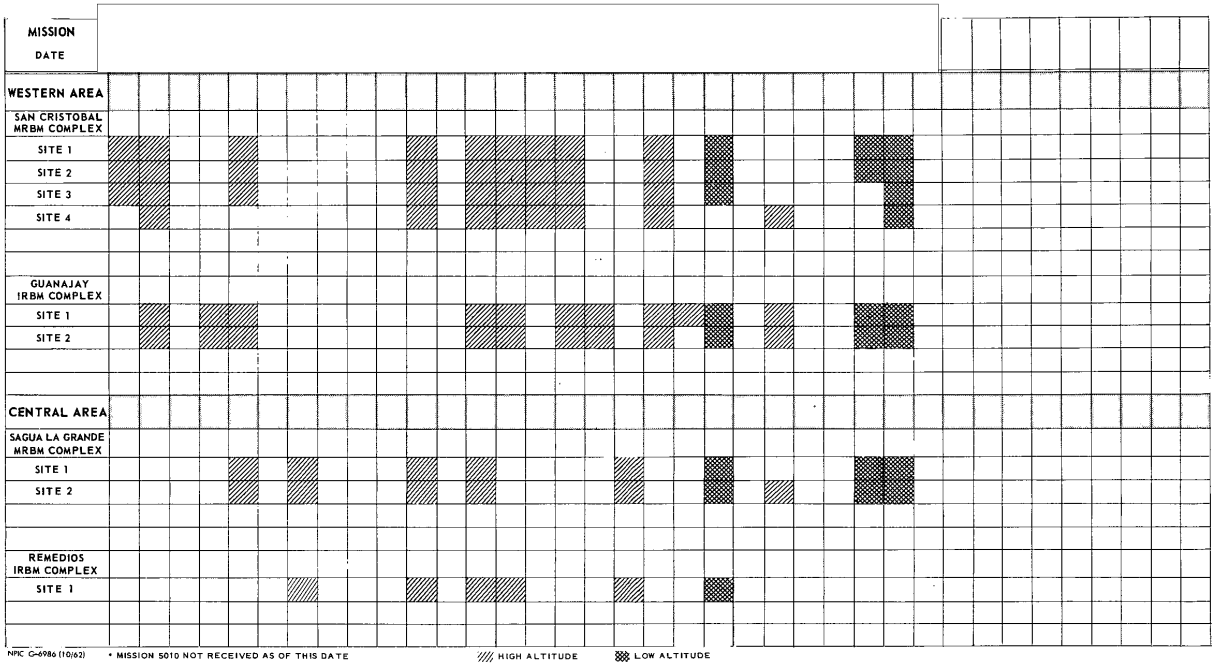

FIGURE 1. SUMMARY OF PHOTOGRAPHIC COVERAGE OF OFFENSIVE MISSILE SITES IN CUBA.

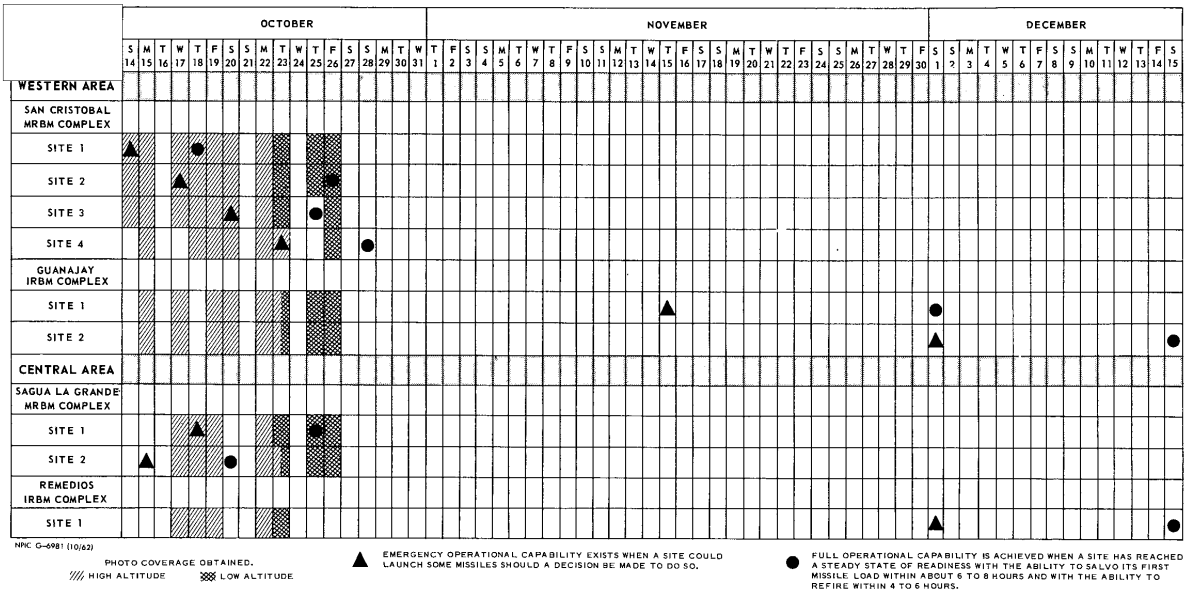

FIGURE 2. ESTIMATED CHRONOLOGY OF OFFENSIVE MISSILE READINESS IN CUBA

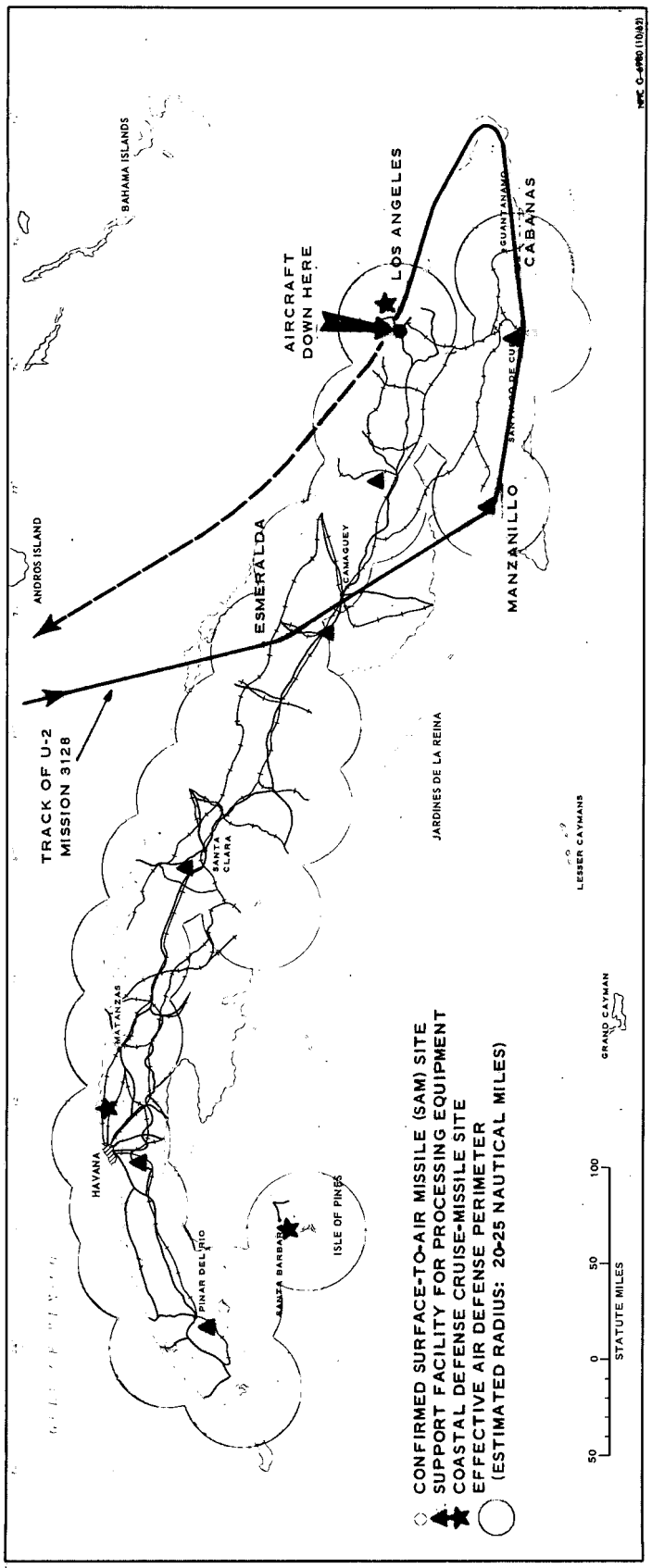

FIGURE 4. LOCATION OF DEFENSIVE MISSILE SITES IN CUBA.

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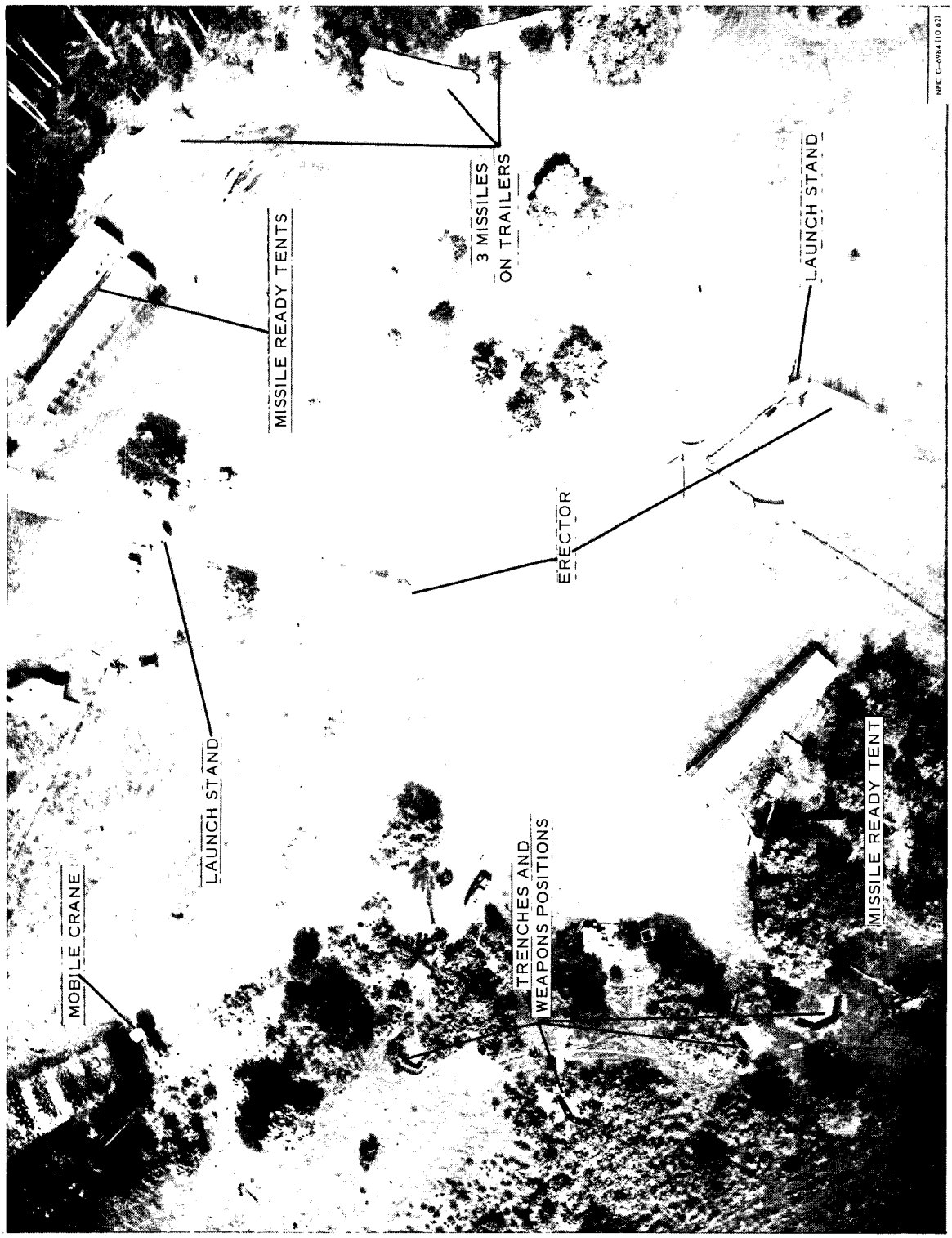

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FIGURE 5. TRENCHES BEING DUG AT SAN CRISTOBAL MRBM SITE 1.

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FIGURE 6. ACTIVITY AT LAUNCH PAD AREA, GUANAJAY IRBM SITE 1.

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FIGURE 7. PORT OF ENTRY, PUNTA GERADA, CUBA.

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