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Joint Photographic Intelligence Report

PROBABLE TYURA TAM
MISSILE TEST RANGE FACILITY
NEAR TARTUGAY, USSR



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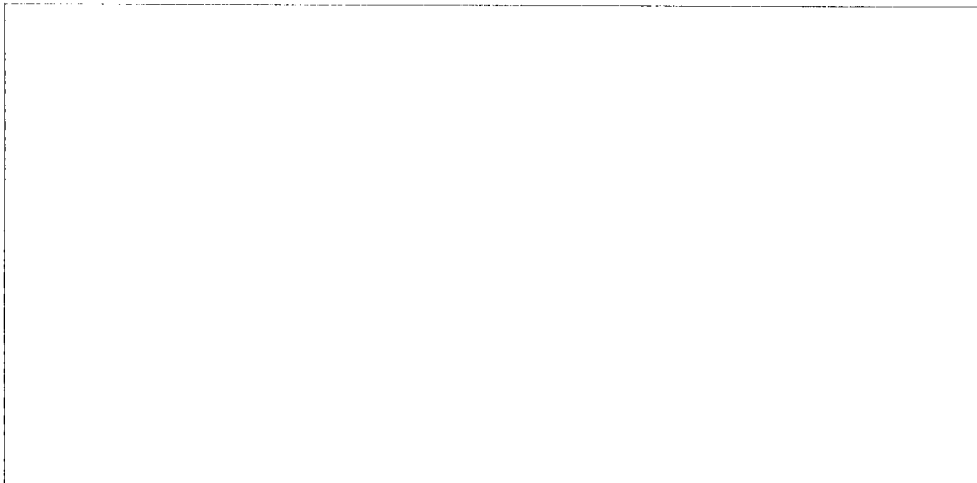
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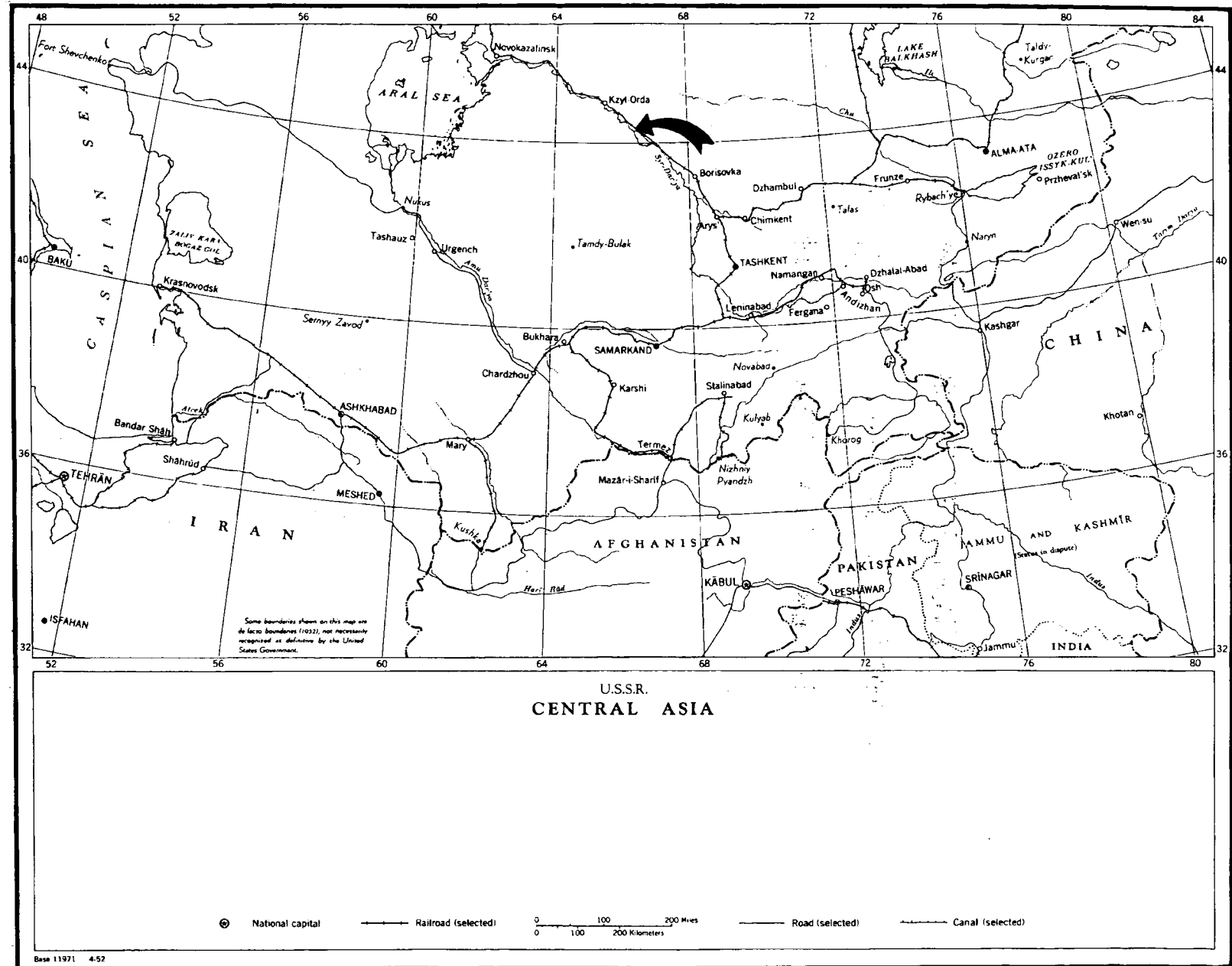
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Some boundaries shown on this map are de facto boundaries (1952), not necessarily recognized as definitive by the United States Government.

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PROBABLE TYURA TAM MISSILE TEST RANGE FACILITY

NEAR TARTUGAY, USSR

I. INTRODUCTION

This joint photographic intelligence report describes a probable Tyura Tam Missile Test Range (TTMTR) facility appearing [] August 1957 photography. It is located at 44°29'N/66°18'E, two nm north of Tartugay and 150 nm southeast of the Tyura Tam rangehead. This report also includes an analysis of [] material believed to be associated with this facility. Finally, through collation of the two sets of data, an attempt is made to analyze its activities and identify its function.

II. DESCRIPTION FROM PHOTOGRAPHY

The site (see Figure 1) consists of a self-supporting lattice tower, two building areas, one of which may be for operations and the other for housing and support, and a tear-shaped balloon.

The self-supporting lattice tower (see Figure 2), 295 feet high, is located 8,400 feet north of the building areas. A dome-shaped object, [] in diameter, is situated on top of the tower. At the base of the tower and enclosed within the tower supports is a 10-foot-square building. A cable and an enclosed elevator lead from the top of the tower down the side to the base. The cable then leads 8,400 feet south to the possible operations area.

The possible operations area consists of 15 buildings enclosed by a fence and an earthen wall 800 by 640 feet. Two guard towers are located between the fence and the wall at opposite corners of the area. An 80-foot-high self-supporting lattice tower is located outside and adjacent to the southeast portion of the wall. A probable open storage area is located adjacent to and outside of the northern portion of the wall.

The possible housing and support area is located 2,500 feet east of the possible operations area. This area consists of 23 buildings surrounded

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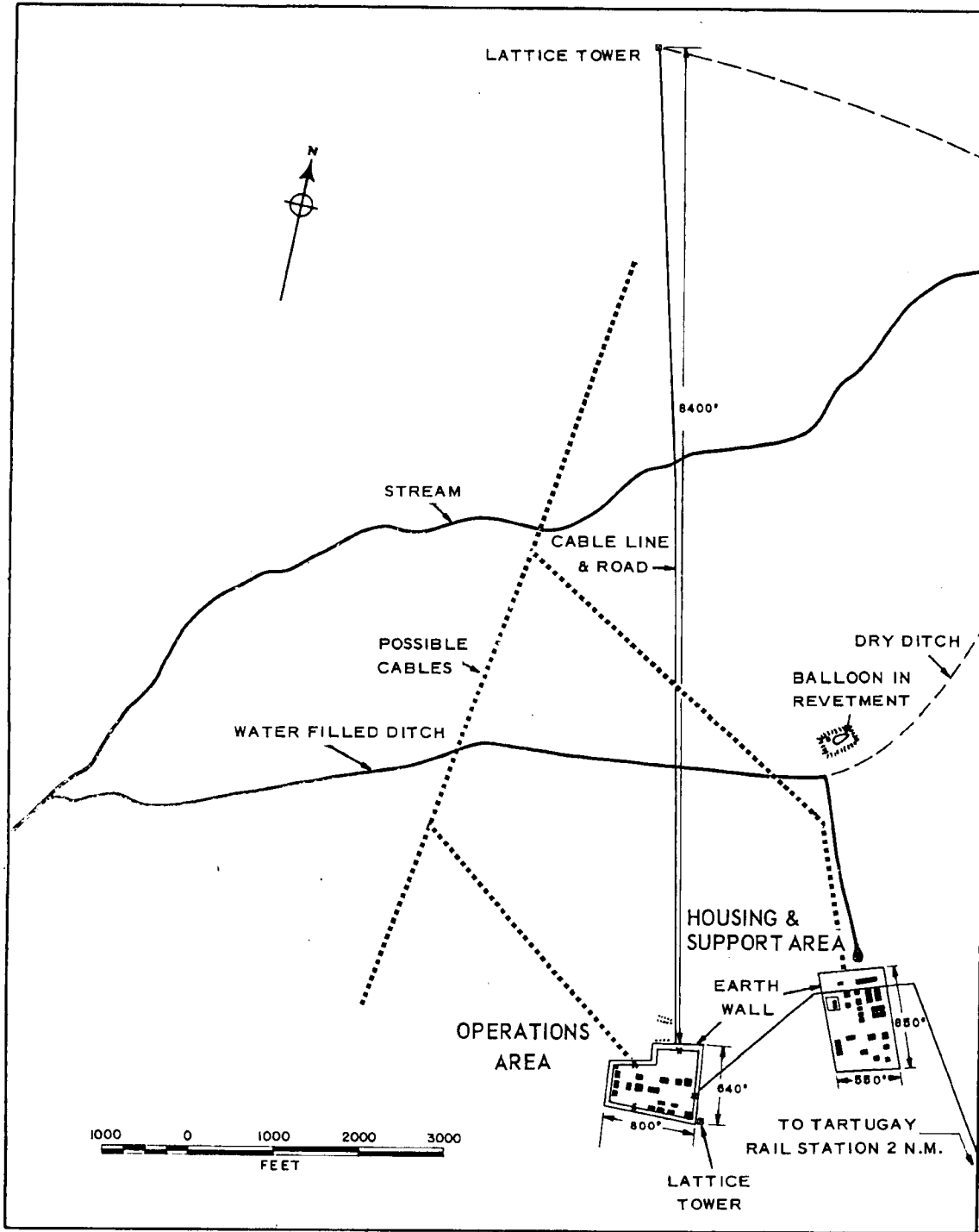


FIGURE 1. TTMR Associated facility 2 nm north of Tartugay.

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by an earthen wall 850 by 550 feet. An all-weather road leads from the possible operations area through the possible housing and support area and then south two miles to the rail station at Tartugay.

A 10-foot-wide ditch leads 2.75 nm north and west from the possible housing and support area to a stream which drains into the Syr-Darya River. It appears that water is pumped from the possible housing and support area into the ditch which at the time of photography was filled with water.

Possible cable scars lead north from both the possible operations area and the possible housing and support area toward the 295-foot lattice tower. Due to the large amount of track activity throughout the vicinity it cannot be determined where these possible cable scars actually terminate.

The tear-shaped balloon, 80 by 20 feet (see Figure 3), is located in an enclosed earthen revetment, 150 by 100 feet, 4,000 feet north of the possible housing and support area. Unidentified equipment is present within the revetment.

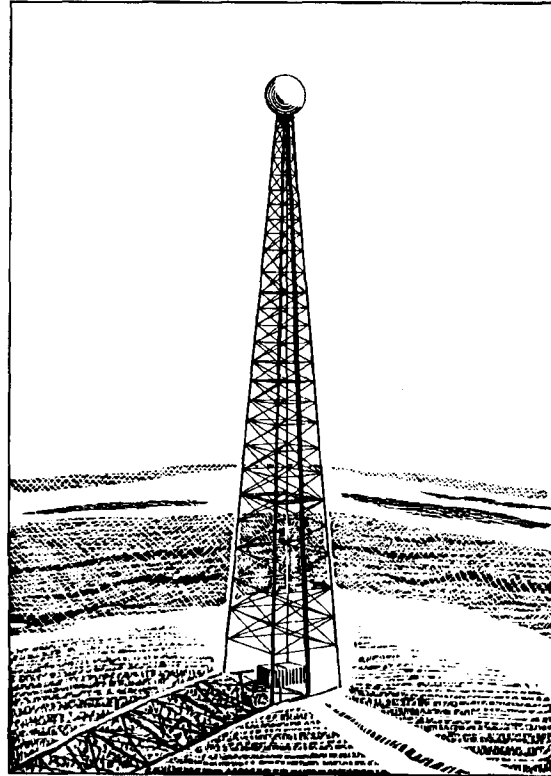


FIGURE 2. Self-supporting lattice tower associated with probable TTMR facility near Tartugay.

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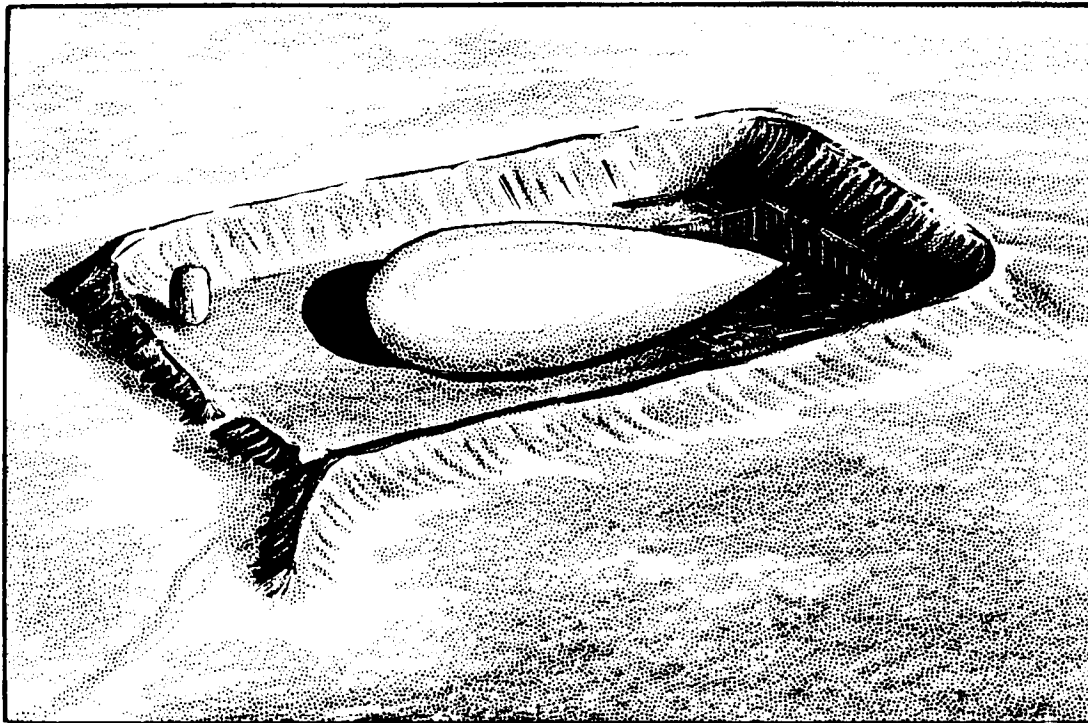


FIGURE 3. Tear-shaped balloon associated with probable TTMR facility near Tartugay.

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2. Kapustin Yar Missile Test Range Communications - Evidence of a guided missile installation in the vicinity of Tartugay can be inferred from messages passed over the Kapustin Yar Missile Test Range (KYMTR) communications links in July 1958 which revealed the transfer of equipment of an unspecified type from a Kapustin Yar instrumentation site in the "F" (650 nm) impact area to the Tartugay railroad station.

3. Weather Analysis - Analysis of the surface weather reports passed by CO5B, an outstation of the local Tyura Tam communications complex, indicates that this station is located within 50 nautical miles of a point 44°30'N/66°00'E, near Tartugay.

4. Frequency Allocation - A study of the transmission frequency allocation pattern for all TTMTR outstations in the near range area indicates that these frequencies are allocated on the basis of distance from the control station at Tyura Tam. On this basis outstation CO5B would be located more than 60 nm but less than 260 nm from Tyura Tam. Tartugay is located approximately 150 nm from the Tyura Tam rangehead.

5. Pre-Fire Reports - Certain pre-fire reports, designated by NSA as "B1, B2" reports (see 3/0/RUGM/R253-59), normally appear to be sent to the outstations in the near range area on the basis of their distance from the control station (i.e., the numerical values of the reports increase as the stations receiving them are further and further from the rangehead) The "B1, B2" numerical values sent to CO5B suggest that this outstation is located further from the rangehead than the CO7 group outstations (60 to 65 miles) but not as far as the CO8 group outstations, which are believed to be located between 230 and 260 nm from Tyura Tam.

6. Balloon in the Tartugay Area - A message originated by Dzhusaly on 20 May 1958 and passed by Moscow/Vnukovo stated that something (possibly a captive balloon) would be raised to a height of 1,500 meters in the region 126 degrees and 200 kilometers from Dzhusaly from 1700 hours on 20 May to 1700 hours on 21 May 1958. It further requested that all (air) crews be warned. The region described in terms of azimuth and range measurements from Dzhusaly equates to the immediate Tartugay area.

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IV. ACTIVITIES OF THE CO5 GROUP

The CO5 group of the TTMTR was first identified in [] and consisted of a control station, CO5A, located at Tyura Tam, and three outstations, CO5B, CO5C, and CO5D. Outstation CO5C was not heard after [] Although in [] a new outstation (CO5E) became active, it is not believed to be the same station identified in 1957 as CO5C. In [] a new outstation, CO5F, was noted. It is possible that it represents the same station as CO5E.

Flight activity by range-associated aircraft, as of the fall of 1957, suggests an association of Tashauz (41°51'N/59°56'E) with Tyura Tam at a time when CO5C was active. If a site at Tashauz were part of the TTMTR instrumentation, it would be compatible with a description of a guidance program used on ICBM/space vehicles appearing in the Soviet magazine Tekhnika Molodezhi, 12 December 1957.

On the basis of weather analysis, station CO5D is believed to be located in the Chelkar/Aralsk area within 50 nautical miles of 47°30'N/60°00'E. Flight activity also implies a TTMTR site in this same general area. CO5F is tentatively located at or near Aralsk.

The CO5 group has been active operationally in some practices, and at least since [] in all valid countdowns for firings. It is interesting to note, however, that only outstations CO5B (Tartugay) and CO5D (Chelkar/Aralsk area) receive countdown data. Outstation CO5E (unlocated) does not. The communications behavior of this group differs from that of the other near range communications groups in several ways. The CO5 outstations, for example, (1) do not normally send in the quick-look "acquisition-and-loss" time reports characteristic of outstations in the Tyura Tam communications complex; (2) do not send the control station the

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single digit audibility reports; and (3) do not participate in the tracking of space vehicles.

V. POSSIBLE FUNCTIONS OF OUTSTATION CO5B

Several possibilities were considered in attempting to identify the function of CO5B. The most probable were: (1) a tracking site (radar or optical); (2) a distance measuring equipment unit; or (3) a missile or space vehicle guidance installation. The preponderance of evidence, summarized below, tends to support the guidance station possibility.

The actual physical size of the layout exceeds that reasonably expected for a simple tracking facility, while distance from rangehead is greater than expected for an optical site. Moreover, if CO5B were performing some type of tracking function it can be reasonably expected that the station would furnish Tyura Tam with "acquisition-and-loss" time reports in the same manner as do all other tracking stations on the range. The fact that CO5B is not observed providing such information to Tyura Tam is of itself an indication that the station's role in range operations is different from that of the regular tracking units previously identified (the CO7, CO8, and CO9 group outstations). Additionally, it appears that the range tracking devices, in particular the telemetry antenna, are aimed. It seems reasonable to assume that the equipment inside the dome-like object atop the 295-foot tower was elevated to lessen the effects of ground return, a factor of little consequence if the device itself is a unidirectional collection device which can be oriented toward a specific point or path in space.

The provision for sizable water run-off noted on photography is considered significant in that it tends to suggest the use of water in quantities one might expect if sizable cooling facilities were located in the area. In turn, a requirement for considerable cooling facilities is more indicative of the existence of additional electronic gear other than that possibly housed under the dome atop the large tower. If the station were performing a guidance function it would require some type of computer center to correlate the input from a detection and tracking device and provide

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appropriate command signals to direct a space vehicle. There would not appear to be such a need for cooling facilities if the station were merely operating a tracker of some type. Furthermore, as stated previously, the fact that the station does not provide the control center at Tyura Tam with a "quick-look" appreciation of its efforts following a launch tends to negate a simple tracking function.

CO5B had ample opportunity to indicate an interest in detection and tracking of vehicles launched from Tyura Tam. Other near range stations were actively engaged in this type of program with respect to various orbits of Sputniks I, II, III. However, CO5B was not so engaged, and did not appear to be required to participate.

If CO5B were a distance measuring equipment unit, it seems reasonable to assume that the station would indicate the results obtained to the rangehead in its operational exchanges with the control station. It has not been observed proving any identifiable information of the distance-measuring type in the manner described.

VI. SUMMARY

CO5B is located 150 nm south and east of the rangehead, and the angle between the line of fire and a line between the rangehead and CO5B is [redacted]. From a purely technical point of view, it is feasible for a station at this location to perform a guidance function, and both COMINT and photography suggest this as a possibility.

[redacted] locates CO5D in an area on the opposite side of the rangehead where it could have the same spatial relationship to the rangehead and the line of fire as CO5B, it is possible that these two stations represent a part of a long-base-line guidance/tracking system. However, no signals have so far been received which would tend to confirm this theory.

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