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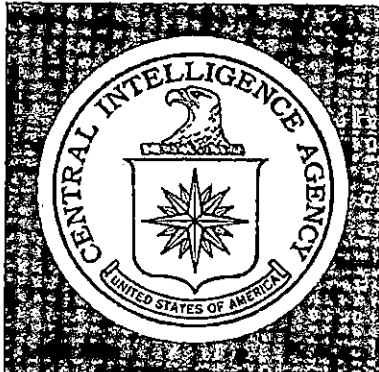
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BLACK SHIELD
Reconnaissance Missions
16 August - 31 December 1967

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BLACK SHIELD Reconnaissance Missions
16 August - 31 December 1967

DST-BS/BYE/68-1
31 January 1968

CENTRAL INTELLIGENCE AGENCY
Directorate of Science and Technology

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PREFACE

This report is the second in a series of resumes of the BLACK SHIELD reconnaissance program flown over North Vietnam. This second resume spans the period from 16 August to 31 December 1967.

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BLACK SHIELD Reconnaissance Missions**16 August - 31 December 1967****SUMMARY**

Twenty-six BLACK SHIELD high-altitude reconnaissance missions were alerted during the period from 16 August to 31 December 1967. Fifteen of the 26 missions were flown, two of which were fired at by enemy SAM units. Eleven missions were cancelled, mainly due to weather conditions. (Appendix I lists these missions and related events.)

Through 31 December 1967, BLACK SHIELD coverage showed no evidence of surface-to-surface missiles, equipment, or facilities. The coverage continued to be of special value for investigating reports of missile deployment derived from other sources. For example, coverage of the Haiphong harbor area was obtained (BX6723) following the arrival there of the Soviet freighter Partizanskaya Iskra, which a clandestine source had reported to be carrying SS-N-2 (Styx) cruise missile crates. A search of the ship and port area photography did not reveal any such crates.

The BLACK SHIELD program has obtained good baseline coverage. There now exists clear, interpretable photography of all of North Vietnam except for a small area adjacent to the Chinese border in Northeast North Vietnam. BLACK SHIELD photography continues to be invaluable in providing unique order of battle information on fighter aircraft and surface-to-air missiles. A number of missions have provided total coverage of nearly all of the major North Vietnamese airfields. The simultaneous coverage of a large number of SAM sites has given US theater forces a quick, comprehensive listing of the occupied SA-2 sites. It has also significantly supplemented communications intelligence in determining the actual number of SAM battalions in North Vietnam and has aided in predicting with some degree of certainty the SA-2 occupancy status for tomorrow's strike operation. As an example, back-to-back missions BX6739 and BX6740, flown 15 and 16 December 1967, photographed 221 of North Vietnam's 226 useable SA-2 sites, including six new sites. Twenty of these SA-2 sites were occupied, including five of the six new sites. (Appendix II provides a listing of the COMIREX targets photographed.)

The program continues to contribute substantially to bomb damage assessment of point targets and of the interdiction effort directed against North Vietnam's

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road, rail, and water transportation systems. BLACK SHIELD missions have identified new targets for US air strikes and have also provided valuable information on Chinese military activity, both in North Vietnam and along the southern and western coast of Hainan Island. In addition, BLACK SHIELD missions BX6737 and BX6738 were flown over the border areas of Cambodia, Laos, and South Vietnam to provide information on the North Vietnamese infiltration and supply routes and on the major North Vietnamese/Viet Cong troop deployment areas.

All of the North Vietnamese missions as well as Cambodian BLACK SHIELD mission BX6737 (which extended up the North Vietnamese panhandle) were tracked by Chinese and/or North Vietnamese air surveillance facilities. North Vietnamese air defense reaction to the vehicle was first noted in related SAM communications traffic during mission BX6723 (17 September). Subsequently, during mission BX6727 (6 October), air surveillance tracking of the vehicle by North Vietnamese facilities was also confirmed. BLACK SHIELD defensive mechanisms were activated on missions BX6716, BX6725, BX6732, and BX6734. One surface-to-air missile was launched at the vehicle on mission BX6732. Nine to eleven SAMs were fired at BLACK SHIELD mission BX6734. A change in the North Vietnamese SAM launch tactics was observed on missions BX6732 and BX6734, when for the first time missile firings occurred with the Fan Song guidance radar in low PRF (pulse repetition frequency) in an attempt to cope with a Mach-3 target; use of the low-PRF mode permits an earlier missile launch against very fast targets. (Appendix III lists the number and type of radar signals recorded by the System 6 Elint collection device carried by BLACK SHIELD vehicles).

North Vietnam air defense facilities were forewarned of the 6 October and 15 October missions (BX6727 and BX6728), apparently as a result of intercepting transmissions from the South China Sea refueling area. A more secure communications posture has since been employed, and no additional forewarning messages have been noted.

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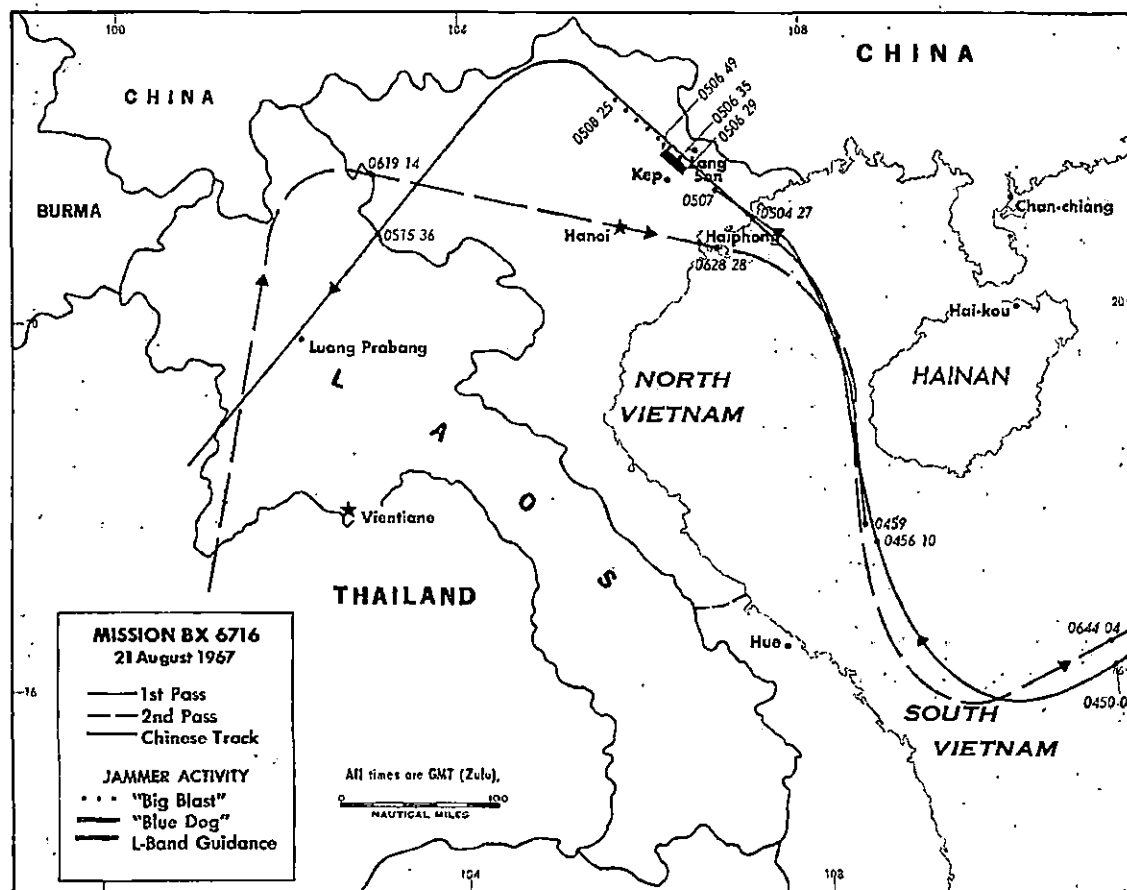
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MISSION ANALYSIS

BX6716

BX6716 was a double-pass, high-altitude reconnaissance mission flown over North Vietnam on 21 August 1967. The BLACKSHIELD vehicle entered and exited North Vietnam on its first pass at 0504:27Z and 0515:36Z and on its second pass at 0619:14Z and 0628:28Z. Figure 1 shows the flight route and associated events.



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Mission photography did not give any evidence of offensive surface-to-surface missile (SSM) equipment or facilities. Hanoi was covered in good clear photography; however, the ability to interpret photography of Haiphong and some other areas was limited by some clouds and haze over North Vietnam and China. The mission aircraft photographed 156 COMIREX targets plus five additional bonus targets. Of these, 108 were SA-2 sites, including one previously unidentified site. Fourteen of the SA-2 sites photographed were occupied.

The BLACK SHIELD mission provided good bomb damage assessment photography of the Hanoi electric power plant, enabling analysts to estimate probable damage to two turbine generators. Photographic coverage of 18 bridges and 11 rail yards yielded current information on the status of the transportation network.

There was no indication of a hostile weapon reaction directed against the mission vehicle; however, on-board warning/defensive systems were activated during the first pass of the overflight at 0506:34Z. (See figure 1.) Activity indicative of a missile launch and subsequent guidance was noted on the following systems:

- a) System 6, an on-board Elint collection device,
- b) Blue Dog, an L-band guidance jammer,
- c) Big Blast, an S- and C-band noise jammer, and
- d) the missile launch indicator lights.

However, analysis of the System 6 tape indicated that none of the seven Fan Song signals collected appeared to be tracking the mission vehicle. System 6 tapes also indicated that the L-band guidance signal came up before the mission aircraft was in the Fan Song sector; the Fan Song was in high PRF. The duration of the L-band signal (20 seconds) would indicate a missile flight to an altitude of 15,000 to 20,000 feet, an altitude compatible with the operational tactics of some of the DOD strike aircraft operating in North Vietnam. Analysis of the Blue Dog tapes indicated that the missile was not fired on a path that would intercept the BLACK SHIELD vehicle. Comint gave no indication of Fan Song tracking or a missile launch relative to the mission vehicle; however, Comint did show that several missiles had been fired at numerous strike aircraft operating in the Kep and Lang Son areas during this time period. Thus, it seems most likely that the radar/missiles that activated the on-board systems actually were directed at DOD strike aircraft.

No on-board systems were activated while over North Vietnam during the second pass. Air surveillance tracking (see figure 1) was carried out by Chinese air defense facilities; there is no indication that the track information was passed on to the North Vietnamese. The tracking of the mission vehicle was limited, probably because of the heavy DOD strike/jamming operations being conducted during

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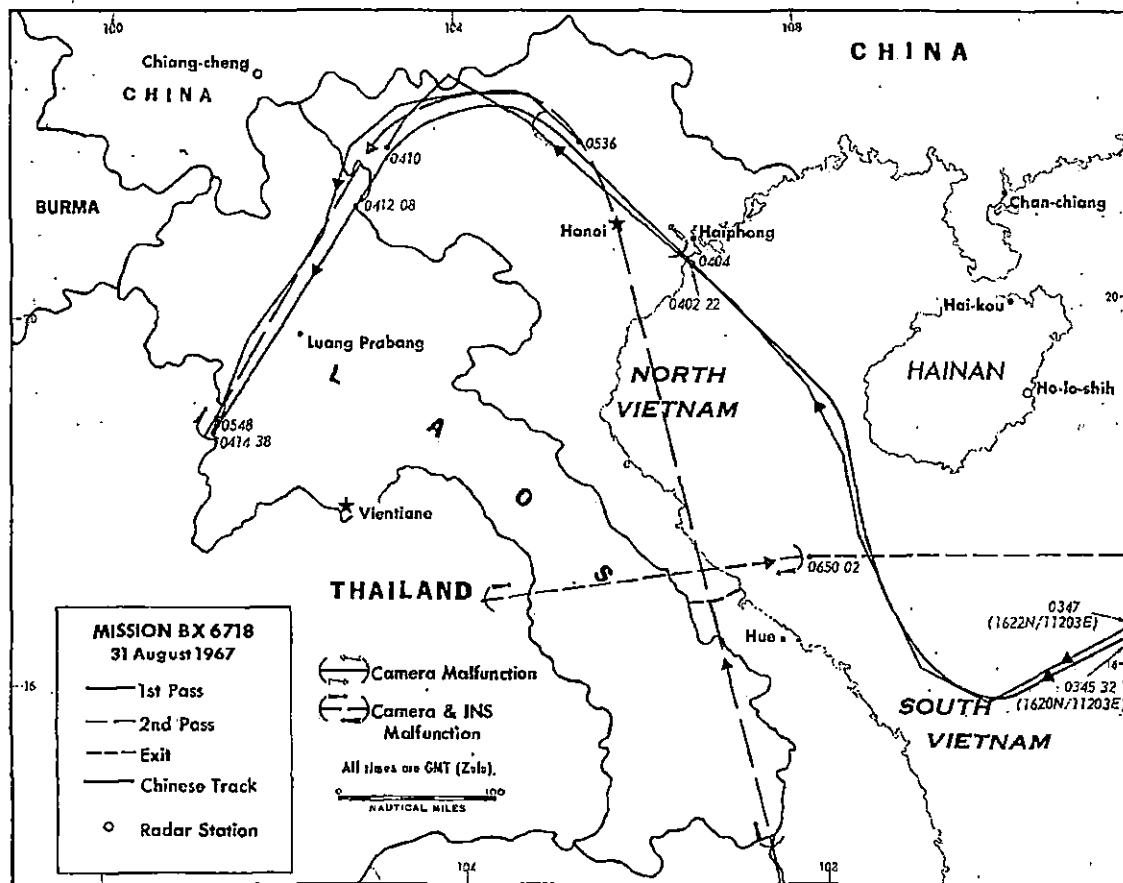
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the overflight period. Five EB-66B, two EB-66C, and one EA1F aircraft were actively engaged in jamming. Overall signal density was also heavy.

BX6718

BX6718 was a double-pass reconnaissance mission flown over North Vietnam on 31 August 1967. The BLACKSHIELD vehicle entered North Vietnam on its first pass at 0402:22Z and exited on its final pass at 0645:46Z. Figure 2 indicates the flight route and related events.



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BLACK SHIELD photography gave no evidence of SSM equipment or facilities. Camera malfunctions occurred on both the first and second passes, as indicated in figure 2. A malfunction in the inertial navigation system (INS) also occurred on the second pass. As a result, only 13 COMIREX targets were photographed. Three of these targets were unoccupied SA-2 sites.

There was no indication of a weapons reaction to the mission vehicle. System 6 recorded eight Fan Song signals during the overflight period. However, none of these sites appeared to be tracking the BLACKSHIELD vehicle, and no on-board defensive systems were activated as a result of these signals. Chinese air surveillance facilities were noted tracking the mission vehicle from 0347Z to 0410Z and 0536Z to 0548Z. Two Chinese radar stations were reflected reporting track information. The plot from Ho-lo-shih (18°55'N, 110°30'E) began at 0347Z, when the aircraft was at a ground range of 185 nautical miles, and ended at 0359Z at a radar-to-aircraft ground range of 140 nautical miles. Chiang-cheng's (22°45'N, 101°50'E) initial plot occurred at 0539Z at a ground range of 134 nautical miles, with the final plot occurring at 0547Z at a radar-to-aircraft ground range of 215 nautical miles. The Kuang-chou Sino-North Vietnamese liaison facility was reflected passing track information on the mission vehicle to the North Vietnamese from 0356Z to 0410Z; a rebroadcast of the same information occurred at 0415Z. This was the second* noted passage of track information by the Chinese to the North Vietnamese. Analysis of the tracking data of BX6718 indicated that from nine to eleven minutes elapsed between initial detection by the Chinese Ho-lo-shih radar station and the passage of the report to Hanoi. Significantly, this reporting time delay enabled the BLACK SHIELD vehicle to complete the first pass over the SA-2 threat zones prior to the initial air surveillance early warning.

Strike/jamming activity by US aircraft was very light during the overflight period, with one EB-66C and one EB-66B operating in the vicinity from 0402Z to 0505Z.

BX6722

BX6722 was a double-pass, high-altitude reconnaissance mission flown over North Vietnam on 16 September 1967. The BLACK SHIELD vehicle entered and exited North Vietnam on its first pass at 0412:57Z and 0423:52Z and on its second pass at 0524:04Z and 0534:20Z. Figure 3 shows the mission route and associated events.

*The first occurred on BLACK SHIELD mission BX6710 flown on 20 July 1967, as noted in BYE-44232/67.

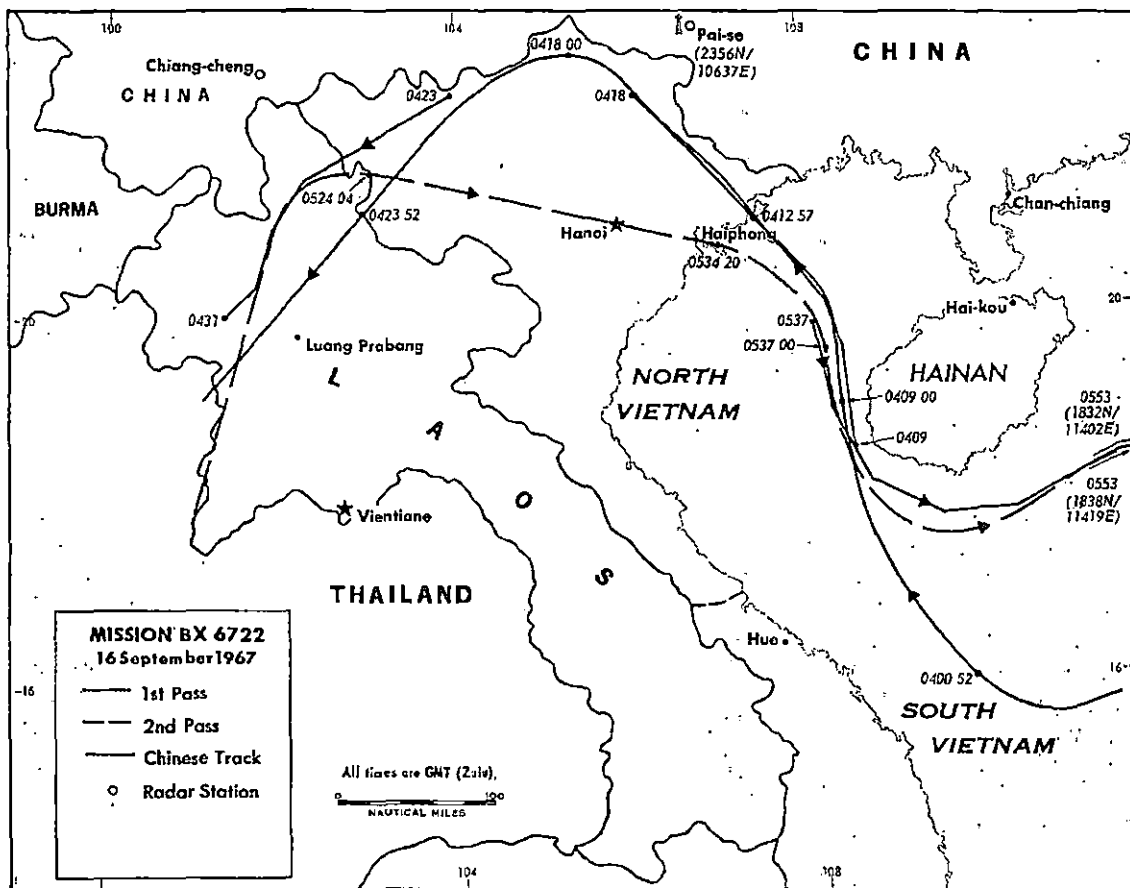
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The weather in the target area was much worse than anticipated, with most of the target area under heavy cloud cover. The mission aircraft photographed 45 COMIREX targets in the North Vietnam/China area. Seventeen of these targets were Vietnamese SAM sites, four of which were occupied. Photography gave no evidence of SSM equipment or facilities.

There was no indication of a hostile weapons reaction. System 6 recorded two Fan Song signals during this mission, but these signals did not appear to be tracking the mission aircraft, and no defensive system was activated by these signals. Chinese air surveillance defense facilities reported track plot times on this mission of 0409Z to 0418Z, 0423Z to 0431Z, and 0537Z to 0553Z. The plot from Pai-se (23°56'N, 106°37'E) began at 0417Z at a radar-station-to-aircraft ground range of 128 nautical miles and ended at 0418Z at a ground range of 105 nautical miles.



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Figure 3

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The initial plot from Chiang-cheng occurred at 0428Z at a radar-to-aircraft ground range of 140 nautical miles, and the final plot occurred at 0431Z at a ground range of 160 nautical miles. North Vietnam's hostile broadcast facility at Hanoi was again noted reflecting the Chinese air surveillance plot information of the BLACK SHIELD vehicle.

One EB-66B and one EB-66C active ECM platforms were in operation over the Gulf of Tonkin from 0254Z to 0502Z.

BX6723

BLACK SHIELD mission BX6723 was a double-pass, high-altitude reconnaissance mission flown over North Vietnam on 17 September 1967. The BLACK SHIELD vehicle entered and exited North Vietnam on its first pass at 0353:41Z and 0404:08Z and on its second pass at 0511:57Z and 0520:11Z. Figure 4 depicts the mission flight route and significant events.

Hanoi, Haiphong and the Chinese border area were covered in clear photography; only about 10 percent of the target area was cloud covered. Mission photography gave no evidence of SSM facilities or equipment. Even though the Soviet freighter Partizanskaya Iskra, an alleged carrier of SS-N-2 (Styx) cruise missiles, was noted berthed and with all five hatches open, a search of the ship and the port area failed to detect any SS-N-2 crates or equipment. Mission photography also provided bomb damage assessment of the port areas and land transportation network. The BLACK SHIELD vehicle photographed over 200 COMIREX targets of North Vietnam and China. Approximately 150 of these were North Vietnamese SA-2 sites, including four newly identified sites. Nineteen of the SA-2 sites photographed were occupied.

There was no indication of a hostile weapons reaction; however, North Vietnamese SAM communications did reveal a hostile intent. At 0352Z a SAM site (possibly located at 21°05'N, 106°19'E) was instructed to go to a "condition one" by his regimental controller. ("Condition one" in Soviet/Vietnamese terminology defines the highest readiness state of a SAM site.) Comint indicated that the site tracked the vehicle with its acquisition radar but was unsuccessful with its Fan Song guidance radar. References to the vehicle's "very fast" speed, and altitude of 25,000 meters (82,000 feet), were noted in the North Vietnamese SAM communication. Comint indicated that a second site (located at 20°59'N, 105°34'E) was unsuccessful in its attempt to pick up the vehicle on its guidance or acquisition radars. The first mention of the BLACK SHIELD aircraft by the North Vietnamese SAM air defense system occurred on mission BX6723.

System 6 recorded five Fan Song signals during the overflight, none of which appeared to be emanating from sites tracking the BLACK SHIELD vehicle; no

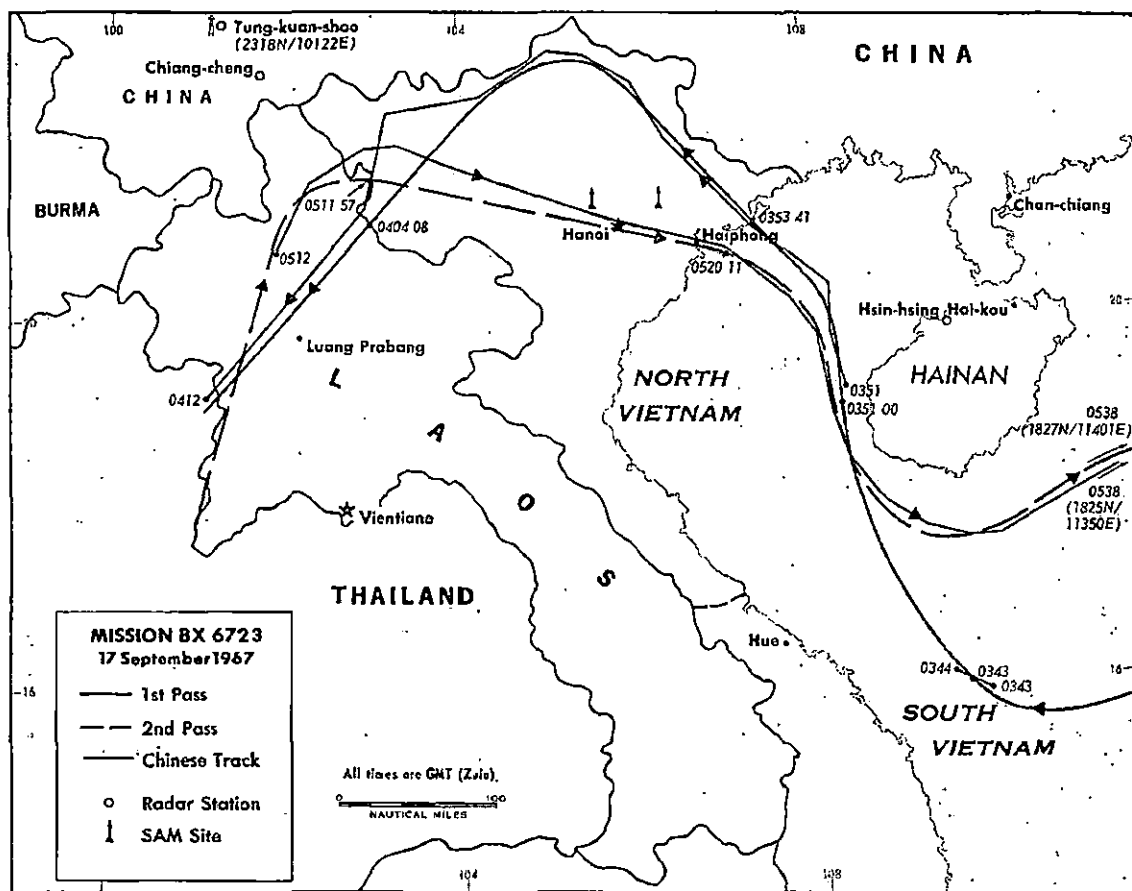
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defensive system was activated as a result of these signals. This is the first BLACK SHIELD mission with complete, unbroken air surveillance tracking of the vehicle while over North Vietnam. This air surveillance tracking was carried out by elements of the Chinese air defense system and passed to the North Vietnamese. Three Chinese radar stations were reflected in this exercise: Chiang-cheng, Hsin-hsing (19°55'N, 109°32'E), and Tung-kuan-shao (23°18'N, 101°22'E). The Chiang-cheng radar station's initial detection of the vehicle occurred at 0513Z at a radar-to-aircraft ground range of 108 nautical miles, and the final plot, at 0517 at a ground range of 218 nautical miles.

There was no indication of any DOD strike/jamming activity being conducted during the overflight period.



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Figure 4

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BX6725

BX6725 was a high-altitude, double-pass reconnaissance mission flown over North Vietnam on 4 October 1967. The mission aircraft entered and exited North Vietnam on its first pass at 0342:34Z and 0348:50Z and on its second pass at 0501:41Z and 0509:28Z. It intercepted two Fan Song signals on the first pass, which activated the on-board defensive systems, but there was no indication of a missile launch. No threat signals were intercepted during the second pass. Figure 5 indicates the mission route and other significant events.

BLACK SHIELD mission BX6725 obtained clear photography of over 40 percent of the country, including the Hanoi, Haiphong, and Thai Nguyen areas and the key Ping-hsiang and Dong Dang transshipment points on the Chinese/North Vietnamese border. Mission photography revealed for the first time the presence of armored vehicles on flatcars at Ping-hsiang, China, where combat equipment had been limited heretofore to field artillery and AA guns. Mission photography gave no evidence of SSM deployment. The BLACK SHIELD vehicle photographed 187 COMIREX and 16 bonus targets. Of these, 154 were SA-2 sites, including 18 that were occupied.

At 0335Z, the Kuang-chou District broadcast the initial detection of the BLACK SHIELD vehicle with a first-plot report time of 0333Z. The Hanoi Bac Mai hostile broadcast, upon reception of the Kuang-chou transmission of 0335Z, began retransmitting the track of the BLACK SHIELD vehicle. At 0338Z a SAM battalion, most probably the one located at site VN 64 (21°09'N, 105°45'E), alerted the senior regimental SAM controller to the approach of a high-altitude, "very fast" target at a range of 108 nautical miles. (This detection range is compatible with the Spoon Rest A radar, one of which is collocated with the battalion at site VN 64.) Shortly after entry into North Vietnam (0342:34Z), the BLACK SHIELD vehicle intercepted Fan Song signals (0343:39Z), which in turn activated the Mad Moth jammer.

According to Comint, two SAM battalions located in the Hanoi area at sites VN 64 and VN 142 (20°58'N, 105°57'E) were actively tracking the mission during this time period. A message intercepted two days later on 6 October reflected the SAM controller at site VN 142 conversing with his regimental controller. The former stated, "Several units picked up the target, the SR-71 We couldn't pick it up because it was too fast Those that picked it up lost it within 3 minutes." These statements of 6 October coincide with the events of 4 October. Pin Peg warning/DF lights located in the cockpit also indicated threat activity emanating from the Hanoi, Phuoc Yen areas. Comint, Elint, and photography all suggest that site VN 64 was attempting a missile launch. The initial Fan Song

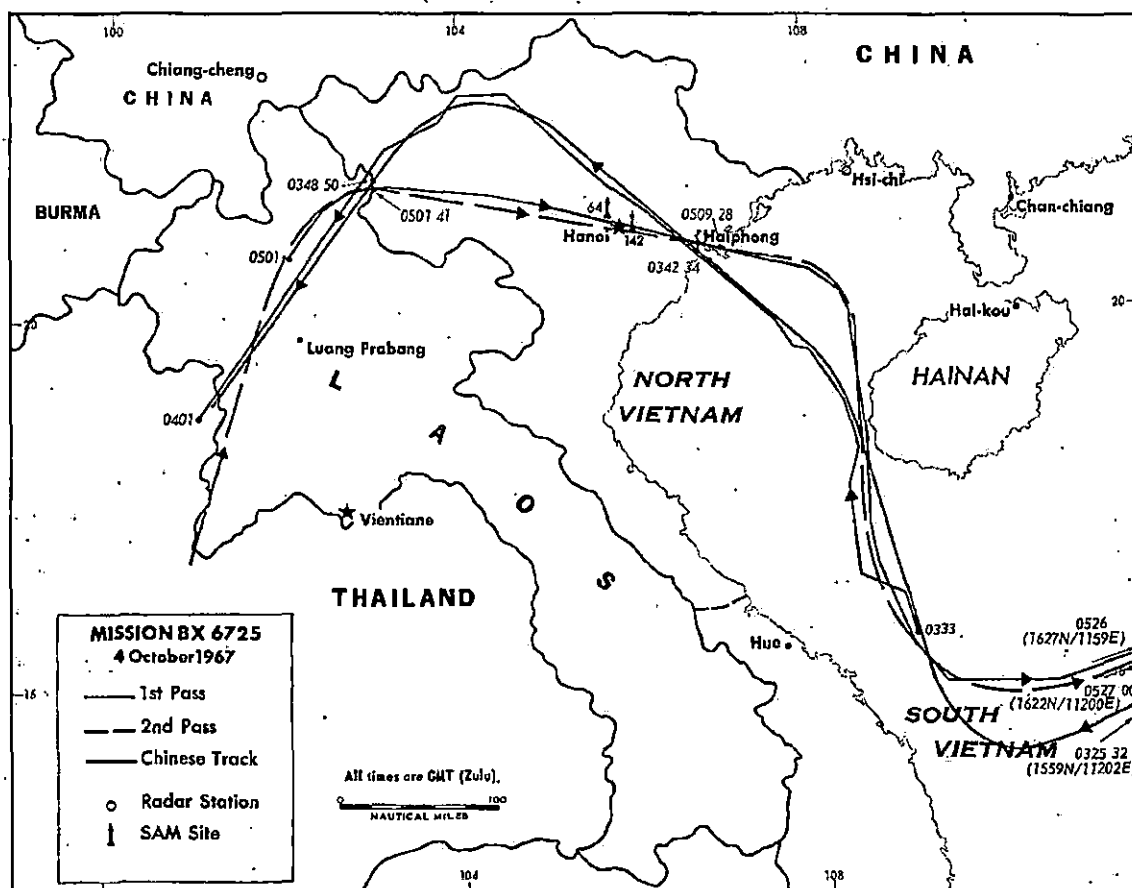
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low-PRF detection range of 57 nautical miles and the switch into and out of high PRF at 32 and 30 nautical miles are compatible with known SAM operations. Although the SAM battalion at VN 64 tracked the mission vehicle in the high-PRF mode for approximately 60 seconds, as shown in figure 6, it did not launch a missile. As apparent from the plot of ground range versus time in figure 6, the off-set range between the mission flight path and SAM site VN 64 was 24.7 nm. Hence, had a missile launch been attempted by this unit, no possible threat to the BLACK SHIELD vehicle would have resulted.

Tracking of the BLACK SHIELD vehicle was reported by Chinese and North Vietnamese air defense echelons from 0333Z to 0401Z and from 0501Z to 0601Z. (The Chinese air surveillance authorities have apparently given position plots of



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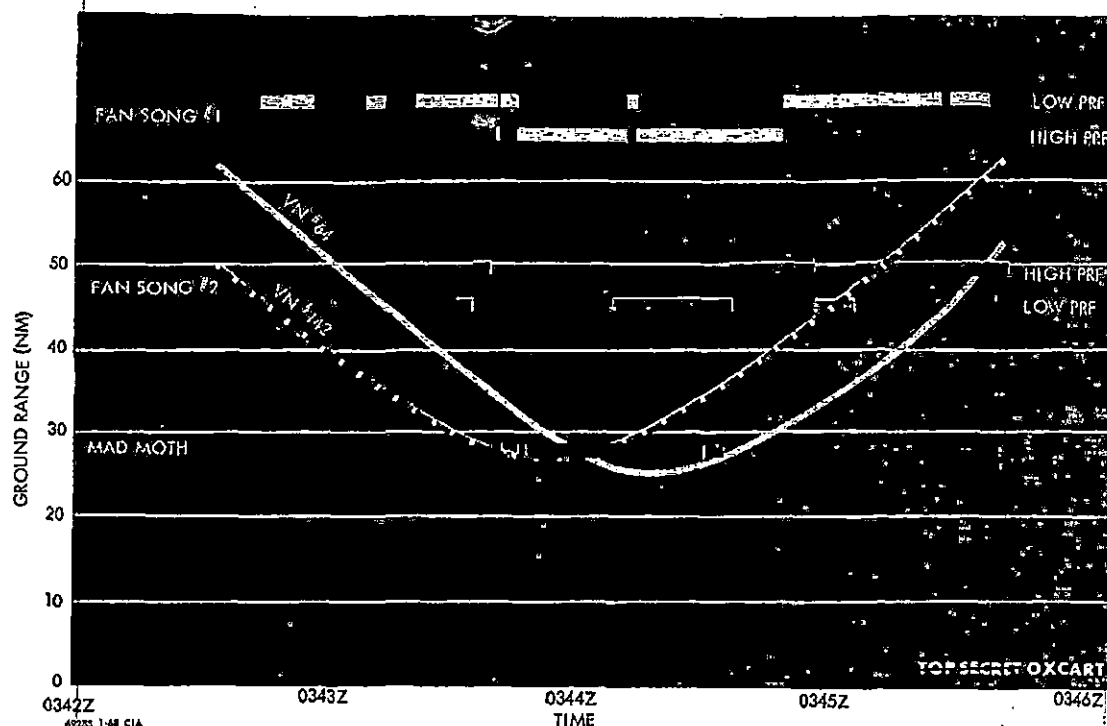


Figure 6. Activity Environment during Attempted Launch, Mission BX6725

the BLACK SHIELD vehicle a special "trinome" and designated the trinome for priority passage. This high priority for passage of special trinome messages has enabled the Chinese to reduce position plot routing delay times by 4 to 6 minutes. The elapsed time from initial detection by a Chinese facility to rebroadcast by Hanoi is now on the order of 1 to 3 minutes. This of course gives the Vietnamese SA-2 system more time to prepare for an engagement.) There was no indication of tracking by North Vietnamese air surveillance facilities on this mission. Two Chinese radar stations, Hsi-chi (21°34'N, 108°28'E) and Chiang-cheng (22°45'N, 101°50'E) were noted reporting tracking on the vehicle. The Hsi-chi radar station initially detected the vehicle at a ground range of 138 nautical miles and tracked it to 140 nautical miles in the period from 0340Z to 0346Z. Chiang-cheng initially tracked the vehicle at a ground range of 128 nautical miles and carried it out to 254 nautical miles.

It should be noted that seven DOD strike/reconnaissance aircraft were active during the SAM activity of the first pass, while 57 strike, four ECM, Iron Hand aircraft were active during the tracked but uneventful second pass.

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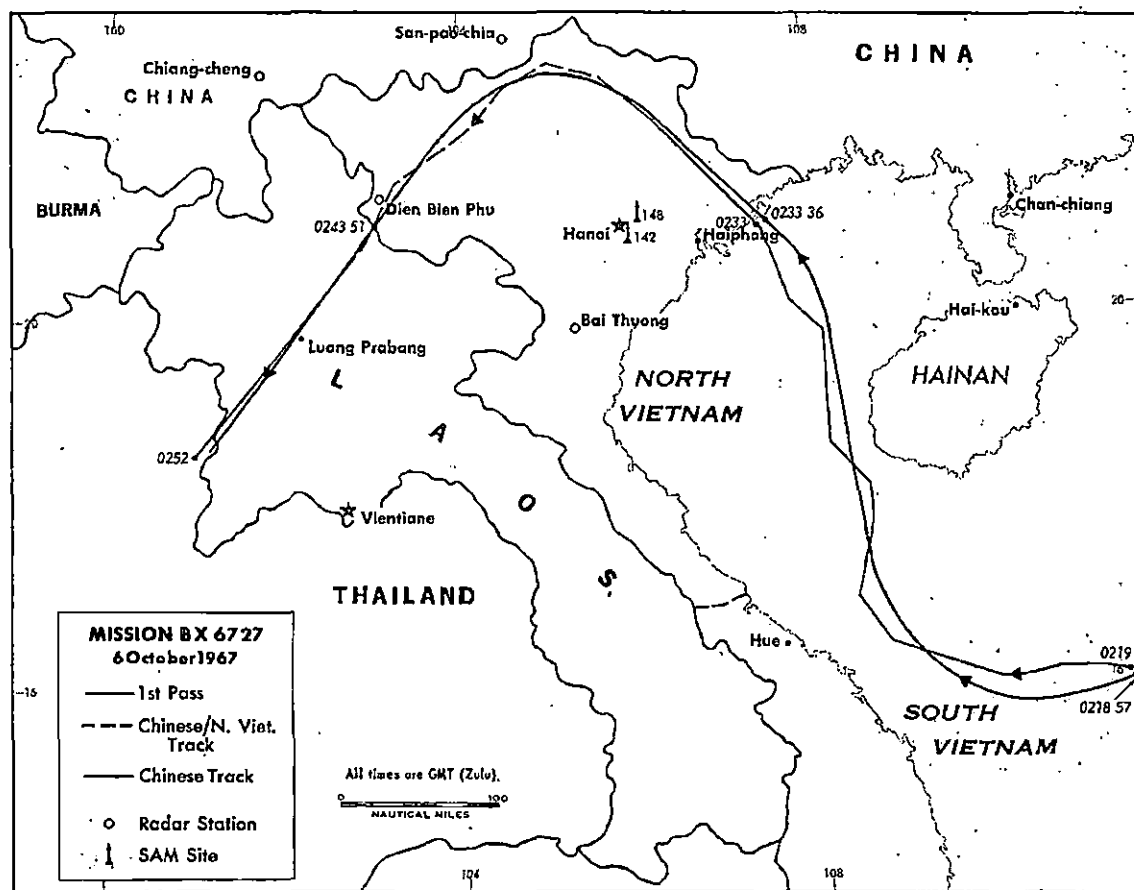
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BX6727

BLACK SHIELD mission BX6727 was a single-pass reconnaissance mission flown over North Vietnam on 6 October 1967. The mission vehicle entered North Vietnam at 0233:36Z and exited at 0234:51Z. Figure 7 shows the route and associated events.

Mission photography gave no evidence of SSM facilities or equipment. Overall photography was good although scattered clouds covered approximately 40 percent of the target area. Thirty-six COMIREX targets were photographed by this single-pass mission. Nine of these were SA-2 sites, but occupancy could not be determined.



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Figure 7

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System 6 recorded seven Fan Song signals during the mission overflight. None of these signals appeared to be tracking the vehicle, and no on-board defensive systems were activated as a result of these signals. At 0128Z the SAM battalion at VN 142 was informed, "From 0210Z on, there will be an SR-71 Be ready to battle." This warning message was passed 51 minutes prior to the initial detection of the mission vehicle by Chinese radar facilities. (Action was taken to determine the original source of this forewarning, but results were negative. Such a forewarning is significant in that it provides the North Vietnamese with ample time to prepare whatever defenses they might choose to use against the BLACK SHIELD vehicle.) Four SAM battalions were noted in Comint reacting to this mission aircraft, but there was no indication of launch activity by any of them. The mission flight path was well north of these SAM sites (see figure 7); two of the battalions, located by Comint at sites 142 and 148, were offset 60 and 65 nautical miles from the mission vehicle's track.

Chinese and North Vietnamese air defense facilities were noted reporting tracking of the BLACK SHIELD vehicle from 0219Z to 0253Z. Bai Thuong (19°52'N, 105°23'E) is the first North Vietnamese radar station where a tracking report of the BLACK SHIELD vehicle was intercepted. Bai Thuong detected the vehicle at 0237Z at a ground range of 156 nautical miles and continued tracking it out to a range of 172 nautical miles. Three Chinese radar stations--San-pao-chi (23°05'N, 104°33'E) and Chiang-cheng in China and Dien Bien Phu (21°18'N, 103°03'E) in North Vietnam--reported initial detection and final tracking ranges respectively of 56-248 nautical miles, 142-229 nautical miles, and 180-64 nautical miles. The reported tracks and altitudes were in general compatible with those of the mission aircraft.

During the overflight period one EB-66C and one EB-66B jamming platforms were active. Strike activity was very light during this time frame.

BX6728

BLACK SHIELD mission BX6728 was a double-pass, high-altitude reconnaissance mission flown over North Vietnam on 15 October 1967. The mission vehicle entered and exited North Vietnam on its first pass at 0312:32Z and 0324:10Z and on its second pass at 0424:47Z and 0425:55Z. Figure 8 is a plot of the mission flight route and other associated events.

Extensive clouds limited clear coverage to about 10 percent of the photographed area. Mission photography gave no evidence of SSM equipment or facilities.

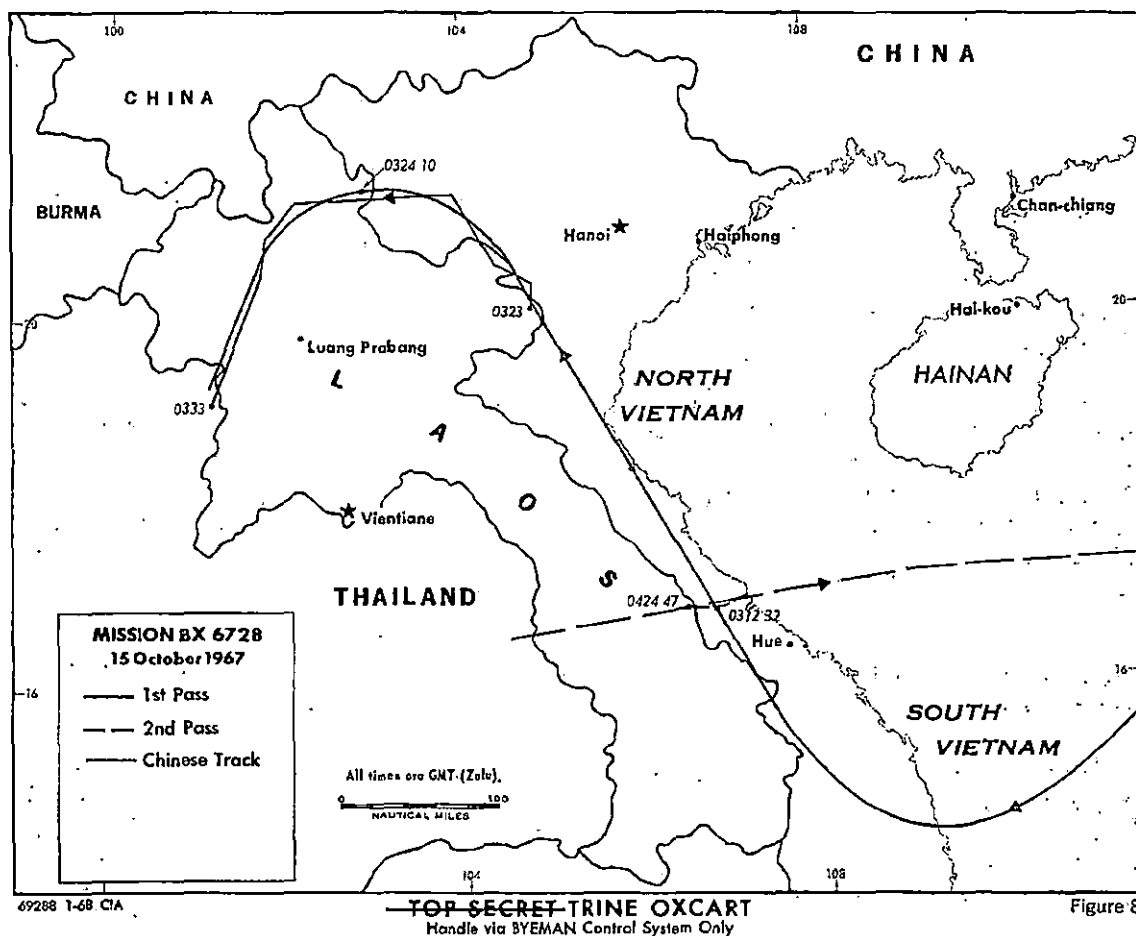
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BLACK SHIELD photographed 19 COMIREX targets, seven of which were SA-2 sites. One new SA-2 site was identified, but none of the sites photographed was occupied.

In the period from 0025Z to 0111Z, warning messages were passed from authoritative Chinese echelons to Chinese radar stations. These messages informed the stations, "Today there will be a high-altitude, high-speed situation; complete preparations." BX6728 was the second BLACK SHIELD mission to be preceded by forewarning. Correlation of the time of intercept of the BX6728 warning messages with those of BX6727 indicated a probable tip-off from the South China Sea refueling area. A more secure communications posture has since been employed in the refueling area, and no more forewarning messages have been noted.

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System 6 recorded one Fan Song signal during the overflight period. The signal did not appear to be emanating from a site tracking the mission vehicle, and no defensive mechanism was activated as a result of this intercept.

Chinese and North Vietnamese air defense facilities were noted reflecting tracking data on the mission vehicle from 0323Z to 0333Z. The latter monitored the Kun-ming sector broadcast and rebroadcast the BLACK SHIELD track over the Hanoi Bac Mai facility.

Available information indicated little or no strike/jamming operations during the overflight period.

BX6729

BX6729 was a double-pass reconnaissance mission flown over North Vietnam on 18 October 1967. The mission vehicle entered and exited North Vietnam on its first pass at 0346:43Z and 0355:56Z and on its second pass at 0506:23Z and 0513:47Z. Figure 9 is a display of the vehicle flight route and air surveillance tracking.

Cloud-free photography was obtained over about 50 percent of the country, including the Hanoi and Haiphong areas. The mission covered most of the surface-to-surface missile search area, but there was no evidence of SSM deployment. Construction activity by Chinese engineers of Yen Bai airfield was noted in mission photography. The mission aircraft photographed 193 COMIREX targets, 153 of which were SA-2 sites. Sixteen of these SA-2 sites were occupied, including one newly identified site. Dummy SA-2 missiles were noted occupying one SA-2 site.

System 6 recorded one Fan Song signal. This signal was not tracking the aircraft, and no on-board defensive systems were activated during the overflight.

Chinese and North Vietnamese air defense facilities were noted reporting tracking of the BLACK SHIELD vehicle with inclusive plot times from 0334Z to 0403Z and from 0503Z to 0533Z. The Chinese radar station Chiang-cheng detected and tracked the vehicle from 0355Z to 0404Z and from 0504Z to 0512Z. The corresponding radar station vehicle to ground ranges for these times were respectively

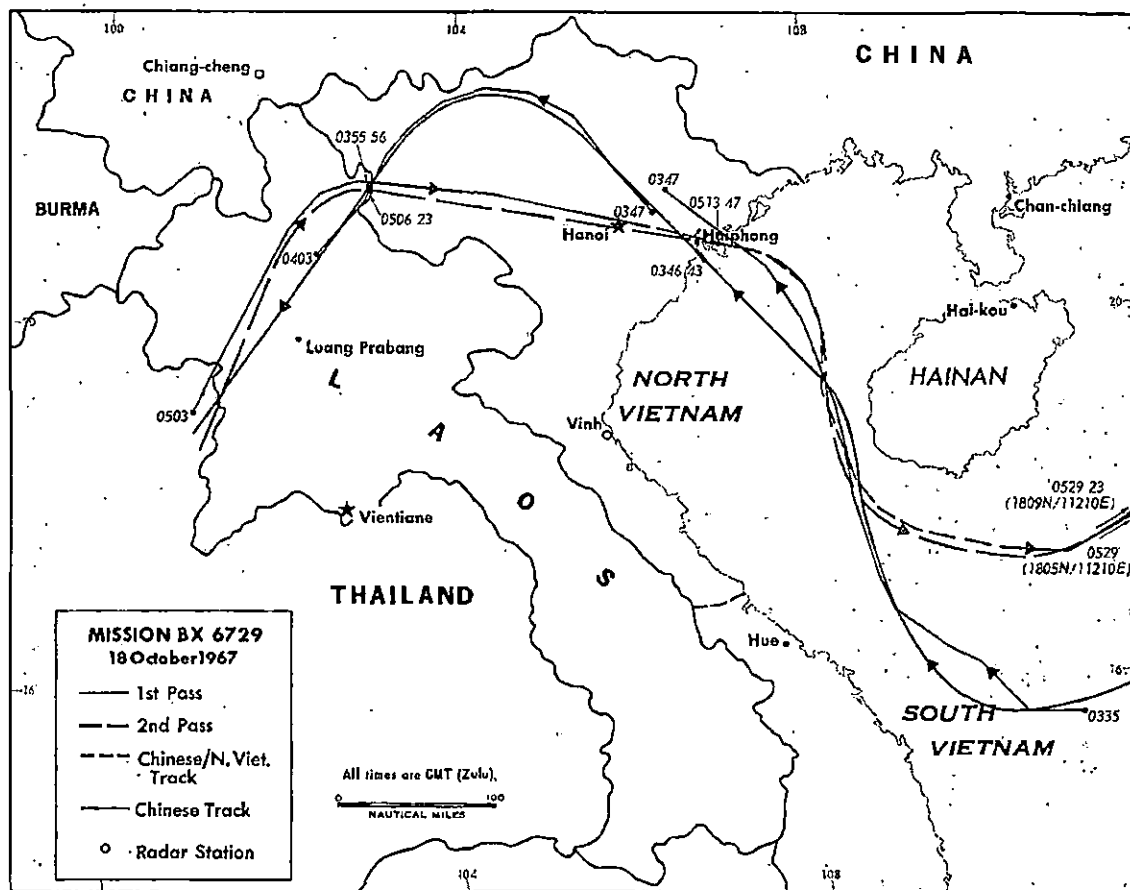
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100-240 nautical miles and 124-253 nautical miles. The North Vietnamese radar station at Vinh (18°45'N, 105°43'E) was noted rebroadcasting the track of the vehicle from 0400Z to 0425Z.

No strike/jamming aircraft were noted in operation during the first pass. Two EB-66 active jamming platforms were in operation during the second pass. Overall signal density was light.



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Figure 9

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BX6732

BLACK SHIELD mission BX6732 was a double-pass, high-altitude reconnaissance mission flown over North Vietnam on 28 October 1967. The first pass entered North Vietnam at 0353:25Z and exited at 0406:12Z; the second pass entered at 0503:53Z and exited at 0511:44Z. A missile was fired at the vehicle during the second pass at 0508:36Z. Figure 10 portrays the BLACK SHIELD flight route and associated events.

BX6732 photography gave no evidence of SSM deployment. A probable rail-to-road transshipment point was shown under construction near Ho-kou, China, across the border from Lao Cai, North Vietnam. BX6732 provided good coverage of all six major airfields in North Vietnam. With the exception of Haiphong/Cat Bi Airfield, all appeared to be serviceable. The mission aircraft photographed 167 COMIREX targets and seven bonus targets. Of these, 120 were North Vietnamese SA-2 sites, 14 of which were occupied.

System 6 recorded four Fan Song signals during the first pass of the overflight. These signals did not appear to be emanating from radars tracking the vehicle; no on-board defensive systems were activated because of these signals.

During the second pass, System 6 recorded three Fan Song signals, two of which were tracking the vehicle. Correlation of all information of this overflight showed that North Vietnamese SAM site VN 133 launched a single, albeit unsuccessful, missile at the mission vehicle. This was the first known missile firing at a BLACK SHIELD vehicle by the North Vietnamese surface-to-air missile air defense system. Comint indicates that site VN 133 and an unidentified site were tracking the vehicle and that the former launched one missile. Figure 11 shows the active environment during the overflight. Analysis of Comint and System 6 tapes gives evidence of a missile launch while the Fan Song radar was in the low-PRF mode (1,200-1,265 pps). Prior to this mission, all known launches by SA-2 systems occurred when the Fan Song radar was in the high-PRF mode (2,400-2,530 pps). The low-PRF launch mode would require some modification in the SA-2 system; such modification probably was performed in the field. This change in procedure was an attempt to cope with a Mach-3 target. (The SA-2 system was designed for a maximum target velocity of Mach 2.)

Figure 12 shows two photographs from this mission: one of missile smoke above site VN 133 and the other of a missile (with missile vapor trail), which

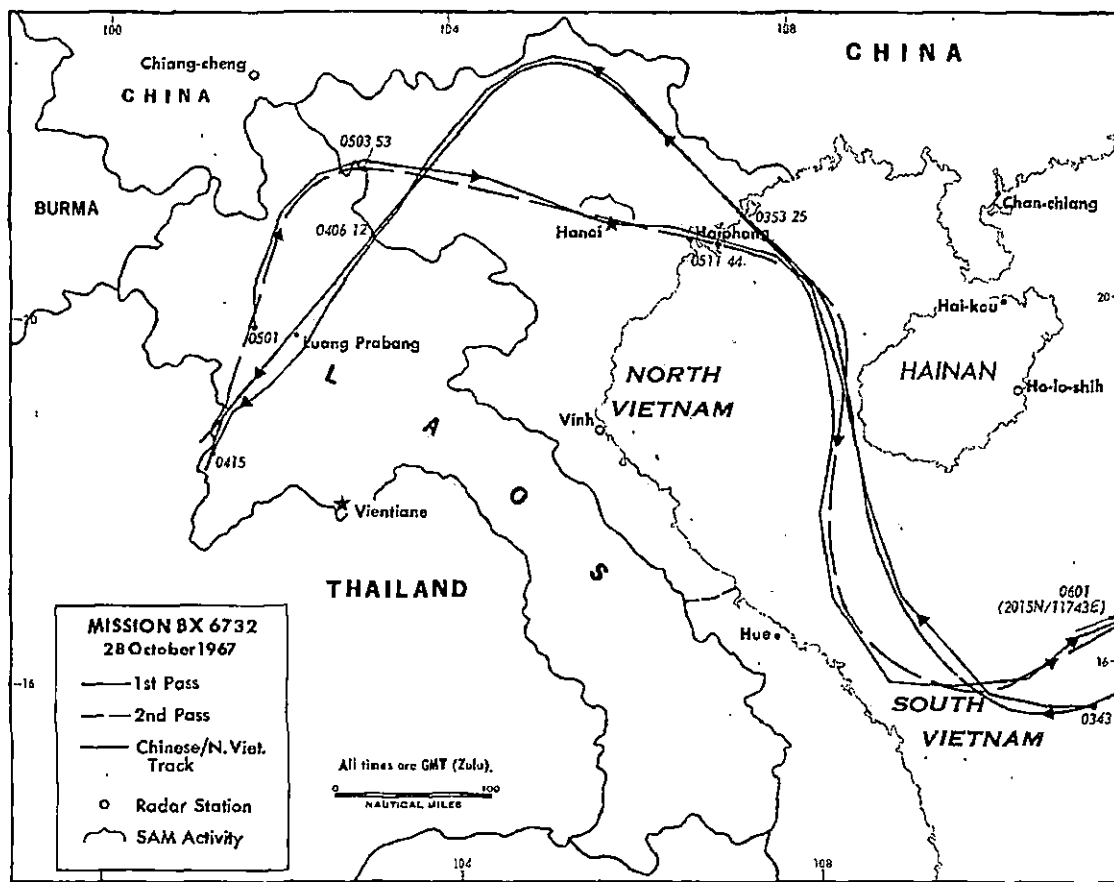
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was probably fired by site VN 133 at the BLACK SHIELD vehicle. The second photograph also shows the missile flight path was then down and away from the BLACK SHIELD vehicle flight path.

The low-PRF launch mode extends the launch window of the SA-2 system (see figure 13.) However, even though this tactic maximizes system capability against a nonjamming Mach-3 target, the kill probability with the ECM equipment now on board the BLACK SHIELD vehicle remains essentially unchanged. The ECM equipment appeared to perform well against this first firing at the mission aircraft. While the low-PRF launch mode allows missile firings at ranges greater than the



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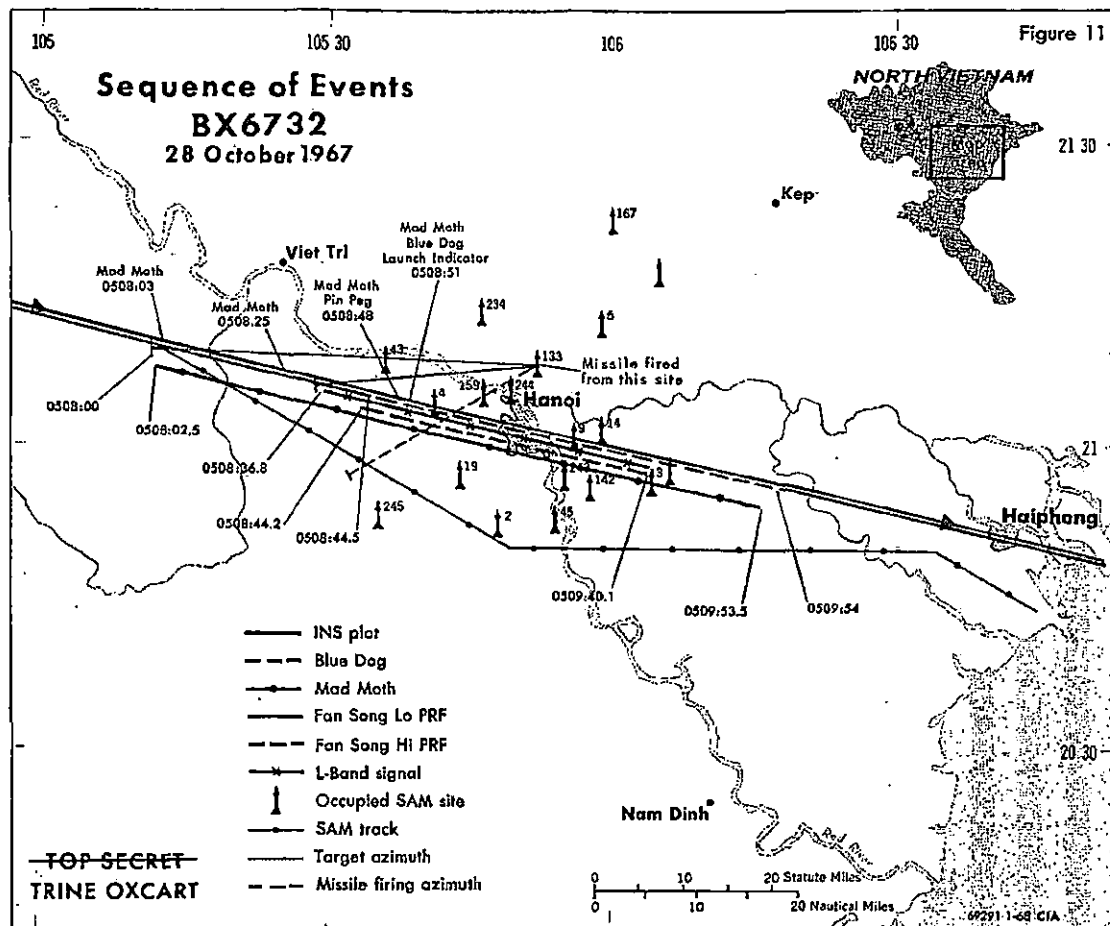
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normal high-PRF launch range of 32 nautical miles, this particular missile launch occurred at a range of 25.2 nautical miles. The regimental controller criticized the SAM battalion controller for launching late, especially after the regimental controller had ordered a firing at 32.5 nautical miles.

Air surveillance tracking of the vehicle was carried out by Chinese and North Vietnamese air defense facilities. The tracking was in general complete and accurate.

DOD strike/jamming reports indicate that 23 aircraft were conducting operations during the first pass overflight. During the missile launch of the second pass, three DOD strike aircraft were conducting operations.

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Figure 12a. Missile Smoke Above Site VN 133

Figure 12b. Missile and Missile Vapor Trail

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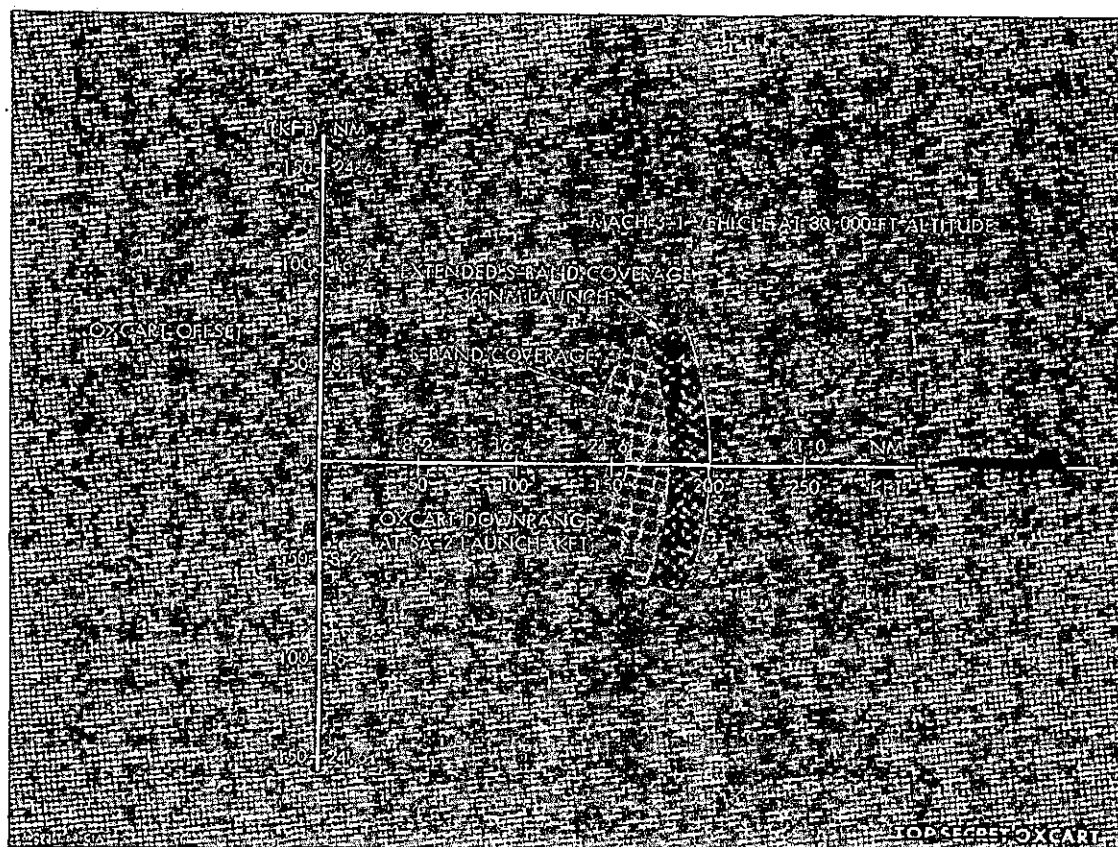


Figure 13. Plan View of SA-2 Launch Windows against Oxcart

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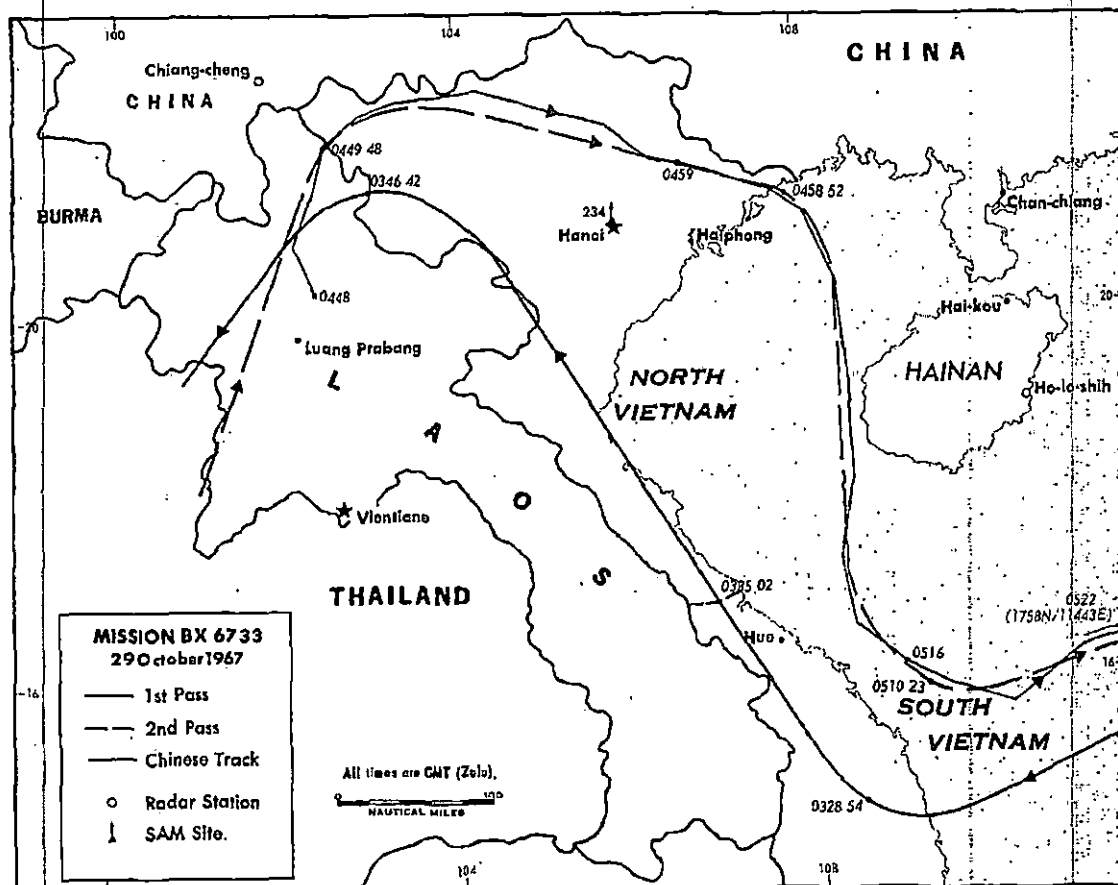
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BX6733

BLACK SHIELD mission BX6733 was a two-pass reconnaissance mission flown over North Vietnam on 29 October 1967. The vehicle entered and exited North Vietnam on its first pass at 0335:02Z and 0346:42Z and on its second pass at 0449:48Z and 0458:52Z. Figure 14 presents the mission flight path and associated events.



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Figure 14

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Mission photography gave no evidence of SSM equipment or facilities. Continuing construction by Chinese engineers of North Vietnamese Yen Bai Airfield was the first sign of progress since 20 June 1967. The mission aircraft photographed 120 COMREX targets. Of these, 74 were SA-2 sites, 16 of which were occupied. One new unoccupied SA-2 site was identified.

System 6 recorded eight Fan Song signals while the aircraft was over North Vietnam. None of these signals appeared to be tracking the BLACK SHIELD vehicle, and no on-board defensive systems were activated as a result of these signals.

During the first pass, there was no indication of air surveillance tracking by either the North Vietnamese or the Chinese. Nor were there any reported strike/jamming operations.

The Chinese air surveillance facilities tracked the BLACK SHIELD vehicle continuously during the second pass. There was no evidence of air surveillance tracking by the North Vietnamese; however, the Chinese did pass the BLACK SHIELD track to the North Vietnamese. Moderately heavy strike/jamming operations (38 aircraft) were being conducted during this pass. Chinese radar stations at Chiang-cheng and Ho-lo-shih were both noted passing mission plots from 0446Z to 0455Z and 0510Z to 0522Z. The initial detection and final tracking ranges for the Chiang-cheng radar station were 80 and 228 nautical miles, respectively. The Ho-lo-shih radar station's detection and final tracking ranges were 175 nautical miles and 265 nautical miles. Correlation of System 6 with the final position plot of the Ho-lo-shih radar station indicates the tracking radar to be a Moon Face VHF radar.

The Phuc Yen regimental controller and subordinate SAM site VN 234 were noted in communications referring to the BLACK SHIELD vehicle, which was over the Gulf of Tonkin at the time; it was never in VN 234's firing zone.

BX6734

Mission BX6734 was a high-altitude, double-pass reconnaissance mission flown over North Vietnam on 30 October 1967. The first pass of the mission vehicle entered North Vietnam at 0343:58Z and exited at approximately 0353:00Z. The second pass was over North Vietnam from approximately 0445:00Z to 0459:23Z. Figure 15 shows the mission aircraft's flight route and associated air surveillance events.

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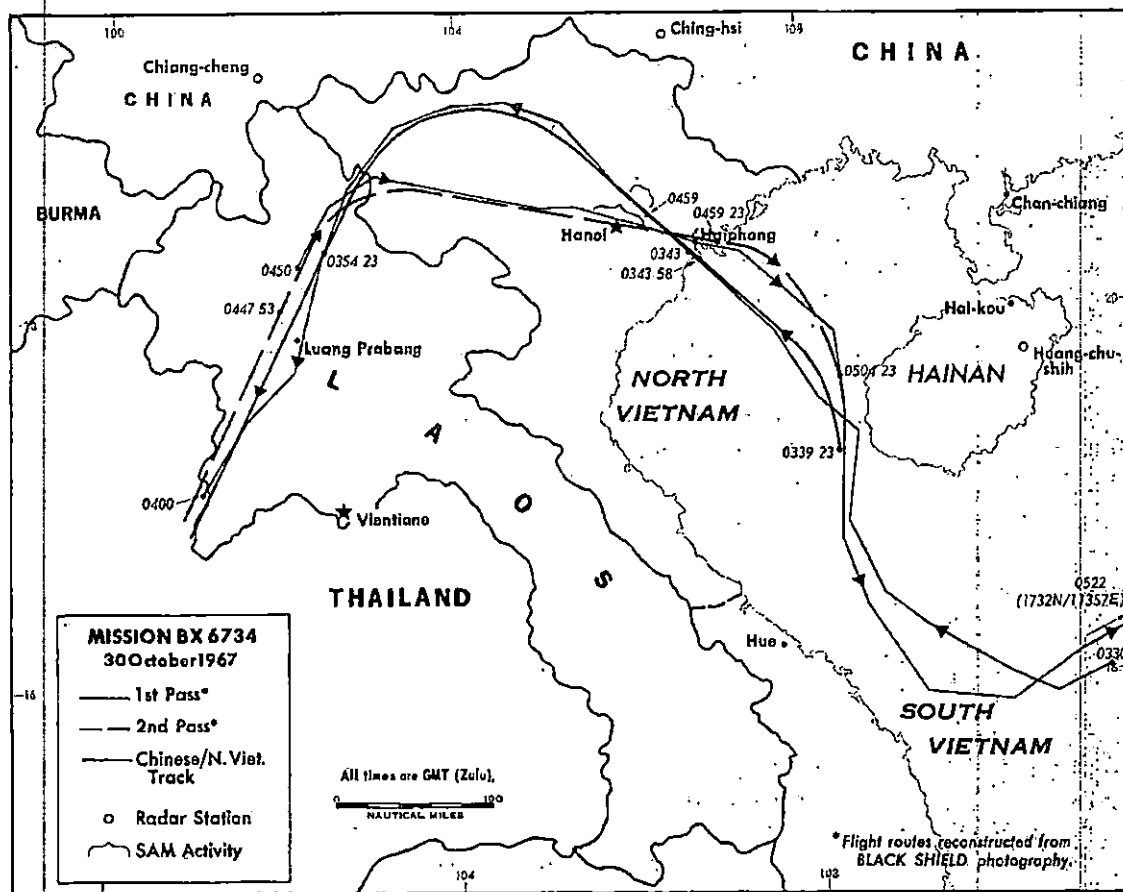
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The BLACK SHIELD vehicle photographed 118 COMIREX targets, 92 of which were North Vietnamese SA-2 sites. Thirteen of these sites were occupied, including one newly identified site. BLACK SHIELD photography gave no evidence of SSM facilities or deployment.

Surface-to-air missile reactions were noted on the first pass from 0340Z to 0402Z and during the second pass from 0420Z to 0501Z. Figure 16 shows the reaction area and related events during this time period.

During the first pass, two SAM battalions located at sites VN 234 and VN 142 were reflected attempting a missile launch. Neither of these sites launched any missiles, both being out of the required range limits for a successful launch. Analysis of System 6 tapes indicates that a low-PRF launch, similar to the one



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Figure 15

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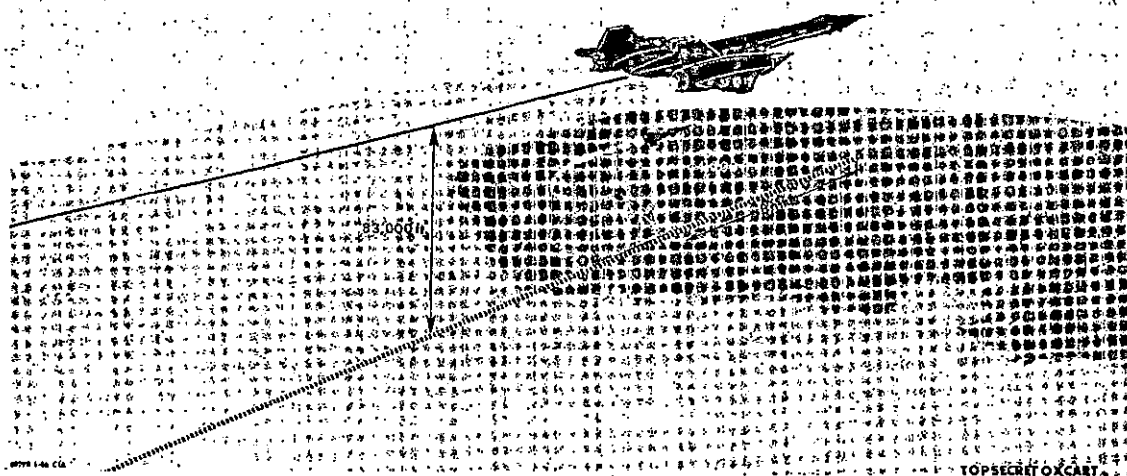
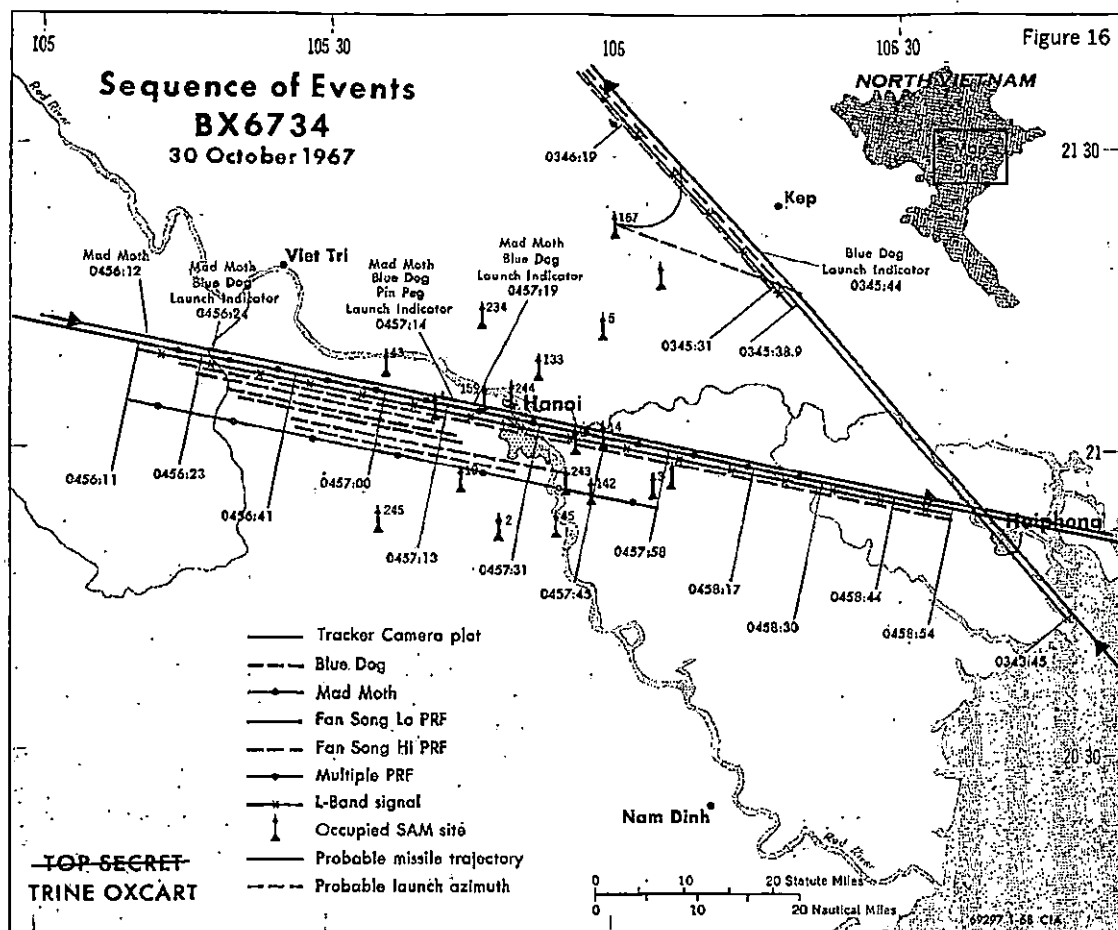


Figure 17. Probable Missile Trajectory Derived from L-band Signals

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during mission BX6732, did occur. Signal analysis coupled with the missile fly-out characteristics indicate the possible launching site to have been VN 167. (Figure 17 shows a probable missile trajectory from VN 167.) The pilot did not report sighting a vapor trail or missile, and it is possible the site fired at another aircraft. The intercepted Fan Song signal was weak; thus, the Mad Moth jammer was active for only a short period of time.

Correlation and analysis of all available data on the second pass shows that at least six SAM sites fired from eight to ten missiles at the BLACK SHIELD vehicle in the 2-minute period from 0456Z to 0458Z. As might be expected, the dense signal environment during the multiple engagement makes a complete delineation of events difficult. Table 1 presents the probable sequence of events and identifies the six SAM sites involved as numbers 234, 133, 244, 159, 142, and 19. Figure 16 depicts six active Blue Dog channels which tend to indicate a minimum of six missile launches most probably carried out by these six SAM sites. BLACK SHIELD photography shows vapor trails of six missiles (see figure 18). The pilot also saw these vapor trails and witnessed three SA-2 detonations.

Table 1 shows missile launches at ranges of 35, 38, and 41 nautical miles. Since these launch ranges are beyond the high-PRF acquisition range of the Fan Song radar (32.6 nautical miles), the launches might be construed to have been low-PRF launches. The ECM equipment (Mad Moth and Blue Dog) appeared to function normally. Mad Moth and Blue Dog replied to the signal environment and some type of interference on S-band was experienced by operators at three of the SA-2 sites. The degree of jamming evident was not reported, but the fact that the aircraft did not sustain a hit by a warhead pellet in an eight-missile-launch environment would appear to be a measure of the ECM configuration's effectiveness.

Postflight inspection of the BLACK SHIELD vehicle revealed that a piece of metal had penetrated the lower right wing fillet area and lodged against the support structure of the wing tank. The fragment is not an SA-2 warhead pellet but apparently is of Soviet manufacture. It was possibly a part of the debris from one of the three SA-2 missile detonations observed by the pilot. Figure 19 depicts the possible fragment path, the fragment, and a portion of the penetrated wing panel. Spectrographic and other measurements made on the fragment and various components of an SA-2 MOD I missile have to date shown no correlation. Efforts are continuing to identify the source of this fragment.

Chinese and North Vietnamese air defense facilities continuously tracked the mission vehicle over North Vietnam and the Gulf of Tonkin.

DOD strike/jamming activity was light during the first pass. In contrast, moderately heavy strike/jamming operations (62 aircraft) were conducted during the second pass. These operations were being conducted in the Haiphong area, however, while the SAM launches occurred near Hanoi.

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TABLE 1

Chronology of Events Associated with Mission BX6734

Site No.	Vapor Trail*	SEARCH PARAMETERS				DETECTION PARAMETERS				LAUNCH PARAMETERS				DETONATION PARAMETERS			Remarks
		Time**	Range (nm)	Azimuth (deg)	Altitude (ft)	Time	Range (nm)	Azimuth (deg)	Altitude (ft)	Time	Range (nm)	Azimuth (deg)	Altitude (ft)	Range (nm)	Azimuth (deg)	Altitude (ft)	
FIRST PASS																	
234	...	0341Z	161	90-180	82,020	0344Z	81	...	...	...	...	...	...	...	...	...	Aircraft to radar minimum range: 32 nm; no launch.
142	...	0345Z	81	100-140	above 65,000	0346Z	32.5	120	...	...	...	...	...	...	...	...	Aircraft to radar minimum range: 32.5 nm; no launch.
167	...	.....	..	...	.....	...	..	...	.....	0346Z	36	110	83,000	..	...	.....	Only possible launch parameters: no indication of launch other than Elint.
SECOND PASS																	
234	D	0429Z	167	270	82,025	...	..	273	83,000	0455Z	38	268	82,000	22.5	180	.....	1 missile, lead angle, jamming on S-band.
244/159	AB,BC,EA	.....	..	...	.....	...	..	...	.....	0455Z	..	...	.....	18.9	180	.....	2 missiles fired (error great)
159/244	A,B,E	0426Z	..	270	78,740	...	..	280	78,700	0457Z	40.5	275	78,700	19.0	265	78,000	1 missile, lead angle, jamming on S-band.
133	C	0426Z	..	...	.....	0457Z	..	270	75,700	0459Z	35.2	270	75,700	20.5	240	82,020	1 missile, lead angle, jamming on S-band.
142	...	.....	..	...	.....	...	..	...	.....	...	...	...	.....	10.8	60	.....	2 missiles fired late.
19	F	.....	..	...	.....	...	..	...	.....	...	...	...	.....	..	...	.....	Photography indicated F vapor trail may have been fired from site 19.

*Refer to Figure 18.

**All times are Greenwich Meridian times.

NOTE - Data in table derived from Comint, Elint, and photography.

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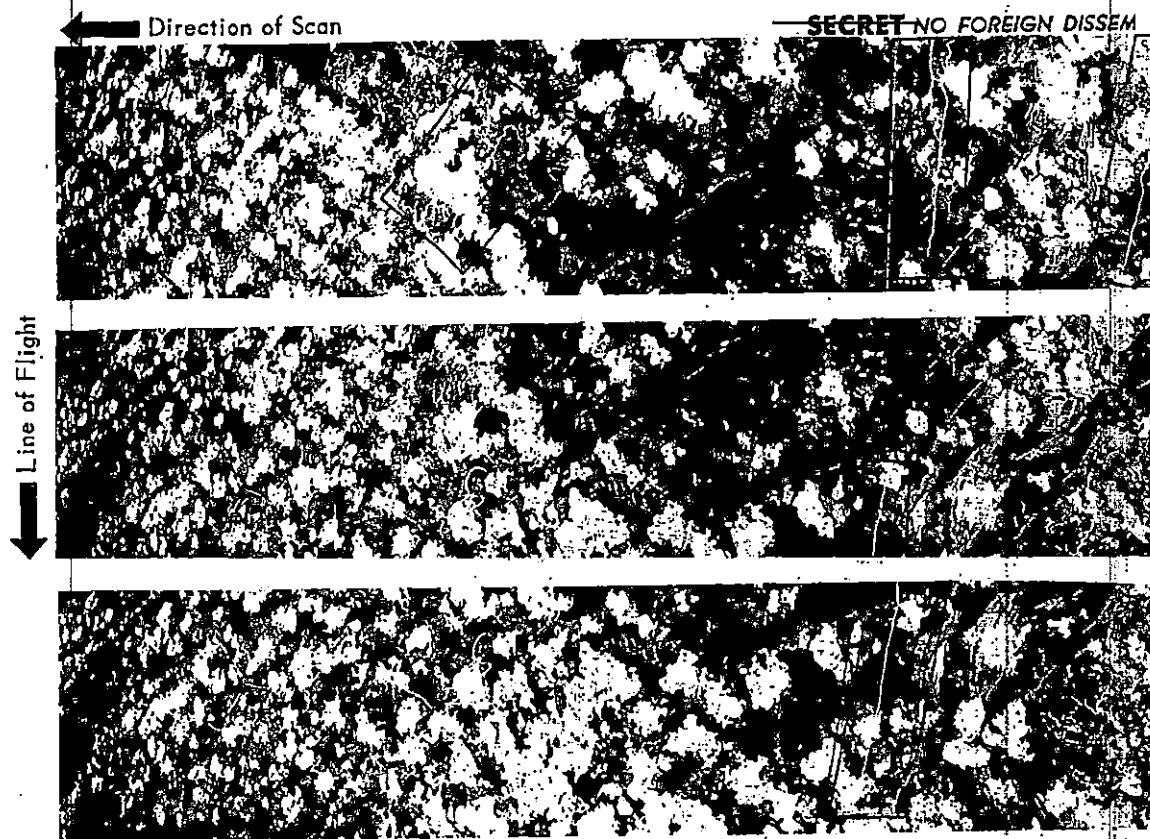


Figure 18a. BLACK SHIELD Photography of Missile Vapor Trails

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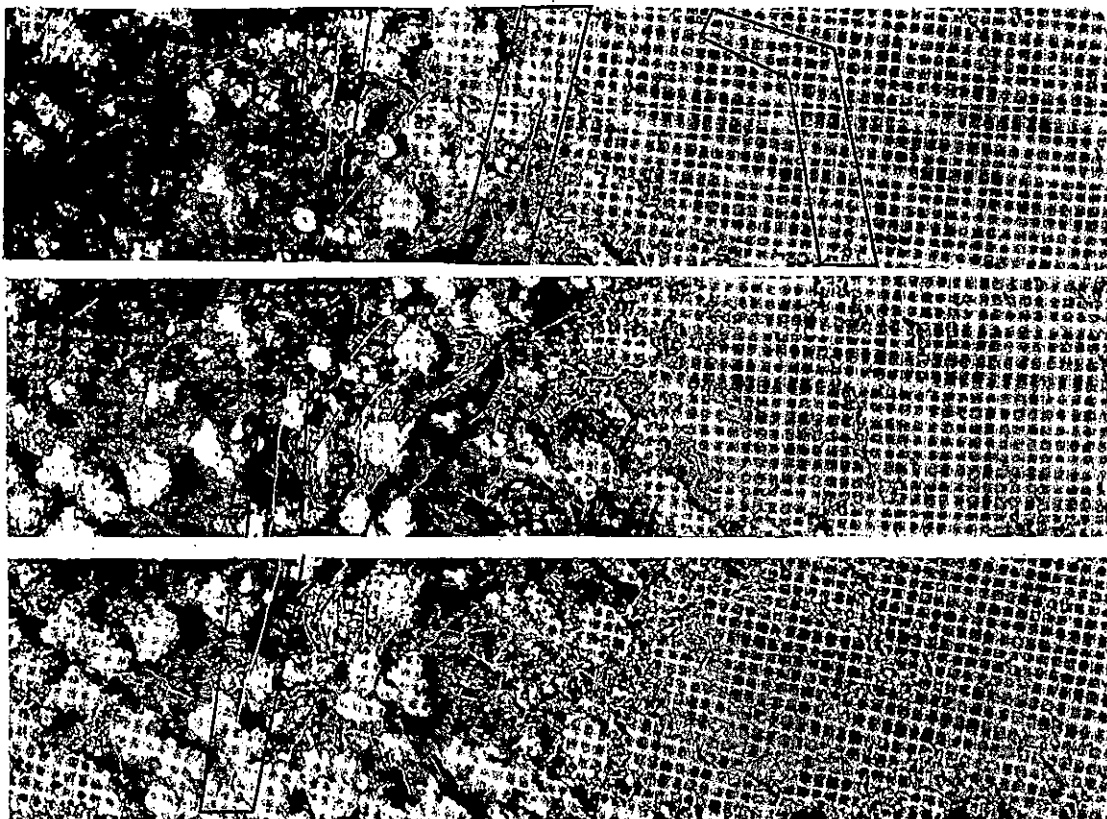
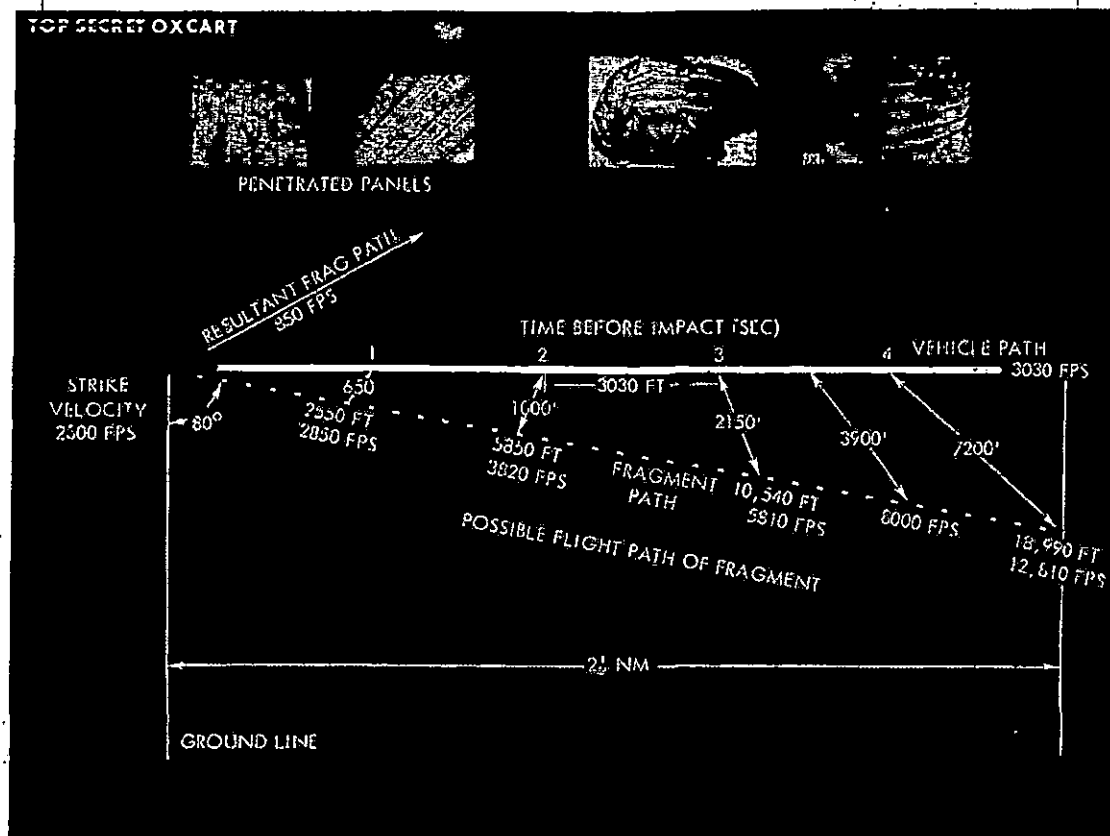


Figure 18b. BLACK SHIELD Photography of Missile Vapor Trails

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Figure 19. Fragment Impact Analysis

BX6737

BLACK SHIELD mission BX6737 was a high-altitude, single-pass reconnaissance mission flown over the Cambodian/South Vietnamese and Laotian/North Vietnamese border areas on 8 December 1967. The mission entered Southeast Asia at 0340:15Z and exited same at 0505:41Z. Figure 20 shows the flight route and associated air surveillance tracking.

Seven specified priority search areas in northeastern Cambodia, southeastern Laos, and adjacent South Vietnam were covered for evidence of Viet Cong or North Vietnamese activity. BLACK SHIELD photography provided evidence of expanded supply transshipment facilities along the Tonle Kong River in Cambodia

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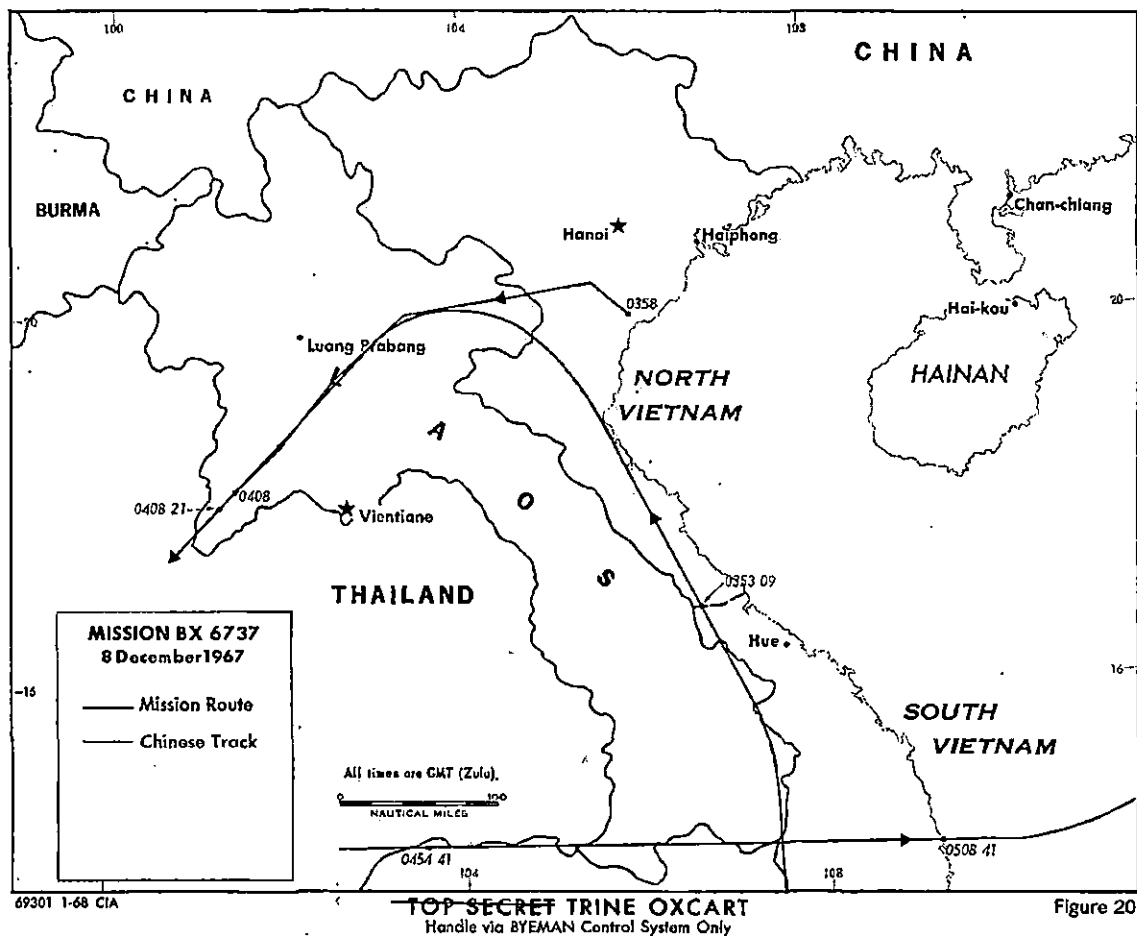
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near the Laotian border. Several troop encampments served by numerous trails extending north to Cambodian Route 97 were detected. A probable new storage area and water-to-road transshipment point were also identified.

No threat signals were recorded on System 6. No defensive system was active during the overflight.

Air surveillance tracking lasting approximately 10 minutes was carried out by Chinese radar facilities. There was no indication of North Vietnamese awareness of the mission.

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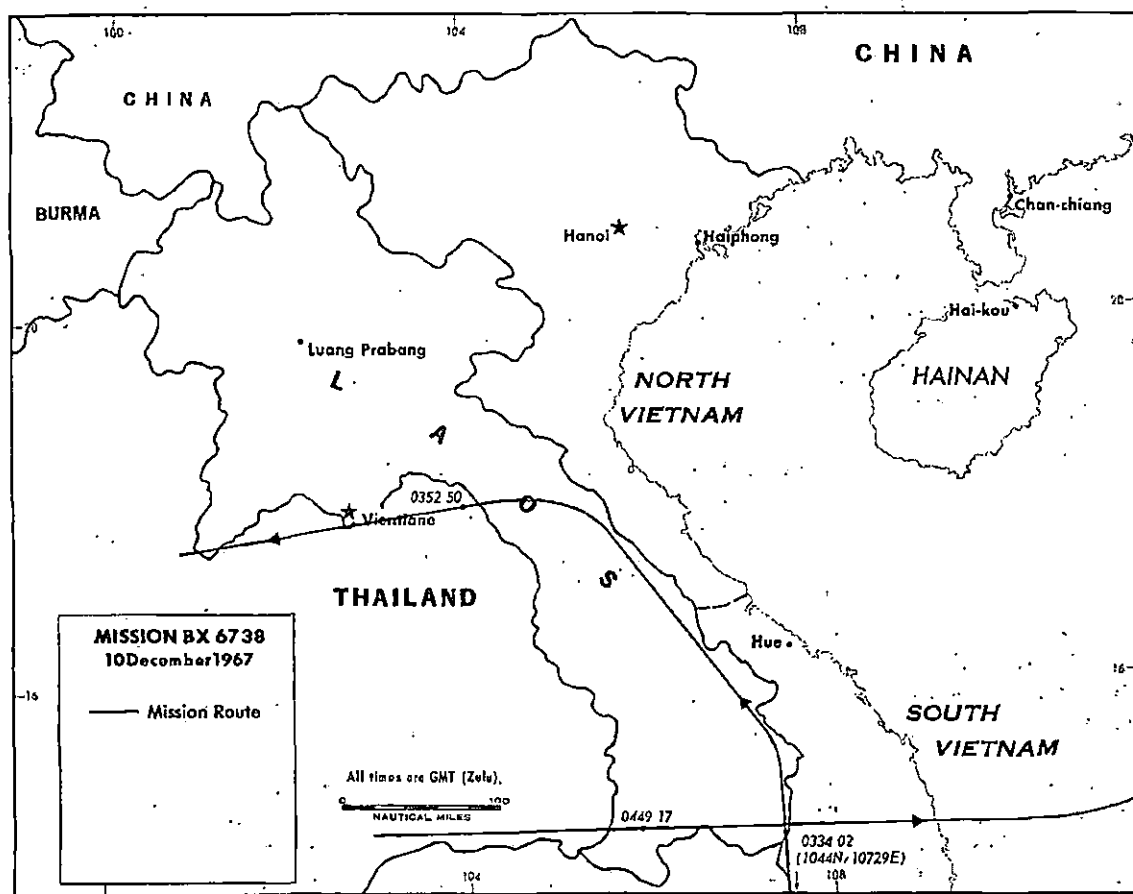
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BX6738

BLACK SHIELD mission BX6738 was a single-pass reconnaissance mission flown over the Cambodian, Laotian, and South Vietnamese tri-border area on 10 December 1967. The mission entered and exited over South Vietnam at 0334:02Z and 0455:37Z. Figure 21 is a plot of the mission route.

Mission photography detected a new probable transshipment-storage facility on the Tonle Son River in Cambodia near the South Vietnamese border. Photography also showed a heavily used trail extending from Cambodia into the north-western corner of Darlac Province in South Vietnam. Two automatic weapons positions were observed near the trail just inside the Cambodian border.



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Figure 21

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There were no threat signals recorded nor defensive system activated during the overflight. There was no evidence of air surveillance tracking by either the Chinese or North Vietnamese.

BX6739

BX6739 was a double-pass, high-altitude mission flown over North Vietnam on 15 December 1967. The vehicle entered and exited North Vietnam on its first pass at 0421:42Z and 0430:23Z and on its second pass at 0529:49Z and 0540:47Z. Figure 22 is a plot of the mission route and associated air surveillance tracking.

Mission photography obtained from this two-pass mission was clear, interpretable, and generally cloud free. No evidence of surface-to-surface missile deployment was noted. All of North Vietnam's major airfields, except Haiphong/Cat Bi, appeared to be serviceable. The mission aircraft photographed 195 COMIREX targets, 142 of which were North Vietnamese SA-2 sites. Eighteen of these sites were occupied.

System 6 recorded three Fan Song signals during the overflight. None of these signals appeared to be tracking the vehicle, and no defensive mechanism was activated by these signals.

The BLACK SHIELD vehicle was tracked by Chinese and North Vietnamese air defense facilities from 0416Z to 0437Z and from 0525Z to 0557Z. Bai Thuong, a North Vietnamese radar station at 19°56'N, 105°28'E, reported two position plots of the vehicle at 0530Z and 0531Z. The radar-to-aircraft ground ranges for these times were 180 and 148 nautical miles, respectively.

DOD strike/jamming operations were conducted during the overflight period.

BX6740

BX6740 was a double-pass reconnaissance mission flown over North Vietnam on 16 December 1967. The mission vehicle entered and exited North Vietnam on its first pass at 0257:51Z and 0309:21Z and on its second pass at 0405:00Z and 0418:03Z. Figure 23 presents the flight route and air surveillance tracking.

Mission photographs obtained about 60-percent cloud-free coverage of the target area. No evidence of SSM deployment was noted. The mission aircraft photographed 86 COMIREX targets, 74 of which were SA-2 sites. Two of these sites were occupied. Missions BX6739 and BX6740, flown on consecutive days, photographed 221 of North Vietnam's 226 useable SA-2 sites, including six new sites. Twenty were occupied, including five of the six new sites.

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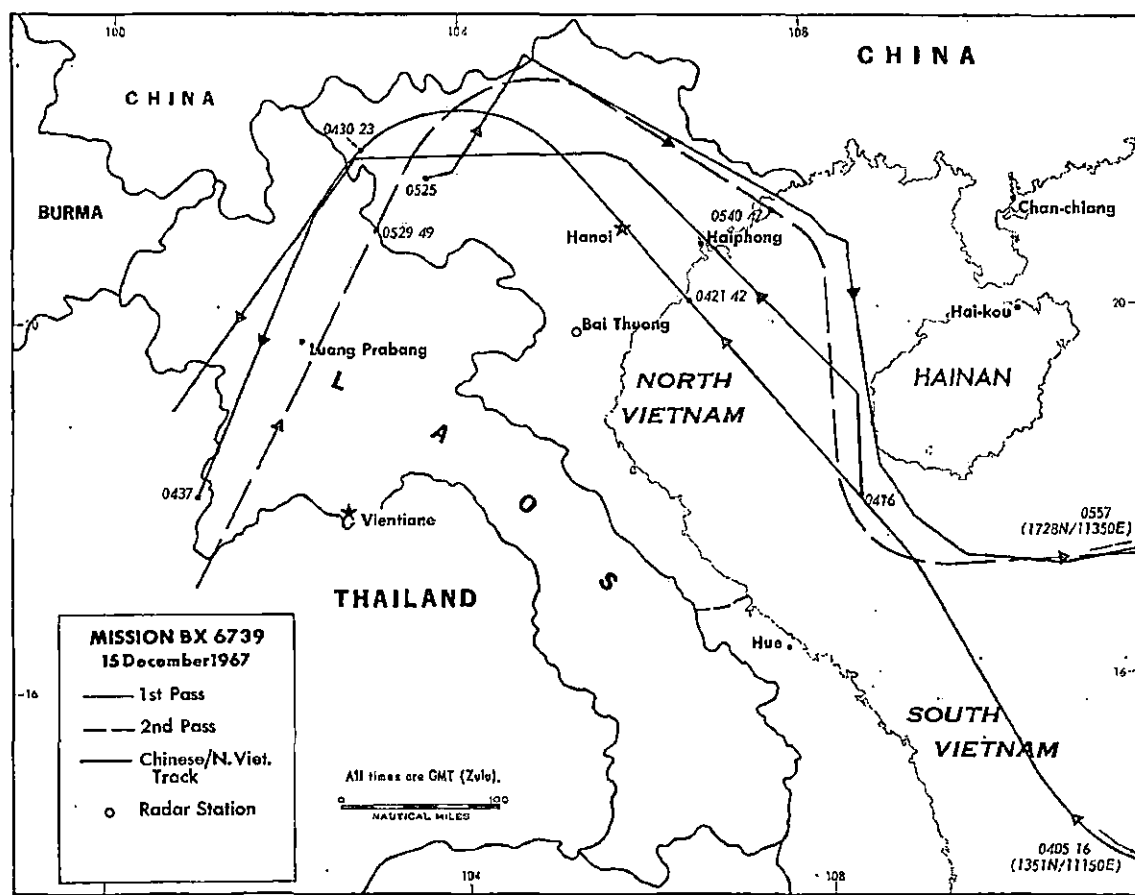
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System 6 recorded six Fan Song signals, none of which appeared to be tracking the vehicle. No on-board defensive system was activated.

Chinese air surveillance facilities tracked the mission vehicle from 0251Z to 0258Z and from 0403Z to 0430Z. A Chinese radar station at Pa-ka (22°25'N, 101°00'E) was reflected tracking the aircraft from 0403Z to 0411Z at radar-to-aircraft ground ranges of 134 and 234 nautical miles, respectively. There was no indication of North Vietnamese awareness of the mission vehicle.

Moderate DOD strike/jamming operations were being conducted during the overflight.



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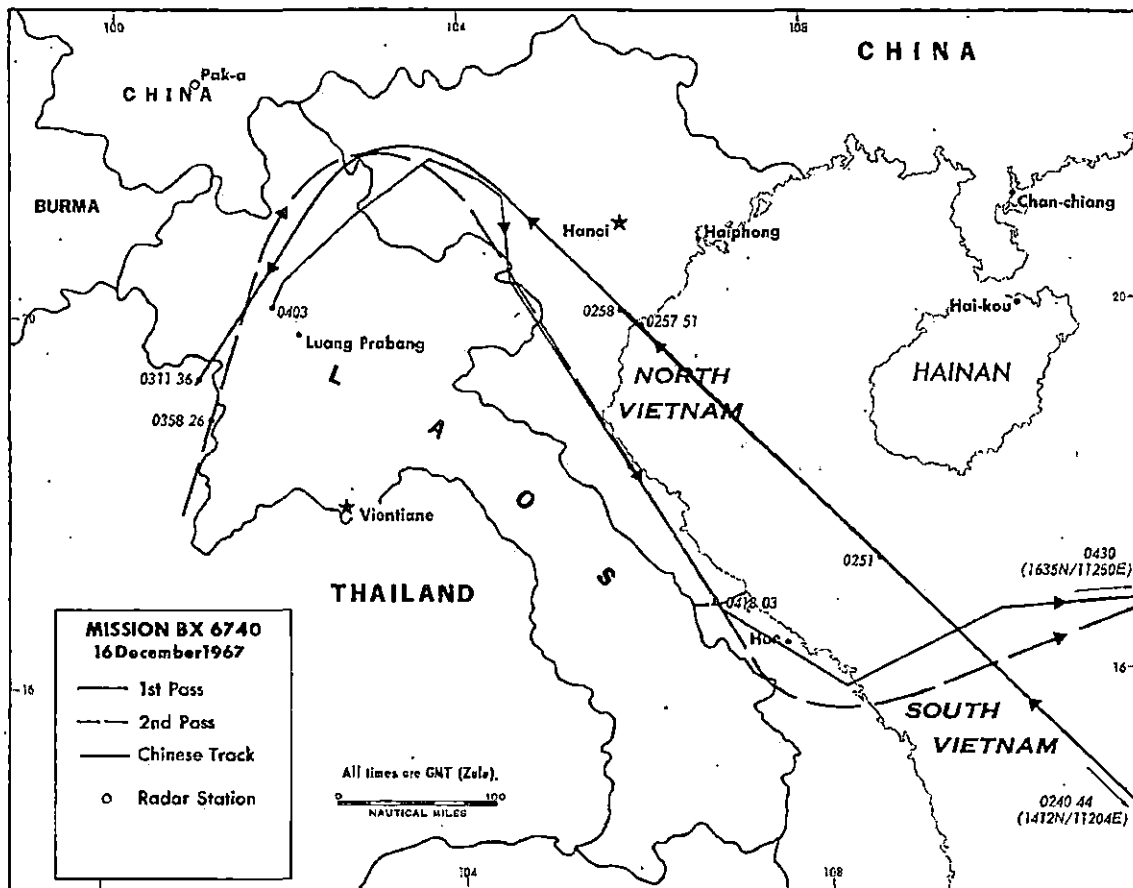
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Figure 23

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Figure 24

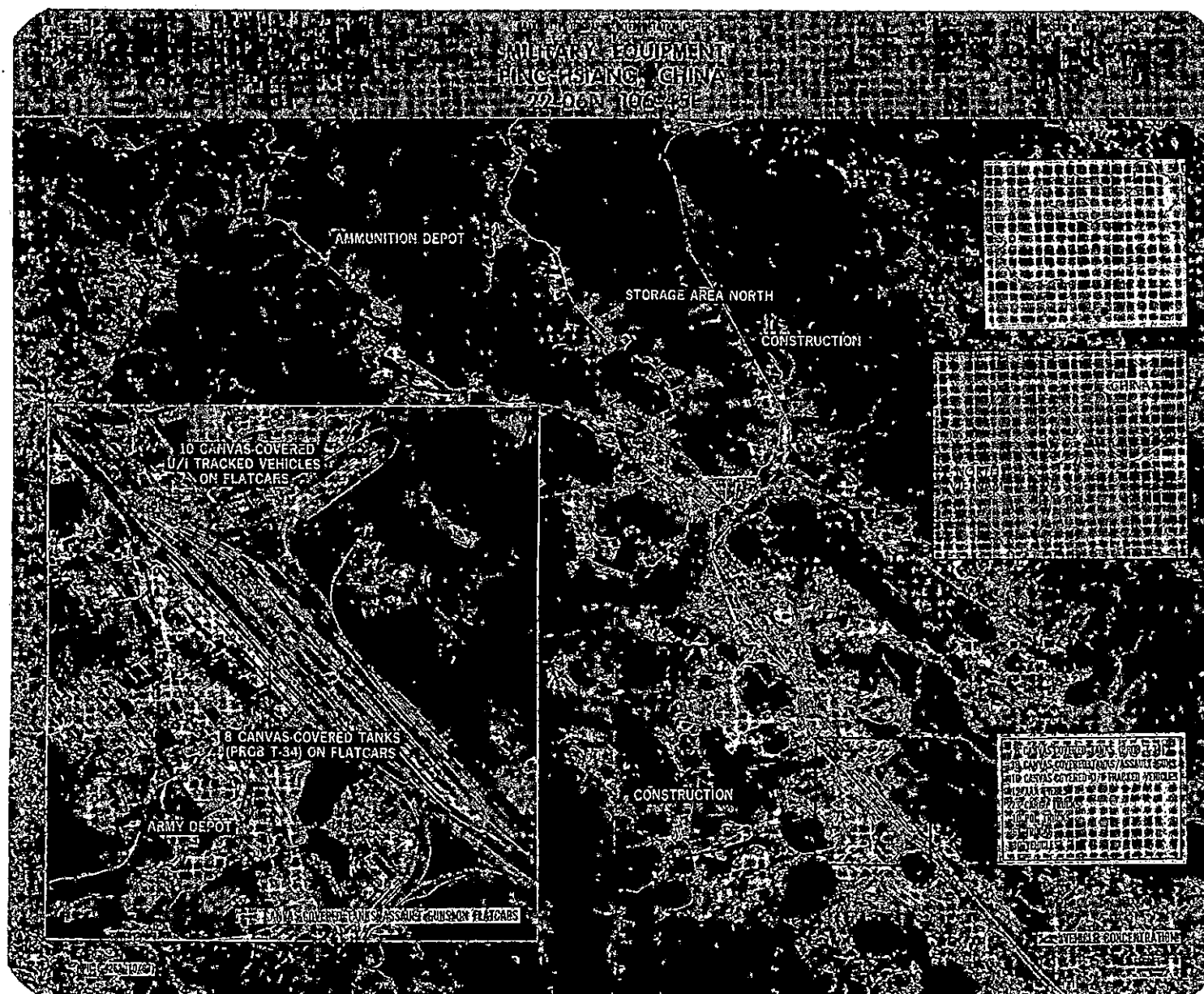


Figure 26

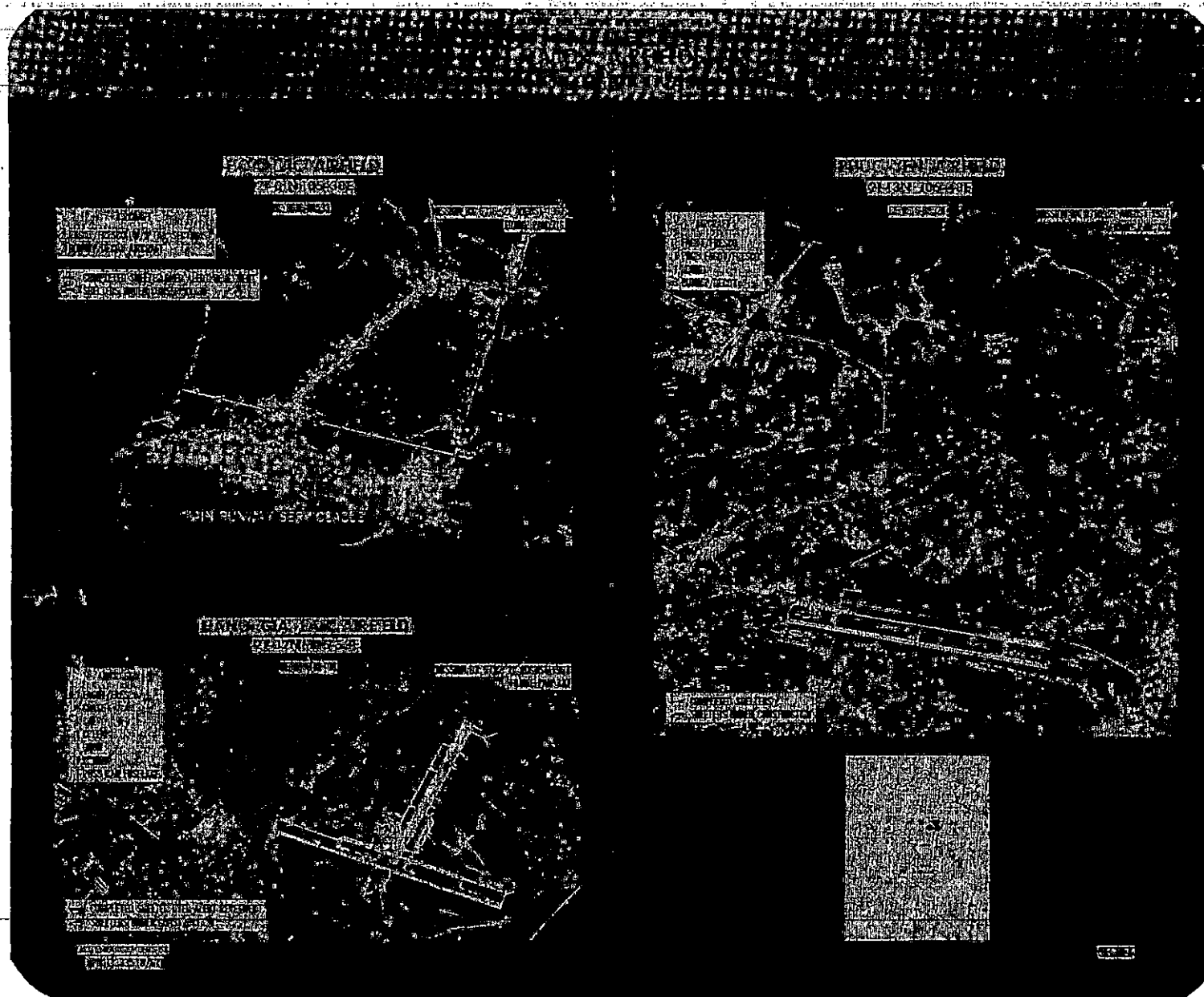


Figure 25

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Figure 27

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APPENDIX I

BLACK SHIELD Operational Missions Alerted Between
16 August and 31 December 1967

<u>Mission No.</u>	<u>Date</u>	<u>Remarks</u>
BX6716	20 Aug. 1967	Flown
BX6717	25 Aug. 1967	Cancelled due to weather
BX6718	30 Aug. 1967	Flown
BX6719	31 Aug. 1967	Cancelled due to weather
BX6720	5 Sept. 1967	Cancelled due to weather
BX6721	10 Sept. 1967	Cancelled due to weather
BX6722	15 Sept. 1967	Flown
BX6723	16 Sept. 1967	Flown
BX6724	1 Oct. 1967	Cancelled due to weather
BX6725	3 Oct. 1967	Flown
BX6726	4 Oct. 1967	Cancelled (Ops decision)
BX6727	5 Oct. 1967	Flown (1 pass flown)
BX6728	14 Oct. 1967	Flown
BX6729	17 Oct. 1967	Flown
BX6730	19 Oct. 1967	Cancelled due to weather
BX6731	25 Oct. 1967	Cancelled due to weather

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APPENDIX I (continued)

<u>Mission No.</u>	<u>Date</u>	<u>Remarks</u>
BX6732	27 Oct. 1967	Flown
BX6733	28 Oct. 1967	Flown
BX6734	29 Oct. 1967	Flown
BX6735	1 Nov. 1967	Cancelled due to weather
BX6736		Cancelled due to weather
BX6737 (Cambodia)	6 Dec. 1967	Flown
BX6738 (Cambodia)	8 Dec. 1967	Flown
BX6739	14 Dec. 1967	Flown
BX6740	15 Dec. 1967	Flown
BX6741	22 Dec. 1967	Cancelled due to weather

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APPENDIX II

COMIREX Targets Covered by BLACK SHIELD Missions
16 August - 31 December 1967

COMIREX		Mission Numbers*															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hai Kou Airfield					x											
	Ling Shui Airfield					x											
	Meng Tzu Airfield West	x	x														
	Haiphong/Cat Bi Airfield	x				x			x	x		x			x		
	Haiphong/Kien An Airfield	x				x			x	x		x			x		
	Hanoi/Bac Mai Airfield	x		x	x	x			x	x		x			x	x	
	Hanoi/Gia Lam Airfield	x			x	x			x	x					x		
	Phuc Yen Airfield	x		x	x	x			x	x		x			x		
	Lang Son Airfield						x		x	x	x				x		
	Kep Airfield	x				x			x	x	x	x			x		

*In this appendix, mission numbers are shortened to the last two digits.

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50X1, E.O.13526

APPENDIX II (continued)

COMIREX Number	Target	Mission Numbers															
		16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
	Ning Ming Airfield						x			x						x	
	Chia Lai Shih Airfield		x			x											
	Ping Yuan Chieh Airfield		x		x												
	Tien Yang Airfield		x		x		x									x	
	Yen Bai Airfield	x		x							x						
	Hoa Lac Airfield	x		x		x			x	x		x			x	x	
	Bai Thuong Airfield ()							x			x					x	
		50X1, E.O.13526															
*	Tho Khoi Helicopter Dispersal Area		x			x											
*	Kep Ha Airfield	x															
*	Hanoi Helicopter Dispersal Area	x															
*	Hoa Lac Helicopter Dispersal Area					x											

*Unnumbered.

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APPENDIX II (continued)

50X1, E.O.13526

COMIREX Number	Target	16	18	22	23	25	Mission Numbers										34	37	38	39	40
							27	28	29	32	33										
	Pei Hai Naval Facility					x					x						x				
	Hsin Hsing Naval Facility					x															
	Port Wallut Naval Base	x			x	x	x		x				x				x				
	Haiphong Naval Base and Port Facilities	x			x	x			x	x			x				x				
	Cam Qha Port Facilities								x												
	Pai Lung Port Facilities					x						x									
	Cam Pha Port Facilities					x	x		x	x			x				x				
	Hon Gai Port Facilities	x			x	x	x		x	x			x				x				
	Ha Tou Shipyard	x			x	x	x		x				x				x				
	Ben Thuy Coastal Transport Point											x					x				
	Pei Li Port Facilities					x	x										x				

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
*	Lam Dong Naval Dispersal Facility				x												
*	Swatow PGM-Hanoi Area				x												
50X1, E.O.13526	Thanh Hoa BW/CW Research Facility							x									
	Lai Chau Complex								x								
	Ma Li Po Supply Depot	x		x													
	Mengtzu Military Complex			x													
	Ping Hsing Ammunition Depot	x					x			x					x		
	Ping Hsing Army Depot	x		x	x		x			x	x				x		
	Ping Hsing Military Storage East										x					x	
	Ping Hsiang Storage Area North	x									x					x	

*Unnumbered.

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Chin Ping Infantry Division Headquarters A Barracks										x						
	Ban Dot A Barracks			x					x								
	Ha Giang Military Area	x		x					x						x		
	Van Hoi Military Areas	x			x	x					x					x	
	Wen Shan Army Barracks West				x												
	Ho Kou Army Barracks North	x	x	x	x	x			x	x							
	Yen Shan Military Barracks and Storage Area				x												
	Lang Son Army Barracks			x	x		x			x					x		
	Y Son Ammunition Depot			x					x				x				
	Xom Hau A Army Supply Depot					x			x								
	Ngoc Thi Barracks Supply Depot										x						

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APPENDIX II (continued)

50X1, E.O.13526

COMIREX Number	Target	Mission Numbers															
		16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
	Tai Xouan Army Barracks, Nam Vu										x						
	Loc Binh Army Supply Depot	x								x	x				x		
	Yen Bai Ordnance Depot			x							x						
	Thai Nguyen Army Supply Depot North					x					x				x		
	Bac Can Barracks A Supply Depot					x					x						
	Bac Giang Military Areas	x				x			x		x	x			x		
	Tung Chia Army Barracks					x											
	Ba Binh Special Area 2009							x			x					x	
	Ben Than Special Area 2013							x									
	Vinh An Special Area 2014							x			x						
	Vit Thu Lu/NVN Special Area										x						

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APPENDIX II (continued)

50X1, E.O.13526

COMIREX Number	Target	16	18	22	23	25	Mission Numbers										34	37	38	39	40
							27	28	29	32	33										
	Tsi Ti Pao Road	x	x	x	x	x															
	Wu Pu Chieh Road Construction	x		x	x																
	Hanoi/Lao Cai Railroad Segment 2	x				x			x												
	Hanoi/Lao Cai Railroad Segment 1	x	x	x	x	x			x	x							x				
	Hanoi/Lao Cai Railroad Segment 3	x			x												x				
	Hanoi/Ping Hsiang Railroad Segment 2	x			x	x			x	x	x	x					x				
	Hanoi/Ping Hsiang Railroad Segment 1	x		x	x		x		x	x	x	x	x				x				
	Hanoi/Ping Hsiang Railroad Segment 3	x			x	x			x	x	x	x					x				
	Hanoi/Lao Cai Railroad Segment 4	x			x	x			x	x	x						x x				
	Hanoi/Lao Cai Railroad Segment 5	x		x	x	x			x	x	x	x					x x				

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APPENDIX II (continued)

50X1, E.O.13526

COMIREX Number	Target	Mission Numbers															
		16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
	An Cap Railroad Hanoi Thai Nguyen					x			x	x	x						
	Ping Hsiang/Hanoi Railroad Segment 4	x		x	x		x			x	x					x	
	Ho Kou Highway Segment, Route 24A								x							x	
	Uong Bi Transformer Power Plant									x							
	Tien Pao Hwy. Sec. Route 25A															x	
	Chin Nan Kuan Hwy. Sec.															x	
	Ping Hsiang Complex	x		x	x		x			x						x	
	Wen Shan Complex			x	x												
	Dong Dang Railroad Yard	x			x		x			x	x						
	Bac Giang Complex	x				x				x	x	x			x		

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Cao Bang Military Complex	x		x			x			x					x		
	Lai Chau Complex	x	x	x					x		x	x			x	x	
	Lang Son Complex	x		x						x	x						
	Mon Cai Complex					x					x	x			x	x	
	Tien Yen Complex					x	x		x	x	x	x			x		
	Binh Lu Area						x				x	x					
	Tuyen Quang Complex			x							x						
	Yen Bai Complex	x													x	x	
	Dien Bien Phu Complex	x	x	x				x		x					x		
	Kep Complex	x				x		x	x	x	x	x			x		
	Lao Cai Complex	x	x	x		x		x		x							
	Haiphong Railroad Station Classification Yard														x		

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50X1, E.O.13526

APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
	Haiphong Railroad Station																
	Classification Yard and Shops	x				x		x		x		x			x		
	Viet Tri Railroad Yard	x		x		x		x	x	x	x					x	
	Yen Vien Railroad																
	Classification Yard	x				x			x	x		x				x	
*	Thai Nguyen Rail Activity									x							
	Kep Railroad Yard															x	
	Highway Segment 10E									x							
	Haiphong Highway Bridge					x											
	Van Diem Battery Plant									x							
	Hanoi Railroad - A Highway																
	Bridge					x	x										
	Haiphong Warehouse Area Port									x							
	Van Diem Vehicle Depot									x							

*Unnumbered

50X1, E.O.13526

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hai Duong Railroad Siding West								x								
	Hai Duong Railroad Station								x								
	Hgoc Kuyet Railroad Station								x								
	Ta Xa PPS North								x								
	Loi Dong Warehouse Area								x								
	Railroad Segment R-3-A								x								
*	Ping Hsiang Railroad Transporting Yard Station and Shops	x			x												
*	Ho Kou Vehicle Park				x												
*	Hsia Shih Storage Areas				x		x										
*	Ping Hsiang Storage Area				x		x										
*Unnumbered.																	

*Unnumbered.

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APPENDIX II (continued)

COMIREX Number	Target	Mission Numbers												
		16	18	22	23	25	27	28	29	32	33	34	37	38
*	Thai Nguyen Unidentified Construction Activity					x								
*	Hanoi/Haiphong Railroad					x								
*	Hanoi/Haiphong Railroad					x			x					
*	Hanoi Transformer Power Plant										x			
*	Haiphong Transformer Power Plant East										x			
*	Haiphong Transformer Power Plant West										x			
*	Viet Tri Transformer Power Plant										x			
*	Hon Gai Transformer Power Plant										x			
*	Bac Giang Transformer Power Plant										x			

*Unnumbered.

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APPENDIX II (continued)

50X1, E.O.13526

COMIREX Number	Target	16	18	22	23	25	Mission Numbers										34	37	38	39	40
							27	28	29	32	33										
	Hanoi SAM Search	x		x	x	x			x				x								
	Lao Cai SAM Search	x	x	x		x			x		x										
	Dien Bien Phu SAM Search	x	x	x	x	x		x	x								x				
	Vinh SAM Search							x													
	Cao Bang SAM Search	x		x			x			x											
	Dong Hoi SAM Search							x			x										
	Fo Lo Probable CD Site					x	x		x								x				
	Cat Ba Coastal Defense Sites 1 and 2					x	x		x	x			x				x				
	Dung Fang Suspect Coastal Defense Site					x	x														
	Chang Chiang Coastal Defense Site (Suspect)					x	x														
	Yai Cheng Probable Radar Site					x	x										x				

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hanoi SAM Site A-10-2	x				x			x						x		
	Hanoi SAM Site A-19-2	x				x				x		x			x	x	
	Hanoi SAM Site A-29-2	x		x		x									x	x	
	Hanoi SAM Site B-04-2	x				x			x			x			x		
	Hanoi SAM Site B-12-2	x				x			x			x			x		
	Hanoi SAM Site B-25-2	x				x				x					x	x	
	Hanoi SAM Site B-29-2	x		x		x				x						x	
	Hanoi SAM Site B-30-2	x		x		x				x		x			x	x	
	Hanoi SAM Site C-29-2	x		x	x	x			x	x					x	x	
	Hanoi SAM Site C-30-2	x		x	x	x			x	x					x	x	
	Hanoi SAM Site D-19-2															x	

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Yen Bai SAM Site B-12-2	x		x											x	x	
	Yen Bai SAM Site C-10-2														x		
	Yen Bai SAM Site B-11-2														x		
	Yen Bai SAM Site C-03-2														x		
	Yen Bai SAM Site C-07-2														x		
	Yen Bai SAM Site C-09-2														x		
	Yen Bai SAM Site C-09A-2														x		
	Yen Bai SAM Site C-17-2	x				x				x					x	x	
	Yen Bai SAM Site B-06-2														x		
	Yen Bai SAM Site C-04-2														x		
Yen Bai SAM Site B-05-2															x		

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APPENDIX II (continued)

COMIREX Number		Target	Mission Numbers														
			16	18	22	23	25	27	28	29	32	33	34	37	38	39	40
50X1, E.O.13526		Yen Bai SAM Site B-10-2	x													x	x
		Yen Bai SAM Site B-11A-2															x
		Hanoi SAM Site B-17-2						x				x					x

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hanoi SAM Site B-21-2	x				x				x		x			x	x	
	Hanoi SAM Site C-28-2	x				x				x					x	x	
	Hanoi SAM Site D-31-2	x				x			x	x	x				x	x	
	Hanoi SAM Site A-11-2	x				x									x		
	Hanoi SAM Site A-24-2	x				x						x			x	x	
	Hanoi SAM Site D-31A-2	x				x					x				x	x	
	Hanoi SAM Site D-16-2	x				x									x	x	
	Hanoi SAM Site D-36-2	x			x	x						x			x		
	Hanoi SAM Site C-06-2	x				x			x	x	x	x			x		
	Hanoi SAM Site C-07-2					x										x	
	Hanoi SAM Site D-31B-2	x		x		x			x		x					x	x
	Hanoi SAM Site E07-2	x				x		x		x						x	

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Haiphong SAM Site A-29-2	x				x			x	x		x			x		
	Haiphong SAM Site A-20-2	x			x	x			x	x		x				x	
	Haiphong SAM Site A-17-2	x				x			x	x		x				x	
	Haiphong SAM Site B-01-2					x	x					x				x	
	Haiphong SAM Site A-29A-2	x				x	x		x	x		x				x	
	Haiphong SAM Site B-33-2	x				x										x	
	Haiphong SAM Site B-06-2					x	x									x	
	Haiphong SAM Site C-32-2	x				x										x	
	Haiphong SAM Site C-32A-2	x				x			x			x				x	
	Haiphong SAM Site B-28-2	x				x					x					x	
	Haiphong SAM Site B-30-2	x				x										x	
	Haiphong SAM Site A-07-2					x	x									x	

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APPENDIX II (continued)

COMIREX Number		Target	Mission Numbers															
			16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526		Haiphong SAM Site A-23-2	x				x				x						x	
		Haiphong SAM Site A-31-2	x				x			x	x						x	
		Haiphong SAM Site A-33-2	x				x			x	x		x				x	
		Haiphong SAM Site C-30-2	x				x						x				x	
		Haiphong SAM Site C-28-2	x				x			x	x						x	
		Haiphong SAM Site A-02-2	x				x			x	x						x	
		Haiphong SAM Site A-17A-2	x				x			x	x		x				x	
		Haiphong SAM Site D-35-2	x				x	x		x							x	
		Haiphong SAM Site A-33A-2	x				x			x	x		x				x	
		Thanh Hoa SAM Site B-28-2											x					
		Thanh Hoa SAM Site C-02-2																x
		Thanh Hoa SAM Site B-01-2																x

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Thanh Hoa SAM Site B-02-2															x	
	Thanh Hoa SAM Site																
	Thanh Hoa SAM Site D-04-2															x	
	Thanh Hoa SAM Site C-03-2															x	
	Thanh Hoa SAM Site C-02A-2															x	
	Thanh Hoa SAM Site A-17-2							x				x				x	
	Thanh Hoa SAM Site C-04-2															x	
	Thanh Hoa SAM Site D-02-2					x										x	
	Thanh Hoa SAM Site C-01-2																x
	Thanh Hoa SAM Site D-03-2															x	x
	Thanh Hoa SAM Site D-03A-2																x

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Thanh Hoa SAM Site A-19-2										x					x	
	Thanh Hoa SAM Site B-28A-2										x					x	
	Thanh Hoa SAM Site B-27-2										x					x	
	Thanh Hoa SAM Site A-14-2															x	
	Thanh Hoa SAM Site D-20-2							x			x					x	
	Thanh Hoa SAM Site D-20A-2							x			x						
	Thanh Hoa SAM Site A-17A-2							x			x					x	
	Thanh Hoa SAM Site A-13-2										x					x	
	Hanoi SAM Site D-04-2								x								
Hanoi SAM Site C-30E-2								x									

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C05492938

APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hanoi SAM Site B-30A-2	x				x										x	
	Hanoi SAM Site C-30A-2	x		x		x			x	x					x	x	
	Hanoi SAM Site D-03-2					x									x		
	Hanoi SAM Site D-04-2	x				x					x				x		
	Hanoi SAM Site A-17A-2	x				x			x	x					x	x	
	Hanoi SAM Site C-30C-2	x		x		x			x	x					x	x	
	Hanoi SAM Site C-01-2	x				x					x				x		
	Hanoi SAM Site C-05-2	x				x			x	x	x				x		
	Hanoi SAM Site C-04-2	x				x						x			x		
	Hanoi SAM Site C-02-2	x				x					x				x		
	Hanoi SAM Site C-04A-2	x				x			x			x			x		
	Hanoi SAM Site C-01A-2	x					x					x	x			x	

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hanoi SAM Site B-33-2	x				x				x		x			x		
	Hanoi SAM Site D-35-2				x											x	
	Hanoi SAM Site C-06A-2	x				x						x			x		
	Hanoi SAM Site C-13-2	x				x			x	x					x		
	Hanoi SAM Site C-11-2	x				x			x	x					x		
	Hanoi SAM Site C-12-2	x				x			x			x			x		
	Hanoi SAM Site C-30D-2	x		x		x				x					x	x	
	Hanoi SAM Site B-07-2	x				x				x		x			x		
	Hanoi SAM Site D-06-2					x										x	
	Hanoi SAM Site C-30E-2	x				x					x					x	x
	Hanoi SAM Site B-34-2					x				x	x		x				
	Bac Can SAM Site C-22-2						x			x							x

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Bac Can SAM Site B-20-2					x									x		
	Bac Can SAM Site C-20-2					x			x		x				x		
	Bac Can SAM Site C-19-2					x			x						x		
	Hoa Binh SAM Site A-19-2					x										x	
	Hoa Binh SAM Site B-20-2					x										x	
	Hoa Binh SAM Site B-22-2					x					x					x	
	Hoa Binh SAM Site B-17-2															x	
	Hoa Binh SAM Site C-17-2															x	
	Hoa Binh SAM Site B-19-2															x	
	Hoa Binh SAM Site D-27-2															x	
	Hoa Binh SAM Site D-28-2					x										x	
	Hoa Binh SAM Site A-04-2	x				x			x	x						x	

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APPENDIX II (continued)

COMIREX Number	Target	Mission Numbers															
		16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
	Hoa Binh SAM Site B-08-2	x			x	x				x						x	
	Hoa Binh SAM Site C-27-2					x										x	
	Hoa Binh SAM Site B-02-2					x									x		
	Hanoi B-08-2				x					x					x	x	
	Hoa Binh SAM Site B-04-2				x	x			x	x					x	x	
	Hoa Binh SAM Site B-03-2					x										x	
	Hoa Binh SAM Site B-08B-2															x	
	Hoa Binh SAM Site B-10-2															x	
	Haiphong SAM Site D-35A-2	x				x	x				x				x		
	Haiphong SAM Site B-07-2					x	x								x		

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Vinh D-35-2															x	
	Vinh C-31A-2										x					x	
	Vinh																
	Thanh Hoa SAM Site C-03A-2															x	
	Thanh Hoa SAM Site B-01A-2															x	
	Thanh Hoa SAM Site C-01A-2															x	
	Thanh Hoa SAM Site C-04A-2															x	
	Thanh Hoa SAM Site D-21A-2							x								x	
	Thanh Hoa SAM Site B-01B-2							x								x	
	Thanh Hoa SAM Site D-21B-2															x	
Thanh Hoa SAM Site A-17B-2															x		

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APPENDIX II (continued)

COMIREX Number	Target	Mission Numbers														
		16	18	22	23	25	27	28	29	32	33	34	37	38	39	40
50X1, E.O.13526	Haiphong SAM Site A-27-2	x				x			x						x	
	Haiphong SAM Site B-34-2	x				x			x	x					x	
	Haiphong SAM Site B-01A-2					x									x	
	Haiphong SAM Site A-06-2					x	x								x	
	Haiphong SAM Site A-14-2	x			x	x			x	x		x			x	
	Haiphong SAM Site B-06B-2					x	x					x			x	
	Haiphong SAM Site D-22-2					x									x	x
	Haiphong SAM Site C-21-2					x									x	
	Haiphong SAM Site D-23-2	x				x			x						x	x
	Haiphong SAM Site B-27-2	x				x			x	x		x			x	
	Haiphong SAM Site A-31A-2	x				x			x	x					x	
	Haiphong SAM Site A-14A-2	x				x			x	x					x	

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hanoi SAM Site E-22-2															x	
	Hanoi SAM Site C-17B-2	x				x			x	x					x	x	
	Vinh C-19-2															x	
	Vinh C-32-2															x	
	Vinh B-16-2															x	
	Vinh																
	Vinh																
	Vinh																
	Vinh C-32-2																x
	Vinh																
	Vinh D-32-2																x
	Vinh A-07-2																x

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Vinh																
	Vinh C-32A-2															x	
	Vinh C-30-2															x	
	Vinh C-32B-2															x	
	Vinh B-21-2															x	
	Vinh B-29-2															x	
	Vinh B-32-2															x	
	Vinh A-01-2															x	
	Vinh A-36-2															x	
	Vinh A-11-2															x	
Vinh C-31-2																x	
Vinh A-01A-2																x	

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Haiphong SAM Site C-29-2	x				x			x						x		
	Haiphong SAM Site C-27-2	x				x											
	Haiphong SAM Site C-26-2	x				x				x					x		
	Haiphong SAM Site B-25-2	x				x				x					x		
	Haiphong SAM Site A-29B-2	x				x									x		
	Haiphong SAM Site A-26-2				x					x					x		
	Haiphong SAM Site A-22-2					x			x	x					x		
	Hanoi SAM Site B-01-2	x				x						x			x		
	Hanoi SAM Site C-33-2	x				x				x					x		
	Hanoi SAM Site B-01A-2	x				x									x		
	Hanoi SAM Site A-33-2	x		x		x				x					x		
	Hanoi SAM Site D-36A-2					x			x						x		

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APPENDIX II (continued)

COMIREX Number	Target	Mission Numbers														
		16	18	22	23	25	27	28	29	32	33	34	37	38	39	40
50X1, E.O.13526	Hanoi SAM Site C-01B-2	x				x			x		x				x	
	Hanoi SAM Site A-01-2	x		x		x			x						x	
	Hanoi SAM Site C-03-2	x				x			x			x			x	
	Hanoi SAM Site C-03A-2	x				x					x				x	
	Hanoi SAM Site A-14-2	x				x			x						x	
	Hanoi SAM Site C-32-2	x		x		x				x					x	
	Hanoi SAM Site B-32-2	x				x				x					x	
	Hanoi SAM Site B-07A-2	x				x				x		x			x	
	Hanoi SAM Site C-17-2	x				x			x						x	x
	Hanoi SAM Site A-31-2	x				x									x	
	Hanoi SAM Site C-17A-2					x			x			x				x
	Hanoi SAM Site B-16-2	x				x			x						x	x

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APPENDIX II (continued)

COMIREX Number	Target	Mission Numbers														
		16	18	22	23	25	27	28	29	32	33	34	37	38	39	40
50X1, E.O.13526	Hanoi SAM Site C-16-2	x				x				x					x	x
	Hanoi SAM Site A-05-2	x				x			x			x			x	
	Hanoi SAM Site B-36B-2					x			x						x	
	Hanoi SAM Site C-03B-2	x				x			x		x				x	
	Hanoi SAM Site D-31C-2	x		x		x					x	x			x	
	Hanoi SAM Site C-05B-2					x			x	x	x				x	
	Hanoi SAM Site B-27-2	x													x	x
	Hanoi SAM Site B-13-2	x				x				x					x	
	Hanoi SAM Site B-28-2	x			x	x			x	x					x	x
	Hanoi SAM Site B-04A-2	x				x									x	
	Hanoi Prob. Site A					x									x	
	Hanoi Prob. Site B					x									x	

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APPENDIX II (continued)

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
50X1, E.O.13526	Hanoi SAM Site C-01D-2	x				x										x	
	Hanoi SAM Site C-01E-2	x			x	x										x	
	Hanoi SAM Site C-29A-2	x		x		x				x					x	x	
	Hanoi SAM Site B-34A-2	x		x		x									x		
	Hanoi SAM Site A-15-2				x	x			x						x		
	Hanoi SAM Site A-34-2				x				x			x			x		
	Hanoi SAM (A-29A)															x	
	Hanoi SAM (A-34-A)																x
	Hanoi SAM Site D-35-2					x			x								
	Vinh SAM Site A-01A-2										x						
	Vinh SAM Site A-25-2								x								
	Hanoi Probable SAM Equipment Training Area		x				x			x							

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APPENDIX II (continued)

50X1, E.O.13526

COMIREX		Mission Numbers															
Number	Target	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40	
	Nan San SAM Site A-12-2	x		x								x					
	Nan San SAM Site C-13-2															x	
	Nan San SAM Site D-13-2															x	
*	Hanoi SAM Site	x															
*	Hanoi SAM Site A-01A-2				x	x			x			x					
*	Hanoi SAM Site A-35-2					x											
*	Hanoi SAM Site B-23-2					x											
*	Hoa Binh SAM Site D-27-2					x											
*	Haiphong SAM Site A-25-2					x			x								
*	Haiphong SAM Site B-36-2					x						x			x		
*	Haiphong SAM Site A-16-2					x			x								
*	Haiphong SAM Site A-02A-2								x	x		x					

*Unnumbered.

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APPENDIX II (continued)

COMIREX		Mission Numbers														
<u>Number</u>	<u>Target</u>	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40
*	Haiphong SAM Site								x	x		x				
*	Thanh Hoa SAM Site D-31B-2										x					
*	Ban Xom Lom SAM Site					x										
*	Chin Chou SAM Site (China)										x	x				

*Unnumbered.

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APPENDIX III

Number of Radar Signals Received by BLACK SHIELD Missions
16 August - 31 December 1967

Radar	Mission Numbers														
	16	18	22	23	25	27	28	29	32	33	34	37	38	39	40
Fan Song	17	8	2	5	4	7	1	1	7	8	12			3	6
Big Mesh	1	2	3	1	1	1				3			1	1	
Side Net		1		1					1					1	
Rock Cake	6	6	10	15	6	8	7	15	14	11	16	4	4	8	10
Cross Legs										2					
Token	6		5	2	1	1		1	4	2	1		1	1	1
Cross Slot	1		14	2	1		1	2	2		3		3	7	
Bar Lock				1	2		6	1	4	3	5	3		5	10
Fire Can	4	5	3	3					1	6	2			3	5
Whiff	6			1		1				2					3
Spoon Rest				1	1	2		5	1		2		1	4	1
Flat Face	5	5	1						3	2	3	2		5	1
Moon Face	11		5	16	2	4			10	9	4	2	7		4
Moon Mat-2				1	1									1	3
Moon Cone	1		2				1		6	1	1		4		

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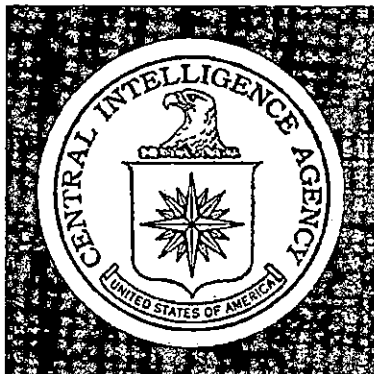


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ANNEX 155

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SCIENCE & TECHNOLOGY

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DD/SA *JA*
D/SA *WP*

BLACK SHIELD
Reconnaissance Missions
1 January - 31 March 1968

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Channels Jointly

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BYE No. 1330/68
DST-BS/BYE/68-2
30 April 1968

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BLACK SHIELD Reconnaissance Missions
1 January - 31 March 1968

DST-BS/BYE/68-2
30 April 1968

CENTRAL INTELLIGENCE AGENCY
Directorate of Science and Technology

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PREFACE

This report is the third in a series of resumes of the BLACK SHIELD reconnaissance program. This third resume spans the period from 1 January to 31 March 1968 and includes missions flown over North Vietnam and North Korea.

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BLACK SHIELD Reconnaissance Missions**1 January - 31 March 1968****SUMMARY**

Fifteen BLACK SHIELD high-altitude reconnaissance missions were alerted during the period from 1 January to 31 March 1968. Six of the 15 missions were flown, four over North Vietnam and two over North Korea. Eight missions were cancelled due to weather conditions, and approval for one Korean mission was not obtained. (Appendix I lists these missions and related events:)

BLACK SHIELD photography of North Vietnam through 31 March 1968 revealed no evidence of surface-to-surface ballistic missiles, equipment, or facilities. Mission BX6843 photographed two suspect surface-to-surface (cruise) missile sites near Thanh Hoa. One site was unoccupied, and the second contained a few small unidentified objects.

The BLACK SHIELD program provided initial baseline coverage of North Korea on missions BX6847 and BX6853, with readable coverage of 70 percent of the country. These two missions supplied current photography of North Korean industrial and transportation systems and updated the existing order of battle. The ability of the BLACK SHIELD program to react rapidly is demonstrated by photographs of the USS Pueblo at anchor in Wonsan Bay obtained on mission BX6847. This mission was flown on 26 January, three days after the USS Pueblo was seized and one day after approval was granted. (Appendix II is a listing of the COMIREX targets photographed over North Korea.)

The BLACK SHIELD program has continued to supply good coverage of North Vietnam, particularly order of battle information of fighter aircraft and surface-to-air missile defenses. The program has contributed substantially to bomb damage assessment of point targets and of the interdiction effort directed against North Vietnamese road, rail, and water transportation systems. BLACK SHIELD missions have identified new targets and provided information of Chinese military activity, not only in North Vietnam and the border areas, but also of the periphery of Hainan Island. The tri-border area of South Vietnam, Laos, and Cambodia has also been covered well by BLACK SHIELD photography. BLACK SHIELD mission BX6856, flown over Khe Sanh and the border area of South Vietnam, provided strategic information of the hostile troop build-up, supply, and infiltration routes. (COMIREX targets photographed over North Vietnam are listed in Appendix III.)

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All of the four North Vietnamese missions were tracked by Chinese and/or North Vietnamese air surveillance facilities. One unsuccessful surface-to-air missile (SAM) was launched at the vehicle of mission BX6842. The missile fired during the overflight was launched with the Fan Song radar in low PRF (first observed on missions BX6732 and BX6734). This was the first known instance of a Soviet SA-2 missile's having been guided by information derived from the Fan Song guidance radar operating in the low-PRF mode.

Missions BX6847 and BX6853 over North Korea were tracked by radars of the Chinese Air Defense System. Soviet air defense radars tracked the BX6847 vehicle for approximately five minutes. The initial evidence of EW tracking by the North Koreans occurred on BX6853 when the Maryong-San radar station reported position plots of the vehicle during a nine-minute period. (Appendix IV lists the number and type of radar signals recorded by the System 6 Elint collection device carried by BLACK SHIELD vehicles.)

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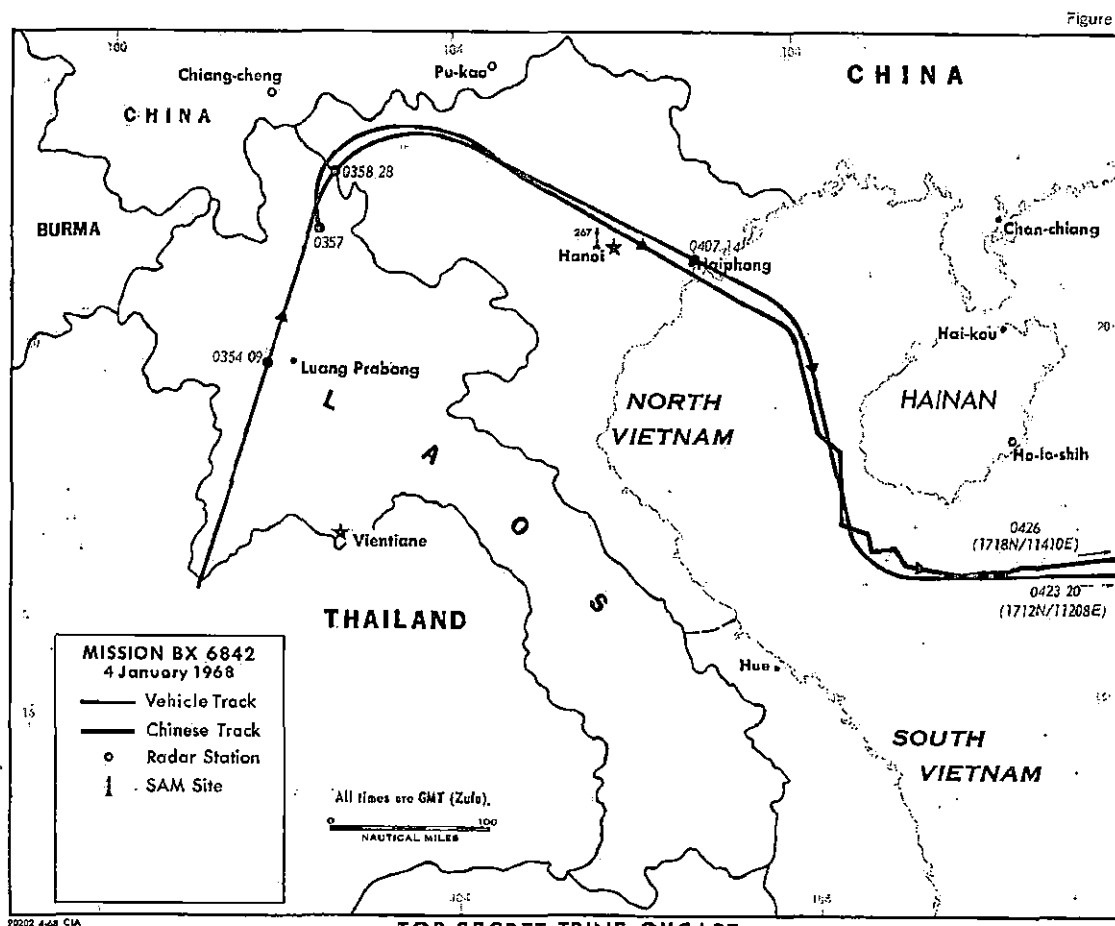
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MISSION ANALYSIS

BX6842

BLACK SHIELD mission BX6842 was a single-pass, high-altitude reconnaissance mission flown over North Vietnam on 4 January 1968. The BLACK SHIELD vehicle entered and exited North Vietnam at 0358:28Z and 0407:14Z. The mission vehicle encountered a SAM reaction at approximately 0405Z. Figure 1 shows the mission route and associated events.

There was no indication of surface-to-surface missile (SSM) activity in the photographed areas. The BLACK SHIELD vehicle photographed 176 Chinese and North Vietnamese COMIREX targets plus 16 bonus (non-COMIREX) targets.



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Of the 176 COMIREX targets photographed, 139 were North Vietnamese SA-2 sites, 12 of which were occupied. The mission vehicle also photographed a number of probable cave defense sites near Hanoi and Haiphong.

Three S-band and one L-band Fan Song B radar signals were recorded during the overflight. The third S-band signal qualified as a valid threat and activated the Mad Moth and Blue Dog BLACK SHIELD jammers. Correlation and analysis of all available data indicate that SAM site 267 (21°05'N, 105°44'E) launched a missile at the BLACK SHIELD vehicle at 0405:02Z. Figure 2 presents three photographs: one of smoke over site 267; a second of the launched missile; missile vapor trail and missile burn-out; and the third of missile detonation. Missile trajectory analysis from photography indicates the missile's approach to the mission vehicle was no closer than 8,000 feet and probably was much greater.

A departure from the normal Fan Song B launch/guidance techniques was noted on this mission. Normal operational procedures specify launch/guidance to occur while the target and missile are under the influence of the Fan Song B radar operating in the high-PRF mode (2,400-2,530 pps). Intentional atypical missile launch sequences were observed in October 1967 during missions BX6732 and BX6734,* when missiles were launched while the radar was in low PRF. The Fan Song was switched to high PRF in two of these firings approximately six seconds after launch, and missile guidance was provided thereafter. The missile fired at the vehicle of BX6842 was launched while the radar was in the low-PRF mode, and missile guidance (high-PRF) information was computed with the radar operating in the low-PRF mode. This atypical launch/guidance sequence may have been an attempt by the Vietnamese to reduce the effect of the BLACK SHIELD jammers while suffering only a small loss in capability due to the lower data rate. Figure 3 is a presentation of the signal and vehicle flight environment during the missile launch/flight phase.

The situation geometry as depicted in figures 1 and 3 tends to indicate that the launch occurred in anticipation of a BLACK SHIELD path offset amenable to a successful missile intercept. This prediction was apparently generated via erroneous EW tracking information which projected the target flight path to within 4 nautical miles of the SA-2 site. The actual vehicle flight path was approximately 20 nautical miles from site 267 and too distant for a successful intercept. The erroneous EW tracking data coupled with the effects of the BLACK SHIELD jammers resulted in a late and probable hasty launch, a launch that could not have been successful because of the large offset range. The missile continued to automatic destruct which occurs approximately 62 seconds after launch. This was also the approximate duration of the L-band signal (see figure 3).

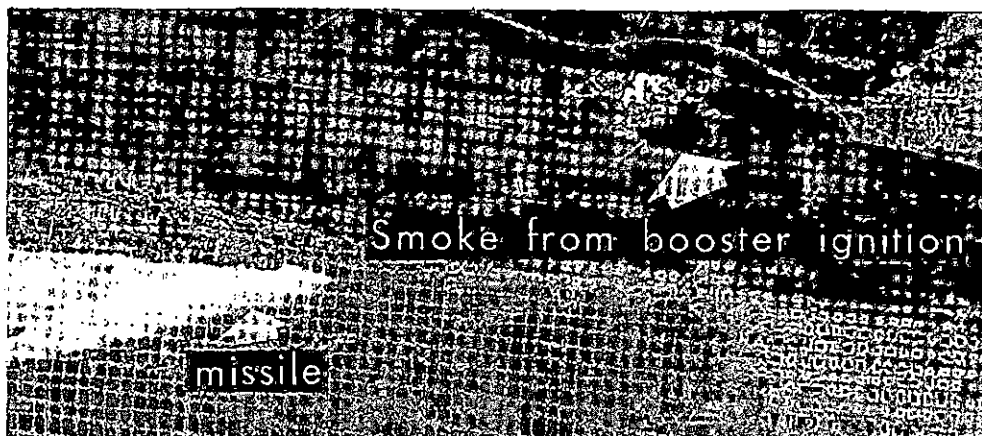
*Evaluated in BYE-1296/68.

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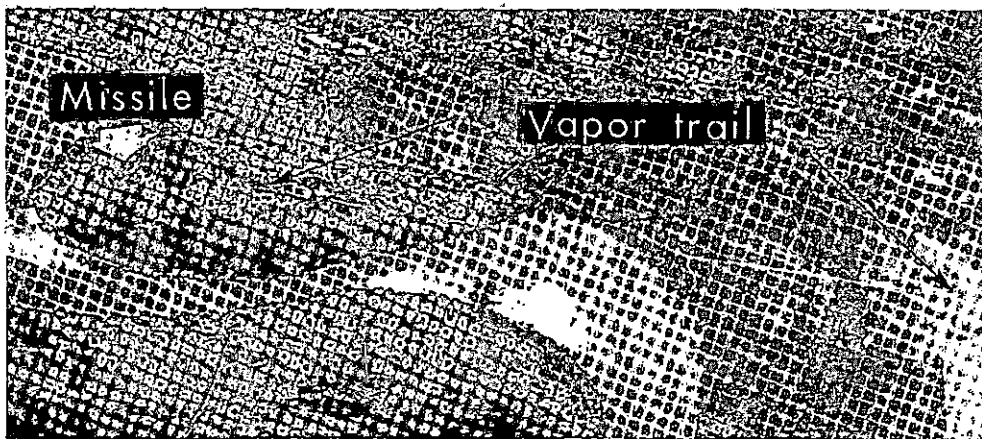
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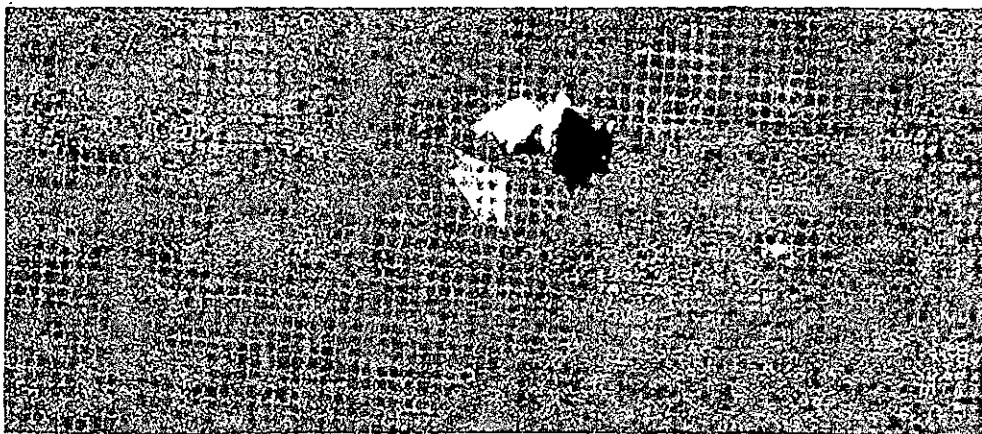
Figure 2. Photography of Missile Launched by Site 267



SA-2 launch



Flight & Missile Burnout

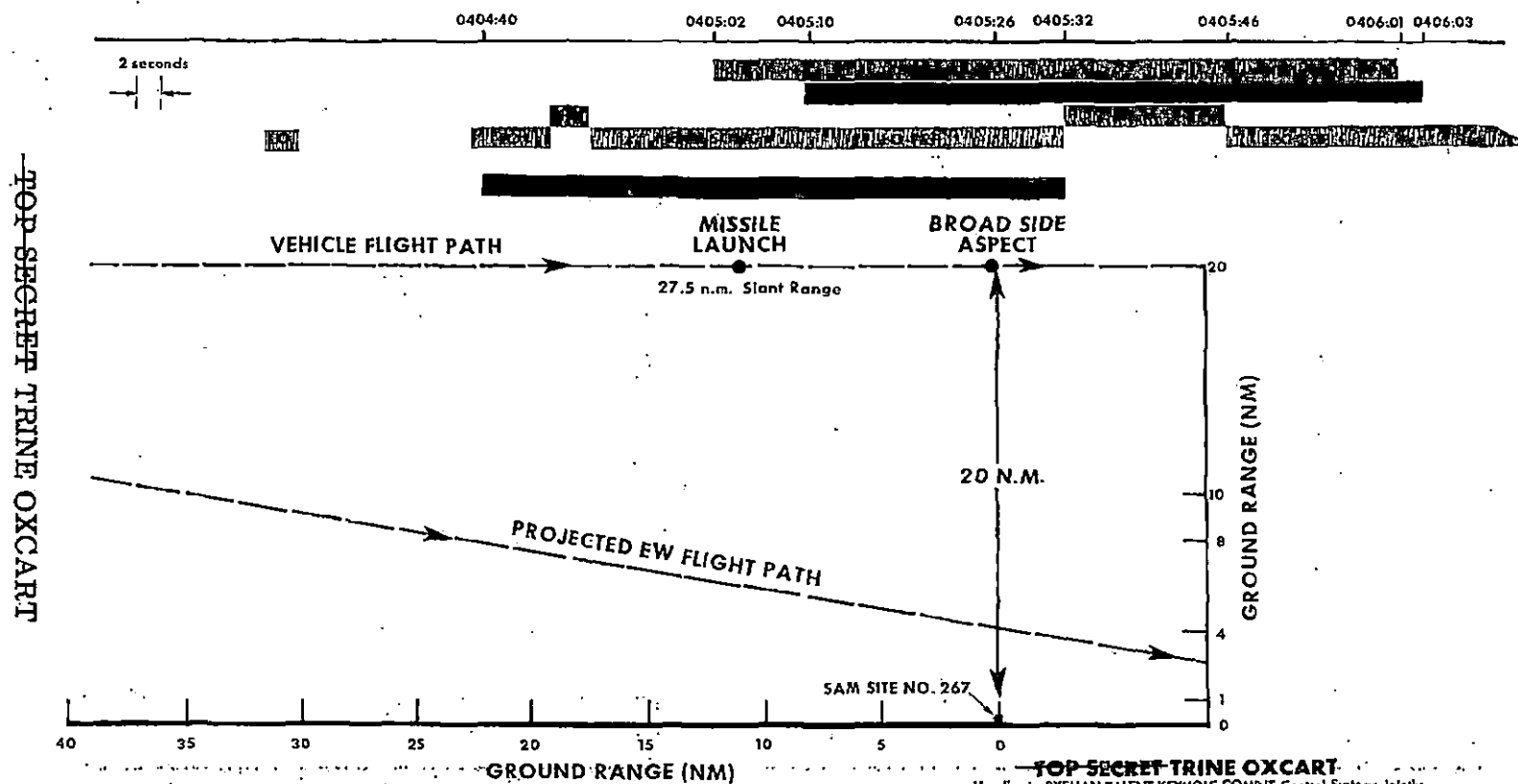


Warhead burst

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Figure 3. Signal & Vehicle Flight Environment



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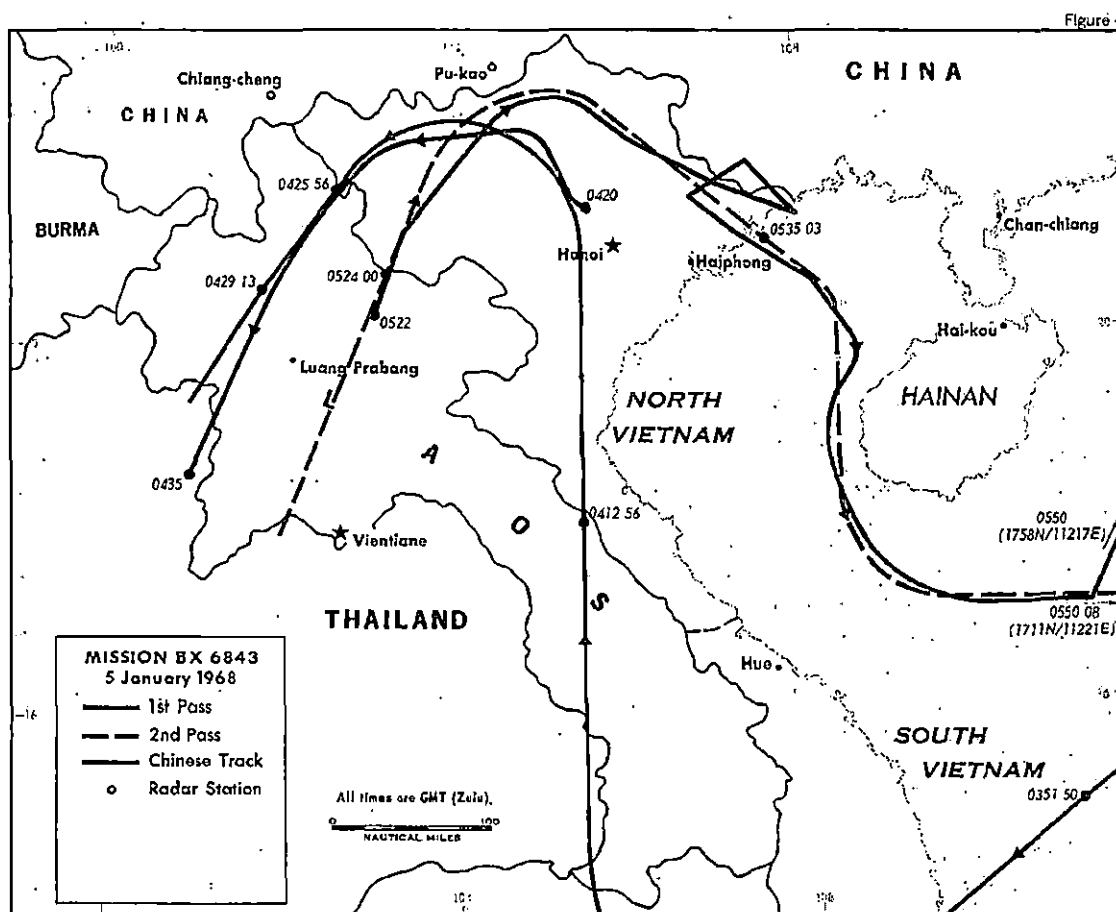
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Early warning track was apparently first established by the Chinese radar facility located at Chiang-cheng. Other radar stations at Pu-kao and Ho-lo-shih supplemented and maintained track of the vehicle. The initial detection and final track radar-to-vehicle ground ranges for these three stations were 67 and 246, 91 and 136, and 137 and 239 nautical miles, respectively. There was no indication of North Vietnamese radar tracking of the vehicle; however, it is likely that the Vietnamese broadcast of the vehicle track was based upon reception of the Chinese plot information.

Strike/jamming activity during the overflight period was moderate and restricted to the Haiphong area.

BX6843

This BLACK SHIELD mission was a double-pass overflight of North Vietnam flown on 5 January 1968. The vehicle entered and exited North Vietnam at



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0412:56Z and 0425:56Z on its first pass, and at 0524:00Z and 0535:03 on its second pass. Figure 4 is a presentation of the flight route and associated events.

Two suspect SS (cruise) missile sites near Thanh Hoa were photographed, one containing a few small unidentified objects and the other unoccupied. The BLACK SHIELD vehicle photographed 233 Chinese and North Vietnamese COMIREX targets plus 10 bonus (non-COMIREX) targets. Of the 233 COMIREX targets photographed, 182 were North Vietnamese SA-2 sites. Fifteen of these sites were occupied. This mission also provided photography of five of North Vietnam's major airfields and coverage of almost all of the rail network.

Eleven Fan Song B S-band signals were recorded during the overflight. None of these signals appeared to be tracking the mission vehicle, and no defensive system was activated. Initial EW tracking was accomplished by Chinese facilities, and this track information was subsequently broadcast by the North Vietnamese. There was no indication of tracking by North Vietnamese radars. Initial detection and final track ranges of Chinese radar stations during the first pass were 109 and 217 nautical miles for Chiang-cheng and 96 and 237 nautical miles for Pu-kao. Chiang-cheng's ranges for the second-pass track were 117 and 325 nautical miles.

There was little or no strike/jamming during the overflight period.

BX6847

BLACK SHIELD mission BX6847 was a three-pass, high-altitude reconnaissance mission flown over North Korea on 26 January 1968. The mission vehicle was over the North Korean land mass on its first pass from 0217:53 to 0222:05, on the second pass from 0244:09 to 0248:36, and on the third pass from 0420:21 to 0425:07. Figure 5 presents the mission flight path and associated air surveillance events.

The BLACK SHIELD vehicle photographed 82 North Korean and Chinese COMIREX targets and 837 bonus targets. The mission obtained comprehensive baseline coverage of most of North Korea's armed forces and industry as well as large portions of the transportation system. The USS Pueblo and three new guided missile patrol boats (Komar PTG) were observed on photography of this mission. A BLACK SHIELD photograph of the USS Pueblo at anchor in a bay north of Wonsan is included in the examples of mission photography at the end of this report.

There was no indication of a hostile weapons reaction; no defensive system was activated during the overflight. The majority of the air surveillance tracking

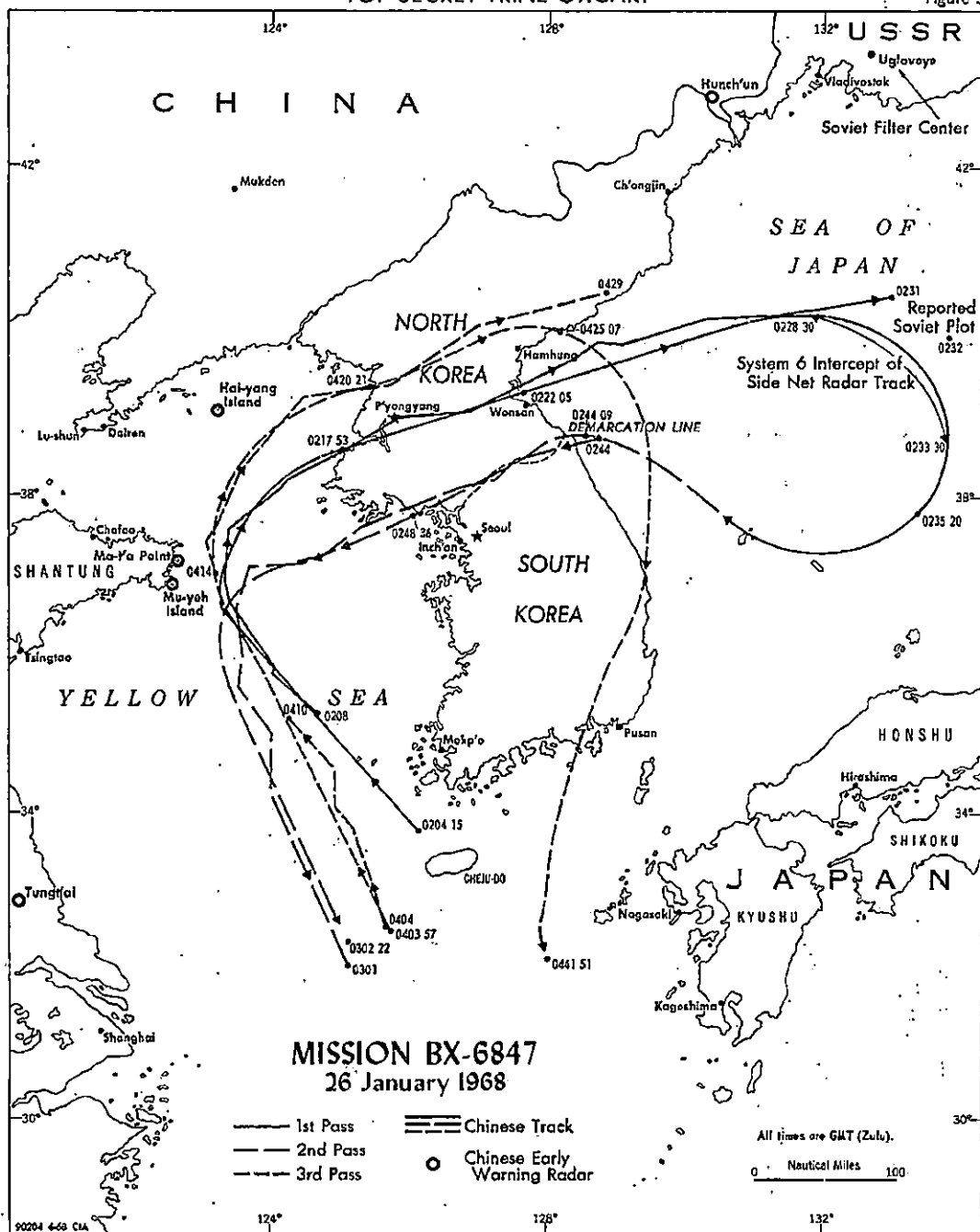
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Figure 5

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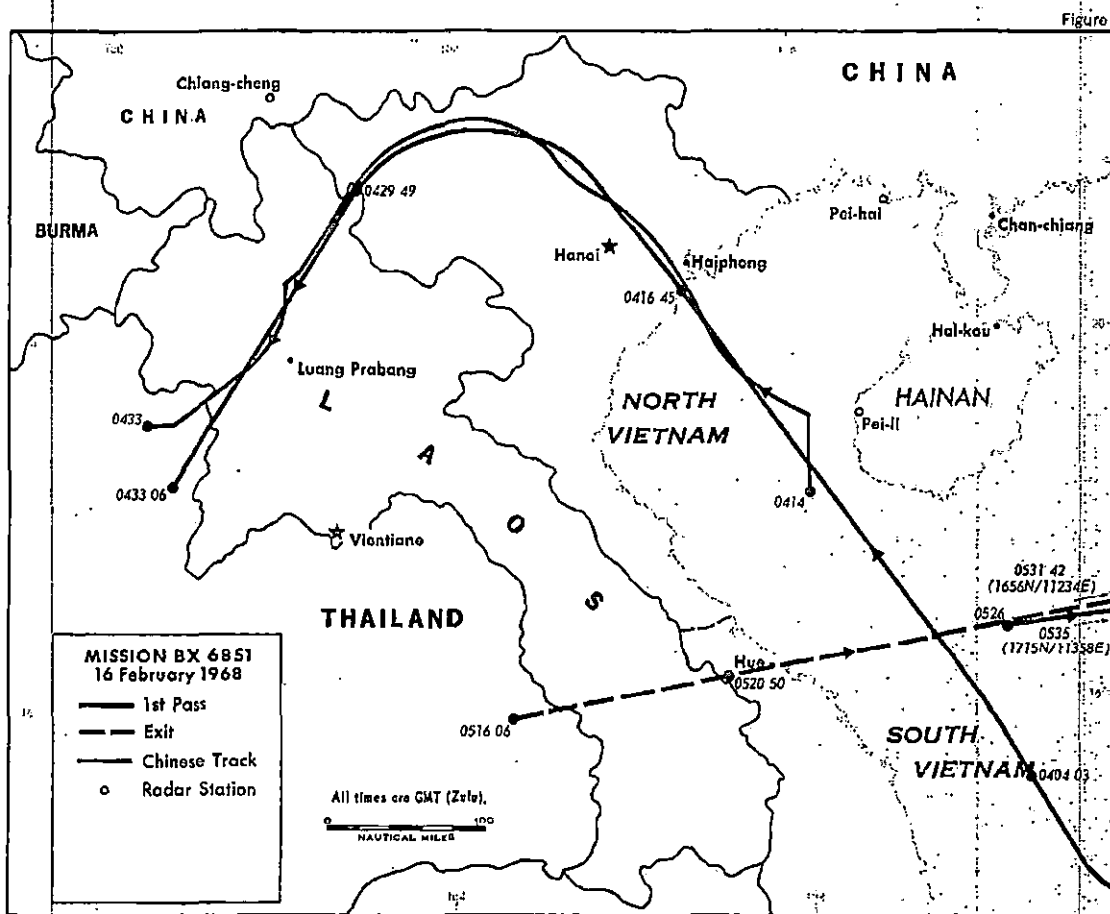
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was accomplished by Chinese radar facilities at Ma-t'a Point (33°12'N, 122°37'E), Tungt'ai (32°52'N, 120°20'E), Mu-yeh Island (36°55'N, 122°31'E), Hai-yang Island (39°20'N, 123°10'E), and Hunch'un (42°50'N, 130°20'E).

Analysis of System 6 Elint indicates that Soviet Bar Lock, Tall King, and Side Net radars, subordinate to Uglovoe (43°21'N, 132°40'E), tracked the vehicle in the time period from 0228:30 to 0233:30. The Soviets broadcast one position plot of the vehicle at 0232Z. There was no indication of any North Korean surveillance tracking.

BX6851

BLACK SHIELD mission BX6851 was a two-pass mission flown over North Vietnam on 16 February 1968. The vehicle entered North Vietnam on its first



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pass at 0416:45 and exited at 0424:49. Overflight of the DMZ occurred from 0520:50 to 0521:46. Figure 6 is a plot of the mission route and associated tracking.

A rapid deterioration of weather over the target area resulted in little useable photography.

There was no indication of a hostile weapons reaction, and no electronic defensive equipment was activated during the overflight. Air surveillance tracking of the BLACK SHIELD vehicle was maintained by Chinese radar facilities at Pei-li (19°08'N, 108°43'E), Pei-hai (21°27'N, 109°E), and Chiang-cheng (22°45'N, 101°50'E). Initial detection and final radar-to-aircraft track ranges for these radar stations were 39 to 228, 126 to 286, and 169 to 233 nautical miles, respectively. Although there was no indication of North Vietnamese radar tracking, track information probably was obtained by monitoring Chinese broadcast facilities.

There was little or no strike/jamming activity during the overflight period.

BX6853

BLACK SHIELD mission BX6853 was a two-pass reconnaissance mission flown over North Korea on 19 February 1968. The mission vehicle penetrated and exited the North Korean land mass on its first pass at 0306:01 and 0309:50, and on its second pass at 0451:30 and 0456:51. Figure 7 is a plot indicating the mission route and related events.

The BLACK SHIELD vehicle photographed 84 North Korean COMIREX targets plus 89 bonus targets. Scattered clouds covered 20 percent of the area photographed, concealing the area in which the USS Pueblo was photographed on mission BX6847. One new, occupied SA-2 site was identified near Wonsan.

There was no indication of a hostile weapons reaction. Air surveillance tracking of the vehicle was accomplished by elements of the Chinese Air Defense System (ADS) from 0300Z to 0332Z on the first pass and from 0448Z to 0516Z on the second pass. This mission marks the first tracking of the vehicle by the North Korean ADS; the North Korean Maryong-San radar station (37°56'N, 125°56'E) reported track and altitude information on the BLACK SHIELD vehicle from 0458Z to 0507Z of the second pass. Initial detection and final track ranges for the Maryong-San radar station were 54 and 237 nautical miles. There was no indication of tracking by Soviet radars.

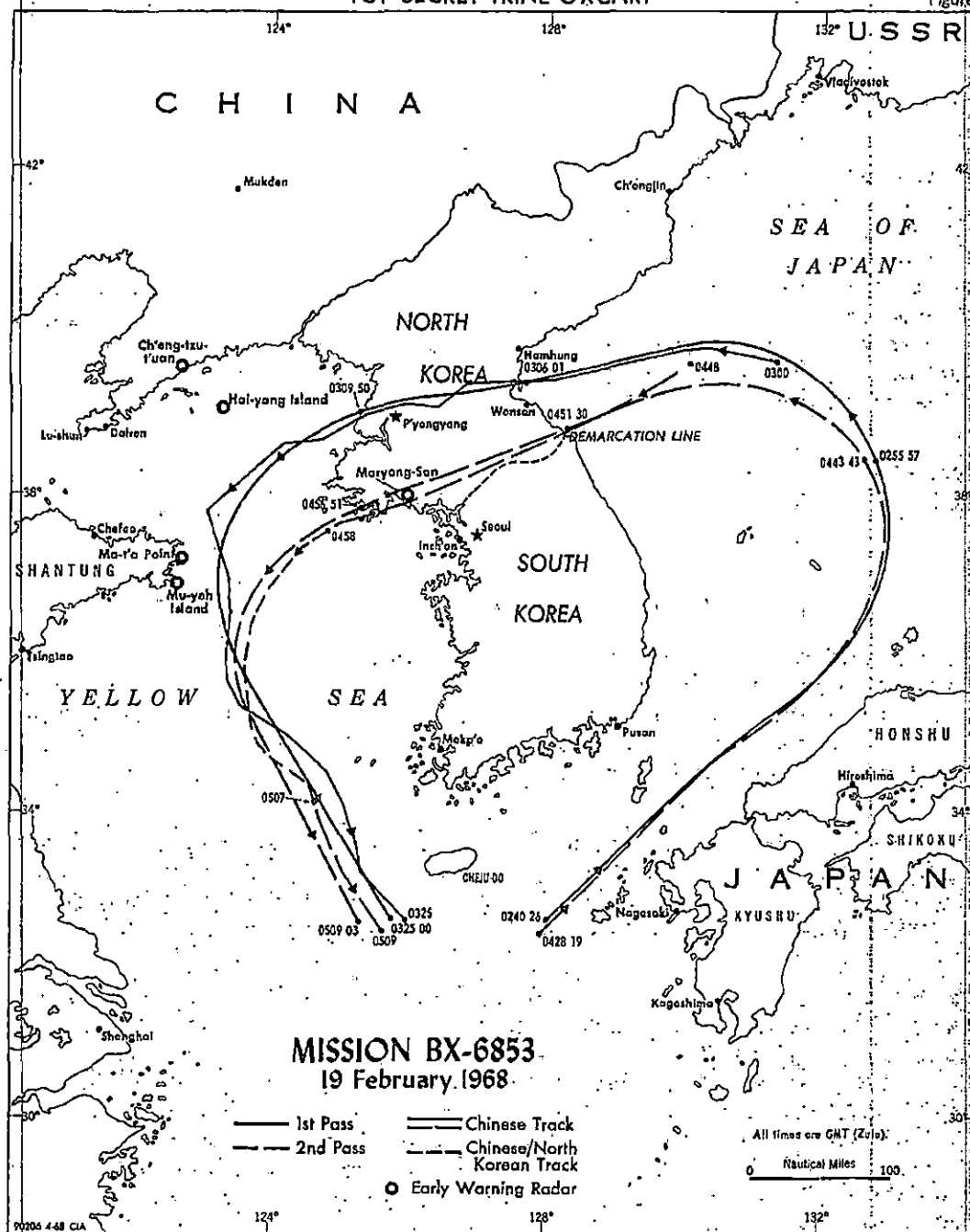
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Figure 7.

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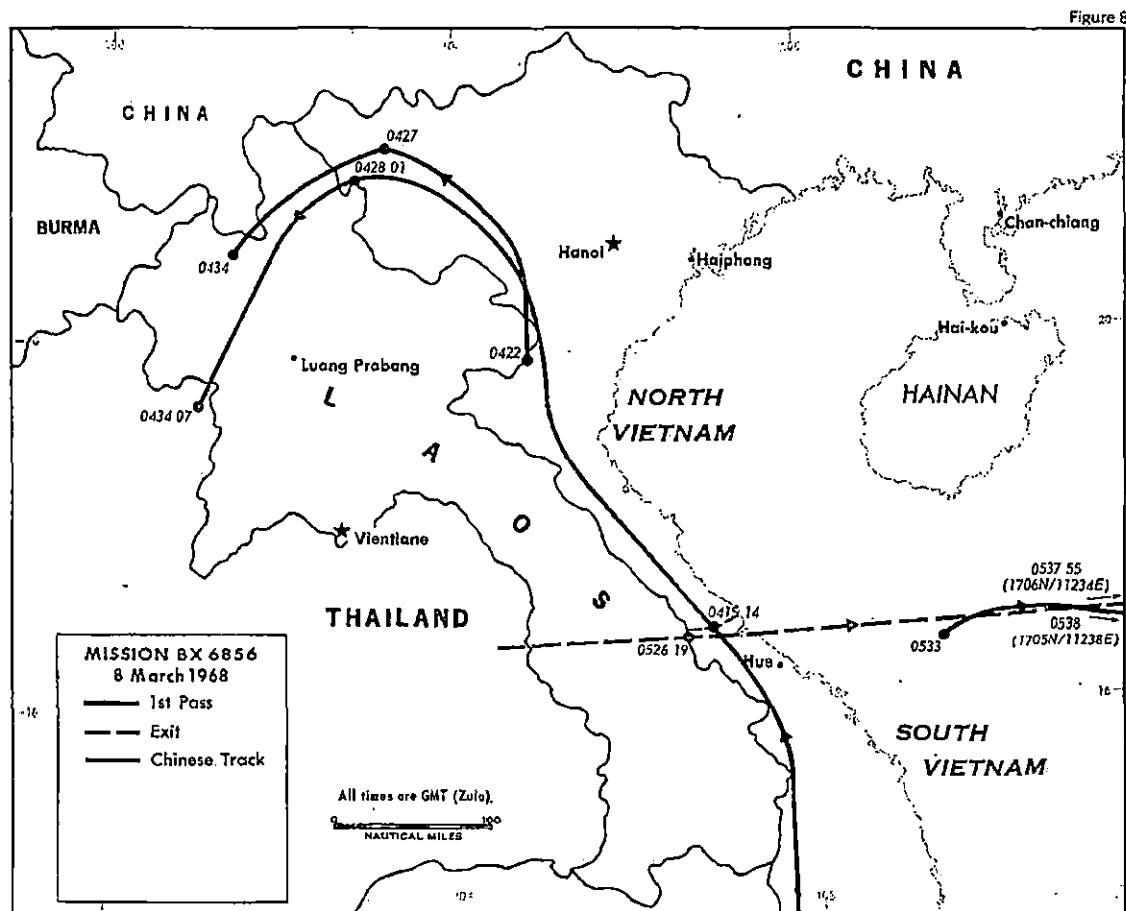
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BX6856

This BLACK SHIELD two-pass mission was flown over North Vietnam and the Demilitarized Zone on 8 March 1968. The mission vehicle entered North Vietnamese airspace on its first pass at 0415:14Z and exited at 0428:01Z. On the second pass it overflowed the DMZ area in the time period from 0526:14Z to 0527:10Z. Figure 8 is a presentation of the flight route and associated tracking.

Good quality photography was obtained of Khe Sanh and the Laos, Cambodia, and South Vietnamese border areas. No useable photography was obtained of North Vietnam due to adverse weather conditions.

There was no indication of a hostile weapons reaction, and no on-board defensive systems were activated. Chinese Air Defense radar facilities



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tracked the mission vehicle from 0422Z to 0434Z and from 0533Z to 0538Z. There was no apparent tracking of the vehicle or indication of knowledge of the overflight by the North Vietnamese. A change in normal route penetration apparently hampered detection of the vehicle by Chinese/North Vietnamese radar facilities.

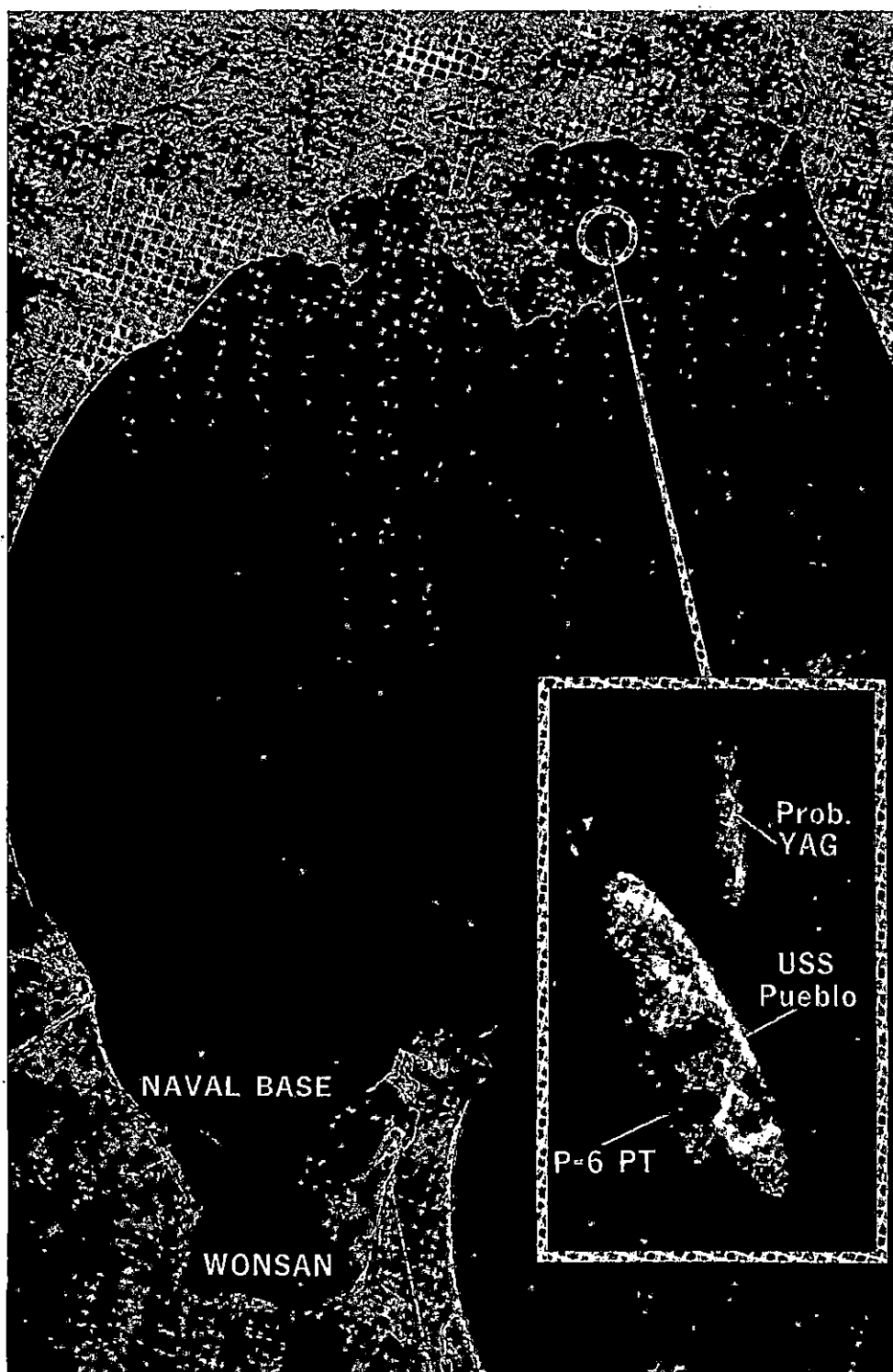
Little or no strike/jamming activity was conducted during the overflight period.

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Figure 9.



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Figure 10. Cave Defense Sites



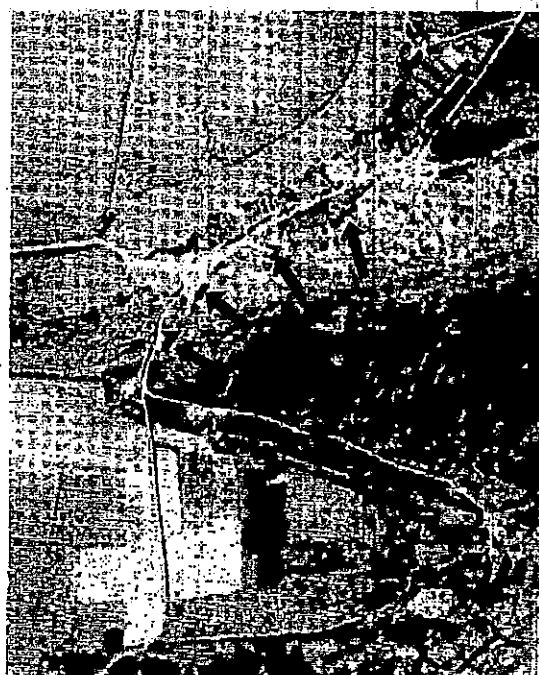
← Early-Stage Construction
 ← Initial-Stage Construction



← Early-Stage Construction



← Parapet



← Early-Stage Construction

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 NO FOREIGN DISSEM
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Figure 11. Vinh Airfield



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APPENDIX I

BLACK SHIELD Operational Missions Alerted
Between 1 January and 31 March 1968

<u>MISSION NO.</u>	<u>DATE</u>	<u>REMARKS</u>
BX6842	3 Jan. 1968	Flown
BX6843	4 Jan. 1968	Flown
BX6844	6 Jan. 1968	Cancelled due to weather
BX6845	19 Jan. 1968	Cancelled due to weather
BX6846	20 Jan. 1968	Cancelled due to weather
BX6847	25 Jan. 1968	Flown (3 Passes)
(Korea) BX6848	29 Jan. 1968	Cancelled due to weather
BX6849	9 Feb. 1968	Cancelled due to weather
BX6850	14 Feb. 1968	No Approval
(Korea) BX6851	15 Feb. 1968	Flown
BX6852	16 Feb. 1968	Cancelled due to weather
BX6853	18 Feb. 1968	Flown
(Korea) BX6854	27 Feb. 1968	Cancelled due to weather
BX6855	5 Mar. 1968	Cancelled due to weather
BX6856	7 Mar. 1968	Flown

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APPENDIX II

COMIREX Targets Covered by BLACK SHIELD Missions over North Korea

1 January - 31 March 1968

COMIREX Number	Target	Mission Number	
		47	53
50X1, E.O.13526	Nampo SAM Site C-24-2	X	
	Hungnam SAM Site A-25-2		X
	Pyongyang SAM Site C-33-3	X	X
	Sariwon SAM Site A-21-2	X	
	Wonsan SAM Site A-10-2	X	X
	Sinpo SAM Site A-09-2	X	
	Nampo SAM Site B-30-2	X	
	Hungdogi-Dong SAM Site C-22-2	X	X
	Pyongyang SAM Site B-17-2	X	X
	Pyongyang SAM Site B-23-2	X	X
	Pyongyang SAM Site C-29-2	X	X
	Pyongyang SAM Site C-12-2	X	
	Pyongyang SAM Site C-05-2	X	X
	Pyongyang SAM Support Factory	X	X

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APPENDIX II (continued)

COMIREX
NumberTargetMission Number
47 53

Nampo Cruise Missile Launch Site #1

X

X

Pyongyang Airfield East

X

X

Sondong Ni Airfield

X

Sunan Up Airfield

X

X

Pukchang-Ni Airfield

X

X

Wonsan Airfield

X

X

Hwangju Airfield 2

X

X

Pyong Ni Airfield

X

50X1, E.O.13526

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APPENDIX II (continued)

COMIREX Number	Target	Mission Number	
		47	53
50X1, E.O.13526	Onchon-Up Airfield	X	X
	Taechon Airfield	X	
	Nampo Naval Base	X	
	Munchon Naval Base Wonsan	X	X
	Changjon Naval Base	X	
	Haeju Naval Base	X	X
	Pipa-Got Probable Naval Dock Yard	X	
	Wonsan Port Facilities	X	X
	Nampo Naval Base		X
	Nampo Port Complex	X	X
	Nampo Ship Yard Myonghyop	X	X
	Hungnam Port Facilities		X
	Pyongyang BW Institute		X
	Hwang-Chon Army Supply Depot	X	X
	Ongjin Complex	X	

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APPENDIX II (continued)

COMIREX
Number

50X1, E.O.13526

<u>Target</u>	<u>Mission Number</u>	
	<u>47</u>	<u>53</u>
Hoeyang Headquarters First Army Group	X	X
Hoeyang Army Barracks		X
Hungnam Military Activity		X
Hungnam Military Barracks Area		X
Kangdong Army Barracks East		X
Koksan Military Activity		X
Koksan Army Barracks/Storage Area		X
Koksan Army Barracks		X
Kumchon Army Barracks Area E.		X
Pyongyang Airborne Training School		X
Pyongyang Army Barracks/Storage East.	X	X
Pyongyang Depot		X
Ningye Military Depot South		X
Yangdog-Up Military Complex	X	X

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APPENDIX II (continued)

COMIREX
Number

Target

Mission Number
47 53

50X1, E.O.13526

Chong Dong Army Barracks/Training

X

Kumsong Army Barracks

X

Sangjok Tong Army Barracks West

X

Sangjok Tong Army Barracks Headquarters

X

X

Masan Ni Army Barracks Headquarters 12th

X

Changdo Ri Army Barracks Headquarters

X

X

Changdo Ri Army Barracks NE

X

X

Changdo Ri Army Barracks NE

X

Sowon Dong Barracks Headquarters 8th Infantry

X

Ousil Army Barracks

X

Wa Dong Army Barracks Headquarters

X

Ichon Army Barracks NE Headquarters 5th

X

Ichon Army Barracks SSW

X

Pyongsan Army Barracks/Storage Depot

X

Siksdong-Ni Army Barracks/Storage

X

X

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APPENDIX II (continued)

COMIREX Number	Target	Mission Number	
		47	53
50X1, E.O.13526	Sibyong Ni Storage Area		X
	Sariwon Headquarters 46th Infantry Division SW	X	
	Yung Ni Army Barracks		X
	Pyongsan Army Barracks		X
	Pyongyang Railroad Yard Taedong	X	
			X
	Pyongsan Railroad Yards		X
	Pokkye Ri Railroad Yards Shops	X	X
	Tosong Ni Railroad Yards		X
	Nampo Railroad Station Yards & Shops		X
	Kowon Railroad Yards		X
	Sariwon Railroad Yard	X	X
	Pyongyang Railroad Yards	X	X
	Pyongyang Railroad Station & Yards	X	X
	Pyongyang Railroad Yards Sopo-Dongsgon	X	X
	Pyongyang Railroad Yards	X	X
	Sariwon Complex	X	

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APPENDIX II (continued)

COMIREX Number	Target	Mission Number	
		47	53
50X1, E.O.13526	Kaesong Complex		X
	Wonsan Complex	X	X
	Sunchon Complex		X
	Haeju Complex		X
	Yonan Complex	X	
	Kosong Complex	X	X
	Hwangju Complex		X
	Sariwon Complex		X
	Ongjin Complex	X	X
	Nampo Complex		X
	Yonan Complex		X

APPENDIX III

COMIREX Targets Covered by BLACK SHIELD Missions over North Vietnam*
1 January - 31 March 1968

<u>COMIREX Number</u>	<u>Target</u>	<u>Mission Number</u> <u>42</u> <u>43</u>
50X1, E.O.13526	Hanoi SAM Search	
	Lao Cai SAM Search	
	Dien Bien Phu SAM Search	
	Vinh SAM Search	
	Cao Bang SAM Search	
	Dong Hoi SAM Search	
	Fo Lo Probable CD Site	X
	Cat Ba Coastal Defense Sites 1 and 2	X X
	Dung Fang Suspect Coastal Defense Site	
	Chang Chiang Coastal Defense Site (Suspect)	
	Yai Cheng Probable Radar Site	
	Hanoi SAM Site A-10-2	X X

*Bad weather precluded photography of targets on BLACK SHIELD Missions BX6851 and BX6856.

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Hanoi SAM Site A-19-2	X	X
	Hanoi SAM Site A-29-2	X	X
	Hanoi SAM Site B-04-2	X	X
	Hanoi SAM Site B-12-2	X	X
	Hanoi SAM Site B-25-2		X
	Hanoi SAM Site B-29-2	X	X
	Hanoi SAM Site B-30-2	X	X
	Hanoi SAM Site C-29-2	X	X
	Hanoi SAM Site C-30-2	X	X
	Hanoi SAM Site D-19-2		X
	Hanoi SAM Site B-17-2		X
	Hanoi SAM Site B-21-2		X
	Hanoi SAM Site C-28-2	X	X
	Hanoi SAM Site D-31-2	X	X
	Hanoi SAM Site A-11-2	X	X
	Hanoi SAM Site A-24-2	X	X

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APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

50X1, E.O.13526

Hanoi SAM Site D-31A-2		
Hanoi SAM Site D-16-2		X
Hanoi SAM Site D-36-2	X	X
Hanoi SAM Site C-06-2	X	X
Hanoi SAM Site C-07-2	X	X
Hanoi SAM Site D-31B-2	X	X
Hanoi SAM Site E07-2	X	X
Yen Bai SAM Site B-09-2	X	X
Yen Bai SAM Site C-09-2		
Haiphong SAM Site A-29-2	X	
Haiphong SAM Site A-20-2	X	
Haiphong SAM Site A-17-2	X	
Haiphong SAM Site B-01-2	X	X
Haiphong SAM Site A-29A-2	X	

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Yen Bai SAM Site B-12-2	X	X
	Yen Bai SAM Site C-10-2	X	X
	Yen Bai SAM Site B-11-2	X	X
	Yen Bai SAM Site C-03-2	X	X
	Yen Bai SAM Site C-07-2	X	X
	Yen Bai SAM Site C-09A-2		
	Yen Bai SAM Site C-17-2	X	X
	Yen Bai SAM Site B-06-2	X	X
	Yen Bai SAM Site C-04-2	X	X
	Yen Bai SAM Site B-05-2	X	X
	Yen Bai SAM Site B-06A-2	X	X
	Yen Bai SAM Site B-10-2	X	X
	Yen Bai SAM Site B-11A-2	X	

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APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

50X1, E.O.13526

Haiphong SAM Site B-33-2	X	X
Haiphong SAM Site B-06-2	X	X
Haiphong SAM Site C-32-2		X
Haiphong SAM Site C-32A-2	X	X
Haiphong SAM Site B-28-2	X	X
Haiphong SAM Site B-30-2	X	X
Haiphong SAM Site A-07-2	X	X
Haiphong SAM Site A-23-2	X	
Haiphong SAM Site A-31-2	X	
Haiphong SAM Site A-33-2	X	

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Haiphong SAM Site C-30-2	X	X
	Haiphong SAM Site C-28-2	X	X
	Haiphong SAM Site A-02-2	X	X
	Haiphong SAM Site A-17A-2	X	
	Haiphong SAM Site D-35-2	X	X
	Haiphong SAM Site A-33A-2	X	
	Thanh Hoa SAM Site B-28-2		X
	Thanh Hoa SAM Site C-02-2		X
	Thanh Hoa SAM Site B-01-2		X
	Thanh Hoa SAM Site B-02-2		X
	Thanh Hoa SAM Site		
	Thanh Hoa SAM Site D-04-2		X
	Thanh Hoa SAM Site C-03-2		X
	Thanh Hoa SAM Site C-02A-2		X
	Thanh Hoa SAM Site A-17-2		X

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APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

50X1, E.O.13526

Thanh Hoa SAM Site C-04-2		X
Thanh Hoa SAM Site D-02-2		X
Thanh Hoa SAM Site C-01-2		X
Thanh Hoa SAM Site D-03-2		X
Thanh Hoa SAM Site D-03A-2		X
Thanh Hoa SAM Site A-19-2		X
Thanh Hoa SAM Site B-28A-2		X
Thanh Hoa SAM Site B-27-2		X
Thanh Hoa SAM Site A-14-2		X
Thanh Hoa SAM Site D-20-2		
Thanh Hoa SAM Site D-20A-2		
Thanh Hoa SAM Site A-17A-2		X
Thanh Hoa SAM Site A-13-2		X
Hanoi SAM Site D-04-2		

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Hanoi SAM Site C-30E-2		
	Hanoi SAM Site B-30A-2	X	X
	Hanoi SAM Site C-30A-2	X	X
	Hanoi SAM Site D-03-2	X	X
	Hanoi SAM Site D-04-2	X	X
	Hanoi SAM Site A-17A-2	X	X
	Hanoi SAM Site C-30C-2	X	X
	Hanoi SAM Site C-01-2	X	X
	Hanoi SAM Site C-05-2	X	X
	Hanoi SAM Site C-04-2	X	X
	Hanoi SAM Site C-02-2	X	X
	Hanoi SAM Site C-04A-2	X	
	Hanoi SAM Site C-01A-2	X	X
	Hanoi SAM Site B-33-2	X	X
	Hanoi SAM Site D-35-2	X	X
	Hanoi SAM Site C-06A-2	X	X

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APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

50X1, E.O.13526

Hanoi SAM Site C-13-2	X	
Hanoi SAM Site C-11-2	X	X
Hanoi SAM Site C-12-2	X	X
Hanoi SAM Site C-30D-2	X	X
Hanoi SAM Site B-07-2	X	X
Hanoi SAM Site D-06-2	X	X
Hanoi SAM Site C-30E-2	X	X
Hanoi SAM Site B-34-2		
Bac Can SAM Site C-22-2	X	X
Bac Can SAM Site B-20-2	X	X
Bac Can SAM Site C-20-2	X	X
Bac Can SAM Site C-19-2	X	X
Hoa Binh SAM Site A-19-2		X
Hoa Binh SAM Site B-20-2		X
Hoa Binh SAM Site B-22-2		X
Hoa Binh SAM Site B-17-2		X

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APPENDIX III (continued)

COMIREX
Number

50X1, E.O.13526

TargetMission Number
42 43

Hoa Binh SAM Site C-17-2

X

Hoa Binh SAM Site B-19-2

X

Hoa Binh SAM Site D-27-2

Hoa Binh SAM Site D-28-2

Hoa Binh SAM Site A-04-2

Hoa Binh SAM Site B-08-2

X

Hoa Binh SAM Site C-27-2

Hoa Binh SAM Site B-02-2

X

X

Hanoi B-08-2

X

X

Hoa Binh SAM Site B-04-2

X

X

Hoa Binh SAM Site B03-2

X

Hoa Binh SAM Site B-08B-2

X

Hoa Binh SAM Site B-10-2

X

Haiphong SAM Site D-35A-2

X

X

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APPENDIX III (continued)

COMIREX
Number

50X1, E.O.13526

Target	Mission Number	
	42	43
Haiphong SAM Site B-07-2	X	X
Haiphong SAM Site A-27-2	X	
Haiphong SAM Site B-34-2	X	X
Haiphong SAM Site B-01A-2	X	X
Haiphong SAM Site A-06-2	X	X
Haiphong SAM Site A-14-2	X	
Haiphong SAM Site B-06B-2	X	X
Haiphong SAM Site D-22-2		
Haiphong SAM Site C-21-2		
Haiphong SAM Site D-23-2		
Haiphong SAM Site B-27-2	X	X
Haiphong SAM Site A-31A-2		
Haiphong SAM Site A-14A-2	X	
Haiphong SAM Site C-29-2		
Haiphong SAM Site C-27-2	X	X
Haiphong SAM Site C-26-2	X	

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APPENDIX III (continued)

COMIREX
Number

Target

Mission Number
42 43

Haiphong SAM Site B-25-2

X

Haiphong SAM Site A-29-B-2

X

X

Haiphong SAM Site A-26-2

X

X

Haiphong SAM Site A-22-2

X

Haiphong SAM Site A-25A-2

X

Vinh C-19-2

X

Vinh C-32-2

Vinh B-16-2

Vinh

Vinh

Vinh

Vinh C-32-2

50X1, E.O.13526

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Vinh		
	Vinh D-32-2		
	Vinh A-07-2		X
	Vinh		
	Vinh C-32A-2		X
	Vinh C-30-2		X
	Vinh C-32B-2		X
	Vinh B-21-2		
	Vinh B-29-2		X
	Vinh B-32-2		X
	Vinh A-01-2		
	Vinh A-36-2		
	Vinh A-11-2		X
	Vinh C-31-2		X
	Vinh A-01A-2		X
	Vinh D-35-2		X

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APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

50X1, E.O.13526

Vinh C-31A-2

X

Vinh A-25-2

X

X

Hanoi SAM Site B-01-2

X

X

Hanoi SAM Site C-33-2

X

X

Hanoi SAM Site B-01A-2

X

X

Hanoi SAM Site A-33-2

X

X

Hanoi SAM Site D-36A-2

X

X

Hanoi SAM Site C-01B-2

X

X

Hanoi SAM Site A-01-2

X

X

Hanoi SAM Site C-03-2

Hanoi SAM Site C-03A-2

X

X

Hanoi SAM Site A-14-2

X

X

Hanoi SAM Site C-32-2

X

X

Hanoi SAM Site B-32-2

X

X

Hanoi SAM Site B-07A-2

X

X

Hanoi SAM Site C-17-2

X

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APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

Hanoi SAM Site A-31-2	X	X
Hanoi SAM Site C-17A-2		X
Hanoi SAM Site B-16-2	X	X
Hanoi SAM Site E-22-2		X
Hanoi SAM Site C-17B-2		X
Thanh Hoa SAM Site C-03A-2		X
Thanh Hoa SAM Site B-01A-2		
Thanh Hoa SAM Site C-01A-2		
Thanh Hoa SAM Site C-04A-2		X
Thanh Hoa SAM Site D-21A-2		X
Thanh Hoa SAM Site B-01B-2		X
Thanh Hoa SAM Site D-21B-2		X
Thanh Hoa SAM Site A-17B-2		X
Thanh Hoa SAM Site D-21-B		X
Hanoi SAM Site C-16-2		X

50X1, E.O.13526

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Hanoi SAM Site A-05-2	X	X
	Hanoi SAM SITE B-36B-2		
	Hanoi SAM Site C-03B-2	X	X
	Hanoi SAM Site D-31C-2		
	Hanoi SAM Site C-05B-2	X	X
	Hanoi SAM Site B-27-2	X	X
	Hanoi SAM Site B-13-2	X	X
	Hanoi SAM Site B-28-2	X	X
	Hanoi SAM Site B-04A-2	X	X
	Hanoi Prob. Site A		
	Hanoi Prob. Site B		
	Hanoi SAM Site C-01D-2	X	X
	Hanoi SAM Site C-01E-2	X	X
	Hanoi SAM Site C-29A-2	X	X
	Hanoi SAM Site B-34A-2	X	X
	Hanoi SAM Site D-35-2		

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Vinh SAM Site A-01A-2		
	Hanoi SAM Site A-15-2	X	X
	Hanoi SAM Site A-34-2	X	X
	Hanoi SAM Site B-36-2	X	X
	Hanoi SAM Site B-30B-2	X	X
	Hanoi SAM Site A-29-A	X	X
	Hanoi SAM Site A-34-A	X	X
	Hanoi SAM Site A-22-2	X	X
	Hanoi SAM Site A-15A-2	X	X
	Hanoi SAM Site A-32-2	X	X
	Hanoi SAM Site A-30-2	X	X
	Hanoi SAM Site A-24A-2		X

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APPENDIX III (continued)

COMIREX
Number

50X1, E.O.13526

TargetMission Number
42 43

Vinh SAM Site A-25-2

Hanoi Probable SAM Equipment Training Area

Nan San SAM Site A-12-2

Nan San SAM Site C-12-2

Nan San SAM Site D-13-2

* Hanoi SAM Site

* Hanoi SAM Site A-01A-2

* Hanoi SAM Site A-35-2

* Hanoi SAM Site B-23-2

* Hoa Binh SAM Site D-27-2

* Haiphong SAM Site A-25-2

* Haiphong SAM Site B-36-2

* Haiphong SAM Site A-16-2

* Haiphong SAM Site A-02A-2

* Haiphong SAM Site

* Thanh Hoa SAM Site D-31B-2

X X

X X

X

*Unnumbered.

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APPENDIX III (continued)

<u>COMIREX Number</u>	<u>Target</u>	<u>Mission Number</u>	
		42	43
*	Ban Xom Lom SAM Site		
*	Chin Chou SAM Site (China)		
	Hai Kou Airfield		
	Ling Shui Airfield		
	Meng Tzu Airfield West		
	Haiphong/Cat Bi Airfield	X	X
	Haiphong/Kien An Airfield	X	X
	Hanoi/Bac Mai Airfield	X	X
	Hanoi/Gia Lam Airfield	X	X
	Phuc Yen Airfield	X	X
	Lang Son Airfield	X	X
	Kep Airfield	X	X
	Ning Ming Airfield		
	Chia Lai Shih Airfield		
	Ping Yuan Chieh Airfield		
	Tien Yang Airfield		

50X1, E.O.13526

*Unnumbered.

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50X1, E.O.13526

APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
[Redacted]	Yen Bai Airfield	X	X
	Hoa Lac Airfield	X	X
	Bai Thuong Airfield (2C0987)	X	X
	Tho Khoi Helicopter Dispersal Area		
*	Kep Ha Airfield		
*	Hanoi Helicopter Dispersal Area		
*	Hoa Lac Helicopter Dispersal Area	X	X
[Redacted]	That Khe Air Facility		
	Pei Hai Naval Facility		
	Hsin Hsing Naval Facility		
	Port Wallut Naval Base	X	X
	Haiphong Naval Base and Port Facilities	X	X
	Cam Qha Port Facilities		
	Pai Lung Port Facilities		X

*Unnumbered.

50X1, E.O.13526

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50X1, E.O.13526

APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

	Cam Pha Port Facilities	X	X
	Hon Gai Port Facilities	X	X
	Ha Tou Shipyard	X	X
	Ben Thuy Coastal Transport Point	X	X
	Pei Li Port Facilities	X	X
*	Lam Dong Naval Dispersal Facility		
*	Swatow PGM-Hanoi Area		
	Thanh Hoa BW/CW Research Facility		
	Lai Chau Complex		
	Ma Li Po Supply Depot		
	Mengtsu Military Complex		
	Ping Hsing Ammunition Depot		X
	Ping Hsing Army Depot		X
	Ping Hsing Military Storage East		X

*Unnumbered.

50X1, E.O.13526

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Ping Hsiang Storage Area North		X
	Chin Ping Infantry Division Headquarters A Barracks		X
	Chin Ping Supply Depot NW		X
	Ban Lot A Barracks		
	Ha Giang Military Area	X	X
	Van Hoi Military Areas	X	X
	Wen Shan Army Barracks West		
	Ho Kou Army Barracks North	X	
	Yen Shan Military Barracks and Storage Area		
	Lang Son Army Barracks		X
	Y Son Ammunition Depot		
	Xom Hau A Army Supply Depot	X	
	Ngoc Thi Barracks Supply Depot		
	Tai Xouan Army Barracks, Nam Vu		
	Loc Binh Army Supply Depot	X	X

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Yen Bai Ordnance Depot		
	Thai Nguyen Army Supply Depot North	X	X
	Liu Tiao Pan Army Supply Depot	X	
	Bac Can Barracks A Supply Depot		X
	Bac Giang Military Areas	X	X
	Mai Li Po Supply Depot		X
	Tung Chia Army Barracks		
	Ban Tchepone/NVN Special Area 1916	X	X
	Ba Binh Special Area 2009	X	X
	Ben Than Special Area 2013	X	X
	Vinh An Special Area 2014	X	X
	Vit Thu Lu/NVN Special Area	X	X
	Ha Huang tien Highway U.C.		X
	Tsi Ti Pao Road		
	Wu Pu Chieh Road Construction		
	Hanoi/Lao Cai Railroad Segment 2	X	X

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APPENDIX III (continued)

COMIREX Number	Target	Mission Number	
		42	43
50X1, E.O.13526	Hanoi/Lao Cai Railroad Segment 1	X	X
	Hanoi/Lao Cai Railroad Segment 3	X	X
	Hanoi/Ping Hsiang Railroad Segment 2	X	X
	Hanoi/Ping Hsiang Railroad Segment 1	X	X
	Hanoi/Ping Hsiang Railroad Segment 3	X	X
	Hanoi/Lao Cai Railroad Segment 4	X	X
	Hanoi/Lao Cai Railroad Segment 5	X	X
	An Cap Railroad Hanoi Thai Nguyen	X	X
	Ping Hsiang/Hanoi Railroad Segment 4		X
	Ho Kou Highway Segment, Route 24A	X	X
	Uong Bi Transformer Power Plant		
	Tien Pao Highway Sec., Route 25A		
	Chen Nan Kuan Highway Sec.		X
	Ping Hsiang Complex	X	X
	Wen Shan Complex		
	Dong Dang Railroad Yard	X	X

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APPENDIX III (continued)

<u>COMIREX Number</u>	<u>Target</u>	<u>Mission Number</u>	
		42	43
50XI, E.O.13526	Phu Lang Thuong Complex	X	X
	Cao Bang Military Complex	X	X
	Lai Chau Complex	X	X
	Lang Son Complex	X	X
	Mon Cai Complex	X	X
	Tien Yen Complex	X	X
	Binh Lu Area		
	Tuyen Quang Complex	X	X
	Yen Bai Complex	X	X
	Dien Bien Phu Complex	X	X
	Kep Complex		
	Lao Cai Complex	X	X
	Haiphong Railroad Station Classification Yard		
	Haiphong Railroad Station Classification Yard and Shops	X	X
	Viet Tri Railroad Yard	X	X

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50X1, E.O.13526

APPENDIX III (continued)

COMIREX
NumberTargetMission Number
42 43

Yen Vien Railroad Classification Yard

X

X

*

Thai Nguyen Rail Activity

Kep Railroad Yard

X

X

Highway Segment 10E

Haiphong Highway Bridge

Van Diem Battery Plant

Hanoi Railroad - A Highway Bridge

Haiphong Warehouse Area Port

Van Diem Vehicle Depot

Hai Duong Railroad Siding West

Hai Duong Railroad Station

Ngoc Kuyet Railroad Station

Ta Xa PPS North

Loi Dong Warehouse Area

Railroad Segment R-3-A

*Unnumbered...

50X1, E.O.13526

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APPENDIX III (continued)

<u>COMIREX Number</u>	<u>Target</u>	<u>Mission Number</u> <u>42 43</u>
*	Ping Hsiang Railroad Transporting Yard Station and Shops	
*	Ho Kou Vehicle Park	
*	Hsia Shih Storage Areas	
*	Ping Hsiang Storage Area	
*	Thai Nguyen Unidentified Construction Activity	
*	Hanoi/Haiphong Railroad	
*	Hanoi/Haiphong Railroad	
*	Hanoi Transformer Power Plant	
*	Haiphong Transformer Power Plant East	
*	Haiphong Transformer Power Plant West	
*	Viet Tri Transformer Power Plant	
*	Hon Gai Transformer Power Plant	
*	Bac Giang Transformer Power Plant	

*Unnumbered

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APPENDIX IV

Number of Radar Signals Received by BLACK SHIELD Missions
1 January - 31 March 1968

Radar	Mission Numbers					
	42	43	47*	51	53*	56
Fan Song	4	11				
Big Mesh			5	2	7	
Side Net			2		1	3
Rock Cake	10	17	9	4	10	14
Rice Cake					1	
Cross Legs	3	2		2		1
Token			11	1	9	
Cross Slot	2		13	1	6	8
Bar Lock	1	3	6	2		1
Tall King			1		1	
Spoon Rest		2	2			
Flat Face	2	2	1	2		2
Moon Face	2	8	7	2	5	
Moon Mat II		1				
Moon Cone	2	1	1		2	
Whiff			6			
Fire Can	2	8	7	1		

*North Korean Missions

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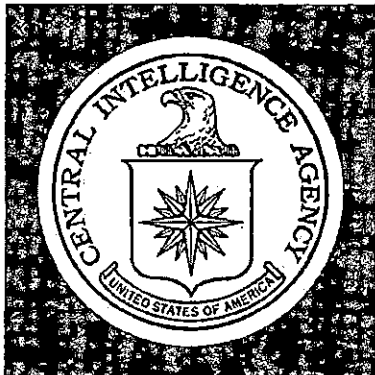
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DIRECTORATE OF
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BLACK SHIELD
Reconnaissance Missions
1 April - 9 June 1968

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7 August 1968
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BLACK SHIELD Reconnaissance Missions
1 April - 9 June 1968

DST-BS/BYE/68-3
7 August 1968

CENTRAL INTELLIGENCE AGENCY
Directorate of Science and Technology

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PREFACE

This report is the last of a series of resumes of the BLACK SHIELD reconnaissance program flown over North Vietnam and North Korea. This final report spans the period from 1 April to 9 June 1968. Only North Korean missions were flown during this time period.

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II. COMIREX targets covered by BLACK SHIELD missions, 1 April - 9 June 1968	6
III. Number of radar signals received by BLACK SHIELD missions, 1 April - 9 June 1968	8

FIGURE

Mission BX6858, flown 5 May 1968	3
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BLACK SHIELD Reconnaissance Missions
1 April - 9 June 1968

SUMMARY

Two BLACK SHIELD high-altitude reconnaissance missions were alerted during the period from 1 April to 9 June 1968. One mission was flown over North Korea. Approval was not granted for the other North Korean mission. (Appendix I lists these missions and related events).

Photography of BLACK SHIELD mission BX6858 flown over North Korea on 5 May 1968, although hampered by clouds and heavy haze, revealed no significant changes in North Korean military posture or disposition. Coverage of the DMZ, transportation, and infiltration routes disclosed no significant troop build-ups or logistic movements. (COMIREX targets photographed over North Korea are listed in Appendix II. Appendix III is a listing of the number and type of radar signals recorded by the System 6 Elint collection device).

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MISSION ANALYSIS

BX6858 was a double-pass, high-altitude reconnaissance mission flown over North Korea on 5 May 1968. The BLACK SHIELD vehicle entered and exited North Korean airspace on its first pass at 0206:27Z and 0210:57Z, and its second pass at 0346:48Z and 0350:50Z. Figure 1 shows the flight route and associated air surveillance tracking.

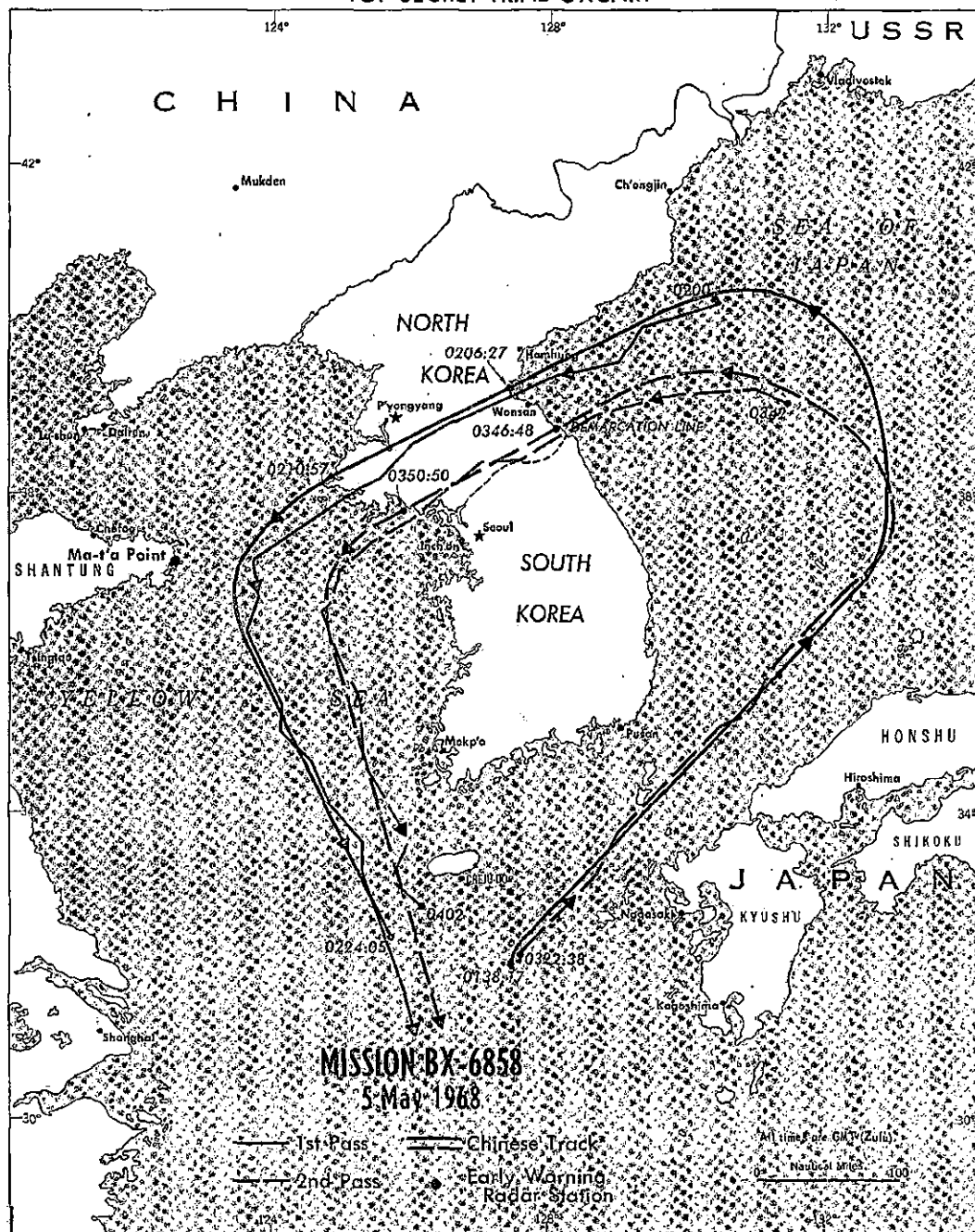
Interpretability of mission photography was severely hampered by cloud cover and heavy haze. The mission aircraft photographed 68 COMIREX targets plus 30 bonus targets. Of the targets photographed, 15 were SA-2 sites. Three of the SA-2 sites were occupied, one was unoccupied, and eleven were identified only. A possible SAMLET coastal defense cruise missile site was tentatively identified on the east coast between Wonsan and Ham hung. Existing weather conditions in the target area did not permit the photographing of the USS Pueblo.

There was no indication of a hostile weapons reaction. Air surveillance tracking of the mission vehicle was accomplished by elements of the Chinese Air Defense System (ADS) from 0200Z to 0233Z of the first pass and from 0342Z to 0402Z of the second pass. Initial detection and final track ground ranges for the Chinese radar station at Mata Point were 118 and 264 nautical miles, respectively. There was no indication of tracking by either the North Korean ADS or the Soviet ADS.

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APPENDIX I

BLACK SHIELD Operational Missions Alerted Between
1 April and 9 June 1968

<u>Mission No.</u>	<u>Date</u>	<u>Remarks</u>
BX6857	27 Apr. 1968 (Korea)	Cancelled-no approval
BX6858	5 May 1968 (Korea)	Flown

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APPENDIX II

COMIREX Targets Covered by BLACK SHIELD Mission BX6858
5 May 1968.

COMIREX NO.TARGET

50X1, E.O.13526

Nampo Coastal Defense Site, 1
Nampo Cruise Missile Site
Sinpo Possible Cruise Missile Site
Pyongyang Airfield, East
Sondok Airfield
Hwangju Airfield 2
Onchon UP Airfield
Mayang Do Naval Base
Panja Ri Naval Facility
Pipa-Got Naval Dockyard
Chinnampo Port
Nampo Port Facilities
Nampo Shipyard
Chaho Nodongjagu Port Facilities
Hungnam Port Facilities
Pyongyang Biological Research Institute
Hoeyang Hq First Army Group
Hoeyang Army Barracks E
Hungnam Hamhung Military Activity
Hungnam Military Barracks Area
Kangdong Army Barracks East
Koksan Military Activity
Koksan Army Barracks A Stor Area SSW
Koksan Army Barracks A Hq Inf Div
Kumchon Barracks Areas
Pyongyang Airborne Training School
Pyongyang Army Barracks A Stor Area E
Pyongyang Ord Dep N Tongpo RI
Singye Military Activity
Yangdok Military Complex
Chong Dong Military Installation
Kumsong Army Barracks
Anhyop Army Bks A Hq 45th Inf Div
Sangjok Tong Army Barracks W
Sangjok Tong Army Bks A Hq 5th Inf Corps

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COMIREX NO.

50X1, E.O.13526

TARGET

Masan Ni Army Bks A Hq 12th Inf Div
Changdo RI Army Bks Hq 2nd Inf Div
Changdo RI Army Barracks N
Changdo RI army Barracks NE
Sowon Dong Bks A Hq 8th Inf Div
Nasan Ni Army Barracks N
Wa Dong Army Barracks A Hq Inf Div
Ichon Army Bks NE AHQ 5th Inf Div
Ichon Army Barracks SSW
Koum Dong Army Barracks A Stor Opo
Soksadong Ni Army Bks/Hoejong Dong
Sam San Ni Military Installation
Sibyong Ni Storage Area
Sariwon Hq Inf Div
Inchon Hq Infantry Corps
Kaesong Complex
Yonan Complex
Kwangju
Koksan Complex
Sariwon Complex
Nampo Complex
Pyongyang RR Clf Rd Taedonggang
Pyongsan RR Yards
Pokkye RI RR Yards
Tosong Ni RR Yards
Nampo RR Station Yards A Shops
Kowon RR Clf Yards
Sariwon Railroad Yards
Pyongyang RR Clf Yards
Pyongyang RR Station and Yards
Pyongyang RR Clf Yard Sopo-Dong
Hamhung Railroad Yards
Pyongyang RR Yards

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APPENDIX III

Number of Radar Signals Received by BLACK SHIELD Mission BX6858,
5 May 1968

Big Mesh	2
Side Net	2
Rock Cake	4
Cross Legs	1
Token	3
Cross Slot	2
Bar Lock	11
Moon Cone	9
One Eye	1
Long Talk	1
Moon Face	3

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ANNEX 156

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BYE 2417-67, Rev. #2

Copy 23 of 28

29 May 1967

MEMORANDUM FOR: Interdepartmental Contingency Planning
Committee

SUBJECT: Contingency and Cover Plan for BLACK SHIELD
Operations

1. Attached is Revision #2 to BYE 2417-67. This is the final version of the Interdepartmental Contingency and Cover Plan for BLACK SHIELD operations, as approved by the Interdepartmental Contingency Planning Committee.

2. This supersedes all previous versions of BYE 2417-67 which should be removed from the files and destroyed.

John Parangosky
JOHN PARANGOSKY

Acting Director of Special Activities

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29 May 1967
Page 2

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Revision #2
29 May 1967

INTERDEPARTMENTAL CONTINGENCY PLAN FOR BLACK SHIELD OPERATIONS

I. MISSION:

To obtain high resolution photographic coverage of priority targets in North Vietnam by utilization of OXCART (A-12) aircraft staging from Kadena AB, Okinawa. The proposed operation does not include overflight of Mainland China.

II. OBJECTIVES:

A. To conduct overflight operations with the least amount of publicity and to protect the true nature of the mission.

B. To conceal intelligence community (particularly CIA) participation in the development and utilization of the A-12.

C. To provide herein guidance and procedures to be adhered to should the following situations occur:

1. Protest without incident.
2. Loss of aircraft in Communist Bloc country.
3. Emergency landing or bailout in hostile neutral areas.
4. Landing at alternate air base.

D. To provide instructions to the pilot for contingency situations.

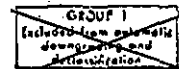
III. GENERAL:

A. For purposes of this contingency plan Mainland China, North Vietnam and Laos will be considered Communist Bloc countries.

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Burma and Cambodia are considered to be hostile neutrals.

B. On operational overflights the BLACK SHIELD aircraft will carry no markings other than tail numbers.

IV. POSSIBLE CONTINGENCIES:

A. Presence of OXCART at Kadena.

In the event of a formal (i.e., press or quasi-official) inquiry as to the identity of the vehicles at Okinawa or the nature of the mission, the Kadena Public Information Officer will state that they are experimental test bed versions of the YF-12A and SR-71 family which are at Okinawa to undergo field tests. He will further state, if necessary, that any additional inquiries will have to be answered by the Office of the Secretary of the Air Force. Other than that stated above no additional information will be released at Okinawa regarding the mission. The Office of the Secretary of the Air Force, if queried, will verify the information released by the PIO, Kadena without further comment or details.

B. Protest without incident.

1. Should a successful overflight evoke a protest or public denunciation by the opposition, the aircraft being described as an SR-71/YF-12A or Mach 3 type, all personnel in the field will disclaim any knowledge of the overflight. Such disclaimer will not be volunteered but will be offered only in response to direct query. An exception to this procedure is considered appropriate in the case of queries directed to U.S. Ambassadors. They will neither disclaim nor acknowledge awareness of any overflight and refer such queries to the State Department.

2. If queries are directed to the government officials in Washington, D. C., the initial response will be "No Comment". After reviewing the circumstances of the situation the 303 Committee

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may determine that a further response is required. This would consist of an appropriately worded statement acknowledging the use of an unarmed reconnaissance aircraft for essential surveillance of North Vietnam military activity. Details concerning the operation, sponsorship and basing of the aircraft will not be divulged. The Committee will designate the appropriate spokesman.

C. Loss of Aircraft in Communist Bloc Country.

1. If a BLACK SHIELD aircraft is lost in Communist Bloc territory, whether from hostile action or other cause, no statement will be volunteered until there has been a full evaluation by the 303 Committee of the circumstances surrounding the incident and the political ramifications.

2. News media queries generated by opposition statements will be referred to the State Department. The latter, through a properly designated spokesman, initially will state only that the alleged incident is under investigation.

3. After evaluation the 303 Committee will authorize an appropriately worded statement. The sole spokesman for the U. S. Government will be the Department of State. The Committee will initially consider the adequacy of the following suggested responses in light of the circumstances.

Loss of Aircraft in North Vietnam:

If pilot fate uncertain or known dead: "No Comment".
If pilot alive, produced and identified as CIA employee:
"A reconnaissance aircraft was lost during operations over North Vietnam. The matter is still under investigation and no further details are available at this time."

Loss of Aircraft in China or Laos:

"A reconnaissance aircraft was lost during a mission intended to reconnoiter North Vietnam. It now appears possible that the pilot may have strayed off course due to mechanical difficulties and crashed in Communist China (or Laos, as appropriate). No further details are available at this time."

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4. Depending on the circumstances, the 303 Committee will further consider:

- a. The necessity of acknowledging the pilot's identity and CIA affiliation.
- b. The necessity of making some statement as to the place of mission origin.
- c. The necessity of making some statement to refute possible allegations that mission was intended to reconnoiter Communist China.
- d. The necessity of identifying a particular type of aircraft.

D. Landing at alternate air base.

If, during the course of an operational mission, the aircraft should be required to land at an alternate air base, in response to query the aircraft will be described as an experimental test bed version of the YF-12A/SR-71 family on a routine field test flight. Further details concerning the aircraft and the field test program are classified.

V. INSTRUCTIONS TO THE PILOT

A. If the pilot is forced down in Communist Bloc territory, he will adhere to the provisions of Headquarters Directive 50-1055-24, dated 27 October 1965 (approved by the 303 Committee 16 December 1965. See BYE 3066-65, dated 26 November 1965) which states, in essence, that he will give:

1. Name
2. Date and Place of Birth
3. Address in United States
4. CIA Affiliation (Civilian)

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(NOTE: All project pilots have been thoroughly indoctrinated in the procedures prescribed in the referenced Headquarters Directive, including resistance to interrogation training. The foregoing instructions are consistent with the psychological preparation they have undergone throughout their assignment to the Program.)

B. In the extremely remote possibility that the pilot should be forced down in Burma or Cambodia, he will not disclose his CIA affiliation. He will state that he is a civilian test pilot ferrying the aircraft from Okinawa to Thailand. His overflight was inadvertent and due to mechanical malfunction of his Inertial Guidance System. A dummy map of the alleged ferry flight will be carried to backstop his story. He will request that the American Consulate be notified of the situation.

VI. COORDINATION

A. Washington, D. C. Area

1. The following named individuals are being furnished a copy of this document for purposes of internal coordination with cleared personnel within their respective departments:

Dr. Alexander Flax - D/NRO

Mr. Peter Jessup - Executive Office of the President

Brig Gen Paul N. Bacalis - D/SA, Central Intelligence Agency

Col Clason Saunders - AFRDR

Mr. Thomas Hughes - D/INR, Department of State

Brig Gen Ralph D. Steakley - JCS

Col William Hall - DIA

Maj Gen Eugene LeBailly - SAFOI

B. Outside Washington, D. C.

1. Officials at Lockheed (C.L. Johnson), at Hughes (Gene Peters and Marc Havard) and at Pratt & Whitney (William Gorton and Leonard Mallett) have been briefed on this contingency plan and the handling of inquiries should they be made.

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2. Commander Detachment D, Col Hugh C. Slater, has been briefed and furnished a copy of this plan.

VII. It is recommended that each Agency maintain a list of all cleared personnel within their respective organization who have been briefed on this cover plan.

VIII. The Central Intelligence Agency will notify each Agency of any change to this plan and in turn requests that any alterations be coordinated with the CIA prior to implementation:

CIA CONTACT: James C. Johnson, Security Officer

OFFICE TELEPHONE: CODE 143 or 351-4397

CIA CONTROL CENTER: CODE 143 or 351-5771

HOME TELEPHONE: 354-3387

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ANNEX 157

U.S. Spy Jet Is Missing Over Pacific

NAHA, Okinawa, June 5 (UPI)—A U.S. Air Force SR-71, fastest plane in the world, is missing and presumed crashed in the Pacific, American military spokesmen said today.

The test version of the high altitude reconnaissance jet—successor to the U-2 spy plane used over the Soviet Union and China—was reported overdue yesterday during a "routine training flight" from the local air force base.

[The SR-71 also has been flying out of Thailand's Takhli fighter base, George Wilson of The Washington Post reported from Saigon May 22. The plane was believed to be keeping track of North Vietnamese military traffic and monitoring China's border.

[Wilson reported that the CIA is involved in the reconnaissance flights from Thailand, and that the SR-71s rotate between Takhli and Kadena Air Force Base on Okinawa, apparently for security reasons.]

The pilot of the black, needle-nosed plane sent a final message from a spot about 600 miles south of here and 500 miles east of Manila, the spokesmen said.

American military officials have launched a search operation.

THE WASHINGTON POST Thursday, June 6, 1968

A 31

Good Mornings Begin with The Morning Star

© K I N A W A

NE NUMBER 099-(899)-5155

MONDAY, JUNE 10, 1968

STAR PHONE NUMBER 09

Missing KAFB Pilot Identified

WASHINGTON, June 9 (UPI)

— The Air Force today identified the pilot of a supersonic test aircraft reported missing in the Pacific since June 4 as Jack W. Weeks of Los Angeles, an employe of the Hughes Aircraft Corp.

The plane was last heard from about 600 miles south of Kadena, Okinawa, and 500 miles east of Manila. The Air Force described the plane as a "YF-12A/SR-71 type test aircraft."

Only a few prototypes of the 2,000-mile an hour interceptor have been built, and it currently is not scheduled for mass production.

The missing plane was a reconnaissance model which has been operated for some time by the Strategic Air Command.

A "test bed" aircraft is one being used to test equipment. The Air Force said the plane was engaged in "field testing." But it would not say what kind.

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ANNEX 158

~~TOP SECRET~~AIRCRAFT LOSSES

- a. A-12 Aircraft: Four A-12 aircraft losses were experienced during test/training phase, and one aircraft was lost during operational phase while on a functional check flight.

(1) Aircraft No. 123:

- (a) 24 May 1963
- (b) Pilot: Kenneth Collins (Project pilot)
- (c) Location: 14 miles South of Wendover, Utah
- (d) Cause: Materiel failure - pitot system
- (e) Successful ejection at 36,000 feet

(2) Aircraft No. 133:

- (a) 9 July 1964
- (b) Pilot: William Park (LAC)
- (c) Location: Area 51
- (d) Cause: Materiel failure - Elevon Servo valve
- (e) Successful ejection at 200 feet

(3) Aircraft No 126:

- (a) 28 December 1965
- (b) Pilot: Mele Vojvodich (Project pilot)
- (c) Location: Area 51
- (d) Cause: Maintenance error - stability augmentation system pitch and yaw rate gyros connected in reverse.
- (e) Successful ejection at 150 feet

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~~TOP SECRET~~(4) Aircraft No. 125:

- (a) 5 January 1967
- (b) Pilot: Walter Ray (Project Pilot)
- (c) Location: near Leith, Nevada
- (d) Cause: Fuel depletion - probable fuel gage error
- (e) Unsuccessful ejection - fatality

(5) Aircraft No. 129:

- (a) 4 June 1968
- (b) Pilot: Jack W. Weeks (Project pilot)
- (c) Location: 520 N.M. East of Phillipines
- (d) Cause: Unknown, Probable catastrophic engine failure
- (e) Ejection: Unknown - Fatality

b. F-101 Aircraft: Two F-101 aircraft losses were experienced as follows:

(1) Aircraft No. 56272:

- (a) 1 June 1967
- (b) Pilot: Lt. Col. Welton King (USAF detailee)
- (c) Location: Kadena AB, Okinawa
- (d) Cause: Materiel failure - aircraft tail section separated in flight.
- (e) Unsuccessful ejection at low altitude - fatality

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~~TOP SECRET~~(2) Aircraft No. 56286:

- (a) 26 September 1967
- (b) Pilot: Lt. Col. James Simon (USAF detailee)
- (c) Location: Area 51
- (d) Cause: Pilot factor - inadvertently flew
into the ground
- (e) No ejection attempted - fatality

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FINAL A-12 FLIGHT STATUS RECAP

(Through 21 June 1968)

<u>Aircraft</u>	<u>Total Flights</u>	<u>Total *</u> <u>Time</u>	<u>Mach</u> <u>2.0</u>	<u>Mach</u> <u>2.6</u>	<u>Mach</u> <u>2.8</u>	<u>Mach</u> <u>3.0</u>	<u>Mach</u> <u>3.2</u>
121 Test	322	418:25	149:05	113:23	99:17	82:36	55:29
122 Test	162	177:12	62:16	32:40	21:38	14:27	4:14
123 Crashed	78	136:10	:09	---	---	---	---
124 Trainer	614	1076:26	---	---	---	---	---
125 Crashed	203	334:50	129:01	74:16	55:11	30:32	:14
126 Crashed	104	169:16	42:00	24:11	19:38	11:56	---
127 Ops	261	499:10	212:18	162:36	134:55	105:04	13:51
128 Ops	232	451:15	201:07	146:42	129:28	94:30	3:45
129 Crashed	269	411:04	178:57	139:10	116:53	93:40	15:25
130 Ops	217	405:13	164:18	127:25	112:08	86:38	3:36
131 Ops	182	344:07	135:11	107:52	94:35	76:59	6:27
132 Ops	197	371:50	161:16	129:46	108:02	76:11	4:43
133 Crashed	9	8:17	2:53	1:12	:57	---	---
Totals	2850	4803:15	1438:21	1059:13	892:42	672:33	107:44

* 1272:14 hours J-75

3531:01 hours J-58

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ANNEX 159

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COMMANDER'S MONTHLY

ACTIVITIES REPORT

STATION "D"

AUGUST 1967

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- TAB 1 - Deputy Commander for Support
- TAB 2 - Deputy Commander for Material
- TAB 3 - Deputy Commander for Operations
- TAB 4 - Director, Base Medical Service
- TAB 5 - Chief, Office of Communications
- TAB 6 - Chief, Office of Security

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THE FOLLOWING IS A SUMMARY OF THE BASE SUPPORT ACTIVITIES FOR THE MONTH OF AUGUST:

MILITARY PERSONNEL:

1. The total strength, assigned and attached for this Detachment as of 31 August, is as follows:

	<u>OFFICERS</u> <u>AREA - B/S</u>	<u>AIRMEN</u> <u>AREA - B/S</u>	<u>TOTALS</u> <u>AREA - B/S</u>
Assigned Det 1, 1129 USAF SAS	28 - 12	150 - 34	178 - 46
Attached Det 1, 2nd Wea Sq	4 - 0	10 - 2	14 - 2
Attached Det 11, 1800 Spt Sq	1 - 0	32 - 2	33 - 2
Attached Hq SAC	<u>2 - 0</u>	<u>0 - 0</u>	<u>2 - 0</u>
TOTALS	35 - 12	192 - 38	227 - 50

2. The following personnel departed this station during this period for the reason indicated:

<u>GRADE</u>	<u>NAME</u>	<u>SECTION</u>	<u>REASON</u>
COL	Burton S. Barrett	COMD	Reassignment
MSGT	Douglas F. Buie	Acft Maint	Reassignment
MSGT	Frank V. Derby	Acft Maint	Retirement
MSGT	Robert A. Fernandez	Operations	Reassignment
TSGT	James L. Sanford	Acft Maint	Reassignment
TSgt	Leamon E. Smith	Fire Dept	Retirement
SSGT	Westley L. Brees	Acft Maint	Reassignment
CMSGT	William R. Hufhand	AFCS	Retirement
MSGT	Olga C. Lytton	AFCS	Reassignment
MSGT	Ronald E. Pletsch	Weather	Retirement

STAFF PERSONNEL:

1. The number of Staff Personnel decreased one (1) during the Month of August with the departure of Mr. James H. Foss.

CONTRACT PERSONNEL:

1. Contract Security Guard Strength remained the same as July.

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MOTOR POOL:

1. During this period there were:

- 9739 Gallons of gasoline issued to USAF vehicles and equipment.
- 701 Gallons of gasoline issued to AEC vehicles and equipment.
- 857 Quarts of oil issued.
- 5978 Gallons of diesel issued to USAF vehicles and equipment.
- 45 Requisitions submitted thru REECO.
- 146 Requisitions submitted thru base supply on 1150.
- 41 Requisitions submitted thru base supply VVP.
- 702 Items issued on recap sheet at parts warehouse.
- 92 Work orders written.
- 31 Trips tickets issued.
- 20 Drivers license issued.

- 2. There was one (1) vehicle received during this period, (1) Sweeper Rotary.
- 3. There was two (2) vehicles turned in during this period. (1) Fork Lift 6,000LB. (1) Tractor Warehouse 4,000LB. DBP.
- 4. There is one (1) vehicle deadlined at this time.

BASE FINANCE:

- 1. Expenditures and obligations of FY-68 station funds during August totaled \$114,350.00. This was an increase of \$25,774.00 over FY-67 funds for the same period last year. In addition we expensed and obligated \$30,600.00 against Headquarters funds for travel of contractor personnel in support of Black Shield. This is an increase of \$28,675.00 over FY-67 funds for the same period last year. A total of 723 individual vouchers were processed during the Month.
- 2. Personnel strength, assigned and attached, decreased from 440 in August to 386 this Month, a decrease of 54 (12.2%).

BASE CIVIL ENGINEERS:

- 1. Construction: There was no construction started or completed in August.
- 2. Maintenance: 14 Work Requests (AF Form 332) from various base supported activities were processed. 9 maintenance work orders were completed. 307 emergency work requests (service calls) were received and processed.
- 3. Utilities: 4,106,600 gallons of water were consumed, for a daily average of 132,460 gallons. 18,132 gallons of fuel were used to operate the base heating plants.

BASE FIRE DEPARTMENT:

- 1. Emergency Responses: Responded to four (4) airborne emergencies and three (3) ground responses during the Month.
- 2. Fire Prevention Inspection: There were a total of 604 inspections made of housing facilities. There were 205 inspections made of hangars, shops, and other working facilities.
- 3. Extinguisher Maintenance: 14 CO2 extinguishers repaired, 10 15LB CO2 extinguishers weighted and checked, 5 CO2 extinguishers replaced, 4 new extinguishers installed.
- 4. HH-43B Section Activities: One hot drill fire 6 man hours, 12 special missions 12 man hours, 2 mission supports 6 man hours, 3 special projects 6 man hours, One TSGT received stanboard check.
- 5. Training: B-52 Rescue Procedures, 40 man hours.

WILLIAM M. FAIRHALL AND ASSOCIATES:

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Attached is Mr. Fairhall's Area 51 Activities report for the Month of August 67.

THE FOLLOWING IS THE STRENGTH BREAKDOWN FOR THIS STATION AS OF 31 AUGUST 1967:

CONTRACTOR	AREA	KADENA	TOTAL
<u>REECO:</u>			
Construction	0	0	0
Maintenance	75	0	75
General Office - Supervisor	16	1	17
Culinary - Kitchen	45	0	45
Culinary - Janitorial and Housing	43	0	43
TOTAL	179	1	180

<u>LOCKHEED:</u>			
Engineers/Maintenance/Supply/	275	102	377
TOTAL	275	102	377

CONTRACTORS:			
MH/MINN	11	3	14
HYCON	8	0	8
MH/FLA	27	12	39
EK	6	1	7
PE	13	11	24
EG&G	28	0	28
P&W	44	8	52
HAM STAND	2	0	2
FIREWEL	3	1	4
DAVID CLARK	3	1	4
COLLINS RADIO	3	3	6
MAGNAVOX	3	3	6
AIRESEARCH	4	3	7
BAIRD ATOMIC	1	1	2
UNIVAC	2	0	2
SANDERS	1	1	2
EDL	2	2	4
SRL	2	2	4
RCA	2	0	2
HAC	8	4	12
TRW	0	1	1
TOTAL	173	57	230

BASE STAFF COMPLEMENT:

<u>Civilian:</u>			
Staff	22	18	40
Staff TDY: Admin/Security	1	1	2
<u>Contract:</u>			
Security Guards	31	22	53
Other Contracts	6	2	8
Drivers	3	3	6
TOTAL	63	46	109

MILITARY:

Officers Assigned	28	12	40
Officers Attached (WEA/AFCs)	5	0	5
Officers Attached (SAC)	2	0	2
Officers TDY Tagboard	6	0	6
Airmen TDY Tagboard	15	0	15
Airmen Assigned	150	34	184
Airmen Attached	42	4	46
TOTAL	248	50	298

GRAND TOTAL STRENGTH AS OF 31 AUGUST 1967: 938 256 1,194

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ACTIVITIES REPORT
FOR
WILLIAM M. FAIRHALL
AND
ASSOCIATES
CONSULTING ENGINEERS
(AREA 51)

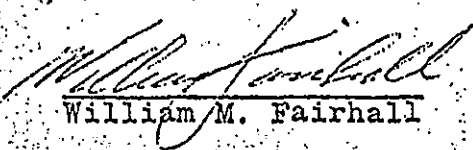
PERIOD: August 1 to August 31, 1967

A. ENGINEERING OFFICE

- (1) Final Plans and Specifications for New Construction Activities at Beale Air Force Base were completed and delivered to the Base Engineer on August 2, 1967. At the present time, the work on this Project is waiting for final allocation of funds, prior to the further action by the Procurement Officer.

B. TRAVEL

Dave Welles of this Office, delivered the Plans and Specifications on the Beale Project on August 2, 1967.


William M. Fairhall

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~~SECRET~~MATERIEL ANNEX TO MONTHLY ACTIVITY REPORTPROJECT AIRCRAFT MAINTENANCE1. Sorties and flying time: (Does not include deployment flights)

Aircraft 124	5 Sorties	10:20 total flying hours
Aircraft 128	1 Sortie	1:20 total flying hours
Aircraft 130	4 Sorties	9:00 total flying hours
Aircraft 132	<u>5 Sorties</u>	<u>9:45 total flying hours</u>
TOTAL:	15 Sorties	30:25 total flying hours

SUPPORT AIRCRAFT MAINTENANCE1. Personnel: Auth: 47 O/H: 49 Due In: 02. Sorties and flying time:

	<u>Sorties</u>	<u>Flying Time</u>
C-130B	53	119.5
F-101	87	110.0
UH-1F	32	32.2
T-33	46	75.4
U-3B	<u>27</u>	<u>30.8</u>
TOTAL	245	367.9

3. Maintenance:

a. T-33, 58-670 - Output from Hill - Phase Inspection.

4. The C-130 airlifted 125.5 tons of cargo during this period.

FOL1. Personnel: Auth: 28 O/H: 212. Servicing: 77 project aircraft were refueled/defueled.3. Storage:

a. During this period, 39 commercial carriers were offloaded.

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b. The average storage levels, total receipts and issues for the period are as follows:

<u>TYPE</u>	<u>AUG LEVEL</u>	<u>TOTAL RECEIPTS</u>	<u>TOTAL ISSUES</u>
PF-1A	972,214	81,324	199,171
Jp-4	167,440	243,832	257,816
AVGAS	5,250	4,700	5,292
LN2	3,675	10,800	5,250
L02	4,075	7,300	1,350
PS-67A	54	0	18
A-50	206	0	102

SUPPLY

1. Personnel: Auth: 55 O/H: 45

2. Storage:

30,128 Sq Ft Inside (net) 95% utilized.
50,230 Sq Ft Outside (net) 48% utilized.

3. Requisitions to Depot 1,274
Line Items Processed 12,657
Line Items Issued or Shipped 4,458
Active Stock Records Maintained 28,922
Freight Received 356,221
Freight Shipped 305,766

4. Inventory:

Cycle 0
Special 0

5. Bench Stock:

Fill rate to organization

Federal 97.5%
Prime 100%

Fill rate by Depot

Federal 84%
Prime 85%

6. BEMO:

Line Items Requisitioned 22
Line Items Turned In 120
Line Items Received 91

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~~SECRET~~7. P-438 Funds:

Accumulative total of P-438 funded items requested from depot is \$104,692.37.

8. Machine Room:

Utilization	<u>Key Punch</u>	<u>Reproducer</u>	<u>Tape Sys</u>	<u>Sorter</u>	<u>Interptr</u>
Hours	140	38	75	20	45
Breakdown					
Hours			101		

Tape System: Had motor replaced, power roller replaced. Reason for delay, parts had to be ordered from company.

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~~S-E-C-R-E-T~~OPERATIONS ANNEX TO MONTHLY ACTIVITY REPORT

(AUGUST 1967)

1. AIR TRAFFIC:

	<u>SCHEDULED</u>	<u>FLOWN</u>
a. A-12		
Detachment/Aircraft Pilots	20	14
Lockheed/Aircraft Pilots	1	1
b. F-101		
Detachment Chase	23	16
Lockheed Chase	2	2
B-52 Chase	1	1
Proficiency (Includes FCF)	77	68
Total:	103	87
c. Air Refueling:		
KC-135	22	18
A-12	21	14
F-101	14	11

2. OPERATIONS AND TRAINING DIVISION:

a. UH-1F Support:

(1) Training Accomplishments:

- (a) Proficiency Flights: 17 sorties, 18:40 hours.
- (b) Flight Checks: Annual Instrument (Capt Pinaud).

(2) Support Flights:

- (a) Parachute Search & Pick-up (EG & G): 6 sorties, time: 4:55 hours.
- (b) Parachute drops: 4 sorties, time: 1:10 hours.

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(c) Scramble Missions: Dutch emergencies -
3 sorties, 1:00; Precautionary orbit after major maint (Dutch) -
1 sortie, 0:10; Precautionary orbit, B-52 takeoff & landing -
5 sorties, 2:25; F-105 emergencies - 1 sortie, 0:20.

(3) Miscellaneous Flights and Activity:

(a) Baldy, 7 people and 6 drums of fuel - 3
sorties, 3:30.

(b) Functional test flight: 1 sortie, 0:10

(c) Capt Pinaud completed testing & test report
on URT-21 installation in Dutch parachutes.

b. Survival Training Section:

(1) EG&G Test Project:

(a) Total missions: 10

(b) Total high altitude drops: 2

(c) Total low altitude drops: 20

(2) Parachute Jumps: 16 static line

(3) Survival Training:

(a) Overwater bailout procedures and use of
equipment: 11 SAC Personnel

(b) New treeletdown device and the new mod on
the placing of the URT-21 radio in the CYG parachute: 3 Project
pilots.

(4) Special Projects:

(a) Completed testing and made report on the
URT-21 radio installation in the cygnus pilots parachute.

(b) MSgt Staggs met with Capt Bassett, Project Hqs,
and vendors on 10 August on the installation of a battery pack in
the cygnus pilots parachute. One device was selected for use.

(c) Tested outer garment that had larger floatation
cells and the automatic inflation device.

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(5) Personnel:

(a) MSgt Bailey returned from TDY at Color, departed again 16 August to attend a two month Project Hqs special school.

(b) TSgt Schneider departed on 23 Augst to Color for Approximately 2 weeks TDY to give training to P.P.

(6) Miscellaneous:

(a) Completed the six month inspection of the emergency survival kits.

(b) Received two tree letdown devices for training use.

(c) Mr Kent Baylor, Project Hqs, visited Las Vegas 16 August. He and MSgt Staggs met with Mr Les Arndt (Mr Arndt is in charge of the parasail boats) concerning parasail training. Mr Baylor wanted to see the site presently used for parasail training and to survey the lake for other sites. The return of the boats and crews and next years parasail training program was also discussed.

3. MISSION SUPPORT DIVISION:

a. Mission Planning:

(1) Three new routes (map/film strips and pilot maps) have been constructed in support of the current testing and validation.

(2) Procedures for the control and timing of flights has been coordinated with the FAA and Project Hqs.

b. Performance: Revision 1 to the Black Shield Operations Order "Scope Heaven", 54-67-01, and "Super Maiden", 53-67-01, have been completed and transmitted to Project Hqs.

c. Personnel: MSgt Robert A. Fernandez departed this station on 16 August PCS.

d. Automation: Mr John G. Papageorge, 1004 Programmer/Operator, arrived on station TDY from Project Hqs. Continued with normal reporting.

e. Periscope Section:

(1) Mr W. W. Striker arrived from the home plant to instruct Mr Hicks in the alignment of the optical system.

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(2) All systems have been checked and it has been decided to replace the system in Article 132.

(3) Alignment of periscope system is currently in progress.

4. LIFE SUPPORT DIVISION:

a. A total of 20 flight procedures were supported for the month of August by the Life Support Division.

11 Project Suit Flights

9 Project Low Flights

0 Hangar Flights

—
20 Total

b. A total of seven low pressure chamber flights were accomplished:

c. No further testing of the constant flow thermal protective helmet has been done to date.

d. Problem Areas:

(1) Visor reflections remain a problem.

e. Suit Status:

(1) 1049-1 is at Edwards AFB on hand receipt.

(2) 1051-3 and 1054-4 have been returned to the factory for zipper replacements.

(3) 1046 (7-3), 1046-3, 1050-3, 1050-4, 1052-3, and 1052-4 are TDY.

(4) All other suit configurations are in service and satisfactory.

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~~S-E-C-R-E-T~~5. OPERATIONS EVALUATION DIVISION:

a. Standardization/Evaluation flight check activity for August consisted of written and flight examination as indicated below by type aircrafts:

A-12	-----	2
F-101	-----	5
T-33	-----	4
C-130	-----	4
U-3B	-----	3
UH-1F	-----	1

Total: 19

b. Conducted a condensed ground school to qualify Lt General Martin for front cockpit flight in TA-12 aircraft.

c. DCOE met with LAC representatives to coordinate a major revision to A-12 emergency procedures.

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AEROSPACE MEDICINE REPORT

AUGUST 1967

SECTION I FLIGHT MEDICINE

1. Health of Flying Personnel:

- a. Lt Col Simon was placed on DNIF for 1 week with gastroenteritis; and Major Gugin placed on DNIF for 2 weeks for hemorrhoidectomy.

2. Flying Safety and Equipment:

- a. See Physiological Training Section of DCO monthly report.
- b. Flying Safety meeting was not held this month.

3. Training, Administration and Research:

- a. Dr. Nichols and Sgt Gerholt departed TDY.
- b. Dr. Dake on leave from 7 August to 28 August 1967.
- c. MSgt Oswalt reenlisted during this reporting period.
- d. Dr. Dake made 3 parachute jumps during the month of August.
- e. Dr. Flickinger visited the area on 28 Aug 67 to coordinate medical matters.

SECTION II PUBLIC HEALTH

- A. Sanitary inspections of various facilities were made during this period with satisfactory results.
- B. One airman was hospitalized at Nellis AFB Hospital with a diagnosis of Myocardial Infarction.

SECTION III STATISTICAL SUMMARY

- 1. During this reporting period there were 719 patient visits recorded at the area medical facility. 490 were for medical care according to the following breakdown; USAF-146, DAFC - 50, REECG - 96, Military Dependents - 59 (at USAF Hospital, Nellis AFB) and 139 other civilian contractor personnel. 8 Flying and 8 Non-flying physical examinations were performed. 44 Food Handler examinations were performed. A total of 435 shots were administered to all categories of personnel. A total of 46 other tests/examinations were performed.
- 2. A total of 299 patients were seen at the forward area according to the following breakdown; USAF - 139, DAFC - 41, Civilian contract personnel - 119. There were 172 immunizations administered to all categories of personnel.
- 3. Flight Line coverage was provided for all flying activities and the medical department responded to 4 crash calls.

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COMMUNICATIONS ANNEX TO MONTHLY ACTIVITIES REPORT

AUGUST 1967

PERSONNEL:

Mr. Conley Marcum departed for Kadena TDY on 2 August.
 Mr. Harry Gillum departed for Kadena TDY on 9 August.
 Mr. John McClintock returned from Kadena TDY on 11 August.
 Mr. James Bodnar returned from Kadena TDY on 11 August.
 Mr. David Stevens departed for Kadena TDY on 23 August.
 Mr. Barry Gowan returned from Kadena TDY on 25 August.

IV. COMMUNICATIONS PERSONNEL STRENGTH SUMMARY:

	Senior Officers	Engineering & Technical	Operations	Signal Center	Total
PCS on board beginning of Month	2	8	5	10	25
PCS on board end of Month	2	8	5	10	25
TDY to Area Man/Days	0	0	0	0	0
TDY from Area Man/Days	30	120	70	124	344

Area Communicators worked a total of 50 hours overtime during August.

SIGNAL CENTER ACTIVITY:

1. The following is a summary of cable traffic volumes for the past three Months;

MONTH	INCOMING MESSAGES	OUTGOING MESSAGES	TRANSMISSIONS IN (INCL RELAYS)	TRANSMISSIONS OUT (INCL RELAYS)
JUNE	1791	867	4446	4838
JULY	1448	595	4314	4320
AUGUST	1672	644	4730	4996

2. Telecons with PW/Fla: There were 28 Telecons lasting a total of 9 Hrs & 35 Min.

3. During August, the Auxiliary Signal Center in the Command Post was manned for 31 hrs & 54 Min. Time spent there is broken down as follows:

DATAKOM	32 transmissions	lasting 11 Hrs & 55 Min.
HY-2	29 conversations	lasting 19 Hrs & 59 Min.

SYSTEMS:

1. BIRDWATCHER: Communications personnel operated the Birdwatcher ground readout system for a total of 23 Hrs & 35 Min covering 10 missions with 3 Cygnus aircraft.

2. HF SINGLE SIDERAND: No problems were encountered with the HFSSB equipment during the Month. Routine adjustments and line checks were made on the transceivers and remoting equipment during the Month.

V. OPERATIONS: The Communications annex portion of the Headquarters Operation Plan 54-67 Revision One (Scope Heaven) was reviewed and revised for inclusion in Area Operations Order 54-67-01 Revision One.

I COLLATERAL SERVICES:

1. TELEPHONES: A total of 9 separate work orders for service were handled during the Month.

2. TELEVISION: Area Technicians undertook the realignment of the Area's UHF to VHF TV translators in an effort to provide better quality service.

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SECURITY ANNEX TO MONTHLY REPORT

The following is a resume of Security activities during the period 1 August - 31 August 1967.

SECTION I - Security Violations

There were two Security violations reported to Project Headquarters.

SECTION II - Briefings/DebriefingsBRIEFINGS

OX CART	3	4	
OX CART	2	9	
TAGBOARD		7	
UP-GRADE	02 to 03		39

DEBRIEFINGS

OX CART	3	13
OX CART	2	3

SECTION III - Physical Security

During the month one ASHCAN was reported activated and recovered. Security coordinated transmit and cover times to all base activities. The base was secured during ASHCAN coverage.

SECTION IV - Operational Support

The security staff expended the following in connection with liaison, courier service and operational support:

AIR MILES FLOWNPOV MILEAGEMANHOURS EXPENDED

13,010

0

105

a. On 2 August 1967 Mr. Zubon, Security Officer, traveled to Beale AFB to brief personnel O-3.

Manhours Expended	8	Miles Flown	720
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b. On 4 August 1967 Michael Sullivan, Shift Captain, traveled to Beale AFB and Moffat AFB as courier with Project material.

Manhours Expended	12	Miles Flown	950
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c. On 16 August 1967 Thomas R. Hallam, Security Guard, traveled to Andrews AFB as courier with Project material.

Manhours Expended	24	Miles Flown	3700
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d. On 21 August 1967 Warren Solheim, Shift Captain, traveled to Burbanks, Calif. as courier with Project material.

Manhours Expended 5 Miles Flown 480

e. On 22 August 1967 Michael Sullivan, Shift Captain, traveled to Hill AFB and Norton AFB as courier with Project material.

Manhours Expended 8 Miles Flown 1000

f. On 24 August 1967 Michael Sullivan, Shift Captain, traveled to Norton AFB as courier with Project material.

Manhours Expended 6 Miles Flown 420

g. On 28 August 1967 Michael Sullivan, Shift Captain, traveled to Andrews AFB as courier with Project material.

Manhours Expended 12 Miles Flown 3700

h. On 29 August 1967 Raymond Schell, Security Guard, traveled to Moffat NAS as courier with Project material.

Manhours Expended 6 Miles Flown 600

SECTION V - General

a. Mr. Zubon briefed several persons on T-program per request of Col. Hartley.

b. Mr. Zubon assisted 3 USAF personnel on personal problems.

c. Thomas Brown III, Security Officer, TDY from Boston Field Office arrived and sent to Okinawa to assist the Senior Security Officer.

d. Meeting with Air Force Communication Service at Nellis AFB re secur. communication procedures.

e. Meeting with William Adair, AEC Security Chief for Nevada Operations, concerning a special shot to be fired in November. The shot will vent and will release a radioactive cloud. Area 51 will be in standby alert for possible evacuation.

f. Several inspections were made in the T-program area to assure good physical security and personal security control procedures.

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g. Initiated survey on document control procedures between Area and LAC plant in Burbank to assure maximizing security during document movement between both places. Results indicated procedures are secure.

h. Gave assistance to the West Coast Security Office through use of OSI/AF facilities in searching for Kenneth E. White in the Las Vegas area. White, LAC employee was on extended absence from work and was reported to be in Las Vegas. White was not found in Las Vegas, nor did the OSI investigation uncover any bad checks or other debts. White turned up later in NYC and established contact with his plant.

i. Mr. Zubon briefed 30 personnel at Beale AFB on T-program for authority of AFRDR.

j. Security Staff participated in CPX.

k. Mr. Zubon traveled to Salt Lake City, Utah, to debrief Stuart Halsey who departed the SLC and briefed O-3 William Cassun who replaced Halsey.

l. Renegotiated access procedures with US Public Health Service to assure maximum security and yet provide access to Area 51 during detonation of AEC devices by radiation safety engineers.

m. Attended a meeting with Stan Ratomski, FAA, DCA; David Candland, SLC; William Cassun, SLC; Capt. Arnold Williams, Detco AFCS area re SOA procedures.

n. Several meetings were held with Lt/Col. Richard Baldwin, Detco Baker 52 concerning flying procedures and cover story in event of difficult in different parts of the SW US.

o. Discussed at length with EG&G security, Las Vegas, concerning a second bomb threat to the Main Las Vegas plant received from (it is assumed) an ex-employee who complained of unfair employment practices within the company. The letter from the crank mentioned unfair practices both at Las Vegas and the Nevada Test Site. As of this writing, two weeks after the incident, no bombs were found nor has anything further been heard from the crank.

p. Mr. Zubon met with Colonel Nelson, SR-71 Commander at Beale AFB in regards to T-program security.

q. Several meetings were held with members of the security force re-emphasizing codes of conduct and standards both in Area 51 and Blackshield deployment location.

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r. The security staff is continuing to maintain close surveillance on the case of a REECO employee who is undergoing severe mental depressions. The employee is currently in Southern Nevada Hospital after attempting to commit suicide by shot gun.

s. Total passenger traffic from Las Vegas to the Area was:

<u>PASS FLT #1</u>	<u>PASS FLT #2</u>	<u>TOTAL</u>
796	0	796

A detailed report is attached.

SECTION VI - Personnel

Security personnel strength summary:

<u>TYPE</u>	<u>AUTH</u>	<u>ASSIGNED</u>	<u>STATUS</u>
Staff	9	8	-1
Staff Contract	2	3	+1
Contract Guards	65	54	-11

Out of the Fifty-four guards available to Station "D" twenty are stationed at Blackshield staging area. In addition to these guards, one Senior Security Officer and two Security Officers are in place providing security guidance for the deployed task force.

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COMMANDER'S MONTHLY

ACTIVITIES REPORT

STATION "D"

AUGUST 1967

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ANNEX 160

ANNEX 160

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November 10, 1965

TO: The Director

FROM: Military Division and International Division (W. R. Thomas 3d)

SUBJECT: High Altitude Reconnaissance Systems

The accompanying memorandum on the A-12 (OXCART) and SR-71 has been written in such a way that it can be shown to persons who are cleared only for these aircraft. In reading it you should bear in mind that the requirements referred to are requirements for specialized reconnaissance of denied areas which have sophisticated defenses. "Specialized reconnaissance" means reconnaissance which cannot be accomplished by satellites because of timeliness (North Vietnam), amount of cloud cover (North Vietnam, South China), or geography (Cuba, the Sino-Indian border). "Sophisticated defenses" mean those equipped with the Soviet SA-2 missile. Although the memorandum includes projections out to 1975, these are highly problematical. They are not valid if the Russians develop and deploy a better anti-aircraft missile, and we cannot counter it electronically. They are also not valid if the Russians deploy a sprint-type ABM around the major target areas. The A-12 and SR-71 would both be vulnerable to such a missile.

Reconnaissance of unsophisticated areas (e. g., the Congo) is not an issue here. It can be accomplished more covertly and economically by using U-2's.

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November 10, 1965

TO: Director

FROM: International Division (W. R. Thomas 3d) and
Military Division (S. B. Leach)

SUBJECT: High Altitude Aircraft Reconnaissance Systems

The purpose of this memorandum is to discuss the current status of, and to recommend alternatives to the proposed programs for the A-12 (OXCART) and SR-71 aircraft. By the end of this fiscal year we will have spent some \$2.5 billion on these two aircraft. The programs proposed for FY 67-71 would add another \$2.1 billion. We believe it is time to review the overall direction of the programs and their relationship to each other.

The A-12 and the SR-71

Background: The A-12 was conceived and designed as a successor to the U-2. It made the tremendous technological breakthrough to Mach 3.2. Procured and operated by CIA, it is a single seat aircraft and its principal sensor is a camera which will cover a 60-mile wide swath along the entire flight path with a peak 1 foot resolution. It also will have an infrared capability. The SR-71 is a successor aircraft designed and being procured for SAC. It is a heavier, 2 seat aircraft which carries a pilot and a sensor control officer. It will have a greater variety of sensors, with varying combinations selected from: 3 different cameras with coverages and resolution ranging down to a spotting camera with a peak 5 inch resolution, COMINT/ELINT systems, side looking radars, and infrared cameras. The programmed flight capabilities of the two aircraft are so similar that they can be treated as interchangeable. Pertinent flight capability data are:

	SR-71 Planned ^{1/}	A-12	
		Planned	Achieved to date
Range between refuelings NM	3,800	4,000	3,000
Cruise speed (Mach)	3.2	3.2	3.2
Maximum altitude (feet)	90,000	86,000	86,000

^{1/} Data on actual SR-71 performance are not yet available.

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In a typical flight profile either aircraft would enter denied territory at an altitude of 75,000-80,000 ft., flying at Mach 3.1 or 3.2. It would cruise at this speed steadily climbing until it exited at maximum altitude. Range over denied territory would be about 15% less than maximum range to allow ascent and descent and enough fuel reserve to reach an emergency landing field.

In addition to the A-12 and the SR-71 there are two other existing versions, the YF-12A, an experimental interceptor, and the Tagboard, an A-12 configured to carry and launch the Mach 3 Tagboard drone. There are 3 YF-12A's and 2 Tagboards. The number of A-12's and SR-71's are:

	Authorized and Produced or in Production		Additional Requested	
	A-12	SR-71	A-12	SR-71
Total	13	31	0	15
Test aircraft ^{1/}	2	6	-	-
Trainers	1	2	-	-
Operational aircraft	8	23	-	-
Lost	2	-	-	-
Attrition Replacement	-	-	-	15

1/ One A-12 and four SR-71 test aircraft are proposed for conversion to operational configuration in later years.

The SR-71 will be based at Beale Air Force Base in California. The A-12 and Tagboard are based at Area 51, a classified facility in the western U.S. operated by CIA. The YF-12A is based at Edwards Air Force Base in California.

Proposed Utilization: The Air Force requirement for 25 operationally configured SR-71's is based on the planned capability to simultaneously:

- conduct sustained operations of one sortie per day in each of two theatres, e.g., the Middle East and Southeast Asia.
- conduct 7 missions per month over Cuba.
- maintain 6 SR-71's on hard alert for crisis reconnaissance of the USSR, or of China if the theatre aircraft were otherwise engaged.

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--support 66 crews in training.

--as an additional benefit, not a primary mission, provide a post SIOP reconnaissance capability.

The projected employment of the 10 operational A-12's is essentially the same except for a lesser sortie rate. The full planned operational capability would provide:

--one permanent overseas detachment, e.g., Southeast Asia.

--a capability to deploy to another area at the same time, e.g., the Middle East.

--continued maintenance of the ability to conduct reconnaissance over Cuba.

--the ability to provide crisis reconnaissance of the USSR from Area 51.

--continued crew training.

The only distinction between the proposed uses of the two aircraft is the claim that the A-12 alone can conduct "covert" overflights. How "covert" they would really be is debatable. CIA is currently preparing to deploy three A-12s for two sixty-day periods to Kadena Air Force Base on Okinawa against the contingency that they may be required for overflights of China or North Vietnam (the flights have not yet been authorized). In preparation for these two 60-day deployments, special construction has been required at Kadena, one million pounds of equipment have been shipped by sea, 15 C-130 sorties to Kadena will be required, and specially configured KC-135 tankers will have to be deployed to the Far East. This seems to be stretching the definition of covert quite a bit.

It appears that the real distinction between the aircraft is that, if one were shot down, an A-12 could be blamed on CIA while an SR-71 would be a SAC plane. The important point is whether the other country would believe it was being overflown by SAC and not who actually conducted the overflight. Because the SR-71 has surfaced, a downed A-12 would

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surely be labeled an SR-71 by the aggrieved country. CIA operational plans, partly to offset this, and partly to profit from the U-2 experience, call for a downed pilot to identify himself and the plane with CIA. This simple declaration would probably not be convincing, and we might well be put in the position of trying to prove publicly that there are two different types of planes. Indeed this question may arise even if there is no shoot down. Both planes emit a continuous sonic boom. A country subjected to sonic boom by a plane flying over 80,000 feet at about Mach 3 would surely connect it with the SR-71, the only reconnaissance aircraft of this capability known to them. Thus, vigorous foreign accusations of warlike action by SAC may result from any overflight.

If there is a policy distinction between an overflight which can be attributed to 'those spies up to their dirty tricks again', and one which is the warlike act of our military forces, one important question remains:--Is this distinction worth an expenditure of \$500 - \$700 million over the next five years?

The costs: The costs of the A-12 and SR-71 programs through 1971 are as follows:

	TOA (in millions of dollars)							
	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>Total</u>
SR-71	451.1	479.8	452.3	312.1	227.8	210.3	197.2	2,330.6
A-12	<u>137.1</u>	<u>111.6</u>	<u>147.6</u>	<u>169.0</u>	<u>153.2</u>	<u>151.7</u>	<u>122.8</u>	<u>933.0</u>
Total	588.2	591.4	599.9	481.1	381.0	362.0	320.0	3,323.6

The costs in the above table are based on the amounts currently being requested for the two programs, rather than the currently approved programs. We expect them to be reduced somewhat during the budget review process on straightforward budgetary issues, e.g., contract prices, time between overhauls, etc. These reductions are not included here because the details of the programs are still being reviewed. They would not affect the basic economics of the alternatives which are discussed below.

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There is an implicit issue associated with the SR-71. The proposed procurement would keep the production line open against the contingency that the F-12 is approved next year. We do not believe the potential savings are sufficient to warrant doing this. The F-12 can stand on its own merits when the time comes.

ALTERNATIVES

The following discussion sets forth major alternatives to the programs proposed for the A-12 and the SR-71. We recommend Alternative 1.

Alternative 1

Do not procure additional SR-71's and phase out the A-12 program by September 1966. From an analysis of the requirements for additional SR-71 aircraft (Attachment) we do not believe the procurement of additional SR-71's is justified. (The Systems Analysis Staff in OSD agrees and will soon forward a Format B which recommends no additional SR-71 procurement.) Based on the attrition experience of the B-58 program, the presently authorized number of SR-71's will be adequate to meet a realistic estimate of requirements through fiscal 1975, which are the same as the requirements postulated for the A-12. The only thing that will be lost is the A-12's claimed distinction of covert overflights. As indicated in our discussion above, we do not believe this distinction is meaningful. It is certainly not worth the cost of maintaining the A-12 program.

Under this alternative we would immediately halt further upgrading of the A-12's and phase down the program during FY 1966 to the three aircraft now becoming fully operational. These would remain operational until September 1966, two months after the first SR-71's unit becomes operational. We would then phase these last three out. We would dispose of the A-12 aircraft with the possible exception of one which might be retained as a back-up aircraft for Tagboard.

We would also close down Area 51. This would require transfer of the Tagboard program to Beale AFB. This should present no difficulties. Tagboard is an Air Force program and security could be as good as that of the CIA U-2's which are currently based at Edwards AFB. Our

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estimated TOA based on a December 1 decision for this alternative is:

	TOA (in millions of dollars)						
	1966	1967	1968	1969	1970	1971	Total 66-71
SR-71	479.8	255.9	220.5	215.8	198.3	179.2	1,549.5 ^{1/}
A-12	85.0	40.0	-	-	-	-	125.0
Total	564.8	295.9	220.5	215.8	198.3	179.2	1,674.5

(Difference from proposed program)

SR-71	-	-196.4	-91.6	-12.0	-12.0	-18.0	-330.0
A-12	-26.6	-107.6	-169.0	-153.2	-151.7	-122.8	-730.9 ^{2/}
Total	-26.6	-304.0	-260.6	-165.2	-163.7	-140.8	-1,060.9

1/ Subject to further budgetary adjustments.

2/ This is based on the program director's request. On the basis of the DNRO's proposed program, which assumes that the larger 34K engines will not be procured in later years, the savings would be about \$180 million less.

Alternative 2

Do not procure additional SR-71's, transfer 6 A-12's to the Air Force, and cancel the balance of the A-12 program. This would provide 6 A-12's against the contingencies of unexpected attrition of requirements. It would have the disadvantage of leaving SAC with a mixed fleet of aircraft, but the problems would be no greater than those caused by the differences between the B-52G and H's and earlier B-52's. It would provide the advantage of retaining an option for covert overflight. Two or three civilian crews could be kept proficient in the A-12 so that we could publicly make the same claims of a CIA crew and plane that we can make under the present programs.

TOA

The additional TOA required for this alternative is difficult to gauge without the benefit of detailed estimates by the program operators.

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The additional costs would result from maintaining separate stocks of parts, separate training programs, separate contractor support, etc. We estimate that they would add \$20 - \$25 million per year (1966-1971) to the TOA shown under Alternative 1. There would also be a potential addition of \$54 million to put the new 34K engines in the 6 A-12's which are retained.

Alternative 3

Procure 6 additional SR-71's and phase out the A-12 program by September 1966. The 6 additional SR-71s would provide insurance against attrition rates in excess of those we have forecast or to meet sustained requirements beyond those which we forecast.

TOA

This alternative would add the following to the TOA required under Alternative 1.

TOA (in millions of dollars)

<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>Total</u>
69.6	6.0	12.0	12.0	18.0	117.6

Summary

Under the presently proposed programs we will have spent well over \$4 billion on the SR-71 and A-12 by 1971. While it is partly hindsight, we do not believe that the intelligence we will get and the contingency capability will be worth this amount of money. It seems clear now that we should have reconciled the two programs before we launched into the SR-71. Not having done so, the time has come to cut our losses. We do not believe there is a real distinction between the purposes or possible uses of the two aircraft. We recommend that the A-12 program be phased out. Nor do we believe that additional SR-71's are required to meet the combined requirement. We recommend that no additional planes be procured.

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If you wish to explore the alternatives set out in this memorandum, we suggest that you arrange a meeting with Secretary McNamara and Mr. Raborn. (You might prefer to discuss the additional SR-71's with Secretary McNamara first and then hold a joint meeting.) We have provided copies of this memorandum to Dr. Flax (the DNRO), Dr. Samuel Koslov (the Director of Defense Research and Engineering's Special Assistant for Reconnaissance), and Mr. John Bross (the Deputy Director of Central Intelligence - NIPE). This will permit Secretary McNamara and Mr. Raborn to be informed of our proposal in advance so that it can be discussed readily.

Attachment

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~~TOP SECRET~~Analysis of Attrition Requirements SR-71

The Air Force has submitted a program change proposal which requests approval of the purchase of 15 additional SR-71 aircraft (9 in FY 67 and 6 in FY 68) for attrition replacement. The requested TOA to support this purchase is:

<u>TOA (in millions of dollars)</u>					
<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>Total - through 1971</u>
196.4	101.1	32.8	39.3	41.9	411.5

The stated Air Force requirement for the 15 aircraft is premised on a requirement for 25 operational (U. E.) aircraft and a loss rate of 1.5 aircraft per year. The proposed procurement would provide for losses through FY 1975. The two issues involved in the procurement center on the required U. E. aircraft and the loss rate.

The Air Force's projected loss rate is based on the number of B-58's lost per year (2.75 from an inventory of 97) and the number of SAC U-2 training losses per year (1.6 from an inventory of 35). By interpolation they forecast a loss rate of 1.5 SR-71's per year. The B-58 experience appears to be more applicable to a sophisticated aircraft like the SR-71 than the U-2 experience. The B-58 is supersonic and represented a major technological step forward, while the U-2 is a subsonic aircraft which operates at the margin of its envelope and is tricky and dangerous to fly.

A straight extension of the B-58 losses in relation to inventory would produce a projected SR-71 loss rate of .9 per year. However, loss rates are more properly (and historically) based on flying hours. The following table compares the Air Force projection and a revised projection based on the B-58 attrition per thousand flying hours. (The developmental losses prior to 1961 have been excluded because similar losses have already been met by the A-12 program.)

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SR-71 losses projected

FY	Cumulative Flying hrs.	Air Force projection		Revised projection based on B-58 experience	
		Cumulative losses a/c	Loss rate per 1,000 flying hrs.	Cumulative losses a/c	Loss rate per 1,000 flying hrs.
1966	1	1	1.00	-	.20
1967	5	3	.60	1	.19
1968	11	5	.46	1	.13
1969	17	7	.41	2	.09
1970	24	8	.40	2	.09
1971	31	10	.32	3	.09
1972	38	11	.30	3	.09

The second issue is whether the 25 U. E. aircraft are needed. Based on a 70% in commission rate, 25 aircraft would provide 9 aircraft deployment as two theatres and 16 aircraft based in the U.S. Nine aircraft will give each theatre the ability to conduct regularly one 8-hour mission per day (i.e., one 16,000 mile sortie). This capability far exceeds any requirement we have experienced to date. The peak U-2 requirement has been for 27 missions per month over North Vietnam, 7 missions per month over Cuba (not a theatre requirement) plus sporadic (perhaps 3 per month) missions elsewhere. This equates to less than thirty 3-hour missions by SR-71's. Three aircraft deployed to each theatre would provide a recurring capability far beyond these past requirements and the ability to peak up to one 8-hour mission a day for short periods.

The 16 aircraft based in the U.S. would provide for proficiency training and 7 missions per month over Cuba (total 10 aircraft) plus 6 aircraft on hard alert for crisis reconnaissance of the USSR. The 6 would cover the 265 targets on SAC's crisis indicator list. This latter requirement is open to serious question. In a major crisis

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such as the Cuban missile crisis, would the President authorize any action as provocative as the launching of 6 supersonic aircraft to fly over the Soviet Union? It seems too unlikely to justify maintaining 6 aircraft on continuous hard alert for this purpose. If a crisis reconnaissance capability seems desirable, it can be provided by standing down proficiency training when a crisis begins to build. Thus, a U. E. of 16 SR-71's would provide a deployed capability in two theatres far in excess of past requirements, a Cuban over-flight capability, proficiency training, and the ability to provide alert aircraft for crisis management by standing down training temporarily.

Alternatives:

The above analysis offers several combinations of losses and requirements. The following table shows the number of U. E. aircraft available under the different loss rates and the alternative U. E. requirements.

	<u>Aircraft Available for U. E.</u>			<u>U. E. Requirements</u>	
	<u>Based on B-58 losses per 1000 flying hrs.</u>	<u>Based on B-58 losses per aircraft</u>	<u>Based on Air Force loss rate</u>	<u>Air Force Personnel</u>	<u>Alternative</u>
1966	11	10	10	25	16
1967	22	21	20	25	16
1968	24	22	20	25	16
1969	23	21	18	25	16
1970	23	20	17	25	16
1971	22	20	15	25	16
1972	22	19	14	25	16
1973	21	18	12	25	16
1974	20	17	11	25	16
1975	20	16	10	25	16

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Do not procure any additional SR-71's. This will provide sufficient aircraft to meet a realistic U. E. of 16 through 1975, regardless of whether losses occur at the rate per flying hour or the rate per aircraft experienced by the B-58.

TOA - Alternative 1 (assuming lowest loss rate)
(millions of dollars)

<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>Total</u>
--	--	9.5	20.8	27.3	23.9	81.5

Alternative 2

Procure 6 additional SR-71's. This will provide sufficient aircraft to meet Air Force's U. E. requirement through 1972 if losses occur at the B-58 rate per aircraft. Even if losses reached the Air Force rate, sufficient aircraft will be available to meet a more realistic U. E. of 16 through 1975.

TOA - Alternative 2 (using middle loss rate)
(millions of dollars)

<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>Total</u>
69.6	15.5	32.8	39.3	41.9	199.1

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ANNEX 161

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OXCART

ExCom-M-11

NRP EXECUTIVE COMMITTEE

Minutes of Meeting Held September 29, 1967

Office of Deputy Secretary of Defense

Room 3E 928, The Pentagon

3:00 p. m. - 4:45 p. m.

Members Present

Mr. Paul H. Nitze
Mr. Richard Helms
Dr. Donald F. HornigDeputy Secretary of Defense
Director of Central Intelligence
Special Assistant to the President
for Science and Technology

Others Present

Dr. Alexander H. Flax

Director, National Reconnaissance
Office, Member Ex Officio

Brig. Gen. Russell A. Berg

Acting Secretary, NRP Executive
CommitteeDr. John S. Foster, Jr.
Vice Adm. Rufus Taylor
Mr. Huntington D. Sheldon
Mr. Carl E. Duckett
Dr. Donald Steininger
Mr. Fred S. Hoffman
Mr. C. William Fischer
Mr. Herbert BeningtonDDR&E
Deputy DCI
CIA
CIA
PSAC Staff
Assistant Director, BOB
BOB
DDR&E StaffCol. Paul Worthman
Col. Clason SaundersNRO Staff
Director, NRO Prog D

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reversal of the December 1966 decision, or (3) adhere to that decision. The discussion turned to the first option. Asked the desirability of this option, Dr. Flax stated that if there were no economic restraints whatever he would prefer to retain the total force. However, economic constraints were very real and he believed a firm decision was called for at this time. A six-months' delay, in making the transition, he pointed out, could cost \$32.0 million. A question was raised as to the cost of reclaiming OXCART aircraft from storage, if required. []

[] stated that this would involve approximately \$300 to \$500 thousand per aircraft, if done within the first year. [] also pointed out that the present financial plan provides some OXCART overlap by providing for continued operation at Area 51 during December.

Mr. Nitze observed that the additional \$32.0 million required for a delay in transition from the OXCART to the SR-71 was extremely critical in today's budgetary environment. Dr. Hornig favored a delay of six months. Dr. Foster agreed with the concept of delay but recommended a shorter period: somewhere between three and six months. Mr. Hoffman stated that the original decision of last December should be followed unchanged. Mr. Helms favored a delay. Dr. Flax agreed that a delay would provide a higher degree of confidence in assuring continued operational effectiveness in the face of possible improvement of North Viet Nameese defenses, which were just now beginning to be brought to bear on the OXCART aircraft. The cost of this insurance would of course be related to the length of delay in phase-out. He believed that the SR-71 deployment should not be held until the very last day of any agreed-to delay period; if a three-month delay were recommended, the SR-71 deployment should be scheduled for mid-February 1968.

Mr. Nitze asked for a memorandum spelling out (1) what the decision for a three-month delay would do for the program, (2) the associated costs, and (3) what is intended for the interim. Dr. Flax was asked to prepare such a paper. Mr. Nitze stated that he would confer with the Secretary of Defense on this matter early in the following week.

Series C:

#1 - DDLA (working paper)
#2 - DD Files

R. A. Berg
Russell A. Berg
Brigadier General, USAF
Acting Secretary
NRP Executive Committee

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ANNEX 162

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CONTROL SYSTEM(S) NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

OFFICE OF THE DIRECTOR

October 3, 1967

MEMORANDUM FOR THE DEPUTY SECRETARY OF DEFENSE

SUBJECT: OXCART Phase Down Extension and Related SR-71 Considerations

On December 23, 1966, the President directed the phase out of Project OXCART by January 1, 1968, primarily since the SR-71 was scheduled to be operationally ready before that time, and a special study indicated that the total numbers of SR-71/A-12 aircraft could be reduced without degradation to mission requirements.

On May 16, 1967, approval was given to deploy three of the OXCART A-12's to Kadena to perform a surveillance mission over North Vietnam to guard against a surprise introduction of Soviet surface-to-surface missiles in this area. There has been no evidence of surface-to-surface missiles in North Vietnam but the simultaneous coverage of large areas of Vietnam by the A-12 has been very useful to U.S. commanders in the field.

On September 19, 1967, and upon recommendation of the Joint Chiefs of Staff, it was reaffirmed that Project OXCART should be phased out in December 1967 and that the Strategic Air Command should be prepared to conduct the North Vietnam overflight mission on December 1, 1967, operating out of Kadena Air Base.

SR-71 operational testing is now complete and while final reports have not been submitted, sufficient data are available to arrive at an evaluation of the readiness of the SR-71 to take over the North Vietnam overfly mission. Although it is the DOD view that the SR-71 is now essentially ready to take over the OXCART mission at Kadena, the view was generally expressed at the September 29 meeting of the ExCom that the OXCART/BLACK SHIELD operations should be extended for three months to allow better assessment of vulnerability of the aircraft to the SA-2 and the relative adequacy of the installed ECM on the OXCART and the SR-71 in the light of operational experience. At the present time there is no pertinent experience since no SA-2 has successfully tracked the OXCART and, in fact, only on one recent mission was an attempt noted. It was considered that in the light of vulnerability considerations, further exposure of the OXCART over the hostile environment during the extended period would provide more experience in coping with an improving defensive environment. It would appear prudent to derive this information from a vehicle which is already in position and will be phased out with the employment of the SR-71. Additionally the OXCART has two ECM devices against

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the SA-2, while the SR-71 interim system includes only one. There is a considerable divergence of opinion as to the absolute values of SA-2 kill probability in the face of either or both devices, since the effectiveness of the SA-2 in the face of ECM depends on a number of undetermined factors including the skill, training, and experience of the SA-2 crew. However, tests, simulations, and analyses, which give the SA-2 the benefit of doubt, indicate relatively small probabilities of kill against either the OXCART or the SR-71 as long as the ECM techniques used remain viable (i.e., not countered by specific ECM or techniques designed against these ECM measures).

Since the ExCom meeting, a plan has been developed which would provide the necessary degree of overlap and insurance required to protect against the possibility that some problem would prevent deployment or successful operation of the SR-71 from Kadena in the BLACK SHIELD role. This assumes that other contingency situations (particularly Cuba) will be covered by other than OXCART. Basically, the plan would be to:

1. Retain the three operational OXCART aircraft at Kadena until re-deployment to Area 51 by February 1, 1968,
2. Retain two operational OXCART at Area 51 as back-up for the BLACK SHIELD mission.
3. Upon redeployment from Kadena, continue to fly the then five operational aircraft at Area 51 thru March 31, 1968 to maintain proficiency, then mothball all five starting in April 1968.
4. Mothball the one remaining test aircraft and one of the operational aircraft in January 1968, as previously planned. Mothball the trainer aircraft in January or February 1968.
5. The Strategic Air Command would deploy three SR-71 aircraft to Kadena, and be ready to assume the BLACK SHIELD operations by February 15, 1968.

The maximum added cost to the NRP for this OXCART extension should be \$9.1 million (\$2.7 million less than if all eight current OXCART aircraft were continued thru March). Detailed implementation considerations will attempt to reduce this cost. The appropriate funding will initially be covered from a present fund reservation in the NRP of \$9.8 million intended to finance mothballing of the current 8 OXCART (two A-12's have been mothballed to date), equipment teardown and movement, closing of Area 51, and related phaseout costs. Except for the costs of mothballing three aircraft in January/February 1968, these phaseout costs will now be deferred until the April-June 1968 time period. Periodic reassessment of the NRP total FY 1968 fund requirements will be made to identify whether there is an overall fund deficiency and, if so, possible sources of funding.

Series C:

#1 - DDS&T File

#2 - DD/SA File

#3 - Office File

Alexander H. Flax
ALEXANDER H. FLAX
Director

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ANNEX 163

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(S) NATIONAL RECONNAISSANCE OFFICE
Washington, D. C.

Office of the Director

March 7, 1968

MEMORANDUM FOR THE DEPUTY SECRETARY OF DEFENSE

SUBJECT: Study of Options for Continuing Operation of the
OX CART Aircraft in Fiscal Year 1969

In accordance with your request, a study of the feasibility and cost of continuing operation of the OXCART aircraft beyond the currently programmed phaseout date of June 30, 1968 has been completed. Although a number of alternatives have been studied, I believe the following options are significant for your consideration:

Option 1. The OXCART aircraft would be transferred to the Strategic Air Command (SAC) by October 31, 1968. SAC operation of seven of these aircraft (six operationally configured plus one trainer) at current rates would begin by about January 1, 1969, with substitution of Air Force for contractor support wherever possible. The eighth (test) aircraft would be sent to Palmdale for continuing contractor test operation.

Option 2. The OXCART aircraft would be transferred to SAC as in Option 1 and the SAC SR-71 inventory would be reduced by eight SR-71's to be stored at Palmdale, starting September 1, 1968. Flying at current OXCART rates would begin by November 1, 1968.

Option 3. The OXCART aircraft would be retained under CIA operational control and management. Area 51 would be closed and aircraft and other program assets would be transferred from Area 51 to Beale Air Force Base by October 31, 1968. Substitution of some Air Force maintenance and other support for contractor support is assumed. Present OXCART flying rates would be resumed by January 1, 1969.

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Option 4. Current OXCART operations would be continued at Area 51. This is a base line option against which the costs of other options may be measured.

The costs of the options studied were derived for FY 1968 and 1969 on the basis of the best currently available data. These costs were necessarily estimates, since details of operating arrangements and contractor support would need to be worked out on the basis of more complete planning for implementation of any of these options. One factor affecting costs of options other than Option 4 (continuing CIA operation at Area 51) was the need for additional facilities at Beale Air Force Base, including aircraft shelters, hangars, trailers and headquarters building. For purposes of cost estimation, it was assumed that the demountable units at Area 51 could be moved to Beale Air Force Base and costs were included for site preparation, foundations and utilities required to accommodate these buildings. On-base housing for additional military personnel at Beale would also pose a problem in the long run, but this could not be resolved initially in any event on the schedules proposed for the phaseover options. Housing trailers from Area 51 could help to alleviate this situation for either military or contractor personnel, and it was assumed these trailers would be made available.

The costs of the options are as follows:

	Additional FY 1968	Total FY 1969
Option 1	\$2,789,000	\$62,160,000
Option 2	2,819,000	40,960,000
Option 3	2,789,000	72,240,000
Option 4	2,789,000	72,000,000

These costs include consideration of NRP costs for operation of the OXCART by the CIA, Air Force costs for operation of the OXCART (as appropriate in each option), CIA and Air Force direct support costs for each option, costs of closeout of Area 51 for Options 1, 2 and 3, and costs of construction (including \$5,400,000 for additional military housing) at Beale Air Force Base for Options 1 and 3. The cost for closeout of Area 51 will be incurred as an NRP cost in any

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event in FY 1969 under the current plan for phaseout of the OXCART program after June 30, 1968. The OXCART associated costs in Option 3 (SAC operation of the OXCART offset by removal of eight SR-71's from the inventory) have been reduced by \$20,900,000 to account for decreased SR-71 program cost. A more detailed breakdown of costs is given in the attached Table I. It should be noted that the FY 1969 costs for closing Area 51 and for new construction at Beale Air Force Base are "one-time" costs; however, costs for years subsequent to FY 1969 cannot be derived by subtracting these one-time costs from the totals, since Options 1, 2 and 3 involve curtailment of OXCART operations to varying degrees during the period June 30, 1968 to January 1, 1969.

In order to provide comparative costs for these options corresponding to a full year of operation without one-time costs included, an estimate for FY 1970 costs is included in the attached Table II. In summary, the FY 1970 costs are estimated to be as follows:

Option 1	\$57,600,000
Option 2	\$39,800,000
Option 3	\$64,600,000
Option 4	\$67,000,000

The Air Force has reviewed the feasibility of options calling for operation of the OXCART aircraft by SAC, from the standpoint of training, maintenance, facilities at Beale Air Force Base, and contractor support and has concluded that the options and schedules described above are feasible. However, there are substantial differences in the configurations of the OXCART and SR-71 aircraft in the areas of cockpit, instruments, sensors, engines and airframe. If commonality in subsystems were to be sought between the two aircraft, considerable expenditure of time and money would be required for modification. Therefore, the options considered contemplated only the operation of the OXCART aircraft in their present configurations. This would require formation of specialized units within SAC capable of maintaining and operating the OXCART aircraft as is. Conversion of as much of the maintenance from contractor to military personnel will require substantial improvements in the

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technical data available for the OXCART aircraft; continuation of essentially the current level of contractor maintenance and overhaul services would be required until the SAC unit were manned and trained. However, because of the small number of OXCART aircraft and their special subsystems, the continuing level of contractor support would continue to be greater than that utilized for the SR-71. These factors were taken into account in estimating option costs.

Continuation of the OXCART program into FY 1969 under any of the options discussed herein will not only require additional procurement of spares, AGE and other equipment in the OXCART program, but will impact the SR-71 program, since up to \$5M of such items common to the SR-71 and OXCART programs have not been procured for the SR-71 in FY 1968, on the assumption that OXCART assets would become available in FY 1969. However, adoption of any of the options for the continued operation of the OXCART will call for adjustments of the allocation of assets and fund reimbursement between the OXCART and SR-71 programs. Our current assessment indicates that if such transfers of assets and outstanding reimbursement liabilities between programs are made, the net costs for FY 1968 and FY 1969 for any of the options may be reduced by between \$5 million and \$10 million.

Security would require special attention under all of the options calling for transfer of the OXCART aircraft to Beale Air Force Base. The most difficult problems would arise in connection with Option 3, in which the CIA would continue to operate the aircraft at Beale Air Force Base. This option has not been reviewed with the CIA, and if implemented, might require additional buildings and other facilities at Beale Air Force Base, not included in the present cost estimates, in the interest of maintaining security separation between the OXCART and the SR-71 programs at Beale Air Force Base. Options 1 to 3, however, all call for development of a plausible explanation for the surfacing of these additional aircraft, differing in configuration from either the YF-12A or the SR-71. These security problems have not been addressed in the current study but would require detailed attention if implementation of any of Options 1 through 3 were contemplated.

(Signed)
Alexander H. Flax
Director

2 Attachments

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TABLE I
Estimated Costs of OXCART Program Options (thousands)

	<u>Option 1</u>		<u>Option 2</u>		<u>Option 3</u>		<u>Option 4</u>	
	<u>FY 68^{a/}</u>	<u>FY 69</u>	<u>FY 68^{a/}</u>	<u>FY 69</u>	<u>FY 68^{a/}</u>	<u>FY 69</u>	<u>FY 68^{a/}</u>	<u>FY 69</u>
OXCART Program Operating Cost:								
Air Force Funds	-	\$26,900	-	\$41,900	-	-	-	-
NRP Funds	\$2,789	9,800	\$2,789	6,000	\$2,789	\$44,900	\$2,789	\$62,100
Air Force Support	-	7,720	30	4,540	-	5,300	-	3,400
CIA Support	-	2,200	-	1,600	-	6,500	-	6,500
Closing of Area 51 ^{b/} (NRP Funds)	-	7,900	-	7,900	-	7,900	-	-
Construction at Beale AFB ^{c/}	-	7,640	-	-	-	7,640	-	-
TOTAL	\$2,789	\$62,160	\$2,819	\$61,940	\$2,789	\$72,240	\$2,789	\$72,000
Reduction in SR-71 Program Cost	-	-	-	(20,980)	-	-	-	-
NET TOTAL	\$2,789	\$62,160	\$2,819	\$40,960	\$2,789	\$72,240	\$2,789	\$72,000

^{a/} FY 1968 costs in addition to programmed costs to continue OXCART operations to June 30, 1968.

^{b/} These closeout costs would be incurred in FY 69 in any event under the current plan for phaseout after June 30, 1968.

^{c/} Construction estimates include \$2,240 for shop and mission support buildings and \$5,400 for additional military housing at Beale AFB.

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ANNEX 164

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BYE-6441-68

18 April 1968

MEMORANDUM FOR Mr. Nitze
 Dr. Hornig

SUBJECT: Considerations Affecting OXCART
 Program Phaseout

REFERENCE: BYE-12948-68

1. I have examined the four options for continuing the OXCART program which are discussed in referent memorandum and feel it appropriate to express some of my initial reactions prior to the EXCOM meeting scheduled for 23 April 1968.

2. I note that one option, the second, involves storage of some of the SR-71 fleet. I find it difficult to make a judgment on the overall size of the SR-71 fleet. From the viewpoint of national intelligence alone, however, we have for several years considered that requirements could be satisfied with six to eight operational aircraft of the OXCART-SR-71 type. I know that the SR-71 was designed to satisfy other requirements which are of a purely military nature; but if in fact the fleet is larger than is required for these military missions, I see no reason why the storage of eight SR-71's cannot be effected with the resultant projected savings in all of the options listed.

3. As to the specific cost figures quoted for the various options, I do not understand the rationale involved in arriving at some of the variations. For example, it is indicated that even if CIA retains responsibility for the OXCART Program and continues to maintain the current quick-reaction capability, the cost could be substantially reduced by moving from an existing established operational base to Beale Air Force Base. My Staff has examined this question and feels that the cost would in fact significantly increase for at least the first

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year or two, and at no time would they expect the operating costs to be lower than those projected for Area 51. I do not know the basis of the cost estimates for SAC operating the OXCART, but we believe that with the major emphasis given to efficiency in the last couple of years we have brought the expenditures for this Program to a very nearly bare minimum. I have serious doubts, therefore, that others could operate the existing OXCART fleet at a lower cost than that we projected for FY 1969. Our latest estimates for maintaining the OXCART fleet at Area 51 under CIA control is \$68.8 million.

4. Option 3, which would move the OXCART fleet to Beale Air Force Base but continue under CIA management, I consider unacceptable from the viewpoint of security. If there is reason to continue the Program under CIA management at all, it should be retained as a truly civilian program; I do not believe that cover can be maintained by mixing the fleet with a clearly-identified military unit.

5. Aside from the costs as projected in the four options, I consider that the key question is the desirability of maintaining a covert civilian capability with an advanced aircraft system and believe that the requirement for this continues. In this connection, I have reviewed the history of the U-2 and OXCART overflight experience from 1956 to the present. This record shows that the government has consistently chosen to exercise a civilian overflight option, particularly in pre-crisis periods in such areas as Cuba and the Middle East or in Southeast Asia before our military build up there in 1965. With the many current or potential trouble spots around the world today it seems to me probable that we will face situations in the future where the option of a civilian capability would indeed be exercised if available.

6. I continue to believe that the OXCART represents a better vehicle for general reconnaissance purpose than the SR-71, particularly because of what I believe to be its superior camera system. I would note, moreover, that in the one-year period since deployment of the OXCART it has successfully completed twenty-eight overflights of denied areas, and I believe we all agree has

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demonstrated an unusually high reliability and has produced valuable intelligence. I am convinced that we should continue the Program and see no merit to changing from a proven management system which in fact represents a unique joint CIA/Air Force undertaking. I recommend that we select Option 4 and maintain the OXCART fleet at Area 51 under CIA management. In this connection I believe that Area 51 represents a useful intelligence resource apart from its use in connection with the OXCART. We would, of course, continue to stress economy and believe that we can operate for an annual cost somewhat below that projected in the NRO memorandum.

(Signed)
Richard Helms
Director

cc: Dr. Flax

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(thousands)

	<u>Option 1</u>	<u>Option 2</u>	<u>Option 3</u>	<u>Option 4</u>
OXCART Program Operating Cost:				
Air Force Funds	\$47,600	\$54,800	\$ -	\$ -
NRP Funds	-	-	50,700	57,100
Air Force Support	10,000	10,000	7,400	3,400
CIA Support	-	-	6,500	6,500
TOTAL	\$57,600	\$64,800	\$64,600	\$67,000
Reduction in SR-71 Program Cost	-	(25,000)	-	-
NET TOTAL	\$57,600	\$39,800	\$64,600	\$67,000

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ANNEX 165

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HEXAGON ☐ GAMBIT
OXCART/TAGBOARD

ExCom-M-14

Comment

NRP EXECUTIVE COMMITTEE

Minutes of Meeting Held April 29, 1968
Office of Deputy Secretary of Defense
Room 3E 928, The Pentagon
3:30 p.m. - 4:50 p.m.

Members Present

Mr. Paul H. Nitze	Deputy Secretary of Defense
Mr. Richard Helms	Director of Central Intelligence
Dr. Donald F. Hornig	Special Assistant to the President for Science and Technology

Others Present

Dr. Alexander H. Flax	Director, National Reconnaissance Office, Ex Officio
Mr. James Q. Reber	Secretary, NRP Executive Committee Ex Officio

Dr. John S. Foster, Jr.	DDR&E
Vice Adm. Rufus Taylor	DDCI
Mr. Carl E. Duckett	CIA
Mr. John A. Bross	Deputy to the DCI
Dr. Donald Steininger	PSAC Staff
Mr. Fred S. Hoffman	Assistant Director, BOB
Mr. C. William Fischer	BOB

Col. Frank W. Hartley, Jr.	Director, NRO Program D
Col. Robert G. Welch	NRO Program D
Col. Bernard L. Bailey	NRO Program D
Col. Paul E. Worthman	NRO Staff

This meeting of the NRP Executive Committee was called specifically to review the situation and developments since the deployment of the SR-71 to Kadena where

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the OXCART has been on standby pending its planned return to the United States and phaseout by June 30, 1968, and to consider issues which might affect that planned phaseout.

Operational Briefing on SR-71

Dr. Flax requested Colonel Hartley, Director of NRO Program D, to brief the Executive Committee on the deployment and operational status of the SR-71.

Colonel Hartley reported on the SR-71 overseas deployment which was concluded without incident. The total complement of personnel deployed is approximately 400. To date there have been six operational missions flown, totaling about 29 hours. Of these missions there were three aborts, one ground and two air. The former was caused by malfunction of the Astrodifferential Navigation System (ANS) and the latter aborts were because of generator difficulties. The ground abort was flown one hour later and Mission S 010 which was an air abort had already completed approximately one half of its mission. To date there has been no requirement to use the OXCART backup.

Of the six missions flown, the film has been received in the National Photographic Interpretation Center (NPIC) and a technical evaluation made on four. Two missions, S 010 and S 011, were made on April 28 and 29 but the product had not yet been received in Washington.

Colonel Hartley pointed out that the Aircraft in Commission rate was 76.9 percent which slightly exceeds the anticipated rate. He also indicated that the rate in Non-Operational Ready Supply (NORS) of 1.1 percent is better than the average NORS rate for the F-4, Century Series, and B-66 aircraft in Southeast Asia.

Colonel Hartley then reviewed for the members the cross section of the aircraft showing the position of the operational objective camera, the technical objective camera, the electronic countermeasures gear, and the side-looking radar equipment, indicating possible alternate installations of the electromagnetic radiation recorder system and the ECM.

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Colonel Hartley reviewed the routes of three of the missions--S 002, S 007, and S 008. In each of these cases the reports showed tracking by the North Vietnamese. However, there were no SAM firings and accordingly no ECM response. In the case of S 007 there was virtually 90 percent cloud cover. The first mission, S 002, was evaluated by NPIC technically as being from fair to poor; and in the case of the best mission to date, S 008, it was rated as from fair to good. In the case of S 007 there was side-looking radar photography acquired, samples of which Colonel Hartley showed along with photographic displays selected from the other missions.

In conclusion Colonel Hartley reported that the Deputy Director for Reconnaissance, JCS, has stated that, weather permitting, it appears that the SR-71 can satisfy and be responsive to the national objectives.

Consideration of OXCART

The discussion of the Executive Committee centered upon the options which had been outlined with costs in the memorandum which the DNRO had prepared for the Deputy Secretary of Defense on March 7 (BYE-12721-68) and which had subsequently been distributed to the ExCom as an attachment to BYE-12948-68.

The following summarizes the substance of the Executive Committee's discussion:

a. The differences in vulnerability of the SR-71 and the OXCART as Dr. Flax pointed out are probably not significant although the formal simulation and analysis showed the SR-71 ECM to give one third the vulnerability of the OXCART. However, Dr. Flax did not feel that the analyses and simulations could be expected to give precise answers applicable to the operational situation.

b. The wider camera swath width of the OXCART does provide a capability for coverage of SAM protected targets from outside the SAM

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range as indicated by an exhibit presented by Mr. Duckett. The SR-71, because of its narrower swath width, would, if it covered the same targets, expose itself more to SAM attack. Dr. Flax and Dr. Foster pointed out that this mode of operation could only be used if the locations of occupied SAM sites were known and if the other side did not react by relocating the SAMs to counter the tactic. Except for this point, however, the SR-71 could, by flying more missions at some small cost, obtain the target coverage required. A redesign of the SR-71 camera to obtain a wider swath width would be a matter of a year and a half in time.

c. Option 4, which is the continuation of current OXCART operations at Area 51, and which the DCI preferred, would cost about \$10 million more for FY 1969 than Option 1 which provides for the transfer of OXCART to SAC at Beale AFB.

d. Option 4 would cost about \$30 million more than Option 2 which provided for the transfer of the OXCART to SAC and reduction of eight in the SAC SR-71 inventory.

e. Option 3, which provided for the OXCART's remaining under CIA management but located at Beale AFB and which would cost approximately the same as Option 4, was unacceptable to Mr. Helms from a security point of view.

f. Dr. Flax stated that under any "extension" option FY 1969 costs could be reduced by such policies as limiting the number of aircraft flying, reducing R&D and improvement programs, or reducing flying hours and that if an extension were determined then careful consideration should be given to logical approaches for lower costs.

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g. It was recognized that the TAGBOARD had not yet reached operational status and could not at present be considered a practicable alternative to the OXCART to accomplish covert missions. Furthermore, depending on the number of missions required to accomplish a given assignment, it could be considerably more expensive.

h. In response to a query from Mr. Nitze as to whether satellite reconnaissance could not be a substitute for aircraft reconnaissance, Dr. Flax mentioned a study he had made of South China in which, to some extent by fortuitous circumstances, the GAMBIT had obtained the most target coverage of the various photographic reconnaissance systems during the winter months when there was a high expectation of cloud cover in that area. However, he emphasized that the lack of responsiveness of satellite photography makes it an unlikely prospect to accomplish the kind of tasks which the OXCART and SR-71 could accomplish with particular regard to quick reaction, frequency of coverage, and responsiveness to weather opportunities.

Mr. Helms stated that after giving the matter a great deal of thought he felt that the question of the OXCART really hinged on whether it makes a difference to the President if indeed a reconnaissance aircraft comes down in hostile territory. The aircraft is so advanced that it can only have come from one country in the world. If the pilot is civilian and if the plane is unmarked, then that hostile country is not forced to make an issue of the incident. He also felt that it is highly desirable for the Government to retain the use of Area 51 for doing exotic testing such as in the case of the recently acquired Mig-21 which could not have been done secretly at any other base. Dr. Hornig noted that there are missions other than in the Far East which the OXCART could serve.

The Deputy Secretary of Defense indicated that he did not believe that the civilian pilot argument was compelling,

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feeling instead the central issue was a budgetary one. His concern was whether what we buy with the additional \$30 million required by Option 4 is worth it; and if it is, he queried where the money for an option would come from. In response to a question from Mr. Nitze, Mr. Helms indicated that he could not reprogram CIA funds to meet the \$30 million additional required for Option 4 for 1969. In regard to the NRO, Dr. Flax indicated that the funds (up to \$72 million for Option 4) could be taken from

☐ but he believed that this program should not be slipped and called attention to some views that the pace of this program was unsatisfactorily slow. If the money were taken from the HEXAGON Program, Dr. Flax indicated that the impact would be severe. Mr. Hoffman of the Bureau of the Budget said that if there were an effort to change the present decision to phase out the OXCART the Director of the BOB wished to present his case to higher authority.

At this point, Secretary Nitze indicated that he would like to discuss the matter further with Mr. Helms and Dr. Hornig in executive session. All participants except the three Executive Committee members adjourned.

James Q. Reber
James Q. Reber
Secretary

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