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basic imagery interpretation report

First Broad-Ocean Area Missile Test from Shuangchengzi Missile Test Range Complex SSM, China (S)

MISSILE RANGES: STRATEGIC SSM SPACE FACILITIES

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DECEMBER 1980
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INSTALLATION OR ACTIVITY NAME		COUNTRY
Shuangchengzi Missile Test Range Complex SSM		CH
UTM COORDINATES	GEOGRAPHIC COORDINATES	
NA	41-08-00N 100-15-00E	
MAP REFERENCE		

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SAC. USATC, Series 200, Sheet 0287-16, scale 1:200,000

LATEST IMAGERY USED	NEGATION DATE (if required)
	NA

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ABSTRACT

1. (S/D) This basic report provides a chronology of launch preparation activity observed at Shuangchengzi Missile Test Range (MTR) Complex SSM [redacted] and several other associated facilities in support of China's first out-of-country, broad-ocean area (BOA) ICBM flight test. The report contains a map of the Shuangchengzi MTR, an overall map of associated facilities and downrange deployment, 19 annotated photographs, and a chart depicting the chronology of events.

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INTRODUCTION

2. (S/D) China's first BOA missile flight test was the most complex missile test series attempted to date by the Chinese. Launch-related activity was observed involving coordinated activity at many facilities (Figures 1 and 2), including activity at two missile test centers, two missile production facilities, a large portion of the SSM/space tracking network, and an 18-ship naval task force. There is substantial evidence that this coordination effort was carried out efficiently, with the necessary diverse construction and preparation activity being done simultaneously at one or several facilities. The extensive and varied types of instrumentation deployed to monitor these missile launches indicated the Chinese determination to continue to improve their strategic missile forces.

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BASIC DESCRIPTION

3. (S/D) The initial launch preparation at Shuangchengzi MTR Complex SSM for the BOA missile launches was the start of construction of two new theodolite shelters (Figures 3A and 3B) between [redacted] [redacted]. Within this same timeframe, telemetry/tracking equipment at Shuangchengzi SSM Tracking Facility 10 [redacted] and slogan placards at SSM Tracking Facility 11 [redacted] were deployed in support of a CSS-X-4 missile launch (items 1, 2, 31, and 36; Chart 1) from the Wuzhai MTC [redacted] to western China. Construction of the theodolite shelters took place within the Launch Complex B support area. The new shelters were somewhat larger ([redacted] than the old shelter [redacted], suggesting a new type of launch azimuth alignment equipment. The first theodolite shelter was externally complete by [redacted]. The completed shelters remained in the support area until the new launch azimuth alignment pads were complete.

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4. (S/D) Naval activity during November 1979 consisted of the continued outfitting of both Yuang Wang space event support ships (SESSs) with their telemetry/tracking instrumentation (item 52, Chart 1).

5. (S/D) Further launch preparation construction was started in late November 1979, when buried cables were installed to connect the new probable microwave transmission towers to their control buildings and an interconnecting cable network for mobile telemetry/tracking equipment to Shuangchengzi SSM Support Facility [redacted] and SSM Tracking Facility 10. The installation of the buried cables at Tracking Facility 10 was delayed by the presence of the mobile telemetry/tracking equipment in support of the launch at Wuzhai MTC (items 22, 31, and 32; Chart 1). Installation of these interconnecting cable networks had been completed at Tracking Facility 10 by [redacted] and at the SSM support facility by [redacted].

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6. (S/D) Imagery of [redacted] revealed the deployment of a new type of telemetry/tracking equipment set. Two of the new telemetry/tracking equipment sets, interim NPIC designation Shuangchengzi-A (SCZ-A), were observed adjacent to the launch position B2 launch control facility (LCF) at Shuangchengzi Launch Test Site B1/2. The equipment appeared to be cable connected to the B2 LCF and may have been undergoing initial checkout. The SCZ-A set consists of one cab-over-engine van truck, one van trailer, and one pedestal-mounted dish antenna on the rear of a truck chassis. The two SCZ-A telemetry/tracking sets remained adjacent to the B2 LCF until [redacted] when one of the sets was no longer seen, and the second had redeployed to Tracking Facility 10 (items 3 and 34, Chart 1). The SCZ-A set at Tracking Facility 10 remained in position until [redacted], when it was no longer in evidence.

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7. (S/D) In late December 1979, a missile airframe was probably shipped from Shanghai/Minhang Missile Production Plant [redacted] to Shuangchengzi MTC. Between [redacted] 25X1
[redacted] a unit train consisting of one type-B and two type-C missile railcars left Shanghai/Minhang 25X1
Missile Production Plant (item 40, Chart 1). These railcars had been present at Minhang since [redacted] 25X1
[redacted] Type-C missile railcars are used to transport the stages of the CSL-2/CSS-X-4 missile. The Shang- 25X1
hai/Minhang production plant has previously been associated with CSL-2 space launch vehicles.

8. (S/D) Naval activity during December 1979 consisted of the completion of outfitting of both SSSs with their telemetry/tracking instrumentation.

9. (S/D) Imagery of [redacted] of Shuangchengzi SSM Support Facility revealed the first 25X1
observation of missile transporters for this launch cycle. The transporters were on the apron of the west 25X1
checkout building (items 25 and 26, Chart 1). This activity probably signaled the arrival of the CSL-2
space launch vehicle airframe from Shanghai/Minhang Missile Production Plant.

10. (S/D) A second missile airframe shipment was observed in January, when a unit train consisting 25X1
of one type-B and two type-C missile railcars left Beijing/Nanyuan Missile Production Plant [redacted] 25X1
[redacted] between [redacted] Beijing/Nanyuan Missile Production Plant has previously been identi- 25X1
fied with the production of CSS-X-4 ICBM missiles. Missile-associated railcars, resembling passenger/

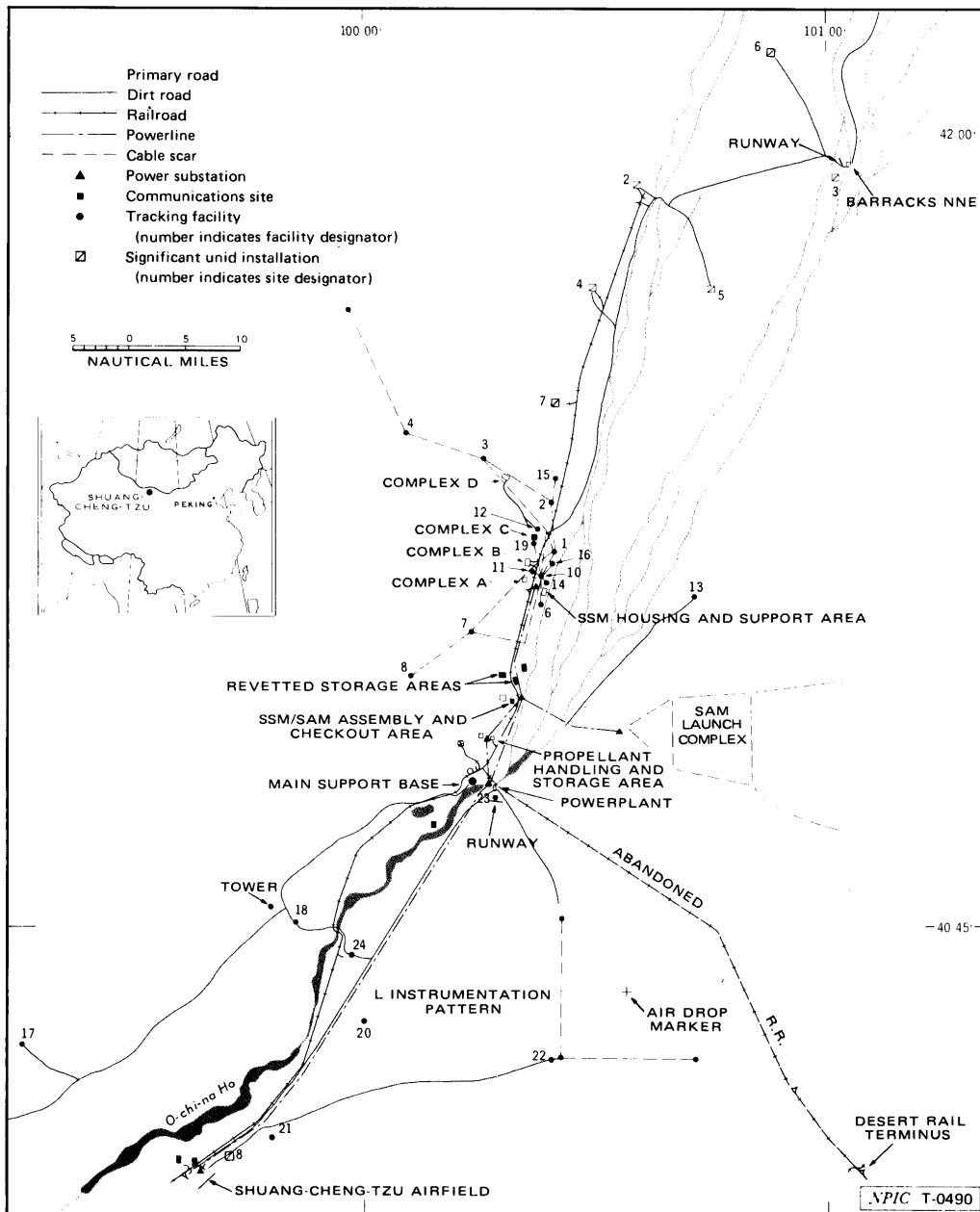


FIGURE 1. SHUANGCHENGZI MISSILE TEST CENTER, CHINA

baggage cars, were also observed to have left the Beijing/Nanyuan plant between [redacted] Imagery of [redacted] revealed a single type-C missile railcar and a CSS-2/3 transporter, in addition to the previously discussed CSS-X-4 first- and second-stage transporters, at Shuangchengzi SSM Support Facility, probably indicating the arrival of the second airframe (items 30, 42, and 46; Chart 1). The presence of the CSS-2/3 transporter could not be associated with the current launch preparation activity (item 27, Chart 1). Subsequent imagery revealed that the CSS-2/3 transporter was not moved during the launch cycle. A likely explanation would be that it had been removed from an assembly/checkout building to make room for the additional missile airframes.

11. (S/D) February imagery revealed further unusual prelaunch activity when unusually high counts of propellant railcars were seen at Shuangchengzi SSM Launch Complex BI/2. Imagery of [redacted] showed three type-C/1/2 propellant railcars (the usual number) on the siding serving the east propellant facility. On [redacted] one type-L and seven type-K propellant railcars were on the siding serving the west propellant facility (usually only three type-K railcars are seen). A propellant transfer operation was apparently in progress at the time of the [redacted] imagery. A group of personnel and a water washdown truck were adjacent to the propellant railcars and the transfer point. Imagery on [redacted] of Shuangchengzi MTC Propellant Facility [redacted] showed one type-L and seven type-K propellant railcars on the siding (items 4 and 5, Chart 1).

12. (S/D) Imagery of [redacted] of Shuangchengzi SSM Support Facility showed three boxcars and a baggage railcar on the siding serving the east assembly/checkout building, suggesting the arrival of support equipment probably in support of the previously delivered airframes. The CSS-2/3 transporter and the first- and second-stage CSS-X-4 transporters remained parked on the apron of the east checkout building (items 25 and 26, Chart 1).

13. (S/D) Additional airframe shipments to the SSM support facility continued in late February, when a second unit train arrived from Beijing/Nanyuan Production Plant between [redacted] (item 43, Chart 1). At the same time, a number of missile-associated railcars were shipped from Beijing/Nanyuan (item 47, Chart 1). None of these railcars was observed to arrive at Shuangchengzi MTC; however, a second CSS-X-4 first-stage transporter was parked on the apron of the east assembly/checkout building (item 25, Chart 1). If the sighting of the additional CSS-X-4 first-stage transporter indicated the arrival of the second Beijing/Nanyuan airframe shipment, then at least three missile airframes would have been in the assembly/checkout area of Shuangchengzi.

14. (S/D) Naval activity during February was highlighted by the observation of one of the Yang Wang SESSs deployed off the coast near Qingdao (Figure 4). The Log Periodic communications antennas were oriented in a southwestern direction, and most of the instrumentation was observed in other than the usual stowed position. This deployment was probably part of the initial sea trials for the recently completed SESS (items 52 and 53, Chart 1).

15. (S/D) March activity indicated that launch preparations had entered the final stages. Construction of two new launch azimuth theodolite shelter pads was observed at Shuangchengzi Launch Complex BI/2 on imagery of [redacted]. The pad at launch position B1 had been completed by [redacted] and the pad at launch position B2 by [redacted] (items 6 and 8, Chart 1). The orientation of both launch azimuth pads indicated that the intended launch azimuth would be [redacted]. Both of these new pads appeared to be different from the previous launch azimuth pads. A smaller, secondary mound had been graded between the launch position and the main pad, and a small stub mast had been erected atop the mound. A similarly configured launch azimuth theodolite shelter pad had previously been observed at Wuzhai Launch Site D configured when it first became operational. The new configuration of these launch azimuth pads and the new, larger theodolite shelters suggest that a new or modified alignment system has replaced the older system. Imagery of [redacted] showed one of the new theodolite shelters being placed on the new degree launch azimuth pad at launch position B1 by a truck-mounted crane (Figure 3C). The second theodolite shelter was in position on the new launch azimuth pad at launch position B2 by [redacted] between [redacted] a security fence was constructed around the launch area of Complex BI/2 (item 10, Chart 1). The fence was incomplete, however, since gates had not been constructed at the three openings (for two rail sidings and the access road) in the fence.

16. (S/D) Additional construction was observed at Shuangchengzi SSM Support Facility and Tracking Facility 10 during March [redacted] at both facilities, a dark-toned material was spread over the ground in the telemetry/tracking equipment deployment areas (Figures 5 and 6 and items 23 and 33, Chart 1). This dark-toned material may have been to control either dust or ground reflection of the electronic telemetry/tracking signals.

17. (S/D) Delivery of the telemetry/tracking equipment to the support areas at the tracking facilities was observed between [redacted] at Shuangchengzi SSM Tracking Facility 10, the SSM Support Facility, and Wuzhai Missile Test Complex Instrumentation Area [redacted]. All of the telemetry/tracking equipment had been operationally deployed at all three facilities by [redacted] (items 35, 39, and 39, Chart 1). The equipment deployed at each location was similar (Figures 5 through 9) and consisted of at least one or two SCZ-A telemetry/tracking sets, two to five four-element helix van trailers with their associated van trucks, and the seven-van-track telemetry/tracking set (usually parked in either a staggered or an echelon formation). Instrumentation at all three locations was deployed to support the indicated [redacted] launch azimuth. The telemetry/tracking instrumentation at these sites remained in position until the conclusion of the launch cycle.

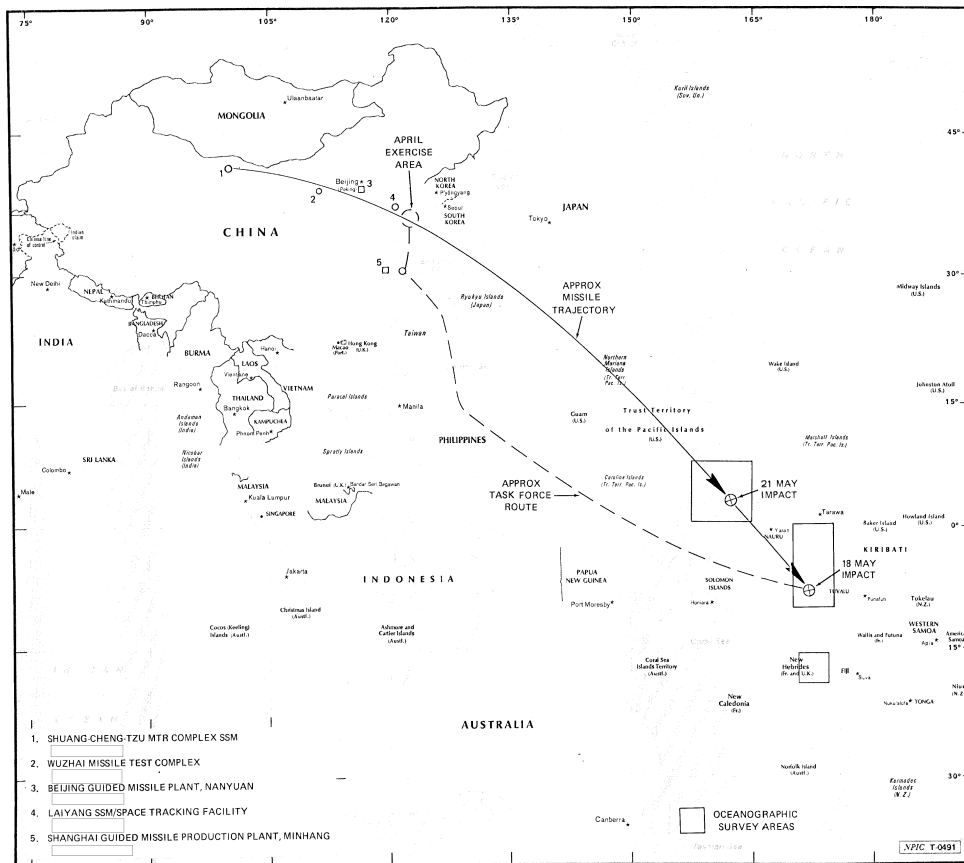


FIGURE 2. LOCATION OF LAUNCH-RELATED ACTIVITY AND FACILITIES

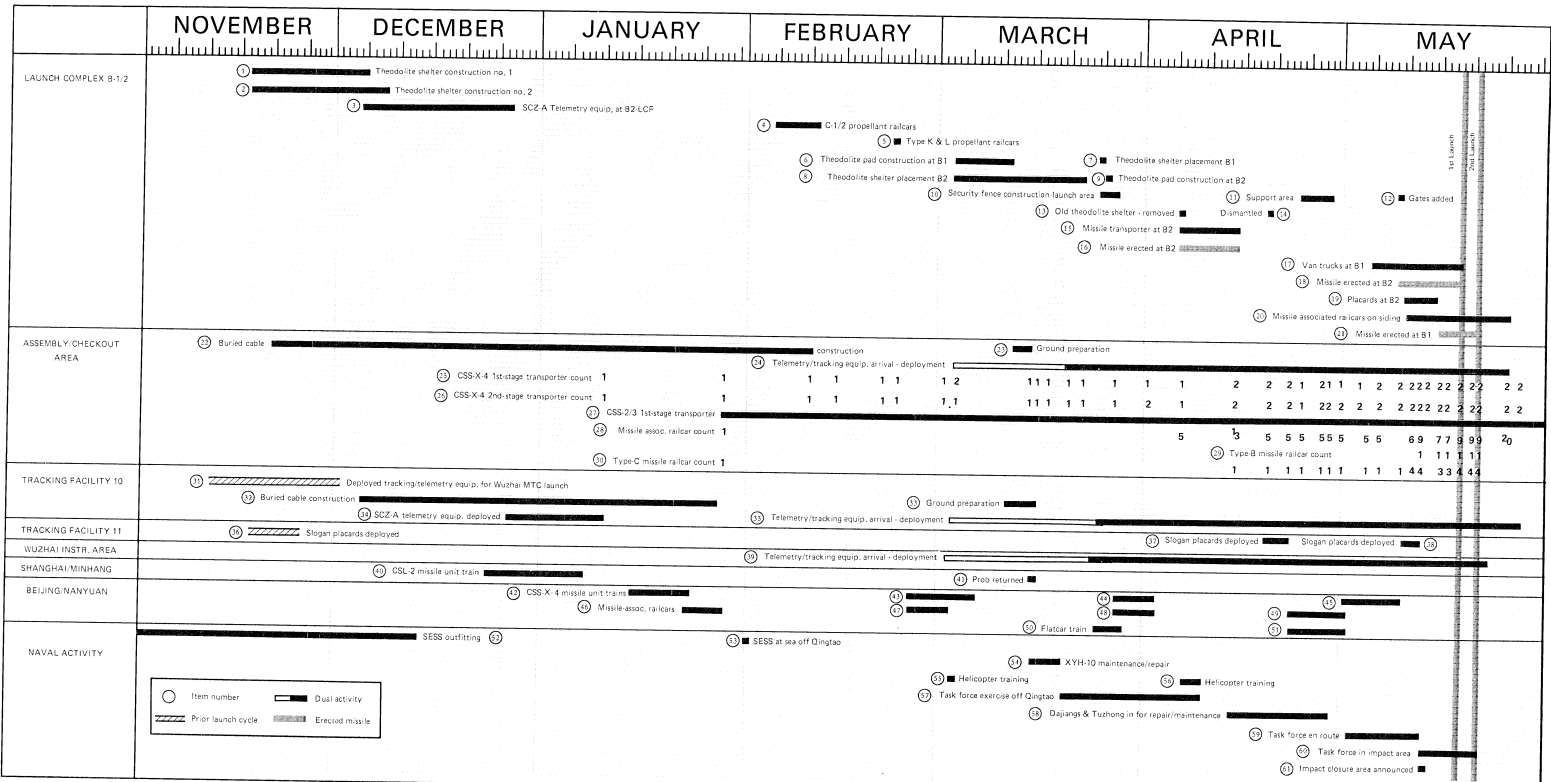


CHART 1. CHRONOLOGY OF BROAD-OCEAN ICBM LAUNCH PREPARATIONS AT RELATED FACILITIES FROM NOVEMBER 1978 THROUGH MAY 1980

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18. (S/D) Between [redacted], a flatcar train in the railyard at Beijing/Nanyuan was observed being loaded with a sedan, buses, and trucks (item 50, Chart 1). These vehicles were probably to provide transportation for technicians at the launch site. A third unit train, consisting of one type-B and two type-C missile railcars and ten missile-associated railcars, left the railyard of the Beijing/Nanyuan Missile Production Plant between [redacted] (items 44 and 48, Chart 1). Imagery of [redacted] showed five of the missile-associated railcars on the sidings of the Shuangchengzi SSM Support Facility (item 28, Chart 1), suggesting that at least part of this shipment was delivered to Shuangchengzi MTC.

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19. [redacted] Naval activity during March consisted of the initial helicopter training at Qingdao/Cangkou Airfield [redacted] for precision takeoffs and landings.¹ The Xiang Yang Hung 10 (XYH-10) oceanographic research ship (AGOR) was observed in port for repair/maintenance between [redacted] (item 54, Chart 1). An exercise for the naval task force began on [redacted] and continued until [redacted] (Figure 2 and item 57, Chart 1). The 18-ship task force assembled off the coast of Qingdao and rehearsed recovery operations involving Super Frelon helicopters. The task force consisted of two Yuang Wang SESSs, an XYH-5 AGOR, an XYH-10 AGOR, two Dajiang submarine tenders (ASs), two Fuqing replenishment oilers (AORs), six Luta destroyers (DDs), three Tuzhong rescue ocean tugs (ATRs; Figures 4 and 10 through 14), and one unidentified vessel.

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20. (TSR) Between [redacted] a CSS-X-4 missile was erected at launch position B2 (item 16, Chart 1). Empty first- and second-stage CSS-X-4 transporters were observed on the apron of launch position B2, with the gantry covering the launch position, on imagery of [redacted] (item 15, Chart 1). This activity was the first indication that a missile was being erected. Imagery of [redacted] revealed a CSS-X-4 missile erected at launch position B2. Enhancement of the [redacted] imagery showed the payload/shroud to be sharply pointed and similar to the cone/cone shaped payload previously observed on CSS-X-4 missiles (Figure 15A). On imagery of [redacted] launch position B2 was again covered by the gantry, the first- and second-stage transporters were at the base of the gantry, and a CSS-X-4 warhead van was on the access road. The observation of the CSS-X-4 warhead van further confirmed that the erected missile had been a CSS-X-4 and not a CSL-2 space launch vehicle. Imagery of [redacted] showed launch position B2 to be empty. Slogan placards were also observed erected at Shuangchengzi SSM Tracking Facility 11 from [redacted] during the missile exercise (item 37, Chart 1). The removal of the erected missile at Shuangchengzi and the termination of the naval task force exercise at the same time suggest that both exercises were related and probably indicates that a rehearsal involving all participants took place during that time (items 16, 56, and 57; Chart 1).

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21. (S/D) Imagery of [redacted] also revealed that during the missile exercise, the old theodolite shelter was removed from the [redacted] launch azimuth pad at launch position B2 (item 13, Chart 1). On imagery of [redacted] components resembling the missing old theodolite shelter were observed within a small salvage yard in the support area of Launch Complex B (Figure 3D). The observation of these components suggests that the old theodolite shelter had been dismantled (item 14, Chart 1).

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22. (S/D) Between [redacted] the security fence was extended around the support area at Shuangchengzi Launch Complex B1/2 (item 11, Chart 1). This new fence, as well as the fence around the launch area, still did not have gates at the access points (Figure 16).

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23. (S/D) One first- and one second-stage CSS-X-4 transporter were absent from the apron of the east assembly/checkout building at the SSM Support Facility on [redacted] when imagery showed the two transporters on the apron near launch position B2 (items 15, 25, and 26; Chart 1). On imagery of [redacted] a first- and a second-stage CSS-X-4 transporter were absent from the apron of the east assembly/ checkout facility; by [redacted] they had returned. On imagery of [redacted] a CSS-X-4 first-stage transporter was observed to be absent; it had returned by [redacted]. This may have been for preparation of the transporter prior to loading the missile airframe. Missile-associated railcar counts at the SSM Support Facility reached a peak of 13 railcars on [redacted] and then decreased to a count of five for the rest of the month (items 28 and 30, Chart 1). A type-C missile railcar was observed on the siding serving the west assembly/checkout building on [redacted] and on all subsequent coverage during the month.

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24. (S/D) A fourth missile-associated railcar train departed Beijing/Nanyuan Missile Production Plant between [redacted] (items 49 and 51, Chart 1). Subsequent imagery of the Shuangchengzi SSM Support Facility revealed an increase in the number of missile-associated railcars at the SSM Support Facility (items 28, 29, and 30; Chart 1).

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25. [redacted] Naval activity during April consisted of the completion of the training/rehearsal exercise off Qingdao¹ (item 57, Chart 1) and the sighting of two Dajiang ASs and a Tuzhong ATR in port for repair/maintenance (item 58, Chart 1).

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26. (S/D) Final preparations at Launch Complex B1/2 were observed on imagery of [redacted] when first- and second-stage transporters were seen repositioned on the apron in front of the doors of the east assembly/checkout building. Transporters have been in similar positions during previous launch cycles and have been an indication that the missile airframe was about to be transferred to the transporters. Imagery of [redacted] revealed the gantry covering launch position B2, slogan placards displayed adjacent to the launch position, and security gates added to the access points in the launch area security fence, suggesting that a missile had been erected (items 12 and 19; Chart 1). Further evidence at the SSM Support Facility was seen in the repositioning of the transporters previously seen parked in front of the east assembly/checkout building. Imagery of [redacted] revealed a portion of a missile between the legs of the covering gantry, and imagery of [redacted] showed a fully-staged missile erected on launch position B2 (Figure 15B). Three missile-associated railcars were parked on the siding adjacent to the support area at Launch Complex B from [redacted] (item 20, Chart 1). These railcars probably provided personnel or equipment support for the launch preparations.

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27. (S/D) A second missile was seen erected at launch position B1 on imagery of [redacted] when a portion of the missile could again be seen between the legs of the covering gantry. The slogan placards at launch position B2 and the slogan placards erected since [redacted] at Tracking Facility 11 were no longer in evidence on imagery of [redacted] (items 19 and 38, Chart 1). Two van trucks were deployed near launch position B1 between [redacted] (item 17, Chart 1). These vehicles have been observed in this position previously and are probably associated with checkout of launch position B1, since they were removed before launch.

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28. (S/D) A fourth unit train, consisting of one type-B and two type-C missile railcars, left the railyard of the Beijing/Nanyuan Missile Production Plant between [redacted] (item 45, Chart 1). Missile and missile-associated railcar counts at Shuangchengzi SSM Support Facility started to increase two days later, on [redacted] and peaked on [redacted] with four type-C, one type-B, and nine missile-associated railcars at the SSM Support Facility (items 28, 29, and 30; Chart 1).

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29. [redacted] Naval activity during May consisted of the deployment of the task force from the Shanghai area to the midocean impact area between [redacted] (Figure 2). The task force was reportedly on station in the impact area from [redacted] until the termination of the launch cycle on [redacted]

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30. [redacted] The first CSS-X-4 missile was reportedly launched on [redacted] at 0200Z, with impact occurring at 07-42-43S 172-15-27E, within the 70-nm closure area.⁵ Postlaunch imagery of [redacted] of Shuangchengzi Launch Complex B1/2 showed launch position B2 empty, with blast marks from the launch in evidence and the first clear observation of the erected missile on launch position B1 (Figure 15C). The second missile was reportedly launched on [redacted] at 0319Z, with impact occurring at 07-20S 172-20E, approximately 815 nm short of the announced closure area.⁶ Postlaunch imagery of [redacted] (38 minutes after launch; Figure 16) revealed launch position B1 to be empty, with vehicles and personnel on the apron at the base of the service tower. The same postlaunch imagery of other rangehead facilities revealed at least 27 BJ-210 jeeps, 43 cargo trucks, 17 buses, and a large group of people at the viewing stand adjacent to Shuangchengzi SSM Tracking Facility 1 ([redacted]). Additionally, two buses, ten cargo trucks, one BJ-210 jeep, and a second large group of people were observed at Shuangchengzi Launch Complex A ([redacted]). Numerous other vehicles were observed along the complex access roads. These people and vehicles had apparently attended the second missile launch, on [redacted] and were leaving the area after the launch.

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FIGURE 11. XIANG YANG HUNG TO AGOR

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31. (S/D) Evidence of additional telemetry/tracking equipment deployment was observed on imagery of [redacted] at the apex site of the L-shaped instrumentation pattern that is part of Shuangchengzi Air Drop Marker 1 [redacted] and adjacent to Shuangchengzi SSM Tracking Facility 22 [redacted] [redacted] Both SHIP WHEEL radars at the apex site and a seven-van-truck telemetry/tracking vehicle set were observed at this site (Figure 7). This equipment was most likely deployed at the same time as the rest of the telemetry/tracking equipment (items 24, 35, and 39; Chart 1), but limited coverage had prevented earlier identification. There was some evidence of activity suggesting participation in monitoring these missile launches at Shuangchengzi Tracking Facility 1, Tracking Facility 5 [redacted] Tracking Facility 22, Tracking Facility 24 [redacted] and Laiyang SSM/Space Tracking Facility [redacted] [redacted] Figures 1 and 2).

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32. (S/D) The Chinese government announced the reopening of the closure area on [redacted] and the naval task force was reportedly en route back to China.⁷ Telemetry/tracking equipment that had earlier been deployed at the many facilities throughout China was no longer deployed by [redacted] (items 24, 35, and 39; Chart 1).

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REFERENCES

IMAGERY

(S/D) All applicable satellite imagery acquired from [redacted] was used in the preparation of this report.

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MAPS OR CHARTS

SAC, US Air Target Chart, Series 200, Sheet 0287-16, scale 1:200,000 (UNCLASSIFIED)

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REQUIREMENT

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(S) Comments and queries regarding this report are welcome. They may be directed to [redacted] [redacted] Asian Forces Division, Imagery Exploitation Group, NPIC, [redacted]

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