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equipment, and all weather capable sensors. Additionally, the detection range of the sensors needed to be extended in order to enable one-pass attacks.^{44/}

(S) [REDACTED] B-57G performance continued to improve subsequent to the evaluation. Whereas the number of trucks destroyed or damaged per B-57G sortie during the 90-day evaluation was about .72, performance during the two months following the evaluation was 2.0 destroyed or damaged per sortie flown. (Secondary fires and explosions during this period also increased sharply.) During the campaign, B-57G crews reported destroying or damaging over 1,900 trucks. Of these, fewer than 100 were reported in the damaged category, making the results even more impressive. Part of the credit for the B-57G performance must be attributed to the munitions it employed throughout the campaign. The standard ordnance load was four M-36E1 (incendiary) bombs and two MK-82 Laser Guided Bombs (LGBs), both of which were considered particularly effective in the truck-killing role.^{45/}

(S) [REDACTED] The B-57G complemented the rest of the truck-killing force during CH V. The AC-130 and AC-119 gunships, considered the most effective truck-killing systems, were employed in the most lucrative portions of the route structure, with due consideration to weather and the AAA environment. The B-57Gs were fraggd to the less lucrative areas, but still managed to produce impressive results. Significantly, the B-57G sorties did not require escorts as did the gunships--an important consideration in view of diminishing strike resources in SEA.

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(S) [REDACTED] In summary, the B-57G demonstrated during CH V that it could be successfully employed in the self-contained, night attack role for which it had been designed. Though there was much room for improvement in the system, it was an important step forward in the effort to develop an effective night attack capability which could be employed in relatively high threat environments.^{46/} A Hq USAF report summarized: "All-in-all, the B-57G has helped to open the door for future night operations, and represents the baseline for further development of high performance night-attack aircraft."^{47/}

3) (S) [REDACTED] IGLOO WHITE. The hub of the IGLOO WHITE (IW) electronic surveillance system was the Infiltration Surveillance Center, located at Nakhon Phanom Royal Thai Air Force Base (RTAFB), and under the control of a group known as Task Force Alpha (TFA). By and large, the employment of sensor information in support of CH V paralleled IW support of the previous campaign. IGLOO WHITE intelligence was still the prime source for estimates of enemy logistics movements into, through, and out of STEEL TIGER. TFA continued to develop targets based on sensor data, visual reconnaissance, photo interpretation, and all-source intelligence. These targets were nominated to 7AF on a daily basis. TFA also continued to provide 7AF with traffic predictions, based on recent truck activity and known enemy tactics, and 7AF placed increased emphasis on the use of these predictions in fragging its strike resources.^{48/}

(S) [REDACTED] During CH V, TFA again used sensor information under the COMMANDO BOLT program to direct strike aircraft against

[REDACTED]

moving or stationary targets during periods of poor weather. The basic concept of COMMANDO BOLT remained the same as during CH III. Elongated sensor strings were emplaced in the high-threat areas of STEEL TIGER, and as trucks were detected, orbiting strike aircraft were directed against them at predetermined points along the strings. Timing of the strikes was based on TFA computer estimates of truck passage along the points. Strike aircraft were LORAN configured F-4s or Navy/Marine A-6s equipped with precision bombing and navigation systems, including AMTI radar. If no trucks were detected during an aircraft's orbit time, the aircraft expended ordnance against one of a number of point targets chosen on a daily basis by TFA.^{49/}

(S) [REDACTED] Optimum delivery altitude for F-4 COMMANDO BOLT aircraft was a subject of controversy during the campaign. During CH V the F-4s normally carried CBU-24* munitions which they delivered from 15,000 feet Above Ground Level (AGL). By way of comparison, the A-6s carried Rockeyes (MK 20) and general purpose (MK 82) bombs and delivered from about 5,000 feet AGL. The high delivery altitude for the F-4 had been chosen at the beginning of the campaign to provide quicker reaction time from the F-4s orbit and to facilitate less restrictive delivery parameters.^{50/} The F-4 wing involved (8 TFW) felt that there was little or no reduction of bombing accuracy resulting from the high delivery altitude, and in fact requested that it be

*Cluster Bomblet Unit.

[REDACTED]

increased to 17,000 feet. TFA opposed such high COMMANDO BOLT delivery altitudes, stating that they resulted in "a definite degradation in bombing accuracy and observed BDA."^{51/}

(S) [REDACTED] The accurate assessment of COMMANDO BOLT strike results continued to be a problem during CH V. Since many strikes were made during periods of inclement weather and/or from high altitudes, aircrews were often unable to obtain accurate BDA. TFA noted that the results of nearly 40 percent of the COMMANDO BOLT strikes against trucks (between 1 July 70 and 31 March 71) were totally obscured by weather. Results reported by aircrews for COMMANDO BOLT strikes were considered conservative by both TFA and 7AF analysts, but provided the only available measure of strike results. Between 1 October 1970 and 30 April 1971, aircrews reported that a total of 2,586 strikes against movers resulted in 338 trucks destroyed and 1,460 secondary explosions and fires. Additionally, 1,150 strikes against point targets reportedly resulted in 740 secondaries.^{52/}

(S) [REDACTED] Not all IW operations during CH V paralleled those of earlier campaigns. One development in the employment of IW information was the expansion and improvement of the traffic advisory program. With the exception of COMMANDO BOLT operations, there had been little success during previous campaigns in exploiting the near real-time traffic information generated by the IW system. TFA was able to detect truck movements throughout STEEL TIGER, but directing strike aircraft efficiently against these targets proved a difficult

[REDACTED]

task. Reporting all truck movements (sequences) to the Airborne Battlefield Command and Control Center (ABCCC) was unworkable because of the sheer volume of intelligence involved. Therefore, during earlier campaigns the procedure was established whereby only the more lucrative targets were passed to the ABCCC. This reduced the volume of reporting to a manageable level, but the potential of available intelligence was not realized since most of the information was not reported to the ABCCC.

(S) [REDACTED] During CH III, it was estimated that only 4 percent of the sequences processed by TFA were passed to the ABCCC, and only about one-eighth of these were in turn passed to a FAC or strike aircraft. Trucks reported destroyed or damaged as a result of the IW information passed to the ABCCC were an insignificant percentage (less than 1 percent) of the total reported for STEEL TIGER. During CH V, for the first time, procedures were established whereby traffic advisories could be passed directly from TFA to FACs, gunships, and strike aircraft throughout STEEL TIGER. The TFA traffic advisory service began officially on 1 October 1970 and was known by the call sign HEADSHED.^{53/}

(S) [REDACTED] Initially, HEADSHED advisories were looked upon with skepticism and were not fully exploited. When advisories were used, the results of their employment were often not accurately reported and recorded. As the campaign progressed, however, deficiencies in the system were corrected, and aircrew confidence in advisories improved somewhat.

[REDACTED]

By March 1971, the system was considered fully operational, and results were being more accurately recorded. During March and April 1971, about 30 percent of the sequences processed by TFA were passed to FACs, gunships, armed recce aircraft, COMMANDO BOLT, or the ABCCC (compared to the 4 percent passed during CH III). Failure to pass sequences resulted from either the absence of aircraft in the area of the truck activity, or the fact that aircraft in the area were already busy with other traffic. According to aircrew reports (via OPREP-4 reports), the advisories which were passed resulted in 1,885 trucks destroyed, 398 damaged, and 2,116 secondary explosions and fires. (Although this represented 20 percent of the trucks reported destroyed or damaged throughout STEEL TIGER during those two months, the Advisory Service cannot be given total credit for these kills. There was no way of knowing how many trucks would have been destroyed had these aircrews searched for their own targets rather than heading towards target areas indicated by the advisories.)^{54/}

4) (S) [REDACTED] All-weather Bombing Systems. For a number of years, the Air Force had recognized the need to improve the all-weather capabilities of the tactical air force. In fact, Pacific Air Forces (PACAF) considered an all-weather bombing system its "most urgent and critical requirement."^{55/} In 1965, the Air Staff selected LORAN as the best short-term solution to navigational deficiencies. After LORAN was introduced into SEA and was established as the most accurate navigation system available, efforts were made to exploit its inherent reliability and accuracy by adapting it for use in an all-weather bombing system. Since COMMANDO HUNT I, LORAN-equipped F-4s

[REDACTED]

had been used to accurately deliver IGL00 WHITE sensors on the route structures throughout STEEL TIGER. In CH III, LORAN-equipped F-4s were used with some success in COMMANDO BOLT operations in an attempt to provide an all-weather strike capability. During CH V, a big step was taken in the development of an all-weather strike capability based on the LORAN navigational system with the introduction into SEA of PAVE PHANTOM.^{56/}

(S) [REDACTED] PAVE PHANTOM F-4 aircraft were equipped with an improved LORAN receiver coupled with a ballistics computer. A primary advantage of the new equipment was flexibility in attack parameters. Previously, LORAN-equipped F-4s were restricted to pre-planned release parameters, but the PAVE PHANTOM system allowed random attack headings, altitudes, and air speeds. In conjunction with the PAVE PHANTOM program, new methods of increasing the accuracy of target coordinates were investigated and employed during CH V, since the accuracy of the bombing system would be no better than the accuracy of the coordinates being attacked.* Because the PAVE PHANTOM system was needed to help fulfill a 7AF operational requirement for an all-weather strike capability, it was developed on an accelerated schedule and was deployed to SEA before completion of operational testing and evaluation. At the same time the system was being exploited in CH V operations, extensive testing and evaluation was to be conducted in SEA by the 8 TFW, 432nd Tactical Reconnaissance Wing (432 TRW), and by TFA.^{57/}

**For a description of these methods, see p. 186 of the 7AF COMMANDO HUNT V report.*

[REDACTED]

(S) [REDACTED] By the end of CH V, not all of the test results had been formally compiled, but the indications were that PAVE PHANTOM was providing a Circular Error Probable (CEP) of about 110 to 130 meters. (Previous LORAN tests with non-PAVE PHANTOM equipment resulted in a CEP on the order of 150 meters.) Additionally, when the PAVE PHANTOM aircraft released a string of bombs, the CEP of the closest bomb in the string to the target was 60 meters. These CEPs were far better than either the COMBAT SKYSPOT or COMMANDO NAIL bombing systems used by the USAF in SEA. Though not without some problems, the PAVE PHANTOM system represented an important step forward toward the attainment of an accurate, all-weather USAF bombing capability.^{58/}

5) (S) [REDACTED] The B-52 Role in Entry Interdiction. Prior to CH V, most B-52 strikes in Laos were delivered against targets such as truck park/storage areas and bivouac areas. Although some B-52 strikes had been directed against enemy LOC in the entry areas,* the backbone of entry interdiction had been the heavy, daily bombing of key choke points by TAC AIR resources. During the initial months of CH V, however, almost all of the ARC LIGHT sorties authorized in SEA were devoted to entry interdiction, and for the first time a coordinated, concentrated, and sustained TAC AIR/B-52 entry interdiction bombing campaign was conducted. A daily average of 27 B-52 and 125 TAC AIR

**Perhaps the most notable such strike occurred early in CH I when B-52 sorties struck and successfully destroyed a previously uninterdicted underwater rock causeway at the Ban Laboy ford.*

[REDACTED]

sorties struck LOC in four critical target areas in Laos near the NVN border.^{59/}

(S) [REDACTED] Essentially, the role of the B-52 was to crater the enemy LOC, while TAC AIR was to hamper enemy road reconstruction in and movement through the target boxes between ARC LIGHT strikes. The fuzing of ordnance and the timing of attacks were both important considerations in achieving maximum effectiveness for the B-52 in its role. To maximize cratering of the enemy road network, fuzing for the 66 general purpose bombs (42 X 750-pound bombs and 24 X 500-pound bombs) delivered by each B-52 sortie was initially set for a .1 second delay for the 750-pound bombs and .025 second delay for the 500-pound bombs. With regards to timing, strikes at maximum frequency and unpredictable times were planned since they would provide enemy crews minimum time for road repair.^{60/}

(S) [REDACTED] Original plans called for daily B-52 strikes by nine cells of three ships each. However, ARC LIGHT missions into the high threat entry areas required protective air support from TINY TIM* resources. Unfortunately, these resources were limited and could support only five strike packages per day, as opposed to the nine that would be needed to support ARC LIGHT strikes in the entry areas. A compromise was reached whereby two B-52 cells of three ships each flew

**A TINY TIM support package included two EB-66s for anti-SAM Electronic Countermeasure (ECM) support, two F-105Gs for SAM suppression, and MIG CAP (Combat Air Patrol).*

[REDACTED]

their missions about one and one-half hours apart, so that they could both be supported by the same TINY TIM package. Although this slightly reduced the flexibility and increased the predictability of ARC LIGHT strikes, it did allow nine separate daily ARC LIGHT attacks in the entry areas.^{61/}

(S) [REDACTED] The entry interdiction program began on 9 October 1970, well before the monsoon rains had ended. After a week of bombing, LOC in three of the four entry boxes were heavily cratered and there were few signs of enemy activity. In the fourth, Box B in the Ban Karai entry corridor, there were signs of enemy repairs and use. It was discovered that B-52 ordnance had been impacting an average of 1600 feet northwest of the desired point. After verifying that there was no error in MSQ bombing directions, the release point for the B-52s was adjusted 1600 feet to the southeast. Following the adjustment, bombs began impacting at the desired point, indicating that the inaccurate bombing had been caused by a geodetic error in target charts, rather than by an error at the MSQ sites or by the B-52 bombing system.^{62/}

(S) [REDACTED] During October, the incessant air strikes severely cratered the entry boxes, while typhoon rains turned them into "impassable quagmires." At the beginning of November, however, there was a shift in ARC LIGHT tactics as a result of bombing saturation* in the boxes and enemy attempts to counter the effects of the

**After about a month of the bombing, it appeared that maximum destruction had been achieved in the boxes. By then the soil had become so pulverized that new roads could be cleared through the boxes in a relatively short time.*

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bombing. While the primary objective of B-52 strikes during October had been the cratering of critical LOC in the boxes, emphasis during November was placed on extending road damage out from the interdicted choke points, and destroying supplies, fuel, road repair equipment and AAA moved into the vicinity of the choke points. This approach was designed to increase the distance over which the enemy had to porter supplies, and to increase the time required to open the roads. ^{63/}

(S) ~~SECRET~~ In pursuit of these objectives there was a change in ARC LIGHT bomb trains and fuzing tactics. Bomb trains for a portion of the strikes were changed from the standard 3200-foot length to almost 15,000 feet. While these bomb train lengths lessened the probability that an individual sortie would interdict a road, the destruction of enemy resources was extended outward from the interdiction point being struck. Additionally, bomb fuzing was set for instantaneous detonation to insure maximum damage to AAA positions, surface storage areas, and personnel. ^{64/}

(S) ~~SECRET~~ Heavy rain continued to be an ally of the entry interdiction program during early November. Nevertheless, enemy activities in and around the boxes began to increase, prompting planners to seek ways of improving the interdiction program's effectiveness. One of the steps needed to improve effectiveness was to increase the frequency of ordnance delivery. Eighth AF recommended that this be accomplished by using a combination of two and three-ship cells. By using a number of two-ship cells, the frequency of B-52 attacks against

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[REDACTED]

targets in the entry boxes could be increased by about half (although the total ordnance delivered would remain the same). Additionally, tactics could be devised utilizing tandem attacks by several cells so that TINY TIM support package requirements would remain at only five packages per day. After review, however, Strategic Air Command (SAC) decided not to authorize the change in cell size proposed by 8AF until mutual ECM support of two-ship cells could be investigated.^{65/}

(S) [REDACTED] By late November weather in the entry areas finally began to improve, and the enemy launched his dry season logistics offensive three weeks later than he had during CH III. Its beginning coincided with a lull in B-52 strikes caused by the temporary diversion of TINY TIM resources to the support of FREEDOM BAIT, a two-day protective reaction raid against NVN. The enemy took full advantage of the short lull in the bombing, rapidly repairing his roads and increasing his logistics surge.^{66/}

(S) [REDACTED] Strikes during the remaining days of November attempted to blunt the enemy's recently initiated logistics offensive. Despite this, he demonstrated a determined resolve to keep the supplies moving. He rebuilt roads in the boxes, constructed by-passes, and, in the Ban Raving area, began using Waterway 7 to float supplies through the heavily bombed Box C* area. Also, there were indications that he

**During early December, ARC LIGHT strikes were directed against an active trans-shipment point on Waterway 7 near Box C. The strikes destroyed the trans-shipment point, destroyed the enemy's channeling guides in the river, and heavily cratered the LOC leading to the trans-shipment point. Additionally, the heavy bombing in Box C had eroded the banks of the river within the box. Enemy waterway activity in the Box C area ceased and was not resumed during the campaign.*

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was able to use the time between ARC LIGHT strikes with relative impunity. ARC LIGHT strikes were, therefore, concentrated on routes that were being reopened on a regular basis, and delayed fuzing was again used on B-52 ordnance to produce maximum cratering effects.^{67/}

(S) ~~SECRET~~ Supply input for the month of December increased greatly over the November level but was still slightly lower than that during the previous December. The B-52/TAC AIR pressure on the interdiction areas continued at a high level; but the NVA continued to counter this pressure through the use of by-passes, by repairing and reorienting routes, and by surging through the boxes. One example of the intensity of road repair efforts was provided when combined B-52/TAC AIR strikes in a karst area in Box A produced a 200-yard slide, 20 to 30 feet high: the NVA cleared the slide in a single day despite the fact that all TAC AIR strikes scheduled into Box A during that 24-hour period were concentrated on the slide area.^{68/}

(S) ~~SECRET~~ On 1 January, SAMs were fired at B-52s striking Box B near the Ban Karai pass. As a result, between 2 and 14 January B-52s were prohibited from striking the heavily traveled roads in the box. TAC AIR continued to hit Box B, but the ARC LIGHT effort was shifted southwest to a safer but less suitable interdiction area. The enemy took advantage of the lull in B-52 bombing and surged large amounts of supplies through the box.^{69/}

(S) ~~SECRET~~ Concentrated attacks continued against all the entry boxes during January, but the impact of these attacks on the

[REDACTED]

enemy had clearly diminished. The boxes themselves had been struck so many times that the originally rugged terrain had been leveled, and bomb craters in the pulverized soil had been reduced to about a third of their original depth. Under these conditions, the enemy had little difficulty clearing a new roadway shortly after strikes. Furthermore, the proliferation of enemy by-passes had necessitated striking an increasing number of target areas, thus diluting the concentration of strikes at any given interdiction point. Also during January, for the first time during the campaign, monthly supply input into Laos exceeded the amount input in the corresponding month during CH III.^{70/}

(S) [REDACTED] The month of February saw the commencement of Operation Lam Son 719 and the ultimate demise of the 1970-71 dry season interdiction campaign against the Laotian entry areas. During the month, the large effort in the entry areas ended as air assets shifted to support Vietnamese ground forces in Lam Son 719.^{71/}

(S) [REDACTED] The interdiction effort along the entry corridors had a significant impact on the enemy, but whether or not that impact justified the high level of air resources devoted to the program was open to debate. Regardless of the uncertainty concerning the overall effectiveness of entry interdiction, however, it was clear that ARC LIGHT strikes had played a major role in the program. Perhaps the best indicator of the impact of B-52 strikes on the enemy was provided

[REDACTED]

by his immediate reaction to standdowns in ARC LIGHT attacks caused by the SAM threat or diversion of TINY TIM resources to strikes in NVN. During these lulls, even though TAC AIR continued to hit the target areas, the enemy concentrated his road repair efforts, and was able to surge great quantities of supplies. While being struck by daily B-52 sorties, these same target areas supported only a fraction of the traffic experienced during the ARC LIGHT lulls. B-52s had clearly proven to be an important and formidable element of the entry interdiction program.^{72/}

3. (S) [REDACTED] (U) Results of U.S. Air Interdiction

a. (S) [REDACTED] (U) Allocation of Effort.

(S) [REDACTED] During CH V, the United States devoted 63 percent of the sorties flown in SEA to the interdiction effort in STEEL TIGER (SL). Although total U.S. air resources in SEA were down from previous years, concentration of its resources in SL enabled the United States to apply a greater weight of effort to interdiction during CH V than was the case during CH III. In fact, the sortie level flown in SL during CH V was only about 6 percent less than the record level flown during CH I. (See Table 1.)^{73/}

(S) [REDACTED] Table 2 shows the U.S. strike resources directed against the various target categories during CH V. Table 3 compares CH V sortie allocations with those of CH I and CH III. Although the figures indicate a reduced emphasis on attacks against trucks during CH V, in actuality this was not the case. Increased employment of



TABLE 1
 SORTIES FLOWN IN STEEL TIGER BY U.S. STRIKE RESOURCES (U)
 (Includes Fighters, Gunships and B-52s)

	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>Daily Average</u>
CH I	6,554*	14,196	13,771	12,268	12,271	11,845	425
CH III	8,711	11,013	11,065	9,526	9,728	7,416	318
CH V	9,860	11,485	12,680	12,217	15,005	11,228	400

**CH I figures for November include only 15-30 November.*

Source: Report, COMMANDO HUNT I (U), 7AF, 20 May 69, pp. 79-80. (S)
 Report, COMMANDO HUNT III (U), 7AF, May 70, pp. 64, 68. (S)
 Report, COMMANDO HUNT V (U), 7AF, May 71, p. 159. (S)





TABLE 2
 U.S. STRIKE SORTIES* IN SL BY TARGET TYPE (U)

	<u>Trucks</u>	<u>Trk Parks/ Storage Areas</u>	<u>LOC (Includes IDPs)</u>	<u>Defenses</u>	<u>Other</u>
10-31 Oct 70	158	507	2,798	40	366
Nov 70	584	636	4,940	216	741
Dec 70	1,344	1,172	5,464	433	688
Jan 71	2,336	2,369	4,120	651	1,097
Feb 71	2,262	2,120	2,334	1,102	1,951
Mar 71	1,927	1,791	2,041	1,737	5,086
Apr 71	2,155	1,604	2,766	1,107	1,225
Total	10,766	10,199	24,463	5,286	11,172

**Includes fighter-attack, gunship, and B-52 sorties which expended ordnance.*

Source: Report, COMMANDO HUNT V (U), 7AF, May 71, p. 161. (S)





TABLE 3
U.S. STRIKE SORTIES* IN SL BY TARGET TYPE (IN PERCENTS) (U)

	<u>CH I**</u>	<u>CH III**</u>	<u>CH V</u>
Trucks	15	31	17
Trk Parks/ Storage Areas	35	27	16
LOC	39	21	40
Defenses	6	12	9
OTHER	<u>5</u>	<u>9</u>	<u>18</u>
	100	100	100

**Strike sorties that expended ordnance.*

***Figures do not include B-52 strikes.*

Source: Report, COMMANDO HUNT I (U), 7AF, 20 May 69, pp. 79-80. (S)
Report, COMMANDO HUNT III (U), 7AF, May 70, pp. 64, 68. (S)
Report, COMMANDO HUNT V (U), 7AF, May 71, p. 159. (S)



[REDACTED]

gunships and introduction of the B-57G during CH V more than offset reductions in the large, less efficient effort which had been applied against trucks by fighter aircraft during CH III. Reported results of the smaller but more efficient truck-killing force during CH V were twice as high as for CH III. Table 3 also indicates that strikes against truck parks and storage areas continued to diminish during CH V, reflecting continuing enemy efforts to disperse, harden, and camouflage these targets. The sharp increase in strike resources devoted to the "other" category can be attributed to close air support provided for Lam Son 719.^{74/}

(S) [REDACTED] In comparing CH V to the previous campaign, probably the most significant change in force application was in the LOC target category. During the initial months of the campaign (October, November, and December 1970), two-thirds of the strike sorties attacked enemy LOC targets, primarily in the entry areas. Overall, 40 percent of the CH V attack sorties struck enemy LOC in the entry corridors, throughout the route structure, and in the exit areas.

b. (S) [REDACTED] (U) Reported Results for Each Target Category.

(S) [REDACTED] Overall aircrew reported BDA is shown in Table 4.

1) (S) [REDACTED] LOC. The results of the sustained, daily bombing of the entry corridors during CH V were difficult to determine. Seventh Air Force analysts believed that the entry point interdiction

[REDACTED]

TABLE 4

AIRCREW REPORTED STRIKE RESULTS (U)

<u>TYPE TARGET</u>	<u>CH V</u>	<u>CH III</u>
<u>TRUCKS</u>		
DES	16,226	6,428
DAM	4,700	3,604
FIRES	7,169	11,537
SEC EXP	9,135	10,462
<u>TRUCK PARKS/STORAGE AREAS</u>		
TAC AIR		
FIRES	4,343	6,182
SEC EXP	27,980	6,516
ARC LIGHT		
FIRES, EXP	1,164	8,584
<u>LOCs</u>		
CUTS, SLIDES	8,078	3,753
BRIDGES DES	19	26
BRIDGES DAM	9	18
TAC AIR		
FIRES	874	418
SEC EXP	840	271
ARC LIGHT		
FIRES, EXP	3,522	*
<u>DEFENSES</u>		
GUNS DES	834	548
GUNS DAM	170	202
FIRES	644	1,848
SEC EXP	1,012	1,845
<u>OTHER</u>		
KILLED BY AIR	4,008	879
WOUNDED BY AIR	200	62
WATERCRAFT DESTROYED	108	68
WATERCRAFT DAMAGED	52	36
BULLDOZERS DESTROYED	41	30
BULLDOZERS DAMAGED	28	30
TAC AIR		
FIRES	4,968	1,137
SEC EXP	17,050	423
ARC LIGHT		
FIRES, EXP	2,705	*

*Included under Truck Parks/Storage Areas.

Source: Report, COMMANDO HUNT V (U), 7AF, May 71, p. 162. (S)

[REDACTED]

effort, combined with unusually bad weather, delayed the enemy's infiltration timetable during the early part of the campaign. They pointed out that he had started his logistics surge three weeks behind his previous year's schedule, which was considered particularly significant in light of problems with the gunship fleet during the early part of the campaign. (Once the enemy started his logistics offensive, however, the rate of his supply input was very close to that of the previous campaign.) Also, the enemy was forced to expend a considerable amount of resources to build by-passes, or to surge through the interdiction boxes, particularly during the first two months of the campaign. ^{75/}

(S) **[REDACTED]** It was also clear, however, that large quantities of enemy supplies continued to flow around and through the entry boxes, despite the heavy bombing. Continuous strikes leveled the terrain and pulverized the soil in the boxes, reducing the effects of the bombing, and making it easier for the enemy to go through them. As this occurred, or as enemy by-passes were discovered, new boxes were formed in an attempt to counter the enemy reactions. The timely establishment of new boxes in the most suitable locations hinged upon continuous surveillance of enemy activities in the entry areas. Unfortunately, observation of enemy reactions to the bombing was severely limited by the weather, which often prevented visual or photographic reconnaissance of the boxes. Sensor strings below the boxes were frequently the only means of observation available. However, even when enemy by-passes were quickly discovered and suitable terrain was available, the

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establishment of new boxes was only partially successful in that it diluted the concentration of air strikes at other target areas.

(S) ~~SECRET~~ Whether or not the impact of entry box saturation bombing justified the resources expended was open to debate, but 7AF continued the strikes in the belief that they were hurting the enemy.^{76/} A message from the Commander of 7AF stated the case for entry interdiction:^{77/}

. . . Entry interdiction is a delaying action, and it is difficult to compare the delays of supply input with the destruction of supplies. . . . Command level judgement must be taken into account. . . . It has been apparent that a definite cause and effect relationship existed between our actions in the boxes and the enemy's reactions. Concentrated applications led to decreased enemy traffic, and below-threshold applications led to increased traffic. . . . It is the judgement of this command that entry interdiction has been effective and has been an important part of the overall strategy for COMMANDO HUNT V.

The option of continuing the sustained effort against the boxes was essentially preempted in early February by Operation Lam Son 719, which placed heavy demands on U.S. tactical air and B-52 support.^{78/}

(S) ~~SECRET~~ Questions concerning the value of entry interdiction continued to surface after the close of the CH V campaign. Detailed analyses conducted by the Office of the Secretary of Defense/Systems Analysis (OSD/SA) indicated that entry interdiction had resulted in no significant decrease of input into Laos during CH V. They further concluded there was no evidence that entry interdiction

[REDACTED]

had significantly increased truck kills during the campaign. Another analysis, conducted at 7AF after the end of the campaign, also questioned the value of an entry interdiction program in Laos. While noting that during CH V such a program may have been of value in delaying enemy input until the truck-killing force was built up, the study recommended against repeating a similar entry interdiction effort during CH VII.^{79/}

(S) [REDACTED] Attacks against the entry boxes accounted for the majority of sorties in the LOC category, but sizeable efforts were also directed against interdiction points throughout the route structure and at the exit areas. Analyses of previous campaigns indicated that the tactic of creating "choke points" had never been more than marginally effective in Laos because of the proliferation of by-passes and the unsuitable terrain. During CH V the effects of attacks against enemy LOC remained difficult to quantify and the degree of impact on the enemy was still unknown. Some analysts felt that these were the least effective strikes flown during the campaign, and that the number of strikes in this category should be sizeably reduced. Others, however, considered them a harassment to the enemy, noting that the attacks sometimes disrupted his logistics flow and forced him to expend effort to counter the bombing. During CH V, 10,340 sorties were flown against LOC targets other than the entry boxes, resulting in a reported 4,513 cuts and slides.^{80/}

2) (S) [REDACTED] Trucks. Increased effectiveness in the destruction of enemy trucks was one of the most impressive accomplishments of the strike force during CH V. Aircrews reported over 20,000

trucks destroyed or damaged--more than twice the number reported in CH III. (Curiously, the secondary explosions and fires that were reported in association with truck kills during CH V numbered only about 16,000, as compared with 22,000 for CH III.) A comparison of the major truck-killing systems used in CH III and CH V is provided in Table 5. The primary reason for the increased effectiveness of the force was the improvement and expansion of the gunship force. The addition of the B-57G, and an increase in the efficiency of most of the other strike aircraft involved, also contributed to the improvement. Although the accuracy of reported truck kills came into question after CH V (and this is covered later in this study), it is apparent that, relative to CH III results, there was a dramatic increase in the truck attrition inflicted on the enemy. ^{81/}

3) (S) ~~SECRET~~ Truck Parks/Storage Areas. Despite continued enemy attempts to disperse, harden, and camouflage his supplies and facilities, aircrews reported record levels of secondary explosions and fires during attacks against this target category. Intelligence often indicated general areas of enemy activity, but precise location of targets was left to the FACs. Weather, foliage, and high operating altitudes made the pinpointing of enemy targets very difficult from the air. Experiences during Lam Son 719 verified that a great deal of intelligence was unobtainable in aerial photography or through observation by the FACs.

TABLE 5

AIRCRAFT PERFORMANCE AGAINST TRUCKS: CH III/CH V (U)

	Sorties Attacking Trucks <u>CH III/V</u>	Truck BDA* <u>CH III/V</u>	DD/Sortie <u>CH III/V</u>
AC-130**	703/ 1,311	3,384/12,741	4.81/9.72
AC-123	141/ ***	440/ ***	3.12/***
AC-119K	435/ 558	987/ 2,400	2.27/4.30
B-57G	***/ 840	***/ 1,931	***/2.30
A-1	2,332/ 24	1,271/ 7	.55/ .29
A-6	1,486/ 1,052	977/ 518	.66/ .49
F-100	***/ 200	***/ 87	***/ .44
A-4	1,223/ 1,389	245/ 396	.20/ .29
A-7	3,147/ 2,070	959/ 703	.30/ .34
F-4	6,310/ 6,708	1,576/ 2,136	.25/ .32
Total	15,777/14,152	9,839/20,909	.62/1.48

*Sum of Destroyed and Damaged

**Includes all three versions of the AC-130 gunship.

***Either not flown during the campaign, or the statistics were unavailable.

Source: Report, COMMANDO HUNT III (U), 7AF, May 70, p. 86. (S)
Report, COMMANDO HUNT V (U), 7AF, May 71, p. 61. (S)

[REDACTED]

(S) [REDACTED] During CH V, the tactic of "probing" was used extensively by the FACs as a way of locating lucrative targets which they were unable to observe directly. Air strikes were directed against suspected or likely areas of enemy activities until positive results were observed. When a target yielded good results, more air strikes were devoted to that area until the results diminished. Thus, a large number of sorties reported no bomb damage, but when a lucrative area was uncovered, the results could be spectacular. Strikes against 19 lucrative target areas, which involved less than 10 percent of the sorties flown against such targets, resulted in 83 percent of the secondaries reported. In these 19 logistics complexes, 88 individual sorties (which represented only 1 percent of the tactical air effort against truck park/storage areas) accounted for two-thirds of the secondaries reported for strikes against this target category during the campaign. Results reported for strikes against truck parks and storage areas during CH V were far greater than CH III results, even though fewer sorties were flown against such targets. Table 6 shows the results reported during both campaigns for strikes against this target category.^{82/}

4) (S) [REDACTED] Air Defenses. During CH V, the estimated enemy gun inventory in SL peaked at 665, as compared to 795 the year before. (Although the enemy gun count was down, his employment of SAMs during CH V was more extensive than in previous years. SAM sites were struck as they were located.) Reported AAA firings in SL

[REDACTED]

TABLE 6
TRUCK PARK/STORAGE AREA SORTIES AND AIRCREW
REPORTED RESULTS (U)

	<u>CH III Sorties</u>	<u>CH III Results (Explosions/ Fires)</u>	<u>CH V Sorties</u>	<u>CH V Results (Explosions/ Fires)</u>
TACAIR	14,545	6,516/6,182	8,866	27,980/4,343
ARC LIGHT	4,139*	8,584**	1,333	1,164**

**Total CH III ARC LIGHT sorties, most of which were flown against truck park/storage area targets.*

***Combined explosions/fires*

Source: Report, COMMANDO HUNT III (U), 7AF, May 70, pp. 64, 68, 69.
Report, COMMANDO HUNT V (U), 7AF, May 71, pp. 92, 162.

[REDACTED]

[REDACTED]

were lower in CH V, even though the number of combat sorties flown was higher than for CH III. Table 7 demonstrates the reduced hit and loss rates experienced during CH V. The majority of hits and losses were attributed to small arms/automatic weapons fire.

(S) [REDACTED] Though there were fewer guns, and fewer sorties flown against them, aircrews reported significantly more guns destroyed or damaged than during CH III. A major factor in the increased force effectiveness against enemy AAA targets was the expanded use of Laser Guided Bombs (LGBs). Aircraft employing LGBs accounted for only 12 percent of the sorties striking AAA targets, but were credited with about 60 percent of the guns destroyed. Table 8 compares the results of attacks against AAA guns during CH V and CH III.^{83/}

5) (S) [REDACTED] Other Targets. The "other" category was a catch-all which included strikes against targets which either did not fit under any of the four target categories, or which were coded as unknown in the data base. Most strikes in the "other" category during CH V were attributable to close air support of Lam Son 719 or, to a lesser degree, of other ground operations in SL. Also included were strikes against such targets as bunkers, trenches, personnel concentrations, and headquarters complexes.^{84/} Support of Lam Son 719 resulted in a marked increase in the number of secondary explosions and fires and enemy killed by air in this target category as compared with the results for CH III. (See Table 4.)

[REDACTED]

TABLE 7
HITS AND LOSSES INFLICTED BY AAA GUNS IN STEEL TIGER (U)

	<u>CH III</u>	<u>CH V</u>
Sorties	81,416	93,526
Reported Firings	16,264	14,000
A/C Hit	310	179
A/C Lost	60	25
Hit/1000 Sorties	3.80	1.91
Loss/1000 Sorties	.74	.27

Source: Report, COMMANDO HUNT III (U), 7AF, May 70, p. 125. (S)
Report, COMMANDO HUNT V (U), 7AF, May 71, p. 181. (S)

[REDACTED]

TABLE 8

RESULTS OF SORTIES ATTACKING AAA DEFENSES (U)

	<u>CH III</u>	<u>CH V</u>
Total Sorties	6481	5865
Destroyed/Damaged/Silenced	548/202/1330	834/170/830
U/D Per Sortie	.12	.17
D/D/S Per Sortie	.32	.31

Source: Report, COMMANDO HUNT III (U), 7AF, May 70, p. 132. (S)

Report, COMMANDO HUNT V (U), 7AF, May 71, p. 94. (S)

[REDACTED]

6) (S) [REDACTED] Input/Throughput Estimates. Enemy supply input to Laos between 1 October 1970 and the end of April 1971 was estimated at 60,518 tons, while throughput during the same period was reported as 7,070 tons. Significant enemy logistics activities continued beyond the official 31 April closing date for CH V, however, and by the end of June, throughput was reported to be in the vicinity of 9,500 tons, while input was placed at about 68,000 tons. These figures represented a sharp reduction in enemy throughput compared to the CH III campaign, even though input during CH V was slightly greater than that for CH III. (Estimated throughput for the previous dry season, November 1969 through June 1970, had been placed at nearly 21,000 tons, while input had totaled just under 64,000 tons.)^{85/}

c. (S) [REDACTED] (U) Credibility of Reported Results.

1) (S) [REDACTED] Truck BDA. For a number of years, the difficulty of obtaining accurate BDA had been recognized, and numerous attempts were made to make aircrew reported results as meaningful and accurate as possible.^{86/} During CH III, extensive efforts were made to confirm reported truck kills with photographic evidence. The results of the program were less than encouraging, however, and caused the Commander of the 460th Tactical Reconnaissance Wing (TRW) to comment:^{87/}

The concept of the Commando Hunt III BDA program required tactical fighter and gunship units to transmit truck kill coordinates directly to the 460 TRW. These were

[REDACTED]

photographed on a daily ASAP* basis. During the six months of this program (Dec 69-Jun 70), we received 2,575 requests for BDA on 4,747 claimed truck kills. Although the majority of these claims were covered with good photos, only 171 kills were confirmed.

We know that in some cases the coordinates were in error. Also, the enemy had a procedure of moving damaged or destroyed trucks under protective jungle canopy, and other kills may have occurred under heavy foliage. However, even when giving due consideration to these factors, I believe that we should have been able to achieve a much higher confirmed success rate.

Although visual reports of strike results from FACs and other aircrews are of great benefit, they should not be relied upon exclusively in assessing bomb damage. . . .

During CH V, attempts to verify reported truck results met with equal difficulty.^{88/}

(S) [REDACTED] There were also other, more direct indications that the numbers of truck kills being reported by aircrews were inflated. A PACAF message to 7AF in May 1970 noted that there was a discrepancy between reported truck kills, and the "net trucks"*** entering Laos during the campaign. The message pointed out that a maximum of 2,100 net trucks entered Laos during the campaign (based on sensor estimates from TFA), but the aircrews reported 6,294 trucks destroyed and 3,688 damaged during CH III operations. The 7AF reply stated that sensor estimates of net truck traffic into Laos were not a valid

*ASAP - As Soon As Possible.

**"Net trucks" is taken to mean the trucks entering Laos at the entry areas, less the trucks returning to NVN through those entry areas.

[REDACTED]

measure of truck losses by the enemy, a primary reason being that a large portion of enemy traffic was not monitored by the sensors due to proliferation of enemy roads and the presence of sparsely monitored routes.^{89/} If 7AF arguments were correct, truck kills could indeed have been much higher than the 2,100 estimate, but estimates of Laotian input and throughput would then be brought into serious question. If net truck entries into Laos could not be measured with accuracy, then exits from Laos were also subject to uncertainty.

(S) [REDACTED] The question of BDA credibility came to a head in the latter stages of CH V. There were a number of reasons for this, the primary one being the record number of trucks being claimed destroyed and damaged in the campaign. There was no argument with the claim that the truck-killing force was achieving record results relative to previous years, but there were doubts that the total kills being reported were correct. The total trucks claimed destroyed or damaged during CH V exceeded the estimated number of trucks in the NVN inventory, yet many thousands of trucks continued to be photographed in NVN, while others continued to operate throughout the Laotian LOC. Furthermore, sensor-based estimates of the net number of trucks entering Laos during CH V, even allowing for a considerable amount of unmonitored entry traffic, indicated that the actual number of trucks which had to be replaced by the enemy was about one-third of the reported destroyed/damaged totals. (During CH V, net sensor-detected truck entries totaled about 4,500 vehicles. Allowing 1,500 more vehicles for undetected truck entries, or drawdown of the Laotian truck inventory,

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the resulting total of 6,000 net truck entries still fell far short of the 16,226 destroyed/4,700 damaged trucks reported by aircrews.)^{90/}

(S) [REDACTED] Another indication of the destruction of enemy trucks actually achieved during CH V was provided by examining NVN requests for vehicle imports from the Communist Bloc. The fact that record attrition had been inflicted upon the enemy's truck inventory was supported by record requests for truck imports. On the other hand, the requests fell far short of the number which would have been needed had actual truck losses been as high as reported. NVN requested 5,000-6,000 trucks from the Communist Bloc for FY 72, not all of which would be used for Laotian infiltration.^{91/}

2) (S) [REDACTED] BDA Criteria. Part of the inflation of reported truck kills was traced to the BDA criteria used by AC-130 gunship crews during CH V. Throughout the campaign, a direct hit by a 40mm round was reported as a destroyed truck, regardless of whether a secondary explosion or fire resulted. Furthermore, a 40mm round impacting just short of the target was reported as a damaged truck. Although these criteria were never officially directed by Commander in Chief Pacific (CINCPAC), PACAF, or 7AF, they were inexplicably initiated during the build-up of the gunship fleet in late 1970, and continued throughout the campaign.^{92/}

(S) [REDACTED] During CH III, there had been only one AC-130 gunship equipped with 40mm cannon, the Surprise Package. During CH V all the AC-130s had the 40mm gun, and they began using new, more effective ammunition. It was estimated that a direct hit with a 40mm

Misch metal round* would destroy a truck. Furthermore, experience with the rounds indicated that "considerable fragment damage was done even with rounds which missed as much as 10 to 30 feet," and that maximum damage resulted from a miss roughly five feet below the target.^{93/} Strike crews used those criteria throughout the campaign.

(S) [redacted] Near the end of CH V, a controlled test was held at Bien Hoa. In the test, AC-130 gunships attacked standard U.S. trucks with 40mm rounds, and the results were observed. Damage done by near misses was much less than had been expected, the only significant damage being flat tires. Direct hits (without associated explosions or fires) not only did not destroy a truck, but in some cases did only minor damage which could easily be repaired. As a result of the test, 7AF directed gunship crews to revise the criteria they had been using. To be considered destroyed, a truck had to explode or burn after projectile impact.^{94/}

(S) [redacted] The majority of the trucks reported destroyed by AC-130 gunships had been the result of direct hits by 40mm projectiles without associated secondary explosions or fires. Seventh Air Force did not retroactively reduce reported truck destruction for the campaign. However, in the CH V report, 7AF made an estimate of the number of trucks which would have been reported destroyed or damaged had the revised criteria been in effect during CH V. It was concluded that

**The improved High Explosive Incendiary 40mm Misch metal round was a standard 40mm round modified by the addition of one one-eighth-inch Misch metal liner which provided increased incendiary effects. Misch metal itself is a metal alloy which ignites upon impact, and burns until it consumes itself.*

under the new criteria, the gunships probably destroyed about 4,595 trucks (as compared to 10,112 reported during the campaign) and damaged 6,137 (as compared to 2,629 reported). Using the revised 7AF estimate for AC-130 truck kills, the truck attrition attained by the whole CH V strike force, would total about 11,000 destroyed and 8,000 damaged.^{95/} The truck BDA criteria used for AC-130s had thus accounted for a major portion, but by no means all, of the discrepancy between truck attrition as reported by visual observation and as estimated by truck inventory and replacement calculations.

(S) [REDACTED] There were some indications that strikes against derelict trucks accounted for some reported truck kills, and could thus have been a factor in inflating reported BDA. However, a majority of CH V truck attacks were against moving targets, which obviously were not derelicts. Also, the new gunship criteria, which required a secondary explosion or fire for a truck to be considered destroyed, tended to further reduce the chance that the target was a derelict.^{96/}

(S) [REDACTED] Other than the original AC-130 BDA criteria referenced above, the most apparent cause for the inconsistency between reported truck destruction and estimated inventory reduction was the terminology involved. That is, a "destroyed truck" did not necessarily equate to a "truck removed from the inventory." By reporting a truck destroyed, an aircrew indicated that the criteria for a truck destroyed had been fulfilled. The criteria, in turn, were an approximation of the conditions which would result in a destroyed truck. In actuality, such a truck might have been only heavily damaged.

[REDACTED]

(S) [REDACTED] In the case of the revised AC-130 criteria, for example, a secondary explosion or fire after projectile impact would result in a reported truck destroyed. The test at Bien Hoa, however, showed that even a sustained fire did not guarantee that the truck was a total loss. Although a secondary might very well destroy a truck's cargo, it was unlikely that all components of the truck would be destroyed. By cannibalizing or salvaging such trucks, the enemy could considerably reduce the number of losses to his inventory, and despite accurate aircrew reporting in accordance with BDA criteria, reported truck losses would exceed actual losses to the NVN truck fleet.

3) (S) [REDACTED] Throughput Estimates. The system used for monitoring and estimating enemy throughput during CH V was essentially the same as used during CH III. Both were independent of estimated input, or destruction of supplies within the enemy's infiltration system, and both were based primarily on information provided by sensor strings monitoring enemy traffic on known routes in the exit areas. Visual observations by aircrews were used to supplement sensor information, and reports by riverwatch teams formed a basis for estimates of enemy use of key waterways. Sensors, however, were the only source of information which combined consistency, reliability, and all-weather monitoring capability, and thus were relied upon almost exclusively as the basis for throughput calculations. Estimated throughput was based on the number of trucks detected by the exit strings, minus the number reported destroyed between the strings and the Cambodian or SVN border, plus a nominal figure for waterway throughput which was based on riverwatch reports. ^{97/}

[REDACTED]

bombed exit areas where enemy road and trail construction was generally less restricted by mountainous terrain. The degree to which the enemy used roads and trails which were unobservable from the air and unmonitored by sensors was not known with exactness, but experience during Lam Son 719 revealed that the proliferation of such unobservable routes was greater than had been suspected. With regard to the enemy LOC network encountered in the Lam Son area, a 7AF analysis of the lessons learned during Lam Son 719 concluded:^{99/}

It was discovered that the number of motorable roads and trails was more extensive than anticipated. Enemy trucks, tanks, and other mobile equipment used routes not visible in aerial photographs or to FACs flying above 1500 feet. Because of the complexity and number of routes, blocking this structure and isolating the battle area was not possible.

(S) [REDACTED] Another factor which tended to reduce the accuracy of throughput measurements was the enemy's use of waterways in the exit areas. During CH V, "the enemy had hundreds of watercraft available within the system, and he requisitioned still more from the local populace."^{100/} In spite of this, estimates of enemy activities on exit waterways were surprisingly low, representing less than 1 percent of the total reported throughput. However, it is likely that in actuality the enemy made much more extensive use of the waterways than was reflected in reported throughput. A February 1971 Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV) message stated:^{101/}

[REDACTED]

At present, Route 110A is the entry gate for measuring, by sensor, truck traffic into Cambodia. . . . To date, a total of only 11 vehicles have been detected by sensors on route 110A in Laos as throughput to Cambodia. This is probably a result of the enemy using the Tonle Kong river in Laos to move a major amount of his supplies down to the Cambodian border. From the border, supplies can be portered by non-motorized means such as oxcarts and bicycles. Thus, by using these types of transport the enemy can, to a large extent, render the sensor strings on the border ineffective.

(S) [REDACTED] Throughput calculations thus had a tendency to underestimate enemy cross-border supply. Coupled with that, however, was the additional problem that throughput, if considered in isolation from other indicators, can paint a misleading picture of the enemy's logistics posture. For example, the level of enemy logistics activity in southern STEEL TIGER, near the border areas, occurred on a scale which seemed to be inconsistent with the low level of throughput. A case in point was provided by the unprecedented results obtained during the bombing of the Ban Bac storage area, which was located in southern STEEL TIGER about 40 miles southwest of the A Chau Valley. During strikes in late December and the first week of January, over 10,000 ^{102/} secondary explosions and fires were reported in the huge storage complex. The presence of such large quantities of supplies so far south and so early in the campaign suggested an enemy logistics posture quite different than that implied by the low level of the reported throughput alone.

(S) [REDACTED] Other evidence of the presence of large quantities of supplies in southern STEEL TIGER was available. The Chavane area is located almost 50 miles southeast of Ban Bac, and is only about 25 miles from the South Vietnamese border and 60 miles north of the Cambodian border. A PACAF analysis of CH V truck traffic into

[REDACTED]

and out of the area revealed that approximately 5,000 more tons of supplies were detected entering the area than were reported leaving it. Though some of these supplies could have been destroyed or consumed, such a discrepancy assumed major significance in view of the 7,000-ton total throughput reported for the campaign. A PACAF briefing noted that if these unaccounted-for supplies were indeed stockpiled in the Chavane area, they could be rapidly deployed at the end of the wet season, and "could provide early dry season support to forces throughout Cambodia and the southern portions of South Vietnam, allowing the initial logistic surges to be directed towards Military Region I of the Republic."^{103/}

d. (S) [REDACTED] (U) The Impact of Interdiction on the Enemy.

(S) [REDACTED] From all indications, CH V was more successful than any previous interdiction campaign in Laos. Results of attacks against nearly all aspects of the enemy's infiltration system exceeded those reported in earlier campaigns. Increased effectiveness of the strike force and the devotion of a high percentage of air resources to the interdiction effort made this increased effectiveness possible. Although interdiction was more effective than in earlier campaigns, conclusions concerning its absolute effectiveness in restricting the enemy's logistics support of his forces were much more difficult to pin down.

(S) [REDACTED] Numerous studies were conducted by the Air Force and other governmental agencies in an effort to assess the effectiveness of the various COMMANDO HUNT campaigns and to determine their ultimate

[REDACTED]

impact on the enemy. Air Force studies generally emphasized that air interdiction operations in Laos made a major contribution to the imposition of a ceiling on the level of enemy activity. However, it was the cumulative effects of all attacks against the various elements of the enemy's system which restricted his ability to take the initiative in the south or to impose his will on the South Vietnamese people. ^{104/}

(S) [REDACTED] On the other hand, a number of non-military government agencies reached conclusions contrary to the Air Force position. An interdepartmental study sponsored by the OSD at the end of the CH III campaign concluded that: ^{105/}

The bombing in Laos has not imposed a ceiling on enemy activity levels, nor should it have been expected to do so. First, available traffic flow statistics show adequate supplies actually were shipped into South Vietnam from Laos to sustain higher activity levels than the enemy actually chose to initiate. Second, the enemy's Laotian resupply system has much additional unused capacity. Third, 85 percent of the enemy supplies come from sources unaffected by the bombing. [Prior to the Cambodian incursion.] And finally, constraints, other than logistic support (such as casualties), impose the effective ceiling on enemy activity levels.

Because of external support from the Communist Bloc, the costs of replacing bomb damage in Southern Laos are shifted largely to the Communist Bloc. The casualties and manpower requirements resulting from the bombing are small relative to amounts the North Vietnamese were willing to accept in the past. Therefore, the bombing seems to impose no substantial costs on the North Vietnamese.

(S) [REDACTED] Military leaders disagreed strongly with these conclusions. In reviewing the OSD study the Joint Chiefs of Staff (JCS) did not feel that a credible analysis of the CH III air interdiction

[REDACTED]

campaign conducted in the Laotian panhandle had been presented. They felt the analysis had a basic weakness in that it was inconsistent with observed enemy behavior. The study stated that the enemy had large amounts of excess logistic capability and that his logistics throughput exceeded requirements in the Republic of Vietnam, but it did not explain why he continued to expand his logistics system in Laos. It also did not explain why the enemy had failed to use his alleged excess capacity to initiate such militarily desirable actions as providing his forces with adequate supplies of food, medicine, equipment, and increased firepower.

(S) [REDACTED] The JCS concluded that the U.S. bombing in southern Laos during CH III, in conjunction with other combat activities in Southern Asia, had narrowed the enemy's range of options. It was the cumulative effect of U.S. bombing and related combat operations that was intended to force the enemy to abandon his aggression. They noted that the bombing in southern Laos had imposed a substantial cost on the enemy: the supplies, trucks, construction equipment, and trained personnel employed in Laos were denied to North Vietnam for rebuilding its industrial base. The substantial nature of these costs was confirmed by the political pressures exerted to stop the bombing, and by the ground offensives in northern Laos which placed pressure on the Royal Lao Government to withdraw its support of the interdiction campaign. Interdiction costs of destroying enemy equipment and munitions enroute were considered less in both lives and dollars than the cost of eliminating the enemy capability when deployed on the battle-

[REDACTED]

field. Also, the relatively low level of U.S. and Allied casualties was attributed in part to the bombing in southern Laos. ^{106/}

(S) [REDACTED] The reduced level of enemy strength and activity in SVN during 1970 and 1971 indirectly lent support to claims that the Allied strategy of attacking all permitted aspects of the enemy's logistics system in SEA hurt him. ^{107/} Without knowing his intentions, however, it was difficult to prove that the lower level of activity was forced on the enemy by Allied operations, rather than being a part of his strategy during the withdrawal of Allied forces. Nevertheless, claims of success in Allied military operations in general, and air interdiction operations in particular, tended to be substantiated by the apparently weakened posture of the enemy in SVN.

(S) [REDACTED] Admittedly, the impact of Allied operations on the enemy was difficult to determine since estimates of minimum enemy requirements and of enemy supply throughput were both of uncertain validity. The JCS evaluated the enemy's logistics posture in Cambodia and SVN following the CH V campaign. They estimated that for the year ending in October 1971, enemy throughput, together with stockpiles built up in southern Laos for later throughput, would total about one-fourth of the enemy input into Laos during the year. Having estimated the enemy's logistics and manpower requirements in Cambodia and SVN, they concluded that the enemy could sustain, almost indefinitely, his force levels in Laos, SVN, and Cambodia. Even if the following year's interdiction program (COMMANDO HUNT VII) were as effective as CH V, the enemy would have sufficient supplies and manpower for protracted war. While

allowing that the enemy could maintain protracted war of the type observed since 1 October 1970, the JCS believed that his ability to support high levels of combat activity was limited. Since his estimated requirements (for a protracted war level of activity) were slightly less than his estimated logistics support, he did appear to retain a marginal capability to mount offensives in Military Region (MR) I, MR II, or Cambodia. On the other hand, the JCS indicated that he did not retain the capability to mount simultaneous, sustained offensives in both Cambodia and the northern regions of SVN. ^{108/}

(S) ~~TOP SECRET~~ On the basis of the above estimates of enemy logistics requirements, and the level of resupply for his forces in Cambodia and South Vietnam achieved during CH V, it appeared that air interdiction in Laos made a major contribution toward imposing a ceiling of activity on Communist forces. Also, the BDA reported for the campaign indicated that the cost to the enemy resulting from interdiction operations in Laos was greater than for any prior campaign. Nevertheless, despite air interdiction, it was evident that the enemy could support a protracted war strategy indefinitely, and retained the capability to mount limited offensives.

c.(S) [REDACTED] (U) SUPPORT OF RLG FORCES

(S) 1. [REDACTED] (U) Concepts and Tactics

(S) a. [REDACTED] (U) U.S. Objectives and Strategy in Laos.

(S) [REDACTED] As noted in the background section, the U.S. sought to assist the RLG in maintaining its neutrality and independence, and thereby to preserve a buffer state between Thailand and the PRC/ North Vietnam. The U.S. further sought to continue the arrangement whereby air and unconventional warfare operations were permitted against the North Vietnamese Army (NVA) logistics system in Laos in return for support of the RLG in combating the Hanoi-directed and supported insurgency. ^{109/} Although these broad U.S. goals remained unchanged during 1970-71, a number of new factors and circumstances arose which affected the importance and strategy of achieving these goals, and carried Laos into a period during which its neutrality and independence were to be threatened more than ever before.

(S) [REDACTED] New developments which had a crucial impact on the achievement of U.S. objectives in Laos included the elimination of the Cambodian sanctuary and its implications for southern Laos, the withdrawal of U.S. forces from SEA, and the repercussions of the RVNAF incursion into Laos. The first factor, brought about by the fall of the Sihanouk regime and the subsequent U.S./RVNAF incursion into Cambodia, held implications which were ominous for the RLG. In early 1970, following their reverses in Cambodia, Communist forces captured the key southern Laotian towns of Attopeu and Saravane. This in effect

[REDACTED]

swept away long-standing tacit agreements concerning territorial control of the important towns on the RLG side of the tenuous 1961-62 cease-fire line. After the turn of events in Cambodia, the southern panhandle became vital to Communist forces, and an unprecedented number of NVA troops moved into the region to improve, expand, and protect their LOC network. The situation in northern Laos was not much better. Friendly forces there were stretched thin and the Communists were in a more menacing posture than ever before. The NVA nullified RLG successes achieved during late 1969 and by early 1970 threatened Long Tieng itself, the heart of the RLG's defense for northern Laos. ^{110/}

(S) **[REDACTED]** Moreover, just at the time that the RLG's needs were increasing, U.S. resources available for supporting them were decreasing due to withdrawals from SEA. The outbreak of hostilities in Cambodia created a need for support there, further reducing the resources available for supporting the RLG. Support of the RLG, in comparison to other needs, was considered to be of lowest priority, for even though the fall of Laos would be serious, it would not have immediate consequences as grave to U.S. national interests as the fall of Cambodia, the failure of the interdiction program, or the collapse of Vietnamization.

(S) **[REDACTED]** With Laotian needs rising and U.S. resources diminishing, there was a temptation to step up Thai or RVNAF activities in Laos. Such activities might produce short-term military benefits, but would further erode Laotian neutrality. Furthermore, such assistance

[REDACTED]

could cause the type of confrontation that U.S. policy was trying to prevent by maintaining a Laotian buffer. ^{111/}

(S) [REDACTED] The Laotian dilemma--how to maintain the independence of Laos while preserving its neutrality--was made all the more difficult by an apparent lack of viable military alternatives. Whereas, in Vietnam, withdrawal of U.S. forces was to coincide with an increase in SVN capabilities through Vietnamization, there was no such parallel alternative in Laos. In a May 1970 assessment of U.S. policy in Laos, ^{112/} G. McMurtie Godley, the Ambassador to Laos, summed up the situation:

The dilemma for Laos and for U.S. policy in Laos is that in the absence of an overall political settlement in Indochina U.S. military disengagement will occur through successfully transferring the burden of the war to the states of the region. There is a name for this process in Vietnam--"Vietnamization." In Laos there is no name, no process and no inherent capability to defend itself against its large neighbors. Laos will always have to play one against the other and also rely on strong friends outside the area. It can however develop greater internal strength and cohesiveness and must do so if it is to survive. U.S. policy should encourage this by developing to a greater extent than before an integrated program of military and civilian assistance to Laos. . . .

Laos is infinitely less self-reliant than any state in Indochina because it is weak militarily and economically; unawakened politically, and possesses limited resources of skilled and unskilled manpower to develop economic or social momentum.

(S) [REDACTED] Thus, at the beginning of CH V, the RLG entered a period in which the fabric of the Geneva Agreements that held the

[REDACTED]

[REDACTED]

country together would be strained more than ever before. The Vientiane government found itself facing greater demands, but having fewer options. The North Vietnamese and Chinese in Laos were stronger and controlled more RLG territory than before. The level of U.S. air support available to counter increased NVA activities was lower, and the RLG's best fighting units in northern Laos had been seriously reduced by the casualties experienced during years of fighting. Temptation on the part of Vientiane to seek outside assistance for its problems was tempered by the knowledge that such assistance could topple the already unsteady Geneva Accords for Laos. The RLG's bargaining power with the NVA was being whittled away, and the options for RLG counter-moves were dwindling with the passage of time. The problem of maintaining the RLG's independence without violating its neutrality was greater than ever. ^{113/}

(S) [REDACTED] Operation Lam Son 719, the large-scale RVNAF thrust into the southern Laotian panhandle, further complicated the already complex situation. Viewed from the standpoint of U.S. objectives in Laos, the repercussions of Lam Son 719 were potentially dangerous. If the operation were at all successful, it could force the westward expansion of the Communist infiltration system in Laos toward the Mekong and the Thai border. Elimination of RLG influence in that area would destroy the viability of Laos as a buffer between North Vietnam and Thailand. Even if the operation failed to cut the enemy LOC in the southern panhandle, it could still cause a collapse of the neutralist political arrangement which had resulted from the Geneva

Agreements. For some time, NVA forces in Laos had been strong enough to overrun the country quickly should they have decided, for political reasons, to do so. The Lam Son incursion could provoke an NVA reaction which would signal the end of the RLG. ^{114/}

(S) ~~SECRET~~ Considering all these complex factors, the United States maintained its objective of a neutral Laos to provide a buffer in Indochina. Since this objective did not appear to be directly attainable by any military action which the United States was prepared to take, the military strategy followed in Laos was designed not to attain a military victory, but rather a military stabilization along the lines of the 1962 Geneva Accords. Diplomatic and political pressures were to provide the real basis for settlement.

(S) ~~SECRET~~ Even if it were possible, the establishment of a Laotian army strong enough to overpower the North Vietnamese/ Pathet Lao forces in Laos would spell an end to the neutral tripartite government in Laos. Realistically, Laos did not have the potential to raise or support such an Army. On the other hand, in order to maintain a strong bargaining position with the Communists and to make them pay a maximum price for their aggression in Laos, the U.S. continued to provide military support to economize and improve the effectiveness of RLG air and ground forces. If the Communists did decide to overrun Laos, they would have to pay the military price. Additionally, it would be clear to all that Laos fell to overt aggression, and not to an internal dissident force.