

■ Airfields - Very low level of damage by a weapons system (9 percent overall average), with LORAN yielding the lowest damage level for the highest percentage of strikes.

■ Power Facilities - There were indications of some damage to the Haiphong and Hanoi transformer stations with radar and LORAN bomb deliveries, but LGBs were the most effective.

■ Radio Communications Facilities - Overall damage by any type delivery was an average of 32 percent. No bomb impacts from LORAN strikes could be found in the target areas.

■ Storage Facilities - LORAN path finder results were "disappointing."

■ Railroad Yards - LORAN was used on only two of 13 targets; one had 6 percent damage attributable to LORAN, the other had about 10 percent. Radar and visual deliveries surpassed LORAN.

■ Bridges, SAM Sites - Not struck with LORAN.

(C) It appears, statistically, that LORAN bombing made no significant contribution to the overall damage level during Linebacker II. The LORAN strikes deep into North Vietnam were made at the fringe of reliable reception in an area where there had been only limited prior reconnaissance to update target coordinates or TDs. In addition, analysis of LORAN strikes during Linebacker II indicated that even area-type targets were missed by a considerable margin.<sup>153</sup>

(C) In summary, LORAN all-weather bombing of NVN was not effective. As a result, one study recommended that "extensive research should be devoted to developing and refining an all-weather strike capability for use on the outer fringes of LORAN or in areas where no LORAN capability exists."<sup>154</sup> LORAN bombing effectiveness should be carefully weighed in programming future bombing campaigns.

#### A TYPICAL LINEBACKER MISSION

(S) Combining each of the elements into a cohesive Linebacker force to support both day and night, all-weather missions required extensive coordination between units and services. A typical day mission against a North Vietnamese high threat target would best illustrate the intricacies of planning, force employment, and proper command and control of its elements. Specific Linebacker elements such as the B-52 strike force, TACAIR guided bomb teams, F-111 night strike teams, and the LORAN strike teams have been discussed individually. A single employment of these elements with their supporting teams of MIG/BARCAP, chaff and ECM, hunter-killer (Iron Hand), and reconnaissance will show the importance of timing

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in negating the threat, minimizing friendly losses and destroying the target complex. Initial photography having been completed days or weeks prior to the strike, the standard Linebacker weather reconnaissance flights of pairs of F-4s visually reconnoitered each target area 4 1/2 and 2 1/2 hours before the TOT. From June to August, the poor F-4 UHF radio reception (caused by antenna location) required that an RF-4 be added to the weather reconnaissance flight to extend the communications range. The HF radio in the RF-4 provided this capability, but it was eliminated during September owing to an urgent need for BDA/LORAN photography.<sup>155</sup>

(U) The CAP (usually one flight of four aircraft per strike team) had three related missions: SAR protection, tanker protection, and strike force protection. Limits on USAF assets caused Marine F-4s from a deployment base at Nam Phong and Navy CTF 77 TACAIR to assume portions of the CAP early in Linebacker operations. The Marine F-4s assumed BARCAP and tanker protection missions ingressing from the west. For missions ingressing from the Gulf of Tonkin, the USN provided BARCAP/tanker CAP. This was a normal outgrowth of the Navy's 24-hour CAP over the Gulf. Normal coordination between services provided time and altitude separation to enhance safety. The Linebacker MIGCAP tactics called for specific orbit locations selected by qualified tacticians who were aware of the strike force routes and current threat areas. Study of MIG attacks showed that, historically, MIGs attacked the first third of any given strike package. Attempts were made by the 432d TRW at Udorn to reinforce the CAP coverage during that period.<sup>156</sup>

(S) MIGCAP had to be in place a minimum of 5 minutes ahead of the strike force (15 minutes early would adversely affect the enemy's timing, but presented fuel shortage problems to the MIGCAP). It was the CAP leader's responsibility to decide when and how to negate any MIG attack. He had to exercise good judgment when in hot pursuit to insure that his flight was not drawn out of position to counter alternate attacks. When MIG engagements did occur, the most frequently reported difficulty facing USAF pilots was one of maintaining proper communications with each other, the strike force, and various controlling agencies. Despite limited loiter time in the target area, USAF MIGCAP had numerous MIG engagements during Linebacker operations. There were 54 reported MIG engagements during the period covered by this report (of which 11 occurred during Linebacker II). MIG tactics were generally characterized by multiple-ship attacks, multiple-flight deceptive maneuvers, and high speed fly-through maneuvers such as a single supersonic pass at a formation of aircraft. (See Appendix 4 for USAF aircraft losses to MIGs during Linebacker I).<sup>157</sup>

(U) The next member of the Linebacker force over the target area went by many names, depending on its precise mission and armament. In general, this team fulfilled a hunter-killer role and was so described in the 388th TFW portion of the 7/13th AF Linebacker tactics review

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conference of September 1972. Equally appropriate during Linebacker operations were the familiar names of Wild Weasel and Iron Hand. In the early phases of Linebacker I, pairs of F-105G Wild Weasels equipped with AGM-45 Shrike and AGM-78 Standard Arm anti-radiation missiles sought out operating NVN Fan Song SA-2 SAM radars and launched their ordnance at the emitters. This suppression role in the hunter-killer concept was called Iron Hand. A newer development used the F-4E with the F-105G. The F-4s carried CBU-52 ordnance to silence suspected SAM sites preemptively. It had been found difficult to kill a SAM site with the AGMs alone. Active SAM sites deceived the AGMs immediately after launch of successive AGMs\* and then operated without fear of subsequent attacks. The inclusion of CBU-equipped F-4s reduced this probability. This suppression/attack role was the hunter-killer concept.<sup>159</sup>

(U) During Linebacker II, the teams were composed of two F-105Gs and two F-4Cs. Numerous changes in NVN ECM/SAM tactics challenged this team even further. Some F-105 pilots deliberately orbited active SAM sites in attempts to "draw up" guidance signals from the SAM radar. The NVN maintained minimum electronic transmission by practicing good emission discipline. Maneuvering around the SAM threat, the Wild Weasels played a key role in keeping the Fan Song off the air. B-52 TOTs were spaced and/or compressed as required to provide the necessary hunter-killer protection. Normal operating altitudes were between 13,000 and 18,000 feet for the F-105s and up to 22,000 feet for the F-4Cs (both at about 400 knots calibrated air speed (KCAS) minimum.<sup>160</sup>

(U) During Linebacker I, this mixed team was not considered a pure hunter-killer team in that it was fringed primarily to support the chaff or strike force. The team would expend CBU-52 only after the strike/chaff force had egressed the area. In other words, it was an Iron Hand or SAM suppression team. Alternate tasks were also integrated into the hunter-killer mission. The F-4s played a role as MIGCAP (and jettisoned ordnance when MIGs threatened) while the F-105s covered the electronic threat. Alternate SAM sites, whether occupied or not, were frequently attacked with CBU-52 during flight egress. The hunter-killer tactic was initially successful, as acknowledged by frequent SAM site relocations, improved camouflage, and strict emission discipline. A side effect was the degrading of SAM associated equipment caused by the frequent moves.<sup>161</sup>

(U) A final analysis of Linebacker II Wild Weasel tactics places a big question mark in the ECM/SAM category. While effectively denying full use of the Fan Song radar to the NVN, the Wild Weasel could do little (as it was configured in December 1972) to prevent an engagement if the

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\*The AGM-45 was subject to confusion in isolating a single radiating source, and, therefore, could be drawn off target by two or more simultaneous signals.<sup>158</sup>

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SAM site intended to engage using a degraded passive tracking capability.\* SAM accuracy was considered adequate against the non-maneuvering B-52.<sup>162</sup> All the launch parameters were available to the SA-2 operator--azimuth, range, and elevation angle. The loss of 15 B-52s to SAMs during Linebacker II gives this rationale some credit.

(U) Difficulties experienced in bringing the hunter-killer concept into full bloom were discussed in early September.<sup>163</sup>

■ The hunter-killer team, thoroughly briefed and in radio contact with the strike force, was able to determine the strike's egress time, but it was usually unaware of the reconnaissance flight's location.

■ In dense SAM areas such as Hanoi, one hunter-killer team of four aircraft could not provide adequate continuous suppression. Two teams, either both hunter-killer or one hunter-killer accompanied by one Iron Hand (with ARM only) could provide suppression and reduce team vulnerability significantly.

■ In target areas with low-altitude non-visual missions, an Iron Hand team was preferable. Ordnance loads for such a team could be mixed.

(U) Numerous changes in the NVN ECM/SAM tactics also challenged the final members of the Linebacker force, the chaff and ECM aircraft. Active electronic countermeasures were conducted by EB-66 aircraft orbiting close to the threat area during Linebacker I. During Linebacker II, the EB-66 maintained positions outside the NVN SAM/MIG threat environment and performed a stand-off jamming role covering the ingress/egress routes of the strike force. It had become necessary to pull the EB-66 back because of its high vulnerability to MIGs. Escort flights of four F-4s, equipped with ECM pods, provided countermeasure protection in the high threat areas over NVN as Linebacker operations increased in scope. The F-4s were typically employed in a modified "fluid four" pod formation, with elements of the flight being spaced 1,500 - 1,600 feet apart and with the wingman at 1,000 - 1,500 feet. Vertical separation ranged from 250 to 700 feet between aircraft. Formations and tactics varied slightly among the 8th TFW, 355th TFW, and 388th TFW. Other tactics included a fighter "weave" about a slower strike force and a tactical pod formation. Single-pod configured aircraft were used in the lower threat areas only.<sup>164</sup>

(S) Chaff and chaff escort tactics took many forms as the NVN moved to counter their effectiveness. Chaff corridors were provided

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*\*(S) It was generally believed that B-52 jamming of the "Banlock" still allowed the SA-2 to passively track the azimuth and elevation of the B-52. Range was easily determined by using the known B-52 operating altitude of 35,000 feet.*

to protect strike aircraft from SAM systems. Aircrews made every effort to fly within the chaff as they could not then be tracked effectively by Fan Song radars. Aircraft flying below, above, or alongside chaff corridors tended to be highlighted. Initially, chaff was dispensed by 8 to 12 F-4s carrying nine M-129 chaff bombs each. At times, however, as many as 16 aircraft were necessary to produce a wide-enough chaff corridor. The length of this corridor, however, was still not sufficient, so on 13 June 1972, the ALE-38 chaff dispenser was introduced giving eight aircraft the capability to produce a continuous chaff corridor 5 miles wide by 105 miles long. This proved sufficient to protect the entire ingress and egress routes within the North Vietnamese heartland.<sup>165</sup>

(S) To avoid stereotyping, actual chaff dispensing tactics took many forms, including varying the time of delivery, dividing the chaff formation to dispense inbound and outbound simultaneously, and using MIGCAP aircraft call signs for deception.\* Each of these tactics proved effective. Initially, the chaff flight was not protected by an escort because the MIGs did not pose a threat. In June, however, MIG attacks were directed toward the vulnerable chaff flights, and an escort package became a permanent part of each Linebacker chaff force. The escort element was the inner perimeter for MIG defense. Standard configuration for air defense aircraft was three external fuel tanks, two or four AIM-7E2 missiles, four AIM-9E/J missiles, and two ECM pods.<sup>167</sup>

(U) Since one flight of four escort aircraft might break into two elements (depending on the strike technique agreed upon by the units), the number one and number three aircraft commanders in each flight were required to be lead qualified. Figure 4 illustrates some of the possible chaff dispensing tactics where one or both of the chaff flights spread chaff outbound from the target (P-1). Each of the options had its respective advantages and disadvantages. In analyzing each set, one should realize that the loose "fluid four" formation sowed a less dense chaff corridor which had to be filled in by the other chaff element. Additional tactical considerations included the ability of opposing flights to protect one another's 6 o'clock position and the difficulty in chaffing multiple targets with several directions of travel for each formation of chaff/escort aircraft.<sup>168</sup>

(U) The presence of a MIGCAP orbit generally indicated that a MIG threat existed in the target area or beyond the target. As implied earlier, the MIGCAP was used throughout Linebacker as a blocking force. The heavy loss rate in May, June, and July was a result of the NVN GCI-directed supersonic stern attacks against the chaff/strike elements. This tactic took a heavy toll of USAF TACAIR with 18 F-4s and one F-105G being lost between 10 May and 11 September. Chaff corridor protection

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*\*(S) Usually the escort and strike flights coordinated their intentions by secure voice telephone before each mission.<sup>166</sup>*

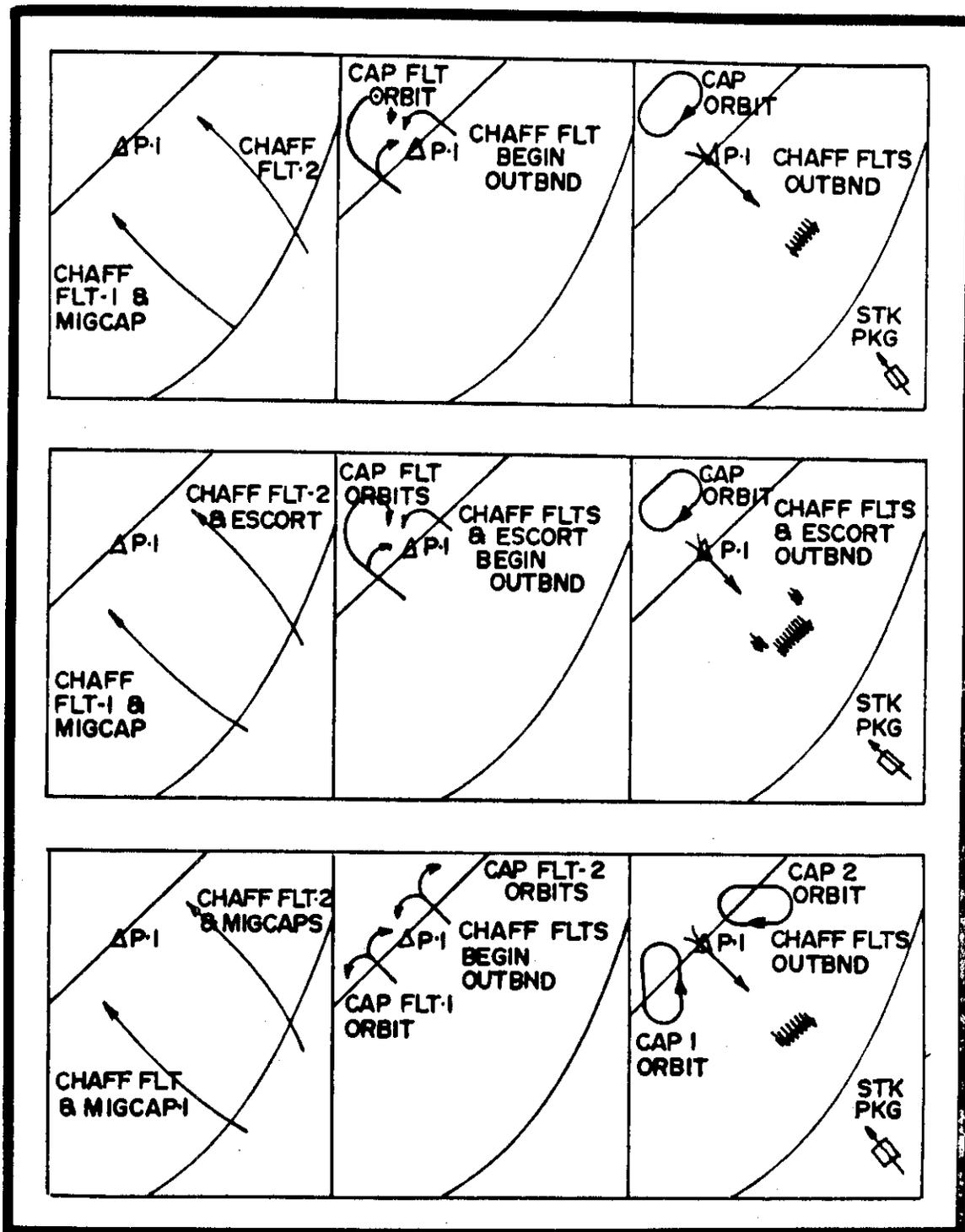


Figure 4

(U)

FLIGHT VARIATIONS FOR CHAFF DISPENSING MISSIONS  
(Target: P-1)

costs were high, as seven chaff aircraft were lost to MIG-21s or ground defenses. (See Appendix 4 for a breakdown of USAF losses by mission function.) The unfavorable loss rate to MIGs was finally countered with Project Teaball, a weapons control center (WCC) located at Nakhon Phanom RTAFB.<sup>169</sup>

#### TEABALL WEAPONS CONTROL CENTER

(S) Although Teaball was an extension of the communications technology for command and control, it must be evaluated as an outstanding example of cooperation and coordination between two staff functions, operations and intelligence. Teaball produced a ground-based, sophisticated warning system using very sensitive intelligence sources. The resulting information was used to plot both friendly and enemy positions, make tactical control decisions based on these plots, and advise all strike, chaff, or escort elements (as applicable) of the impending MIG threat. Teaball's supporting agencies (such as Combat Apple, Olympic Torch, Luzon, Red Crown, and Disco) were tasked to provide one geographical position per minute on both USAF TACAIR and MIG targets, thus enabling real-time information to be given to U.S. pilots flying deep into North Vietnam.<sup>170</sup>

(S) Teaball was born as a result of an extremely high U.S. fighter loss rate during May 1972. The U.S. losses were twice those of the North Vietnamese. Officially, the loss rate was quoted by 7th AF headquarters as 1 to .47 in May. The NVN strategy was analyzed and one factor emerged: the enemy attacked "only when the pilot and GCI controller perceived a clear-cut advantage." The NVN advantage was created over Hanoi and targets west of Hanoi because of limited U.S. radar coverage and GCI control capability. The problem became one of providing sufficient warning to U.S. pilots that they were about to be attacked by MIGs. The latest NVN tactic involved a single high-speed, usually supersonic, pass by one or two MIG aircraft.<sup>171</sup>

(S) The ideal solution would have been an AWACS (airborne warning and control system) aircraft with downward looking radar capable of spotting the low-flying MIGs as they were vectored to an attack position. The available line-of-sight radar capability of Red Crown did not cover altitudes below 10,000 feet over Hanoi.<sup>172</sup> The MIG flights maneuvered below this altitude with relative impunity. The actual solution involved those agencies previously mentioned. The orbit or flight path flown by each is shown in Fig 5. The air elements of Teaball consisted of Olympic Torch in the Gulf of Tonkin orbit, Burning Pipe, Disco, and Big Look flying optimum flight paths for relay, and the Luzon radio relay aircraft. During Linebacker strikes, much support was located in the Gulf. Combat Apple and Olympic Torch inputs were fed back into Teaball at NKP, along with security squadron inputs. Control output information was relayed through Luzon to the airborne elements of Linebacker (see

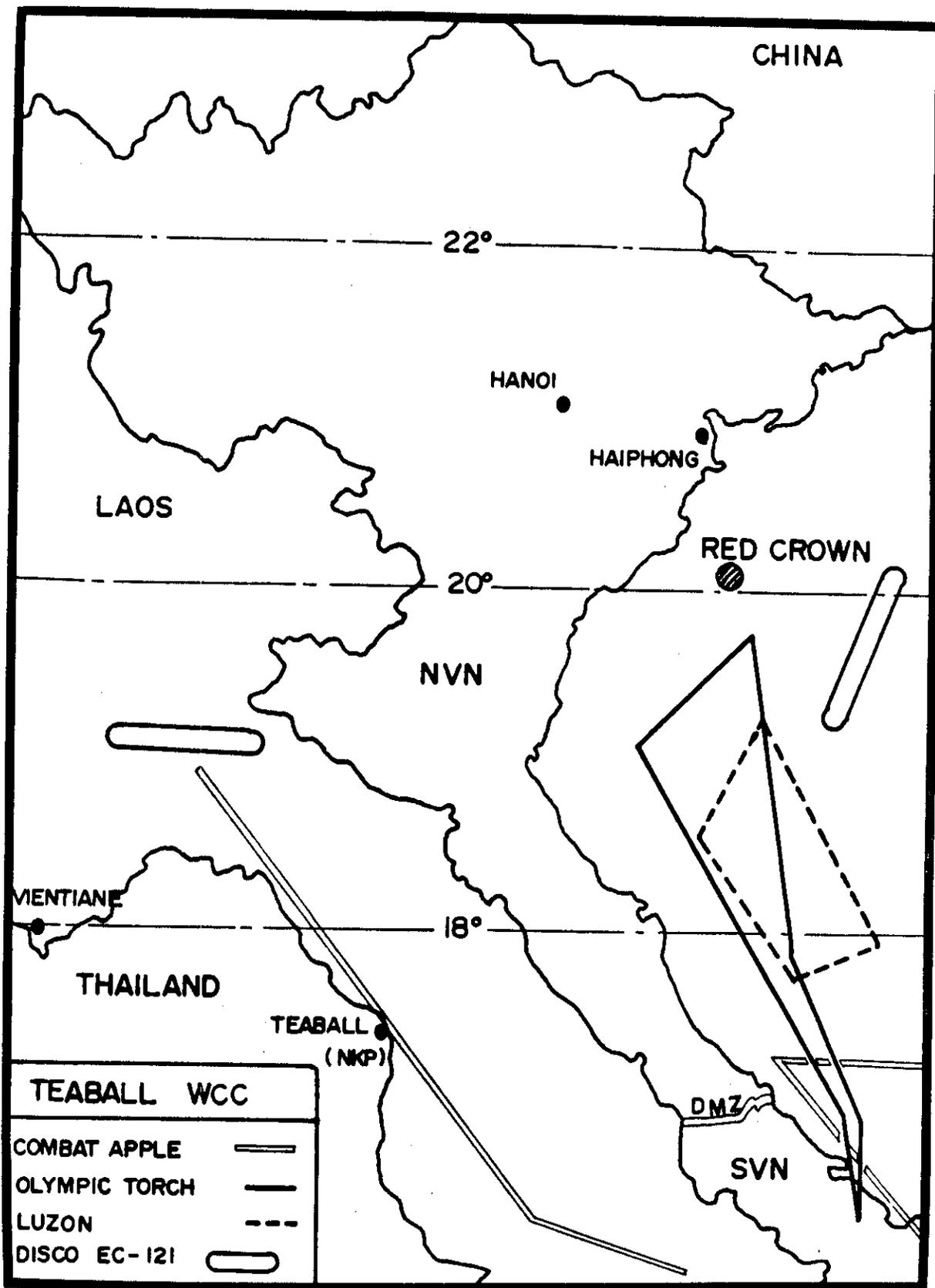


Figure 5

(S-REVW 9 Oct 92)

ELEMENTS AND ORBITS OF TEABALL WEAPONS CONTROL CENTER

Fig 6).<sup>173</sup> Red Crown and Disco provided positions, relayed information and were designated as back-up weapons control centers should Teaball communications fail. Acting alone, without any Teaball capability, Red Crown and the Disco EC-121 could give "bandit" MIG warnings; however, because of communications difficulties or radar limitations, these warnings came too late or were inaccurate. Luzon played a special role mentioned previously in the general discussion of command and control communications. It flew at high altitudes and acted as a radio relay aircraft.<sup>174</sup>

(S) Some communications problems did arise during the period from early August, Teaball's introduction, to 6 October. In fact, four U.S. aircraft were downed by MIGs during that period. In three or four instances, Linebacker conferences revealed that Teaball communications had been lost, a MIG reaction occurred, and one or more U.S. fighters were shot down.<sup>175</sup> Overall, however, the Teaball statistics were a dramatic improvement over the previous period. From early August to mid-October, there were only five U.S. losses compared to 19 MIGs destroyed, in air-to-air engagements. The new loss rate had improved to an impressively favorable ratio of 3.8 to 1.<sup>176</sup>

(U) One additional factor greatly assisted the Teaball facility in improving the kill ratio--that of identification, friend or foe (IFF) interrogation by specially equipped U.S. fighters. The program was nicknamed Combat Tree, and was an extremely important development in aerial engagements. In September, the 432d TRW electronic warfare staff evaluated Combat Tree as follows:<sup>177</sup>

*Approximately 17 of our last 20 MIG kills were made possible either directly or indirectly by the use of Combat Tree equipped aircraft. We are certain that NVN is aware of our ability. . . . This has been reflected in a change in their tactics from constantly squawking . . . to use of their IFF only during critical phases of the GCI intercept and recovery.*

U.S. counter-tactics also included faking a failure of the Combat Tree equipment by operating in a passive mode to entice the MIG within range for a coordinated attack by other U.S. aircraft controlled by Teaball.

(S) In the final analysis, the initial effect of Teaball was overwhelmingly favorable to the U.S. forces. General Vogt expressed his obvious pleasure in the sudden turnaround in aerial engagements when he stated:<sup>178</sup>

*With the advent of Teaball we dramatically reversed this [loss to victory ratio], and in August, September, and October, and for the subsequent months of bombing activity*

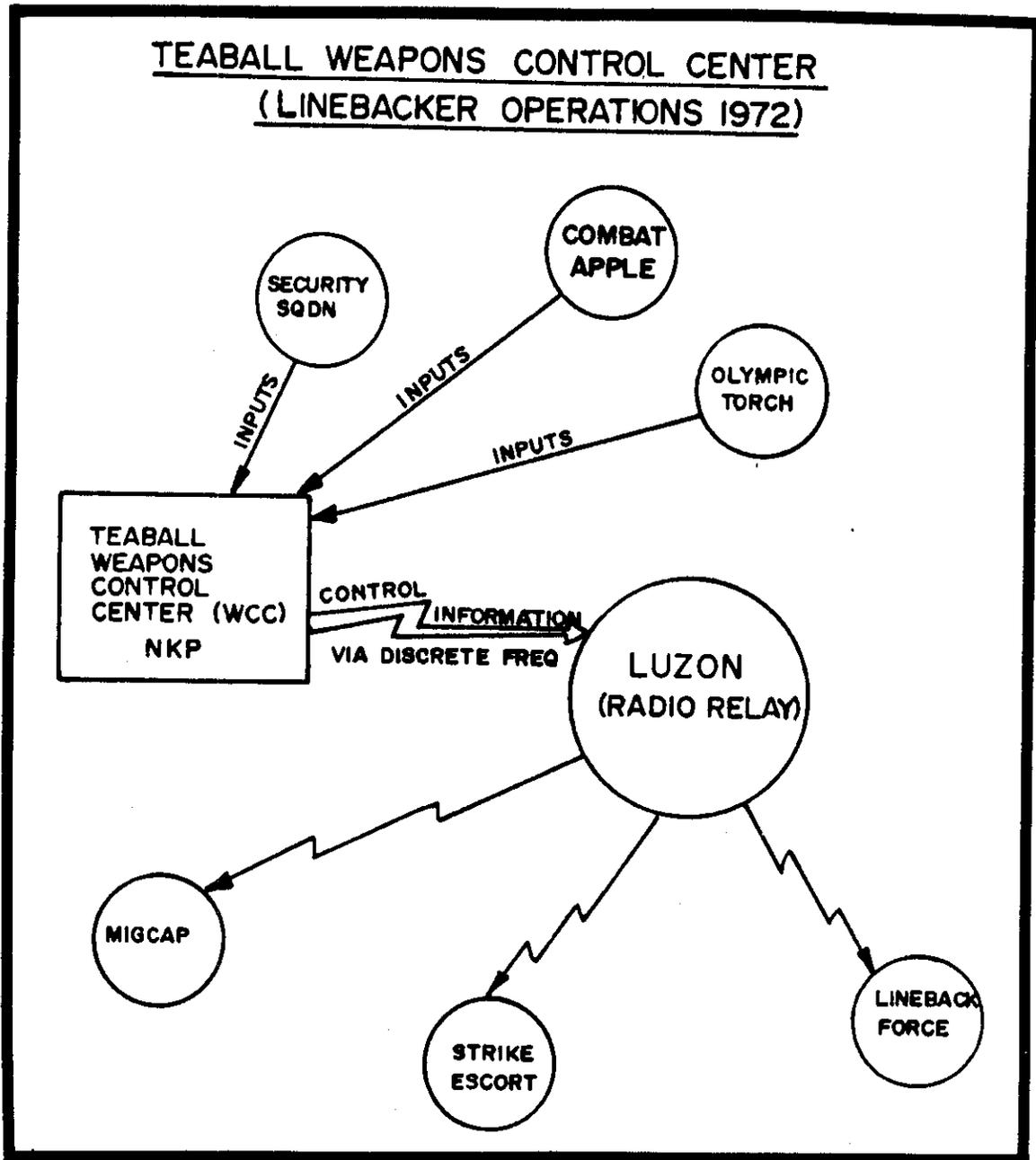


Figure 6

(U)

COMMUNICATIONS NET FOR TEABALL WEAPONS CONTROL CENTER

during Linebacker I, we were shooting down the enemy at the rate of four-to-one. Same airplane, same environment, same situation, same tactics; largely [the] difference [was] Teaball. It was one of the most impressive developments we've had out here.

#### IV. LINEBACKER II OPERATIONS

##### OVERVIEW

(U) Where Linebacker I had been an interdiction campaign directed against supply routes throughout North Vietnam, Linebacker II was a sustained maximum effort using air power to destroy all major target complexes located in the Hanoi and Haiphong areas (Fig 7). Linebacker II operations were a significant departure from all previous campaigns. This brief but intensive campaign provided USAF and USN forces with specific objectives and specific targets and removed many of the restrictions and frustrations surrounding earlier operations (underscored in the conduct of Rolling Thunder, Proud Deep Alpha, Freedom Train, and Linebacker I).

(U) Linebacker II operations north of 20°N were initiated on 18 December 1972 and were ordered by the JCS to "continue until further notice." During these operations, USAF/USN tactical aircraft and B-52s commenced an around-the-clock bombardment of the NVN heartland. The B-52s struck in RPs 5, 6A, and 6B during the hours of darkness with F-111s and USN TACAIR providing diversionary/suppression strikes on airfields and SAM sites. In addition, MIGCAP, chaff support, BARCAP, escort aircraft, and SAC tankers were active members of the strike force. The daylight TACAIR effort was maintained primarily by A-7s and F-4s bombing visually or with LORAN techniques, depending upon the available weather windows over each target. The huge support effort, for both B-52 and TACAIR strikes, included the same mission functions mentioned in the previous chapter, and the details in planning and coordination were by no means reduced in scope. The timing required to optimize the total USAF effort in coordination with Navy and Marine support/strike missions was enhanced by a computerized fragmentary operations order (frag) during Linebacker II.<sup>179</sup>

(S) Linebacker II was characterized by three distinct phases covering the 12-day period, 18 through 29 December 1972. The operation came to be known as the "Eleven Day War" (there was a standdown on Christmas Day), and was divided as follows:<sup>180</sup>

■ Phase I (18-20 Dec): A 3-day maximum effort against 11 target complexes with a total of 314 B-52 night sorties.

■ Phase II (21-24 Dec): A reduced level of effort accompanied by a shift in target areas (to Haiphong and lower-threat areas). Only 120 B-52 sorties struck in the night attacks.

■ Phase III (26-29 Dec): An increased level of effort with 295 B-52 sorties against 13 separate targets in the vicinity of Hanoi, Haiphong, selected railroad yards, and 5 SAM sites.

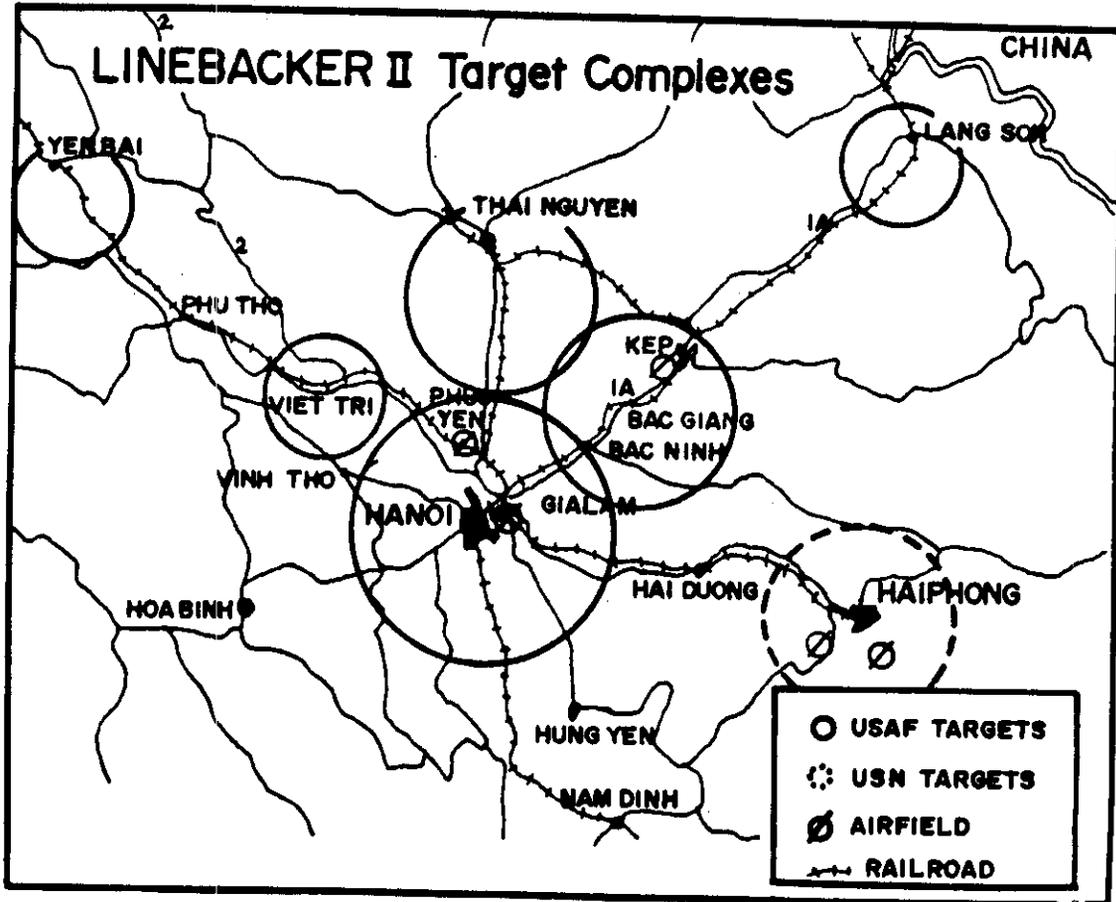


Figure 7

(U)

LINEBACKER II TARGET COMPLEXES

(S) Although comprised of three phases, Linebacker II was construed by planners to be two distinct operations, simultaneously imposed on the NVN war-making capability. The first operation involved the night strike/support package of B-52s, F-111s, and USAF/USN TACAIR. The second operation involved the day strike/support package of USAF A-7s and F-4s and USN/USMC A-6s, A-7s, and F-4s.<sup>181</sup> Actual force structure, planning and employment will be discussed in this chapter.

(S) Linebacker II forces encountered intense enemy defensive reactions, losing 26 aircraft in the 12-day period. USAF losses included 15 B-52s, two F-4s, two F-111s, and one HH-53 SAR helicopter. USN/USMC losses included two A-7s, two A-6s, one RA-5, and one F-4. Seventeen of these losses were attributed to SA-2 missiles, three to daytime MIG attacks, three to AAA, and three to unknown causes. The threat picture was heavier than U.S. losses indicate, and the 2.1 percent B-52 attrition rate was far below that expected (see Appendix 5).<sup>182</sup>

(C) Specific bomb damage results by weapon systems and targets indicated some surprising conclusions to planners (as discussed in Chapter III, LORAN and LGB results). The impact of the bombing was obvious in the severe damage to the NVN logistic and war supporting capability. Railroad complexes received the greatest number of bombs per target and also showed the highest damage level of all targets struck by the USAF. Another key factor in the Linebacker II success was the ability of USAF weaponeers to cope with the severe weather constraints in scheduling their LGB and LORAN strikes.<sup>183</sup>

#### FORCES, TARGETS, AND PLANNING

(S) Three days prior to the commencement of Linebacker II, plans were initiated in an alerting message from the JCS to Admiral Gayler, CINCPAC. This message proposed a 3-day maximum effort of B-52 and TACAIR strikes in the Hanoi and Haiphong areas utilizing visual and all-weather bombing capabilities. Thirty-two specific targets were authorized by the JCS for the initial strikes. Additional guidance indicated appropriate targets for both B-52 and LGB forces. The emphasis on railroad yards, shipyards, and storage capacity was revealed by the scope of the first JCS target authorizations:<sup>184</sup>

- Hanoi Target Complex (total 13): Radio station, power plant, railroad yards, repair shops, port, and Bac Mai Airfield.
- Haiphong Target Complex (total 8): Power plant, railroad yard, warehouses, shipyards, naval base, and airfield.
- Electric Power Facilities (total 3): Thermal power plants at Uong Bi, Thai Nguyen, and Bac Giang.
- Radio Communications Facilities (total 3): Hanoi international radio transmitter and Hanoi and Lang Truoc radio communications transmitters.

- Air Defense Targets (total 4): Strikes by B-52s on Phuc Yen, Kep, Yen Bai, and Hoa Lac Airfields.
- Transshipment Point (1): Strikes by B-52s on the Bac Giang TSP.

Actual target complexes struck during the Phase I bombardment included all of those listed above. For a detailed list of strikes by date and aircraft type, see Appendix 6.

(S) The general authorizations for Phase I allowed commanders to reduce their B-52 operations during the 24-hour period prior to initiation of Linebacker II in order to achieve a maximum effort on the first day. That B-52 effort was to include use of all resources which would not have a detrimental effect on support of operations in RVN and emergency/priority situations in Laos and Cambodia. Another planning guideline was the authorization to strike NVN airfields and active SAM sites as the tactical situation dictated (so as to improve the effectiveness of attack forces and to minimize losses). This guideline enabled CINCPAC to direct TACAIR and F-111 pre-strikes against selected airfields and SAM sites on subsequent days. The USN/USMC sortie planning included the assets of three attack carriers and portions of the Marine force located at Nam Phong, Thailand and Bien Hoa, SVN (those not required by MACV operations in SVN, Laos, and Cambodia).<sup>185</sup>

(S) After a 24-hour delay to improve planning objectives and coordination, Linebacker II operations were initiated with the following execute message from the JCS to CINCPAC:<sup>186</sup>

*You are directed to commence at approximately 1200Z [1900 hours NVN time], 18 December 1972 a three-day maximum effort, repeat maximum effort, of B-52/TACAIR strikes in the Hanoi/Haiphong areas against the targets [identified on 15 December]. . . . Object is maximum destruction of selected military targets in the vicinity of Hanoi/Haiphong. Be prepared to extend operations past three days, if directed.*

(S) Seventh Air Force first-day plans called for 129 B-52s striking in three waves against seven targets previously authorized by the JCS. Approximately 15 F-111s were to strike at night against targets in RPs 5 and 6A. USAF TACAIR resources were to be used, where available, to provide support such as ECM, chaff, Iron Hand, and CAP for all three B-52 waves. Owing to a limited F-105G force, Navy A-7s supplemented the Iron Hand mission on one B-52 wave. F-111 strikes were used throughout the first night to maintain pressure on enemy airfields and eliminate as much of the radar/radio communications network as possible. The following daylight hours were filled with USAF/USN TACAIR strikes against Hanoi (precision bombings were scheduled, but weather downgraded the strikes to LORAN drops) and Yen Bai Airfield. The point targets, Hanoi radio communications and the Hanoi international radio transmitter, were re-scheduled until they were successfully struck. Although operational

reporting of the first night's efforts followed the normal command/control procedures, a preliminary summary of strike information and BDA was immediately transmitted to keep the President informed of any significant activities that might affect the peace negotiations in Paris. (S)

(S) The kick-off of Linebacker operations represented the maximum sustained effort maintained throughout the period of Phase I. Certain similarities existed during the three days of heavy bombardment; namely: 188

- All attacks were conducted in a manner that would minimize danger to the civilian population to the extent feasible without compromising effectiveness.

- All attacks avoided known POW compounds, hospitals, and religious structures.

- The criteria for support aircraft for B-52s was coordinated at command level between 7th AF, SAC, and the chief of the Fleet Coordinating Group (USN).

- All SAC B-52 strikes were designated as "press-on" missions and would proceed with or without chaff support.

- All strike/support forces received full assistance and monitoring by Olympic Torch, Luzon, Combat Apple, Teaball WCC, ABCCC, College Eye, and Red Crown. Teaball/Red Crown controlled the CAP forces, and Disco controlled the strike/chaff forces using normal Linebacker/Arc Light control procedures.

- Naval gunfire operations were conducted in conjunction with air strikes, concentrating on continuing the pressure in RP 6B. (Ships were not pre-positioned prior to Linebacker II execution, to preserve maximum surprise effect.) NGF was continued along the entire NVN coastline to prevent the logistics movement southward.

- USAF/USN TACAIR conducted defensive suppression strikes on airfields and SAM sites prior to B-52 TOTs. USN diversionary strikes on other targets further reduced NVN pressure on the B-52 strike force.

(S) The second phase of the B-52 operations (21-24 Dec) represented a significant reduction in sortie numbers and a variation in employment. During Phase II, only one B-52 wave struck the targets each night vice three during Phase I. The effort shifted to Haiphong on 22 December and then to lower-threat areas such as Lang Dang, Kep, and Thai Nguyen. A new target category was introduced with the attack on three SAM sites on 23 December. Additionally, the SAM suppression support was augmented by F-4Es loaded with CBU-52s and CBU-58s. 189

(S) In Phase III (26-29 Dec), 295 of 300 scheduled B-52 sorties struck 13 separate targets using the powerful single wave concept (striking all targets on a given night simultaneously). Significantly, more sorties were flown on 26 December after a standdown on Christmas Day. On 27 December, after a 4-day absence from Hanoi, B-52s struck three railroad yards and one supply depot in the area. Other strikes were directed against Haiphong (30 sorties) and Thai Nguyen (18 sorties). The majority of the last two days' efforts were expended against the Lang Dang railroad yard in Hanoi and two nearby SAM support facilities.<sup>190</sup>

(S) Throughout the night campaign, F-105s, F-4Cs with AGMs, F-4Es with CBU's, and Navy A-7s flew SAM suppression sorties. Overall, 93 percent of the F-105s and 88 percent of the F-4Cs expended ordnance using the Iron Hand procedures discussed in Chapter III. Eight of the F-4Es (26 percent) expended their CBU's. SAM suppression and chaff support comprised 49 percent of the TACAIR support effort. The remaining 51 percent was devoted to an anticipated MIG threat which did not materialize.<sup>191</sup>

(S) The USAF day strike and support campaign was sustained primarily by A-7s and F-4s bombing visually or using LORAN techniques, depending upon the weather over each target area. (See Fig 8 for the weather windows available on 21, 27, and 28 December.) A total of 497 USAF sorties (271 F-4s and 226 A-7s) flew strikes and expended ordnance during Linebacker II day operations. A low daytime support-strike ratio of 0.94 was attained with 530 support sorties being flown, including 126 F-4/F-105 Iron Hand sorties. The remainder of the support force included 85 chaff sorties, 273 F-4 sorties performing CAP, and 46 fulfilling other roles such as photo reconnaissance, SAR, and escort. The USN/USMC day strike and support contribution was 226 sorties involving A-6s, A-7s, and F-4s. (See Appendix 7 for the USAF day support sorties during Linebacker II.)<sup>192</sup>

### SIGNIFICANT EVENTS

(U) The total employment of various weapon systems, tactics, and command and control during Linebacker II operations produced a number of significant results--large B-52 losses during the first three nights of strikes against Hanoi targets, a rapid attrition of SAMs as Phase I drew to a close, NVN AAA ineffectiveness, and the significance of weather on operations.

#### B-52 Losses

(S) Fifteen B-52s were downed by SA-2s on five separate days (18, 20, 21, 26, and 27 December). Losses were high during Phase I as nine of the bombers were downed in this period, including six on the 20th. Commanders recommended changes to "control the SAM environment,"

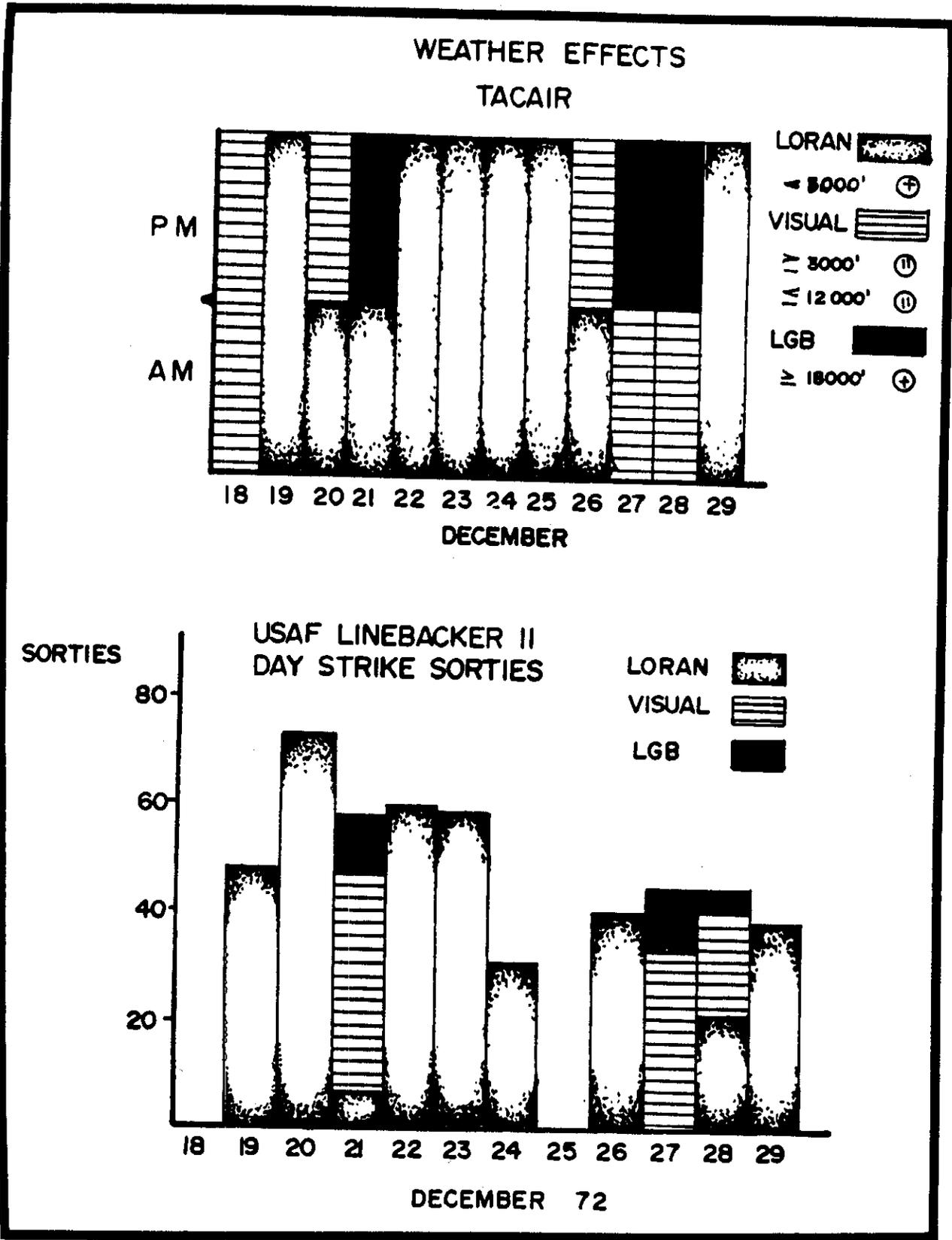


Figure 8

(C-DECL 30 Apr 79)

WEATHER WINDOWS AND LGB STRIKES ON 21, 27, AND 28 DECEMBER 1972

considered essential for B-52 survival. Concern for the high initial loss rate was expressed by the CINCPACAF in a message to 7th AF, in which he said: "Events of the past 4 days produced significant B-52 losses which obviously are not acceptable on a continuing basis. . . . [I recommend the] following for your consideration:<sup>193</sup>

- a. Use Navy EA-6B for support jamming in racetrack pattern just outside the SAM ring, . . . one to cover ingress and one to cover egress area.
- b. Vary B-52 flight altitudes within the chaff corridor on ingress. Change release altitudes and the ingress/egress headings on a daily basis.
- c. Increase the density of our chaff pattern (by combining B-52 targets to enable the use of one chaff corridor per mission, or increasing the number of chaff-dropping aircraft from 12 to 16, or having the B-52s dispense chaff as they approach the target, thus increasing chaff corridor density for subsequent flights.

(S) The CINCSAC concurred with most of the recommendations on 23 December. A chaff blanket was eventually employed over the entire target area for added protection in conjunction with the chaff corridor (first used on the Haiphong strike). Throughout Linebacker II, bomber tactics were continuously evaluated and modified. These modifications included changes in the bomber wave (single waves used in Phase II and III), stream composition, timing (simultaneous TOTs in different target areas), direction of attack, and altitudes. Base altitudes were varied each day; immediate pre- and poststrike altitude changes were used to counter enemy height-finder radars. The large-scale effort on 26 December used the chaff blanket technique for the first time. Finally, the use of widely divergent axes of attack for 120 B-52s against 10 targets on 26 December (plus the other diversionary tactics) were found to be highly effective in diluting the enemy defensive effort.<sup>194</sup>

(S) A significant reduction in B-52 losses during Phase III indicates a partial success in controlling the SAM environment. No B-52s were downed by MIGs; instead, two B-52D tail gunners were eventually credited with MIG kills themselves. Timely MIG warnings and MIGCAP/escort control by the control and warning platforms, plus degraded enemy night intercept capability, prevented the anticipated losses.<sup>195</sup>

#### SAM Activity

(S) The most serious threat to U.S. aircraft during Linebacker II was the SAM reaction. The total number of SAMs fired during the 12-day offensive was greater than during any previous month in the SEA conflict. Specifically, a total of 1,321 SAMs were launched at U.S. planes over NVN, 1,250 of which were directed against Linebacker II forces. B-52s attracted 1,032 SAMs, to give the SAM operators a kill ratio of 68.8 to 1 (SAMs fired per B-52 downed).<sup>196</sup>

(S) The North Vietnamese SAM order of battle had been shifted towards the north and northwest in the latter part of Linebacker I in an apparent effort to counter the attacks on rail and highway networks. The trend during the remainder of the offensive was to increase SAM coverage in RPs 6A and 6B. When Linebacker II began, 9-10 occupied SA-2 sites (photo confirmed) defended targets within a 10-mile radius of Hanoi. All B-52 hits and losses to SAMs were incurred within that 20-mile circle. The SAM threat remained static thereafter in terms of photo-confirmed sites and operating areas. A marked decrease in SAM launches during Phase III indicated a shortage in the SA-2 supply, and photography showed this to be the case at a few individual sites. Photography taken of three sites in the Hanoi area on 31 December showed less than the standard complement of six missiles on launchers and six in reserve. All-source intelligence indicated that the supply of assembled SA-2s in the Hanoi/Haiphong area had reached a low level at the cessation of the bombing.<sup>197</sup>

#### AAA Activity

(S) North Vietnamese AAA enjoyed limited success during Linebacker II. Losses to AAA included three USN/USMC (A-6A, F-4J, A-7E) aircraft and one USAF helicopter on a SAR mission. Five additional USAF and nine USN aircraft received light to moderate AAA damage. Most of the reported 547 AAA reactions occurred in Hanoi, Haiphong, and Thai Nguyen.<sup>198</sup>

(S) AAA threat areas were inadequately defined at the start of both Linebacker I and II because of limited photography. U.S. reconnaissance and tactical aircraft had not been flying over RPs 5 and 6 with any degree of regularity. Similarly, the forces did not have the immediate advantage of daily aircrew reports. The majority of firings reported by tactical aircrews during Linebacker II were 23mm and 82mm. In most cases, as aircraft approached major targets in the Hanoi/Haiphong areas, AAA fire was observed in a continuous stream all along the route. This tactic was contrary to the expected concept of employment in separate AAA high threat areas. The lack of any significant success by NVN AAA might be attributed to the following factors:<sup>199</sup>

- The high altitude of the B-52s (31,000 - 39,000 ft).
- The low approach altitude of the F-111s (200 - 500 ft).
- Poor NVN AAA firing tactics and discipline.
- Complete saturation of the system by a large attacking force, ECM/chaff employment, and diversionary strikes.

#### Weather Significance

(S) Weather made increased demands upon planners during Linebacker II operations, especially with respect to scheduling of weapons and photo reconnaissance missions recording bomb damage. Thunderstorms, extreme

high wind velocities at chaff corridor altitudes, and low cloud ceilings all hindered operations. Weather had a significant impact on day USAF TACAIR strike sorties. Owing to poor visibility, 76 percent of the strikes employed LORAN deliveries. Only 6 percent of the strikes delivered LGBs or EOGBs.\* Cloud forecasts for LGB operations were routinely given to mission planners 24 hours in advance and updated six to eight hours prior to TOTs. To take advantage of mission weather windows, LGB sorties were scheduled daily. There were three brief periods of clear weather in the afternoon hours of 21, 27, and 28 December (Fig 8). Visual and LGB deliveries were made on those dates, but no apparent effort to take advantage of those three periods with surge capabilities is shown in the TACAIR sortie rates. Good reasons existed for this shortcoming. LGB pods were in short supply, and the requirement to support night B-52 strikes limited the option for generating additional daytime LGB strikes.<sup>201</sup>

(S) Another means of taking advantage of available weather windows was to schedule all A-7s with non-LGB F-4 sorties that had either a visual or LORAN delivery capability. An F-4 pathfinder element (with LORAN capability) led two or three flights of A-7s to the target area. If visual release were possible, all aircraft released in that manner. When nonvisual conditions prevailed, the pathfinder element directed the drop using LORAN equipment. Planners did emphasize visual and guided bomb releases within RP 6 whenever the strike forces and weapons were available and planning directives permitted. In the event of non-visual bombing weather, the primary TACAIR mission was to support B-52 operations.<sup>202</sup>

#### TACTICS EMPLOYED

(S) Linebacker II support for B-52 strikes included all available SEA assets. Tactics involved the phasing of EB-66 standoff jamming, chaff delivery aircraft, SAM suppression, and MIG protection (MIGCAP and B-52 escort). U.S. Navy assets augmented the support package (within the capability and range limitations of USN forces). All resources were employed to the maximum extent possible. Initial SAC requirements for chaff protection exceeded the 18th TFW chaff seeding capability. (SAC requested corridors for all targets plus diversionary chaff corridors.) Lack of chaff assets to meet even the primary target requirements, accompanied by the high initial B-52 losses to SAMs, played a large role in the "single-wave" B-52 tactics of Phases II and III. Wind velocities further complicated normal chaff corridor seeding. At 35,000 feet (mean B-52 bombing altitude), the measured winds during the critical first

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*\*(C) For planning purposes, 3/8th or less cloud cover below 18,000 ft and visibility in excess of 3 NM was considered favorable for LGB/EOGB operations. 4/8th or more coverage was considered marginal.<sup>200</sup>*

three days exceeded 25 knots. Insufficient chaff seeding assets prevented reseeding the rapidly shifting corridors. Red Crown radars offered only limited assistance in ascertaining chaff corridor location or effectiveness because of the extended range. Wind forecasts from Fuchu Air Station, Japan, provided the critical wind velocities for 7th AF and 8th TFW planners. Chaff missions were then planned at 7th AF headquarters to give a desired location for the chaff at a specified time. The massive SA-2 response to U.S. bombing around Hanoi indicated less than adequate protection because of chaff dispersion and showed the need for accurate wind forecasts.<sup>203</sup>

(S) Changing the B-52 strike tactics simplified many of the support roles, especially chaff corridor seeding. SAC requested, and received, a 20x20-NM chaff square or blanket over the target during the compressed TOTs. Initially, ingress and egress routes were not covered by chaff when the blanket technique was employed. Later variations were employed to concentrate chaff bombs within a chaff blanket dispensed by the F-4 configured with the ALE-38 chaff dispenser. Aircraft capabilities were used to the maximum, as indicated by 7th AF:<sup>204</sup>

*[The F-4 aircraft configured for weapons/chaff delivery]. . . were operated at 6,000-8,000 ft above combat service ceilings with one engine in afterburner and one engine in military rated power. Maneuverability and visibility under these conditions were marginal.*

(S) SAM suppression support used essentially the same tactics as discussed in Chapter III; however, weather limited the hunter-killer effectiveness. The hunter-killer teams operated throughout each mission, but required sighting of the SAM launch to effectively strike them. Similarly, the Iron Hand aircraft required 5,000-6,000 ft clearance above cloud tops to successfully evade missiles launched against them. Although SAM support facilities had not been included in the initial JCS approved list of targets, they were subsequently struck after the list was revised. The reported correlation of the T8209\* with SA-2 sites and track-on-jamming techniques for SAM launches contributed to the unsatisfactory SAM suppression during Linebacker II.<sup>206</sup>

(S) MIGCAP tactics were similar to Linebacker I, but the MIG threat was considerably reduced during Linebacker II. Initially, said General Vogt, "There was a great deal of concern on the part of SAC that the MIGs would get to them, and many of the SAC people felt that the MIG would be a greater threat than the SAMs. This did not turn out to be the case."<sup>207</sup> There were 27 MIG reactions during December, 26 of which were related to Linebacker II operations. All reactions were by MIG-21

*\*(S) NVN acquisition radar, using India band, and considered more reliable than normally used Fan Song.<sup>205</sup>*

aircraft. The early strikes against airfields and intensive jamming were major contributors to the low level of MIG activity, thus making the losses low on both sides. A major change in MIG tactics was observed for the first time. Whereas, previous MIG tactics were directly from Soviet manuals, Linebacker II saw instead the simultaneous employment of MIGs and SAMs against U.S. forces:208

*During the first half of Linebacker II operations, MIGs were repeatedly vectored against B-52s within periphery of the lethal SAM ring, while SAM units were actively engaging targets. It appears that SAM units have been able to discriminate B-52s from the smaller and faster MIG interceptors. After the Christmas bombing pause, it appeared that the NVN changed their tactics by indirectly vectoring MIGs to a point east of Dien Bien Phu to attack B-52s from the rear before they arrived in the SAM defended area (due to near misses by SA-2s or the complicated SAM firing formula). . . . Since the NVN experienced far greater success in downing B-52s using SA-2s, removal of the MIGs from the SAM threat areas probably simplified their air defense coordination.*

(U) Another 7th AF analysis of the 20 December operations indicated that MIGs were flying "formation" with the B-52s, possibly to provide precise altitudes, airspeeds, and course to defense controllers on the ground. SAM sites were thus able to accurately engage the B-52 force. The MIG-21 force was formidable, fluctuating between a high of 93 at the start of Linebacker to a low of 39 at NVN bases during the successful employment of Teaball. (See Fig 9 and Appendix 8.)

#### LESSONS LEARNED - LINEBACKER II

(S) On 22 December, the Linebacker conferences resumed with a review of the missions flown on 18-20 December over Hanoi. Some specific aircrew comments from the review of the first three days of Linebacker II were as follows:210

■ Day 1: Four Udorn MIGCAP flights reported no MIG reactions against the MIGCAP; however, all flights reported SAM firings. The two Korat Iron Hand flights expended all their SAM suppression ordnance preemptively at the fragged B-52 targets or against active signals. Udorn chaff and escort flights reported heavy SAM reaction coordinated with the tracking AAA. The tracking AAA and random MIG sightings appeared to be at the normal chaff flight altitude used on previous Linebacker day operations (15,000-16,000 ft). Night chaff altitudes were 36,000 ft for Day 1. It was felt that a 1-minute TOT spacing, with both chaff flights at the same altitude could lead to a mid-air collision and should be brought to the attention of 7th AF planners.

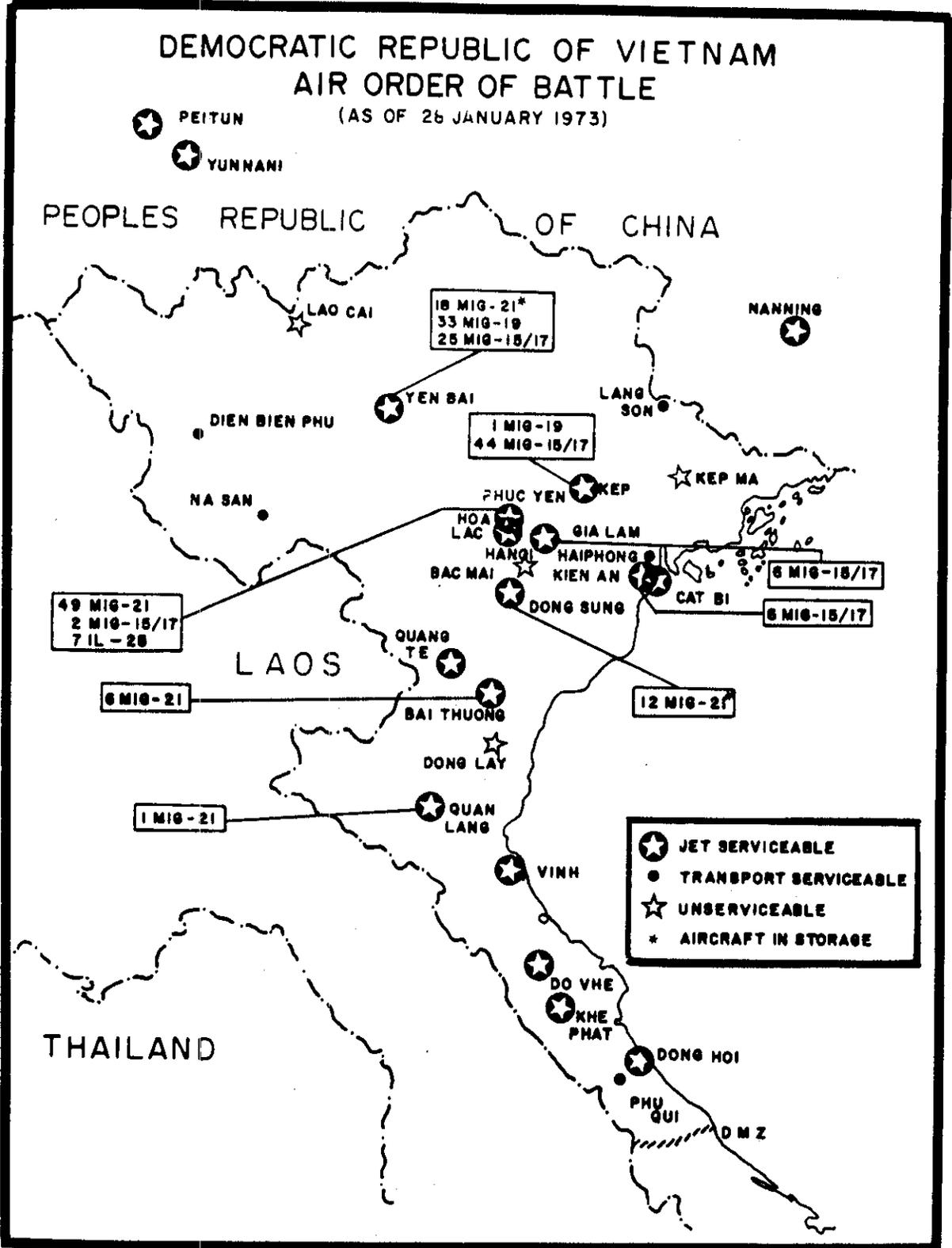


Figure 9

(S-REVW 15 Jul 93)

NORTH VIETNAM AIR ORDER OF BATTLE

■ Day 2: Iron Hand flights reported an almost complete lack of Fan Song signals during SAM launches on the first two days, and SAMs appeared to be salvo-fired. Two of the MIGCAP flights reported that MIGs appeared to be confirming B-52 altitudes to aid fusing of the SAMs. These incidents were followed by accurate SAM salvos at B-52 altitudes in the target area. SAMs were used to force escort flights down into AAA tracking envelopes. Tankers transferred portions of fuel planned for egressing aircraft to enable ingressing aircraft to strike their targets. Spread-out fighter launch times caused excessive loiter time prior to their ingress refueling. SACADVON promptly scheduled three extra tankers for Day 3.

■ Day 3: Brigham (Udorn control and reporting center) reported their VHF frequencies were saturated. The Nam Phong (Marine) aircrew representative wanted to conduct rendezvous by fighter-tanker back-up procedures because of communications saturation. It was also requested that tankers broadcast their positions from a TACAN station in the clear about every two or three minutes for post-strike refueling. (Several fighters had nearly run out of fuel during post-strike rendezvous.) The Teaball representative reported good communications and no MIG reaction because of weather. (On Day 4, Teaball experienced severe communications jamming, apparently originating from Hainan Island, China.)

(U) The comments by aircrew and staff representatives were typical, relating problems in all Linebacker II mission elements. Glaring planning errors, poor command and control procedures, and adverse weather conditions precluding effective bombing by LGB strike elements were all subjects to be reviewed and improved before the Hanoi strikes were to be resumed following a one-day standdown on 25 December. Aircrew comments received careful analysis and had great validity in measuring Linebacker II's effectiveness. The complaint of saturated communications was made at an Arc Light critique:<sup>211</sup>

*No problems with the escort rendezvous were reported and apparently the use of a common strike/escort/bomber frequency has eliminated most of the problems with join-ups. . . . The serious problem of frequency saturation has been addressed repeatedly throughout all of Linebacker I and now again in Linebacker II. Frequency saturation nearly cost us an airplane on the Day 12 [Arc Light] mission. There have been missions where radio discipline was bad, particularly during Linebacker I and recently during the initial [Arc Light] Linebacker II missions. The last several [Arc Light] missions . . . have seen a vast improvement in individual flight radio discipline. The problem now seems to be the total number of aircraft on single frequencies.*

(S) Stereotyped ingress/egress maneuvers were rapidly assimilated into the daily frags, as was the single TOT B-52 strikes from multiple axes of attack. The planning concept of Linebacker II bombers on 26 December illustrates the new concept:<sup>212</sup>

*Timing and altitude are very critical on this mission. . . . The altitudes listed in the route section (of the frag) are ingress altitudes and Commander 8AF is authorized to descend 1,000 feet at 120 seconds TTG (time-to-go) for Hanoi targets. . . . The Haiphong target descent will be started no later than 180 seconds TTG. Post target descent for all cells (Hanoi and Haiphong) is at the discretion of 8AF commander.*

(S) Improvements in the overall command and control system received compliments from aircrews and from General Vogt, 7th AF commander. Specific aircrew comments regarding Red Crown control indicated that Red Crown had done an outstanding job for both the fighters and bombers. Four Udorn MIGCAP flights received Red Crown vectors against MIGs, and one MIG was eventually shot down during the 28 December Linebacker II mission. The MIGCAP flight involved had received its initial vector immediately after ingress.<sup>213</sup>

(C) Command and control coordination was not a significant problem during Linebacker I because the areas of responsibility had long been divided by route packages. The Air Force operated in RPs 1, 5, and 6A, while the Navy operated in RPs 2, 3, 4, and 6B. Under these circumstances, the only problems were in limiting the respective forces' activities to their appointed areas. When Linebacker II commenced, however, a high degree of coordination had to be enforced, because all U.S. forces were concentrating their total effort in the small area of RPs 5, 6A, and 6B with emphasis on prime targets in the Hanoi-Haiphong complexes. The Saigon Coordinating Group (Navy liaison, SAC liaison, and the 7th AF commander) determined the level of participation when coordination was required. General Vogt's summary of the command and control function was simply stated: "I think command and control, and lessons learned, during Linebacker II have been taken seriously, and next time we would be able to do the job much better."<sup>214</sup>

(C) The overall PACAF evaluation of Linebacker II bombing effectiveness opened the door for continued improvements in all-weather bombing systems (LORAN), laser guided bombing during marginal weather conditions, and accurately determining the level of bomb damage as it is inflicted. General Vogt stressed the importance of verifying BDA in order to discredit any public outcry of intentional damage to non-military targets. During Linebacker, extensive BDA photographs were taken of every mission in RPs 5 and 6. General Vogt said of his BDA policy:<sup>215</sup>

I wanted to know precisely where every bomb had gone. . . . I can say with certainty that we knew where just about every bomb went in the two route pack areas. We persisted until we got the photography, even if it took a week or two.

(C) The BDA photography served a second useful purpose. It helped rate weapon systems against different types of targets. Poststrike analyses indicated that damage and disruption could have been much higher and more significant if these same targets had been struck with a short duration effort at the start of Linebacker I, a period just before the enemy's shift to truck movement and dispersed storage. The truck-oriented supply system which was developed in the heartland areas reduced the effect of massive B-52 bombing raids on the railroad yards and storage facilities during Linebacker II.<sup>216</sup>

(C) General employment of U.S. air power against existing North Vietnamese weapon systems (SAMs, MIGs, and AAA) was good. However, one old problem which hindered efficient targeting in air operations over Southeast Asia surfaced again during Linebacker II. There was a definite need for a single manager for air, a single command agency for air resources. This lack of a single responsible commander was thought to have degraded the specific capabilities of all-weather operations, area bombing, and pinpoint bombing. It was shown in a PACAF bombing survey of Linebacker II that a less-than-optimal mix of aircraft and ordnance had been used against specific target categories. "Additionally," according to PACAF, "the isolation of Navy strikes in Route Package 6B and Air Force TACAIR in Route Packages 5 and 6A prevented the optimal integration of forces and ordnance to maximize destruction in each of the areas."<sup>217</sup>

(U) The North Vietnamese moved to counter the massive Linebacker II raids, and their ability to field a suitable defensive team raised questions for planners of future air operations. The implication in the following remarks by Brigadier General Cross is clear:<sup>218</sup>

*For every action that we took there was a reaction by the North Vietnamese. They never waited to make some corrective action when they felt like they had failed the course. . . . If they were provided even more modern equipment they could certainly be able to make us stop and think about the worth of our continued bombing of the North, because the SA-3 and SA-4 missile would present new and more complex problems to us and make our survivability more difficult in an unfriendly environment.*

[REDACTED]

CONCLUSION

(U) While Hanoi anticipated an expansion of U.S. bombing (according to press reports and intelligence sources), the intensity of air strikes undoubtedly was greater than expected. Massive evacuations of Hanoi and Haiphong were reported, and there were indications that the people were anxious to leave the cities for the first time in the war. The intended objective, as stated by CINCPAC to COMUSMACV, had been achieved. U.S. forces had been ordered to "conduct maximum/combined TACAIR and B-52 sustained strikes in [the] NVN heartland [and to] strike targets that have [the] greatest military/psychological impact on NVN leaders and populace."<sup>219</sup>

(C) Although the psychological impact is difficult to measure, some indications were evident after U.S. air strikes in the Gia Lam area. Employees were seen wandering around completely disoriented and foreigners were permitted to walk anywhere in the airport area, which was normally restricted. Other reports indicated similar instances undoubtedly occurred throughout the target areas in Hanoi and Haiphong. Although the NVN leadership appeared to maintain control of the situation, all the facts point to Linebacker II as the one campaign which brought the North Vietnamese back to the conference table in Paris, according to a PACAF study.<sup>220</sup>

(U) During his press conference on 24 January 1973, presidential advisor Dr. Henry Kissinger was asked if Linebacker II was the key to achieving agreement. He answered: ". . .there was a deadlock. . .in the middle of December. . . . There was a rapid movement where negotiations resumed. . .on January 8. These facts have to be analyzed by each person for himself."<sup>221</sup>

[REDACTED]

[REDACTED]

[REDACTED]

## NOTES

1. Rprt (C-DECL 27 Sep 79), Proj CHECO, Linebacker: Overview of the First 120 Days, 27 Sep 73 (material used U) (hereinafter cited as CHECO, Linebacker, First 120 Days) (CHECO microfilm roll (CMR) TS-195, odometer 119).
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3. Hist (TS-NF-REVV 15 Jul 93), Hq MACV, Jan 72 - Mar 73, 15 Jul 73, I, B-9 (material used S) (hereinafter cited as MACV Hist).
4. Msg (TS-REVV 9 May 92), JCS to CINCPAC, subj: NVN Interdiction Program, 090247Z May 72 (material used U) (CMR TS-137, 20).
5. Msg (TS-REVV 14 May 92), 7AF to wings, subj: Linebacker Standing OpOrd, 141200Z May 72 (material used S) (CMR TS-137, 24).
6. Rprt (C-DECL 1 Mar 79), Proj CHECO, Rules of Engagement, November 1969 - September 1972, 1 Mar 73, pp 48-56.
7. Ibid, pp 50-56.
8. Msg (TS-REVV 10 May 92), CINCPACFLT to COMSEVENTHFLT, subj: NVN Interdiction Program, 100925Z May 72 (material used S) (CMR TS-139, 150).
9. Msg (TS-REVV 9 May 92), JCS to CINCPAC, subj: NVN Interdiction Plan, 092356Z May 72 (material used S) (CMR TS-137, 73).
10. Msg (TS-REVV 3 Jun 92), JCS to CINCPAC, subj: Linebacker, 030020Z Jun 72 (material used S) (CMR TS-140, 92).
11. Current History, Aug 72, p 92.
12. Msg (TS-REVV 4 Jun 92), CINCPAC to COMUSMACV, subj: Temporary Operating Authorities - SEAsia, 040425Z Jun 72 (material used S) (CMR TS-137, 68).
13. Rprt (TS-NF-REVV 30 Jun 92), Hq USAF/XO, subj: Rolling Thunder - Linebacker: A Preliminary Comparative Analysis, Jun 72, Tab 2 (material used S) (CMR TS-180, 11).
14. Ibid, Tab 3 (material used U).
15. Ibid (material used S-NF).
16. Ibid.

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17. Msg (TS-REVV 3 Sep 92\*), CINCPAC to CINCPACFLT, subj: Linebacker/Prime Choke Extension, 030248Z Sep 72 (material used S).
18. Msg (TS-REVV 25 Sep 92\*), 7AF/DO to wings, subj: Fragmentary Operations Order Special Instructions, 251135Z Sep 72 (material used S).
19. Msg (TS-REVV 11 Oct 92\*), Adm Clarey to VAdm Holloway, 110915Z Oct 72 (material used S).
20. Msg (TS-REVV 22 Oct 92\*), JCS to all AF units, subj: Operations in NVN, 221956Z Oct 72 (material used S).
21. Msg (U), CINCPAC to JCS, subj: Linebacker/Pocket Money Assessment, 050339Z Oct 72 (hereinafter cited as CINCPAC, Pocket Money Assessment) (CMR TS-168, 45).
22. Msg (U), 7AF/DO to CINCPACAF/DO, subj: Linebacker Intentions, 230829Z Aug 72 (CMR TS-184, 8).
23. Ibid.
24. Ibid.
25. Msg (U), CINCPAC to 7AF/CC, subj: SEADAB/OPREP-3 Reporting, 150345Z Jul 72.
26. Msg (TS-REVV 10 May 92), CINCPAC to CJCS, subj: NVN Interdiction Program CINCPAC Master Target List, 100427Z May 72 (material used S) (CMR TS-139, 149).
27. Msg (U), 7AF/DO to CINCPACAF/DO, subj: Linebacker Intentions, 230829Z Aug 72 (CMR TS-184, 8).
28. Msg (TS-REVV 22 Dec 92\*), CINCPAC to COMUSMACV, subj: Operations in NVN, 222031Z Dec 72 (material used S).
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30. Msg (TS-REVV 25 Oct 92\*), CINCPAC to CINCPACFLT, subj: Linebacker Target Validation, 250812Z Oct 72 (material used S).
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32. Msg (TS-REVV 29 Dec 92), CINCPACAF to 7AF/CC, subj: B-52 Strike Coordination, 290245Z Dec 72 (material used S) (CMR TS-184, 115); msg (TS-REVV 31 Dec 92\*), 7AF/DO to PACAF/DO, subj: B-52 Strike Coordination, nd (material used S).

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33. Msg (TS-RE VW 2 Aug 92), CINCPAC to CINCPACFLT, subj: Linebacker Target Priorities, 022211Z Aug 72 (material used S) (CMR TS-184, 9).
34. Ibid.
35. Msg (TS-RE VW 4 Jan 92), CINCPAC to all AF units, subj: Temporary Operating Authorities - SEAsia, 040425Z Jan 72 (material used S) (CMR TS-137, 67).
36. CINCPAC, Pocket Money Assessment.
37. Ibid.
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39. Msg (U), CINCPAC to CINCPACFLT & CINCPACAF, subj: Air Intentions Message Number Two, 260330Z Oct 72 (CMR TS-180, 125).
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41. Msg (U), CINCPACAF to 13AF, subj: Thailand Tanker Beddown, 140342Z Oct 72 (CMR TS-160, 110).
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43. Briefing (U), MACV/DO-211, subj: 7AF Air Operations, 2 Oct 72 (hereinafter cited as MACV Briefing, 2 Oct 72) (CMR TS-180, 104).
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45. Briefing (U), MACV/DO-223, subj: Counteroffensive Operations Summary, 5 Sep 72 (CMR TS-180, 103).
46. Draft 7AF OPlan 715 (material used U).
47. Msg (U), CINCPACAF/XP to 7AF/CC, subj: Constant Guard VI, 230410Z Sep 72 (CMR TS-180, 165).
48. Msg (TS-RE VW 2 Nov 92), CINCPACAF/DO to CINCPAC, subj: PACAF OPlan C-101, Commando Flash, 022202Z Nov 72 (material used S) (CMR TS-180, 118); msg (TS-RE VW 2 Nov 92), CINCPACAF/DO to CINCPAC, subj: PACAF OPlan C-102, Commando Hawk, 022201Z Nov 72 (material used S) (CMR TS-180, 117); msg (TS-RE VW 2 Nov 92), subj: PACAF OPlan C-103, Commando Fly, 022200Z Nov 72 (material used S) (CMR TS-180, 120).

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50. MACV Briefing, 2 Oct 72.
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52. MACV Hist, I, B-39 (material used C-DECL 15 Jul 79).
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55. Briefing (U), MACV/DO, subj: Counteroffensive Operations Summary, 5 Sep 72 (CMR TS-180, 103).
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58. Intv (C-DECL 28 May 79), Maj William W. Lofgren, Jr., Proj CHECO, with Gen John W. Vogt, Jr., COMUSSAG/7AF, 28 May 73 (CMR S-899, 166).
59. Draft 7AF OPlan 715 (material used U)
60. Cross Intv.
61. Msg (U), 7AF to all wings, subj: Linebacker, 201237Z Sep 72.
62. Msg (TS-REW 27 Dec 92), CINCPACFLT to COMSEVENTHFLT, subj: Linebacker II, 270945Z Dec 72 (material used S) (CMR TS-184, 115).
63. Msg (TS-REW 27 Dec 92), CINCSAC to CINCPAC, subj: Linebacker II, 272245Z Dec 72 (material used S) (CMR TS-184, 86).
64. Msg (TS-REW 11 Aug 92\*), CINCPACAF to 7AF/CC, subj: Linebacker Operations, 112151Z Aug 72 (material used S); msg (TS-REW 17 Aug 92\*), 7AF/CC to CINCPACAF, subj: Linebacker Operations, 170736Z Aug 72 (material used S).
65. Msg (TS-REW 27 Dec 92\*), COMUSMACV to CINCPAC, subj: Linebacker II, 272245Z Dec 72 (material used S).

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70. Msg (U), 620TCS to 7AF/CC, subj: Control of MIGCAP Aircraft, 020350Z Dec 72.
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80. Msg (U), CINCSAC to CINCPAC, subj: Linebacker II, 191915Z Dec 72 (CMR TS-184, 80); msg (U), CTF77 to 620TCS, subj: Buffalo Hunter Communications, 091400Z Dec 72.
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98. Cross Intv.
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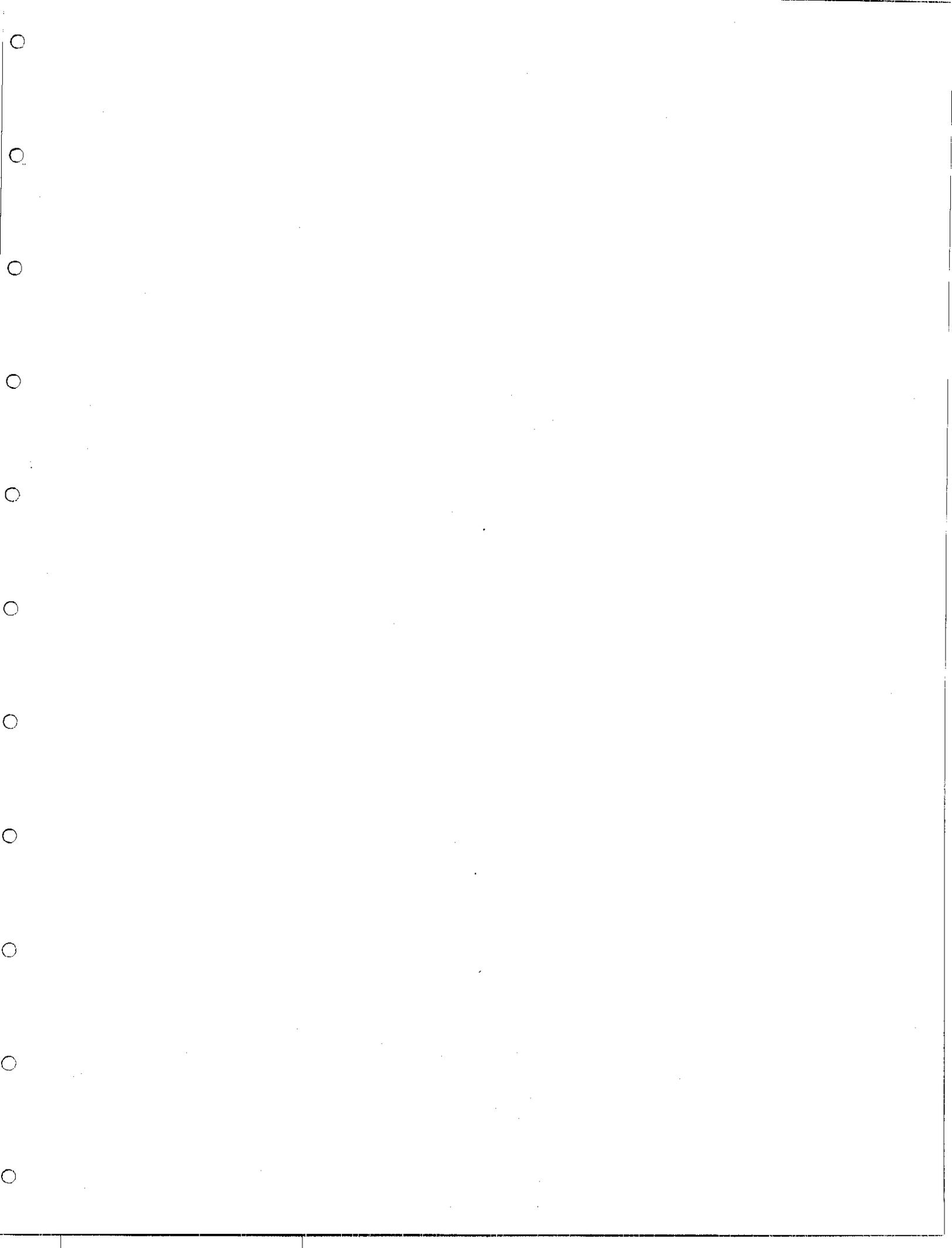
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\*Ed note: Most restrictive of declassification rules under EO 12065 applied to documents for which regrading instructions could not be confirmed.



## GLOSSARY

AAA	antiaircraft artillery
AB	air base
ABCCC	airborne battlefield command and control center
ACM	air combat maneuvering
ADVON	advanced echelon
AF	Air Force
AFB	Air Force Base
AGM	air-to-ground missile
AIG	address indicating group
AIM	air intercept missile
AOA	air operating authorities
ARM	anti-radiation missile
AWACS	airborne warning and control system
BARCAP	barrier combat air patrol
BDA	bomb damage assessment
Blue Chip	7AF command and control center which controlled out-country combat operations
Brigham	radar control and reporting center which was located at Udorn RTAFB
CAP	combat air patrol, an aircraft patrol provided over an objective area, over the force protected, over the critical area of a combat zone, or over an air defense area, for the purpose of destroying hostile aircraft before they reach their target
CBU	cluster bomb unit
CCK	Ching Chuan Kang (AB, Taiwan)
CEA	circular error average, arithmetic average of the circular error of all munitions delivered on a particular target
CEP	circular error probable, an indicator of the accuracy of munitions delivery; the radius of a circle within which half of all munitions expended are expected to fall
CETF	College Eye Task Force, EC-121D aircraft which provided airborne navigational assistance and/or border warnings by use of IFF/SIF, and MIG warnings to friendly aircraft
CHECO	Contemporary Historical Examination of Current Operations
CINCPAC	Commander in Chief, Pacific Command
CINCPACAF	Commander in Chief, Pacific Air Forces
CINCPACFLT	Commander in Chief, Pacific Fleet
CINCSAC	Commander in Chief, Strategic Air Command
CJCS	Chairman, Joint Chiefs of Staff
CMR	CHECO microfilm roll

COA	confirmed (SAM) operating area
COM	commander
COMUSMACV	Commander, US Military Assistance Command, Vietnam
CONUS	continental United States
COS	confirmed (SAM) operating site
CSAF	Chief of Staff, US Air Force
CTF	commander task force
CVA	attack aircraft carrier (US Navy)
DASC	direct air support center
DCS	deputy chief of staff
D/D	destroyed/damaged
DECL	declassify (on:)
DMZ	demilitarized zone
DO	director of operations
DR	dead reckoning
ECM	electronic countermeasures
ELINT	electronic intelligence
EOGB	electro-optical guided bomb
EW	electronic warfare; early warning (radar)
FAC	forward air controller
frag	fragmentary operations order
G	gravity
GCI	ground-controlled intercept (radar)
H	HOTEL time zone (Greenwich mean time + 8 hours, as in South Vietnam)
HF	high frequency
IFF/SIF	identification, friend or foe/selective identification feature
IFR	instrument flight rules
IMC	instrument meteorological conditions
in-country	that part of the SEA conflict within South Vietnam
Invert	control and reporting post which was located at Nakhon Phanom RTAFB
JCS	Joint Chiefs of Staff
KCAS	knots calibrated air speed
KTAS	knots true air speed
LASER	light amplification by stimulated emission of radiation
LOC	line(s) of communication
LOP	(LORAN) line of position
LORAN	Long-range navigation

LT GAP	LORAN targeting (through) grid annotated photography
MHz	megahertz
MIG	Soviet fighter aircraft designed by Mikoyan and Gurevich
Monkey Mountain	a radar, communications, and electronics complex which was located near Da Nang AB, RVN
MR	military region (of South Vietnam)
MSQ-77	MSQ-35 radar bomb scoring equipment modified for radar guidance of bombers
nd	no date
NF	not releasable to foreign nationals
NGFS	naval gunfire support
NKP	Nakhon Phanom (RTAFB, Thailand)
NM	nautical mile
NVN	North Vietnam(ese)
out-country	that part of the SEA conflict outside the borders of South Vietnam
PACAF	Pacific Air Forces
PACFLT	Pacific Fleet
PACOM	Pacific Command
Pave Phantom	LORAN equipped F-4 aircraft
pod formation	a two- or four-ship fighter formation which was flown in such a manner that the ECM pods on each aircraft offered mutual ECM protection
POL	petroleum, oil, and lubricants
POW	prisoner of war
PRC	People's Republic of China
QRF	quick reaction force
Red Crown	US Navy destroyer on station in the northern part of the Gulf of Tonkin for radar surveillance
RESCAP	rescue combat air patrol
REVM	review (for declassification on:)
RHAW	radar homing and warning
RITS	reconnaissance intelligence technical squadron
ROE	rules of engagement
RP	route package (area, of North Vietnam)
RTAFB	Royal Thai Air Force Base
RVN	Republic of Vietnam
SAC	Strategic Air Command
SAM	surface-to-air missile
SAR	search and rescue
SEA	Southeast Asia
Sentinel Lock	a method of determining LORAN coordinates

7AF	Seventh Air Force
Shrike	AGM-45A, a passive homing anti-radar air-to-surface missile designed for use against hostile gun- or missile-directing radar
Snakeye	bomb fin structure providing high-drag ballistics
SPINS	special instructions (in a frag)
Standard ARM	AGM-78B anti-radiation missile
SVN	South Vietnam(ese)
TACAIR	tactical air
TACS	tactical air control system
TCS	tactical control squadron
TD	(LORAN) time delay
TDY	temporary duty
TESS	test squadron
TFR	terrain following radar
TFW	tactical fighter wing
TG	(seconds) to go (before release)
TOT	time over target
TRS	tactical reconnaissance squadron
TRW	tactical reconnaissance wing
TSP	transshipment point
TTG	time to go (before release)
UHF	ultra-high frequency
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy
USSAG	United States Support Activities Group
USSR	Union of Soviet Socialist Republics
VHF	very high frequency
WCC	weapons control center
WS	weather squadron
XP	(Deputy Chief of Staff) Plans
Z	ZULU (Greenwich mean time)

## APPENDIX 1

CHRONOLOGY OF MAJOR EVENTS  
(September 1972 - January 1973)1972

- 11 Sep USAF jets again destroyed the Paul Doumer Bridge in Hanoi, just as repairs were nearing completion.
- 18 Sep US Seventh Fleet off-shore strength in Gulf of Tonkin was announced at 39,000.
- 28 Sep USAF F-111s returned to combat for the first time since 1968.
- 30 Sep US troop strength in South Vietnam was reduced to 35,500.
- 8 Oct B-52s struck a supply buildup near Vinh in the deepest raids into North Vietnam in 6 months.
- 16 Oct The US reported that 400 fighter bombers struck NVN yesterday in the second heaviest bombing of 1972.
- 23 Oct B-52s did not bomb NVN, for the first time in 18 days; TACAIR strikes were at the lowest level in 3 weeks.
- 27 Oct Defense Secretary Melvin Laird announced a halt to bombing above the 20th parallel in NVN, in response to NVN's indicated willingness to sign a peace agreement in Paris.
- 31 Oct B-52s staged the heaviest raids in 3 months over NVN, south of the 20th parallel.  
  
US troop strength in SVN was reduced to 32,200.
- 1 Nov NVN announced there would be no further peace talks in Paris until the US signed the draft cease-fire agreement.
- 22 Nov The first B-52 combat loss of the Vietnam War occurred when one was hit by a SAM near Vinh.
- 30 Nov US troop strength in SVN was reduced to 25,500.
- 18 Dec President Nixon ordered a resumption of bombing north of the 20 parallel, suspended since 27 October.

- 26 Dec Bombing of NVN continued after a 36-hour Christmas pause.
- 30 Dec President Nixon announced a halt to bombing of NVN above the 20th parallel.
- 31 Dec Revised figures of Linebacker II (18-29 December) showed a total of 15 B-52s lost and 12 other aircraft shot down.
- US troop strength in SVN was reduced to 24,000.

1973

- 8 Jan Serious private negotiations resumed between Henry Kissinger and Le Duc Tho in Paris.
- 15 Jan President Nixon ordered that bombing, shelling, and mining be suspended over all of NVN.
- 27 Jan In Paris, US, North Vietnamese, South Vietnamese, and Viet Cong delegates signed a cease-fire agreement to end the war and restore peace in South Vietnam. It became effective at 2400Z (0800 on 28 January, SVN time).

## APPENDIX 2

NORTH VIETNAM SORTIE SUMMARY

<u>Type Sortie</u>	<u>May 72</u>	<u>Jun 72</u>	<u>Jul 72</u>	<u>Aug 72</u>	<u>Sep 72</u>
USN Attack	3,920	4,151	4,175	4,746	3,937
USAF Attack	1,919	2,125	2,310	2,112	2,297
USMC Attack	23	34	8	38	102
TOTAL Attack	5,862	6,310	6,493	6,896	6,336
TOTAL Sorties*	10,982	12,121	12,879	13,316	13,233
B-52	1	271	308	572	411

	<u>Oct 72</u>	<u>Nov 72</u>	<u>Dec 72</u>	<u>Jan 73</u>
USN Attack	2,674	1,716	1,383	863
USAF Attack	2,214	1,606	1,548	716
USMC Attack	34	79	119	50
TOTAL Attack	4,999	3,401	3,050	1,629
TOTAL Sorties*	11,368	8,909	7,894	6,731
B-52	616	846	1,381	535

\*Excludes B-52 sorties.

Linebacker operations officially commenced on 10 May and terminated on 29 December 1972.

Source: Hist, MACV, Jan 72 - Mar 73, I, B-19 (material used S-REVV 15 Jul 93).