a zone of insecurity below the 20th parallel in which the RVNAF could introduce agents, saboteurs, and company-sized Special Forces units to provide intelligence, engage in unconventional warfare activities, and persuade Vietnamese in the area that they could escape from the communists. If the North Vietnamese strategy was to control I and II Corps, this zone of insecurity would defeat their effort by forcing them to divert resources.

Ky also said that the CHICOM's would not enter the war if activity remained below the 20th parallel that North Vietnam would not attempt a large scale invasion of RVN, and that the populace below the 20th parallel would be responsive to RVN activity.

COMUSMACV concurred in Ky's proposals but withheld judgment on the "zone of insecurity" until he could determine the RVNAF's capacity to carry it out.

At the OSD conference in Honolulu on 20 April, the Secretary of Defense, Mr. McNamara, said that the Rolling Thunder bridge operations were good but that the armed recce was not accomplishing results worth the resources. He said in effect that we have been wasting air operations over the last 20 years, and particularly during World War II, as far as destruction was concerned. Admiral Sharp requested authority for alert armed recce sorties in addition to the 24 daily sorties currently allocated.

Admiral Sharp at the meeting was critical of Barrel Roll and Steel Tiger results but the Secretary of Defense seemed to favor armed recce in Laos over similar programs over North Vietnam.
The Secretary of Defense felt that too few sorties were projected within the RVN and too many for Rolling Thunder, Barrel Roll, and Steel Tiger. He later said that if there were requirements for close support that were not being met in RVN he would introduce more squadrons.

In commenting on armed recces, the Secretary of Defense voiced doubts about the program in North Vietnam, saying that losses should be measured in terms of destruction achieved and not in relation to sorties.

The biggest Rolling Thunder effort to date was launched on 23 April with some 285 tons of bombs dropped on seven bridges, all of which were destroyed. This heavy pressure continued for the next week in strikes against bridges, ferries, naval installations, coastal shipping, and barracks. On 30 April, a strike was flown against the Thien Linh Dong Army Supply Depot, about 75 miles from Hanoi. Strikes continued into May on an intensified scale with several strikes in the Vinh area, including an attack on Vinh Airfield on 8-9 May.

As of early May, the forces engaged in strikes against North Vietnam were still limited to the area south of the 20th parallel. Targets attacked included ammo and supply depots, military barracks, port facilities, airfields, radar sites, and lines of communication, including rail and highway bridges. The results of these missions, as verified by BDA, indicated that U.S. airpower was inflicting significant damage to North Vietnam. Reports filtering out of
North Vietnam indicated considerable unrest among the civilian populace, with many women and children being evacuated from Hanoi itself. Positive precautions were being taken in the form of anti-aircraft defenses around the city. While it was difficult to assess how these strikes were affecting the war in the south, PACAF said that it was safe to assume that continued pressure by air against North Vietnam would be felt by the Viet Cong and Pathet Lao in the form of logistics problems.

PACAF was anxious to extend the area for air strikes above the 20th parallel in order to serve notice to North Vietnam that the U. S. did not intend to continue sanctuary status above the 20th. PACAF further wanted to continue the interdiction program, to include destruction of supply points and LOC's above the 20th, as a means of enhancing and supporting the current choke point and interdiction program in Laos. PACAF also recommended to CINCPAC that attacks against the North Vietnam include random strikes of specific target areas from the expanded "94 target" list above the 20th parallel rather than continue the gradual extension northward. This would reduce the capability of North Vietnam to provide warning and defensive reaction against the Rolling Thunder program.

Included in the list of random targets proposed by PACAF above the 20th parallel were the Haiphong POL products storage area, the Hanoi POL products storage depot, the Hanoi Gia Lam Airfield, and the Phuc Yen Airfield.
Special reconnaissance over North Vietnam in May showed that prior to the special Rolling Thunder program (13 May) they had become accustomed to BDA flights in support of strikes and sporadic armed recce of main LOC's. It appeared that North Vietnam had decided to accept the risk and continue to move supplies during the daytime. This was probably the reason, according to PACAF, that many vehicles were sighted during the first day of the current effort. The dramatic drop-off in vehicle sightings after 184 recce flights in three days, and the relative ineffectiveness of night recce by comparison, indicated a switch to night movements, a pattern which had previously been observed in Laos.

As was experienced in Laos, the enemy made considerable efforts to maintain the movement of traffic on vital LOC's. Attempts were made to repair key bridges. Where this was impracticable, alternates such as fords, ferries, and barges were used. It was also anticipated that alternate roads or trails would be developed as bypasses and that increased emphasis would be placed on portages, porter traffic, and small vessel water transport, both inland and on the coast.

PACAF, therefore, suggested that interdiction operations concentrated on armed recce by day and night over the main LOC's leading to Barthelemy, Nape, and Mu Gia Passes on Routes 7, 8, and 12, (as well as routes 1 and 15) respectively. It also suggested that road interdictions be directed at choke points in North Vietnam and Laos on a more concentrated and selective basis and that
a flexible attack program be directed at new truck parks, tranship-
ment points, ferries, barges, and river traffic which were developed
after successful bridge destruction.

A program to isolate the city of Vinh and reduce its capability
to serve as a center for logistic support in southern North Vietnam
was directed by CINCPAC on 11 May. A concurrent program for inter-
dicting rail traffic, including bridges was also directed. To
carry out the program, PACAF suggested using two ship flights of F-105's
to drop five MLI 108 mines each in shallow dive attacks on railroad
tracks beds. If the fuse of these mines was not activated by rail
traffic, delayed fusing would cause detonation in 75 to 85 hours.
These mines could be delivered in the afternoon with little risk
and followed the next day by armed recce which could hit any
stopped trains.

CINCPAC, evaluating the results of the first fourteen weeks of
Rolling Thunder, told the JCS that the air attacks against North
Vietnam had disrupted rail and road movements, and completely
changed the pattern of logistic support into Laos. It was there
that the first concrete military results of the strikes would be
seen. The Laoctian communists were more directly dependent on
North Vietnamese support than the Viet Cong and the cumulative
effects of the strikes would be realized as the difficulties of the
rainy season added to the effects of air interdiction.

CINCPAC indicated that there was some doubt as to how much
remained to be done south of 20 degrees North. The destruction
of North Vietnamese military and logistic support facilities south of 20 degrees has just begun, he added. Within four of the major barracks complexes attacked, roughly two thirds of the 674 known buildings remained undamaged. Of three major ammo storage depot complexes struck, 40% of the 46 known ammo storage and 56% of the 95 known depot support buildings had been destroyed or damaged. The surface had barely been scratched on striking North Vietnamese shipping and port facilities. Despite the success of bridge attacked, the major portion of the bridge and ferry system was still intact. Newly developed dispersal, staging, rest, and refueling areas were yet to be attacked.

The immediate military objective of the strikes, he said, was to reduce the movement of personnel and supplies to support the Viet Cong and the Pathet Lao/Viet Minh. However, in the effort to do this, the U. S. should strive to convince North Vietnamese leadership that U. S. staying power was greater than theirs. This could be done by raising their direct costs in terms of manpower and military, logistic and support facilities, as well as in indirect economic effects. Secondly, and perhaps more important, the air campaign should generate pessimism and a feeling of helplessness among the military, and general frustration, anxiety, and fear among the civilian populace. Lastly, CINCPAC added, the U. S. should present the North Vietnamese government and military with an every growing management problem. The cumulative effect of these internal problems should turn North Vietnam's attention
inward rather than outward. The total impact would be realized in the degradation of supervision, military training, cadre replacement, and build-up for Laos and Republic of Vietnam as well as a reduction of supplies. By making it as difficult and costly as possible for North Vietnam to support the insurgency in Laos and the Republic of Vietnam, success could be realized when they were convinced that the cost of aggression was too high. 111

CINCPAC further stated that it was certain that interdiction, even when a maximum feasible damage level was attained, could not be expected to stop completely the flow of supplies to the Viet Cong through southern North Vietnam and Laos routes. Further, the U. S. could not predict how successful the Viet Cong would be in getting weapons and ammunition through other sources and channels. The capabilities and limitations of airpower, he said, had to be carefully weighed within current political parameters and the vulnerabilities of North Vietnam in this framework. 112

CINCPAC proposed a concept which would call for an ubiquitous demonstration of U. S. airpower carrying out a round-the-clock program of immobilization, attrition, and harassment. Specific types of missions to do this included extensive day armed recce of land and inland waterway routes south of 20 degrees; night blockade tactics; continued route interdiction south of 20 degrees; repeated attacks on known military facilities in this area by a small strike force; destruction of dispersed supplies, equipment, and military personnel; and stepped-up interdiction of supplies by sea
through attacks on port facilities and identified North Vietnam shipping.

These missions, he added, should be accomplished on an incremental basis by repeated strikes by appropriate number of aircraft. There was more than enough airpower available to keep unrelenting pressure on North Vietnam. This pressure was less than it could be because of certain self-imposed operational restraints. It was possible without altering the necessarily rigid control of the Rolling Thunder campaign to increase the effectiveness of airpower by combining greater number of armed recce flights with small precise bombing attacks on pre-briefed military targets. This would provide maximum surveillance with its prohibitive effect on military movements in North Vietnam, along with effective attacks of military objectives. The armed recce flights would be augmented by other small flights of pre-briefed or on-call aircraft. Analysis had shown that the desired damage level on certain type targets could be achieved with less strike aircraft per target, while at the same time maintaining maximum area harassment of repair efforts through these frequent and unpredictable pattern of attacks.

The air operations, CINCPAC added, should contain a mixed bag of tricks, including stepped-up night operations with flareships, more frequent use of delayed fuse weapons to further harass repair activities, and the establishment of fixed surveillance points immediately inside the North Vietnam/Laos border.
While he believed that larger scale attacks had a place in the campaign, CINCPAC indicated it was well to get away from the policy of inflicting maximum feasible damage in a one day strike. It was better to hit larger targets incrementally over a period of days based on BDA. The current system of carrying out a strike in a one day period had become too stereotyped, he added. Incremental strikes would give greater latitude in marginal weather, allow for better employment of strike aircraft, and would probably result in greater and more precise damage to the primary targets and reduced U.S. losses. Large scale strikes should be programmed against major military installations ranging northwestward to Dien Bien Phu. These larger strikes would be scheduled in consonance with the developing situation as political and psychological considerations made them appear desirable. The attack on Dien Bien Phu could be launched to attain maximum destruction, CINCPAC said, as this attack on a prestige target would be felt throughout the Asian communist world and its role in resupplying Pathet Lao/Viet Minh forces in Laos could not be underestimated.

CINCPAC wanted to complement the strikes with intensified psychological operations, telling the people that the U.S. had no quarrel with them and that they should avoid military installations. The themes should be hammered home that the intent of the strikes was to destroy the North Vietnamese military capacity and that the U.S. was determined to continue until the military left their cousins in peace.
On 11 May, DOD ordered a pause in strikes against North Vietnam to last for several days effective 13 May 1965. Photo and visual recce missions were allowed to continue during this pause, so long as they could be carried out without flak suppression aircraft or escorts. Bombing sorties, which would have been applied to North Vietnam strikes during this period, were directed to in-country strikes. This restriction, of course, applying only to those aircraft based in the Republic of Vietnam or off-shore.

This "bombing pause", which lasted until 18 May, was a political decision based on diplomatic contacts with the Hanoi government. Rolling Thunder strikes were resumed on 18 May.

This specific goal of the Rolling Thunder program, according to Secretary of Defense, was to destroy targets essential to the infiltration of men and materiel into Laos and South Vietnam within limitations imposed by higher authority. To do this, the program resumed in late May, was to be directed against certain categories of targets south of the 20th parallel, avoiding population centers. These targets were (1) LOC's, including land transport systems, storage areas, inland waterways, and coastal shipping, (2) military installations, including barracks and headquarters, training facilities, communication facilities, ammo dumps, POL storage, supply areas, airfield and naval bases, and (3) thermal power plants. Strikes against fixed targets could be accomplished on an incremental basis by scheduling appropriate numbers of aircraft for repeated strikes, as indicated by BDA. In addition to attacks against
fixed targets, extensive day and night armed recce would be conducted over North Vietnamese LOC's from the DMZ to the 20th parallel, including estuaries and coastal islands. The objective of armed recce would be the maximum interdiction of LOC's through surveillance and destruction of targets encountered, including railroad rolling stock, trucks, ferries, lighters, radar sites, secondary bridges, road repair equipment, bivouac and staging areas, naval craft mooring areas, North Vietnamese naval craft and other craft which fired on friendly aircraft.

One strike per week was to be planned against a military target north of the 20th, avoiding the Hanoi-Haiphong area and population centers. Sorties used for this purpose would be in addition to 400 strike sorties a week authorized for allocation to attacks against fixed targets and armed recce.

CINCPAC was to forward to the JCS a weekly plan of operations by 0900Z each Thursday. The first plan covering Rolling Thunder 18, 11-17 June, was to be submitted by 030900Z June. This would include all targets, estimated strike sorties per target, and estimated strike sorties for armed recce. CINCPAC was to indicate which fixed targets would be included in armed recce missions and which would be used on a single strike or an incremental basis.
The Enemy Anti-Air Threat

Since there were restrictions on strikes against the airfields where MiG's were based, CINCPAC in April asked his commanders to develop and submit to him by 15 April detailed plans to achieve maximum success in flushing and destroying MiG's when on strike sorties against targets of secondary importance.

Earlier, the JCS had proposed baiting the MiG's with an attack on a significant target from the 94 target list and located close enough to Hanoi to be within reasonable range of the MiG intercept. The mission would appear as a realistic strike, similar to Thanh Hoa, but forces would be over the target with minimum air to ground ordnance and adequate fuel to maintain high airspeed. Fuel would be sufficient so that after external stores were jettisoned, fighters would have a full internal fuel load for optimum fighting endurance, with enough reserve to pursue the enemy as necessary. EC-121's over Tonkin Gulf would be used for early warning and GCI assistance, and a low to medium altitude F4C screen would be set up between the target area and the MiG base, using the basic F4C weapons to acquire and destroy hostile MiG tracks. F-104's would provide CAP under GCI control. If the MiG's penetrated the F4C and F-104 screen and attacked the strike forces, they would jettison external stores and pursue the MiG's all the way to home base if necessary, taking advantage of U.S. fighter speed and performance. The JCS felt that destruction of the target was of less importance than getting the MiG's to take the bait.
On 30 May, COMUSMACV notified CINCPAC that three SA-2 missile sites near Hanoi were nearing operational readiness and posed a potential threat to Trojan Horse recce operations. When the sites were operational, they could deny U. S. high altitude photo intelligence of the Hanoi area unless destroyed, he added. He also noted that information showed that there were IL-28 aircraft in North Vietnam for the first time. These represented a potential threat to air bases in Republic of Vietnam.\footnote{125/}

There were several factors, he said, which dictated the destruction of these SAM sites before they became operational. Trojan Horse high altitude photo intelligence could continue without high risk. Knocking out the sites one at a time just prior to their becoming operational would involve minimum risk and cost. Waiting for the first one to be activated would involve high risk and potentially high losses. The destruction of the sites would have a demoralizing effect on North Vietnam while giving the Republic of Vietnam a psychological lift. Finally, every SAM site allowed to reach completion would improve the defense of Phuc Yen Airfield, thereby increasing the risk of attack on South Vietnam airfields.\footnote{126/}

General Westmoreland stated he believed the SAM sites must be destroyed and recommended attacking them one at a time whenever intelligence indicated the target was most lucrative but before it became operational. He said the 2d Air Division had briefed him on a plan and tactics for such an operation that appeared feasible and sound. He would not address himself to the political implications of such an effort.\footnote{127/}
PACAF in early June considered it a matter of military necessity that the North Vietnamese air threat be eliminated as soon as possible, by hitting both the SAM sites and the Phuc Yen airfield where both the North Vietnam jet fighter and bomber strength were based. PACAF further believed that allowing North Vietnam to expand its offensive air capability would be an open invitation to air strikes against South Vietnam's friendly bases. To preclude a possible disaster to Da Nang and eliminate interference with Rolling Thunder missions, PACAF wanted early destruction of the threat at Phuc Yen. If MIG's and IL-28's were deployed to other bases, the task would be more difficult but PACAF considered its air resources adequate to strike any or all North Vietnam air bases.

Radar coverage over the northern portion of South Vietnam was not considered adequate to satisfy the increasing air threat which the MIG/IL-28 buildup posed, according to PACAF. An additional radar which would give overland low level coverage (500-100 feet) out to at least 50 NM beyond the DMZ was urgently needed. A UPS-1 type radar at Dong Ha would provide this coverage. For improved high level coverage, it suggested a USN picket ship be positioned in an optimum location to complement the land based radar coverage at about 18 degrees, 30 minutes north and 107 degrees west. Additional Hawk units at Qui Nhon, Nha Trang, Bien Hoa and Tan Son Nhut were considered desirable. Overall airfield defense posture would be helped by adding anti-aircraft guns to the airfields defenses. Acquisition radars associated with the Hawk units at Qui Nhon and...
Nha Trang would provide the seaward low level coverage required in those areas. PACAF proposed augmenting these Hawk units with USAF weapons controllers in order to provide continuity of air defense efforts. 129/

The problem of security involved in placing a UPS-1 radar at Dong Ha could be met by placement of a land force of comparable strength to the force at Hue Phu Bai. 130/

PACAF asked that six Marine F4B's at Da Nang be made available for air defense. Leaving the F-102's in their current status, this would place two F-102's on five minute alert, two on fifteen and two on one hour. The same would be true for the six Marine F4B's. During Rolling Thunder or periods of increased air alert, all twelve aircraft could be placed on five minute alert. 131/

To get around the problem of base congestion, PACAF suggested expansion of existing parking facilities by use of new materials such as AM-2 aluminum matting. The completion of the new runway at Da Nang East would allow better dispersal. 132/

PACAF also suggested a third battery of Hawks be deployed to complement the two in place at Da Nang. Another Hawk element of not less than two fire units should be deployed near Chu Lai when aircraft were positioned on the base. This unit would be integrated into the Monkey Mountain complex. PACAF noted that the Monkey Mountain and Chu Lai complexes were presently secure, thus giving maximum increased effectiveness with the least cost and effort. Anti-aircraft guns at Da Nang would assist in securing this base. 133/
While these air defense proposals were submitted to CINCPAC to increase the air defense posture, PACAF reemphasized that the threat could be best neutralized by an early decisive strike on Phuc Yen and the SA-2 missile sites located near Hanoi. The economy in life and material which such a strike could afford, when compared to a passive and semi-active air defense effort, could not be overstated, it concluded. 134/

While recognizing the value of early attacks on Phuc Yen and the missile sites, CINCUSARPAC reported to CINCPAC that the overriding considerations for such a decision were political and psychological. This would include the effect on North Vietnam/CHICOM/USSR, the effect on the overall plan for graduated pressures on North Vietnam, and the effect on U. S. and allied public opinion. CINCUSARPAC did not possess adequate information to comment on these aspects. However, he mentioned a final consideration that if an attack on Phuc Yen or the SA-2 sites should trigger overt CHICOM intervention and/or North Vietnam attacks across the 17th parallel, U. S. forces would be in much better position to counter such an attack "several months hence", after the completion of planned deployments. 135/

CINCPACFLT, in reply to the request from CINCPAC concerning the feasibility of an attack on MIG bases, said that the timing of the Phuc Yen attack should not be affected by the operational status of the SA-2 sites. The attack could be made so as to avoid the missile envelope. An operational SA-2 site should be attacked by aircraft only when its presence was denying friendly
forces the attainment of a military objective. The immediate military necessity, CINCPACFLT said, was to neutralize the air threat presently in place at Phuc Yen. The current CINCPAC plan to strike Phuc Yen was valid, calling for a night attack by SAC forces, followed at first light by armed recce by PACOM forces on all airfields in the Hanoi/Haiphong area. \[35/1\]

COMUSMACV recommended that missile sites at Phuc Yen and elsewhere be attacked before they became operational. To avoid alerting the enemy by prior recce, he wanted the strikes made without prior low level recce. Trojan Horse photography was considered adequate for strike purposed by 2d Air Division. While acknowledging that attacks on Phuc Yen SA-2 sites would be costly and could provoke a USSR/CHICOM reaction, COMUSMACV said that the U.S. could ill afford to allow the Hanoi area to become a North Vietnam sanctuary. The concentration of aircraft at Phuc Yen airfield and the threat of low level attacks by these aircraft against U.S. installations in South Vietnam made it prudent that the North Vietnam air capabilities be destroyed while concentrated and vulnerable. \[37/1\]

There was some concern in June over the aircraft losses incurred on Rolling Thunder operations. The success of North Vietnam in bringing down U.S. aircraft, according to CINCPACFLT, was due to the current parameters of the strike program which created a stereotyped pattern of operations. The Rolling Thunder programs were conducted generally in a seven day time frame. In
each program, PACOM forces were assigned six targets. The desired damage level was established as "maximum feasible" and small strike groups were approved and encouraged. The result of this pattern was to give the enemy an advantage since he knew six targets a week would be hit at random intervals. The same six targets would be hit repeatedly until the desired damage level was reached. The enemy knew each strike group was small and that aerial photo and BDA would follow each strike. As a result of this stereotyped operation, CINCPACFLT said, the enemy was able to concentrate his AA within a limited number of target areas and against a relatively small number of aircraft for a given target area.

CINCPACFLT said that concentrated enemy AA forced U. S. planes to adopt delivery tactics which did not result in optimum weapon effectiveness. While the Bullpup missile was used as a stand-off weapon with some success, the Snake Eye series of bombs were developed to improve CEP and permit a low level delivery. The Snake-Eyes, however, could not be used on most of the fixed targets due to altitude restrictions on strike aircraft necessary to counter concentrated and effective AA. The use of napalm was minimized for the same reason.

The practice of giving the tactical commander only a relatively short period of time to achieve maximum feasible damage on a given target, could result in attacks carrying less than optimum ordnance. For example, limitations on visibility could require an attack with bombs against a target more suitable for Bullpup delivery.
CINCPACFLT recommended that the number of approved targets for a given period be increased, allowing the tactical commander to vary his target selection. He wanted to delete the requirement to achieve maximum feasible damage within the approved Rolling Thunder period. The tactical commander could concentrate his effort on targets which promised the largest gain for the risk involved. He wanted to increase the Rolling Thunder period to two weeks to ease the management of the program and increase the flexibility of the commander. In summary, he said, the limited number of targets, the requirement to obtain maximum feasible damage, the approved Rolling Thunder period, and the standard Rolling Thunder period of about seven days, had stereotyped operations and offered the enemy tactical advantages in defense which were not warranted. 141/

ECM aircraft, introduced into the 2d Air Division on 8 May 1965, were proving most effective in reducing the enemy's capability to direct anti-aircraft fire by radar. The four aircraft shot down in the period between 8 May and 30 June were the result of factors other than radar directed fire. Two were lost to barrage attack, one to a low level attack where optic sighting was employed and one on a day when the RB-66 was not on station due to the off-scheduled arrival of strike aircraft. ECM operators were consistently reporting a capability to break the Firecan "lock-ons" made by Firecan radars. They also doubted the capability of Firecan to read through jamming for ranges more than 22 miles. 142/
This was important since North Vietnam had demonstrated a capability to construct, occupy, and operate an 85 MM radar controlled gun position within six days. These weapons could be concentrated in certain areas which the enemy could probably predict based on the number of days and number of times in which targets would be attacked in a particular time period. The Air Force Component Commander in SEA was limited in his choice of tactical decisions by not having the authority to select from a range of targets and by not being permitted to select the frequency of attack. 143/

The primary threat to U. S. aircraft striking against targets in North Vietnam as of 30 June was the 3000 plus AA weapons in place, and the additional weapons which are being steadily added to the inventory. Five SA-2 sites had been located by early July with another under construction. The enemy in early July had 66 MIG-15/17 aircraft and eight IL-28's, all located at Phuc Yen. 144/
Strikes Above the 20th Parallel

The JCS execution message for Rolling Thunder 18, for the
week of 11-17 June, called for strikes and armed recce missions on
a series of targets above 20 degrees North. For safety of forces
and reduction of risks in attacking targets in heavily defended
areas north of 20 degrees, air elements were authorized to execute
the attacks with relatively small elements in a series of attacks
spread over the seven strike days to insure maximum achievement
of desired damage levels.

The decision on the Rolling Thunder program for the week of
25 June - 1 July had not been made on 21 June. For planning purposes,
CINCPAC was told that Rolling Thunder 20, planned for that period,
was designed to maintain the graduated increase of pressures on
North Vietnam by air strikes to the north; continue the attacks on
remaining suitable targets in southern North Vietnam; and maintain
the interdiction of LOC's by armed reconnaissance. In addition to five
fixed targets for U. S. aircraft and two for the VNAF, armed recce
was permitted for U. S. forces northward to 21-26-10 North and
103-41-49 East, remaining outside a 40 NM range of Hanoi. VNAF
armed recce was to cover the area between the DMZ and 19 degrees
north.

To reduce risks and economize on forces in attacks north of
20 degrees North, CINCPAC was authorized to attack in successive
small elements in a series of attacks spread, if required, over
Several strike days, to achieve the desired damage levels. Emphasis on armed recce by U.S. aircraft was to be placed on routes emanating from Vinh to restrict traffic in and out of this important LOC hub. A maximum of 200 sorties was authorized for the seven day period. VNAF target sortie requirements beyond the capability of VNAF could be filled by U.S. aircraft.

To clarify some misunderstanding regarding use of incremental strikes to achieve desired damage levels, CINCPAC in June clarified the current Rolling Thunder policy and guidance. He noted that he authorized use of relatively small elements in a series of attacks over specified strike days to allow the maximum achievement of the desired level of damage. This was not to be interpreted as an arbitrary directive restricting strike forces to small numbers in all cases. The intent was to provide operational flexibility and enhance force effectiveness and safety, and not to reduce the ultimate desired damage level. The determination of the composition of the individual strike force was to be based on size and type of target, operational variables such as AA defenses, weather, other tasks to be accomplished, and forces available. As a general rule of thumb, he said, the damage objective should be not less than 50% during the Rolling Thunder period for the average size and type of target. The operational commander had to exercise judgment on a target by target analysis based on the operational situation.

The direction of the Rolling Thunder program was laid down in the operations order prepared by CINCPAC in June. The order
said that the strikes were designed to maintain the graduated pressure on North Vietnam by conducting air strikes, coupled with attacks on remaining suitable targets in southern North Vietnam and continued interdiction of LOC's by armed recce. The objective was to cause North Vietnam to cease and desist in its support of the insurgency effort in SEA.  

Instructions for these attacks provided for the use of carrier aircraft from ships in the South China Sea, VNAF forces, and Thai-based aircraft, the latter being used in coordination with the U. S. Embassy in Bangkok. Strikes on population centers were to be avoided. The timing of strikes was at the discretion of commanders with TOT's coordinated to insure no conflict. Maximum feasible damage was defined as that which neutralizes or renders the target ineffective and/or unable to accomplish its basic function. While small elements could be used in a series of attacks over the specified strike days, the tactical commander could launch a heavy strike when tactical considerations warranted. An anti-MIG screen was established between the target and the MIG threat when enemy air was expected, which to be outside the envelope of SA-2 sites in the Hanoi area. Active ECM operations against radars was authorized and an airborne early warning and picket station capability was to be used to the maximum extent feasible.  

Armed recce was to employ surveillance and destruction of military targets encountered, including railroad rolling stock, new railroad construction tracks, ferries, lighters, barges, radar sites, secondary bridges, road repair equipment, bivouac supply and maintenance areas.
By the end of June 1965, the program for strikes against North Vietnam had become almost routine and the MIG threat which appeared in early April seemed to have faded away. Primary concern was centered on the new SA-2 sites going up in the Hanoi area.

Although the Rolling Thunder program had still not reached its peak, results as of 8 July were impressive. Sixty bridges had been destroyed and 152 damaged. There were 644 buildings destroyed plus another 678 damaged. Other results:

<table>
<thead>
<tr>
<th>Destroyed</th>
<th>Damaged</th>
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<tr>
<td>Vehicles</td>
<td>53</td>
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<tr>
<td>RR Cars</td>
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<td>1</td>
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<td>RR and By Cuts</td>
<td>7</td>
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<tr>
<td>Bridge Approaches</td>
<td>12</td>
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</tbody>
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By mid-July, 91 of the 117 JCS numbered targets south of 20 degrees North had been attacked. All POL storage areas and airfields were damaged, four being temporarily unusable. Twenty-two of the 24 JCS scheduled bridges south of 20 degrees had at least one span collapsed with another severely damaged. The Thanh Hoa Bridge, struck four times, was restored on a limited basis by the enemy, and sporadic re-strikes by U. S. Navy armed recce aircraft failed to collapse its spans. At least 100 other bridges, struck as "bonus" targets were made unusable. Also south of the 20th parallel, 1151 buildings were destroyed, 409 sustained severe
damage, and 677 received light to moderate damage. Nearly all of the JCS targets in the barracks/headquarters, ammo/supply depot category were hit.

Although most Rolling Thunder strikes as of mid-July were south of 20 degrees, 18 out of the 132 JCS numbered targets north of the 20th parallel were struck as of 22 July. Two airfields, one supply depot, one POL storage, one island radar site, two coastal bridges, six ammo depots and five barracks areas were struck in the northern part of North Vietnam. Included were targets 40 NM south and southwest of Hanoi and extending northward from Nam Dinh to Dien Bien Phu, with some strikes taking place less than 40 NM south of the CHICOM/DRV border.

Despite repeated attacks and confirmed building damage to radar and radio communication sites, these facilities remained relatively intact. Their inherent mobility, use of remote antennae, and lack of pinpoint intelligence resulted in very little gain from strikes against this elusive target system. The Phuc Yen and Cat Bi airfields in the Hanoi-Haiphong area were untouched. Nor had any of the five SA-2 sites been hit as of 22 July. Only two validated targets in the critical POL storage category had been struck, these being Phu Qui and Vinh. The largest naval bases at Haiphong, Hon Gay and Port Wallut had not been hit, nor was the port of Haiphong interdicted in any way. No strikes were made against locks and dams, which could disrupt canal traffic and flood agricultural areas and roads. Except for damage to three
thermal power plants, no industrial targets were struck. Thus there was still a potentially significant target area in North Vietnam which had remained free from air strikes as of 22 July.

As of 22 July, USAF, U. S. Navy, and VNAF planes had flown 6861 strike sorties against North Vietnam targets, expending 10,019 tons of conventional bombs, 3940 rocket pods, 179 anti-personnel bombs, 449 air to ground missiles, 57 CBU-2A pods, 5742 Zuni rockets (all U. S. Navy), and eight Lazy Dog containers (all USAF).

Sixty-three aircraft of the U. S. Navy, USAF, and VNAF had been lost in strikes against the North Vietnam since 6 February.

A more personal picture of the results of Rolling Thunder strikes appeared in a broadcast over Peking radio in which one of its correspondents described the effects of the bombing:

"...I have visited numerous transport lines wantonly bombed by American planes, where I saw a heartening picture of the all-people transport line. On the transport lines which, as boasted by U. S. imperialism, were badly destroyed, trucks loaded with military supplies and consumer goods for factories on the front or villages filed through horsecarts, oxcarts and bicycles. This view was often lit up by flares from American planes whining overhead. Heavily laden boats sailed abreast with timber and bamboo rafts, while trains rumbled along overland."

"The truck drivers put forward a militant slogan: 'be always ready to set out'. They drove in the dark and braved enemy's bombing and strafing to safely carry the passengers and goods to their destination. They kept on studying the method of using high speed to get away from the attacks of enemy planes and united closely to fight against the destructive schemes of the enemy. Once, a convoy on its way to the front encountered
enemy planes. The drivers immediately took to hiding by the roadside. As the planes kept circling overhead, driver Tran Quy Thi, for the sake of saving the whole convoy, stepped on the gas and raced along, thus luring the enemy away from its target. As soon as the planes of the U. S. marauders left, road maintenance workers and the local population organized themselves to repair the damaged road and bridges to ensure normal traffic."

"On 9 April, the F bridge in a certain area was hit by the enemy. On that very evening, more than 3000 people rushed to the spot from all directions, carrying with them hurricane lamps and tools; and within a few hours, the bridge was put back to service."

"A section of a certain highway in Quang Binh Province was once heavily damaged by enemy planes. The repairing work was hindered by the presence of a large number of time bombs in the area. The Youth Shock Brigade of a certain county quickly defused and removed the bombs and filled up the bomb craters, thus enabling the convoy to pass."

"The local populations in various places have mobilized themselves to build many new roads, bridges, and culverts, in addition to repairing the damages...Militia Corps formed by workers, peasants, and students cooperate with the People's Army air defense units in safeguarding the transport lines. They stand sentinel on important bridges, ferries, and key road sections to insure that convoys and ships will pass safely."

"Mobile repair teams and supply station have been set up on ferries and at terminals. Tool carrying repairmen and doctors and nurses equipped with first aid kits are on the alert 24 hours a day to serve the transport workers."

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"A large number of horsecarts, oxcarts, and bicycles have been used by the local population to help transportation agencies to ship material. A team of more than 1000 bicycles in Phuc Minh Country, Phuc Tho Province, in a single trip sent one hundred tons of salt, cotton piece goods, and other commodities to the countryside. Thirty-six oxcart teams have been formed in Lam Thao, Thanh Ba, Viet Tri, and other places. One hundred fifty horses are being used in Nui Thanh Country to transport goods to villages in the hilly regions. Timber and bamboo rafts are busy plying along many rivers..."
FORECE STRUCTURE

The force structure during the period was in a constant state of change to meet the Rolling Thunder requirements, as well as the stepped up air war in South Vietnam and the Laos interdiction programs. In February the USAF had 18 F-100's and 18 F-105's at Da Nang, 18 F-105's at Korat, 18 F-100's at Takhli and eight B-57's at Bien Hoa. For the February strikes against North Vietnam, only the RVN-based aircraft were committed, along with VNAF aircraft and planes of the 7th Fleet. In late February, the Thai Government agreed to the use of its bases for these strikes, thus increasing the flexibility of the force. The B-57's at Bien Hoa, which had been removed to Clark Air Base following the mortar shelling of Bien Hoa in November 1964 were returned on a limited basis in February. One squadron fortunately was moved from Bien Hoa only two weeks before the attack. Eight B-57's arrived on 10 February and ten more on 19 February, the day jets were released for in-country strikes. Another 16 B-57's arrived from Clark on 1 March, bringing the B-57 force back to its November 1964 strength. 158

In Thailand, the F-105 squadron at Korat was joined in early February by two more squadrons of F-105's, one of which came from Da Nang; the other arrived at Takhli as part of the four squadrons approved by the JCS for deployment to the Western Pacific. The F-105 squadron at Da Nang was replaced by the F-100's formerly based at Takhli. Other squadrons included in the JCS deployment order were an F4C squadron for Ubon, and F-104 squadron for Kung.
Kuan, Formosa, and an F-105 squadron at Kadena.

With these deployments, there were 65 F-105's in Thailand on 18 March and within a month, this total was raised to 74. The F-105's were carrying the main burden of Rolling Thunder.

On 7 April, the squadron of F4C's arrived at Ubon to participate in the strikes against North Vietnam. Also, arriving at Thailand bases during April were a detachment of six RF-101's and another detachment of six RB-66's at Udorn. An F-104 squadron arrived in April at Da Nang to support the Rolling Thunder program. Two EC-121's arrived at Tan Son Nhut on 13 April.

This establishment remained relatively unchanged until late June when several changes were made in unit locations. The two B-57 squadrons, the 8th and 13th Bomb Squadrons, were moved from Bien Hoa to Da Nang and redesignated as the 405th ADVON, effective 29 June. On 18 June, an F-100 squadron, the 431st Tactical Fighter Squadron arrived at Tan Son Nhut. With the move of the B-57's to Da Nang, the 18 F-100's of the 416th Tactical Fighter Squadron at Da Nang moved to Bien Hoa. The other F-100 squadron at Da Nang, the 615th, returned to the U. S. and was replaced by the 476th Tactical Fighter Squadron.

The force structure on 30 June was as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Squadrons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Da Nang</td>
<td>405th ADVON (24 B-57's)</td>
</tr>
<tr>
<td></td>
<td>476th TFS (F-104)</td>
</tr>
<tr>
<td>Bien Hoa</td>
<td>307th TFS (F-100)</td>
</tr>
<tr>
<td></td>
<td>416th TFS (F-100)</td>
</tr>
</tbody>
</table>
Tan Son Nhut 481st TFS (F-100)

(NOTE: F-100's were used for out-of-country strikes only in the first two months of operations.)

Don Muang SAC Tanker Force (KC-135)

Ubon 45th Tactical Fighter Squadron (F-4C)

Takhli 35th TFS (F-105)
563rd TFS (F-105)

Korat 357th TFS (F-105)
12th TFS (F-105)

Udorn 15th RTF (RF-101's)
33rd ARS (HH-43's)

In estimating the use of planned forces for the period July through October, consideration was given to the basing of two F-105 squadrons at Takhli, two F-105 squadrons at Korat, and an additional F-105 squadron due on 15 July. Also, there was one squadron of F-4C's at Ubon with another scheduled for 15 July and a possible third squadron on 15 September. There would also be 24 B-57's and a squadron of 14 F-104's at Da Nang, two F-100 squadrons at Bien Hoa, one F-100 squadron at TSN, and another F-100 squadron at Bien Hoa by 15 September if the base was ready. No change was planned in the A-1E aircraft strength.

Using this criteria, the planning for the July-October period was as follows:

<table>
<thead>
<tr>
<th>Month</th>
<th>Sorties Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>8,876</td>
</tr>
<tr>
<td>August</td>
<td>9,527</td>
</tr>
<tr>
<td>September</td>
<td>9,933</td>
</tr>
<tr>
<td>October</td>
<td>10,029</td>
</tr>
</tbody>
</table>

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Based on an 80% OR rate, the following numbers of aircraft would be available for this period.

<table>
<thead>
<tr>
<th></th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-105</td>
<td>63</td>
<td>72</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>F-4C</td>
<td>22</td>
<td>28</td>
<td>36</td>
<td>43</td>
</tr>
<tr>
<td>F-104</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>F-100</td>
<td>42</td>
<td>42</td>
<td>49</td>
<td>57</td>
</tr>
<tr>
<td>B-57</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>A-1E</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Total</td>
<td>193</td>
<td>208</td>
<td>223</td>
<td>238</td>
</tr>
</tbody>
</table>

The available sorties were considered adequate to support the present JCS targeting program in Laos and North Vietnam. However, the full use of sorties available was believed contingent upon tanker support, particularly for targets located above the 20th parallel. In South Vietnam, base loading factors in June prevented the deployment of any additional forces above those programmed. However, the development of Cam Ranh Bay would provide a greatly increased capability.
"FACT SHEET" Leaflet Drop Operation

An integral part of the Rolling Thunder operation was Operation "Fact Sheet", a psy-war program calling for the dropping of some four million leaflets weekly over North Vietnam by USAF and VNAF aircraft, with VNAF participation on a limited basis. The first "Fact Sheet" missions were launched on 14 April when VNAF A-1 aircraft dropped one million leaflets on the cities of Dong Hoi, Ha Tinh, Vinh and Thanh Hoa. USAF F-105 aircraft made their first "Fact Sheet" mission on 19 April when they dropped 1,200,000 leaflets on Bai Thung, Ha Trung, Thanh Hoa, Phu Qui, Phu Dien Chau, Vinh and Ha Tinh. The leaflets warned civilians to stay away from military installations, compared life in the south with life in the north, and explained the reason for the strikes against the DRV.

On 28 April, one million leaflets were dropped by USAF aircraft over Cua Rao, Khe Bo, Muong Sen and Cong Cuong. Missions were also flown on 20 and 23 May by USAF aircraft and on 22 May by VNAF aircraft with a total of 1,494,000 leaflets dropped. During June, the tempo of leaflet operations increased when 4,800,000 leaflets were dispensed.

In July, USAF aircraft made leaflet drops on the first 14 days, dispensing a total of 9,888,000 leaflets on impact areas ranging from Dien Bien Phu and Haiphong in the north to the DMZ in the south.

On 20 July, Hanoi was targeted with 960,000 leaflets and Haiphong with 320,000, using the wind drift method, because of the 40 mile
restricted area imposed around Hanoi for leaflet operations. The VNAF conducted leaflet drops on 20 and 30 July dispensing 800,000 leaflets in the southern half of the DRV. The first months of leaflet operations were considered to have produced successful results. Intelligence reports and numerous transcripts of DRV press reports and radio broadcasts attested to the success of the program.
ROLLING THUNDER

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