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No. 1356/66

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
21 May 1966

INTELLIGENCE MEMORANDUM

An Appraisal of the Bombing of North Vietnam*
(Through 14 May)

SUMMARY

1. US air strikes in NVN during the period 15 April - 14 May 1966 were primarily armed reconnaissance against lines of communication (LOC), infiltration routes, dispersed logistic targets and land and waterway traffic. The interdiction effort in the northeast section of the country was intensified while continuing pressure was maintained on LOCs to the south. All railroad lines radiating from Hanoi with the possible exception of the line between Hanoi and Haiphong are estimated to be presently closed to through traffic, although extensive provisions have been made to circumvent damage through bypasses, shuttle service, and/or water traffic. The constant interdiction of rail and road facilities and traffic apparently has caused the North Vietnamese to emphasize the use of waterways for moving supplies southward as evidenced by the record high destruction or damage of watercraft reported during the period. Strikes against fixed targets (other than LOC targets) were few; consequently, there was little effect on national capacities.

2. Although the flow of men and material from NVN into Laos and SVN continues, perhaps at an increased rate, the US air effort below the 20th

*This memorandum is CIA's issuance of a joint CIA-DIA study prepared monthly.

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parallel is having adverse effects. Operations from a dispersed logistical base continue to cause management and control problems for Hanoi. The North Vietnamese, in attempting to circumvent the effects of the air strikes, continue to place major emphasis on construction and maintenance of LOCs. While the capacities of the LOCs still greatly exceed observed traffic densities, the reduction in LOC capacities which has been achieved by US air strikes has lessened North Vietnam's capability to mount and sustain an overt attack into South Vietnam and Laos. On the other hand, the capability of the NVN armed forces to perform the missions of national defense, internal security, and to train and support with men and materiel VC/NVA and PL/NVA forces in South Vietnam and Laos has not been appreciably impaired.

3. The North Vietnamese leadership in the past several weeks has stepped up its propaganda campaign to bolster the morale of the NVN populace. This intensification of optimistic themes suggests growing concern on the part of North Vietnam's leaders over the effects of the air raids on popular morale, although there is no evidence of any impending change in regime policies.

4. Although the economic impact of air strikes against NVN has been limited by the restriction of bombing to targets of relatively minor economic significance and by the receipt of assistance from Communist countries, the previously estimated adverse effects of the bombing have now been confirmed by recent statements of the Hanoi regime. Increasing amounts of resources are being drawn from agriculture and industry to counter the effects of bomb damage, thereby contributing heavily to constraints on the growth of these sectors. Problems resulting from the reallocation of manpower and inept management continue, with industry experiencing a decline in the quality and efficiency of production. US air strikes of 19 and 23 April halted seaborne exports of coal from Cam Pha port, North Vietnam's principal coal export harbor, causing a substantial reduction in coal exports for April. There are also indications that loadings scheduled for early May have been postponed as much as two weeks and that shipping may

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not return to normal before July. A prolonged reduction in exports of coal from Cam Pha will have a serious effect upon North Vietnam's foreign exchange earnings, 25 percent of which are derived from sales of coal.

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Effects on Military Targets

5. US air strikes in NVN during the period 15 April - 14 May 1966 were primarily armed reconnaissance against lines of communication, infiltration routes, dispersed logistic targets and land and waterway traffic. Strikes against fixed targets (other than LOC targets) were few; consequently, there was little effect on national capacities.

6. The interdiction effort in the northeast section of the country was intensified while continuing pressure was maintained on LOCs to the south. All railroad lines radiating from Hanoi, with the possible exception of the line between Hanoi and Haiphong, are estimated to be presently closed to through traffic, although extensive provisions have been made to circumvent damage through bypasses, shuttle service, and/or water traffic. An intensive effort will probably be made to repair the most important bridges. Destruction of the Hai Duong combination rail/highway bridge on 17 April interrupted through traffic between Hanoi and Haiphong, and required an estimated two to four weeks to accomplish temporary repairs. Recent strikes against the Hanoi-Dong Dang line, the main land supply route from China, resulted in the destruction of the Bac Giang combination rail/highway bridge, effectively interdicting through traffic. The Hanoi-Lao Cai line remains closed to through traffic. New interdictions have been accomplished south and north of Yen Bai. Continued strikes against the Hanoi-Vinh railroad line also have resulted in new interdictions, with the Phyl Ly bridge between Hanoi and Nam Dinh being the most important target struck.

7. Air strikes on highways were concentrated along Routes 1A and 15 south of the Thanh Hoa area. Significant repetitive interdiction of lateral routes in southern North Vietnam also was effected. On 26 April, B-52s conducted the second heavy-bomber attack against North Vietnam on the northern side of Mu Gia Pass about 60 nautical miles south of Vinh. Convoys were noted using the pass within 24 hours of this strike. The repairs--actually accomplished during about 10 hours of darkness--indicated how important this route is and illustrated that the Communists will spare no effort to keep it open.

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8. Recent Allied air strikes have inflicted extensive damage to transport equipment in Military Region IV, as the North Vietnamese logistic effort in this region has increased. Both coastal and inland water transport routes and equipment have absorbed heavy losses. Although no JCS-targeted inland waterway facilities were struck during the period, transshipment facilities were attacked at four locations and a record high of over 1,400 waterway craft were reported damaged or destroyed. Junks and barges are using a new coastal route from Thanh Hoa south to Vinh. The route utilizes existing waterways as well as some coastal routes to cover the distance of approximately 80 nautical miles. Over 600 rivercraft were destroyed or damaged on this new coastal route alone. The constant interdiction of rail and road facilities and traffic apparently has caused the North Vietnamese to emphasize the use of waterways for moving supplies southward into and within Military Region IV. Although there are indications that some NVN ships are restricting their movements to the hours of darkness, the numbers of junks which could be called into service to support these movements probably precludes a significant reduction in this supply system in the near future. Cumulative totals of damaged and destroyed targets are shown in the annex.

9. While the flow of men and materiel from NVN into Laos and SVN continues, perhaps at an increased rate, the US air effort below the 20th parallel is having adverse effects. In the armed reconnaissance areas, movement has been restricted almost entirely to the hours of darkness and dispersed supply facilities have been harassed, causing operations to be conducted from small, isolated, or camouflaged areas. Operations from a dispersed logistical base continue to cause management and control problems for Hanoi.

10. The North Vietnamese, in attempting to circumvent the effects of the air strikes, continue to place major emphasis on construction and maintenance of LOCs. No apparent effort is being made to repair fixed military installations such as barracks, supply depots and ammunition depots. While the capacities of the LOCs still greatly exceed observed traffic densities, the air strikes are causing the North Vietnamese to devote an increasing amount of time and

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effort to maintain them. Moreover, the NVN armed forces' capability to perform the missions of national defense, internal security, and to train and support with men and materiel VC/NVA and PL/NVA forces in South Vietnam and Laos has not yet been appreciably impaired. On the other hand, the reduction in LOC capacities which has been achieved by US air strikes has lessened North Vietnam's capability to mount and sustain an overt attack into South Vietnam and Laos.

Leadership and Public Reactions

11. The North Vietnamese leadership in the past several weeks has stepped up its propaganda campaign to bolster the morale of the NVN populace by claiming that the continuing US bombing raids merely represent a "frenzied" effort by the Americans to offset repeated defeats in South Vietnam.

12. The most recent major effort by the regime to shore up morale came in a week-long National Assembly meeting convened on 16 April. Speakers at the assembly, including Ho Chi Minh, Vo Nguyen Giap and Pham Van Dong, gave the people an optimistic report on the developments of the war, and reaffirmed North Vietnamese determination to win the war even if it takes a long time. The assembly speakers pointed to what they alleged were the factors that the Vietnamese people have in their favor in the prosecution of the war. They stressed the unity of all Vietnamese on both sides of the 17th parallel, the growing opposition in the US to the war, the support of the socialist countries for the Vietnamese position, and the successful challenge of US military power in the air over North Vietnam.

13. Emphasis on the air victory culminated in a flood of boastful propaganda to celebrate the alleged shoot-down of the "1,000th" US aircraft over NVN on 29 April. In the context of this celebration, the propaganda asserted that in spite of the US bombings, the people have been able to step up production, improve the economy and other facets of life while at the same time achieving a better allocation of manpower resources and a greater defense effort.

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14. This intensification of optimistic themes in regime propaganda suggests growing concern on the part of North Vietnam's leadership over the effects of the air raids on popular morale. Nevertheless, despite the destruction of military and economic assets, and difficulties in transportation, communications, and the allocation of food and consumer goods, there is no evidence of any impending change in regime policies.

Effects on the Economy

15. Air strikes against North Vietnam are having a small but increasingly debilitating effect upon the economy. Even though the economic impact has been limited by the restriction of bombing to targets of relatively minor economic significance, the previously estimated adverse effects of the bombing have now been confirmed by recent statements of the Hanoi regime. Increasing amounts of resources are being allocated to counter the effects of bomb damage. These resources are being drawn from agriculture and industry, thereby contributing heavily to constraints on the growth of these sectors. According to Hanoi, gross value of agricultural output increased only 1.1 percent in 1965 compared with an announced 6.7 percent in 1964. The gross value of industrial output increased 8 percent in 1965, somewhat less than the 10.7 percent increase claimed for 1964. The customary announcements of annual production figures for individual commodities and other sectors of the economic performance in 1965 are markedly low-keyed, thus suggesting that even the alleged increases may be illusory.

16. A recent statement of the premier of North Vietnam confirms our estimate that at least 200,000 workers have been allocated to repair and to maintain essential lines of communications (LOCs). Pham Van Dong boasted that as a result of this effort "...for many months now..." the average daily tonnage of goods transported has exceeded the average volume reached by the end of 1964. He also gave at least a partial indication of the increasing share of resources required to prosecute the war and to compensate for bomb damage. Planned investment in capital construction for 1966

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amounts to an estimated 330 million dollars, one-third more than the level of 1965. This investment will be used to develop communications and transportation associated with defense requirements, and to strengthen other sectors of the economy. A program of this magnitude is facilitated by the stepped-up program of economic assistance from other Communist countries which is becoming increasingly important to North Vietnam. Such assistance has averaged some 100 million dollars annually since 1955. During the 13-month period through January 1966, Communist countries offered an estimated 100-150 million dollars in economic aid.

17. Indications of problems resulting from the reallocation of manpower and inept management continue to persist. Some of the manpower normally available for industry and agriculture has gone into military service, but large increments have been shifted into repair and maintenance of the transportation and communications sectors. Although the volume of output in industry seems to have held up reasonably well, there are signs that wasteful use of manpower and materials has contributed to a decrease in the quality of the output and an increase in the cost of production. Agriculture has been affected adversely by the loss of supervisory personnel, particularly in irrigation projects, as well as by the failure to make small machinery available to the farms to compensate for the loss of labor.

18. Recent air strikes against targets of economic significance have included attacks against the port and coal preparation plant at Cam Pha, the country's largest electric power plant at Uong Bi and bridges on the four railroad lines radiating from Hanoi.

19. Seaborne exports of coal from Cam Pha Port were halted by US air strikes of 19 and 23 April. Most of North Vietnam's coal is shipped by sea, and 90 percent of these shipments over the past 15 months originated at Cam Pha. The only alternative port for the shipment of coal is Hon Gai which has a shallower draft limitation and more limited loading facilities. Exports of coal amounted to only 83,000

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tons in April compared with an average of nearly 130,000 tons a month in the five months ending 31 March. There are also indications that loadings scheduled for early May have been postponed as much as two weeks and that shipping may not return to normal before July. The sharp decline in coal shipments reduced North Vietnam's total seaborne exports well below average levels, despite a strong recovery of exports of cement. A prolonged reduction in exports of coal from Cam Pha will have a serious effect upon North Vietnam's foreign exchange earnings, 25 percent of which are derived from sales of coal. A less significant effect of the strikes on Cam Pha is the possible prohibition by Poland of further calls at North Vietnam by Polish flag ships, one of which Poland claimed was damaged during the strike on 19 April. While Polish ships in the past have carried only relatively small volumes of cargo to North Vietnam, they would nevertheless have to be replaced in the trade, probably by ships of other Communist countries.

20. On 18 and 28 April 1966 restrikes were carried out against the Uong Bi thermal power plant, which had been put out of operation initially by air strikes in December 1965. Photographic analysis indicates that the damage inflicted by the restrikes again was sufficient to halt operation, but the power plant probably can be restored to partial operation within one or two months.

21. The estimated costs of replacing damaged and destroyed economic and military facilities and equipment continue to accumulate slowly. During this reporting period some 95 percent of the strike sorties flown against North Vietnam were by armed reconnaissance missions. Pilots report numerous military and economic targets destroyed or damaged, but lack of adequate and timely post-strike photography and descriptions of the targets make it impossible, except in specific instances, to quantify the value of the loss or the cost of accomplishing repairs to the facilities and equipment. Intelligence on the results of attacks on military facilities and equipment has not permitted an upward revision of the estimate carried for this category in the previous

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report. Direct cumulative losses caused by confirmed bomb damage to economic and military facilities and equipment are therefore estimated at approximately \$59 million as indicated in the following tabulation:

<u>Economic Facilities and Equipment</u>		<u>Military Facilities and Equipment</u>	
<u>Targets</u>	<u>Million Dollars</u>	<u>Targets</u>	<u>Million Dollars</u>
Railroad/Highway Bridges*		Barracks	16.0
Reconstruction	11.0	Ammunition Storage	4.5
Temporary Repairs	2.7**	Supply Depots	3.0
Transportation Equipment	8.8	Radar and Communications	1.1
Railroad Yards and Ports	1.0	Naval Bases	0.8
Electric Power Plants	6.3***	SAM Sites	0.6
Petroleum Storage		Airfields	0.4
Facilities	0.7	Miscellaneous Targets of	
Manufacturing Facilities	1.5	Armed Reconnaissance	0.6
Total	32.0		27.0

Measurable indirect losses amount to about 10.1 million dollars made up principally of losses of foreign exchange earnings of 6.6 million dollars**** and losses in the 1965 fall rice crop of 3.5 million dollars.

- * The estimate in this category is incomplete because of inadequate post-strike photography.
- ** Includes 1.8 million dollars expended to date on temporary repairs and 0.9 million dollars required to provide temporary repairs for structures damaged but not yet repaired.
- *** Assessment of recent, good-quality photography of the Uong Bi power plant has required a downward revision of the estimated restoration costs of this category.
- **** This figure includes those decreases in exports of apatite, cement and coal that appear to be related to the bombing. This month's figure has been revised downward to take into account a more accurate average value of cement exports.

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ANNEX

RESULTS OF STRIKES ON NVN TARGETS a/ THRU 16 MAY 1966

FIXED TARGETS	TARGETS STRUCK		No. AT-TACKS	c/ STRIKE SORTIES	% of NAT'L CAPACITY	
	No.	% b/			DE-STROYED	IN-ACTIVE
BARRACKS	44	23.0	193	2436	11.65	15.12
AMMO DEPOTS	13	75.7	51	1143	32.84	71.20
POL STORAGE	4	19.0	12	142	17.20	
SUPPLY DEPOTS	18	19.0	48	592	9.96	6.25
POWER PLANTS	6	27.5	25	238	27.50	
MARITIME PORTS	5	12.0	17	219	5.70	
RR YARDS	2	7.5	11	99	7.50	
EXPLOSIVE PLANT	1	100	3	28	71.00	
AIRFIELDS	4		12	359		
NAVAL BASES	2		15	196	17.1% of National Capacity destroyed	
BRIDGES	43		d/ 151	2211		
COMMO INSTALL	2		2	15		
RADAR SITES	13		e/ 59	383		
SAM SITES	24		37	259		
LOCKS & DAMS	1		2	10		
FERRIES	11		e/ 7	44		

TOTAL SORTIES		Results e/	
		Destroyed	Damaged
AGAINST FIXED TARGETS:	8,370		
ARMED REECE SORTIES :	29,397	Vessels *1362	*2149
TOTAL OF ALL SORTIES		Vehicles * 758	* 790
EXCEPT SUPPORT :	37,767	RR Stock * 410	* 806

- a/ Assessments are based on best information received, will be refined as more accurate information becomes available.
- b/ Percentages of national capacity where appropriate.
- c/ Strike plus flak suppression sorties.
- d/ Also numerous attacks during armed reece and other missions.
- e/ Also numerous installations, AA sites, bridges, etc, attacked and road and rail cuts made.

*Indicate a complete re-accounting from 1 April 66.

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