

# Vietnam Bombing Evaluation By Institute for Defense Analyses

*Excerpts from report by Institute for Defense Analyses, "The Effects of U.S. Bombing on North Vietnam's Ability to Support Military Operations in South Vietnam: Retrospect and Prospect," Aug. 29, 1966, as provided in the body of the Pentagon study. Paragraphs in italics are the study's paraphrase or explanation.*

1. As of July 1966 the U.S. bombing of North Vietnam (NVN) had had no measurable direct effect on Hanoi's ability to mount and support military operations in the South at the current level.

Although the political constraints seem clearly to have reduced the effectiveness of the bombing program, its limited effect on Hanoi's ability to provide such support cannot be explained solely on that basis. The countermeasures introduced by Hanoi effectively reduced the impact of U.S. bombing. More fundamentally, however, North Vietnam has basically a subsistence agricultural economy that presents a difficult and unrewarding target system for air attack.

The economy supports operations in the South mainly by functioning as a logistic funnel and by providing a source of manpower. The industrial sector produces little of military value. Most of the essential military supplies that the VC/NVN forces in the South require from external sources are provided by the USSR and Communist China. Furthermore, the volume of such supplies is so low that only a small fraction of the capacity of North Vietnam's rather flexible transportation network is re-

quired to maintain the flow. The economy's relatively underemployed labor force also appears to provide an ample manpower reserve for internal military and economic needs including repair and reconstruction and for continued support of military operations in the South.

2. Since the initiation of the ROLLING THUNDER program the damage to facilities and equipment in North Vietnam has been more than offset by the increased flow of military and economic aid, largely from the USSR and Communist China.

The measurable costs of the damage sustained by North Vietnam are estimated by intelligence analysts to have reached approximately \$86 million by 15 July 1966. In 1965 alone, the value of the military and economic aid that Hanoi received from the USSR and Communist China is estimated to have been on the order of \$250-400 million, of which about \$100-150 million was economic, and they have continued to provide aid, evidently at an increasing rate, during the current year. Most of it has been from the USSR, which had virtually cut off aid during the 1962-64 period. There can be little doubt, therefore,

that Hanoi's Communist backers have assumed the economic costs to a degree that has significantly cushioned the impact of U.S. bombing.

3. The aspects of the basic situation that have enabled Hanoi to continue its support of military operations in the South and to neutralize the impact of U.S. bombing by passing the economic costs to other Communist countries are not likely to be altered by reducing the present geographic constraints, mining Haiphong and the principal harbors in North Vietnam, increasing the number of armed reconnaissance sorties and otherwise expanding the U.S. air offensive along the lines now contemplated in military recommendations and planning studies.

An expansion of the bombing program along such lines would make it more difficult and costly for Hanoi to move essential military supplies through North Vietnam to the VC/NVN forces in the South. The low volume of supplies required, the demonstrated effectiveness of the countermeasures already undertaken by Hanoi, the alternative options that the NVN transportation network provides and the level of aid the USSR and China seem prepared to provide, however, make it quite unlikely that Hanoi's capability to function as a logistic funnel would be seriously impaired. Our past experience also indicates that an intensified air campaign in NVN probably would not prevent Hanoi from infiltrating men into the South at the present or a higher rate, if it chooses. Furthermore, there would

appear to be no basis for assuming that the damage that could be inflicted by an intensified air offensive would impose such demands on the North Vietnamese labor force that Hanoi would be unable to continue and expand its recruitment and training of military forces for the insurgency in the South.

4. While conceptually it is reasonable to assume that some limit may be imposed on the scale of military activity that Hanoi can maintain in the South by continuing the ROLLING THUNDER program at the present, or some higher level of effort, there appears to be no basis for defining that limit in concrete terms or, for concluding that the present scale of VC/NVN activities in the field have approached that limit.

The available evidence clearly indicates that Hanoi has been infiltrating military forces and supplies into South Vietnam at an accelerated rate during the current year. Intelligence estimates have concluded that North Vietnam is capable of substantially increasing its support.

5. The indirect effects of the bombing on the will of the North Vietnamese to continue fighting and on their leaders' appraisal of the prospective gains and costs of maintaining the present policy

have not shown themselves in any tangible way. Furthermore, we have not discovered any basis for concluding that the indirect punitive effects of bombing will prove decisive in these respects.

It may be argued on a speculative basis that continued or increased bombing must eventually affect Hanoi's will to continue, particularly as a component of the total U.S. military pressures being exerted throughout Southeast Asia. However, it is not a conclusion that necessarily follows from the available evidence; given the character of North Vietnam's economy and society, the present and prospective low levels of casualties and the amount of aid available to Hanoi. It would appear to be equally logical to assume that the major influences on Hanoi's will to continue are most likely to be the course of the war in the South and the degree to which the USSR and China support the policy of continuing the war and that the punitive impact of U.S. bombing may have but a marginal effect in the broader context.

*In the body of the report these summary formulations were elaborated in more detail. For instance, in assessing the military and economic effect of the bombing on North Vietnam's capacity to sustain the war, the report stated:*

The economic and military damage sustained by Hanoi in the first year of the bombing was moderate and the cost could be (and was) passed along to Moscow and Peiping.

The major effect of the attack on North Vietnam was to force Hanoi to cope with disruption to normal activity, particularly in transportation and distribution. The bombing hurt most in its disruption of the roads and rail nets and in the very considerable repair effort which became necessary. The regime, however, was singularly successful in overcoming the effects of the U.S. interdiction effort.

Much of the damage was to installations that the North Vietnamese did not need to sustain the military effort. The regime made no attempt to restore storage facilities and little to repair damage to power stations, evidently because of the existence of adequate excess capacity and because the facilities were not of vital importance. For somewhat similar reasons, it made no major effort to restore military facilities, but merely abandoned barracks and dispersed materiel usually stored in depots.

The major essential restoration consisted of measures to keep traffic moving, to keep the railroad yards operating, to maintain communications, and to replace transport equipment and equipment for radar and SAM sites.

*A little further on the report examined the political effects of the bombing on Hanoi's will to continue the war, the*

*morale of the population, and the support of its allies.*

The bombing through 1965 apparently had not had a major effect in shaping Hanoi's decision on whether or not to continue the war in Vietnam. The regime probably continued to base such decisions mainly on the course of the fighting in the South and appeared willing to suffer even stepped-up bombing so long as prospects of winning the South appeared to be reasonably good.

Evidence regarding the effect of the bombing on the morale of the North Vietnamese people suggests that the results were mixed. The bombing clearly strengthened popular support of the regime by engendering patriotic and nationalistic enthusiasm to resist the attacks. On the other hand, those more directly involved in the bombing underwent personal hardships and anxieties caused by the raids. Because the air strikes were directed away from urban areas, morale was probably damaged less by the direct bombing than by its indirect effects, such as evacuation of the urban population and the splitting of families.

Hanoi's political relations with its allies were in some respects strengthened by the bombing. The attacks had the effect of encouraging greater material and political support from the Soviet Union than might otherwise have been the case. While the Soviet aid complicated Hanoi's relationship with Peking, it reduced North Vietnam's dependence on China and thereby gave Hanoi more room for maneuver on its own behalf.

*This report's concluding chapter was entitled "Observations" and contained some of the most lucid and penetrating analysis of air war produced to that date, or this! It began by reviewing the original objectives the bombing was initiated to achieve:*

... Reducing the ability of North Vietnam to support the Communist insurgencies in South Vietnam and Laos, and ... increasing progressively the pressure on NVN to the point where the regime would decide that it was too costly to continue directing and supporting the insurgency in the South.

*After rehearsing the now familiar military failure of the bombing to halt the infiltration, the report crisply and succinctly outlined the bombing's failure to achieve the critical second objective—the psychological one:*

... Initial plans and assessments for the ROLLING THUNDER program clearly tended to overestimate the persuasive and disruptive effects of the U.S. air strikes and, correspondingly, to underestimate the tenacity and recuperative capabilities of the North Vietnamese.

This tendency, in turn, appears to reflect a general failure to appreciate the fact, well-documented in the historical and social scientific literature, that a direct, frontal attack on a society tends to strengthen the social fabric of the nation, to increase popular support of the existing government, to improve the determination of both the leadership and the populace to fight back, to induce a variety of protective measures that reduce the society's vulnerability to future attack, and to develop an increased capacity for quick repair and restoration of essential functions. The great variety of physical and social counter-measures that North Vietnam has taken in response to the bombing is now well documented in current intelligence reports, but the potential effectiveness of these counter-measures was not stressed in the early planning or intelligence studies.

*Perhaps the most trenchant analysis of all, however, was reserved for last as the report attacked the fundamental weakness of the air war strategy—our inability to relate operations to objectives:*

In general, current official thought about U.S. objectives in bombing NVN implicitly assumes two sets of causal relationships:

1. That by increasing the damage and destruction of resources in NVN, the U.S. is exerting pressure to cause the DRV to stop their support of the military operations in SVN and Laos; and

2. That the combined effect of the total military effort against NVN—including the U.S. air strikes in NVN and Laos, and the land, sea, and air operations in SVN—will ultimately cause the DRV to perceive that its probable losses accruing from the war have become greater than its possible gains and, on the basis of this net evaluation, the regime will stop its support of the war in the South.

These two sets of interrelationships are assumed in military planning, but it is not clear that they are systematically addressed in current intelligence estimates and assessments. Instead, the tendency is to encapsulate the bombing of NVN as one set of operations and the war in the South as another set of operations, and to evaluate each separately; and to tabulate and describe data on the physical, economic, and military effects of the bombing, but not to address specifically the relationship between such effects and the data relating to the ability and will of the DRV to continue its support of the war in the South.

The fragmented nature of current analyses and the lack of adequate methodology for assessing the net effects of a given set of military operations leaves a major gap between the quantifiable data on bomb damage effects, on the one hand, and policy judgments about the feasibility of achieving a given set of objectives, on the other. Bridging this gap still requires the exercise of broad political-military judgments that cannot be supported or rejected on the basis of systematic intelligence indicat-

ors. It must be concluded, therefore, that there is currently no adequate basis for predicting the levels of U.S. military effort that would be required to achieve the stated objectives—indeed, there is no firm basis for determining if there is any feasible level of effort that would achieve these objectives.

*The critical impact of this study on the Secretary's thinking is revealed by the fact that many of its conclusions and much of its analysis would find its way into McNamara's October trip report to the President.*

*Having submitted a stinging condemnation of the bombing, the Study Group was under some obligation to offer constructive alternatives and this they did, seizing, not surprisingly, on the very idea McNamara had suggested—the*

*anti-infiltration barrier. The product of their summer's work was a reasonably detailed proposal for a multi-system barrier across the DMZ and the Laotian panhandle that would make extensive use of recently innovated mines and sensors. The central portion of their recommendation follows:*

The barrier would have two somewhat different parts, one designed against foot traffic and one against vehicles. The preferred location for the anti-foot-traffic barrier is in the region along the southern edge of the DMZ to the Laotian border and then north of Tchepone to the vicinity of Muong Sen, extending about 100 by 20 kilometers. This area is virtually unpopulated, and the terrain is quite rugged, containing mostly V-shaped valleys in which the opportunity for alternate trails appears lower than it is elsewhere in the system. The location of choice for the anti-vehicle part of the system is the area, about 100 by 40 kilometers, now covered by Operation Cricket. In this area the road network tends to be more constricted than elsewhere, and there appears to be a smaller area available for new roads. An alternative location for the anti-personnel system is north of the DMZ to the Laotian border and then north along the crest of the mountains dividing Laos from North Vietnam. It is less desirable economically and militarily because of its greater length, greater distance from U.S. bases, and greater proximity to potential North Vietnamese counter-effects.

The air-supported barrier would, if necessary, be supplemented by a manned "fence" connecting the eastern end of the barrier to the sea.

The construction of the air-supported barrier could be initiated using currently available or nearly available components, with some necessary modifications, and could perhaps be installed by a year or so from go-ahead. However, we anticipate that the North Vietnamese would learn to cope with a barrier built this way after some period of time which we cannot estimate, but which we fear may be short. Weapons and sensors which can make a much more effective barrier, only some of which are now under development, are

not likely to be available in less than 18 months to 2 years. Even these, it must be expected, will eventually be overcome by the North Vietnamese, so that further improvements in weaponry will be necessary. Thus we envisage a dynamic "battle of the barrier," in which the barrier is repeatedly improved and strengthened by the introduction of new components, and which will hopefully permit us to keep the North Vietnamese off balance by continually posing new problems for them. . . .

The anti-troop infiltration system (which would also function against supply porters) would operate as follows. There would be a constantly renewed mine field of non-sterilizing Gravel (and possibly button bomblets), distributed in patterns covering interconnected valleys and slopes (suitable for alternate trails) over the entire barrier region. The actual mined area would encompass the equivalent of a strip about 100 by 5 kilometers. There would also be a pattern of acoustic detectors to listen for mine explosions indicating an attempted penetration. The mine field is intended to deny opening of alternate routes for troop infiltrators and should be emplaced first. On the trails and bivouacs currently used, from which mines may—we tentatively assume—be cleared without great difficulty, a more dense pattern of sensors would be designed to locate groups of infiltrators. Air strikes using Gravel and SADEYES would then

using Gravel and SADEYES would then be called against these targets. The sensor patterns would be monitored 24 hours a day by patrol aircraft. The struck areas would be reseeded with new mines.

The anti-vehicle system would consist of acoustic detectors distributed every mile or so along all truckable roads in the interdicted area, monitored 24 hours a day by patrol aircraft, with vectored strike aircraft using SADEYE to respond to signals that trucks or truck convoys are moving. The patrol aircraft would distribute self-sterilizing Gravel over parts of the road net at dusk. The self-sterilizing feature is needed so that road-watching and mine-planting teams could be used in this area. Photo-reconnaissance aircraft would cover the entire area each few days to look for the development of new truckable roads, to see if the transport of supplies is being switched to porters, and to identify any other change in the infiltration system. It may also be desirable to use ground teams to plant larger anti-truck mines along the roads, as an interim measure pending the development of effective air-dropped anti-vehicle mines.

The cost of such a system (both parts) has been estimated to be about \$800 million per year, of which by far the major fraction is spent for Gravel and SADEYES. The key requirements would be (all numbers are approximate because of assumptions which had to be made regarding degradation of system components in field use, and

regarding the magnitude of infiltration): 20 million Gravel mines per month; possibly 25 million button bomblets per month. . . .

Apart from the tactical counter-measures against the barrier itself, one has to consider strategic alternatives available to the North Vietnamese in case the barrier is successful. Among these are: a move into the Mekong Plain; infiltration from the sea either directly to SVN or through Cambodia; and movement down the Mekong from Thakhek (held by the Pathet Lao-North Vietnamese) into Cambodia.

Finally, it will be difficult for us to find out how effective the barrier is in the absence of clearly visible North Vietnamese responses, such as end runs through the Mekong plain. Because of supplies already stored in the pipeline, and because of the general shakiness of our quantitative estimates of either supply or troop infiltration, it is likely to be some time before the effect of even a wholly successful barrier becomes noticeable. A greatly stepped-up intelligence effort is called for, including continued road-watch activity in the areas of the motorcade roads, and patrol and reconnaissance activity south of the anti-personnel barrier.

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of the war—from July, 1965, to the fall of 1966—forms another section in the series presented by The New York Times.

The study, ordered by Secretary McNamara in 1967 and prepared by a team of 30 to 40 officials and analysts to determine how the United States became involved in the war in Indochina, con-

sists of 3,000 pages of analysis and 4,000 pages of supporting documents.

Previous articles in The Times's presentation of the Pentagon study have recounted President Kennedy's deepening of the American involvement in Vietnam and President Johnson's decisions, through July, 1965, to commit the United States to an air and ground war in Vietnam.