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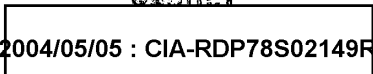
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CONSEQUENCES OF MINING THE SEAPORTS OF NORTH VIETNAM

Office of Research and Reports

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CONSEQUENCES OF MINING THE SEAPORTS OF NORTH VIETNAMSummary

The immediate impact of mining the seaports of North Vietnam would be a severe disruption to normal transport activity as the country reallocated its human and material resources to develop alternative means of supply from abroad. Over the longer term the impact could be characterized as one of delay but not of denial of imports. We estimate that by the use of alternate transport connections to Communist China or other transport expedients the regime could probably move almost all normal foreign trade and could certainly maintain the import of essential military and economic goods. The movement of goods would be more costly and the means of transport would become highly vulnerable to air attack. Nevertheless a mining program alone could not stop North Vietnam from continuing its support of the war in South Vietnam.

If the mining program were carried on in conjunction with an intensified program of air attack against significant military/economic targets -- the remaining petroleum storage facilities, the Haiphong cement plant, and the logistics target system -- the impact would be more severe. North Vietnam would probably be unable to maintain the normal flow of import and export traffic. Some economic requirements would have to go unsatisfied and many of the Bloc aid projects and domestic construction programs would have to be postponed. In spite of increased losses to air attack there would still be adequate transport capacity to support the military establishment and the ability to continue the present level of aggression in South Vietnam and Laos would not be appreciably diminished.

Political reaction to a mining program, with or without an intensified air campaign, would probably follow established patterns. Some Free World countries would see this as a step toward a wider war. Those Free World countries still trading with North Vietnam, particularly the maritime powers, would object vigorously. But the alignment of Free World nations toward the Vietnam war would not change significantly. The Communist countries would mount an intensive propaganda campaign. Both the USSR and Communist China would probably increase their logistic support to North Vietnam but each would refrain from steps leading to a direct involvement with the US. Hanoi's reaction would be keyed to its success in countering the interdiction programs. The North Vietnamese would probably not consider any basic change in their policy toward the war unless they were singularly unsuccessful in maintaining the import of essential supplies. This is unlikely.

North Vietnam's foreign trade in 1965 amounted to at least 3.2 million tons. About 2.7 million tons was seaborne trade and about 520,000 tons moved overland on the Hanoi - Dong Dang railroad. The port of Haiphong handles almost all of North Vietnam's imports and all of its exports except coal. The other two major ports -- Cam Pha and Hon Gai -- are used almost exclusively for coal traffic.

The North Vietnamese could use several options to counter a mining program. These would include the use of shallow draft vessels for the coastal transport of imports from Communist China, the lightering of cargo from ships anchored outside the minefields, or the use of land transport connections to Communist China. The most pressing problem would be sustaining petroleum deliveries. The use of lighters or a combination of lighters and, as they become available, overland or underwater pipelines should enable deliveries to be maintained at the current rate of 860 tons per day. Some or all of this petroleum could also be moved on overland routes from Communist China.

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Coastal transport of most dry cargo imports from Fort Bayard could be sustained by using a maximum of 2,000 powered shallow draft vessels. A total of 5,700 craft suitable for this movement are available in the waters off southern China and the northern coasts of North Vietnam.

If transport by coastal or lighterage operations proved inadequate or was not immediately feasible, trade could be routed along the rail and road connections to Communist China. The Hanoi - Dong Dang line is currently used at only one-third its daily capacity of 3,300 tons each way per day. It is also now possible to route North Vietnamese imports via the Hanoi - Lao Cai line which has a similar capacity. The road connections to China have a daily capacity of 4,750 tons a day in the dry season and 1,050 tons a day in the wet season. Total imports by North Vietnam were at a level of about 3,200 tons a day in 1965. It is unlikely that the capacity of these overland routes can be reduced by interdiction to a level that most normal imports cannot be satisfied. However, if these routes also had to absorb the full burden of cement and petroleum imports under conditions of intensified air attacks, the traffic load would exceed the interdicted capacity of the routes. In this case some import and export programs would have to be foregone with the greatest impact being felt in the construction and modern industry sectors of the economy.

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CONSEQUENCES OF MINING THE SEAPORTS OF NORTH VIETNAMI. The Dimensions of North Vietnam's Foreign TradeA. Volume of Foreign Trade

In spite of the bombing of North Vietnam and the interdiction of lines of communication, the volume of foreign trade, both by sea and railroad in 1965 exceeded the level of 1964. Foreign trade in 1966 is continuing at the 1965 level although there have been significant changes in the composition and direction of the trade. The total foreign trade of North Vietnam in 1965 amounted to at least 3.2 million tons.\* About 2.7 million tons, or 85 percent of the total, was seaborne trade moving through the seaports of Haiphong, Cam Pha, and Hon Gai. The remainder, about 520,000 tons, moved overland by rail across the North Vietnamese-Chinese border at Dong Dang. In addition a small amount of trade moved by highway.

The volume and commodity composition of the seaborne trade in 1964, 1965, and the first six months of 1966 are shown in Table 1. About 70 percent of the trade consists of exports, of which coal is by far the major commodity. Coal accounts for about 25 percent of foreign exchange earnings. Apatite and cement have been the other major export items although exports of apatite by sea have not been observed since August 1965. The major seaborne imports have been petroleum and fertilizers. Imports of machinery, vehicles, and manufactured and processed goods, are all vital to the small modern sector of economy and to the country's program for industrial expansion.

*about same rate*

The foreign trade carried by railroad in 1965 consisted of about 350,000 tons of imports and 170,000 tons of exports. Coal made up about half of the rail imports, while military supplies made up a significant portion of the remainder. Machinery, metals, specialized petroleum products, and a variety of consumer goods were also imported by rail. Exports by rail consisted of apatite (until the Lao Cai line from the mines was interdicted in July 1965), coal, and products of North Vietnam's food processing and handicraft industries. Rail traffic thus far in 1966 probably has continued at the 1965 level, except for the export of apatite which probably has not resumed.

B. Level of Traffic Compared with Route Capacity1. Ports

Deep-draft international merchant ships normally call at only three North Vietnamese ports -- Haiphong, Cam Pha, and Hon Gai. Only Haiphong is served by North Vietnam's rail network. Haiphong is the principal maritime port for virtually all seaborne imports, and all of the seaborne exports except coal. Haiphong's petroleum storage facilities normally handle about 90 percent of all petroleum imports. Cam Pha and Hon Gai handle only one significant cargo, anthracite coal for export. About 90 percent of the seaborne coal exports originate at Cam Pha which is the only coal port able to accommodate large-size ships at its dock. Both ports have limited wharf and storage facilities for general cargo, which consists almost exclusively of supplies for the mines and their small worker communities.

\* Tonnages in this report are expressed in short tons.

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Table 1

North Vietnam: Identified Seaborne Foreign Trade a/  
1964, 1965, and Jan-Jun 1966

Thousand Short Tons

	<u>1964</u>	<u>1965 b/</u>	<u>Jan-Jun 1966</u>	
<u>Total Seaborne Trade</u>	<u>2,430</u>	<u>2,660</u>	<u>1,227</u>	
<u>Imports</u>	<u>703</u>	<u>768</u>	<u>532</u>	
Petroleum	157	188	145	
Fertilizers	154	179	136	
Grain and bulk food	179	131	32	
Timber	35	16	11	
Miscellaneous	179	255	208	
<u>Exports</u>	<u>1,725</u>	<u>1,888</u>	<u>694</u>	
Coal	1,047	1,268	610	
Apatite	373	350	0	
Cement	154	86	58	
Miscellaneous	151	184	25	25X1

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Haiphong has the capacity to handle about 5,000 tons of general cargo and 900 tons of bulk petroleum per day. During 1965 the port handled daily about 3,300 tons of general cargo of which 1,600 tons were imports and 1,700 were exports. Petroleum imports, which amounted to 515 tons per day in 1965, have increased to about 860 tons per day so far in 1966. Thus the volume of general cargo handled in 1965 was well below the estimated capacity of the port, and remains so in 1966, while the volume of bulk petroleum imports has approached the estimated capacity of the port facilities to handle it. Irregular arrivals of ships, however, have led to port congestion and delays

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### 3. Roads

Only small amounts of cross-border, short-haul foreign trade moves by truck between North Vietnam and China.

The estimated total capacity of the roads that cross the border and lead to the Hanoi - Haiphong area is 4,750/1,050\* tons a day. Of this amount, 3,000/700 tons could come over the eastern border of North Vietnam (from the Nanning, Canton, and Fort Bayard areas) and 1,750/350 tons over the western border (the K'un-ming area).\*\* The road capacity from Hanoi to Haiphong is estimated to be about 1,150/400 tons per day.

### 4. Inland Waterways

Very little, if any, foreign trade currently moves on inland waterway connections between Communist China and North Vietnam. With the completion of the new railroad connecting Yunnan Province with the rest of China, the Red River connecting Yunnan Province with Hanoi takes on new importance. The capacity of the Red River from Lao Cai to Hanoi is estimated to be 1,000 to 3,000 tons per day. Some imports for North Vietnam could now move over this circuitous and costly rail-water route via Yunnan Province.

\* The figures separated by the slanting line show estimated minimum capacities between terminal points under the best and worst climatic conditions.

\*\* Supplies from the Nan-ning, Canton, and Fort Bayard areas can now be shipped by rail through China to K'un-ming, China, and then to North Vietnam by rail and road over the western border, if necessary.

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II. Impact of Mining Under the Present Rolling Thunder ProgramA. Immediate Effects

If mining of the ports was carried out without warning, a number of foreign flag ships might be caught in the ports.\* The daily average number of ships at Haiphong during January to June 1966 included 10 freighters (5 Soviet and European Satellite, 3 Free World, and 2 Chinese Communist) and 1 tanker (usually Soviet). The actual number on any one day during this period ranged from 3 to 12 ships. Since the end of April, however, the average number of Free World vessels at Haiphong has declined to one. In addition one or two ships (of the flags listed above) are loading at both Cam Pha or Hon Gai on any given day.

An immediate short-term effect of mining the ports would be an intensive disruption of normal transport activity. This would arise from the need to adopt alternative distribution procedures, to reroute import traffic, to reallocate small craft, rolling stock, and trucks, and to reassign personnel. The maximum impact from mining the ports under the present Rolling Thunder program would be one of delay but not of denial in the delivery of imports. Sustained delivery of petroleum imports would be the major problem. Almost all exports could be continued, except that the added costs of handling coal exports might be so great that they would be foregone.

The amount of delay in rearranging the routes and methods of import and export would depend on the extent of North Vietnam's contingency planning. The organization of transport to cope with the effects of bombing has improved substantially in the past year. There are several indications that the regime has prepared itself to cope with a denial of the port of Haiphong. About 50 dispersed petroleum storage sites have been built and others are under construction, alternate petroleum distribution procedures have been adopted, and by-pass bridges, roads and rail routes have been constructed. The extensive publicity given to possible US courses of action against the port of Haiphong make it highly probable that Communist plans to deal specifically with a mining of the port are well developed. [redacted] in the case of a naval blockade, the North Vietnamese have seriously considered using an island off the coast near Haiphong as a base for loading and unloading ships and would assign some 300 lighters to the operation. An alternative plan was also reported whereby an area on Luichow Peninsula in China would be used and the material shipped to Hanoi via land or coastal shipping. The North Vietnamese capability for various courses of action of this type are discussed below. Their alternatives include the shifting of seaborne trade to South China ports and using land transport routes through China for the movement of cargoes to and from North Vietnam; the use of small watercraft to load and unload ocean-going ships while they are anchored outside North Vietnamese ports; the use of other minor ports in North Vietnam; and the use of pipelines for petroleum.

B. Means of Maintaining Foreign Trade1. Small Watercraft Through Haiphong and Other Ports

Only in recent years have the areas near the docks at Haiphong been dredged to permit dockside loading and unloading of ships with full loads. Prior to dredging, goods were lightered between ships anchored down

\* It would be possible for mines to be equipped with delayed action fuses to give foreign flag ships time to clear port or to divert shipping enroute to the port.

stream and the docks to lighten or top off the load. Thus, the North Vietnamese have had considerable experience with these operations.

If the mining operation affects only the movement of ocean-going ships, shallow-draft watercraft could be used to transport supplies to and from the mined ports. There are probably over 900 motor-powered and about 4,800 sailing junks operating in the waters off southern China (Hong Kong-Canton-Hainan area) and the northern coasts of North Vietnam that might be used for improvised lighterage in addition to those craft normally used for this purpose. Because of their shallow drafts the junks might move unharmed over the minefields. They could travel close to the shore thereby minimizing opportunities for detection by US aircraft. The number of small craft available in the area could, if properly organized, handle the total cargo estimated to have moved through the port of Haiphong in 1965.

Excluding petroleum, North Vietnam imports through Haiphong amount to about 1,600 tons a day. A combination of about 2,000 motor powered and sailing junks would be required to handle this volume of imports if they were to be delivered via Fort Bayard in China.

Cargoes to be handled by small craft would, however, be limited to items that could be loaded and unloaded by ships' gear and floating cranes, and carried in small native craft, lighters, and barges. Among such items would be bagged fertilizer, grain and other foods, petroleum in drums, and vehicles. Loose bulk products such as fertilizer, grain, apatite, and coal probably would be difficult to handle. The use of clam-shell buckets, ordinary buckets, wicker baskets, slings, and other such devices could also be used to offload bulk cargoes into lighters, but any of these alternatives would be time consuming.

The river port of Nam Dinh is a significant loophole in current mining programs. Nam Dinh is the third largest city in North Vietnam and is served by the main railroad and highway network as well as the extensive inland water network in the delta area. The port area of Nam Dinh, including piers and river bank suitable for handling cargo, has a cargo handling capacity of about 4,000 tons a day, almost equal to the general cargo handling capacity of Haiphong. Small ships with a draft of up to 9 feet could use this port as an alternate to the mined ports, although some of the cargo would have to be discharged along the banks of the Red River.

The ports of Cam Pha and Hon Gai are especially equipped to export coal and have very limited facilities for handling other types of cargo. [redacted] coal occasionally is loaded from lighters on to ships while the ships are anchored outside the port area. Presumably this is only done for topping off or when the berths at the docks are filled. The time and expense of lightering coal make it unlikely that more than 10 percent of normal exports would be loaded in this manner. The small amount of imports normally needed in the coal mining areas could, however, be imported by lightering. Truck transport from the port area to



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the main transport network probably would not be used for either coal exports or for the movement of imports away from the port. Both ports are connected by route 18 with the main road network and thereby to Hanoi and Haiphong, but have no connections to the main rail network. The capacity of route 18 is limited to 100 tons a day during the rainy season, because it traverses low-lying terrain that is subject to inundation, and even during the dry season it can handle only 600 tons a day. Furthermore, if route 18 were used for truck traffic carrying supplies from China to Hanoi or Haiphong, traffic from Cam Pha and Hon Gai would have to share route 18 with this traffic.

## 2. Maintaining the Flow of Petroleum

The recent strikes against the major petroleum storage facilities in North Vietnam have created new problems in maintaining the flow of petroleum imports. We do not know at this time the extent of destruction of the facilities at Haiphong.

If the facilities were not destroyed but are denied by mining, there are still several alternatives available to maintain petroleum imports. While all of these methods would require the Soviet tankers delivering petroleum to spend longer times in Vietnamese waters than during the normal discharging process, their use would not prevent continued petroleum deliveries to North Vietnam at the current rate of 860 tons per day.

The alternative means for transporting petroleum from tankers to storage facilities would require the following three categories of equipment, either alone or in combination:

(1) Shallow-draft petroleum lighters: These would have to be tank vessels capable of receiving petroleum while tied alongside a tanker at anchor. They would have to be of sufficiently shallow draft to permit navigation either through mined portions of the Haiphong channel for sea-going vessels or through any of the various shallow river channels that link Hanoi, Haiphong and other storage centers with the Gulf of Tonkin. North Vietnam is not known to possess any vessels in this category. However, six tank vessels with capacities estimated at 300 tons have been observed in North Vietnamese waters. They are suspected to be of Chinese Communist origin. Additional petroleum lighters could conceivably be brought in, both from Communist China and the Soviet Far East.

(2) Underwater pipelines: Flexible underwater pipelines with diameters of up to six inches were used by the US Armed Forces during World War II for the movement of petroleum over distances up to fourteen miles. Similar lines are currently in commercial use at ports in the Free World and the USSR.

(3) Temporary overland pipelines: The Soviet Army in East Germany has for a number of years employed temporary overland pipelines in its field maneuvers. These have been six inch lines with capacities in excess of 800 tons per day. They have been observed operating at distances up to 176 miles and apparently require booster pumps at nine mile intervals.

We are not certain of the extent to which underwater and overland pipelines are now present in North Vietnam but estimate that they could be easily supplied in the required amounts. Assuming the availability of the above equipment, it could be used in the following alternative means:

(1) Lighters alone: This method would require the discharge of petroleum into lighters to be delivered directly to the pier at the storage facility in Haiphong. If their shallow draft renders them immune to the mines, they could travel by way of the channel for sea-going ships. Otherwise they would have to follow one of the various shallow river channels available.

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(2) Lighters and overland pipeline: If it were not feasible to use lighters in a movement directly to the storage facility, they could be used to transport petroleum to the terminus of a temporary overland pipeline linking the storage facility in Haiphong with a shore point along the Gulf of Tonkin outside of the mined area.

(3) Underwater pipeline: If the mined area did not extend too far into the Gulf of Tonkin, it might be possible to lay an underwater pipeline between a suitable anchorage in the Gulf of Tonkin following along one of the shallow river channels leading to the storage facility.

(4) Underwater and overland pipeline: Assuming an overland pipeline had been laid between the storage facility and a shore point on the Gulf of Tonkin as in Alternative #2, it might be possible to link the shore point with a suitable anchorage for tankers using an underwater pipeline.

### 3. The Use of Chinese Transport Connections

Land transport from the Chinese port of Fort Bayard via the Chinese rail network provides the North Vietnamese with a significant alternative route for their foreign trade if the ports are mined. This route probably could provide sufficient capacity for all of the normal imports of North Vietnam. Not all of the exports would necessarily be moved by rail, however. The problem and added costs of moving export coal from North Vietnamese mines to the rail system might mean that this movement would be foregone. If our air strikes against the rail network, nevertheless, continue at the level achieved thus far in 1966, North Vietnam should have no difficulty in maintaining both the current volume of imports and exports by land as well as the imports normally received by sea. Although the volume of foreign trade traffic on the Dong Dang line increased by about 30 percent in 1965, we estimate that this line even when carrying transit traffic was used at less than 50 percent of its normal capacity of 3,300 tons EWP. In spite of the air strikes the North Vietnamese with Chinese help have been able to maintain the line at its normal capacity.

The Hanoi-Lao Cai rail line was effectively disrupted for through service during the second half of 1965 and for most of 1966. Interdiction of this line disrupted the export of apatite by rail to China and through the port of Haiphong to other countries, and ended the movement of Chinese transit traffic to and from Yunnan Province. There are recent indications, however, that the North Vietnamese may plan to ship apatite from Lao Cai through Yunnan to the rest of China over the new K'un-ming-Kuei-yang railroad, which was opened to traffic during the first part of 1966. Thus North Vietnam now has a second rail line to China which can be used for imports and exports. Chinese goods to and from Yunnan now move over the Chinese rail line rather than through North Vietnam, so that some railroad cars formerly used for this traffic are now available for other purposes.

At the beginning of 1966, North Vietnam had about 1,500 to 1,600 freight cars, including an estimated 300 tank cars. Some meter-gauge freight cars, including about 150 tank cars can also be obtained from Communist China. Although the estimates of capacities and of the actual traffic carried on the North Vietnamese rail lines may be subject to large margins of error, ample excess capacity is estimated to be available on the railroad lines to carry any tonnage that might be diverted to them by mining of the approaches to the port of Haiphong.

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Although road transport has not been used for a significant quantity of North Vietnamese foreign trade, it is available as an alternate to sea transport. The North Vietnamese have shown considerable ability to maintain motor transport operations in spite of the air strikes delivered thus far. The approximately 12,000 trucks in the North Vietnamese civilian and military truck parks would probably be sufficient to move over the roads that import and export tonnage which for various reasons might not be handled by rail movement.

A final alternative would be the use of the new railroad within China to Yunnan Province and thence the Red River to Hanoi. The capacity of the river for movements from Lao Cai to Hanoi is estimated at 1,000 to 3,000 tons depending on the season of the year.

C. Measures to Reduce the Volume of Traffic

The DRV could reduce the volume of traffic that would be required to move through the mined ports by eliminating all non-essential seaborne foreign trade.\* Export of coal from Hon Gai and Cam Pha represents about 70 percent of the volume of North Vietnam's total seaborne exports and accounts for about 25 percent of its foreign exchange earnings. The coal export trade might, therefore, be considered essential by the North Vietnamese, but the time and expense involved in its transportation by means other than water would probably make it unprofitable to continue its export if the ports were mined. A similar situation would apply to the export of cement and apatite. A decision to forego the export of these bulk commodities would reduce seaborne exports from more than 5,000 tons per day, including coal, to less than 500 tons a day.

North Vietnam would be more reluctant to cut back on its imports. Fertilizers, grains and bulk foodstuffs are important to the economy. They do, however, represent only a small percentage of the total food supply and if necessary could be eliminated by strict rationing programs. Coal for the coking plant at Thai Nguyen, which represents a significant portion of rail imports, could be cut out with only the production of pig iron being affected. Reduction in use of petroleum would be more difficult to achieve, and we estimate that North Vietnam would try to maintain petroleum imports at about current consumption levels. The reduction of imports of miscellaneous cargoes, some of which are essential to the continued operation of modern industry and transportation, would be more difficult. Imports of military supplies would certainly be maintained as would imports of rails and that portion of timber imports which is used in transport repairs. We estimate that less than half of the 1965 level of imports could be eliminated without materially affecting the economy or military capability in the short run. In the long run, the modern sector of the economy would be greatly slowed down by such a reduction.

\* See Table 1, page 4, for foreign trade data.

III. Impact of Mining Under an Intensified Rolling Thunder Program

The effectiveness of the mining of the three major ports would be greatly enhanced by an expanded bombing program including intensive interdiction of road and rail connections with China, attacks on the remaining petroleum storage target system and the Haiphong cement plant, and 24-hour armed reconnaissance against all forms of transport, particularly in the northern part of North Vietnam. The attacks on the remaining petroleum storage target system would leave the North Vietnamese with stocks in dispersed sites, drummed storage or the distribution system amounting to 60 days normal consumption. By eliminating non-essential requirements these stocks could last 90 days. Within this period the alternative measures to restore petroleum imports could be put into effect. An attack on the Haiphong cement plant would deprive North Vietnam of domestic production of 720,000 tons of cement, almost 90 percent of which is consumed within the country. About 100,000 tons of this consumption is for military construction. If North Vietnam attempted to maintain all normal construction activity, particularly the Bloc aid projects, an additional 500,000 tons of cement would have to be imported overland.

If only one-half of the normal traffic through Haiphong could be handled by lighters and other craft, once they are subject to 24-hour armed reconnaissance, the other half would probably be transferred to rail transport. In this case 800 tons per day of general cargo imports and up to 400 or 500 tons per day of petroleum imports would be transferred to rail transport. Rail connections to Communist China which are currently operating at only about one-third of capacity, would then be forced to attempt to operate at approximately full capacity under interdicted conditions. If production in the cement plant were also halted at the same time, an additional import requirement for cement, probably as high as 1,700 tons a day would be generated. This additional tonnage would raise traffic even beyond the uninterdicted capacity of the rail connections to China. As a result, some economic requirements at least would go unsatisfied and many of the Bloc aid projects and other domestic construction programs would have to be postponed. Sustained interdiction of the lines would force the Communists to allocate considerable amounts of manpower and materials to maintain the railroad lines and alternate highway routes. The repair of major bridge structures would be measurably more complex and expensive than the relatively simple expedients which keep traffic moving in the southern provinces and in Laos. Sustained 24-hour interdiction and destruction of locomotives and rolling stock by armed reconnaissance would stop all daylight traffic and disrupt night traffic, thus slowing down movement and making the logistic resupply of Communist forces considerably less reliable than at present.

The North Vietnamese would probably be forced to make greater use of highway and inland water traffic. Although it is extremely difficult to interdict these systems, their greater use would increase the opportunities for harassment of actual traffic movement. The roads from China are estimated to have a limited capacity in rainy season of about 1,000 tons EWP. In the area north of Hanoi the height of the rainy season occurs during July through September. A sustained high level of interdiction during this period would be more effective in reducing the gap between transport capabilities and the volume of traffic to be moved.

On balance we estimate that the North Vietnamese, with Chinese engineering help and the possible loan of transport equipment, could continue to move at least the essential import and export traffic, by using all modes of transport. The essential traffic, however, would not include

supplies for all sectors of modern industry, some of which would then cease to operate as supplies of raw materials and imported machinery were depleted. The resulting economic impact would be significant because modern industry accounts for about one-half of gross industrial output. Industrial construction would come to an almost complete halt under the assumed attack. There would be a sharp setback to North Vietnam's economic development program. The repercussions of the slow-down of modern industry would, however, be limited by the primarily self-sufficient nature of the subsistence agricultural sector, which supports about 80 percent of North Vietnam's 18 million people. The impact of even a complete loss of its modern industrial base would be a matter of direct concern to only a small element of the North Vietnam society. Most of the population leads a fairly primitive life, with simple wants and needs. Only a small segment of the society would find its daily routine or standard of living measurably impaired if the industrial base ceased to operate. More than one-half million non-agricultural workers would be released from their jobs, but most of these workers would undoubtedly be reemployed in reconstruction and transportation. The morale and productivity of the nonagricultural labor force probably would decline because of the transfer from normal work, the regime's probable demand for further amounts of uncompensated labor, and the separation from families as a result of new job assignments or the probable further evacuation of dependents from urban areas. But these effects would be felt directly by such a small segment of the population that they would neither control the reactions of the rest of the country nor be compelling enough to shape the attitude of the policy-makers.

A further decrease in the normally tight supplies of food and other essential consumer goods as a result of the disruption of the transportation system and denial of imports might also have a harmful impact. Although North Vietnam imports some foodstuffs it is basically self-sufficient in food. However, the distribution problems resulting from the disruption of transport could lead to food shortages in some smaller urban areas and intensify food shortages in the already food-deficit regions in the southern, north-western, and northeastern parts of the country. Evacuation of urban residents, which is currently underway, would undoubtedly be stepped up to relieve food shortages. The proximity of North Vietnam's major urban areas -- Hanoi, Haiphong, and Nam Dinh -- to surplus rice-growing regions would ease the problem of distribution of food to these areas.

As certain sectors of the economy, such as the cement plant, coal mines, and the iron and steel plant, ceased to operate, transport capacity presently used to serve them would be available for use in other ways. Ample transport capacity would remain to support the military establishment. Thus ability to continue the present level of aggression in South Vietnam and Laos would not be appreciably diminished by any or all of these proposed air attacks.

IV. Political Reactions:A. Free World

Free World reaction to the mining of North Vietnam's ports would probably be the same whether or not it was accompanied by intensified Rolling Thunder strikes. Some countries would fear that one more step had been taken toward a wider war. Grumbling could be expected from countries which trade with North Vietnam and from those which traditionally resent any interference with maritime trade. There is little likelihood, however, that the mining of the ports would significantly alter the current attitude of any Free World nation toward the Vietnam war.

B. The Communist World1. North Vietnam

The mining of its major seaports would cause serious concern to North Vietnam's leaders, particularly if that action were accompanied by a step-up in the Rolling Thunder program. The key to Hanoi's reaction would be the effectiveness of the interdiction and the adequacy of alternate means of bringing in supplies. The North Vietnamese probably would wait until they had been able to evaluate the effectiveness of their contingency plans for insuring the import of supplies before considering any basic change in their policy toward the war.

Hanoi's propaganda machine could be expected to mount an outcry alleging a serious new escalation of the war. This outcry would probably include a Foreign Ministry statement, a protest to the International Control Commission (ICC), and possibly a note to the 1954 Geneva Conference Co-chairmen urging all "peace-loving people" to take action to stay the hand of the "US imperialists." The propaganda would also probably include vague references to retaliation against US forces and a reiteration of Hanoi's determination to continue the fight at any cost.

2. Communist China

Peking would react noisily to the new US attacks but even if mining of the ports were accompanied by increased bombing of North Vietnam it is unlikely that the Chinese response would go beyond propaganda blasts and stepped-up logistic support for Hanoi. The Chinese are very reluctant to risk a war with the US and could be expected to move with great caution, avoiding any action which they believed might increase the chance of US military moves against China.

The initial reaction would probably be a violent propaganda barrage labeling the new developments as a step toward general war in Asia and implying that Chinese involvement was more likely as a result of the US escalation. The objective of all this would be to generate deterrent pressure from US allies and neutrals against any further enlargement of the war. The Chinese campaign would also be targeted against the general public in the US in the hope of developing effective domestic opposition to administration policies.

Peking might, if the Vietnamese press for it, publicly acknowledge some part of the Chinese logistic support presence in North Vietnam and might make some thinly veiled military moves inside China designed to demonstrate growing Chinese concern. Peking would, however, be very reluctant to do this. Since the fall of 1965 the Chinese have

sharply reduced public statements suggesting that they might take a direct role in the hostilities and have implied that war with the US would come only if the US attacked China. There has been no reference to Chinese "volunteer" involvement since last November.

The Chinese would, however, almost certainly attempt to increase the level of logistic support in an effort to make up for restrictions imposed on sea supply by mining of the ports. The Chinese have already started to improve overland supply routes to North Vietnam, probably in the expectation that the ports might sometime be damaged or put out of action. These efforts would be increased. Communist China might also furnish additional anti-aircraft weapons and possibly more Chinese AAA units to bolster North Vietnamese air defenses. It seems unlikely, however, that the Chinese would commit their outmatched air force to defend North Vietnam.

### 3. The USSR

The USSR would also be quick to mount an intense propaganda campaign condemning US actions and reiterating its pledge to provide North Vietnam with the necessary defensive assistance.

The Russians would, however, recognize their inability -- within the limits they have long since drawn for their involvement -- to deter or counter US air attacks on North Vietnam. Evidence available over recent months reaffirms our estimate that the Soviet leaders are determined to avoid steps which might lead to any direct Soviet-US military confrontation in Southeast Asia. Recent evidence suggests a diminution of the activity, and perhaps of the presence of Soviet military advisors already in North Vietnam.

In the unlikely event that the US mining program resulted in serious damage to Soviet ships in North Vietnamese waters, Moscow would almost certainly feel constrained to level a sharp protest. The Soviet leaders would probably avoid making such an incident a cause célèbre, however, but rather would be likely to control their response in order to prevent relations with Washington from falling into a state of complete disrepair.

