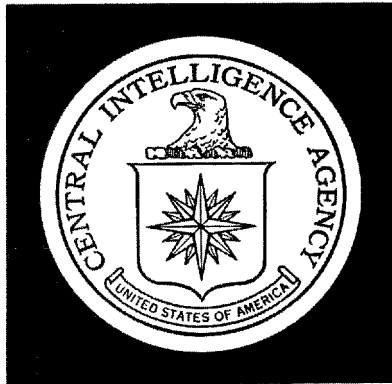


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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

POSSIBLE ALTERNATIVES TO THE ROLLING THUNDER PROGRAM

(The case in which the Sea Dragon Program is extended north to the Chinese Buffer Zone) (No. 5)

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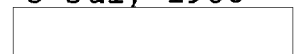
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5 July 1968



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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
5 July 1968

INTELLIGENCE MEMORANDUM

Possible Alternatives
to the Rolling Thunder Program

(The case in which the Sea Dragon Program
is Extended North to the Chinese Buffer Zone)
(No. 5)

Summary

This memorandum analyzes the estimated effects of an extension of the Sea Dragon Program north to the Chinese Buffer Zone but under the target restrictions existing before 31 March. The analysis is based on the assumption of a campaign against North Vietnam's heartland by a force as large as three cruisers, 22 destroyers, and the recently reactivated battleship *New Jersey*, but subject to the same targeting restrictions that applied to air attacks prior to the March 1968 standdown.

An extension of the Sea Dragon Program would add little to what has already been achieved by previous air and naval attacks on North Vietnam. Only a few significant military or economic targets are within the 8 to 10 mile coastal strip that could be subject to effective naval gunfire. All of these targets could be attacked with equal or greater effectiveness by aircraft.

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The indirect effects of an expanded Sea Dragon Program might have a greater impact than the physical attack on inland targets. The major indirect effect would be the psychological impact of the visible presence of Allied warships. As an indication of Hanoi's inability to provide security, this presence might depress the morale of the North Vietnamese. Disruptions of fishing and agriculture along the coast could easily be made good by increased imports.

The nominal benefits, particularly the psychological impact, that might accrue to an extended Sea Dragon Program could be more than offset if North Vietnamese countermeasures resulted in the loss of a major Allied warship. North Vietnam's present conventional coast defense -- eight light bombers, 14 torpedo boats, and numerous coast artillery weapons -- could not deter a forcefully prosecuted Sea Dragon effort and would probably be hard pressed to sink or severely damage US ships. The risk of loss could be substantially higher if North Vietnam and its allies felt that the escalation represented by the northward extension of the Sea Dragon Program justified the introduction of Styx or Samlet surface-to-surface missiles.

I. Previous Sea Dragon Operations

Operation Sea Dragon, a US Navy surveillance and interdiction operation conducted by surface ships against the coast and offshore water traffic of North Vietnam, has been limited to the southern Panhandle of North Vietnam. The operation was first authorized against offshore watercraft between 17° (the DMZ) and 17°-30' North latitude in October 1966. In February 1967, it was expanded to include shore bombardment of military-associated targets and to extend the range of the attacks to the 20th Parallel. The operation has been restricted since March 31 to those areas of North Vietnam south of the 19th Parallel.

The Sea Dragon force has been small, with only one cruiser and four destroyers normally on station off the coast of North Vietnam. At least one of these ships has always been equipped with surface-to-air missiles. Australian and New Zealand ships have frequently participated. Spotter aircraft have usually been available for target identification and fire adjustment in good weather, and, on occasion, US aircraft have conducted coordinated attacks with Sea Dragon ships.

Sea Dragon forces have attacked watercraft, vehicles, roads, railroads, bridges, coast artillery, radar and antiaircraft sites, supply depots, barracks, and electric powerplants. The attacks have been difficult to evaluate because strikes have often been at night, in bad weather, without spotter aircraft, or against targets that have been attacked by aircraft. Secondary explosions have often been observed, however, and watercraft sightings which averaged 30 per day at the start of the program have dropped to less than four per day.

Sea Dragon forces have sustained minor ship damage and several casualties from North Vietnamese shore battery fire. Twenty Allied ships have been struck by small-caliber shells through December 1967. Five crewmen have been killed and 18 wounded. North Vietnam's small air force and navy have not attempted to attack Sea Dragon ships, probably because North Vietnamese air and naval bases have been located too far north for effective opposition.

II. Expanded Operations

The nature of an expanded Sea Dragon Program above the 20th Parallel is not known. We assume that the restricted bombing areas existing under the March ground rules would continue. In addition, the program would be subject to the following considerations. A maximum of one battleship, three cruisers, and 22 destroyers could be sustained on station off North Vietnam without recourse to further ship reactivation. The *New Jersey* can be available for use against North Vietnam in October 1968. These ships would probably stage hit-and-run attacks rather than maintain a constant patrol in fixed locations that would invite North Vietnamese counterattacks. Sea Dragon attacks would be limited generally to targets within 17,000 yards. This limitation is determined by the offshore water depths and ship drafts, as shown in the following tabulation:

	<u>Ship Type</u>		
	<u>Destroyer</u>	<u>Cruiser</u>	<u>Battleship</u>
Main armament	5-inch	8-inch	16-inch
Range (yards)			
Maximum	18,000	29,000	42,000
Effective range <u>a/</u>	15,000	26,000	32,000
Ship draft (feet)	18	27	38
Average required offshore distance (yards)	10,000	12,000	15,000
Average effective range <u>a/</u> inland (yards)	5,000	14,000	17,000

a. The longest range at which gunfire can be accurately controlled. Technical standards for determining this range vary with individual classes of weapons.

All of the areas capable of being struck by an expanded Sea Dragon force could also be hit by air-strikes, and in some respects there would be little

to choose between the two modes of attack. Ships would remain on station for longer periods of time, firing continuously; but air ordnance would be heavier than conventional shells, as shown in the following tabulation:

<u>Ship</u>	<u>Ordnance</u>	<u>Explosive Weight a/ (pounds)</u>
Destroyer	5-inch shell	7.2
Cruiser	8-inch shell	21
Battleship	16-inch shell	154
	750-pound bomb	386

a. The effectiveness of a bomb or projectile varies as the one-third power of the weight of explosive.

Naval gunfire would be delivered more accurately at short ranges and under conditions of adverse weather and visibility, but air attacks would probably be delivered with greater accuracy in good weather because of the extremely long gun ranges required by sea forces to strike targets in the north. Aircraft losses north of the 20th Parallel in the heavily protected Delta area of North Vietnam would be high, but the loss of a major warship would have a tremendous psychological impact.

III. Targets

Few military targets of any significance would be within effective gunfire under an expanded Sea Dragon Program, except for air defense sites east of Haiphong. Naval craft and bases in the Cat Ba Island area are within range of effective naval gunfire, but these targets are well protected by water-level caves. A few small barracks and storage areas could be attacked, but these facilities could be easily dispersed with little disruption to military operations. The airfield at Cat Bi, east of Haiphong, would be within range, but this field has been infrequently used. East of Haiphong, some air defense sites, including three to six known SA-2 sites, could be reached by naval gunfire. The neutralization of these sites and the relocation inland of coastal SA-2 battalions, radars, and antiaircraft artillery weapons could conceivably open a less hazardous avenue of approach for US aircraft attacking Haiphong from seaward.

Few economic targets of any significance would be within effective gun range. All rail lines, major high-ways, and bridges are well inland, beyond the effective range of the largest naval guns available to Sea Dragon forces. Even offshore watercraft would be relatively immune. Those craft using coastal routes south of Haiphong could easily be diverted to operating exclusively on the inland waterway network, well out of range of naval guns. Those operating north of Haiphong between Haiphong, Hon Gai, and Cam Pha are well protected by numerous offshore islands. There are no major industrial facilities within effective gun range and few storage sites. Twenty-two small dispersed petroleum storage tank sites with a capacity of approximately 3,000 metric tons, about 3 percent of the total storage capacity of North Vietnam, are within range, but these sites would be difficult to destroy. The tanks are dispersed within the sites, are buried in excavations, and are hardened with earth covering.

Other military and economic targets in Haiphong, Hon Gai, and Cam Pha could conceivably come under attack by Sea Dragon forces, but attacks on these ports would be highly inaccurate because of the great ranges involved. Moreover, they would risk heavy civilian casualties and damage to foreign shipping. The *New Jersey* could deliver a 16-inch projectile 42,000 yards, and the ranges to these targets from likely offshore firing sites would be between 32,000 and 42,000 yards. The average firing error at these long ranges, however, could be as great as half a mile. Maximum effective range for the *New Jersey* -- the range at which gunfire could be delivered accurately -- is only 32,000 yards. Furthermore, shore bombardment is most accurate when ships operate at firing ranges of only a few thousand yards, at slow speeds, and near familiar terrain -- conditions not likely to be met near these cities. Attempts to close the range, reduce speed, or remain in firing areas for lengthy periods of time for familiarization would greatly increase the risk of grounding or North Vietnamese countermeasures. The waters off the coast of these targets are shallow, poorly charted, and near the sites of North Vietnam's strongest coastal defenses.

IV. Indirect Effects

Fishing would be adversely affected, but even large losses would have little effect on the North Vietnamese economy. North Vietnam's major fishing centers are located north of the 20th Parallel at Mon Cay near the Chinese border, Haiphong, Do Son, and Cat Ba Island, and these centers would undoubtedly be harassed by warships conducting shore bombardment or searching for naval and logistics craft. Deep-sea fishing, however, is as yet relatively undeveloped in North Vietnam. The total annual fish catch before the bombing for all of North Vietnam was only about 200,000 tons, of which about 110,000 tons was salt water fish and the remainder fresh water fish raised in the many ponds and irrigated fields in North Vietnam. Most of the catch is intended for local consumption because of the lack of refrigeration facilities. In addition, deep sea fishing in the area north of the 20th Parallel has already been adversely affected by offshore air attacks against suspected logistics or naval craft.

Agricultural production could drop slightly as a result of the abandonment of farm land close to military, logistic, and economic targets. A small part of the cultivated area of North Vietnam could be subjected to naval bombardment north of the 20th Parallel, and some of this would be the highest yielding land in North Vietnam.

Manpower requirements to support the war could increase slightly, and fewer troops might be available to fight in the south. Extended Sea Dragon operations would probably result in the increased diversion of manpower to coastal areas to serve as spotters, coast artillery gunners, and in other coastal defense forces. The number diverted should be only a tiny fraction of the total number of workers so far diverted to war-related activities. The necessary additional manpower probably could be made up of farm workers who abandon farming operations because of the shelling. The presence of enemy warships off the coast of North Vietnam's heartland, however, would enhance North Vietnam's invasion fears and might serve to freeze additional military manpower in the north that might otherwise be sent south.

[redacted]

International shipping might be disrupted, but such disruption would almost certainly be minimal. Foreign-flag ships regularly transit the Tonkin Gulf to and from Haiphong, Hon Gai, and Cam Pha.

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[redacted] US warships engaged in shore bombardment off these ports or in close proximity to international shipping lanes could conceivably help to discourage these ships from calling at North Vietnamese ports. Intimidation of these ships, however, would not likely enhance the effect already achieved by air attacks on Haiphong, Hon Gai, and Cam Pha and by US air and naval forces operating in the lower end of the Gulf.

Morale of the North Vietnamese population and leaders would undoubtedly be affected by the visible presence of naval warships off the densely populated areas of North Vietnam north of the 20th Parallel. The psychological impact of naval gunfire on civilian and military personnel far exceeds that of air attacks, according to survivors of both types of attacks. However, in view of the demonstrated resiliency both to air attacks and to naval bombardment south of the 20th Parallel, it is doubtful that North Vietnam's will to persist will diminish under an extended Sea Dragon Program.

V. Countermeasures

The North Vietnamese might be able to sink or severely damage one or more Allied warships participating in an expanded Sea Dragon operation with the means currently at their disposal, although such losses would probably not prevent Sea Dragon forces from carrying out their missions. A small bomber force -- eight IL-28 light bombers -- could be used against naval ships, and MIG aircraft have been noted conducting exercises over the Gulf of Tonkin. A force of about 14 modern, fast torpedo boats, including a new, Chinese-built hydrofoil boat, is based in the Haiphong - Cat Ba Island area and could operate against inshore Allied naval forces with a minimum exposure to early detection. Thirty-seven coastal defense sites, the strongest such sites in North Vietnam, are located north of the 20th Parallel, most of them guarding the sea approaches to Haiphong

on the Do Son Peninsula and off-lying islands, and nine of them make use of caves. The artillery at these sites are mostly 100-mm and 120-mm field guns with ranges around 20,000 meters, but weapons as large as 152-mm and 130-mm guns with ranges out to 27,000 meters have been identified. SA-2 battalions could also attempt attacks on Sea Dragon ships with their missiles in surface-to-surface mode -- missile range in this mode is approximately 16 nautical miles. SA-2 attacks would probably be ineffective, however, because of the small fragmentation warheads and probable accuracy limitations. Furthermore, SA-2 battalions would probably not be moved from their air defense sites to combat surface ships, because Sea Dragon attacks would almost certainly be accompanied by a resumption of air attacks. Mines and frogmen might also be employed, should US warships attempt to penetrate shallow waters at slow speeds in an attempt to improve the accuracy of their fire.

The expansion of Sea Dragon operations, and particularly the employment of the *New Jersey*, might be viewed by North Vietnam and its allies as a significant escalation of the war and might serve to justify the introduction of surface-to-surface missiles and other new weapons systems. Both the Samlet and Styx anti-ship missiles could be deployed in North Vietnam. The Samlet can carry a one-ton warhead to a fuel-limited range of perhaps 70 nautical miles, and the Styx can carry a warhead weighing more than 800 pounds to about 25 nautical miles. The operational range of both missiles, however, is believed to be limited to the radar horizon of the launch unit. Either missile could be fired from ashore, but, because most of North Vietnam's coast is very low, effective ranges might not exceed the 10 to 15 nautical mile range of conventional coastal artillery. Styx in a ship-to-ship role mounted on North Vietnamese torpedo boats would provide a more serious threat.

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