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THE DEPUTY SECRETARY OF DEFENSE  
WASHINGTON, D. C. 20301

28 JUN 1971

MEMORANDUM FOR MR. HENRY A. KISSINGER, ASSISTANT TO THE PRESIDENT FOR  
NATIONAL SECURITY AFFAIRS

ADMIRAL THOMAS H. MOORER  
CHAIRMAN, JOINT CHIEFS OF STAFF

THE HONORABLE U. ALEXIS JOHNSON  
UNDER SECRETARY OF STATE FOR POLITICAL AFFAIRS

THE HONORABLE RICHARD HELMS  
DIRECTOR, CENTRAL INTELLIGENCE AGENCY

SUBJECT: FY 72-73 Air Operations in Southeast Asia (U)

Attached for Senior Review Group consideration is a paper which assesses U.S./allied air operations in Southeast Asia. The paper examines current air operations and considers four alternative U.S. sortie levels and their associated effectiveness and costs for FY 72 and FY 73.

Enclosure

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**TOP SECRET**AIR OPERATIONS IN SOUTHEAST ASIA

This study examines U.S. air operations in Southeast Asia in order to provide a basis for considering U.S. sortie levels for FY 72 and FY 73. Specifically, the study looks at the effect the U.S./allied interdiction effort has had on the North Vietnamese supply efforts, assesses current and planned tactical air and B-52 operations in SEA, summarizes the fiscal impact of alternative sortie levels, and considers four sortie level options for FY 72 and FY 73. Section I summarizes the key points of the study and presents the four sortie level options and their associated costs. Section II addresses the broad question of the effectiveness of our interdiction effort and the extent to which these efforts have imposed a constraint on the North Vietnamese. In Section III the use of tactical air is examined and two methodologies which provide a basis for considering sortie level options are developed. Section IV considers the use of B-52s, their effectiveness, and possible sortie level options. The final section, Section V, examines the fiscal impact of four alternative sortie level options.

I. Summary and Sortie Level Options

The U.S. has waged a large scale interdiction effort since 1965 with the principal objectives of destroying North Vietnamese supplies and the means the enemy has been using to ship them to South Vietnam, and of raising the cost to the enemy of continuing his war effort in Southeast Asia. The extent to which this interdiction effort has seriously limited the strategy the North Vietnamese have chosen is not clear.

In light of the evidence of previous campaigns and DIA/CIA intelligence estimates, two points should be kept in mind in reviewing sortie rates for FY 72 and FY 73. First, marginal changes in sortie levels probably can be made without a significant impact on the outcome of the conflict in SEA. Second, because of the uncertainty of North Vietnamese intentions and the assessment that maintaining current levels of interdiction effectiveness may constrain the worst-case strategy the North Vietnamese might select, the effectiveness of air interdiction efforts in FY 72 should probably be maintained at levels not significantly lower than the current level.

The study indicates that two key factors must be considered when deciding upon sortie rates for FY 72 and FY 73: (1) it is the level of U.S./allied air operations effectiveness, not numbers of U.S. sorties that is most important; and (2) in view of the enemy's fluctuations in activity rates,\* a variable sortie rate with a surge capability appears most appropriate.\*\*

\*The Joint Staff believes that despite historical seasonal fluctuations in enemy activity, because his logistical program is behind schedule due to the air interdiction program and LAM SON 719, he will exert an intensive effort to continue movement of supplies during the southwest monsoon season on a crash basis.

\*\*The Joint Staff points out that an additional factor is the force structure remaining at any point in time. See Tab 1 for a summary of FY 71, 72 and 73 programmed force structure.

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The four tactical air and B-52 sortie rate options (two tactical air options have a variant) considered in the study and their associated costs or savings are summarized in the table below.

SORTIE LEVEL OPTIONS

<u>Tactical Air</u>	<u>Concept</u>	<u>No. Sorties</u>		<u>Added Costs (\$M)</u>		<u>a/</u>
		<u>FY 72</u>	<u>FY 73</u>	<u>FY 72</u>	<u>FY 73</u>	
Budget/Fiscal Guid.	Ceiling	10,200	5,300	-	-	
JCS Proposed	Level Rate	10,000	8,000	+\$145	+\$460	
Option 1	Variable Rate	6-8,000	4-6,000	-\$300	+\$20	
	W/Surge	10,000	7,700	-	-	
Option 1A <u>b/</u>	Same as Option 1 plus six more AC-130s.			-\$255	+\$30	
Option 2	Variable Rate	4-6,000	3-4,000	-\$490	-\$180	
	W/Surge	7,700	5,000	-	-	
Option 2A <u>b/</u>	Same as Option 2 plus six more AC-130s.			-\$445	-\$170	
 <u>B-52</u>						
Budget/Fiscal Guid.	Ceiling	1,000	650	-	-	
JCS Proposed	Level Rate	1,000	1,000	+\$35	+\$100	
Option 1	Variable Rate	7-900	4-700	-\$80	-\$40	
	W/Surge	1,000	840	-	-	
Option 2	Variable Rate	4-700	3-500	-\$180	-\$100	
	W/Surge	840	600	-	-	

a/ Added cost over present Budget and Fiscal Guidance.

b/ Considers procurement costs and added sortie costs of gunships.

Each of the four options results in a different level of U.S./allied air operations effectiveness, and compares differently to the current (FY 71) level of effectiveness.

The decision as to what FY 72-73 sortie levels are appropriate turns on the level of effectiveness desired in relation to its impact on limited resources. Sortie levels above the Budgeted level will necessitate the re-allocation of FY 72 and FY 73 funds and would require several sizeable program cuts. Alternatively, levels below the Budgeted rates would provide additional funds for either other high priority SEA programs or non-SEA high priority programs.

II. Overview: NVN Supply Efforts and the Impact of U.S./Allied Interdiction

The principal objectives of the U.S./allied interdiction campaign have been to destroy supplies and the means the North Vietnamese have been using to ship them to South Vietnam, and to raise the cost to the North Vietnamese of continuing their war effort in Southeast Asia. In an effort to achieve these objectives, the U.S. has waged a large scale interdiction effort since early 1965. The effort was focused primarily on North Vietnam until 1968 when it was shifted to South Laos. Since the bombing began the U.S. has added 200,000 tons of bombs (allies have added 200,000),

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75,000 B-52 strikes and dropped 6 million tons of bombs (compared to a total of 2 million tons in World War II and 635,000 tons in the Korean War). Despite this effort, the North Vietnamese have continued to move men and supplies and have persisted in the war against South Vietnam, have exerted considerable pressure on the FANK and essentially immobilized the Cambodian Government and forces, have met a major ARVN effort in Laos, and have mounted offensives in both North and South Laos.\*

Partially in response to the U.S./allied bombing and partially in an effort to increase their flexibility, the North Vietnamese have greatly expanded their LOC network in South Laos. Currently sixteen logistical commands (Binh Trams), employing 40,000 to 50,000 personnel and an inventory of 2,500 to 3,000 trucks,\*\* direct the flow of supplies along the LOCs in South Laos. The system moves supplies chiefly by truck, supplemented by two petroleum pipelines, various waterways, oxcarts, bicycles, and thousands of human porters. Its 1,900 miles of road extend from Mu Gia Pass 300 miles to the tri-border area. Besides the Mu Gia Pass there are two other entry corridors from North Vietnam -- the Ban Karai and the Ban Raving Passes -- through which supplies are funneled into South Laos.

Disagreement exists as to how effective the U.S./allied interdiction campaigns have been. It is clear that the campaigns have destroyed some supplies and have disrupted to some extent the flow of material along the LOC. But has the level of destruction and disruption been sufficient to seriously limit the North Vietnamese's chosen strategy? Some argue that the interdiction campaigns have not been very effective because:

-- Within the level of pressure imposed by the bombing the enemy has essentially not been resource-constrained nor severely limited by the capacity of the Laotian road net; the enemy can continue to ship supplies into South Vietnam and Cambodia at somewhat higher rates if he is willing to pay a price.

-- The enemy has minimized short-term disruptive effects due to bombing by maintaining sizeable stockpiles in South Laos.

-- The cost to the North Vietnamese has not been great as most of the trucks and material that are destroyed are provided by China and the Soviet Union, and they are fully capable (and apparently willing) to provide whatever level of military aid is needed for North Vietnam to continue their war effort.

-- Captured documents and ralliers make a convincing case that manpower considerations (training capacities, casualties, and personnel resources) act as more of a constraint on enemy operations than supply movements or the effectiveness of the U.S./allied interdiction campaign.

\*The Joint Staff believes this interdiction effort has significantly impeded enemy supply flow and has imposed serious constraints on enemy military intentions, strategy, and options in Southeast Asia.

\*\*DIA believes the system has about 2,200 to 2,800 vehicles, of which about 1,600 to 1,800 are cargo trucks involved in the movement of supplies.

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Others argue, however, that the interdiction campaigns have been effective in that:

-- The pressure imposed on the enemy by the bombing in South Laos has been a key factor in the enemy's choice of military strategy and tactics in South Vietnam. Enemy supply throughput, despite the most intensive effort ever attempted, was about one-third the amount of the previous dry season. The reductions in enemy forces since peak 1968 levels, the absence of country-wide offensives such as reportedly planned for TET in 1969 and 1970, reduced number of battalion sized offensives, and continued pacification progress all suggest the enemy's combat actions are significantly constrained by the interdiction campaign.

-- The determination of the enemy's efforts in South Laos to counter the effects of the bombing (e.g., additional roads, antiaircraft, guns, and manpower) as well as North Vietnamese pressure on the Royal Laotian government to end the U.S. bombing of the Trail all suggest that the interdiction effort is impacting on desired enemy strategy for operations in South Vietnam.

-- The destruction of materiel moving down the LOC (less than 2,600 truck loads entered South Vietnam and Cambodia during the last dry season) and the diversion of manpower for security of the network does inflict a significant cost on the North Vietnamese.

-- There is considerable evidence that air strikes and supply shortages have resulted in enemy morale problems and defections.

One point is clear, however. With the loss of Sihanoukville, the destruction of secure base areas in Cambodia, the support of additional LOC security forces in South Laos, and the disruptive effect of LAM SON 719, the burden on the logistic system in South Laos has increased substantially. Supplies must be moved along this route if the North Vietnamese are to continue their current level of war effort in South Vietnam and Cambodia.

In looking ahead to possible North Vietnamese intentions and capabilities in 1972 and into 1973, DIA and CIA have assessed the capability of the South Laos logistic system to support alternative North Vietnamese military strategies in South Vietnam. Though the burden imposed on the logistics system has become significantly greater over the past year, CIA concludes that if the current levels of interdiction effectiveness are maintained, the logistics system would not be a constraint on any strategy the North Vietnamese might want to adopt other than a major, country-wide offensive in South Vietnam or a simultaneous offensive in MR I and Cambodia, assuming no LAM SON or similar type operation is conducted. DIA believes that if a LAM SON-type operation is conducted the enemy's capability to carry out a major offensive in Cambodia, or simultaneous offensives in MR I and II would be marginal because of logistic constraints. Without a LAM SON however, DIA believes the constraint imposed by the enemy's logistics system on their options would be less severe.

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III. Tactical Air Sorties

A. Background Data

Trends in Sorties. Significant changes in the numbers and mix of sorties have occurred in the past six years and important changes are planned for FY 72 and FY 73. Tactical air sortie data are summarized in the following table:

<u>TACTICAL AIR SORTIES IN SEA</u> (Monthly Averages-in Thousands)								
<u>Total Attack Sorties</u> <sup>a/</sup>	<u>FY 66</u>	<u>FY 67</u>	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u> <sup>b/</sup>	<u>FY 73</u>
U.S.	16.7	24.5	28.0	29.2	20.6	12.3	10.2	5.3
RLAF	-	-	.4	.8	1.5	2.5	3.0 <sup>d/</sup>	3.0
VNAF	2.5	2.7	2.2	2.1	3.1	3.1	4.9 <sup>d/</sup>	6.8
Totals	<u>19.2</u>	<u>27.2</u>	<u>30.6</u>	<u>32.1</u>	<u>25.2</u>	<u>17.9</u>	<u>18.1</u>	<u>15.1</u>
 <u>Sorties by Area of Operations</u> <sup>a/</sup>								
South Vietnam	12.0	14.6	17.9	17.4	11.9	5.4		
Cambodia	-	-	-	-	1.0	2.3		
North Laos	<u>c/</u>	<u>c/</u>	1.1	2.1	4.9	3.6	N/A	N/A
South Laos	3.5	3.6	3.7	8.4	7.4	6.6		
North Vietnam	3.7	9.1	7.9	4.2	-	-		
Totals	<u>19.2</u>	<u>27.3</u>	<u>30.6</u>	<u>32.1</u>	<u>25.2</u>	<u>17.9</u>		
 <u>Gunship Sorties</u>								
U.S.	.1	.2	.5	.4	.6	.6	.7	.4
RLAF	-	-	-	-	-	.1	.2	.2
VNAF	-	-	-	-	.2	.1	.8	.8
Totals	<u>.1</u>	<u>.2</u>	<u>.5</u>	<u>.4</u>	<u>.8</u>	<u>.8</u>	<u>1.7</u>	<u>1.4</u>

a/ Excludes gunship sorties.

b/ Budgeted tactical air sorties, excluding gunships.

c/ Not designated either North or South Laos in these years.

d/ VNAF has been budgeted for 6.5 thousand tactical air sorties in FY 72, and 8.2 thousand in FY 73, but the VNAF have been flying about 17% non-operational sorties.

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Among the significant facts shown by this table are:

- RIAF and VNAF sortie capability is increasing and should continue to increase over the next two years.
- Despite the sharp drop in U.S. sorties, overall tactical air sorties continue at about the same level.
- As currently budgeted, total tactical air sorties will be slightly higher than current levels in FY 72 because of the increases in RIAF/VNAF capability, but will drop in FY 73 as U.S. sorties are reduced.
- Sortie levels in South Vietnam have decreased significantly.
- Sortie levels remain high in South Laos; however, they were lower in 1970 and 1971 than in 1969.
- Gunships have been performing an increasingly greater share of the tactical air sorties. The allied gunship capability will expand over the next two years.

Mission Allocation. The following table illustrates the type of missions U.S. aircraft have been flying.

ATTACK SORTIES BY TYPE MISSION  
(Percentage of Strikes by Target)

<u>Mission</u>	<u>1968</u> <sup>a/</sup>	<u>1969</u> <sup>a/</sup>	<u>1970</u> <sup>b/</sup>	<u>1971</u> <sup>c/</sup>
AAA/Radar	6	4	5	7
Truck Parks/Other Area Targets	57	66	62	42
Roads/Bridges	15	12	8	26
Trucks	7	5	14	13
Troops	10	10	9	10
Other	5	3	2	2
Average Sorties Per Month <sup>d/</sup>	24,300	22,300	17,500	12,900

<sup>a/</sup> As reported in BOMBA data.

<sup>b/</sup> Based only on Jan and Feb data.

<sup>c/</sup> As reported in SEDAB files.

<sup>d/</sup> BOMBA data show approximately 1.4 attacks per sortie.

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The following observations can be made:

- The percentage of effort expended against air defense targets has remained about constant.
- Missions against area type targets, which had remained nearly constant, decreased noticeably during 1971.
- The percentage of effort against roads and bridges has increased three fold over 1970 levels, and has doubled from 1968-69 levels.
- The increased emphasis on attacking trucks is evident in the doubling of the percentage of effort against these targets in 1970-71 over 1968-69 levels.

Effectiveness by Type of Aircraft. Truck killing missions have proven to be a relatively high pay-off mission. The table below shows reported truck kills by type of aircraft for the current dry season.

AIRCRAFT EFFECTIVENESS VS. TRUCKS - SOUTH LAOS  
(Nov 70 - Apr 71)

<u>Type Acft</u>	<u>Total Sorties</u>	<u>Trucks Reported Des/Dam</u>	<u>Trucks Des/Dam Per Sortie</u>
AC 119	486	2,193	4.51
AC 130	1,286	12,268	9.54
Total Gunship	1,772	14,461	8.16
A1	22	8	.36
A4	1,036	290	.28
A6	660	324	.49
A7	1,606	511	.32
B57G	804	1,821	2.26
F100	128	41	.32
F4	4,345	1,293	.30
Other <sup>a/</sup>	15	4	.27
Total Tac Air	8,616	4,292	.50
Total Sorties	10,388	18,753	1.81

a/ Includes F-8 and TA-4; A-37s and F-105s flew no sorties against trucks.

The table shows that gunships have been much more effective at killing trucks than the other attack aircraft -- demaging and destroying about 16 times as many trucks per sortie. Of the gunships, the AC-130s kill about twice as many trucks per sortie as the AC-119s. The most effective truck killing tactical aircraft has been the B-57G, averaging about 2.3 trucks per sortie. The Navy's A-6 has averaged about .5 kills per sortie

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the remainder of the tactical aircraft have been averaging between .25 and .35 trucks per sortie.

While the number of A-1 sorties shown in the preceding table are insufficient to provide a valid indication of A-1 effectiveness against trucks, data from previous years are more conclusive. For example, during the 1969/70 dry season USAF A-1s flew 2,332 sorties against trucks in South Laos, destroying or damaging 1,271. Their effectiveness, 0.55 trucks per sortie, was higher than that of all tactical aircraft flown during the 1970-1971 dry season, except the B-57Gs. However, it should be noted that the A-1s do not have the survivability of faster aircraft in areas of high anti-aircraft threat.

The wide difference in truck kills per sortie suggest that changes in the mix of aircraft could increase the number of truck kills with the same sortie level, or achieve the same number of truck kills at reduced sortie levels.\* For example, if additional gunships are substituted for tactical aircraft, additional truck kills would be possible at the same sortie levels. Shifts within types of tactical aircraft could also increase truck kills as in the past the A-1s and currently the A-6s are achieving 1.5 to 2 times the number of kills per sortie as the other tactical aircraft (except for B-57Gs).

Where Truck Kills Occur. Figures 1 and 2 on the following pages show where truck kills by gunships and fast-moving aircraft took place during April 1971. The target boxes lettered A through D are the areas which were subjected to intense B-52 strikes from October 1970 to February 1971.\*\* The area of the LAM SON interdiction program is also outlined. The arcs represent the SAM threat envelope. During April 1971 the B-52 activity in the boxes was well below the levels of previous months.

The figures point up a number of interesting facts:

- The lettered boxes through which the majority of the truck traffic passed and which were supposedly made less trafficable by the intense bombing were not lucrative truck killing areas for fast-moving aircraft.\*\*\* The SAM/AAA threat can be presumed to be the reason for the lack of gunship activity in those areas.

- The largest proportion of the fast mover truck kills occurred in the northern area of the logistics system, whereas the gunship kills occurred primarily in the central and southern areas.\*\*\*\*

\*The Joint Staff believes that all of the elements must be considered in the truck killing mission.

\*\*The boxes described in this paper include not only the area of the original COMMANDO HUNT V Interdiction boxes, but also the areas subjected to intense bombing when the enemy began bypassing the original boxes. Each box is approximately 20km x 20km.

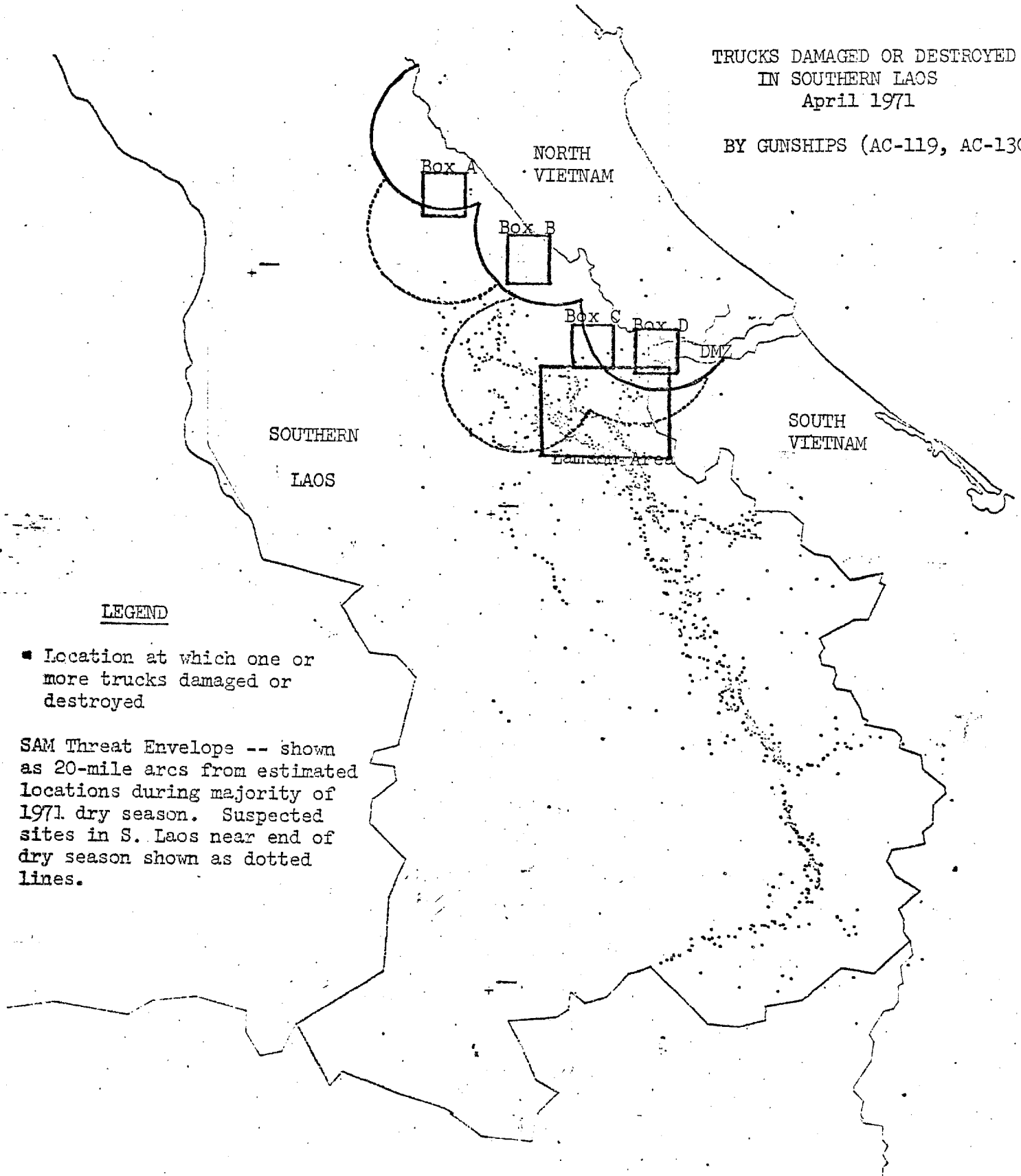
\*\*\*The Joint Staff says that numerous truck kills occur in the boxes (due to B-52, TAC AIR radar strikes, and time delay ordnance) but are never reported.

\*\*\*\*The Joint Staff state that the reasons for the higher gunship truck kills in these areas were that, (1) gunships can always operate on southern routes, but are frequently restricted from operating in northern high threat areas, and (2) gunships are scheduled to hit the heaviest truck traffic

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TRUCKS DAMAGED OR DESTROYED  
IN SOUTHERN LAOS  
April 1971  
BY GUNSHIPS (AC-119, AC-130)

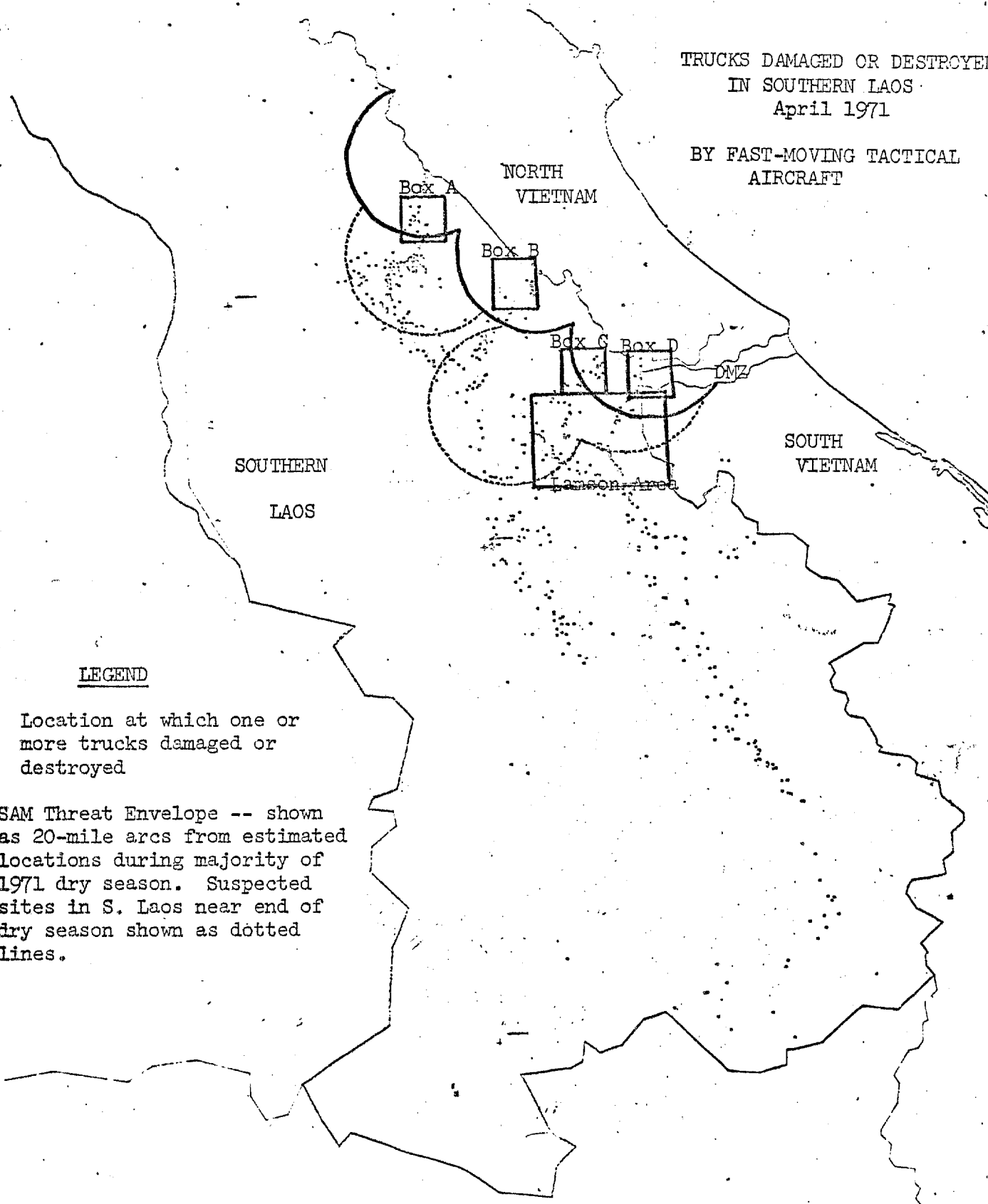


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• Location at which one or more trucks damaged or destroyed

SAM Threat Envelope -- shown as 20-mile arcs from estimated locations during majority of 1971 dry season. Suspected sites in S. Laos near end of dry season shown as dotted lines.

FIGURE 2



LEGEND

• Location at which one or more trucks damaged or destroyed

SAM Threat Envelope -- shown as 20-mile arcs from estimated locations during majority of 1971 dry season. Suspected sites in S. Laos near end of dry season shown as dotted lines.

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- The suspected SAM sites in Laos appeared not to deter either fast-mover or gunship strike activity as numerous truck kills took place within these SAM-threat envelopes.

- The success of the gunships in interdicting trucks on the egress routes late in the dry season is evidenced by the number of kills in the southern portion of the Laotian panhandle.

B. Requirements for U.S. Tactical Air in FY 72-73

Because of the basic disagreements concerning the overall effectiveness of the interdiction effort and the dearth of "hard" data upon which to base an analysis, it is most difficult to estimate "requirements" for tactical aircraft. However, the impact of marginal sortie rate changes on interdiction effectiveness can be estimated. In light of this, two approaches are used to provide a framework within which to examine tactical air sortie levels for FY 72 and FY 73. The first approach begins with the current sortie rate (the U.S. has been flying an average of 12,000 fixed wing attack\* sorties monthly) and considers the impact on effectiveness resulting from planned changes in air operations in SEA. The second approach by determining the number of sorties required for the most essential tactical air missions, establishes a benchmark of the number of aircraft needed to perform the most critical missions as well as provides a lower bound which should not be breached if lower sortie options are considered.

While agreeing with the principle that maintaining the level of total U.S./allied air operations effectiveness is more important than maintaining the numbers of U.S. sorties, the Joint Staff does not subscribe to the implications which this study draws from the combination of the above statement of principle, and the following discussion of the impact of VNAF/RLAF increases, impact of increased effectiveness and additional gunships and impact of reductions in least effective sorties.

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\*An attack sortie is an aircraft sortie whose primary mission is to deliver destructive air-to-ground ordnance on the enemy. This includes strike, flak suppression, armed reconnaissance, interdiction, and close air support. Combat air patrol (MIG defense) sorties are generally not classified as attack sorties but are included in this discussion since the same aircraft are being used interchangeably for attack and CAP in SEA.

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Variations from Current U S. Sortie Levels

Three factors should be kept in mind when examining the impact variations in current U.S. sortie levels will have an overall interdiction effectiveness. The first is that there are planned increases in the VNAF/RLAF tactical air capability. The second is that a significant increase in effectiveness per U.S. sortie should occur -- resulting from continued improvements in sensors and weapons systems and changes in the mix of sorties. And the third is that changes in effectiveness can be achieved by varying the number of those sorties which seem to be least effective.

The Impact of VNAF/RLAF Increases. The VNAF and RLAF have been averaging about 3,200 and 2,200 monthly attack sorties in FY 71, respectively. Under current planning the VNAF is expected to increase to 4,900 monthly attack sorties in FY 72 and 6,800 in FY 73. The RLAF should increase to about 3,000 attack sorties monthly in FY 72 and FY 73. To assess the effect of these increases a basis for comparing a VNAF/RLAF sortie with a U.S. sortie is needed. Because of the differences in such factors as range/payload, loiter time, and mission flexibility which tend to favor the U.S. aircraft there is some question as to what basis is most appropriate. One approach is to trade off the VNAF A-1 and A-37 sorties and the RLAF T-28 sorties on a one-for-one basis with U.S. aircraft, arguing that this is not unreasonable as an F-4 sortie is now carrying only about  $2\frac{1}{2}$  tons of ordnance -- less than the ordnance capacity of an A-1 and A-37 (which represents 85 to 90 percent of increase in VNAF/RLAF sortie capability), although still greater than that of a T-28. A second approach -- resulting in a more conservative estimate -- is to base the trade off on tonnage of munitions per sortie. Present munitions loading factors provide for about 2.75 tons per U.S. sortie and about 1.4 tons per VNAF/RLAF sortie, resulting in a trade off factor of about 1.9 VNAF/RLAF sorties for each U.S. sortie. This results in an anticipated monthly VNAF/RLAF sortie increase which equates to an added capability of about 1,300 U.S. sorties in FY 72 and 2,300 in FY 73.

The table below summarizes three ways this added capability might be viewed in relation to changes in U.S. sortie rates.\* Using the FY 71 sortie rate as a base, Case 1 shows that by holding U.S. sortie rates constant in FY 72 and FY 73 the added capability would result in a net increase in effectiveness (measured in terms of FY 71 sortie equivalents). Case 2, using the FY 71 U.S. sortie rate as the Adjusted Capability Level, illustrates that U.S. sorties could be reduced to 10,700 and 9,700 in FY 72 and FY 73 without reducing effectiveness from current levels. Case 3, with the currently budgeted U.S. sortie rate as a base, shows the resulting levels of effectiveness when this added capability is considered.

\*The criteria for the three cases used in the table and in the tables on the following pages are:

Case 1 - The FY 71 sortie rate is used as the base for both FY 72 and FY 73. Adjustments are added to this base.

Case 2 - The FY 71 sortie rate is used as the "Adjusted Capability" in both FY 72 and FY 73. The "Base Sortie Rate" is the U.S. sortie rate that must be flown for effectiveness to remain at FY 71 levels.

Case 3 - The "Base Sortie Rates" for FY 72 and FY 73 are as currently budgeted. Adjustments are added to this base.

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IMPACT OF VNAF/RLAF INCREASES ON SORTIE CAPABILITY  
(Average Monthly Sorties)

	Case 1		Case 2		Case 3	
	FY 72	FY 73	FY 72	FY 73	FY 72	FY 73
Base Sortie Rate	12,000	12,000	10,700	9,700	10,200	5,300
VNAF/RLAF Increases	1,300	2,300	1,300	2,300	1,300	2,300
Adjusted Capability	13,300	14,300	12,000	12,000	11,500	7,600

a/ The Joint Staff says that as a larger share of the total air effort is shifted to the allies we must recognize the fact that their operations are not wholly under our control and some loss of effectiveness will be realized beyond that which is a function of performance and load carrying capacity of their aircraft.

Impact of Increased Effectiveness and Additional Gunships. As our ability to develop more precise target data continues to improve through the use of advanced sensors and better intelligence data, a more effective screening of proposed targets and thus an increase in effectiveness per sortie flown should be possible. Similarly, through the use of advanced weapons such as laser and electro-optically guided bombs and advanced CBU munitions, greater effectiveness per sortie should be realized.

Under current plans allied gunship capability in FY 72 will increase by six AC-130s. One approach to quantifying the possible trade off of these six additional gunships for tactical air sorties is to consider them in terms of truck killing capability. In the current dry season campaign it took about 16 tactical air sorties to kill the same number of trucks as was killed with one gunship sortie. Thus, these six gunships in terms of truck killing might be traded off with about 2,300 tactical air sorties per month\*. During the peak months of the current dry season we were flying about 2,000 tactical air sorties monthly against moving trucks. About 300 of these sorties are needed to keep trucks off the road during daylight hours when gunships do not operate. Because of this constraint, the additional six AC-130s can be traded off with only about 1,700 tactical air sorties per month in FY 72 and FY 73 when assessing the possibility of reducing U.S. sorties while holding effectiveness constant (unless a shift away from targeting tactical aircraft on other target-types is also undertaken).

It is difficult to estimate with confidence the precise increase in capability that might be achieved with the improvements in target selection, munitions, and weapon systems and the addition of the gunships. However, using the 2,300 or the 1,700 monthly sorties (depending on the case being considered) as an estimate of the added capability due to the additional gunships and adding a 10% increase in capability due to improvements in targeting selection and weapon systems appears to provide a reasonable estimate.

\*Gunship/tactical air sortie trade offs consider that three tactical air sorties are required as escorts for each gunship sortie.

\*\*The Joint Staff cannot subscribe to a linear trade off of gunship for tactical air sorties as prescribed in this rationale. As previously noted, gunship effectiveness is a direct result of the combined effects



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Below is summarized the impact of this added capability depending upon the manner in which it is viewed in relation to the current U.S. sortie level. Case 1 again shows the net increase in effectiveness if the current sortie rate is held constant in FY 72 and FY 73. Case 2 illustrates the levels to which U.S. sortie rates could be reduced without degrading effectiveness. And Case 3 shows the resulting levels of effectiveness when these improvements are considered.

IMPACT OF INCREASE IN PER SORTIE EFFECTIVENESS  
(Average Monthly Sorties)

	Case 1		Case 2		Case 3	
	FY 72	FY 73	FY 72	FY 73	FY 72	FY 73
Base Sortie Rate	12,000	12,000	8,000	7,300	10,200	5,300
VNAF/RLAF Increases <sup>a/</sup>	1,300	2,300	1,300	2,300	1,300	2,300
Improved Effectiveness	+3,500	+3,500	+2,700	+2,400	+3,300	+2,800
Adjusted Capability	16,800	17,800	12,000	12,000	14,800	10,400

<sup>a/</sup> The difference in the number of sorties added due to improved sortie effectiveness results from (1) differences in the number of tactical sorties that can be traded off for the added gunships (because of the constraint of flying a minimum number of tactical air sorties against trucks to keep them off the roads in the daytime), and (2) differences in the base number that the 10% factor is applied to.

Impact of Reductions in Least Effective Sorties.\* In examining the impact in variations from the current sortie level, it is useful to assess the relative effectiveness of sorties directed at various target categories and consider the impact on effectiveness of variations in the numbers of sorties directed against target categories which appear to be least effective

One target category that might be considered is Traffic Control Points (TCPs). From October 70 through March 71 there has been an average of 3,000 sorties monthly targeted against TCPs. The concept of a TCP is essentially one of area denial -- to impede the flow of supplies. Although occasionally these sorties have been successful at closing sections of road for short periods of time (less than a day and usually for only a few hours) and thereby temporarily impeding the movement of supplies, it is likely this level of effort could be varied somewhat without having a major impact on overall effectiveness.

A second target category that might be considered is labeled Miscellaneous. From October 70 to March 71 there has been a monthly average of about 1,500 Miscellaneous sorties in South Laos. Some of these sorties have struck tanks and bulldozers, but some of them have also been expended on targets of doubtful value such as ox-carts, pack animals, and caves. It is likely that some variations could be made in this category without significantly impacting on tactical air effectiveness.

\*The Joint Staff believes that the following discussion is of little validity maintaining that if it were feasible to identify in advance those sorties which turn out in retrospect to have produced little or no effect on the enemy, they would not have been scheduled or flown in the first place.

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If one-half of the sorties allocated to Miscellaneous targets are re-allocated against more lucrative targets (e.g., trucks or truck parks and storage areas -- when based on good intelligence), a net increase in effectiveness could probably be realized. Assuming one-half of these re-allocated sorties represent a net increase in capability, the table below shows the impact of this re-allocation in relation to the sortie rates for the three cases.

IMPACT OF SORTIE RE-ALLOCATION ON CAPABILITY a/  
(Average Monthly Sorties)

	Case 1		Case 2		Case 3	
	FY 72	FY 73	FY 72	FY 73	FY 72	FY 73
Base Sortie Rate	12,000	12,000	7,650	6,800	10,200	5,300
VNAF/RLAF Increases	+1,300	+2,300	+1,300	+2,300	+1,300	+2,300
Improved Effectiveness	+3,500	+3,500	+2,450	+2,400	+3,300	+2,800
Sortie Re-Allocations	+1,000	1,000	+600	+500	+850	+400
Adjusted Capability	<u>17,800</u>	<u>18,800</u>	<u>12,000</u>	<u>12,000</u>	<u>15,650</u>	<u>10,800</u>

a/ The Joint Staff states that the responsible field commanders who are in close contact with the daily tactical situation constantly strive for the most effective application of available resources within the constraints of air operating authorities and enemy intelligence. The Joint Staff also says that there is no identified breakthrough in force management or targeting techniques which will permit maintenance of the same effectiveness with a significant reduction in the weight of effort applied. As new tactics, techniques, and equipment are introduced, the enemy also strives to improve his posture by the employment of heavier defenses, surprise tactics, continued expansion and improvement of the LOC network, and innovations in his methods of moving supplies through the system. These actions and counteractions tend to offset each other to the end that total impact on the enemy remains a direct function of weight of air effort applied.

Minimum Essential Sortie Levels\*

The second approach is to establish a minimum essential sortie level by estimating the number of sorties needed for the four most important tactical air missions: close air support, gunship escort, combat air patrol, and interdiction. This estimate has two purposes: (1) it represents an estimate of tactical air requirements for the most critical missions, and (2) it establishes a floor which should not be breached if reductions in current sortie levels are considered. Estimating sortie requirements by mission area is used only to provide a basis for determining the magnitude of the total requirement; it does not imply that sorties should actually be managed or controlled in this manner. The field commander should retain the flexibility to manage the sorties as necessary.

Close Air Support. Close air support for U.S. combat troops is the most essential tactical air mission; the amount of close air support per maneuver battalion should not be reduced. From October 70 to June 71 an average of 35 close air support sorties per month were provided each U.S.

\*The Joint Staff believes the discussion in this section, continuing to paragraph C on page 17, seriously understates the minimum sortie levels required and should be balanced by the views of the responsible field commander. COMUSMACV's comments on the impact of these actions are at Tab 2.

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maneuver battalion in Vietnam. Under current redeployment planning there would be an average of 20 maneuver battalions in SVN during FY 72 and four in FY 73. To maintain the same amount of close air support per maneuver battalion would require 700 tactical air sorties monthly in FY 72 and 140 monthly in FY 73.

However, as U.S. forces redeploy, the enemy may be capable of applying greater military pressure on the remaining U.S. maneuver battalions. In light of this it may be prudent to increase the number of close air support sorties to 40 per maneuver battalion in FY 72 and FY 73. This level of effort would require 800 sorties monthly in FY 72 and about 150 monthly in FY 73.

Because the RVNAF Improvement and Modernization Program has not provided a build-up in VNAF capability as rapidly as the ARVN has expanded, there will be a decline in the number of close air support sorties per ARVN maneuver battalion unless U.S. sorties are provided in the interim. If the entire VNAF capability is used for close air support in FY 72, an average of 27 sorties per maneuver battalion would be available. Increasing this level of effort to 30 sorties per battalion per month in FY 72 would require an average of almost 600 U.S. sorties per month.

Data on the level of close air support the U.S. has been providing the Cambodians are limited as these sorties have been aggregated in other categories. Because the VNAF have been providing their own close air support in engagements in Cambodia, the level of U.S. effort is not believed to be great (on an average monthly basis). A level of 200 per month in FY 72 and 100 per month in FY 73 is believed to be adequate.

Close air support in North Laos has been averaging about 30 sorties per month. Assuming this level of effort is held constant, a minimum of about 1,600 monthly U.S. close air support sorties are considered essential in FY 72 and about 300 in FY 73.

Gunship Escort. Because gunships are the most effective weapon against trucks, and because they are vulnerable to AAA fire, it is essential that tactical aircraft escort the gunships. Presently, three F-4 escorts are provided for each gunship sortie. Current planning provides for a monthly average of 700 and 350 gunship sorties in FY 72 and FY 73. If each of these is accompanied by three tactical air escorts, gunship escort would require 2,100 and 1,050 sorties monthly in FY 72 and FY 73. These escort sortie levels would enable all gunships to operate in relatively high threat areas.

Combat Air Patrol. Assuming B-52 strikes are continued, tactical aircraft will be needed for combat air patrol against the MIG threat. Each cell of three B-52s is protected by two F-4s. During the last two years, no B-52s have been challenged by a MIG, however, the F-4s are undoubtedly an important deterrent. Current plans call for an average of 1,000 B-52 strikes monthly in FY 72 and 650 monthly in FY 73, therefore about 700 monthly tactical air CAP sorties are needed in FY 72 and about 450 in FY 73. Gunships do not require CAP sorties as the F-4 escorts flying flak suppression are also capable of providing a defense against MIGs.

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Interdiction. The missions included in this grouping are those with the objective of reducing enemy capability by disrupting his logistics system by destroying his supplies as they are moved toward his area of operations and by forcing him to divert additional men and effort to his logistic effort. In South Laos, armed reconnaissance against trucks during daylight is an important mission. Tactical aircraft are used to force trucks to move only at night when gunships can be used most effectively. From October 70 through March 71 there has been an average of about 300 sorties monthly flying armed daylight reconnaissance against trucks. This sortie level should be maintained in FY 72 and FY 73. In addition, about 200 sorties monthly are probably essential in South Laos to hinder enemy road repair crews, to strike the waterway logistics system, and to strike truck parks and storage areas. Though difficult to estimate, a total of about 200 interdiction-type sorties are also probably essential in South Vietnam and North Laos and about 200 additional in Cambodia in order to adequately disrupt the enemy's logistics system. Thus a total of about 900 monthly interdiction sorties are considered essential in FY 72. Because of the anticipated improvement in RVNAF and Cambodian forces in FY 73, it is estimated that essential U.S. interdiction sorties can be reduced to about 500 per month in FY 73.

The table below summarizes the minimum essential tactical air sorties for FY 72 and FY 73. If U.S. gunship sorties are maintained at the FY 72 level in FY 73, an additional 1,050 tactical air sorties (for gunship escort) should be added to the FY 73 total.

MINIMUM ESSENTIAL SORTIES <sup>a/</sup>  
(Monthly Averages)

	<u>FY 72</u>	<u>FY 73</u>
Close Air Support	1,600	300
Gunship Escort	2,100	1,100
Combat Air Patrol	700	450
Interdiction	900	500
Total	<u>5,300</u>	<u>2,350</u>

a/ The Joint Staff points out that these figures bear no resemblance to the views of the field commander. (See footnote on page 15 and Tab 2.)

C. Variable Sortie Demands and Rates

It is important to recognize that wide variations in sortie needs result from weather and enemy activity patterns, changes in combat activity, and other factors. This is evident, for example, in the variations in sensor-detected truck movements in South Laos (a large proportion of U.S. sorties are allocated to countering this truck movement).

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SENSOR DETECTED TRUCK MOVEMENTS -- SOUTH LAOS<sup>a/</sup>  
(Fiscal 1971)

July	3,219	November	7,662	March	43,326
August	1,637	December	20,612	April	31,620
September	470	January	32,324	May	19,971
October	939	February	38,915		

<sup>a/</sup> Shown are both north and south bound movements.

These fluctuations in the need for sorties indicate that a procedure should be developed to encourage lower sortie levels during periods when needs are low. There are infrequent but intense periods when demands for sorties reach peaks beyond that normally experienced even during the dry season -- the recent LAM SON operation is one such instance.

The table below illustrates the variations in sorties flown to date in FY 71; the monthly variation in sorties resulting from wet and dry season truck movements is evident as well as the peak demand for sorties in March during LAM SON 719. Fluctuations are greatest for F-4, A-7, and gunships, which are the aircraft most used for attacking trucks during the dry season. The increase in B-57 sorties are resulting from their introduction into the theater.

U.S. ATTACK SORTIES - SEA<sup>a/</sup>  
By Aircraft Type

Type	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Mo. Ave
A-1	624	551	529	498	432	305	224	144	216	198	372
A-4	1,890	1,633	1,462	859	1,043	932	1,887	1,959	2,114	2,067	1,585
A-6	902	626	470	407	527	820	648	690	836	611	654
A-7	918	945	742	773	1,123	1,463	1,289	1,644	1,893	1,655	1,245
A-37	1,264	1,270	1,097	470	704	1,088	1,021	876	992	939	972
B-57	-	-	-	6	52	160	239	212	283	249	120
F-4	5,017	4,346	3,506	3,677	4,521	5,520	5,924	5,656	7,286	5,363	5,082
F-100	2,482	2,906	1,840	1,209	1,523	2,121	2,331	1,794	2,273	1,801	2,028
Gunships	315	347	327	304	390	640	738	733	839	801	543
Other	1,023	823	505	60	1	14	19	37	102	56	264
Total	14,435	13,447	10,478	8,263	10,316	13,063	14,320	13,745	16,834	13,740	12,864

<sup>a/</sup> The Joint Staff points out that, in addition to variations induced by weather factors, a major factor in the August to November 1970 period was the reduction in FY 1971 sortie authorizations (NSDM-77) and subsequent guidance and interpretation to the field.

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D. Sortie Level Options For FY 72-73

The two previous sections (B and C) suggest it would be appropriate to consider establishing sortie rates for FY 72 and FY 73 with the following three characteristics:

1. A variable sortie rate for use during periods of normal operations -- this would take into account the fluctuation in sortie demands during the wet and dry seasons and reasonable variations in enemy activity. The exact number of sorties flown would be at the discretion of COMUSMACV.
2. Provide a 30 day surge capability above the ceiling of the variable rate -- this would provide a capability to meet peak needs (e.g., a LAM SON-type operation).
3. Budget munitions for the midpoint of the variable range and establish the force structure to support high end of range. COMUSMACV would be permitted to "bank" any munitions not used below the budgeted average for use later in the year.

A sortie rate with these characteristics would have the flexibility to meet the normal fluctuations and the high points in enemy activity rates, yet would allow the realization of the significant savings associated with reduced average sortie levels.

The table below outlines the currently Budgeted, the JCS proposed, and two lower level sortie options (each with one variant) which incorporate the three characteristics noted above.

TACTICAL AIR SORTIE OPTIONS <sup>a/</sup>  
(Monthly Sorties)

	<u>Concept</u>	<u>No. Sorties</u>	
		<u>FY 72</u>	<u>FY 73</u>
Budget/Fiscal Guidance	Ceiling	10,200	5,300
JCS Proposed	Level Rate	10,000	8,000
Option 1	Variable Rate	6-8,000	4-6,000
	W/Surge	10,000	7,700
Option 1A	Same as Option 1 except 6 additional AC-130 gunships are added to the force.		
Option 2	Variable Rate	4-6,000	3-4,000
	W/Surge	7,700	5,000
Option 2A	Same as Option 2 except 6 additional AC-130 gunships are added to the force.		

<sup>a/</sup> The Joint Staff points out that the sortie rates proposed in Option 1, 6-8,000 for FY 72 and 4-6,000 for FY 73; and Option 2, 4-6,000 for FY 72, approximate the reductions of 25% and 50% which COMUSMACV describes at Tab 2. Option 2, with 3-4,000 sorties proposed for FY 73, represents 60-70% of the currently programmed FY 72 levels.

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Budgeted/Fiscal Guidance Option. This sortie option would provide a significantly greater total allied capability (level of effectiveness) in FY 72 than the current level as the increases in VNAF/RLAF capability, per sortie effectiveness, and a limited re-allocation of missions more than offset the reduction in numbers of U.S. sorties (as noted in Case 3 on page 15, there would be an additional capability of about 3,500 monthly sorties). In FY 73 the Budgeted option would provide slightly less capability than the current sortie level.

JCS Proposed Option. The JCS proposed option would also provide a significantly greater total allied capability in FY 72 than is provided by the current sortie level (an additional capability of about 3,500 monthly sorties). This option would also provide a greater level of effectiveness in FY 73 than the current level (as noted in Case 3 on page 15, there would be an additional 1,000 to 2,000 monthly sortie capability). For both years the increases in VNAF/RLAF capability, per sortie effectiveness, and a limited re-allocation of missions more than compensate for the reduction in numbers of U.S. sorties.\*

Option 1. This option calls for a variable monthly sortie rate of 6,000 to 8,000 in FY 72 and 4,000 to 6,000 in FY 73 and the capability to surge to peak levels (10,000 sorties per month in FY 72) for up to 30 days if the military situation dictated such a rate. Under this option, and assuming an average of 7,000 monthly sorties are flown, total allied capability in FY 72 would remain slightly below the current level as the increases in VNAF/RLAF capability, per sortie effectiveness, and a limited re-allocation of missions will just about offset the reduction in numbers of U.S. sorties (note Case 2 on page 15). In FY 73, total allied effectiveness would be reduced to somewhat below current levels, assuming an average of 5,000 monthly sorties was flown. If the high end of the range was flown, total allied capability would be only slightly below the current level. Effectiveness considerations aside, the average of this variable rate is considerably above the number of estimated essential sorties for both fiscal years.

Option 1A. This option is the same as Option 1 except that six additional AC-130 gunships (above the six already planned) are added to the force. The six gunships would cost \$30 to \$40 million for modification and probably would not be available until mid-FY 72, thus they would increase total allied interdiction capability under Option 1 by a monthly average of about 1,000 sorties in FY 72 and about 2,000 in FY 73. This would raise total allied capability to about the current levels for both FY 72 and FY 73.

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\*The Joint Staff does not believe that this option would provide a significantly greater total allied capability in FY 72-73 as they believe this conclusion is based on undue optimism about VNAF increases and the possibility of improved effectiveness.

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Option 2. This option provides for monthly rates of 4,000 to 6,000 in FY 72 and 3,000 to 4,000 in FY 73 with a surge capability of 7,700 sorties for up to 30 days in FY 72. Assuming an average of 5,000 sorties per month are flown, total allied capability would be below current levels (about 2,000 to 3,000 sorties below the current level as is evident in Case 2, page 15). In FY 73, total allied capability would be significantly below the current level (about 3,000 to 4,000 below), as the increases and improvements would not fully compensate for the reductions in numbers of sorties. In FY 72, the average of this variable rate is slightly below the number of estimated essential sorties; in FY 73, it is about 1,000 sorties above.

Option 2A. This option is the same as Option 2 except that six additional AC-130 gunships (above the six already planned) are added to the force. The six gunships would cost \$30 to \$40 million for modification and probably would not be available until mid-FY 72, thus they would increase total allied capability under Option 2 by a monthly average of about 1,000 sorties in FY 72 and about 2,000 in FY 73. Total allied capability would be about 1,500 sorties less in FY 72 and 1,000 sorties less in FY 73.

#### E. Alternative Methods for Performing Interdiction Missions

Increased Gunships for U.S. and Allies. As previously noted the truck-killing capability of gunships has proved far superior to that of fast moving tactical aircraft. An increase in the number of gunships, beyond that already planned, and a corresponding reduction in tactical air sorties could be made without any decrease in the effectiveness of the air interdiction program. However, such trade offs are not without limitations, as gunship operations are limited to night operations and to areas where they can survive the anti-aircraft threat. Hence, a limited number of fast moving tactical aircraft will be needed for daylight operations and for sorties in high threat areas. By making minor shifts in the mission allocation, it is still possible to substitute additional gunships for fast moving tactical aircraft within those constraints.

As a gunship sortie costs about six times as much as a fighter aircraft sortie (\$52,000 -- which includes three escorts -- versus about \$8,500) and during the current dry season has been killing about sixteen times as many trucks per sortie, this trade off appears very favorable.\*

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\*The Joint Staff believes this cost comparison is not valid because the gunship is only able to work in a semi-permissive environment under conditions of marginal moon illumination, and relies solely on fighter type aircraft for the maintenance of a workable environment.

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Slower Moving Aircraft. Many of the sorties presently flown by fast-moving U.S. aircraft (e.g., F-4s) could probably be replaced by A-1 or A-37 sorties flown by VNAF and RLAf pilots at no reduction in truck killing effectiveness, and at significant savings. Allied A-1 and A-37 sorties are estimated to cost about \$3,200 compared to about \$9,000 to \$11,000 for a U.S. F-4 sortie. While no data are available for A-37 effectiveness against trucks, the A-1 has achieved a higher kill ratio against trucks than that of the F-4 (.55 versus .30).\*

Simple Aircraft for Allies. Consideration is being given to more simple, lower cost aircraft for our SEA allies. The Air Force is currently conducting tests of an armed, STOL aircraft as part of a broader Air Force program designed to evaluate counter-insurgency aircraft for our SEA allies. During the coming dry season, the Air Force program is expected to include tests along the RVN border of both the concept and the use of these aircraft for the interdiction role.

IV. B-52 Operations

A. Background Data

As shown in the table below, the use of B-52s in Southeast Asia increased in parallel with the buildup of U.S. forces to a peak of 1,770 monthly sorties in FY 69.

<u>Area of Operations</u>	<u>B-52 SORTIES</u> (Monthly Averages)					
	<u>FY 66</u>	<u>FY 67</u>	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>
South Vietnam	280	520	920	1,340	870	190
Cambodia	-	-	-	-	60	90
North Laos	-	-	-	-	-	-
South Laos	40	100	190	430	530	840
Total Sorties	320	620	1,110	1,770	1,460	1,120

As is evident, these sorties were flown primarily in South Vietnam until FY 71 when the emphasis was shifted to South Laos. This shift is a reflection of the improved pacification situation in South Vietnam and the reduction in large unit engagements and also a reflection of the increased use of B-52s against the enemy's infiltration and supply routes in South Laos.

Significant trends have also occurred in the types of targets B-52s have been attacking.

\*The Joint Staff believes this discussion is incomplete because it does not address the low survivability of the A-1 nor the lack of range of the A-37. In addition, the Joint Staff says the truck kills achieved with these slow moving aircraft were achieved with U.S. pilots and the VNAF pilots will probably not be able to achieve the same ratios because the VNAF pilots do not generally have a proven night flying combat capability nor the facility to operate with ABCCC and PACs to achieve these truck kill ratios.

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B-52 MISSIONS  
(Monthly Average)

	FY 69	FY 70	FY 71 <sup>a/</sup>	FY 71 Breakout by Period		
				Wet Season (July-Oct)	Dry Season (Nov-Jan, Apr)	LAM SON (Feb, Mar)
<u>SVN</u>						
Area Targets	897	745	166	272	78	26
Enemy Troops	83	110	40	62	20	11
Not reported/other	355	11	7	13	1	0
	<u>1,335</u>	<u>866</u>	<u>213</u>	<u>347</u>	<u>99</u>	<u>37</u>
<u>S. Laos</u>						
Interdiction Boxes	-	-	244	-	647	169 <sup>b/</sup>
Area Targets	218	516	461	634	230	403 <sup>b/</sup>
Enemy Troops	9	9	80	11	25	399 <sup>b/</sup>
Other	200	2	32	54	10	8
Subtotal	<u>427</u>	<u>527</u>	<u>817</u>	<u>699</u>	<u>912</u>	<u>979</u>
<u>Cambodia</u>						
Area Targets	-	53	84	119	40	67
Enemy Troops	-	5	10	14	6	6
Other	-	1	0	1	0	0
Subtotal	<u>-</u>	<u>59</u>	<u>94</u>	<u>134</u>	<u>46</u>	<u>73</u>
<u>Total SEA</u>	1,762	1,452	1,124	1,180	1,057	1,089
% Area Targets	63%	91%	63%	87%	33%	46%
% Area Targets/ Interdiction Boxes	63%	91%	85%	87%	94%	61%

a/ Totals by area do not agree precisely with the numbers in the previous table as this data is from another source.

b/ During the peak of the LAM SON operations (March 1971), B-52s flew 592 sorties against troops and 306 against area targets in the 20-by-30 mile LAM SON area itself.

- B-52s have been used primarily against area targets (storage areas, depots, truck parks, and building complexes) throughout Southeast Asia. In FY 70, 91% of the B-52 sorties were reportedly flown against area targets, and in FY 71 the figure has been about 63%. In FY 71, two new types of targets were developed:

- Interdiction boxes placed at the entry points of the Ho Chi Minh trail into Southern Laos from North Vietnam (the Mu Gia, Ban Karai, and Ban Raving Passes and the DMZ By-Pass). These special area targets accounted for over 60% of the B-52 effort in the dry season period November - January and April. The B-52s which were attacking area targets in South Vietnam and South Laos in the wet season were shifted to the interdiction boxes in the dry season.

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- Close air support against massed enemy troop targets. In the month of March 1971 during the LAM SON 719 operation, almost 600 sorties against enemy troops were flown in the 20-by-30-mile LAM SON 719 area.

B. B-52 Sortie Needs In FY 72-73

Because of the large amount of ordnance they can deliver, B-52s provide a unique capability against area targets such as truck parks, supply storage areas, building complexes, and troop concentrations. B-52s have also been useful in critical tactical situations such as Khe Sanh and LAM SON 719 when heavy and concentrated firepower was needed. Further, all-source intelligence and ralliers indicate that B-52s have a significant psychological or "terror impact" on the enemy because of the lack of warning associated with their high altitude operation. However, the complexity of the factors affecting the employment of U.S. airpower in Southeast Asia, many of which cannot be quantified, and the limited available data on our B-52 operations make it difficult to estimate the overall effectiveness of B-52 sorties and to determine precisely the level of sorties we should plan to fly in SEA.

Several important factors should be kept in mind when considering B-52 sortie levels.

- The fact that at this time a significant reduction in enemy overall capabilities and determination during FY 72-73 cannot be anticipated. With the continued redeployment of U.S. ground forces, it would therefore seem prudent to assume that the tactical situation in Southeast Asia will require an effectiveness in air operations not substantially lower than in FY 71.

- With the constrained DOD budget, the high cost of a B-52 sortie (about \$40,000 -- includes \$7,000 for aircraft providing anti-aircraft and SAM suppression and ECM support) represents a significant drain on resources.

- Recent improvements in technology, such as the use of advanced sensors and improved tactical air munitions (such as fuel air explosives), could allow the use of tactical aircraft against some targets that formerly only B-52s could strike effectively.

- B-52s should be used against only those targets which justify large concentrations of firepower on an area basis. As our ability to find and validate these targets continue to improve, the use of B-52s should become more selective, thereby necessitating fewer sorties to maintain the same level of effectiveness, and increasing effectiveness for a given sortie level.

In considering sortie levels for FY 72 and FY 73, this study examines the available B-52 data to determine the relative effectiveness of B-52s in different missions. This should permit better estimates of the impact of various FY 72 and FY 73 sortie rates.

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As pointed out in section A, the four major roles in which B-52s were used in FY 71 and the percentage of effort devoted to them are:

- Attacking selected area targets (63%)
- Dropping ordnance in interdiction boxes (22%)
- Attacking troop concentrations/enemy base areas (5%)
- Providing close air support (5%)

#### Attacking Selected Area Targets

The effectiveness of B-52s against enemy supply depots is the most difficult to assess quantitatively because little information is available on strike effectiveness. There are a number of reasons for this:

- Due to the high altitude of B-52 operations (36,000-40,000 feet), flight crews are generally unable to observe bomb damage and rarely is there a ground observer on the scene.
- All source intelligence can frequently be correlated with B-52 strike areas and times, providing evidence of specific strike results. These samples, however, are not sufficiently large for statistical inference.
- Although secondary fires and explosions are means of gauging lucrative target areas, estimates of destruction are very speculative.

As our intelligence indicates that most enemy supply depots are small and widely dispersed, it is reasonable to conclude that the amount of supplies destroyed per sortie is probably very small. Forcing the NVN to disperse their storage areas, however, does introduce inefficiencies and therefore increases to some extent the cost of moving the supplies.

#### Dropping Ordnance in Interdiction Boxes

As was evident in section A, B-52 strikes were concentrated on four interdiction boxes in South Laos during the 1970/71 dry season. During the LAM SON operation, however, most of the interdiction-box sorties were shifted temporarily to the 20-by-30 mile Route 9-Tchepone area.

The concept of the interdiction box is one of area denial; to impede the input of supplies into the logistics system rather than to attempt to destroy supplies. Because of the terrain and existing road network, most of the supplies destined for SVN and Cambodia must pass through one of these four boxes. By bombing on a daily basis it is hoped that sufficient obstacles (e.g., craters, landslides, and fallen trees) can be created to impede the inflow of supplies. As the North Vietnamese cleared these obstacles additional strikes would create new obstacles.

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The objective was to damage the routes sufficiently to either reduce the input of supplies or to force the enemy to surge truck movements (thereby making the trucks more vulnerable to tactical aircraft and gunships). B-52s are essential to the concept of interdiction boxes because they are the only aircraft that can efficiently deliver the large amount of ordnance required for area bombing.

Three methods can be used to provide a rough assessment of the effectiveness of the interdiction-box\*concept during the past dry season.

Reduce Input of Supplies. Sensor data show that the B-52 interdiction box campaign did not reduce the overall flow of truck traffic through the four areas. About 48,000 tons moved through the four boxes from November 1 through March 30 in the current dry season, compared to about 38,000 tons during the same period last year when the interdiction box concept was not used. While this might be explained by differences in the enemy's intentions, it at least indicates that B-52s cannot stop the inflow if the enemy wants to input higher levels. The enemy's dry season campaign started a few weeks later this year than last, but there is little data to show whether the B-52 bombing in the target boxes was responsible.

Delays in Truck Movements. If the B-52 strikes were having a significant impact, days of high intensity bombing should be associated with low truck traffic and vice versa. Graphs showing the day-by-day relationship between daily supply throughput and bombing intensity in the four interdiction boxes are at Tabs 1 through 4. Tab 2 illustrates the sensor detections of southbound truck movements through the box and the number of tons of ordnance dropped by B-52s and tactical aircraft in the interdiction box near the Mu Gia Pass during the months of October through January. Graphs for Ban Karai, Ban Raving and the DMZ By-Pass are at Tabs 3-6.

While there were some time periods when the interdiction boxes seemed to be effective, they were often followed by periods when the bombing seemed to have no strong effect on truck throughputs. The bombing in all the boxes seemed to be somewhat effective for at least parts of each month examined (October 1970-January 1971), but there were many periods when truck throughput did not seem to be related to bombing intensity. For instance, for the box at Mu Gia (Tab 2), bombing intensity and truck throughput are positively correlated (i.e., intense bombing and high truck throughput) in late December and early January. By the end of January, enough bypasses existed for most of the boxes to make the interdiction box concept lose most of its effectiveness.

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\*The four boxes analyzed in this section are the expanded boxes described in the footnote on page 8.

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Truck movements on days of high, medium, and low bombing intensity are also examined in the table below.

IMPACT OF BOMBING IN INTERDICTION BOXES ON TRUCK MOVEMENTS

	Number of Southbound Truckloads Moving Through Per Day				
	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Average</u>
<u>Box A (Mu Gia Pass)</u>					
On Days of High Bombing	0	11.4	5.4	15.4	8.9
Medium	0	5.8	10.1	12.8	6.8
Low	0	38.0	8.1	15.5	11.5
<u>Box B (Ban Karai Pass)</u>					
On Days of High Bombing	.7	7.9	15.6	13.3	10.1
Medium	2.6	6.7	12.0	31.0	14.4
Low	2.0	23.0	20.0	33.0	23.6
<u>Box C (Ban Raving Pass)</u>					
On Days of High Bombing	.3	5.2	5.4	8.1	5.4
Medium	.8	4.1	6.2	13.4	5.7
Low	.8	13.6	10.3	14.6	11.0
<u>Box D (DMZ by Pass)</u>					
On Days of High Bombing	.1	0	5.0	7.7	4.0
Medium	.2	.2	10.1	6.1	4.5
Low	0	1.0	5.0	4.8	3.1

Except in Box D, the data indicate that there is some correlation between days of highest bombing intensity and lower truck throughput and days of lowest bombing and higher truck throughput. There is no correlation on days of intermediate bombing as sometimes traffic is higher than when bombs are less intense, and sometimes traffic is lower than when bombs are more intense. These data suggest that sizeable variations in B-52 strikes affect truck movements through the boxes.

Impact on Tactical Air Effectiveness. If the target box concept only causes minor fluctuations in truck movements (i.e., it does not reduce total supply input), its principal value must lie in increasing the ability of tactical aircraft to kill trucks in and around the target boxes by forcing the enemy to surge truck movements and use more vulnerable routes. By examining the number of trucks destroyed and damaged in the areas within one shuttle run of the target boxes (the enemy drives his trucks about 10 to 20 miles between shuttle points) an assessment of the B-52s impact can be made. These data are shown in the table on the following page.

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TRUCK SORTIE EFFECTIVENESS  
(January-April 1971)

	<u>Within 5-10 Miles of Interdiction Boxes</u>					<u>Other S. Laos</u>	<u>Total S. Laos</u>
	<u>Box A</u>	<u>Box B</u>	<u>Box C</u>	<u>Box D</u>	<u>Total</u>		
<u>Tactical Air</u> <sup>a/</sup>							
No. Truck Sorties	1,288	717	480	406	2,891	6,000	8,891
Trucks D/D	432	342	154	141	1,069	2,042	3,111
Trucks per Sortie	.34	.48	.32	.35	.37	.34	.35
<u>Gunships</u> <sup>b/</sup>							
No. Truck Sorties	1	4	27	16	48	1,514	1,562
Trucks D/D	5	8	116	133	262	13,601	13,863
Trucks per Sortie	5.00	2.00	4.30	8.31	5.46	8.98	8.88
<u>B-57</u>							
No. Truck Sorties	76	0	1	1	78	613	691
Trucks D/D	131	0	1	2	134	1,509	1,643
Trucks per Sortie	1.72		1.00	2.00	1.72	2.46	2.38

<sup>a/</sup> Includes A-1, A-4, A-6, A-7, F-4, and F-100 sorties.

<sup>b/</sup> Includes AC-119 and AC-130 sorties.

The data show that in two boxes (Boxes B and D) the fast moving tactical aircraft are more effective than elsewhere in South Laos; in one box (Box C) they are less effective; and in one box (Box A) equally effective. For the four boxes in total, the fast movers are slightly more effective, but not significantly so. Both the gunships and the B-57s are less effective in all box areas than elsewhere in South Laos. Overall, the use of B-52s in the interdiction boxes have not resulted in any increase in the effectiveness of tactical air and gunship sorties against trucks.

In summary, the data indicate that the use of B-52s in interdiction boxes has not had a great deal of effect on supply movement. This conclusion is supported to some extent by pilot sightings and all source intelligence which indicate that the enemy has been able to maintain a fairly high level of traffic through these four entry routes during the entire dry season. Few landslides have been caused and the terrain has become so pulverized that little is left to create an obstacle. The B-52s have averaged at best only a few hours of bombing per day in each box and the enemy has apparently been able to drive around and through the craters once the bombs have stopped falling. His principal impediment has been the

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use of time delayed ordnance. However, in many places the soil has become so soft through constant bombing that the delayed ordnance is buried well underground and creates little damage when it later explodes.\*

#### Attacking Enemy Troops In Base Areas

Little quantitative evidence exists to measure the effectiveness of B-52s in bombing enemy troops in base areas. Prisoner interrogations and ralliers indicate that B-52s have a significant psychological or "terror" impact on the enemy because of the lack of warning associated with their high altitude operation. However, the two primary factors which lead to the reduction of these sorties in FY 71 likely will lead to further reductions in FY 72 and FY 73:\*\*

-- As the main force situation in South Vietnam continued to improve, fewer enemy base areas existed to provide good targets for B-52s. Enemy troops were not often massed in sufficient quantities to merit the use of B-52s.

-- Targets became more difficult to identify at fixed locations for a sufficient period of time to enable B-52s to strike as the enemy adopted more mobile, hit-and-run tactics.

#### Provide Close Air Support

In certain situations B-52s can be used for close air support. B-52 strikes were used extensively in LAM SON 719 and in the defense of Khe Sanh during the Spring of 1968 to help break up the massing of enemy troops and to discourage enemy attacks.

There is little quantitative data available to assess the effectiveness of B-52s in this role. It is clear that B-52s are not as capable as tactical aircraft in delivering ordnance close to friendly positions. B-52s are normally targeted against suspected enemy troop concentrations in base areas. Reports of the effectiveness of these strikes are mixed.

There are some circumstances where the B-52 plays an effective close support role. These are circumstances where large enemy forces concentrate for major attacks and our intelligence can locate them with some precision. There have been several ARVN reports on the LAM SON operation indicating that the B-52s had been extremely effective in causing casualties in such a situation. Similar evidence is available from the Khe Sanh battle in 1968. On balance, however, it seems reasonable to conclude that the use of B-52s in the close air support role is relatively inefficient unless the enemy is massed.

\*The 7 AF COMMANDO HUNT V report concluded and the Joint Staff agrees that the interdiction box strategy provided major benefits by delaying the enemy's timetable for the 70-71 dry season, provided time to build up the truck killing force of B-57Gs and AC-130 gunships, and required the enemy to expend extra effort constructing bypass routes.

\*\*The Joint Staff finds no evidence which would lead one to the conclusion that the relatively few FY 1971 attacks against troops in base areas will be further reduced in FY 1972 and 73. On the contrary, there is reason to believe that, as the U.S. continues accelerated redeployments, the enemy will revert to larger scale operations, which would require massing of troops in base areas.



**TOP SECRET**Summary

The available quantitative data indicates that there is a wide variation in the effectiveness of B-52s against differing targets. Strikes against massed enemy troops (e.g., LAM SON or Khe Sahn) are quite effective. Strikes against the interdiction boxes and enemy troops in base areas are far less effective. The fact that some sorties appear to be only marginally effective, in conjunction with recent improvements in tactical air munitions and the continuing trend toward smaller unit actions, indicates that it may be possible to consider reduced B-52 sortie levels in FY 72 and FY 73.

C. Sortie Level Options for FY 72-73

The previous section indicates that a variable sortie rate with a surge capability would also be appropriate for B-52s. Such a rate would have the flexibility to meet the normal fluctuations and the high points in enemy activity rates (e.g., a LAM SON situation), and at the same time would allow for the savings associated with reduced average sortie rates.

Under this variable rate munitions should be budgeted for the mid-range and the force structure sized to support the high end of the range.

The table below outlines the currently Budgeted, the JCS proposed, and two lower level sortie options based on a variable rate.

B-52 Sortie Level Options  
(Monthly Sorties)

		<u>Number Sorties</u>	
		<u>FY-72</u>	<u>FY-73</u>
Budget/Fiscal Guidance	Ceiling	1,000	650
JCS Proposed	Level Rate	1,000	1,000
Option 1	Variable Rate	700-900	400-700
	W/Surge	1,000	840
Option 2	Variable Rate	400-700	300-500
	W/Surge	840	600

Budgeted/Fiscal Guidance Option. This option would provide at least the same level of capability as the current level in FY 72. Capability in FY 72 could probably be increased above the current level if: (1) full advantage is taken of the improvements in advanced sensors (thereby eliminating unproductive sorties due to poor intelligence) and tactical air munitions (substituting tactical air sorties where appropriate), and/or (2) emphasizing those missions in which B-52s seem to be most effective. In FY 73, capability would likely be reduced somewhat -- depending on which type of missions the sortie reduction affects -- although the need for B-52 sorties probably will also be reduced as there should be fewer large unit actions.

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JCS Proposed Option. This option would result in the same as the current level of capability in both FY 72 and FY 73. As noted in the Budgeted option, it would probably result in an increased level of capability if advantage is taken of the improvements in advanced sensors and tactical air munitions.

Option 1. This option introduces variable monthly sortie rates of 700 to 900 in FY 72 and 400 to 700 in FY 73, with average rates below the FGM levels in both years. In addition there would be a 30 day surge capability of 1,000 and 840 sorties in FY 72 and FY 73. A 700 to 900 rate in FY 72 would provide a rate close to the rate recommended by JCS and contained in the Budgeted option; however, by emphasizing the need to keep the sortie level as near 700 as militarily prudent MACV should be encouraged to attack only the more lucrative targets. If the improvements noted above are utilized, overall capability should remain at close to current levels. The variable rate for FY 73 will not provide the maximum capability recommended by JCS; however, it would provide a capability to fly the same level of effort against close air support and enemy troop targets as was flown in support of LAM SON.

Option 2. This option provides for significantly lower average rates than the Budgeted and JCS Options; monthly rates of 400 to 700 in FY 72 and 300 to 500 in FY 73. This option is based on the belief that B-52 sorties can be reduced substantially without increasing the risk of carrying out our military operations in SEA to unacceptable levels; that with the improvements noted above and reductions in the least effective B-52 sorties (e.g., interdiction box sorties) overall effectiveness will not be reduced too far. This option would provide in FY 72 a capability to fly the same level of effort against close air support and enemy troop targets as was flown in support of LAM SON. In FY 73, this option would provide a capability to fly about 70 percent of the level of support flown in LAM SON.

#### V. Fiscal Impact of Alternative Sortie Levels

The table below summarizes the Budgeted/Fiscal Guidance tactical air and B-52 sortie levels, the JCS proposed levels, and the two lower level options developed in the sections III and IV with their associated costs and savings for FY 72-73.

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**TOP SECRET**SORTIE LEVEL OPTIONS

Tactical Air	Concept	No. Sorties		Added Costs(\$M) a/	
		FY 72	FY 73	FY 72	FY 73
Budget/Fiscal Guid.	Ceiling	10,200	5,300	-	-
JCS Proposed	Level Rate	10,000	8,000	+\$145	+\$460
Option 1	Variable Rate	6-8,000	4-6,000	-\$300	+\$20
	W/Surge	10,000	7,700	-	-
Option 1A b/	Same as Option 1 plus six more AC-130s.			-\$255	+\$30
Option 2	Variable Rate	4-6,000	3-4,000	-\$490	-\$180
	W/Surge	7,700	5,000	-	-
Option 2A b/	Same as Option 2 plus six more AC-130s.			-\$445	-\$170
<u>B-52</u>					
Budget/Fiscal Guid.	Ceiling	1,000	650	-	-
JCS Proposed	Level Rate	1,000	1,000	+\$35	+\$100
Option 1	Variable Rate	7-900	4-700	-\$80	-\$40
	W/Surge	1,000	840	-	-
Option 2	Variable Rate	4-700	3-500	-\$180	-\$100
	W/Surge	840	600	-	-

a/ Added cost over present Budget and Fiscal Guidance.

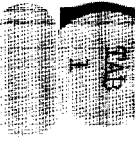
b/ Considers procurement costs and added sortie costs of gunships.

The table shows that maintaining the tactical air and B-52 sorties at the levels proposed by the JCS would cost about \$180 million in FY 72 and \$560 million in FY 73 above currently budgeted levels. The added FY 72 cost is due to maintaining a constant capability throughout the year rather than phasing down near year-end. Reducing both tactical air and B-52 rates below the budgeted levels results in sizeable savings as under Option 1 above \$380 million and \$20 million would be realized in FY 72 and FY 73, and under Option 2 about \$670 million and \$280 million would be realized in FY 72, and FY 73. The additional gunships of Option 1A and 2A would reduce the savings by about \$45 million in FY 72 and \$10 million in FY 73.

Because it is not likely that additional DOD funds will be made available to support sortie levels above currently budgeted levels, higher rates would necessitate the reallocation of FY 72 and FY 73 funds and would require several sizeable program cuts. On the other hand, the savings realized with sortie levels below the budgeted levels would provide for high priority programs for SEA such as the development of a STOL-type aircraft interdiction capability for the VNAF, additional counter-insurgency aircraft for our Asian allies, and/or other concepts now under study which should help provide the South Vietnamese with an adequate capability to provide for their own defense. Alternatively, the funds could be used for non-SEA priority programs such as modernization programs for all Services.

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SUMMARY OF U.S. AND ALLIED AIR FORCE STRUCTURE

In addition to sortie levels and their effectiveness, discussed in the body of the study, a third factor bearing on the adequacy of SEA air support is the available force structure existing at any point in time. It is the deployed force structure in combination with the associated material support which finally determines our ability to counter enemy activity with air power. The following table compares the currently programmed force structure for FY 72 and 73 with that of 71. For purposes of comparison an "as of" date of 31 January was selected as it corresponds to the usual period of peak logistic activity.

COMPARISON OF AIR FORCE STRUCTURE IN SEA  
(as of 31 January)

		(aircraft FY 71 possessed)	FY 72 (UE)	FY 73 (UE)
<u>USAF</u>	B-52	(43)	(43)	(33)
	B-57	1 Sqn (9)	1 Det (10)	1 Det (10)
	F-4	13 Sqn (202)	13 Sqn (234)	7 Sqn (126)
	F-100	4 Sqn (73)	--	--
	F-105	1 Sqn (16)	1 Sqn (12)	1 Sqn (12)
	A-1	1 Sqn (28)	1 Sqn (25)	--
	A-37	1 Sqn (28)	1 Sqn (25)	--
	AC-119	2 Sqn (31)	1 Sqn (16)	1 Sqn (16)
	AC-130	1 Sqn (11)	1 Sqn (18)	1 Sqn (18)
	<u>USN</u>	3 CVA (1.6 on line)	3 CVA (1.6 on line)	2 CVA (1.1 on line)
	<u>USMC</u>	A-4	1 Sqn (25)	--
A-6		1 Sqn (13)	--	--
F-4		1 Sqn (14)	--	--

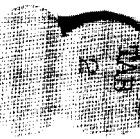
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		(aircraft		
		<u>FY 71</u>	<u>FY 72 (UE)</u>	<u>FY 73 (UE)</u>
		possessed)		
<u>VNAF</u>	F-5	1 Sqn (19)	1 Sqn (18)	1 Sqn (18)
	A-37	5 Sqn (98)	5 Sqn (90)	6 Sqn (144)
	A-1	3 Sqn (58)	3 Sqn (60)	4 Sqn (96)
	AC-47	1 Sqn (15)	1 Sqn (18)	1 Sqn (18)
	AC-119	-- --	1 Sqn (18)	1 Sqn (18)
<u>RLAF</u>	T-28	-- (63)	-- (86)	-- (86)
	AC-47	-- (10)	-- (8)	-- (8)

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The Joint Staff says that COMUSMACV's concept for the employment of air assets in Southeast Asia during FY 1972 envisions sustained interdiction in Southern Laos at or near current levels of effort to disrupt enemy logistical activity on a continuing basis. Planned U.S. monthly tactical sortie allocations for FY 1972 in Northern Laos, Cambodia, and the Republic of Vietnam are 1,000 in each area with the remainder being applied in Southern Laos. As stated by the Joint Staff, it is COMUSMACV's judgment that the planned U.S. levels in each of the three areas outside Southern Laos are the minimum requirement and that any reduction in his overall authorization would have to be absorbed in the Laotian interdiction program. COMUSMACV has provided his estimate of the logistical consequences of both a 25 and 50 percent decrease in sorties. It is his estimate that a 25 percent decrease in sorties would permit an additional 13,550 short tons of throughput, almost tripling the amount of supplies available to the enemy. He further estimates that a 50 percent reduction in air sorties would permit the enemy to increase his throughput by 27,100 short tons.\* COMUSMACV sees additional ramifications resulting from a reduction in air interdiction in that large numbers of rear service and security personnel would be freed from duties in the logistical system and would be available for reassignment to combat units. AAA units could be more effectively concentrated against the residual air interdiction effort in Laos or relocated to support forces operating in RVN. As to how the enemy would employ additional supplies available as a result of a reduction in air sorties, COMUSMACV has submitted the following comments. "The enemy presently requires more material in all locations, however, his three areas of greatest concern will probably continue to be RVN MR-1, COSVN (MR-3, MR-4 and Eastern Cambodia), and the B-3 front. Accordingly, examples of the impact that additional logistical throughput would have on each of these areas have been developed.

a. The enemy could assign first priority to RVN MR-1. Approximately one-third of the enemy units oriented against RVN are currently in or adjacent to MR-1. Short supply routes would permit a rapid improvement in the logistical posture of this sizeable force and a concurrent increase in the level of tactical activity. It is currently estimated that the enemy has allocated to MR-1 3,400 short tons of the material throughput this past dry season. If, for example, the 13,550 short tons of throughput which would accrue from a 25 percent reduction in air sorties were added to the supplies already being directed to MR-1, he would be capable of eventually quadrupling the current rate of 137 attacks by fire per month while maintaining the same level of intensity. At the same time the enemy could build reserve stocks in northern MR-1 base areas in preparation for efforts to isolate population centers, interdict friendly LOCs and overrun fire support bases. If stockpiled, the additional materiel would support the 6.1 division equivalents targeted against MR-1 for 133 days of sustained full scale combat operations.

\*OSD(SA) believes that tactical air performance in Southern Laos during FY 71 contradicts COMUSMACV's concern for the consequences of reduced numbers of sorties when the effectiveness per sortie is increased. During each month of the first three quarters of FY 71, there were about 1,400 less tactical air and gunship sorties than in the same period of FY 70. However, in FY 71 truck kills have been about double the FY 70 level and throughput into South Vietnam and Cambodia has been about one-half that of FY 70.

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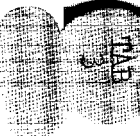
b. As a second illustration the enemy could send the additional supplies to COSVN's area of operation, principally the areas of MRs 3 and 4 and Eastern Cambodia. The most vital areas of RVN lie within these boundaries, and it is here that the enemy must ultimately prevail, if he is to win the war. Longer supply lines to COSVN would not, however, permit the enemy to achieve results as rapidly as in MR-1. The area would probably be of secondary priority initially but, as the enemy's supply position improved in MR-1, the emphasis of the logistics effort would probably shift to COSVN. It is estimated that the area under consideration in this example has received 2,000 short tons of supplies during the past dry season. In the event of a 25 percent reduction in air sorties, the enemy could initially direct the additional 13,550 short tons of supplies as they became available to forces in Cambodia east of the Mekong. There are presently 5.2 divisional equivalents operating in this area and the additional materiel would logistically support them for 154 days of sustained, full scale combat operations.

c. As a final example, the enemy could direct the increased logistical throughput to the B-3 front. The enemy has long regarded this region as the stepping-stone to the populous coastal provinces. While relatively short supply lines would permit quick improvement of the communist logistical position, an increase in tactical activity would not have the immediate impact of operations in MR-1, or be as critical to enemy goals as activity in COSVN. The B-3 front is estimated to have received 920 short tons of materiel during the past dry season. If the communists were to direct all additional supplies to this area, a 25 percent diminution in air sorties would provide sufficient materiel to logistically support a force twice as large as the 2.3 division equivalents currently in the B-3 front for 173 days of sustained, full scale combat.

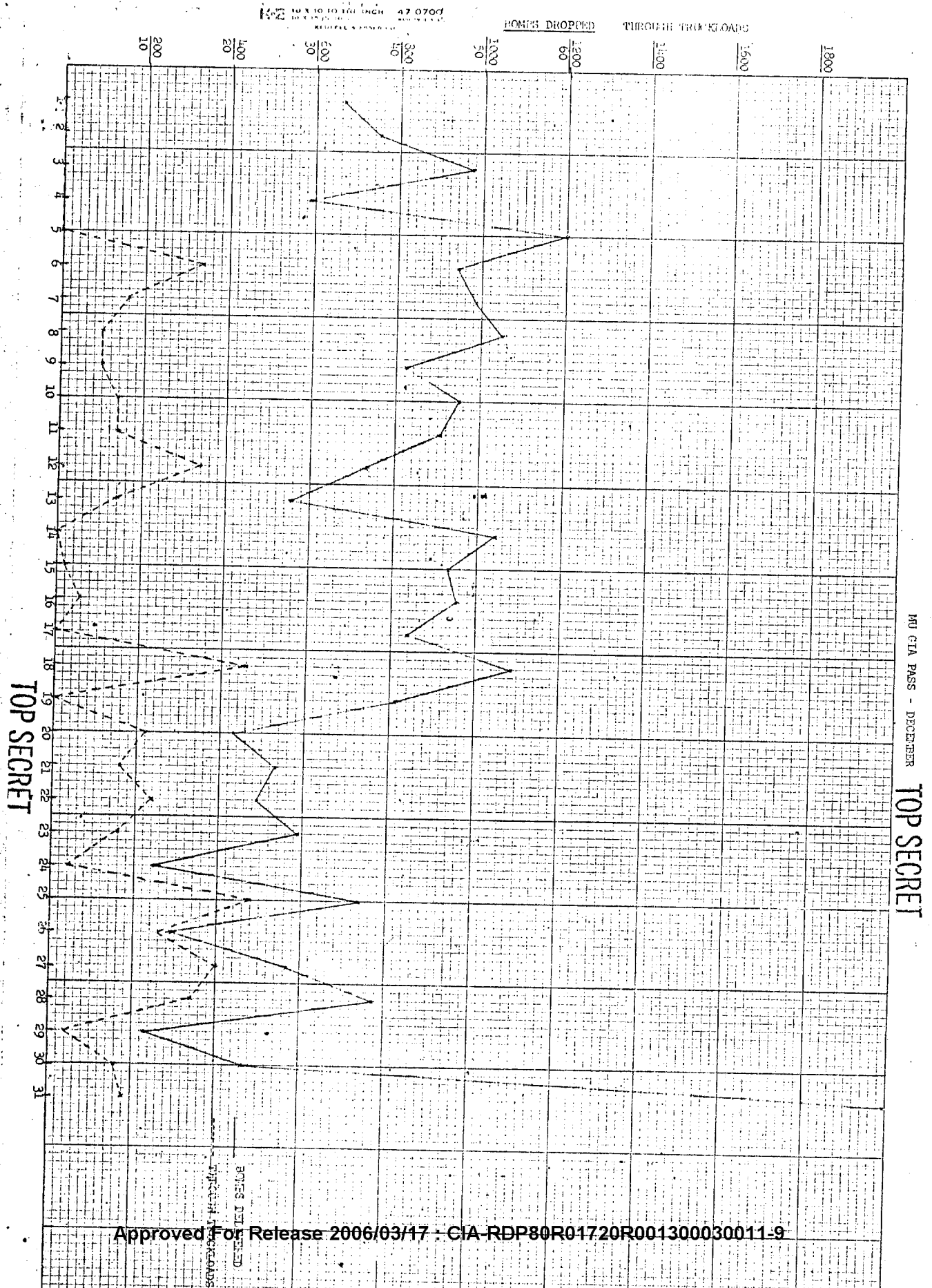
d. In conclusion, a reduction in the air interdiction effort would permit the enemy to significantly increase the capability of his forces. Further, the amount of improvement in capabilities is directly related to the degree by which the air sortie rate is reduced. If the current balance of the Indochina War is not to be altered in favor of the enemy, any reduction in air sorties must be avoided."

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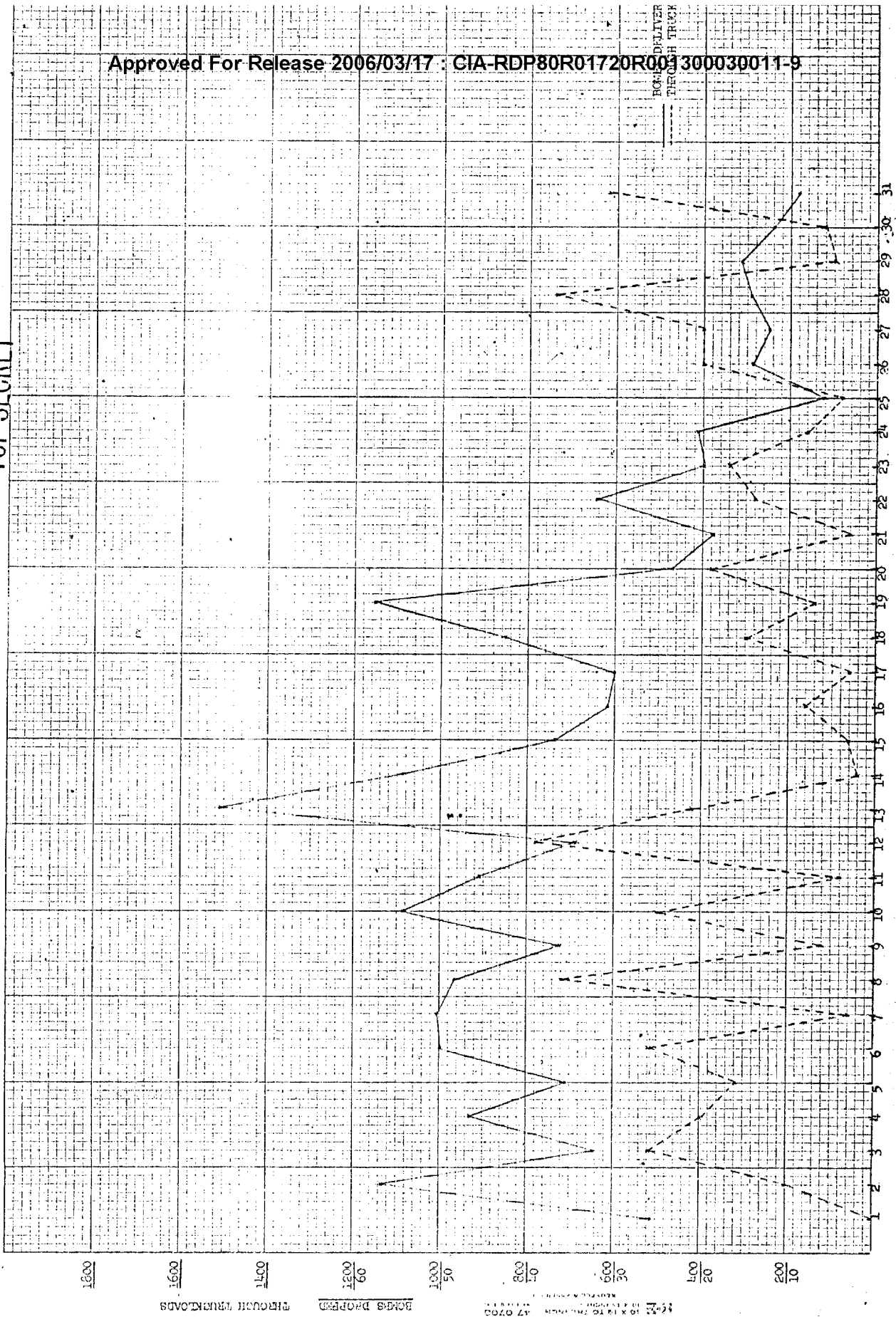


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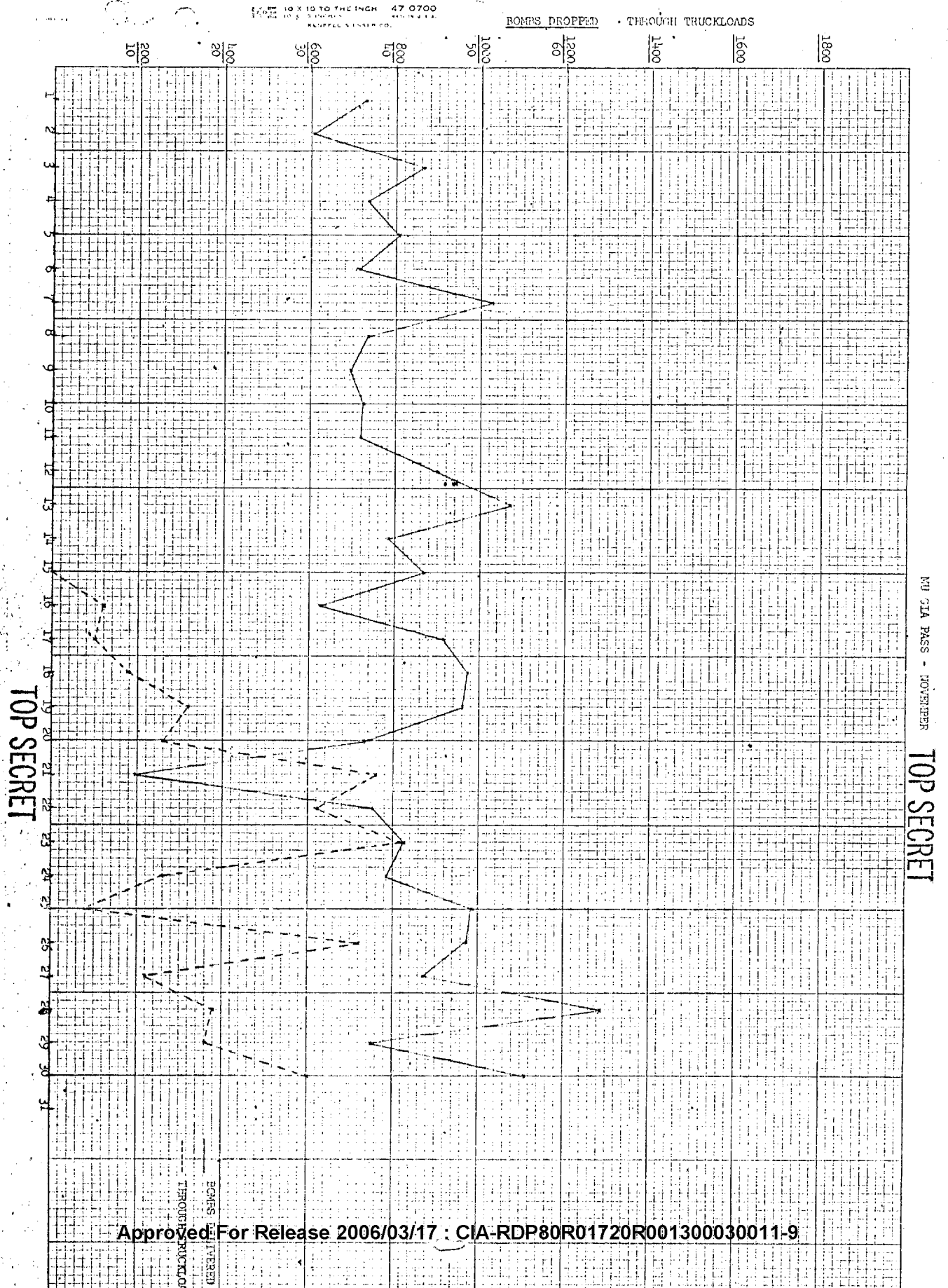


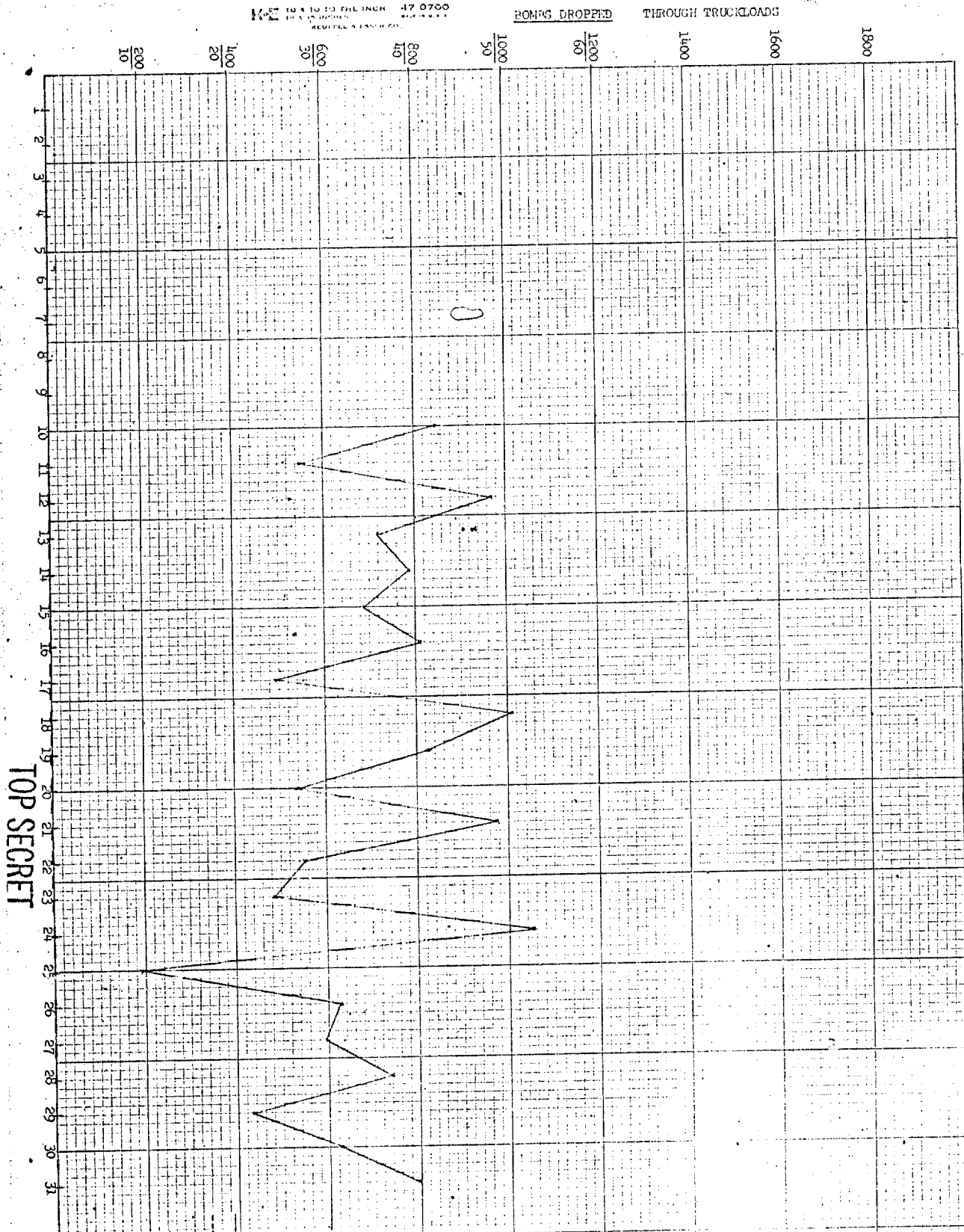
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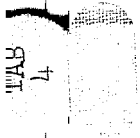


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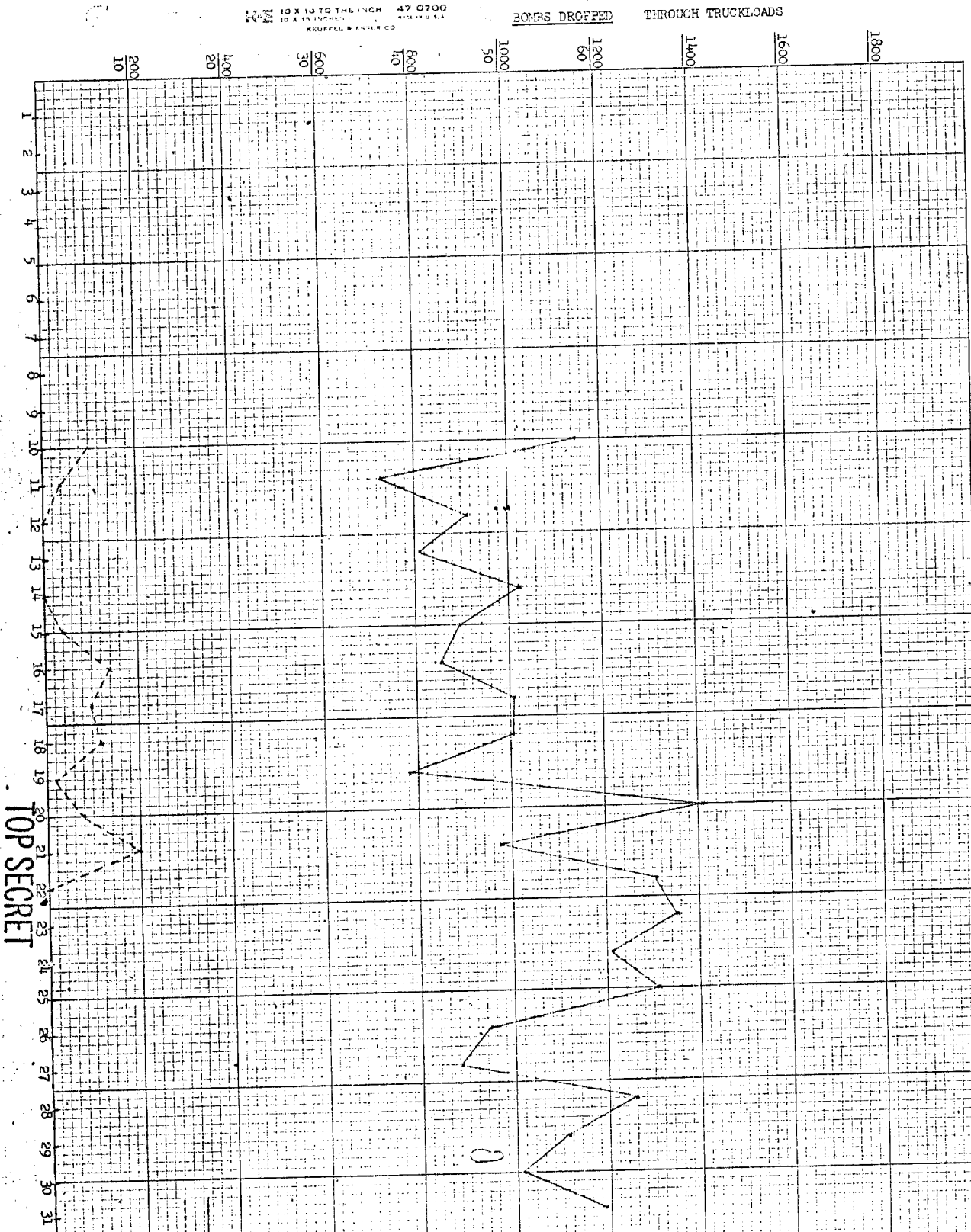
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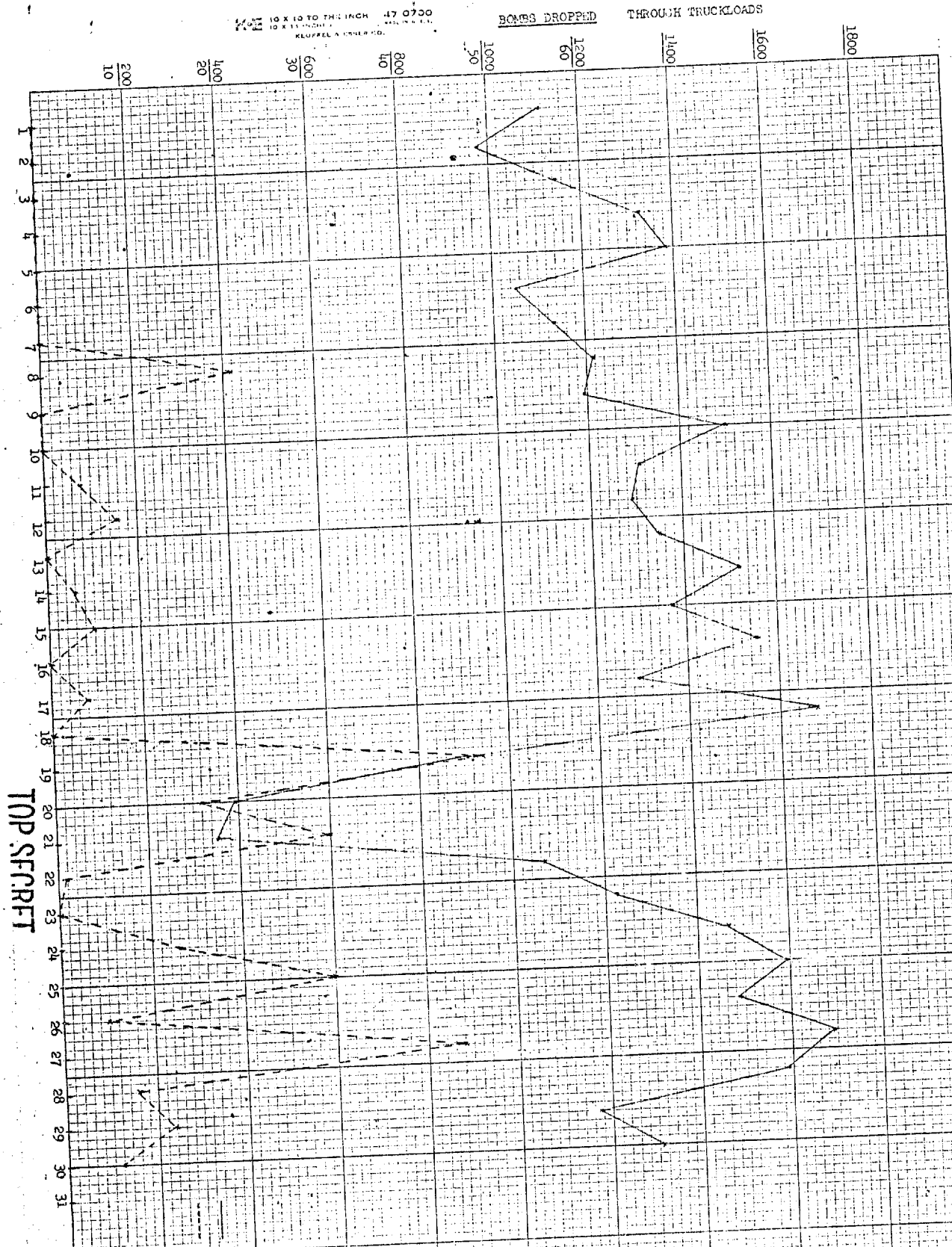


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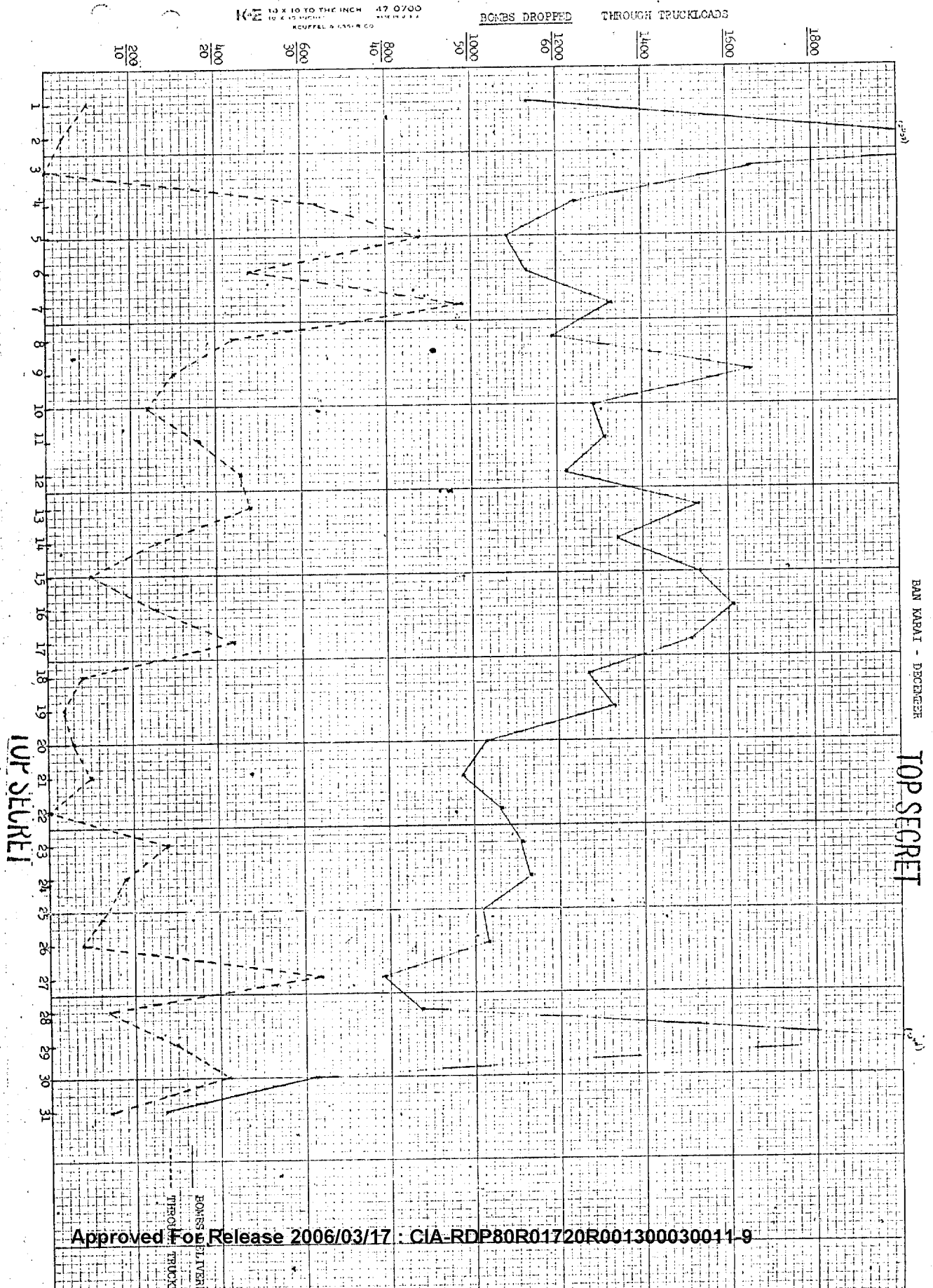


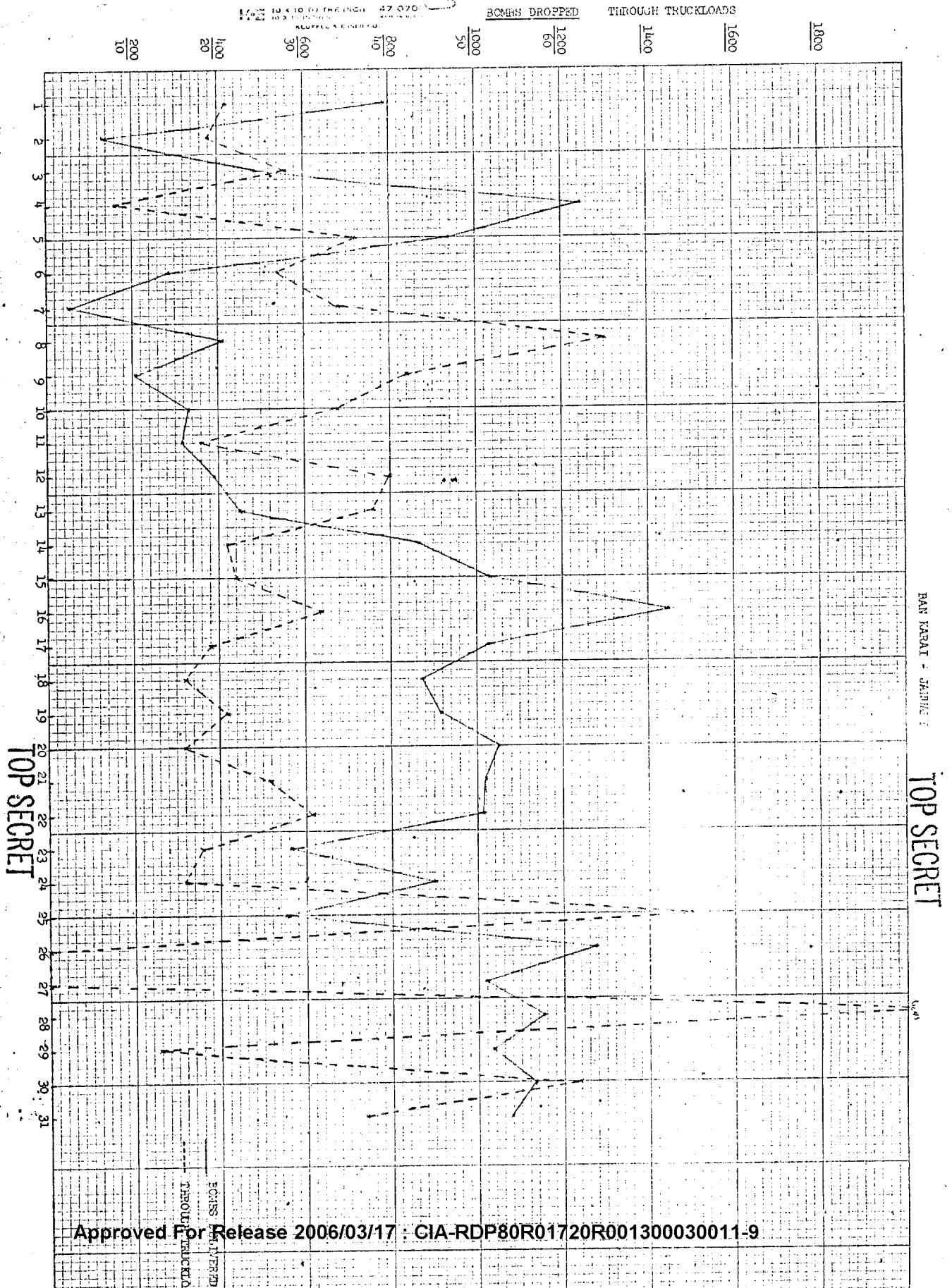


PAT. YAMAI - NOVEMBER

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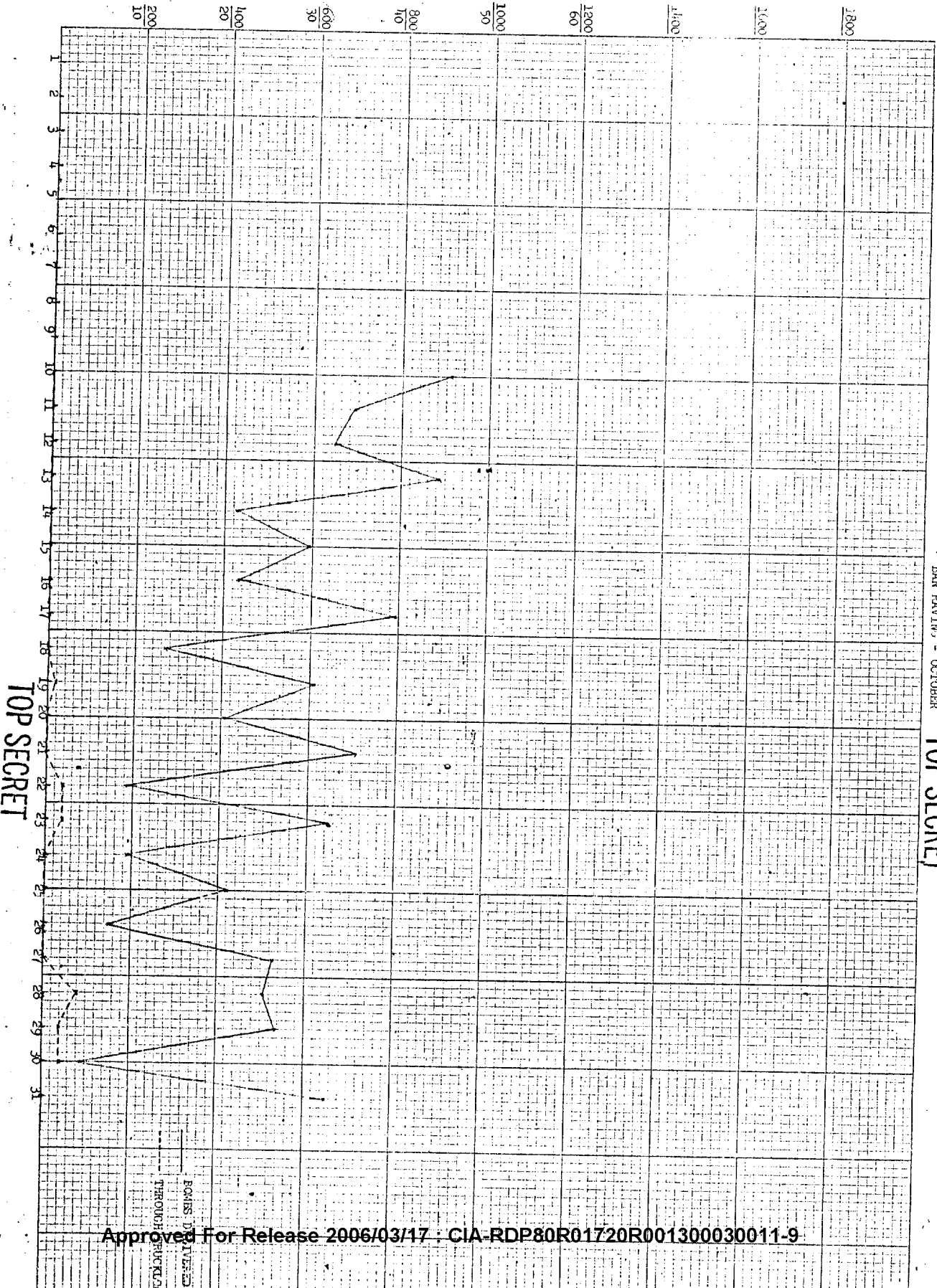
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SCALE 10 X 10 TO THE INCH 47 0700

BOMBS DROPPED THROUGH

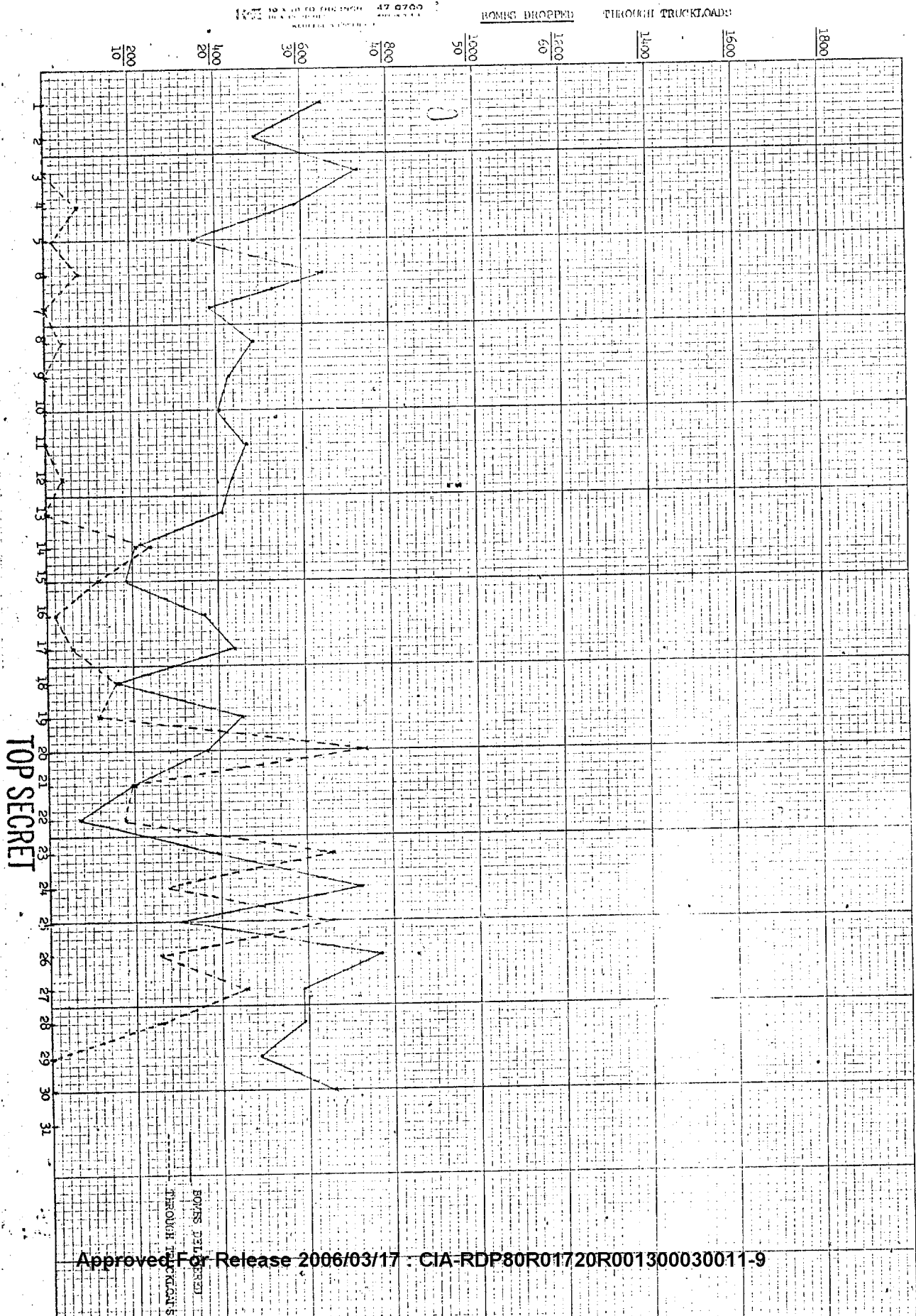


MAN PAVING - OCTOBER

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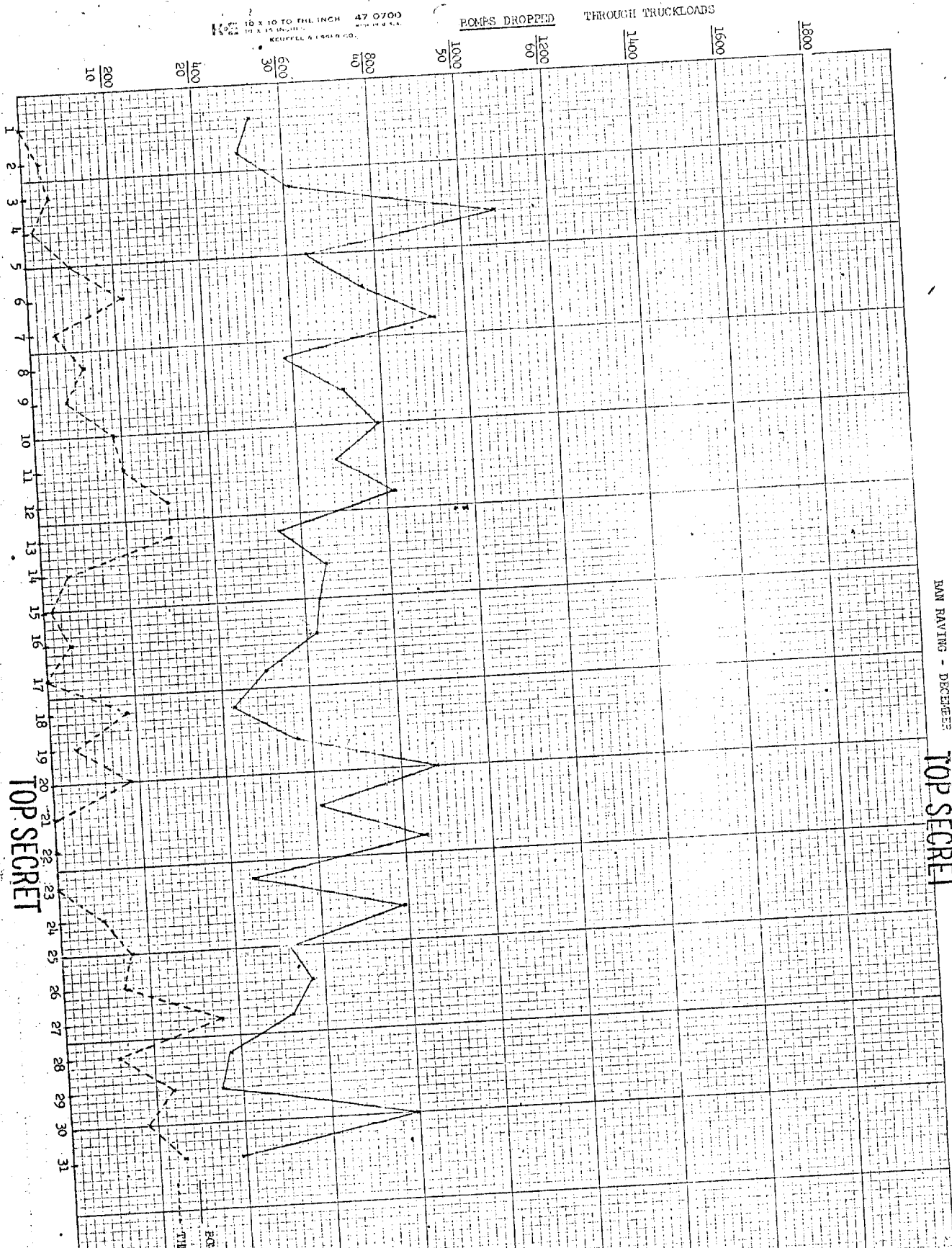
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BOMBS DROPPED THROUGH



BAN SAUING - 1971EMBER

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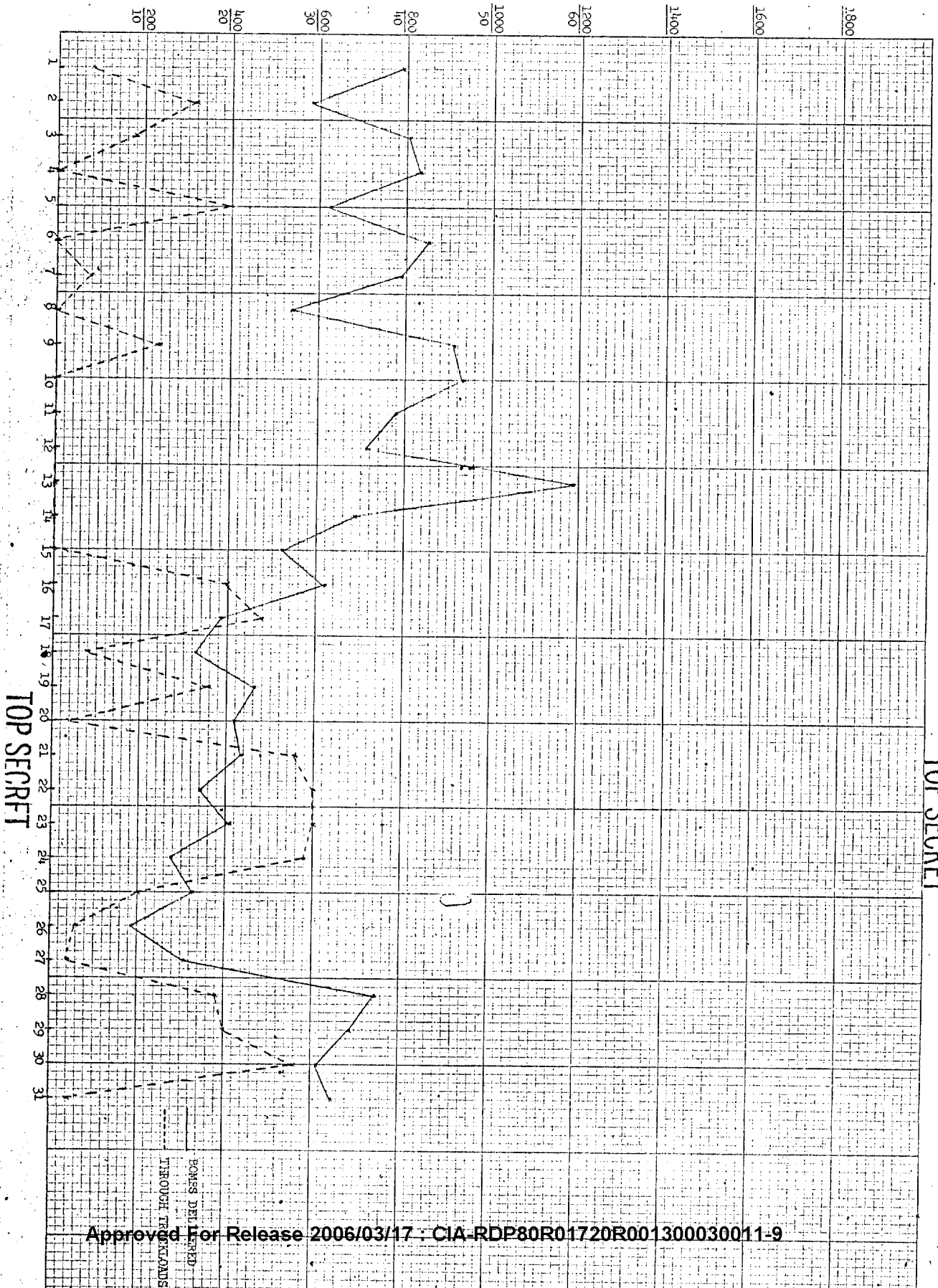


BAN RAVING - DECEMBER  
TOP SECRET

TOP SECRET

10 X 10 TO THE INCH 47 0700  
10 X 10 MILLIMETER  
KEUFFEL & ESSER CO.

BOMBS DROPPED THROUGH TRUCKLOADS



BAN FAYING - JANUARY

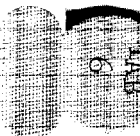
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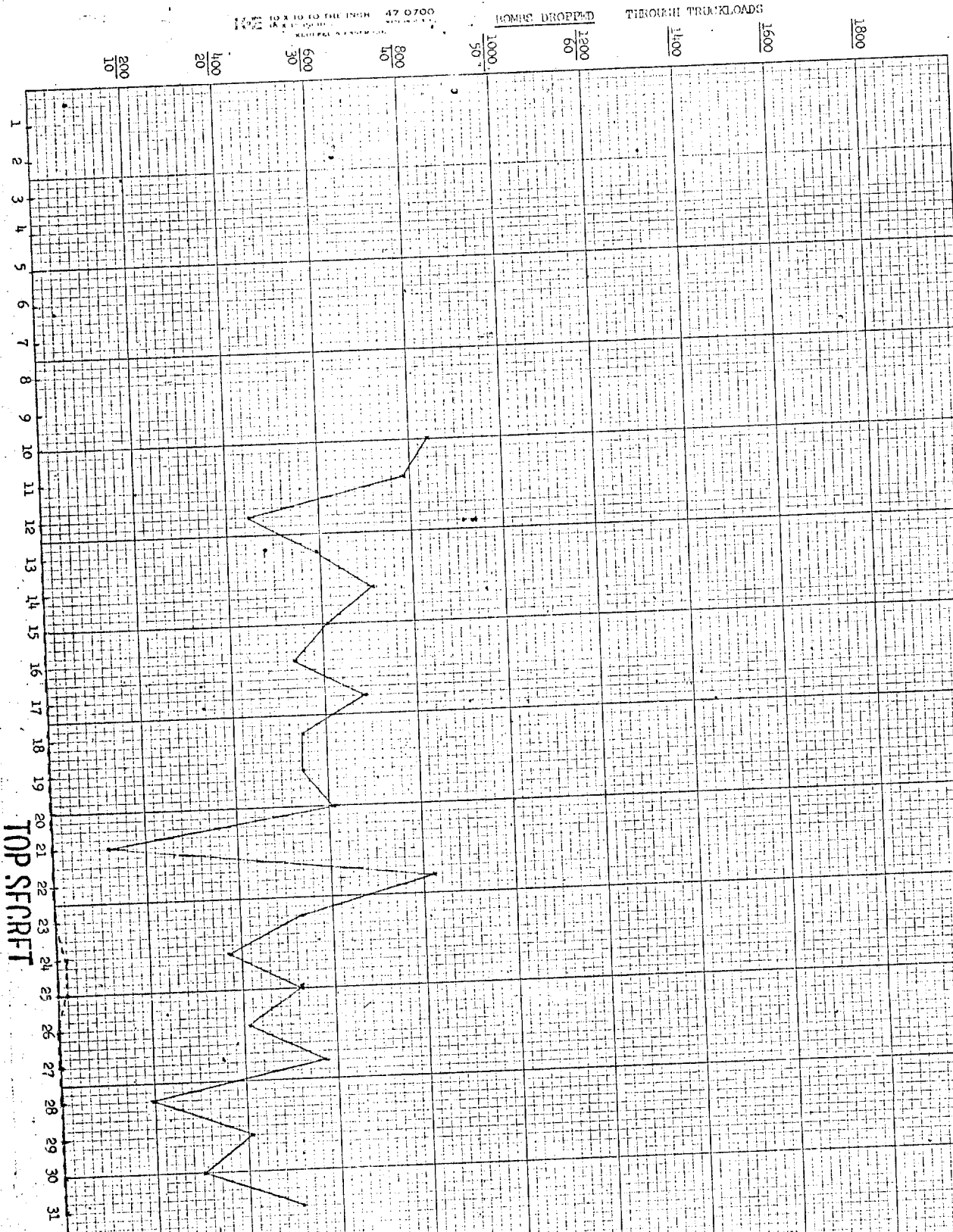
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TOP SECRET

DIV 2 ET PASS - OCTOBER

TOP SECRET