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25X1¹ May 1967

THRU : Chief, T/TR
Chief, D/T
Chief, T/CST

NGA Review Complete

Bomb Damage Assessment of Bridges in North Vietnam Through 1966

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1. In September/October 1965 [redacted] spent two weeks at Arlington Hall (DIA) searching all available photography for confirmation of the number of damaged/destroyed bridges in North Vietnam. This search was undertaken in conjunctions with DIA personnel, and it was commonly agreed that 121 bridges were damaged/destroyed at that time. This total represented about one-seventh of the 755 bridges DIA was reporting in their Daily Bulletin (see the attached DIA Bulletin).

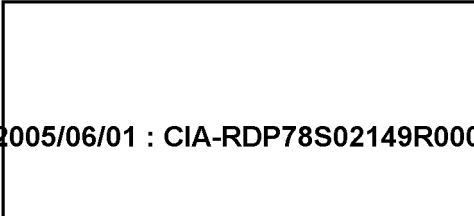
2. By the end of 1966 the total number of bridges confirmed by aerial photography to have been damaged/destroyed had risen to 393. This figure includes highway, railroad, and combination RR/Swy bridges. Of this total, 352 bridges had been seriously damaged one or more times, for a total of 552 "serious damage occurrences" (see the attached table).

3. The difference between CIA and DIA estimates of total bridges damaged/destroyed lies largely in the methodology used. CIA relies exclusively on aerial photography, because photography is the only source which provides sufficient information to estimate bridge damage and the cost of bridge damage to the North Vietnamese. DIA apparently relies heavily on pilot reports, which have proven to be overly optimistic in estimating the damage actually inflicted during a raid. There is substantial agreement between CIA and DIA on the number of railroad bridges and combination bridges because the total number of structures of these types is relatively low. There is a wide difference, however, between the two estimates on the number of highway bridges.

4. The differences can be reconciled only if the methods of analysis and sources of information on bomb damage are the same. To derive a meaningful cost estimate of destruction to bridges in North Vietnam, T/CST must rely on post strike photography of each bridge attacked. The Imagery Analysis Staff of EPIC prepares Photo Interpretation Bulletins (PIB's) and they are distributed to the Intelligence Community in general. This staff does not attempt to correlate information on daily air strikes against the photography they receive. Instead, they scan every available mission and report to T/CST and to the Community only information on those bridges with new or additional damage. Agreement between CIA and DIA on the total number of bridges damaged/destroyed would mean that the analysts responsible for counting bridges in DIA would have to use the same system as CIA. The difference in the methodology, definition of damage, and

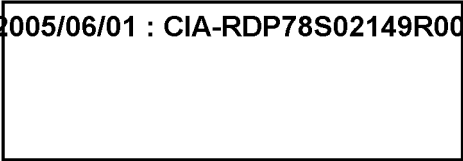
DIA review(s) completed.

NGA Review completed.



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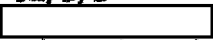


availability of photography preclude a common figure. The figures reported by T/CST always carries the caveat "confirmed by aerial photography." To avoid confusion, DIA should footnote their published figures on bridges stating which sources of information were used to arrive at the estimate and whether or not they are counting repaired and rebuilt bridges as more than one bridge.

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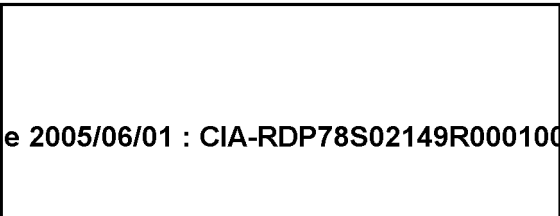


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Table 2

Bridge - Bomb Damage Assessment
in North Vietnam
First Quarter 1967

Type of Bridge	Strikes Resulting in Serious Damage						Bridge Totals		
	Initial Hits			Re-Hits			Total Damaged	Total Seriously Damaged	Total Serious Damage Occurrences
	Original Bridge's	By-Pass Bridge's	Total Bridge's	Original Bridge's	By-Pass Bridge's	Total Bridge's			
Highway	5	0	5	17	2	19	6	5	24
Railroad (only)									
Hanoi - South	0	1	1	2	0	2	1	1	3
Hanoi - Dong Dang	0	0	0	0	0	0	0	0	0
Hanoi - Haiphong	0	0	0	0	0	0	0	0	0
Hanoi - Lao Cai	0	0	0	0	0	0	0	0	0
Kep-Thai Nguyen	1	0	1	0	0	0	1	1	1
Total RR	1	1	2	2	0	2	2	2	4
Combination									
Hanoi - South	1	4	5	3	3	6	5	5	11
Hanoi - Dong Dang	0	0	0	0	0	0	0	0	0
Hanoi - Haiphong	0	0	0	0	0	0	0	0	0
Hanoi - Lao Cai	0	0	0	0	0	0	0	0	0
Kep-Thai Nguyen	-	-	-	-	-	-	-	-	-
Total Combination	1	4	5	3	3	6	5	5	11
Total Thru March 1967	7	5	12	20	3	23	13	12	39

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Table 3
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 Bridge - Bomb Damage Assessment in North Vietnam
 1966

Strikes Resulting in Serious Damage

Type of Bridge	Initial Hits			Re-Hits			Bridge Totals		Total Serious Damage Occurrences
	Original Bridge's	By-Pass Bridge's	Total Bridge's	Original Bridge's	By-Pass Bridge's	Total Bridge's	Total Damaged	Total Seriously Damaged	
Highway	120	9	129	90	0	90	141	129	219
Railroad (only)									
Hanoi - South	25	8	33	26	8	34	28	33	67
Hanoi - Dong Dang	0	0	0	1	0	1	0	0	1
Hanoi - Haiphong	0	0	0	0	0	0	0	0	0
Hanoi - Lao Cai	7	0	7	11	0	11	8	7	18
Kep-Thai Nguyen	1	0	1	0	0	0	1	1	1
Total RR	33	8	41	38	8	46	37	41	87
Combination									
Hanoi - South	7	4	11	11	1	12	11	11	23
Hanoi - Dong Dang	2	0	2	0	0	0	2	2	2
Hanoi - Haiphong	1	0	1	1	0	1	1	1	2
Hanoi - Lao Cai	1	0	1	0	0	0	1	1	1
Kep-Thai Nguyen	-	-	-	-	-	-	-	-	-
Total Combination	11	4	15	12	1	13	15	15	28
Total 1966	164	21	185	140	9	149	193	185	334

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Table 4
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Bridge - Bomb Damage Assessment in North Vietnam
 1965

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Strikes Resulting in Serious Damage

Type of Bridge	Initial Hits			Re-Hits			Bridge Totals		Total Serious Damage Occurrences
	Original Bridge's	By-Pass Bridge's	Total Bridge's	Original Bridge's	By-Pass Bridge's	Total Bridge's	Total Damaged	Total Seriously Damaged	
Highway	135	2	137	30	0	30	153	137	167
Railroad (only)									
Hanoi - South	15	2	17	1	2	3	21	17	20
Hanoi - Dong Dang	2	0	2	0	0	0	2	2	2
Hanoi - Haiphong	0	0	0	0	0	0	0	0	0
Hanoi - Lao Cai	13	0	13	5	0	5	14	13	18
Kep-Thai Nguyen	0	0	0	0	0	0	0	0	0
Total RR	30	2	32	6	2	8	37	32	40
Combination									
Hanoi - South	8	0	8	3	0	3	8	8	11
Hanoi - Dong Dang	0	0	0	0	0	0	0	0	0
Hanoi - Haiphong	0	0	0	0	0	0	2	0	0
Hanoi - Lao Cai	0	0	0	0	0	0	0	0	0
Kep-Thai Nguyen	-	-	-	-	-	-	-	-	-
Total Combination	8	0	8	3	0	3	10	8	11
Total 1965	173	4	177	39	2	41	200	177	218

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