

UNITED STATES FLEET
HEADQUARTERS OF THE COMMANDER IN CHIEF
NAVY DEPARTMENT
WASHINGTON 25, D. C.



UNCLASSIFIED

20 September 1944

MEMORANDUM FOR CAPTAIN FRANK T. WATKINS OP23c

Subject: Comparison of Operational Results for Various Submarine Types.

Enclosure:(H#) (A) Secret SORG Memorandum SS17 of 20 September 1944.

1. Enclosure A is forwarded for information.
2. This study was prepared by Mr. L. A. Holloway in response to your request of 4 September 1944.
3. The data given on British and German operations are neither complete nor accurate.
4. It has not been possible to compare Fleet and S-boat patrols in the same areas as requested because of the almost total lack of overlapping between Fleet areas and S-boat areas. However, it is believed that certain ratios, such as:
 - (a) Ships sunk per 100 ships sighted.
 - (b) Percent successful salvos.
 - (c) Ships sunk per submarine sunk.

are relatively independent of the particular patrol area, and are therefore valid criteria for comparison purposes.

5. The statistics indicate a large advantage for Fleet type subs over S-boats, and in general show that U. S. Navy submarines have given far greater yields than British and German submarines.

CHARLES KITTEL
SORG

F-4253

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20 September 1944

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UNCLASSIFIEDORG MEMORANDUM SS17

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1. The five tables given below present the relevant data for a comparison of the operational results achieved by fleet subs, S-boats, British subs, and German U-boats.

2. The statistics of U. S. operations are based on patrol reports, using Task Force Commanders' assessments of damage inflicted on the enemy. The results of British operations are taken from several unofficial British reports, supplemented by assessments available to Opl6-P1. The results of German operations are based on P.O.W. reports and FX-43 statistics of Allied losses.

3. The period covered is from 3 September 1939 or 7 December 1941 up to 1 July 1944, except where otherwise specified.

TABLE 1

OVERALL RESULTS OF AMERICAN, BRITISH, AND GERMAN SUBMARINE CAMPAIGNS

	U. S. A.			BRITISH		GERMAN			
	Fleets	S-Boats	Total	Total	517 tons	740 tons	1200 tons	1600 tons	Total
Commissioned	181	51	232	187	586	144	29	37	796
Lost (enemy action)	26	1	26	66	295	108	13	17	433
Ships sunk	1160	28	1188	362					2632
Tons sunk	6,346,800	101,800	6,448,000	1,072,800					13,901,500
Ship Damaged	636	10	646						
Tons Damaged	4,147,300	56,800	4,203,900						
Ships sunk per sub sunk	46	28	46	5					6
Tons sunk per sub sunk	250,000	100,000	250,000	16,000					32,000

TABLE 2

AMERICAN, BRITISH AND GERMAN SUBMARINE PERFORMANCE ON A "PER PATROL" BASIS

	U. S. A.			BRITISH		GERMAN			
	Fleets	S-Boats	Total	Total	tons	tons	tons	tons	Total
ALL TYPES OF PATROLS (7 Dec. 1941 - 1 Jul. 1944)									
Number Patrols	722	133	855						3500 (estimated)
Length of Patrol	47 days	27 days		16 days	33 days	55 days			38 days (estimated)
Ships sunk per patrol	1.6	0.2							0.8
Ships sunk per 100 days at sea	3.4	0.8							2.0
INDEPENDENT OFFENSIVE PATROLS ONLY (1 Jan. 1943 - 1 Jul. 1944)									
Number Patrols	350	36	386						
Length of Patrol	47 days	27 days							
Ships sunk per offensive patrol	1.6	0.3							
Ships sunk per 100 days at sea	3.4	0.9							

TABLE 3

AMERICAN, BRITISH AND GERMAN SUBMARINE TORPEDO PERFORMANCE

	U. S. A.		BRITISH		GERMAN				Total
	Fleets	S-Boats	Total	Total	517 tons	740 tons	1200 tons	1600 tons	
Percent Successful Salvos	63%	46%		48%					
Percent torpedo hits	36%	26%		23%					36% (estimated)
Average torpedoes per salvo	2.9	2.7		3.0					
Avg.No. torpedoes -									
Carried	21	11							
Fired	13	3							
Returned	8	8							

TABLE 4

SIGHTING AND BLOCKADE FACTORS AMERICAN, BRITISH AND GERMAN SUBMARINES

	U. S. A.			BRITISH		GERMAN			
	Fleets	S-Boats	Total	Total	517 tons	740 tons	1200 tons	1600 tons	Total
Ships sunk per 100 ships sighted	15	10							
BLOCKADE FACTOR: Proportion of ships on route sunk per sub on route		12 per thousand		5* per thousand					1** per thousand

* based on Nov, Dec. 1942 in Mediterranean.

** based on Western Atlantic, 1942; this fell in 1943 to $\frac{1}{2}$ per thousand on North Atlantic
convoy routes.

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TABLE 5

REASON FOR SUBMARINES' RETURN TO BASE

AMERICAN AND GERMAN SUBMARINES

	U. S. A.				GERMANY	
	Fleet		S-Boat		514 & 700 Tons	
	No.	%	No.	%	No.	%
Mission completed, or ordered back to base	159	49%	18	90%	181	68%
Fuel expended	63	19%	0	0	19	7%
Torpedoes expended	77	23%	0	0	20	8%
Failure of equipment or non-enemy damage	12	4%	2	10%	19	7%
Damage due to enemy action	16	5%	0	0	25	9%
Replacement of sick or dead personnel	0	0	0	0	4	1%
TOTAL	327	100%	20	100%	268	100%

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