

Copy No. 162

This book is invariably to be kept locked up when not in use and is not to be taken outside the ship or establishment for which it is issued without the express permission of the Commanding Officer.

B. R. 1736 (42) (1) (RESTRICTED)
~~C. B. 3081 (31)~~

BATTLE SUMMARY No. 39

VOLUME I

OPERATION
"NEPTUNE"
LANDINGS IN NORMANDY

JUNE, 1944

1947

Change No.	Authority	Insertion Date	Initials.
1	AFO P251/63	29-4-64	M. Deigan.

~~This book is the property of His Majesty's Government.~~

THIS BOOK IS THE PROPERTY OF HER MAJESTY'S GOVERNMENT AND IS FOR THE USE OF PERSONS IN HER MAJESTY'S SERVICE ONLY. IT MUST NOT BE SHOWN OR MADE AVAILABLE TO THE PRESS OR TO ANY MEMBER OF THE PUBLIC.

~~this power will be held responsible that such information is imparted with due caution and reserve.~~

RESTRICTED
~~CONFIDENTIAL~~

CEO (CS)

Attention is called to the Penalties attaching to any infraction of the Official Secrets Acts.

~~B.R. 1736 (42) (1) / RESTRICTED~~
~~C.B. 3081 (31) (1)~~

BATTLE SUMMARY No. 39

VOLUME I

OPERATION "NEPTUNE"

LANDINGS IN NORMANDY

JUNE, 1944

TACTICAL AND STAFF DUTIES DIVISION,
(HISTORICAL SECTION),
NAVAL STAFF,
ADMIRALTY, S.W.1.

June, 1947.
(T.S.D. 68/47).

Sea Power Centre - Australia



R00955

SECRET

This report is based on the information furnished to the Joint Chiefs of Staff by the G-2 Intelligence Division.

REF ID: A66500
C.B. 3081-3114

BATTLE SUMMARY No. 39

VOLUME I

OPERATION
"NEPTUNE"
LANDINGS IN
NORMANDY
JUNE, 1944

Approved and For Distribution
Commander in Chief
Joint Chiefs of Staff
15 July 1944

Page 100

Form 100

Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

BATTLE SUMMARY No. 39

OPERATION "NEPTUNE"
The Landings in Normandy
 6th JUNE, 1944

ERRATA

- Page 17, Section 10, line 6, first word.
For "them" read "then".
- Page 58, Figure 11, Title.
For "opitimum" read "optimum".
- Page 87, Section 47, line 7.
After "unreal precision" delete "inverted commas".
- Page 91, line 15.
For "from them onwards" read "from then onwards".
- Page 103, line 17.
For "reach" read "reached".
- Page 119, last line.
For "H.M.S. 'Sumatra'" read "H.N.M.S. 'Sumatra'".
- Page 121, line 4 from bottom.
For "expreienced" read "experienced".
- Page 127.
 Line 22. *For "(ii)" read "(i)".*
 Line 25. *For "(ii)" read "(iii)".*
- Page 132, line 9.
For "results" read "result".
- Page 133, line 9.
For "L.T.S.s" read "L.S.T.s".
- Page 140, line 16.
For "St. Laurant" read "St. Laurent".
- Page 141, Footnote 2, Table, Column 4.
 L.C.V. (P). *For "02" read "102".*

(C22996) 500 8/48

Training and Rehearsals

28. Preliminary training.
 29. Exercise "Tiger."
 30. Final rehearsal: Exercise "Fabius."

(C22996)

B

BATTLE SUMMARY No. 39

OPERATION "NEPTUNE"
The Landings in Normandy
 6th JUNE, 1944

CONTENTS

PART I.—PREPARATION

INTRODUCTION

I

Planning and Preparation

1. Object and intentions.
2. Enemy preparations.
3. Air situation.
4. The Naval problem.
5. High Command.
6. Decision for daylight landing.
7. Early planning.
8. The C.O.S.S.A.C. plan.
9. Start of detailed planning.
10. General Eisenhower's system of command.
11. Outline joint plan.
12. D-day and H-hour.
13. Intelligence.

II

Naval Plan and Operation Orders

14. Naval System of Command.
15. Special features of operation.
16. Issue of Naval plan.
17. Outline of Naval plan.
18. Naval Forces taking part.
19. Cover and deception.
20. Loading and assembly plan.
21. Passage arrangements.
22. Protection on passage.
23. Minelaying: Operation "Maple".
24. Minesweeping plan.
25. Naval bombardment plan.
26. The build-up plan.
27. Operation orders.

III

Training and Rehearsals

28. Preliminary training.
29. Exercise "Tiger."
30. Final rehearsal: Exercise "Fabius."

Contents—continued**IV****Events Prior to the Operation**

31. A.N.C.X.F. moves to battle headquarters.
32. Enemy reactions.
33. Selection of D-day.
34. Visit of H.M. the King.
35. Operations orders opened : Security.
36. Final preparations.
37. Loading and assembly.
38. A.N.C.X.F. assumes operational control.
39. Postponement.
40. The operation launched, 4th June, 1944.

PART II.—EXECUTION**V****Passage**

41. Organisation of Assault Forces.
42. Departure.
43. Sweeping of approach channels.
44. Passage of mine barrier.
45. Diversions.
46. Arrival at lowering positions.
47. German torpedo attack on eastern flank.
48. Deployment of Assault Forces.

VI**The Assault**

49. General narrative, assault landings.
50. Western Task Force : Force "U."
51. Western Task Force : Force "O."
52. Ranger landing at Pointe du Hoc.
53. Eastern Task Force : Force "G."
54. Eastern Task Force : Force "J."
55. Eastern Task Force : Force "S."
56. Fighter cover to assault and shipping areas.
57. Situation at close of D-day.
58. Defence of Allied anchorages.
59. The night of D-day (6th/7th June, 1944).

PART III.—CONSOLIDATION**VII****Post Assault Period
7th-16th June**

60. General Review, 7th June-4th July.
61. Beach organization and far shore services.
62. The start of the build-up.
63. Mulberries.
64. Naval activity in the assault area.
65. Operations in the English Channel.
66. General situation, 16th June, 1944.

VIII**Close of Operation "Neptune"
19th June-3rd July**

67. The northerly gale.
68. Continuation of build-up and Naval activities, 17th/30th June.
69. Bombardment of Cherbourg.
70. Withdrawal of Task Force Commanders.
71. Conclusion.

Contents—continued**LIST OF APPENDICES**

Volume II. Appendices are issued in a separate volume.

- A. British Flag Officers and Commodores, with Senior Staff Officers.
- A (1). British and Dominion Ships of War, with C.Os.
- A (2). Landing Ships, Craft, etc., E.T.F.
- A (3). Miscellaneous Ancillary Ships and Craft.
- A (4). Officers Commanding Assault Force Units, etc., E.T.F.
- B. United States Flag Officers and Commodores.
- B (1). United States Ships of War, with C.Os.
- B (2). Landing Ships, Craft, etc., W.T.F.
- C. Warships, with C.Os. of Allied Navies, other than U.S.
- D. Ships of Home Fleet, Supplying Distant Cover.
- E. Disposition of Enemy Forces, 1944.
- F. Gunnery Details of Bombarding Forces and Support Craft.
- F (1). Pre-arranged Fire Plan : E.T.F.
- G. Special Order of the Day by General Eisenhower to Allied Expeditionary Force.
- G (1). Special Order of the Day by Admiral Sir Bertram Ramsay to Allied Naval Expeditionary Force, 31st May, 1944.
- H. Assault Convoy Table.
- H (1). Build-up.
 - I. Organization and Allocation of Escorts.
 - II. Initial Outward Convoy Programme.
- H (2). Summary : Arrival of Merchant Shipping and Landing Craft in France, 7th–30th June, 1944 (D+1 D+24).
- H (3). Achieved Rate of Allied Build-up to D+28.
- J. Allied Shipping Casualties, Operation " Neptune," June, 1944.
- J (1). Analysis of Shipping Casualties from Salvage Records.
- K. British Assault Area : Mines Destroyed and Mine Casualties, June, 1944.
- L. German Submarine Losses : Operation " Neptune," June–September, 1944.
- M. United Kingdom : Shore Authorities, Bases and Harbs.
- N. United Kingdom : Commanders-in-Chief, F.O.I.C.s and N.O.I.C.s.
- O. Glossary of Terms and Abbreviations.
- P. Sources.
- Q. Chronology : Operation " Neptune " June, 1944.

LIST OF PLANS

(At end of Book)

- 1. Bay of the Seine : Assault Areas, Sectors and Beaches.
- 1A. Bay of the Seine : German Coastal Batteries.
- 1B. Bay of the Seine : Pre-arranged Bombardment Plan.
- 1C. Bay of the Seine : Assault Landings.
- 2. Isle of Wight Area : Final Assembly.
- 3. English Channel and Approaches : Covering Forces.
- 4. English Channel : Approximate Situation, H–6 hours.
- 5. Diagram of Typical Deployment at Lowering Position (Force " S ").
- 6. Typical Deployment, Assault Force, H–20 minutes (Force " S ").
- 6A. Typical Deployment, Assault Force, H-hour (Force " S ").
- 7. Typical Close Range Support (Force " J ").
- 8. Typical German Defence System (Area Gold).
- 9. Typical Assault Force Anchorage Plan (Area Juno).
- 10. Defence of Anchorage, Eastern Task Force.
- 11. Defence of Anchorage, Western Task Force.
- 12. Mulberry " B " : Artificial Harbour, Arromanches.
- 13. Bombardment of Cherbourg, 25th June, 1944.
- 14. Military Advance, June, 1944.

FIGURES IN TEXT

	<i>Facing Sec.</i>
Fig. 1. Area and Objectives of Operation	1
Fig. 2. Inter-service Chain of Command	10
Fig. 3. Initial Main Assaults	11
Fig. 4. Intelligence Organization : A.N.C.X.F. Staff	13
Fig. 5. Organization of Eastern Task Force	17
Fig. 6. Organization of Western Task Force	17
Fig. 7. Routes of Assault Forces	21
Fig. 8. Operation "Maple" : British Minefields	23
Fig. 9. German Minefields affecting "Neptune" Convoys	24
Fig. 10. "Neptune" Minesweeping as actually Carried Out	24
Fig. 11. Optimum Rate of German Reinforcement	26
Fig. 12. Sailing of Assault Forces and First Build-up Convoys	42
Fig. 13. Typical Beach N.O.I.C. Staff	61
Fig. 14. Typical Far Shore Chain of Command	61
Fig. 15. General Layout, Mulberry "B"	63

Naval Operations at the Assault Landings in Normandy

6th JUNE—3rd JULY, 1944

(OPERATION "NEPTUNE")

" 'Twas on a Summer's day—the sixth of June—
I like to be particular in dates,
Not only of the age, and year, but moon ;
They are a sort of posthouse where the Fates
Change horses, making History change its tune,
Then spur away o'er empires and o'er States."

Lord Byron, "Don Juan" Canto 1.

INTRODUCTION

The 6th of June, 1944, witnessed landings by the Assault Forces of the Allied Nations over some 40 miles of the beaches of Normandy. From the narrow foothold secured on that day sprang the pregnant series of events which culminated eleven months later in those forces meeting the Russians in the heart of Germany, and the abject surrender of the Third Reich and all for which it stood.

Operation "Neptune," the name given to the assault phase of Operation "Overlord," the general plan for the liberation of north-west Europe was indeed appropriate—because without in any way detracting from the magnificent work of the sister services, the Navy was necessarily bound to play the major part in the opening stages of convoy and transport.

Like all opposed landings, Operation "Neptune" falls into three well-defined phases, viz. :—

- (1) Preparation. Planning, etc. (May, 1942–June, 1944).
- (2) Execution. The Assault Landings (4th–6th June, 1944).
- (3) Consolidation. The Build-up (7th June–3rd July, 1944¹).

It was, however, unique in two respects. These were: firstly, the proximity to the scene of operations of the United Kingdom with all its resources as a main base, which facilitated the maximum application of the Allied Sea and Air superiority and the rapid turn round of the build-up shipping, besides making possible such novel expedients as the use of pre-fabricated harbours and the supply of oil through submarine pipe lines; and secondly, the gigantic scale on which the operation was conceived and launched.

This operation involved the landing of five divisions with their stores, motor transport and impedimenta on open beaches heavily defended by every means which modern science could devise; and after the initial bridgehead had been secured, the rapid build-up of the force to some thirty divisions and their maintenance. No less than 5,000 ships and craft took part in the first four

¹ On this date the last of the Assault Force Commanders withdrew from the Assault Area, and the more permanent naval organizations—by means of which the Armies in France were maintained for the remainder of the year—came into being.

INTRODUCTION

days. The provision of this Armada, the loading and berthing arrangements, co-ordination of movements, measures for security from both enemy interference and stress of weather, disembarkation and the continued flow of reinforcements and supplies, as well as direct support of the Army by bombardment—all these were naval responsibilities calling for most intricate and careful planning on a scale which admittedly surpassed anything ever seen in the history of the world.

.

The manner in which these vast naval commitments were discharged is described in great detail in the orders and reports of the various officers who took part in the operation; but, because most of these reports were addressed to recipients who were well aware of the details of the plan, they tend to be cast in the form of commentaries on how the plan worked out in its various aspects, rather than narratives of what actually occurred.

The ensuing Battle Summary aims at giving an overall connected account of the operation. It is by no means exhaustive nor does it deal with technical matters, such as the complex and vital communications organization, but it should serve as a convenient introduction or background to the detailed study of any particular aspect of the operation¹.

¹ A list of sources will be found in Appendix "P."

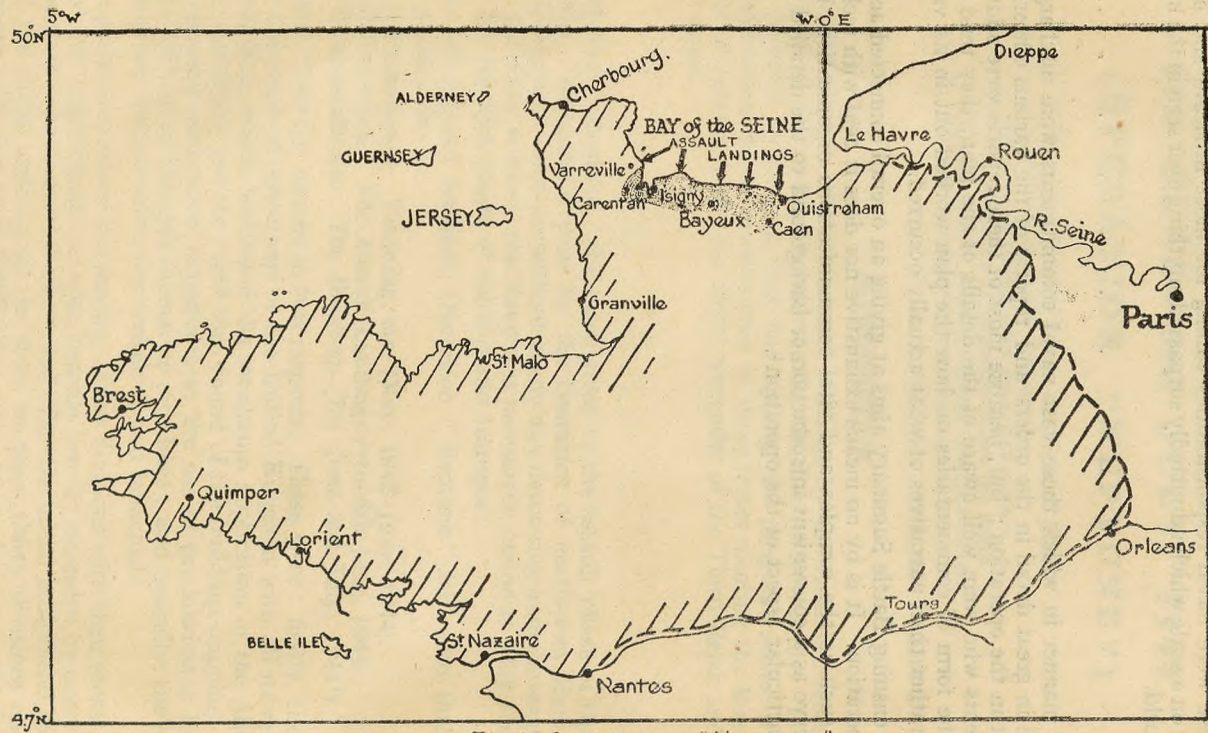



Fig. 1. OPERATION "NEPTUNE"

AREA OF IMMEDIATE OBJECTIVES  : LODGETMENT AREA AS PLANNED APPROXIMATELY DAY D+30 TO 40 

I. PLANNING AND PREPARATIONS

1. Object and Intentions

Operation "Neptune" was a combined British and United States undertaking by all services of both nations.

Its object was defined as "to carry out an operation from the United Kingdom to secure a lodgement on the continent from which further offensive operations can be developed. This lodgement area must contain sufficient port facilities to maintain a force of 26 to 30 divisions and to enable this force to be augmented by follow-up formations at the rate of from three to five divisions a month."¹

The plan finally adopted consisted of an assault on a five-divisional (eight brigades up) front in landing ships and landing craft on the beaches between Ouistreham and Varreville in the Bay of the Seine, follow-up formations being landed on the second tide of the same day (D-day). The remainder of the follow-up formations, as well as other formations from mechanized transport ships were to land on the next day (D+1), after which the forces were to be built up at the average rate of one and one third divisions a day.

Initial objectives were the towns of Caen, Bayeaux, Isigny and Carentan, with the neighbouring airfields and the port of Cherbourg. The lodgement area was then to be completed by the capture of the Brittany ports as far south as (and including) Nantes—a phase which was expected to last some five or six weeks. Depending on the progress of events, the capture of Paris and the liberation of southern France was to be the next aim of the Allied Armies.

2. Enemy Preparations

Intelligence for Operation "Neptune" was the outcome of years of research with unequalled resources by large and specialized inter-service bodies. Hence it was comprehensive and extremely detailed. It by no means minimized the difficulty of the undertaking, for the whole of the northern coast of France had been fortified by every means modern science could suggest, adapted to local physical peculiarities.

Coastal batteries—heavy, medium and light—covered most of the seaward approaches²; minefields, underwater obstacles, wire, anti-tank defences abounded; concrete strong points were spaced along the coast at frequent intervals; exits from beaches were mined and obstructed, and full advantage was taken of inland areas suitable for flooding. Flame throwers, machine guns, howitzers and field guns—usually in casemates—covered all possible landing places³. Naturally, particular attention was paid to the neighbourhood of ports.

The weak spot lay in the quality of the troops manning the defences. They were believed to be of a not very high standard; but it was known that the enemy had ample first rate troops available in France for concentration at the threatened point once the invading forces were committed.

German naval forces immediately available consisted of five destroyers, nine to 11 torpedo boats (including "Elbings"), 50 to 60 E-Boats, 50 to 60 R-Boats, 25 to 30 "M"-class minesweepers, and about 60 miscellaneous local

¹ O.N.I, p. 1.

² See Sec. 25, *postea*.

³ See Plan 8 for details of the coast defences and Plan 1A for details of coastal batteries. The event proved the intelligence to be accurate in the main (see Sec 13, *postea*).

Sec. 2-3

OPERATION "NEPTUNE"

small craft. A further six destroyers and 10 torpedo boats might be sent from the Baltic or Heligoland Bight, but this would deprive their heavy ships—all of which were in Norwegian or Baltic waters—of a screen should they wish to put to sea¹. As regards submarines, there were 130 operating from the Biscay ports; these might be reinforced to a total of about 200 within a fortnight of the invasion. In addition, up to 25 short-range U-Boats (300 tons or less) could be sent from the Baltic to operate off the east and south-east coasts of England².

As regards the air, the strain to which the Luftwaffe had been subjected for the previous five years had reduced it to a position of hopeless numerical inferiority, but it could safely be reckoned that it would give all possible support to the Wehrmacht³.

3. The Air Situation

The Allied air contribution to the operation was to be on an overwhelming scale. Exclusive of fighter reconnaissance and photographic aircraft, and of aircraft of Coastal, Troop Carrier and Transport Commands and the Naval Air Arm, it was estimated that there would be 5,886 aircraft of the Allied Air Forces available in the United Kingdom on 1st June, 1944⁴.

¹ The German main units consisted of:—

- (1) Two capital ships, *Tirpitz* (8—15", 12—5·9"), *Gneisenau* (9—11", 12—5·9")—both seriously damaged.
- (2) Two pocket battleships, *Admiral Scheer*, *Lützow* (6—11", 8—5·9").
- (3) One aircraft carrier, *Graf Zeppelin*—unfinished.
- (4) Two heavy cruisers, *Prinz Eugen*, *Admiral Hipper* (8—8" each).
- (5) Four light cruisers, *Nürnberg*, *Leipzig*, *Köln* (9—5·9" each), *Emden* (8—5·9").
- (6) Approximately 37 destroyers and 83 torpedo boats.

² See Appendix "E." Disposition of Enemy Naval Forces, between the Bight and the Bay of Biscay, March, 1944.

³ The relative strengths of the German and Allied available Air Forces are considered in section *B* *postea*.

⁴ Estimate of Allied Air Forces available in the United Kingdom, 1st June, 1944:—

Type of Squadron.	Approximate number of A/C per Squadron.	Estimated number of Squadrons.	Estimated number of Aircraft.
UNITED STATES			
<i>Eighth Air Force—</i>			
Day Bomber (Heavy)	8	165	1,320
Day Fighter	16	45	720
<i>Ninth Air Force—</i>			
Bomber (Medium)	12	32	384
Bomber (Light)	12	12	144
Fighter (Day)	16	63	1,008
Fighter (Night)	12	3	36
BRITISH			
Night Bomber (Heavy)	12	72½	870
Bomber (Light)	12	18	216
Fighter (Day)	12	59	708
Fighter (Bomber)	12	18	216
Fighter (Night)	12	22	264
Grand Total	—	509½	5,886

These figures do not include aircraft required for normal operations, such as Air Defence of Great Britain.

Against this, the German Air Force first line strength on their Western Front (from south of Trondheim in Norway to Rochefort in the Bay of Biscay) was reckoned to be about 1,515 aircraft, of which not more than 590¹ were likely to be available for close support of operations in the "Neptune" area². Prior to the assault landings the general air offensive was directed towards the destruction of the enemy's air forces, particularly fighters, and the interruption of his communications. At the same time Air and Naval anti-U-Boat and anti-E-Boat operations were intensified in the English Channel and the Bay of Biscay, and air bombardment of the enemy bases accompanied by offensive minelaying was carried out. Particular attention was paid to the enemy radar stations from Ostend to the Channel Islands, with the result that during the whole night preceding the assault only 18 out of a normal 92 were operating in the "Neptune" area. This air offensive reached its climax immediately before the assaults and culminated in a heavy air bombardment of the beach area and defences just before the landings.

The role of the air forces as far as it affected the naval operations will be referred to later.

4. The Naval Problem

"The Naval problem that had to be faced can be briefly summarized as, first, the breaking of the strong initial crust of the coast defences by assault, together with the landing of the fighting army formations; and, secondly, to commence, and continue without a pause for five or six weeks, their reinforcement at as high a rate as possible. The first required the co-ordination of the movement of thousands of ships and landing craft and aircraft, and then of their fire power; the second the co-ordination of the activities of hundreds of thousands of men and women of all services, both in the United Kingdom and off the French coast, marshalling, loading, sailing, unloading and returning at least eight ship convoys a day, in addition to 10 or 12 landing craft groups. Considerations of time and space did not permit the use of any unexpected manœuvre to confuse the enemy; we had simply to drive ahead in great strength and to ensure that the organization was as efficient as it could be, as the time factor was all important³."

5. High Command

The system of command finally adopted for the assault was as follows. General Dwight D. Eisenhower, U.S.A., was appointed Supreme Allied Com-

¹ According to a captured German document dated 6th August, 1944, a total of 319 aircraft only could be operated in the "Neptune" Area on D-day.

² Estimate of German aircraft available for operations in the "Neptune" area:—

Long Range Bombers.	Recon-naissance.	Fighter Bombers.	Twin Engined Fighters.	Single Engined Fighters.	Total.
320*	10	65	75	120	590

* Includes about 90 anti-shipping aircraft, fitted for torpedo, glider or FX—radio controlled bombs. These might be augmented by a further 60 at a later date.

³ A.N.C.X.F. Report, Vol. 1, p. 5.

Sec. 5-7

OPERATION "NEPTUNE"

mander, with Air Chief Marshal Sir Arthur Tedder¹ as his deputy. Under him and exercising their commands jointly were three commanders² :—

- Naval* .. Allied Naval Commander-in-Chief Expeditionary Force (A.N.C.X.F.), Admiral Sir Bertram Ramsay³.
- Army* .. Commander-in-Chief, 21st Army Group (C.-in-C., 21 A.G.), General Sir Bernard Montgomery⁴.
- Air* .. Air Commander-in-Chief, Expeditionary Force (A.E.A.F.), Air Chief Marshal Sir Trafford Leigh-Mallory⁵.

6. Decision for a Daylight Landing

The one fundamental question on which there had to be early agreement between the three services was whether to assault during darkness so as to obtain the greatest measure of surprise on the beaches, or whether to assault after daylight and to rely on the greatly increased accuracy of air and naval bombardment under these conditions. The decision arrived at was in favour of a daylight landing. This was in accordance with experience in the Pacific in cases when the assaulting force possessed decisive naval and air superiority⁶ and in the event was entirely justified in Operation "Neptune."

Bearing in mind the foregoing salient features of the combined plan actually carried out, it is proposed to examine the plan and its evolution in some detail, particularly as regards its naval aspects.

7. Early Planning

The inception of the naval plan dates from May, 1942, when a planning staff (known as the "Round Up" Staff) was formed to study the administrative problems in connection with a major cross-Channel operation.

Far off, indeed, to these pioneers of invasion must the day have seemed when their plans were to come to fruition. Already (1946) it requires an effort of memory to recall the grim world situation which confronted the Allied Nations in May, 1942. Except for the Iberian Peninsula, Switzerland, Sweden and Turkey the whole of Europe from the Pyrenees to the North Cape was under Axis domination, though the Vichy Government was still enacting the farce of administering Southern France. The great Russian winter campaign of 1941-42 was dying down, and the German drive which was to carry them to the gates of Stalingrad was about to be unleashed. The Anglo-Soviet Treaty was signed in London on 26th May and on the same day the German General Rommel launched the offensive in Libya which in five weeks brought

¹ Air Chief Marshal Sir Arthur Tedder, G.C.B.

² By a melancholy coincidence, two of the Commanders-in-Chief, Admiral Ramsay and Air Chief Marshal Leigh-Mallory, lost their lives in air accidents less than nine months after the operation.

³ Admiral Sir Bertram H. Ramsay, K.C.B., K.B.E., M.V.O. For scope and principles of the Naval Command, see Sec. 14, *postea*.

⁴ General Sir Bernard Montgomery, K.C.B., D.S.O.

⁵ Air Chief Marshal Sir Trafford Leigh-Mallory, K.C.B., D.S.O.

⁶ Admiral Ramsay subsequently remarked "I am convinced that this is the correct answer under these conditions. When the decision was made there were no beach obstructions in place on the "Neptune" beaches. Their later appearance would almost certainly have caused the decision to be revised had it been originally made in favour of darkness, and it was very fortunate that no change was necessary, as all training and, to some extent, development of weapons was affected. It should, however, be noted that there was by no means general agreement as to a daylight attack, and that even after the initial decision had been agreed between the three Cs.-in-C. of the Expeditionary Force at least two vain efforts were made to change it." A.N.C.X.F. Report, Vol. 1, p. 6.

him to within 80 miles of Alexandria. In the Far East, Allied fortunes were at their lowest ebb. With the fall of Corregidor on 6th May, the Japanese were in possession of the Philippines, Borneo, Malaya, the Dutch East Indies and parts of New Guinea, and controlled the whole of the immense area north of the equator from the 180th meridian to the coasts of China. Attacks had commenced on the northern Solomons and grave concern was felt alike for India and Australia.

The early days of this month of May, 1942, however, saw one British success which was a portent of things to come—the capture and occupation of Diego Suarez, an exploit which may be regarded as the prototype of the great series of amphibious operations which found its culmination in the gigantic undertaking of which the "Round-Up" staff was the germ.

The "Round-Up" staff did not function long without interruption; about three months after its formation the greater part of it was transferred to the planning and subsequent execution of the North African landings, but a small skeleton staff remained in being which busied itself with the provision of long term facilities of all kinds from the Wash to Lands End. These included headquarters at Portsmouth and Plymouth, as well as landing craft bases, loading hards and repair slips.

In May, 1943, the Commander-in-Chief, Portsmouth¹, was appointed Naval Commander-in-Chief (designate) for "the invasion of the continent of Europe from the United Kingdom, and charged with the preparation of the naval portion of the plan which was being produced²," in accordance with the terms of a directive of the British and U.S. Combined Chiefs of Staff, by Lieutenant-General F. E. Morgan³, who had been nominated Chief of Staff to the Supreme Allied Commander (designate) (C.O.S.S.A.C.). Commodore J. Hughes-Hallett⁴ was appointed Chief of Staff (X) to the Commander-in-Chief, Portsmouth, and the naval planning staff working at Norfolk House, London, was placed under his charge⁵.

At the end of June, 1943, a conference (known as Operation "Rattle") was held under the chairmanship of Vice-Admiral Lord Louis Mountbatten—then chief of Combined Operations—at which definite conclusions as to the provision of equipment, future training and planning were reached⁶.

¹ Admiral Sir Charles J. C. Little, G.B.E., K.C.B.

² Report on Operation "Overlord"—Portsmouth Command, Part 1, para. 10.

³ Lieut.-General F. E. Morgan, C.B.

⁴ Commodore J. Hughes-Hallett, D.S.O.

Commodore Hughes-Hallett was relieved by Rear-Admiral G. E. Creasy, C.B.E., D.S.O., M.V.O., in August, 1943.

⁵ Admiral Ramsay subsequently remarked that since a large share of the administrative burden of the invasion inevitably fell on the staff of the Portsmouth Command, this early and close association of the Planning Staff was of great value.

⁶ This Conference was attended by:—

Vice-Admiral Lord Louis Mountbatten	..	C.C.O. (Chairman).
Admiral Sir Charles Little	.. ..	C.-in-C. (designate).
General Sir Bernard Paget	.. ..	G.O.C., 21st Army Group.
Air Chief Marshal Sir T. Leigh-Mallory	.. ..	A.O.C.-in-C., Fighter Command.
Lt.-General F. E. Morgan	.. ..	C.O.S.S.A.C.
Lt.-General J. L. Devers	.. ..	U.S. Army.
Lt.-General A. G. L. MacNaughton	.. ..	Canadian Army.
And Staff Officers.		

8. The C.O.S.S.A.C. Plan¹

Six weeks later (August, 1943) the Quebec Conference took place and the combined plan put forward by General Morgan—known as the C.O.S.S.A.C. plan—received the general approval of the Combined British and American Chiefs of Staff. This plan entailed assaulting on a three divisional front (six brigades) in landing ships and landing craft, with two divisions following up. A high degree of close support fire from landing craft was provided and the supporting divisions were also to be very well equipped with supporting arms. The assault area was in the Bay of the Seine between the River Orne and the River Vire, a sector which had been chosen provisionally in January, 1943.

The planning carried out by C.O.S.S.A.C., whilst confirming the choice of this section of the coast unprovided with a major port, had also stressed the need of guarding against delay in capturing such a port and of insuring against the complete stoppage of landing operations through bad weather by the construction of two artificial ports²—known as "Mulberries"—off the beaches³. This extraordinary expedient was devised to reconcile the conflicting requirements of the assault landings with those of the build-up (the principal naval commitment) of the Allied Armies. The enemy, of course, was fully alive to the paramount importance of port facilities and had largely based his plan of defence on his ability to deny them. Well nigh impregnable defences had been constructed in the vicinity of all major ports⁴, and on the Allied side it had been early appreciated that an assault in any such area would have little chance of success—a view tested and confirmed by the raid on Dieppe in August, 1942. The build-up, on the other hand, over open beaches, would have equally little chance of achieving the minimum acceptable rate and might well be brought to a complete stoppage by bad weather.

It was therefore decided that the assault landings must be closely followed by the arrival of pre-fabricated harbours, capable of erection within a few days and of sufficient capacity to maintain the build-up at the required rate for at least three months.

9. Start of Detailed Planning

Combined planning on the basis of the C.O.S.S.A.C. plan commenced at 21st Army Group Headquarters on 15th December, 1943. As the naval implications of the operation became clearer, the Admiralty had decided that a separate Naval Commander-in-Chief would be necessary, especially in view of the heavy extra burden which must fall on the Portsmouth Command from its geographical position, and Admiral Sir Bertram Ramsay had been appointed

¹ C.O.S. (43) 416 (O) Operation "Overlord"

² The suggestion that artificial harbours should be constructed in the assault area was, it is believed, first made by Commodore Hughes-Hallett when serving as Chief of Staff (X) to the C.-in-C., Portsmouth, who suggested that sunken ships should be used for this purpose.

³ The soundness of this outline plan was proved later in the detailed planning, as in no respects were its fundamentals altered, though its scope and range were extended when General Montgomery assumed command of the 21st Army Group.

⁴ Apart from very strong fixed defences, all the major ports were garrisoned by picked troops, with orders to hold out to the last man. In the event, with the exception of Cherbourg, the ports held out as isolated pockets long after the Allied Armies had overrun the hinterland. In addition, typically thorough demolition schemes had been prepared for each port in case its loss should prove unavoidable.

as Allied Naval Commander-in-Chief, Expeditionary Force (A.N.C.X.F.) in October. Air Chief Marshal Sir Trafford Leigh-Mallory had been appointed Air Commander-in-Chief, Allied Expeditionary Force, in November, but no Army Commander had as yet been nominated and initial responsibility for all land operations was assigned to General Sir Bernard Paget¹, then Commander-in-Chief of the 21st Army Group. Nor had a Supreme Commander as yet been designated and the planning situation was thus far from satisfactory, as these two appointments might well involve a major change of plan.

The appointment of General Sir Bernard Montgomery as Commander-in-Chief, 21st Army Group, was announced on Christmas Day, 1943. General Montgomery arrived in London on 3rd January, 1944, and was not slow in stating his objections to the "Neptune" plan as it then stood. In brief, these were that the assaults were not being made on a wide enough front, or with a sufficiency of force, and that it was necessary to extend them, both in order to introduce a greater number of formations on D-day and to accelerate the capture of Cherbourg. The General had already discussed the plan very briefly with General Eisenhower, who in the meanwhile had been appointed Supreme Commander, and on the assumption that the final approval of the latter would be forthcoming it was agreed to continue planning on the basis that half the landing ships and landing craft previously allotted to Operation "Anvil"² in the Mediterranean would be available for "Neptune" and that the target date for the latter would be postponed for one month³.

10. General Eisenhower's System of Command

This course of action was facilitated by General Eisenhower's method of exercising the Supreme Command which was familiar to the Commanders-in-Chief from former experience in the Mediterranean. Having satisfied himself of the feasibility of a project, he gave them a free hand in working out the plans, before they were finally submitted to him for approval. They were then directed to carry out the execution as agreed upon. At the same time S.H.A.E.F. provided a common meeting ground where the joint and combined planning, already outlined by C.O.S.S.A.C. could be put into final shape for execution. In cases of difference of opinion, the Supreme Commander would give his decision, and when requested to do so, would deal with other authorities on the highest level on behalf of his Commanders-in-Chief.

Joint planning on the new basis re-started between the Commanders-in-Chief on 14th January, 1944, and the initial joint plan was issued on 1st February.

To put this plan into effect, under Supreme Headquarters, the inter-service chain of command was integrated as shown in Fig. 2 on page 18.

¹ General Sir Bernard Paget, K.C.B., D.S.O.

² Operation "Anvil," a diversionary threat against Toulon by two divisions, had been planned originally to take place simultaneously with operation "Neptune." It was designed to tie down German mobile reserves and air forces in the South of France during the critical stages of the battle for a lodgement in Normandy. It was, however, found necessary to cancel this operation.

³ At the time the C.O.S.S.A.C. plan was worked out, the strength and scope of the assault were dictated by the limited amount of landing craft and shipping available.

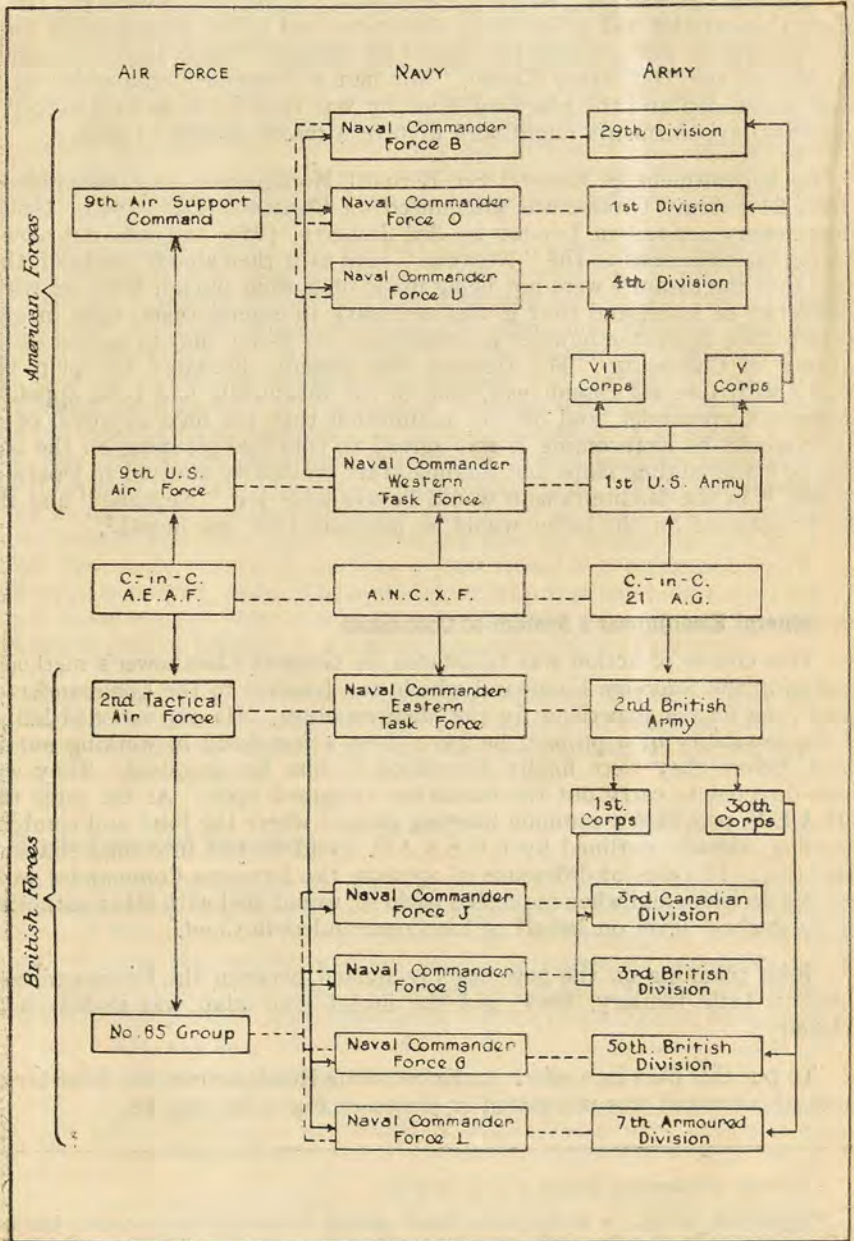


Fig. 2. Inter-Service Chain of Command.

11. Outline of Joint Plan.

(Plan 1)

The assault area was defined as being bounded on the north by the parallel of Lat. 49° 40' N., and on the west, south and east by the shores of the Bay of the Seine. This area was divided into two Task Force areas, the boundary between them running from the root of the Port en Bessin western breakwater in an 025° direction to the meridian of Long. 0° 40' W. and thence along this meridian to Lat. 49° 40' N.

The 1st United States Army, commanded by Lt.-General O. M. Bradley, was to operate in the Western Task Force area, of which Rear-Admiral A. G. Kirk, U.S.N., was the Naval Commander, and the 2nd British Army, commanded by Lt.-General M. C. Dempsey¹, in the Eastern Task Force area, with Rear-Admiral Sir Philip Vian as Naval Commander.

The Western Task Force area was divided into two assault force areas—"Utah" area covering the east coast of the Cotentin Peninsula to the River Vire and "Omaha" area from thence to the British area. Two Naval Assault Forces, "U" and "O" respectively, were responsible for all naval operations in these areas.

The Eastern Task Force area was divided into three assault force areas—"Gold" area, from Port en Bessin to Ver, "Juno" area thence to west of Langrune, and "Sword" area thence to Ouistreham—served by Naval Assault Forces "G," "J" and "S" respectively.

The assault force areas were sub-divided into lettered sectors as shown in plan 1, the beaches in each sector being known as "Red," "Green" or "White" beaches.

The immediate army tasks were :—

U.S. 1st Army

- (a) To assault with two divisions, one of the VII Corps commanded by Major-General Lawton-Collins east of St. Martin de Varreville, the other of the V Corps commanded by Major-General Gerow between Isigny and Port en Bessin.
- (b) To capture Cherbourg as quickly as possible, and to develop the Vierville-Sur-Mer—Colleville-Sur-Mer beach head southward towards St. Lo in conformity with the advance of the British 2nd Army.

British 2nd Army

- (a) To assault with three divisions, two of the 1st Corps commanded by Lt.-General C. J. Crocker, and one of the 30th Corps, commanded by Lt.-General G. C. Bucknall between Port en Bessin and the River Orne.
- (b) To secure and develop a bridgehead south of a line Caumont—Caen and south-east of Caen in order to secure airfield sites and to protect the flank of the 1st U.S. Army.

¹ Lt.-Gen. Miles C. Dempsey, C.B., D.S.O., M.C.

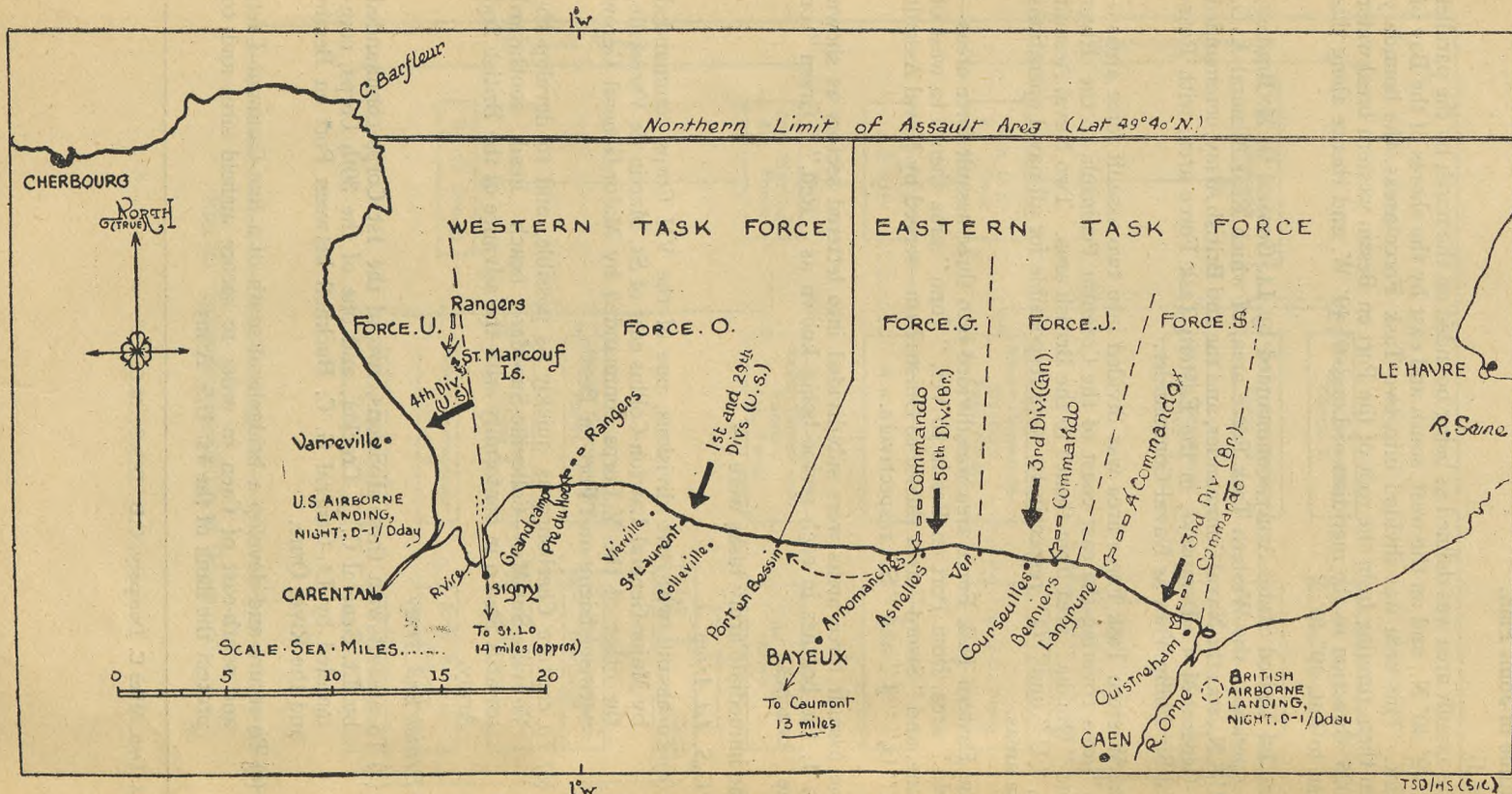


Fig. 3. Assault Area, showing Initial Main Assaults.

TSD/HS (516)

Landings in the various areas were planned as follows¹ (see plan 1C) :—

WESTERN TASK FORCE

"Utah" area .. 4th U.S. Division (Major-General R. O. Barton).
Initial assaults by 1st Bn. 8th Infantry on
"Tare" Green and by 2nd Bn. 8th Infantry on
"Uncle" Red beaches (east of St. Martin de
Varreville).

Rangers capture St. Marcouf Islands.

"Omaha" area .. 1st U.S. Division (Major-General Huebner).
Initial assaults north of St. Laurent by 116th
Regimental Combat Team on "Dog" Green,
White, Red, and "Easy" Green beaches, and
by 16th R.C.T. on "Easy" Red and "Fox"
Green beaches.

Three Ranger Companies at Pointe du Hoe in
sector "Charlie" to capture 6·1-in. battery
located there.

Troops of the 82nd and 101st Airborne Division were to be landed and dropped from 932 aircraft and 110 gliders in the Cotentin Peninsula during the night before the assault, with the object of assisting in the capture of the Peninsula, and preventing the movement by land of enemy reinforcements into the 1st Army sectors.

EASTERN TASK FORCE

"Gold" area .. 50th (Northumberland) Division (Major-General D. E. H. Graham). Initial assaults by 231st Infantry Brigade (Brigadier Sir A. Stanier, Bt.), on "Jig" Green beach (east of Asnelles) and by 69th Infantry Brigade (Brigadier F. V. C. Knox) on "King" Green and Red beaches (north of Ver).

47th Commando of 4th S.S. Brigade to land with 231st Infantry Brigade and capture Port en Bessin.

"Juno" area .. 3rd Canadian Division (Brig.-General R. F. L. Keller). Initial assaults by 7th Canadian Infantry Brigade (Brigadier H. W. Foster), on "Mike" Green and Red, and "Nan" Green beaches (north of Courseulles) and by 8th Canadian Infantry Brigade (Brigadier K. G. Blackader), on "Nan" White and Red beaches.

48th Commando of 4th S.S. Brigade to land with 8th Canadian Infantry Brigade to clear the area to the eastward between the assault beaches.

¹ It had originally been intended that these assaults should be made simultaneously but the individual peculiarities of the various landing places compelled them to take place over a period of about an hour and a half. See Sec. 12 *postea*.

Sec. 11

OPERATION " NEPTUNE "

" *Sword* " area .. 3rd British Division (Major-General R. G. Rennie).
Initial assaults by 8th Infantry Brigade (Brigadier E. E. Cass) on " Queen " White and Red beaches north of Ouistreham.

41st Commando of 4th S.S. Brigade to land with 8th Infantry Brigade to clear the area to the westward between the assault beaches, and the 4th Commando of 1st S.S. Brigade to clear up Ouistreham.

During the night prior to the main assault the 6th Airborne Division (less 5th Parachute Brigade) was to land in the area east of Caen and astride the crossings of the River Orne to assist in securing the left flank.

Resulting from these movements it was intended that the 2nd Army line should run southwest from Cabourg along the line of the River Dives from D-day onwards (see Plan 14).

In broad terms the assaults were to be conducted in three phases :—

Phase 1 .. Pre-H-hour naval and air bombardment to " soften " the beach defences and knock the spirit out of the defenders.

Phase 2 .. The break through at H-hour of the static beach defences with the object of developing lanes through the beaches and opening up exits for the vehicles. In this phase, tank landing craft (L.S.T.) with tanks specially equipped for moving beach obstacles (A.V.R.E.), preceded by assault landing craft fitted to project 60-lb. bombs (L.C.A.(H.R.)) intended to blast a lane through wire and anti-personnel mines, were to beach at H-hour, followed immediately by a wave of assault infantry and obstacle clearance teams. The whole were to be supported by close range fire from gun craft, warships and " DD " (" swimming ") tanks.

Phase 3 .. The landing of reserve battalions and supporting arms in infantry and tank landing craft (L.C.I.(L) and L.C.T.).

An assault in daylight called for a variety of types of landing craft in each assault force. Many new weapons, too, were used operationally for the first time, which greatly complicated the whole technique from the naval point of view. In particular, the timing of the approach of the assault waves and the deployment from the " cruising " to the " assaulting " formations called for a degree of efficiency and seamanship unique in the history of landing craft.

For ease of reference a typical chronological sequence of events from H-2 to H+2 hours for an assault force is given in the following table :—

Time.	Movements and Order of Landing.	Fire Support and Bombardment.	Remarks.
H-120 mins.	Group one L.C.T. with DD tanks pass lowering position.		
H-115 mins.	L.S.I. reach lowering position.		
H-110 mins. to H-95 mins.	L.C.T. groups with L.C.T.(A) and L.C.T. A.V.R.E. pass lowering position.		
H-80 mins. to H-60 mins.	Launch DD tanks and DD tanks form up.		At 5,000-6,000 yards from beach.
H-60 mins. or Sunrise-30 mins.		Bombarding ships open fire with air observation. Destroyers and L.C.G.(L) open fire on beach targets.	
H-35 mins.		S.P. artillery opens fire	At range 11,000 yards approx.
H-30 mins.		Heavy day bombing of beach defences starts.	
H-10 mins.		1st Group L.C.T.(R) opens fire.	At 3,500 yards from beach.
H-7½ mins.	DD tanks touch down		
H-5 mins.		S.P. artillery fire lifts to back of beach.	
H-4 mins.		2nd Group L.C.T.(R) open fire.	
H hour	L.C.T. A.V.R.E. touch down followed by L.C.A. with assaulting infantry.	L.C.A.(H.R.) fire. S.P. artillery check fire.	L.C.A.(H.R.) precede A.V.R.E. L.C.T. and fire just before they touch down.
H+20 mins. to H+30 mins.	L.C.A. with reserve infantry companies, L.C.O.C.U. (obstacle clearance units), etc., touch down.		
H+45 mins.	L.C.T. with 1st priority vehicles touch down.		
H+60 mins.	L.C.I.(L) and L.C.A. with reserve battalions touch down.		
H+75 mins. to H+105 mins.	L.C.T. with S.P. artillery touch down.		

Note.—(1) No mention is made of air bombardment before daylight.

(2) Order of landing subsequent to H+105 followed orthodox lines.

12. D-day and H-hour

"No single question was more often discussed during planning than that of H-hour"¹—the time at which the first landing craft should hit the beaches—and it is therefore proposed to examine the factors affecting it in some detail. All three services were vitally interested in the problem, but since tidal conditions were the prime consideration, its solution was ultimately a naval responsibility.

The main considerations affecting the choice of H-hour were as follows:—

- (a) It was desirable to have as many hours as possible of rising tide upon which to land the supporting arms, so that landing craft could "retract"; at the same time it was necessary to spare the infantry too long a run over exposed beaches.
- (b) An adequate period of daylight for the pre-H-hour observed bombardment was required; on the other hand, it was important to leave as many hours of daylight as possible for the landing of the "follow-up," and to have the second high water before nightfall. It was also considered that the earlier H-hour was, the greater was the hope of obtaining tactical surprise.

Balancing these factors, it seemed that the best conditions would obtain between three and four hours before high water and about 40 minutes after the start of nautical twilight².

But about a month before D-day a further complication arose. Reconnaissance revealed that the enemy was busily placing underwater obstacles on the beaches. This compelled the modification of H-hour so that the first waves would touch down short of the obstacles and thus allow of their clearance dry shod. This, however, brought other factors into play; the army naturally desired the assaults to be simultaneous, but whereas the U.S. requirements for their area favoured a time as near low water as possible, one of the British assault forces (Force "J") had to negotiate rocky shoals to seaward of one of the beaches, over which there was barely sufficient water below half tide. A compromise was eventually reached, and for the day ultimately chosen the planned time of H-hour varied from 0630³ as the earliest on the Western Task Force front to 0745 for the latest group of Force "J."

These many requirements of H-hour restricted the choice of D-day to three days every fortnight, and these three days were of course subject to the over-riding considerations of weather⁴. The absence of fog was essential for the air operations and reasonably quiet weather for the start of the build-up in the period immediately following D-day was as important as for the passage and the assault.

A special meteorological organization was set up, but it could not guarantee accurate forecasts for more than 48 hours ahead, which was barely sufficient to cover the hour of the assaults, as the convoys from the more distant west country ports had to sail 36 hours before H-hour.

It was realized very early in the planning that the decision which General Eisenhower as Supreme Commander would have to make to launch the operation would be one of the most difficult and far-reaching of the whole war.

¹ A.N.C.X.F.'s Report, Vol. I, p. 9.

² Sun 12° below horizon.—(On 6th June, 1944, 0406 M.S.T.)

³ Time is given in Zone minus 2 (M.S.T.) throughout the narrative.

⁴ In order to assist the forecasts two United States and two British warships were stationed in the Atlantic to transmit weather reports for some days before D-day.

13. Intelligence

At this stage it will be convenient to consider briefly the Allied intelligence arrangements, on the efficacy of which the planning and success of the operation largely depended.

A body known as the Theatre Intelligence Section (T.I.S.), consisting of a large number of military officers, with a small party of naval officers representing N.I.D., had been formed under G.H.Q. Home Forces as early as 1941 for the study of intelligence in western Europe. Later this staff was expanded to include U.S. officers and incorporated in S.H.A.E.F. "The T.I.S. thus became the one final authority which both nations and all forces accepted and in consequence there was no division of opinion on matters for which it was responsible.¹"

As already mentioned (Sec. 2) the intelligence available for Operation "Neptune" was complete, detailed and in the main accurate². From the naval point of view the main problem which confronted A.N.C.X.F.'s Intelligence Staff was not so much the provision of intelligence as the selection and dissemination to the thousands of ships and craft involved of the information necessary to their functions. No less than 15,000 annexes, each one a small book in itself, had to be distributed without the recipients being on the one hand overburdened, or on the other under-informed. It was also necessary to cater for the slightly different American requirements and procedure, while ensuring that the intelligence used by both nations was identical.

Admiral Ramsay's Intelligence Staff was organized as shown in Fig. 4. "This organization in general proved satisfactory, but could have been improved had it been formed earlier, and had the various officers all had the benefit of general intelligence training, so that they would have been more interchangeable."³ Some of the officers (shown in italics in the diagram) only joined shortly before, or immediately after, D-day.

After the operation had been launched, general intelligence received from the forces was promulgated by situation intelligence reports. Intelligence of concern to the naval forces was sent out in "A.N.C.X.F. Intelligence Reports."

¹ A.N.C.X.F. Report, Vol. 1, p. 51.

Admiral Ramsay recommended that basic intelligence of inter-service interest should always in future be provided by some such body as the T.I.S. He considered, however, that the Naval representatives on it should be solely responsible to the Naval Commander concerned. In "Neptune" this was not at first the case, and difficulties arose, since they had divided responsibility.

² This was proved by the event, the outstanding exception being the inability to recognize from photographs the fact that a large portion of the German pillboxes on the beaches were sited purely for enfilade fire, their seaward side being blind and thus invulnerable to direct fire from positions at sea immediately opposite to them.

³ A.N.C.X.F. Report, Vol. 1, p. 50.

Admiral Ramsay subsequently stressed the importance of photographic reconnaissance and its rapid interpretation. "One of the striking intelligence lessons of the operation was that no Staff is complete without the services of a photographic interpreter. Photographic interpretation plays a major part in intelligence concerning enemy defences, and to be dependent for this information upon interpreters situated at a considerable distance in space and time is not acceptable. It is considered, in fact, that all Intelligence Officers should in future have at least some training in this most important subject, and that a specialist should be attached to every operational staff. . . . At the last moment the services of a Photographic Interpretation Officer were lent to A.N.C.X.F. and his work proved invaluable."—A.N.C.X.F., Vol. 1, p. 51.

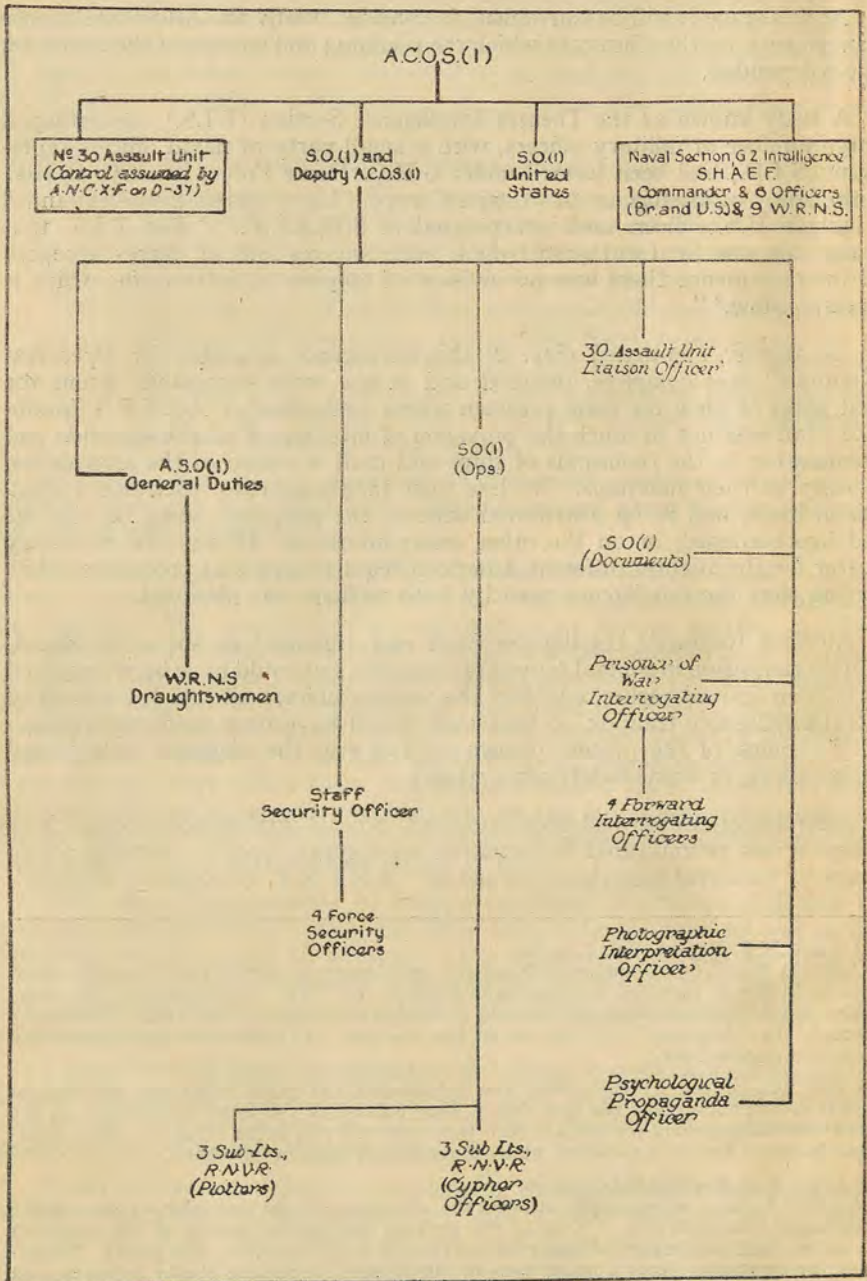


Fig. 4. Intelligence Organization : A.N.C.X.F. Staff.

As regards operational intelligence, continuous watch involving a Cypher and Plotting Staff was kept at A.N.C.X.F. headquarters from D-5 day, and current plots were maintained of enemy surface force dispositions, U-Boat movements and mining activities.

Provision was also made for the capture and utilization of enemy documents and secret equipment in the assault area. For this purpose No. 30 Assault Unit—a joint R.N. and R.M. Commando—was trained for the seizure of intelligence objectives and placed under the operational control of A.N.C.X.F.¹ This unit subsequently proved its worth by the large number of documents and equipment of very high grade intelligence value which it secured and despatched to the United Kingdom², though its work was hampered by the ruthless way in which captured equipment was looted for souvenirs or mishandled from sheer destructiveness.

¹ Initially two main objectives were assigned to No. 30 Assault Unit, viz., (a) the radar station at Douvres and (b) the naval headquarters and arsenal at Cherbourg. Subsidiary tasks were the prevention of demolitions at Port en Bessin, Ouistreham and Coursuelles and examination of radar stations at Arromanches and Englerqueville (west-south-west of Bayeux.) For these purposes the Assault Unit was divided into two forces, the one landing early on D-day in "Juno" area, the other on D+4 in "Utah" area.

Since the operations of No. 30 Assault Unit were of a military rather than a naval character, little mention is made of its activities in this narrative. As things turned out, the capture of Douvres was considerably delayed, and though a section of the unit was present at its fall on 17th June (D+11), the main body concentrated on flying bomb sites in the Carentan Peninsula, subsequently assisting in the capture of N.H.Q., Cherbourg on 26th June.

"Throughout the operations, No. 30 Assault Unit displayed the greatest determination, gallantry and efficiency in carrying out the tasks ordered. Further operations, such as the examination of explosives, mining depots, etc., imposed extremely hazardous and arduous conditions on both officers and men."—A.N.C.X.F. Report, Vol. 1, p. 53.

² Documents of special interest included charts showing the enemy's swept channels, certain cypher and code books, and detailed radar information. Amongst the many important items of equipment were infra-red signalling apparatus, miniature tanks, a night gunsight, a W/T van, vital parts of radar installations and samples of a new German mine.

II. NAVAL PLAN AND OPERATION ORDERS

14. Naval System of Command

Admiral Sir Bertram Ramsay's first concern after his appointment as Allied Naval Commander-in-Chief was to modify the chain of command for the operation so that he could exercise the necessary overall control whilst ensuring that full use was made of the existing organizations of the Home Commands¹, whose Commanders-in-Chief would continue to perform their normal functions². As the general scope and picture of the plan took form a considerable expansion of the Home Command Staffs—particularly that at Portsmouth—became necessary to cope with the heavy additional burdens thrown on them.

The principles of the naval command as finally exercised were as follows:—

- (a) The Allied Naval Commander-in-Chief exercised general command and control over all naval forces other than those providing distant cover and over all naval operations forming a part of the general plan. He exercised direct command within the assault area off the French coast.
- (b) The Commanders-in-Chief, Home Commands, continued to exercise their normal functions and control, except within the assault area, subject to the necessity to give effect to the plan of the Allied Naval Commander-in-Chief. This applied particularly to all movements in or near ports of their commands and in the vicinity of the English coast.
- (c) The Naval Task and Assault Force Commanders initially exercised command of their own forces as regards training, passage, etc., and later exercised operational control within the assault area.

It was also apparent that it would be necessary to place all U.S. Forces taking part under a U.S. Flag Officer, superior to the U.S. Assault and Follow-up Commanders, who would deal direct with the Commander, U.S. Naval Forces in Europe (ComnavEu)³, for administrative purposes, but who would be subordinate to Admiral Ramsay operationally. To this post Rear-Admiral A. G. Kirk, U.S.N., was appointed with the title of Naval Commander, Western Task Force (N.C.W.T.F.)⁴.

¹ See App. "N."

² The introduction of a Flag Officer as Allied Naval C-in-C. to conduct an operation of the nature and extent of "Neptune" naturally called for a careful consideration of the system of command and division of responsibilities as between him and the respective Home C.s-in-C. in whose stations he was called upon to plan and operate. From the outset it was Admiral Ramsay's policy to employ existing organizations, where they existed, rather than to institute new ones—a policy which worked admirably. Admiral Ramsay subsequently remarked that "some resentment might well have been felt by the C.s-in-C., Home Commands, in the Channel, at receiving directions from an authority other than the Admiralty, especially as all three were senior to me. I cannot speak too highly, however, of the unselfish manner in which they accepted the situation. . . . During the operation, the co-ordination between the commands was perfect, and the intricate machine worked as if it had been running for years."

³ Admiral H. Stark, U.S.N.

⁴ Rear-Admiral Kirk was responsible to three higher authorities, viz.:—

(a) For planning, training and active operations to A.N.C.X.F.

(b) For administration and logistics to Commander, U.S. Twelfth Fleet.

(c) For operational matters of interest, to C-in-C., U.S. Fleet (Fleet-Ad. King).

In addition, when U.S. Forces were operating within the limits of a British Home Command, those forces were under the operational control of the C-in-C. of that Home Command. Rear-Admiral Kirk made "no comment as to what other organization might have been possible" but remarked that "the success of a command based on co-operation does not change the old rule that naval operations are most effective when controlled through a simple and direct chain of command."

Admiral Ramsay took over the "X" Staff of the Commander-in-Chief, Portsmouth, with Rear-Admiral G. E. Creasy as Chief of Staff, but it was soon found necessary to increase it very considerably, particularly with regard to the build-up organization, the Mulberry operations and the engineering and technical departments. Rear-Admiral J. W. Rivett-Carnac was appointed as Chief Naval Administration Officer (C.N.A.O.) and Rear-Admiral W. G. Tennant for duties in connection with the "Mulberry/Pluto" organizations (R.A.M.P.). A small United States section was formed to assist in co-ordination with the U.S. Forces taking part¹.

The command of the Assault and Follow-up Forces under Admiral Ramsay, who had his headquarters on shore, was as follows:—

- Western Task Force.* Rear-Admiral A. G. Kirk, U.S.N., Naval Commander, Western Task Force (N.C.W.T.F.). Flag in U.S.S. *Augusta*.
 Force "O" Rear-Admiral J. L. Hall, Jr., U.S.N., Flag in U.S.S. *Ancon*.
 Force "U" Rear-Admiral D. P. Moon, U.S.N., Flag in U.S.S. *Bayfield*.
 Follow-up Force "B" Commodore C. D. Edgar, U.S.N., Broad Pendant in U.S.S. *Maloy*.
- Eastern Task Force.* Rear-Admiral Sir Philip L. Vian, Naval Commander, Eastern Task Force (N.C.E.T.F.). Flag in H.M.S. *Scylla*.
 Force "S" Rear-Admiral A. G. Talbot, Flag in H.M.S. *Largs*.
 Force "G" Commodore C. E. Douglas-Pennant, Broad Pendant in H.M.S. *Bulolo*.
 Force "J" Commodore G. N. Oliver, Broad Pendant in H.M.S. *Hilary*.
 Follow-up Force "L" Rear-Admiral W. E. Parry.

Until the army was firmly established ashore the command of each Naval Task and Assault Force and of the military formations embarked was exercised by their respective naval commanders.

Rear-Admiral F. H. Dalrymple-Hamilton (C.S. 10) and Rear-Admiral W. R. Patterson (C.S. 2), whose squadrons formed part of the bombarding forces of the Eastern Task Force, waived their seniority while in the assault area and acted under the instructions of the Task and Assault Force Commanders. In the American area, Rear-Admirals M. L. Deyo and C. F. Bryant, U.S.N., acted in a similar capacity. Shortly before the start of the operation Rear-Admiral Jaujard hoisted his flag in the *Georges Leygues*. At that late date it might have caused confusion to include him in the chain of command of the Western Task Force, and she acted as a private ship, except as regards administration of the Free French ships.

¹ The formation of a fully integrated British/U.S. Naval Staff was considered, but shortage of U.S. Officers prevented this being done. Nearly every outside naval command and agency that had to be dealt with was British, and in the event the small U.S. Section of the Staff proved adequate to give the necessary advice and explanation with regard to differing U.S. and British practice.

In May, 1944, Rear-Admiral Bieri, U.S.N., arrived from Washington to be attached to A.N.C.X.F.'s Staff; but by then there was no operational requirement for such an appointment, and he was attached to the Future Planning Section of A.N.C.X.F.'s Staff at Supreme Headquarters as Deputy C.O.S. (U.S.).

15. Special Features of Operation

The Staff of A.N.C.X.F. as well as those of the Task Force and Assault Force Commanders included officers who had had previous experience of planning amphibious operations and were familiar with the procedure adopted in the Mediterranean in the landings of 1942-3. This was fortunate, as the planning procedure was thus generally understood, and the necessary attention could be focussed on the establishment of organizations demanded by the special nature of Operation "Neptune." These included the "Build-up Control Organization" (B.U.C.O.)—an inter-service organization at Portsmouth to adjust the movements of ships and craft of all types and their military loads, designed to meet the requirements of the Supreme Allied Command for the build-up of the Expeditionary Force; the "Turn Round Control" (T.U.R.C.O.)—an inter-service body set up in certain ports to assist the Naval Commanders-in-Chief and Flag Officers in Charge in the "turn round" of shipping in the ports of the United Kingdom; and the "Combined Operations Repair Organization" (C.O.R.E.P.)—an organization (with headquarters at the Admiralty) established in the major ports for co-ordinating and allocating to yards, for repairs, all damaged and defective ships and craft (including Red Ensign ships) employed in the operation.

Other administrative problems never before encountered on such a gigantic scale included:—

- (a) Training, accommodation, and general arrangements for the landing craft crews during the suspense and assembly periods.
- (b) Shelter for the craft of the ferry service; accommodation and facilities for their crews on the far shore.
- (c) Provision of the large numbers of personnel.
- (d) Evacuation of army casualties.
- (e) Overhaul and repair of assault ships in preparation for D-day¹.

In addition there were problems in connection with the pre-fabricated harbours (Mulberries)² and the supply of petrol to the Expeditionary Forces on shore ("Pluto"). At Admiral Ramsay's request, Rear-Admiral W. G. Tennant was appointed to his staff to take charge of these two organizations. The harbours were to be constructed of sunken concrete caissons (known as Phoenixes) and from the outset the Rear-Admiral was uncertain of their ability to withstand even a moderate gale. Moreover, it was estimated that it would require at least 14 days to get them in place. At his suggestion,

¹ Admiral Ramsay subsequently remarked: "The long time available for administrative planning, coupled with the fact that the resources of the United Kingdom were available to A.N.C.X.F. enabled most of these problems to be solved, but this exceptionally favourable situation is unlikely to be repeated in another theatre." A.N.C.X.F. Report, Vol. 1, p. 27.

² The original designs for these harbours "were prepared, for some extraordinary reason by the War Office. It was apparent soon after taking up my appointment that much greater naval supervision of the preparations and an experienced naval staff to conduct the operation was necessary. . . . It also soon became apparent that the programme of completion for the Phoenix and Whale Mulberry units would not be kept. The gear provided by the War Office was in no state to be towed, nor was towing gear provided. All the riggers in Chatham Dockyard were put on to this at high pressure to make good the deficiency. This shows how essential it is for the Admiralty to be concerned at the outset of any seagoing project." A.N.C.X.F. Report, Vol. 1, pp. 6, 27.

therefore, 70 obsolete ships¹ were prepared as blockships, which could be placed in two or three days and thereby speedily provide some shelter over the 40 miles of coast before the "Phoenix" breakwaters could be built.²

The supply of fuel in sufficient quantities to the armies on shore raised a special problem which would increase in importance and difficulty as the build-up progressed and the armies advanced from the coast.

This was to be done in two ways:—

- (a) By laying four ship-to-shore pipe lines for tankers to discharge oil direct to shore storage tanks from off shore moorings. Four such pipe lines—two in each Task Force area—known as "Tombola" (6-in. internal bore) and "Amethea" (10-in. internal bore) were to be completed by D+18, and a large tanker could then discharge 600 tons per hour.
- (b) By laying 10 pipe lines completely across the English Channel from Sandown Bay to Querqueville (west of Cherbourg). These pipe lines were of two kinds: "Hais," a flexible pipe similar to electric cable but without the inner core, laid by cable-laying vessels, and "Hamel," flexible steel pipe wound round floating drums, 50 ft. in diameter, which unreeled as they were towed across the water. These pipe lines were to be completed by D+75.

A force known as "Pluto"³ was formed to carry out these projects and placed under the command of Captain J. F. Hutchings, D.S.O., O.B.E., R.N.

From the early stages much attention was paid to the basic naval organizations to be established on the "Far Shore" and their liaison with army authorities. Rear-Admiral J. W. Rivett-Carnac, the Chief Naval Administrative Officer on Admiral Ramsay's staff, was appointed as Flag Officer, British Assault Area (designate); he was thus able to continue the detailed planning for the naval organization ashore which he had commenced while serving on A.N.C.X.F. staff. It was not till a good deal later that a parallel appointment was made for the United States area, when Rear-Admiral J. Wilkes, U.S.N., was nominated as "Flag Officer, West."

16. Issue of Naval Plan

From the naval point of view once the all important question of whether the landing should take place in darkness or daylight had been settled, the plan developed naturally and largely consisted in determining and co-ordinating the movements of large numbers of convoys and groups of ships during the first few days⁴; but uncertainty as to what naval forces would be available

¹ Nearly half of this number was provided by the United States.

² Rear-Admiral Tennant's foresight was proved in the gale that blew from 19th to 22nd June, as these blockships alone gave some shelter to hundreds of landing craft and barges on a lee shore and greatly reduced the number that was damaged, as well as making it possible to continue unloading on a small scale. One of these shelters, which were known as "Gooseberries," was constructed in each assault force area (*see* Sec. 62. *postea*).

³ Pipe Line Under The Ocean.

⁴ Admiral Ramsay remarked that this had to be arranged on the Naval C.-in-C.'s level, owing to the closely knit nature of the operation and the small area in which all movements had to take place. "The very considerable detail to which A.N.C.X.F.'s operation orders descended . . . was foreign to the practice in the U.S. Navy, where the orders of the higher levels of commands are largely confined to the definition of tasks and the issuing of directives. Despite their frank criticism, both before and after the operation, it is still believed that the large size of the operation orders was unavoidable . . . The attack had to be made on a narrow front and the ports and anchorages in the Isle of Wight area were jointly used by the British and the U.S. Co-ordination could only therefore, be achieved on the highest naval command level." A.N.C.X.F. Report, Vol. 1, p. 28.

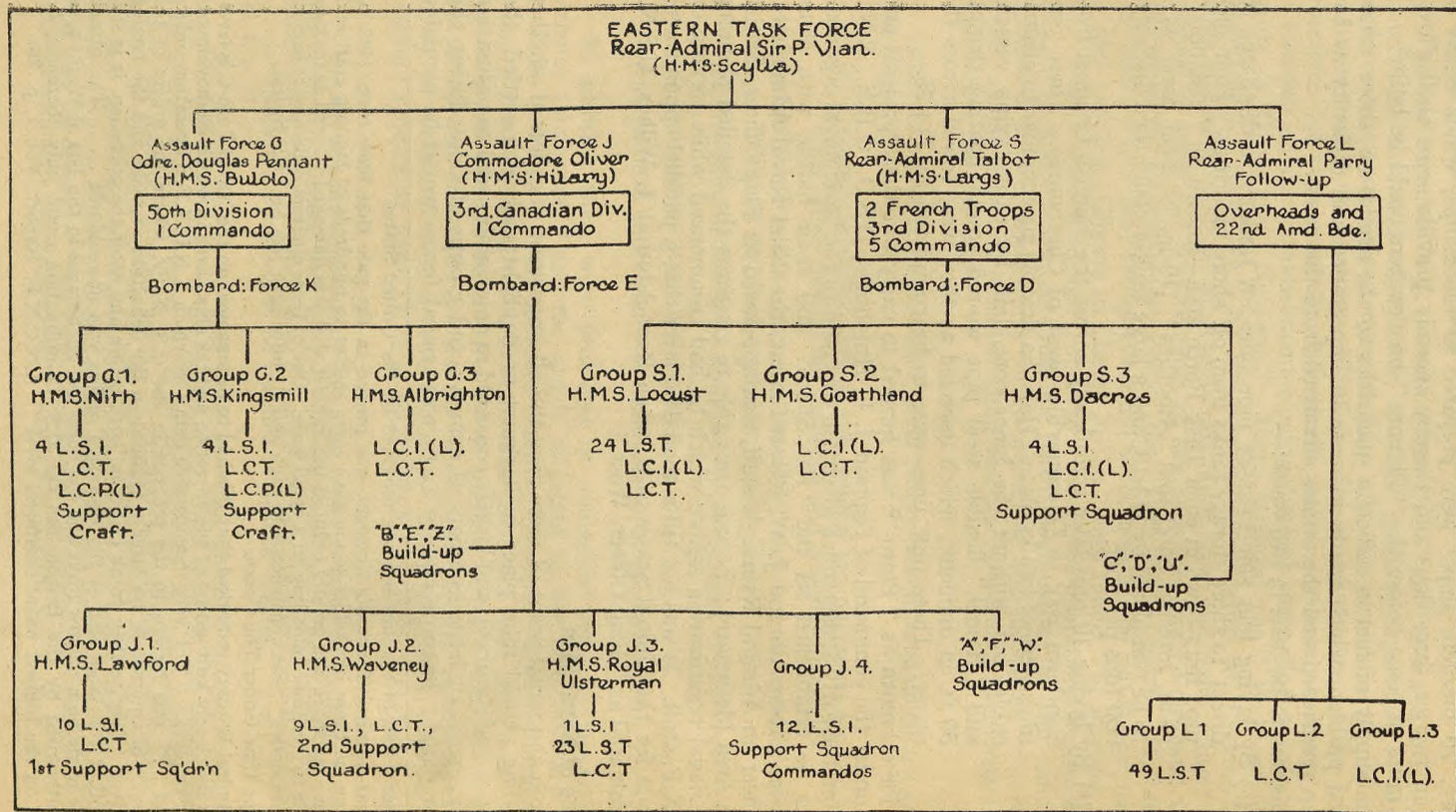


Fig. 5. Organization of Eastern Task Force.

for the operation added considerably to the difficulties of planning. The extension of the combined plan to include a five-divisional front necessitated an all-round increase of naval strength and for some time there was anxiety as to the possibility of meeting the increased demand. A proportion of the landing craft was made available from the U.S.A. on 7th February, but it was not until 20th March that the allocation of the total lift was settled.

As regards naval forces, A.N.C.X.F. had forwarded a preliminary estimate of his requirements in December, 1943¹. This was substantially increased as planning proceeded on the new basis; with the assistance of the United States², however, the necessary forces were eventually found³.

Another difficulty experienced during the planning was due to the relatively late date at which the air forces were able to make known their detailed intentions. It was important that the naval forces should be aware of particulars of fighter protection, as well as the routing of airborne forces, but it proved impossible to obtain some of this information until after some naval forces had actually sailed for the operation. The routes chosen for the airborne forces entailed flying over, or in close proximity to the assault forces during hours of darkness. Total restrictions on A.A. gunfire by these forces were imposed, but Admiral Ramsay was careful to explain that these restrictions could not be guaranteed should a simultaneous enemy air attack develop—a misgiving unfortunately justified by the event.

Despite these uncertainties a naval outline of the operation was produced on 15th February, 1944—just a fortnight after the issue of the initial joint plan; and by 28th February sufficient was known of the naval forces available to issue a naval plan, though in some cases escorts for convoys, etc., had to be left blank.

After the issue of the plan, intelligence of enemy minelaying in the assault area which came in during March gave great prominence to minesweeping—considerations as to which had hampered the plan from the outset—and necessitated certain modifications.

17. General Outline of Plan

Broadly, the naval plan was as follows:—

As mentioned previously the assault forces were organized in two main task forces—the *Western Task Force* (American), consisting of two assault forces, known as "O" and "U," and a follow-up force "B," destined for the western assault area, and the *Eastern Task Force* (British), consisting of three assault forces, "G," "J" and "S," and a follow-up force "L," destined for the eastern assault area. These task forces were organized as shown in Figs. 5 and 6.

¹ Estimate by A.N.C.X.F. in December, 1943:—

2 battleships.	6 Fleet minesweeping flotillas.
3 monitors or battleships.	6 M.M.S. flotillas.
15 cruisers.	64 A/S trawlers.
87 destroyers.	108 motor launches.
20 old destroyers.	120 motor torpedo boats and motor gunboats.
48 frigates or corvettes.	

² Admiral Ramsay subsequently stated that he "was personally always sure that in due course U.S. naval forces would be provided for "Neptune," although it was understood that it had been agreed at the Cairo Conference that all forces should be found by the British."

³ See Sec. 18.

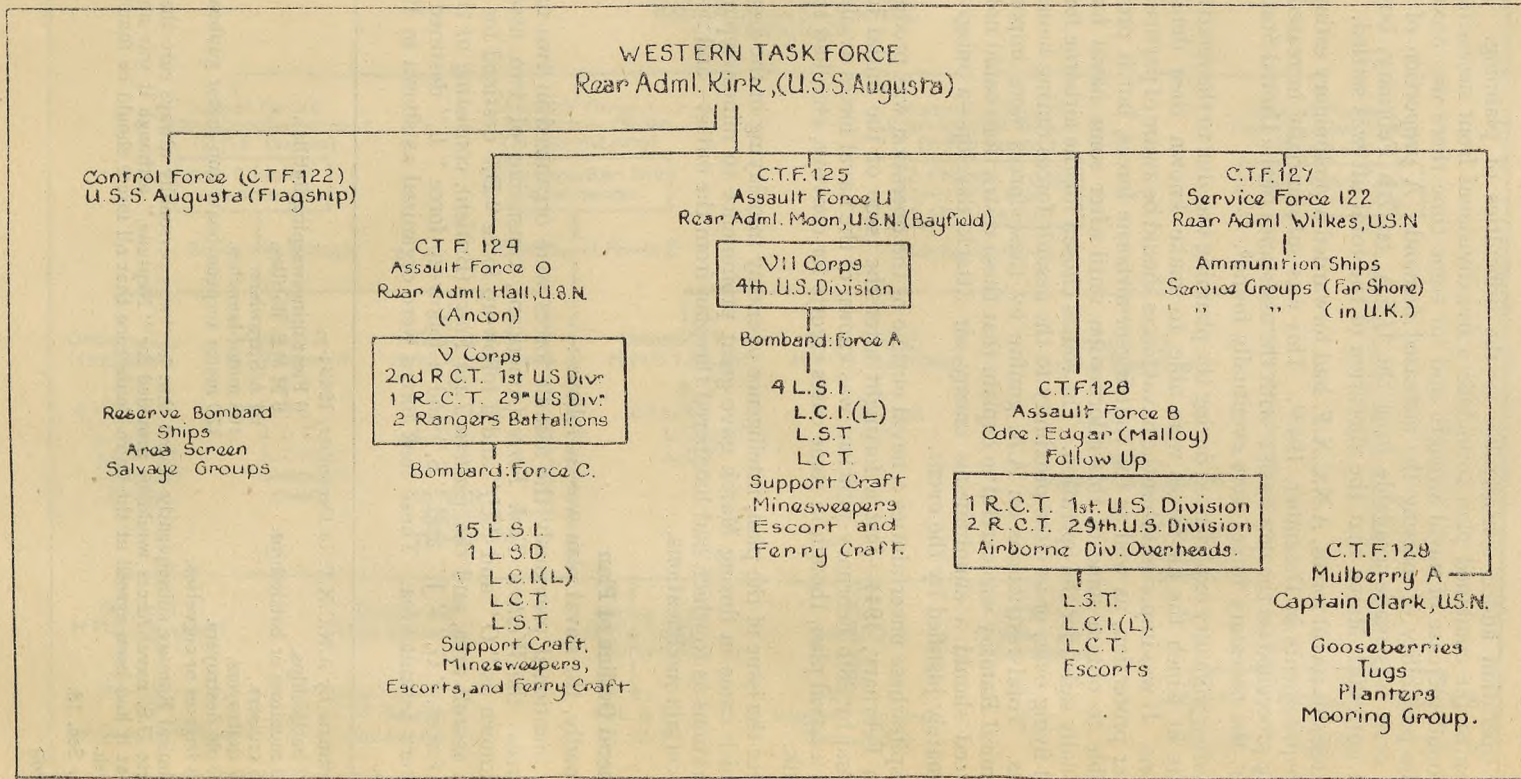


Fig. 6. Organization of Western Task Force.

Each assault force consisted of sufficient landing ships and craft of various types to transport and land approximately a division, as well as special craft for close range supporting fire, etc., and fleet minesweepers to sweep it through the enemy mined area. Each convoy¹ was escorted and four divisions of destroyers supplied close cover to the flanks of the cross Channel routes, while distant cover was given by the Home Fleet and forces detailed by the Commanders-in-Chief Plymouth and Western Approaches under the general direction of the Admiralty. In addition to the operation of four anti-submarine support groups by the Plymouth Command, elaborate arrangements were made by the Admiralty and Headquarters, Coastal Command, to "flood the western approaches to the channel with aircraft" as protection against U-Boat attack. A bombarding force—including battleships—was detailed to support each task force.

After loading and assembling in the southern ports of Great Britain, the forces were to sail for an area to the south-eastward of the Isle of Wight in accordance with a detailed time table, and from thence to the "lowering positions" off the assault beaches.

The assaults were to be immediately preceded by heavy naval and air bombardment. The establishment of the assault forces ashore was to be followed as rapidly as possible by the follow-up forces, the construction of the artificial harbours and the build-up.

18. Naval Forces Taking Part

The following table shows the naval forces assigned to the operation and their allocation for the assault phase:—

Type.	Western Task Force.					Eastern Task Force.					In reserve (A.N.C.X.F.).	Home Commands.	Total.	
	As required.	Force "O".	Force "U".	Force "B".	Rangers.	Commandos.	Force "S".	Force "G".	Force "J".	Force "L".				As required.
BOMBARDING SHIPS (139)														
Battleships ..	—	2	1	—	—	—	2	—	—	—	1	1	—	7
Monitors ..	—	—	1	—	—	—	1	—	—	—	—	—	—	2
Cruisers ..	2	3	5	—	—	—	3	4	2	—	2	—	—	23
Gunboats ..	—	—	1	—	—	—	1	1	—	—	—	—	—	3
Fleet Destroyers " Hunt "	2	12	16	—	—	2	10	9	7	—	—	20	—	78
Destroyers	—	3	—	2	—	—	3	6	4	1	—	7	—	26
ESCORTS (226)														
² Escort Destroyers	—	2	—	2	—	—	1	—	3	1	1	—	13	23
Destroyer Escorts (U.S.)	—	3	2	1	—	—	—	—	—	—	—	—	—	6
² Sloops ..	—	—	—	—	—	—	1	3	—	—	—	—	10	14
² Frigates ..	—	2	2	—	—	—	3	4	2	2	3	—	19	29
Corvettes ..	—	—	2	2	—	—	3	3	3	5	3	—	50	71
Patrol Craft(U.S.)	—	9	7	2	—	—	—	—	—	—	—	—	—	18
A/S Trawlers ..	—	3	3	3	—	—	6	6	6	3	—	30	—	60

¹ Each British Assault Force sailed in about 16 groups; the American Assault Forces in about 4 groups each.

² Exclusive of A/S Escort Groups, see infra.

3. One as H.Q. ships.

(C22996)

4. Two as H.Q. Ships.

Type.	Western Task Force.					Eastern Task Force.					As required.	In reserve (A.N.C.X.F.)	Home Commands.	Total.
	As required.	Force "O."	Force "U."	Force "B."	Rangers.	Commands.	Force "S."	Force "G."	Force "J."	Force "L."				
						MINESWEEPERS ¹ (287)								
Fleet														
Minesweepers	—	17	25	—	—	—	24	16	16	—	—	—	—	98
B.Y.M.S. ..	—	10	—	—	—	—	10	10	10	—	—	—	—	40
Y.M.S. (U.S.) ..	—	—	16	—	—	—	—	—	—	—	—	—	—	16
M.M.S. ..	—	10	10	—	—	—	10	10	10	—	—	20	—	70
LL Trawlers ..	—	—	—	—	—	—	—	—	—	—	—	20	—	20
Danlayers ..	—	8	8	—	—	—	10	9	8	—	—	—	—	43
						SUBMARINES (2)								
Midgets ..	—	—	—	—	—	—	1	—	1	—	—	—	—	2
						MINELAYERS ² (4)								
Surface ..	—	—	—	—	—	—	—	1	—	—	1	—	2	4
						SEAPLANE CARRIER ³ (1)								
—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
						COASTAL FORCES (495)								
Motor Torpedo Boats (M.T.B.s)	—	1	1	—	—	—	—	—	—	—	17	—	139	158
U.S., M.T.B.s (P.T.) ..	31	1	1	—	—	—	—	—	—	—	—	—	—	33
Motor Gunboats (M.G.B.) ..	—	—	—	—	—	—	—	—	—	—	6	—	—	6
Steam Gunboats (S.G.B.) ..	6	—	—	—	—	—	—	—	—	—	—	—	—	6
U.S., Submarine Chasers (S.C.)	3	6	7	2	—	—	—	—	—	—	—	—	—	18
Motor Launches (M.L.) ..	—	12	7	—	—	—	7	12	12	—	—	—	90 ⁴	140
Harbour Defence Motor Launches (H.D.M.L.) ..	—	2	3	—	—	—	2	2	2	—	—	—	31	42
U.S. Coastguard Cutters (U.S.C.G.) ..	—	15	15	—	—	—	10	10	10	—	—	—	—	60
Rescue Motor Launches (R.M.L.) ..	—	—	—	—	—	—	—	—	—	—	—	—	32	32
						A/S ESCORT GROUPS (58) ⁵								
Escort Carriers	—	—	—	—	—	—	—	—	—	—	—	—	3	3
Destroyers ..	—	—	—	—	—	—	—	—	—	—	—	—	14	14
Sloops ..	—	—	—	—	—	—	—	—	—	—	—	—	3	3
Frigates ..	—	—	—	—	—	—	—	—	—	—	—	—	38	38

¹ In addition, 72 motor launches shown under Coastal Forces *infra*.

² One as Emergency Repair Ship (Force "G"), one as H.Q. ship, F.O.B.A.A., two as M/L in Operation "Maple." In addition 22 motor launches and 36 M.T.B.s shown under "Coastal Forces" *infra*, and Aircraft from Bomber Command.

³ As L.S.E.

⁴ 36 M.L.s (M/S) were attached to the Fleet Minesweeping Flotillas for the assault.

⁵ These forces were not under the operational control of A.N.C.X.F. They played an important part in the operation, however, and for this reason are included in the above statement.

NAVAL PLAN AND OPERATION ORDERS

Sec. 18

Type.	Western Task Force.					Eastern Task Force.					As required.	In reserve (A.N.C.X.F.)	Home Commands.	Total.	
	As required.	Force "O."	Force "U."	Force "B."	Rangers.	Commandos.	Force "S."	Force "G."	Force "J."	Force "L."					
LANDING SHIPS (L.S.) (302)															
L.S.H.	1	—	—	—	—	—	4	4	2	—	—	—	—	—	185
L.S.I.	9	4 ¹	—	6	6	4	8	18	—	—	—	—	—	—	55
L.S.T.	24	30	52	—	—	24	29	24	53	—	—	—	—	—	236
L.S.E.	1	1	—	—	—	—	—	1	—	—	—	1	—	—	4
L.S.D.	1	—	—	—	—	—	1	—	—	—	—	—	—	—	2
MAJOR LANDING CRAFT (L.C.) (1,211)															
L.C.H. ²	9	6	—	—	—	2	5	4	—	—	—	—	—	—	26
L.C.I. (L) ..	33	47	13	—	—	52	22	23	19	—	—	—	—	—	209
L.C.I. (S) ..	—	—	—	—	39	—	—	—	—	—	—	—	—	—	39
L.C.T.	126	150	48	—	—	132	132	132	48	—	—	—	—	—	768
L.C.T. (A) ..	8	8	—	—	—	8	16	8	—	—	—	—	—	—	48
L.C.T. (R) ..	9	5	—	—	—	5	8	9	—	—	—	—	—	—	36
L.C.T. (C.B.)	2	—	—	—	—	1	—	2	—	—	—	—	—	—	5
L.C.T. (H.E.)	8	—	—	—	—	—	—	8	—	—	—	—	—	—	16
L.C.F.	7	4	—	—	—	4	7	7	—	—	—	—	—	—	29
L.C.G. (L) ..	5	4	—	—	—	3	6	7	—	—	—	—	—	—	25
L.C.S. (L) (2) and (3)	—	—	—	—	—	3	4	3	—	—	—	—	—	—	10
MINOR LANDING CRAFT (L.C.) (250)															
L.S.C. (L) (1) ..	—	—	—	—	—	—	—	4	—	—	—	—	—	—	4
L.C.S. (M) ..	—	—	—	2	—	—	16	8	—	—	—	—	—	—	26
L.C.S. (S) ..	24	12	—	—	—	—	—	—	—	—	—	—	—	—	36
L.C.A. (H.R.) ..	—	—	—	—	—	9	18	18	—	—	—	—	—	—	45
L.C.A.	36	18	—	40	42	78	134	154	—	—	—	—	—	—	406
L.C.V.P.	124	65	—	—	—	—	—	—	—	—	—	—	—	—	189
L.C.P. (L) (Smoke)	36	18	—	—	—	18	36	36	—	—	—	—	—	—	144
L.C.P. (Survey)	—	—	—	—	—	2	2	6	—	—	—	—	—	—	10
FERRY SERVICE LANDING BARGES (L.B.), etc. (531)															
L.B. Flak ..	—	—	—	—	—	4	7	4	—	—	—	—	—	—	15
L.B.V. (2) ..	72	36	—	—	—	36	42	42	—	—	—	—	—	—	228
L.B.E.	14	9	—	—	—	9	12	15	—	—	—	—	—	—	59
L.B.K.	2	2	—	—	—	2	2	2	—	—	—	—	—	—	10
L.B.W.	5	3	—	—	—	4	4	4	—	—	—	—	—	—	20
L.B.O.	20	12	—	—	—	16	20	24	—	—	—	—	—	—	92
Fuelling Trawlers	10	4	—	—	—	5	7	9	—	—	—	—	—	—	35
Rhino Ferries ..	20	11	—	—	—	9	17	15	—	—	—	—	—	—	72
MINOR LANDING CRAFT (1,125)															
L.C.V.P.	172	88	—	—	—	96	150	144	—	—	—	—	—	—	650
L.C.M.	139	67	—	—	—	48	96	96	—	—	—	—	—	—	446
L.C.M. (Sal.) ..	12	6	—	—	—	—	—	—	—	—	—	—	—	—	18
L.C.P. (R)	—	—	—	—	—	—	—	6	—	—	—	—	—	—	6
L.C.E.	—	—	—	—	—	1	2	2	—	—	—	—	—	—	5

¹ One acting as H.Q. ship.² U.S., L.C.C. (Control).³ In addition to 8 warships previously listed.

(C22996)

c 3

Sec. 18-19

OPERATION "NEPTUNE"

The ferry service was to be augmented by 190 United States vehicle and personnel landing craft (L.C.V.P.) and other minor landing craft, as well as 220 tank landing craft (L.C.T. (5) and (6))—after they had taken part in the assault.

In addition to the forces enumerated, which were required for the actual assault and follow-up phases of the operation, were the large number of ships and craft of many types necessary for the build-up and Mulberry and "Pluto" projects.

These included :—

ANCILLARY SHIPS AND CRAFT (423)			
Tugs	216	Surveying Ships	4
Buoy laying ships	5	Telephone cable ships	6
Control ships (Mulberries, etc.)	89	Mooring force	31
Salvage and wreck disposal vessels	42	Rescue Tugs	814
Force "Pluto"	33	F.D.T.s	3
"Eagle" ships (A.A.)	9	Smoke making trawlers	6060
Depot and repair ships	6	Miscellaneous	296
MERCHANT SHIPS (1,260)			
Personnel ships (excluding L.S.I.)	18	Ammunition carriers	76
M.T. ships	224	Ammunition supply issuing ships	18
M.T. coasters	64	(A.S.I.S.)	12
Store coasters	122	Liberty store ships	78
Tankers and colliers	15049	Hospital ships and carriers	10
Blockships	596	Accommodation ships	10
Cased petrol carriers	136	Miscellaneous	205

These large forces, totalling over 7,000² vessels, clearly could not be mustered unknown to the enemy. It was therefore of supreme importance to conceal from him when and where the blow would fall, and much depended on the cover plan and security arrangements.

19. Cover and Deception

"Because the power of manœuvre at sea was so limited and because it was vital to hold the enemy reserves in sectors other than that to be assaulted as long as possible, the need for cover and deception was paramount, both strategically during the preparatory period and tactically during the approach³."

¹ Including 4 warships.

² Naval Units	1,206
L.S., L.C., etc., including ferry service	4,127
Ancillary craft	423
Merchant ships	1,260
	7,016

The figures in the foregoing table are the gross figures as planned. They will not necessarily agree exactly with those in Apps. "A," "B" and "C," which have been compiled from the current Pink, Red and Green Lists and various operation orders and reports; these appendices show the net numbers of ships and craft operationally fit at the start of the operation. Pooled reserve of landing craft, etc., and new construction which became available as the operation proceeded have not been included.

³ A.N.C.X.F.'s Report, Vol. 1, p. 6.

4. In addition 6 warships & 3 L.S.F. previously listed.
 5. D.V.K. ws, Army harbour launches, fast motor boats etc.
 6. Including 4 warships.

The strategic cover plan was prepared by Supreme Headquarters Allied Expeditionary Force (S.H.A.E.F.) in agreement with the London Controlling Section. Initially it was designed to conceal the general state of preparedness of the invasion forces, so as to indicate a later target date for the real operation. Subsequently, when preparations were well advanced, an appropriate display of strength in the south-east, together with concealment in the west and south, pointed to a threat to the Pas de Calais.

Naval wireless played an important part in the cover plan by simulating assault forces in areas where none was situated, and by simulating large scale exercises implying the presence of the assault forces in harbour on D-1 day while they were actually at sea.

Tactically, a naval diversion was carried out by light craft in the Straits of Dover to support an air bombardment in this area synchronized with the main assaults, and a similar diversion was made in the neighbourhood of Cape d'Antifer. In each of these and also off Cape Barfleur radio counter measures were employed by both air and surface craft to give an appearance to the enemy radio similar to that presented by the real forces¹.

A somewhat unusual detail of the cover plan lay in the practice mobilization of approximately eighty Press Correspondents, and their embarkation in their respective ships for 24 hours. This was carried out on 22nd May, to obviate the danger to security that might arise when a large number of correspondents disappeared from their usual haunts just prior to D-day².

The most ingenious cover plan could not have succeeded without security being maintained, and much attention was paid to this aspect of the operation. The highest degree of secrecy was of course enforced throughout all Service establishments. Instructions issued by the Inter-Services Security Board and Security Services were carefully observed, and major breaches of security before D-day were rare. Such as did occur were promptly dealt with and certainly did not benefit the enemy³.

As D-day approached, at General Eisenhower's request, the British Government introduced broader security measures, affecting the general public. On 9th February all civilian travel between Britain and Ireland was suspended, in order to prevent leakage of information through Dublin, where German agents continued officially to represent their Government and on 1st April a visitors' ban was imposed on the coastal areas where the assault was being mounted, extending to a depth of 10 miles inland. This was followed on 17th April by the unprecedented step of restricting Diplomatic privileges. All movement of foreign diplomats or their couriers into or out of the United Kingdom was prohibited, and correspondence hitherto immune was subjected to censorship⁴.

¹ "It is now known that these were very successful and were an instrumental factor in enabling our forces to continue for so long towards the enemy coast before their composition could be determined." A.N.C.X.F. Report, Vol. 1, p. 6.

² Several useful lessons were learned from this exercise, which proved that this item of cover deception had been highly necessary. A.N.C.X.F. Report, Vol. 1, p. 33.

³ Admiral Ramsay subsequently remarked: "the very highest satisfaction may be felt that despite the many hundreds who were for months aware of all the details of the plan, so far as is known there was no leakage."

⁴ This ban was maintained until 17th June.

Sec. 20

OPERATION "NEPTUNE"

20. Loading and Assembly Plan

The plan for loading and assembly of the forces, which was laid down in great detail, may be summarised as follows:—

(a) *Assault and Follow-up Forces*

<i>Force.</i>	<i>Load.</i>	<i>Assemble.</i>
<i>Force "L"</i>		
1 Brigade group ..	Tilbury	Southend, Sheerness.
2 Brigade groups ..	Felixstowe	Harwich.
<i>Force "S"</i>		
2 Brigade groups ..	Portsmouth	Portsmouth, Spithead.
1 Brigade group ..	Newhaven, Shoreham ..	Newhaven, Shoreham.
<i>Force "J"</i>	Southampton, Portsmouth	Southampton, Solent, Spithead.
<i>Force "G"</i>	Southampton	Southampton, Solent, Spithead.
<i>Force "O"</i>	Weymouth, Portland ..	Weymouth, Portland, Poole.
<i>Force "U"</i>		
1 R.C.T. ¹	Torquay, Brixham, Dart- mouth East.	Torbay, Brixham, Dart- mouth.
1 R.C.T. ¹	Dartmouth West	Dartmouth, Brixham.
1 R.C.T. ¹	Plymouth East	Salcombe.
<i>Force "B"</i>		
1 R.C.T. ¹	Plymouth West	Plymouth.
2 R.C.T. ¹	Falmouth	Falmouth, Helford River, Fowey.
<i>First U.S. Build-up Division.</i>	Bristol Channel Ports ..	Bristol Channel Ports.

(b) *Attached Forces*

<i>Force.</i>	<i>Assembly Ports.</i>
Covering forces, destroyers	Plymouth, Portsmouth.
Covering forces, coastal forces	Dartmouth, Portland, Newhaven, Dover.
Landing craft of ferry service	Chichester, Langston Harbour, Poole.
Tugs, salvage vessels, accommodation ships, etc. ..	Ports between Falmouth and Southend.
Escorts and minesweepers	With their convoys.
E.T.F. bombarding ships	Clyde.
W.T.F. <i>Bombarding Ships.</i>	Belfast.
Blockships ("Corncocks")	Oban.

¹ Regimental Combat Team, the U.S. equivalent of a Brigade Group.

<i>Force.</i>	<i>Assembly Ports.</i>
Mulberry Units ¹ :—	
“ Phoenix ”	Selsey, Dungeness, Reserve in the Thames.
“ Bombardon ”	Portland.
“ Whale ”	Solent and Selsey.
Tugs	Portland and Spithead.

(c) *Pre-loaded Merchant Vessels*²

<i>Type.</i>	<i>Load.</i>	<i>Assemble.</i>
Stores coasters	89, Thames.. .. .	68, Thames.
	12, Grimsby	55, Solent.
	104, Bristol Channel	82, Bristol Channel.
M.T. ships	37, London, Tilbury	London, Southend.
	37, Bristol Channel	Bristol Channel.
Personnel ships	6, Tilbury	Tilbury.
	9, Bristol Channel	Bristol Channel.

21. Passage Arrangements

All forces for the assaults were to be sailed by the Commanders-in-Chief, Home Ports, and Flag Officers in Charge in accordance with the detailed requirements of task force and assault force commanders to carry out the programme of A.N.C.X.F. Each assault force was to be accompanied by fleet minesweepers and the various convoys were to follow the appropriate coastal channels to an area to the south-eastward of the Isle of Wight³ (area “ Z ”). The bombarding forces were to proceed independently.

An enemy mine barrage was known to exist south of Lat. 50° N. ; through it, 10 channels (numbered 1 to 10 from west to east) were to be swept and buoyed⁴ to the lowering positions in the respective assault areas off the French coast, as follows :—

<i>Area.</i>	<i>Approach Channels.</i>	<i>Assault Force.</i>	<i>Bombarding Force.</i>
“ Utah ”	Nos. 1, 2	“ U ”	“ A ”
“ Omaha ”	Nos. 3, 4	“ O ”	“ C ”
“ Gold ”	Nos. 5, 6	“ G ”	“ K ”
“ Juno ”	Nos. 7, 8	“ J ”	“ E ”
“ Sword ”	Nos. 9, 10	“ S ”	“ D ”

In general, one channel of each assault force was assigned to fast convoys, the others to slow convoys.

¹ “ Phoenix ” .. 200 ft. concrete caissons for use as breakwaters, 2,000-6,000 tons.

“ Bombardon ” .. 200 ft. cruciform steel structures ; moored end on to form a shelter in an outer deep-water anchorage outside the “ Phoenix ” breakwater.

“ Whale ” .. Military piers and pierheads, up to 2,000 tons, for discharge of coasters, and L.S.T./L.C.T. direct to shore.

² In addition empty M.T. ships assembled at Southend and Bristol Channel awaiting loading berths.

³ Except Force “ U,” for which a special channel was swept from Portland Bill direct to the entrance to the approach channels. The use of the normal coastal channels contributed to the security of the operation, since the enemy were accustomed to a large number of ships moving in them.

⁴ See Sec. 24, “ Minesweeping,” *postea*.

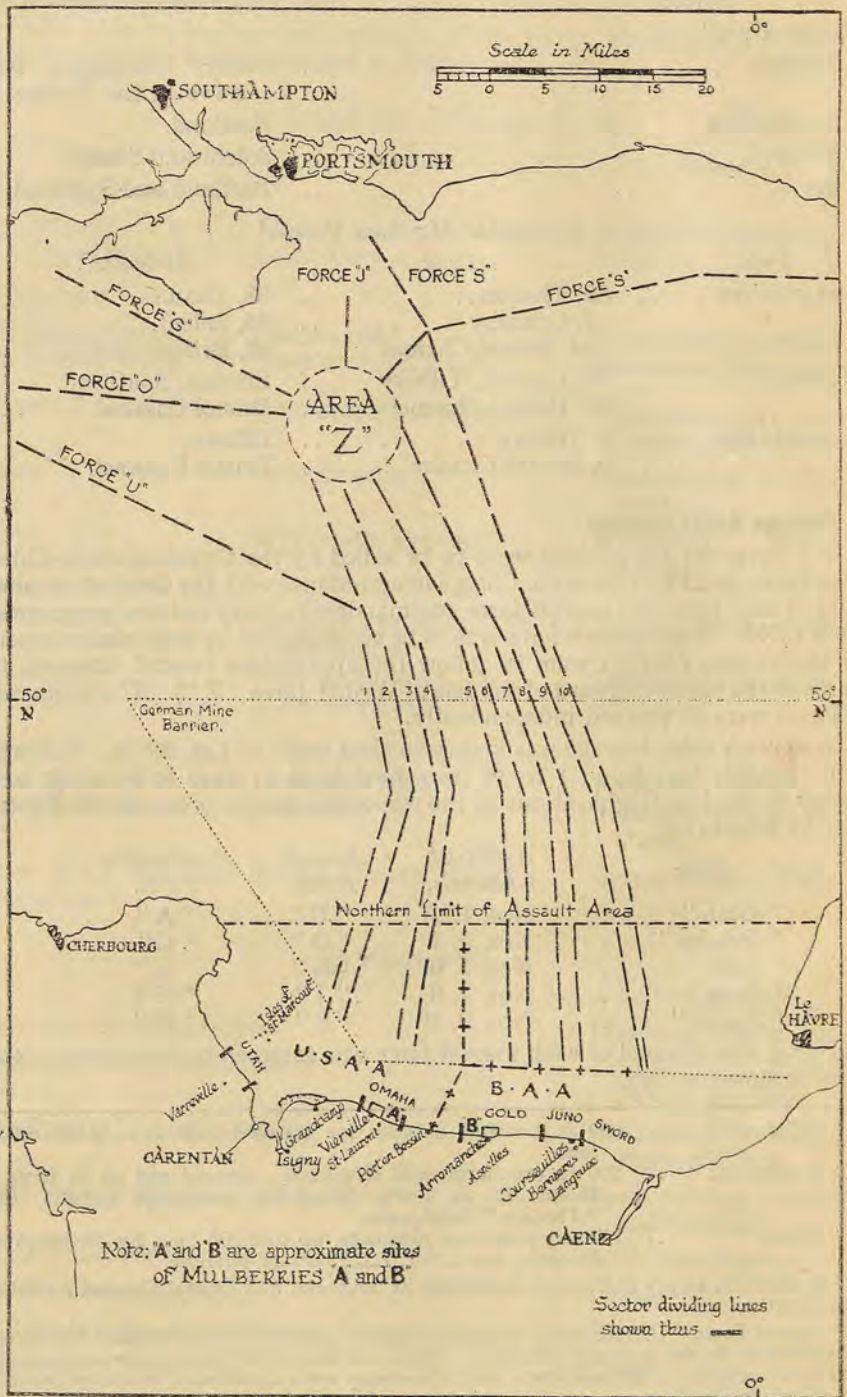


Fig. 7. Sketch Map of Operations showing Routes of Assault Forces.

Should enemy forces be encountered, the policy was evasion. Ships were cautioned that surprise for the whole operation would not necessarily be lost by an outlying unit falling in with the enemy.

In case of attack of any kind—air, surface or U-Boat—convoys were to maintain their course and speed while in the swept channels. If losses occurred, survivors were to be dealt with by rescue craft only¹; other ships in the vicinity were to drop rafts *en passant*, but were forbidden to stop.

The "lowering positions" were to be south of the known mined area and as near the beaches as it was estimated the enemy long range batteries would permit (*see* plan A). These were distant from the shore approximately 7 miles in the Eastern and 11 miles in the Western Task Force area.

The identification of the beaches in areas "Juno" and "Sword" presented special difficulties, and to assist the leading landing craft, two midget submarines were detailed to mark the approaches to them.

22. Protection on Passage.

(Plan 3)

As already mentioned (*see* Sec. 17) a close escort was provided for each convoy, but these escorts were necessarily weak²—owing to the difficulty of finding sufficient craft for this duty—and reliance was mainly placed in denying the enemy access to the convoy routes.

The responsibility for the safety of the convoys while passing through the "Spout"—a collective term applied to the system of channels between "Z" buoy³, 15 miles south of the Nab Tower, and the northern limit of the assault area (Lat. 49° 40' N.)—rested with the Commander-in-Chief, Portsmouth⁴. His plan was as follows:—

- (a) A 7 mile gun zone was established on either side of the "Spout." Any ship entering this zone during dark hours was to be presumed hostile by the convoy escorts. Patrol vessels were to enter it only if in close action with the enemy.

¹ Ten U.S. coastguard rescue craft were allotted to each assault force for employment with convoys carrying personnel, *i.e.* L.S.I., L.C.I. (L) and L.S.T.

² *See* Apps. "H", "H (1)".

³ Lat. 50° 25' 00" N., Long. 0° 58' 00" W. The "Spout" was about 10 miles wide at "Z" buoy and 30 miles wide on the parallel 49° 40' N.

⁴PORTSMOUTH COMMAND

<i>Forces Available.</i>	<i>No. of Craft.</i>	<i>Remarks.</i>
<i>Fleet Destroyers</i>		
<i>Onslow, Onslaught, Oriibi, Offa</i>	4	
<i>Frigates</i>		
<i>Stayner, Retalick</i>	2	<i>Hotham, Duff</i> in addition available for night D-1/D.
<i>Coastal Forces</i>		
53rd M.T.B. Flotilla ..	7	"D" class.
35th M.T.B. Flotilla ..	8	71' 6" M.T.B.s.
13th M.T.B. Flotilla ..	8	70' M.T.B.s.
14th M.T.B. Flotilla ..	8	70' M.T.B.s. } Available when not minelaying.
64th M.T.B. Flotilla ..	8	"D" class }

- (b) Destroyers were to patrol along the outer edges of the gun zone. These systems of patrols were known as the East and West Walls respectively.
- (c) Frigates to be used to extend shore radar cover,¹ and to control and support the coastal force covering units.
- (d) M.T.B.s either patrolling in company with the frigates or lying stopped in positions ordered.
- (e) Additional outlying offensive patrols of M.T.B.s to be established off the enemy coast as forces became available.
- (f) Coastal force patrols to be withdrawn at daylight except in reduced visibility; destroyers and frigate patrols to be maintained as necessary according to enemy intelligence.
- (g) N.O.I.C., Newhaven, and F.O.I.C., Portland, to be available to take over control of forces stationed within shore radar cover on the East and West Walls respectively, if necessary.

The West Wall was controlled by the Commander-in-Chief, Portsmouth;² the East Wall by the Vice-Admiral, Dover.³

This arrangement eased the strain on the communications at Portsmouth, and, by unifying the command in the Eastern Channel, was well adapted to deal with the contingency of enemy destroyers or torpedo boats breaking in through the Straits of Dover.

¹ The C.-in-C., Portsmouth, subsequently remarked: "It is possible that the enemy had pinned his faith upon E-Boats on the grounds that they would be operating outside the range of radar stations on the English coast. . . . The introduction of radar controlling ships with attached units of M.T.B.s which was first suggested in this Command by Lieutenant M. G. Raleigh, R.N.V.R. . . . may eventually prove to have been an important tactical surprise and may well have had a most disturbing effect upon the enemy's plans for counter measures at sea. In effect, a close blockade of his principal E-Boat bases was instituted, so much so that his craft seldom made the open sea without being brought to action. . . . Thus losses by E-Boat action, which might have been serious, were reduced to negligible proportions."—Report on Operation "Overlord," Portsmouth, Part II, Sec. 1, para. 12.

² It had originally been proposed that the West Wall should be the responsibility of the C.-in-C., Plymouth, but he considered his headquarters too far away to be able to control it effectively.

³ Vice-Admiral Sir H. Pridham-Wippell, K.C.B.

To put this arrangement into effect the boundary of the Portsmouth Command for operational purposes was altered on 28th May, 1944, to a line running from Worthing to position Lat. 50° 00' N., Long. 0° 15' W., thence to Lat. 49° 40' N., Long. 0° 00' W. and thence—090° to the French coast.

In the eastern portion of the Dover Command,¹ the possible area of operations was limited by shoals and minefields. This area was covered by coastal force units. Further west, single destroyers patrolled in four areas between Dungeness and Worthing south of the gun zone to seaward of the coastal channel. Two radar control ships were placed to extend the radar cover from Beachy Head to Cap d'Antifer.

The conduct of such large numbers of coastal forces in a limited area called for special arrangements. In order to obtain the necessary close co-ordination of their operations, not only as between the various coastal force units, but also with other surface craft—particularly the destroyers and controlling frigates—and with air forces, Captain P. V. McLaughlin, R.N., was appointed in March, 1944, to the Staff of the Commander-in-Chief, Portsmouth, with the title of Captain, Coastal Forces (Channel). This officer was responsible for the co-ordination of the policy adopted for coastal forces throughout the English Channel; for the operation of the coastal forces in the Portsmouth Command, and for planning the use of coastal craft in operation "Overlord."²

Further afield, in the western part of the English Channel, the following dispositions were ordered by the Commander-in-Chief, Plymouth³ :—

A division of destroyers—known as the Hurd Deep Patrol—carried out a turning line ahead patrol in mid-Channel, north of the Gulf of St. Malo, between positions Lat. 50° 12' N., Long. 2° 21' W.

¹ DOVER COMMAND

<i>Forces Available</i>	<i>No. of Craft.</i>	<i>Remarks.</i>
	<i>Fleet Destroyers</i>	
<i>Savage, Opportune, Obedient, Orwell</i> ..	4	
	<i>Frigates</i>	
<i>Trollope, Thornborough</i>	2	Based on Portsmouth.
	<i>Coastal Forces</i>	
2nd M.T.B. Flotilla (R. Neth. N.) ..	5	71 ft. 6 in. M.T.B.s.
5th M.T.B. Flotilla	8	70 ft. M.T.B.s.
9th M.T.B. Flotilla (R. Neth. N.) ..	8	70 ft. M.T.B.s.
51st M.T.B. Flotilla	8	"D" Class.
59th M.T.B. Flotilla	8	
19th M.L. Flotilla	} 9	
21st M.L. Flotilla		
50th M.L. Flotilla		
52nd M.L. Flotilla		

² On 21st May, 1944, a Control Office was established in H.M.S. *Dolphin*, to maintain contact with all boats and to co-ordinate the maintenance, repairs and general turn round arrangements.

³ PLYMOUTH COMMAND

<i>Forces Available.</i>	<i>No. of Craft.</i>	<i>Remarks.</i>
	<i>Fleet Destroyers</i>	
19th Division	} 8	
<i>Tartar, Haida,</i>		
<i>Ashanti, Huron.</i>		
20th Division		
<i>Blyscawicka, Piorun,</i>		
<i>Eskimo, Javelin.</i>		
18th U.S. Division	} 4	During assault phase only.
<i>Davis, Jowett, Somers + Emmons</i>		
	<i>Coastal Forces</i>	
52nd M.T.B. Flotilla	12	"D" Class.
65th M.T.B. Flotilla	8	"D" Class.
1st M.T.B. Flotilla	8	71 ft. 6 in. M.T.B.s.
23rd M.T.B. Flotilla (French) ..	8	70 ft. M.T.B.s.
	<i>A/S Support Groups</i>	
3rd, 11th, 12th, 14th		Anti-U-Boat operations.

and Lat. 49° 56' N., Long. 3° 16' W. A second destroyer patrol—the Western Patrol—was established 50 miles to the north-north-west of Ushant, in approximately Lat. 49° 19' N., Long. 5° 30' W. with the object of intercepting the Narvik class destroyers if they attempted to enter the Channel or to interfere with coastal convoys east or north of Lands End. Four U.S. destroyers patrolled to seaward of the Force "U" convoy route.

By night these patrols were reinforced by coastal forces, in units of two or three craft each, just south of the seven mile gun zone to seaward of the convoy route between Portland Bill and the Eddystone; and also by Wellingtons fitted with special equipment operating north and north-west of the Channel Islands, and Albacores near the convoy routes as a striking force.

A special pre-occupation of the Commander-in-Chief, Plymouth, lay in the threat of submarine attack by U-Boats based on the Biscay ports. Measures against this menace fell into three main categories, viz., air, mining, and A/S support groups.

It was estimated that the enemy had about 40 U-Boats immediately available for operations in the Channel. The air plan was designed to make their passage as difficult and exhausting as might be; but while an attempt to rush the submarines in large numbers up the centre of the Channel was possible, it seemed more likely that a route close in to the French shore would be chosen, where A/S aircraft would be exposed to heavy attack from enemy fighters. An extensive mining programme had therefore been carried out along the Brittany coast.

Four A/S support groups were at the disposal of the Plymouth Command. These were to be disposed as circumstances might require; for the night of D-1/D-day, two groups patrolled between the Lands End and the Start, the other two being held in reserve at Plymouth and Milford Haven.

In addition to these dispositions in the English Channel, a force consisting of three escort carriers (*Tracker*, *Pursuer*, *Emperor*) and six escort groups was stationed by the Commander-in-Chief, Western Approaches,¹ some 130 miles to the westward of Lands End (approximately Lat. 50° 30' N., Long. 9° 00' W.).

Interference by German main naval units from Norway or the Baltic was guarded against by the Home Fleet under Admiral Sir Bruce Fraser, based on Scapa Flow.²

Such, briefly, was the naval scheme for safeguarding the assault forces and the build-up on passage. Equally important was the part played by Coastal Command.

The task of Coastal Command was threefold: (i) to prevent U-Boats from breaking into the western end of the Channel, (ii) to assist the Allied Navies in the protection of invasion convoys from E-Boats and surface craft, and (iii) to attack the German coastal supply lines.

¹ Admiral Sir Max. Horton, K.C.B., D.S.O.

Few contacts were obtained by this force in the event, and by 10th June, four of the escort groups had been handed over to the C.s-in-C., Portsmouth and Plymouth, for use in the Channel.

² The Home Fleet, exclusive of ships acting under the orders of A.N.C.X.F. in immediate support of operation "Neptune," consisted of three battleships, three Fleet carriers, six cruisers and ten destroyers. See App. "D."

With these objects in view, the aircraft of Coastal Command and of six Naval Air Arm squadrons operated by them were disposed in two main areas of concentration. In the south and west the bulk of the anti-U-Boat aircraft were disposed under the orders of No 19 Group, with the object of providing a system of continuous air patrols in the south-west approaches. In the east and south-east, No. 16 Group operated a formidable force of anti-shipping aircraft. Arrangements were made for the operation of anti-U-Boat aircraft in the eastern area and anti-shipping aircraft in the western area, should the occasion arise.

Far away to the north-east, a vigorous anti-submarine offensive was maintained in Norwegian waters by No. 18 Group, in order to prevent the reinforcement of the Biscay Flotillas by U-Boats from the Baltic sailing north-about.¹

The protection afforded by the foregoing measures, which, broadly speaking,² were maintained throughout the period of the build-up, was supplemented by an extensive minelaying programme, known as Operation "Maple," of which the outline is given in the ensuing section.

23. Minelaying (Operation "Maple")

Operation "Maple" was a long term commitment designed to assist in the protection of the Allied forces in the Channel—especially the bombarding and assault forces—from attacks by E-Boats and R-Boats based on Cherbourg and Le Havre.

The minelaying forces consisted of the *Apollo* and *Plover* based on Plymouth and Dover respectively, 4 M.L. Flotillas (22 M.L.s) and 5 M.T.B. Flotillas (36 M.T.B.s) distributed between the south coast commands, and heavy bombers of Bomber Command. The disposition of these forces was kept flexible in order to take advantage of any intelligence of enemy movements, or of the laying of defensive minefields by him.

The minelaying operations were divided into six phases, during which the laying of special mines was gradually introduced and concentration on "Neptune" targets effected unobtrusively, as follows:—

- | | |
|-------------------------|--|
| Phase I (to D-45) | Routine offensive laying by coastal force and aircraft using standard mines. |
| Phase II (D-45 to D-24) | As in phase I with introduction of special type mines by surface minelayers. |
| Phase III (D-24 to D-3) | As in phase I with laying of special type mines by surface minelayers and aircraft. ³ |

¹ This offensive started on 16th May. By 31st May, there had been 22 sightings and 13 attacks, of which six were "kills." During June, there were the same number of sightings, 15 attacks, and seven probably sunk in this area.

² The patrols were at full strength during the assault phase. Later, running conditions compelled a reduced scale normally. The forces allocated to the various commands were readjusted after the assault phase.

³ As soon as possible after D-10, special type mines were to be laid by aircraft on the maximum possible scale in the standard areas in the Baltic, Kattegat, Heligoland Bight, Frisian Islands, and Biscay ports, in order to make full use of these special mines before the enemy had time to put the appropriate sweeping technique into full operation.

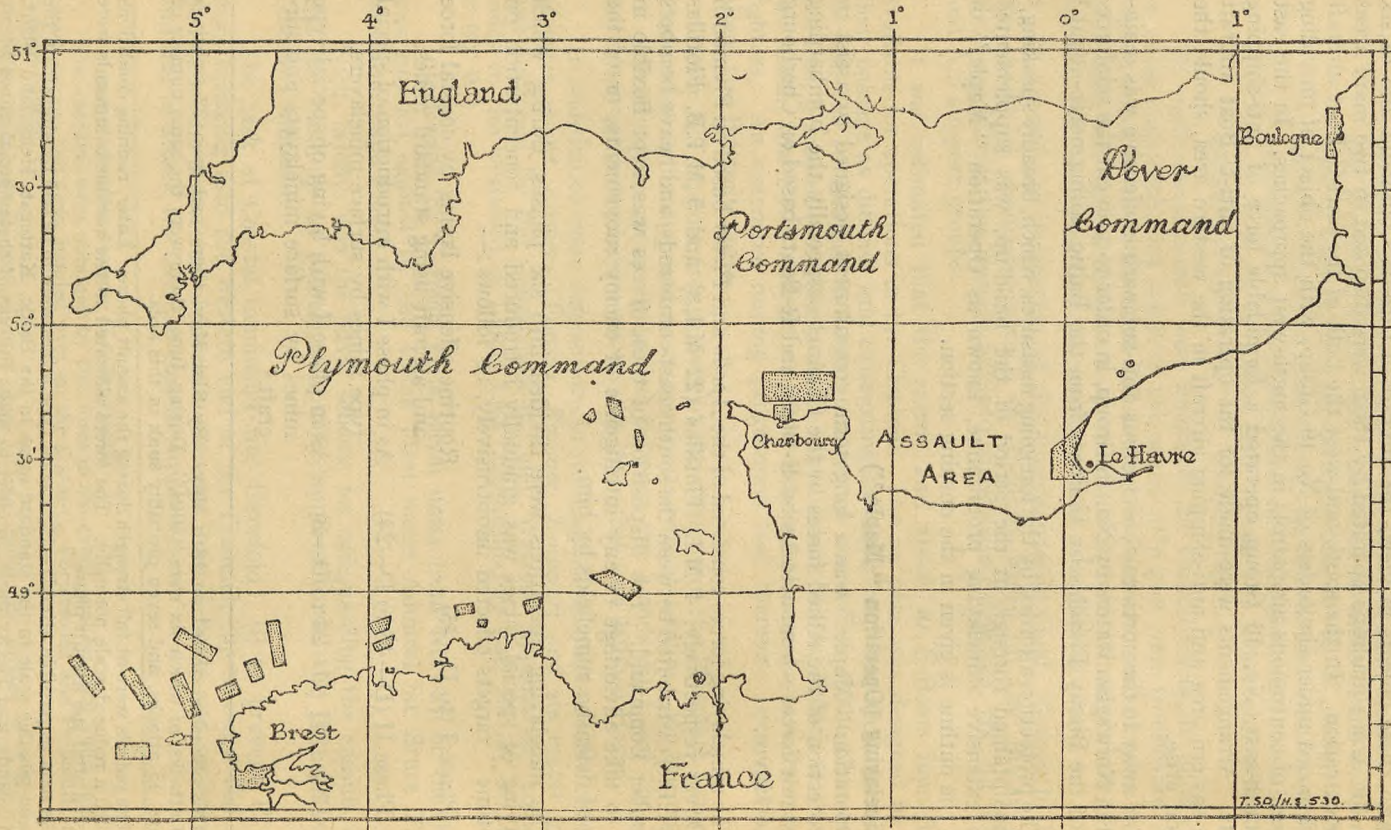


Fig. 8. Operation "Maple": minefields laid in support of "Neptune."

- Phase IV (D-3 to D-1) .. Laying of special type mines only by available coastal force minelayers, the main concentration off Le Havre, Cherbourg, Calais and Boulogne, and by aircraft off Ijmuiden, Hook, West Scheldt, Chenal de Four and Brest.
- Phase V (D-1 to D-day) .. Laying of special type mines only by coastal force minelayers off Le Havre, Cherbourg, Entretat and Brittany coast.
- Phase VI (after D-day) .. As requisite.

Operation orders for the operations in Phases I to IV inclusive were issued by the Commanders-in-Chief, Home Commands, and for Phase V by A.N.C.X.F.

24. Minesweeping Plan

Minesweeping played a particularly important part in Operation "Neptune" not only before and during the assault, but throughout the duration of the whole operation.¹ A normally unspectacular role, its importance is apt to be somewhat overlooked; it nevertheless called for careful and continuous planning, and a high degree of seamanship, courage and constant hard work in execution. It is proposed at this stage briefly to examine the problem as it presented itself and the measures taken to cope with it.

It was known that a moored mine barrier existed from about Lat. 50° N, to within some 7 to 10 miles of the French coast. To the southward of this barrier ran the enemy coastal channel, which was expected to provide a clear area unless mined at the last moment. The lowering positions for the assault forces were accordingly sited in this channel. Inshore of the coastal channel there was no evidence of mines, but it was necessary to make provision in this area and on the flanks for the safety of the bombarding ships. Ground mine-laying in shallow water by aircraft and possibly E-Boats was anticipated as soon as the Allied intentions became clear.

The plan adopted fell into four phases, viz. :—

- (a) Cutting and marking two channels for each assault force through the mine barrier, using one fleet minesweeping flotilla for each channel.
- (b) Finding or making clear areas for the bombarding forces and anchorages close inshore.
- (c) Widening the approach channels through the mine barrier and clearance of mines from neighbouring areas in order to give a room.
- (d) Clearance of mines laid after the assault.

¹ "It can be said without fear of contradiction that minesweeping was the keystone of the arch in this operation. All of the waters were suitable for mining, and minesweeping plans of unprecedented complexity were required. The performance of the minesweepers can only be described as magnificent. The passage of the Western Task Force to the assault area, and of the assault waves and supporting ships up to the beaches, without loss from mines, is the best testimonial to the effectiveness of their work. An equally high standard was maintained in the unremitting daily labour of sweeping the assault area during the build-up phase."—Rear-Admiral Kirk, U.S.N., N.C.W.T.F.; A.N.C.X.F. Report, Vol. 3, p. 6.

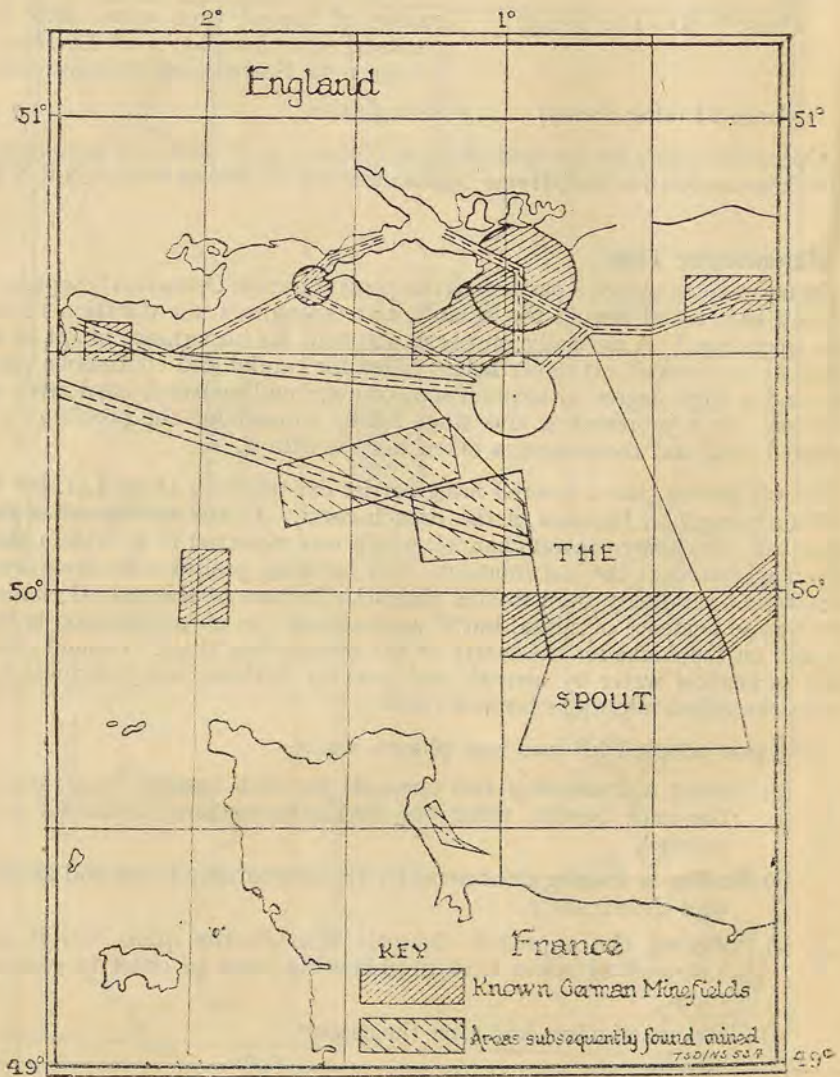


Fig. 9. German Minefields affecting "Neptune" Convoys.

Phase (a)—the sweeping of the approach channels was the largest single minesweeping operation ever undertaken in war. Each channel was to be marked on both sides with lighted Dan buoys, spaced at intervals of about one mile throughout its length. No fewer than 255 vessels took part in¹ this phase. Since the movements of the flotillas had to be related closely to one another as well as to those of the assault forces, it was planned and ordered in detail by A.N.C.X.F., who also directly controlled phase (c)—widening the channels²—using flotillas retained by him after the completion of phase (a).

Phase (b)—clearance of areas for bombarding forces and shore anchorages—was planned and ordered by task force commanders using a proportion of the flotillas released after the sweeping of the approach channels. A B.Y.M.S. Flotilla was provided for the bombarding ships of each assault force.

Phase (d)—Mines laid after the assault—was to be dealt with as occasion demanded by the task force commanders.

It was considered essential that in each task force area the minesweeping forces should be under the command of an experienced minesweeping officer who would be responsible to the task force commander for all minesweeping operations in his area from the completion of phase (a) onwards. Rear-Admiral Kirk, U.S.N., requested that a British officer should carry out this duty in his area, and Commander J. G. B. Temple was appointed as Commander Minesweeping West, with U.S.S. *Chimo* as his headquarters ship. Acting Captain R. B. Jennings, who had been appointed Captain Minesweeping (X) in February, 1944, to co-ordinate flotilla training, was appointed as Captain Minesweeping East.

The minesweeping forces³ were allocated as follows⁴ :—

WESTERN TASK FORCE

<i>Force "U"</i>	<i>Force "O"</i>
514th M.S.F. (F.M.S.).	54th M.S.F. (F.M.S.).
516th M.S.F. (F.M.S.).	531st M.S.F. (F.M.S.).
"A" M.S.F. (F.M.S.), U.S. (for bombarding ships).	104th M.S.F. (M.M.S.).
132nd M.S.F. (M.M.S.).	167th M.S.F. (M.M.S.).
Y1 M.S.F. (Y.M.S.), U.S.	
Y2 M.S.F. (Y.M.S.), U.S.	

¹ The provision of the necessary flotillas necessitated using some which had little opportunity for practice, and this further complicated the problem, as the time of H-hour relative to high water made it necessary for all flotillas to change sweeps during the passage to avoid sweeping with an unfavourable tide.

² This in the first place consisted of sweeping the water between adjacent channels, which were then known by both the numbers of the original channels, e.g. when the water between channels No. 5 and 6 had been cleared, the whole channel became No. 56.

³ For names of ships and C.O.s, see App. "A" (1).

⁴ Abbreviations :—

M.S.F.—Minesweeping Flotilla.

F.M.S.—Fleet Minesweeper.

M.M.S.—Motor Minesweeper.

B.Y.M.S.—British Yard Minesweeper.

Y.M.S.—U.S. Motor Minesweeper.

LL Trawlers—Magnetic Minesweepers.

See App. "O," Glossary of Terms.

⁵ With two minesweeping motor launches and three or four danlayers attached.

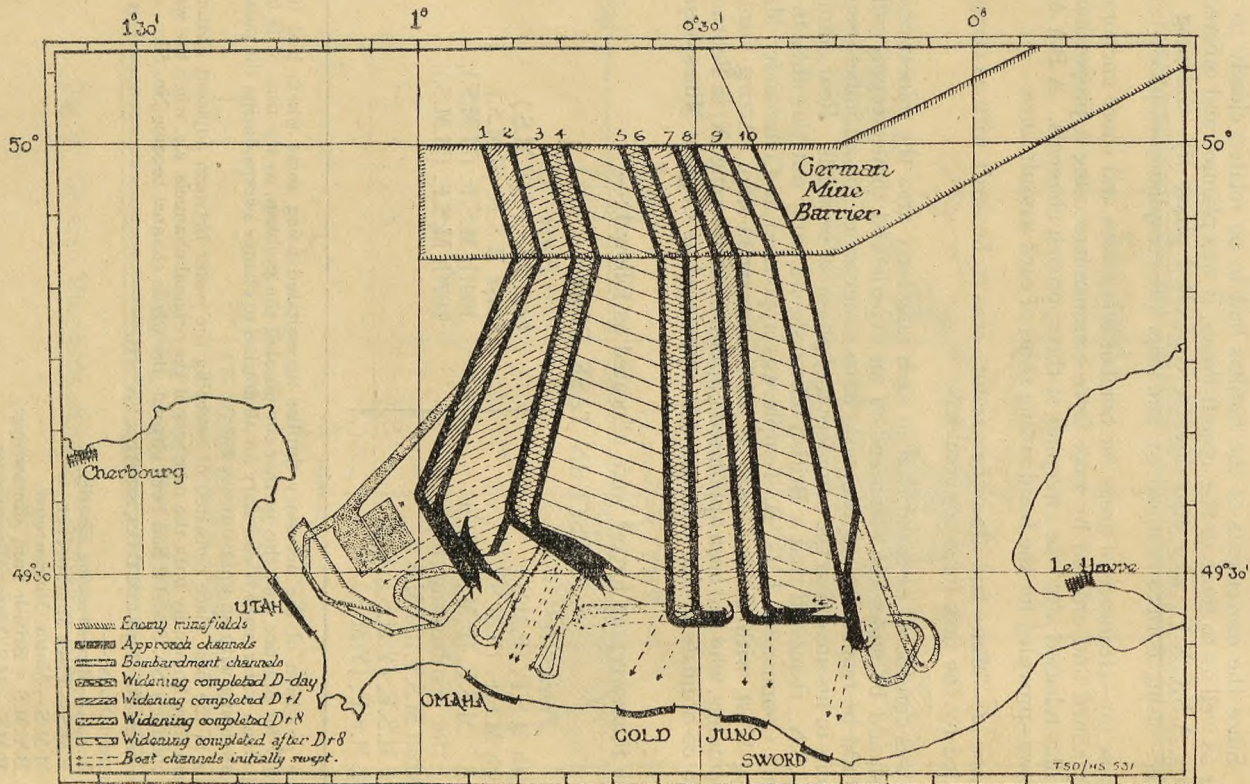


Fig. 10. "Neptune" minesweeping as actually carried out.

EASTERN TASK FORCE

<i>Force "G"</i>	<i>Force "J"</i>	<i>Force "S"</i>
16th M.S.F. (F.M.S.).	17th M.S.F. (F.M.S.).	11st M.S.F. (F.M.S.).
118th M.S.F. (F.M.S.).	19th M.S.F. (F.M.S.).	115th M.S.F. (F.M.S.).
150th M.S.F. (B.Y.M.S.)	159th M.S.F. (B.Y.M.S.).	40th M.S.F. (F.M.S.) (for bombarding ships).
		115th M.S.F. (M.M.S.).
		143rd M.S.F. (M.M.S.).
		165th M.S.F. (B.Y.M.S.).

A.N.C.X.F.'s RESERVE

101st M.S.F. (M.M.S.). For special duties with "Mulberries."
 102nd M.S.F. (M.M.S.) } Escort on D-day, then available to relieve flotillas
 205th M.S.F. (M.M.S.) } under task force commanders.
 131st, 159th, 139th, 181st "LL" trawler groups. For captured ports.

An important corollary to the minesweeping operations was the marking of the areas cleared. As already mentioned this was done in the first instance by dan buoys laid by danlayers attached to the minesweeping flotillas. The dan buoys were replaced by ocean light buoys and A.G.A. type buoys laid by H.M. ships *Astral* and *Scott* and the Trinity House vessels *Alert*, *Discovery II*, *Warden*, *G. de Joli* and *A. Blondel* between D-day and D+1.² Subsequently, the buoy-laying craft continued to mark the channels and areas successively swept in accordance with a detailed programme laid down in Admiral Ramsay's operation orders.

25. Naval Bombardment Plan.³ (Plans 1A, 1B)

The object of the naval bombardment was defined by Admiral Ramsay as "to assist in ensuring the safe and timely arrival of our forces by the engagement of hostile coastal defences, and to support the assault and subsequent operations ashore."

The enemy defences were the most formidable ever tackled hitherto in a seaborne assault. Their batteries included guns of almost every calibre, from modern 380 cm. (16-in.) down to old French 75 mms., of the 1914-18 war. Generally speaking, coastal batteries were sited as far forward as possible, so that most of them stood near the beaches. Howitzers formed an exception to this practice and often stood several miles inland and on reverse slopes. Both radar and visual methods of control were employed, the control positions being frequently placed at a considerable distance from the guns.

In addition to the coastal batteries the Germans held a certain amount of mobile artillery in reserve, with which to reinforce the fixed artillery in any sector assaulted. A large number of spare emplacements (normally armed only with light guns) were constructed along the coast ready to receive the heavier guns and howitzers from the pools further inland in case of need.

Abbreviations—See footnote ⁴ on p. 51.

¹ With two minesweeping motor launches and three or four danlayers attached.

² "The greatest co-operation was given by Captain Barber, Superintendent of Trinity House, Cowes, to whom considerable credit is due."—A.N.C.X.F. Report, Vol. 1, p. 15.

³ See *Gunnery Review: Normandy Bombardment Experience*, June/September, 1944, which reviews the bombarding operations of the Eastern Task Force and the lessons learnt in detail.

The coast defences fell into four main categories :—

(a) *Heavy coast defence anti-ship batteries*

These consisted of 122 to 155 mm. guns, generally four to a battery, in massive reinforced concrete gun houses about 7 ft. thick on the sides and roof, with observation posts and control positions, sited with a field of fire to seaward.

(b) *Casemated field gun and howitzer batteries*

Field guns or howitzers of 105 to 155 mm. calibre, generally four to a battery, in casemates of reinforced concrete about 7 ft. thick, with a field of fire to seaward or on to the beaches. The guns were on wheeled mountings and could be brought out for all-round fire.

(c) *Open field gun and howitzer batteries*

Similar batteries to (b) above, but in open unprotected positions. They had no direct view to seaward, but were probably controlled from forward observation posts and their main role was to harass the beaches.

(d) *Beach defence strong points*

The beach defences consisted mainly of a system of strong points spaced at intervals of about a mile along the coast, extending to about 100–200 yards in depth. Very strong concrete emplacements, some 7 ft. thick on the seaward side and overhead, housed 75 or 88 mm. guns sited to enfilade the beaches. Smaller concrete gun shelters, similarly protected from fire to seaward, but open on the landward side, housed 50 mm. anti-tank guns, which could also enfilade the beaches. An elaborate trench system connected the underground living quarters, many pill-boxes and a large number of Tobruk type machine gun and mortar posts. In addition there was a number of open 50 mm. and 75 mm. and mortar positions.

A combination of air bombing and naval bombardment was relied on to deal with these "impregnable" defences. In the first instance the selection of targets and co-ordination of naval bombardment with air bombing was carried out by the three Commanders-in-Chief, and a joint plan¹ was issued, in which was specified :—

- (a) The batteries to be bombed, (i) before D-day, priority being given to those most menacing to the approach of naval forces²; (ii) by heavy night bombers, during the night of D–1/D-day³, and (iii) by medium bombers during the early hours of D-day⁴.

¹ This plan was not arrived at without difficulty. The Graham Report on "Fire Support of Seaborne Landings Against a Heavily Defended Coast" in its conclusions and recommendations (p. 13) stated that: "The Committee recommends that the Chiefs of Staff should confirm the principle that the Army is responsible for stating the fire support requirements, both as regards type and quantity, and the Navy and Air Force for agreeing the method of meeting the Army's needs." This principle Admiral Ramsay considered to be entirely wrong. He was strongly of the opinion that "whilst the production of the plan must be a joint effort, prime responsibility for calculating the type and quantity of fire support required until the beaches are captured, and for deciding upon its application, must rest with the Navy, because the Navy bears the responsibility for the safe arrival of the assault convoys." A.N.C.X.F. Report, Vol. 1, p. 28.

The Air Forces, too, were reluctant to commit themselves until very late in the planning as regards the weight of air support which would be available and the times relative to sunrise at which the various bomber forces would operate. Uncertainty on these points considerably hampered the drawing up of the pre-arranged fire plan.

² The air effort which could be allotted to this task was limited by the necessity to bomb batteries in other areas for cover purposes.

³ It was planned to drop 100 tons on each of ten batteries, of which four were in the British area.

⁴ From Civil Twilight + 10 minutes (0520, 6th June) till H-hour. Six batteries, three in each task force area.

- (b) The batteries to be engaged by naval gunfire to cover the assault¹.
- (c) The heavy and medium bomber effort available to supplement the naval beach "drenching" fire and its distribution between the task forces commencing at H-45; about 2,500 tons were to be dropped in the British and some 1,700 tons in the American area.

The plan aimed at the neutralization of all batteries capable of firing on the sea approaches or assault beaches until the capture or destruction of each battery, and the neutralization or destruction of beach defences during the final approach. After the assault, support was to be given to the Army by engagement of mobile batteries, counter-attacking formations, defended areas, etc., particularly during the period before the Army was fully deployed.

For the initial stages, bombarding forces² were organized as follows:—

WESTERN TASK FORCE

*Bombarding Force "A"**(supporting Assault Force "U")*

- U.S.S. *Nevada* (10—14-in., 16—5-in.).
 H.M.S. *Erebus* (2—15-in.).
 U.S.S. *Tuscaloosa* (9—8-in., 8—5-in.).
 (Flag, Rear-Admiral Deyo, U.S.N.).
 U.S.S. *Quincy* (9—8-in., 12—5-in.).
 H.M.S. *Hawkins* (7—7.5-in.).
 H.M.S. *Enterprise* (6—6-in.).
 H.M.S. *Black Prince* (8—5.25-in.).
 H.N.M.S. *Soemba* (3—5.9-in.).
 8 U.S. Destroyers.

*Bombarding Force "C"**(supporting Assault Force "O")*

- U.S.S. *Texas* (10—14-in., 6—5-in.).
 (Flag, Rear Admiral Bryant, U.S.N.).
 U.S.S. *Arkansas* (12—12-in., 6—5-in.).
 H.M.S. *Glasgow* (12—6-in.).
 F.F.S. *Montcalm* (9—6-in.).
 (Flag, Rear-Admiral Jaujard).
 F.F.S. *Georges Leygues* (9—6-in.).
 9 U.S. Destroyers.
 3 Hunt Destroyers.

EASTERN TASK FORCE

H.M.S. *Scylla* (8—4.5 in.).

(Flag, N.C.E.T.F.).

*Bombarding Force "D"**(supporting Assault Force "S")*

- H.M.S. *Warspite* (8—15-in.³, 8—6-in.).
 H.M.S. *Ramillies* (8—15-in., 12—6-in.).
 H.M.S. *Roberts* (2—15-in.).
 H.M.S. *Mauritius* (12—6-in.).
 (Flag, Rear-Admiral Patterson).
 H.M.S. *Arctusa* (6—6-in.).
 H.M.S. *Frobisher* (7—7.5-in.).
 H.M.S. *Danae* (5—6-in.).
 O.R.P. *Dragon* (6—6-in.).
 13 Fleet Destroyers.
 2 Hunt Destroyers.

*Bombarding Force "E"**(supporting Assault Force "J")*

- H.M.S. *Belfast* (12—6-in.).
 (Flag, Rear-Admiral
 Dalrymple-Hamilton).
 H.M.S. *Diadem* (8—5.25-in.).
 7 Fleet Destroyers.
 4 Hunt Destroyers⁴.

¹ Task and assault force commanders were at liberty, however, to make last minute adjustments in the light of the latest intelligence, subject to A.N.C.X.F. being informed, in order that spotting aircraft could be briefed.

² For gunnery details, see Appendix "F."

³ "A" and "B" turrets only were in action.

⁴ In addition, assault force commanders were authorized by N.C.E.T.F. to use the destroyers allocated to forces for escort duties on the passage south. These amounted to three "Hunts" and three escort destroyers for Force "J," and two "Hunts" and one escort destroyer for Force "G."

Sec. 25

OPERATION "NEPTUNE"

WESTERN TASK FORCE
(continued)EASTERN TASK FORCE
(continued)*Bombarding Force "K"*
(supporting Assault Force "G")

H.M.S. *Orion* (8—6-in.).
 H.M.S. *Ajax* (8—6-in.).
 H.M.S. *Argonaut* (10—5·25-in.).
 H.M.S. *Emerald* (7—6-in.).
 H.N.M.S. *Flores* (3—5·9-in.).
 9 Fleet Destroyers.
 4 Hunt Destroyers¹.

In Reserve.

U.S.S. *Augusta* (9—8-in., 8—5-in.).
 (Flag, N.C.W.T.F.).
 H.M.S. *Bellona* (8—5·25-in.).
 17 U.S. Destroyers.

In Reserve.

H.M.S. *Rodney* (9—16-in., 12—6-in.).
 H.M.S. *Sirius* (10—5·25-in.).

H.M.S. *Nelson* (9—16-in., 12—6-in.) was held in reserve at Milford Haven, for use wherever she might be required.

On arrival in the assault area, bombarding ships formed part of the assault forces to which they were allocated. Flag and Senior Officers Commanding British Bombarding Forces were therefore requested to "exercise only such control over ships of their force as necessary to implement the intentions of Task or Assault Force Commanders." Similarly, U.S. Bombarding Forces came under the immediate control of N.C.W.T.F., or of the appropriate assault force commander as directed by N.C.W.T.F.

Ships were to open fire on their pre-arranged battery targets either when the assaulting convoys came within range of them, or when it became light enough for the enemy to spot the fall of his shot (about half an hour before civil twilight), whichever was later.

Close supporting fire by warships and gun support craft was to be employed to "drench" the beach defences at specified times prior to the assault.

The responsibility for detailing ships to the selected targets rested with task and assault force commanders.

In the British area the pre-arranged naval fire plan was co-ordinated by the Naval Commander, Eastern Task Force and issued in his operation orders. The heavy batteries on either side of the Seine estuary on the eastern flank were considered the most serious threat. Those to the south of the estuary, Villerville, Benerville and Houlgate—all of which covered "Sword" area, but were outside the sphere of military operations—were to be neutralized by the *Warspite*, *Ramillies* and *Roberts* respectively. Those at Le Havre were not included as primary targets, as it was intended that they should have been put out of action by bombing prior to D-day; should they open effective fire, however, they were to be engaged as directed by Rear-Admiral Patterson,

¹ In addition, assault force commanders were authorized by N.C.E.T.F. to use the destroyers allocated to forces for escort duties on the passage south. These amounted to three "Hunts" and three escort destroyers for Force "J," and two "Hunts" and one escort destroyer for Force "G."

the Senior Officer of Force "D." All cruisers and the *Flores* were given counter battery tasks in the areas of the assault forces they were supporting. Fighter reconnaissance spotting aircraft were arranged for all these bombarding forces, and definite periods of 35 to 45 minutes each assigned to the various targets, as well as to impromptu shoots throughout D-day. Destroyers were allocated sectors of the beach defences on the fronts of the assault forces to which they were attached. In some cases, definite targets were specified, but it was appreciated that identification would be difficult, and commanding officers were allowed discretion, giving priority to (a) guns firing on our own forces, (b) pill-boxes, (c) suspected machine-gun posts and (d) possible observation posts.

Initial targets laid down in the pre-arranged fire plan are given in Appendix F(1) and Plan 1B.

In the Western Task Force area, following the U.S. system of greater decentralization than is customary in the Royal Navy, the pre-arranged fire plans were worked out by the assault force commanders. In general they were similar to that in the British area, but differed in one respect; whereas the British plan was based on the neutralization of selected strong-points using all available sea and air fire power and accepting the menace from the beach defences between these strong-points, on "Omaha" front—where, in the event, the infantry were most seriously held up¹—the air and sea bombardment was spread evenly over the whole length of the beaches.

26. The Build-up Plan

The build-up problem was unique and of major importance. The enemy's system of defence—static divisions on the coast backed by mobile reserve divisions—required an immediate build-up of sufficient strength to oppose these reserves². This entailed the continuous discharge for the first month after the assault of a daily volume of shipping and craft far greater than in any previous operation.

The plan for the build-up was worked out in great detail and included in the operation orders. Large numbers of pre-loaded stores coasters and merchant vessels—also for the most part pre-loaded—were assembled in the Isle of Wight area and the ports on the flanks respectively. These merchant vessels, together with the landing ships and craft returned from the assault area, were to operate in a continuous cross-Channel shuttle service to provide a daily build-up of sufficient strength to counter such movements or reinforcements as the enemy was capable of making. The estimate indicated that the beach capacities were sufficient to accomplish this task, but little margin remained and the early capture of a port such as Cherbourg was of great importance.

¹ Other factors, such as the failure of the pre-H-hour air bombing on this front, combined to render the task of the infantry more difficult, but Rear-Admiral Vian subsequently quoted the incident in support of the British method. A.N.C.X.F. Report, Vol. 2. Report by N.C.E.T.F., p. 26.

² "Had the enemy not been deceived by our cover plan and the latent threat to the Pas de Calais, it would have been possible for him to have built up his forces against us at a rate at least equal to that of which we were capable with the craft and shipping at our disposal assuming the optimum conditions on our part and minimum turn-round times. In the event the enemy was slow to commit his reserves . . . so that despite bad weather and other minor difficulties, our build-up was far quicker than his and assured the integrity of our initial position in the lodgement area." A.N.C.X.F. Report, Vol. 1, p. 94.

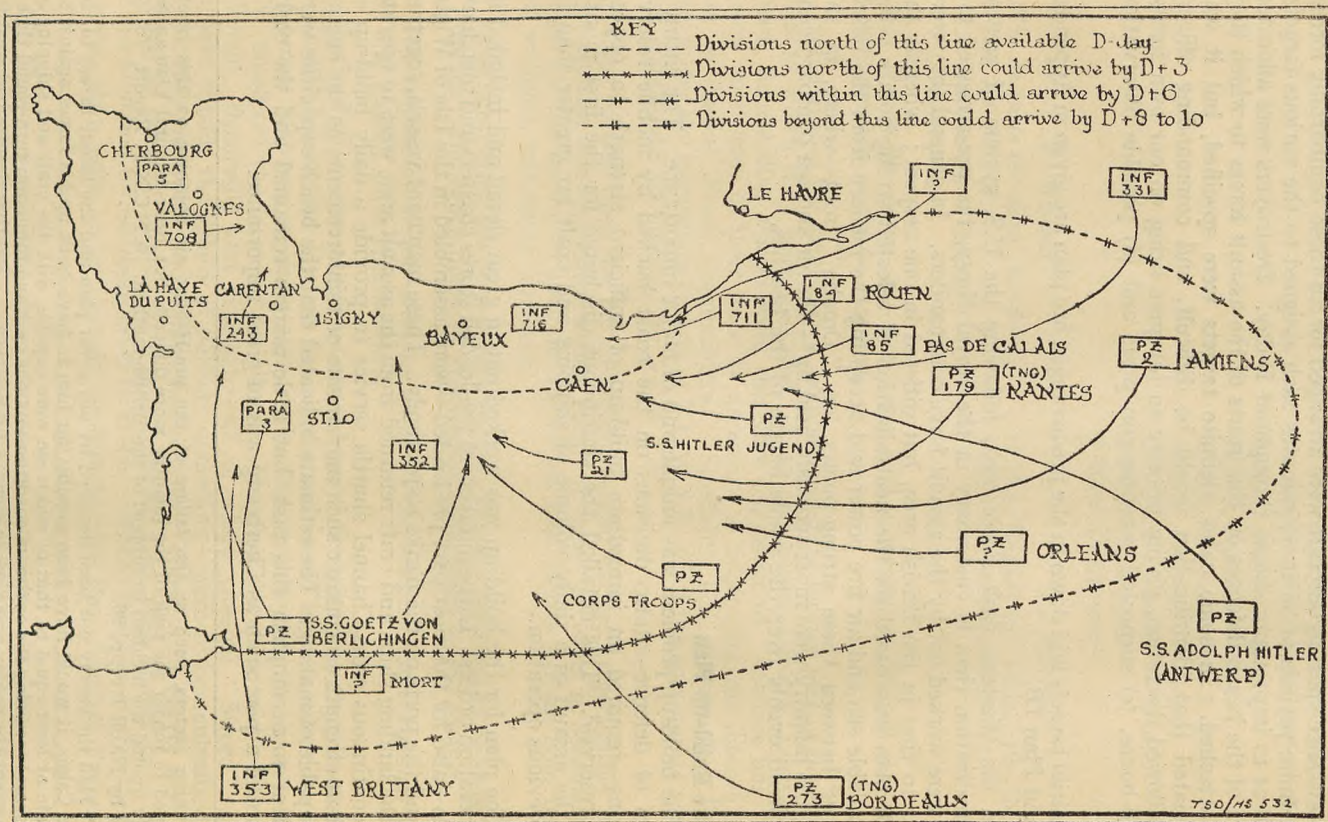


Fig. 11. Optimum rate of German reinforcement,

In addition to the infantry and tank landing ships and craft (L.S.T., L.C.T. and L.C.I.(L)) which, together with a large merchant fleet, were to carry the build-up formations, equipment and stores, there was a further requirement imposed by the lack of port facilities, namely, craft with which to unload merchant ships on the far shore. This ferry service was provided by Rhinos, L.C.T.(5) and (6), L.C.M., L.C.V.P., L.B.V. and D.U.K.W.S.¹

The administration of the ferry service in itself presented a large problem. Eleven depot ships were provided for the accommodation of personnel, four being allocated to the Western Task Force and seven to the Eastern.² Administrative control of the ferry service was entirely separate in the British and American areas; in the former it was exercised by Commodore H. T. England, D.S.O., who was appointed as Commodore Depot Ships (under the F.O. British assault area), with his broad pendant at first in the *Ascanius* and later in the *Hawkins*.

In view of the probable signal congestion during the first few days of the operation, full instructions for all early convoys and groups of landing craft and their escorts were laid down beforehand and provision made for contingencies of damage and delays. Later the build-up plan gave the maximum latitude to the Home Commanders-in-Chief and Flag Officers in Charge within the framework laid down.

To reinforce and maintain the Expeditionary Force at the rate required, it was necessary to run eight ship convoys a day—four to the British and four to the American areas—in addition to landing craft groups as required.

Mention has already been made of the special organizations set up in the United Kingdom ("Buco," "Turco," "Corep," etc., see Sec. 15) to expedite the build-up. It was recognized that the problem confronting the task force commanders in the assault area during the first few days of the operation would be even more difficult, since their organizations would perforce start

¹ Abbreviations. (See App. "O.")

L.C.T. (5) and (6)	..	Landing Craft, Tanks, Mark V and VI. (55 men, 11 vehicles, 5½ knots).
L.C.M.	..	Landing Craft, Mechanized. (Mark I, 16-ton, Mark III, 30-ton, tank or vehicle).
L.C.V.P.	..	Landing Craft, Vehicle, Personnel. (United States; Ramped, 18-cwt. vehicle)
L.B.V.	..	Landing Barge, Vehicle. (Mark I, dumb, ramped; Mark II, stores, ferry, 4½ knots).
D.U.K.W.	..	2½-ton, 6-wheeled amphibious truck.

² Initial allocation of depot ships:—

Gooseberry 1 (U.S.).	Mulberry "A" (U.S.).	Mulberry "B."	Gooseberry 4.	Gooseberry 5.
H.M.S. <i>Ceres</i> 1 Troopship (S.S. <i>Thomas</i> <i>B. Robinson</i>)	H.M.S. <i>Capetown</i> 1 Troopship (S.S. <i>Eleazar</i> <i>Whitlock</i>)	H.M.S. <i>Frobisher</i> S.S. <i>Thysville</i>	H.M.S. <i>Hawkins</i> H.M.S. <i>Southern Prince</i> ² S.S. <i>Ascanius</i> U.S.S. <i>George W.</i> <i>Woodward</i>	H.M.S. <i>Danae</i> S.S. <i>Cap Towne</i>

² After disembarkation of F.O.B.A.A.s staff.

untried and from scratch.¹ These included organizations on shore, reception and direction of convoys, control of unloading operations, and the turn round and despatch of return convoys.

In order to relieve the force commanders of as much detailed work of this nature as possible, two new naval authorities were introduced into the far shore organization of each assault force, viz. :—

- (a) *The Beach N.O.I.C.*, the naval executive authority on shore responsible to the assault force commanders, on the beach sub-area level, and
- (b) *The Senior Officer Ferry Craft (S.O.F.C.)*, who was responsible for the control of ferry craft on a beach group front, working in close co-operation with the Principal Beach Master and Beach Group Commander.²

The reception of shipping and convoys in the assault area and the formation and sailing of return convoys to the United Kingdom were to be dealt with respectively by two authorities stationed to seaward of each task force area, known as "Captain Southbound Sailings" and "Captain Northbound Sailings." These and other requirements, such as the placing of "Gooseberries," "Mulberries," etc., minesweeping and the permanent buoyage of channels, surveying operations, laying moorings and defence of the area throughout the whole period of the operations were worked out in advance and covered by the operation orders of A.N.C.X.F., Task and Assault Force Commanders.

Special attention was paid to the problem of repair and salvage of damaged ships and craft on the far shore. Mr. T. McKenzie of Metal Industries, Ltd., was appointed to the Staff of A.N.C.X.F. as Principal Salvage Officer, with the rank of Commodore, R.N.V.R., and a complete salvage organization,³ capable of dealing with large numbers of casualties simultaneously, was created. This organization abundantly proved its worth, especially in the days following the gale of 19th–22nd June.⁴

¹ The British and American methods and systems differed widely in matters of detail. For Operation "Neptune" it was essential that common practice should exist in two respects, viz. (a) beach marking and sectoring and (b) control of shipping and ferry craft, in order to avoid confusion to ships and craft of one nationality which might be using the beaches of the other. "This was achieved to a large measure in 'Neptune' due to the co-operation of the U.S. Navy, who readily adopted new methods to conform to the British." A.N.C.X.F. Report, Vol. 1, p. 70.

² The early days of planning fortunately coincided with the convening of an Inter-Service Committee on Beach Maintenance, sponsored by the War Office. Two fundamental principles were agreed upon with regard to ferry craft :—

- (a) The control of ferry craft should be exercised by the Navy to meet the Army's wishes.
- (b) The organization should provide the maximum inter-service representation at all levels.

³ See App. "A (3)" VIII.

Commodore McKenzie's requirements could not be met in full, since the number of rescue tugs requested could not be allocated and, owing to Mulberry and Military commitments, no shallow draught tugs at all were available. "This was later to prove the most serious deficiency in the 'Neptune' Salvage Organization." A.N.C.X.F. Report, Vol. 1, p. 88.

⁴ See Secs. 58, 61 to 62, 67, *postea*.

27. A.N.C.X.F.s Operation Orders

The naval plan thus fell into three well-defined phases, viz. :—

- (a) *Preparation.* Assembly and passage, including cover plan and diversions.
- (b) *Execution.* The assault landings.
- (c) *Consolidation.* The build-up, including construction of Mulberry harbours and laying the petrol pipe line.

Each of these aspects was dealt with in considerable detail in A.N.C.X.F.s orders. These were arranged in three separate series¹ :—

Operation orders (short title) O.N.

Administrative orders (short title) O.N.A.D.

Communication orders (short title) O.N.C.O.

Admiral Ramsay defined his object as " The safe and timely arrival of the assault forces at their beaches, the cover of their landings, and subsequently the support and maintenance and the rapid build-up of our forces ashore."²

To carry out this object, the Admiral's intentions were stated under fifteen headings, the first six of which dealt mainly with the passage and assault and the remainder with the build-up, viz. :—

- (a) To provide adequate surface covering forces to protect the flanks of the routes of our assault, follow-up and build-up convoys.
- (b) To provide adequate close escort for all our convoys, both coastwise along the English coast and across the Channel.
- (c) To route our forces prior to the assault so far as possible to avoid disclosure of their intended location.
- (d) To make full use of counter measures against enemy radar.
- (e) To provide minesweeping forces to sweep our assault forces in to the assault, to sweep the convoy anchorages, and later to establish swept channels from the assault area and captured continental ports to England and coastwise along the French coast.
- (f) To provide the maximum available naval gun support for our landings.
- (g) To establish a shuttle service of tank landing ships (L.S.T.), large infantry landing craft (L.C.I.(L)) and tank landing craft (L.C.T.) between England and France, in which, in addition to personnel ships, M.T. ships, and coasters, will be carried the build-up of our forces.
- (h) To employ a proportion of the available tank landing craft (L.C.T.) and all available minor landing craft off the French coast to ferry vehicles and stores ashore during the build-up.
- (j) To provide adequate forces for the protection of the anchorages off the enemy coast.
- (k) To support the advance of our land forces with naval bombardment.

¹ Other authorities issuing orders in connection with " Neptune " conformed to this system, their orders being distinguished by self-evident suffixes, e.g., O.N.C.O. East—Communication Order of Naval Commander, Eastern Task Force. O.N.A.D., Portsmouth—Administrative Orders, Portsmouth Command. O.N.West/G.O.1—Operation Orders of Commander, Group " O.1 " Western Task Force.

² A.N.C.X.F. Operation Order No. 1, p. 4.

- (l) To make preparations to reform one assault force at short notice to carry out another assault if so ordered by the Supreme Commander.
- (m) To provide adequate administrative repair, salvage and rescue facilities off the French coast.
- (n) To provide five areas of sheltered water off the beaches by sinking lines of old merchant vessels.
- (o) To provide two artificial harbours on the French coast for the landing of stores.
- (p) To provide petrol and oil in bulk on the French coast by establishing—
 - (i) submarine pipe lines across the Channel;
 - (ii) tanker discharge points off the French coast.

In order that the earliest possible information of the details should be available for the necessary authorities, provisional orders were issued on 2nd April, 1944¹. In form these generally followed those of the Commander-in-Chief, Mediterranean², for Operation "Husky" (the landing in Sicily); but the "Neptune" orders, in view of the complexity of the operation, were arranged chronologically and not separate for each force, as in Operation "Husky."

Orders directing the movements of over 6,000 ships for a complicated operation in confined waters were necessarily voluminous and Admiral Ramsay was "gravely concerned at the problems likely to arise in smaller vessels when, shortly before D-day, not only his orders but in addition the orders of the task force and lower commanders would be opened³." In spite of these considerations, the orders of A.N.C.X.F. alone when completed totalled approximately 1,000 pages of typescript—without amendments—and since security demanded the latest possible date for opening the orders, it appeared that genuine difficulties might occur. Arrangements were accordingly made for the commanding officers of all the smaller vessels to receive assistance by briefing after opening the orders.

The orders went to print on 10th April, 1944, and were issued on 24th April to a strictly limited number of authorities authorised to open them on receipt⁴. Two days later Admiral Ramsay and his Staff moved to his Battle Headquarters at Southwick Park, near Fareham in Hampshire, and the final stage of the long period of preparation was reached.

¹ Admiral Ramsay subsequently remarked: "In an operation where a large number of command levels are concerned it is believed to be essential that the orders of the C.-in-C. should be issued as early as possible, but to do this inevitably means that when issued they are incomplete and incorrect. But it is strongly felt that it is far better to issue orders early and amend them later, rather than to delay until all details are reasonably firm." A.N.C.X.F. Report, Vol. 1, pp. 27, 28.

² Then Admiral-of-the-Fleet Sir Andrew Cunningham, G.C.B., D.S.O.

³ This concern was shared by the C.-in-C., Home Fleet, who on the 18th May signalled some suggestions to A.N.C.X.F. "to avoid consternation and possible outcry from ships when these and other orders are opened by them."

⁴ "The greatest assistance was rendered by Harrow Printing Press and by I.S.T.D. (Colonel Bassett, R.M.) the latter reproducing most admirably many complicated diagrams. Great credit too, is due to Mr. Cross (M. Branch (Books) Admiralty) who organized with great efficiency and unflinching cheerfulness the distribution of some 3,000 copies of three sets of orders with their amendments." A.N.C.X.F. Report, Vol. 1, p. 29.

III.—TRAINING AND REHEARSALS

28. Preliminary Training

Meanwhile the individual training of the various assault forces had been taking place, and at the time Admiral Ramsay opened his Battle Headquarters at Southwick Park was about to culminate in two large scale exercises, which took place between 24th/28th April (exercise "Tiger") and 3rd/8th May (exercise "Fabius").

Training facilities and assault firing areas had originally been designed to cater for a three-divisional assault, and it was not easy to expand these to accommodate the two new assaulting divisions (Forces "G" and "U") required for General Montgomery's plan. But thanks to "the great co-operation shown by all concerned, to the unselfishness of the commanders whose divisions were already nearly trained, and to the initiative and drive of the commanders of the new divisions, who had to fit a six months' programme into three, all difficulties were overcome, and on the day Forces "G" and "U" carried out their assaults with the precision of yet another rehearsal¹."

Of the five assault forces, Force "J" started its training with a decided advantage over the other four, its nucleus having been formed as far back as October, 1942, under Captain Hughes-Hallett, with headquarters at Cowes. In 1943 it took part in the landing in Sicily, after which it returned to the Isle of Wight and was built up to lift a division. In November, 1943, Rear-Admiral Sir Philip Vian was appointed to command Force "J" and training with the 3rd Canadian Division, which had started in September, was carried out during the winter. This included twelve assault and three ferry exercises, as well as several beach reconnaissances—the latter in the actual "Neptune" area.

During this training period there was another change in the command, Commodore G. N. Oliver relieving Rear-Admiral Vian on the appointment of the latter in February, 1944, as Naval Commander, Eastern Task Force.

Force "S," commanded by Rear-Admiral A. G. Talbot, was based in Scotland for its training. Headquarters were set up in October, 1943, at Inverness, and training with the 3rd British Infantry Division commenced in December.

The training of this force was seriously handicapped by the restrictions in its assault training areas; not until the final exercise at the end of March, for example, could close support fire and the assault be practised at the same beach. Another great difficulty was the stormy winter weather of the Moray Firth, but this Rear-Admiral Talbot subsequently considered "a blessing in disguise." Putting aside the cancellation of exercises and losses of craft² and personnel the experience gained under these conditions stood them in good stead in the actual operation.

Five full scale exercises were carried out at Burghead, which, from a hydrographical point of view, closely resembled the beach which was to be assaulted in Normandy.

¹ A.N.C.X.F. Report, Vol. 1, p. 7.

Admiral Ramsay concurred with the opinion expressed by Rear-Admiral Vian that "five to six months is the ideal period for a force to work up in." A.N.C.X.F. Report, Vol. 1, p. 56.

² For the first three months there were no slipways or docks in the area to enable underwater repairs to be carried out to the craft and the weather prevented their being sent further afield. Rear-Admiral Talbot paid tribute to the Repair Staffs of the Northern Bases under Captain J. I. Hallett, C.B.E., R.N., who "worked marvels by beaching the craft and working on them at low water."

During most of this period the entire staffs of Force "S" and the 3rd British Division were working together at Combined Force Headquarters in Cameron Barracks, Inverness, but the routine work in connection with the training was so intense that it was decided to seek a more peaceful atmosphere for the detailed planning of the operation, and for the month of March the Combined Planning Staff moved to Aberlour House, on Speyside. The Rear-Admiral subsequently expressed the opinion that the results fully justified this step.

At the beginning of April, 1944, Force "S" commenced to move south to the assembly area (Portsmouth), an operation completed without incident by the end of the month.

Force "G" started at a considerable disadvantage to the other two forces, as it was not formed until 1st March, 1944. Its task was to land the 50th (Northumberland) Division. Commodore Douglas-Pennant established his headquarters (H.M.S. *Purbeck*) at the Royal Hotel, Weymouth, on 14th March¹, and during the ensuing six weeks four brigade exercises were carried out in the Studland area. In this connection, the Commodore subsequently remarked that the Army possessed an advantage over the Navy in that its training staff was almost entirely separate from its operational staff, thus allowing the latter to concentrate on planning the actual operation. "It is hardly an exaggeration," he wrote "to say that my staff were so occupied in planning the five major exercises ('Smash' 1 to 4 and 'Fabius') that they could devote little time to the operation until the beginning of May²."

The disadvantage due to the shortness of the working up period was accentuated by the fact that the headquarters ship, H.M.S. *Bulolo*, did not arrive in the United Kingdom till 17th April, and then required the fitting of extra communications. She was thus only available for the final exercise ("Fabius"). The Commodore remarked that the collaboration of a force staff and the officers of the headquarters ship can contribute greatly to the success of an operation and regretted that the two did not have the opportunity of working together during the earlier exercises³.

The force was transferred from the Portland-Poole area to the Southampton-Solent area on 28th April.

The two American assault forces of the Western Task Force—Forces "O" and "U"—were drawn from the U.S. Eleventh Amphibious Force, which was directed on 17th December, 1943, to arrange for amphibious training with the Army divisions assigned by the Commanding General, First U.S. Army. The V Corps was allotted to Force "O" and the VII Corps to Force "U."

Training was carried out on the south coast of England, particularly in the Slapton Sands (South Devon) area, Force "O" commanded by Rear-Admiral J. L. Hall, U.S.N., being based on the Portland area and Force "U," under Rear-Admiral D. P. Moon, U.S.N., on the West Country ports. Starting

¹ Commodore Douglas-Pennant arrived in London from India on 17th February and took over the Naval planning staff which was already carrying out preliminary planning with the Advanced Headquarters of the 30th Corps and 50th Division in a Combined Force H.Q. in London. The Advanced H.Q. of the 50th Division accompanied the Naval Headquarters to H.M.S. *Purbeck*.

² A.N.C.X.F. Report, Vol. 2. Report by Naval Commander, Force "G," p. 5.

³ H.M.S. *Bulolo* had, however, already carried out the duties of Force Headquarters Ship at ~~Catania~~ Sicily and Anzio, and Commodore Douglas-Pennant subsequently stated that the experience gained by her ship's company in these operations was of great value.

with exercises for battalions and regimental combat teams the forces worked up to full divisional and corps rehearsals with all supporting elements, every effort being made to simulate conditions that would obtain in the assault area. From the naval point of view great attention was paid to practice in keeping in narrow swept channels with currents running up to 3 knots, and to beaching and handling landing craft on flat beaches with a large tidal range¹.

29. Exercise "Tiger" : Attack by E-Boats

The large assembly of ships in the southern ports caused some increase of enemy activity in the English Channel, and several encounters occurred between E-Boats and patrols from the Portsmouth, Plymouth and Dover Commands. According to prisoners, their objectives were mainly reconnaissance but as April drew to a close—when the final "Neptune" rehearsals were scheduled to commence—stronger enemy reaction was anticipated. Actually the only interference with the "Neptune" preparations occurred during exercise "Tiger," a full scale exercise including assembly, loading, assault and build-up, carried out by Force "U," then comprising 337 ships and landing craft under Rear-Admiral Moon, U.S.N. Slapton Sands was the scene of the assault and throughout the exercise covering forces from the Plymouth Command were stationed south of the line joining Start Point to Portland in four patrols, consisting of four destroyers, three M.T.B.s. and two M.G.B.s.

Force "U" sailed during the night of 26th/27th April from Plymouth, Salcombe, Dartmouth, Torquay and Brixham and, in order to simulate the long minesweeping approach to the Bay of the Seine, followed a route first to the northern part of Lyme Bay, then to the southward and finally west to Slapton Sands. That night H.M.S. *Scimitar*, one of the escorting destroyers, was damaged by collision with an American tank landing ship, and put into Plymouth for repair.

At daylight, 27th April, the assault was carried out successfully at Slapton Sands. The last convoy to simulate the build-up sailed during darkness that evening, being due to arrive at Slapton Sands at 0730, 28th. It consisted of eight tank landing ships and two pontoons, escorted by H.M.S. *Azalea*. Unfortunately the *Scimitar*, which had been detailed by Rear-Admiral Moon as part of the escort for this convoy, did not sail from Plymouth after her repairs². At 0020, 28th April, three groups of E-Boats were plotted west-south-west of Portland Bill, apparently searching to the north-westward. Two hours later the convoy, then in position 254° Portland Bill 15 miles, was attacked by one, or possibly two, E-Boat groups. The single escort was unable to beat off the attack; two tank landing ships were sunk by torpedoes and one other was damaged. Casualties, two-thirds of whom were military personnel, amounted to 638 killed and 89 wounded. The enemy, escaping to the southward were engaged by the destroyers *Offa* and *Orwell*, but escaped by the use of high speed and smoke³.

¹ Rear-Admiral Kirk, subsequently expressed the opinion that "this training paid big dividends." A.N.C.X.F. Report, Vol. 3. Report by Naval Commander, W.T.F. p. 61).

² This was due to a misunderstanding for which the C-in-C., Plymouth, accepted responsibility.

³ This, the first offensive success of the enemy against "Neptune" operations was apparently gained in ignorance of the real target, the subsequent routine German broadcast merely claiming to have sunk three ships in convoy totalling 19,000 tons.

30. Final Rehearsal : Exercise "Fabius"

Exercise "Fabius"—the final rehearsal for Forces "O," "S," "J" and "G"—was carried out between the 2nd and 6th May, 1944. During this period Admiral Ramsay as Allied Naval Commander-in-Chief assumed control of operations in the English Channel in accordance with the arrangements for command. Covering forces to the southward of the exercise area were provided by the Commanders-in-Chief, Portsmouth and Plymouth.

The exercise embraced port authorities and organizations and communications generally. Berthing, loading and sailing of the ships and craft of the four forces took place throughout the 3rd May. The next day assaults were carried out under conditions as realistic as possible by Force "O" at Slapton Sands, Force "S" west of Littlehampton, Force "J" at Bracklesham Bay and Force "G" at Hayling Island.

No noticeable enemy reaction was shown to the large naval forces at sea. Two incidents, however, occurred in the Portsmouth Command patrol line. At 0337, 4th May, H.M.S. *Offa* was attacked by aircraft—tentatively identified as Me. 210—in position Lat. 50° 13' N., 1° 27' W. (20 miles to the southward of St. Catherine's Point). One bomb hit the upper deck under the port after Oerlikon and a near miss caused splinter holes in the hull. Structural damage was light; casualties, three killed, four wounded.

About a quarter of an hour later, in position 208° St. Catherine's Point 24 miles, M.T.B.s 708 and 720 were attacked by Beaufighters. M.T.B. 708 was set on fire and subsequently sank, four officers and seven ratings being wounded.

The weather was favourable at the outset of the exercises, which from the naval point of view were generally satisfactory, but at 1300 4th May it commenced to deteriorate, with freshening south-westerly wind which reached force 6 in the night, and the full programme had to be curtailed to avoid damage to landing craft.

With the completion of Exercise "Fabius" the training and exercise period of the assault forces came to an end. From then until the start of the operation, except for a defence exercise carried out off Brighton, 18th/19th May by Forces "S," "G" and "J,"¹ efforts were concentrated on making all craft operationally fit.

The majority of the assault ships and craft had necessarily been used continuously in training for months past, and an extremely heavy strain was thrown on the repair facilities on the south coast in these last few weeks. There had been frequent discussions during planning as to what percentage of landing ships and craft would be available for the operation. In the event, the high overall figures for all types, 97·6 per cent. for the British and 99·3 per cent. for the American, exceeded the most sanguine forecast and reflected the "very highest credit on all concerned in the maintenance and repair organizations of both countries²."

¹ Forces "S," "G" and "J" assembled off Brighton where they were assumed to have established a successful landing. Ships in the build-up were subjected to attack by craft simulating E-Boats, W-Boats (small fast submersibles) and dummy air and mine-laying. No noteworthy incident occurred during the exercise.

² A.N.C.X.F. Report, p. 8.

IV.—EVENTS PRIOR TO THE OPERATION

(26th April–5th June, 1944)

31. A.N.C.X.F. Moves to Battle Headquarters

On 26th April, 1944, the Allied Naval Commander-in-Chief moved into Battle Headquarters at Southwick Park. This was conveniently near to the Supreme Commander and to the Portsmouth Combined Headquarters.

At this date the five assault forces—their individual training completed—were assembled in the following areas :—

<i>Western Task Force.</i>	<i>Eastern Task Force.</i>
Force " U " Plymouth.	Force " S " Portsmouth.
Force " O " Portland.	Force " G " Southampton.
	Force " J " Isle of Wight.

Follow-up Force " B " was in the Milford Haven area and Force " L " at the Nore.

The components of the artificial harbours, though as yet by no means operationally fit, were gradually arriving at their assembly points—" Phoenix " and most of the " Whale " units at Selsey and Dungeness¹, " Whale " roadways in the Solent, " Bombardons " at Portland and spare " Phoenixes " in the Thames. The " Corncocks " (blockships) were still in northern ports.

Everything was then going according to plan, but berthing facilities in the south coast ports were already a problem². Plan 2 shows the berthing arrangements for the final assembly in the Isle of Wight area—the largest single concentration—which may be considered typical of the congestion experienced at all the other ports.

By 1st May it became evident that the programme of construction of the Mulberry units was falling behind and later in the month it was found that the

¹ Various factors had to be considered in the selection of " Phoenix " and " Whale " assembly areas, such as the nature of the bottom, the shelter afforded, accessibility to the building areas, vulnerability to enemy attack, and compliance with the requirements of the cover plan. For this latter reason Selsey and especially Dungeness were chosen in preference to places further west, e.g. Christchurch Bay. The choice of Dungeness and Selsey which was reached early in March, necessitated the establishment of skeleton port facilities. Under Vice-Admiral W. F. Sells (ret.) at the former and Rear-Admiral F. Burges-Watson (ret.) at the latter, these organizations were rapidly developed, the actual assembly and subsequent despatch of the Mulberry units being controlled by H.M.S. *Queen of Kent* (Lt.-Com. H. V. Todd, R.N.R.) in the Dungeness area and H.M.S. *Queen of Thanet* (Com. J. P. de W. Kitcat, R.N.) at Selsey. These two ships also provided accommodation for the " Phoenix "—" Whale " handling parties.

² A fortnight previously (11th April) Admiral Ramsay had written to the C.s-in-C., Plymouth, Portsmouth and the Nore, that he fully appreciated that saturation point had to all intents and purposes been reached : the only additions which could then be foreseen were 60 trawlers for smoke making and 60 83-ft. U.S. motor launches to be used on sea rescue work.

pumping gear supplied by the War Office to pump out "Phoenix" units was totally ineffective¹.

Another difficulty lay in the shortage of tugs, and this, indeed, was never entirely got over. A special body, known as "Cotug" with Captain J. G. Y. Loveband, R.N., as its head, was organized on 24th May under A.N.C.X.F. to deal with all "Neptune" tug problems; but the fact was that there were not enough tugs in the country to satisfy all the demands—Civil, Naval and Military—on their services. As late as 31st May, of the tugs allocated for towage of "Phoenix" and "Whale" units the totals available were 48 out of 72 large, and only four out of 44 small, and on that date Admiral Ramsay directed that "the principle that Mulberry construction constituted a vital part of the whole operation must govern decisions as to the extent that tug assistance could be provided for other purposes²."

32. Enemy Reactions

Although the Germans were slow to react to the much publicised invasion preparations, enemy naval activity in the Channel did increase from the end of April onwards. As mentioned before (Sec. 29) Force "U" was attacked during exercises on 28th April, and the following night H.M.C.S. *Athabaskan* (Lieut.-Comdr. J. H. Stubbs, D.S.O., R.C.N.)—which, with H.M.C.S. *Haida* (Commander H. G. de Wolf, R.C.N.) was covering the 10th Minelaying Flotilla operating off the Ile de Bas—was sunk in an engagement with Elbing class destroyers. One of the enemy was driven aground by the *Haida*³.

During May an increasing number of E-Boats and R-Boats were reported as having moved to Cherbourg and Havre. Their activities were successfully dealt with by the Commanders-in-Chief, Plymouth and Portsmouth.

A new feature, however, appeared on 20th May when a submarine was sighted and attacked in position Lat. 49° 01' N., Long. 4° 09' W. (roughly halfway between Ushant and Guernsey). On the following night another

¹ This defect was brought to light by the accidental stranding of a "Phoenix" unit about the middle of April. Operations for refloating it occupied a salvage vessel for a period of seven days. After discussions between the Admiralty and the War Office it was decided about the 20th May (less than three weeks before D-day) that the former should take over the responsibility for raising the "Phoenix" units. The work was then entrusted to the Admiralty Salvage Department. The Deputy Director, Captain J. B. Polland, R.N.V.R. was put in charge of the operation and all the resources of the department were put at his disposal. Space does not admit of a description of his activities, but Rear-Admiral Tennant subsequently reported: "The Salvage Department . . . performed in the very short time available a herculean task in getting the pumping situation under control and the thanks of the Allied Naval C.-in-C., Expeditionary Force, are due to them, and particularly to Captain Polland, for their great assistance." Report by R.A.M.P.

² The administration, servicing and operation of the large number of tugs employed in Operation "Neptune" presented a unique problem. Briefly, it was eventually solved by the appointment of Captain E. J. Moran, U.S.N.R., as "Tug Controller," with Headquarters at Lee-on-the-Solent and a Staff of British and American Officers and Ministry of War Transport Representatives, under whose able direction was carried out the operational control of some 200 tugs of various nationalities and services, during the assembly, assault and build-up stages of the operation.

The motor vessel *Aorangi* was detailed as Tug Depot Ship, to which all tugs reported for instructions as to fuel, water, defects, etc., on arrival in harbour.

Priorities of all towing requirements (other than local movements) were periodically reviewed and decided by a small committee consisting of the Head of Cotug, Captain Loveband (Chairman), the Tug Controller and Mr. Watkins of the M.O.W.T. The matter is dealt with at some length in the Reports of R.A.M.P., and the C.-in-C., Portsmouth.

³ See Battle Summary No. 31. Cruiser and Destroyer Actions in the English Channel.

U-Boat was sighted by aircraft. This looked like a move against the "Neptune" convoy routes and special dispositions were made by the Commanders-in-Chief, Plymouth and Portsmouth, as well as the Air Officer Commanding-in-Chief, Coastal Command¹ to deal with the situation.

But Admiral Ramsay has left it on record that no weapon available to the enemy at this time caused him greater anxiety than did the potentialities of minelaying. Defensive minefields in the Bay of the Seine had caused the naval plan largely to be framed round the requirements for sweeping the allied forces through them. In the six weeks before D-day the enemy considerably intensified his minelaying off the south coast of England, using aircraft on a heavier scale than for over two years, and introducing two new types of mines. Fortunately these activities were confined to moonless periods. "Had D-day been in such a period it is doubtful whether the Portsmouth Channels could have been cleared in time. As it was, no interruption was caused . . . and it is considered that the enemy missed a great opportunity in not still further extending this form of attack. That he did not attempt more was yet another result of the air superiority we achieved before D-day²." Towards the end of May some of this minelaying was combined with small scale night bombing attacks on south coast ports, but very few casualties were caused either to ships or personnel.

33. Selection of D-day

On 1st May a meeting was held at Supreme Headquarters to discuss the situation created by the extension of obstacles in the assault area. It was decided that they must be dealt with dry shod, *i.e.* when they stood in less than two feet of water³. This necessitated the adjustment of H-hour, which in its turn involved the fixing of a target date for D-day. After some days' consideration, Admiral Ramsay decided that the earliest acceptable dates from the naval point of view were the 5th and 6th June; the 7th June could be accepted in case of extreme necessity. This decision he communicated to General Eisenhower at a meeting on 8th May.

The next day Admiral Ramsay gave warning by signal that the naval plan would be "frozen" at 0900, 12th May. This was necessitated by the large number of alterations in plans of task and assault force commanders, which would, if continued, create a critical situation with authorities responsible for implementing the initial movements in "Neptune⁴."

On 15th May a meeting took place at 21st Army Group Headquarters at which a general outline of the complete "Neptune" plan was presented by each of the respective Commanders-in-Chief and Task Force Commanders. Included in the audience were H.M. The King, the Prime Minister and General Smuts, each of whom addressed the assembled Officers. "Great, if sober, confidence in the outcome of the operation was evident throughout the meeting. The need for flexibility to meet events which might not go in accord with plans was emphasized by both the Prime Minister and A.N.C.X.F.⁵."

¹ Air Chief Marshal Sir W. Sholto Douglas, K.C.B.

² A.N.C.X.F. Report, Vol. 1, p. 9.

³ A number of reconnaissance landings, arranged by the Chief of Combined Operations, were carried out to investigate the extent of these obstacles. On the night of 17th/18th May, two officers failed to return from one of these missions in the Pas de Calais area.

⁴ A.N.C.X.F. Report, Vol. 1, p. 35.

⁵ A.N.C.X.F. Report, Vol. 1, p. 36.

The First Lord of the Admiralty¹ visited Admiral Ramsay at Battle Headquarters, and saw the preparations in the Portsmouth area on 21st May. Two days later, on 23rd May, the Supreme Commander signalled in special code that D-day was provisionally fixed to be 5th June².

34. Visit of H.M. The King

On 24th May H.M. The King visited the Portsmouth area. After being met by Admiral Ramsay, he embarked in each of the three force headquarters ships of the Eastern Task Force, and witnessed assault landing craft flotillas steam past in formation. His Majesty afterwards embarked in the royal barge and proceeded past major landing craft assemblies at Portsmouth and Southampton, and coastal craft in Haslar Creek.

The next day His Majesty visited Portland, where he was met by Rear-Admiral Kirk, U.S.N., and inspected ships and personnel of the Western Task Force, taking luncheon on board the Flagship, U.S.S. *Augusta*.

35. Operation Orders opened : Security

At 2330, 25th May, all holders were directed to open the operation orders³ and on the 28th a further signal was made naming 5th June as D-day and specifying the five H-hours for the respective assault forces⁴.

This brought security to the fore. About 24 hours previously, security measures had been increased in stringency by order of the Supreme Commander. All mail of personnel taking part in the operation was impounded; telephone and cable facilities were forbidden; and private telegrams might only be sent in emergencies by special permission of Commanding Officers. On the naming of D-day on 28th May, all personnel became "sealed" in their ships⁵ in accordance with instructions contained in the operation orders.

Nevertheless, some breaches of security did occur. The premature issue (on 31st May) of charts of the Bay of the Seine area to tugs—which afterwards dispersed to various ports—was regarded as a serious danger. As a counter measure, each tug was promptly issued with a large-scale chart of the Boulogne area, marked "Immediate. Top Secret".

¹ The Rt. Hon. A. V. Alexander, C.H.

The Prime Minister, accompanied by the Dominions Premiers (with the exception of the Prime Minister of Australia) had visited the Portsmouth area on 13th May.

² The provisional fixing of D-day was necessary at an early date, since sailing orders to certain units, such as the "Corncocks" (Blockships) at Oban, had to be issued as early as D-8 days.

³ A reassuring message had been promulgated by the Admiralty at Admiral Ramsay's request on 24th May, pointing out that the orders were of necessity voluminous, but that only a small part of them concerned each individual ship, and that difficulties would be cleared up during briefing. (Admiralty Message 241824 May, 1944.)

Admiral Ramsay was also concerned at the volume of signal traffic which the size of the operation entailed. Admiralty approval was obtained for various measures to reduce this, the most noteworthy being authority to take action on telephone conversations and personal letters to a much greater extent than was customary.

⁴ It had been originally intended to include D-day and H-hour in the signal ordering the operation orders to be opened, but it was decided to hold them back until after the orders had been studied, in order to avoid possible confusion over the five newly decided H-hours.

⁵ Difficulties arose over "sealing" personnel of minor landing craft who were accommodated ashore.

There were also several instances of indiscreet signals linking D-day with the calendar date. Happily, these had no ill effects, and on "the day" complete tactical surprise was achieved¹.

36. Final Preparations

With the promulgation of D-day on 28th May the long period of preparation entered on its last stage.

On this day Phase III of the minelaying plan (*see* Sec. 23, *ante*) was completed—five days earlier than originally planned—and the phase which was to last till the eve of D-day was started².

Restriction on air attack on surface ships in the Channel to the westward of a line from North Foreland to Walcheren Fort (near Dunkirk) was instituted on all aircraft except those of Coastal Command on 27th May³.

On 31st May ten sonic underwater buoys were laid in positions marking the edge of the enemy mine barrage in the assault approach channels (Operation "Enthroned"). The buoys were laid sonically dead to come alive on D-1, when they would be used by motor launches acting as mark boats to enable the minesweepers to start sweeping the channels in the correct positions.

In Operation "Neptune" radar, radar-counter measures and communications interlocked to an unprecedented degree, and to avoid saturation of the ether and complete loss of all efficiency, drastic restrictions were imposed.

Several outstanding and recurring problems called for settlement during these last few days, the most important of which were in connection with the shortage of tugs and the Air Force plans.

As a result of enemy troop movements in the Cotentin Peninsula, the Air Force plans for the U.S. airborne operation in that area were changed, and a new air route was chosen, which passed dangerously close to the American forces in "Utah" sector. Admiral Ramsay decided that he must assist the Air Force by accepting, though with misgiving, the proximity of aircraft to ships, and imposed restrictions to A.A. gunfire similar to those already in force on the eastern flank⁴ (*see* Sec. 16).

The question of an aircraft carrier to transport air O.P. aircraft was also revived, and H.M.S. *Argus* was actually sailed to Belfast to embark them; but on her arrival the army authorities decided they could not make use of her—to the relief of the naval authorities, who did not relish the employment of this very vulnerable ship in the assault area.

¹ A curious point in security was investigated by the naval Intelligence Section towards the end of May. This arose from the "Daily Telegraph" crossword puzzle, in which a remarkable number of the codewords used in "Neptune" formed the correct answers to the clues. Not only was the word "Neptune" itself a solution, but also "Overlord," "Omaha," "Mulberry," "Whale," etc.

² It was estimated that enemy casualties due to the minelaying were seven ships sunk and eight damaged during Phase II, which ended on 10th May, and nine sunk and 29 damaged during Phase III—results which were considered by Admiral Ramsay to reflect great credit on all concerned. A.N.C.X.F. Report, Vol. 1, p. 40.

³ The restriction was not applied to aircraft of the A.E.A.F. inside a 10-mile strip from the French coast till 29th May.

⁴ Rear-Admiral Moon, the Assault Commander, Force "U," made a strong protest (through the Naval Commander, Western Task Force) against the proposed route of troop-carrying aircraft in the close proximity of the ships in his assault area.

But the main preoccupation at Battle Headquarters centred on the weather. A long spell of fine weather in May was showing signs of breaking up, and as the days went by, it became increasingly clear that an unsettled spell was impending. On 29th May at a meeting at which the Deputy Supreme Commander (Air Chief Marshal Tedder) was present it was decided that Commanders' meetings to give weather forecasts critical examination should be held at Battle Headquarters twice daily from D-3 (2nd June); and on 31st, details of movements of forces in event of postponement of D-day were promulgated, amplifying the instructions in the operation orders. On the same day an inspiring message was issued by the Allied Naval Commander-in-Chief in a special order of the day, for distribution to every officer and man in the Naval Expeditionary Force. An order couched in somewhat similar strain was also issued by the Supreme Commander-in-Chief (*see* Appendix G, G1).

37. Loading and Assembly

Meanwhile in the assault forces, briefing had occupied the days immediately following the opening of the operation orders. On 31st May commenced the intricate business of loading and final assembly. Since all the ports were very congested, every available mooring and berth being occupied¹, this necessitated very careful timing and movement of craft, both loaded and unloaded.

Broadly speaking, all went according to plan (*see* Sec. 20). Such hitches as occurred had mostly been foreseen, and were overcome without undue difficulty. The majority of the ships and craft and military formations had practised the evolution in exercises, and Commodore Oliver remarked that "the knowledge that they were really 'off at last' acted as a great incentive."

The Naval Commanders of both Forces "S" and "J" remarked on the delays which occurred in loading the L.S.T. due to lack of experience of the military loading personnel; in the case of Force "J" this was aggravated by difficulty experienced in backing trailers down the Southampton hard at low states of tide.

Rear-Admiral Talbot commented on the overloading of craft, which seems to have been general in a greater or less degree, and also on the ill effect of not adhering to the loading plan laid down for the L.C.T.²

There was complete absence of enemy interference throughout the loading, part of which was personally witnessed by the Prime Minister and Field Marshal Smuts.

38. A.N.C.X.F. assumes Operational Command

At 1200, 1st June, 1944, Admiral Sir Bertram Ramsay assumed operational command of "Neptune" forces and general control of operations in the Channel.

That night a minor episode occurred off the coast of France, when at 0220 2nd June, M.T.B.s 742 and 749 were engaged by enemy shore batteries off

¹ This is no overstatement. Space forbids an account of the special moorings laid and berthing arrangements carried out, but the following extract from the report of the C.-in-C., Portsmouth, gives an idea of the magnitude of this problem:—

"It is a commonplace expression to say that an anchorage is 'full of ships,' but in the case of the East and West Solent with an available area of approximately 22 square miles in which to anchor ships, it was literally true. On 18th May, the Admiralty offered the C.-in-C., Portsmouth, the services of H.M.S. *Tyne*, but it was only possible to accept her because H.M.S. *Warspite* was not being sent to Portsmouth till D-day, which gave one berth in hand."

Report on operation "Overlord," Portsmouth Command, para. 38, plan 2, shows the berthing arrangements referred to.

² A.N.C.X.F. Report, Vol. 2, Report by Naval Commander, Force "S," pp. 8, 9.

Cape de la Heve (near Havre) while carrying out a minelaying operation. No damage or casualty was sustained; the M.T.B.s took avoiding action, and subsequently laid their mines in an alternative position.

The first meeting of the Commanders-in-Chief to consider the weather forecast was held by the Supreme Commander at Battle Headquarters during the forenoon of 2nd June. Less favourable conditions were predicted for D-day, particularly as regards cloud and cloud base, which was of special concern to the Air Force authorities, since it would affect the passage of the airborne divisions.

The first sailings of warships for the assault area took place that evening (2nd June) with the departure of Bombarding Force "D," from the Clyde, and the two midget submarines, X.23 and X.20¹, from Portsmouth. H.M.S. *Nelson* also left Scapa for Milford Haven.

The 3rd June dawned cloudy, with cloud base lowering. Wind was west, 3-4, backing to south-west and increasing to force 5, sea slight, increasing to moderate. Commanders' meetings were held at 0430 and again at 2130 to consider the forecast, which was still unfavourable for 5th June. The conditions predicted affected the Army and Air Force plans more unfavourably than the naval, and at the evening meeting Admiral Ramsay considered that the Navy would be able to undertake its task if reasonable protection could be given from the air. The Supreme Commander decided to await a possible change in the forecast in the next six hours.

Meanwhile the Western Task Force bombarding forces sailed from Belfast, and the *Rodney* and Bombarding Forces "E" and "K" from the Clyde; and—late in the afternoon—the first assault force convoys (sections of Force "U") put to sea from Dartmouth, Salcombe and Brixham.

39. Postponement

At 0415, 4th June, the Supreme Commander and the Commanders-in-Chief again met to consider the weather. The forecast was pessimistic, and it was decided to postpone the operation for one day. This decision was communicated to the Admiralty and the Commanders-in-Chief, Home Commands, by telephone, and a general signal ordering the postponement was promulgated from Battle Headquarters at 0515².

Convoys at sea were ordered to reverse their courses, and proceed to sheltering anchorages; those which had not yet sailed were retained in harbour. The "Corncob" convoys were diverted to Poole Bay, and the bombarding forces reversed courses with the intention of remaining at sea. Movements generally went in accordance with the postponement plan, and at 2250 that evening (4th June) the Commander-in-Chief, Portsmouth, reported all "Neptune" convoys anchored except Group U.2A which was under way off Portland, where the harbour was too crowded to enter.

¹ X.23 and X.20 were towed by H.M. Trawlers *Sapper* and *Dartheta* till in Lat. 50° 22' N., Long. 0° 50' W., when they were slipped at about 0430, 3rd June. They proceeded under their own power dived throughout daylight, 3rd June, surfacing after dark to cross the enemy mine barrier, and arrived off the French coast about 0500, 4th June.

² This signal included the revised times of H-hours for 6th June.

This was a very large convoy totalling 138 vessels—128 tank landing craft (77 British, 51 U.S.), four escorts and a rescue tug—and its experiences proved the exception to the general smooth working of the postponement plans. The group had got some distance ahead of its planned position and apparently missed the postponement signal at 0515. Nearly four hours later, at 0900, it was 25 miles to the southward of St. Catherine's Point and still heading south. The Commander-in-Chief, Plymouth, sent two destroyers at full speed to turn the convoy, and the Commander-in-Chief, Portsmouth, sent a Walrus aircraft which at 0948 reported that all craft had turned to the northward¹. They were ordered to anchor in Weymouth Bay and refuel, but great difficulty was experienced in making to the westward against a west-south-westerly wind, then blowing at force 5 to 6, and a short steep sea on the port bow. It was after midnight (4th/5th) before any of the craft were at anchor. At 2300 (4th June) a U.S. tank landing craft, which had previously broken down, capsized and sank off Portland. No casualties were reported. She is believed to have carried 12 vehicles and 70 men instead of 11 vehicles and 55 men as the allotted load².

Early that morning—at about the time the decision for the postponement was being reluctantly taken at Battle Headquarters—H.M. midget submarines X.23 and X.30 had arrived off the coast of France. The two submarines thus had the honour of being the first Allied vessels to arrive in the assault area. There they remained, within three miles of the enemy coast, checking their positions as opportunity offered, till the arrival of the assault forces some 48 hours later³.

40. The Operation Launched, 5th June, 1944

During the afternoon of 4th June, the First Sea Lord, Admiral of the Fleet Sir Andrew Cunningham, visited Battle Headquarters. Throughout the day the weather had been overcast, with low cloud and a south-westerly wind, force 6⁴. Cloud conditions were expected to deteriorate, with little improvement before 7th June. Nevertheless, at the evening meeting of the Commanders-in-Chief at 2115, though conditions were still bad—with weather charts typical of December rather than June—the meteorological officers

¹ About half an hour later, the 14th Minesweeping Flotilla reported mines in approximately Lat. 50° 15' N., Long. 1° 16' W. (15 miles south of St. Catherine's Point). This area was in the route of the Force "U" convoys. Five mines were cut and two exploded in the sweep—all of the new German X star type.

² Admiral Ramsay had observed signs of overloading in the course of visits of inspection to some of the hards, and had made a signal the previous day (3rd June) that specified draughts must not be exceeded.

³ The operations of each X-craft were directed by the Senior Officer of a Combined Operations Pilotage Party embarked. They were manned as follows:—

	X.20	X.23
C.O. . .	Lieut. K. R. Hudspeth, R.A.N.V.R.	Lieut. G. B. Honour, R.N.V.R.
1st Lieut. . .	Lieut. B. E. Enser, R.N.V.R.	Sub-Lieut. H. J. Hodges, R.N.V.R.
E.R.A. . .	E.R.A. L. Tilley, R.N.	E.R.A. G. B. Vause, R.N.
C.O.O.P. . .	Lieut.-Cdr. P. C. Clarke, R.N.	Lieut. L. G. Lyne, R.N.
	Sub-Lieut. R. Harbud, R.N.V.R.	Lieut. J. M. Booth, R.N.V.R.

Admiral Ramsay commended the "great skill and endurance" shown, and added: "Their reports of proceedings, which were a masterpiece of understatement, read like the deck log of a surface ship in peace time, and not of a very small and vulnerable submarine carrying out a hazardous operation in time of war." A.N.C.X.F. Report, Vol. 1, p. 11.

⁴ At 1100 4th June the Admiralty promulgated a warning that a south-westerly gale, force 8, was imminent in the Irish Sea.

considered that there was a good chance of suitable conditions existing on the morning of 6th June ; they anticipated a return of high winds and rough seas, however, later that day, and these conditions were then likely to continue for an indefinite period¹.

General Eisenhower was therefore "faced with the alternatives of taking the risks involved in an assault during what was likely to be only a partial and temporary break in the bad weather, or of putting off the operation for several weeks until tide and moon should again be favourable. Such a postponement, however, would have been most harmful to the morale of our troops, apart from the likelihood of our losing the benefits of tactical surprise²." It was a grim dilemma, but he decided to proceed with the operation, subject to confirmation next morning, and at 0400, 5th June, he "took the final and irrevocable decision : the invasion of France would take place the following day²."

¹ Admiral Ramsay subsequently remarked that although the unfavourable weather caused difficulties and damage to craft off the beaches later, the advantages gained by surprise were so striking that the decision of the Supreme Commander to go on despite the weather was amply justified. "A postponement of one more day, *e.g.* till 7th June would, in the event, have proved disastrous owing to the conditions of sea off the beaches. The problems arising out of a postponement of 12 or 14 days to the next suitable period are too appalling even to contemplate." A.N.C.X.F. Report, Vol. 1, p. 10.

² Report by the Supreme Commander, p. 24.

