III MAY 1-15, 1944: ETO – European Theater abcd lmn

A. Chapter 18: The 90-Division Gamble (Cont'd): May 1-15, 1944; Matloff, *Strategic Planning for Coalition Warfare Vol II* xyza

Mentioned elsewhere, official historian Matloff had the task of a "full explanation" of an "inexplicable" gambit made that carried tragic consequences int the ETO from September 1944 through January 1945. It began at SEXTANT. The Joint Logistics Committee predicted serious 1944 service troops shortages from the Pacific war and B-29 program. The committee suggested "a calculated risk to eliminate the fifteen (new) infantry divisions" in 1944 leaving 90 total divisions as: 43 Europe, 7 North Africa, 22 Pacific, and 18 in U.S. reserve. "In a pinch", service troops were a reserve. **408** A December Strategy Section report "capped" the U.S. Army at 90 divisions as enough to "win the war".[2] **It was a guess!** Justifications included fears "the Army would be unable to add 15 divisions and remain within the 7,700,000-man ceiling of November". Selective Service was slow. The Army was 200,000 men short of its 7,700,000 goal. The new "rotation program" required 60,000 men in 1944, the Air Forces needed 130,000 for the B-29 program. The justifications ended at: "**Besides, the Strategy Section concluded, there were no firm requirements for the fifteen additional infantry divisions**." A cardinal rule is never fight with "just enough" forces – always use "overwhelming forces"! No politician would dare adopt such a career perilous course!

Yet, the fifteen planned divisions were cancelled. Marshall ordered theaters to economize. SOS was 40,000 troops short for ANVIL and 112,000 for the Pacific. There were no increases. The Army was "trying desperately to stay within the 7,700,000 ceiling". In February, Marshall knew ground forces were short 97,000 men. The Army found 100,000 men from the B-29 program leaving a 100,000- troop shortage for OVERLORD, ANVIL, and Pacific. Marshall estimated the actual shortages was 409 between 350,000 and 400,000 men.

Behind this was an Army college tuition program for enlisted men designed to bail out colleges or the "Specialized Training Program" (STP). It was to "educate some of its more intelligent men in colleges." Marshall was forced to cut 120,000 men from the 150,000 "scholarships" providing 120,000 highly educated sergeants. By Spring 1944 manpower shortage was "made up", but then followed:

> This still left enough strategic reserve to defeat of Germany. **Of all the calculated risks taken by Marshall and his staff … the greatest gamble was the decision to hold to the 90-division troop**

[2] Other explanations do not quite match. Yet, the decision was made with tragic results when the Germans unexpectedly withdrew to the German border. The explanations stretch credulity. One suspects overconfidence and a belief that German generals would overthrow Hitler were to blame. The coup occurred but failed. The U.S. soldiers who suffered were the ones who lost the bet of the "90-Division Gamble".

basis. There were uneasy doubts about the gamble … On 10 May Secretary Stimson raised the issue with General Marshall:

> I have always felt that our contribution was an overwhelming appearance of national strength in the critical battle front and reserve. It has been our fate to come in as the final force after others were long engaged. Our men were untested to fight veteran enemies. Such conditions make possession of overwhelming strength on our part important both tactically and psychologically.

Stimson feared this might not happen against fifty-six German divisions in France, the U.S. would have equal number plus large replacements. **Current Army calculations "shave the line of sufficiency rather narrowly instead of aiming at massive abundance."** There would be 14 uncommitted divisions, the only reserve. The British had none. The Germans must perceive overwhelming strength but had a reserve of 11 --- nearly the size of the American reserve. **410** Stimson feared a November stalemate in cold weather. **To forestall a stalemate, Stimson asked if new manpower legislation be sought?** Should not new divisions be activated now?

Three weeks before OVERLORD, Marshall wrote: "We have staked our success on our air superiority, on Soviet numerical preponderance, and high quality of our ground combat units. Air forces are our most effective weapon to convince the German people of the futility of continued resistance". The Army relied on the qualitative, not quantitative superiority of its forces, "Our equipment, high standard of training, and freshness should give us a superiority." The replacement system meant keeping U.S. divisions in the line at full strength.

Shipping limited the increase to four divisions a month. By April 1945, the 59 U.S. divisions would be in battle. Adding 20 British and 10 to 15 U.S. French divisions (and if Italy was quiet) the Allies had 95 divisions versus 56 German divisions. The real problem was the build-up rate -- purely a logistical limitation. **411** If a stalemate occurred, a few more divisions were not enough. New divisions meant "emasculating drafts" of current divisions for cadres upsetting deployments. No far-reaching changes should be made until results of the invasion were clear. "Considering if from all angles, I believe no increase should be made except for replacements." Marshall would stand pat probably because he saw Allied Mediterranean divisions as a part of the strategic reserve to invade Europe as evidenced by his future debate over ANVIL would show. He was adamant to use surplus U.S. and French divisions for the main effort in France.

Behind the calmly reasoned language of Marshall's reply **lay one of the boldest war calculations. How great a risk was shown in the willingness of Gen Marshall and staff to allocate manpower for the B-29 program against Japan, instead of investing in more divisions. Only the future would disclose whether**

the bold calculation would be vindicated by the still largely untested divisions of the U.S. Army, a product of his own faith and struggles.

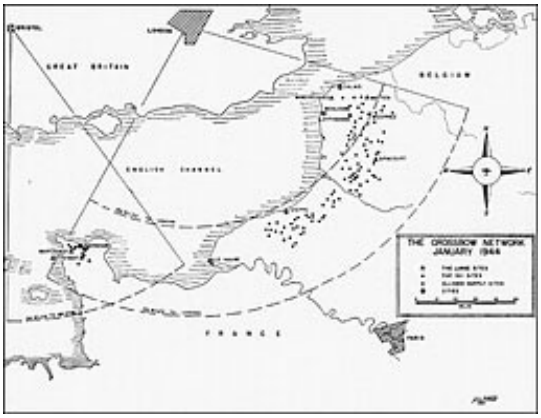
(Comment: When this history turns to the September Siegfried Line struggles, the December fight-to-the-death Battle of the Bulge and its companion Operation Nordwind in January 1945, the inexcusable shortage of manpower suggests a huge mistake was made. ***Mistakes happen, but this was a gamble with U.S. lives; its result lay somewhere between negligence and recklessness! It is called the "90 Division Gamble" but involved lives, not currency.)***

B. Chapter 4: CROSSBOW; Craven and Cate Army Air Forces in WWII, Vol III xyza

Late in 1942 British intelligence learned of German long-range "secret weapons" to bomb England. Near "dawn on 13 June 1944 (7 days after D-Day), a German pilotless aircraft … V-1 flamed across the dark sky from the Pas-de-Calais to explode on a railroad bridge in London. A new era in WWII began. The V-1 was an aerial torpedo with wings. Next was V-2, a 12-ton rocket at 4,000 mph exploding with no warning. The first hit Paris on 8 September; the second London. By VE Day about 16,000 V-1's and 14,000 V-2's were fired. In May 1943, WAAF Officer Babington-Smith, located a curving black shadow of T-shaped blot above a ramp. She found the V-1. Then at Watten on the French Channel coast an inexplicable installation was found and then others. **84** CROSSBOW, the effort to locate and destroy them began.

1. The German V-weapons. To the military an "ideal" missile had long-range, was cheap and easy to launch. Banned from building bombers by the Versailles Treaty, "rockets" were popular in Germany. The Allies ignored them in: "A failure of imagination … (and) insufficient funds". Hitler was uninterested, but others had a 1934 prototype V-2 launched. Military specifications in 1936, the Peenemunde experimental station in 1937 and one-third of Germany's aero research funds were invested in 1939 for a rocket to hit New York City. The first V-2 launched June 1942; by October if flew 115 miles. **86** Hitler wanted 5,000 V-2's simultaneously launched against England. The *Luftwaffe* joined with its cheaper, very effective "flying bomb", which actually was "better weapon". In March 1943 Hitler lost interest. Albert Speer, a most prominent production was against and then for the V-2 87 Experts convinced Hitler to continue when the V-2 flew 175 miles. A May 1943 plan projected 108 London attacks per day beginning 15 January 1944 at 94,000 tons of explosives per month to a million tons in one year – equal to the Allied Strategic Bombing Campaign. 88-89

Crossbow Network, January 1944 *Wikipedia*



2. The Need for a CROSSBOW Policy. By April 1943, the War Cabinet had a study with RAF reconnaissance at Peenemünde on a Baltic Sea Island. Photos

revealed the V-1 – then an unknown object. On 17 August 1943 (the date of Schweinfurt) it was bombed, but not damaged. Two results obtained: 1) Germany knew the Allies would bomb and 2) dispersed all activity. The Eighth bombed German construction at Watten and the Pas-de-Calais. Watten was a massive “Boulder Dam project” with seven "Large Sites". 90 On 24 October 1943 new “ski-sites” appeared in France to hit 21 by November – all aimed at London – the world's most populous city. 91

Some called it a hoax. Experts said worried over huge 100-ton rockets and pilotless planes with 20 tons. Rumor had a “Red Death" tanks of poison or a gigantic refrigerating machine dropping clouds of ice. One year later this was known: 1) the Germans were up to something; (2) no one knew what; and (3) there was no plan to stop it. **92** Bombing began before the rockets. By 24 November, 21 sites were found, soon to be 38. The War Cabinet on 29 November ordered an attack. Gen Eaker completely agreed to give Brereton’s Ninth AF the mission. The 150-mile arc was photographed to locate 64 ski sites, by 21 December 75 were “found”. **93-94 95 96** Ninth Air Force joined the RAF Second Tactical AF to ineffectively strike 5 December. It was Christmas before effective missions were flown in the largest Eighth AF operation with 1,300 planes! The world learned from *New York Times* about the new "Rocket Gun Coast". The editorial: "The Germans have now created a diversion … a breathing spell … temporarily … The threat … (lessens air attacks on) Germany." Eisenhower was still the MTO commander.

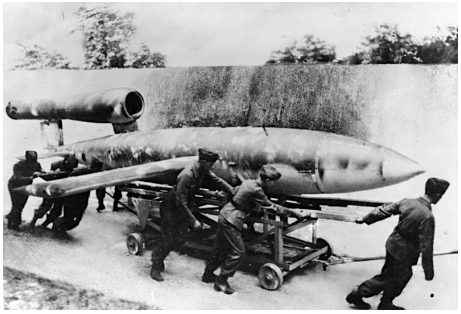
The U.S. Joint Chiefs were clueless as Gen Devers briefed Gen Marshall on 23 December and sent sketches. A War Department committee “interpreted” all information to be “upset at the British failure to reveal the danger … stated the problem was more "acute". It seemed … "late in the picture" when U.S, commanders just learned three weeks before as “Marshall wrote Dill a strong message …” COSSAC’s Gen Morgan feared it could "prejudice” the g an assault. U.S. estimates were glooming as “gas warfare” and “revolutionary explosives” of a "violent character" were mentioned! The Germans could force a stalemate or stop the CBO by devastating England! *(Comment: The topic is given fulsome treatment here, because it is generally ignored elsewhere!).*

The need was for a concentrated effort to include: “the somber implication of atomic energy -- a field in which they were advanced.” “The Joint Chiefs directed Eisenhower to take countermeasures if the Germans used gas or biological warfare including an Allied gas attacks on ski sites.”

3. The Eglin Field Tests 1944. **97** On 25 January, Arnold phoned Gen. Gardner, Eglin Field testing, to build buildings for simulate V sites. Gardner mobilized his force, purchasing agents roved the country and in 12-hour shifts thousands of workers built a complete ski site with camouflage and antiaircraft.98 “Then every weapon known to the AAF attacked the replicas.” On 19 February Arnold plus British Marshalls Bottomley and Inglis visited. The conclusion was minimum altitude attacks with fighters were most effective.

4. The Continuing Debate. The Eglin report was well received by Americans, less so by the British. The Eglin technique was used, **99** but results were not as anticipated beginning a difference of British using bomber U.S. fighters. Evidence showed fighters more effective, but, ignoring this, British used 1,000 or 2,000 lbs. delayed action bombs as AAF had better results with 250 and 500 lbs. bombs. **100-101** The British could not justify their results, so Gen Arnold wrote a strong letter – it did no good as "more ineffective bombing followed." Eisenhower ordered an "all-out" effort in April 1944, but 102 both Gen Arnold and Spaatz protested in a letter to the scale of and failure to use Eglin's low-altitude methods. Yet, …. "no one else agreed with the Eglin test results or … low altitude bombing … (including) Eisenhower."

V-1 Buzz Bomb

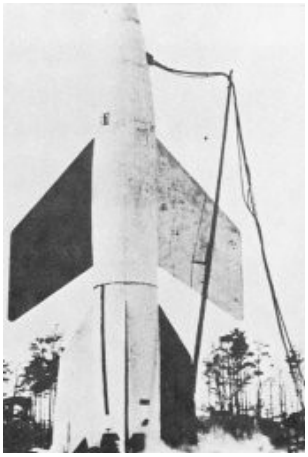


5. Correcting the Official History's Editorial Account of the Events.[3] The "official" history is misleading. The V-1 and V-2 were terrifying. The V-1 went quiet as it fell. If you heard it stop, you were a likely target! The V-2 made no noise, just exploded! RAF tracked buzz bombs. But shooting them down was perilous as the planes flew through the blast. Fighters flew wingtip to wingtip beside the jet and then flipped it over, so it crashed! Since 58 were destroyed, there were many V-1 aces! *Wikipedia* reports 1,300 V-2' rockets and 9,251 V-1 buzz-bombs launched. There were no V-2 aces, they could not be shot down since these rockets they were too fast and high. There was no V-2 defense!

The V-2's 1,000-pound warhead just exploded somewhere – a massive explosion arbitrary and random -- the perfect terror weapon. *Wikipedia* states 1,300 V-2 rockets and 9,251 V-1's buzz bombs were launched. Craven and Cate note the Allied diversion of planes to the V-Project sites was reasonable. The U.S. Army Air Force objection to CROSSBOW was founded upon its focus of all air assets to bombing Germany to end the war

6. CROSSBOW Results. Few others agreed with Gen Arnold's "fighter-bomber" CROSSBOW remedy for destroying launch sites from the Eglin Field testing. On 6 May Spaatz reported **103** four fighter pilots in P-47's attacked with two 1,000-pound delayed-fuze bombs. Three neutralized the flying bombs with no losses. Eglin found twin-engine P -38's twice as effective. Spaatz argued test attacks in France caused Category A damage with 2,000 pounds per site versus 1,947 tons per site for heavy bombers! Gen Doolittle wrote in late May British Mosquitoes light bombers were most effective with most damage, less tonnage, fewer sorties and fewer losses. Yet, "the weight of the effort was still carried by the medium and heavy bombers". In spite of all data and protests, massive Eighth Air Force B-17's raids with Ninth and the RAF mediums and also fighter and fighter-bomber attacks were used. The Eighth's bombers attacked in boxes of six from 12,000 to 20,000 feet and "radar bombing" guaranteed poor results. Medium bombers struck in in boxes of 12 to 18 from 10,000

Launching a V-2



[3] //en.wikipedia.org/wiki/V-1_flying_bomb; //en.wikipedia.org/wiki/V-weapons.

and 12,000 feet. 104 Sites were well defended and hard to spot with radar. Bombers caused major damages to 107 V-1 sites into May 1944 when the effort halted.

The effort was horribly expensive since it cost 25,150 bombing sorties lost plus 771 airmen and 154 aircraft.105 To the good, 96 sites had Category A damage. **106**

C. The Missing Master OVERLORD Plans: OUTLINE OF OPERATION OVERLORD:

(Comment. A striking feature of the OVERLORD Plan for the first 90 days of the ETO Campaign is the lack of an OVERLORD Plan. One will not find "The" OVERLORD plan anywhere. It was briefed in detail by Montgomery and others at St Paul's Church before D-Day presented to Churchill, the King and other dignitaries, yet "that plan" which was so famous, is nowhere to be found! A search for "The" Plan produces no plan. It requires "no leap of faith" to discern a concerted effort to not maintain the "original", "main", "primary" plan that "hung on Gen Eisenhower's wall".

The "Plan" had many versions as each nation, each military branch and each army, corps and division made detailed plans for their post-OVERLORD operations defined as the period up to D+90 days. Yet, those plans are also missing in the "official" histories. The maps that Bradley, Montgomery, the Navy, the RAF and AAF, and all of their corps and divisions are not to be found. The "Map(s) of Battle Plans "for the post landing D-Day plans are absent. While maps of individual battles fought elsewhere and at other times abound, the maps of plans for the greatest invasion in the history of earth appears to be from an unnamed U.S. Services of Supply source.

(The original employs stilted "military" language with repetitions. It is modified for clarity and brevity.)

THE PLAN:

1. OBJECT—The ultimate mission of the Commanding General, ETOUSA, is the total defeat of Germany. The object of Operation OVERLORD is … to secure a lodgement area on the Continent from which further offensive operations can be developed … (in an) assault upon German occupied Europe from the United Kingdom, the Mediterranean and Russia.

2. GENERAL INFORMATION—The operation will be executed in two phases:

> Phase I—The assault and capture of an initial lodgement area with airfields in e CAEN area and CHERBOURG.
>
> Phase II—Enlargement of the to include the Brittany peninsula, all ports south to the Loire (inclusive) and area between the Loire and the Seine.

U.S., British and Canadian Forces are under 21st Army Group. When designated by the Supreme Commander, First U.S. Army Group will take over certain areas and U.S. Forces from 21st Army Group.

3. ALLIED FORCES AVAILABLE—There will be in the United Kingdom:

Land Forces—2l U.S. divisions (13 Infantry, 6 Armored, and 2 Airborne), 17 British divisions (l0 Infantry, 5 Armored, and 2 Airborne) and supporting troops of both Forces. **1**

Air Forces—331 U.S. Squadrons (214 – Eighth; 17- Ninth Air Forces) and 220 British Squadrons.

4. MAJOR CONDITIONS AFFECTING THE SUCCESS OF THE OPERATION. An operation this size has never been attempted as "is fraught with hazards, both in nature and magnitude … greater than any other theater. To have a reasonable prospect of success certain conditions concerning major obstacles are:

German Fighter Strength—will be reduced for air superiority. Recent figures on destruction of German fighter production and of fighters are encouraging; but the German Air Force efforts need not be sustained since the battle for the lodgement will be over in the first few days. (They have Fighters - 2700; Hv Bombers - 1956; Med Bombers 456; Lt Bombers - 171; Photo Recon - 128; Plus, Reserves.)

Coast Defense—German Coast Defense is designed to delay access to principal ports. Our landing should be against lightly defended areas given the distance from a major port.

German Land Forces—The German policy is to defeat an invasion on the coasts. Offensive reserves are within striking distance of most vulnerable parts and first-quality divisions will be deployed in the CAEN area **2** as not to exceed 3 divisions on D-Day, 5 division on D+2 and 9 divisions on D+ 8.

Surprise—A considerable measure of tactical surprise should occur, but strategic surprise is impossible. Every must be made to draw German attention to the Pas de Calais, and away from the CAEN area.

Beach Maintenance—Maintenance over beaches is a paramount with 18 divisions maintained the first month, 12 divisions the second and NIL the third month. Artificial sheltered waterways must be made for landing vehicles on beaches and for repairing beaches from grounding craft.

4. THE ASSAULT (original misnumbered) — The plan has two main principles—1) concentration of force and 2) tactical surprise. Three Regimental Combat Teams (RCTs) of the First U.S. Army right, and five Brigade Groups of the British Second Army left with air and naval forces against the CAEN area, with airborne divisions and early development of airfield sites and the capture of CHERBOURG in Phase I. Success will be a race between the build-up of forces and supplies vs. German reserves.

5. PHASE II: -

First Army—After capturing CHERBOURG, and with its left flank protected by British Second Army, First U.S. Army will drive south-southeast to cut the Brittany Peninsula to ports of NANTES and ST. NAZAIRE. One Corps will head west to clear the Brittany Peninsula.**3** First Army will head to the Upper Seine.

Third Army—Third Army will land D+35 to D+45 to capture the Brittany peninsula and open Brittany ports unless first done by First Army. After clearing Brittany Peninsula, Third Army will go right of First Army on the east or will swing south of the Loire if a wider envelopment is feasible.

	F.F. & SOS		AIR FORCES		TOTAL		% of Total	
	Veh	Per	Veh	Per	Veh	Per	Veh	Per
D	9,456	89,750	146	707	9,602	90,467	4%	7%
D+5	27,758	188,000	1,804	9,542	29,562	197,542	12%	16%
D+15	66,882	385,500	5,190	25,147	72,072	410,747	29%	33%
D+30	120,057	660,000	11,355	56,640	131,412	716,640	53%	58%
D+50	165,648	873,350	17,892	94,160	183,540	967,510	74%	78%

Situation on D+90—By D+90, occupation of the lodgment area is complete. U.S. and British Forces are on the Seine River, First and Third Armies are abreast, and First Army Group has a Communications line. Our forces are prepared for further offensive operations. **4** Situation maps of the stages are attached.

6. THE BUILD-UP OF US FORCES—The anticipated build-up of U.S. Forces on the Continent is above:

7. MULBERRY A HARBOR: is the code name for a U.S. artificial harbor near Vierville. MULBERRY A will be an all-weather harbor for 5,000 tons of stores and 1,000 vehicles per day. Vast British labor with military added are building the cubic docks. The GOOSEBERRY (small, sheltered anchorage) had block ships 400 ft each sunk on the east beach. A west breakwater of 8 sunk PHOENIXES or reinforced concrete caissons 204 ft long, 60 ft high and 60 ft wide with 34 PHOENIXs sunk in a line for the inner MULBERRY A shelter. These gigantic structures were 19 ft deep at 6,000 tons.

48 BOMBARDONS are steel cruciform lilos, 200 ft long, will be anchored in two parallel lines about 800 ft apart to form a breakwater 1,100 ft from the outer breakwater of PHOENIXES. **5**

Within the U.S. breakwater four LOBNITZ PIERHEADS connected by three one-mile-long floating roads would drive cargo and vehicles to shore. The west causeway will hold 40 tons, and each of the two smaller causeways 25 tons capacity (Note: *90 tons equals nine Liberty Ships!)*. LOBNITZ, spud. PIERHEADS were 200’ x 60’X x 10’ deep barges on top of anchored steel spuds electrically raised with the tides Pierheads held 3 LST's, 1 coaster and 5 LCT's 100 ft each discharge.

Inside 34 PHOENIXES shelter, seven Liberty ships (450 ft), plus five large (300 ft), five medium (275 ft) and seven small coasters (150 to 200 ft) could anchor to discharge.

The MULBERRY provides a protected harbor for 21 miles of beach plus forty 1,000-ton barges being built will be beached at high water for unloading during a 12-hour tide cycle. RHINO FERRIES will discharge coasters directly to beaches. These are 500-ton capacity steel barges lashed tight for a 175’ x 43’ raft powered by two pontoon barges with outboard and inboard motors.

DUKWs, PEEPS, LCTs, LBVs, and other small craft will be used in unprecedented numbers to assist in the discharge of stores from larger craft. [NOTE: Severe storms beginning 19 June 1944 halted cargo for 3 days and damage to "MULBERRY A prevented its use for future operations." (FUSA Report to 1 Aug)]**6**

8. SPECIAL PROBLEM—CONTINENTAL TRANSPORTATION: The Transportation Corps problem is adequate port capacity and motor transport. First 90-day build-up plans are for 1,200,000 tons building in proportion to troop build-up but the "planned … phasing of troops … will meet the problems with difficulty." *(Jargon for "nearly impossible").* Tonnage requirements can be accommodated with sufficient port handling equipment (barges, DUKWs and cranes), except a 5 company DUKW and a 16-port battalion shortage … (Regardless) the highway network will not permit the large tonnages required, especially the Cotentin Road capacity to the south. Waiting for increased rail capacity means road limitations may not prove to be insurmountable difficulties. *(Jargon for roads are insurmountable limits)*

Rail operations are not considered until after D+90. "L/C" (Line of Communications) will use trucks with POL pipelines. Two-thirds of the SOS Truck Companies (151 companies) will have heavy haul equipment (semi-truck-tractors and trailers from Ordnance Projects). Yet, if all equipment arrives, there will be an appreciable truck company shortage if the maximum troop flow obtains. The solution is to pre-ship truck companies from the Third and later armies in order to allow a 24-hour operation. **7** Assuming rails operate by D+60, not the "conservative" D+90 and assuming heavy vehicle equipment. "It is estimated that the transportation system will be effective." (If we succeed, we are super-heroes).

Present plans for railroad reconstruction and operation call for two general lines of communication, one running from Cherbourg south through the Cotentin peninsula through Lison and terminating in the Rennes (main supply) area, and the other running north from St. Nazaire to the same area. These two lines are first US priority construction. Second priority, and to be accomplished by D plus 90 includes the link from St. **N**azaire to Le Mans and from Rennes to Le Mans. From D+90 to D+360 plans provide for the

Quiberon - Rennes - Le Mans - Paris	Cherbourg - Laigle - Paris;
St. Nazaire - Nantes - Tour - Orleans - Paris	Le Havre and Dieppe - Chauny

development of four principal Lines of Communication:

Plans called for the extension of the rail lines which connect base ports with the forward areas. The extension of double track on the Le Mans-Paris line, double tracking the line from Surdon-Laigle to Paris, and the reconstruction of the double track line along the Loire Valley to Paris route, were among the important rail construction projects contemplated. When the British transferred the control of the Le Havre and Dieppe-Chauny line to the Americans, it was planned to extend the first three lines referred to above so that they would connect with this fourth line of communication. (Hq ETOUSA, AG 400.312, 8

June l944, Planning Directive Series "H" #3, Subject: Projects for Continental Operations (PROCO), D+91 to D+ 360, to Chiefs of Supply Services, ETOUSA, p. 5). **8**

9. SPECIAL PROBLEM – PORTS: Studies have been made by ETOUSA considering reconstruction and development of fifteen (15) ports which include Brest, Cherbourg, Granville, Concarneau, La Pallice, St. Brieue, Lorient, St. Nazaire, Nantes, La Rochelle, Morlaix, L'Abervrach, St. Malo, Les Sables D'Olenne and Bordeaux. In the ports under consideration tide range is excessive, amounting in some cases to as much as 45 feet. Large scale engineering works have been necessary in the construction of locked basins to overcome this physical draw-back, and to permit accommodation of large ships. In many ports constant dredging is required to maintain navigable channels. Port operations under normal conditions are not simple. After capture, operation will depend on such facilities as can be provided through rapidly repair and improvised structures for the discharge of military cargoes, either from large vessels direct to reconstructed quays, or by use of coasters, lighters, and DUKWs.

From reconnaissance it is assumed that every effort will be made to destroy each port and its facilities by mining approaches, blocking approaches, destruction of facilities, destruction of railway roads and bridges, and destruction of locks. Allied air attacks have been heavy on all ports. For example, at St. Nazaire at the present time not a building of the entire Chantiers de Penhouet has escaped damage and the basin quays have suffered to the point where they are unusable by merchant ships. Dredging has almost ceased. It is estimated that, when the enemy has evacuated, the ports will be from 75% to 90% destroyed.

Plans call for the initial capture of Cherbourg which is designated as a U.S. Port with a British sub-area allocation. Operations are scheduled to begin by D+11. Clearance of British supplies from the decks to the British transit area near the port will be a U.S. responsibility with the use of U.S. transport and labor units if U.S. facilities suffice. When this is no longer possible, port authorities will notify 21st Army Group which will assign British transport and labor units necessary to supplement U.S. resources. The British transit area is to be staffed by British personnel. Other ports will be developed and operated by the Ally capturing them. *

* Fwd. Ech Com Z Plan, Annex 13, Transportation Corps Plan, 10 May 1944, p. 1.

First U.S. Army plans to phase in personnel, supplies equipment and vehicles over the beaches of Quineville, St. Laurent **9**and Madeleine on D-Day, through the port of Isigny on D+7, the artificial port of St. Laurent on D+12, Grandcamp on D+14 and St. Vaast on D+21. Barfleur is scheduled to open by D+20, Granville on D+24, St. Malo D+27, Brest and Rade de Brest D+53, Quiberon Bay D+54 and Lorient D+57. *

* Fwd Ech, ComZ Plan, Annex 13, Transportation Corps Plan, 10 May 1944, p. 2, 3, 5, 8.

Build-up previously cited, requires 40,000 tons/day by D+90 which will have to be maintained in order to build up reserves and provide maintenance. 15,000 tons/day is maximum capacity for UK ports (outloading)—25,000 tons/day required ex US. *

NOTE: *Port Capacity on D+90 was estimated at 45,950 long tons in comparison to the estimated tonnage flow of 37,500 tons. Tonnages were expected to increase to the point where they exceeded port capacities between D+120 and D+150, unless Nantes and St. Nazaire were captured and placed in operation during the interval, and unless the capacities of the ports in operation were increased. Com Z expected an increase in port capacity with the anticipated transfer of the British Mulberry at Arromanches and the port of Caen to the U.S. Army by D+210. No additional increase was contemplated until D+300 when the British were expected to withdraw from Le Havre, Fecamp, and Dieppe.

Invasion preplanning did not include plans for the opening and operation of any additional French ports south of Nantes. Facilities available at La Pallice, Rochefort and Bordeaux should not be developed unless future operations disclosed the necessity for such action. (Hq ETOUSA, AG 400.312, 8 June 1944, Planning Directive, Series H #3, Subj: Projects for Continental Operations (PROCO), D+91 to D+360, to Chiefs of Supply Services, ETOUSA, p,5.) **10**

10. SPECIAL PROBLEM: RAILWAY, ROAD AND BRIDGING CONSTRUCTION. By D+90 it will be necessary to construct 425 miles of main line railway. By D+240, construction of 1,325 miles will have to be completed. A detailed study has been made of all railway lines using Intelligence Reports from US and British sources, coordinated with aerial photographs. From these data, it is estimated that 40 lineal foot of bridging per mile of track and 5.6 lineal feet of culvert per mile of track trill be required. In view of enemy methods and technique in demolition, it is estimated that over 95% of track and bridges will be destroyed between D and D+90. About 30% of the track will be recoverable; none of the destroyed bridges will be recoverable before D+90; and only about 10% thereafter.

Based on this enemy demolition, a total of 1535 miles of main line track will have to be re-laid and 67,300 lineal feet of bridging must be reconstructed. Accomplishment of this work will require over 42,000 effective man months of labor, exclusive of supervisory and administrative personnel. Weight of the materiel and equipment to accomplish railway reconstruction amounts to 333,000 long tons, of which 74,000 long tons must be supplied from the U.S.

Reconstruction of road nets, particularly bridging, also presents special problems. By aerial photographs, ETOUSA has established the average length of bridge gap per mile of roads, and various intelligence sources were consulted to determine existing road construction. It has been determined that on the average for every mile of road there will be 13.9 lineal feet of bridging. Bridges of various lengths will occur in these percentages: 24% will be 10 to 30 ft gap; 34% will be 30 to 80 ft gap; 14, % 80 to 180 ft gap; and 28% over 180 ft. Of all this bridging, 90% on main supply routes will be destroyed and 75% on routes of lesser importance. Approximately 134 miles of road, which will be destroyed, will require reconstruction. Aside from reconstruction, a total of 6,100 miles of road will have to be maintained.

The total labor requirement for the maintenance and reconstruction of roads and bridging amounts to 1,548,000-man days, of which 1,282,000 will be military and 260,000 will be civilian. **11** 15,800 long tons of asphalt will be required for road reconstruction and maintenance; 112,000 tons of road bridging will be required. This bridging will consist of 800 standard fixed Bailey sets (130 feet); 250 Standard Pontoon Bailey sets; 175 Heavy Increment Sets (Fixed) and 165 Heavy Pontoon Increment Sets. In addition to this material, 11,700 long tons of construction equipment will be needed. The total tonnage of all this

material which must be transported to the Continent amounts to 139,500 long tons, of which 114,000 must be shipped from the U.S. **12**

11. POL DISTRIBUTION PROBLEM (Petroleum, Oil and Lubricants)

a. POL SUPPLY PROGRAM. For the first 15 days, all POL would be handled in 5-gallon Jerry cans, but after D+15 would be in bulk, meaning a canning station would then exist on the Continent.

b. DISTRIBUTION IN PACKAGES. About 250,000 tons were in cans in the U.K. with 165,000 tons needed the first 41 days. The peak moving period was the first 14 days to serve current needs and build-up a stock. The 14 POL depots in the U.K. would not move to Europe until D+41. In Europe, each division had sufficient gasoline supply companies for their needs until D+41. **13**

In that time, 9 QM POL depots would be opened on the Continent, including three Petroleum Testing Laboratories but regardless canned POL would be sent to the ETO simply to increase the can population for mobile warfare. B D+41 there would be 1.5 million cans plus those on each vehicle plus the remainder of 11,500,000 Jerry cans stockpiled in UK on D-Day. *(That was 13 jerry cans per soldier!)*

c. BULK POL. Gas consumption at D+20 will be 5,000 tons going to 10,500 tons by D+90. But by D+14 the Field Forces needed a 7-day and the AAF needed a 14-day supply in storage. At D+41 the inventory would be 14 and 21 days, respectively and the final limit. In six weeks, nine weeks had to be shipped.

Pipeline and storage tanks required tanks at 800 tons by D+41 with 850 miles of 6" pipeline, 460 miles of 4" pipeline, and 100,000 tons of steel and 37,400 tons of construction supplies (14 Liberty ships). **14**

12. CIVIL AFFAIRS PROBLEMS: OBJECTIVE. Civil Affairs controls civilians to avoid interference and to maximize local resources, plus providing minimum civilian supplies for adequate public health and to avoid a burden on troops. The CCS set minimum food intake of 2,000 calories per day plus medical, sanitary and clothing with the maximum from "indigenous resources". This may extend Civil Affairs responsibilities beyond the area of military operations.

The military area may have to be extended under a German "collapse condition". The President wrote the Secretary of War, 10 November 1943, raised this point to direct that Army plans for a complete German collapse must "embrace the entire civilian population for the area of N. W. Europe." **15**

D. CHAPTER 8: German Defense Measures, 1944; Cross-Channel Attack, Gordon A. Harrison May to July 1944 xyza

1. German OKW Policy in 1944. German 1944 strategy realized Russia could not be defeated and a Channel invasion was inevitable. But the Channel offered a chance for a stunning victory, but: "If the Allies were not stopped at the landings, their attack would carry … into the heart of Germany …" Hitler "staked everything" on a battle where the place and time were "of the enemy's choosing … an all but impossible burden …" "Directive No. 51 held no forces could come from the Eastern Front, "a debt

the Allies owed the Soviets". OKW only had seven divisions to use: 3 Norway-Denmark divisions, 1 Italy, and 4 mobile *Jaeger* infantry divisions from the Balkans. **231**

OKW saw the Allied Mediterranean front was a costly effort that made no sense! The Balkans offered greater prizes. So, when agents reported an English landing craft increases, the Germans saw a Balkan invasion with Anzio on 22 January as confirmation. Gen Jodl predicted periphery dispersing attacks a Channel *coup de main*. The Germans then saw the Anzio pause as connected to attacks on Portugal, west and south French costs and/or Aegean first. **232** If so, it was a German "windfall". The Germans weakened sectors not threatened for Italy and Russia. Allied good fortune saw troop movements to the Atlantic waiting clearer indications. "By March 1944, the German western defense had thus been weakened by a growing confusion as to Allied intentions." Of course, the Soviets "were the larger problem"! Harrison ties it in with the Anzio attack benefit. By late December 1943, the Soviet issue was serous as the Kiev offensive drove the *Wehrmacht* back 200 miles. In January Leningrad was freed and **233** German *Eighth Army* encircled at Cherkassy. In February, the Russians hit the German *Sixth Army* at the Dnepr bend. The need for troops east was great, but the Germans protected western reserves. Late January Anzio caused a prestige gamble to destroy an Allied invasion with the *715th Division* and *9th SS Panzer Division* sent to Anzio where the *715th Division* was lost March brought another Soviet offensive as *Panzer Lehr Division* returned to France in May, but four others went to Russian **234** cutting French reserves.

Landing Craft Obstacles

The Soviets were unstoppable. On 10 March the *361st Division* left Denmark and *349th Division* left France. The "ax fell" 26 March when the premiere *9th* and *10th SS Panzer Divisions* left France. March was a low point until mid-May when four panzer divisions were combat ready with four more "being built up". Just before D-day, *Panzer Lehr* and *1st SS Panzer Divisions* arrived for rebuilding and a remarkable recuperation occurred. From November 1943 and June 1944, Rundstedt's divisions grew from 46 to 58, but many were "fought-out" units with many new soldiers.

Germans combined training and occupation duties. Recruits had basic training **235** near home in a field training unit as reserve divisions in the Replacement Army. Soon they were integral into the army to be actual divisions. Six reserve divisions were so "upgraded" to combat levels; another seven after D-day. The steady Eastern Front drain left two kinds in France: old divisions lacking their best personnel and equipment, and new divisions, some excellent but partially so.

2. Organization for Combat. Before 1944 the infantry division were three regiments of 12 battalions each with a howitzer and antitank company plus antitank and reconnaissance battalions. One artillery regiment was medium (150-mm.) and three light (105-mm.) battalions of 48 guns. With antitank and reconnaissance, a division had 17,00 men – vastly larger than U.S. divisions that **236** could be sustained. In October divisions were reduced in size, not fire power, to 13,656 men, three regiments of two (not three) battalions. In January 1944, they were cut to 12,769 with 7 rifle battalions as more

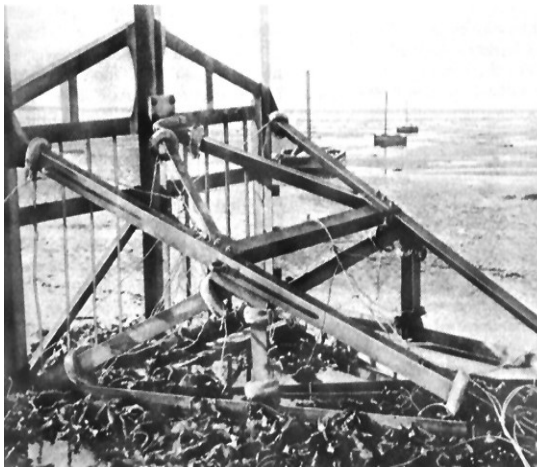
automatic weapons were issued. New companies had 140 enlisted with 2 officers vs. U.S. of 187 enlisted and 6 officers. German division rifle strength was 1,200 but had more fire power and equal artillery with a heavy superiority in automatic weapons.

237 In late 1943 replacements were captured Soviet "volunteers" with little uniformity in organization. Harrison points out there was little standardization in size or equipment in German forces.

3. Parachute and Panzer Grenadiers. The "elite" with the best being *Luftwaffe* divisions. Goering formed two parachute armies of 100,000 equally elite to the SS. *OB WEST* had the *3d* and *5th* Parachute Divisions, first-rate with **238** 17,420 volunteers who were only 17 l/2 years old. Better armed, regiments had 70 trucks -(but 50 different models! Panzer grenadiers had more tanks and armored carriers, but only *17th SS Panzer Grenadiers* were in France. Stronger six rifle battalions were four battalions with partial motor transport, two had bicycles. The tank battalion had 37 assault guns, no tanks. **239**

In June, *OB WEST* 6 army and 3 SS panzer divisions of wide variance from 12,768 to 16,466 men. SS divisions were 17,590 to 21,386 – much larger than U.S. armor divisions. The 1st SS was twice as large with fewer tanks. The German Table of Allowances were not met for equipping divisions. The *1st SS Panzer* was due 45 assault guns and 199 tanks, but only had 88 tanks. The *2d SS Panzer Division* had 69 of the 163 tanks authorized. **240** New units received captured weapons. In December 1943, the theater had 703 823 tanks, not the 1,226 planned. It grew on 1 May to 1,608 tanks and assault guns, but **241** tank losses soared -- 1,400 "tanks" and 4,000 heavy artillery were lost to the Soviets. Focus on new tanks left a shortage of "spare" parts. Here, U.S. experience in reusing tanks was spectacular. The "tank" did not burn up and could be restored at a fraction of the cost and time. The U.S. had a small need for "replacement" tanks.

Belgian Gates



"The Germans on D-Day were "strong enough to hope for victory in a battle" with Allied materiel superiority offset by the coastal defenses." (***Map V***) On 1 June 1944. Rundstedt had 58 divisions, 33 static (limited defense) and 24 "fit for duty". All infantries were on or just behind the coast in four armies: 1) *First* (Atlantic coast, 2) *Seventh* (Brittany and Normandy), 3) *Fifteenth (Kanalkueste*) and 4) *Nineteenth* (French Mediterranean). The *Seventh Army* met the invasion with 14 division in four corps.

4. Command and Tactics. **242** The worst German weakness was lack of "unified command". Rundstedt defended France and the Low Countries but did not command air and naval units who were *Third Air Force* (Gen Sperrle) and *Navy Group West* (Adm Krancke). The Navy only had destroyers, torpedo boats, and small vessels. They were too small to have effect, and Naval battery command was separate. So, three independent, uncoordinated military arms defended on D-Day. Von Rundstedt shared territory with Field Marshal Rommel in command of the *Army Group for Special Employment* **243-245** intended to defend for the invasion and counterattack. Both Rommel and Rundstedt concurred that Rommel's *Army Group B* was under Rundstedt's *OB West* command. Yet, Rommel was a Field Marshall of equal "status"

if not rank with **246** automatic personal access to Hitler. Harrison notes despite "chains of command", Rommel's personality, status and reputation made him the *de facto* land commander. "After January 1944 Rommel was the dominant personality in the west with an influence disproportionate to his formal command authority."

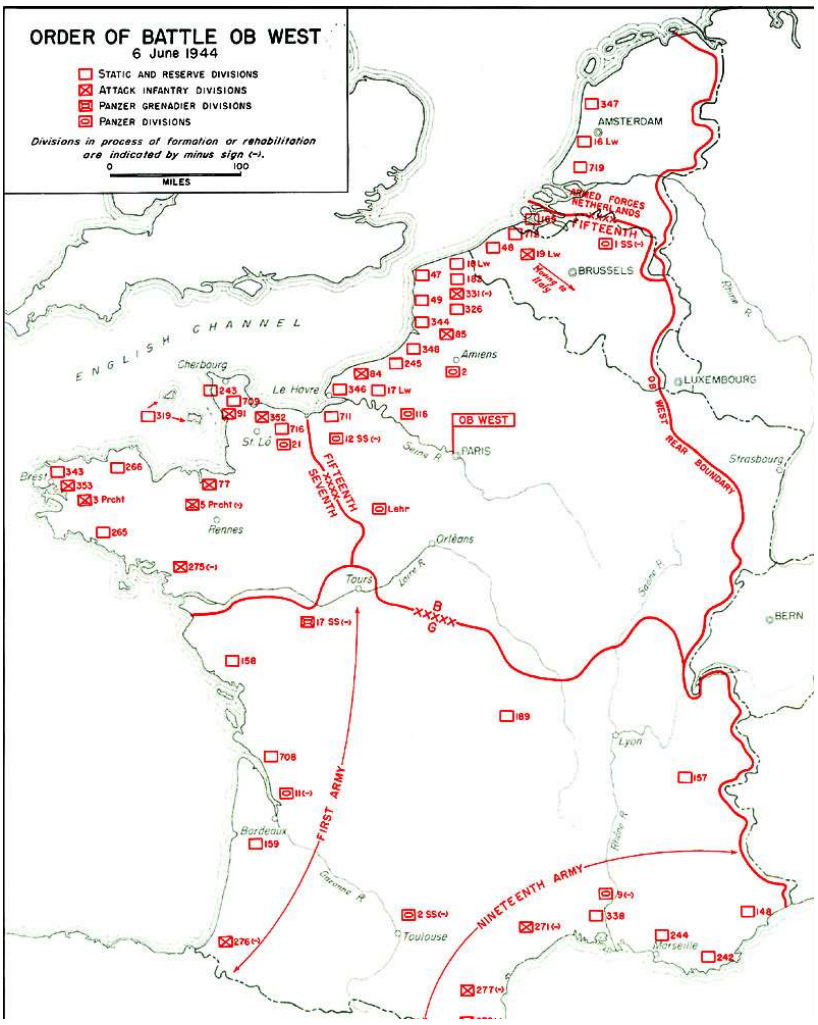
So, in November 1943 Rundstedt planned a large, armored counterattack with Gen von Schweppenburg to command armored force training. Rommel, disagreed to eliminate Geyr and Rundstedt from command so he had all armored, motorized and GHQ artillery. Hitler met all three to side with Rommel giving him "operational" command of ground forces for defense before the battle. It did not please Rundstedt. **247** When the OKW later supported Rundstedt Hitler incompletely reversed but his solution solved nothing when four more panzer divisions were put in an OKW mobile reserve to complicate the solutions. Rundstedt could not influence the battle without Rommel as maximum authority was denied both high commanders. The final bout was in May when Rundstedt formed a second army group headquarters for *First* and *Nineteenth Armies* of *Army Group G* under Gen Blaskowitz who controlled two armies and three panzer divisions to offset Rommel as the intermediary with Hitler. But few commands came from Hitler who too far away in **248** East Prussia quarter. Hitler left a "vague demarcation of authority between the two. Defense preparations in 1944 were increasingly scarred by compromise as the Commander in Chief West and the commander of *Army Group B* made detailed decisions in accordance with divergent aims."

Rommel came west when the battle was near to be responsible for that battle forced to examine limitations, not possibilities. North Africa taught him the loss of air superiority was fatal and France had an army crippled by inadequate training, inferior soldiers, material, and mobility. Fighting from the strong fortified positions was the only advantage left. "Rommel relied upon fortifications, which neither Rundstedt nor Hitler had contemplated". Rommel believed the war was won on the beaches in the first 48 hours, so he built his famous defenses not seen elsewhere on the Atlantic Coast. A belt **249** inland

3.5 miles for all infantry, artillery, headquarters, and reserves to division level in resistance nests and between were mines and obstacles to halt enemy thrusts.

He had to focus on simple defenses not a few heavy fortifications and stressed mines and underwater obstacles to play havoc with landing craft. Hedgehogs and tetrahedra from inland tank obstacles were moved to the beaches to which Belgian Gates and slanted stakes were added. He hoped to cover every beach between high- and low-tide. The mines assumed the landings would be near high tide to limit the open beaches enemy forces had to cross. Obstacles were laid starting at the high tide level working to the low level.

Map 5 Order of Battle OB West - *Wikipedia*



Fields suitable to gliders were staked with poles that were mined. The German guessed paratroops would land Brittany and Normandy, so defenses concentrated there.

The Navy laid extensive mine fields off the coasts; 16 fields 5-miles long were created. Before the invasion more mines would be laid without any pass-through lanes. From Belgium south 36 fields were planned plus air mines in British harbors. **250-251** Rommel tried to make invasion impossible. The Allied force would be entangled to receive a paralyzing sting from shore. It required more labor than available. Engineer and fortress builders were far insufficient for Rommel's expansive plans. Combat troops became construction workers spending certain days constructing, plus training and defending the coast. Training was mandatory since new and "reorganized" divisions were defending. As recounted earlier, the U.S. Army took one full year in training new divisions! German recruits had vastly less. In the *Seventh Army* six of 14 divisions were. In February Rommel then added beach defense construction duties. **252**

Rommel's plan to "fight it out on the beaches" drew criticism since the battle would be over in 48 hours in a "roll of the dice" strategy. Harrison notes: "This deduction was the final extension of the doctrine of static defense implicit in the … Atlantic Wall." To question Rommel questioned if the Atlantic Wall was "impenetrable." High commanders who thought it a good idea, had "cold feet" when reality was visible. It "boiled down to a judgment of what was possible." "Rommel preferred a battle of maneuver …" Rundstedt and others rejected it. The issue was: could Germany make the soldiers mobile? **253**

That inability voided the objections. If Germany depended on fixed defenses, where else could it have been? They had to be where they were. German "Mobility" meant horses, wagons and bicycles. **254-255-256-257**

> … The conflict … to compromise troop dispositions which on D Day were not suitable for the practice of either theory. The pool of mobile reserves had been cut … below … (that) needed for an effective counterattack … (But) considerable forces were still held far enough from the coast so that, if Rommel's theories were correct, they would be unable to reach the battlefield in time … **In short, operational flexibility had been curtailed without achieving a decisive thickening of the coastal defense**.

(Comment: It must be noted that those landing on D-Day likely disagreed!).

5. The Defense on the Eve of Invasion. German intelligence was beyond poor, it was abysmal. "The difficulty **258** was (reports) were too few and too spasmodic to allow … a convincing picture of Allied intentions …"

> The best guess was Hitler's … (who) in March suddenly decided … (upon) the Cotentin and Brittany peninsulas … (based on) the ease with which defensible bridgeheads could be established …
>
> … On 26 April Admiral Krancke, Commander of *Navy Group West*, observed … no activity in the ports … (opposite Calais but noted) Allied air attacks against coastal batteries and radar installations … between Boulogne and Cherbourg, that Allied mine sweeping and mine laying generally blocked off the same area, and that the bombing of railroads had interrupted traffic to the Channel coast but had not affected communications with the Atlantic area … (He) felt that all signs pointed to an invasion between Boulogne and Cherbourg …

Mark V Tank

His hunch was partially accurate. But his difference in emphasizing a southward attack toward the Cotentin was striking.

> This appreciation differed … only in lopping off the Pas-de-Calais sector between Boulogne and Dunkerque … The resulting difference in emphasis, however, was striking, particularly in the singling out of the Cotentin … (His later reports) emphasized this threat, particularly from Allied airborne attack. Krancke's … conviction grew as it was seen that Cherbourg and Le Havre alone of the major French ports had been spared from heavy air attack.

In late April Hitler's interest increased. On 6 May **259** it was Cherbourg. A parachute regiment and two tank battalions were dispatched to Lessay-Périers. Others toward Cherbourg with the *91st Division* moved to la Haye du Puits. Others shifted toward the Cotentin in May. Focus turned to airborne defense. **"The Cotentin was thus substantially reinforced and fully alerted a month before the two U.S. airborne divisions were dropped there." Yet:**

> … neither Rommel nor Rundstedt reckoned that such assault would form part of the main Allied effort … (They) took no further steps to cope with a major landing …
>
> As for the Navy … it relaxed under the curious delusion that the Allies might not play at all. 260 (Krancke) continued to believe … (the target was) the Pas-de-Calais … The Navy thus remained confident that its artillery could still knock the Allied invasion fleet out of the water-provided of course it sailed where it was expected … (On) 4 June Admiral Krancke (concluded attack was) not imminent but … part of a huge hoax …
>
> The contrast between Krancke's optimism … and his sober … helplessness of his own forces … was the most striking aspect of his last report… His fleet of combat ships was so small that it could scarcely be … (called) a naval force … **261** **262**

Army construction program was not done. Shortage of materials, cement and mines due … Allies' all-out rail bombing. Late in May *LXXXIV Corps* received 47 carloads of cement in three days versus a daily need of 240 carloads … The Cherbourg works closed for lack of coal. Yet, on 15 May *Seventh Army* reported defense preparations were complete … "This was … an exaggeration…" A week later … (it was) 50% … The so-called *Zweite Stellung* (Second Fortress) a few kilometers from the coast slowly progressed with just 31 of 81 planned resistance nests ready. Rommel in April stopped the work. The last chance for defense in depth lost. The report that shoreline structures were complete except for deepening … **263**" Complete" meant high tide obstacles with few mined … Rommel had tripled the mines to lay 5 million of the planned on 50 million!

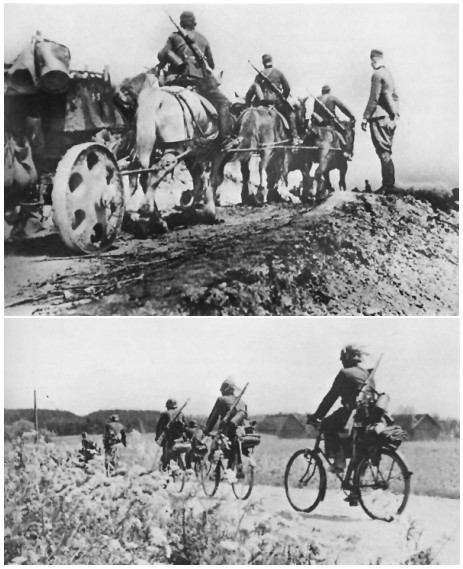
n the Cotentin east coast, strong points and resistance nests were 875 yards apart -- In the *352d Division* sector only 15% were bombproof (roofed) … The *716th* Division's 40 to 50 resistance centers "were beaded along the coast like a string of pearls" arranged 2 kilometers apart, so one loss left a 4 km gap! The … wall was not decisive. **264** The weakness, as Rommel knew, was the German inability to maneuver.

6. Air Defenses and the *Luftwaffe*. In four years, the *Luftwaffe* was eclipsed … (as) close air support planes were not modernized. Bad judgment changed emphasis to … big bombers and then to fighter defense planes. Both failed and *Luftwaffe* cooperation with ground force support flagged. The … Combined Bomber Offensive (benefit) was to deplete … (*Luftwaffe*) abilities in tactical support of ground troops …

> Through 1942 Hitler persisted in believing that the end of the war was just around the corner … (refusing) to recognize the tremendous productive capacity of the Western Allies … Although in 1940 the Germans had pioneered in the use of specially developed attack aircraft for support of

ground operations, after (1940) they neglected to develop the tactics further (and) … turned instead first to creating a bomber fleet … and later to producing fighter forces to protect the homeland. Their efforts on both scores were inadequate … Thus, the Germans faced the same dilemma … (as in) the division of their ground troops between the west and east. In both cases the compromise … (meant) inferiority to the enemy … a sAIRal of attrition and increasing inferiority …

German Mobile Infantry



… Albert Speer tried to halt the spiral by concentrating on fighter production … (and) production of fighters rose steadily in 1944 despite all the Allied … (bombing). **In the three months before D Day between seven and eight thousand fighters were produced.** Since losses continued to mount, the net gain was only about a thousand planes. But … (this lost out to) the critical shortage of qualified pilots … (due to) a lack of gasoline which … (shortened) pilot-training period from about 260 **265** hours in 1942 to 110 (even 50) hours. The green pilots accelerated the deterioration of the Luftwaffe … (and) planes … mass produced in haste, were inferior …

On D Day there were … 400 fighter planes … only about half of these were available … divided between … the *4th Fighter Division* … (Metz) and the *5th Fighter Division* … Paris. The mission of the *4th Division* (Metz) was to intercept Allied heavy bombers … (or) Allied planes over the invasion area, but with bases so far … (away they) would not be on hand on D Day.

Despite the … (inevitability of OVERLORD) the Luftwaffe made no comprehensive plans … In December 1943 the *II Air Corps* … (took) control of all the fighter aircraft … (but on) D Day …. (It was) without any planes … (After June 6) six wings arrived … (with) new graduates … (with) no battle experience; they were barely able to handle their planes. Most … did not know how to read maps … Responsibility for the movement, however, rested with the German Home Air Command (who) was not consulted … (On) D Day the units were scattered and lost … many were forced to make emergency landings. Few arrived…

Thus, for one reason or another the planes that should have been in France on 6 June (were not) … **267**

E. CHAPTER 13 (Cont'd): ANVIL Revived. *Global Logistics and Strategy*, Leighton and Coakley, Vol II May 1944 xyza

Anvil Revived. Ten days after ANVIL was squashed, Gen Wilson's reply to the directive revived hopes of a still-warm ANVIL corpse. Wilson said he could develop a "positive threat" of invasion to southern France in early June – not a landing! Yet, Wilson had five uncommitted divisions. Army OPD was

frightened that Churchill had “fertile plans: for this force. **347** It seems the British too were worried about employing their Mediterranean forces after OVERLORD launched. The miserly Adm King hinted the Navy would “chip in” a month’s worth of landing craft. Gen Wilson developed four plans for this excess: two in Southern France, two in Italy. After meeting with Wilson, the British provided the alternative Mediterranean amphibious operations with “excess” Italian forces.

Interestingly, Leighton and Coakley omit another obvious issue, which was employing the 10 French African divisions whose creation the U.S. had completely underwritten. In fact. it is strange this should occur since these French forces represented 10% of the total divisions the U.S. raised for WWII.

The British alternatives did not depend upon gaining Rome in Italy. Two areas were Southern France — Sète in the Gulf of Lions, and the Riviera farther east. The other two were in Italy north of Rome. They now agreed to the plan without waiting the Anzio-Rome outcome and “ditched” Churchill’s lingering plans for a Balkan invasion. Preparations included regrouping American service troops in Italy, the recently arrived U.S. 91st Infantry Division and the two new French armored divisions. The MTO had “lift” for one division, so Adm King’s offer of lift for a second division gave plausibility to the plans. They then requested immediate delivery. **348**

That Churchill failed in his “opportunistic” adventures was a sign WWII in Europe was reaching a final crescendo. U.S. refusal of Balian occupation forces was effective! Implied in all of this was a U.S. ploy for Adm King to play the “Tough Cop” role and the U.S. Chiefs the “Good Cop” role in “negotiating an agreement”. King made his concession "to keep ANVIL alive." It was just not a July ANVIL. In addition to 26 LST's headed that way, the JCS added 19 LST's carrying LCT's to arrive 20 July to replace the 19 sent to England for OVERLORD. The final Navy ANVIL tally was 22 LST's and 19 LCT's.

ANVIL was one alternative to exploit Italian success. On 11 May the Italian offensive jumped off to a good start. Wilson cabled ANVIL would occur between 15 August and 15 September and he preferred the French Riviera for the assault. Building to 10 divisions, he would leave in Italy enough forces to **349** **350** I to stabilize the front there. He worried a slowdown might require many more landing craft for shore-to-shore end runs. Thus, ANVIL and Italy were still major competitors to OVERLORD.

Planning was still “up-in-the-air”. OVERLORD 191 LST’s adequate on 6 February grew to 234 LST’s on D-day. In the process the Mediterranean lost 42 LST’s plus 61 LCI and LCT’s. While the Tehran scheme for simultaneous assaults was impossible, it was due to the

> … Allied failure to win a timely and decisive victory in Italy either … at Anzio or the attacks on the main German (peninsula) front …. The Italian campaign competed with ANVIL. (It) undoubtedly

was the decisive factor … (Here for the first time) it was the assault forces and not the assault shipping that could not be readied in time. Uncertainties about the future in Italy and British insistence that … campaign … (had) a priority over… southern France … (left) ANVIL in limbo … as a final issue to be settled in the long Anglo-American strategic debate on the conduct of the war in Europe. **351**

This was a "watershed moment" in the history of WWII.

F. CHAPTER 14: The OVERLORD-ANVIL Debates – ANVIL Revived. *Global Logistics and Strategy*, Leighton and Coakley, Vol II May 1944 xyza

From January through May 1944, the OVERLORD build-up proceeded while ANVIL was halting with considerable waste. Once forces landed, logistics would return to familiar problems of ports and internal lines of communication, merchant shipping, and service troops!

1. **The Logistical Outlook.** Year 1944 promised much. The ASF machine was maturing. OVERLORD and ANVIL's top priority accelerated solutions. Here then is an interesting observation and omission in other histories:

> There was, however, an impending shortage of military **manpower**. The troop basis for 1944 ceiling (was) … 7,700,000 officers and men. At the end of 1943. **352** the Army was still 200,000 men short … It was with some reluctance that General Marshall had deferred indefinitely the activation of 15 divisions … gambling that a total of 90 ground combat divisions … would be enough to win the war. Behind the gamble was the hope that Germany could be defeated without a protracted land campaign in Europe on the scale of that in World War I.

While this history discusses this "90-Division Gamble", Leighton and Coakley describe an unknown strategy that "Germany could be defeated without a protracted land campaign in Europe on the scale of that in World War I". Several points are key. In WWII, the Germans occupied all of Europe, not just the northern portion. Second, at first the Allies intended a lodgement to build bases to bomb Germany into submission, not a protracted land combat campaign. Third, unlike WWI, the Soviets were provided the "grist" for a bloody defeat. The 15 divisions not activated were sorely needed before the ETO campaign ended. We do not know is why western histories have not covered this "shortage".

> … (The) pinch would … (be) late in the year if German resistance proved stubborn. The shortage of service troops seemed to be the more … pressing problem. During January General Somervell … (had) a clear deficit of 40,000 service troops for ANVIL and an uncertain outlook for

> OVERLORD … (plus) 112,000 (deficit) for the … Pacific operations … Marshall turned down Somervell's pleas … and warned theater commanders to economize in their use of service troops. At the end of January an ASF study showed a shortage of 62,500 service troops …

This is interesting since the actual shortage was combat troops beginning mid-August 1944 with the "breakout" from Normandy. Two months after D-Day a troop shortage problem occurred even though troop shipping seemed abundant! Cargo shipping seemed adequate except for a possible post-War task of shipping relief supplies and equipment.

2. Shipping Deficits -- A third "zinger" from Leighton and Coakley: The bright shipping outlook dimmed when ship construction dropped below 1943 levels. In January 1944 Maritime Commission yards only delivered 131 ships (a third below) the December peak production. Output for 1944 was well under 1943 levels … but the unexpected drop of ship losses offset the reductions … **353** On 4 February Admiral Land … (in) a comment that contrasted startlingly with the current optimism of the military authorities:" "**May I say candidly that the shipping position … for the next five or six months is as tight as it has been … huge tonnages have been necessarily retained for operational purposes."**

"Operational purposes" meant intra-theater cargo and ships as floating warehouses due to inadequate storage. Shipping authorities saw deficits in all theaters—the harbingers of a major shipping crisis.

3. The Final Build-up for Overlord. OVERLORD shipping reached its climax in the first five months of 1944 with other theaters occasionally deprived. U.K. ports, camps and staging areas were flooded as troops rose from 774,000 in December to 1,527,000 by May 1944, more than planned. **354** While OVERLORD forces on D-day were adequate and balanced, cargo flow lagged far behind troop flow but **355** exceeded what British ports could handle. It led to the dreaded term "floating warehouses" or "prestowage" as U.S. ships were loaded with specific supplies for direct discharge at the beaches. March plans had 54 pre-stowed ships. When the cost (or luxury) of immobilized ships was accepted, it was efficient. By the end of May, a demand for 155 commodity loaders had been added to the prestowage requirement, but this meant a huge increase in coaster ships to unload them. It meant the extraordinary holding of merchant ships to await unloading and then unloading at a slow rate. "In all, by May the revised OVERLORD plan provided for a tie-up of over three million dead-weight tons of merchant shipping … for a month or more after D-day besides the great assault armada and the huge tonnages shuttling across the Atlantic." It was done.

4. The Uncertainties of Anvil. ANVIL posed different problems. **356** It was supposed to be mounted from resources already in Europe but was not so simple. The U.S. found extra service troops by breaking up the 2nd Cavalry Division, Pacific diversions, pressuring the French to provide their own service forces and using Italian POW's. The chore was finding "ships". The first three months required **357** an astounding 467 loadings -- 174 above estimates! Coincidently, 147 ships were needed in the

assault as “flatting” -- floored with bottom cargo on which deck loads of vehicles could be loaded. Washington saw a shortage of 110 sailing (April-May), but on 23 January Eisenhower added 64 more ships for OVERLORD with pre-stowed ship requests still pending. The British flippantly said they could not assist unless ANVIL was reduced in size. It was not helpful as U.S. staffs distrusted British cargo shipping estimates. **358**

An emergency meeting found the Atlantic short 245 cargo ships, but on 9 February reversed to hold there was enough! But warned of a serious strain. **359** “No more was said about the deficit of 245 sailings predicted on the 6th.” American ANVIL plans lacked British agreement. But the string grew tighter, so the CCS on 25 February gave the Mediterranean overriding priority for the Italian campaign postponing an ANVIL decision. It solved OVERLORD’s problems at the expense of ANVIL to leave ANVIL at the mercy of the heating up Italian campaign. Gen Wilson planned a robust spring Italian offensive moving 276,000 troops and 44,000 vehicles requiring 180 more ship sailings in March and 160 in April which essentially used all shipping allotted to ANVIL. A battle erupted between the staffs the next six weeks with the same “attitudes” involved in the “assault shipping controversy” as the **Americans tried to save ANVIL from obliteration by the Italian campaign which the British supported regardless of ANVIL.** *(Comment: this paragraph may contain insight into Gen Marshall’s special relation with Sir John Dill)***.**

> *A* Cairo agreement was both would equally share **360** Italian cargo shipping and the British always provided their 50% so the dispute was the U.S share. The JCS balked at 80 sailings in April, 50 above the agreement. To do this plus OVERLORD in April would leave a critical May shortage of 118 sailings (25% of the total) … The JCS concluded Wilson sought cargo for his entire campaign to Rome, not just for April … (Then) a shake-up over a June ANVIL meant postponing it until July or later – causing an upset JCS … Sir John Dill sought a solution by asking Wilson to review his needs if ANVIL were in July and therefore not compress his agenda.
>
> Thus, the end of March 1944 saw U.S. shipments to the Mediterranean 35 short … for the Mediterranean in April. Miffed … the British Chiefs dispatched a “snippy” message to the JCS asking it to then provide 100 of the 195 sailings for April, which was apparently far greater than scheduled. **A battle was brewing!**

5. The Uncertainties of Anvil #3. By now BOLERO shiploads were up 20 in May and June. **361** Yet, 22 more April ANVIL flatted ships with 28 from March and the original 30 sailing in April meant 80 April sailings. Angry debate on a July ANVIL reached a climax. The JCS stand on 7 April declined further obligations. Finally, Gen Wilson got his 195 sailings and the feared four-months deficit disappeared! May Atlantic program was balanced with an 80 sailings deficit out of a total of 1,500 were forecast for June and July**.** Thus, Wilson received his April build-up loads. On 18 April a new directive killed a July ANVIL when a surplus of cargo shipping suddenly loomed. Wilson set May requirements **362** at 135 sailings, for June 60, and July 30 sailings—assuming no south France invasion. The Pacific Shipping

Conference found it had a 200 ship Pacific surplus so suddenly again the U.S. had a surplus for a south France ANVIL!

In the midst, on 6 April OPD decided to not change the ANVIL priority as next below OVERLORD. Flatted cargo vessels were loaded and shipped. Then OPD thought ANVIL finished to halt logistic preparations. Loading stopped, but **363** 64 flatted vessels already so OPD sent them to Italy as the British had wished. Gen. Devers, U.S. theater commander and ANVIL commander froze stocks and flatted ships for ANVIL bucking War Department pressure to send them to Italy. **"Devers' optimism was soon justified."** On 28 April Adm l King reoffered assault shipping as on 12 May Alexander's forces launched their Italy offensive, by 17 May Wilson saw prospects for a 2-division ANVIL near mid-August. On 13 May, Gen Wilson sent May shipping estimates for Italy and ANVIL for a huge, preloaded August ANVIL. In the calmer atmosphere agreements were made with the British late May for 50/50 split between Italy and ANVIL. The key to keep loading the 64 flatted ANVIL ships that were alone sufficient to stock ANVIL. Troop shipping was shared for a resurrected ANVIL. **364** Thus, on OVERLORD eve there was enough merchant shipping for an August ANVIL. But requisitions had been cancelled so ANVIL fell out of the supply chain ordering system. Time was needed just to recreate all of the cancelled requisitions! **365** Then ASF found that Gen Devers had frozen ANVIL stocks and the picture improved. On 11 June Chiefs then in England learned ANVIL D-day in 60 days would work.

Then, in Italy German defenses crumbled. The Allies had entered Rome on 4 June northward bound.

> On the 7th General Wilson jubilantly reported that he could now definitely promise an amphibious assault … 15 August … (adding) "planning is being carried out on the assumption that the launching of ANVIL at this date will fit into the general European picture," and he asked for firm allocations of shipping … (just as) the JCS were on their way to England to confer with the British on future strategy in Europe … (and) the Mediterranean …

6. Atlantic Shipping on the Eve of Overlord. Obviously, Atlantic shipping before considerably improved with low ship losses with new construction climbing, huge tonnage gains came each month. April the submarine defeat in the North **366** Atlantic relaxed convoy schedules with those between Halifax and the U.K. suspended and between New York and British ports sped up and enlarged in 10, 9, and 8 knot groups with no convoy size limits on numbers of ships in a convoy. Sailings exceeded WSA forecasts. The 374 May sailing scheduled, had 539 ships. It resulted from more ships and a tremendous increase in efficiency at all levels. An Italy shipping crisis evaporated with expedited unloading's over the Anzio beaches even under fire – it bode well for OVERLORD. Mediterranean shipping zoomed January 1944. Battered Naples was the "largest allied military port in the world." Quite a change! Ship retentions evaporated in January as WSA vessels spent just 26 days in ports making roundtrips of 80 days down to only 18 and 70 days in April! **367** It was incredibly favorable for OVERLORD and ANVIL in May outlooks while the Soviet protocol and British imports in 1944 substantially exceeded commitments.

One dark cloud was overwhelmed British ports that handled 1,637,690 tons of in April —an increase of almost 700,000 over January and 300,000 tons over its capacity. May shipments exceeded 2 million tons to remain through July. So, U.S. authorities demanded a British import reduction. The British claimed dangerous reductions in food and raw materials, but the evidence contravened such feigned hardships. A pre-invasion problem was equipment shipped was far bulkier so the British also increased rail movements. **368** Agreements solved discharging BOLERO cargo. In fact, by June 1 of 67 ships at anchor, only 7 had BOLERO cargo and 19 actually heading to the Continent. Only 48 waited – very acceptable. But using 67 ships as warehouses began a trend that became unmanageable. The imponderable was whether the artificial harbors could handle such loads. One WSA official said: So far the position does not appear unmanageable."

G. Chapter 6: Pre-Invasion Operations April – May 1944; The Ninth Air Force; Craven and Cate Army Air Forces in WWII, Vol III xyza

1. April-May 1944; Author's Insight into the U.S. Ninth Air Force OVERLORD Preparations --- Going from the "If" to the "When". Launching OVERLORD least effected AAF. OVERLORD meant new air bases. Nothing changed, but everything changed. It was still the same AAF, but its bases were at the front lines. The 320-mile roundtrip to reach the battlefield was eliminated for planes that could fly 1,000 miles. AAF's mission change was they could devote 100% of their effort to "combat patrols" with no "transit time". In an instant, pilots and planes available for combat doubled! Second, it eliminated German *Luftwaffe* warning and response time. No longer could the *Luftwaffe* see planes forming over England to intercept before they reach German targets. Third, suddenly *Luftwaffe* planes had to be kept 320 miles from the front lines and from that simple principle that the air war in Europe completely changed.

D-Day Normandy was monumental because it culminated in the demise of the *Luftwaffe* and *Kriegsmarine.* Moving AAF air bases to France was the first "nail in the coffin". The second was a "lodgment" for ground forces. Thereafter, the Allies could destroy enemy forces in combat in which the AAF 2nd British Tactical RAF were keys.

Further, at some point Allied soldiers, airmen and sailors realized: "Hey, we are here to stay until the end" – a unifying fact of one single goal: "The Death of Adolf Hitler". It is unclear when this certainty of victory arose. Clearly, the capture of the Bridge at Remagen in March 1945 was the benchmark, but one suspects confidence in victory came far sooner. It was not clear on D-Day Normandy, however. The "when", "where" or "how" were unknown. The courage of Normandy was the willingness to fight not even sure that the "if" was possible. **138**

Air plans assumed the Allies would have air superiority and by D+40 have 116 fighter squadrons in France. April estimates predicted on D-Day the Allies would have in the U.K.:

1,407 U.S. heavy bombers and 1,180 British heavy bombers (actually 3,467);
835 light and medium bombers (1,645);

565 fighter-bombers, 2, 250 day and 170-night fighters; (5,409)
175 tactical and 150 photo reconnaissance aircraft; and
1,000 troop carriers and 120 transports (2,316).

The Germans were thought to have 1,950 planes with only 855 for Normandy. Post-war analysis shows both estimates far too low. The Allies had nearly double each category and the enemy actually had 3,222 fighters. The outcome did not change, but the scope of the effort was far greater than anticipated.

The nerve center for control of the great air armadas was at Uxbridge, where the RAF led the Battle of Britain, RAF's Second Tactical Air Force resided under Air Marshal Coningham, and where U.S. Ninth Air Force had a shared operations room with British the Second Tactical Air Force at the insistence of Leigh-Mallory. **139** However, the authors note the latter's authority was more formal, than actual, as Air Marshall Coningham and Gen Brereton worked in constant association with "effective collaboration" executing Leigh-Mallory 's directives that originated with his meetings with air commanders with Tedder, Spaatz, and Harris. Quesada's IX Fighter Command and RAF's 11 Group had a combined control center at Uxbridge. Montgomery's 21 Army Group had an Uxbridge office.

"A fantastically complicated system of communications and signals joined Uxbridge to its operating units and to associated forces on land and sea." Behind all of this was the Allied access to the German enigma machines a/k/a "Magic" and "Ultra". Each of the five command ships for OVERLORD had an air control officer and there were three fighter direction tenders accompanying the invasion fleets to act as local "ground controllers". Until solid bases were set on the Continent, all of this vast air force network somehow flowed through and was overseen at Uxbridge. It worked!

2. *Comment: The Lack of Air-to-Ground Fighter Plane Controls*. *Craven and Cate highlight the Allied Air Force effectiveness, when, in truth, it kept German fighters, who never appeared, from appearing. This was an accomplishment. Yet, June 1944, 2 ½ years after Pearl Harbor, the AAF had yet to create doctrine for close air support of ground troops. The Ninth Air Force spent its pre-D-Day attacking railways, robot-bomb (V-1) installations, airfields, coastal batteries and radar stations. Before H-hour D-day its eleven groups of A-20's and B-26's attacked six heavy gun batteries and its mediums bombed seven behind UTAH. Then IX Bomber Command's bombers were "on call". In three years before D-Day the AAF had no effective air-to-ground "close support" capability!* **141** *Historians note the Ninth's D-Day plans were 1,376 pages long! Yet, absent air-to-ground radios, the planes were unable to assist ground forces*

What was missing to alleviate the carnage on D-Day at OMAHA Beach were fighter planes attacking German gunners in the cliffs or fighter planes attacking the causeways leading off UTAH Beach. There are no records of these efforts, because they were never made! The impact of AAF tactical bombers bombing and strafing German defenders, many in open foxholes on the cliffs over the OMAHA beaches, is unknown but inarguably obvious. The risk of "friendly fire" accidents over a 300-yard beach with battle lines so clearly obvious was so minimal – yet it decapitated the effort!

3. D-Day Tactical Air Plans. On 14 April SHAEF ordered Eighth AF bombers to execute the transportation plan against railroads while the Italian Fifteenth AAF hit marshalling yards in south Germany and France for OVERLORD. Later orders had Eighth AAF hit coastal batteries, V-bomb sites, airdromes, and bridges while deep penetrations of Germany tackled German fighters. **142** CBO devoted 40% on the Pas-de-Calais instead for pre-OVERLORD deception plans.

On D-day all heavy bombers made one massive saturation bombing attack on the beaches just before the forces landed. It was to be a spectacular "beach drenching" bomb carpet to stun and temporarily incapacitate German beach defenders. Montgomery requested 7,800 bomb tons to "stun" defender's one-half hour before the landings as: strategic bombers 6,000 tons; navy ships 2,500 tons, and medium bombers 500 tons. The Eighth AF sent in 1,200 heavy bombers! It simply failed – in a spectacular fashion!

The Eighth AF bombed OMAHA Beach flying south in corridors to deluge beaches and defenders with bombs. 143 Airmen resisted; ground commanders insisted. To avoid huge craters, small 100 pound and fragment bombs were used. A later bombing aimed for bridges. Spaatz and Doolittle objected on both humanity and effectiveness grounds. Leigh-Mallory plan involved a large fighter force, but 144 fighter pilots were proficient in air-to-air combat, not in making ground attacks a skill they later had to learn "on the job". The air "Transportation Plan" was effective as fighters roamed inland under FULL HOUSE, STUD, and ROYAL FLUSH plans hitting trains, troops, airfields, and opportunity targets.

(Comment: Before D-Day fighter bombers learned "close air support" by training on fixed targets such as rail bridges and intersections. The U.K. American pilots had no experience with close air support for ground troops! The fear of friendly fire losses cost invaluable air assistance on D-Day and weeks thereafter. The U.S. Ninth AF had to invent close air support doctrine before it could employ it. Given that Pacific Theater fighting began in January 1942 and that North Africa was invaded in November 1942, it is unconscionable that our soldiers lacked "close-air support" on D-Day Normandy.)

Craven & Cate state: "Airborne Division parachute forces faced uncertainties … "**145** *In truth, it was closer to "suicidal" with unarmed cargo planes flying low over German defenders with antiaircraft defenses alerted.* That the RAF hoped to trick the enemy into turning on its searchlights and flak so other planes could attack these defenses was of no comfort. Thus, at 0200 on D-day, 432 C-47 aircraft would drop the 101st Airborne around Ste.-Mère-Église with 50 gliders arriving at 0400. The 82d Airborne in 369 aircraft and 52 gliders would land just to the west. They were to obstruct the German defenses at UTAH beach. On D-Day evening reinforcements would be flown in. **146**

The bad-weather plan for the Channel invasion force was to bomb with H_2S-equipped pathfinders. But then delay in dropping bombs had to be longer to avoid "friendly" forces since radar bombing was so inaccurate. Shorelines were one thing clearly visible on early radar sets. Montgomery decreed bad weather would not halt the invasion. Air commanders would hold bombers waiting for a break, but fighter-bombers would attack regardless of clouds. "This fighter-bomber operation seemed likely to prove suicidal for most of the pilots involved." **147** Morale and tensions were both conspicuously high as "the historic importance of the events about to unfold was everywhere sensed."

> An unprecedented degree of harmony in purpose … (and) cooperation … (were) remarkable features … Eisenhower … (promoted) mutual trust, friendliness, and determination … "The Supreme Commander … said that **148** for him, military operations were always a matter of human beings … the men who were fighting … (had to know) how much the Commanders reckoned on what they had done and would do … "Doubts must come up, only enthusiasm must go down" … doubts … (by) Commanders must not … reach those who were fighting … They must feel that the best plans had been made and that the operation was worth-while …

3. The Railway Plan. Until `10 March 1944 twin-engine medium bombers were considered "strategic bombers". At that time, the low altitude, flexibility of "mediums" was shifted to "tactical" bombing focused upon German front ne and rear-line areas. The "Railway Plan" became the most significant air battle for medium bomber air forces. The U.S. built a huge force of twin engine "bombers" that it failed to use in tactical air roles: B-25 Mitchell and B-26 Marauder, previously described. They waged the "Transportation Campaign" that was delayed until:

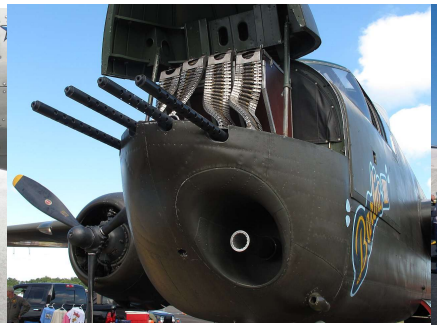
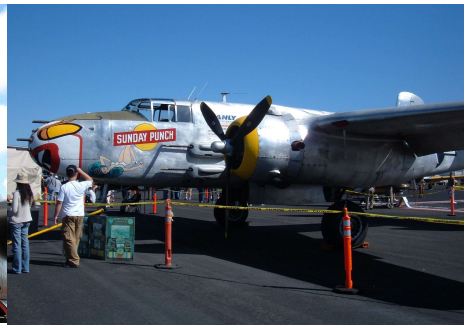
> … 10 March 1944 … (Until then) Ninth Air Force … (was part of the) strategic air forces, to the restlessness of both Leigh-Mallory and Brereton … (Under the) transportation campaign … priority (was given to) robot-bomb launching sites … airfields in France, oil production, coastal defenses, and ordnance depots … The … AEAF took their orders from Leigh-Mallory, who … (unfortunately had) five or six different bombing campaigns (against) his new deputy in AEAF, Maj. Gen. Hoyt S. Vandenberg … (advice for) concentration on one program …

Yet, a footnote reveals: "As of 1 April, AEAF included 496 American and 70 British medium bombers, 96 American and 38 British light bombers, and 670 American and 1,764 British fighters." A force of 496 medium bombers was not powerful compared to the 5,300 B-26's and 9,800 B-25's built in WWII – there were less than 500 in Europe.[4] Medium bombers were used in the Pacific (500 ETO vs 15,000 PTO). The Pacific lacked "strategic" targets. But the 500 mediums in Europe that were potent weapons. The Pacific Theater B-26 was a "gunship" with four wing 50-caliber machine guns, a huge 75-mm. artillery gun in the nose, plus two machine guns on each side of the cockpit, plus wing rockets and three machine guns fired by the crew. Yet, there were no Pacific gunship versions in Europe from fear of "friendly fire" accidents. That risk was minimal given each division had "Piper Cub" artillery spotter planes to guide fighters to ground targets. Second, air-to-ground radio sets could have been given to ground forces. The Ninth AAF Gen Pete Quesada was famous for his ground attack fighter support. Yet, the plentiful B-25 or B-26 gunships were not used in Europe.[5]

[4] Wikipedia *B-25* and *B-26*.

[5] Photo By Ssaco - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=17385251.

Yet, Eisenhower approved Zuckerman's controversial Railroad "Transport Bombing Plan" **149** on 26 March after bitter opposition by Air Marshall Harris and Gen Spaatz who abhorred using strategic bombers on "tactical" missions. Railway bombing expert Solly Zuckerman's planned to isolate rail and repair centers. French rails, SNCF, already had Germans confiscating cars and locomotives; it lacked

maintenance. Zuckerman computed 45,000 bomb tons of bombs would paralyze French-Belgium rails with his Mediterranean experience to "produce a chaotic situation" wrecking locomotives, marshalling yards, switches, rolling stock, tracks, and stations destroying just 30 targets **150** "without slaughtering the inhabitants … "Eisenhower agreed for Le Mans, Amiens, Laon, Aulnoye, Trappes, and Courtrai. Churchill was silenced by the U.S. forcing him to decide between saving French civilians or British soldiers! It was a brilliant ploy![6]

Examples of the effort include 8 April Hasselt, Belgium where 163 B-26's dropped 263 tons and 101 P-47's another 120-250-pound bombs by dive bombing. It was still smoking when 56 P-51's bombed two days later. On 9 April 48 P-47's halted German troop and freight trains, Namur and Charleroi were hit 10 April by 148 Marauders dropping 184 tons and 193 Marauders left 347 x 1,000-pound and 1,106 x 250-pound bombs the next day. The Ninth had four B-26 groups of 37 planes each hit one rail center in 4-plane packets. Damage rose as **151** accuracy reduced civilian injuries. Then P-51 escorts strafed and dive-bombed that RAF Spitfires began the same as the "age of the fighter bomber was born" in the ETO in an accident arising out of boredom by the fighter pilots no longer needed escorts. Then P-47, P-51 and P-38 pilots were "bored" escorting bombers. They had an exciting new task!

By the mid-April French civilian casualties were acceptable, so Churchill lifted his ban on bombing occupied cities. Tedder quickly assigned out rail center targets as: Eighth (23), Fifteenth (22), Bomber Command (39) AEAF (18) and ninth a large number. On 19 April with 182 B-26's and 50 Ninth fighters hit three towns. On 20 April, P-47's dive-bombed Mantes and Creil. Ninth fighters used Mustangs and Thunderbolts with "conspicuous success" on six cities in three days. Fighter bombers struck 22 towns the last two weeks of April. On April 23 Eighth fighters had plentiful**152** rail targets at Namur as 100

[6] Churchill, a self-professed military expert, could not avoid political implications -- baggage his generals and admirals lacked.

Ninth fighters joined. On 30 April **153** 33,000 tons demolished 12 important targets and the Germans sent up no fighters. The Germans repaired much, but at an ever-slowing pace.

By 30 April pressure rose to add strategic bombers. "May revealed the heaviest pre-invasion bombing and 'cunningly focused on routes which led into Normandy while seemingly concentrated on those serving other areas.' On 1 May, B-26s, RAF Boston's and Thunderbolts attacked 11 sites. "The Eighth … (sent) 328 heavy bombers and 16 groups of fighters against six marshalling yards. The mighty effort was on." Mid-May only the Eighth and Fifteenth Air Forces were behind on their schedule, so they accelerated two weeks before D-Day. **154** Of its 23 targets, the Eighth had 15 in Category A and 8 in B with "devastating effect" that justified the disputed efforts!

By 25 May "spectacular" results essentially cut French rail capacity to just meeting military; the Germans were inconvenienced, but not incapacitated with 51 of 80 rail centers badly damaged. Plane losses and civilian casualties were light, accuracy high and protests mild. **155** "But SHAEF G-2 reported on 20 May that the rail center bombings were not yet producing the effects expected." Leigh-Mallory ordered fighter sweeps on 20 May. Then trains were shot up "openly, on a large scale. In two weeks, fighters damaged about 475 locomotives and lines at 150 different points."

CHATTANOOGA CHOO-CHOO missions began 21 May as fighters swept north France and 500 Eighth fighters flew over Germany attacking trains until 4 June. "These operations furnished good practice for fighter pilots in attacking ground targets, a skill they were to develop to a high degree after the invasion." In addition, "French train crews deserted in large numbers, especially after fighters began to drop belly tanks on stalled trains and to set them afire by strafing."

The "transportation plan" decisive phase "was the brilliantly successful interdiction campaign against bridges." For **156** months the efficacy was hotly debated. The Allies had no experience in blowing bridges – "no data which planes, and plans might work best on river bridges … small, incredibly sturdy targets." Plus, German 88-mm guns were useless against "nap of the earth" fighters and medium bombers. Suddenly Gen Spaatz wanted his big bombers on the bridge campaign. An RAF 21 April mission showed bridges could be rendered useless without collapse. On 3 May, Montgomery ordered all Normandy bridges destroyed. **157** On 7 May eight Ninth Air Force p-47's with two 1,000-pound bombs each demolished a 650-foot steel railway bridge near Vernon plus three others. On 10 May Leigh-Mallory ordered his planes to down all bridges on the Seine River to Mantes (Paris) and up the Loire River to Blois. Between the Seine and Loire Rivers was an 80-mile wide "Paris-Orléans Gap" where all bridges over small rivers were cut except the north-south Loire River bridges – spared to keep up the deception that Calais was the actual D-Day location!

Ninth AF attacks on Belgian bridges 11 to 26 May ruptured three, damaged others. On 24 – 30 May 14 Seine bridges were hit in spectacular B-26 and P-47 low level attacks making the **158** B-26 the choice weapon. The "combination of B-26's dropping 1,000-pound bombs, P-47's diving with 500-pounders, and Typhoons firing rocket projectiles proved devastating." RAF and Ninth Air Force fighters damaged bridges and tunnels. Yet, by 1 June 1944 the German rail system did not collapse as hoped. Last minute attacks had all Seine bridges below Paris impassable. "Marauders, Thunderbolts, Lightnings, and Typhoons attacked every day… until every bridge was wrecked!" Turned out bullets could blow up a steam engine's boiler with only 20% of the bombs expected! "The Ninth Air Force carried off most of the honors." **159**The campaign against 1) rail centers and tracks and 2) bridge succeeded with rail bridges winning. Rail centers were murky, undecided, Clear though, was the impact on German D-Day responses. **160** **161**

Luftwaffe: All Planes All Fronts - 5/1944			
	Need	Have	Ready
Fighters	2,680	1, 729	1,195
Night fighters	1,052	644	434
Twin-engine fighters	385	318	153
Light bombers (Schlacht)	937	869	639
Bombers (Kampf)	1, 824	1,259	801

4. Neutralization of German Air Bases. The goal was to eliminate *Luftwaffe* bases as far from the beaches as Allied fields in England were. POINTBLANK in early 1944 ensured the *Luftwaffe* could not halt the invasion. Predictions were 900 German planes on D-Day (450 fighters) from **162** 100 airfields within a 350-mile radius. Air supremacy plans required Allied: 1) patrols to keep the *Luftwaffe* reduced; 2) heavy bomber missions in Germany before and after the invasion to freeze planes there; and 3) destroying French fields 3 weeks before D-day. Airfields near Caen lightly attacked in hopes the Allies could use them. **163** Yet, pre-invasion airfield attacks were vital piolet training in another new task. Results varied with varied pilots' ability to assess damage. The last week of April, Lightnings and Thunderbolts strafed and bombed north France bases as B-17 groups struck Alsace area bases. Leigh-Mallory began his plan 1 May to eliminate Area I (130-mile radius of Caen) and Area II – a 350-mile radius. Area 1's 40 fields were assigned to Bomber Command, AEAF, and the Eighth. Area II, to Germany. had 59 fields given to the Eighteenth and Fifteenth Air Forces.

Attacks began 11 May as each air commander planned attacks with Normandy fields less heavily hit. An accurate description is infeasible. The first day 37 B-26's and 18 A-20's groups bombed; May 13 had 42 A-20's and 3 Marauder groups; 19 May 200 P-47's hit three airfields and so it went --.**164** constant and unpredictable bombing by all types. Ninth AF rapidlyly finished. By D-day it hit 36 airfields most followed up with strafing and dive-bombing attacks on specific targets. The Eighth AF "lolly-gagged" but on 9 and 23 May hit eight area fields. On 24 May 400 heavies hit fields near Paris, Belfort, Nancy, and Brussels. The 25 May Eighth effort was so effective little more was needed. By D-day airfields in Area, I received 6,717 tons. **165** The "principal purpose" was attained: "The Germans did not have enough serviceable bases to put their air forces within good striking distance of the beachhead." Here Eighth Air Force shone, since it threats to German industrial areas kept the Germans from transferring more fighters from the *Reich.*

On D-Day German air opposition "was astonishingly slight, far below the scale anticipated … (One) of the most remarkable facts … is that the *Luftwaffe* did not make a single daylight attack on D-day …"

5. Breaching the Atlantic Wall. The Nazis' built intricate, ingenious shore defenses stretched from the Netherlands through France as the Atlantic Wall was meant to keep landing craft from

approaching. Von Rundstedt knew it was overrated; lacked depth; was vulnerable from behind. So only after Rommel arrived to "inspect" defenses did they receive attention. Coastal batteries held 2 to 6 guns of 105 - 400 mm sizes in 50 locations covering sea approaches with murderous fire that were: "exceedingly difficult to neutralize". Early plans omitted air assaults until the invasion hoping a gigantic, focused air-naval bombardment might knock out guns or stun the crews. Air forces would use every plane. Yet, in late March Montgomery insisted coast defenses be destroyed as pressure forced the air forces to test at least test out bombing. **167** Eight coastal batteries were still not encased in concrete and were vulnerable. Airmen opposed but Adm. Ramsay insisted on bombing. Deception plans required three areas to be bombed from everyone hit guarding invasion beaches. In a sense, deception required an ineffective effort to be three times less so! Marshall Harris called it a "wildly extravagant method". So, 24 sites were struck with Naval commanders deciding if they were "knocked out". The Ninth and Second Tactical barrage began 13 April 1944 with A-20's and B-26's hitting a single battery. Some aircraft were lost to AA guns, many had damage. In April all 24 were bombed with 3,500 tons doing some good with naval commanders demanding more.

In the midst, came concern over the new **168** beach obstacles sprouting on tidal flats of were steel, concrete, timber stakes and ramps with mines or shells lashed to them. Curved railroad-type rails and ramps ("tetrahedra") were added. Then pilots found bombs caused secondary explosions proving the Germans were mining the obstacles. The Navy was not yet concerned, and beach bombing did not begin until 25 May with 54 big bombers using H_2S radar in blind-bombing with very poor results after massive raids on 2, 3, and 4 June. Bomber Command **169** dropped 14,000 tons to incur heavy losses. D-day evening had 5,904 tons of bombs dropped and as 495 sixty-pound rockets hit Normandy batteries in Normandy with 17,190 tons "wasted" outside the area. On 26 May, Zuckerman said the bombing was ineffective enough. Late efforts never answered the issue if it was worthwhile. D-Day bombing and shelling was so intense, evidence of prior bomb damage was destroyed. Post-invasion analysis confirmed that few gun emplacements were destroyed, conversely the big guns were knocked around and "unbalanced" with crews (allegedly) demoralized.

The Germans built extensive radar sites every ten miles to **170** **171**detect air and seaborne forces. Not all could be bombed, so those with anti-jamming protection were bombed. Again, deception required hitting three sites for every one targeted. Air attacks on 10, 18 and 25 May 42 had 16,668 sorties! Spitfires and Typhoons dive bombe as "heavies" struck several. These were dangerous, costly missions with plane casualties so high the effort halted. Then the navy and air forces picked the six most important sites, and all were crippled. Fortunately, a key German signal headquarters was damaged to cut radar coverage by 82%, lowered to just 5% by jamming. "The Germans were therefore blind to Allied movements toward the Atlantic Wall, and they were utterly confounded about the nature and intentions of the invasion forces. They were surprised … and … (lacked) no trustworthy means of detecting the approach of air and naval fleets."

6. The Beginning of the Campaign against Oil. For all of their objections, "the Eighth and Fifteenth Air Forces launched what was to become their most rewarding campaign … the destruction of enemy oil production. Germany's oil position was always "precarious", but never as desperate as the Allies believed. Before 1939, Germany consumed 7,500,000 tons of petroleum, two-thirds imported so it began WWII in September 1939 with just six months-worth of oil. Restrictions and making synthetic

oil from coal helped. The latter produced 6,180,000 tons and 2,000,000 tons were imported from Rumania and Hungary in 1943. By early 1944, the Germans had "confidence" in their oil reserves.

The 1940 British plan to cripple German oil facilities, had failed by May 1944, but the Allies left this target alone for a lack of planes ply production was in 80 locations, many beyond bomber range until Fifteenth Air Force ***172*** took up the task. Oil complex "components" were five times more numerous than aircraft factories. The force necessary did not exist until early 1944 as oil priority was dispossessed by others. On January 1944 oil had no priorities. Then in February 1944, oil became a topic. Gen. Somervell, ASF, pressed Gen Spaatz who agreed oil was a #1 OVERLORD strategic target.

On 5 March he pushed his "oil plan" on Eisenhower, in part, to resist the Zuckerman transportation scheme. Spaatz claimed German increases were 8,600,000 tons and of all the plants 27 were Ploesti and Ruhr plants were "especially important" in providing one-half of Germany's supply. 173 He argued hitting 54 oil centers, but Eisenhower also favored the rail and CROSSBOW campaigns. Bomber Harris objected to the "oil project". Arnold supported Spaatz using the Fifteenth Air Force in Italy on Ploesti refineries. On 5 April Fifteenth Air Force made a major attack on Romanian rail yards where most of the 588 tons "with more than coincidental inaccuracy badly damaged the Astra … refineries nearby." On 15 and 24 April large forces again attacked Ploesti marshalling yards as refineries sustained major "incidental" damage. By 5 May actual orders to continue hitting oil arrived!

Normandy Beachhead – P-38 Planes Covering

D-Day Beach Defenses Being Built

On 174 5 March 1944 Spaatz battled for oil over rail centers arguing to defeat the *Luftwaffe* meant attacking targets they absolutely had to defend, which was oil. Bomber fleets heading to oil plants were an imperative attraction. Spaatz sought to have Eisenhower list 13 synthetic oil plants as a third OVERLORD priority intending to force the *Luftwaffe* to engage. He proposed Eighth AF and Bomber Command hit rails in the day and oil at night. RAF's Harris did not agree. But Spaatz schemed to convince Eisenhower he could destroy the *Luftwaffe* per D-day plans by bombing oil production. Since the aim was really the *Luftwaffe,* bombing oil targets did not upset priorities! Thus, was the oil campaign sold -- a test to force the *Luftwaffe* to fight! 175 Tedder was able to negotiate two oil attacks for one CROSSBOW on 20 April 1944, but weather delayed the start until 12 May

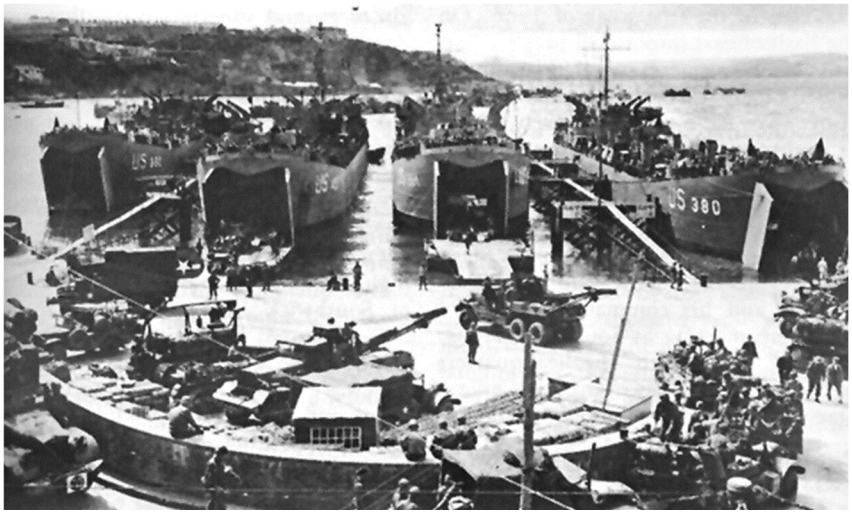
> "… **for the great experimental attack, one which the Germans had been dreading almost above everything."** "They had foolishly grouped … plants together … (It) proved painful … On … (12 May) 15 combat wings involving 935 heavy bombers, escorted by Eighth and Ninth Air Force and RAF fighters, took off for what was to prove a historic operation … Near Frankfurt the GAF

rose to intercept … Between 150 and 200 enemy aircraft attacked … even ramming the B-17's. One of the combat wings lost half its bombers … (Then) escorting P-47's and P-51's came to the rescue and the bombers proceeded … More than 800 heavies attacked, dropping 1,718 tons on the synthetic oil plants at Zwickau, Merseburg-Leuna, Brux, Lutzkendorf, Bohlen, and other cities … During the withdrawal phase a force of 50 German twin-engine fighters pressed determined attacks … (The) Eighth Air Force lost 46 heavy bombers on this mission, and 10 Allied fighters … 176

Bomber crews claimed 115 enemy aircraft and fighter pilots 75 … (The) German Air Force had reacted vigorously … and had suffered severe losses … (All) of the targets were damaged … (and) happened to destroy a building … (was making) heavy water for Germany's atomic-bomb project. It was an excellent mission, despite the heavy loss of bombers, and an auspicious opening of the Eighth Air Force campaign to deny the Germans oil.

… (The) Fifteenth Air Force was by now well launched … (against) the invaluable cluster of crude-oil refineries at Ploesti … one-fourth of Germany's petroleum … (as) RAF 205 Group, filled the Danube regularly with mines to interfere with barge shipments of oil to the *Reich*. (This campaign is little known but was highly effective!)

Loading LST's at the Ports



On 5 May the Fifteenth's bombers, almost 500 strong, fired many of the installations around Ploesti and encountered … intensive antiaircraft fire and over 100 fighters. On 18 and 31 May up to 450 B-24's successfully made Ploesti attacks. It would remain a favorite target of **177** the Fifteenth until August 1944, when Russians occupied the ruins. On 28 May, the Eighth hit with good results. On 29 May 224 Liberators stuck the distant Pölitz refinery with another serious *Luftwaffe* response to lose 49 bombers. The Allies had found the "Achilit les Heel". Pre-D-Day heavy bomber raids confused and overwhelmed fighters at: Berlin, Friedrichshafen, Brunswick and Hannover. Fifteenth Air Force hit Ploesti and Vienna three times. In mid-May Goering was warned *Luftwaffe* pilot losses were critically in excess of replacements. Post-war records showed GA plane losses peaked as follows: February 1,432; March 2,012; April 2,540; and May 2,461. Both plane and oil production losses **178** were "exceptionally painful". After August 1944, German forces were "greatly hampered by lack of fuel and lubricants". Albert Speer said May oil decided the war. While only 5,166 tons of bombs hit oil targets in May, June production was one-half of March as the Allies had landed in Europe. On 8 June, Spaatz made oil the first strategic priority for air forces. The campaign was off to a splendid start.

7. Air Reconnaissance before the Invasion. Pre-D-day efforts entailed substantial, coordinated reconnaissance by all intelligence agencies. By Spring 1944 photographic and tactical reconnaissance aircraft were experts, which was critical for D-day. 179 Ninth Air Force and the Second TAF flew eight missions daily ranging over all of coastal Europe to hide the invasion site, which provided massive intelligence data for train movements, target identification, mapping, troop movements, etc. The Ninth flew over 400 reconn missions between 15 May and D-day. By this date, most of Europe was photomapped allowing intelligence analyst to find enemy changes. They even photographed Normandy beaches flying at wave top heights to obtain height estimates and airborne landing areas. The Ninth's 10th Photo Reconn Group flew 11 dangerous, missions at 15 feet over the beach obstacles. *180* The group won a Presidential unit citation. The enemy had "no clue" where the invasion would land. The air forces came through in its 1) transportation campaign, 2) airfield attacks, 3) neutralizing the Atlantic Wall, 4) reconnaissance, and 5) still struck industrial centers. "The Anglo-American air forces did more than facilitate the historic invasion of 6 June 1944. They made it possible." ***181***

H. May 1 – 15, 1944: Buresh Eighth AF Bombing Logs Excel Format, xyza

May started slow, but then picked up the pace beginning 7 May 1944. For the next eight days roughly 800 big bombers attacked, particularly in France and the Netherlands. Interestingly, many of the pesky

EIGHTH AIR FORCE DAILY RECORDS

				B-17's				B-24's				US Bomb Crew			Lutwaffe			P-38 & P-47 Escort				P-51 Esc0rt				Lutwaffe			US Crews		
No.	Mission	Area	Type	Fly	Dwn	Fin	Rep	Fly	Dwn	Fin	Rep	KIA	WIA	MIA	Dwn	Rep	50%	Fly	Dwn	Fin	Rep	Fly	Dwn	Fin	Rep	Los	Dam	Prob	KIA	WIA	MIA
Mon, 1 MAY 1944			947																												
332.1		Ops	CROSS	51	0	1	20											119	0	0	0										
332.2	Pas Calais	Fran	V-1	22	0	1	19	57	0	1	15	5	0	0								90	0	0	0						
333.1	Troyes	Fran	Rails	109	1	0	52					0	0	10				120	2	0	0								0	0	2
333.2	Saarguemines	Fran	Rails	119	2	1	43					0	0	20				272	0	0	4					1	0	1	0	0	0
333.3	Brussels	Belg	Rails					99	0	0	21	0	0	0								166	1	0	1	5	0	2	0	0	2
334.1	Fran	N'lnd	Info	5	0	0	0																								
334.2	CARPETBAGGER French Underground FFI							25	0	0	0																				
			50																												
335	Pas Calais	Fran	V-1					50	0	0	0							50	0	0	0	52	0	0	0						
Wed, 3 MAY 1944			56																												
336	Wizernes	Fran	V-1					47	0	0	33	0	3	0				48	0	0	0	53	0	0	0						
337.1	Fran	Belg	Info	5	0	0	1																								
337.2	CARPETBAGGER French Underground FFI							9	0	0	0																				
Thr, 4 MAY 1944			591																												
338	Bergen	N'lnd	Air	40	1	0	15					2	1	0				229	2	3	9	287	1	2	0	9	2	6	0	1	3
Fri, 5 MAY 1944			67																												
339.1	Scottevast	Fran	V-1					33	0	1	6	4	0	0								52	0	0	0						
339.2	CARPETBAGGER French Underground FFI							21	1	0	0	?	?	10																	
Sat, 6 MAY 1944			195																												
340	Siracourt	Fran	V-1					70	0	0	48							104	0	0	0	81	0	0	0						
341	Fran	Belg	Info	5	0	0	1								0	1	0														
Sun, 7 MAY 1944			965																												
342.1	Berlin	Germ	Indus	553	8	2	265					8	14	83	1	0	0	232	5	0	13	284	1	1	1				0	0	3
342.2	Munster	Germ	Indus					212	1	1	22	1	2	6																	
342.3	Liege	Belg	Rails					29	0	0	0	0	0	0				24	0	0	0	51	0	0	0						
343.1	Central	Fran	Info	3	0	0	0																								
343.2	CARPETBAGGER French Underground FFI							14	0	0	0																				
Mon, 8 MAY 1944			971																												
344.1	Berlin	Germ	Indus	433	25	1	169					1	7	261	76	16	16	775	12	1	3	282	5	1	1	55	4	20	0	1	13
344.2	Brunswick	Germ	Indus					289	11	7	28	7	8	112																	
345.1	Glacerie	Fran	V-1	92	5	1	29					0	0	28				97	0	0	0	97	0	0	0						
345.2	Brussels	Belg	Rails					57	0	0	29	2	2	19																	
346	Various	Fran	Info	3	0	0	0																								
Tue, 9 MAY 1944			839																												
347.1	St Dizier	Fran	Air	220	0	0	38											144	1	1	1								0	0	0
347.2	Laon	Fran	Air	238	2	0	44					1	1	20				277	0	0	0	277	0	0	0	3	0	1	0	0	0
347.3	St Trond	Fran	Air					344	2	0	35	2	1	44								247	6	0	1				0	0	6
348.1	Various	N'lnd	Info	3	0	0	0																								
348.2	CARPETBAGGER French Underground FFI							13	0	0	0																				
Thr, 11 MAY 1944			982																												
350.1	Mulhouse	Fran	Rails					138	1	2	17	1	7	40				147	0	0	2					2	0	0	0	0	5
350.2	Belfort	Fran	Rails					57	1	0	0							188	2	0	6	188	2	0	6	3	0	2			
350.3	Epinal	Fran	Rails					69	3	0	0											201	3	1	2	3	0	0			
350.4	Chaumont	Fran	Rails	Cancelled					3	1	30	0	1	31																	
351.1	Brussels	Belg	Rails	547	8	1	172					2	23	83				99	0	0	0	805	4	0	0	11	0	4	0	0	4
352.1	Various	Denm	Info	4	0	0	0					2	3	0																	
352.2	CARPETBAGGER French Underground FFI							4	0	0	0																				
Fri, 12 MAY 1944			891																												
353.1	Mersenburg	Germ	Oil	313	2	3	189					4	6	20				153	0	0	0					2	0	0			
353.2	Brux	Czech	Oil	258	41	1	162					3	8	377				201	4	0	4	201	4	0	4	26	0	8			
353.3	Zeitz	Germ	Oil					242	3	5	61	0	7	33								381	3	0	9	38	0	5	0	0	7
354	Various	Denm	Info	5	0	0	1					2	3	0																	
Sat, 13 MAY 1944			749																												
355.1	West	Pol	Oil	283	10	0	81					1	1	88				155	1	0									0	1	5
355.2	Osnabruck	Germ	Rails	179	1	0	61					0	2	10				238	2	1	0	238	2	1	0	14	2	9			
355.3	Tutow	Germ	Air					240	1	0	2	0	1	10								346	2	0	7	33	1	4			
Mon, 15 MAY 1944			174																												
356.1	Marquise	Fran	V-1	38	0	0	5					0	0	0								105	1	0	0				0	0	1
356.2	Siracourt	Fran	V-1					90	0	0	8	0	0	0																	
357.1	Various	Belg	Info	3	0	1	0					1	3	0																	
357.2	CARPETBAGGER French FFI							5	0	0	0																				
Week				3531	106	13	1367	2214	27	18	355	49	104	1305	77	17	16	3672	31	6	42	4484	35	6	32	205	9	62	0	3	51

V-1 bomb attacks were carried out by the "newcomers" – the B-24'S. There were 6,000 big bomber strikes but at the end the two weeks with only 130 bombers shot down. Again, it was one bomber too

many for those that went down with the plane, but the loss percentages were low. May 7 800 bombers. Four days before 15 May had 800+ bombers from Eighth Air Force, which is why the Davis *Combined Bomber Offensive* is so important since nearly triples these numbers when adding Fifteenth AAF and Bomber Command. This figure does not include Ninth AAF medium bombers nor its fighters. Fighter planes flew over 9,000 missions in these two weeks – with great impunity. The AAF lost 66 fighters in these two weeks but claimed 265 German fighters for zero killed and 51 MIA's.

I. Chapter 4: Neptune Operations Plans to May 1944: U.S. Naval Administration WWII, Naval Forces Europe, Histories. Vol V Operation NEPTUNE (London 1946) xyza 20

(Comment: Naval histories employ a stilted military terms that often repeats information. The content is edited)

1. Amphibious Training Exercises - 1944. Army assault formations undertook amphibious training and experimenting with large-scale practice invasions at Slapton Sands including live fire. Many problems were identified. No one in history ever attempted **an eight-division combined amphibious and parachute assault invasion!**[7] **360** The experimenting was on the beaches at Instow and Westward Ho! Some of the principal experiments and trials were:

1. Waterproofing of vehicles and tanks.
2. Wading trials to ascertain maximum depth vehicles could wade ashore.
3. Design and trials with LCT ramp extensions.
4. Rhino ferry trials.
5. LCT beaching trials.
6. Trials with minor landing craft in surf.
7. Trials for suitability of LST as a Hospital ship.
8. Most efficient means of discharging stores from a Coaster.
9. Methods for clearing beach obstacles.
10. The quickest way to refloat stranded landing craft.

Army troops took seaboard orientation trips, practiced driving vehicles on and off, loading and discharging Army equipment from craft as naval personnel learned about army equipment. Naval training was done for landing, beaching, retracting and discharging cargo into "ferry craft" from large ships. Large-scale practice invasions occurred from 31 December - 2nd January for Force "O" (Omaha) **361**. Operation DUCK assaulted Slapton beach with the 29th ID. Four destroyers plus trawlers and minesweepers escorted. DUCK assigned vessels and amphibious parties to their actual assault organizations so naval and army units were "married-up" as early as possible.

[7] In fairness, there were seven actual divisions plus a substantial British paratroop force and Army Rangers which, with other special forces, seems fair to categorize D-Day Normandy as an eight-division assault.

2. Organization and Training of U.S. Naval Assault Forces. Increasing the assault size in March 1944 forced the U.S. Navy to find a second ship assault force! Adm Moon became commander of OVERLORD forces on 4 March – just 60 days out! The 11th Amphibious Force commanded:

a. FORCE B for follow-up formations to both assault forces;
b. LANDCRAB supported all three forces;
c. FORCE U, under Rear-Admiral Moon; and,
d. FORCE O, under the Amphibious Force Commander himself - Rear-Admiral Hall.

Training progressed as the 11th Amphibious Force learned operations. Moon had a huge task of creating, equipping and training a force in two months. It was hectic as orders for exercises were often finished just prior to the sailing! **363**

Amphibious exercise "Fox" involved Force "O" from Gen Gerow's V Corps who loaded at Weymouth and Portland "FOX" used APAs for the first time with two cruisers and eight destroyers bombarding. As in DUCK, the Germans did not attack the tempting targets. Force "U" exercises included MUSKRAT (24-27 March) and BEAVER (29-31 March). MUSKRAT trained the 4th ID for ship to shore efforts. **36** BEAVER sailed the 4th ID in LST's and LCI(L)'s with bombardment by two cruisers and four destroyers plus escorts, a covering forces and two minesweeping flotillas. The last Force "U" exercise was TIGER (26th-28th April) on a large scale with actual landing craft for the 4th ID and VII Corps with a nighttime sea passage marked by lighted dan buoys. Two cruisers and seven destroyers shelled.

The last exercise was FABIUS (3-6 May) -- a full-scale dress rehearsal with Assault Force "O" (FABIUS I) and British Assault Force "J" and "S" (FABIUS II and IV) **365** landing Gen Huebner's 1st ID, but weather cancelled it. Battleships refrained from sending their 14" and 16" shells crashing onto the English countryside!

3. German Land, Navy and Air Forces and Coast Defenses. "Commander in Chief West", Field Marshal von Rundstedt had these Army Group D armies:

1. The Fifteenth Army held the channel coast from the Rhine to the Seine.

2. The Seventh Army had western channel coast and Brittany Peninsula from the Seine to Loire.

German Air Fores D-Day			Fighter-			
	Bombers	Recce.	Bombers	Fighers	Coastal	Total
West and South Seine	70	35	--	70	--	175
East Seine and Belgium	70	10	30	250	--	360
Holland	--	10	--	125	--	135
Northwest Germany	200	10	35	455	35	735
Denmark and Norway	--	10	--	50	40	100
Total	340	85	65	950	75	1,505
Close by D-Day	320	10	65	195		590

3. The First Army held the Biscay Coast from the Loire to the Spanish frontier.

4. The Nineteenth Army held the Mediterranean coast and the Italian frontier.

They had static infantry coast defenders with mobile counterattack divisions 20 to 100 miles inland. On 17 May Army Group D had 60 divisions: 10 Panzer divisions, 2 Parachute ***233*** and 47 Infantry -- with 41 static defense units while 19 were mobile. The sea defense focused upon: (1) vulnerability of assaulting force and (2) a slow build-up. But defenses lacked depth with limited numbers of troops. Artillery had reasonable coverage and was protected with concrete or armor. Mobile reserves could respond faster than the invader, but **234** there was no second line. Defenders remained to the end. German effort was "expended on strengthening the one really good defense line -- the coast"; "hard, but thin - reinforceable no more than 'skin-deep'."

Strong points were linked with obstacles (mines, wire, anti-tank walls, etc.). A house might be a pillbox. Sea walls were obstacles. Anti-tank walls barred streets. Mines and barbed wire barred areas ***235*** covered by artillery of heavy and medium intersecting batteries. Near beaches were light batteries, field artillery and howitzers. Beaches had enfilading fire and inland mobile batteries. Radar made the artillery systems complete (accurate) **236** while beaches had concrete strong points (casemates, pillboxes, magazines, shelters) with trenches and wire and mines surrounding them and light, anti-tank and machine guns for "close in" defense. Most were connected by phones with underground personnel shelters, firing slits at entrances and concrete 3.3 to 6.5 feet thick. **237** Each had ample food, water and ammunition**.** Obstacles to stop movement were everywhere. Mines were laid in rows at the back of beaches or high-water mark.

1. Barbed wire was on and off the beaches, between, and fronting strong points and sometimes underwater to catch troops wading ashore. **238**
2. Walls were common as were roadblocks or breast works 6-10' high and 3-8' thick.
3. Anti-tank obstacles had steel gates, curved rails tetrahedron with moats 40 to 60 ft. wide with water or dry.
4. Inundations flooded low, marshy ground.
5. Under water obstacles covered landings beaches, even on cliffs to impede or explode boats.

Steel and timber stakes were sewn beginning **239** February and laying 7 rows 20' feet apart over 3 miles in just one week. Element C, steel tetrahedra, steel hedgehogs, steel rails, and timber posts rows spaced 8 – 50 feet apart starting with four rows of steel obstacles 12 to 17 feet below high water. These ran to the low tide line with land mines on top**.**

Ports and estuaries were well-defended as heavy artillery defended sea approaches. Entrances were covered by batteries with booms and minefields, flame-throwers, piers, and jetties were mined. Ports had strong landward defenses with well-stocked strongholds. Docks, **240** quays and cranes were wired with explosives, block-ships were ready to be sunk; harbors were mined, estuaries defended with howitzers and mouths blocked with booms. Coastal batteries had concrete from 3'3" to 6'6" thick, ranged from large 16" guns down to old French 75's from WWI as follows:

1. Heavy coastal batteries (8" and over) effective range of 40,000 yards.
2. Medium coastal (4.5" to 8") maximum range of 27,000 yards.
3. Light coastal batteries (3" to 4.5") up to about 20,000 yards. **241**
4. Howitzers for plunging fire from 7,000 to 18,000 yards.**242**

Four armies each had two or three corps with two or three divisional sectors. Division fronts were 25 miles in Belgium and Pas de Calais, but 45 miles in Normandy and 70 miles on the Biscay Bay. Three static divisions defended NEPTUNE, under strength with non-Germans having 243 two regiments forward, one in reserve with more 244 in rear areas. Local reserves increased Normandy defenses from 5 static divisions to a total of 8 on 245 D-Day.

Available Forces	U.S.		British		Total	
	Avail	In U.K.	Avail	In U.K.	In U.K.	
Infantry Divs.	13	12	10	10	22	
Armor Divs.	6	5	5	5	10	
Airborne Divs.	2	2	2	2	4	36
L of C Divs.			1	1	1	
Parachute Reg	4	4			4	
Tank=Arm Brigade			10	10	10	
Armored Grp Comp	4	4			4	

In November 1943, German major naval vessels were: two useable battleships, one carrier, six heavy and light cruisers, 37 destroyers, 83 torpedo boats and 200 U-boats. In March 1944, the Allies counted just 5 destroyers, 10 torpedo boats and 56 E-boats and R-boats, 25 minesweepers and 60 miscellaneous in the invasion area with 246 6 more destroyers and 10 torpedo boats possible. The 130 U-boats in Biscay ports could arrive from D +4 to +14 - a maximum of 60% of the 200 U-boat total. The threat was small. 247-248 Adm Ramsay predicted night attacks on the flanks striking without regard to losses, **but mines were a larger threat.** 249

The *Luftwaffe had* about 1,515 aircraft, just making 25 to 50 sorties per day. **250 – 251- 252**

4. Beaches, Lodgement and Amphibious Attack and Land Campaign. First tasks were:

a. Assault and buildup of sufficient strength and speed;

b. Impede enemy movement to the battle area by bombing and local resistance groups,

c. Delay enemy movement to the battle area by threats elsewhere, and **253**

d. Attack with maximum force and with the greatest attainable violence**.**

The governing air considerations were the assault beaches:

1. Had to be in range of effective air cover;
2. Had to have airfields or sites for allied planes in strength soon after the assault;
3. Beaches had to be close enough for decisive allied air superiority; and
4. Could not be near German centers of air strength.

Naval considerations included the English Channel was easier to protect, reduced submarine threats, **254** with less minesweeping and avoided the German-held Channel Islands. The area from Cherbourg to Calais was the best choice by far in **which the authors devote 11 pages to its advantages. 255-256-257-258-259- 260- 261**

Type of Squadron	Aircraft Totals		
	Planes/ Squad	Total Squad	Total Planes
U.S. Eighth Air Force			
Bomber heavy day	12	165	1,980
Fighter day	25	45	1,125
Photo recce	12	4	48
		Subtotal	3,153
U.S. Ninth Air Force			
Bomber medium	16	32	512
Bomber light	16	12	192
Fighter day	25	63	1,575
Fighter night	12	3	36
Fighter recce	18	4	72
Photo recce	12	4	48
Troop carrier	13	52	676
		Subtotal	3,111
Royal Air Force			
Fighter day	18	59	1,062
Fighter bomber	18	18	324
Fighter recce	18	8	144
Fighter night	18	22	396
Bomber light	20	6	120

After capturing Cherbourg, armies would capture the "lodgement area" and required ports. The Supreme Commander could choose the Seine Group of ports or the Brittany group of ports. The German would likely

> … withdraw his main forces to cover Paris, while holding the Seine River line … (while) some … (impeded) allied advances towards the Loire ports and into the Brittany Peninsula … (The) allies would have to force the line of the Seine, capture Paris, and advance as far North-East as the Somme. An early advance … would run grave risks of being defeated in detail.
>
> The allies would … be compelled to pause until communications … (and) essential airfields were … restored or built … the pause could be expected to be a lengthy one, at the end of which the forces, which could be maintained, **would probably be insufficient to undertake so large an operation.**
>
> During this pause … forces might … (capture and open) the Britany Peninsula … ports … to supply a force adequate to capture Paris and force the line of the Seine. **262** … (but) an immediate advance to capture the Seine ports … would be feasible … only if Germany was on the point of final collapse …
>
> The lodgement zone … (of) Cherbourg and Brittany group of ports … (could support 31) divisions, after one months' development, and a force of forty-five divisions after three months' development … (It) was estimated that the Cotentin-Caen group of ports should be in allied hands in fourteen days, and the Brittany group in six to eight weeks.[8]

[8] Both estimates were far too optimistic!

> An advance towards … the Somme … (to gain) Paris and the Seine ports, could then be undertaken, within the limit of 150 miles of … (the) Cherbourg group of ports …The development of the land campaign, after the capture of Cherbourg, as anticipated by COSSAC, is illustrated in the appended sketches. The broad NEPTUNE plan for the initial campaign was:
>
> 1. Capture by assault the Normandy beaches;
> 2. Occupy Caen, Cherbourg, and the Brittany Peninsula as far as Nantes (i.e., the entire peninsula); **263**
> 3. Land maintenance and build-up over the beaches but to later add the port of Cherbourg; and
> 4. Open the Britany and Normandy ports for independence from the beaches …

The Army's plan assaulted with a division, strengthened with special troops to be an amphibious" division of 20,000 men of three regimental combat teams (R.C.T.) with beach engineers **265** and special units added. The naval formation for an R.C.T. is an assault group of three battalions with three companies with each a "wave" of small naval boats. The division assaulted with two regiments attacking, the third in reserve to exploit success where most promising. Each regiment attacked on a two-battalion front; each battalion a two-company front for "a divisional assault on a four-battalion front."

"Normal" assault formation should have had simultaneous assaults on a 10 R.C.T. (Brigade) front. But there was not the assault lift available for landing … only 5 R.C.T. The normal system had therefore to be modified to some extent …" (*Comment: The OVERLORD assault was 50% of the size normally required! Interesting …)* The plans below were for the 50% smaller assault! 266-267 -268 -269

The order of events was as follows:

> During the last 40 minutes, before the first wave hit the beach (H-hour), the Navy and the Air Force would "drench" beaches with maximum weight of fire power **270**
>
> Leading the infantry onto the beach, DD tanks were to land at H minus 10 minutes (10 minutes early).
>
> Behind … were more tanks in special landing craft, LCT(A)'s … tanks could begin firing while still aboard.
>
> Behind … at H plus one minute, the first waves of infantry in L.C.V.(P)s, or other very small landing craft types;
>
> Behind them at H plus 3 minutes were Naval Combat Demolition Units (NCDU) to clear paths through the German beach obstacles. The tide would be one to two hours below the outermost obstacles. The NCDU were to clear paths through the obstacles working exposed and racing the rapidly rising tide.
>
> Then more infantry, tanks, light artillery, beach equipment … would land in successive waves … **(271-272**)

6. **Timing and Movement of Forces.**

NEPTUNE was scheduled for May and the Soviets were promised May, but when the assault grew to five divisions, the date became June. The time had many factors: 1) night gave the ships cover and 2) electronic devices would confuse German radar at night. **273** Daylight was required 40 minutes before H-hour for battery bombardment, to obtain a density of landing forces and clear beach obstacles. The army wanted some light for glider infantry. Tides were important with low tide mandatory due to beach obstacles and time for obstacle clearing parties to work.

LANDING SHIPS AND CRAFT	U.K.	U.S.	Total
Landing Ships (L.S.I., A.P.A. and L.S.T.)	126	185	311
Major Landing Craft Incl' Support Craft	777	434	1211
Minor Landing Craft and Barges	1570	930	2400
BATTLESHIPS	6	50%	50%
CRUISERS	23	15%	85%
DESTROYERS	104	35%	65%
LANDING SHIP-CRAFT	4021	40%	60%
COASTAL FORCES	316	30%	70%
MINESWEEPERS	277	10%	90%
ESCORT VESSELS	152	15%	85%
MONITORS & GUNBOATS	4	0%	100%
ANCILLARY FORCES (Tugs, salvage, etc.)	324	30%	70%
MERCHANT SHIPS	224	50%	50%

Yet, at Juno the Calvados Rocks required a high tide -- **274** three hours after extreme low tide and 30 - 135 minutes after civil twilight (dawn). Different beach gradients and tide levels on west beaches required different H-hours. West (U.S.) landing was as the tide rose. British Forces G and S were an hour later, Force J 1.5 hours later for Calvados rocks with less than a one-half moon. There would be only six days in June for all of these conditions. D-day was set for June 5.[9]

Then came weather: 1) wind under Force 3 or Force 4 offshore; 2) minimum swell; and 3) visibility of at least 2 miles. **275** The air force needed no cloud base below 1,000 feet nor above 5,000 feet, 6/10th visibility and no fog. The army needed dry weather to avoid mud. "The probability of all these weather requirements being met on any one of the six possible days of landing in June 1944 was extremely remote". In June 1944 in that area, weather could be predicted only 24 hours in advance. If postponed, vessels would steam a reverse course for exactly 12 hours to turn around – again. Rules were: 1) U.S. always on the west (right) from western ports; **276** 2) follow-on forces were loaded further away; 3) forces were named by their beach code [west to east: Force U, O. G, J and S or UTAH, OMAHA, GOLD, JUNO AND SWORD)] and 4) forces met at Area Z to sail south across the channel in marked routes. **277-278**

[9] Luck was riding with the Allies. June 18 to 20 was the "greatest storm on record" that demolished the harbor.

6. <u>Preliminary, Prepatory, Assault and Built-Up Phases.</u> NEPTUNE had four phases: (1) The Preliminary, (2) The Preparatory, (3) The Assault and, (4) Build-up.[10]

The Preliminary Phase. It began months before as Allied air forces reduced **279** the "value of the German Air Force" using POINTBLANK. Second was disorganizing railroads by cutting lines but not disclose the point of attack. All enemy rail in a wide zone were attacked to paralyze railroads. "CROSSBOW sites" were attacked to aid British civilians and their morale. Third, Allied Air Forces gained "air superiority" (not necessarily supremacy) over the invasion to: attack German rear maintenance areas; airfields with 130 miles unserviceable; **280** constant bombing to keep *Luftwaffe* planes from invasion areas. Fourth were attacks on the *Kriegsmarine* (E-boats, destroyers, U-boats, bases; air minelaying, vessel and U-Boat patrols). Fifth, three days before came air attacks on billeting. command and control, and communications. On and after D-day, a percentage of planes sought out "opportunity targets.

Assault Phase. After loading, naval assault and bombarding forces sailed in convoy from assembly Area Z (southeast of the Isle of Wight) where navy escorts and minesweepers guided them across the Channel. **281** Upon hitting the enemy mine barrier, minesweepers cleared and marked 10 passages. Seven miles offshore, L.S.I. and A.P.A. stopped to lower their L.C.A.'s and L.C.V(P)'s All craft were to assault but were to adjust speeds, so the first wave hit at H-hour. Bombarding and support ships would be in supporting positions. Fighters escorted Bomber and Airborne Forces, covered the Channel, and hovered over the beaches and fleets in a five-squadron force with six fighter squadrons were on stand-by for emergencies.

H-hour was $1^{1}/2$ hours after nautical twilight; 4-5 hours before high water, with 30 minutes of daylight for shelling with maximum landings on first tide landing below beach obstacles. 282 A massive bombing attack and navy shelling would precede landings. D-Day objectives were St. Mere Eglise, Carentan, Isigny, Bayeux, and Caen. 283 Only the first was accomplished. The air forces most important mission was air superiority. **284** **285** The Build-up sought to set up armies on shore before the Germans could respond, to build airfields for Allied fighters. Landing necessary forces by D+3 to defeat a German counterattack with the U.S. and British Armies each having five complete divisions then in place. **286**

J. Chapter 4 (Cont'd) Composition and Organizations; U.S. Naval Administration WWII, Naval Forces Europe, Histories. Vol V Operation NEPTUNE (London 1946) xyza

[10] All materials in this section have been taken from NEPTUNE Initial Joint Plan, RJC 1004 of 1st February 1944. This was prepared jointly by the three service C's-in-C and issued under the direction of the Supreme Commander. Though later amended in many particulars, it was the basic joint plan on which the plans and orders of the various services were built.

1. Forces, Ships and Craft: Army Forces, Allied Expeditionary Force. 288 The Allies had 36 divisions in England --- only about 10% of total German forces, but large compared to German forces in the ETO. The Allies also various regiments and battalions equal to 7 or 8 more divisions. The ability to put 44 divisions into Europe in one bridgehead within a few months was "mind-boggling". The histories do not make clear if the Germans really anticipated the power that was unleashed beginning on D-Day.

Hours	Action
H-6 to H-4	Minesweepers to pass the transport areas
H-41/2	U.S. Landing -Bombarding Ships to reach transport areas
H-31/2	U.S. L.C.T. to arrive as transport areas
H-2	First British L.C.T. at lowering positions (transport area)
H-2	U.S. L.C.A. (Wave 1) to depart from transport area
Minutes	
H-103	U.S. Waves 2 to 5 to depart from transport area.
H- 78 min	
H - 100	British Landing Ships to reach lowering positions
H - 45	D.D. Tanks leave departure line (4000 yards from beach)

The tables for the Allied Expeditionary Air Forces ("AEAF) are also boggling -- 10,700 planes! Today 25,000 passenger planes fly the world, but in 1944, 10,700 planes were astronomical numbers. There were 1,160 planes towing gliders, many towed two gliders or up to 2,200 gliders. The feat was unknown! **289-290**

The list of ships is equally impressive against a *Kriegsmarine* surface fleet that could not escape its Norway forced anchorage. The Allies had 30 battleships and cruisers able to destroy concreted structures and certainly able to "stun" and "deafen" the defenders. Unfortunately, the big ships were of little aid on D-Day. Their damage was not significant since they were kept too far offshore to render direct fire aid to assaulting troops. The destroyers saved D-Day.

Seaborne "lift" carried five divisions with a two-divisions to follow-up. **291** If the landing ships (LST's) are deducted, the actual "ships" involved were still 2,460 -- less 55 "block ships" for break waters for the artificial harbors. Antidotally, the Allies lacked enough "junk" ships. Many of these were new, including Liberty Ships making just one voyage! The minesweepers were the heroes as 6,500 ships sailed over the Channel with infinitesimally small losses. The sweepers dragged cables to explode mines or cut anchor cables, so they floated up to be exploded with gunfire! While there were 2,400 landing crafts and ships, there were critical shortages in bulldozers and tanks. The infantry lacked the ability to engage in shootouts with German direct beach artillery which bulldozer tanks had the ability to contest plus plow paths through the beach obstacles for landing craft. Both were existed, but both were lacking.

The number of landing ships seems low for five divisions landing. But landing "ships" were large beach-able holding 200 men such as the LSI, LST and Tank ships, but there were only 185 for three U.S. beaches! **292 -293**

2. #5 ASSUALT AND FOLLOW-UP FORCES. The Navy's NEPTUNE Plan with stages provided:

The Approach: The five Assault Forces sailed from ports on D minus 1, except Force U from Devon and Cornwall left early evening D minus 2. British Assault Forces were put into 16 groups for the order they were required. U.S. Forces had four Groups with Forces O, G and J to gain point Z (15 miles South of

Nab Tower) and to latitude 50°05' North. Forces U and S headed to Area Z turning southward to 50°05' just before reaching it. From 50°05' assault forces would be led by minesweepers marking out narrow, buoyed channels for each force behind 10 minesweepers Flotilla's.

Assault Timetable: H-10 hours (10 hours before touchdown) minesweepers crossed 50°05' North through enemy minefields to "the transport areas" some 7 to 11 miles from the beaches. Ten channels would be swept and "danned" (marked with lighted "dan" buoys).

Commandos and Rangers: Commandos and Rangers would land with the Assault forces:

1. Five Commandos on the east flank to capture Quistreham and destroy the River Orne bridge.
2. One Commando west of Force J to mop up.
3. One Commando west of Force G to capture Port En Bassin.
4. Two Ranger Battalions for the West Flank of OMAHA and to capture Isles de Margouf.
5. Two Commandos on standby for the Eastern Flank the night of D+1 if required. **308/309**

Follow-up Forces: 1) Force L (British – 5 groups) and 2) Force B (U.S.-3 groups) sailed from Thames and Bristol Channel for the second D-Day tide. **310**

3. The Build-Up for Offensive Land Operations. The landing after the Assault and Follow-up was styled "the Build-up" of "extreme complexity" mandating the "most careful timing" designed to: a) Lift the maximum force in preloaded ships and craft by D +3; b) Lift 1-1/3 divisions per day to avoid discharge peaks; and c) deliver maintenance cargos of 600 tons/day/ division. The Build-Up used (1) MERCHANT, (2) a SHUTTLE, and (3) FERRY services. MERCHANT services had 1,256 vessels (M.T., Coasters, Stores Coasters ships, tankers, colliers, Liberty's, Tugs) 311

Ports to the east of Southampton were for British troops and equipment, while ports west were American troops and equipment. Convoys of M.T. ships and coasters began daily joining convoys from the Central Sector and daily return convoys made the reverse trips. A body of Joint Commanders-in-Chief, styled B.U.C.O. (Build-up Control Organization), at the Portsmouth. ANCXF with the British Ministry of War Transport and U.S. War Shipping Administration controlled movements to the beaches using MOVCO and TURCO to implement cross-channel movements. **T.U.R.C.O.** (Turn Round Control Organization) worked England wharfs. **312** **M.O.V.C.O.** handled channel convoys and traffic and **N.O.I. C's** controlled ship activity "**on the far shore" (a.k.a. "France")**.

4. Supporting Naval Operations. Minesweeping**.** It was a huge chore of a constant watch against German mining. 313-314 Channels were first opened and buoyed to 2 miles wide and later widened and marked with ocean lights. Plus, sweeping the enemy coast so warships could shell German positions, particularly Cherbourg.

Bombardment. The bombarding ships formed in the Clyde (Eastern Task Force) and Belfast (Western Task Force). **316** Bombardment began 40 minutes before H-hour to: a) neutralize coastal defence and inland batteries; b) destroy beach defences and c) engage hostile batteries and enemy formations. Ships were to return to Portsmouth, Plymouth, or Portland, to replenish ammunition Spotting was by

104 fighter planes, 40 Forward Observers Bombardment (FOB) landing with the Army plus Shore Fire Control Parties (SFCP's) with assault battalions. Piper Cubs were used. **317-318**

Covering Forces. Western Approaches and Plymouth gave cover outside the English Channel and within the Channel gave cover against destroyers, small craft and U-boats with four divisions of destroyers, Coastal Forces and Western Task Forces. **319** Coastal Command flew patrols of the Approaches and Channel called "CORK".

Defence of the Assault Area and Mine Laying. Each force had its own air defense with continuous air cover as well as the eastern and western approaches for subs and E-Boats. **320** Successful attacks were made, however. Destroyers patrolled the area and the defense line at nights. The main threat was high speed E-boat and air night attacks. Anti-E-boat forces were plentiful. **321** The larger concern was human torpedoes. The fleet contained "A.A. and Radar" guardships and the fleet was prepared for an "umbrella barrage". Minelaying was used to protect the fleet. **322** Minelaying Operations involved new "special mines" frequently mentioned, not described.

Assault Force	**Bombardment Force**	**Ships**	
Eastern Task Force	Reserve	*Rodney*	*Sirius*
S.	D.	*Warspite*	*Frobisher*
		Ramillies	*Dragon*
		Mauritius (C.S.2.)	*Danae*
		Arethusa	*Roberts*
		10 Fleets	3 Hunts
J	E	*Belfast*	*Diadem*
		7 Fleets	4 Hunts
G	K	*Orion*	*Argonaut*
		Ajax	*Emerald*
		D.S. Flores	
		9 Fleets	4 Hunts
Western Task Force	Reserve	*Augusta* (Flag)	*Bellona*
O	C	5 U.S. Destroyers	
		Arkansas	F.S. *Geo, Leygues*
		Glasgow	
		9 U.S. Destroyers	3 Hunts
U	A	*Nevada*	*Quincy*
		Erebus	*Hawkins*
		Tuscaloosa(.DEYO)	*Black Prince*
		Enterprise	*D.S. Soemba*
		8 U.S. Destroyers	8 U.S. Destroyers

5. Supporting Air Operations. Airplanes for Defense. 323 The above include aircraft required for normal operations, such as the Air Defense of Great Britain. This included fighter Protection patrols of ten squadrons over the beaches and assault area with three Fighter Direction Tenders (converted L.S.T.'s) in control.

Coastal Air Operations: Patrols in S.W. and Eastern approaches to the Channel gave early warning and protection from enemy vessels, surface or submarine. U-Boat patrols were conducted by 21 squadrons One squadron of Wellingtons had night reconnaissance with Coastal Forces. **324**

Minelaying by Aircraft: Bomber Command laid mines until D minus 10 to Holland and Brest.

Air Spotting: Spitfires and Seafires spotted for bombarding warships.

Air Bombardment: Shortly before the assault.

Expected Scale of German Air Effort: The *Luftwaffe* had 1,515 aircraft with 590 estimated to be the assault area.

MULBERRY artificial harbors have been discussed, but **325** additionally the breakwater harbor area was 2 miles long x 1 mile wide with breakwaters made of: a) Blockships (CORNCOBS) - sunk in water up to $2^1/2$ fathoms (15 feet). b. Caissons (PHOENIX) - Sunk in 30 feet were 200' long, 60' high from 2,000 to 6,000 tons. c. Floating Booms (BOMBARDON) in 10 fathoms (60 feet) were 200 ft. long floating steel tubes moored end-on in a line for a deeper water anchorage. d. WHALEs were prefabricated floating pierheads on "stilts" raised and lowered with the tide for dock unloading of ships.

Layout:

1) Shallow water area had 12 blockships sunk by D plus 3 for ½ mile of beach shelter. (GOOSEBERRIES II and III);

2) At the $5^1/2$ fathoms were GOOSEBERRYs with 40 PHOENIX to give shelter to 17 coasters at anchor or alongside piers;
3) Then a line of 25 Bombardons seaward to sheltered eight big ships (25' feet); and 4. WHALE piers inside the breakwater led to rocky shores where craft couldn't beach. **326** All were towed from England using a huge 160 Tugs.

Capacity: MULBERRY "A" had 6 Pierheads and three Roadways and "B" had 7 for stores and L.S.T.'s.

Aircraft Defensive Planes

Squadrons		Squad's	Planes
8th & 9th AAF (U.S.)	Day Bomber Heavy	165	1,320
	Day Fighter	108	1,728
	Bomber Medium	32	283
	Bomber Light	12	144
	Night Fighter	3	36
R.A.F.	Night Bomber Heavy	721	870
	Bomber Light	18	216
	Day Fighter	59	708
	Fighter Bomber	18	216
	Night Fighter	22	264
Coastal Command	Anti-U Boat	21	252
	Anti-Shipping	10	120

MULBERRY A (U.S.) – was destroyed in the June storm.

D Plus 6 onwards	Vehicles	1400 vehicles to be landed daily dry shod
	Stores	1000 tons daily over the beaches.

D Plus 18 onwards		Planned for 5,600 tons.

MULBERRY B (British)

	Daily Average	Maximum	
D plus 4 to D plus 8	1000 tons	1240 tons	-
D plus 9 to D plus 12	3400 tons	4150 tons	1250 (from D plus 11)
D plus 14 onwards	6000 tons	7340 tons	1260

GOOSEBERRIES: Shelters made by sinking a line of 12 blockships in 2^{1}/2 fathoms. There were to be five GOOSEBERRIES: Varreville (US), St. Laurent (U.S.). Arromanches (U.K.). Courseulles (U.K.) and Ouistreham (U.K.). It took 60 blockships **327-328**

PLUTO, TOMBOLA, AND AMATHEA. PLUTO was a Channel underwater fuel pipeline. Ten were laid to Querqueville, France by D+75 for 2,500 tons per day plus four floating discharge points for deep water tankers at 600 tons per hour or 57,600 tons daily!

Slapton Sands Memorial New Bedford MA

Slapton Sands Tragedy. New Bedford, MA residents well know of the Slapton Sands tragedy. During the April 27th exercises, German E-Boats worked inside of the covering warships to torpedo and sink two LST's and severely damaged a third LST. Casualties were terrible.

This is all the "official" history provides. A local news channel relates: "Operation Tiger was a large-scale rehearsal by Allied Forces preparing for the D-Day invasion … On the early morning of April 28, 1944, the servicemen were attacked by German forces and two Landing Ship Tanks (LSTs) were sunk and two others damaged. **A total of 749 American soldiers and sailors were killed.**[11] **It was an ominous beginning for the 29th ID known as the "Boys from New Bedford"**.

K. OUTLINE OF OPERATION OVERLORD: G-4 Report, COMMZ UTOUSA[12] xyza

[11] City Honors Those Lost During WWII Rehearsal Exercise Tiger at Fort Taber Memorial | https://wbsm.com/city-honors-those-lost-during-wwii-rehearsal-exercise-tiger-at-fort-taber-memorial/?utm_source=tsmclip&utm_medium=referral.

[12] *Note:* This manuscript was prepared by the Historical Section of the G-4 of the Communications Zone, European Theater of Operations (COMZ, ETOUSA) as volume seven of its multi-volume manuscript organizational history AND deposited at the Office of the Chief of Military History (OCMH; now US Army Center of Military History). It is

Below is the Communications Zone description of the Omaha Beach Port project. Monumental in its conception, more so in its execution. The enemy was "flat-footed" assuming beach landings would fail for lack of adequate port capacities. Considering it was a "real time" document, it is interesting for its insight. This is the outline plan.

1. OBJECT—The ultimate mission of the Commanding General, ETOUSA, is the total defeat of Germany. The object of Operation OVERLORD is to mount and carry out an operation with forces and equipment … to secure a lodgement area on the Continent from which further offensive operations can be developed. This will be part of a concerted assault upon German occupied Europe from the United Kingdom, the Mediterranean and Russia.

2. GENERAL INFORMATION—The operation is in two phases:

Phase I—The assault and capture of an initial lodgement area, including the development of airfield sites in the CAEN area and the capture of CHERBOURG.

Phase II—Enlargement of the area captured in Phase I, to include the Brittany peninsula, all ports south to the Loire (inclusive) and the area between the Loire and the Seine …

3. ALLIED FORCES AVAILABLE—On the target date it is estimated that there will be available in United Kingdom:

> Land Forces—2l U.S. divisions (13 Infantry, 6 Armored, and 2 Airborne), 17 British divisions (l0 Infantry, 5 Armored, and 2 Airborne) and supporting troops of both Forces. **1**
>
> Air Forces—331 U.S. Squadrons 214 in Eighth [Strategic] Air Force, and 117 in Ninth [Tactical] Air Force) and 220 British Squadrons. Figures for each Air Force include squadrons of all types *(Fighters - 2700; Heavy Bombers - 1956; Med Bombers 456; Lt Bombers - 171; Photo Recon - 128; plus, Reserves*).

4. MAJOR CONDITIONS AFFECTING THE SUCCESS OF THE OPERATION. An operation of the nature and size of operation OVERLORD has never previously been attempted in history. It is fraught with hazards, both in nature and magnitude, which do not obtain in any other theater … (To) have a reasonable prospect of success, it is assumed that certain conditions must exist concerning the major obstacles. These conditions are:

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typical of the kinds of detailed studies routinely acquired (as here) or done by WWII historians. It is reproduced with limited modifications for the World Wide Web; spelling, punctuation, and slang usage have not been altered from the original. https://history.army.mil/documents/WWII/g4-OL/g4-ol.htm.

5 **German Fighter Strength—**There will be an overall reduction in the German fighter force … (for) superiority. Recent figures on destruction of German fighter(s) are encouraging; the effort … need not be sustained as the battle for the lodgement area will be won or lost in the first few days.

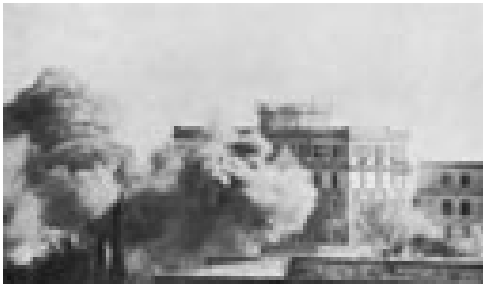
Coast Defense—The German Coast Defense has been designed primarily to delay access to principal ports. Our landing will be made presumably in a lightly defended area as the Germans consider a landing there likely to be unsuccessful because of its distance from a major port.

German Land Forces—The German defense policy is to defeat any attempted invasion … on the coasts. Offensive reserves are accordingly located within striking distance … It is assumed … the number of first-quality divisions which could be deployed in the CAEN area to support the divisions **2** holding the coast should not exceed three divisions on D-Day, five divisions by D+2, or nine divisions by D+8.

Surprise—Though …possible to effect … tactical surprise, it will be impossible to achieve strategical surprise. Every effort must be made to **draw the enemy's attention to our most favorable landing place, Pas de Calais …**

Beach Maintenance—Maintenance over beaches is a paramount … (and using) every captured port … 18 divisions must be maintained … the first month … 12 divisions during the second month, and …. diminishing to NIL during the third month … (It) is imperative … to provide sheltered waterways by artificial means …

Hospitals and Hotels Hit with Artillery



6. THE ASSAULT— The plan … (has) two main principles—concentration of force and tactical surprise. Three Regimental Combat Teams of the First U.S. Army on the right, and five Brigade Groups of the British Second Army on the left … will make the assault … supported by airborne divisions … (and) early capture and development of airfield sites and … port of CHERBOURG … Here is the race between the build-up … by Allied Forces and the bringing up of reserves -- Germans.

7. PHASE II -

First Army—After CHERBOURG … the first U.S. Army will drive to the south and southeast to cut the Brittany Peninsula and secure the ports of NANTES and ST. NAZAIRE. One Corps will turn west to clear up the peninsula. **3** Then, First Army will advance the line of the Upper Seine prepared for further action to the northeast.

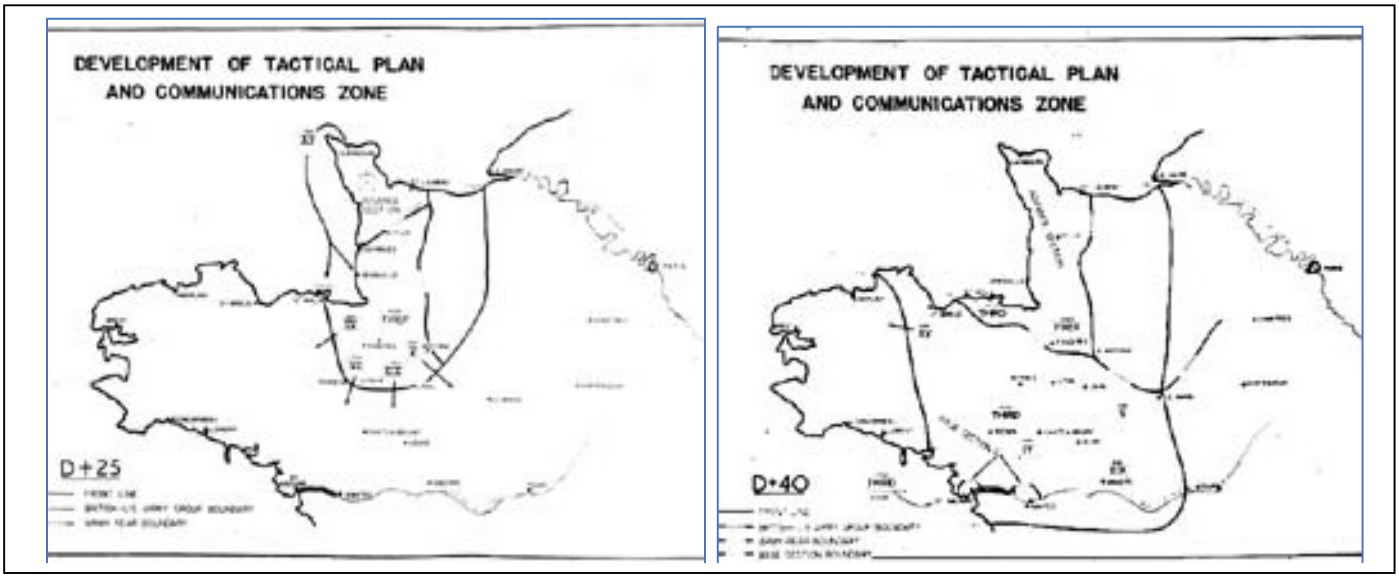
Third Army—Third Army will land … about D+35 to D+45 and will capture the Brittany peninsula and open the Brittany ports … (Then) Third Army will concentrate on the right of the First Army, prepared to operate to the east, either in close conjunction with First Army or by swinging south of the Loire if a wider envelopment is feasible.

Situation on D+90—By D+90, occupation of the lodgment area is complete. U.S. and British Forces are on the Seine River, First and Third Armies are abreast, and First Army Group has been established as has a Communications line. Our forces are prepared for further offensive operations. Situation maps showing the various stages … are attached.

8. THE BUILD-UP OF US FORCES—The anticipated build-up of U.S. Forces on the Continent is:

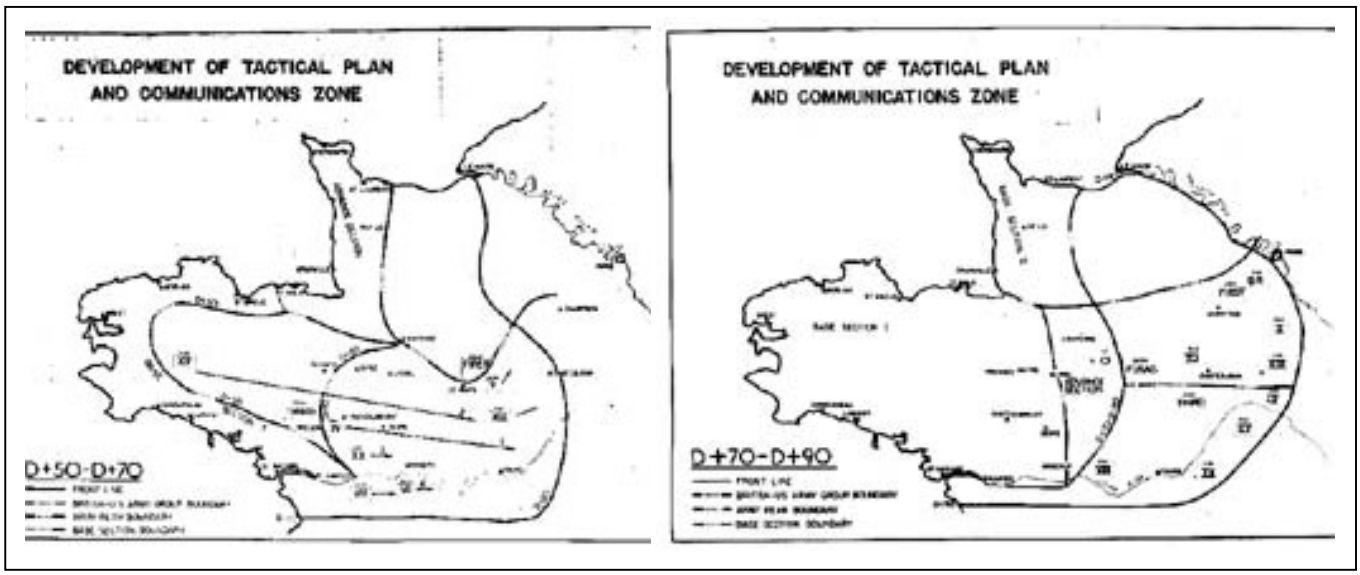
	F.F. & SOS		AIR FORCES		TOTAL		TOTAL %	
	Veh	Pers	Veh	Pers	Veh	Pers	Veh	Pers
D	9,456	89,750	146	707	9,602	90,467	3.9%	7.3%
D+5	27,758	188,000	1,804	9,542	29,562	197,542	11.9%	15.9%
D+15	66,882	385,500	5,190	25,147	72,072	410,747	29.0%	33.1%
D+30	**120,057**	**660,000**	**11,355**	**56, 640**	**131,412**	**716,640**	**52.9%**	**57.7%**
D+50	165,648	873,350	17,892	94,160	183,540	967,510	73.9%	77.9%
D+70	191,066	987,750	25,394	121,960	216,460	1,109,710	87.1%	89.3%
	215,570	**1,99,790**	**32,890**	**142,700**	**248,460**	**1,242,490**	**100.0%**	**100.0%**

As stated previously, this operation is fraught with hazards … There is no reason why they should not be overcome, provided the energies of all concerned are bent to the problem. **4**



1. **U.S. Artificial Harbor MULBERRY A.** This … is the code name for the U.S. … artificial harbor … to provide an all-weather harbor so that a minimum of 5,000 long tons of stores, plus 1,000 vehicles and equipment, may be discharged per day … (Vast) quantities of British civilian labor have been employed …

… 12 block ships of approximately 400 ft each in length will be sunk in a line on the east … forming a GOOSEBERRY or small sheltered anchorage … (while) the west breakwater … of 8 PHOENIXES … will



be sunk … PHOENIXES are reinforced concrete caissons … 204 ft long, 60 ft high and 60 ft wide. The seaward side of MULBERRY will be … 34 PHOENIXs in a line, which will complete the inner shelter of MULBERRY A. These gigantic structures have a draft of 19 ft. and … (displace) 6,000 tons …

48 BOMBARDONS … steel cruciform lilos … 200 ft long … anchored to concrete blocks and located in two parallel lines about 800 ft apart to form a breakwater, 1,100 ft … (beyond) PHOENIXES. **5**

Within the west breakwater four LOBNITZ PIERHEADS with three causeways, each 1 mile long. will … discharge vehicles … (with) a capacity of 40 tons, and … 25 tons capacity. LOBNITZ PIERHEADS (spud pierheads) are all-steel, watertight compartmented barges, 200 ft long, 60 ft wide, and have a draft of 10 ft and displace about 1,000 tons. The spuds … (are) raised by electrically controlled winches … (to lift) pierheads off floatation … pierheads can accommodate three LST's and one coaster …

Inside the … 34 PHOENIXES, anchorage is obtained for seven Liberty ships (450 ft), five large coasters (300 ft), five medium coasters (275 ft) and seven small coasters and craft (150 to 200 ft).

… As added insurance … forty 1,000 tons capacity barges … will be beached at high water mark and allowed to remain until unloaded.

… RHINO FERRIES are 500-ton capacity barges … (of) pontoons into a craft 175 ft long and 43 ft wide, powered by two pontoon barges … (with) an outboard and inboard propulsion unit. DUKWs, PEEPS, LCTs, LBVs, and other small craft will be used in unprecedented numbers … [13] **6**

2. SPECIAL PROBLEMS:

a. CONTINENTAL TRANSPORTATION AND PORTS. Port capacity and motor transport were a concern with 1,242,000 troops in 90 days. The major predicted problems were a shortage stevedores and highways. Railroads would cure the highway problem, but it would not be D+90 for them to be ready. Everything had to be by truck … SOS had 151 Truck Companies, still short of needs. A ploy was to use the trucks from new arrivals "provided adequate drivers could be obtained to permit 24-hour operation." **7** Without new problems, there was a shortage and there were new problems. "Only if rail operation begins by D plus 60 … (not) the conservative estimate of D plus 90 and provided heavy vehicular project equipment is made available in time for the critical period from D to D plus 90, it is estimated that the transportation system will be effective." …

Two supply lines (*a/k/a* lines of communication), one from Cherbourg south to the Rennes (main supply) area, and another north from St. Nazaire. These were the first US. priority. Second priority by D+90 was from St. **N**azaire to Le Mans and from Rennes to Le Mans. By D+360 four main lines were:

(1) **Quiberon** - Rennes - Le Mans - Paris;
(2) St. Nazaire - Nantes - Tour - Orleans - Paris;
(3) Cherbourg - Laigle - Paris; and
(4) Le Havre and Dieppe - Chauny.

Plans called for double track on 1, 2 and 3. **8** Studies have been made to reconstruct 15 ports the larger which include Brest, Cherbourg, Lorient, St. Nazaire, Nantes, La Rochelle, St. Malo, and Bordeaux[14]. In many the tidal range is a major concern. Locks at port entrances. Operation depends upon rapidly repair and improvisation for cargo discharge. Presumably, the enemy will destroy each port …from 75% to 90% destroyed.

Initially, Cherbourg would be cleared and operating by D+11. Other port projections were Quineville, St. Laurent, **9** and Madeleine on D-Day, Isigny on D+7, St. Laurent on D+12, Grandcamp on D+14 and St. Vaast on D+21, Barfleur by D+20, Granville on D+24, St. Malo D+27, Brest and Rade de Brest D+53, **Quiberon Bay D+54** and Lorient D+57.[15] Build-up requires 40,000 tons/day received by D+90 as against 15,000 tons/day is maximum capacity for UK ports (outloading)—25,000 tons/day required ex US. (In

[13] Unfavorable weather conditions on 19 June 1944 marked the beginning of a severe storm which prevented the discharge of cargo for three successive days. Damage to the artificial port of MULBERRY A prevented its use for future operations. (FUSA, Report of Operations, 20 October 1943-1 August 1944, Book I, p. 78)

[14] Some such as Bordeaux were not seriously considered.

[15] Fwd. Ech, ComZ Plan, Annex 13, Transportation Corps Plan, 10 May 1944, p. 2, 3, 5, 8.

short, by D+ 90 the U.S. needed to unload 2.7 times more freight than the U.K. could ship!) U.S. planners optimistically predicted 46,000 tons of unloading capacity. There were no changes then until D + 300. **10** *(In this vein the SOS underestimated needs and problems to be incurred in building supply lines).*

b. RAILWAY, ROAD AND BRIDGING CONSTRUCTION. By D+90 it will be necessary to construct 425 miles of main line railway. By D+240 it will be 1,325 miles. A detailed study estimates 40 feet of bridging and 5.6 feet of culvert required per mile of track given Germans will demolish 95% of track and bridges by D+90. A total of 1,535 miles of main line track and 67,300 lineal feet of bridging must be reconstructed at 42,000 effective man months. The materiel and equipment will be 333,000 long tons, of which 74,000 long tons must be supplied from the U.S.

For every mile of road there will be 13.9 lineal feet of bridging from 24% 30' gap; 34% 80' gap; 14% 180'gap; and 28% over 180'. 90% of bridges on main supply routes and 75% on lesser routes will be destroyed. Plus, 6,100 miles of road will have to be maintained. It will require 1,548,000-man days, of which 1,282,000 will be military. **11** Materials include: 15,800 long tons of asphalt, 112,000 tons bridging of 800 standard Bailey sets (130 feet); 250 Standard Pontoon Bailey sets; 175 Heavy Increment Sets (Fixed) and 165 Heavy Pontoon Increment Sets. Another 11,700 long tons of construction equipment and 114,000 material tons must be shipped from the U.S. **12**

c. POL DISTRIBUTION PROGRAM. Until D+ 15 POL (Petroleum. Oil, Lubricants) will be boxed, after that in bulk. About 250,000 gross tons of POL are in storage in reserve. During the first 41 days of the operation 165,000 gross tons will be required -- 91,000 tons will be required in packages. Bulk POL will be available by D+15. The peak package gas will require 1,350 box cars. Until D+41, 14 Gasoline Supply Companies will be in the UK to zero by D+90. **13** Small lines will deliver in bulk at first. From D to D+41, 9 POL depots will be built on the Continent based on ports, pipeline, and distribution to be run by Gasoline Supply Companies … packaged gas will flow by D+41 using 1,500,000 gasoline cans.

Gasoline consumption during the period from D to D+90 will be 5,000 tons per day at D+20 to 10,500 tons per day by D+90. Aviation gasoline will be delivered to within 40 miles of Air Force installations. It will require 10 Engineer Petroleum Distribution Companies and 1 General Service Regiment, and 37,400 long tons of equipment will be consumed in installing the bulk POL system. **14**

d. CIVIL AFFAIRS OBJECTIVE. The objective is effective control of the civilian population to prevent its interference and maximum use of local resources and certain minimum supplies to the civilian population, adequate public health and prevent the civilians as a burden upon the military. The standard CCS standard ration is 2,000 calories per person per day with the maximum from local sources …supplies will not normally extent *[sic]* beyond the area of military operations … CLASSES OF SUPPLY are four: Items for:

Immediate relief, consisting of: Food, clothing, medical and sanitary supplies. **15**

Distribution of relief, consisting of: Emergency feeding equipment, fuel and public repairs.

Re-establish production of natural resources, such as coal, oil, etc., for military or civilian use.

Reducing relief burdens as: agriculture implements and seeds, rehabilitation of the textile industry.

1. ESTIMATED TONNAGES REQUIRED. Forced occupation from invasion to plus 120 days **16** are shown in the table. (Further requirements for a collapse condition were computed but are not shown). ….

4. … these are estimates only … (and do not cover if) the area remains "unscorched" or is progressively destroyed ("scorched") as the enemy retreats.

5. … (this is a) responsibility of civilian supply … the given objective of Civil Affairs Operations.

6. … (It may be) increased by a considerable refugee problem … it is estimated that there are: **17-18**

Food	116,260 long tons
Clothing and blankets	5,224 long tons
Soap	3,489 long tons
Medical and sanitary suppl.	1,257 long tons
Ethel and lubricants	15,114 long tons
Emergency feeding equip.	337 long tons
TOTAL	141,681 long ton
2,500,000	displaced persons in France

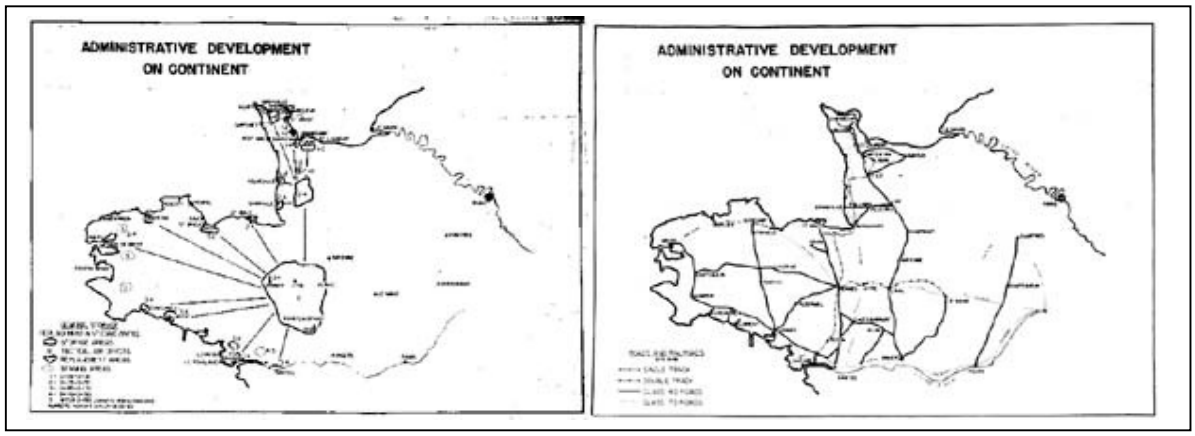
e. Development of Communications Zone will start with the beaches and enlarged with the forward movement of the Field Forces. The beach areas will first be under the Commanding General, First Army … Rear areas will eventually all be under the control of the Advance Section upon the establishment of any Army rear boundary. When … a Communication Zone will be established … about D+20. There has already been activated in England, a Hq Advance Section which will operate the Advance Section throughout OVERLORD. **19**

First Army would be the highest headquarters in Europe until Patton's Third Army was activated and then Gen Bradley would open the 12th Army Group in control of the First and Third Armies. The 12th would draw a "rear boundary" so from there to coast would be the "Communications Zone" or "Comm Z" for a normal SOS supply area. Comm Z would unload equipment and goods into storage areas of 12th Army Group who would forward supplies and equipment to the First and Third in the forward battle zones. The problem was Gen Bradley's reluctance to surrender rear areas to the SOS. The "Advance Sections" had "Base Sections One and Two" to open Loire River ports on about D+40 to rehabilitate and operate the ports. Then it would develop the Brittany peninsula as a principal supply base for northeast France.

Communications Zone (COMMZ) was to command the entire zone. As Section One moved forward behind Twelfth Army (about D+50), Hq Base Section Two would arrive to control "the Continental area relinquished by Advance Section." COMM Z would have its operations in Europe as U.S. goods and troops went to France skipping the U.K. Only Air Forces would have big bombers and major maintenance in England. The author states:

The development of lines of communication in OVERLORD … direction will change on about D+40 … to a general East-West direction … to fit into the tactical plan; also, the progressive development of beaches and ports; and finally, storage considerations.

Initially and until about D+40, the flow of supplies will come over the beaches and through the ports of the Cherbourg peninsula …



After D+40, the Brittany ports will be opened up … 20 when …(it) is allocated to the Communications Zone. The flow of supplies then will be generally East to the using units.

… By D+90, there will be over 1,200,000 US troops and about 250,000 US vehicles on the Continent … The problem of providing all that will be needed … will be staggering … The only way to simplify these problems … is to lay down in the Theater everything that can … be expected to be required. **21**

Despite the poor map quality, the Brittany Peninsula Ports, including the mobile Port of Quiberon Bay, were essential to the U.S. supply structure for the drive into Germany. Here were some controversial aspects of the ETO.

L. The D+90 OVERLORD Logistical Plans Shortfalls; Logistical Support of the Army, Vol I: Ruppenthal and Riviera to the Rhine Clarke. Xyza

Here are many factors not highlighted in other "official" histories by noting most logistical plans ended at D+90 days

1. **90 Days Out ETO LOGISTICS.** OVERLORD was a 90-day plan with few 91-day or after day plans! The Army knew the divisions for 90 days; not after that. There were no plans for capturing major ports on the Seine, Antwerp, or Rotterdam. Yet, these ports had the totals needed. "Official" histories little discuss the last 8 months of the ETO.

Table 4 documents the shifts and the importance of logistics to the ETO to with immense information critical to the War with 4,804,142 tons of supplies unloaded!

2. 90 Days Out Ruppenthal *Logistical Support of the Armies Vol 1.* Ruppenthal stresses opening ports in 90 days as the temporary ones managed 14% of the total freight to ruin the strategic defense plans of denying all ports, the most minor, to the Allies. **Allied ability to move freight was the single most important event in the first 90 days in a story of** ingenuity, cunning and practicality. Ships could unload at "blown up" piers and destroyed quays. Beaches and small ports greatly exceeded expectations handling so much cargo. An amazing 2 million tons of cargo passed through small Cherbourg "to ruin German plans to curtail Allied force size." The did a "bang up" job except for the largest port --Antwerp. "But for" this WWII may have been different! In its second month Antwerp handled 428,000 tons (one-third of the 1944 monthly totals). Still Cherbourg and minor ports then far from battlefronts handled civilian relief.

3. 90 Days Out Riviera to the Rhine. Yet, the most significant accomplishment were contributions by Mediterranean ports – not discussed in Ruppenthal's two volume history. "Why?" The answer is: "There is no answer" "why" the Allied 6th Army Group under Gen Devers is omitted. A huge force landed in South France mid-August 1944, yet the "official" histories see, to belittle, downplay its contribution. A military effort that delivered 4 million tons of freight should be recognized in the "official" history on logistics. While 27% of all goods came through these ports, yet Ruppenthal wrote nothing about this feat other than 7 pages of Volume II. Volumes I and II are 1,300 pages long.

TABLE 4--TONNAGES DISCHARGED AT CONTINENTAL PORTS: JUNE 1944-APRIL 1945

	Total	OMAHA Beach	UTAH Beach	Cherb,	Minor Ports	Brittany Ports	Le Havre	Rouen	Antwerp	Ghent	South France	
1944												
June	291,333	182,199	109,134	--------	--------	--------	--------	--------	--------	--------	--------	2.0%
July	621,322	**356,219**	**193,154**	31,658	40,291	--------	--------	--------	--------	--------	--------	4.2%
Aug	1,112,771	348,820	187,955	266,644	**125,353**	9,499	--------	--------	--------	--------	174,500	7.5%
Sep	1,210,290	243,564	150,158	314,431	100,126	75,198	--------	--------	--------	--------	326,813	8.2%
Oct	1,309,184	120,786	72,728	365,603	58,816	**77,735**	61,731	26,891	--------	--------	524,894	8.8%
Nov	1,402,080	13,411	12,885	**433,301**	48,707	64,078	148,654	127,569	5,873	--------	547,602	9.5%
Dec	1,555,819	--------	--------	250,112	50,749	27,327	166,038	132,433	427,592	--------	501,568	10.5%
1945												
Jan	1,501,269	--------	--------	262,423	47,773	--------	**198,768**	157,709	433,094	15,742	385,760	10.1%
Feb	1,735,502	--------	--------	286,591	41,836	--------	195,332	173,016	473,463	69,698	495,566	11.7%
Mar	2,039,778	--------	--------	261,492	39,691	--------	192,593	**268,174**	558,066	172,259	**547,503**	13.8%
Apr	2,025,142	--------	--------	181,043	47,542	--------	165,438	240,708	**628,227**	**277,553**	484,631	13.7%
	14,804,490	1,264,999	726,014	2,653,298	600,884	253,837	1,128,554	1,126,500	2,526,315	535,252	3,988,837	
			1,991,013		3,254,182	253,837		2,255,054		3,061,567	3,988,837	
			13.4%		22.0%	1.7%		15.2%		20.7%	26.9%	

Yet, 60 days into the ETO campaign plans for major Brittany ports were abandoned (about 15 August) when Patton finagled Bradley to send Third Army east across toward Germany instead of west into Brittany Peninsula. Thus, the major Quiberon Bay project, "CHASTITY", was abandoned its port facilities were built in the U.K. It had major repercussions into late December 1944 including the Battle of the Bulge. Then ANVIL launched, but Ruppenthal explains ANVIL forces were "on their own". And, indeed, they were!

4. Port Reconstruction. Most logistical support was through restored deep-water ports. Normandy had; 1) the best beaches; **286** 2) the port of Cherbourg, and 3) was between the Seine and Brittany ports. Planners relied completely upon Normandy and Brittany for the required capacity to D plus 90. Transportation Corps ran the ports; Engineers restored them via the Chief Engineer, ETOUSA.

Gen Davison, chief engineer, it equated to restoring the U.S. ports of Baltimore, Portland, Maine, and Oregon, Mobile and Savannah. Davison brilliantly built port construction companies using U.S. railway firms to sponsor rail operating battalions. In early 1943 COSSAC formed a port committee under British Gen White who **287** calculated port capacities for: draft, tonnage, operating plant, and weather data for each area. Repair of Brest, for example, contained a statistics, German demolition estimates, reconstruction and timetables. **The Chief Engineer prepared detailed plans before D Day for eighteen ports in Normandy and Brittany.** Port construction and repair groups had marine construction, heavy construction and engineer service troops using civilian and Army dump truck companies as if they were beach engineer special brigade.

Quantity estimates were made "for X yards of quay, X miles of track, Z feet of locks, etc." A reconnaissance team prepared bills of material, set repairs, reused damaged items and found local supplies. It decided degrees of **288** rehabilitation using assumptions as: 90% of the quays unusable, 50% were repairable. All boats would be sunk, all cargo equipment destroyed, buildings would be demolished, access blocked with debris, no water and electric with dredging after years of silting. Detailed plans existed for: Cherbourg, Grandcamp, Isigny, St. Vaast, Barfleur, Granville and of St. Malo. Except for Granville, the others were very small but to be open by D+ 30 under the SOS Advance Section.

"Estimated Port Capacity" is the adjacent table. The results were awful, which the history does not admit. The British had first claim on ports north of Caen -- Le Havre and Rouen. Le Havre used locks that were destroyed. Rouen, 50 miles up the Seine River was badly silted. Left unsaid was the awful fix if more ports were not captured. The artificial beach ports would close in September in Channel storms with a tiny "best case" U.S. estimate of just 12,500 tons per day by late August against each division needing 1,000 tons per day! The logistical risk that the Allies assumed has not been accurately acknowledged in various WWII histories. Ports were the Achilles' Heel of OVERLORD. **289** All were tidal meaning "drying out completely at low water" (*i.e.,* a low tide the harbor was a mud flat). At high water the max depth was 13 feet. St. Malo had large "locked" (high tide) quayage, but these could be blown, and railroad facilities were poor. It required DUKW trucks. Granville could hold seven 4,000-ton ships of 14-foot draft simultaneously (*i.e.,* "coaster" ships). It was slated for coal and ammunition.

Reconstruction efforts were planned the first six weeks by Advance Section. The port officer would create repair **290** plans with D+6 Isigny and Grandcamp starting D+6. St. Malo was 6,000 daily tons as the major Third Army port.[16] Yet, small ports were "stop-gaps". Even Cherbourg was not to be a major port, but here it was the third major Allied port. It was an ocean liner passenger port to France, particularly to Paris. Passengers boarded express trains to Paris – very luxurious and organized. Cherbourg also had a major naval base all behind locks. It was not a major freight port, only 900 tons/day – 27th in French ports lacking **291** warehouse, storage and freight car facilities, but **292** plans had 12 Liberty ships, 18 LSTs (6 of which would for railroad cars), 56 coasters, 2 tankers, 3 colliers, and 1 train ferry ships plus anchorage to unload ships with DUKWs or barges with a "hoped for" daily discharge of 8,000 tons.

Estimated Ports Capacity + 60 Days

Port	Open	Tons/Day	%
Isigny	D + 11	100	
Cherbourg	11	1,620	
Grandcamp	15	100	
St. Vaast	16	600	
Barfleur	20	500	
Granville	26	700	
St. Malo	27	900	
Total		4,520	36%

Plans was to open only three days after capture. Royal Navy would sweep mines, U.S. salvage units removed blockships as 1056th Port Construction cleared wreckage. Cargo ships had cranes so little else was needed. **293** Rehabilitation began the second day (D+10 per plans vs D+20 actual). Here the Germans underestimated Allied plans. First day:

> … (involved) debris clearance … (and) LST landing sites on the Nouvelle Plage (Beach), and construction of a tanker berth … By D plus 11 … about 1,600 tons … DUKWs and barges (were) unloading from Liberties and coasters … at least one docked coaster … discharge of 840 vehicles per day from LSTs at the Nouvelle Plage. By the fourth day … 3,800 tons, and by the tenth to about 5,000 tons … DUKWs and barges working Liberty ships and coasters at anchor …

Rehabilitation plans were detailed listing the length and width of every quay in France. Tasks, quantities, and schedules existed for every port:

> In meticulous detail they drew up lists of materials … specifying the exact quantities of hundreds of items from bolts and nails, ax handles … to heavy hoists, tractors … cement … (for 21) projects … by D plus 31 … While it was unlikely … to be followed to the minute … plans nevertheless had to be made … **294**
>
> Cherbourg was assigned 1 port headquarters, 6 port battalion headquarters, 20 port companies, 2 harbor craft service companies, 1 port marine maintenance company, and 4 amphibian truck companies …950 DUKWs, 16 tugs, 7 sea mules, 66 barges, and … 69 cranes … 30 derricks, plus conveyors, trailers, and tractors.

Plus were massive railway locomotive, freight car and track items. Plans for other ports were not detailed. "But when the Quiberon Bay (CHASTITY) project was adopted in early in April 1944, COMZ plans were limited to these Brittany ports: Lorient, Brest, and St. Malo (with Cancale), and the development of Quiberon Bay. These four ports were to have a daily capacity of about 17,500 tons.

[16] This explains why the Third Army was so involved at St. Malo when other Brittany ports were far more critical at the time.

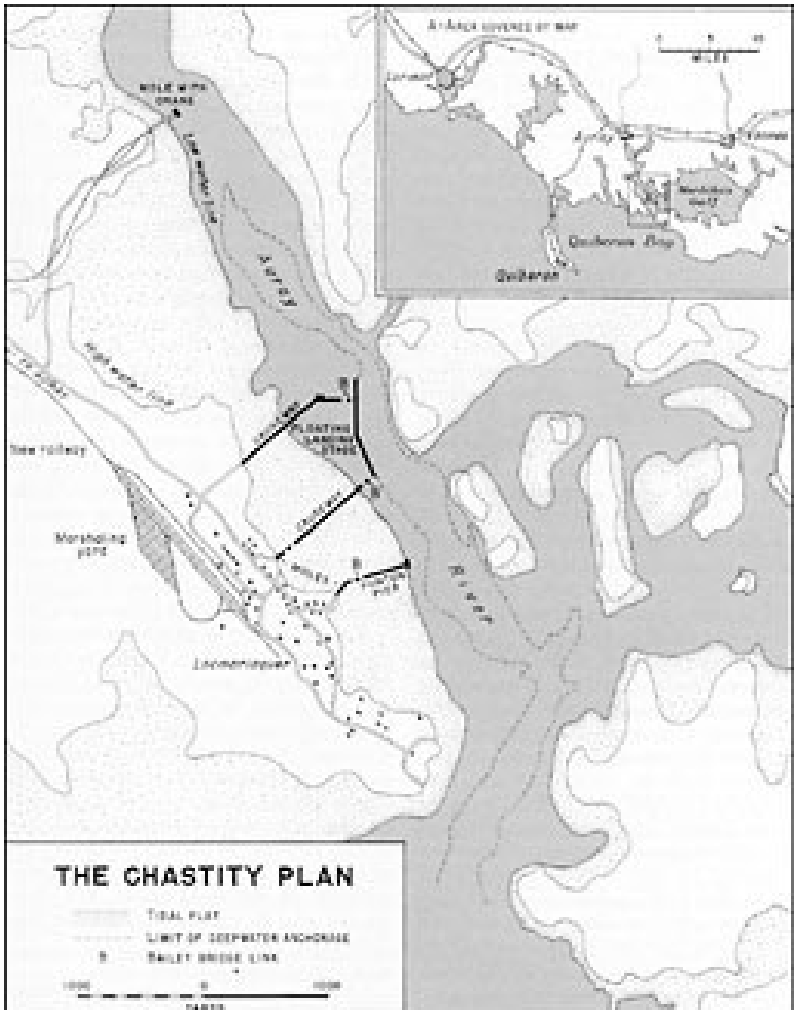
5. The Quiberon Bay ("CHASTITY") Secret. For reasons not disclosed, the entire CHASTITY plan for Quiberon Bay was "buried" in most "official" histories. There is no explanation why it was "erased" from WWII histories, "official" and not "official". It would not have been known, "but for" Ruppenthal's casual mention in a mundane history on WWII "logistics". Ask those purporting to be WWII historians about "CHASTITY" -- expect no answer. Per Ruppenthal, the plans for rebuilding the ports of the Brittany Peninsula were

> written in far less detail, since the final decision … was to depend on circumstances following the battle of Normandy … although estimates were made as to types of units and quantities of equipment needed to bring Brest, Quiberon Bay, and Lorient into operation … Before April 1944 they … (were eight port sites in Brittany). With the acceptance of the Quiberon Bay (CHASTITY) project early in April the final COMZ plans provided for the restoration of only (four:) Lorient, Brest, and St. Malo … and development of Quiberon Bay. These four ports were planned to develop a daily capacity of about 17,500 tons.

The initial Quiberon plan was an anchorage in the Bay as were unloaded by "lighters". The bay was shallow and open to storms with a huge tidal range but …

The answer … (was) the Auray River, which flows into … Quiberon Bay … This estuary had scoured a narrow channel almost eighty feet deep near the small fishing village of Locmariaquer, providing deep and sheltered water where large ships could lie alongside piers … and discharge their cargo, and anchorage from which lighterage operations could be safely conducted. (**Map 8)**

Map 8: The CHASTITY Plan - *Wikipedia*



… (The) plan called for moorings for thirty deep-draft vessels in the deep-water "pool," and a landing stage designed to float up and down …**295** providing berths for five Liberty ships at the edge of the deep-water anchorage. Two fixed-construction causeways were to extend across the tidal flat … to the landing stage. In addition, a floating pier … was planned south … and an existing mole with rail … connections farther north was to be extended into deep water to make possible the handling of heavy lifts. **These facilities were expected to give the port a capacity of 10,000 tons per day.**

The CHASTITY project … made the most of an existing natural advantage--that is, sheltered water--and that it required only a fraction of the labor and materials … (for the) MULBERRIES. Furthermore, no special design or manufacturing problems were involved … (it used) standard materials and equipment already available.

The (above) port capacities … (of) the final OVERLORD plan … (were) substantial revisions made in March and April 1944, when it was realized that additional discharge capacity would be needed. As plans stood at that time the port situation remained very tight … (through) post-OVERLORD periods and … (meant) every port and beach would be forced to work to capacity … (It) was estimated … capacities would actually fall short … at D plus 41 … (with) daily requirements … (of) 26,500 tons, while discharge capacities were estimated … (at) 20,800. **(CHASTITY alone was 40% of the total U.S. daily tonnage!)**

By April substituting CHASTITY for St. Nazaire and other minor Brittany ports was a partial solution. Second, March plans prolonged the life of the MULBERRIES and estimates were changed. With the

"stroke of a pen" estimated port capacities were increased. Second, the date for ports to open was reduced by reducing time to capture the ports and open them. Third, port tonnage capacities were increased. Cherbourg capacity zoomed 160% by capturing it by D+8, not D+10 to receive cargo beginning on D+11, not D+20 days. "As a result of similar alterations … planned tonnages of the Normandy ports were increased by over 4,000 tons per day." The changes were allegedly based upon 1) experience at Anzio and Philippeville and 2) the Allies "had greatly improved their equipment and engineering techniques …" **296**

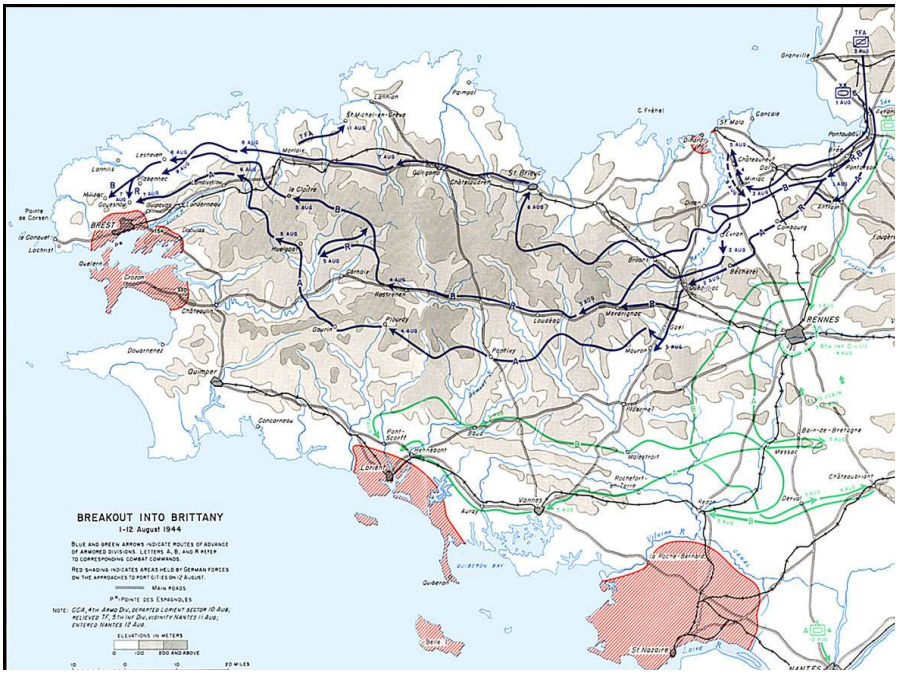
Beach and Port Plans for Operation OVERLORD						
Port or Beach	Open Date		Discharge Capacity (in Long Tons):			
		At Start	D +10	D +30	D +60	D + 90
OMAHA Beach	D Day	3,400	9,000	6,000	5,000	5,000
UTAH Beach	D Day	1,800	4,500	4,500	4,000	4,000
Quinéville Beach	D + 3	1,100	1,200	1,200	1,000	1,000
Isigny	D + 11	100	0	500	500	500
Cherbourg	D + 11	1,620	0	6,000	7,000	8,000
MULBERRY A	D + 12	4,000	0	5,000	5,000	5,000
Grandcamp	D + 15	100	0	300	300	300
St. Vaast	D + 16	600	0	1,100	1,100	1,100
Barfleur	D + 20	500	0	1,000	1,000	1,000
Granville	D + 26	700	0	700	1,500	2,500
St. Malo	+ 27	900	0	900	2,500	3,000
Brest & Rade de Brest	D + 53	3,240	0	0	3,240	5,300
Quiberon Bay	D + 54	4,000	0	0	4,000	7,000
Lorient	D + 57	800	0	0	800	2,250
Total			14,700	27,200	36,940	45,950

Then the discovery in May of an additional German division saw Cherbourg was moved to D+15 losing 34,820 tons. Port discharge was to become one of the most frustrating limiting factors to persist for six months after the landings. Conversely, Ruppenthal provides ample evidence of "fudging figures", so increasing daily discharge rates solved many planning problems – at least on paper! The final plans **296** met needs of in the first three months. Then in May 1944 another German division was located in the Cotentin which forced discharge rates downward.!

This author notes ports were frustrating for six months (until the Antwerp opened). The problem arose in August when Gen Woods wheeled his 4th AD away from capturing the south Brittany ports to charge east across France toward Germany with the "approval: of his corps, division and army commander, the latter being Gen Patton. The Map VIII the "green lines" are Gen Woods" 4th AD movements at Quiberon Bay between August 1 and 11, 1944 as his "green line" leads east, away from the ports. The bottom three rows of the "Beach and Port Plan" table show Brest, Quiberon and Lorient with 15,000 tons/day out of a total of 45,000 -- one-third. All three were ignored!

There was an "ebb and flow" of worldwide web information, but two events pertinent to this topic have since disappeared on the web -- they "evaporated". The first was the diary of a combat unit in England recording that it had spent two weeks in England welding the floating docks for Quiberon Bay. Second, on about 5 September 1944, Adm Ramsay dispatched a curious message stating that if the Quiberon Docks were not towed around the defenses of Brest by 5 September 1944, it would be too late in the "fair weather" season for the docks built for Quiberon Bay to be towed to that location. The former established what the "official" histories did not, which was the Quiberon Bay floating docks were manufactured. As to the second, checking the weather patterns the route, there were neither exceptional serious September weather patterns nor was Brest at that time in any position to interfere with an210 escorted slow convoy towing floating docks. In the meantime, the 69th Naval Construction Battalion (Seabees) were dispatched on 11 August "when 5 officers and 33 enlisted men formed our first reconnaissance party and left for the Quiberon Peninsula of France. The plan was to survey for construction of naval bases in that section. It was abandoned and the reconnaissance party returned to Plymouth."[17] **297**

Map VIII: Future Action in Brittany August 1 – 12 – *Map from Breakout & Pursuit*



[17] *See* //www.history.navy.mil/content/dam/museums/Seabee/UnitListPages/NCB/069%20NCB.pdf, pp 22. "The first step in this direction came on 11 August when 5 officers and 33 enlisted men formed our first reconnaissance party and left for the Quiberon Peninsula of France. The plan at that time was to survey for the possible construction of naval bases in that section which the 69th would operate. This plan, however, was abandoned and the reconnaissance party returned to Plymouth."

Three sources confirm Quiberon Bay was not a "fantasy" and docks and structures were built and to be towed until, for a strange reason, Adm Ramsey placed an arbitrary deadline on about 5 September 1944 and the project just evaporated. We are never told of the effort or structured built that ended in a "scrap heap" most likely to "cover" Patton's decision to march toward Metz and Nancy without regard for "logistics". Port discharge was a most frustrating, persistent problem for six months after abandoning the docks for the "perfect harbor" at Quiberon was irrevocably made.

6. **Troop Build-up and Replacements.** *Starting with five divisions on D-Day, 298 a shuttle of ships from the U.K. to France would move forces. Speed critical with 1,340,000 men and 250,000 vehicles delivered in three months building as: 12 U.S. divisions D + 30, 16 by D + 60, and 21 (14 infantry-7 armored) by D + 90. After D+90, divisions would arrive in France at the rate of from three to five per 299 month. There was an early concentration on fighting forces (75% of the total at D + 15). Service units were attached to these, but the disputes of the ratio of service to combat forces continued. 300 Eisenhower had realized larger beachheads needed more service troops so plans had 340,000 COMZ troops to 665,000 field troops by D+90., but platitudes were not results. Service forces were only 40% of the D+40 group, when the average had to be 50%. At D+50 service troops had to build "permanent-style" structures for the flood of warriors arriving. This infrastructure dictated a much higher service ratio for additional port and depot operations. 301 Plus, service troops had to build airfields for the fighters and twin-engine bombers moving to French bases. All of these competed in a: "Were airfields more important than railroads?" question with no answers.*

Strangely, constant carping of every entity produced roughly equitable results. The problem was never how many combat forces can be sent, but how many can be supported? There lay the complexity for which there was no ready solution. Compromises produced a list for priority of embarkation and movement. The two corps commanders, V and VII, planned their "assault waves" later integrated by First Army 1st Army Group. **302** The late May discovery of an unknown German saw all new estimates, which before computers, was hand altered unit by unit and orders changed. "However, … actual flow of troops … (was) dictated by … battle."**303**

Col Layman scheduled "The Replacement Center" soldiers – "outcasts." Soldiers had close bonds with those replaced, not those "replacing". In scope, 200,000 replacements were scheduled to D+90 in three phases. In Phase I three "replacement battalions" landed after the assault (one for each corps). Next, five battalions with 5,000 soldiers came via the Advance Section as a "depot". Phase III (D+42) added three more depots in an "impersonal" system:

> … Large numbers of replacements would be needed quickly … **304** (An) over-strength of 2,500 men … (were in) each assault division … (and trained) with them … held in readiness … sent forward on a prearranged schedule.
>
> … (But by D+5 it was) exhausted … (so) replacements were … in "packages" … (of) 250 men organized into platoons … commanded by (replacement) officers and noncommissioned officers … An infantry package … (was) infantrymen of varying specialties, such as riflemen, cannon crewmen, mechanics, antitank gunners, …

305 Estimating was subjective with 64.3% of all replacements estimated before D-Day were riflemen. The cause was a workforce shortage requiring liberalizing draft standards for men. Second, is a spurious claim no one knew actual casualty rates. It is disingenuous to suggest the Army lacked casualty evidence

after one and one-half years of war! "**The first weeks of combat on the Continent were soon to reveal the inadequacy of these measures."**

7. The Supply Plan. The build-up of U.S. forces was limited from the beginning by the scale of logistic support provided. Thus, logistics, not combat soldiers, controlled the rate of the war. It was a balance between building up and maintaining. **"Maintenance requirements alone for a division slice were estimated to total approximately 900 tons per day in the early stages."** This figure is critical to understanding the larger picture of the war. Later it was reduced to 800 tons for U.S. military forces and 400 tons for civilian and other needs. **307** This was the SOS 1,200 tons per division per day rule, with 800 tons per division, plus civilian needs and a reserve stockpile on the continent of another 400 tons. "Since daily maintenance requirements were expected to average about 800 tons per division slice in the D plus 41–90 period … 1,200 tons of supplies per slice would have to be landed every day … (and) the total discharge requirement to about 45,000 tons per day at D plus 90." *(This author's "rule of thumb" of 10 Liberty Ships for each division in the ETO is explained below.)*

Date	Div's	Field	Air	COMZ	Total	Replace
D + 5	9	172,900	8,500	41,200	222,600	6,700
15	11	297,200	21,900	83,500	402,600	43,600
25	11*	353,100	42,600	142,300	538,000	60,200
40	15	453,800	79,900	235,100	768,800	95,100

SOS attempted to estimate needs for 90 days by **308** guessing on daily receiving rates. Despite Maritime Commission's efforts, lift originally was insufficient for the rate of the build planned. Advances exceeded resupply capabilities and efficient loading impossible when Army commanders decided who, what and where forces went. The first two-weeks supplies but then it was impossible to locate them on anchored ships; they were loaded by ignoring stowage plans. A solution "confiscated" the British coaster fleets for small cargo ships to "dry out" – the entire fleet was commandeered. "Coasters … (arrived with 126 carried **309** with) a theoretical capacity of 17,000 tons per day …"

Then deeper-draft vessels arrived so by D + 42 the fleet was mostly U.S. Ocean vessels. **310** There was a limited "air freight" service of 6,000 pounds per day and 18 preloaded LCTs were beached with ammunition and bridging. Next, 87 LBV's (50 ton) came preloaded with ammunition, POL, and construction. Finally, 20 - 500-ton barges had ammunition, POL, rations, and engineer materials on D+4. **311** England was very close; shortages were quickly solved. The plans were flawed since D+41 forces still had a "hand-to-mouth" supply system that **312** time finally cured.

8. A Liberty Ship "Rule of Thumb". It is helpful to convert the logistic quantities into Liberty Ship loads to grasp the enormity of the effort. A Liberty Ship could carry 10,000 tons, but rarely had cargo that dense. Research suggests an actual average of 8,000 cargo tons with about 10 days to unload. A division needed one ship each 10 days or 36.5 shiploads per year (3/month). Atlantic crossings were two weeks (one-month round trip). Assume loading and unloading each required 30 days at 10 days loading - unloading plus 20 days waiting. It took 9 ships to make 36.5 shiploads per each year or say 10 ships per division.

Fifty divisions in Europe required 500 Liberty sized ships with variance for some civilian supplies for liberated countries.

9. The Depot Structure. Ships were unloaded into "dumps" in hedgerow fields without organization. Engineer special brigades brought more order by the establishing segregated dumps. As First Army advanced, beach areas went to the Advance Section responsible to organize a "supply system". Third, Advance Section moved up with combat forces for a third phase of a "Communications Zone". This "logistical area" was a mini-U.S. depot system, but temporary. Comm Z was a complex area responsible for armies and air forces, but to restore civilian oversight operating everything as ports, hospitals training and rest centers, utilities and "R&R" facilities. It was the U.S. military final phase of war and civilians first phase transitioning to peace in a "delicate balance" of supporting, but not "coddling", civilians. if was French territory ruled under U.S. "marshal law". **313**

Space requirements were astronomical. The first six weeks Advance Section needed 2.2 million square feet of covered storage and 15 million of open storage.

> In the first six weeks the ADSEC Ordnance Section planned … third, fourth, and fifth echelon maintenance for 52,500 vehicles, 2,400 weapons, and 5 antiaircraft battalions … needing 410,000 square feet of covered and 440,000 square feet of open … a park for 2,000 vehicles … Storage space for 130,000 tons of ammunition was sited along 260 miles of road. Vehicle assembly at the rate of 100 vehicles per day …

The above figures represent the requirements only for the first six weeks. **314**

10. Transportation. Rail and motor transport were "bottlenecks" most feared and studied. Trucks were initial and primary haulers with inadequate "motor" roads. Rails were the main means of freight movement, but all knew the Germans would destroy as much as possible. Engineers repaired, Transportation Corps operated them, and SOS was the prime customer. The Corps of Engineers' primary road concern was bridging. One engineer general service regiment could "reconstruct" 10 - 12 miles of road per day and maintain 170 miles. Transportation **315** Corps handled all motor transport beaches to depots, but most truck companies in Quartermaster units until later put in Transportation Corps. Plans were for 240 truck companies with two drivers each for 24-hour service. Sadly, the 10-ton flat-bed semitrailers and truck-tractors were limited and 2½-ton 6 x 6 truck, of which there were thousands, were not for long distance hauls.

Yet, plans relied primarily on rails; restoration was paramount. Planning track repairs divided construction into parts as per yard of rail bed or bridging. **316**-**317** Fortunately, the British had French railway data. Planners assumed 75% of track and all bridges would be destroyed, 55% new ties and rails, and 90% new bridges based upon Italy. Rail operations began at Cherbourg radiating outward; it was the only place where engines and rail cars could be unloaded. **318** **Conservative p**lans had service only to Isigny by D+41 with only 245 total miles by D+ 90. The logistic scheme aimed toward Rennes for major depots as engineers computed every mile, curve and bridge. There were five engineer service regiments, three engineer dump truck companies, and one heavy ponton battalion. The rail service regiments had zero experience. Work was by Transportation Corps' 2nd Military Railway Service with Gen Burpee directly commissioned from Atlantic Coast Rail Line. He had railway grand divisions matching each base section covering 250 to 450 miles of railway. **319**

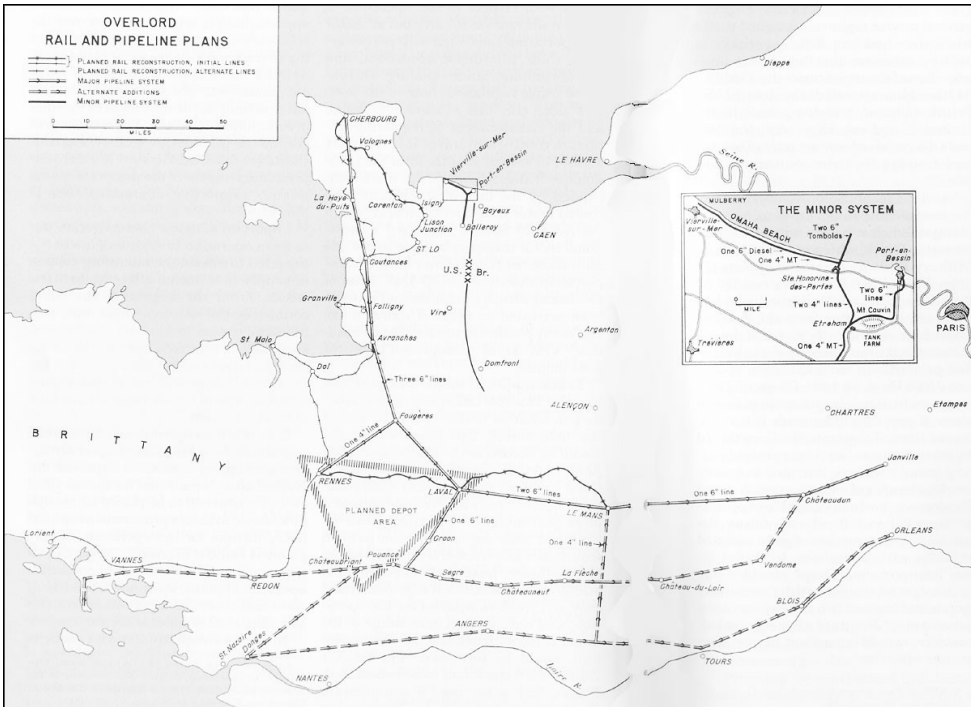
11. <u>The Supply of POL.</u> POL ("Petroleum, Oil and Lubricants") supply enjoyed a preeminence equal to port reconstruction and represented 25% all the tonnage transported. Plans focused upon installing a pipeline. The British experimented after Dunkerque with overland and submarine lines. Fortunately, the studies found POL would be last place for shipping which spurred innovation. **320** The AAF was intimately involved due to its heavy use of aviation fuel. Late 1943 COSSAC proposed a fuel farm at Port-en-Bessin for tankers which led to a pipeline from Great Britain ready to open by D+20. A second system was designed for Cherbourg as well as Brittany ports to be done by D+90, but the effort was confused until a POL Branch was created in ETOUSA under Col Burford by March 30 had set requirements for a much larger system, but **321** progress was slow until Moore got Pentagon attention in March 1944. Thus, equipment and training were last-minute, but finished 1 June. Then items were provided to be lost as amongst Quartermaster, Air Force, Transportation, and engineers. **322**

The first 21 days fuel was shipped in 5-gallon cans! The minor at Port-en-Bessin had tanker berthing and unloading lines to inland tank farms with storage and dispensing to both British and U.S. tank farms from an offshore anchorage and pumping point. **323** Cherbourg had a massive facility with pipelines. The British went a further to build an "under the Channel" major pipeline or PLUTO (*i.e., "*pipeline under the ocean"). **324**

A vital feature was storage as the Allies assumed most would be destroyed. Cherbourg plans alone included 38 x 10,000barrel tanks with a pipeline system from La Haye-du-Puits to Laval all by D+42. **325**

The delay in capturing Cherbourg for one week had a ripple effect. **326** It is easy to overlook something as mundane as gasoline, but Germany was defeated beginning in January 1945 due to a lack of it. **327**

Map 9: Rail/Pipeline Plans – Ruppenthal: *Logistical Support of Armies Vol I*



12. <u>Summary.</u> SHAEFE was not complacent. It was "logistically feasible only if certain conditions were met: the front line at D plus 90 must not … (exceed) the planned line … the build-up must be limited to troops absolutely essential … a rail net must be developed … The failure of only one important function—might create a bottleneck … (There) was no margin of safety in the logistical arrangements …

M. Chapter 8: TRAINING AND REHEARSING FOR OVERLORD; Logistical Support of the Army, Volume I: Ruppenthal (1952) xyza

Ruppenthal's Chapter 8 rewrites the standard history of D-Day. We are led to believe the preparations were "adequate", not extraordinary. Especially at OMAHA sailors manning the landing craft and assault soldiers were bewildered and lost and succumbed. From this, one naturally assumes there was a lack of adequate planning, thought and effort into preparing the assaulting forces. However, Ruppenthal completely disabuses the reader of that thought. Far from being a rushed, unfinished job of rehearsals, the opposite is true. Chapter 8 raises the question: "What else could have been done?"

The better truth appears to be the men assaulting OMAHA Beach had the most and best training possible. The truth is nothing can train a man to face death without fear. Instead, and to the opposite effect, survivors seem to have first accepted they would die, then their training kicked in and then they moved essentially in a dream-like world. The portrayal by Tom Hanks in *Saving Private Ryan* seems to clearly reflect that phenomenon.

1. Earlier Amphibious Experience. Initially it was surprising to find the treatise of amphibious warfare in logistics history. Yet, beach invasions are mostly logistical issues. The topic is raised in numerous official histories, yet Ruppenthal received the assignment for a detailed history. Amphibious war was perfected in WWII starting with zero experience before Pearl Harbor. Once beaches were captured, they became logistical bases for which no evidence-based data existed. The U.S. Marines had a 1934 "Tentative Manual for Landing Operations". The Army participated in Navy fleet landing exercises in 1937, 1938, 1941 and 1942, but they overlooked beach organization, handling and supply. When in truth amphibious landings were logistical maneuvers. **329**

In response to Japanese assaults, the Navy agreed to produce landing craft and the Army amphibious land craft. In mid-1942, Col. Noce formed the Engineer Amphibian Command at Camp Edwards which led to army units trained for beach operations including "organize the beaches, evacuate wounded … (and) build-up of supplies …" He created boat, shore and service forming the 1st Engineer Amphibian Brigade trained to perform beach supply and engineering. **330** The brigade was sent to England to join Adm Mountbatten's Combined Operations Headquarters late in 1941. In early 1942 training was for American Rangers and British Commandos attacking without shore organization subjects. The conflict between the U.S. Navy and Army was finally resolved with the Army controlling the beaches and the Navy the beach waters. The Navy controlled the watercraft and landing; the Army controlled the rest.

North Africa was an amphibious disaster that succeeded. **331** TORCH involved first-hand, under fire landing, beach dumps and exit road experiences. The Army created an Invasion Training Center in Africa for the Sicily that actually functioned. HUSKY was: "a landmark … (for) amphibious logistic support … For the first time a naval beach battalion was utilized to achieve closer coordination between the Navy afloat and the Army ashore. In addition, the make-up and responsibilities of the amphibian brigade emerged more clearly." **332** The operation had succeeded since it was unopposed and on beaches without tides. LCT's, small craft pontoon docks, and the marvelous DUKW were all proven. **333-334** The DUKW proved to be a most valuable "weapon". The AVALANCHE and SHINGLE invasions proved extended beach operations worked. Second, the Navy said Anzio was a worthless port, but the 540th

Engineer Combat Regiment had it discharging 8,000/day proving the worth of small ports. Italy was an Army "confidence builder".

2. <u>The Training Schools and First Exercises.</u> The military was learning amphibious doctrine in the Pacific and Mediterranean and schools were formed. **335** But there was a schism between the European and Pacific areas. In January 1943 the Army offered and advanced training at Fort Belvoir, Va., The Engineer Amphibian Command at Camp Edwards trained shore service parties and boat crews. Fort Pierce, Fla. (and Camp Pickett) typically involved an engineer combat battalion supporting a regimental combat team. These efforts were not worthwhile. The groups, instead, developed solutions as had the teams for the Sicilian landings. The sum of these lessons and leaders migrated to the U.K. later in 1943, even though the Army insisted the training be conducted in the U.S. Essentially, doctrine and training remained undeveloped into late 1943. **336**

As a preliminary, British, and American officers "were poorly acquainted with the **337** planning procedures in each other's forces." The "lack of mutually understandable procedures was sharply evidenced in the confusion attending the planning of the North African invasion." A joint British-American "Q" school was created to provide a reservoir of trained American and British administrative officers who were familiar with each other's staff procedures and operations. It was a logistical course. The school began on 5 December 1942 and was a success. On 25 January 1943 the school opened with a ten-day joint course for 30 officers to include planning amphibious operation, landing tables, mounting and beach maintenance. **338** It operated on the assumption that it was preparing for the invasion of France. In the year it operated it was invaluable in training OVERLORD officers. It grew to a 12-day course with classes raised to 75 officers. About 460 American officers attended most of whom held key positions in planning agencies for the Normandy assault.

The school highlighted the "early training phase" for Americans who were thoroughly unqualified in the logistics of cross-beach operations. Until British units and the American as guinea pigs practiced the fall of 1943 actual mechanics of such operations, the 29th ID -- the only large American ground force combat unit in the U.K. The "29th Division was a sort of trial horse for training methods." Supply problems began receiving more attention in the amphibious exercises held. **339** The reader can almost sense the slow dawning of realization that the major battle of WWII would be fought in Europe without ports but relying upon rude and crude beach unloading to support massive armies.

A pause seems appropriate. There were four key issues each had never been tried before on the scale anticipated. They were: 1) transporting one million men across England to the southern ports; 2) closeting them in secret locations where the truth and their assignments were revealed; 3) transporting and depositing them across 100 miles of ocean on an enemy beach ready to battle to the death; and 4) maintaining a force of up to one-million men fighting overseas without access to any modern ports for a period of four to 12 weeks. This was the "miracle" of OVERLORD plus a host of others were involved, starting with complete surprise …

DUKW's Training Cornwall

It is in this vein that the pre-D-Day assault practices were so very important. Everyone knew they "only had one chance to get it right." Exercise JANTZEN II in July 1943 practiced supporting a corps over beaches for two weeks. Beginning

> … with the movement of troops from concentration areas through assembly and transit areas, embarkation, the loading and unloading of coasters, the organization of beaches and a beach maintenance area, the establishment of a bulk fuel supply installation, and so on. Only administrative and supply troops took part … but the exercise produced valuable information on staging … and on the whole matter of supply maintenance in an amphibious operation.
>
> … HARLEQUIN …. was part of a larger deception scheme … (but it also tested) mounting procedures—that is, the machinery to move troops … through marshaling camps to embarkation points. Complete landing tables were worked out, and the bulk of the forces involved moved to assembly areas, formed into craft loads, and then moved to embarkation points … (It taught) a great deal about the mounting procedure and about housekeeping problems … (It also) revealed that … loading of assault forces … was much more difficult …

There were more exercises.

3. **<u>The Assault Training Center and Engineer Special Brigades.</u>** Training activities involved: **340**

a. Specialized training given to assault units and beach engineers;
b. Minor exercises used to test portions of the OVERLORD plan;
c. Training program worked out by the various assault units themselves; and
d. Major exercises or dress rehearsals held just before D Day.

The highly specialized training given the assault units and beach brigades, and the big dress rehearsals were the most important. The concept of an "Atlantic Wall" had a psychological effect on the troops. This led to the incredibly important Assault Training Center. Established in May 1942, Gen Truscott, Jr., who later commanded the Fifth U.S. Army in Italy, led the U.S. section, its principal mission being to study and train for combined, amphibious operations. At first invasion training mimicked that taught to the Commandos and Rangers, but this proved inappropriate. Assault troops were "normal infantrymen" who would remain there for a long time. Late in January 1943, engineer LTC Thompson was assigned to the new project. **341 Like** Gen Wedemeyer, Thompson had served with a German engineer battalion, studied hydraulic engineering at the Technische Hochschule in Berlin and been in Engineers Intelligence Branch. He foreshadowed the large role which engineers were to play in the invasion.

The U.S. purchased the 25 square mile of land with 8,000 yards of beach near Woolacombe and Appledore with characteristics of the French coast, especially the tidal range. This may seem marvelous, but it was only 4.5 miles of beach, was very, very small for live-fire exercises … especially pre-invasion bombardment practice! Moreover 5 miles by 5 miles equals 25 square miles. Again, not a huge area.

> The limitations in space meant that all firing would have to be tightly controlled. It later became necessary to move some of the civilian population for reasons of security and safety. The Assault Training Center was activated on 2 April 1943, with Colonel Thompson named as commandant. Target date for the opening of the center and the start of training was set for 1 September.

The Assault Training Center included "workable methods for the assault of enemy-held shores, but the training of demonstration troops … and supervision of all assault units expected to participate in the operation. … (A) special assault battalion combat team … (acted) as a test unit."

> … (The) center began from scratch … TORCH landings … (had) little resemblance to the … cross-Channel operation … (and) assault techniques were in the formative stage … **342** and assault regiments be formed, others recommending that the normal battalion structure be retained …
>
> … By the end of July considerable progress had been made in formulating a training program … By mid-August the center had moved … to Woolacombe, and work was pushed on … assault and firing ranges and courses. The amphibious section was … from embarkation to landing, while the assault training section was responsible for operations after the touchdown on the beaches … School troops … (were) teams for demonstration and for the development of tactics, for … exercises, simulating enemy forces … (In) August the 156th IR arrived at the center to assume these duties …
>
> Training at the center was organized mainly … (for) combat units … although the logistic aspects of amphibious operations also received attention. Beginning in September 1943 the 29th, 28th, and 4th Divisions, and a portion of the 1st Division … all completed the training course … The 2nd and 5th Ranger Battalions and parts of the 101st Airborne Division also took the courses … Training was hard, and a number of accidents occurred, as could be expected in exercises which included the use of live fire …
>
> More important for the logistic aspects … was the training given the engineer brigades … to organize the Normandy beaches for supply … **343** The 1st, 5th, and 6th Engineer Special Brigades all were given specialized instruction … and were among the most highly trained …
>
> Each of the three brigades … (had) engineer combat battalions, a medical battalion … signal company … military police, a DUKW battalion, an ordnance battalion, and … quartermaster units, numbering 4,000-odd men. But eventually all three were built up to a far greater strength. The 1st Brigade … (arrived) in December 1943 with only 3,346 men. In the OVERLORD operation it … (supported) VII Corps and … UTAH Beach … By the time of the invasion the brigade again had a strength of over 15,000.

OMAHA was more complex since it would install the MULBERRY harbor. Two brigades—the 5th and 6th—would handle the larger volume of supplies for V Corps. In time it became clear OMAHA operations required far larger forces for two divisions (versus one at UTAH) but also involved installing an operating the artificial port versus UTAH's minor Grandcamp and Isigny ports. **344** E The 11th Port grew to 7,600 men to include 4 port battalions, 5 amphibious truck companies, 3 quartermaster service

companies, 3 quartermaster truck companies, an automotive maintenance company, and a utility attachment. By D Day the Brigade had 30,000 men!

The Assault Training Center was instrumental in creating procedures and training to include landing, setting up dumps, clearing beaches, and constructing exits. In November 1943, the 234th Engineer Combat Battalion began training other engineer units in beach organization, exits, dumps, road maintenance traffic plans, salvage of vehicles, and moving supplies. All of these were routine, but novel in practice of running them off a beach. It seems the Army "stumbled into" the problem and then solved it. The Center also evaluated and in so doing found new uses and problems. A November 1943 coaster unloading revealed grave weaknesses in keeping DUKW's steady alongside the coaster.

As D-Day approached the Center found its forces assigned to the real invasion. On May 1 it became a Field Force Replacement Depot, and on 15 May the center was officially deactivated. **345**

4. <u>Major Exercises.</u> Beginning in January 1944 until the last minute there were exercises. For coordination, the most important were "combined arms and services" exercises and final rehearsals. The major exercises were DUCK I, II, and III, FOX, and BEAVER that gathered all elements of a combined assault and supply action for mounting and launching with two big dress rehearsals—named FABIUS I and TIGER—duplicating a cross-Channel invasion.

DUCK I was the most important by being a first attempt to launch all unit types in a coordinated amphibious operation. It revealed many defects and was the first SOS engagement. For these the Slapton Sands area near Dartmouth, had a resemblance to the Normandy coast with a tidal lagoon like UTAH. It included the 175th IR (29th ID), 1st Engineer Special Brigade, Ninth Air Force beach party and a V Corps headquarter. SOS had to both marshal the forces and set up on the beach. **346** For the SOS it was the first fulsome test of their mounting procedures including running the debarkation camps (containments) at the ports where the soldiers were isolated before boarding. More than 10,000 men were in the assault force and 10,000 SOS servicemen. D-Day was 3 January 1944 and on D minus 10 the loading of coasters was begun. Troops and vehicles began moving on D minus 8. LCT loading on D minus 6, LSTs on D minus 4, and LCI(L)'s on D minus 3 (New Years' Day). Then D-Day was extended one day to 4 January. In the end 26,400 men were marshaled to the loading docks.

The assault phase went as scheduled, although the landings were not per plans. A large runnel separated the beach from the mainland and bridging equipment did not arrive. Otherwise, the landings were smooth with a pre-H-Hour bombardment, storming simulated enemy defenses and pushing rapidly inland. Most important from the supply standpoint were the 1st Engineer Special Brigade who landed at D + 25 minutes, demined one beach, cleared a second, set up three supply beaches, opened beach exits, and began unloading supplies. Coasters arrived within a few hours to be unloaded by DUKWs and landing craft, and dumps were established inland. Engineers assessed track laying for beach roads, new packing and waterproofing, pallet loading, and **347** skid loading and new packaging. It lasted two days. These are events not recorded in other histories. As awful as D-Day OMAHA was, the failures were "not for want of trying".

Mistakes and faults were revealed. The list is too long and, frankly, must have been depressing to the planners. The good points were marshalling procedures (next chapter). The DUCK shined again. One result of DUCK was it spawned a need for DUCK II and III for the entire 29th ID.

Marshalling areas were an issue solved. The British objected to the exercise for fear of damaging "hardstandings" for the actual invasion. "Hardstandings" were the fields and roads in which thousands of vehicles would be parked along with astronomical quantities of ammunition and military supplies. The British objected since many of these "could only be used only a brief time, for the turf was easily torn up and the areas might quickly turn into quagmires." Engineer Col Wyman designed the practice so only secondary hard-surfaced roads were used, camps were built in wooded areas on the roads, and only the roads t (blocked off to civilians) were used as hardstandings. Because of their elongated shape these areas were called "sausages." **348**

DUCK II was completed on 12 February and III followed on 29 February. Problems remained, but most had been fixed. The entire 29th ID and 1st Engineer Special Brigade had been through the training together, but in the ways of the Army the 1st was then ordered to support the 4th ID at UTAH.

A fourth exercise, FOX, in March closely paralleled the final OVERLORD assault plan conducted again by V Corps. Since it would mirror OVERLORD, the operation was delayed until First U.S. Army ("FUSA") completed its invasion plans! Ruppenthal had to note: "The exercise suffered somewhat from the resultant tardiness and once more pointed up the vital importance of adequate planning."[18]

Exercise FOX at Slapton Sands was mounted by the XVIII District to involve different personnel and camps. It included 1st and 29th ID regiments with attached forces to strongly resemble OVERLORD. By then mounting procedure was established with forces moving to the ports of Plymouth, Weymouth, Dartmouth, and Portland on 7 March of 17,000 men and 1,900 vehicles. The assault on 9 March included live naval gunfire employing live ammunition. It was satisfactory, but weaknesses were not entirely due to inexperience. Interestingly, it saw "the repetition of errors of the previous exercises. Coordination between the Army and Navy and between other headquarters was still faulty …" **349** In fact, Ruppenthal lists deficiencies at this late date.

At this point Ruppenthal lists pre-invasion exercise conducted that are not revealed in other "official" histories. Instead of a few practice rounds before the tournament, it appears that extensive "hands on" training was conducted for all three assaulting divisions and their various attachments. The list is given, but explanations are curtailed. Exercises DUCK and FOX involved V Corps and OMAHA Beach forces. Another series for the 4th ID at UTAH were conducted in OTTER I and II, and MINK I and II with battalion landing team tests at Slapton Sands area. Then USKRAT I and II trained regimental combat teams and engineer detachments in Firth of Clyde in Scotland. A seventh exercise, BEAVER for the 8th and 22nd IR of the 4th ID with the 1st Engineer Special Brigade, 1106th Group engineers, the 502nd AIR and Ninth Air Force. Small exercises were held by artillery, antiaircraft, tank destroyer, airborne, and air force, medical and signal units. Marshalling practices ones were CHEVROLET, JEEP, and JALOPY to **350** to train troops and supply staffs in outloading from the U.K., chemical warfare units in screening with smoke, and the possibility of operating in a completely smoke-screened harbor and beach. JEEP, conducted by XV Corps and Northern Ireland Base Section in March had the 2nd ID moving to Belfast via the entire mounting process up to the quays. JALOPY, repeated JEEP with the 5th and 8th IDs in Northern Ireland. Then there was NUDGER (December 1943 by SOS and Canadians), SNIPE (February 1944), GULL (March)

[18] A rather brave comment for an Army officer to write in 1953 when Gen Eisenhower was the President of the United States and Gen Bradley the Army Chief of Staff.

CELLOPHANE (late April for SOS skid-loading techniques), CARGO and TONNAGE (beach battalions handling supplies over beaches).

In sum, any suggestions the Allies were unconcerned with OVERLORD planning are dashed on the rocks of the record and reality! So much so, one must again ask how OMAHA went so wrong – given the degree and effort of the preparations? Moreover, five pages remain on the final, final rehearsals!

5. Final Rehearsals. Part of the answer the three DUCK major combined exercises were done before the final OVERLORD plan "was made final". After publication of the First **351** Army NEPTUNE Plan was issued at the end of February the exercises followed the invasion operation to include FOX for the V Corps at OMAHA Beach, and BEAVER for VII Corps at UTAH. These "led logically to the two big rehearsals for the invasion—FABIUS and TIGER. FABIUS was a series of exercises targeted to the Isigny–Caen area. TIGER was for UTAH Beach. Both were "dry runs" of the actual invasion or the "climax of all the long months of training."

TIGER in late April included all three 4th ID regimental combat teams at Slapton Sands mounted from the Plymouth–Dartmouth area with 25,000 men and 2,750 vehicles. The 101st AID took part by landing in trucks! The exercise ran from 22 to 30 April, with the 28th as D-Day. Traffic jams, confusion and late Navy landing craft gave the exercise a "sense of reality." Then the Germans arrived.

> Only a few hours before H Hour … after midnight on the night of 27–28 April, German E-boats discovered eight **352** LSTs in convoy off Portland. The enemy torpedoed and sank two … (with a loss of life) greater than that later suffered … on UTAH Beach … (The) LSTs were … carrying troops of the 1st Engineer Special Brigade, the 4th Division, and VII Corps headquarters … The enemy craft launched several torpedoes … strafed the decks of the LSTs and fired on men who jumped into the water. Several of the LSTs escaped, although at least one later picked up survivors.
>
> … Army records list 749 fatalities and more than 300 injured … The E-boat attack was a complete surprise, and men on the LSTs reacted in different ways. Some thought at first that it was all part of the exercise, and some even kept a sense of humor and leaped over the sides of the craft shouting "Dry run!" (There was) considerable confusion and … deficiencies …

TIGER Memorial New Bedford MA

Otherwise, the exercise proceeded. Following bombardment, 4th ID troops went ashore, reduced pillboxes and cut wire, and contacted elements of the airborne division. Units of the 1st Engineer Special Brigade meanwhile went ashore, swept mines, opened beach exits. "Aid tracked roads and established the first dumps. Supply operations were watched closely by First Army, which had ordered 2,200 tons of stores unloaded in the first two days. As scheduled, two LCTs unloaded on the first tide, two coasters on the second, and on D plus 1 the mission was accomplished with the unloading of six barges. Experiments with skid loading were again conducted and proved successful enough for some to be in the OVERLORD supply plan.

Also U.S. V Corps, the three British assault forces held FABIUS exercises in phases I through VI. These two followed the final OVERLORD plans. It included Assault Force O's 1st and 29th ID the Provisional Engineer Special Brigade Group. **353**,

FABIUS I came close the plan, but also disclosed flaws, old and new as traffic regulation, supply records and right numbers of DUKWs required. The "usual errors in their scheduled landing" were made with few attempts to rectify them. FABIUS VI did process 50% of the first three days of forces through marshalling facilities (35,000 men and 5,000 vehicles). **354** "In general, the machinery worked quite smoothly …" Changes included increasing the speed, "loss of control" in the marshaling camps … "from the splitting of battalions and companies, and … some overcrowding".

"FABIUS and TIGER had little of the experimental … They were the final rehearsals." "But to the participating units the exercises … (were) monotonous. The 1st Engineer Special Brigade … (was) in fifteen in the preceding four months … (so) some personnel, therefore, to regard TIGER or FABIUS as just another in an endless series of training exercises." **356-357**

N. Chapter 9, MOUNTING THE OVERLORD OPERATION, May-June; Logistical Support of the Army, Volume I: Ruppenthal (1952) xyza

1. The Mounting Problem and Plan. "It is unlikely that the average observer in the United States who learned of the Allied invasion of Normandy from his newspaper or radio on 6 June 1944 had much appreciation of the multifarious and almost frenzied activities which occupied the American and British forces in the United Kingdom in the months just preceding the assault.**"**

In the weeks near D Day vast administrative machinery for "mounting the invasion" began. OVERLORD was the complex loading of 130,000 men in the assault and first follow-up with preloading build-up echelons. Then another 1,200,000 men were sent in 90 days. The were 3 steps: 1) assembly; 2) marshaling, and 3) embarkation. Plus. units were reunited in the U.K. and equipment replaced. **358** Troop units arrived intact in the concentration area for the sea voyage. They waterproofed vehicles, added supplies, packed equipment, and shed "residues" (non-combat troops). Most left at reduced strength ("assault scale") shedding logistical forces. These troops went to a separate camp to be transferred later. Soldiers in marshaling areas were briefed and obtained rations, lifebelts, maps and organized into assault formations. Final was embarkation.

It meant great facility construction, iron tight security against "espionage". No one would escape. The men were "locked down". No last-minute good-byes with sweethearts. The 359 task fell to SOS Southern Base Section Responsible as forces rose from 360,000 to 720,000 needing new camps. It mounted the invasion from "marshalling camps" with a two-day flow of troops for 18 to 36 hours before marching to the ships. 360 **N**ine marshaling and embarkation areas for 187,000 troops and 28,000 vehicles. The other two districts (XVI and XVII) mounted airborne and glider forces. Of the two SOS districts, the XVIII (east) contained large British camps for 1,500 to 9,000 men with mess and recreation halls. The XIX District strained to house the flood of units arriving in early 1944. It relied upon the portable "sausage camps" that straddled five to ten miles of roadway with a dozen small 230-man camps. These differences produced two mounting procedures. 361

Loading a Tank Recovery Tank

The Base Section built 50,000 double-tiered bunks. Gen Lee estimated he needed 15,000 field and 46,000 more SOS troops for the camps. The Section received the entire 5th AD for the marshaling areas, the 29th IR and 6th Tank Destroyer Group were "maids". Cooks and Bakers were short after 4,500 cooks were trained. Loading capacity was increased with new concrete "boat" ramps. Camps, docking, depots, storage, advance shops, utilities, kitchens, bakeries, post offices were built using 47,500 engineer troops. 362 Loading was complicated because many of the vehicles and troops rode their boats to the shores of France. Western Base Sections loaded through Mersey ports and Bristol area; only marshalled two airborne divisions. 363 Airborne units were marshaled at their departure airfields requiring no extra work.

2. <u>The Mounting Begins.</u> SOS mounted Task Force O in Portland–Poole, Task Force U in the Torquay–Dartmouth, and Force B (follow-up) in the west country (Falmouth and Plymouth). Preloaded build-up units used Bristol Channel ports. Months of effort created the Buildup Priority Lists for hundreds of units to load. Procedures funneled troops into mounting via a Buildup Control Organization (BUCO) task by British and American forces at Fort Southwick, Portsmouth. BUCO was new. BUCO controlled ships and craft. He reported to British and American Army chiefs, not SHAEF. 364 U.S. Staff reported to Bradley at First Army, then at 12th Army Group. BUCO controlled MOVCO (Movement) and TURCO (Turn-Round). MOVCO got troops to embarkation, BUCO made Buildup Priority Lists from the army. TURCO assisted naval commanders to control ships and found ships. 365 Southern Base Section used EMBARCO for movements on an enormous white board tracking systems --- <u>It was not a good system but moved the 30,452 men and 3,569 vehicles for UTAH with a</u> bit of a "rebel" in command. The author wrote: <u>"Traffic did not move smoothly … and there was poor liaison …"</u>

In the weeks just before D Day every English citizen knew something was up as a tremendous force of soldiers moved through England. Rails and highways were "alive" with traffic with "train after train of foot troops, and traffic bottlenecks in cities like Gloucester, Cheltenham, and Oxford. In some cases, civilian traffic was banned, which caused "resentments". 366 <u>The Transportation Corps assigned 478 officers and 2,583 men for traffic control.</u> Units were checked in and assigned to camps.

At the edge of the camp the units were met … Vehicles … camouflaged, and "topped off" with gasoline … The troops then marched into the camp … (about) a mile distant … briefed … were broken down into craft loads … (where) they awaited …

… It was in the marshaling area that the soldier was issued … (with) anti-seasickness pills, water-purification tablets, emergency rations, heating units, vomit bags, dusting powder, and a lifebelt, and … Impregnated clothing and payment of 200 francs in the new French currency issued by the Allied military government.

"I see Comp'ny E got th' new style gas masks, Joe."

The biggest joke were gas masks and chemically impregnated clothes. Cartoonist Bill Maudlin captured GI disdain.[19]

The soldier might then ease the long wait with … baseball or poker … movie, read the *Stars and Stripes*, *Yank*, or *Army Talks* called "Achtung" … for the … Continent. Extraordinary efforts … (indulged) the … appetite … (with) meat and white bread … laundry and shoe repair units provided other essential services. … **367**

… (A) complete security seal was imposed … and more than 2,000 counterintelligence corps …

… (The) Allies expected the Germans to send bombers over … an antiaircraft brigade was attached … Camouflage was another … and (they) enforced camouflage discipline. The 604th Camouflage Battalion painted 18,000 tents … to render marshaling areas unrecognizable at 10,000 feet …

"Two onerous problems—making up supply deficiencies, and waterproofing vehicles—added greatly to the administrative burden …" The **368** build-up divisions … (had) serious shortages. Ordnance was hard pressed to meet late demands … In the end almost all needed equipment and supplies were obtained." But pity the soldier who was not in the "almost all" group!

Vehicles had to waterproofed with a sticky, gummy substance … terrible to put on; worse getting off. **369** A terrible worry, the British made a waterproofing that was easily stripped off made of "grease, lime and asbestos fibers." Tubing extended air vents, carburetor air intake extensions and exhausts. Quick stripping was done on beaches. **370** Ordnance had to waterproof **137,041 wheeled and semi-tracked vehicles, 4,217 full-tracked vehicles, and 3,500 artillery pieces.** One month after D-Day vehicles were landed "dry shod."

Both base sections had manpower shortages and combat troops pressed into SOS duties were not great substitutes. Men worked long, thankless shifts though the three major areas had 43,000, 20,000 and 23,000 soldiers on duty. Many combat units intentionally arrived overstrength with extra equipment

[19] Americans were convinced the Germans would employ lethal gas and Chemical Weapons had conducted extensive tests of rubber suits, etc. In the end, they sprayed GI uniforms and clothing with a stiff crinkly chemical resin that made the cloth impervious to gas and then issued gas masks. It was a quick, easy fix. However, there were no gas attacks, the masks were too bulky, and the impregnated fatigues were awful to wear, scratchy and made a cracking noise with every step!

and vehicles that could not be squeezed on board. Many soldiers cut cardboard vehicle figures to scale on an LST map to create complex positioning to squeeze in every vehicle onto the ship, to find sailors loading the ship didn't care or follow their instructions! Many came with more men or vehicles. It caused unnecessary confusion in the marshaling areas.

The briefing Force O and U officers on the attacks began on 22 and 23 May. Many briefings used excellent visual aids, **371** sponge rubber models, large-scale maps and aerial photos. Security was then doubled and marshaling areas patrolled. A few well-executed enemy air raids or any security leak could have disrupted plans. One raid did bomb a site killing 12 men with 19 wounded.

Loaded Landing Craft Waiting for Invasion

Loading ships began second week of May with prestowed cargo for 15 days. Some ports were POL; Penarth and Fowey were ammunition; Cardiff was heavy equipment and a 112 vehicle Liberties in Southampton. May added barges that could be beached in France. The **372** navies assembled, Adm Ramsay with U.S. Western Naval Task Force (Adm Kirk) with Force O (Adm Hall, Jr.) of 1,200 ships and craft; Force U (Adm Moon) with 800 vessels. Force B (Cmdr Edgar) with 500 ships had OMAHA follow-up. TF O had five convoys and TF U had 12 convoys in widely scattered ports. **373** Embarkation of all was done 3 June as all waited the signal from the Supreme Commander.

O. May 19 – 31, 1944: Buresh Eighth AF Bombing Logs Excel Format, xyza

As would be expected the last one-half of May 1944 was crammed with preparing for OVERLORD. There were many 800 bomber days for the Eighth including four days of 900 or more big bombers raids. At least one-half of the strikes were in occupied countries of Europe – not Germany. B-17's and B-24's flew a smashing 19,601 major bomber sorties in May which was 40% of their total since January 1944. Every month, month after month the volume increased. The "weight of bombs" heavy in the air. Constant downpours, never knowing when or where the next would strike. It was for all intents "Terror Bombing." Intentionally starting "firestorms" to burn houses. Most European towns had row houses or apartments with common walls of concrete and brick. The bombs lit the wood floors, beams and roofs on fire cruelly leaving the brick and mortar standing – remorseful and empty. Walls with door and window holes? Yes. Homes no more. Taunting, forlorn memories of better days.

More mind-numbing numbers on the size and weight of the Eighth and Ninth Air Force attacks on German occupied Europe. One need recall these are but the figures for the Eighth Air Force – they omit the Fifteenth Air Force and Bomber Command, which readers contained huge components that consistently pounded day-after-day with 800 or so big bombers!

Nine days of the last 17 days in May launched over 800 bombers. The bombers flew 19,600 sorties in May 1944. YTD it they had flown 54,600 missions of which three months (January to March) before had been unflyable. They lost 1,780 B-17's and B-24's, which accounted for 17,820 crewmembers as one sees the actual number was 17,534 men lost. Of those, 17,401 were reported as "MIA", with great hope and expectations they were alive in a German stalag, or a Swedish or Swiss prison! For certain, nine hundred bomber crewmen had been killed. It was a strikingly small number.

EIGHTH AIR FORCE DAILY RECORDS

				B-17's				B-24's				US Bomb Crew			Lutwaffe			P-38 & P-47 Escort				P-51 Esc0rt				Lutwaffe			US Crews		
No.	Mission	Area	Type	Fly	Dwn	Fin	Rep	Fly	Dwn	Fin	Rep	KIA	WIA	MIA	Dwn	Rep	50%	Fly	Dwn	Fin	Rep	Fly	Dwn	Fin	Rep	Los	Dam	Prob	KIA	WIA	MIA
Fri, 19 MAY 1944			888															0													
358.1	Berlin	Germ	Indus	545	16	2	289					3	16	137				337	8	2	9	545	15	0	11	32	0	18	0	0	17
358.2								273	12	0	64	1	8	119												45	0	15			
Sat, 20 MAY 1944			638	Cancelled																		882									
359.1	Orly	Fran	Air	163	0	4	48					20	6	0												3	0	2	0	0	1
359.2	Reims	Fran	Air					125	0	0	5	0	0	0								177	1	0	0				0	0	1
359.3	Liege	Belg	Rails	Cancel	2	4	41					17	16	17								334	2	0	5				0	0	2
Sun, 21 MAY 1944			150																												
360.1	Marquise	Fran	V-1	25	0	0	13	99	0	0	1							48	0	0	0										
360.2	Strafing	Germ	Rails															145	8	2						8	0	3	1	0	8
360.3	Strafing	Germ	Rails															139	4	0	21					1	0	0	0	0	3
360.4	Strafing	Germ	Rails																			333	15	1	20	94	0	66	0	0	15
Mon, 22 MAY 1944			454																												
Occupy all 66 U.K. Airfields w/ 82 VIII AF Operational Units																		145	3	1	1					8	1	5	0	0	6
361.1	Kiel	Germ	Navy	294	5	1	209					4	3	78				95	3	0	2					12	1	2			
361.2	Siracourt	Fran	V-1					94	0	0	1											328	1	0	1	2	2	1			
361.3	Hasselt	Belg	Rails	Fighter Bomber														130	1	0	1								0	0	1
363.1	Hague	N'lnd	Info	4	0	0	0																								
363.2	CARPETBAGGER French FFI							12	0	0	0																				
Tue, 23 MAY 1944			1057																												
364.1	Metz	Fran	Rails	377	2	2	50					12	4	?				138	0	1	1	324	0	0	1						
364.2	Orleans	Fran	Air					437	1	1	33	10	0	10																	
364.3	Escort Provided		???															644	4	0	0										
365	Hasselt	Belg	Rails	Fighter Bomber																		89	1	0	0				0	0	1
366.1	Various	Belg	Info	4	0	0	0																								
366.2	CARPETBAGGER French FFI							7	0	0	0																				
Wed, 24 MAY 1944			1113															0													
367.1	Berlin	Germ	Indus	517	33	1	256					4	24	482				322	2	0	2	280	8	1	4	6	0	2	0	1	10
367.2	Melun	Fran	Air					400	0	0	24															27	7	4			
368.1	Creil	Fran	Rails	Fighter Bomber														72	0	0	1										
368.2	Beaumont	Fran	Rails	Fighter Bomber																		146	3	0	6	5	0	1	0	1	3
369.1	Various	Fran	Info	4	0	0	0																								
369.2	CARPETBAGGER French FFI			3	0	0	0																								
Thr, 25 MAY 1944			**1042**																												
370.1	Belfort	Fran	Rails					258	2	0	57	0	0	20				136	9	0	8					3	1	0	0	0	9
370.2	Nancy	Fran	Rails	275	0	0	14											181	0	0	6					7	1	7	0	0	0
370.3	Montignies	Fran	Rails					112	0	0	3											287	3	0	1	6	0	1	0	0	3
370.4	Brussels	Belg	Rails	199	2	1	71					1	6	28																	
370.5	CARPETBAGGER French FFI		Guns	33	0	0	0	18	0	0	0																				
371	Various	Fran	Info	4	0	0	0																								
Fri, 26 MAY 1944			Small																												
372.1	Various	N'lnd	Info	4	0	0	0																								
372.2	Various	N'lnd		Strafing Attacks														58	0	0	0										
Sat, 27 MAY 1944			1130																												
373.1	Ludwigshafen	Germ	Rails	308	12	0	98					2	5	114				170	1	1											1
373.2	Karlsruhe	Fran	Rails	200	7	1	89					1	3	70				238								3	0	1			
373.3	Woippy	Fran	Air					72	0	0	0	0	1	0								302	6	1	8	41	1	6			6
373.4	Saarbrucken	Germ	Rails					286	5	1	18	3	4	50																	
373.5	Fecamp	Fran	Guns	36	0	0	0	18	0	0	0																				
373.6	Escort Provided																	425	1							4	0	0			
374	Willenstadt	N'lnd	Navy	Attack barge convoy														24	0	0	1	2 barges									
375	Various	Belg	Info	3	0	0	0																								
Sun, 28 MAY 1944			1346																												
376.1	Ruhland	Germ	Oil	236	17	1	107					3	15	155	20	21	18	182													
376.2	Konigsburg	Germ	Oil	183	9	0	64					3	2	90	16	8	6	208	4	2	3					2	0	2			4
376.3	Lutzendorf	Germ	Oil					82	3	0	16	0	1	3	???							307	5	1	8	25	1	5			5
376.4	Merseburg/Lena	Germ	Oil					287	3	0	23	1	1	26	1	0	0														
376.5	Cologne	Germ	Rails	58	0	0	0																								
376.6	Escort Provided		5 Lost																							38	0	17			
377.1	Various	Belg	Info	5	0	0	0																								
377.2	CARPETBAGGER French FFI							22	1	0	0																				
Mon, 29 MAY 1944			993																												
379.1	Politz	Germ	Oil					415	17	3	150	2	10	161				184													
379.2	Leipzig	Germ	Air	203	9	0	80					0	3	90	11	4	5	187	4	0	3					1	0	1	0	0	3
379.3	Krsesinki	Pol	Air	179	8	0	97					0	5	67	22	18	14					302	6	0	6	54	1	19	0	0	5
279.4	Escort Provided		594	2 Lost																						1	0	0			
279.5	CARPETBAGGER French FFI							23	1	0	0																				
Tue, 30 MAY 1944			978																												
Loading D-May Begins																															
380.1	Dessau	Germ	Air	246	9	0	81					0	2	86	8	5	1	186	0	0	3										
380.2	Oldenburg	Germ	Air					354	1	2	36	1	2	9				184	1	0	0					2	0	0			1
380.3	Munster	Germ	Air					82	2	1	36	1	6	9								302	8	2	4	56	3	5			8
380.4	Reims	Fran	Rails	122	0	0	24																								
380.5	Brussels	Belg	Rails	39	0	0	12																								

Statistics were better for the fighter crews who flew over 75,000 missions in the first five months! Of these 960 had been shot down, which was just a 1% loss rate. The chances of getting 20 missions as a fighter pilot were far better than for bomber crews. Another interesting statistic relates that fighter crews "took down" far more German planes and pilots than did bomber crews. The fighters had 3,400 enemy pilots claimed out of a total of 3,600 pilots!

EIGHTH AIR FORCE DAILY RECORDS

				B-17's				B-24's				US Bomb Crew			Lutwaffe			P-38 & P-47 Escort				P-51 Escort				Lutwaffe			US Crews		
No.	Mission	Area	Type	Fly	Dwn	Fin	Rep	Fly	Dwn	Fin	Rep	KIA	WIA	MIA	Lost	Rep	50%	Fly	Dwn	Fin	Rep	Fly	Dwn	Fin	Rep	Lost	Dam	50%	KIA	WIA	MIA
Tue, 30 MAY 1944			978																												
Loading D-May Begins																															
380.1	Dessau	Germ	Air	246	9	0	81					0	2	86	8	5	1	186	0	0	3										
380.2	Oldenburg	Germ	Air					354	1	2	36	1	2	9				184	1	0	0					2	0	0			1
380.3	Munster	Germ	Air					82	2	1	36	1	6	9								302	8	2	4	56	3	5			8
380.4	Reims	Fran	Rails	122	0	0	24																								
380.5	Brussels	Belg	Rails	39	0	0	12																								
380.6	Pas Calais	Fran	V-1	76	0	0	12					3	2	10																	
380.7	Escort Provided		637	3 Lost																						8	0	2			
380.8	Beaumont	Fran	Rails	Fighter Bomber														98	1	0	0								0	0	1
Wed, 31 MAY 1944			1051																												
382.1	Luxeuil	Fran	Rails	108	0	0	45					1	4	0																	
382.2	Osnabruck	Germ	Rails	156	1	0	58					0	1	10				193	0	0	1					1	0	0	0	0	0
382.3	Various	Fran	Rails	Cancel					0	1	7	0	0	0				180	1	0	3					0	0	0	0	0	1
382.4	Beaumont	Fran	Rails					4	0	0	0	0	0	0								309	2	0	0	3	0	1	0	0	2
382.5	Escort Provided		No Data																												
382.6	Gutersloch	Germ	Air	Fighter Bomber														78	0	0	1	5	1	3							
382.7	Rehein	Germ	Air	Droopsnoot														35	0	0	0	5	0	0							
382.8	CARPETBAGGER							22	0	0	0																				
Mnth Ttl Sort's				**11,671**	344	43	4492	**7930**	102	45	1184	191	358	4451	232	90	76.5	12506	117	21	151	14225	147	21	139	908	37	310	1	8	219
Mnth Ttl Sort's All				**19,601**											1140	127		26731													
YTD TOTAL SORTIES				**37,061**	1298	143	13341	17534	484	133	2857	901	1647	17401	232	90	76.5	**51,318**	483	109	724	**24,468**	413	47	280	3438	239	1907	21	39	813
YTD TOTAL B-17 & -24/FIGHTER SOR				**54,595**	1,782	**276**	###								**3670**	**329**		**75786**	967	242	3581										
YTD LOSSES B-17 & -24/FIGHTERS					2.9%				1.3%										1%				1%								
YTD % SORTIES FOR EACH				67.9%				32.1%										68%				32%									

Of the YTD 54,595 sorties, 19,600 were big bombers and 26,730 were fighter planes. YTD 1,782 planes were downed, but a huge percent or 1,298 were large bombers lost, versus just 483 fighters totaled. Bombers had 901 killed versus just 21 fighter pilots, and 4,450 MIA (likely POW's) vs. just 813 fighter likely POW's. Either case, YTD crew known killed of less than 1,000 was remarkably low. One ground force division could have those numbers in just one dreadful day! Fighters lost escorting bombers and attacking were 260 for May 1944, and YTD totals were just 967 lost out of almost 76,000 sorties. Lacking knowledge on total *Luftwaffe* sorties, it is impossible to predict a percent of German fighters lost in combat. Yet, U.S. bombers to a small extent, U.S. fighters to a huge extent, claimed massive destruction of German planes totaling 3,670 in the first five months of 1944. The far greater claim was by U.S. fighter pilots.

The attacking USAAF lost 2,850 bombers and fighters over Germany in the first five months but claimed 3,670 German fighters in the process! Logic suggests the Germans should have one-half (or less) of the

planes lost or 1,425 total, not 2,850. Setting aside numbers, the point clearly made is U.S. losses were far below reasonable expectations for flying 500 miles into Germany to bomb and then return. All of this was done before the U.S. had fighter bases in France or had emergency landing fields for bombers in France! The air loss statistics heavily favored the United States.

P. Overlord and the Strategic Air Forces; Davis, COMBINED BOMBER OFFENSIVE 1-31 May 1944

3–4 May: Bomber Command—begins attacks on German airfields in France.
5 May: Fifteenth Air Force—hits 20 heavy groups; largest force over 640 bombers to Ploesti RR yards.
8 May: Eighth Air Force—two B-17s crash-land in Sweden.
9 May: Eighth Air Force—strikes German airfields 130 miles from D-Day. Red Army captures Sevastapol.
9–10 May: Bomber Command attacks Pas-de-Calais batteries.
10 May: Fifteenth Air Force—reaches planned strength of 21 heavy bomber groups.
11 May: Eighth Air Force—two B-24s crash in Switzerland.
12 May: Eighth - First attacks on synthetic oil, loses 46 bombers.
12 May -- Fifteenth Air Force—sends largest force of 730 bombers to assist Allied ground forces.
12–13 May: Bomber Command—Mosquitoes lay sea mines for first time—Kiel Canal.
15 May: Germans send Hungarian Jews to Auschwitz to be systematically murdered.
19 May: Eighth Air Force—one B-17 lands in Sweden.
21 May: AEAF and Eighth —unrestricted strafing French railroads begins “Chattanooga Choo Choos”.
27 May: Eighth Air Force—three B-17s and two B-24s land in Switzerland.
28 May: Eighth Air Force—makes second attack on synthetic oil, 32 bombers lost.
29 May: Eighth Air Force—third attack on synthetic oil, 34 bombers lost. Eight bombers land in Sweden.

Next, view missions by the Eighth Air Force bombers using *Combined Bomber Offensive* data provided by Mr. Davis.

Transport Plan Fears. On 3 May Churchill said Eisenhower’s transportation plan “will smear the good name of the Royal Air Force across the world.” He asked if less than 10,000 French civilians would be killed. Tedder said – no guarantee. Churchill ordered “no more than 10,000 French dead” and sought

252 Roosevelt's aid. FDR replied: "I am not prepared to impose … any restriction on military action." Casualties before D-Day were 5,750 civilians killed, likely 11,500 after it. French Gen Koenig said: "This is war … people will be killed …" The fight for strategic targeting had compromises:

> … (Such) struggles are endemic … **253** Harris and Leigh-Mallory quickly lost … Leigh-Mallory because of his personality … Harris because … his force … fit the … transportation plan … Portal … refused to give … to Churchill's worries … Much the same … (for) Tedder; he served … Eisenhower and Portal, faithfully …
>
> Eisenhower, of course, had … complete support of his government … "Ike was a very tough customer … (for) the cross-channel invasion."

Spaatz had more than the rest. He refused to serve under Leigh-Mallory or to lower his *Luftwaffe* or synthetic oil priority. He used his congeniality. **254** *(Author Davis's additional context is omitted* ***256 257 258 259).*** In May preinvasion air operations quickened with just 4 of 18 May major ones flown to Germany. Yet, hundreds of nuisance raids by Mosquitoes needled Germans. Bomber Command and Eighth hit French and Belgian rails, then barracks, fields, coast defenses and radar for cumulative damage. On 21 May train strafing to blow up engine boilers with bullets began. Ammunition trains were obliterated. **242 243** French train crews fled to avoid dying by machine guns or scalding steam.

Luftwaffe French air bases were destroyed. Bomber Command lost just 1.8% over France April to June -- Allied night raids had huge losses, "but the overall loss rate of 3.9 percent … was acceptable." Harris had four major Germany raids losing 27 and 12 planes -- 6.6% losses. *(Note: That is a 1 in 15 chance of being shot down – with 20 missions required!).*

Fifteenth AAF in Italy hit full strength -- 21 bombardment groups (1,512 bombers) flying 22 missions. Nine were for U.S. Fifth and British Eighth Armies. Here 3,500 of 4,800 sorties were on German supplies and troops, and cities losing (.03%). Davis states Germany battles drained *Luftwaffe* from its periphery. **344** Davis mentions air assist of communist Tito in a three-way war for Yugoslavia as Anglo-Americans supported the communist, Tito. On May 15th Air Forces struck 13 towns with 1,088 bomb tons. **345** The Allied support of communist Tito spoke loudly at the time.

In May the Fifteenth sought to finally destroy Ploesti as 1,293 sorties lost 52 planes (4%). Austria plane plants had four hits. Wiener Neustadt lost 31 of 406 planes (8%); 30 May lost just 5 of 420 (1%). In 1,855 sorties to Austria, 78 were lost (4.2%). Eighth had more sorties and losses than Bomber Command or Fifteenth. With 292 planes lost in **13,674 effective sorties (2.1%) in** 23 major missions in Germany, France, and Low Countries. Its 40 bombardment groups had 1,688 heavy bombers and 1,423 crews. The Eighth hit Luftwaffe airfields for 49 such strikes (20% of total). An additional 1,299 strikes hit aeroengine manufacturing and Me-109 and FW-190 component and assembly plants.

On 25 May, per Prof. Zuckerman's transport plan, Gen Doolittle sent bombers against German coastal fortifications which intensified in June. Yet, one-third of the bombs (3,569 sorties of 9,800 tons) hit French, German and Belgian marshaling yards and strafing passenger trains began 21 May as Allies claimed hundreds of trains. One pilot of the 352d Fighter Group claimed 25 cows!

Crossbow had 771 sorties, 2,600 tons all with just a 1.4% loss rate. Yet, none of these addressed the top priority of destroying the Luftwaffe – a nagging concern since the enemy would not spend fighters to defend occupied Europe. This "husbanding" worried Spaatz who had "stressed … with Eisenhower, Tedder, and others … (continuing Pointblank was) vital … (for) the depletion of the GAF." **347**

Only two targets—Berlin and synthetic oil—brought the Luftwaffe into action. The Eighth struck Berlin on 7, 8, 19, and 24 May with 1,861 sorties and 4,277 bomb tons through overcast. Then 312 bombers struck Osnabrück and Hannover 7 May; next day 336 bombers hit Brandenburg and 273 bombers at Brunswick. May totals were 3,287 sorties with 7,800 bomb and as a first, the Eighth dropped more bombs in Germany than Bomber Command and lost 119 bombers or 3.6%

Most important were synthetic oil strikes on 12, 28, and 29 May that prompted a Luftwaffe response. Fifteen wings (886 bombers; 735 fighters) were swamped by fighters as 3rd Division lost **348** 12 of 16 bombers at Gera, 10 of 14 at Zwickau --- one division lost 45 bombers. Escorts lost fighters to claim 61 enemy. Records showed 28 German dead, 65 planes lost. Survivors dropped 1,718 bomb tons destroying atom bomb "heavy water"; it was the end. **349** On 28 May 400 bombers hit five oil areas; next day Politz to lose 10 of 410 planes, but Dessau lost 36 bombers. Combined it cost 66 bombers; 19 fighters in two raids with U.S. claims of 121 destroyed, two probable, and 33 damaged – very intense. All

Berlin and oil raids cost 25% of the Luftwaffe pilots (578); most of any month – a five-month total of 99% -- "no force could survive such casualties for long and retain any semblance of effectiveness." *Ultra* intercepted a 13 May order that stripped staff and antiaircraft guns from the east for three fighter plants and two hydrogenation plants at Zeitz and Politz – noted as **"one of the most decisive and timely pieces of intelligence received in this war,"** because **oil was of "paramount importance—even above the production of fighter aircraft.**"

A week later came orders to **350** use wood fuel generators for vehicles. On 30 June Speer reported to Hitler May plane of 156,000 tons was 14,000 tons short as Ultra revealed use of the "strategic reserve". Portal wrote Churchill it was "one of the most important pieces of information we have yet received." On 4 June Eisenhower's headquarters publicly pro **351** **352** claimed the existence of the oil offensive. After Normandy, the U.S. campaign on oil began in earnest.

Q. Chapter 13: Arming for the Grand Campaign; ORDNANCE ON BEACHHEAD AND BATTLEFRONT. Mayo xyza

In October 1943 Frist Army's staff was planning the invasion aided by staff who served Bradley in II Corps, including his G-4, Col Robert W. Wilson, and his Ordnance officer, Col. John Bruce Medaris under Brig. Gen. Henry B. Sayler, Chief Ordnance Officer, ETOUSA. Sayler was promoted to Brig Gen in early 1943 and major general in June 1944. "A longtime friend and classmate of General Eisenhower, he was one of only two technical service chiefs who were West Pointers." He was well-liked and respected. **219**

New Methods of Supply. Early in 1944, the War Department asked for a list of its "special" matériel-over and above tables or PROCO (projects for continental operations). The Ordnance list was more vehicles of all types; **220**; spare parts kits; weapons and vehicles to be replaced; waterproofed packaging and pre-shipping **16,000 spare parts tons in 450,000 boxes.** But early shipping in July 1943, meant monumental storage needs as an **infantry division had 2,089 vehicles**. **221** Two depots, five vehicle parks and acres of Nissen huts. There were 350 different Army units with separate equipment tables. Weapons and vehicles were short. Monthly Material Status Reports were impossible – so much was "in transit" -- no computers

Waterproof Test Tank

Motor Vehicle Assembly. **222** Mid 1943 all saw insufficient motor vehicle assembly (MVA) space for vehicles shipped "knocked-down in boxes", especially 2 ½ ton trucks. Thousands were needed, but Army assembly companies were in short supply; mechanics were untrained in assembly lines. **223**"Yank ingenuity" plus a Pvt Phillips III was "a time and motion study expert". Ordnance built an assembly line 18 August to rebuild 5,000 trucks. In total, Ordnance re-assembled 43% of the 60,70.3 British-bound vehicles. It became was terrible in 1944 when eight factories closed when British rails could not haul the crates. Eight US plants closed; by D-day only Ashchurch and Bromborough assembly plants remained while MVA companies (motor vehicle assembly) worked at British case dumps near the ports.

Preparations for a Short Sea Voyage. By January 31, 1944, the massed weapons of war were everywhere against the background of the quiet English countryside: hooded 90-mm. guns in a farmyard; row after row of Sherman tanks in fields, white stars under splashed mud; acres of trucks -- extra gas and water cans strapped on – in parks; miles of steel ammunition bays on narrow lanes. **224** "Hidden "gems" abound. "D-day was postponed until the end of May in order to gain an extra month's production of landing craft and increase the chance that the Russians would at the same time be attacking on the Eastern Front." (*Was there post-War trend "downplaying" Soviet contributions?)* TORCH had excessive security kept as men worked without information. In truth, OVERLORD "planning" was nearly 100% a technical services task.

Established in December 1943, under Col. Plank's ADSEC was attached to First Army to follow it taking over its rear installations between D+15 to + 20 and then at D+41 the S.O.S. Forward Echelon,

Communications Zone (FECOMZ) took over. Two histories confirm Gen Bradley so agreed before D-Day but reneged afterwards. **226** ADSEC was the sole support organization on the Continent to move across Europe with the armies. Its Ordnance component had to anticipate combat needs. The Ordnance Section was activated on 25 January 1944 under Col Mesick. Col Nislev was the First Army Group ordnance officer and Col Webb had FECOM as both handled the Continent. Col Nixon rejoined Gen Patton as the Third Army Ordnance Officer. **227**

Excellent Photo of the D-D Tank

Ordnance Units trained at ETOUSA's Assault Training Center. When Medaris' army depot and ammunition companies arrived in England they were trained with maintenance men by modifying tanks and equipment with, for example, new Quad 50 machine guns (four heavy .50-caliber machine guns on a on a wheeled trailer). Armor-plating floors of armored cars. Training DUKW maintenance soldiers. **228** The British invented DD (duplex-drive) swimming tank. "Hobo's funnies" (after inventor Hobart). The Crocodile had flame thrower version; the **229** CDL (Canal Defense Light, a name given to mislead the enemy) was a powerful searchlight that blinded the enemy; the Crab revolving flail tanks exploded mines; and Bulldozer blades were some new inventions. The weasel M29 light cargo carrier, a small, tracked carrier (a forerunner of snowmobiles) for mud, swamps and snow. Snakes were explosive filled pipe lengths screwed together to be pushed through obstacles to blow them. **230**

Bomb Disposal. One highly secret subject was bomb disposal of unexploded bombs (UXB's). Pre-war "nobody had realized all of its ramifications". In 1941 Ordnance opened a bomb disposal school at Aberdeen Proving Ground to teach a subject that was unknown. Worse, the UXB had to deal with German bombs and American bombs that were unexploded. Training was given *bomb reconnaissance* to recognize one. Col Kane became the **231-bomb** disposal officer in March 1944 with 11 officers to train forces which issued the *Fuze News*letter! The men arrived 1 officer and six enlisted per team. Casualty rates are not given.

Neptune Ordnance Plan. This section portrays Ordnance efforts during the invasion. They were varied. **232** Col Medaris put nine battalions on OMAHA Beach for the main Army effort. This would be the forward support organization to march across France. UTAH had five battalions and would be responsible for Ordnance service in army rear. Separate were the main army rear depot and heavy shop battalions. Each army contained a (an):

forward third echelon maintenance;

battlefield clearance battalion;

fourth echelon maintenance;

field depot;

collecting point and evacuation facilities;

intermediate, rear support to repair of trucks and move others to rear shops; and

handle bomb disposal.

Col Medaris

Forward battalions went to corps, medium maintenance companies to divisions. Learning in in Sicily, Col. Medaris had large Ordnance support of three engineer special brigades, battalions for ammunition, automotive maintenance for DUKW's and LVT's (landing vehicles, tank), and bomb disposal. Men **233** repaired vehicles, made ammunition dumps and handed out "Ordnance supplies". Replacement vehicles were full of engineer supplies for the first 15 days. There were arbitrary tonnage limitations for assault forces -- "a basic load." Medaris had "collecting companies" recover battle damaged items that four companies with wreckers and tank recovery vehicles hauled in.

He sent men to Signal Corps schools. His Engineers had their own radio network. **234** He made sure he controlled all ordnance forces, not the local commander. A feud brewed at this point who controlled ordnance, as Medaris claimed sole control of his forces. First Army refused to agree. So his Ordnance Section relied upon a vague concept called the "appearance of authority". But Gen Bradley gave his "special staff officers" "operational control" of troops under the British example. Combat commanders want control of everyone, but Ordnance had "two bosses" -- the relationship Medaris sought to establish. His troops were there to infantry when necessary, but not "front line" infantry. Medaris never obtained his own "complete" command but had great relations First Army 's Gen Bradley and then Hodges. **235** The "Medaris concept" was informally followed, but was never formally solved even after WWII.

"The Best Equipped Fighting Force" Medaris did receive **236** an independent Army Ordnance staff as an "unofficial" solution. Thus, Ordnance units were well-stocked, because they had a separate staff function at the Army-Level and here had a coup of getting 30 ships pre-loaded with just Ordnance items that became "floating warehouses" **237** When DUKW's parts ran short from training and from war, the War Department airlifted parts. As D-day drew near, very few shortages existed either in spare parts or ammunition. **238**

R. Hobart's "Funnies" and the M4 Sherman Bulldozer Tank in World War II[20] xyza

Crocodile Flamethrower – Tank

D-7 Armored Bullddozer

Italy was the first combat use of the Sherman Bulldozer tanks. There the German Army was careful to destroy the bridges, culverts, and mountainside shelf roads that the Allies needed in their advance up the Italian peninsula. German units then used light-caliber weapons to stop the men and bulldozers sent forward to restore the roads. The Sherman tank-dozers solved this problem making immediate positive changes in the situation. At the Anzio beachhead, tank-dozer were used to extinguish fires in the large ammunition dumps that were targeted by German artillery. Once the tank-dozers were available, even large fires could be quickly contained by scooping dirt and pushing it over the burning containers

The lessons learned in Italy made the Sherman-dozer an item of high demand for the European Theater (ETO) from the invasion of Normandy to V-E Day. General Eisenhower expressed a personal interest in increasing the supply of these versatile machines but manufacturing never caught up with orders from the field. For D-Day, a total of 393 tank dozers were requisitioned prior to 9 May 1944 for US forces, and another 100 for the British and 24 for the French. Only 24 were received in April 1944 and another 81 in May, far fewer than the requests. Nonetheless, the tank dozers were essential in clearing beach obstacles and allowing units to move off the beaches on D-Day and immediately after. Following D-Day in the early stages of the Battle of Normandy before the Culin Cutter was developed (also called Rhino or Hedgerow Buster), the dozer Sherman was the best method of breaking through the Bocage hedgerows. Working with artillery and infantry, the tank dozers were highly effective in disrupting German defenses and making territorial gains. As the Allied armies moved out of France and closer to Germany, the tank dozers prepared tank and gun emplacements, cleared roadblocks, removed wrecked vehicles, snow and debris, filled craters, cleared mines, and built approaches for river crossings. While there were some mechanical and operational problems with the Sherman tank dozer, the value far outweighed the deficiencies with great benefit to the users.

Sherman Dozer Tank

Sherman Flail Tank – Mine Exploder

S. Chapter 4: FINAL D-DAY AND POST D-DAY SCHEDULE May 1944: U.S. Naval Administration in WWII, Naval Forces Europe, Histories. Vol V Operation NEPTUNE (London 1946) xyza

[20] http://olive-drab.com/idphoto/id_photos_m4_sherman_bulldozer.php.; *see generally: https://en.wikipedia.org/wiki/Hobart%27s_Funnies.*

D-Day Normandy is an event that can never be adequately described. Simplicity is often the answer. With that in mind, perhaps the best tribute to all the effort was the final end product – the Schedule:

Day and Time	EVENT	REFERENCE
D - 6	C.O.B. I, II and II sail from Oban for assault area	ON 13 App. VI
D - 3	"X20" and "X23" sail from Portsmouth to mark Force J and S beaches	ON 7 P.5
D - 2 A.M.	First Coaster and M.T. convoys from Bristol Channel sail for I. of W.	ON 13 App. I
2000	American Assault Forces U2A and U2B from Dartmouth sail for UTAH beach	ON 7.
D - 1	"X20" and "X23" arrive off J and S Force beaches	ON 7 P.5
700	O2a. O2B American Assault Forces sail from Portland for OMAHA	ON 7 App. I
1100	Assault Forces G1, 3, 4, 5, 6, 7, and 8 sail from Solent, for GOLD	ON 7
1200-2200	British follow-up Forces L1, 2, 3, 4 and 5 sail from THAMES for the E.T.F. area	ON 13 App. VI
1330-1400	British Assault Forces J1 and 2, J 3, 4, 7 and 8 sail from SPITHEAD for JUNO.	ON 7
1500	American Assault Force U.1 sails from DARTMOUTH for UTAH	ON 7
1615	British Assault Force J14 sails from SPITHEAD for JUNO	ON 7
1740	14th and 4th M.S.F. commence sweeping No. 2 and 4 channels	ON 6 App. I
1830	18th and 7th M.S.F. commence sweeping No. 6 and 8 channels	
1900	6th, 9th, and 1st, MSF commence sweeping Nos. 5, 7, and 9 channels	ON Appx I
1900	American Assault Force O.1 sails from Portland for OMAHA	ON 7
1940	16th and 31st MSF commence sweeping Nos.1 and 3 channels	ON 6 Appx. I
1945	15th MSF commences sweeping channel No. 10	ON 6 Appx. I
2100	British Assault Force J 9 and 10 sail from SPITHEAD for JUNO	ON 7
2200	American Assault Force O.3 sails from PORTLAND for OMAHA	ON 7
2230	British Assault Forces G.15, 16, and 18 sail from SOLENT for GOLD	ON 7
2300	American Assault Force O-3C, U-3C sail SOLENT for OMAHA and UTAH	ON 7
2300	"BIG DRUM" units detach from Force "U" Lat. 49°50' N.	ON 3 6 (C)
D-Day	G.M.I., J.M.I., S.M.I., (M.L.C.) sail LANGSTONE for GOLD, JUNO, SWORD	ON 13 App.VI
200	2 Air Div land, VARREVILLE-CARENTAN and CAEN astride river ORNE.	ON.1 p.31
330	6 H.D.M. L's (GLIMMER) cause diversion in PAS DE CALAIS	ON.3
330	8 H.D.M. Ls (TAXABLE) cause diversion off BRUNEVAL and FECAMP	
530	4 H.D.M. Ls (BIG DRUM) diversion off BARFLEUR.	
530	Bombardment by warships.	
530	Heavy air bombardment of assault beaches	
530	Assault and Support Craft approaching beaches.	

550 - 555	D.D. Tanks and Assault craft land OMAHA, UTAH, GOLD, JUNO and SWORD	
H-hour	L.C.T.s, L.C.A.(HR), L.C.P.(L), L.C.H., L.C.T.(R), L.C.F. L.C.G. touch all sectors	
630	Commandos, S.S., French assault OUISTREHAM and PORT EN BASSIN	ON 7 P.48
700	L.C.I.(L) touch down in all sectors	
715	Commandos land west of Queen Beach and advance above ORNE	
730	L.C.T.s. (S.P. Artillery) touch down in all sectors	ON 7
1000	L.S. Ts and Rhinos arrive in all sectors	ON 7
1100	"P" Tows sail from PORTLAND for assault area	ON 13
1300	L.S. Ts and Rhinos (J16 G18) arrive in JUNO and GOLD	ON 7
1500	American Follow-Up forces O4(a), U5(a) arrive E.T.F. area	ON 13 App VI
1600	British Follow-Up force L.1 (L.S.T., L.C.I. Coasters) arrive E.T.F. area	ON 10 App I
1700	American build-up convoys O4(b) U5(b) arrive in W.F.T. area.	ON 13 App VI
1700	L.S.T. and Rhinos S.14 beach in SWORD	
1830	G.M.I., J.M.I., S.M.I. Groups of M.L.C. arrive in E.T.F. area	ON 13
1830	British Follow-up Force L2 (L.S. Ts) arrive in E.T.F. area	ON 13
2000	Force REGULATOR arrives in E.T.F. area American build-up	
2000	Convoys O5(a), (b), U6(a), (b), U.B.1 and B.B.1 sail from POOLE	Op. DEER
2130	LSD arrive in E.T.F. and W.T.F. areas and return when unloaded	ON 10
	British follow-up Forces B.1 and 2 arrive in E.T.F. area	
	American follow-up Forces O3C and U3C arrive in W.T.F. area	
	L.C.R.U. and LBOs arrive in all sectors	
2200	G.M.S., J.M3 and S.M.3, groups of M.L.C. arrive in E.T.F. area	ON 13
2345	Desultory Bombardment of HOULGATE or BENERVILLE batteries	Op. DEER
2300	"S" Tows sail from SELSKY for assault area	ON 13
D plus 1	American follow-up Force U2 sails from KAMOUTH for W.T.F area.	ON 13
30	Commando's assault HOULGATE Battery, Operation DEER or FROG (Choice_	ON 13
30	British follow-up forces L4 and 5 (L.S.T. beach in E.T.F. area	ON 13
630	G.M.4, J.M.4, S.M.4 Groups of M.L.C. sail NAB for ETF area	ON 13
1000-1200	3 L.C.R.U. and 2 K-9 units arrive in assault area	ONAD 2
1000-1200	12 Tug Units and 6 Units of sunken causeway arrive GOLD and JUNO	ON 13
1000-1200	American follow-up force B.3 and U.4 arrive W.T.F. area.	ON 13
1000-1200	28 sunken causeways + 4 large barges arrive UTAH and OMAHA	ON 13
1400	C.O.B.1(3) and (4) arrive. GOOSEBERRIES construction begins	ON 13
1400	C.O.B.2(1) & (2) Abd C.O.B. 1(5)	ON 13
1430	C.O.B.2(2)	ON 13

1500	C.O.B.1(5)	ON 13
1500xyz	American follow-up Forces U6(a), U.B.1 (ammunition	ON 14
1500	B.B.I (9-300 tons ammunition barges arrive E.T.F. area	ON 14
1500	Ships begin lay cable from CHRISTCHURCH to LONGUES and from SWANAGE to QUERQUEVILLE	
1600	American follow-up force O6(b) arrives in W.T.F. area	ON 13
1700	American follow-up O5(b) and U.B.1 (ammunition) arrived W.T.F. area.[1]	ON 13
D plus 2		
600	4 Hospital Carriers arrive in the Assault Area	ON 13
600	"P", "S" and "D" tows arrive in the Assault Area	ON 13
1200	U.B.2 (4-1000-ton ammunition barges) arrives W.T.F. area	On 13
1300	C.O.B.3 arrives in assault area[2]	ON 13
D plus 3	"P", "S" and "D" Tows arrive in the assault area.	ON 13

1. Readiness of U.S. NAVAL NEPTUNE FORCE. There were 2,493 vessels in the U.S. Navy Neptune Force to be maintained and repaired. 367-368 369 The U.S. Navy had to recreate maintenance and repair facilities in the U.K. The Tidworth depot did major engine repairs plus salvage and recovery depot. On D-day, 6 June 1944, all ships and craft were “fully prepared” except one destroyer damaged in collision, an LST torpedoed off Dartmouth, and of twelve minor craft damaged the last day of loading. All were clear of repair work, had necessary spare parts with new repair facilities installed at Portland, Weymouth, Poole, Southampton, Deptford, and Newhaven at full strength. Consequently, U.S. Naval forces were 99.3% operational on D-day vs. 97.6% for home-based British forces – an obvious point of pride! 370

2. Review of Royal Navy Preparations. The Royal Navy had one force to each home ports with an assault force and its follow-up force one division. Landing craft were in flotillas. The CinC Home Command where each was stationed, had accommodations, administration, fuel, etc. 371 In the assault, CinC Portsmouth, to a lesser degree CinC Plymouth, CinC Nore, and V.A. Dover, provided maintenance, repair, and logistic and administrative support. Force "J" did 1943 Sicily landings. In November 1943, Adm Sir Vian commanded training the 3rd Canadian Division with 15 exercises.

Force "S" Adm Talbot, was in Scotland training Inverness, 372 handicapped by a lack of training areas and stormy winter weather. Five full-scale exercises were carried, and early April Force S moved south to Portsmouth. 373

"Force G was not formed until 1 March 1944 for 50th (Northumberland) Division under Commodore Douglas-Pennant at Weymouth to transfer to the Southampton - Solent area 28 April. **374**

LOADING AND ASSEMBLY: NEPTUNE FORCES:

Force	Military	Leading Points	Assembly Points

First Br.	Build-up Div.	Thames	Thames
L	3 Brigades (including 22 Armored Brigade)	Tilbury, Felixstow	Southend, Harwich
L	3 Brigades of 3rd Division of 1st Corps British Army	Portsmouth. Newhaven, Shoreham	Portsmouth. Newhaven, Shoreham
J	3 Brigades of 3rd Canadian Division of 1st Corps, Br. Army Commandos	Southampton, Portsmouth	Southampton, Solent Portsmouth
G	3 Brigades of 50th Division of 30th Corps British	Southampton	Southampton, Solent, Spithead
O	2 R.C.T. of 1st Div., 2 R.C.T. of 29th Div. both of 5th Corps U.S. Army	Portland, Weymouth	Portland, Weymouth, Polle
U	3 R.C.T. of 4th Div. of VIIth Corps, U.S. Army.	Torquay, Brixham, Dartmouth and Plymouth	Torbay, Brixham Dartmouth, Salcombe
B	1 R.C.T. of 1st and 2 R.C.T. of 29th U.S. Div.	Plymouth, Falmouth, Fowey	Plymouth, Falmouth, Fowey

The table tells the story of getting thousands of soldiers to the right the assembly area and port and on the right ships at the right time. Invasions are not unique but one from 12 different ports to assemble offshore to sail 100 miles in the dark through mined waters was quite extraordinary. Hopefully, one can grasp a bit of the complexity. **375 376-377 378 379 380**

END BOOK 3

