

Joint-Service Beach Obstacle Demolition in World War II

By Mr. James Douglas O'Dell

Combined into *gap assault teams* to clear beach and underwater obstacles in the landings at Normandy in June 1944, Army combat engineers and naval combat demolition units (NCDUs) experienced D-Day like everyone else—terrified beyond measure. What they have yet to receive is full recognition for their joint accomplishment. Some accounts say that the engineers were augmented by NCDUs, while others say that the naval units were augmented by engineers. Both accounts are correct—it was a team performance.

A gap assault team consisted of twenty-eight Army engineers and an NCDU made up of a Navy officer and twelve enlisted men—seven Navy and five Army. Also called *boat teams*, the NCDUs went into action with engineer combat battalions, assigned to regimental combat teams (RCTs). As part of Assault Force “O,” the 299th Engineer Combat Battalion was attached to the 16th RCT and the 146th Engineer Combat Battalion to the 116th RCT. Assault Force “U,” operating from VII Corps, was organized along the same lines.

Before World War II, no one had experimented with the demolition of massed obstacles in amphibious assault. Tasked with developing the use of obstacles in defense between the World Wars, the Corps of Engineers had a grasp of practical problems by the end of 1942. They had been experimenting with underwater demolition for two months at an amphibious training base in Florida, when in May 1943 the Navy announced the creation of its own combat demolition program.



Photo in This is JANET, October 1945

Captain Alfred G. Hoel Jr., Corp of Engineers was instrumental in the establishment of the Joint Army-Navy Experimental and Testing Board (JANET).

Striving to develop a joint amphibious doctrine, the Army and the Navy joined forces, each surrendering some of its traditional autonomy, but never unconditionally. To the dismay of political leaders intent on controlling the cost of the war, the two services continued to inaugurate duplicate programs. Wherever the Army went, the Navy was sure to follow, straining to take the lead in all things amphibious.

The Navy’s ascendancy in landing operations put the future of the Engineer Amphibian Command in doubt. Acquiescing to the transfer of authority, one engineer expressed optimism, seeing

it as a challenge for the Navy not to undo previous achievements, but to build on them. In a memo dated 25 February 1943, Lieutenant Colonel Paul W. Thompson stressed the need for trained personnel who were fully aware of American amphibian doctrine at assault training centers in England. Seeking to promote continuity, he noted that the Engineer Amphibian Command had developed “a workable doctrine.” His understanding of the impending change was that the Navy would “simply absorb the personnel and facilities of the Engineer Amphibian Command,” basically adhering to the established doctrine and

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technique. In sum, he anticipated “a change in form rather than in substance.”¹

With respect to the demolition of beach and underwater obstacles, the Navy elected to start from scratch, disregarding what the engineers had previously accomplished. The engineers made significant contributions, beginning with obstacle experiments predating the amphibious exercises that nurtured the Fleet Marine Force in the 1930s. Beginning in 1923, the Corps of Engineers developed beach and underwater obstacles for island defense in the Philippines and Hawaii—starting with steel *chevaux-de-frise*, barbed wire, and small mines. Coral formations off Oahu and Corregidor made it difficult to install heavy steel obstacles, but by August 1933—with the armed forces of various nations using heavier equipment—the engineers were forced to reconsider heavier obstacles.

While keeping tabs on German and Japanese amphibious operations, the engineers accumulated useful data on tactics and equipment. In February 1941, the Engineer Board started a project to investigate general demolitions. On 8 May 1941, the Chief of Engineers proposed that the board find a location for experiments in beach and underwater obstacle techniques. In late August and early September 1942, to guide research, the board composed a list of the military characteristics of effective underwater obstacles. A study of a working classification of existing types resulted and convinced the Chief of Engineers to authorize Project DM 361, *Underwater Obstacles*, on 22 September.

Beginning in late 1942, experiments were conducted at a temporary site at Camp Bradford, five miles northeast of Norfolk, facing the Chesapeake Bay. Over the winter of 1942–43, a variety of obstacles were tested, including horned scullies.² Based on work at Camp Bradford, the board made preparations for establishing a test site at Fort Pierce, Florida, authorizing a survey of North Island (now known as *Hutchinson*), conducted on 25–26 February 1943. A newly established naval amphibious



Photo courtesy/Kenneth B. Reynolds

Engineers launch into the surf with a nitrostarch charge, preparing to blast a sandbar, 1 March 1943. Amphibious Force, Atlantic Fleet Photo AFAX-735.

training base on South Island (also known as *Hutchinson*), combined with excellent beach and surf conditions, made North Island ideal for a joint-service program—where the Army began a demolition school.

On 8 March, the Chief of Engineers specified that the test area be located close to the naval base, directing the board to coordinate work with a similar project in the United Kingdom. On that same day, Report 740, Project DM 361, *Underwater Obstacles* (covering the work at Camp Bradford), was completed, and the board opened Project DM 361E, *Demolition Equipment for Removing Beach and Underwater Obstacles*. At Fort Pierce, engineers experimented with ways of blasting channels through sandbars—at that juncture, the only underwater obstacles known to exist at potential landing beaches in Axis (Germany, Italy, and Japan) territory.

Since offshore bars were obstacles to boat traffic, the Navy argued for jurisdiction. Heavily engaged in the development of their own landing craft, the engineers sought a compromise based on joint responsibility. The elimination of obstacles, extending to natural features, was a logical adjunct to combat engineering, Army or Navy. Both services coveted the capability and the freedom to operate according to their

respective doctrines. Acquiring responsibility for all amphibious training and landing craft production, the Navy sought total control over landing operations. Essentially, the Navy was responsible for getting troops and supplies on the beaches, while the Army was responsible for getting them off the beaches. From that perspective, the elimination of all obstacles to navigation was a logical extension of naval activity. In the sense that a landing beach could develop into a makeshift port, the clearance of underwater obstacles fell under an existing interservice arrangement, but there was a problem.

In the spring of 1943, the Navy had nothing comparable to the obstacle research base compiled by the engineers over the previous two decades—or a demolition school. Responsible for port clearance—principally, the removal of mines, torpedoes, and wrecked vehicles—the Navy did have training facilities for ordnance disposal. In addition to the Mine Disposal School, as of late 1941, there was the Bomb Disposal School—established and headed by Lieutenant Commander Draper Laurence Kauffman, U.S. Navy Reserve (USNR). He knew something about demolition specific to ordnance disposal, but he was not a demolitions expert. For expertise on demolitions,



Photo courtesy Albert J. Shankle

This experimental beach and underwater obstacle course was constructed at North Island, Fort Pierce, Florida, in April 1943.

planners could look to the Naval Construction Battalions, or Seabees, skilled in the use of explosives for building purposes.

Neither bomb disposal technicians nor Seabee builders were classed as combat troops trained for assault. The Marines were, but the Navy wanted to confine them to the seizure of ports, their traditional assignment. In the Pacific, that came to include entire islands, such as the Solomon Islands where Marine engineers experimented with combat demolition. Given their assignment to secure ports, and considering that landing beaches could serve as ports, Marines were logical candidates for demolition training. Nevertheless, Navy planners thought of Marines as an inert force until they actually hit the beach. In that sense, the only active units in the surf zone were landing crafts, which included amphibious tractors, able to surmount a coral reef but having a limited capacity to deal with artificial obstacles.

In the wake of the landings in North Africa in November 1942, the Allies gave some thought to the possibility that the Axis might make greater use of artificial

barriers extended into the surf zone. Examining the results of beach marking by amphibious scouts in Operation Torch, Admiral H. Kent Hewitt decided to expand their capabilities to include onshore reconnaissance. In a memorandum to the Commanding General of the Army Ground Forces, dated 18 February 1943, he requested a specially organized company of engineers (including a demolition platoon) to assist in the development of particular projects in amphibious technique. He wanted the unit to be available by 1 March at the latest. At the top of the list was “the training of Scouts and Raiders in the technique of investigating and destroying beach and underwater obstacles.”³

Established in September 1942 at Little Creek, Virginia, and moved to Fort Pierce in January 1943, the joint-service Amphibious Scout and Raider School was not designed to train raiders in the usual sense, but as reconnaissance specialists, skilled at gathering intelligence behind enemy lines without revealing their presence. The fact that Admiral Hewitt directed his request to

the Army, and not the Navy, is significant. Clearly, he saw the need for a combat demolition capability with respect to underwater obstacles, recognizing that the Navy, as yet, did not have one.

On 17 March 1943, the Engineer Board informed the Chief of Engineers that Captain Clarence C. Gulbranson—U.S. Navy Commandant of the Amphibious Training Base, Fort Pierce—had submitted a request for “the immediate construction of a sample underwater obstacle course” for use in the preliminary training of combat personnel in the Amphibious Force, Atlantic Fleet (AFAF). Supervised by the district engineer, civilian contractors completed the course by the end of April.

By early spring, the Army and the Navy had begun to discuss joint responsibility for the passage of beach and underwater obstacles in the assault. In a memo to Army Ground Forces, dated 17 April 1943, an officer of the General Staff, Army Service Forces, wrote, “Steps to obtain a joint decision on the delineation of responsibilities have been

initiated by the Navy, and a decision is expected in the near future.”⁴

On 1 May, the engineers recommended the immediate construction of an obstacle course, and by 1 July, it was ready for experimental testing. Colonel James H. Stratton, head of the Engineering Division, on 29 June wrote that the course would not be used to train troops. The Chief of Engineers requested a revised plan for Project DM 361E, with emphasis on the passage of beach obstacles and continued cooperation with the AFAF, in developing techniques in the passage of underwater obstacles. Submitted on 7 July, the revised plan was approved within twelve days.

The emphasis on beach obstacles did not herald a total shift away from underwater obstacles, although another critical development in early May 1943 applied pressure in that direction. Admiral Ernest J. King, Chief of Naval Operations (CNO), formally announced a plan to establish a program to train NCDUs. With no reference to the Army’s efforts, the CNO said simply that it made sense to prepare for the eventuality of having to achieve passage through underwater obstacles on enemy

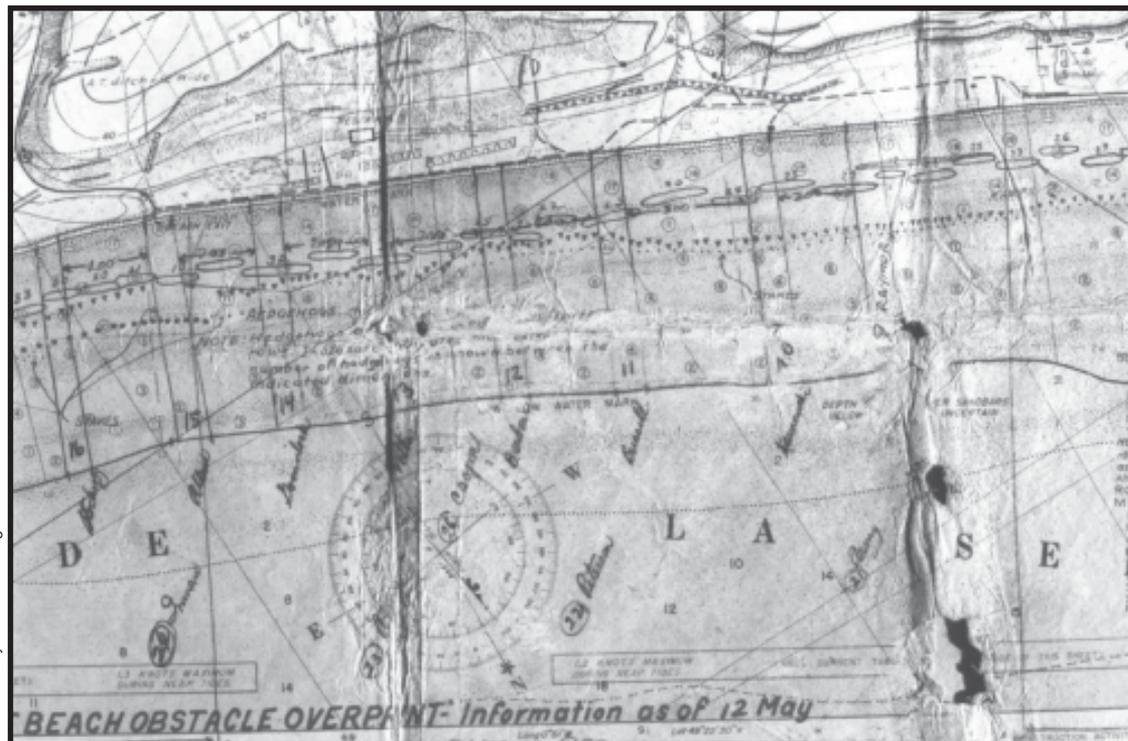
beaches—basically, the Navy thought it was a good idea.

Citing an “urgent” requirement, the CNO tasked Lieutenant Commander Kauffman to find a suitable location and commence training. Kauffman organized a training cadre and established the NCDU Project at the Amphibious Training Base, Fort Pierce, in early June. The engineers appeared to take the situation calmly. Speaking to an assembly at the Assault Training Center, European Theater of Operations, on 31 May 1943, Lieutenant Colonel Edwin P. Lock, Corps of Engineers said, “I understand that this task is assigned to units of naval demolition engineers.” He assured his colleagues in the United Kingdom that “the program for the development and means of passing underwater obstacles is being undertaken jointly by the Army engineers and the Navy.” In reference to the long-standing arrangement, Lock explained, “The Army engineers are responsible for the technique of underwater obstacles in the defense, hence their interest in the project.”⁵

The Army did not want to transfer all responsibility for removing underwater obstacles to the Navy. As Colonel Lock

explained, “In an operation of this nature, it is wrong to assume that one or the other service is assigned full responsibility, since the planning and training are joint responsibilities.” More pointedly, “Planning must designate the removal of specific obstacles by specifically designated units.”⁶ At this point, a problem arose in the negotiations over the division of labor. Depending on the state of the tide, obstacles on the foreshore rested upon dry land. The Navy wanted jurisdiction over anything that, by definition, was an obstacle to navigation. Basically, that included everything below the high-water mark. The Army thought it made more sense for the Navy to tackle obstacles that were submerged at the time of the landing. According to the engineers’ definition, those were truly *underwater* obstacles.

Eventually, Admiral King had to concede that shifting tides made it difficult to referee responsibility for removing underwater obstacles: “The Commander in Chief, U.S. Fleet, agrees that underwater obstacles may, under certain conditions, be above water and also may not be technically separable from other obstacles in the landing



This is a portion of an actual chart used by a naval combat demolition unit officer in the assault on Omaha Beach, 6 June 1944.

Photo courtesy Mr. James Douglas O'Dell

area.”⁷ The engineers sought to avoid duplication of effort, either with respect to cooperation with the Navy or their own demolition research projects. The prime directive was to maintain close coordination of all amphibious preparations.

As stated on 21 January 1941, Admiral King’s philosophy of command embraced the concept of individual initiative within the framework of an effort coordinated with other components of the fleet. Echelon commanders were to be told what to do, but not how to do it, unless circumstances warranted otherwise. Clarifying this position three months later, he said, “When told ‘what’ to do—make sure that ‘how’ you do it is effective, not only in itself but as an *intelligent, essential, and correlated part of a comprehensive and connected whole*.”⁸ On the surface, this would seem to have placed the Army and the Navy on the same page, but beneath the tacit agreement to cooperate in amphibious preparations lay the determination to continue separate efforts at separate, if also contiguous, sites. Duplication was the order of the day, but so was interdependence. In a letter dated 3 August 1943, Brigadier General C. L. Sturdevant noted, “The passage of beach and underwater obstacles is a subject about which little is known.” Emphasizing the importance of the experimental work at Fort Pierce, he wrote, “The Navy, for the time being, is largely dependent upon the Chief of Engineers for such development.”⁹

At Fort Pierce, the 299th learned techniques from the NCDUs, demonstrated there in February 1944. Otherwise, the Army and the Navy maintained separate training regimes and sites on North Island. It was nearly the eleventh hour before Army engineers and Navy demolition units participated in joint exercises on a realistic scale in the United Kingdom.

According to the final draft of the operational plan for Normandy, Navy personnel were “entirely responsible” for removing obstacles that were *submerged at the time of the landing*—as the engineers had wanted from the

start. Army personnel were not expected to disengage from work on obstacles that were being engulfed by the tide. The arrangement proved satisfactory. A Navy observer rated the cooperation between Army and Navy demolition units on D-Day as “virtually perfect.”¹⁰



Mr. O’Dell is a freelance writer and former editor of FIRE IN THE HOLE!, the newsletter of the UDT-SEAL Museum Association, Inc. He holds a bachelor’s in anthropology and a master’s in history.

Endnotes

¹Lieutenant Colonel Paul W. Thompson, Corps of Engineers, Memo No. 8 to General Barker, 25 February 1943, p. 1 (National Archives, Textual Reference Division, Military Reference Branch, Suitland, Maryland.).

²Report 740, Project DM 361, *Underwater Obstacles*, Engineer Board Study No. DM 361, 8 March 1943, submitted to the Engineer Board, Fort Belvoir, Virginia. File AD-B957 600, records of U.S. Army Engineer School, Fort Leonard Wood, Missouri.

³Rear Admiral Henry Kent Hewitt, U.S. Navy, Commander, Amphibious Force, U.S. Atlantic Fleet, to Commanding General, Army Ground Forces, Army War College, Washington, D.C., 18 February 1943. Records of U.S. Army Engineer School, Fort Leonard Wood, Missouri.

⁴Memorandum for the Commanding General, Army Ground Forces: Subject: Beach Assault Training, 17 April 1943. Records of U.S. Army Engineer School, Fort Leonard Wood, Missouri.

⁵Lieutenant Colonel Edwin P. Lock, Corps of Engineers, U.S. Army, Discussion of address of 31 May 1943, Assault Training Center, European Theater of Operations, U.S. Army (National Archives, Textual Reference Division, Military Reference Branch, Suitland, Maryland.), pp. 3-4.

⁶*Ibid.*, 3.

⁷Commander in Chief, U.S. Atlantic Fleet, “A History of the Amphibious Force,” p. 81.

⁸Commander Walter Muir Whitehill, USNR, “A history of the organization and administration of Headquarters, Commander in Chief, U.S. Fleet, December 1941 to October 1945.” *Headquarters* (Operational Archives, Naval Historical Center, Washington, D.C., 1946, microfiche, pp. 7-12).

⁹Brigadier General Clarence L. Sturdevant, Corps of Engineers, to Commanding General, Fort Belvoir, 3 August 1943. Records of U.S. Army Engineer School, Fort Leonard Wood, Missouri.

¹⁰Operational Order No. 3-44, 15 May 1944, p. 1; Lieutenant (jg) H.L. Blackwell Jr., Report on Naval Combat Demolition Units in Operation Overlord, July 1944 (Operational Archives, Naval Historical Center, Washington, D.C.), p.16; Lieutenant Commander Herbert A. Peterson, D-V(G), USNR, Commander, Task Group 125.2.3, to Naval Commander, Western Task Force, Report of Operations (Operational Archives, Naval Historical Center, Washington, D.C.), p. 3.

Note: This article is condensed from *The Water Is Never Cold: The Origins of the U.S. Navy’s Combat Demolition Units, UDTs, and SEALs* by James Douglas O’Dell (Brassey’s, Inc., 2000, 2001), and unpublished data from a work in progress.

