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Salvage Support and Operational Commanders: What They Need But May Not Get

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YOU ARE THE COMMANDER of the U.S. Navy Middle East Force, stationed in Bahrain. Joint air raids from aircraft carriers and by B-2 bombers based in the United States have just demonstrated U.S. resolve in the face of blatant violations by Saddam Hussein's government of United Nations sanctions. But now, a B-2 is down in the northern Arabian Gulf, under sixty feet of water in a mined area claimed by both Iran and Iraq. You are to salvage it before the Iraqis or Iranians do.

The North Korean army, in a surprise assault, has driven the Combined Forces back to pockets around Kunsan and Pusan. North Korean saboteurs and suicide merchant ships have blocked essential facilities in both harbors. As the naval component commander, your ability to resupply and reinforce the surrounded armies depends upon your ability to clear these ports quickly.

During an amphibious assault on a Middle Eastern littoral shore, the USS *Tarawa* (LHA 1) grounds in a poorly charted area while avoiding missile fire. Within twelve hours, a severe storm is expected that may result in the loss of a large and valuable ship. Can you, as the amphibious group commander, stabilize *Tarawa* or get her off in time?

Changes in both technology and the world political situation have increased the importance of salvage as a consideration at the operational level of maritime warfare. Its importance was easy to underemphasize when planning for the

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Commander Skudin, a 1976 Officer Candidate School graduate, has served in five salvage ships—USS *Abnaki* (ATF 96), USS *Hitchiti* (ATF 103), USS *Moctobi* (ATF 105), USS *Reclaimer* (ARS 42), and USS *Beaufort* (ATS 2)—and one repair ship, USS *Ajax* (AR 6). Ashore, he has served on the staffs of the Naval Diving and Salvage Training Center in Panama City, Florida, and Combat Support Squadron Five in Hawaii. A qualified ship salvage and mixed-gas diving officer, he commanded USS *Beaufort* from April 1989 until August 1991, during which time the ship was the only U.S. naval salvage ship in the Gulf War. Commander Skudin graduated from the Naval War College in November 1992 and is currently the executive officer of Naval Weapons Station Earle in Colts Neck, New Jersey.

fast-moving, global, open-ocean conflict that was envisioned until the demise of the Soviet Union. With the end of the Cold War, all the salvage missions established since the First World War—clearance of sea lines of communication, battle damage repair, deep object recovery, support of amphibious assaults, and harbor clearance—always vital concerns, have become more obviously so. The relative importance of these functions in the likely operational environment now appears much higher than it would have been in global warfare.

National military strategy and naval doctrine recognize the probability of regional conflicts, perhaps protracted, requiring naval presence in littoral areas, and a concomitant decrease in the chances of open-ocean battles. This prospect implies increased requirements to operate in shallow, mined areas and to keep lines of communication open to operations remote from bases; in practical terms this involves such salvage functions as rescue towing, "debeaching," underwater repair, and minor clearance. While, on one hand, efficient positioning of salvage resources is made easier when operations are geographically restricted (as littoral contingencies are), the intensity of the salvage problem as a whole may be increased by limited port facilities and the criticality of keeping open those that are available.

New political, social, and environmental dimensions must also be respected. The omnipresence of the media can make it a matter of national concern that salvage be carried out quickly and with minimal environmental impact. Deep object recovery, especially of downed aircraft or human remains, can be a domestic political issue; it becomes a military security problem as well if opponents recover classified or sensitive material, ordnance, remains, or a submarine's survivors before we do.

Also, the naval or expeditionary force commander is likely to command a smaller number of ships—but each of them larger and of higher value—than his predecessors. The consequences of losing a single unit are therefore much greater than they might once have been. Accordingly, the importance of on-scene salvage forces to provide prompt, effective battle damage repair and at-sea diving services (to clear fouled propellers, etc.) is greatly increased. If salvage assets are immediately available, damage (or its aggravation) is minimized, chances of sinking are reduced, and speed of towing is increased; of equal importance, another combatant need not be diverted from its own mission in order to render assistance or tow the damaged unit.[1]

The U.S. Navy is not well prepared to meet the salvage needs of the near future. The history of modern American naval salvage demonstrates that the most critical shortcomings the Navy faces are division of operational responsibility and, especially, over-dependence upon contracted civilian resources.

The World Wars

Although modern Navy salvage began with the introduction of metal ships, there was no permanent U.S. naval salvage organization until World War I. The Navy had stationed divers on large ships and in shipyards and had operated a few harbor and oceangoing tugs. Alone or in conjunction with contractors, they completed a number of large operations, including the raising of Spanish gunboats in Manila Bay after the 1898 battle, the American gunboat USS *Princeton* (PG 13, sunk alongside a pier at Pago Pago in 1914), and the submarine USS *Skate* (SS 23, in 1915, from the then-world-record depth of 306 feet). This latter operation was undertaken to determine the cause of the first loss of a U.S. Navy submarine, and it pioneered submarine salvage and deep-diving methods. The best-known salvage of the era before American entry into World War I, however, was the raising of the USS *Maine* in Havana harbor by the U.S. Army Corps of Engineers—which, as it does now, possessed greater capabilities for harbor clearance than the Navy.

Lacking an operational salvage organization, the Navy generally had its salvage successes in stable situations, in which there was time to divert the few knowledgeable salvors from other duties, typically (since there were no salvage ships) at shipyards. Salvage officers tended to be members of the Navy Construction Corps (CC); they were the equivalent of today's Engineering Duty officers, although only a few CC officers were experienced at salvage, and those few at salvage engineering, not seamanship. Almost no line or shipboard officers had salvage experience.

Illustrative of the hazards of this lack of ready expertise was the December 1916 stranding of the submarine *H-3* on a beach near Eureka, California. After rejecting civilian bids to refloat the boat, the commandant of Mare Island Navy Yard decided to try the twenty-one thousand horsepower of the armored cruiser USS *Milwaukee* (C 21). Attempting a straight pull in a heavy cross-current, the cruiser was soon "in irons"; she broached, went aground, and became a total loss. *H-3* was later salvaged by a civilian company for $18,000. Any experienced salvage engineer, after only a brief inspection, could have predicted the futility of *Milwaukee*'s effort; and any experienced salvage seaman-operator would have taken greater precautions against the current.

With the U.S. entry into the war in 1917, the need for a salvage organization became evident. The sea lanes had to be cleared of vessels breaking down or stranding, and there were numerous harbor clearance and repair tasks to be done, mainly in French ports. The Navy first attempted to provide to the British (who had made an urgent request) civilian salvage ships from the three American salvage companies then in business on the East Coast. When none of these three felt the risk was justified, salvage ships from the firms of Merritt and Chapman

(New York) and T. A. Scott (New London, Connecticut) were taken over by the Navy, and experienced salvors were put into uniform as reservists. Overseas, significant successes were achieved in keeping ships moving and ports open in the face of the U-boat assault. At home, a patchwork squadron of ex-fishing boats with commandeered civilian equipment was assembled. It assisted numerous commercial and naval vessels in the North Atlantic, pulling, for example, the battleship USS *Texas* (BB 35) and the gunboat *Don Juan d'Austria* off the beaches at Block Island and Woods Hole, respectively.

At the end of the war, this salvage organization was almost completely abandoned. In order to retain some salvage capability but without great expense, the Assistant Secretary of the Navy, Franklin D. Roosevelt, worked out a deal with the two remaining salvage concerns on the East Coast (one having gone bankrupt). The two companies were allowed to buy new, surplus *Bird*-class minesweepers at scrap-value prices and were merged to form a commercial firm (Merritt, Chapman, and Scott) under Navy contract. The company established salvage bases on both coasts, with four ships east, one west. The contract—which allowed the salvor to refuse work if the risk appeared too great—was administered by the Bureau of Construction and Repair, which was staffed by CC officers. (This bureau was later to become the Bureau of Ships (BUSHIPS), and is now the Naval Sea Systems Command (NAVSEA).)

The record of contracted and mixed naval-and-contractor salvages in the interwar years was generally satisfactory. Four stranded warships were successfully retracted—USS *DeLong* (DD 129, in 1921), *S-19* (1925), *S-48* (1925), and USS *Omaha* (CL 4, in 1937). U.S. naval salvage's long suit in these years (though the number of people involved was small) was engineering and diving expertise. In the areas of submarine rescue and salvage and, consequently, deep diving, the U.S. Navy's capability became the best in the world. Of nine submarine sinkings from 1920 to 1939, seven were raised, and the depths involved accelerated the development of helium-oxygen diving. The failure of early attempts to save trapped survivors resulted in the fitting of submarine rescue ships with McCann Rescue Chambers, which fitted onto submarine hatches.

These efforts remained generally within the Construction Corps and submarine communities, but they provided the nucleus from which our World War II salvage forces were to grow. By no means the least influential of those involved was Captain Ernest J. King, who, as commander of the submarine base at New London from 1925 to 1927, was involved with the raising of the submarines *S-4* and *S-51*. King was never to lose sight of the importance of the salvage mission and its requirements for experienced men and materiel. On the other hand, from this experience there arose in the salvage community a submarine-focused segment that was separate, both organizationally and fiscally, from the "surface side."

In other ways, however, all was not well. When seven destroyers in formation ran aground in 1923 at Honda Point, California, no salvage assets were available and all seven were lost. Also, in 1920 the submarine *H-1* sank during salvage after a grounding. As with the *Milwaukee* in 1916, the post–World War I Navy, despite its engineering and diving capabilities, had not developed the specialized operational skill and seamanship needed for salvage. "In the more complex jobs, a vital element in the equation for success—the *specialized knowledge of salvage techniques and seamanship*—was not resident in the Navy but was provided by a contractor."[2]

In 1938 the Navy's salvage contractor abandoned West Coast operations as uneconomical, forcing the Navy to begin a real salvage organization in the Pacific. When the U.S. entered the Second World War, there was only one shore facility on the Pacific coast, in San Diego. The U.S. Navy salvage forces were produced, then, out of necessity; "grey-hulled" (that is, naval-manned) ships were built for overseas duty in a crash program. At the onset of war, large numbers of civilian tugs were taken over, and twelve civilian and Navy ships were chartered to a firm which was given the Bureau of Construction and Repair contract for salvage on the East and West coasts. These efforts were overseen by a newly created Supervisor of Salvage (SUPSALV), under the Navy Bureau of Construction and Repair. These civilian ships and their shore stations, collectively called the Navy Salvage Service, performed all salvage in North and South America—except Alaska after 1943, when a New Year's Day grounding caused by drunkenness led to the loss of the salvage ship USS *Rescuer* (ARS 18).

In American waters alone the Navy Salvage Service reclaimed over $675 million worth of ships and cargo in over seven hundred salvage incidents, at a cost of under $20 million. A civilian-run salvage school was started in New York City; it trained 2,500 salvage officers and divers as they worked to raise the 1,029-foot, 65,000-ton USS *Lafayette* (AP 53, the former French liner SS *Normandie*), capsized alongside Pier 88. These men, and others who received their training on the job at Pearl Harbor, constituted the body of expertise for the massive wartime tasks of overseas harbor clearance, underwater repair, rescue towing, firefighting, stranding salvage, and even deep diving for intelligence exploitation of sunken enemy ships.

The Navy built scores of rescue ships (ATAs and ATRs) to support fleet operations or warship concentrations and to rescue sailors and seamen; sixty-nine fleet tugs (ATFs) for towing within convoys and fleet operations (the ATFs were powerful enough to tow a Liberty ship at seven knots, the nominal speed of slow convoys); nine wooden and twenty steel-hulled salvage ships (ARS); a dozen battle damage repair ships (ARB); four lift craft (ARSD); three dozen landing craft repair ships (ARL); three salvage craft tenders (ARST); eleven deep-diving and submarine rescue ships (ASRs); a wide variety of floating docks (ARD, ABD,

ABSD, AFD); and numerous miscellaneous landing craft configured for salvage and repair.

The hundreds of ships, landing craft, and aircraft that the salvage forces saved and the many harbors they cleared were essential to the war effort. The oft-repeated observation of naval commanders that salvage units were highly effective but too few was borne out by the number of missions they accomplished and their hectic work pace. Ships' logs show them towing, changing propellers, raising wrecks, rescue-towing, fighting fires, or debeaching *daily or more often* for months at a time.

The Postwar Years

The massive and crucial harbor clearance efforts of World War II were not repeated. Korean War salvage was fast-paced and crucial but on a much smaller scale than in 1941–1945. The Suez Canal clearance of the late 1950s—while massive—was multinational, involved both military and civilian forces, and was accomplished without opposition. Accordingly, maintaining high levels of salvage capability in immediate readiness would have been disproportionately expensive, so the massive derricks, numerous support craft, and qualified uniformed personnel required were mostly discarded and their roles let out to contractors. However, the postwar Navy had been left with tremendous salvage assets and a unique organization—the Navy office of the Supervisor of Salvage, that continued to administer (as it does today) civilian salvage contracts.

Vietnam. By the start of the Vietnam War, while the Navy still possessed and operated many World War II–era salvage ships (ATA, ATF, ARS, and ASR), there were no military units dedicated to harbor clearance. Pools of ready portable salvage assets (pumps, compressors, etc.) and some yard and lift craft existed in mothballs;[3] also, SUPSALV had conducted clearance operations in a peacetime setting with a variety of assets. The need for a uniformed, combat harbor clearance capability became evident when the USNS *Card* (T-AKV 40) was mined at Saigon in 1964. A patchwork team that included two salvage ships refloated and removed the *Card*; but the operational problems experienced in the process led to the formation of a Harbor Clearance Unit (HCU 1) in the Mekong Delta, with a floating base ("mother" craft or a YRST).

HCU 1 was organized and equipped along World War II lines and was furnished with both heavy and light lift craft, a shore base, and converted landing craft and boats. This unit kept the Mekong Delta clear by removing innumerable sunken boats and aircraft, four grounded or sunken ships, and three sunken dredges. It also provided "fly-away" units (i.e., that travelled by air to salvage sites) to assist in strandings all over Southeast Asia as well as battle damage and

recovery operations. HCU 1 was often under fire, and most of the craft and ships it raised had been sunk as a result of enemy action. When the war ended, the Navy retained two Harbor Clearance Units, but much of the heavier equipment was gradually discarded.

The '70s and '80s. Two developments in the years between the end of the Vietnam War and the Persian Gulf War of 1991 are of particular importance. The first was the maturing of ocean technologies that had been rapidly advancing since the Second World War; the capabilities that emerged had a profound effect on the U.S. Navy salvage mission and its organization. For several decades, the Navy had enthusiastically pursued a "Man in the Sea" program, which took advantage of the unprecedented depth and duration of saturation diving; both manned and unmanned submersible technology advanced in the sixties and seventies. However, by the late seventies the offshore oil industry's experience confirmed Navy lessons from submarine rescue and classified underwater operations that saturation diving is highly dangerous and expensive. The answer was a surge of research and development in the area of unmanned remotely operated vehicles and manned submersibles. The results, coupled with advances in sonar, computer technology, and highly accurate vessel positioning, produced underwater systems of such efficiency and reliability that saturation diving technology was eclipsed in most applications. Accelerating since the early 1980s, these technological advances have dramatically expanded the salvage mission of deep object recovery, placing within our (and others') reach objects and depths inconceivable only ten years before.

The second major development, and this time a negative one, was the aging and dwindling of the Navy's salvage fleet. The end of World War II, as noted, had found the Navy with many capable salvage ships. But in the postwar decades this force was added to only sporadically, and its increasingly obsolescent vessels began to retire. By the end of the 1980s the "grey-hulled" salvage force consisted of four *Safeguard* (ARS 50), three *Edenton* (ATS 1), and two *Pigeon*-class (ASR 21) ships of recent construction, seven modern ATFs assigned to the civilian-manned Military Sealift Command (MSC) and fewer than two dozen World War II–era vessels. By 1994 it dropped to nine Navy ships (ATS, ARS, and ASR) and, in the Military Sealift Command, seven salvage tugs (T-ATF); by 1996 there are likely to be only four naval vessels, all of the *Safeguard* (ARS 50) class, and ten MSC (seven T-ATFs and three salvage and rescue ships, T-ATS).

As a result, Navy salvage ships in the 1980s were kept constantly busy; as their numbers declined, civilian contractors and the MSC vessels took up the slack. In addition, battle forces, even amphibious groups, seldom included a salvage component. An entire generation of operational commanders grew up without exercising salvage ships. This deficiency was the result not only of the paucity of

Navy salvage ships but also, until the end of the Cold War, the result of the U.S. Navy's focus upon aircraft carrier battle force operations on the open ocean. Save only for operations during the 1980s in "havens" like Vestfjord in Norway, salvage ships found no place in such warfare; they could not keep up with the battle groups.

Yet war against the Soviet navy did not occur. Between the war in Vietnam and the war in the Persian Gulf, what did occur were numerous groundings, collisions, fires, and hostile actions; and in all of these the lessons of World War II were repeatedly applied. In the Persian Gulf, for example, the frigate USS *Davidson* (FF 1045, which suffered an engineroom fire), the USS *Stark* (FFG 31, hit by an Iraqi missile), and the USS *Samuel B. Roberts* (FFG 58, nearly broken in half by an Iranian mine) were assisted by Navy combatants or commercial tugs, not U.S. Navy salvage ships. The services of a cruiser, USS *Leahy* (CG 16), were lost while it towed *Davidson* more than two thousand miles to Diego Garcia. Warships could not be risked in a minefield to rescue *Samuel B. Roberts*, although she was assisted by helicopters delivering damage control equipment.

Ironically, U.S. Navy salvage ships could have done these jobs had they been assigned to the area. There were also many other ways in which such vessels could have been useful, including salvage of wrecks from the "tanker war," convoy escort, mine countermeasures "mother-ship" duties, light salvage, port visits, intra-theater cargo hauling, underwater repairs, diving, and participation in joint and combined exercises. Throughout these years the Navy had enough salvage ships to provide a continuous capability in so important an area as the Middle East, but from 1979 until Desert Storm it did not do so, and neither did it assign a salvage officer to the staff of the Commander, Middle East Force (COMIDEASTFOR).

Desert Storm. When Iraq invaded Kuwait in August 1990, no Navy salvage ship, salvage equipment, or land-based salvors were in that theater of operations, nor had any been requested. Moreover, because salvage did not appear in any operations plan and there was no salvage officer on the staff of the Commander, Naval Forces, Central Command (COMUSNAVCENT), no assets had been programmed to be sent to the region. In a frantic effort, the Supervisor of Salvage at the Naval Sea Systems Command dispatched Navy experts to the region, where they scrambled to set up a salvage organization and get resources to the theater. These resources included ready access to salvage funding that was, by law, centrally controlled. The U.S. Army, by contrast, had pre-positioned and pre-programmed the 7th Transportation Group's harbor maintenance and diving equipment; it was in place by September 1990. Not until mid-January 1991 did the U.S. Navy establish a salvage force responsive, through COMIDEASTFOR,

to the naval component commander, COMUSNAVCENT. This force consisted mainly of contracted vessels and 325 tons of portable salvage gear. Salvage officers in the theater determined that in order to handle two or three vessel casualties at once, two or three Navy salvage ships would be necessary, along with fifty to seventy-five shore-based enlisted clearance and salvage divers. In fact, only one ship, USS *Beaufort* (ATS 2), four salvage officers, and one portable recompression chamber with its team were on the scene before the end of the war made the problem moot.

The salvage organization did accomplish many small but essential tasks: underwater hull inspection, ship repair (at sea, in forward areas), underwater recoveries (one helicopter, one aircraft, and four missiles), and minor harbor clearance (stabilizing sinking ships, removing floating wrecks, and raising a patrol boat). More importantly, it was also able to provide immediate response to the mine-stricken USS *Tripoli* (LPH 10) and USS *Princeton* (CG 59). In fact, by prompt assistance, inspection, and technical advice, it may have saved the latter from breaking up. That effort involved flying aboard a repair ship's Battle Damage Assessment Team with a salvage engineer in charge, and then arranging for the Navy's only available salvage ship to conduct an underwater inspection before towing the *Princeton* out of the combat zone; she was eventually passed off to a civilian charter tug with a Navy liaison group embarked. This response, which took only hours, stands in marked contrast to the case of USNS *Andrew J. Higgins* (T-AO 190), which remained aground for three days (2–5 January 1991) awaiting the arrival of divers and an experienced salvage engineer from Subic Bay. Had the weather been worse, *Higgins* might well have suffered much greater damage or even been lost; as it was, her damage was undoubtedly exacerbated by her prolonged working on a submerged (and uncharted) pinnacle.

The naval salvage assets deployed for Desert Storm were much needed, well used, and operated to capacity. However, they were sufficient in number, one may conclude, only by good luck. That is, certain likely and very demanding scenarios (some of which had been actually expected)—multiple missile hits, grave damage to more than one ship simultaneously (the damage to *Tripoli* was less than grave, but she hit a mine on the same day *Princeton* did), two major groundings, battle damage from an amphibious assault, or the need for a rapid and extensive harbor clearance to support a stalled ground offensive—did not occur.

Furthermore, when active hostilities ended, streamlined access to wartime salvage funding ended as well. Frustration soon resulted, because COMIDEASTFOR (under COMUSNAVCENT) still faced recovery and harbor clearance operations beyond the capability and capacity of available naval resources. For example, when operational commanders desired to recover objects from a downed aircraft, sophisticated civilian resources, including side-scan sonar

and remotely operated vehicles, were required. However, the Chief of Naval Operations office whose funds were required chose not to release them to NAVSEA, and the parts were not recovered. In the harbor of Ash-Shuwaikh in Kuwait a commander was again unable to accomplish an operational task because he did not control the necessary funds; the result was that this harbor was not cleared (other than of mines) by the Navy at all, but later, by civilians. A contrasting example of what could have been done had the commander possessed more resources was Ash-Shuaybah, where a team of U.S. Navy salvage officers, a few senior enlisted men, and U.S. Army dive teams and equipment were able to raise an Osa II missile boat.

These examples are not given in order to argue that any particular project would have been worth the money to the Navy. The point is that operational commanders did not have, under their direct control, the means to accomplish even relatively modest salvage tasks.

Where We Are Now

What should two world wars and two "major regional contingencies" (as we are learning to call them) have taught us about operational naval salvage? First, salvage forces are necessary to keep sea lines of communication open and to clear port facilities blocked by sunken vessels. Second, amphibious and mine clearance operations require particularly extensive salvage support. Third, forward battle damage repair is best performed by specialized vessels capable of towing, firefighting, and damage control, and integrated into the combatant force. Fourth, successful salvage of any kind in an operational environment demands specialized and distinct resources in seamanship and engineering, both of which the commander must knowledgeably and directly control. Finally and most fundamentally, we learned that naval, not civilian—whether contracted, Navy-augmented Military Sealift Command, or chartered—salvage ships are essential, because of their ability to integrate into battle groups in forward, fleet, or combat environments. Though a useful adjunct in rear areas, civilian-manned salvage has never been adequate for wartime needs. While dependence upon civilian-manning and contracting is attractive in peacetime, especially as a matter of economy, it seriously risks costly and fatal inabilities to react rapidly to conflict or disaster.

Desert Storm revealed that in certain important ways the U.S. Navy had not digested its experience; some lessons had to be relearned under fire, and others remain unlearned today. Although individual skills and specific technical competencies involved in salvage remain, the Navy's ability at the operational level to utilize the much smaller fleet salvage force is seriously degraded. There is a lack of expertise on operational staffs; accordingly, planning for the salvage mission is inadequate. Naval forces are deficient in organization for salvage, in

the ability to obtain and employ salvage contractors, and in integrated salvage assets—especially naval-manned, but even MSC.

Unity of Command. The historical dichotomy between the engineering and operational aspects of salvage has grown as ships have become larger. While a simple task can often be handled by either an experienced operator or an engineer, for a complex operation the expertise of both the "operating salvor" (i.e., line officers and divers) and the salvage engineer are necessary. Further, the advance of technology has made it much more likely that a given salvage project will be more complex and also that short-notice operations, at least, will require the cooperation of U.S. Navy, MSC, civilian, U.S. Army, and sometimes allied assets. In addition, compelling legal, technical, and budgetary factors have concentrated a vital portion of Navy salvage capability and funding in the hands of the Supervisor of Salvage, not under the direct control of naval component commanders. Navy operational commanders are generally unaware of these special resources, their capabilities and organization, or of the planning factors that directly affect their effectiveness.

Further, when projects must be done in conjunction with contractors, the systems commands (rather than operational commanders) contract and coordinate with commercial salvage contractors and often supervise the actual operation. It is a principle of war—and historically a very dangerous one to violate—that forces "must be so organized that the tactical commander has unquestioned control over his own logistical support allocated to his use."[4] This control is unquestioned with respect to naval ships and teams, or non-contracted MSC vessels like the T-ATFs. But, as the head of Ship Repair Unit at Bahrain stated after Desert Storm, "The idea that every salvage task had to first be approved and signed as a contract task order was abhorrent to everyone in the fleet. You cannot build a civilian operation into a military organization in the middle of a war. . . . The salvage line of communication by commercial land line and INMARSAT [communication satellite], both in and around the Gulf theater and direct to Washington, coupled with the civilian salvage contract, placed salvage outside the theater military [command, control, and communications]."[5] Interestingly, the managing director of the major civilian contractor agreed: "The USN combat salvage command structure should be vertically integrated, culminating with a senior salvage officer on the staff of the top operational command—with budgetary authority for all required in-theater salvage commitments."[6]

The existence of a parallel chain of command leading from a combat zone to the shore establishment is also outside the experience of almost all Navy operational commanders. It virtually guarantees misunderstanding, miscommunication, and non-coordination between the two commanders and their

respective subordinates. In such conditions it is almost inevitable that operational planning for salvage will be inadequate—as it was in Desert Storm—and that the operational commander will be obliged to make up the deficit in the heat of action.

In practical terms, the problem stems primarily from the fact that the operational commander does not have control over relevant funds. During Desert Storm, the Supervisor of Salvage sent officers with contracting authority to work directly for the commanders in the theater; however, they were still required to communicate with Washington for contract administration. Also, as soon as the cease-fire occurred, peacetime salvage procedures again applied, thwarting the operational commander in several instances.

Over-dependence on Civilian Salvors. The use of civilians in salvage is a long-established fact of life. However, naval salvage resources have been so severely depleted that commanders will be obliged to rely far too greatly upon civilian contractors. The U.S. armed services as a whole no longer possess the quantity or types of salvage vessels and equipment required for many conceivable contingencies. In 1950, the USS *Missouri* (BB 63), aground near Norfolk, was pulled free by an all-naval effort involving eighteen salvage ships, seventeen purchase ground legs, and seven yard tugs. This assemblage exceeds the present inventory of salvage ships in the entire Navy and Military Sealift Command combined. The U.S. Navy cannot perform its own harbor clearance; civilian cranes, berthing barges, and lift craft are necessary. Deep object recoveries are often beyond its capability; they require specialized civilian assets. In short, there is often no way for the operational commander to avoid using civilian firms, even for critical requirements, even directly in the combat area.

For legal and financial reasons, however, civilian tug assistance is rarely available in a combat environment.[7] In each of the pre-Desert Storm Persian Gulf cases previously mentioned, a Navy salvage ship could have done the assistance job better than the combatant that was suddenly assigned. There would have been no need to ask (and pay) civilians to operate in a combat area; the assisting combatant would have remained free to perform its intended mission; and a less expensive ship would have been risked in the rescue attempt.

Ultimately, however, civilian assets cannot be counted upon in the most critical and hazardous combat-related scenarios, simply because they are not military. To say this is not to impugn the courage, devotion, patriotism, or skill of these individuals and firms; civilian salvors have voluntarily undergone great danger. They have also, however—in both world wars, in Vietnam, and the Persian Gulf—been known to refuse to go in harm's way or to increase their rates exponentially as danger increased. It is their right, from some viewpoints their obligation, to do so. But in the extreme case—and the military exists for

extreme cases—a commander cannot rely on someone who can legitimately say "No." As an experienced planner cautioned, "If USS *Princeton* had gone hard aground after the mine strike, the decision for *Smit New York* to go into mined waters or under hostile gunfire would have been made back at Smit International Headquarters in Rotterdam, and not by the ship's master or the Navy Salvage Coordinator. In spite of Smit's willingness to go in harm's way, it is difficult to say what the outcome of such a decision would be until it actually happens. The financial and liability issues are considerable."[8]

To a worrisome degree, we are going to have to live with these ills and others like them. As for the division of responsibility and control of salvage operations, administrative efficiency and budgetary constraints inevitably lead to the centralization of specialized support functions, and the needs of "users" will conflict with the concerns of "owners." As for over-dependence upon civilian resources, the obvious remedy would be for the Navy to build for itself all or most of the specialized, highly capable, and numerous salvage vessels its future commitments are likely to require. That would be an easy recommendation, but a useless one; while the salvage capability has a strong claim to a place in the "recapitalized" force of the coming decade, a large new "grey-hulled" salvage fleet is simply not in prospect. However, there are things that can realistically be done to reduce the worst effects and put operational commanders in the best practical position with respect to salvage.

To assist the commanders of fleets, forces, and joint naval components, operational salvage officers who have experience in planning, along with salvage engineers skilled in the execution of maintenance and repair, should be assigned (if only on additional duty) to the commanders' staffs. Navy operational planning doctrine, especially in the amphibious area, should be reviewed by systems command and operational salvage specialists; the resulting revisions should take adequate account of salvage, with specific reference to sea lane clearance, amphibious support, harbor clearance, deep object recovery, and battle damage repair as separate but interrelated missions. The military and civilian resources available at the systems commands should be made known to the planning commander, which should in turn lead to the involvement of those commands in the planning and doctrine-review processes. Battle group and naval component organizations should be altered to provide for a salvage coordinator directly subordinate to the commander, controlling a salvage organization that flexibly addresses each salvage mission and balances centralization of resources with local execution. It also should be possible to prearrange SUPSALV funding and to preposition the equipment to be used—and operationally controlled—by maritime commanders.

Naval salvage assets, especially vessels, can and should be assigned more often to participate in exercises (the South American UNITAS cruise, for example) and in actual power projection, forward presence, and evacuation missions. A naval salvage ship should always be on station with the U.S. Navy Middle East Force. Finally, when conflicts begin to develop, early action must be taken to concentrate "grey-hulled" salvage ships and clearance forces capable of operating with battle groups so that reliance upon civilian resources "at the point of the spear" is minimized.

Notes

1. Despite a warship's greater horsepower, rigging and hawser constraints normally force her to tow more slowly than a salvage ship, which has a wire tow hawser and an automatic towing winch. This differential in tow-speed increases with the size of the vessel being towed and severity of the weather.

2. C. A. Bartholemew, *Mud, Muscles, and Miracles* (Washington: Naval Historical Center and Naval Sea Systems Command), p. 48. (Emphasis supplied.)

3. As a technical note for non-salvors, a salvage ship is often not an optimal platform for major harbor clearance operations, although it can accomplish many simple clearance tasks and provide whatever portable gear it carries and function as a base. A salvage ship's lifting capability (in and out of water) is generally not sufficient for major clearance, and of course it is not available for other salvage missions while engaged in (often lengthy) clearance operations. The use of the salvage ship, then, seldom obviates the need for harbor tugs, yard craft, derricks, etc., for major clearance operations.

4. H. E. Eccles, *Logistics in the National Defense* (Harrisburg, Penna.: Stackpole), p. 125.

5. Commander Naval Sea Systems Command, *Operation Desert Shield/Desert Storm Salvage, Vol. II Interview Report* (Washington: July 1991), p. 64. Interview of Captain Patrick Shepard, USN.

6. Commander Naval Sea Systems Command, p. 38. Interview of Mr. Roger Elliot.

7. Commercial salvors generally work on a Lloyd's Open Form contract with a "no cure, no pay" provision. This contract awards a percentage of the value of salved property, based on the difficulty and danger (considerably greater in conflict) of the salvage. The salvor has a lien on the property salved until adjudication of the salvage award. This proviso has caused legal problems in the past with the rescue and salvage of U.S. Navy ships; theoretically, it could result, for example, in an award of 10 percent of the value of an Aegis cruiser. The system also subjects commercial salvage companies to dramatic fluctuations in cash flow; accordingly, these firms often do not make themselves available, or at least only to a very limited extent, in most non-lucrative areas of the world.

8. Commander Naval Sea Systems Command, p. 10. Interview of Mr. Richard Asher.

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Wisdom should reckon on the unforeseen.

G. K. Chesterton
"The Blue Cross," 1911