FLOATING DRYDOCK, USS *Tortuga* (LSD 26), disgorges LVTs and LVT(A)s during tests conducted at Sagami Bay, Japan.

Navy's LSDs Carry a 'Kangaroo Punch'

IT was the morning of the invasion. The eastern sky glowed with morning sun and mist as a huge Navy task force lined up off the coast of North Korea. A helicopter spotter had reported that the channel ahead was filled with mines and the ships would not be able to move through it.

Then out of the mist it came—an unusual ship-of-war with a blunt, stubby bow, a huge bridge house and weird lines that sloped away to a squared-off stern that looked like the back end of a truck.

The strange vessel moved smoothly through the water straight toward the mine-infested channel. Then, all at once, it squatted down in the water like a mother duck covering her brood. When its hull was half submerged the flat stern folded downward into the sea and revealed that the ship's interior was flooded with sea water. A Marine with the task force looked at his buddy. "What kind of ship is that?" he asked. "A ship that fills with water but doesn't sink?"

Then as if in answer to the question, a roar of motors came from the strange vessel. A haze of blue exhaust smoke appeared over its superstructure and through the gaping hole where the stern had been came a bevy of "ducklings"—a small navy of pint-sized minesweepers, LCMs and LCVPs that had been fitted out with special minesweeping gear.

As they came out the "ducklings" circled behind the mother ship. Then they formed a line three abreast, streamed their sweeping gear out behind them and moved through the mine-infested channel. The boats were staggered so that the area covered in their sweep would overlap and no part of the channel would be left unswept. The path they cleared would allow the bigger ships to move in.

Navy's Seagoing Garages, Born in World War II, Prove Versatility in Korea

When their job was done the "ducklings" streamed back to the mother ship and entered the open stern. The stern gate closed up behind them and the big ship steamed away slowly rising out of the sea as it disappeared back into the mist.

This unique ship made its initial apearance in World War II. She was named "LSD" (for landing ship dock) and her function was to carry and launch landing craft with amphibious task forces in the Pacific. However, it wasn't long before she was doing all sorts of odd jobs for the fleet. She's a ship with a 'kangaroo punch.' Her ability to take aboard small boats and ships made her an ideal dry-dock repair ship. Her huge docking-well enabled her to carry tremendous cargoes of invasion equipment. She was an important

cog in the amphibious wheel. Now in Korea she has added another job to her list of duties—that of a mother to minesweepers.

She steams along in convoy with her docking-well filled with little minesweeps ready to be turned loose at any spot they're needed to clear a path for the task force. Where combat forces were previously hampered by having to move slowly so that regular-type minesweepers could keep up with them they are now able to steam along on their missions at full tilt.

At first glance an LSD looks like something that got away from its builders before it was finished. It has a tremendous shell of a hull and a docking-well 396 feet long and 44 feet wide which tunnels from the stern clear up under the bridge to the bow.

The vast docking-well is only 60 feet short of the entire length of the LSD. In it will fit 27 LCVPs, 18 LCMs with one LCVP in each, three LCUs, one LSM—or anything narrow enough to get through the stern gate.

An LSD has a "superdeck" of steel grating that covers the top of her water-garage. On this grating go 350 tons of invasion cargo which may include tanks, cars, trucks, jeeps or other vehicles.

The superdeck comes in six-ton sections and has a six-ton traveling bridge crane that rides tracks along the top of the wing-walls. This crane can lift the deck sections overboard when they are not needed.

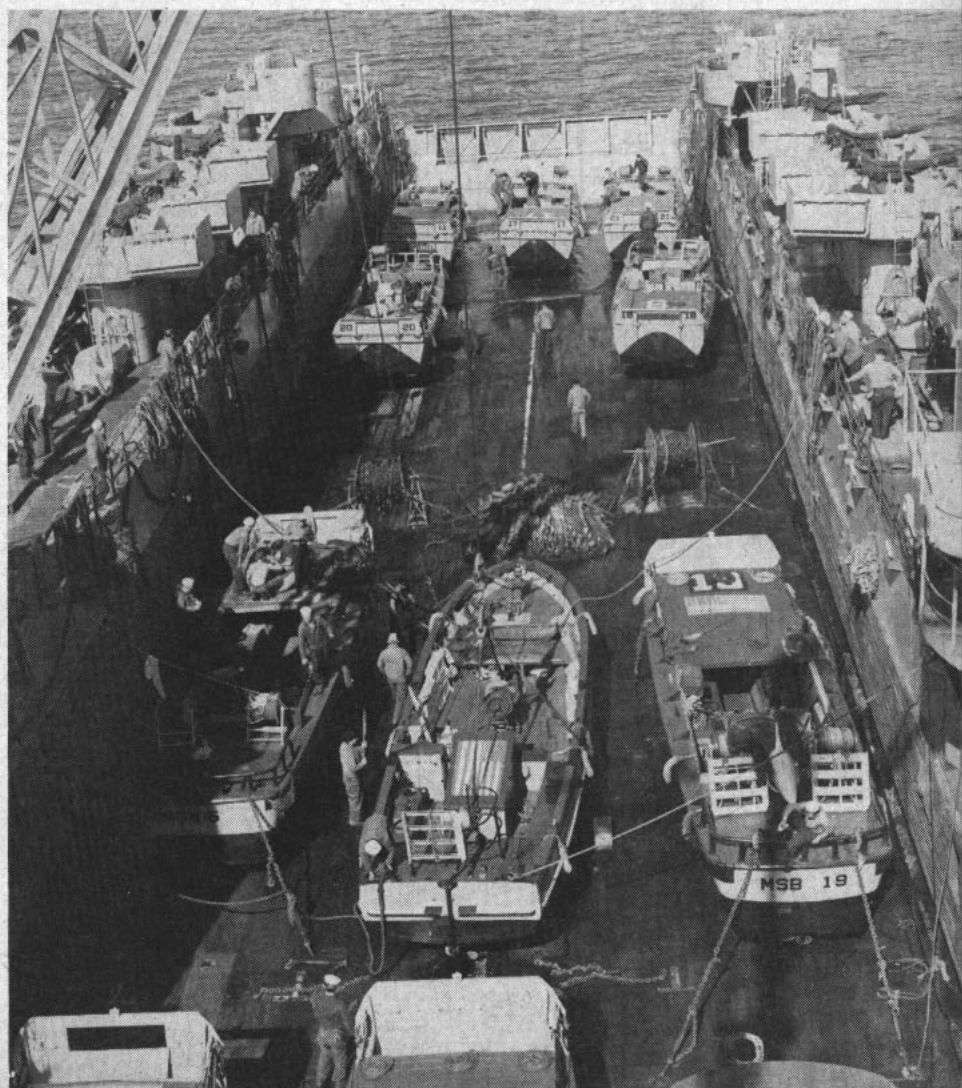
The average LSD has a crew of 330 men and 18 officers. Her big 7000-horsepower reciprocating engines enable her to steam along at 16 knots.

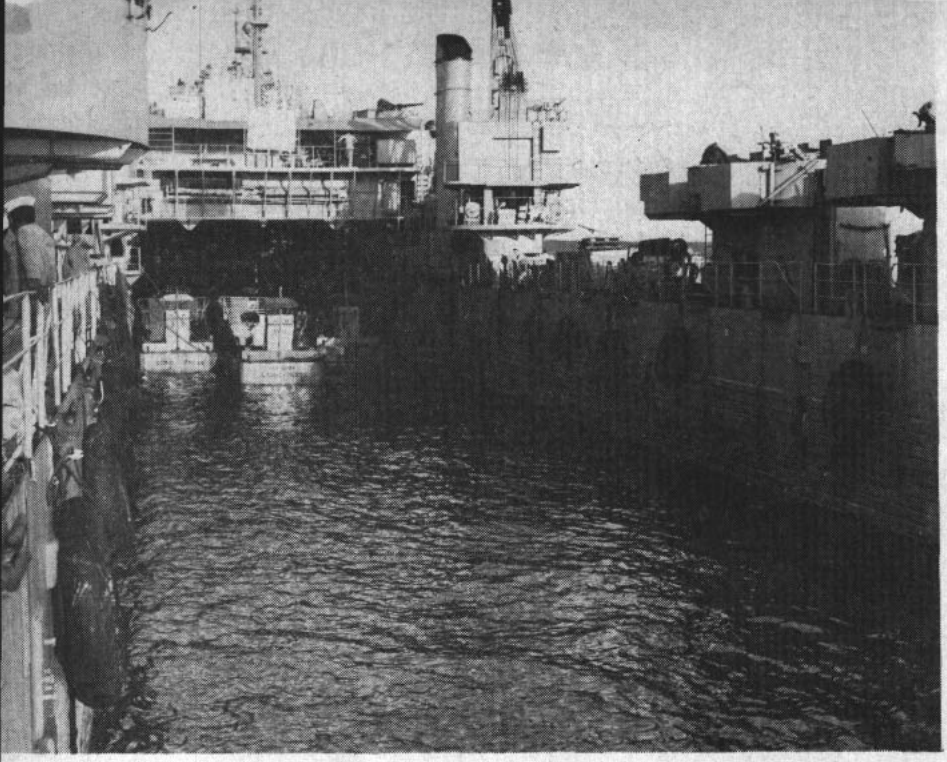
It takes about an hour-and-a-half to ballast her down until there's enough water in the docking-well to float the small craft. In order to save time, ballasting is usually started while still underway.

Men with telephone gear stand at six different stations around the ship to report ballast progress as the ship takes on water. Each phone connects with the ballast control center—a tiny shelter on the starboard wing-wall lined with huge panels of wavering dial needles that gauge the ballasting.

Crewmen are careful to see that there are no half-full tanks with "free surface" where water can slosh around. If the ship is rolling in a

UNITS of amphibious tank and tractor battalion churn waters leaving LSD. Below: Minesweeping boats are readied in well deck of LSD at Wonsan, Korea.





WELL DECK SUBMERGED, USS *Colonial* (LSD 18) waits for return of LCMs. LSDs can hold 18 LCMs—each with one LCVP—or 27 LCVPs, three LCUs or one LSM.

heavy swell, free surface water will slosh steeper than the roll and tend to keep the roll going. If the roll is big enough it could cause a lot of damage.

Here is a "blow-by-blow" account of a typical LSD minefield operation:

When approaching the mine field the engineering officer orders the stern gate to open slightly. Slowly the ship starts to settle in the sea and the docking-well fills like a big washbowl.

By the time the destination is reached, 7000 tons of salt water have flooded the docking-well to a depth of six feet or more.

Arriving at the mine field, the engines stop and the LSD turns into the wind. Gears groan, and now the stern gate goes down, folding neatly in half and doubling back under the stern. Inside, the noise of the boat engines fills the well. Three at a time, the little sweepers emerge from the cloud of fumes to circle the mother ship like a young brood enjoying their freedom for the first time and excited by the unfamiliar surroundings.

Now they form groups and proceed to carve a path for the bigger sweeps that will follow later. Because of their small draft, minesweeping small craft can penetrate shallow areas without danger of running aground and can clear places that the standard sized minesweepers can not reach.

With their part in the sweeping operation completed, the minecraft head back to the LSD, which is standing by. The boats form two circles off each quarter of the ship's stern while they wait to be "called in."

Up on the after-end of the port wing-wall stands the docking officer with a power megaphone giving the signals. Like the Landing Signal Officer on an aircraft carrier directing flight landings, he is responsible in bringing each of the boats back aboard safe.

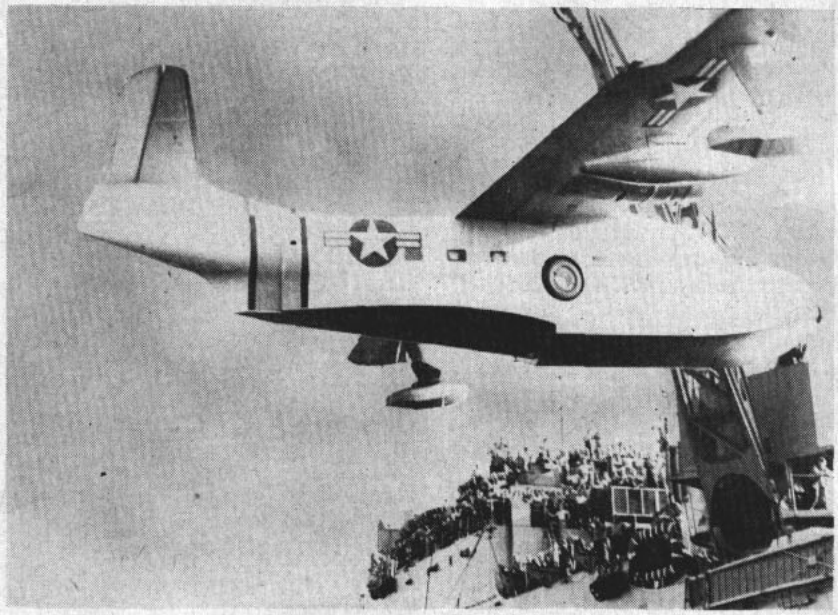
A typical command goes like this:

"No. 6 aboard center—7 and 8 follow port and starboard."

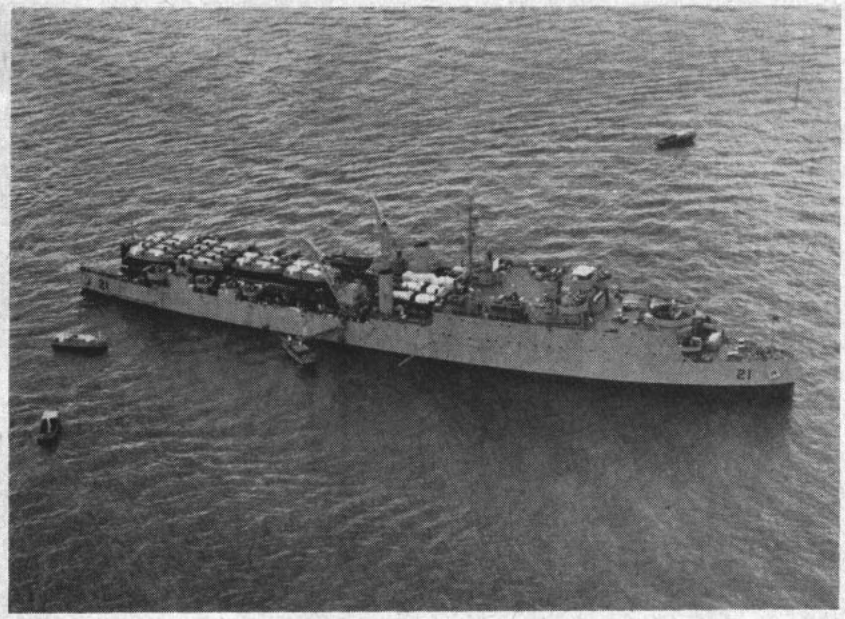
Immediately No. 6 roars through the stern gate right down the center to the forward end of the docking-well. No. 7 and No. 8 follow, flanking No. 6 until they are finally made fast with chain lashings. The loading proceeds three at a time until the last of the little craft are safely back to roost. Then the stern gate closes part way to allow the ocean inside to spill back out. Deballasting begins and the ship gets underway in short order.

All this is a pretty smooth operation in a calm sea. But when "Mama" LSD is heaving and rolling in rough weather it's another story. Only a highly skilled crew can handle the bounding small craft as they enter the heaving docking-well. The little boats whirl and spin, knock against the bulkheads and crash against each other like carnival cars.

On icy mornings in cold weather, steam lines have to be rigged to unfreeze the ballast valves so that the docking-well can be flooded and the stern gate lowered. Steam is also often applied to boat engines to warm them after a frozen night. The LCVP crews have the most rugged



'ALBATROSS,' disabled 14-ton amphious plane, is hoisted aboard versatile USS *San Marcos* (LSD 25) in unusual rescue mission in the Mediterranean.



STERN GATE OPEN, USS *Fort Mandan* (LSD 21) lies at anchor waiting for her 'brood' to return. Note cranes, grating which houses some 12 small boats.

job of all. The constant spray forms an icy film on their boats and although the men wear foul-weather clothing suitable for the arctic, long hours of rough-water, open-boat sweeping mean tough work in winter weather.

To make matters tougher, in combat areas boats must be backed into the well so they can be launched faster. Everything is timed to the last instant. As the boats start coming aboard after a sweeping operation, the mother ship begins deballasting at once, forward tanks first. If the engineers are on the ball, the forward end of the docking-well will be tipped up and dry and the first boats will be grounded seconds after they're lashed into place. Deballasting proceeds sternward so that as each threesome of boats is tied up they will be high and dry almost immediately.

Partial ballasting, so that only the after end of the docking-well is flooded, has other advantages. It enables the LSD to become a launching beach for amphibious craft.

LVTs (amphibious tanks), for instance, can be lowered from the superdeck to the bow end of the docking-well by crane. When ready to launch, the stern ballast tanks are filled and the after end of the well sinks into the ocean. The amphibs sitting high and dry in the bow end simply rumble down the sloping deck as though they were taking off from a beach. Going into the water halfway down they are afloat by the time they pass the stern gate. As each group of amphibs takes off others are lowered to the "beach" by the crane.

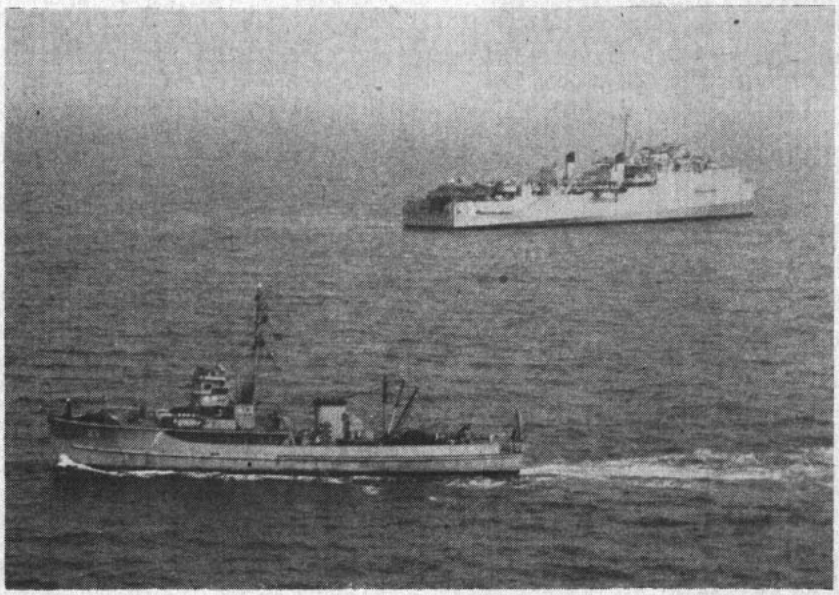
LSDs are versatile ships. For example, when a U. S. Air Force amphibious plane on a rescue mission landed at sea and was unable to take off again when it developed engine trouble, a request was radioed to Commander Sixth Fleet for help. Immedately USS *San Marcos* (LSD 25) was dispatched to render aid to the stricken plane.

Following its arrival at the scene of the downed plane, *San Marcos* hoisted the huge aircraft aboard with its powerful cranes. The plane, weighing 14 tons, and with a wing span of 80 feet and an over-all length of 61 feet, would have posed a spectacular problem for other types of ships. Hoisting it aboard was a praiseworthy feat for the LSD which accomplished the job without difficulty.

So that they will be able to do even more "odd jobs," two LSDs, USS *Lindenwald* (LSD 6) and USS *Gunston Hall* (LSD 5) have now been "winterized" for Arctic work. Their hulls have been strengthened and insulated to resist the pressing ice pack. Crane controls and deck equipment have been placed under shelter. The bridge is housed and there are steel shacks for bow and gun lookouts. New reciprocating engines will give the ships fast, sudden back-down power in ice floe regions.

Their availability for all types of tasks has earned the LSDs the respect of all Navymen and a prominent place in the fleet of tomorrow. Why not? What other ship can do a day's work and end up with a deck full of fresh fish?

That's no fish story—it is not at all unusual for an LSD to find after deballasting that her docking-well is covered with a good sized "catch" of flopping fish!—Ted Sammon.



MINESWEEPER USS *Mocking Bird* (AMS 27) clears water off Chinnampo, Korea, inshore of USS *Comstock* (LSD 19), shortly before a raid by marine units.