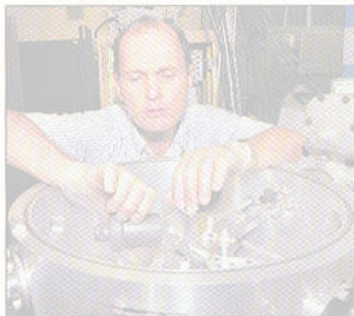


## Smoothing Fusion's Bite

The high temperatures needed to fuse light atoms erode the inside of fusion reactors. Researchers



*Eliminating erosion removes a roadblock to fusion power.*

have found that injecting deuterium gas into the containment vessel reduces erosion. "We may have resolved a major problem in fusion," says Bill Wampler, of Sandia National Laboratories in Albuquerque, N.M.

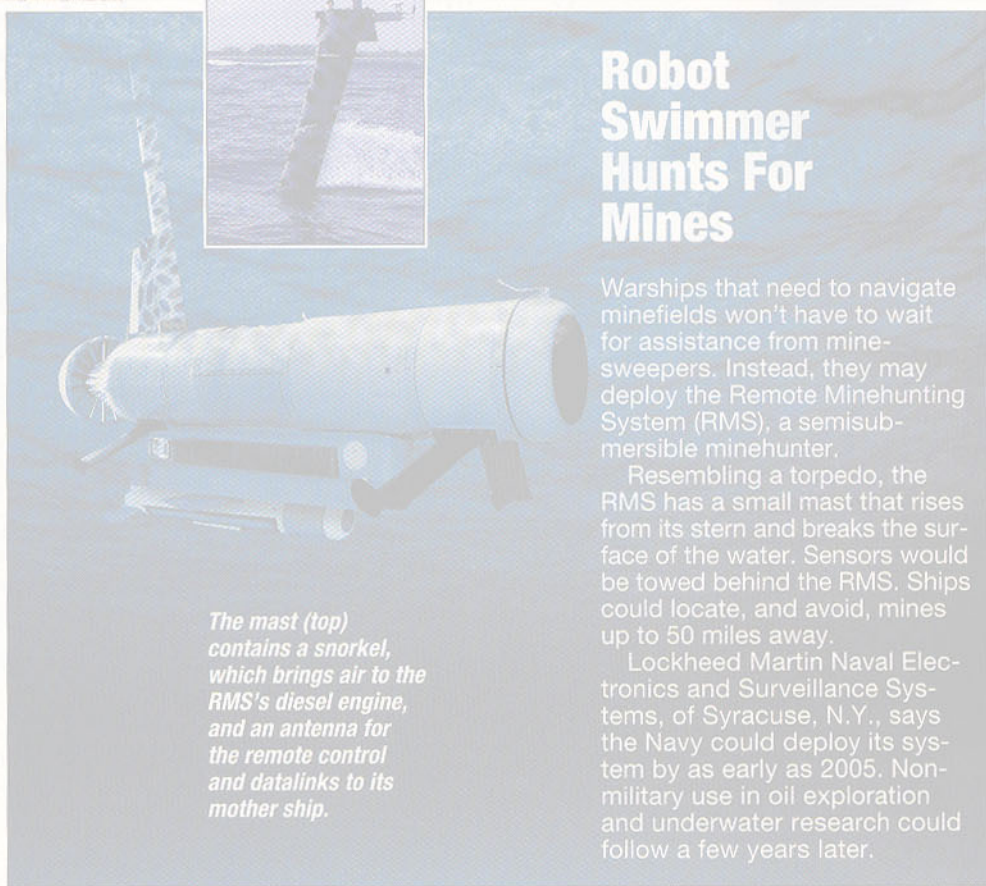
RANDY MCMEYER



## Successful Delta 3 Launch

After back-to-back failures, Boeing has finally sent its new Delta 3 rocket into orbit. Although the or-

BOEING



## Robot Swimmer Hunts For Mines

Warships that need to navigate minefields won't have to wait for assistance from mine-sweepers. Instead, they may deploy the Remote Minehunting System (RMS), a semisubmersible minehunter.

Resembling a torpedo, the RMS has a small mast that rises from its stern and breaks the surface of the water. Sensors would be towed behind the RMS. Ships could locate, and avoid, mines up to 50 miles away.

Lockheed Martin Naval Electronics and Surveillance Systems, of Syracuse, N.Y., says the Navy could deploy its system by as early as 2005. Non-military use in oil exploration and underwater research could follow a few years later.

*The mast (top) contains a snorkel, which brings air to the RMS's diesel engine, and an antenna for the remote control and datalinks to its mother ship.*

bit that the rocket reached was 1700 miles short of its 22,300-mile target, company officials say it was close enough to be considered a success.

The chubby Delta 3 is the successor to the work-horse Delta 2. High-energy propellant, bigger solid-fuel boosters and other improvements will enable it to place 8400-pound payloads in geostationary orbits. That is twice the payload of a Delta 2.

Boeing says its Delta 3 will be a transition rocket to a new class of advanced heavy-lift launchers—Delta 4.

Success has been a long time coming. A steering failure killed the first bird, barely a minute into its first flight in 1998, causing a spectacular nighttime explosion. A year later, a bad engine weld felled the second, so the third lifted a dummy payload. With confidence in the Delta 3 restored, 18 launches are now booked.

## Jet Lands In The Classroom

Cutaway models and computer simulators of jet engines can't match having your hand on the throttle as you spool up the genuine article. Turbine Technologies of Chetek, Wis., claims its Mini-Lab can bring this hands-on realism to any classroom with a standard wall outlet.

Behind the heavy polycarbonate viewing window is a fully operational SR-30 turbojet engine. The tiny 10-pound engine, which is only a foot long and 6 in. in diameter, develops 40 pounds of static thrust.



*The easy-to-maintain SR-30 engine reaches 87,000 rpm and can be restarted after a 1-minute cool-down.*

Sensors on and inside the engine are able to "talk" to either a stripchart recorder or a computer. This allows students to observe a jet's actual internal conditions under various operating conditions.

Lock-out devices prevent overzealous students from "flying" the SR-30 without a qualified instructor.

With jet travel expected to double in the next decade, this training tool has landed just in time.

TURBINE TECHNOLOGIES