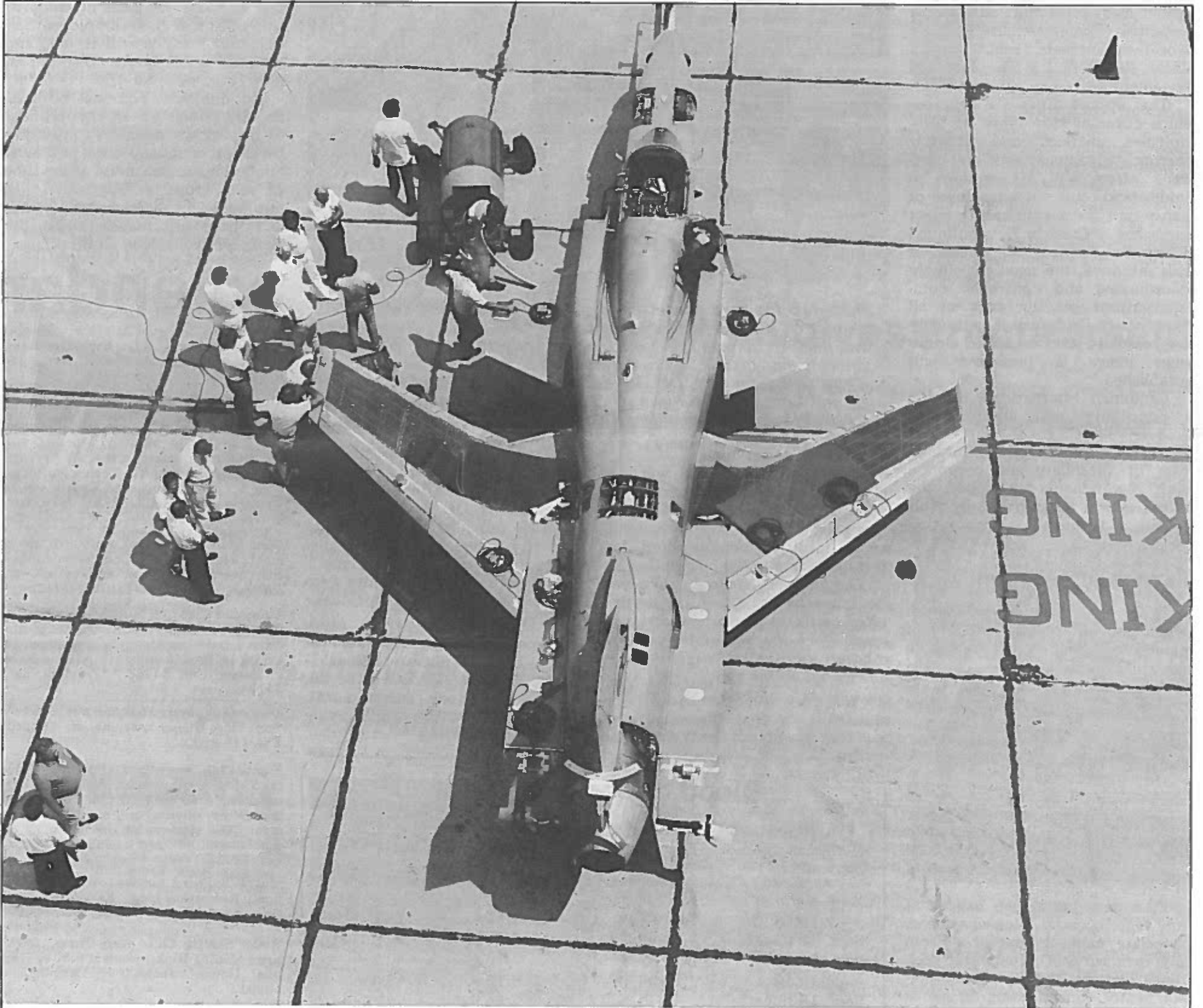


# GRUMMAN planenews

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## X-29A undergoing full 'flight physical'

In preparation for its first flight later this year, the X-29A Advanced Technology Demonstrator aircraft has recently undergone rigorous tests at Calverton. The X-29 rollout ceremony will be held there this Monday, August 27. Guest of honor will be Vice President George Bush. See article on page 7.

# Grumman's sole undersea venture: a yellow sub called Ben Franklin

Fifteen years ago this month, Grumman was "deeply" involved in its first and only "undersea adventure," as the *Ben Franklin* research submarine drifted silently along the Gulf Stream. The Grumman-Piccard PX-15 submersible research vessel was designed and built by Dr. Jacques Piccard, a world renowned oceanographic scientist, working as an executive consultant for Grumman's Ocean Systems division.

The *Ben Franklin* was launched July 14, 1969 from what was then Grumman Aircraft Engineering Corporation's West Palm Beach, Florida Ocean Systems operational base. The ship's mission was a 1,444-mile Gulf Stream underwater voyage to gather data on the Atlantic Ocean's peculiar warm water flow up the Eastern seaboard of the United States. An additional aim of the mission was to generate data on "man-machine interface:" how man operates in a closed ecological environment for the National Aeronautics and Space Administration (NASA).

The white and yellow *Ben Franklin* carried six crew members on its historic oceanographic mission, including its Grumman skipper, Don Kazimir. Kazimir said then of his four-week undersea voyage: "The mission was just great. The boat worked beautifully throughout and it was a very enjoyable and educational experience."

Other members of the experimental sub's team included: Dr. Piccard; Frank Busby, U.S. Navy Oceanographic scientist; Cmdr. Ken Haigh, Royal Navy acoustician; NASA science engineer, Chet May; and Swiss pilot, Edwin Aebersold.

NASA's Chet May told a Washington, D.C. press conference on the day after surfacing from his 31-day undersea voyage, that he was "very pleased with the results of the mission as they might apply to the manning of future space stations." He noted that the crew's "high morale and ability to perform maintenance and scientific tasks, together with the maintenance of a habitable environment during the

long voyage, provided much useful information to be applied to the space program."

According to Walter Muench, Grumman retiree and former program manager for the *Ben Franklin*, "the information gathered on the psychological and physiological effects of human confinement on extended missions is still in use today as a basis for continued research being done by NASA in space."

Muench notes that "rising interest during the 1960s in oceanographic studies — for their own worth and as related to space — spurred Grumman's involvement in the field with the *Ben Franklin* and its Gulf Stream mission."

Grumman signed Jacques Piccard on as a consultant in 1966 as part of a then-popular aerospace industry movement to diversify into oceanographic research. "In fact, at the time, the government was very seriously considering the creation of what we called a 'wet NASA' — an agency for oceanographic research and exploration set up just like the space agency. With the *Ben Franklin* project and our association with Piccard — a world renowned leader in this field, Grumman was establishing itself as a frontrunner in the design and manufacturing of oceanographic research vessels," Muench adds.

Government and industry interest in oceanography waned in the

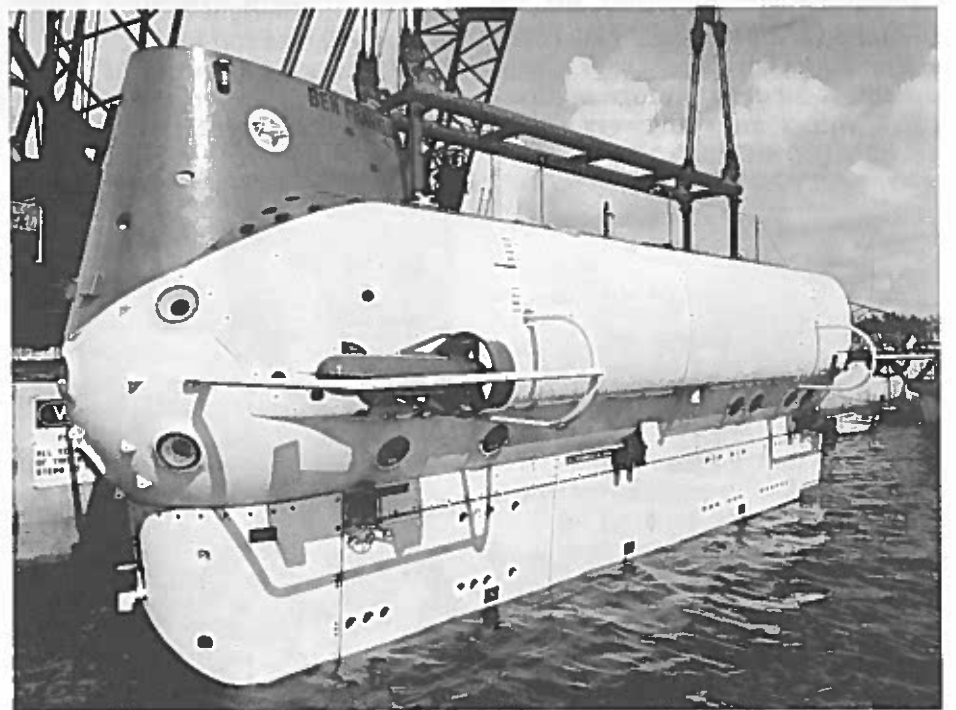
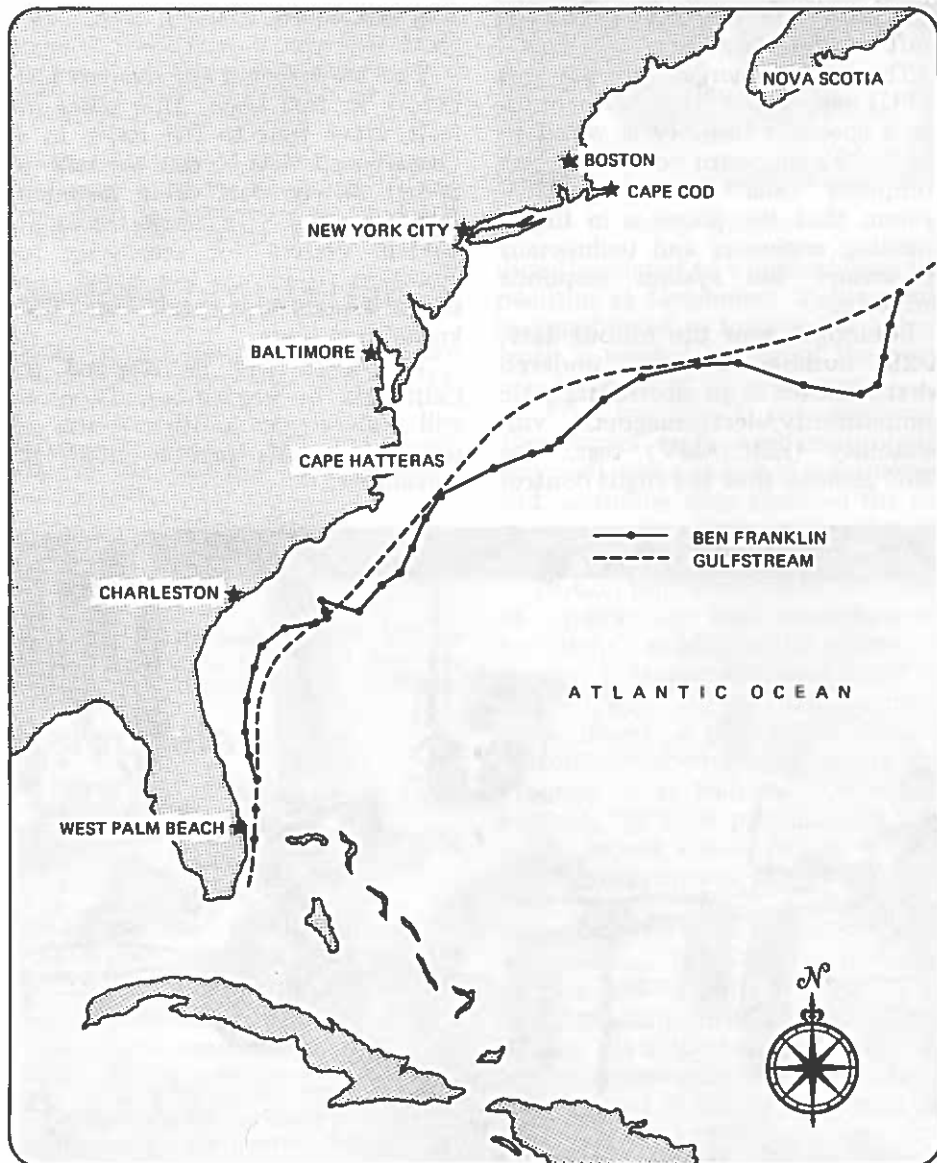
1970s when steep inflation forced deep budget cuts in NASA and virtually every other government research effort. Still, Muench says the *Ben Franklin*'s Gulf Stream mission "was a real success in light of what we and others in the field of ocean studies were trying to do at the time. The mission collected over one million bits of data for the Navy's Oceanographic office as well as the physical and psychological data for NASA."

In addition to its success from an informational standpoint, Muench says the *Ben Franklin* program also succeeded in creating a "very special feeling of 'esprit de corps' among those involved — from the crew members of the vessel itself and the Navy Support ships to the land-locked program engineers. It was truly a unique project, both in its undertaking and in the enthusiasm that it generated."

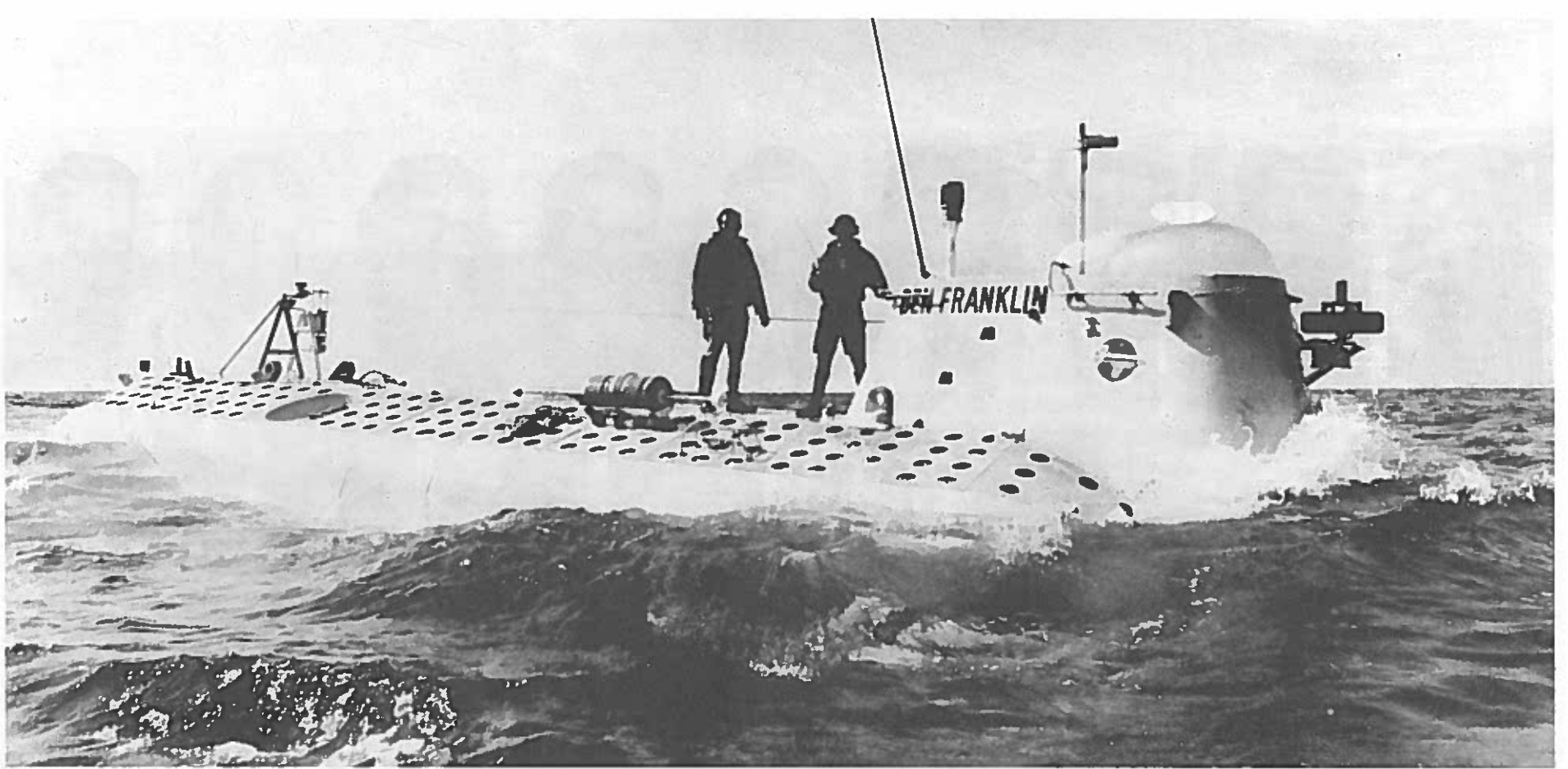
#### Enthusiastic team

That enthusiasm was also remembered by Dick Opsahl, a director of technical liaison for Tech Ops in Plant 35 and program manager for the European construction of the *Ben Franklin* from 1966 — 1968. Opsahl says the program "offered a fascinating challenge for Grumman and was carried out with amazing cooperation and smoothness considering the diverse nature and backgrounds of everyone involved."

Opsahl was stationed in Switzer-



**Ready for the plunge.** The white-and-yellow *Ben Franklin* submarine, made by the Grumman/Piccard team, carried six crew members on its historic oceanographic mission.



**Historic summer voyage.** During the summer of '69, the Grumman-Piccard submarine named *Ben Franklin* made its historic 1,444-mile

*Gulfstream underwater voyage to gather data on the Atlantic Ocean's peculiar warm water flow up the Eastern seaboard of the U.S.*

land to oversee the actual construction of the Piccard-designed submarine. Subcontractors from Italy, Germany and Switzerland were involved in the manufacturing of the vessel. While he was already fluent in German when he was assigned to the project, Opsahl notes that he had to take a crash course in French before leaving for Europe and further courses while he was there. "The day-to-day business communication was conducted in French, especially since that was Jacques Piccard's native language. Doing my job and learning French at the same time was pretty interesting, to say the least. I eventually became fluent in French though, and it helped me make some very good friends over there. A nice fringe benefit of the job," he says.

#### Railroad tunnel specs

An interesting aside to the European construction of the *Ben Franklin*, says Opsahl, were the size limitations placed on the vessel. "Our design parameters for the size of the *Ben Franklin* were actually governed by two things: the height of the railroad tunnels in Switzerland and the height of Dr. Piccard. We had to make the ship small enough to get through the railroad tunnels on its way from the mountains to the coast — and big enough for Dr. Piccard, who is over six feet tall, to be able to work inside comfortably. Not exactly the usual engineering parameters you encounter in the manufacturing business," he notes.

After its construction and testing in Switzerland, the *Ben Franklin* was dismantled and shipped to Grumman's West Palm Beach,

Ocean Systems operational center. There, the project's Grumman team reassembled and modified the vessel, adding Grumman-designed fiberglass ballast tanks. The ballast tanks were attached to the ship's cylindrical 1.4-inch-thick steel hull to provide stability and floatability when it was on the surface.

#### Christening in '68

On August 21, 1968, the Grumman-Piccard PX-15 submersible was christened *Ben Franklin* by Louisa J. Castle, the great-great-great-great-granddaughter of Benjamin Franklin. Famed inventor, scholar and statesman, Franklin was responsible for the first research and charting of the Gulf Stream over two centuries ago.

The ship underwent testing for close to a year at the West Palm Beach operational center before it was launched, on its Gulf Stream mission.

#### A Long Island celebration

Edmund Rabut, program administrator for the *Ben Franklin*, and now a Grumman retiree, says he remembers well the launching of the research submarine some 15 years ago. "Those of us who were working on the project here on Long Island gathered on a beach in Centerport where we staged our own 'mock' submersible launching, simultaneous with that of the *Ben Franklin*. We had a radio hook-up with Florida so that we would know when the ship was launched. We even made a model of the *Ben Franklin* out of empty beer cans and other scraps, painted with the names of the program managers and a version of the

Grumman insignia. It was a joyous occasion for everyone in the program up here and our way of sharing the excitement of the actual Florida launching," he says.

Rabut comments that the lift-off on July 17, and subsequent mission of the Apollo 11, "stole a lot of the thunder from the *Ben Franklin* at the time. Still, the mission and the whole *Ben Franklin* program was significant and successful for all concerned. Everyone who was a part of the *Ben Franklin* and the Gulf Stream mission can be proud of contributing to a considerable achievement by Grumman.

And I think that everyone involved has fond memories of the teamwork and the sense of adventure that characterized that time in our past."

#### Unhappy ending

The *Ben Franklin* was sold to the Chicago Bridge and Iron Company in 1972 after several years of use as an experimental submersible vessel and display model. It was subsequently moved to Vancouver, Canada, where it was cannibalized for parts for its sister ship the *Auguste Piccard*, an oceanographic tourist vessel.



**Ready to dive.** Standing on the deck of the *Ben Franklin* in West Palm Beach are (L to R) Harold Dorr, relief pilot; unknown; Bill Rand, operations manager; Walter Muench, program director; Bill Zarkowsky, vice president; Ken Busby, Navy; Erwin Aebersold, chief engineer for Piccard; Chet May of NASA; Don Kasimir, Grumman pilot; Ken Haigh, British exchange oceanographer; Jacques Piccard, designer-oceanographer; Lew Evans, Grumman president; and Walter Scott, director of Ocean Systems, with two unidentified divers.