



*J. Harry Hendil*

## I. HARRY MANDIL

1919–2006

Elected in 1998

*“For engineering design and development of materials for  
naval and commercial nuclear reactors.”*

BY THEODORE ROCKWELL

THE BIOGRAPHICAL FACTS OF Harry Mandil’s life are listed in his obituary. Born December 11, 1919, in Istanbul to an American father and a French mother, he earned a bachelor of science degree from the University of London in 1939 and a master of science degree from the Massachusetts Institute of Technology in 1941. He received an Honorary Doctor of Science degree from Thiel College in 1960 for his pioneering work in the field of nuclear power. He also graduated from the legendary Oak Ridge School of Reactor Technology in 1950.

As an officer during World War II in the Navy Bureau of Ships in Washington, D.C., Harry worked under Commander H.G. Rickover on electrical power distribution systems for naval ships. After the war, he went to work for an engineering company in Newton, Massachusetts, but in 1949, then-Captain Rickover called him back to Washington to participate in the Naval Reactors Program, where he worked for both the U.S. Navy and U.S. Atomic Energy Commission (AEC). Harry was director of the Reactor Engineering Division, Bureau of Ships, and chief of the Reactor Engineering Branch, Naval Reactors, AEC.

Harry was involved from the very beginning in all aspects of the development, design, and application of nuclear reactor cores and associated equipment for the propulsion of naval ships, from the first nuclear submarine, *Nautilus*, to the aircraft carrier, *Enterprise* (more than 75 ships and about 100 nuclear reactors). He was also project manager for the development and design of the

Shippingport Atomic Power Station, the first commercial nuclear plant in the world for the generation of electricity, a demonstration of President Eisenhower's Atoms for Peace Program.

In 1964, Harry left the Naval Reactors Program with two colleagues (I was one of them) to found MPR Associates Inc., a company that provided engineering services to industry and government, with an emphasis on the generation of electricity from nuclear and fossil fuels. He retired as principal officer of the company in 1985; he died of brain cancer in Naples, Florida, on April 27, 2006.

Harry received numerous awards, including the Naval Letter of Commendation (1946) and Meritorious Civilian Service Award (1952); and the American Society of Mechanical Engineers (ASME) Prime Movers Award (1956) and Distinguished Civilian Service Award (1959). He was elected to the National Academy of Engineering in 1998, was a registered Professional Engineer in the District of Columbia, a member of ASME and the American Nuclear Society, and author or co-author of numerous technical papers. He is listed in *Who's Who in the World*, *Who's Who in America*, and *Who's Who in Engineering*. He was a member of the Secretary of Energy's Advisory Board (1995–1999) and a member of the Visiting Committee for the Nuclear Engineering Department of the Massachusetts Institute of Technology (1984–1993). He was also a Paul Harris Fellow of Rotary International.

But the biographical facts in the obituary don't really give a picture of the man. It's the personal anecdotes that begin to show who he was. For example, Admiral Rickover said Harry Mandil was the best engineer he had ever met—and he'd met some of the world's best. No one else can make that claim.

One of Harry's early responsibilities in the Naval Reactors Program was to find a company capable of fabricating a large pressure vessel to hold the nuclear reactor core. One of his technical specialties was mechanical design and properties of materials, and he knew that the vessel would be subject to pressure, temperatures, corrosion, and radiation that would require an unprecedented degree of quality assurance. When manufacturing officials assured him, "We've been making special pressure vessels, large and small, since long before you were born, Sonny.

We know what we're doing. Just leave it to us. We don't need your fancy QA systems," Harry didn't buy it. He noticed that vessels were being built in a roped-off section of the plant behind "Keep Out" signs. Something special was going on there. When he inquired, he was told it would not interest him. But he dug in his heels and was finally told that the vessels were being built for the Germans, and "You know how fussy those guys are." Harry did indeed. His response was, "You're going to have to get some more rope."

The obituary says Harry "worked in" and "was involved in" various projects, but that doesn't indicate the nature or importance of his personal contributions. Let me describe one remarkable task that isn't even mentioned in the obituary—the transfer of nuclear power technology to the British navy. In 1958, Admiral Rickover took Harry to Europe with him to survey the state of British nuclear and manufacturing technology and measure progress toward the British goal of building a U.K. version of a nuclear power plant for a submarine. After several days, Harry reported that the British were hopelessly bogged down, and the final product was nowhere in sight. At that point, Rickover made a startling decision—he would give the Brits an American nuclear submarine power plant, with all of the technological background necessary to install, operate, and maintain it. Subsequent plants could then be built without further U.S. aid.

Knowing that endless complications would ensue if the normal naval and atomic people and organizations on both sides were involved, Rickover decided his plan could only work as a commercial contract between Westinghouse and Rolls-Royce, with neither government involved. The arrangement was worked out on a personal basis among Rickover, Harry, Admiral Mountbatten, and Lord Hives, chairman of Rolls-Royce Ltd. The deal worked only because of the mutual respect, integrity, and competence of the four participants. Dr. Francis Duncan, AEC historian, later wrote that, without this unique personal arrangement, the British "would never have gotten their first nuclear submarine to sea [in 1963]."

The early years of MPR Associates Inc., were very revealing of

Harry Mandil's character. The three partners had very different technical specialties, personalities, and histories. Yet we were unquestioningly confident of each other's adherence to the highest technical and ethical standards. We did no advertising or promotional work for the new company, and once we had a place to sit down, we simply waited for the phone to ring. One of the first calls came to Harry. From our side of the conversation, it was clear that he was being offered a large contract. But then he said, "It sounds as if you don't want an objective technical evaluation of your project; you just want our endorsement of it. I'm sorry, but that's not what we do." And he hung up. He hadn't looked at either of us, and we hadn't even bothered to nod "Yes." We didn't have a single contract yet, but there was no question in Harry's mind that if we couldn't get quality work, we'd "just have to shine shoes."

Incredibly, the issue came up twice more, before we got our first real contract. And each time, there was no question about the decision. Only later did we learn that such an attitude was also good business.

None of this comes through in an obituary, but that's who Harry was. That's how he thought, and that's how he acted. He didn't ask us to agree because the issue was not negotiable. He was an excellent role model for his children and for his profession. What more could anyone ask of a person? Particularly, of an engineer.

He is survived by his wife of 60 years, Beverly, of Naples, Florida; his daughter, Jean Brolund, of Ellicott City, Maryland; his son Eric of Denver, Colorado; and three grandchildren, Matt, Beth, and Jon Brolund.

