"The Laboratory became a premier international center for producing and separating transuranic elements."

As more powerful research reactors and accelerators were added during the 1960s, the Laboratory became a premier international center for producing and separating transuranic elements. Researchers studied the structures and properties of transuranic elements and nuclei using accelerated particles that range in mass from protons to curium ions. In support of the AEC reactor program, the Laboratory pursued development of a molten salt reactor and also investigated liquid-metal and gas-cooled reactor technologies. By 1970, in response to the new political realities that the nuclear industry faced, the Laboratory also became a center for exploring the safety, environmental, and waste disposal challenges presented by nuclear energy.

The Laboratory's advance into new research frontiers was both a response to necessity and a deliberate effort to assume new challenges. Budget shortfalls between 1969 and 1973 shelved plans for new reactors and reduced staff from nearly 5500 in 1968 to fewer than 3800 by 1973. Moreover, wartime veterans, now in their 50s and 60s, began to retire as the Laboratory's 30th anniversary neared in 1973. The departure of Oak Ridge's Manhattan Project engineers and scientists left a void in the institutional culture that was progressively filled by a new generation who brought their own interests and experiences to the research agenda. Having come of age in the 1960s, this new generation carried somewhat different priorities and sensibilities to the workplace than had the original scientists, for whom World War II had served as the defining period in their careers.

To meet these challenges, Laboratory management reorganized and launched a series of retraining programs designed to transcend the traditional uranium fission focus. These new efforts led to investigations into all forms of energy—a broadening of research that made the Laboratory more responsive to the political and social changes sweeping the nation.

In the aftermath of Earth Day in April 1970 and passage of a series of environmental laws and regulations intended to bring environmental concerns to the forefront of the nation's policy agenda, the public clamored for more "socially relevant" science that would address everyday concerns. In 1973, as Americans lined up to purchase gasoline and turned down their thermostats because of shortages of imported oil, the desire for relevant science was never more urgent.

Laboratory efforts to explore new, non-nuclear energy issues proved both timely and critical. Born at the dawn of the nuclear age and nurtured to maturity during nuclear power's great leap forward in the 1950s, the Laboratory was not about to abandon its ties to nuclear research. Nevertheless, as it experienced and then responded to the dramatic changes of the 1970s, it emerged from this tumultuous decade a multipurpose science research facility, ready to tackle the increasingly complex issues of energy and the environment.

Super-Duper Cooker

The high-flux reactor designed under Eugene Wigner's supervision in 1947 and built in Idaho provided the highest neutron flux then available. By the late 1950s, however, the Soviets had designed a reactor that surpassed it.

"We do not believe the United States can long endure the situation of not having the very best irradiation facilities in the world at its disposal," commented Clark Center, Union Carbide chief at Oak Ridge. "Therefore, we would like to suggest that the Atomic Energy Commission undertake actively a design and development program aimed at the early construction of a very high-flux research reactor." Glenn Seaborg, an expert in transuranic chemistry, concurred with Center and urged the AEC to build a higher-flux reactor.

With these statements of support echoing in Washington, ORNL embarked on the design of what Weinberg labeled a "super-duper cooker." Trapping a reactor neutron flux inside a cylinder encasing water-cooled targets, the proposed High Flux Isotope Reactor would make possible "purely scientific studies of the transuranic elements" and augment the "production of . . . radioisotopes." Weinberg also insisted that the reactor be built with beam ports to provide access for experiments.

Charles Winters, Alfred Boch, Tom Cole, Richard Cheverton, and George Adamson led the