

# ...AND THE IDAHO BOOST

*There can be a great future for the state in atomic energy development.*

—Idaho Governor Don Samuelson, 1967—

Milton Shaw and the AEC canceled Argonne's FARET reactor. Never mind that Congress had authorized the funds. Times had changed. Old breeder plans were not the right breeder plans. Atoms for peace had become a fact. Between 1965 and 1970, utility companies in the United States ordered a hundred nuclear power plants—all of them moderated and cooled by water. Shaw and the others felt that the torch had passed to industry, and water-moderated reactors should no longer require federally subsidized research.<sup>1</sup>

The national coal lobby had objected for years that Congress subsidized nuclear power. Congress was unfair, it said, to displace coal plants by financing the research that would make commercial nuclear power possible. The lobby had protested the AEC's reactor demonstration program. It objected to federal insurance subsidies for utility companies in the event of a nuclear accident.<sup>2</sup>

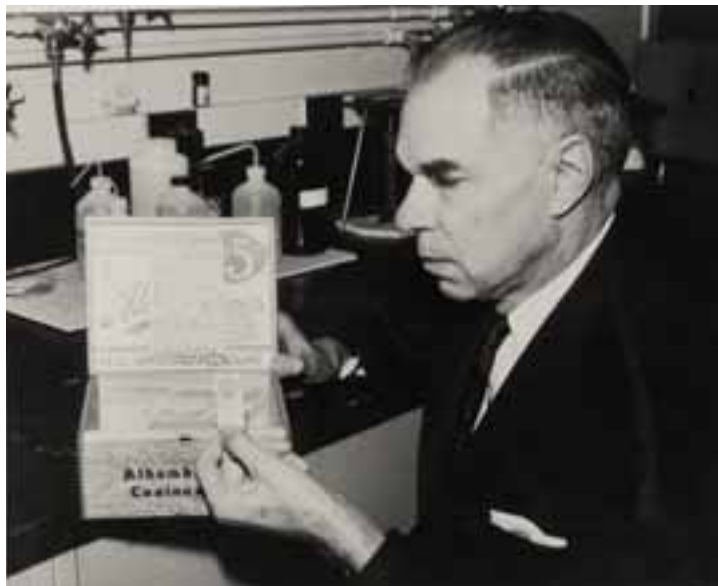
The AEC and the JCAE were in a position, therefore, in 1964 to make a concession to the coal industry while at the same time advancing to the next level of the nuclear future, which was to bring liquid-metal-cooled fast-breeder reactors to the commercial market. It could conclude research on water-cooled concepts.

Ideas about the world's reserves of uranium were still driving reactor development ideas. The global wave of new nuclear power plants would consume more and more uranium, probably depleting it if the demand for energy continued to grow. Water-moderated reactors used uranium extremely ineffi-

ciently. Of the uranium in a reactor core, a typical commercial reactor burned about one percent, perhaps a little more. The rest of the uranium—the unfissioned U-235 and the U-238—could be recycled at great expense or discarded as a contaminated waste. A breeder, on the other hand, could produce something valuable—plutonium fuel—out of U-238 and thus convert it into an energy source. The breeder could use nearly *all* of

the uranium. Besides, breeders had the potential of burning up a higher percentage of the fuel to begin with.<sup>3</sup>

Therefore, Shaw and the AEC shifted their resources to the breeder. Glenn Seaborg, a Nobel laureate chemist who



U.S. Department of Energy 66-7696

*Glenn Seaborg holding the first tiny sample of the fissionable form of the nuclear fuel plutonium-239. This sample is now at the Smithsonian Institution in Washington, D.C.*



*Nuclear energy exhibit attracts Idaho Falls visitors in 1969.*

Idaho State Historical Society MS326



## P R O V I N G   T H E   P R I N C I P L E

as part of the Manhattan Project had made the world's first plutonium, became chairman of the AEC in 1961. Seaborg was completely committed to the "plutonium economy" of the breeder reactor. He told President Kennedy in 1962 that the way for the United States to maintain nuclear reactor technological preeminence in the world was to perfect the breeder reactor as a safe and commercially viable source of energy. He even suggested that plutonium would eventually replace gold as the standard of the monetary system.<sup>4</sup>

Washington politics favored the AEC's new focus on the breeder. But many safety and engineering questions still remained to be solved if breeder reactors were to scale-up to commercial proportions. Physics and chemistry questions remained. As a more distant achievement, therefore, the breeder represented less of a threat to the coal industry and their opposition evaporated. The breeder research program would take many more years.<sup>5</sup>

Shaw spent 1965 considering how best to redirect the AEC's breeder program and then decided, with AEC approval, to manage it directly from his own office. This arrangement was a departure from the AEC's more typical assignment of contractor management to its field offices. Shaw's critics, among them Albert Crewe, the director of Argonne National Laboratory, publicly challenged Shaw's "cult of perfection" in experimental work. If research methods lived with the safety requirements for nuclear submarines, he said, so little would be accomplished that Europe would take the lead in breeder technology.<sup>6</sup>

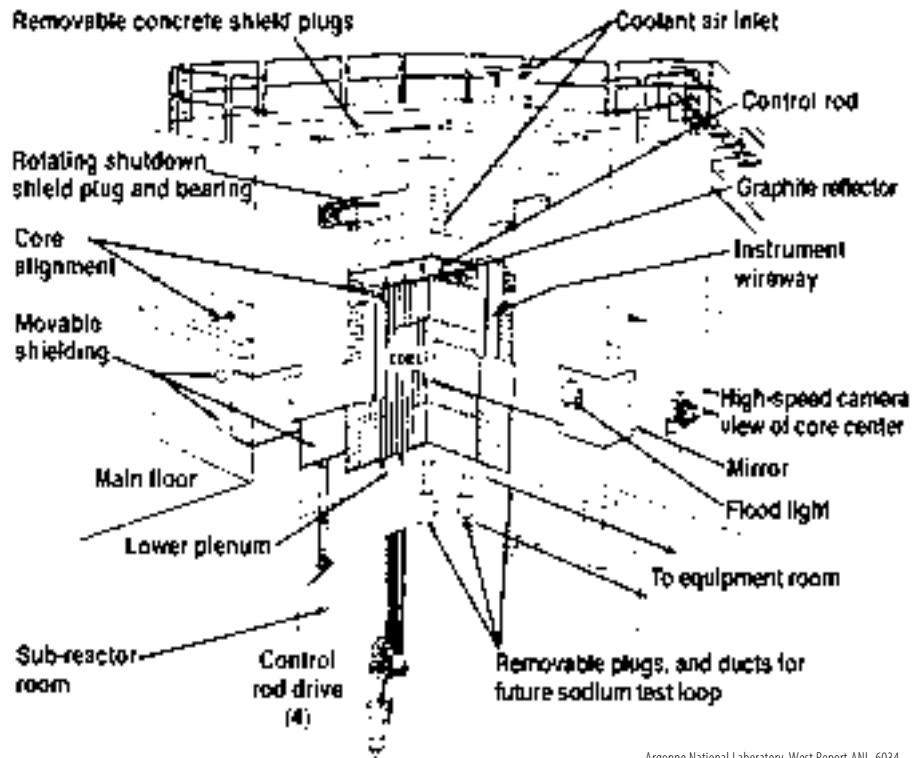
Shaw felt that the breeder program needed a large test reactor. Goals for testing fuel and components had to be aggressive if the breeder was to make it to the commercial market. The FARET reactor was too small, the Argonne program too unambitious. Instead, he chose Hanford to design a new reactor, named the Fast-Flux Test Facility (FFTF). The open conflict between Shaw and Crewe didn't help Argonne. In view of Crewe's public antipathy for Shaw, the new reactor wasn't going to Argonne. Still, even if Hanford designed it, Argonne assumed the FFTF could still be built in Idaho.<sup>7</sup>

The technical issue appeared to be the type of fuel planned for each reactor. Argonne's efforts with EBR-II fuel to date had been to improve uranium-



Argonne National Laboratory-West 7330

Above. Original exterior of TREAT reactor building.  
Below. Perspective drawing of the TREAT reactor.



Argonne National Laboratory-West Report ANL-6034

## CHAPTER 19 - ...AND THE IDAHO BOOST

plutonium fuel so that it could operate in a reactor at higher and higher temperatures without melting the fuel or cladding. The economics of a commercial reactor would require an operating temperature of about 1,200°F, a target that Argonne had not yet reached. Shaw and others felt that fuel made of oxides or carbides of uranium and plutonium and cladding of zirconium and titanium alloys held more promise for higher operating temperatures. In this larger scheme of research, Shaw wanted the EBR-II to shift its program emphasis and become a materials testing reactor for these new fuel concepts. The new FFTF would have test loops in which fuel elements six inches in diameter and three to four feet long could be irradiated in an environment producing more neutron flux than even the ATR was capable.<sup>8</sup>

Shaw opened a Liquid Metal Fast Breeder Reactor (LMFBR) office at Argonne's Chicago and Idaho locations and staffed them with people who reported directly to him. The atmosphere was not cordial. Shaw's people demanded copies of all trip reports, conference reports, and program documents containing conclusions and recommendations. He laid his quality template on all planning documents: objectives, criteria, standards, alternatives, priorities, rationale, and more. He told Crewe that he expected Argonne to "serve as an extension" of the LMFBR office. He rejected initiatives from the field. A historian of the Argonne lab described Argonne's new role as "captive handmaiden" of Shaw's office, its autonomy gone.<sup>9</sup>

In Idaho Falls, business leaders responded swiftly to Idaho's loss of the FARET



Idaho State Historical Society 103-CS413

Governor Robert Smylie

reactor. By this time, they were well-practiced observers and promoters of the NRTS. The spirit of the "party plan" was still intact. The team now included the Idaho governor's office and the Idaho congressional delegation. The new editor of the Idaho Falls *Post-Register*, Robb Brady, forged an important link between the NRTS and the public. These groups eyed the flow of money and ideas in Washington, D.C. They kept a tally of projects gained and lost, proposed and canceled. They watched the NRTS employment and budget statistics like hawks. All understood that competition for federal research funds was a growing fact of life.

Information flowed freely among the players, and they followed up in carefully orchestrated moves. The newspaper kept readers informed, and Brady's thoughtful editorials were so well considered that they circulated in Washington, D.C. Political party affiliation made no apparent difference in who

spoke with whom. In April 1964, for example, Republican Governor Robert Smylie sent a telegram to each member of the delegation, at the time consisting of two Democrats and two Republicans:<sup>10</sup>

*Urge you support AEC project 630-A for Arco, Idaho AEC installation. Now before JCAE. Efforts currently exerted to assign same to Hanford. If shifted, will have detrimental effect in eastern Idaho.*<sup>11</sup>

The effort succeeded, and the 630-A reactor experiment went to TAN. The project, intended to advance a nuclear-powered civilian maritime fleet, was of modest budgetary impact, but it helped preserve the NRTS as an important AEC facility. Better that Idaho get the work than Hanford.

While Hanford designed the FFTF, the Idaho boost machine worked on another project. In 1965, the AEC asked the National Academy of Sciences (NAS) to select a location for a proposed National Accelerator Laboratory, a \$348 million particle accelerator known as the "Bevatron." Editor Brady thought it was a long shot for Idaho, given the absence of a nuclear physics program at Idaho State University (ISU) in Pocatello.<sup>12</sup>

Nevertheless, Governor Smylie was game. He established a special Idaho Accelerator Committee, on which men from the business community and from Ginkel's office all helped to coordinate the promotion. Headed by Fred Rooney, an executive with the FMC Corporation in east Idaho, the committee included Brady and a professional publicist named Don Watson. The com-

## PROVING THE PRINCIPLE

mittee decided early that if Idaho didn't make it through the "first turnstyle"—over a hundred applicants from forty-three states were competing—Idaho could fall back to a regional deal involving Utah, Montana, Nevada, and Oregon. Political trading would be possible, Rooney told Smylie. In the meantime, Brady would make a discreet contact with AEC commissioner James Ramey, and another committee member would contact Glenn Seaborg.<sup>13</sup>

Watson developed the "livability" sections of the proposal and orchestrated the reception of the NAS fact-finding team when it visited the Site. "Voluntary turnover of scientific personnel at the NRTS is low almost to the point of being non-existent," said the proposal. Along with the technical data on the cost of electrical power at the NRTS went statistics on the below-national-average high school drop-out rate in Idaho Falls. Idaho slipped through the first turnstyle, but it was crowded: eighty-four other proposals also made the cut.<sup>14</sup>

The NAS committee did not favor Idaho. The NRTS was not near the right kind of university. Although ISU was geographically near, the Idaho legislature had done little to support the AEC through higher education. Only in 1965 had it made its first significant gesture by authorizing a

training program at ISU for health physicists. This situation in no way lent Idaho any status in academic circles concerned with high-energy physics. Smylie regretted Idaho's neglect.<sup>15</sup>



*Teamwork inside the NRTS duplicated the outside teamwork among NRTS supporters. Here, technicians work over the core of EBR-I.*

A month after that disappointment, Smylie dissolved his old Nuclear Radiation Hazards Safety Committee and created a Committee on Nuclear Science and Industry to take its place. The state's interest in the NRTS shifted firmly from the Health Department to the Department of Commerce and Development. The eleven volunteer members were to advise him, Commerce and Development personnel, and the legislature on all matters "pertaining to nuclear energy and the utilization of same in the State of Idaho." Among other forces, Idaho was competing with Hanford's home state of Washington, which called itself "the

Nuclear Progress State," had funded a promotional office, and was distributing full-color brochures touting Washington's "Total Nuclear Environment."<sup>16</sup>

Smylie appointed business promoters and members of Bill Ginkel's staff to the committee. Evidence of the state's new enthusiasm for nuclear industry appeared immediately. A 1966 analysis of the state's industrial opportunities identified atomic energy as one of the state's promising growth industries, NRTS's "600 engineers" a valuable asset. The

committee recommended that the Idaho legislature create an office similar to Washington State's, run by a state commission. The cause would be helped, too, if Idaho could express its positive interest in atomic energy by regulating radioactive materials in the state, an activity then managed by the AEC.<sup>17</sup>

Among its first acts, the Governor's committee decided that Idaho should fight to have the FFTF built in Idaho. Feelings ran high because many viewed the cancellation of FARET as a political act, not solely a technical one. The NRTS was the obvious place to build it. Breeder technology had been born, proven, matured, and safety-tested at the NRTS. Where else was there a bet-

Argonne National Laboratory—West 1173

## CHAPTER 19 - ...AND THE IDAHO BOOST

ter team or better facilities? To duplicate these elsewhere would waste the AEC's investment at Idaho.<sup>18</sup>

The strategy was to combat "Washington State/AEC power with Idaho/Illinois power." Robb Brady, the chairman, reviewed with the congressional delegation the poor state of the current NRTS win/loss record. As of 1966, cancellations had included the army program, the merchant ship project, a lithium-cooled reactor, the organic-cooled program, and FARET. It was time for a win. As for the rules of the campaign, partisan politics were out. The gist of Brady's analysis, paralleled by Ginkel's, was that the NRTS needed a "new platform" if the NRTS was to enjoy long-term stability free of wide swings in employment levels. It seemed that the most promising new missions were the FFTF and nuclear applications for the space program.<sup>19</sup>

In January 1967, the AEC, following Shaw's recommendation, sited the FFTF at Hanford. The justification—that there was a strong overlap from design to construction—rang hollow in Idaho. Reactor designs from all over the country had been built successfully in Idaho for years. Idaho's new governor, Don Samuelson, sent a "strenuous protest" to Seaborg. Editorial opinion in Idaho Falls was harsh. Congressman James McClure demanded explanations. But the Idaho/Illinois axis could not undo the decision.<sup>20</sup>

The Idaho Legislature, then in session, took the loss into account as it consid-

ered the idea of a state promotional office. Samuelson threw his wholehearted support behind the idea. The legislature created the Idaho Nuclear Energy Commission (INEC) and funded a director and small office for it. Idaho had in the past created commissions to promote potatoes, beans, wheat, and peas. The hallowed tradition now embraced nuclear energy.



INEC was to advance the nuclear possibilities in the state by stimulating the interest of industry, agriculture, and education. Commercial developments, aside from diversifying Idaho's economy, would augment and support the NRTS base. INEC would advise the governor, report progress, and administer grants.<sup>22</sup>

Ginkel welcomed the INEC and encouraged the board to direct their energies "around and beyond the NRTS," not solely at the NRTS itself. He had observed traditional Idaho industries fail to exploit good nuclear opportunities. No one in the Idaho timber industry, for example, had answered an AEC invitation to develop an irradiated, plastic-impregnated wood product. Idaho also had not bid on a chance to test whether irradiating meat could preserve it without refrigeration. After all, Ginkel said, the Army had first irradiated beef in the MTR canals.<sup>23</sup>

Samuelson appointed the five commissioners, two from Idaho Falls, two from Pocatello, one from Boise. The chairman, Steele Barnett, was an executive with the Boise Cascade Corporation, headquartered in Boise. The legislation dictated that INEC be bi-partisan, with no more than three members from one party. The administrator of the state's radiation control office was an *ex officio* member, preserving a connection to the regulatory and health interests of the state.<sup>24</sup>

The enabling legislation gave INEC an official start date of July 1, 1967, but the commissioners met early and laid plans. They felt that hiring a "top-notch" executive secretary was crucial, and they found him at the Naval Reactors Facility. Gene Rutledge, a Westinghouse chemist then working at a non-chemist post, took the job. He had come years earlier from South Carolina to work on the *Nautilus* prototype. "I'd just like to



## PROVING THE PRINCIPLE



1967 INEC Annual Report

*Gene Rutledge, second from left, poses with Governor Don Samuelson, third from left, and the members of the INEC Commission.*

be a salesman,” he said as he began with INEC. He had his chance and he grabbed it with both hands.<sup>25</sup>

Hired on August 1, he was ready with a 21-point program six days later. The first thing was to survey Idaho and identify the ways that atomic energy and radiation could enhance existing industries: agriculture, timber and forestry, mining. Idaho should ally with other western states in promoting nuclear industries in the Pacific Northwest. Beyond that there was a whole frontier of industrial possibility: irradiation might give cotton fabric qualities of permanent press, irradiation could improve vulcanized rubber. Public education was important. Above all, the NRTS must be preserved and

given new missions. Idaho must never allow the AEC to abandon it.<sup>26</sup>

Rutledge hit the deck running and never stopped. He had the governor proclaim the 25th anniversary of the first Chicago pile. Exhibits entitled “This Atomic World” began appearing at state fairs across the state, often promoted by the current Miss Idaho. A sophisticated exhibit called the Nuclear Energy Museum appeared for a week at the Idaho Falls High School in August 1969. Rutledge arranged a symposium in the town of Salmon, Idaho, to discuss the future of the thorium market, thorium being a potential breeder-related fuel found in Idaho. A nuclear exhibit appeared in the Idaho Statehouse, taking its place next to the familiar exhibits celebrating Idaho mining and farming. Boise Cascade conducted seminars on the potential of irradiation in the timber industry. INEC sponsored a television show each week entitled “Idaho and the

Atom” to showcase ideas and guest speakers. Rutledge even arranged for eminent scientist Dr. Willard F. Libby to accept a title as “science advisor” to Governor Samuelson, further embroidering Idaho’s image as a science-friendly state.<sup>27</sup>

Rutledge specialized in the sponsorship of multiple high-profile activities. He discovered that the AEC had a portable cesium food irradiator on tour in the Pacific Northwest. Soon, news releases poured out of the Governor’s office, the Twin Falls County Republican Central Committee, and INEC. Robert Erkins, the owner and manager of the Snake River Trout Farm near Buhl, Idaho, was persuaded to host the irradiator at his trout farm for one week in April 1968. The public was warmly invited. The Twin Falls newspaper, the *Times-News*, gave front page coverage to the story for two days and also published photos. Governor Samuelson, Lt. Gov. Jack Murphy, and Secretary of State Pete Cenaarussa all left Boise to have a look at the irradiator—and be photographed while doing so.<sup>28</sup>

The legislature continued to support INEC’s recommendations. Idaho became an “agreement state,” taking over from the AEC the task of issuing licenses for the use of medical and industrial radioactive materials. The work cost the state money and gave it no advantage other than giving the rest of the world the impression that Idaho welcomed nuclear industry. The day of the signing ceremony, August 14, 1968, was well publicized, and two AEC commissioners flew in for the event.<sup>29</sup>

## CHAPTER 19 - ...AND THE IDAHO BOOST

Rutledge, INEC, and its allies quickly forged an elaborate network of institutional connections. The legislature was helpful by appropriating funds to the Board of Education so INEC could make nuclear research grants. It entered into a Western Interstate Nuclear Compact. The Compact was a regional version of INEC, promoting nuclear technology in the West and facilitating mutual interests in power plant siting, mutual aid in case of a nuclear transport accident, and waste disposal. Rutledge was Idaho's representative. Several western universities formed an association to encourage the assignment of their students and faculty to the AEC's western labs. The Western Governors Association created nuclear issue committees, and Samuelson joined them. In Idaho Falls, the Chamber of Commerce maintained an active atomic energy committee and kept in touch with the Eastern Idaho Nuclear Industrial Council (EINIC), a group that formed in 1969 to foster nuclear spin-off industries. NRTS scientists had formed a chapter of the American Nuclear Society, and their expertise was always available.<sup>30</sup>

The nuclear boost machine was fully charged. It had a proactive governor, a supportive congressional delegation, a friendly legislature, a state commission, energetic staff, regional ties within the state and in the West, educational resources, and a nuclear-friendly populace. One of the most important goals of the entire apparatus was to support and protect the interests of the NRTS.



Idaho State Historical Society MS 326

In 1968 the AEC announced that it would decommission the MTR in early 1970. By that time, the ATR would be fully functioning, and between the ATR and the ETR, the MTR would have no further mission. All of the MTR's neutron beam research would end. Alarmed, INEC formed a study committee to consider this and advise Samuelson. The problem was serious, but it handed INEC a tremendous opportunity. All of INEC's promotions paled in comparison to what soon became its single biggest goal: to save the MTR.<sup>31</sup>

*Nuclear energy exhibit at Idaho Falls High School in 1969.*