The 1980s were a decade of change. The Cold War heated up at the beginning of the decade, and then abruptly ended at its close. In the early part of the decade, Savannah River had to accommodate renewed demands for more nuclear weapons-grade plutonium and tritium, which led to the program to restart the L-Area reactor, on standby since 1968, as well as other initiatives. This was the first time in U.S. nuclear history that a production reactor had ever been brought back into operation after an extended shutdown period. Beginning just a year after the accident at Three Mile Island, the restart effort was complicated by the need to comply with new environmental laws, Department of Energy regulations developed in response to these laws, and increasingly adverse public opinion. Environmental scrutiny intensified in the wake of the disastrous Chernobyl accident of April 1986. In the months and years that followed, the nuclear defense programs came under heightened scrutiny as the Cold War reached its conclusion.

These external changes and pressures put increasing stress on Du Pont throughout the 1980s. The end of an era came in 1987, when Du Pont announced that it would not seek renewal of the Savannah River production reactors. Lessons learned from Three Mile Island were incorporated into DOE orders that focused on reactor safety and environmental protection required for nuclear facilities. During this period, the Clinch River Breeder Reactor project expired, largely as a result of safety issues and concerns. As Crawford Greenewalt noted in 1983, the incident at Three Mile Island brought a virtual halt to the development of new nuclear power plants in the United States. Nuclear power provided 13 percent of the nation’s electrical energy in 1983, and that number was scheduled to rise to 21 percent by 1985, but it was not likely to rise higher. Greenewalt admitted that nuclear energy was not popular at the time, but prophesized that it would again be appreciated as a source of cheap energy, “when the shoe pinches.”

The impact of Three Mile Island resulted in changes to the Savannah River production reactors. In 1981, the Confinement Heat Removal System (CHRS) was installed to minimize any radioactive release from the carbon filters in the event of a reactor core meltdown. The CHRS would flood the minus-40-foot elevation floor with water from the disassembly basin to cool any molten core debris. This was designed to reduce the temperature of the exhaust air reaching the carbon filters of the confinement system. Without this feature, it was feared that the radioactive iodine trapped by the filters might become airborne as a result of the high temperature of the effluent air exiting the reactor building.

Other reactor features were upgraded. In 1982, the high-level flux monitors were replaced by solid-state instruments. More important was the implementation of the Diagnosis of Multiple Alarms system (DMA). Developed at the Savannah River Laboratory, the DMA was a computer-based diagnosis of malfunctions in the reactor operation, designed to aid operators in dealing with unusual reactor conditions. Since operators at Three Mile Island were confused by the multiple alarms and thus failed to act fast enough to prevent core meltdown, the DMA was designed to quickly determine the cause of the various alarms and advise reactor operators of the best response. Installed in 1982, the DMA system went online in 1984.

Environmental Clean Up and the Defense Waste Processing Facility (DWPF)

New laws and regulations put greater effort on the environmental cleanup programs at Savannah River. Environmental monitoring in 1981 by Savannah River personnel identified two non-radioactive industrial chemicals in shallow groundwater under the M-Area.
Chapter Nineteen

19 Transition

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These external changes and pressures put increasing stress on Du Pont throughout the 1980s. The end of an era came in 1987, when Du Pont announced that it would not seek to renew its Savannah River contract. When the facility was turned over to Westinghouse Savannah River Company in April 1989, all of the production reactors had been shut down and the facility had a new name and mission. Now designated the Savannah River Site, its primary goal of production, site restoration, and cleanup expanded to include the permanent disposal of decades of nuclear waste.

THE IMPACT OF THREE MILE ISLAND

It was during the early 1980s that the full impact of the Three Mile Island accident became known, and this had repercussions for both the nuclear power industry and for the operation of the Savannah River production reactors. Lessons learned from Three Mile Island were incorporated into DOE orders that focused on reactor safety and environmental protection required for nuclear facilities. During this period, the Clinch River Breeder Reactor project expired, largely as a result of safety issues and concerns.1 As Crawford Greenewalt noted in 1983, the incident at Three Mile Island brought a virtual halt to the development of new nuclear power plants in the United States. Nuclear power provided 13 percent of the nation’s electrical energy in 1983, and that number was scheduled to rise to 21 percent by 1985, but it was not likely to rise higher. Greenewalt admitted that nuclear energy was not popular at the time, but prophesized that it would again be appreciated as a source of cheap energy, “when the shoe pinches.”2

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ENVIRONMENTAL CLEAN UP AND THE DEFENSE WASTE PROCESSING FACILITY (DWPF)

New laws and regulations put greater effort on the environmental cleanup programs at Savannah River. Environmental monitoring in 1981 by Savannah River personnel identified two non-radioactive industrial chemicals in shallow groundwater under the M-Area
serpage basin. When the monitoring tests identified the problem, South Carolina Department of Health and Environmental Control (SCDHEC) was notified and a plan for groundwater cleanup was defined. Between 1958 and 1979, the basin, constructed using industry standards, received wastewater from degreasing operations in the adjacent fuel fabrication facility. About 2 million pounds of trichloroethylene and tetrachloroethylene, both chlorinated degreasing solvents similar to those used in the dry cleaning industry, were released into the basin. The basin overflowed at times spreading the contamination into an adjacent natural seepage area and Lost Lake, a Carolina bay. The groundwater cleanup operation began in 1981 at the combined affected areas known as the M-Area Hazardous Waste Management Facility (HWMF). A prototype facility began in 1982 to remove these organics by a process known as air stripping in which air was used to strip the chemicals from the groundwater. Treatment consisted of pumping and treating the water from the basin, the removal of a sludge layer of heavy chemicals which was then dewatered, stabilized, returned to the basin and compacted. Contaminated soils from Lost Lake and the affected surrounding area were excavated, effectively removing contamination and allowing regrowth. The excavated contaminated soils were backfilled into the basin which was then capped with dense clay, a synthetic liner, and layers of gravel/sand, topsoil and grass. The settling basin was certified closed in 1991 under the Resource Conservation and Recovery Act (RCRA) at an approximate cost of $5.8 million.

Other basins, set aside for chemical settling or low-level radioactive waste disposal, were also targeted for cleanup during this period. The F and H Effluent Treatment Facility (ETF), a product of the late 1980s, was built to start this process. Built at a cost of $55 million, its construction and operation was approved and permitted by SCDHEC and the EPA. This facility, which went into operation in 1988, treats low-level radioactive wastewater from the F- and H-Area Separations and Waste Management Facilities by eliminating chemical and radioactive contaminants (heavy metals, organic chemicals, corrosive chemicals, cesium, and other radioactive contaminants) from the wastewater prior to its release into Upper Three Runs Creek, a branch of the Savannah River. Operation of the ETF allowed Savannah River to meet environmental regulations embodied in the Resource Conservation and Recovery Act and the National Pollutant Discharge Elimination System under the Clean Water Act. A biological baseline study of Upper Three Runs Creek was conducted by the Environmental Sciences Division of the Savannah River Technology Center prior to ETF startup to provide comparative data on environmental impacts. To date, no impact has been noted.

By 1981, the largest and most significant of the waste programs across the production complex that dealt with problems posed by the permanent disposal of high-level radioactive waste materials was the Defense Waste Processing Facility (DWPF) at SRP. Long-stored in huge carbon steel tanks, high-level radioactive waste had been a concern. At Savannah River there were over 30 million gallons of high-level waste stored in 51 tanks located in the Separations Areas.

The search for a permanent solution to the problem of high-level waste had begun as early as the 1960s, when leaks were discovered in high-level waste storage tanks. Bedrock storage had been considered but abandoned because of the danger of contamination to the Tuscaloosa Aquifer. The eventual goal was to bury the high-level waste in such a way that the material would be immobilized so that it could not leak into the environment. Several stabilizing matrices were considered, including synthetic rock, various ceramic forms, cement, and glass. Tests showed that glass appeared most promising. With vitrification, the radioactive particles within the high-level waste were atomically bonded to the glass, and the end result, often referred to as a “glass log,” could also be recycled if a better method of disposal were to arise. By the 1970s, Du Pont had begun to develop the vitrification process as a means of permanently disposing of high-level waste. In 1982, the vitrification process proposed for the DWPF called for the immobilization of Savannah River high-level liquid waste in borosilicate glass. Progress was pushed further along in 1982, when the Nuclear Waste Policy Act called for all commercial and DOE high-level waste to be disposed in federal repositories and mandated the creation of a permanent waste disposal facility. A crucial step in the vitrification process, the development of ‘in-tank precipitation’ using sodium-tetraphenyl borate, was demonstrated in 1983. This final step led to the funding of DWPF, at a cost of just under one billion dollars.

The groundbreaking ceremony for the DWPF took place on November 4, 1983 and construction continued throughout the 1980s. Designed by Bechtel and built by Morrison Knudsen, the DWPF has reinforced concrete walls, three feet thick, and was designed so that all operations could be remotely conducted. The facility also has a powerful ventilation system, with air exhaustion through a huge underground sand filter.

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Despite the increased environmental pressure of the early 1980s, Savannah River reactor production began a sustained increase for the first time since the 1960s, reaching a peak in 1984 and 1985, before dropping back in 1986 and 1987. One measure of productivity is the number of reactor subcycles per year. In 1980, there were 13 reactor subcycles, a total comparable to previous years. At that time, there were only three production reactors in operation at Savannah River: P, K, and C. By the following year, 16 subcycles were completed, and there appeared to be a complete halt in the production of californium. In 1982, there were 17 subcycles, and in 1983 there were 18. Twenty-one subcycles were completed in 1984. Among the products of these years were tritium, neptunium, and plutonium-238, -239, and -242. During these years, the use of Mark 22, the main tritium producing assembly, was expanded from its original use in K-Area Reactor. In December 1983, the first Mark 22 charges designed for C-Area Reactor went critical. Two years later, in January 1985, C-Area reactor attained a record high-power rating with Mark 22 charges: 2829 MW. The production of fuel and targets in the 300 Area was also greatly affected by the increases in production and the need to match the higher-power reactor operations in their output. Fabrication processes in M Area were conducted on a 24-hour-a-day, 7-days-a-week work schedule.

Part of the increase in reactor operations was the result of a change in the irradiation level of Savannah River plutonium. In 1982, plutonium irradiation levels were dropped from six percent to three percent plutonium-240, a figure that would be maintained until at least 1988. This allowed the plutonium made at Savannah River to be blended with material from the only other production reactor then in operation, N-Area reactor at Hanford. Since N-Area reactor was both a power and a production reactor, it operated more efficiently with long fuel cycles. As a result, it produced plutonium with a longer reactor exposure creating 9 to 12 percent plutonium-240. By the end of 1985, there were four reactors in operation at Savannah River, the first time this had been the case since 1968, when L-Area reactor was placed on standby. After a five-year restart program that began in 1980, L Reactor was brought back online in October 1985. By the close of that year, 20 reactor subcycles had been completed. Using Mark 16B-31 and Mark 22 charges, the reactors were producing tritium, neptunium-237, and plutonium-239.

This increase in production led to improvement in facilities and an overall site upgrade. New construction occurred in the process and administration areas to house new programs and personnel. Older facilities were repaired, and technical upgrades were made to operating systems and equipment. New security provisions and other physical changes were made with the installation of Wackenhut Inc. as the onsite security force. To begin to refurbish the Site’s facilities, a five-year Restoration Program was established, funded at $350 million, which was to be dovetailed with a $300 million Productivity Retention Program by Du Pont. The Restoration Program did not include capital funds needed for new construction such as the DWPF, but was the source of funding for L-Restart and other upgrades.

Although the DWPF was first expected to be complete in 1989, with the first radioactive start-up scheduled for January 1990, the facility did not actually begin operation until March 1996. The six-year delay was largely the result of various commissioning procedures and numerous safety checks. As a result, the operational story of the Defense Waste Processing Facility is discussed in the following chapter.
INCREASED REACTOR PRODUCTION

Early in the decade new production records were set. At the end all reactors were shut down.17

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In 1972, Rosa Burnette, a widow with two children, and Loretta Barnett, also a mother of three, became the first female operators in production areas such as Health Physics, where they processed draftspersons, in design work and printing, and as technicians within the non-traditional roles as analysts in Works Technical, mathematicians, workers, cafeteria workers, and in maintenance. Others worked within the announcement team. By 1955, Du Pont employed 750 women at the plant.

Mrs. Burnette’s first job as an operator was in Raw Materials, where she assembled aluminum-clad fuel billets. She described her overall experience in production as an operator as working within a family. Mrs. Burnette worked in separations and other production areas before she retired in 1953. Many women would follow in her footsteps on the production lines and in work roles that had previously been typically reserved for males.

Mary Walker, noted above, was one of the first employees to arrive in the plant. With her typewriter in tow, she arrived at the Richmond plant, where she worked in separations and clerical help within a range of administrative positions. Du Pont's plant was not a “bum plant” or “trash plant,” and the women were not expected to be there for very long. They were there to learn the nuclear business of Savannah River, the Reactor Department is where the men would be actually standing on top of the building looking at us, because women never did this before...

In 1982, four young women became the first female supervisors in the history of the Savannah River Plant. The women were responsible for supervising reactor control operations. Barbara Jennings, one of the first women to work in these positions, stated that she had never worked in a male-dominated field before. She had been employed as a secretary but was promoted to a supervisory position because she had demonstrated leadership skills and a willingness to learn the nuclear business.

In 1978, Bob Mason, a former military man, was selected for a secret project at Savannah River. He was one of the first employees to arrive at the plant and was able to provide the clerical support for Mary Walker, a secretarial worker who had helped him in his search for a job. Mason later became the first male operator to work in a reactor control room.

Women historically figured in diverse roles and fields of endeavor that allowed for the employment opportunities that women at SRP enjoy today. In 1972, Rosa Burnette, a widow with two children, and Loretta Barnett, also a mother of three, became the first female operators in reactor control rooms. They were both assigned to the Traffic and Transportation department in H Area. Burnette was first assigned to Traffic and Transportation, accepting positions with Du Pont. Barnett, also a mother of three, became the first female operators in reactor control rooms.

The SRP community, not knowing what their husbands did “out at the plant,” was surprised when they learned that their jobs were related to the nuclear business of Savannah River. The women were hired in 1950, when Mary Walker, Mr. Mason’s secretary, called to alert her to the broadcast by the AEC announcing the selection of a site in South Carolina. She learned where and when over the radio on November 28, 1950, when Mary Walker, Mr. Mason’s secretary, called to alert her to the broadcast by the AEC announcing the selection of a site in South Carolina. Mary Walker, noted above, was one of the first employees to arrive in the plant.

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Yankees. Housing was scarce and the schools were stretched to capacity as the operations workforce arrived. Moving to the South was an experience for some, as was the incredible heat. Most stayed and carved out new lives forming the nucleus of the SRP community. This generation of SRP women is also notable for their protection of the mantle of secrecy that their job demanded.

Mary Hannah, one of the first employees to arrive at the plant, worked in separations and other production areas before she retired in 1993. Many women would follow in her footsteps on the production lines and in work that had previously been typically reserved for males. She described her overall experience in production as an operator as working within a family. Mrs. Burnette worked in separations and other production areas before she retired in 1983. Many women would follow in her footsteps on the production lines and in work that had previously been typically reserved for males.

Science and ecological research, and literary science brought professional women to Savannah River. One of the first professional women at the plant was Dr. Elizabeth Baumann, an analytical chemist, who engaged in analytical chemistry studies at the Savannah River Laboratory. Other female scientists and researchers would slowly join Dr. Baumann within the laboratory. Today, Dr. Susan Wood is the Laboratory’s director. The Medical Department also offered professional women employment onsite. Nurses, such as Mary Hannah, were hired early on to begin the employee health program. Dr. Patrick is a recognized authority on wetland research and has received a number of awards for her achievements, including the John and Alice Tyler Ecology Award, considered to be the highest honor within her field. The Ruth Patrick Science Center at USC-Aiken, named in 1991, is a testament to her scientific achievements in the state, and Dr. Patrick was inducted into the South Carolina Hall of Science and Technology in 1998.

University of Georgia professor and SREL's senior ecologist, Dr. Rebecca Sharitz graduated from the University of North Carolina with a Ph.D. in botany and ecology in 1970. Dr. Sharitz came to Savannah River in the early 1970s, and has worked onsite in her research areas: plant community ecology, wetland ecology, environmental restoration, and the biology and conservation of rare species. As an educator and ecologist, she has provided students and colleagues with a female role model in science and has advanced the ecological profile of SREL on a regional and national basis. Dr. Sharitz was awarded the Meritorious Teaching Award from the Association of Southeastern Biologists in 1997 for her profound impact on students.

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The Scrap Recovery Line (also called Phase I) recycles plutonium scrap for purification and concentration to a solid form. The Phase III or Plutonium-238 Oxide Line produces plutonium-238 oxide from nitrate solutions. It also produced neptunium oxide and recovered plutonium-238, plutonium-239, and uranium scrap. Phase I and II of the HB-Line supplied plutonium-238 for the Cassini Mission. Phase II, the Neptunium-237/Plutonium-239 Oxide Line, was designed to produce solid oxide material from neptunium-237 or plutonium-239 nitrate solutions.

The Naval Fuels Program initiated in the 1980s was aimed at converting uranium feedstock into usable fuel in support of the Navy's nuclear propulsion program. Facility 247-F, a 90,000-square-foot facility constructed between 1982 and 1985, housed the processes involved in this conversion. Built at the request of Admiral Rickover, this facility provided fuel components for the Navy's nuclear propulsion reactors until it was shut down by request of the Department of Defense.

The last of the heavy-water production units (412-D) was shut down in 1982. The area was in operation for slightly over 29 years, and had produced a sufficient amount of heavy water for the three operating reactors, a reserve stock, and deuterium for use in weapons components. Notably 37 percent of the current Heavy-Water personnel in 1982 had remained in D Area since startup. Plant Manager John Granaghan, on hand for the occasion, noted that while a contingent of employees would stay on, the majority would be shifted over to the L-Area reactor restart program, as well as other project assignments on site.

New construction also occurred in F and H areas. The construction of H-Area’s B production line (HB-Line), a $70 million addition of two new levels built on top of 221-H, was begun in 1980. It was built in three phases and designed as three process lines. Construction began on the scrap recovery facility, then the neptunium oxide facility, followed by the plutonium oxide facility. The HB-Line, when built, was the sole producer of plutonium-238, a power source for the nation’s deep-space exploration program. The addition of L Reactor marked the high point of Savannah River production during the 1980s. In the three years that followed, reactor production would decline dramatically.
Scrap Recovery Line (also called Phase I) recycles plutonium scrap for purification and concentration to a solid form. The Phase III or Plutonium-238 Oxide Line produces plutonium-238 oxide from nitrate solutions. It also produced neptunium oxide and recovered plutonium-238, plutonium-239, and uranium scrap. Phase I and III of the HB-Line supplied plutonium-238 for the Cassini Mission. Phase II, the Neptunium-237/Plutonium-239 Oxide Line, was designed to produce solid oxide material from neptunium-237 or plutonium-239 nitrate solutions.

The Naval Fuels Program initiated in the 1980s was aimed at converting uranium feedstock into usable fuel in support of the Navy’s nuclear propulsion program. Facility 247-F, a 90,000-square-foot facility constructed between 1982 and 1985, housed the processes involved in this conversion. Built at the request of Admiral Rickover, this facility provided fuel components for the Navy’s nuclear propulsion reactors until it was shut down by request of the Department of Defense.

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The process areas were not the only focus of upgrades and new construction in the 1980s. The main administration area was expanded under a long-range building program that aimed at replacing trailers with administrative facilities. A 1982 article in the Savannah River Plant News (December 2, 1982) stated that 100 trailers housed 800 DOE and Du Pont employees. The Du Pont Project Department was charged with obtaining permanent buildings (30-year life expectancy) to replace the trailers over time, depending on the availability of funding. Between 1980 and 1989, nine buildings were added to the Upper 700 Area to improve the work environment and better provide office space for the increasing SROO and Du Pont staffs. Building 703-A, the main administration building, was upgraded with new conference rooms and added computer space. As a result of these changes, the main administrative area received a completely new look. SRL’s building inventory was also enlarged with the construction of a pair of two-story buildings, adding office and laboratory space. The design and building materials used in this construction was based on obtaining the most space for the available money. The buildings were considered “Local Practice Commercial Standard Office Buildings” and were let to bid as “Design-Build” projects at significant cost savings.

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from 17 subcycles in 1986 to 9 subcycles in 1987. C-Area reactor was not restarted in 1986 after an unsuccessful attempt to repair a tank leak. The gradual end of the Cold War itself, which had been the impetus behind the U.S. nuclear weapons material production, decreased the need for nuclear material production. By the end of 1988, all of the Savannah River reactors had been temporarily shut down to study safety issues in the wake of Chernobyl. Despite fitch's attempts in the early 1990s to resuscitate L and K, with the end of the Cold War and heightened environmental concerns, the Savannah River reactors were out of production.

**THE L REACTOR RESTART PROGRAM**

In the years that followed the Limited Test Ban Treaty of 1963, R Reactor was shut down in 1964, and L Reactor was placed on stand-by in 1968. With increased power levels, C-, P-, and K-Area reactors were able to meet the production goals originally established for the five SRP reactors and R- and L-Area reactor's production was not needed. Although the three Savannah River reactors remained in operation throughout the 1970s, all but one of the reactors at Hanford were also taken out of production during this period. The Vietnam War was ongoing, but it was also the era of détente, formally espoused by Secretary of State Henry Kissinger and at least informally accepted by presidents Johnson, Nixon, Ford, and, in the early years of his administration, Carter. The centerpiece of détente was the idea of nuclear parity and pushed for a military and nuclear build-up. This inauthentic what has been called the Neo-Nuclear Age of the early 1980s. Also associated with this military renewal was the Strategic Defense Initiative (SDI), known as “Star Wars.” Conceived in 1981, and revealed to the public in 1983, SDI pushed the idea of national defense into a whole new realm, and threatened to make the Soviet nuclear arsenal obsolete. The ripples caused by the Carter–Reagan shift in the late 1970s and early 1980s were clearly felt in the DOE Defense Program facilities. As early as 1980, under Carter, Hanford's N-Area reactor went back to producing weapons-grade plutonium. However, production was needed. Throughout this period, there was discussion of the need for a New Production Reactor (NPR) for tritium. Almost every aspect of the NPR engendered controversy, from the site location, to the costly Environmental Impact Statement. Even the reactor technology, whether heavy water, light water, or gas, was up for consideration. Although the need for the NPR was debated until the end of the Cold War, the controversy and production needs had the more immediate effect of spurring a related program that was considerably cheaper and more immediate, the restart of L Reactor at Savannah River.

The L Reactor Restart Program began in 1980. Its goal was to restart L Reactor by October of 1983. This was a major initiative budgeted at $314 million, employing a peak workforce of 800 for the renovation efforts, and projected to employ an operating workforce of 400 to run the reactor. It was also the first time that a reactor on standby had ever been refurbished and restarted after being out of service for more than a decade. The symbol chosen for the program was, appropriately enough, the phoenix. The L Reactor Restart Program, directed by Walt Joseph, soon found that the reactor needed new heat exchangers and replacement of all small diameter carbon steel cooling pipes. The Restart Team also had to remove deposits of aluminum-nitrate from the reactor tank and nozzles, eliminate the old asbestos insulation, and add safety upgrades that had been installed on the other reactors. In June 1983, the restart program was $10 million dollars under budget, ahead of schedule, and possessed an admirable safety record of 2.5 million hours without a single lost-day injury among the Restart workforce.

The greatest problem, however, was not technical but environmental. The accumulation of environmental requirements governing DOE facilities came down hard on the L Reactor Restart Program, as did those who opposed any expansion of nuclear facilities, whether for production or power. A lawsuit was filed in a Washington DC federal court by the National Resources Defense Council, the Energy Research Institute, the League of Women Voters, and several individuals in November 1982. This lawsuit requested that the DOE prepare an Environmental Impact Statement (EIS) on the impact of L Reactor operations on the environment, specifically the discharge of hot water into Steel Creek and the remobilization of 14 curies of cesium-137 from Steel Creek to the Savannah River.

The lawsuit was lodged against DOE because the environmental groups disagreed with an earlier finding of no significant impact (FSNII) forecasted for L Reactor operations in an Environmental Assessment (EA) prepared by the US Army Corps for DOE. They also protested that there had been no public input into the decision making. The findings in the EA stated that the rise in Savannah River's temperatures, as measured by previous L Reactor operations, would be one to two degrees F and that the river tempera-
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Beginning in the mid-1970s, the reality of détente began to fall apart. In 1975, the U.S. lost all influence in Vietnam with the fall of Saigon, and the Soviet Union and its Cuban ally made their presence felt in Sub-Saharan Africa. The Soviet invasion of Afghanistan in December 1979 proved to be the last straw for President Carter, who called for a U.S. military buildup that same month. As a result of Afghanistan, the U.S. boycotted the 1980 Summer Olympics in Moscow. More significantly, the U.S. failed to ratify the SALT II agreement, which had been signed by Carter and Brezhnev in June 1979 after years of negotiation. Ronald Reagan won the presidency in an electoral landslide in November 1980, and he took the new direction even further. Reagan formally rejected the idea of nuclear parity and pushed for a military and nuclear build-up. This inaugurated what has been called the Neo-Nuclear Age of the early 1980s. Also associated with this military renewal was the Strategic Defense Initiative (SDI), known as “Star Wars.” Conceived in 1981, and revealed to the public in 1983, SDI pushed the idea of national defense into a whole new realm, and threatened to make the Soviet nuclear arsenal obsolete.

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Replacement heat exchangers for L reactor were fabricated in Japan at a cost of $1 million each for the 12 needed. Courtesy of SRS Archives nega-

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An Atomic History 19 8/11/02 4:40 PM Page 500

Chapter Nineteen

Reactor.40 In 1981 and 1982, the Savannah River Ecology Laboratory released two Savannah River that would once again receive hot water effluent discharge from L Reactor. Direct was concern over the environmental impact to Steel Creek, a tributary of the Savannah River. In February 1983 to elicit public response on the environmental consequences of the L Reactor Restart project and its als involved with decision making on the L Reactor Restart project and its impact on local waters. Source: “Du Pont progress through political, regulatory, and public waters. Senator Ernest F. Hollings stated that he would introduce legislation to block L Reactor restart funds until an EIS was compiled.52

Further complicating matters were ongoing negotiations between DOE and South Carolina Department of Health and Environmental Control (SCDHEC) on obtaining an National Pollutant Discharge Elimination System (NPDES) permit that would regulate all site-water discharges. The previous permit, issued by the EPA, allowed direct discharges of the reactor cooling water to the site’s streams. In 1983, NPDES permitting was conducted at the state level, not by the EPA, which had delegated its responsibilities to individual states. After negotiation, the State of South Carolina agreed to remove itself from the 1982 lawsuit on the signing of a Memorandum of Agreement with DOE in which DOE agreed to study thermal mitigation for SRP discharges, to undertake a health study of SRP populations, to continue expanding the SRP groundwater program, to provide the state with radiation emission data, to provide available reactor safety documents, and to operate L Reactor within state permit limits and DOE statements. After signing the agreement, L Reactor startup was able to proceed on schedule.77

A detailed monitoring system that met the regulatory requirements of the NPDES was established on the site. One source notes that 70 NPDES monitoring stations were in place on the site in 1987.38

In response to criticism on the lack of public input on the project, Senator Strom Thurmond conducted a session of the Senate Armed Services Committee in North Augusta in February 1983 to elicit public response on the environmental consequences of the restart program. The public turnout at the session was large enough that Senator Thurmond recommended that DOE provide a 90-day comment period to allow the public to fully express their concerns. In accordance, DOE held additional public meetings in Augusta, Aiken, Savannah, and Beaufort throughout May 1983, and the statements made at these meetings were submitted into the record and transmitted to Congress. By this time, the L Reactor controversy had fragmented into opposing camps. Most local business, community leaders and citizens favored the restart, while those opposed were the more distant regional forces tied directly to environmental groups.59

The groups opposed to the program argued from a number of angles. Some were upset that L Reactor would not be equipped with a containment dome, as was now required for all commercial power reactors by the Nuclear Regulatory Commission. More direct was concern over the environmental impact to Steel Creek, a tributary of the Savannah River that would once again receive hot water effluent discharge from L Reactor.49 In 1981 and 1982, the Savannah River Ecology Laboratory released two reports dealing with the impact of L Reactor on the ecosystem of Steel Creek. The Laboratory’s general conclusion was that the “Steel Creek stream corridor and floodplains must be considered… a sacrifice zone for virtually all higher life forms.”55 This was essentially the position taken by Academy of Natural Sciences limnologist, Dr. Ruth Patrick. Dr. Patrick appeared at the North Augusta hearing in 1983 to state that the renewal of the reactor would have minimal impact on the Savannah River, implicitly recognizing that Steel Creek itself would have to be used as a buffer.52 This position was acceptable in earlier decades, when wetlands and simple distance were used to minimize impacts on the Savannah River itself. By the 1980s, however, it was no longer perceived as environmental best practice. There was now concern over the thermal effect on Steel Creek itself. It was noted at the 1983 hearing that L Reactor would discharge 250,000 gallons of slightly radioactive water per minute into Steel Creek at a temperature of 20º F, a violation of U.S. and South Carolina water standards for any commercial reactor.64 By 1983, environmental groups were calling for an artificial lake that would mitigate the effects of the high-temperature effluent water from L Reactor.44 Before the end of 1983, it was recognized that “L Lake” would have to be constructed adjacent to L Reactor as thermal mitigation to meet NPDES requirements. Construction of the lake began in 1984 and was completed the following year.58 By the time L Reactor went critical, on October 31, 1985, the controversy over Steel Creek and L Lake had delayed the reactor restart by two years.62 In the three years that L Reactor operated, before all the reactors were shut down in 1988, the operation of L Reactor was often limited by the environmental requirement to limit the temperature in L Lake to 90º F in the summer months.45

CHERNOBYL AND ITS AFTERMATH

On April 26, 1986, Unit 4, a graphite-moderated and water-cooled reactor at the Chernobyl Nuclear Power Station, 80 miles north of Kiev, suffered a series of explosions that are recognized as the worst nuclear reactor accident to date. As a result of a low-power test in which operating personnel disregarded established safety procedures, the reactor overheated to the point that the control rods could not be inserted when the supervisor ordered a “scram.” The fuel elements burst apart, causing the cooling water to turn to steam almost instantly, which in turn blew the top off the reactor tank and the building around it. The explosions dispersed huge quantities of radioactive particles into the atmosphere. Two persons were killed in the explosions and another 29 died soon after from radiation exposure. Hundreds more were sickened, as Soviet authorities struggled to evacuate and clean the area.48

The impact of this disaster was felt throughout Europe, and it had repercussions within the Soviet Union that contributed to the end of the Cold War itself. Those repercussions will be explored in more detail later in this chapter. Chernobyl also had an impact on the DOE nuclear reactors that was more momentous than Three Mile Island.
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The most immediate impact was on the dual-purpose N-Area reactor at Hanford. A graphite-moderated reactor, as was Chernobyl, N Reactor was closed for extensive safety checks. Like Chernobyl, N Reactor had no containment vessel to protect the environment and probably would not then have been licensed if subjected to current NRC requirements. Even though the reactor was basically sound, it was not restarted. The closing of N Reactor was followed by the temporary shutdown of the High Flux Isotope Reactor at Oak Ridge.

Chernobyl would influence the DOE’s decision to shutdown C Reactor. Small leaks had occurred in the lower portion of the C Reactor tank as a result of stress corrosion cracking. The leaks were repaired in 1968. In 1984, another small leak was found in the C Reactor tank, which caused the reactor to be shut down the following year for a thorough examination. A number of cracks were discovered, the most serious of which were at the knuckle joint. Efforts to repair these cracks were unsuccessful, and in September 1986, the reactor was placed on “cold stand-by” by order of the Department of Energy. This effectively ended the operation of C Reactor, which was never restarted.

These developments, however, did not satisfy the anti-nuclear lobby, which turned up the heat on all aspects of the DOE complex in the wake of Chernobyl. This attention created an environment in which the media began a more intensive search for problems within the industry, especially within the aging DOE facilities that served the military needs of the Defense Department. There was also a marked increase in the number of films, television shows, and articles critical of DOE facilities and the companies that managed and operated them. Prominent on the list of DOE operator-contractors was Du Pont.

CHANGING REQUIREMENTS FOR THE DEPARTMENT OF ENERGY COMPLEX

In the first two decades of Savannah River’s operation, relations between Du Pont and the Atomic Energy Commission, while occasionally strained, were still based on mutual respect and amiability. Du Pont had a proven track record in the wartime operation of Hanford, and the AEC permitted substantial autonomy. As a result, the AEC only had around 150 employees at its Savannah River Operations Office, and supervision was not overly intrusive. Additionally, in the 1950s and 1960s, there was little or no outside pressure from environmental groups disposed to scrutinize the arrangement or look for flaws in the operation of the plant.

This began to change in the late 1970s, with the demise of the Atomic Energy Commission as an independent federal commission. Whatever the flaws of the earlier arrangement, the AEC and Du Pont’s Atomic Energy Division shared similar goals and aspirations for nuclear energy. This was not always the case with ERDA, a Federal administration, and its successor, the Department of Energy, a cabinet-level department with a multifaceted role spanning the range of energy sources from fossil fuels, to solar and wind power, and a politically driven concern for gas prices. Not always, but certainly sometimes, nuclear energy was relatively neglected, and this trend continued as various advocacy groups and the general public itself began to turn away from the promise of the atom. And there did not appear to be anything that could be done to alleviate the situation. In the early days, Du Pont may have been far ahead of the environmental curve, as witnessed by the collaboration with the pioneering work of scientists like Dr. Ruth Patrick, but that was not the case in the 1980s. By then, changing laws and expectations led the Savannah River Operations Office to correct perceived deficiencies in safety procedures and radiouclide waste disposal.

WACKENHUT SERVICES COMES ON BOARD

Security became a major issue at Savannah River in the early 1980s. With the taking of American hostages in Iran in 1979 and the general rise of terrorism in the Middle East, the security arrangements at U.S. nuclear facilities came under closer scrutiny by the National Security Agency. Industrial guard forces at most facilities were capable of thwarting simple threats, but were inadequate to protect facilities and nuclear materials from dedicated and trained terrorists. In 1980, the government conducted a mock raid on Savannah River with government agents, who infiltrated the plant with forged documents, took hostages, and seized control of one of the reactors. The relative ease of this raid led to a Congressional hearing on security and it soon became obvious that security at Savannah River would have to be improved.

Even though Du Pont had been responsible for all aspects of the Savannah River operation, including its security, the company was not interested in developing the capability to deal with the terrorist threat. The Department of Energy thus contracted with Wackenhut Services Inc. to provide security services for the site in 1983. Du Pont continued to provide security projects and safeguards for special nuclear materials. In the business of securing industrial and national sites from the Alaska pipeline to the Kennedy Space Center, Wackenhut immediately made plans to upgrade the plant’s security force employed by Du Pont at Savannah River. Soon after the transition, security was tightened around the reactors, the separations areas, and the fuel manufacturing area.
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In April and May 1982, Du Pont at Savannah River underwent a management reorganization that moved away from a traditionally “functional” approach to one that was more responsive to “program management.” This shift began approximately in 1979. The adoption of the program management approach was perceived as an enabling tool for Du Pont to handle the greater load of new programs required of the facility in this decade, and to conduct the training that new recruits required. Much of this reorganization was observed in Wilmington by Frank Krusci, Technical Director, and Jim Conaway, Manufacturing Director, and was coordinated at Savannah River by the plant manager, John Granahan. Under the new organization, the Savannah River Manager of Operations was Al Peters, and under him were the program managers for Reactors, separations, and waste management. In the case of reactors, the Program Manager was Joe Womack, and under him were five superintendents: Lowell Hibbard for reactors; Gerry Meox for Reactor and Reactor Materials Technology; Tom Beliveau for Reactor Works Engineering; Bob Swingle for Raw Materials and Heavy Water; and Walt Joseph for the L Startup Project Team.54

Much of this reorganization was an attempt to come to grips with the gradual change in the overall mission of the Department of Energy. Throughout the 1980s, there was a shift in the DOE mission from weapons manufacturing to cleaning up the weapons complex, and this was true despite the re-emphasis in the early 1980s on weapons-material production as witnessed by the L Restart effort. This new emphasis was recognized in 1987, when the DOE Headquarters itself went through a reorganization that allowed it to better concentrate on defense waste programs and site cleanup.55

Du Pont had never been completely at ease with its involvement in the nuclear industry, even in the early days. This dissatisfaction grew as the nuclear industry and weapons material production received increasingly bad press beginning in the 1970s and intensifying in the 1980s. Savannah River had never had a close fit with Du Pont’s corporate culture, which was devoted to the pursuit of new products. Du Pont performed the early nuclear work out of a sense of patriotism, and was certainly interested in the promise of Savannah River Plant Staff, 1989.


Of more relevance to Du Pont commercial activities was the Atomic Energy Commission’s Plowshares program of the 1980s, which attempted to develop nuclear explosives suitable for use in construction and mining. The Du Pont Explosives Department followed the work closely, but no practical atomic explosives were ever developed—in part because their use was unlikely to be accepted by the public. At Savannah River, use of explosives to create transplutonium elements was studied, but found problematic because the great amount of material that would need to be processed to recover the products.

Between the mid-1960s and the 1980s, about 100 power reactors were built in this country. Only one was heavy-water cooled and moderated like the Savannah River reactors, and that was an experimental unit in operation briefly at Parr South Carolina. Thus Du Pont’s expertise in reactor operation was a type of reactor that was not attractive to the power industry, as heavy-water reactors were expensive to build and operate. By the late 1960s, while many of the commercial power reactors were being built, public perception of risks associated with the nuclear industry were fast tilting toward the negative. Environmental concerns and regulations further hampered development of the nuclear power industry in the 1970s, encouraged by and encouraging greater public apprehension about the safety of nuclear energy. Du Pont did not pursue any lingering interest in power generation that it may have had into this period. Also, through the 1970s, it became apparent that none of the products installed in the reactors at Savannah River would find markets suitable for commercial development by the company anytime soon. Du Pont’s testing of the commercial nuclear industry waters did not proceed beyond public sector involvement by anything more than a few hesitant steps.

with the addition of perimeter fencing and many internal security improvements. Major capital improvements and operational changes required close collaboration between SROO, Du Pont, and Wackenhut. Helicopters, machine guns, and flak jackets became the security norm at Savannah River.\(^\text{57}\)

**CHANGE AND FRUSTRATION**

The security issue was a major challenge for the Department of Energy and Du Pont, and it was a harbinger of things to come. There had always been a tension between Du Pont and the Savannah River Operations Office, but this had been a creative tension when the need for nuclear materials was paramount. As that need declined, as AEC headquarters became more politicized, as the elder generation of workers was replaced by a new generation, and as environmental scrutiny made everyone’s job more difficult, this frustration became more intense for SROO and Du Pont.

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In April and May 1982, Du Pont at Savannah River underwent a management reorganization that moved away from a traditionally “functional” approach to one that was more responsive to “program management.” This shift began as early as 1979. The adoption of the program management approach was perceived as an enabling tool for Du Pont to handle the greater load of new programs required of the facility in this decade, and to conduct the training that new recruits required. Much of this reorganization was overseen in Wilmington by Frank Kruesi, Technical Director, and Jim Conaway, Manufacturing Director, and was coordinated at Savannah River by the plant manager, John Granahan.

Under the new organization, the Savannah River Manager of Operations was Al Peters, and under him were the program managers for Reactors, separations, and waste management. In the case of reactors, the Program Manager was Joe Womack, and under him were five superintendents: Lowell Hibbard for reactors; Gerry Metz for Reactor and Materials Technology; Tom Blevins for Reactor Works Engineering; Bob Swingle for Raw Materials and Heavy Water; and Walt Joseph for the L Startup Project Team.\(^\text{58}\)

Du Pont’s commercial interest in the nuclear field was limited at best until the early 1980s. From 1957 through 1982, Du Pont and Savannah River had participated in studies of potential commercial reactors, but did not wholeheartedly jump aboard the power reactor bandwagon. The company’s interest in commercial developments lay elsewhere, in potential products closer to its traditional marketable goods. Participation in the platinum-238 and transplutonium production projects at Savannah River indicates management was looking towards the materials rather than the energy that reactors could produce.

In 1961, Crawford Greenewalt wrote to AEC Commissioner-Chairman Glenn Seaborg, expressly reviving earlier statements on commercial aspects of the nuclear industry. This change of heart among the Du Pont management reflected broad attitudes of the day. At the time, public fear of nuclear energy was nearly nonexistent, and interest in radiolabelling uses in medicine and industry were waxing, as were head source applications in space exploration.

By Spring 1963, Du Pont had acted on its newly expressed interest in the commercial nuclear sector in a variety of ways, but found little that warranted more than minimal or routine efforts. One person in the Development Department was then spending almost all his time following the nuclear industry to watch for potential areas of investment, but had seen nothing of great interest. A committee investigating the potential of thermal nuclear power generation could not recommend further pursuit for the company. Collaboration with another company in their interest in nuclear energy was nearly nonexistent, and interest in space exploration.

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Of more relevance to Du Pont commercial activities was the Atomic Energy Commission’s Plutonium program of the 1980s, which attempted to develop nuclear explosives suitable for use in construction and mining. The Du Pont Explosives Department followed the work closely, but no practical atomic explosives were ever developed—in part because their use was unlikely to be accepted by the public. At Savannah River, use of explosives to create transplutonium elements was studied, but found problematic because the great amount of material that would need to be processed to recover the products.

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During the initial years of management at Savannah River, Du Pont followed the functional management system described in the earlier chapter discussing the company. At the corporate level two shifts occurred in managerial organization, one in 1972 and a second in 1978; neither impacted operations at Savannah River.

In 1979, a shift in management policy did occur that had an effect on Savannah River. Forecasts of increased construction with authorization of major new facilities prompted a change from functional to what Du Pont called a program management organization, first instituted in L-Area as an outgrowth of an effort to enhance liaison between Wilmington and Savannah River personnel and between construction and operations managers during the upgrade of L-Area reactor. The then-revised concept included recognition of the Wilmington AED Process Section into the Project Management office, assignment of project liaison personnel in major SHP departments and Wilmington, and organizing the L Reactor Startup Team to provide close design and construction follow-up of the L Reactor reconditioning. Ideally the liaison personnel for a new project would be the future top operating staff. The new organization gave operations managers more generalized authority, placing the management focus on target products. This was to encourage greater coordination among the various groups involved in production, moving the focus away from individual functions of production, which could encourage isolation of production units and less efficiency. The new system was an adaptation of practices Du Pont had successfully applied to some of its commercial plants.

The concept of more generalized authority for management of operations was generally applied to the entire plant in the spring of 1982. Under the new system, three product teams, each headed by a Program Manager, were responsible for all production at the Site. And each program manager was in charge of Production, Works Engineering, and Works Technical departments for their particular program. The new organization consolidated these entities into what was hoped to be a more coordinated structure at upper management levels, while leaving the lines of authority intact for most of the wage roll employees and their supervisors. This change came at a time when many of the persons with Hartford experience had retired, taking with them early organizational experience and know-how. The new managers typically had learned their skills in commercial operations. The new structure may have been inefficient initially or appeared to be so to those accustomed to the earlier organization. Departments like Health Physics no longer had a direct line to the plant manager since their findings now passed through a production manager, although, as always, safety issues did have the ear of management when needed.

This management structure, in effect through 1989, was too briefly used to assess its impact. However a similar reorganization of SRL was quickly seen to be detrimental. At the end of 1978, the director of the Technical Division, in Wilmington, announced a reorganization of the Savannah River Laboratory along “programmatic lines.” The Laboratory director position was eliminated, and three staff positions were created to manage laboratory work. These were Special Programs, Process Research and Development, and Laboratory Manager (in charge of services, planning general operations, and information). The former Laboratory Director was offered one of these positions but left the plant in protest over the changes and did not return.

Ostensibly, a change to a program management organization, one effect of the change was to move decision-making power over broad program pursuits to Wilmington since there was no longer a single person in charge of the Laboratory in South Carolina. Prior to this, a single director of the Savannah River Laboratory had reported to the director of the Technical Division for approval of all projects, but the latter had little authority to broadly determine Laboratory work. With local management power divided, the Technical Division director could then apportion as he saw fit. Greater preference was given to waste issues, organized under Special Programs. The shift in funds to waste programs under the Special Programs group reduced monies available to the Process Research and Development group, which meant in turn reduced funding for reactor oversight and cooperative activities previously undertaken by Laboratory personnel. Some have felt that this reduction may have contributed to reactor safety problems experienced in the 1980s. At the very least, it did increase competition for funds and personnel in the Laboratory, and heightened tensions there.

The Technical Division director who initiated this change was transferred late in 1979, and by early the following year the new director had reversed the problematic division of management authority. An announcement in January 1980 stated that the programmatic functions—Special Programs and the Process Research and Development—were consolidated under a new Laboratory Director. Even though short-lived, this change shows that shifts in management responsibilities could have great impacts on work undertaken, and that such shifts as the change to the program management concept had to be carefully considered by the plant operator.

Sources: John T. Granzau to staff, with attachments, April 19, 1982, Savannah River Site; and W. P. Martin to P. L. Poppenkamp, Personnel History of AED and SRL Management, May 1, 1987, Savannah River Site.
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the transplutonium programs in the 1960s. However, when those programs failed to find a niche in the open market, and when the production of weapons materials was clearly no longer critical to national security, Du Pont realized that its continued presence at Savannah River was not in the company’s best interest.

Congress was increasingly dissatisfied with the arrangement as well. The latitude given Du Pont in the original AEC contract did not sit well with Congress, which put pressure on DOE Headquarters to standardize arrangements with its various management and operations contractors. One senior DOE official complained in the 1980s, “we don’t have a contract with Du Pont, we have a treaty with Du Pont.”

The breaking point was the issue of liability. In the original contract, Du Pont had insisted, and the AEC had accepted, that the company would not be held liable for damages in the case of an accident or some other form of litigation that might result from its operation of a nuclear facility. At the time, this was seen as reasonable, and even the government received some support in this regard through the Price-Anderson Act of 1957, which established liability limits and certain no-fault insurance provisions for reactor accidents. By the mid to late 1980s, however, DOE began to suggest that Du Pont’s liability arrangement might have to be altered. Du Pont, which did not run Savannah River for a profit, was not eager to assume this responsibility.

**DUPONT’S DEPARTURE**

Given the above, it was not surprising when Du Pont announced in October 1987 that it would not accept another extension of the Savannah River contract when the existing contract expired in 1989. Richard E. Heckert, Chairman of Du Pont, stated that the reason was two fold, that the government no longer appeared willing to guarantee the work, and that Du Pont was no longer uniquely qualified to do it. A parallel announcement was made by John Granaghan, Manager, at Savannah River.

Since the mid-1980s, DOE and its contractors had been under examination in Congress for allegations of poor safety practices at various nuclear facilities. In hearings before the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce, Savannah River was noted for its poor fire-prevention procedures. It was stated that in certain parts of the reactor buildings, fire control was nothing more elaborate than a standard garden hose. Congress wanted sprinkler systems installed in the reactor buildings, and this was a government expenditure that SROO and Du Pont management had resisted for the simple reason that the all-concrete reactor buildings could not burn.

The concern over fire-prevention procedures was eclipsed by a news story reported on the front page of the New York Times in 1988. A report, “SRP Reactor Incidents of Greatest Significance” compiled three years before, which detailed and categorized 30 significant incidents in the history of the five Savannah River reactors, was released to the public. Most of the incidents in the 1985 report had been summarized in an earlier ERDA document. An internal memorandum initially, the report’s purpose was to show that the serious reactor incidents at the Savannah River Plant were largely confined to the early years of operation, and that the safety precautions of later decades had greatly reduced the incidence of error. It was composed at a time when reports of a similar nature were being compiled for other sorts of mishaps; one such report, for example, compiled in June 1985, documented the occupational exposures of workers to chemicals at Savannah River from 1952 through 1984. In 1988, the report on reactor incidents was released in an effort to show that nuclear work was, in fact, becoming safer. This was not, however, the case.

In March 1987, the Atomic Energy Commission and Du Pont’s Board of Directors approved a plan for Du Pont to operate Savannah River for a limited period of three months. This was done so that SROO and DOE could verify Du Pont’s ability to operate Savannah River. In April 1989, all of the reactors were shut down, and the U.S. had ceased the production of transplutonium elements.
Chapter Nineteen


Du Pont plant manager John Granaghan, along with Ernie Ruppe (seated), Petrochemicals Source: “Du Pont to Leave SRP in 1989,” Richard E. Heckert, excerpted from 1987 announcement. And operations contractors. One senior DOE official complained in the 1980s, “we don’t have a contract with Du Pont, we have a treaty with Du Pont.”

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The fact that the Savannah River reactors had all been shut down in 1988 was almost lost in the public debate. Although this shutdown was initially intended to be temporary, it soon became permanent. In March 1987, administrative limits were placed on the power levels at K, L, and P reactors due to lingering uncertainties over the Emergency Cooling System (ECS). Even though these limits were relaxed somewhat later that same year, it seemed increasingly clear that the three reactors would never again be brought to full power. The following year, all three were shut down due to continuing concerns over the ECS, as well as the possibility of a “loss of pump accident” (LOPA) or a “loss of coolant accident” (LOCA). Reactor 1 was the first to go, in April 1988, followed in rapid succession by L, in June and P in August. The ripple effect of these shutdowns passed through other areas of Savannah River as well. The production of fuel tubes ceased in Building 321-M that same year, as did production in Building 313-M.

By the time Westinghouse Savannah River Company assumed the facility from Du Pont in April 1989, all of the reactors were shut down, and the U.S. had ceased the pro-
duction of weapons-grade fissionable material altogether. The Site was officially included on the National Priority List and became regulated by the Environmental Protection Agency. In the same year, the Department of Energy formally announced that its primary mission had changed from weapons production to a comprehensive program of environmental compliance and cleanup. In a signal that it was making a break with the past, the facility’s name was changed from the Savannah River Plant to the Savannah River Site.75


The controversy over “Star Wars,” not to mention conflicts in Afghanistan and Nicaragua, kept the Cold War fairly warm in the early 1980s. There was also a confrontation over missile deployment in Europe. It was in this context that the L Reactor Restart Program was initiated and completed. By the mid-1980s, however, Soviet society was beginning what would turn out to be a permanent thaw. Yuri Andropov, Brezhnev’s successor, died in 1984 after only a couple of years in power, and was eventually succeeded by Mikhail Gorbachev in 1985. Within a year, Gorbachev became the first Soviet leader to openly admit the weakness of his country’s planned economy. More remarkably, he was the first Soviet leader to admit that elements of the old Communist doctrine were wrong or, at the best, outdated.76 By the late 1980s, Gorbachev was well into the programs now associated with his name: glasnost (openness) and perestroika (economic and political restructuring of the old Soviet system).

The nuclear accident at Chernobyl played a role in this development. After first denying the accident, Soviet authorities soon made a complete turn around, with relatively open disclosure of the problem and solicitations for foreign assistance. The relatively new approach to Chernobyl paved the way for new approaches to other problems. In December 1987, the U.S. and Soviet authorities signed an agreement to eliminate all land-based intermediate-range nuclear missiles from Europe.77 More was to follow in almost dizzying succession. In the fall of 1989, the Berlin Wall, symbol of the Cold War in Europe, was dismantled, permitting a rapid reunification of Germany. Communist regimes collapsed throughout Eastern Europe. Within two years, in 1991, the Soviet Union itself would collapse, leaving the former giant split into its various constituent republics. Gorbachev, now jobless, was forced to bow out to Boris Yeltsin, the president of Russia.

In the decade that followed, there would be additional problems with Russia as its economy continued downward, but there would no longer be the threat of an ideologically fueled nuclear war between the two great superpowers of the Second World War. Now it was the time to take stock of the vast nuclear arsenals in both countries, and initiate a general cleanup of forty years of nuclear production. Savannah River Site, under the auspices of the Westinghouse Savannah River Company, was already poised to head in that direction.

“When we started using these reactors down here, the commercial nuclear business hadn’t been invented yet. We had five reactors going—and commercial power reactors were just a gleam in the scientist’s eye. So everything we did was pioneering—there was no real road map for us.”

- Gerry Merz


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duction of weapons-grade fissionable material altogether. The Site was officially included on the National Priority List and became regulated by the Environmental Protection Agency. In the same year, the Department of Energy formally announced that its primary mission had changed from weapons production to a comprehensive program of environmental compliance and cleanup. In a signal that it was making a break with the past, the facility’s name was changed from the Savannah River Plant to the Savannah River Site.75


The controversy over “Star Wars,” not to mention conflicts in Afghanistan and Nicaragua, kept the Cold War fairly warm in the early 1980s. There was also a confrontation over missile deployment in Europe. It was in this context that the L Reactor Restart Program was initiated and completed. By the mid-1980s, however, Soviet society was beginning what would turn out to be a permanent thaw. Yuri Andropov, Brezhnev’s successor, died in 1984 after only a couple of years in power, and was eventually succeeded by Mikhail Gorbachev in 1985. Within a year, Gorbachev became the first Soviet leader to openly admit the weakness of his country’s planned economy. More remarkably, he was the first Soviet leader to admit that elements of the old Communist doctrine were wrong or, at the best, outdated.76 By the late 1980s, Gorbachev was well into the programs now associated with his name: glasnost (openness) and perestroika (economic and political restructuring of the old Soviet system).

The nuclear accident at Chernobyl played a role in this development. After first denying the accident, Soviet authorities soon made a complete turn around, with relatively open disclosure of the problem and solicitations for foreign assistance. The relatively new approach to Chernobyl paved the way for new approaches to other problems. In December 1987, the U.S. and Soviet authorities signed an agreement to eliminate all land-based intermediate-range nuclear missiles from Europe.77 More was to follow in almost dizzying succession. In the fall of 1989, the Berlin Wall, symbol of the Cold War in Europe, was dismantled, permitting a rapid reunification of Germany. Communist regimes collapsed throughout Eastern Europe. Within two years, in 1991, the Soviet Union itself would collapse, leaving the former giant split into its various constituent republics. Gorbachev, now jobless, was forced to bow out to Boris Yeltsin, the president of Russia.

In the decade that followed, there would be additional problems with Russia as its economy continued downward, but there would no longer be the threat of an ideologically fueled nuclear war between the two great superpowers of the Second World War. Now it was the time to take stock of the vast nuclear arsenals in both countries, and initiate a general cleanup of forty years of nuclear production. Savannah River Site, under the auspices of the Westinghouse Savannah River Company, was already poised to head in that direction.