## ENVIRONMENTAL STEWARDSHIP





# WE ARE PROUD OF OUR ENVIRONMENTAL COMPLIANCE RECORD



Given the extensive nature of environmental regulation, total compliance and excellent performance is not easy to achieve. It requires cooperation and communication among all employees. The necessary effort is both great and, constant. I expect everyone at GPU Nuclear to-make that effort every day.

We at GPU Nuclear are proud of our environmental compliance record. At Oyster Creek and -Three Mile Island (TMI) we have significantly reduced radioactive effluents,, hhazardous waste, and reportable spills and permit violations. These environmental improvements have been accomplished while meeting or exceeding our generation goals.

These outstanding environmental performances confirm GPU Nuclear's commitment to the environment and demonstrate that nuclear power plants can be an environmentally friendly source of electricity. Operating the plants with minimal impact on public health and the environment is vitally important and. also one of the best ways we can demonstrate that GPU Nuclear is a good neighbor 'to our surrounding communities.



The regulated electric utility industry is changing to a deregulated one. Competition is at hand. While the way we do business may change, our commitment to producing electricity safely and with respect for. the environment will not. After all, generating electricity with environmental excellence is good business.

T.G. Broughton. President, CEO, GPU Nuclear, Inc.

## WE ARE COMMITTED TO OPERATING OUR PLANTS IN AN ENVIRONMENTALLY SOUND MANNER

Nuclear, Inc., a subsidiary of GPU Inc., operates two nuclear generating stations, Oyster Creek in New Jersey and Three Mile Island in Pennsylvania. It also is decommissioning the Saxton Nuclear Experimental Facility in Bedford County, Pa. As a responsible steward of the environment, we have a long-term commitment to doing business and operating our plants in an environmentally sound manner.

Oyster Creek and Three Mile Island operations can affect the environment in various ways: radiological releases can enter the air, food, water, river, and bay sediments; water usage and the resulting discharges have the potential to affect aquatic life; hazardous and non-hazardous wastes are by-products of our processes, and soil and groundwater can be affected by leaks and spills. Our challenge is more than just.operating our facilities in compliance with all of the regulations; it is to be an excellent steward of the environment as well.

Our strategy raises employee awareness of environmental protection above the conventional compliance point of view through aggressive environmental goals, environmental auditing and self-assessment, and proactive environmental risk management activities.

GPU Nuclear's high standards of excellence are reflected in a number of very challenging environmental goals. We have made significant 'Progress in the following. areas:

Implementation of a zero liquid radwaste discharge policy at Oyster Creek since 1989, making it a top performer in the industry.

Significant reductions in gaseous effluents at Oyster Creek and TMI as a result of improvements in waste treatment systems.

Minimization of radiological liquid discharges at TMI, making it, a top performer in the industry.

Zero discharge to surface water permit violations for 1994, 1995 and 1996 for both Oyster Creek and TMI and 1997 for TMI.

Reduction of hazardous waste by more than 95 percent from 1990 to 1997.

T Effective implementation of spill prevention programs.

- Regulatory audits and inspections of permits, hazardous waste; and radiological environmental monitoring resulted in no programmatic deficiencies.
- A self-assessment demonstrated that our Environmental Management System compares favorably with the International Standard for Environmental Management, ISO-14001.

While we have achieved a level of excellence, as always, we. will continue to strive for continued improvement.

This report provides a summary of our environmental performance.

#### . . . . . . . . . . . . . . . . . . .

#### WE MONITOR OUR RADIOLOGICAL EFFLUENTS TO- MAKE SURE THEY ARE WELL BELOW REGULATORY LIMITS

Nuclear power plants use a number of barriers to keep radioactive material inside the plant. Under normal operating conditions, nearly all of these radioactive materials are contained. Effective containment systems, and the operation of gaseous and liquid radiological waste treatment systems make sure only minute amounts of radioactive materials are released to the environment. The radioactive materials released from our plants are well below regulatory requirements.

At Oyster Creek, we have significantly reduced the amount of radioactive effluent releasedd to the environment in the past 10 years. A zero liquid discharge policy has - been adopted and no routine liquid radwaste releases have occurred since ,1989. Similarly, TMI water treatment systems were modified to minimize- liquid releases of radioactive materials to the Susquehanna River.

The small amount of radioactive mate= vials released from nuclear plants' move through the environment in a variety of ways. Humans may come in contact with them through breathing; eating and direct exposure. Thus, GPU Nuclear conducts comprehensive surveillance programs at Oyster Creek and -TMI to monitor for radiation and



radioactive materials in the environment. These programs include collecting and analyzing samples of air, groundwater, surface water; soil, vegetables, fish shellfish and, sediments. Monitors are located around the plants to record direct. radiation exposure. These monitoring programs exceed the requirements and guidance established by the U.S. Nuclear Regulatory Commission (NRC).

Through the years, only a small number of samples have contained detectable amounts of man-made radioactivity, most 'of which came from atmospheric nuclear weapon's testing fallout and medical industry activities. In addition, levels of <sup>radioac-</sup>tivity from Oyster Creek and TMI, when detectable, were small when compared with natural background radiation.



The biological- effects of radiation are expressed in terms of radiation dose called rem. Because radioactive releases from a nuclear generating station are extremely small, a subunit of the rein, millirem, is used to express the radiation dose received by the public. A millirem is 0.001 rem.

The average United States resident receives a radiation dose of about 360 millirems each year. Of this, about 300 millirems are from natural, background radiation and about 60 millirems come from man-made sources, like x-rays.

For comparison, the maximum doses received

by people living near-Oyster Creek and TMl are very small fractions of the U.S. Environmental Protection Agency limit of 25 -millirems per year.

Years of monitoring show that radioactive, releases from Oyster Creek and TMI have had. no adverse impact on the quality of the environment and the health and safety of the public.

## WE HAVE IMPLEMENTED A COMPREHENSIVE GROUNDWATER PROTECTION PROGRAM

Groundwater protection is necessary for sound environmental stewardship, maintaining high quality drinking water, achieving regulatory compliance and efficient plant operation. Recognizing the importance of this resource, GPU Nuclear has implemented a comprehensive three-point groundwater protection program. The first element.- groundwater contamination prevention - involves identification, assessment, repair or replacement, and periodic testing of storage tanks, pipelines and other plant, equipment containing potential groundwater pollutants. Containment

#### devices keep portable equipment from leaking unwanted materials to the environment. Spills or leaks of any liquids, other than clean water, are not acceptable.

Groundwater contamination monitoring, the second part of the program, began in the early 1980s and involves the installation and periodic sampling of monitoring wells. At Oyster Creek and TMI a network of monitoring. wells is located around the plants. The wells detect unmonitored leakage from equipment. so it can be identified and repaired.

The final element - groundwater- contamination cleanup - involves containing, removing, treating and disposing of contaminated soil and groundwater. The object is to prevent the spread Of any contamination that existed before the groundwater-protection program was implemented, or that may be caused by accidental spills.

GPU Nuclear has phased out the use of 'underground storage tanks at Oyster Creek. TMI has decommissioned several tanks and upgraded most remaining tanks with double walls and leak detection systems.

#### Some minor spills

and laks have counted at 0 year Creck and  $\mathbb{N}$  that have caused  $^{|}aw$  levels Of the radioactive isotope, tritium, and other contaminants to migrate into

#### the soil and groundwater. Our comprehensive groundwater protection -

program is designed for early detection so that corrective actions may be taken. Our extensive radiological environmental. program has not detected any migration of these contaminants to the offsite environment,



demonstrating that controls and corrective actions have been effective. In accordance with strict environmental protection requirements, Oyster Creek has an ongoing project to remediate localized -contarnination resulting from an underground fuel oil leak.

## WE HAVE. SIGNIFICANTLY REDUCED OVERALL HAZARDOUS WASTE .PRODUCTION

Both Oyster Creek and TMI have aggressive programs to minimize the amount of hazardous waste, low-level radioactive waste (LLRW) and other waste produced at the plants.



The programs focus on source reduction. recycling and reuse, treatment, job planning, oversight of plant activities,, training and educating our employees.

As a result, we have cut our overall hazardous waste<sup>-</sup> production at Oyster Creek and TMI by 95 percent from 1990 to 1997.

Low-level radioactive waste (LLRW) has been reduced significantly. as welf. Our plants have emerged as top performers in reducing LLRW volume. In 1986, Oyster Creek disposed of 21,245 cubic 'feet of

LLRW;-in 1997, that number dropped to 1,666 cubic feet. TMI disposed of 7,600 cubic feet of LLRW in 1986, but only 48.5 cubic feet in. 1997,

Nuclear power plants also generate high-level radioactive waste, also known as spent fuel. Both Oyster Creek and TMI currently store their spent fuel- in pools looted inside secure buildings. TMI has enough space in its. spent fuel pool to store its used' fuel assemblies until its license expires in 2014. Oyster Creek, however, will need additional space before its .lieense.expires in 2009.

If the federal government does not construct an interim or permanent fuel storage facility by then, as required by law, Oyster Creek plans to store its spent fuel in an onsite interim spent fuel storage facility.

#### WE. ARE SERIOUS ABOUT PROTECTING OUR SURFACE WATER RESOURCES

Our environmental scientists have monitored fish and other marine life in Barnegat Bay and adjoining streams since 1963. The company has spent more than \$8 million studying the impact of Oyster Creek on marine life. More than \$5 million in upgrades havee been made to lessen environmental impact on marine life. In 1994, the New Jersey Department of Environmental Protection (NJDEP) concluded that Oyster Creek does not affect the long-term health and welfare of Barnegat Bay and the organisms that live there.



Winter shutdowns present a difficult challenge at Oyster Creek, because a sudden drop in water temperature can prompt a fish kill. The number and size of winter\_ fish kills were significantly decreased by reducing the station's discharge canal temperatures, thereby minimizing the attraction of migrating fish to the area. In addition, shutdowns are no longer\_ scheduled for the winter, but now occur in the fall. When a shutdown is necessary, operators attempt to do it . slowly, allowing fish in the discharge canal to addition to the changing temperature.

Barnegat Bay, having been. recognized as one of the nation's important natural resources, has been added to the National Estuary Program. In support of such an important program, a GPU Nuclear scientist participates as a member of the Scientific and Technical Advisory' Committee. This committee oversees the quality of scientific study and provides the scientific direction to the development of a management plan for Barnegat Bay.

Threatened and endangered species of sea turtles are occasionally found in the Oyster

Creek intake canal. These turtles were first observed at Oyster Creek in 1992, as a number of 'sea turtles began migrating to Barnegat Bay. To minimize the plant's impact on the sea turtles, employees must follow a procedure, which defines surveillance, handling, and reporting requirements. Instructions on the identification, proper handling, and resuscitation' of sea turtles. are included in the procedure and on large color posters 'prominently posted at the intake structures.

For the past 1.8 years, GPU Nuclear has conducted extensive

aquatic monitoring of the Susquehanna River near TMI and has concluded that plant operations do not adversely impact the river. In fact, the Susquehanna River in the vicinity of TMI, is a popular recreational area for boating and fishing, noted especially for small mouth bass.

Surface water discharges at Oyster Creek and TMI are governed by state-issued permits, which limit the amount of effluents such as heat and chlorine that may be discharged with no significant impact to public health or the environment.

#### WHEN IT COMES TO CLEAN AIR, WE TAKE THE INITIATIVE.

The Clean Air Act Amendment (CAAA) of 1990 is one of the most significant and



complex , pieces of environmental legislation ever enacted by Congress. It requires an unprecedented level of effort from both industry and government in all phases of air quality management. The legislation covers & wide range of air quality issues\_ and regufates. many different sources of pollution..

Nuclear power generation is one of the cleanest forms of electricity production, as it, does not emit large quantities of pollutants such as nitrogen oxide and sulfur dioxide OT "greenhouse gases" like. carbon dioxide. Small amounts of nitrogen oxide are emitted at Oyster Creek and TMI when operating their auxiliary boilers and emergency diesel generators. GPU Nuclear'has voluntarily limited its nitrogen oxide emission below regulatory limits.

GPU Nuclear has also taken a proactive stance on reducing its use' of chloro fluorocarbons (CFCs) to protect the Earth's.ozone layer. -

#### WE ARE PROACTIVE IN PREVENTING. SPILLS

Spills and accidental releases of hazardous substances can pollute the soil and groundwater. GPU Nuclear is proactive in preventing spills.- Each year -select personnel receive spill, response training and emphasis is placed 0n spill prevention during routine and major plant activities. At TMI, an above ground tank monitoring program was implemented in 1997 to further ensure timely response to leaks.

If a spill does occur, spill response and cleanup materials are located throughout each site for quick access. This attention to spill prevention has reduced the number of spills at our facilities.

#### WE HELP OUR COMMUNITIES PREPARE FOR AN EMERGENCY

GPU Nuclear works closely with the communities surrounding our generating stations.to help them be prepared to. respond to an emergency. We share our knowledge and training, facilities with local fire companies,. police departments, first aid squads and other community organizations. We participate in training exercises 'with these organizations to ensure a continued state of readiness. GPU,Nuclear first aid squad personnel are available. to respond to emergencies in local neighborhoods with company equipment. These partnerships foster a sense of teamwork among our employees and our neighbors that ultimately benefit the entire community.

We have implemented a comprehensive Hazardous Substances Awareness Program that is designed to ensure that our host communities, as well as our employees, are adequately. informed about the potential hazards associated with chemicals stored at otir facilities. Annual inventories, including quantities, storage locations; container types and hazardous characteristics of each chemical; are provided to the community emergency response organizations.

### OUR ACTIVE PARTICIPATION, WITH LEGISLATIVE RULEMAKING HAS KEPT US AT THE FOREFRONT OF ENVIRONMENTAL REGULATORY ISSUES

Since the early 1970s the number of federal and state regulations that affect nearly every aspect of our business has dramatically increased. There are approximately 1-9,000 pages of federal environmental, regulations and nearly 10,000 pages each of environmental regulations **for**, New Jersey

and Pennsylvania.

GPU Nuclear actively participates in several environmental, initiatives through memberships in various industry organizations and partnerships. with governmental • agencies. Our goal. is to develop sound environmental public policy and enhance environmental protection.

GPU Nuclear monitors federaland state rulemaking to gain an early understanding of the environmental regulatory climate. This information is then communicated to the rest of the company so that timely actions can be taken to, ensure compliance. Our, active **par**ticipation with legislative and rulemaking issues has allowed, us to he at the forefront of environmental regulatory issues. -



## WE BELIEVE TRAINING OUR EMPLOYEES IS AN INTEGRAL PART OF OUR ENVIRONMENTAL SUCCESS

'Training our employees plays an important role in our overall success. To achieve excellence as an environmental leader, we must ensure our employees have the skills necessary to perform their jobs in an environmentally acceptable manner.. Instructors now use a proactive, integrated approach to training, tailoring-similar-environmental and safety-related training requirements to an employee's job requirements.

#### WE RECOGNIZE THE VALUE OF NATURAL RESOURCES

Sure, we. are committed to preserving our natural resources and protecting the environment. But, being environmentally responsible means going beyond the letter of the law and practicing environmental stewardship..

AtTMI, we offer tours of the natural areas of the plant site to interested groups and schools. Our natural areas are also used by high schools and colleges for course studies and research projects. Archaeological digs of Native American artifacts have been conducted in collaboration with the William Penn Museum. Those artifacts are included in educational programs conducted by the museum and TMI employees:

Osprey nesting platforms on plant property have been built by TMI employees and by Boy Scouts, working on an Eagle Scout project at Oyster Creek. Company employees have built bluebird and wood duck nesting boxes also.



## Environmental Stewardship at Oyster Creek and TMI.



At TMI, nearly 200 acres of company-owned property next to the plant serve as a wildlife sanctuary for whitetail deer, fish, opossum, weasels and. others. Nearly a third Of this area is wetlands that undergoes seasonal flooding,, making an attractive habitat for migrating waterfowl such as Canadian geese, ducks, herons, egrets,

swans, hawks, owls and songbirds.. In cooperation - with Waterfowl

USA, the area was enhanced by employees who planted a variety of grasses, seeds, and root stalks and built duck boxes.

TMI personnel are part 0f a regional effort to help restore American shad in the Susquehanna River and Chesapeake Bay.

Recreational fishing abounds at both power plants. The discharge canal bridge by Oyster Creek is known as the best inland. fishing area in Ocean County.. The Susquehanna River by TMI is noted for its small mouth bass fishing.

Oyster Creek has donated trees to local schools for Arbor Day. During the summer, a five-week math and science Discovery Program is 'offered to. Rutgers University\_students. Participants take a day trip to



Oyster Creek for hands-on

radiological training and an overview of \_ environmental monitoring. GPU Nuclear sponsors workshops for middle and high school teachers in cooperation with Rutgers University for Oyster Creek and. Pennsylvania State University for TMI.





#### WE WILL CONTINUE TO STRIVE FOR. ENVIRONMENTAL EXCELLENCE

Environmental excellence is an integral part of sound business strategies, practices. and, policies, and is essential in meeting the competitive challenges facing the industry. While a certain level of excellence has been achieved at Oyster Creek and TMI, we-need to maintain this excellent performance, identify areas needing improvement, and' work 'continuously  $t_0$  improve the effectiveness of our environmental management.



## GPU Nuclear's Strategy for Maintaining Environmental Excellence:

Conduct our business in accordance with our environmental policies and procedures and the environmental principles of the International Chamber of Commerce Business Charter for Sustainable Development.

Educate and train employees so they know their environmental responsibilities and accept ownership for environmental performance.

Set and achieve challenging environmental performance goals.

Expand and emphasize focus on pollution prevention.

Use environmentally preferred materials whemi appropriate.

Monitor our environmental performance regularly.

*Communicate our environmental performance to employees and the public.* 



Oyster Creek Nuclear Generating Station U.S. Route 9 P.O. Box 388 Forked River, NJ 08731 (609) 971-4000



Three Mile Island Nuclear Generating Station Route 441 South P.O. Box 480 Middletown, PA 17057 (717) 948-8000