



BIG ROCK POINT

The Journey's End

AUGUST 30, 1962 – AUGUST 29, 2006



IN THE BEGINNING

Generations of Native Americans regarded the “Big Rock” as a sacred site, a navigational aid and a meeting place. Shown here in the late 1950s, the rock sits in the shallows of Lake Michigan, a few hundred feet from the former nuclear plant site. Called Kitchiossining (kit-hee-ah-sin-ing), literally the “Big Rock,” it fell out of a retreating glacier at the end of the last Ice Age and stands 8 feet tall and measures 30 feet in circumference. After 35 years as the namesake of one of the nation’s nuclear power success stories, the rock still stands tall in its ancient location as the Big Rock Point Restoration Project fulfills its promise to return the site to a natural state.

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Consumers Energy has fulfilled its promise to restore the Big Rock Point nuclear plant site to a greenfield — free for unrestricted use by new generations of Michigan residents.

The significance of this small 67-megawatt nuclear energy pioneer — tucked away along northwest Michigan’s picturesque shoreline — will long be remembered as a shining example of operational excellence and good citizenship.

From the plant’s groundbreaking in 1960, through the final shutdown in 1997 to celebrating our arrival at the end of the “road to green,” Big Rock Point’s long and safe journey is a tribute to the employees, families, friends and neighbors who have contributed to much of the project’s success.

When you work and live in a small town, you become woven into the fabric of community life. Over the years, generations of Big Rock Point employees have been involved in local little leagues, have become engaged in improving the quality of education, and have contributed thousands of hours of volunteer service with charitable organizations. It was impossible to separate Big Rock Point employees from the citizens of Charlevoix, Petoskey and other surrounding communities because they were — and are — part of those communities.

Though many people may be sad to see Big Rock Point go, it’s important to remember that decommissioning is a natural phase in the life of a nuclear power plant. People wanted to make this final phase a success that the industry and others could point to and say — “That’s how you do it.” And they did just that, setting a high standard for all future nuclear power decommissioning projects in the United States.

A hallmark of Big Rock Point and certainly a key to its success — from its inception to its return to a greenfield — has been its ability to find and apply innovative, simple, lower-cost options to resolve challenges. By doing so, we often set a new standard and became the model for others to follow.

In the 9-year transition from the nation’s longest-operating nuclear plant to an internationally recognized leader in the decommissioning process, we have maintained our three goals — safety, efficient restoration and preparing all people for future changes and opportunities.

All who have been involved in this venture have every legitimate reason to take enormous pride in the final achievement at Big Rock Point.

On behalf of the many past and current employees at Big Rock Point and the hundreds of thousands of shareholders, Consumers Energy is pleased to return this 560-acre setting to a natural state. Thank you for being part of our team.



Dave Joos



Bob Fenech



Kurt Haas

Dave Joos
Consumers Energy
Chief Executive Officer
Big Rock Point Employee
(1976 – 1979)

Bob Fenech
Consumers Energy
Fossil and Hydro Operations

Kurt Haas
Big Rock Point Restoration
Project Site General Manager

Safety – Always First

SAFETY WAS ALWAYS first at Big Rock Point because the well-being of people came before any other consideration.

From prejob briefs and sitewide safety events to installing a new and award-winning decommissioning power system, it was clear to anyone who worked or visited the site that safety was the highest priority.

During Big Rock Point's long operational life through decommissioning, employees enjoyed an incredible 23-year run without a lost-time accident.

Safety engineer Karl Ulbrich, also co-chair of the restoration project's safety committee, said making the transition from operating a plant to decommissioning required adjustment. The work changed and the flurry of activity brought many new faces to the site.

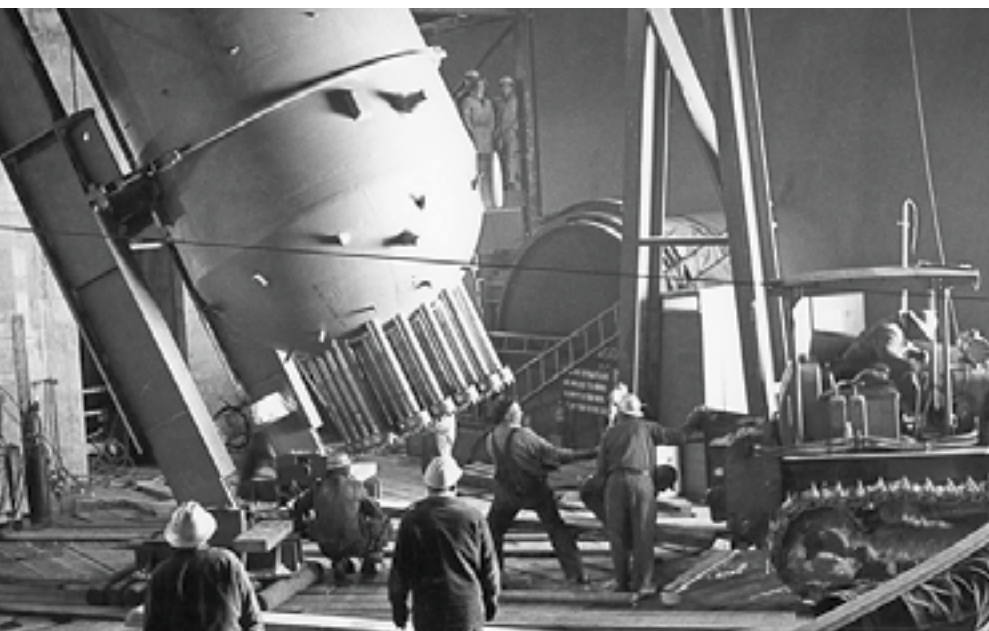
"During the first year of shutdown, employees began finding that procedures proven successful while running an operating plant weren't necessarily the best procedures for demolition," Ulbrich said. "After 35 years of status quo, new technologies were introduced. Some adjustment was necessary for every employee."

– CONTINUED ON PAGE 4



"In April 1960, I was asked to head the start up and operation of the world's first high-pressure, forced-circulation water nuclear reactor plant. The initial task was to select and provide academic training and operating experience to safely start up and operate the Big Rock Point Nuclear Plant. We met our objective on Sept. 27, 1962, when I was privileged to take the reactor core critical, initiating the first sustained controlled chain reaction at 2:30 p.m."

– LEE HAUSLER
Big Rock Point plant manager
(1960 – 1966)



LEFT: Workers place the reactor vessel in a vertical position on Feb. 9, 1962. The heart of the plant, it contained the fuel bundles that helped power homes and businesses of northern Michigan for 35 years.



Safety – Always First – CONTINUED FROM PAGE 2

Rich Smith returned to the site for decommissioning after being away for 5 years.

He was most impressed with how company employees and contract workers were singing from the same hymnal – “Safety is Our Number One Priority.”

“I have been to several producing nuclear power plants during my time away from Big Rock Point,” Smith said. “All of these plants had safety programs established. But at some sites, there seemed to be different criteria for existing personnel and contractor crafts.

“This difference never seemed to be good for the safety program, nor for the morale of contractor personnel. The safety program at Big Rock Point was like a family where we all watched out for one another.

“It’s much easier to stop someone from doing something unsafe than to feel guilty because you didn’t intervene, and the person was injured or worse. I’m extremely happy for the chance to come back to help complete such a great project.”

At the plant’s annual safety kickoff in 2004, site general manager Kurt Haas challenged employees to recognize the changing hazards.

All employees were given a safety pledge and asked to sign it, demonstrating their personal commitment. Employees were also asked to autograph a large safety sign that read, “We are personally and emotionally committed to safety.” The sign was mounted on a wall at the entrance to the work site.

RIGHT: Working safely required a keen focus on the fundamentals as employees faced many hazards that included: working aloft, confined spaces, radioactive zones, heavy objects, high-pressure steam and electricity. For more than 40 years, employees watched out for themselves and each other and made safety their first choice — every time.

BELOW: During Big Rock Point’s long operational life through decommissioning, employees enjoyed an incredible 23-year run without a lost-time accident. Employees attended annual safety fairs and in 2004 signed a safety pledge, demonstrating their personal commitment to safety.



“I consider myself fortunate to have been granted so much access to what has proved to be one of the most fascinating journeys of discovery in my life – the preparation of the Big Rock Point exhibit. I hope that others will react the same way after having visited the exhibit at the Charlevoix Historical Society’s depot.”

– DAVID L. MILES
Charlevoix Historical Society
Harsha House Museum
Co-director and collaborator
on the Big Rock Point exhibit that
opened in June 2006



“Big Rock Point was not just a reactor and a turbine. Big Rock’s greatest assets were the people who dedicated their working lives to making it a success. The buildings are now gone, but the plant will live on in the memories and friendships that were formed during our time along the beautiful shores of Lake Michigan.”

– BILL BECKMAN
Consumers Energy manager of
environmental and laboratory
services and Big Rock Point plant
manager (1990 – 1993)



Members of the Citizen Advisory Board recently gathered in front of the plant’s milestone marker that recognizes significant decommissioning achievements. From left to right: George Korthauer, Carl Lord, Don Smith, Robbin Kraft and Jacqueline Merta.

Fostering Open Communications

Two independent organizations contributed greatly to Big Rock Point’s operational and decommissioning success. The Citizen Advisory Board (CAB) and the Restoration Safety and Review Committee (RSRC) were established voluntarily by plant management to provide input and guidance on plant issues.

The CAB was established in 1995 and was comprised of community leaders from Emmet, Charlevoix, Crawford and Otsego counties. The CAB provided input and recommendations to plant officials concerning operation and decommissioning activities and plans.

Current and past CAB members include: Mike Wiesner, Jacqueline Merta, Don Smith (chairman), JoAnne Beemon, George Korthauer, Carlin Smith, Carl Lord, Al Behan, Robbin Kraft, Tim Volovsek, Rick Kelly, Dale Troppman (former chairman), Steward Sandstrom, Roger Gowell, Pat Mather, A.J. Witthoef, Bruce Reid, Debbie Rohe, Andy Hayes, Leslie Cunningham, Ethel Knepp and Cheri Hoffman.

In September 2000, board members Smith, a Charlevoix County Commissioner, and Sandstrom, the Petoskey Regional Chamber of Commerce CEO, visited Yucca Mountain, the planned site for the government’s used fuel storage facility in Nevada.

Said Sandstrom: “Yucca Mountain looks like a place nobody will ever go and stumble over nuclear waste, and it seems to be a very safe place to store spent nuclear fuel.”

Smith personally spoke to more than 80 Michigan counties, boards and organizations about the pending vote that affirmed President George W. Bush’s recommendation to license and construct Yucca Mountain.

The RSRC was established in 1998 and was comprised of recognized nuclear industry experts. The RSRC provided an outside, independent, critical review of all Big Rock Point decommissioning activities. Members of the RSRC were: Bill Mannion (chairman), Ted Borst, Jim Pomaranski, Dr. Paul Ziemer, Warren Peabody, Greg Szcotka, Rob McCaleb and Dan Malone.

Mannion is known as the “father of decommissioning” for his more than 45 years of contributions to the field. Ziemer was named to a national radiation review board by President Bush.



Recognized nuclear industry leaders and members of Big Rock Point’s Restoration Safety Review Committee stand in front of the plant shortly after decommissioning began. From left to right: Ted Borst, Bill Mannion and Dr. Paul Ziemer.



Community Involvement – *friends, family and neighbors*

PROJECT WORKERS AND Consumers Energy maintained close ties with their neighbors throughout the life of the plant.

“We committed in 1997, when we closed Big Rock Point, that we would remain a vital part of the community as long as we had workers on-site,” said Kurt Haas, site general manager from 2000 through restoration.

During the restoration project, workers and their families helped shape the community through United Way fund-raising efforts, American Red Cross blood drives and collecting toys for The Salvation Army.

“The toy collection, which began in the mid-1980s, is one of the most heartwarming traditions we have at Big Rock Point,” Haas said. “It makes us feel as good as the children who receive the toys.”

For many years, plant workers and contract partners were by far the largest contributors to the local United Way campaign and that achievement continued after the plant shutdown.

During the last decade, site workers also contributed to other fund-raising efforts, such as the Manna Project, which provides food to 20 area pantries. In April 2001, workers donated 209 pounds of food and more than \$1,000 during National Volunteer Recognition Week.

“Throughout the years, Big Rock Point has been successful because of the quality of people who work here,” said Greg Withrow, a veteran plant employee. “We’ve been involved in our community for more than 40 years. A volunteering spirit wasn’t a requirement to work at the site, but it tended to be a wonderful attribute of all workers.”

LEFT: From fund-raising activities to hours of volunteer service, Big Rock Point workers were — and remain — deeply committed to Petoskey, Charlevoix and the surrounding communities.

Employee volunteer efforts also earned thousands of dollars in grants from the Consumers Energy Foundation for such nonprofit organizations as Boy Scouts of America, little leagues and volunteer fire departments. Workers also donated time to local boards, and staffing events for church and service clubs.

In addition, each year the plant provided financial assistance to help support local projects such as Keep Charlevoix Beautiful, Top of Michigan Trails Council, Little Traverse Civic Theatre, Charlevoix Teen Center and the Venetian Festival.

HIGHLIGHTS

- **Overall Support:** During the past decade, the site invested an estimated \$100,000 in the community through company grants, fund-raising and volunteer efforts.
- **United Way:** With the end of the site’s final United Way campaign on Dec. 1, 2005, Big Rock Point workers and the company contributed almost \$310,000 over 16 years.
- **Blood Drives:** Under George Petitjean’s and Doe Field’s many years of leadership, workers donated almost 3,000 pints of blood during 15 years of hosting drives. Workers donated 23 pints of blood at the final on-site drive on Feb. 9, 2004, when Gaye Schroeder and Sheila McKinney collected their 3-gallon pins, while Larry Darrah (opposite page, bottom left) was congratulated after donating 7 gallons of blood.
- **Toy Collection:** Workers donated more than 2,000 new toys since the mid-80s for The Salvation Army to distribute to needy children in the area during the holiday season.
- **Volunteer Grants:** Each year, employees donated their time to help earn thousands of dollars in grants from the Consumers Energy Foundation for area nonprofit organizations. Almost 100 grants totaling more than \$37,000 were made to area organizations recognizing employee efforts.



Operators manipulated control rods from inside the control room to ensure the delivery of safe and reliable electric power for northern Michigan communities and businesses for 35 years.

What Big Rock Point Was

● Big Rock Point workers were pioneers in developing commercial nuclear power when the world's first high-power density boiling water reactor began generating electricity in northern Michigan in 1962.

The plant began operation as a research and development facility with a goal to demonstrate that nuclear plants could economically generate electricity. Other research focused on increasing fuel life and reducing fuel fabrication costs.

Hundreds of skilled and dedicated men and women continued that initial spirit of innovation and achievement.

Over the years, the plant established safety and performance records that put Big Rock Point among the leaders in the industry and provided safe, reliable electric generation for 35 years.

Big Rock Point was Michigan's first and the nation's fifth com-

mercial nuclear plant. During its lifetime, more than 100 other reactors went into service in the United States.

Here are some Big Rock Point highlights:

- For 11 years, the reactor was used to produce cobalt 60 to treat cancer patients. It was estimated that the cobalt 60 helped save more than 120,000 lives.
- In 1977, Big Rock Point set a world record for boiling water reactors by operating for 343 consecutive days.
- In 1991, the American Nuclear Society named Big Rock Point a Nuclear Historic Landmark.
- From 1977 to 2000, Big Rock Point employees worked more than 23 years without missing a day of work due to injury.

Big Rock Point continued to operate well and set records as it approached the end of its operating life. In 1995, the plant set a site



On May 21, 1963, Gov. George Romney, seated to the left of the lectern, addressed dignitaries and media representatives at the plant's dedication, which received statewide news coverage.

yearly generation record by producing 516,209 megawatt-hours.

Only a soon-to-expire operating license and the economics of a new competitive era of electric generation stilled Big Rock's reactor, for good.

The plant shut down amid a large "Success Celebration" of about 1,000 attendees on August 29, 1997, with the memorable words from plant nuclear control operator Andy Loe: "Goodbye, Big Rock. Sorry to see you go."



Pitcher's Thistle, Lake Huron Tansy and other endangered and native flora and fauna will join the historic Big Rock and pine, cedar and birch trees in the new greenfield community as Consumers Energy has fulfilled its promise to restore the Big Rock Point former nuclear plant site and make it free for unrestricted use by new generations of Michigan residents.

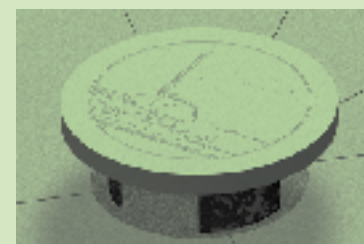
What Big Rock Point Will Be

○ A familiar name, Big Rock Point, will once more refer simply to the beautiful stretch of Lake Michigan shoreline with the complete removal of the nuclear plant and the restoration of the 560-acre site to a natural state.

By the end of 2006, the only remaining evidence of Big Rock Point's internationally recognized career will be the dry fuel storage facility and part of the road that once led to the plant. Once the used fuel is shipped to a federal repository in Yucca Mountain, Nev., the last remnant of the plant will be removed.

While the buildings will be gone, fond memories of the people and times at "the Point" will linger among the site's shady cedars and protected Pitcher's Thistle and Lake Huron Tansy.

Said Tracy Goble, environmental services superintendent: "We are true environmentalists. We're going beyond state and federal requirements to return the land to a condition that coexists with the beauty of northern Michigan."



BIG ROCK POINT LANDMARK: Working at Big Rock Point was more than a job. People established a sense of community, family, tradition and pride that most had rarely, if ever, experienced before. That pride is reflected in the groundswell of support to establish a permanent landmark recognizing the plant and its workers. The effort is being funded by donations from more than 200 individuals and corporations (listed on page 20). The memorial is being created by Xibitz, a Michigan company that helped design part of the world-renowned Frederick Meijer Gardens. An artist's rendition will be unveiled at the Aug. 29, 2006, Greenfield Celebration with the actual dedication of the landmark planned for 2007.



"My memories are naturally built around what made the place so special: the people. I will always remember folks such as Russ Abel, Linda Oostmeyer, Jerry Shea and Jiggs Whitley. These people inspired me through their dedication and actions, such as teaching orphans in a foreign land or the willingness to fight tough health battles. These are only a few of those who made Big Rock Point so unique."

— ELLEN ZIENERT
Big Rock Point employee
(1988 – 2004)



"It was an emotional time when the decision was announced in the spring of 1997 to retire the plant. Everyone was disappointed that we would not realize our goal of running the plant until May 31, 2000, when its license was scheduled to expire. Despite all these distractions, we were determined to shut the plant down with grace and dignity. And that's just what the employees did. We ran the entire summer and safely produced electricity for 114 continuous days until the final shutdown on Aug. 29, 1997."

— STEVE BEACHUM
Big Rock Point employee
(1983 – 1997)

Big Rock Point – A Legacy of Achievement

1960



Getting Started

At one point, an army of workers was on-site during the early 1960s to help build the nation's fifth commercial nuclear plant.



Building the Dream

Prime contractor Bechtel Corp. completed the Big Rock Point nuclear plant, shown here during construction, in 29 months at a cost of \$27.7 million. When Big Rock Point shut down Aug. 29, 1997, it was the oldest and longest-running nuclear plant in the United States.



Reactor Vessel

During construction, the reactor vessel arrived on-site via a rail line that ran nearly up to the plant. A day after this photo was taken, workers placed the reactor in a vertical position on Feb. 9, 1962. The heart of the plant, it contained the fuel bundles that helped power the homes and businesses of northern Michigan for 35 years.



New Generation

Big Rock Point began as a research and development center to study the life extension capabilities and efficiencies of different nuclear fuel combinations and to prove that large power reactors could be a viable source of reliable electric generation.

The Building of Big Rock Point

7-20-60
Groundbreaking of Big Rock Point, Michigan's first nuclear power plant.

8-30-62
Atomic Energy Commission issues operating license for the plant.

9-27-62
Big Rock Point achieves first sustained chain reaction.



Going Critical

On Sept. 27, 1962, the world's first boiling water direct-cycle, forced circulation, high-power density nuclear reactor facility went critical.

Presidential Welcome

In the 1962 film, "Headstart on Tomorrow," narrator and future U.S. President Ronald Reagan welcomed visitors to the information center at Big Rock Point. Reagan was at the time a spokesperson for General Electric, which manufactured the turbine generators installed at Big Rock Point.

"Hundreds of thousands of people saw the film," said Pat Kujawski, an employee who greeted visitors from 1962 to 1970.



1965

5-21-63
Gov. George Romney participates in Big Rock Point dedication.

11-01-65
Consumers Power Company declares Big Rock Point commercial.

1969 – 1977
Big Rock Point licensed to use mixed-oxide fuel through a cooperative research and development program sponsored by the Edison Electric Institute.



Tourist Attraction

Even before it began generating electricity, Big Rock Point attracted 50,000 visitors during the summer of 1961. By 1965, visitors had arrived from all 50 states and 58 foreign countries. The 500,000th visitor came to the plant's information center on May 30, 1968.



Information Center

The Avery youngsters listen to an explanation of the plant's operation at the information center's scale model. One of these boys, Chris Avery, ended up working at Big Rock Point as a control operator.



New Electrical System

On Feb. 23, 1999, a separate decommissioning power system was energized to avoid potential electrical hazards hidden within walls, floors, ceilings or the machinery.

The system earned a "Project of the Year 2000" award from *Power Engineering* magazine because it increased employee safety and provided a model for future decommissioning projects.



Redeployment

In early 2000, the single-largest reused item from Big Rock Point was the main transformer, which now supports the Consumers Energy Thetford electric substation near Flint, Mich. Weighing 12.5 tons, the transformer was transported on a 100-foot-long, flat-bed trailer.

Other items headed to new homes included: office furniture, the standby and emergency diesel generators and the maintenance building.



7-23-77
Big Rock Point completes continuous operating run of 343 days, setting world record for boiling water reactors.



Demolition

In 2001, a massive jackhammer demolishes the alternate shutdown building. It was the first structure at Big Rock Point to receive a radiological survey and be pronounced clean prior to demolition.

Within three days, the structure — built to withstand earthquakes, tornadoes and floods — was reduced to rubble. All 765,000 pounds of the former building were collected and placed in a quality verification area.



Dry Fuel Storage

In 2002, one of three rings that comprise a dry fuel storage overpack is lowered through the roof of the building where they were assembled.

The dry fuel storage campaign was successfully completed May 2, 2003, with the loading of cask number 8. In less than six months, 441 fuel bundles and other equipment had been moved into dry fuel storage safely and without incident. Today, the containers are guarded and monitored around the clock.



Reactor Vessel

On Aug. 25, 2003, almost 6 years to the day after the plant's historic shutdown, the reactor vessel was lifted out of the concrete cavity that encased it and put into a specially designed shipping container.

The process took nearly seven hours. The largest component and the heart of the plant began the trip of a lifetime on Oct. 7, 2003, when it departed for its final resting place at a licensed disposal facility in Barnwell, S.C.



Steam Drum

On Nov. 5, 2003, about one month after removal of the reactor, the steam drum departed the plant on its way to a licensed disposal site in Clive, Utah. It arrived 13 days later.

The steam drum weighed 200,000 pounds and was almost 41 feet long and up to 10 feet in diameter.

The steam drum's trip to Utah utilized three rail companies, passed through seven states and covered about 1,800 miles.



Inside the Sphere

By the spring and summer of 2004, the containment sphere became a beehive of activity, inside and out. Inside the familiar green dome, diamond wire saw-cutting tools were used to slice the concrete reactor cavity into sizes weighing up to 20 tons each.

Segmentation was chosen over the use of explosives to enable better control of dust and debris. The first segment to be removed was 24 feet tall and weighed 30,000 pounds.



Removing a Landmark

In the fall of 2004, the most visible change to the skyline came with the removal of Big Rock Point's navigational landmark — the 240-foot-tall red and white stack.

During the plant's operation, the concrete- and steel-reinforced stack (built in 1961) had served as a ventilation structure.

The steam drum was chosen over the use of explosives to enable better control of dust and debris. The first segment to be removed was 24 feet tall and weighed 30,000 pounds.



Last to Go

In 2005, the turbine building and sphere were the last major structures demolished.

All interior surfaces of the turbine building had earlier been surveyed for radiological material before dismantlement.

In preparation for the sphere removal, more than 1 million pounds of concrete that once cradled the reactor inside the familiar "green ball" were carefully removed and assessed before disposal.



"Goodbye, Big Rock"

During the final shut down on August 29, 1997, plant nuclear control operator Andy Loe utters the memorable words, "Goodbye, Big Rock. Sorry to see you go."



Breaking Down the Shell

The steel frame of the turbine building (top) was all that remained in 2005. Above, a crane moves the personnel lock, which hundreds of employees walked through to enter and exit the containment sphere.



The Final Days

Before the concrete monolith inside the containment sphere could be demolished, it first had to be "softened" using explosives. Even with this softening, final demolition still remained challenging — even for a 16,000-pound wrecking ball.

2006

8-29-06
Big Rock Point returns to a natural state ending its 9-year restoration project.

Restoration Project – Dismantling the Dream

On the Road to Green

IN SEPTEMBER 1997, after 35 years of safe and successful operation, the management and employees of Big Rock Point faced a new challenge: restoring the site to a greenfield — free for unrestricted use.

The site added “Restoration Project” to its name, and the journey officially began Sept. 20 when the last fuel bundle was removed from the reactor.

The next nine years would include the challenges of surveying all areas used during plant activities and painstakingly dismantling and removing all plant equipment, structures, piping, concrete and steel. Each stage required meticulous planning and scrupulous attention to detail.

During this time, the site welcomed industry representatives from Washington and around the world who wanted to learn more about decommissioning and site restoration. In 1999, the site also hosted the American Nuclear Society Executive Conference and an Electric Power Research Institute workshop.

What had taken a little more than 2 years to build was safely disassembled, piece by piece — creating a natural retreat for generations to enjoy.

All workers — whether company employees or contractors — received a green hard hat with the site logo to help foster a sense of team, family and site pride.



On Nov. 5, 2003, the steam drum departed Big Rock Point on a heavy hauler and boarded a railcar in neighboring Petoskey, Mich., about three hours later. It then passed through seven states and covered about 1,800 miles before it arrived at a licensed disposal site in Clive, Utah, on Nov. 18.



“When I think of Big Rock Point, I feel a mixture of sorrow and pride, not unlike watching your children grow up. The sorrow is only because the last 9 years have gone by so fast. However, I cannot help but also feel a sense of accomplishment. I am extremely proud to have been a part of a project to restore a nuclear plant site to a natural state. To some day be able to walk the beach or kayak its shore with my own family would be my final Big Rock Point success.”

— TRACY GOBLE
Big Rock Point employee
(1989 – 1992 and 1994 – 2006)





“As a young man, I was very much taken by the message in the commercial many of us had seen on television of the Native American looking over the littered landscape with the tear running down his cheek. Today my picture of Big Rock Point is that very same Native American looking over what was once Big Rock Point. But instead of the tear, I see his smile of approval.”

— KBV PALLAGI
Big Rock Employee
(1983 – 2006)

Dry Fuel Storage – Making it Safe and Secure

- More than 500 workers, friends, neighbors and other visitors attended an open house at Big Rock Point in 2001 to learn more about dry fuel storage.

A local celebrity attended the event. Chuck Fairbanks coached the New England Patriots from 1973 – 1978 in the National Football League (NFL). He was raised in Charlevoix, Mich., but admitted he was a novice to dry fuel storage.

“Consumers Energy is taking all the precautions to dismantle this plant for the public’s safety, as they should,” he said.

Fairbanks said some of the toughest players he coached or coached against were “Mean” Joe Greene, Dick Butkus, John Hannah and Mike Haynes — all in the NFL Hall of Fame.

Asked if the dry fuel storage canisters could hold up to these men, he smiled and said, “I think we would be very safe.”

The steel and heavily reinforced concrete casks are designed to withstand floods, fires, flying objects and tornado winds up to 360 miles per hour.

A steel reinforced concrete pad, ranging from 2 feet to 3 feet thick and about the size of a basketball court, was specially engineered and built to temporarily store the fuel until the U.S. Department of Energy fulfills its legal obligation to move the fuel to a federal site.

The dry fuel storage project was successfully completed May 2, 2003. A total of 441 fuel bundles and other equipment were moved into dry fuel storage safely and without incident.

The facility and pad — guarded and monitored around the clock by trained professionals — supports eight concrete and steel canisters, each 19 feet tall and weighing up to 167 tons.



TOP: An American flag is draped across dry fuel storage container No. 7, which was loaded and moved to the nearby dry fuel storage pad. ABOVE: A special crane lifted the reactor vessel up and out of its concrete cavity, across the reactor deck and back down into its shipping container on Aug. 25, 2003.



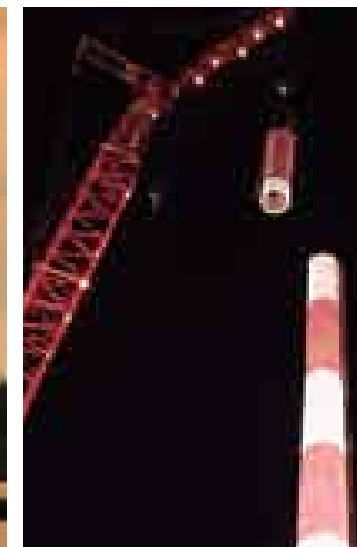
REACTOR TAKES TRIP OF A LIFETIME

The heart and soul of the nation’s longest-running nuclear plant was safely laid to rest Oct. 30, 2003, when the plant’s reactor vessel was delivered to a licensed disposal site in Barnwell, S.C.

“The safe transport and disposal of the reactor vessel is a testament to the precise planning of the project team over the past several years,” said Kurt Haas, site general manager from 2000 through restoration.

The rail journey from Gaylord, Mich., to Barnwell began Oct. 14. The trip took eight days and covered approximately 1,200 miles through Michigan, Ohio, Indiana, Kentucky, Tennessee, Georgia, North Carolina and South Carolina.

Since the entire package — reactor, concrete packing and shipping container — weighed more than 565,000 pounds, the train was limited to 10 and 25 miles per hour throughout the journey.



LEFT TO RIGHT: Two cranes loom over Big Rock Point’s stack, prepared for their role in the dismantlement process. A 300-foot crane holds the very top segment of the stack after it was cut free on Oct. 11, 2004. The piece was nearly 24-feet tall and weighed 30,000 pounds. Lights were installed the length of the crane to ensure it was visible to aircraft.

BRINGING DOWN THE STACK

For more than 40 years, a red and white navigational landmark served as a visual aid to area boaters, letting them know Charlevoix was a little closer.

During the plant’s operation, the concrete- and steel-reinforced stack had served as a ventilation structure.

“After careful consideration, we decided to segment and lower the stack by crane rather than drop it by explosives,” said Bill Trubilowicz, who began his career at Big Rock Point in 1976. “We felt that segmentation was safer, and we would have better dust and debris control.”

During the fall of 2004, the 240-foot-tall stack was safely dismantled in 12 separate sections, weighing as much as 39,000 pounds.

The 300-foot-tall crane used in dismantling the stack arrived at Big Rock Point in 15 separate truckloads and required permission from the Federal Aviation Administration to erect it. A second crane, standing 269-foot tall, was used to hoist a steel work basket that carried two workers up and down the height of the stack.



TOP: The 9,000-pound containment sphere cap was the first of 90 pieces to be removed and lowered to the ground in mid-September 2005. Some of the sections weighed up to 20,000 pounds, and the project spanned two months.

LEFT: As the sphere was peeled away, the concrete monolith inside came into clear view — appearing much like an ark that had been sailed ashore.

ABOVE: After the controlled blasts in December 2005, cranes help workers remove the concrete and steel reinforced foundation that supported the landmark blue-green containment sphere.

The Final Days

● In early 2006, millions of pounds of crushed concrete and tangled strands of steel rebar were all that remained at Big Rock Point.

The effort to remove the concrete monolith, which housed the former nuclear plant's vital components, along with the foundation of the blue-green containment sphere 30 feet below ground, was the last major step to restore the 560-acre site to a natural state.

Consumers Energy contracted with Controlled Demolition Inc. (CDI) to plan, engineer and execute four controlled blasts that were successfully completed in December 2005 and February 2006. CDI had previously worked to bring down such recognizable structures as Seattle's Kingdome, Pittsburgh's Three Rivers Stadium and the J.L. Hudson Building in Detroit.



The explosives were designed, placed and detonated in order to fracture — but not drop — the structure, which stood nearly eight stories at its apex. A 16,000-pound wrecking ball and hydraulic-powered equipment finished the task.

Resembling a science fiction movie, hydraulic hammers, rams and backhoes stood on top of the wreckage — breaking, scooping and loading debris into giant containers each capable of holding 44,000 pounds of material.

In total, more than 32 million pounds of concrete were removed, including 23 million pounds that once housed equipment and 9 million pounds that supported the sphere.

ENVIRONMENTALLY FRIENDLY DISPOSAL

Big Rock Point is particularly proud of its commitment to personal, industrial and environmental safety. That commitment is reflected in the success of shipping material offsite for disposal.

More than 53 million pounds of low-level radioactive waste were shipped to South Carolina, Tennessee and Utah. Of the more than 2,000 shipments, plant personnel safely and successfully completed unique challenges such as shipping the plant's steam drum, reactor head, and 565,000-pound steel package that contained the reactor vessel.

More than 1,000 shipments containing more than 59 million pounds of nonradioactive, clean building material were meticulously surveyed, packaged and shipped to an industrial landfill for disposal.

All of these shipments were completed without a single personal injury and in accordance with local, state and federal regulations.

Thanks

for your generous support to the Big Rock Point landmark



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A NUCLEAR INDUSTRY PERSPECTIVE



Paul Genoa, the Nuclear Energy Institute's director of public policy and deputy assistant to the NEI President, began his nuclear career at Big Rock Point in 1982 as a radiation protection and health physics technician. He shares his thoughts on the plant, its people and its mission.

Honoring our commitment. That is the vision that comes to me when asked what returning the Big Rock Point site to a greenfield means to the nuclear industry.

I think of the promise of America back in 1960 when our friends' fathers were building the Big Rock Point "atomic" plant. Those were exciting times when atomic energy would power our future. And we were proud of that future. Highway billboards encouraged tourists to visit the atomic power plant on Lake Michigan.

Built in just 2 years, the plant had many reasons to be proud. Big Rock's focus on nuclear fuel research provided a significant contribution to the industry in the early years. Big Rock also was an early pioneer of probabilistic risk assessment techniques that are now routine industry practices. In addition to electricity,

Big Rock produced cobalt-60 for cancer treatment, which helped save more than 100,000 lives.

Perhaps the greatest legacy to the industry is Big Rock's unrelenting safety focus. At one point, plant workers went more than 23 years without missing a day of work due to injury.

After many long and, in some cases, record generating runs, the plant shut down after 35 years of operation — then the longest-operating commercial nuclear power plant in the nation. But she wasn't done leading the way. She still had to honor a commitment.

A commitment to return the site to greenfield condition, to do so safely, to meet all regulatory requirements, and to do so in a cost-effective manner.

Through hard, collaborative work with the industry and the U. S.

Nuclear Regulatory Commission, decommissioning rules and regulations have been met. Using innovation and technology, plant workers implemented many programs and processes that have gained broad appeal at other nuclear sites.

Big Rock and the people who worked there have demonstrated to the industry, the regulators and the world that we have the knowledge, technology and commitment to build, operate and decommission nuclear facilities safely.

As a former member of the Big Rock Point team, I am extremely proud that the commitment made so many years ago to the nuclear industry, to safety, and to the environment, has been achieved.

On behalf of the nuclear industry, I congratulate Big Rock Point workers on their remarkable accomplishment.



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8/06 2M 15323