VideoRay

CASE STUDY

# Underwater Robotic System Provides Safe Inspection of Nuclear Plant Intake Racks

## Duke Energy, headquartered in Charlotte, NC,

**owns and operates a diverse mix of regulated and commercial power plants including hydro, coal, natural gas, nuclear, solar and wind.**

DUKE ENERGY®

## Summary

Duke Energy selected VideoRay's Mission Specialist Defender underwater robotic system to inspect trash racks that block debris from entering the intake canal pumps at the Brunswick Nuclear Plant.

## Challenge

The Brunswick plant circulates about a million gallons of water per minute from the Cape Fear River for cooling purposes using a nine-mile-long canal system. The water in the intake canal is brackish saltwater with visibility of only one to three feet. Human divers were performing inspection of the trash racks to look for growth or debris that could impede water flow.

# CASE STUDY

## Solution

To reduce the time divers needed to work underwater, Marcus Wescott, Diversion Structure Lead, Nuclear Maintenance, selected a Mission Specialist Defender underwater robotic system to deploy ahead of personnel to determine where cleaning was needed.

Duke Energy has a history of using VideoRay underwater robotic systems for successful missions at other locations including Cowans Ford Hydroelectric Station in Stanley, North Carolina, and Bad Creek Hydroelectric Station in Salem, South Carolina. The Brunswick Nuclear Plantwas the first Duke Energy site to use the Mission Specialist Defender system.

Nuclear plants around the world use the Mission Specialist Defender system to safely and easily perform intake, trash rack and reservoir visual inspections, cooling pump assessments and nuclear turbine evaluations and clean-up.

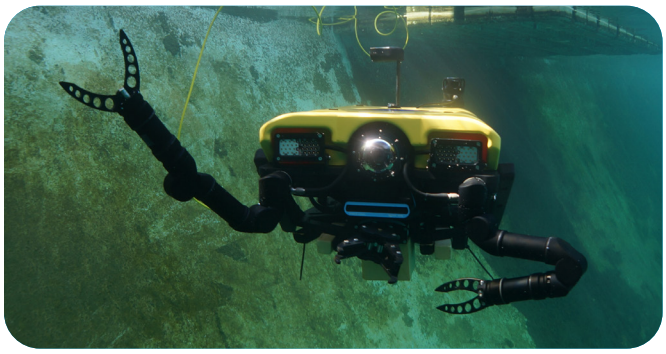
The Defender is optimized for demanding missions. It is designed for precise control of vehicle position and orientation, heavier payloads, lifting and specialized operations. The Defender system has seven thrusters for exceptional maneuverability. It can move in any direction and maintain active pitch to move the vehicle in an upward or downward orientation.

## Results

Wescott and his team deployed the Defender system from a dive boat in front of the racks. Because of the Defender system's power and maneuverability, they were able to successfully operate the system in water flow throughout the intake canal, even in challenging currents.

The Defender system's autonomous capabilities enable it to perform complex navigation, intervention, cleaning and manipulation tasks, which reduces underwater risks to divers.

> **We are very happy with the power and capabilities of the Defender system. We have deployed it in many areas, and the task list is expanding.**
>
> — Marcus Wescott, Diversion Structure Lead, Nuclear Maintenance, Duke Energy Brunswick Nuclear Plant



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