

Meteorological and Oceanographic Monitoring as an Aid to Nuclear Power Production

by

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The Diablo Canyon Power Plant is located in San Luis Obispo County, California, on a thirteen mile stretch of open coastline. The plant's intake is sited at the shoreline, protected by a man-made breakwater which forms the intake cove. The nearshore environment supports a very diverse and highly productive assemblage of marine plantlife. During periods of extreme swell activity, plant operations are challenged by large amounts of drift seaweeds which enter the intake and can cause failure of the intake screens, which has lead to unit trips.

Early in commercial operation the plant embarked on a program of early storm watch to provide advanced warning of the approach of adverse sea-state conditions. Over the past ten years this program has continued to evolve, employing a number of new technologies which have enhanced our predictive capabilities.

The program currently utilizes a number of data sources, including real time access to the National Weather Service offshore buoys, the DCPD wave rider buoy, National Weather Service Marine forecasts, and National Meteorological Center Marine forecast charts. In addition, we are supported by site specific daily weather forecasts provided by a contract with an outside vendor, and a satellite downlink of satellite and NEXRAD weather data.

These data are integrated to develop a daily weather and sea-state report which is published on the plant's local area network bulletin board, and is electronically mailed to a list of end users. A verbal summary is also posted daily on a dial up answering machine. When approaching conditions warrant, the operations shift supervisor is contacted immediately. Mitigative measures include modification of the operation of the intake traveling screens and increased maintenance activity at the intake. Updates of storm conditions are made until the storm condition passes. In addition, operations and maintenance activities are supported via a 24 hour paging system.

To date the program has proven very effective at preventing generation losses, however, experience has shown that early warning is not always the sole solution. There are still limits to the effectiveness of any man made device in combating the elements, and to this end we are continuously working to improve the ability of the intake to withstand the challenges presented by wind and wave.