



## Diablo Canyon Power Plant

On October 21, 2008, Reactor Unit 2 at the Diablo Canyon Power Plant in San Luis Obispo County, California was manually scrammed when operators detected inadequate flow of cooling water to the circulating water system. The power plant obtained cooling water from the Pacific Ocean. The water entered an intake structure by passing through bar racks, and then flowed through traveling screen assemblies. The bar racks and screens prevented debris and sea life from entering the circulating water pumps.

On the day of the incident, a large group of moon jellyfish were carried by the current to the traveling screens. The sudden influx of jellyfish, each approximately 16 inches in diameter and weighing 30 pounds, overwhelmed the debris removal system. The additional weight of the jellyfish overloaded the traveling screen drives, snapping shear pins holding the mesh baskets used to carry debris away from the intake. Once the pins failed, the screens could not be restarted. With the blockage, the flow of water into the coolant system was restricted, leading to the manual shutdown. The Pacific Gas and Electric Company had developed models to help predict



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debris entering the intake, but those models were limited to debris from storm events. Therefore, the debris removal system was not sized for unexpected natural conditions such as jellyfish. A recommended corrective action following the event was the installation of a detection system that included underwater cameras and image recognition software to facilitate real-time assessment of the debris removal system.

**Lesson Learned:** Natural environments can be an unexpected source of hazards. Natural environments can include humidity, wind, radiation, temperature, lightning, and even flora and fauna. Although most natural and induced environments may be known, the ability of our systems to withstand these environments is sometimes overestimated. Risk assessments should carefully consider the effects of hazard causes from natural environments. ●

### References

1. U.S. Nuclear Regulatory Commission. Licensee Event Report 323/2008-002, December 19, 2008.