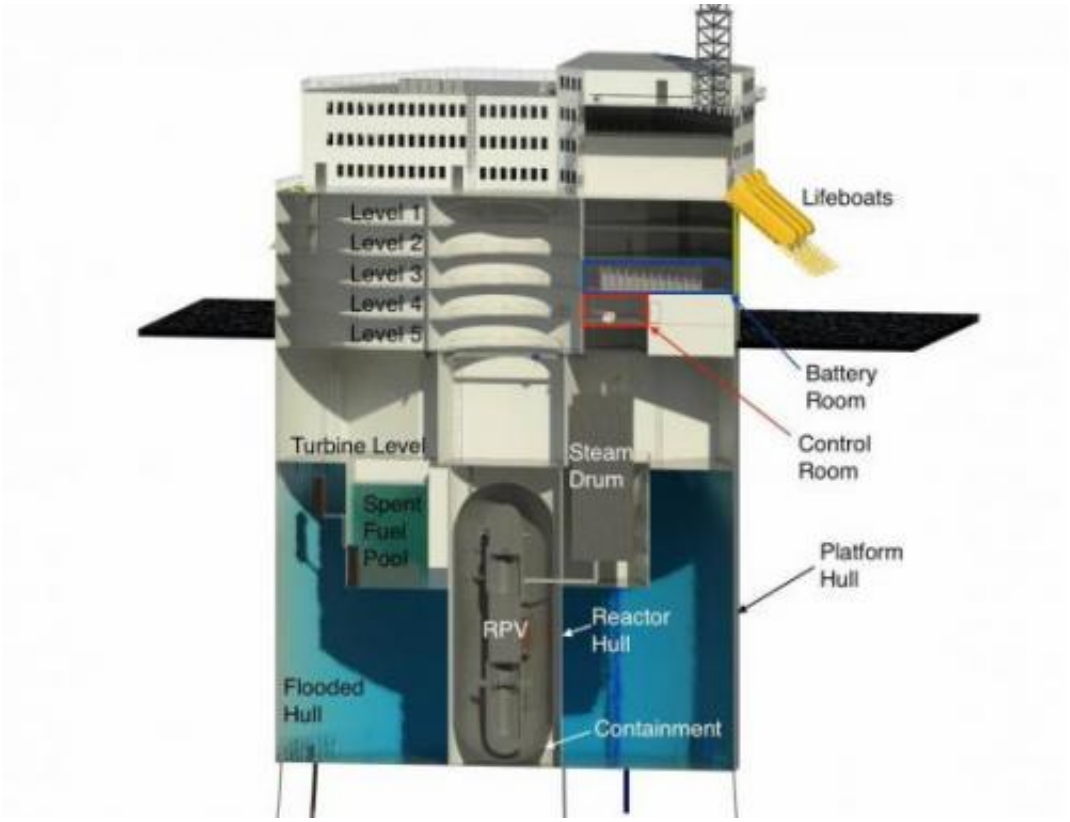
Offshore floating nuclear plant group to crowdsource ideas for new reactor design

June 3 2014



The illustration shows a 3-D cut view of MIT Offshore Floating Nuclear Plant. Credit: Jake Jurewicz/MIT-NSE

A team led by Jacopo Buongiorno, an associate professor of nuclear science and engineering at MIT, in collaboration with researchers from the University of Wisconsin and the Chicago Bridge and Iron Company,

is developing a new concept for an offshore nuclear power plant on a floating platform, much like the ones commonly used for oil and gas production.

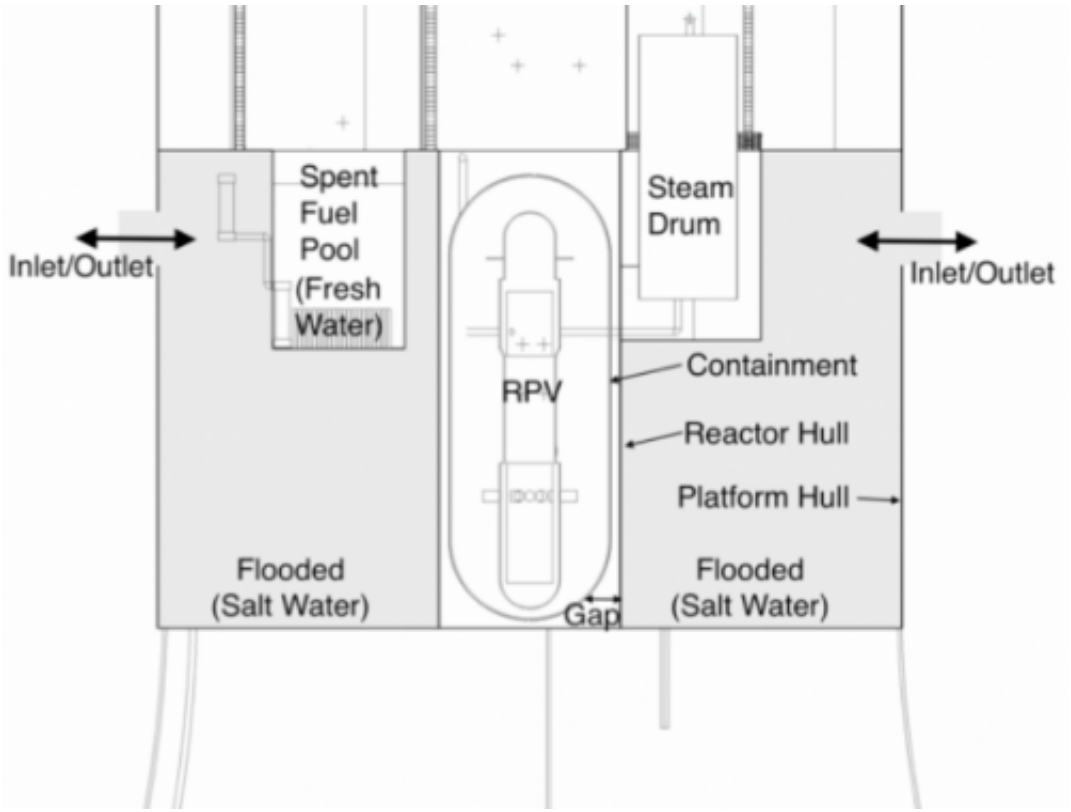
The concept proposes a plant that can be built in a shipyard and towed on a floating platform to a site where it can be anchored a few miles off the coast in relatively deep water. There, it can be connected to the grid via an underwater transmission line. The plant would be unaffected by earthquakes and would also "ride out" tsunamis, which have low wave heights in deep water.

In addition to centralized construction these plants would provide easier siting and enhanced safety: Proximity to the ocean heat sink assures that reactor cooling can be maintained reliably and without external intervention, even during hypothetical accidents.

The group has launched an MIT wiki webpage to crowdsource design ideas for the new nuclear plant concept. The webpage describes the current design along with areas the researchers would like to address through crowdsourcing. These areas include any aspect of the design, strategies for dealing with ship collisions and possible underwater attacks, and proposals for any aspect that may not have been addressed by the current concept.

This illustration shows a possible configuration of a floating offshore nuclear plant, based on design work by Jacopo Buongiorno and others at MIT's Department of Nuclear Science and Engineering. Like offshore oil drilling platforms, the structure would include living quarters and a helipad for transportation to the site. Credit: Jake Jurewicz/MIT-NSE

The group has announced a call for proposals and is encouraging students to contribute individually or in teams, and is offering prizes for winning ideas.



The illustration shows a 2-D lateral view of the offshore floating plant platform showing the reactor pressure vessel (RPV), the containment, the flooded chamber, and the spent fuel pool. Credit: Jake Jurewicz/MIT-NSE

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