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Briefing on Nuclear Safety in Illinois
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Before I begin, I'd like to extend our deepest condolences to the people of Japan. We join the world in mourning the thousands of people who lost their lives in this disastrous earthquake and tsunami. We send our best wishes to everyone involved in the hard work of cleanup and recovery, including the scientists, engineers and others who are working to stabilize the damaged Fukushima Daiichi Nuclear Power Station.

I'd also like to thank Senator Durbin and Senator Kirk for this opportunity to discuss the vital issue of nuclear safety in Illinois.

Illinois is the birthplace of nuclear energy. The first man-made, self-sustaining, nuclear chain reaction was initiated in Chicago in 1942, under the supervision of Enrico Fermi, Argonne National Laboratory's first Director. Since then, Argonne's scientists and engineers have been international leaders in the development of safe nuclear energy. Almost all currently operating nuclear power plants worldwide use light-water reactors derived from research done at Argonne. These reactors rely on water to cool the reactor and transport its heat to large steam turbines that generate electricity. Today, 11 light-water reactors at six nuclear power plants in Illinois generate about half of the electricity we consume in this state.

Given the importance of nuclear energy in Illinois, it is both wise and timely for us to take a close look at what went wrong at the Fukushima power plant. Through a coordinated, structured review of the Fukushima accident, we will gain insights on how to further improve safety for the U.S. nuclear infrastructure. These types of intensive safety reviews were conducted after the accident at Chernobyl and the earlier, less severe incident at Three Mile Island; those reviews led to improved nuclear safety technology and operational standards worldwide. At the same time, we must work together to make sure our response is based on a sound assessment of the actual risks we face here in Illinois, along with a clear understanding of the ongoing efforts to limit these risks through improvements in plant design, regulation and operation.

Scientists and engineers at the Department of Energy's national laboratories have worked with regulators and private industry to design and build America's nuclear power plants under a "defense in depth" strategy, which requires multiple, redundant, and independent layers of safety systems. U.S. reactors are protected by a diverse set of safety measures that include many layers of reinforced physical barriers, including thick steel and concrete walls around the reactor built to withstand the most destructive tornado-strength winds, floods and earthquakes. At Fukushima, the first-ever nuclear accident caused by a natural disaster, the extremely severe earthquake triggered safety systems that prompted the reactors to shut down successfully. It appears the worst damage was caused by the tsunami, which of course could not happen in the Midwest.

Illinois' nuclear power plants also are strongly fortified against human attack. After the terrorist attacks on Sept. 11, 2001, the Department of Energy national laboratories joined in an extraordinary effort by the NRC and the nuclear industry to analyze the most severe incidents that could occur at nuclear power plants. These analyses, including some that remain classified, led to installation of new back-up systems and procedures to protect the public if large portions of a nuclear power plant become inaccessible, or if a plant loses all off- and on-site power – the type of "station blackout" that contributed to the failure of cooling systems in Japan. Those measures are in place at all U.S. nuclear reactors and are included in NRC requirements for all new reactor designs.

As the events in Japan have demonstrated, reactor containment is only one aspect of nuclear plant safety. Multiple safety systems and procedures are in place to ensure the safety and security of spent nuclear fuel rods, which currently are stored on-site at each nuclear reactor while the United States develops a national strategy for long-term nuclear waste management.

As we move forward, Argonne and our sister national laboratories will continue to build on our long record of expertise and success as we work with private industry to develop and design advanced nuclear energy systems. With a consistent, ongoing national investment in research and development of nuclear technology, the United States can further improve the safety and performance of this vital component of our energy supply. Newer "passive" safety systems, which use such natural forces as gravity and

convection to respond to malfunctions, are being developed to replace safety technologies that rely on pumps, valves, and human operators. We also are working on new fuel recycling and disposal technologies that greatly limit both the amount and the radioactive content of a reactor's wastes, further reducing safety concerns about spent fuel at nuclear power plant sites.

In the coming months, nuclear scientists and engineers at the Department of Energy's National Laboratories will continue to work alongside our colleagues in the public and private sectors in Japan and here at home to gain a fuller understanding of the recent events at the Fukushima nuclear power plant and their effects on human health and safety. Going forward, this understanding will enable us to improve upon the established, extensive plant safety provisions and accident management procedures now in place, and will help to ensure that Illinois and the United States can continue to benefit from safe, reliable nuclear power.