

**Questions for IAEA**

**Event Timeline**

Can the IAEA provide the NRC with a chronological summary of the major elements of the event including:

- A. Equipment damage
- B. Environmental releases
- C. Plant response
- D. Effects of aftershocks

**System and Equipment Response**

A. Key system response/integrity – Which systems (if any) did not respond as expected or were significantly degraded? (Of particular interest are the response of safety systems, systems that monitor or control reactivity, fission product boundaries and core cooling systems.)

B. Did the radiation monitoring system remain operational throughout the event? Were any compensating actions required?

C. Pumps and Valves - Were there failures of any large pumps and valves, including pipe mounted control or valve failures?

D. Piping - Were there piping leaks that required immediate attention? Were there specific joint or coupling designs that generally performed worse than others?

E. Cables and Conduits - Please comment on the performance of cables and conduits during the event.

F. Off-Site Power: Was there a loss of off-site power? Is yes, what was the duration of the off-site power loss? Describe the condition of the switchyard during and after the event.

G. Emergency Power Generators - Please describe any performance deficiencies associated with emergency power generators during and following the event.

H. Buildings and Structures – Please describe buildings damage, slope failures, and intake structure failure, if any.

I. Instrumentation - Were there instances of any relays or vibration sensitive components malfunctioning? Were there any systems that changed state?

J. Overall, how did the expectation for equipment failures following a large earthquake compare with the actual failures?

**Emergency Preparedness and Security**

A. Please list emergency preparedness concerns that have been identified as a result of the event?

B. Please comment on any physical security vulnerabilities that have been identified as result of the event?

## **Seismic Design Issues**

A. Was this earthquake outside the prediction limits for the Japanese facility (considering seven units, two of them with different/new design)?

B. The NRC believes that the Japanese may use different evaluation techniques to develop their plant seismic designs. How do Japanese design modeling/evaluation techniques compare with those used in Europe or North America?