Follow-up Questions for Japanese Contacts

Please provide the following information in the time frame indicated:

Highest Priority Questions – as soon as possible

1) A timeline describing the order of events and the individual plant responses to the earthquake

2) Confirmation that all operating and shut down units achieved or maintained safe-shutdown conditions without manual operator intervention or complications. Did all safety-related systems respond to the seismic scram as designed? Please note if there were any unexpected plant responses to the event, including any spurious signals.

3) A more detailed description of the impacts of the earthquake on the plant (e.g., what systems were involved, which pipes were damaged, where did the leakage occur (pipe wall, joints, fittings,,etc).

4) A description of seismic instrumentation at the site and at each of the 7 units, soil/rock shear wave properties through depth, instrument location and mounting condition, all the recorded data on the basis of unified starting time, such that the coherency of motion through the surface or the foundations and at depth can be determined

5) Full spectrum seismic design basis for the plant.

6) What actually caused the Unit 3B house transformer fire?

Additional Questions – please provide answers as more information is developed

7) Damage to buildings, slope failures, intake structure failure, if any

8) Behavior of cranes, cables and conduits

9) Failures of any large pumps and valves, pipe mounted control or valve failure

10) Instances of any relay or vibration sensitive components malfunctioning

11) Nature of damage to service water and fire-suppression piping - their diameter, material they are made of including their elastic properties, design standards used for the piping design, nature of failure (at support, anchor motion, failure of anchors, subsidence differential movement etc)

12) Were there any systems that changed state?

13) Impact on physical security, and any vulnerabilities identified

14) Were there any impacts on the grid because of the event?

15) Please describe the switchyard performance?

16) What emergency preparedness concerns have been identified as a result of the event?

3B Transformer Specific Questions – please respond when there is time and other issues have been addressed

17) What are the primary and secondary voltages of the transformer?

18) What type of transformer - liquid or dry-type (air-cooled)?

19) Who was the manufacturer of the transformer?

20) What are the physical dimensions of the transformer?

21) How are the transformer coils restrained within the cabinet?

22) What is the clearance between transformer energized component and cabinet?

23) What is the relative displacement for connection between the high voltage leads and the first anchor point (adequate slack?) in the transformer?

24) What was the natural frequency of the burned transformer, if known?

25) What was the acceleration level (or the response spectrum, if available) at the support location of the burned transformer?

26) What seismic requirements exist for the burned transformer? Was the transformer tested or analyzed to a specific acceleration or response spectra, and if so, what are they?

27) Are there any of the same type of transformer installed at other locations in the plant?