Summary of Staff's Review of EPRI Letter MRP 2008-014 and 2008-012

In March 2007 the NRC issued Confirmatory Action Letters (CALs) to 40 nuclear power plant licensees with pressurized water reactors (PWR), confirming commitments from those licensees to resolve concerns regarding potential flaws in specific reactor coolant system (RCS) dissimilar metal (DM) butt welds by the end of 2007. The remaining 29 PWR plants had either completed the requisite actions or do not have welds susceptible to these flaws.

Nine of the plants receiving CALs did not have outages scheduled in 2007. The nine plants were Braidwood 2, Comanche Peak 2, Diablo Canyon 2, Palo Verde 2, Seabrook, South Texas Project 1, V. C. Summer, Vogtle 1, and Waterford 3. By letter dated September 7, 2007 [ML072430836], NRC allowed these plants with uninspected pressurizer DM butt welds to operate beyond December 31, 2007, due to the results of an advanced finite element (AFE) analyses. The AFE analyses postulated flaw growth in the pressurizer nozzle welds, and it was concluded that PWSCC in pressurizer DM butt welds would progress through-wall and exhibit detectable leakage prior to causing a possible rupture event.

A safety question was raised, relative to this extension, based on the flaw profile provided in EPRI Letter MRP 2008-014 [ML080670004] which summarized data from the manual phased array UT inspection of one of five retired pressurizer DM butt welds, as documented in EPRI Letter MRP 2008-012 [ML080701017]. The flaw profile illustrated an indication 360° around the circumference and deep at most locations. The EPRI Letter MRP 2008-012 concluded that data used to create the flaw profile could be attributed to either service induced flaws or fabrication flaws. This information raised NRC staff questions regarding the continued applicability of the AFE analyses, if the flaw identified in the profile was caused by service induced cracking.

The NRC staff discussed this question with industry executives. Industry representatives took actions to rapidly put in place a comprehensive inspection effort consisting of qualified automated phased array UT and other non-destructive examinations. An automated phased array UT technique provides a more detailed characterization of any potential degradation in the welds than a manual phased array UT technique. Industry representatives then compared this new NDE data with the previous manual phased array UT data. Industry characterized the flaws in the retired pressurizer DM butt welds as fabrication flaws of no structural significance.

NRC staff and its contracted UT expert have completed their review of the industry data. The NRC finds that there is sufficient data available to provide reasonable assurance that there are no structurally significant service induced flaws within the retired pressurizer safety nozzle welds. Therefore, the NRC staff's safety question has been resolved, and the NRC continues to find that the AFE analyses support the continued operation of the 9 plants beyond December 31, 2007 to their respective spring outages. On March 14th, the NRC staff documented this decision and its basis which is available in ADAMS under accession number ML080740419. Then the NRC issued letters communicating this position to the remaining 8 plants that had not shut down for their scheduled spring outages.