

REQUEST FOR ADDITIONAL INFORMATION 738-5663 REVISION 2

4/25/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 05.04.01.01 - Pump Flywheel Integrity (PWR)

Application Section: 5.4.1.1

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects)
(CIB1)

05.04.01.01-8

The response to RAI No. 274-2126, Question 05.04.01.01-05 states that the analysis (MUAP-09017) incorporates justification for the initial flaw size distribution and flaw acceptance criteria. However, this does not resolve the RAI, since it cannot be determined from this information that the critical crack size can be detected during an inspection. Therefore, the response should include:

- At design speed of 1500 rpm (125% of normal operating speed), what is the critical crack size where the flywheel would rupture due to a non-ductile failure?
 - For example, Table 4-1 of the Mitsubishi Heavy Industries Report MUAP-07035 provides information that at a speed of 2596 rpm, a crack size of 0.25 inches would rupture the flywheel. This table also says that at a speed of 2489 rpm, a crack size of 0.50 inches would rupture the flywheel. Therefore, provide the crack size at a speed of 1500 rpm that would rupture the flywheel for the period of time between inspection of the flywheel. This should include a 10 year inspection interval and a 20 year inspection interval.
- What crack length size is the ultrasonic inspection technique for the flywheel capable of reliably detecting? Mitsubishi Heavy Industries Report MUAP-09017, Section 8.0 implies that a crack length of 0.040 inches can be detected 50% of the time. This however, does not provide what size can be reliably detected. Provide a reliable capability of the inspection technique; for instance, MHI response to RAI No. 199-2073, Question 10.02.03-5 stated that ultrasonic inspection procedures for the integral rotor forgings can reliably detect flaws of [] inches.