

3.8 Pipe Break Hazards Analysis

Design Description

1.0 System Description

Plant features provide the capability to shut the plant down in the event of a pipe break.

2.0 Mechanical Design Features

2.1 Systems, structures, and components that are required to be functional during and following an SSE are protected against or qualified to withstand the dynamic and environmental effects associated with postulated failures in Seismic Category 1 and non-safety-related piping systems.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.8-1 lists the pipe break hazards analysis ITAAC.

Table 3.8-1—Pipe Break Hazard Analysis ITAAC
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Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
<p>2.1 Systems, structures, and components that are required to be functional during and following an SSE are protected against or qualified to withstand the dynamic and environmental effects associated with postulated failures in Seismic Category 1 and non-safety-related piping systems.</p>	<p>a. A pipe break hazards analysis will be performed. {{DAC}}</p>	<p>a. A pipe break hazards analysis report concludes the plant can be shut down safely and maintained in cold safe shutdown following a pipe break with loss of offsite power. For postulated pipe breaks, the pipe break hazards analysis report confirms that:</p> <ul style="list-style-type: none"> – Piping stresses in the RCB penetration area are within allowable stress limits. – Pipe whip restraints and jet shield designs for protection of the essential systems and components can mitigate pipe break loads. – Loads on safety-related SSCs are within design load limits. – SSCs are protected or qualified to withstand the dynamic and environmental effects of postulated failures, including cubicle pressurization effects.

Table 3.8-1—Pipe Break Hazard Analysis ITAAC
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Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
			<ul style="list-style-type: none"> – A summary of the dynamic analyses applicable to high-energy piping systems, including: <ul style="list-style-type: none"> – Sketches showing the location of the resulting postulated pipe ruptures, including identification of longitudinal and circumferential breaks; structural barriers, if any; restraint locations; and the constrained directions in each restraint. – A summary of the data developed to select postulated break locations, including, for each point, the calculated stress, the calculated primary plus secondary stress/stress intensity range, and the calculated cumulative usage factor. – For failure in the moderate-energy piping systems, descriptions showing how safety-related systems are protected from spray wetting, flooding, and other adverse environmental effects. <p>{{DAC}}</p>

Table 3.8-1—Pipe Break Hazard Analysis ITAAC
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Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
		<ul style="list-style-type: none"> b. Inspections of as-built features for protection against pipe break will be performed. c. Analyses will be performed to reconcile deviations with the pipe break hazards analysis. 	<ul style="list-style-type: none"> b. The required features for protection against pipe break exist. c. Reconciliation of deviations to the as-designed pipe break hazards analysis has been performed and concludes that the plant can be shut down safely and maintained in cold safe shutdown following a pipe break with loss of offsite power.