



Dominion

Millstone Power Station

Appeal of FAQ 55.2

HPSI Safety System Unavailability

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- *Purpose*
 - *To demonstrate that DNC treatment of unavailability associated with MP3 HPSI pump oil leaks is in full compliance with NEI 99-02 guidance.*



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- *Agenda*
 - *Overview of Millstone 3 ECCS*
 - *Discussion of oil leak*
 - *Discuss NEI 99-02 guidance*
 - *Conclusion*



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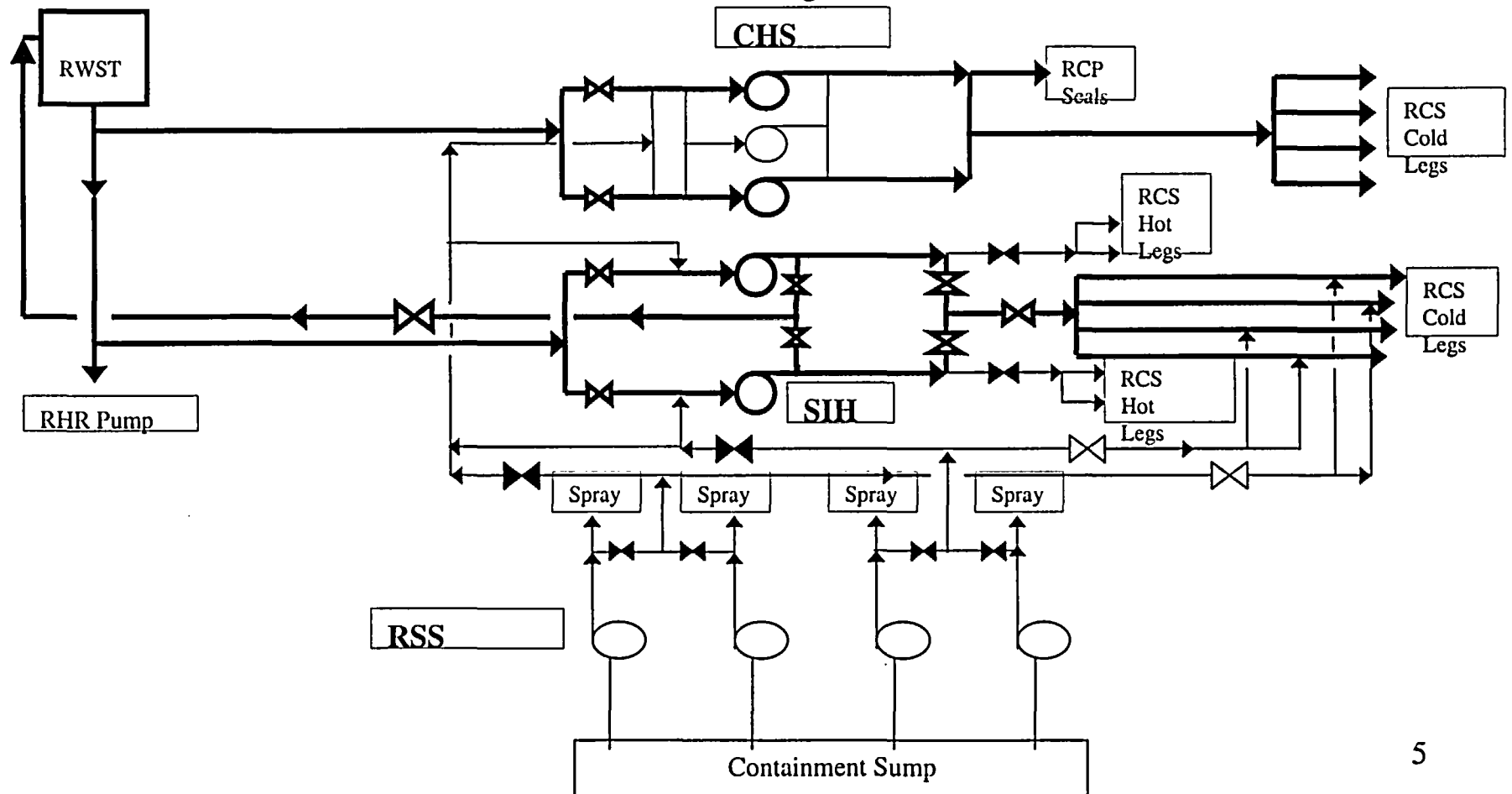
- *NEI 99-02 HPSI monitoring requirements*
 - *Function: “Ability of a **HPSI** train to take suction from a primary water source, or from the emergency sump, and inject into the RCS at rated flow and pressure.”*
(page 54, lines 24-28)
 - *“Recirculation is provided by taking suction from the RHR pump discharges.” (page 55, lines 32 –33)*



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HPSI Injection

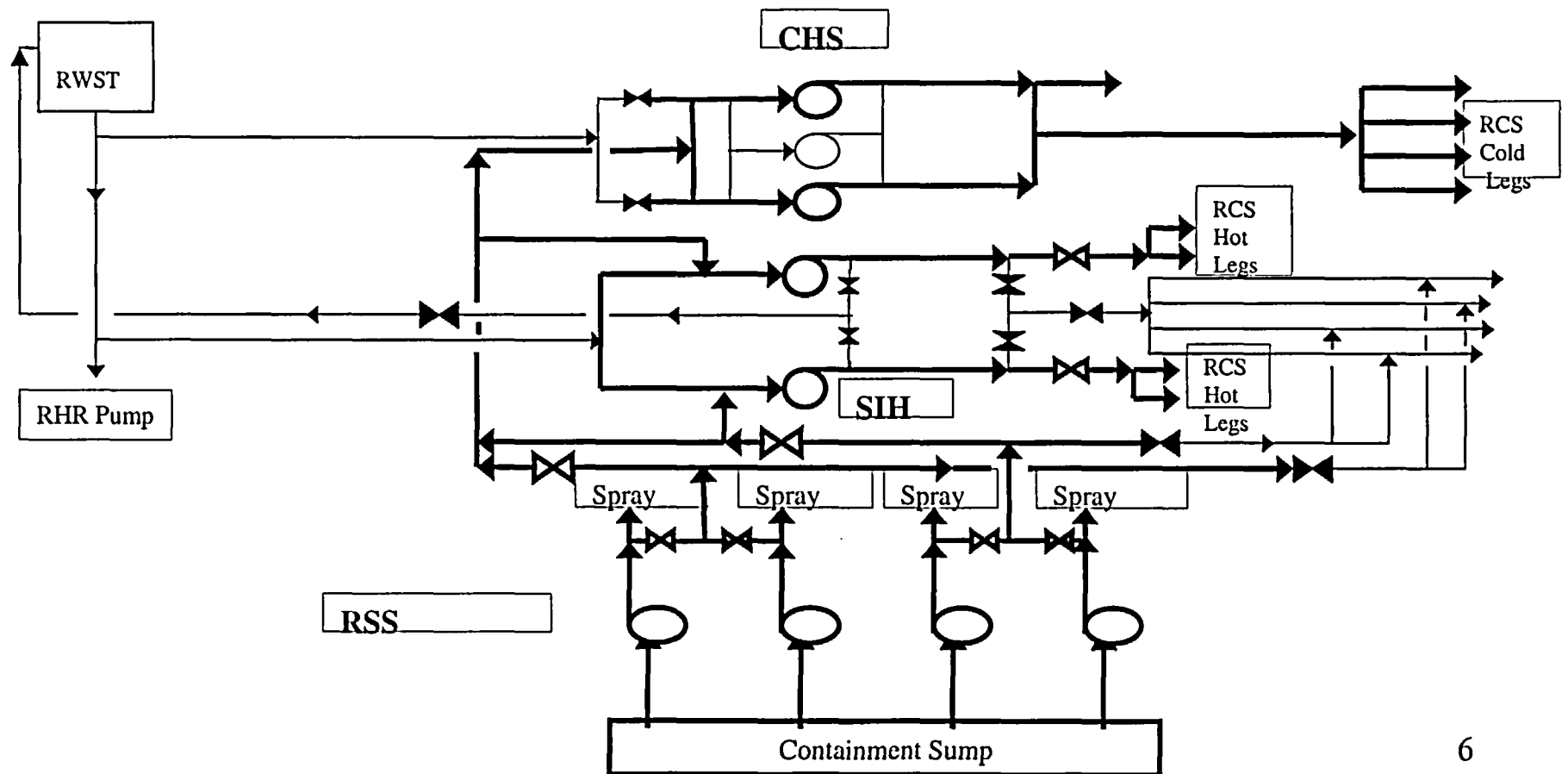




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HPSI Hot Leg Recirculation





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- *NEI 99-02 HPSI monitoring requirements*

- *Millstone 3 HPSI is defined as 4 trains*

“Four loop Westinghouse may be represented by Figure 5.4.

This design features two centrifugal pumps that operate at high pressure, two centrifugal pumps that operate at an intermediate pressure, a cold leg injection path, and two hot-leg injection paths. Recirculation is provided by taking suction from the RHR pump discharges. Each of the two intermediate pressure trains is comprised of the safety injection pump, the suction valves, and the hot-leg injection valves electrically associated with each pump. The HPSI system represented in Figure 5.4 is considered a four train system for monitoring purposes. (page 55, lines 29-37 & 38-39)



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- *NEI 99-02 RHR monitoring requirements*
 - *RSS is monitored under RHR indicator*

“Because RHR and HPSI are monitored as separate systems with each having its own performance indicator, there is no need to cascade RHR unavailability into HPSI. “ (page 54, lines 10-12)



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- *Oil Leaks*
 - ‘A’ SIH pump oil leak
 - 6 dpm
 - 10/14/04-11/04/04
 - ‘B’ SIH pump oil leak
 - 4 dpm
 - 8/8/02-4/16/03



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- *HPSI Active Function Determination*
 - *The DB / LB does not identify an SIH pump mission time or ECCS mission time*
 - *“In some instances, engineering evaluation is necessary to determine whether or not a train may be considered available.” (NEI 99-02, page 22, line 20)*



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- *HPSI Active Function Determination*
 - *Plant conditions at time of complete loss of oil*
 - *RSS pump providing water to SIH flow path*
 - *On Hot Leg Recirculation*
 - *The engineering evaluation concluded at 6 days there was sufficient flow from the existing/required RSS suction boost through SIH without SIH pump running*
 - *No Operator actions required*



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- *NEI 99-02 Guidance - Purpose of the indicator*
 - *“The purpose of this indicator is to monitor the readiness of important safety systems to perform their safety functions in response to off-normal events.”*
(page 24, lines 28-29)



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- *NEI 99-02 HPSI monitoring requirements*
 - *Function: “Ability of a **HPSI train** to take suction from a primary water source, or from the emergency sump, and inject into the RCS at rated flow and pressure.”*
(page 54, lines 24-28)
 - *“Recirculation is provided by taking suction from the RHR pump discharges.” (page 55, lines 32 –33)*



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- *NEI 99-02 Guidance - Train Definition*
 - *“A train consists of a group of components that together provide the monitored functions of the system and as explained in the enclosures for specific reactor types.”*
(page 23, lines 25-26)



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- *NEI 99-02 Guidance - Train Availability*
 - *“A train is available if it is capable of performing its safety function” (page 29, line 22)*
 - *HPSI safety function was met*
 - *“Small oil, water, or steam leaks that would not preclude safe operation of the component during an operational demand and would not prevent a train from satisfying its safety function are not counted. (page 29, line 18-20)*
 - *HPSI safety function was met*



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- *NEI 99-02 Guidance – Use of Engineering Evaluations*
 - *As noted before - “In some instances, engineering evaluation is necessary to determine whether or not a train may be considered available.” (page 22, line 20)*



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- *NEI 99-02 Guidance – Use of Engineering Evaluations*
 - *“Fault exposure hours are not counted for a failure to meet design or technical specifications, if engineering analysis determines the **train was capable of performing its safety function** during an operational event.” (page 29, lines 29-31)*



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- *No Credit for Alternate System Taken*
 - *“Except as specifically stated in the indicator definition and reporting guidance, no attempt is made to monitor or give credit in the indicator results for the presence of other systems at a given plant that add diversity to the mitigation or prevention of accidents.”*
(page 24, lines 11-13)



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- *Conclusion*
 - *Engineering Evaluation concluded the safety function was maintained*
 - *The SIH and RSS systems performed their required safety functions*
 - *The HPSI train remained available to perform its safety function with an idle SIH pump*
 - *All requirements of NEI 99-02 were met.*