

INSERVICE TESTING PROGRAM
REVISION 14
SAN ONOFRE NUCLEAR GENERATING STATION
UNIT 2

April 1990

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INSERVICE TESTING PROGRAM
SAN ONOFRE - UNIT 2

PUMP RELIEF REQUEST NO. 6

System: Auxiliary Feedwater, Component Cooling Water, Saltwater Cooling, Charging

Components: P140, P024, P025, P026, P112, P113, P114, P307, P190, P191 and P192

Class: 2 and 3

Function: To provide flow to safety systems.

Test Requirement: The full scale range of each instrument shall be three times the reference value or less in accordance with IWP-4120.

Basis for Relief: Relief is requested from the full scale range requirements of IWP-4120 for Steam Driven Auxiliary Feedwater pump flow, Component Cooling Water pump suction pressure, Saltwater Cooling pump discharge pressure and Charging pump suction pressure and flow.

The combined requirements of IWP-4110 (accuracy within plus or minus 2 percent of full scale for pressure and flow) and IWP-4120 (full scale less than or equal to three times the reference value) result in an overall measurement accuracy within plus or minus 6 percent of the reference value. Existing installed station instruments, listed above, meet the combined requirement for measurement accuracy within plus or minus 6 percent of the respective reference values although they exceed the IWP-4120 range limit alone.

Alternate Testing: Perform IWP tests with existing installed station instruments for the following pump parameters:

<u>Pump Parameter</u>	<u>Instrument</u>	<u>Reference Value</u>	<u>Instrument Range (Range/Ref)</u>	<u>Accuracy</u>
<u>Auxiliary Feedwater Pumps</u>				
P140 Flow	FI-4720-2 and FI-4725-1	300 gpm	0 - 1000 (3.3)	1.0 %

PUMP RELIEF REQUEST NO. 6 (continued)

Alternate
Testing:
(continued)

<u>Pump Parameter</u>	<u>Instrument</u>	<u>Reference Value</u>	<u>Instrument Range (Range/Ref)</u>	<u>Accuracy</u>
<u>Component Cooling Water Pumps</u>				
P024, Suct P P025 and P026	PI-6313, PI-6318 and PI-6322	32.5 psi	0 - 100 (3.1)	0.5 %
<u>Salt Water Cooling System Pumps</u>				
P112, Disch P P113, P114 and P307	PI-6230, PI-6231, PI-6233 and PI-6322	31.1 psi	0 - 160 (5.1) (5.5) (5.4) (4.7)	0.5 %
<u>Reactor Charging Pumps</u>				
P190, Suct P P191 and P192	PI-9284, PI-9285 and PI-9286	53.0 psi	0 - 160 (3.0) (3.5) (3.1)	0.5 %
P190, Flow P191 and P192	FI-0212	42.7 gpm	0 - 150 (3.5)	1.0 %

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PUMP RELIEF REQUEST NO. 8

System: Chemical and Volume Control
Components: P190, P191, P192
Class: 2 and 3
Function: To provide makeup flow to the Reactor Coolant System
Test Requirement: In accordance with IWP-4510, at least one displacement vibration amplitude (MILS peak-to-peak) composite shall be read during each Inservice Test. Table IWP-4110-1, Acceptable Instrument Accuracy, calls for Vibration Amplitude to be measured with an accuracy of +/- 5% of full scale. IWP-4520(b) calls for a frequency response range of the readout system to be from one-half minimum speed to at least maximum pump shaft rotational speed.

Basis for Relief:

The Charging pumps are run at a speed of 196 rpm. Vibration Monitoring equipment readily available cannot meet code requirement IWP-4520(b) for measurement of displacement (MILS, i.e., thousandths of an inch) due to their band pass filter which deletes vibration input below 350 cycles per minute (350 rpm).

The most appropriate commercially obtainable instrument for velocity vibration measurement is accurate to 10 Hz. It can be used to measure pump vibration velocity and provides the best information on pump condition available.

This deviation from the Code requirements is acceptable because the readings are repeatable and can be compared with past data to detect trends. Additionally, readings can be compared with the acceptance criteria of OM-6 for evaluation of pump test results. To achieve the OM-6 required calibration range for the very low frequency of the Charging pumps would dictate use of custom circuitry and equipment that is not readily available.

PUMP RELIEF REQUEST NO. 8 (continued)

Basis for
Relief:
(continued)

The calibration range provided by station instruments and OM-6 requirements are as follows (both a meter/analyzer and a pick-up must be used to take readings):

Instruments in use for IST Vibration Measurements

For the 810 analyzer:

Displacement: 10 - 10,000 Hz +/- 2 % full scale
Velocity: 15 - 10,000 Hz +/- 2 % full scale

For the 970 Pick-up:

Both Displacement and Velocity:
10 - 10,000 Hz +/- 10 % full scale

For the 308 Meter:

Both Displacement and Velocity:
15 - 1,000 Hz +/- 2 % full scale

For the 544 Pick-up:

Both Displacement and Velocity:
15 - 160 Hz +/- 5 % full scale

OM-6 Requirements

Acceptable Instrument Accuracy:

Vibration ... 5 % (From: OM-6, Table 1)

Range:

Vibration instruments are excluded from range requirement. (From: OM-6, Paragraph 4.6.1.2.)

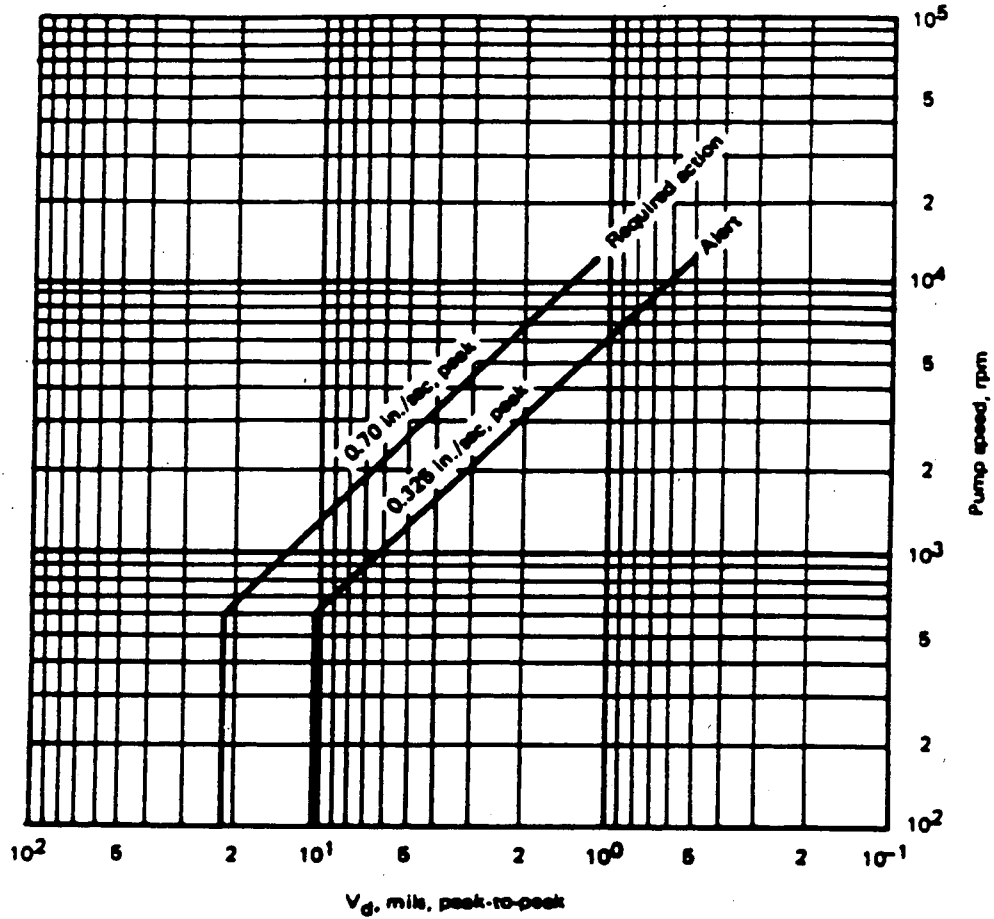
Frequency Response Range:

The frequency range of the vibration measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1000 Hz. (From: OM-6, Paragraph 4.6.1.6.)

Alternate
Testing:

Perform IWP tests with station instruments for the pump parameters discussed above. Use the requirements of OM-6 for velocity vibration acceptance criteria as shown on the attached Table PR-8.

TABLE PR-8
RANGES FOR TEST PARAMETERS



Pump Type	Pump Speed	Test Parameter	Acceptable Range	Alert Range	Required Action Range
Centrifugal and vertical line shaft (Note (2))	< 600 rpm	V_r or V_s	$\leq 2.5 V_r$	> 2.5 V_r , to 6 V_r , or > 10.5 mils	> 6 V_r , or > 22 mils
Centrifugal and vertical line shaft (Note (2))	≥ 600 rpm	V_r or V_s	$\leq 2.5 V_r$	> 2.5 V_r , to 6 V_r , or > 0.325 in./sec	> 6 V_r , or > 0.70 in./sec
Reciprocating		V_r or V_s	$\leq 2.5 V_r$	> 2.5 V_r , to 6 V_r ,	> 6 V_r ,

GENERAL NOTE: The subscript r denotes reference value.

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VALVE RELIEF REQUEST NO. 2

System: Safety Injection
Components: Check Valves 24-001-C-724 and 24-002-C-724
Category: C
Class: 2
Function: These valves prevent back-flow from the High Pressure Safety Injection Suction Header, Low Pressure Safety Injection Suction Header and Spray Pump Suction Header to the Refueling Water Storage Tanks (RWST's).
Test Requirement: Exercise these valves open and closed every three months.

Basis for Relief:

These valves cannot be full stroke exercised using system flow during power operation, cold shutdown or refueling. To achieve the required flow of approximately 6500 gpm would require a flow path that does not exist in the as-constructed plant. This flow rate is only achieved during a LOCA with all of the pumps in one train running at the same time (one HPSI pump, one LPSI pump and one Spray pump).

It is burdensome to disassemble and inspect both of these valves each refueling outage. IST by means of disassembly and manual stroking requires that the system piping be drained. This generates a significant amount of liquid radioactive waste. In addition, significant radiation exposure is received by personnel performing the tests. As a consequence, there is a clear advantage in reducing the number of these tests required in each refueling.

NRC Generic Letter 89-04, Attachment 1, Position 2, identifies disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. In this case, there is no physical way to stroke these valves either fully open or closed with the existing system design using flow.

VALVE RELIEF REQUEST NO. 2 (continued)

Alternate
Testing:

Quarterly, perform a partial stroke test (open) of each valve using system flow. At each refueling outage, test the valve by disassembly, inspection and manual stroking on a rotating basis (one valve per refueling). During disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk will be manually exercised. If it is found that the full stroke capability of the disassembled valve is in question, the other valve will be similarly disassembled and inspected and manually full stroked during the same outage. Following reassembly, the valve will be tested by partial stroking using system flow.

VALVE RELIEF REQUEST NO. 15

(Withdrawn)

VALVE RELIEF REQUEST NO. 17

(Withdrawn)

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