



SMUD

SACRAMENTO MUNICIPAL UTILITY DISTRICT ☐ 6201 S Street, P.O. Box 15830, Sacramento, CA 95813; (916) 452-3211

RJR 83-617

AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

August 23, 1983

J B MARTIN, REGIONAL ADMINISTRATOR
REGION V OFFICE OF INSPECTION AND ENFORCEMENT
U S NUCLEAR REGULATORY COMMISSION
1450 MARIA LANE SUITE 210
WALNUT CREEK CA 94596

DOCKET NO. 50-312
LICENSE NO. DPR-54
SUBJECT: IE BULLETIN 83-05

As provided by the subject bulletin, received May 23, 1983, the Sacramento Municipal Utility District has taken the required actions at Rancho Seco Nuclear Generating Station.

Following is a specific discussion of those items required.

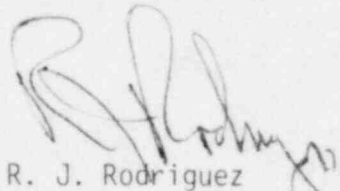
1. SMUD's Rancho Seco is a facility with an operating license which may use spare parts provided by Hayward-Tyler Pump Company (HTPC) in ASME Code pumps manufactured by other companies.
2. No pumps at SMUD were manufactured by HTPC during the period 1977 through 1981. Attachment 1 lists the thirteen Code Pumps installed, which were manufactured by B&W Canada prior to HTPC's acquisition of that company.
3. The HTPC recommendations on replacement parts (Attachment 3 of IEB 83-05) have been reviewed and will be included in the reassembly directions prior to the use of any HTPC spare parts procured during the 1977 through 1981 period. No HTPC spare parts addressed by this bulletin have been installed in safety related pumps at Rancho Seco.
4. The inservice test requirements for each Code pump except P-251 are described in SP 213.01 (Attachment 2). These pumps are tested quarterly. The Pump P-251, the low pressure injection header warming pump is not tested, but is included in the list since its failure could drain the BWST. There is no concern under this bulletin with respect to this pump, since there are no HTPC pressure boundary spare parts at Rancho Seco and a pressure boundary failure is the only failure mode of concern with respect to this pump.

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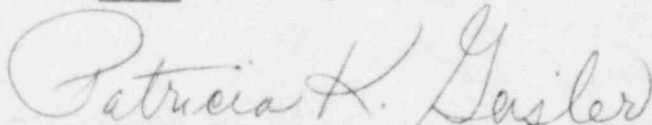
5. If reassembly of a pump with HTPC parts manufactured during the period of 1971 through 1981 which affect the measured parameters should occur, the pump's performance will be tested in accordance with the applicable portions of the engineering standards recommended by HTPC's "Expanded Commissioning Tests" (Attachment 2, IEB 83-05). Further, monitoring will be done quarterly under SMUD's SP 213.01.
6. There have been no HTPC spare parts used that form part of the ASME Code pressure boundary.

If you have need of additional information in this matter, please contact Mr. R. Colombo at the Rancho Seco Nuclear Generating Station.

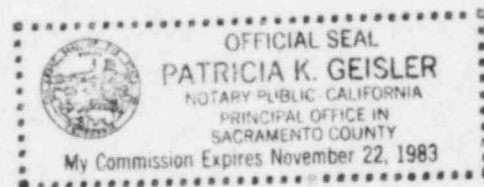


R. J. Rodriguez
Executive Director, Nuclear

Subscribed and sworn to before me
This 23rd day of August, 1983.



Patricia K. Geisler
Notary Public



ATTACHMENT 1

DISC	EQUIPMENT ID	SYSTEM	EQUIPMENT DESCRIPTION
M	P-251	BWS	LP INJECTION HEADER WARMING PUMP
M	P-261A	DHS	DECAY HEAT PUMP
M	P-261B	DHS	DECAY HEAT PUMP
M	P-291A	CBS	REACTOR BUILDING SPRAY PUMP
M	P-291B	CBS	REACTOR BUILDING SPRAY PUMP
M	P-318	FWS	AUXILIARY FEEDWATER PUMP
M	P-319	FWS	AUXILIARY FEEDWATER PUMP
M	P-472A	NRW	NUCLEAR SERVICE RAW WATER PUMP
M	P-472B	NRW	NUCLEAR SERVICE RAW WATER PUMP
M	P-482A	NSW	NUCLEAR SERVICE WATER PUMP
M	P-482B	NSW	NUCLEAR SERVICE WATER PUMP
M	P-705A	BWS	BORIC ACID PUMP
M	P-705B	BWS	BORIC ACID PUMP

SP 213.01

INSERVICE TESTS AND INSPECTION OF PUMPS

1.0 PURPOSE

- .1 To implement the intent of the Rancho Seco Technical Specifications of Subsection IWP, Inservice Testing of Pumps in Nuclear Power Plants, of Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition with Addenda through Summer 1975.
- .2 To provide a system for periodically obtaining data for use in analysis of pump performance.
- .3 To identify pumps for which periodic testing is required.
- .4 To identify test variables which must be measured for pump performance evaluation and acceptable ranges in which these variables must fall for pump performance to be deemed satisfactory.
- .5 To provide historical record files of previous performance tests.

2.0 REFERENCES

- .1 Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition, Addenda through Summer 1975, Subsection IWP, Inservice Testing of Pumps in Nuclear Power Plants.
- .2 Rancho Seco Technical Specifications.

3.0 LIMITS AND PRECAUTIONS

- .1 Assure that all test files are maintained current and complete.
- .2 Assure that all test data is analyzed for acceptability within 96 hours of performance of the pump test.

4.0 PROCEDURE

- .1 Complete performance testing on all pumps listed in Enclosure 6.1 on a quarterly basis.
 - .1 In each pump history file, record all performance parameters listed in Enclosure 6.1.

PROCEDURE (Continued)

4.2 Analyze test data for acceptability with respect to acceptance criteria as listed in Enclosure 6.2.

- .1 If any performance parameters fall within the "Alert Range," the frequency of testing shall be doubled until the cause for deviation from the "Acceptable Range" is determined, corrected, and either the existing reference values reverified or a new set of reference values are established and the pump performance falls within the "Acceptable Range."
- .2 If any performance parameters fall within the "Required Action Range," the pump shall be declared inoperative and not returned to service until the condition has been corrected. Corrective action shall be considered complete when a performance test has been completed and all results fall within the "Acceptable Range."
- .3 Record the performance data in the appropriate pump file and file the original data sheet in the appropriate Surveillance Procedure historical file.

5.0 ACCEPTANCE CRITERIA

- .1 Performance testing is completed on all pumps listed in Enclosure 6.1 on a quarterly basis.
- .2 All test data analyzed within 96 hours of test completion.
- .3 All test data transcribed into the appropriate pump file and original test data sheets filed in a timely and accurate manner.

6.0 ENCLOSURES

- .1 Pump Test Performance Parameters
- .2 Allowable Ranges of Pump Test Performance Parameters

NOTE:

On Enclosure 6.2, "NA" specifies
Not Applicable.

ENCLOSURE 6.1

PUMP TEST PERFORMANCE PARAMETERS

Symbol Legend

* - Acceptance Criteria (ΔP or Q or Pd)
 N - Speed
 Pi - Inlet Pressure
 Pd - Discharge Pressure
 Q - Flowrate

V - Vibration
 L - Lubricant Level
 Tb - Bearing Temperature
 M - Measure
 C - Calculate

PUMP NO./DESCRIPTION			P AND ID/COORD	ASME CODE CLASS	N	Pi	Pd	Q	V	L	Tb	ΔP
TEST PARAMETER												
P-236	Makeup		521/H9	2	-	M	M	C	M	M	M	C*
P-238-A	"A" Loop High Pressure Injection		521/G9	2	-	M	M	C	M	M	M	C*
P-238-B	"B" Loop High Pressure Injection		521/J9	2	-	M	M	C	M	M	M	C*
P-261-A	"A" Loop Decay Heat Removal		522/H8	2	-	M	M	M	M	M	M	C*
P-261-B	"B" Loop Decay Heat Removal		522/H10	2	-	M	M	M	M	M	M	C*
P-272	Spent Fuel Cooling		523/F5	3	-	M	M	C	M	M	M	C*
P-291-A	"A" Loop Reactor Building Spray		524/G6	2	-	M	*M	M	M	M	M	C*
P-291-B	"B" Loop Reactor Building Spray		524/G10	2	-	M	*M	M	M	M	M	C*
5+ P-318	Auxiliary Feedwater (Dual Drive)		533/F4	3	M	M	M	C*M	M	M	M	C*
+ P-319	Auxiliary Feedwater (Motor Drive)		533/G4	3	-	M	M	C*M	M	M	M	C*
P-472-A	"A" Loop Nuclear Service Raw Water		544/E3	3	-	M	*M	*C	M	M	-	-
P-472-B	"B" Loop Nuclear Service Raw Water		544/E7	3	-	M	*M	*C	M	M	-	-
P-482-A	"A" Loop Nuclear Service Cooling Water		545/D5	3	-	M	M	C	M	M	M	C*
P-482-B	"B" Loop Nuclear Service Cooling Water		545/D10	3	-	M	M	C	M	M	M	C*
P-705-A	"A" Loop Boric Acid		570/H9	2	-	M	M	M	M	M	M	C*
P-705-B	"B" Loop Boric Acid		570/H10	2	-	M	M	M	M	M	M	C*

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-236, Makeup

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)		10-100	NA	NA	NA	NA
ΔP (psid)		2696-2957	2609-2696	2957-2986	<2609	>2986
V (mils)	H	0-1.2	None	1.2-1.8	None	>1.8
	V	0-1	None	1-1.5	None	>1.5
	A	0-1	None	1-1.5	None	>1.5
L		Normal	NA	NA	NA	NA
Tb (°F)		0-180	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-238A, "A" HPI

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)		0-100	NA	NA	NA	NA
ΔP (psid)		2613-2866	2529-2613	2866-2894	<2529	>2984
V (mils)	H	0-1.0	None	1-1.5	None	>1.5
	V	0-1.2	None	1.2-1.8	None	>1.8
	A	0-1.6	None	1.6-2.4	None	>2.4
L		Normal	NA	NA	NA	NA
Tb (°F)		0-180	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-238B, "B" HPI

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)		0-100	NA	NA	NA	NA
ΔP (psid)		2681-2941	2595-2681	2941-2969	<2595	>2969
V (mils)	H	0-1.4	None	1.4-2.1	None	>2.1
	V	0-1.2	None	1.2-1.8	None	>1.8
	A	0-1.2	None	1.2-1.8	None	>1.8
L		Normal	NA	NA	NA	NA
Tb (°F)		0-180	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-261A, "A" LPI

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		133-146	129-133	146-147	<129	>147
Q (gpm)		3000	NA	NA	NA	NA
V (mils)	H	0-1.6	None	1.6-2.4	None	>2.4
	V	0-1.6	None	1.6-2.4	None	>2.4
	A	0-1	None	1-1.5	None	>1.5
L		Normal	NA	NA	NA	NA
Tb (°F)		0-170	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-261B, "B" LPI

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		134-147	130-134	147-148	<130	>148
Q (gpm)		3000	NA	NA	NA	NA
V (mils)	H	0-1	None	1-1.5	None	>1.5
	V	0-1.2	None	1.2-1.8	None	>1.8
	A	0-1	None	1-1.5	None	>1.5
L		Normal	NA	NA	NA	NA
Tb (°F)		0-170	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-272, Spent Fuel Cooling

TEST PARAMETER	ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
		LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)		NA	NA	NA	NA
ΔP (psid)	16-18	NA	NA	NA	NA
Q (gpm)	1015-1101	972-1015	1101-1112	<972	>1112
V (mils)	H	None	1.6-2.4	None	>2.4
	V	None	1.2-1.8	None	>1.8
	A	--	--	--	--
L	Normal	NA	NA	NA	NA
Tb (°F)	120°F	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-291A, "A" Containment Spray

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
P1 (psig)			NA	NA	NA	NA
ΔP (psid)		171-188	166-171	188-190	<166	>190
Q (gpm)		1500	NA	NA	NA	NA
V (mils)	H	0-1	None	1-1.5	None	>1.5
	V	0-1.8	None	1.8-2.7	None	>2.7
	A	0-1	None	1-1.5	None	>1.5
L		Normal	NA	NA	NA	NA
Tb (°F)			NA	NA	NA	NA
Pd (psig)		<u>></u> 208	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-291B, "B" Containment Spray

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		165-181	159-165	181-182	<159	>182
Q (gpm)		1500	NA	NA	NA	NA
V (mils)	H	0-1.2	None	1.2-1.8	None	>1.8
	V	0-1.2	None	1.2-1.8	None	>1.8
	A	0-1.2	None	1.2-1.8	None	>1.8
L		Normal	NA	NA	NA	NA
Tb (°F)			NA	NA	NA	NA
Pd (psig)		<u>>208</u>	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-318, Dual Drive Auxiliary Feedwater (Turbine Drive)

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		≥ 1000	NA	NA	NA	NA
5+- Q (gpm)		$\geq 840^*$	NA	NA	NA	NA
V (mils)	H	0-1.2	None	1.2-1.8	None	> 1.8
	V	0-1	None	1-1.5	None	> 1.5
	A	0-1	None	1-1.5	None	> 1.5
L		Normal	NA	NA	NA	NA
Tb ($^{\circ}F$)			NA	NA	NA	NA
N (rpm)						

5+- *This is measured test flow through FT-31850 and does not include pump miniflow (approx. 60 gpm).

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-318, Dual Drive Auxiliary Feedwater (Motor Drive)

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
5+	ΔP (psid)	≥ 1118	NA	NA	NA	NA
+	Q (gpm)	$\geq 780^*$	NA	NA	NA	NA
Y (mils)	H	0-1.2	None	1.2-1.8	None	> 1.8
	V	0-1	None	1-1.5	None	> 1.5
	A	0-1	None	1-1.5	None	> 1.5
L		Normal	NA	NA	NA	NA
Tb ($^{\circ}F$)			NA	NA	NA	NA

5++ *This is measured test flow through FT-31850 and does not include pump miniflow (approx. 60 gpm).

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-319, Auxiliary Feedwater (Motor Drive)

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
5+ ΔP (psid)		≥ 1118	NA	NA	NA	NA
+ Q (gpm)		$\geq 780^*$	NA	NA	NA	NA
V (mils)	H	0-1.2	None	1.2-1.8	None	> 1.8
	V	0-1	None	1-1.5	None	> 1.5
	A	0-1.2	None	1.2-1.8	None	> 1.8
L		Normal	NA	NA	NA	NA
Tb ($^{\circ}F$)			NA	NA	NA	NA

5++ *This is measured test flow through FT-31850 and does not include pump miniflow (approx. 60 gpm).

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-472A, "A" NSRW

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		26.4-29.0	25.6-26.4	29.0-29.3	<25.6	>29.3
Q (gpm)		16000-18000	NA	NA	NA	NA
V (mils)	H	0-1	None	1-1.5	None	>1.8
	V	0-1	None	1-1.5	None	>1.5
	A	None	None	None	None	None
L		Normal	NA	NA	NA	NA
Tb (°F)			NA	NA	NA	NA
Pd (Spray Header)		9.1-11.6	NA	NA	NA	NA

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-472B, "B" NSRW

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		27.5-30.2	26.6-27.5	30.2-30.5	<26.6	>30.5
Q (gpm)		16000-18000	NA	NA	NA	NA
V (mils)	H	0-1	None	1-1.5	None	>1.5
	V	0-1	None	1-1.5	None	>1.5
	A	None	None	None	None	None
L		Normal	NA	NA	NA	NA
Tb (°F)			NA	NA	NA	NA
Pd (Spray Header)		9.1-11.6	NA	NA	NA	NA

ENCLOSURE 5.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-482A, "A" NSCW

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		53-57	51-53	57-58	<51	>58
Q (gpm)		6000-6600	5805-6000*	6600-6644	<5805*	>6644
V (mils)	H	0-1	None	1-1.5	None	>1.5
	V	0-1	None	1-1.5	None	>1.5
	A	0-1	None	1-1.5	None	>1.5
L		Normal	NA	NA	NA	NA
Tb (°F)			NA	NA	NA	NA

* 6000 GPM is the minimum design flow according to Technical Specification 4.5.1.2D.3 requirement.

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-482B, "B" NSCW

TEST PARAMETER		ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
			LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
Pi (psig)			NA	NA	NA	NA
ΔP (psid)		53-57	51-53	57-58	<51	>58
Q (gpm)		6000-6600	5805-6000*	6600-6644	<5805*	>6644
V (mils)	H	0-1	None	1-1.5	None	>1.5
	V	0-1	None	1-1.5	None	>1.5
	A	0-1	None	1-1.5	None	>1.5
L		Normal	NA	NA	NA	NA
Tb (°F)			NA	NA	NA	NA

* 6000 GPM is the minimum design flow according to Technical Specification 4.5.1.2D.3 requirement.

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-705A, "A" BA Addition

TEST PARAMETER	ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
		LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
4> Pi (psig)	2-20	NA	NA	NA	NA
ΔP (psid)	80-130	NA	NA	NA	NA
Q (gpm)	50-79.1	<50	80	<50	>80
V (mils)	H — 0-1	None	1-1.5	None	>1.5
	V — 0-1	None	1-1.5	None	>1.5
	A — None	None	None	None	None
L	Normal	NA	NA	NA	NA
Tb (°F)	0-120	NA	NA	NA	NA

NOTE:

50 gpm = 51 percent indication at FI-70507
 79.1 gpm = 80 percent indication at FI-20507
 80 gpm = 82.5 percent indication at FI-20507

ENCLOSURE 6.2

ALLOWABLE RANGES OF PUMP TEST PERFORMANCE PARAMETERS

PUMP NO./DESCRIPTION: P-705B, "B" BA Addition

TEST PARAMETER	ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE	
		LOW VALUES	HIGH VALUES	LOW VALUES	HIGH VALUES
4> P1 (psig)	2-20	NA	NA	NA	NA
ΔP (psid)	80-130	NA	NA	NA	NA
Q (gpm)	50-79.1	<50	80	<50	>80
V (mils)	H 0-1	None	1-1.5	None	>1.5
	V 0-1	None	1-1.5	None	>1.5
	A None	None	None	None	None
L	Normal	NA	NA	NA	NA
Tb (°F)	0-120	NA	NA	NA	NA

NOTE:

50 gpm = 51 percent indication at FI-70507
 79.1 gpm = 80 percent indication at FI-70507
 80 gpm = 82.5 percent indication at FI-70507

END