CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9806300085 DOC.DATE: 98/06/25 NOTARIZED: NO DOCKET #
FACIL:50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
AUTH.NAME AUTHOR AFFILIATION
WILKERSON,T.M. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Provides addl info re motor operated valve testing performed at Unit 2.

DISTRIBUTION CODE: A001D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 8
TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD2-1 LA	1	1	PD2-1 PD	1	1
	SHEA,J W	1	1			
INTERNAL:	FILE CENTER 01	1	1	NRR/DE/ECGB/A	1	1
	NRR/DE/EMCB	1	1	NRR/DRCH/HICB	1	1
	NRR/DSSA/SPLB	1	1	NRR/DSSA/SRXB	1	1
	NUDOCS-ABSTRACT	1	1	OGC/HDS3	1	0
EXTERNAL:	NOAC	1	1	NRC PDR	1	1

CATEGORY 1

DOCUMENT

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 13 ENCL 12

10 CFR 50.54(f)

CP&L

Carolina Power & Light Company
Robinson Nuclear Plant
3581 West Entrance Road
Hartsville SC 29550

RNP File No: 13510
Serial: RNP-RA/98-0121

JUN 25 1998

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

ADDITIONAL INFORMATION CONCERNING
MOTOR OPERATED VALVE TESTING

Dear Sir or Madam:

The Attachments to this letter provide additional information concerning motor operated valve testing performed at H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. Carolina Power & Light (CP&L) Company letter dated February 20, 1998, CP&L committed to provide this information by June 25, 1998.

If you have any questions concerning this matter, please contact me or Mr. H. K. Chernoff of my staff.

Very truly yours,

for T. M. Wilkerson
Manager - Regulatory Affairs

A00093

KLB/klb
Attachments

I. Motor Operated Valve Response
II. RNP Static Test Stem Coefficient of Friction Data
III. Reliable RNP Dynamic Test Stem Coefficient of Friction Data
IV. RNP Difference in Static and Dynamic Coefficient of Friction Data
V. RNP Stem Lubricant Degradation Data

c: Mr. L. A. Reyes, USNRC, Region II
Mr. J. W. Shea, USNRC
Mr. R. H. Wessman, USNRC
USNRC Resident Inspector, HBRSEP

MOTOR OPERATED VALVE RESPONSE

Additional information concerning motor operated valve testing performed at H. B. Robinson Steam Electric Plant is provided below.

1. A large number of valves were tested statically and dynamically during refueling outage (RO)-18 to obtain more direct measurement data to support the assumptions used in development of stem friction coefficients (COF). The static and the dynamic stem COF measured during RO-18 and that collected during previous outages were combined, and a statistical evaluation of the data performed; to determine average + 2σ for the static, dynamic and the difference between the static and dynamic COF. Attachments II, III and IV contain this data. The average + 2σ values determined were found to be comparable to the average + 1σ value in ESR 97-00331, Rev.0, "Determination of MOV Stem Factors," prior to RO-18.

   Valves tested during RO-18 that were not considered in statistical analysis are discussed below. Table B of Attachment III lists reasons for not considering the test data collected for certain valves prior to RO-18.

   VALVE AFW-V2-16C

   The results from the tests of valve AFW-V2-16C show an increase in stem COF of 0.076 from the static test to the dynamic test for the closing stroke. This is significantly higher than the expected Rate of Loading (ROL) effect, and this valve appears to be an outlier. The resulting test evaluation demonstrated that the valve is operable, but the reason for the considerable ROL effect is uncertain. Possible causes for the high ROL effect include test inaccuracies, inadequate stem lubrication during testing, or worn/burred actuator parts. In addition, there was no difference between the static and dynamic tests performed on this valve during the previous outage (RO-17 in September 1996). Based on this, the data collected during recent outage (RO-18) is not considered reliable. Actions will be taken to determine and correct the cause of the high ROL for this valve during the next refueling outage.

MOTOR OPERATED VALVE RESPONSE

VALVES FP-256 and 258

MOVs tested under dynamic (i.e., differential pressure) conditions exhibit a different behavior than MOVs tested under static conditions (no differential pressure or flow). In the JOG Periodic Verification Report (MPR-1807), the JOG recommends guidelines on the conditions at which a test stroke can be considered dynamic. The guidelines say that the initial wedging load should be at least 2000 lb, at least twice the running load, and approximately one-quarter of the thrust at torque switch trip before a test can be considered dynamic. Review of the thrust traces for each dynamic valve test for valves FP-256 and FP-258 show that these do not meet this criteria. In fact, the thrust traces for the fire protection valve dynamic tests are almost identical to the thrust traces for their corresponding static tests. Changes in stem COF for these valves between the static and dynamic tests are not due to ROL effects. Consequently, the data from these tests should not be considered when determining a bounding stem COF and COF change.

VALVE RHR-759A

The test for valve RHR-759A performed during RO-15 (1995) showed a high ROL effect in the closing direction. During RO-18, the valve actuator was disassembled to check for any potential problems, and the stem re-lubricated. The torque switch setting was also reduced to ensure the valve did not exceed the maximum thrust limits. The valve was then setup and re-tested with new torque switch settings. Accordingly, the tests performed prior to the actuator disassembly are not indicative of the current stem performance and the data should not be considered when evaluating the test data to determine a bounding stem COF and COF change. The close dynamic test data was not collected, as the close torque switch tripped prior to valve closure, indicating valve did not close against RHR pump discharge pressure. This was not considered an issue as the valve is required to close against zero differential pressure during a design basis accident.

2. A justification for not using open direction data follows. Only eight dynamic tests have been performed in the open direction for which the test data is considered reliable. Only three of those have the corresponding static tests necessary to determine the change in COF between dynamic and static conditions. Three data points are judged too small a population on which to base a statistical argument. Consequently, the results from this data set will not be applied to untested valves without the support of additional test data. Therefore, the close statistical difference (average + 2σ) of 0.048 will be used for the open direction as well (see Attachment IV).

3. The maximum Stem Lubricant Degradation (SLD) determined for the population over an operating cycle was 0.06, while the maximum SLD for the as-found and subsequent as-left test following re-lubrication was 0.08. The maximum SLD for the total population was also 0.08. Therefore, SLD of 0.08 will be used in the valve set up (see Attachment V).

MOTOR OPERATED VALVE RESPONSE

4. The evaluation of the hydrodynamic torque requirements for butterfly valves V6-16A/B/C is complete. The valves were statically tested during RO-18. Valve V6-16B was also dynamically (DP) tested. The hydrodynamic torque determined during the dynamic test was found to be much lower than the seating torque. Therefore, the seating torque, and not the hydrodynamic torque, governs determination of the minimum required closing torque.

   The shaft for V6-16B is located downstream of the disc relative to the flow, and for V6-16A and C the shaft is located upstream of the disc relative to flow. Based on review of EPRI TR-103224, hydrodynamic torque tends to close a butterfly valve installed in an incompressible fluid system, with the exception that for single offset discs with the shaft downstream (V6-16B), hydrodynamic torque may become self-opening over part of the stroke. This self-opening tendency can be observed in the dynamic closing trace for V6-16B. For V6-16A and V6-16C, where the shaft is upstream of the disc relative to flow, hydrodynamic torque will tend to close the valve. It is therefore conservative to assume that the hydrodynamic closing torque for V6-16A and V6-16C is zero (as opposed to a negative value), and that the minimum required closing torque should be based on the seating torque.

   Based on this, it is concluded that the hydrodynamic torque is not significant in the determination of the total torque required to closeV6-16A, B and C.

5. Site procedures were revised to require diagnostic verification of close limit switch and torque switch bypass setting of certain valves. TMM-035, "Analysis and Trending of MOV Performance," was revised to require diagnostic verification of close limit switch and torque switch bypass for those valves that are considered "position controlled." In addition the field settings of the position controlled and testable valves were verified against the desired limit switch setting. The field settings were found to be within the limit specified.

RNP Static Test Stem Coefficient of Friction Data

MOV		Diameter	Pitch	Lead	Form	h	Date	Test No.	Teledyne or Votes	Close Torque at TST	Close Thrust at TST	SF-CS	COF-CS	Open Torque at TST	Open Thrust at TST	SF-OS	COF-OS
AFW-V2-14A	*	1.500	0.333	0.333	STUB	0.100	3/15/98	2	Teledyne	125	11354	0.011	0.108				
AFW-V2-14B	*	1.500	0.333	0.333	STUB	0.100	3/14/98	1	Teledyne	127	13213	0.0096	0.085				
AFW-V2-14C	*	1.500	0.333	0.333	STUB	0.100	3/14/98	3	Teledyne	144	12294	0.0117	0.119				
AFW-V2-16A	*	1.500	0.333	0.333	STUB	0.100	4/2/98	2	Teledyne	102	8520	0.012	0.124				
AFW-V2-16B	*	1.500	0.333	0.333	STUB	0.100	4/3/98	2	Teledyne	102	7790	0.0131	0.142				
AFW-V2-16C	*	1.500	0.333	0.333	STUB	0.100	4/4/98	2	Teledyne	97.1	7950	0.0122	0.127				
CC-716B	*	1.500	0.333	0.333	STD	0.167	3/15/98	3	Votes	85	7118	0.0119	0.128				
CC-730	*	1.500	0.333	0.333	STD	0.167	3/17/98	4	Votes	95.6	6834	0.014	0.164				
CC-735	*	1.125	0.167	0.333	STD	0.084	3/17/98	3	Votes	69.8	6782	0.0103	0.128				
CC-749A		2.125	0.500	0.500	STD	0.250	3/24/98	1	Teledyne	341	27997	0.0122	0.068	187.00	15305	0.0122	0.068
CC-749B		2.125	0.500	0.500	STD	0.250	3/24/98	2	Teledyne	381	25523	0.0149	0.101	162.00	13205	0.0123	0.069
CVC-381	*	0.875	0.167	0.333	STD	0.084	3/20/98	2	Teledyne	37.1	4287	0.0087	0.121				
FCV-626		1.125	0.167	0.333	STD	0.084	3/16/98	2	Teledyne	92.7	8055	0.0115	0.154	29.40	3184	0.0092	0.104
FP-248	*	1.250	0.333	0.333	STUB	0.100	5/1/95	2	Votes	128.3	6840	0.0188	0.280				
FP-249	*	1.250	0.333	0.333	STUB	0.100	5/1/95	4	Votes	135.0	10754	0.0126	0.161				
FP-256		1.250	0.333	0.333	STUB	0.100	3/8/98	2	Teledyne	94.75	11474	0.0083	0.077	63.61	7705	0.0083	0.077
FP-258		1.250	0.333	0.333	STUB	0.100	3/8/98	1	Teledyne	85	9664	0.009	0.091	38.25	4735	0.0081	0.073
FW-V2-6A	*	3.000	0.500	0.500	STD	0.250	3/20/98	3	Votes	769.4	53001	0.0145	0.066				
FW-V2-6B		3.000	0.500	0.500	STD	0.250	4/1/98	6	Teledyne	872	42746	0.0204	0.115	496.00	22069	0.0225	0.133
FW-V2-6C	*	3.000	0.500	0.500	STD	0.250	3/28/98	7	Votes	789.4	51949	0.0152	0.072				
MS-V1-8A	*	0.750	0.200	0.400	STUB	0.060	4/2/98	4	Teledyne	47	4586	0.0102	0.155				
MS-V1-8B	*	0.750	0.200	0.400	STUB	0.060	3/31/98	9	Teledyne	46.8	4546	0.0103	0.158				
MS-V1-8C	*	0.750	0.200	0.400	STUB	0.060	4/3/98	2	Teledyne	35.69	4303	0.0083	0.096				
RC-535		1.125	0.200	0.400	STD	0.100	3/19/98	2	Teledyne	153	13762	0.0111	0.127	68.50	5935	0.0115	0.136
RC-536		1.125	0.200	0.400	STD	0.100	3/19/98	2	Teledyne	124	13861	0.009	0.082	57.30	5127	0.0112	0.129
RHR-744A		2.550	0.333	0.666	STD	0.167	3/25/98	1	Teledyne	728	29790	0.0244	0.149	461.00	17151	0.0269	0.172
RHR-744B	*	2.550	0.333	0.666	STD	0.167	3/26/98	3	Teledyne	431	23657	0.0182	0.090				
RHR-752A	*	1.750	0.333	0.333	STD	0.167	3/20/98	6	Votes	434.9	33099	0.0131	0.126				
RHR-752B	*	1.750	0.333	0.333	STD	0.167	3/20/98	3	Votes	401.4	33298	0.0121	0.111				
RHR-759A		1.500	0.250	0.500	STD	0.125	3/24/98	1	Teledyne	110	8060	0.0136	0.115	89.20	6654	0.0134	0.111
RHR-759B	*	1.500	0.250	0.500	STD	0.125	3/25/98	3	Votes	144.2	13587	0.0106	0.066				
SI-845A	*	1.250	0.200	0.200	STD	0.100	3/14/98	2	Teledyne	81	9108	0.0089	0.125				
SI-845B	*	1.250	0.200	0.200	STD	0.100	3/13/98	3	Teledyne	90	10599	0.0085	0.117				
SI-845C	*	1.250	0.200	0.200	STD	0.100	3/14/98	2	Teledyne	78.8	6662	0.0118	0.182				
SI-860A	*	1.750	0.333	0.333	STD	0.167	9/21/96	3	Votes	360.8	22700	0.0159	0.166				
SI-860B	*	1.750	0.333	0.333	STD	0.167	9/22/96	2	Votes	310.2	24830	0.0125	0.117				
SI-861A	*	1.750	0.333	0.333	STD	0.167	3/24/98	3	Votes	307	20331	0.0151	0.154				
SI-861B	*	1.750	0.333	0.333	STD	0.167	9/23/96	1	Votes	270.0	20300	0.0133	0.129				
SI-862A	*	1.750	0.333	0.333	STD	0.167	9/23/96	5	Votes	367.0	23908	0.0154	0.159				
SI-862B	*	1.750	0.333	0.333	STD	0.167	9/23/96	1	Votes	411.5	22595	0.0182	0.199				
SI-863A	*	1.250	0.250	0.500	STUB	0.075	5/8/95	3	Votes	69.8	6778	0.0103	0.071				
SI-863B	*	1.250	0.250	0.500	STUB	0.075	5/13/95	1	Votes	84.4	5412	0.0156	0.170				
SI-864A	*	1.750	0.333	0.333	STD	0.167	9/25/96	3	Votes	329.2	22368	0.0147	0.149				
SI-864B	*	1.750	0.333	0.333	STD	0.167	9/29/96	3	Votes	253.2	21446	0.0118	0.107				
SI-866A	*	1.250	0.200	0.200	STD	0.100	3/24/98	6	Teledyne	109.4	11533	0.0095	0.137				
SI-866B	*	1.250	0.200	0.200	STD	0.100	3/12/98	5	Teledyne	136.4	11759	0.0116	0.178				
SI-869	*	1.250	0.333	0.333	STD	0.167	4/7/98	4	Teledyne	112	12260	0.0091	0.098				
SI-870A	*	1.250	0.333	0.667	STUB	0.100	3/10/98	2	Teledyne	130	10917	0.0119	0.059				
SI-870B	*	1.250	0.333	0.667	STUB	0.100	3/10/98	3	Teledyne	152	9809	0.0155	0.127				
SI-880A	*	1.500	0.333	0.333	STD	0.167	2/27/98	2	Votes	113.3	6882	0.0165	0.206				
SI-880B	*	1.500	0.333	0.333	STD	0.167	2/27/98	6	Votes	113.3	7277	0.0156	0.191				
SI-880C	*	1.500	0.333	0.333	STD	0.167	3/3/98	9	Votes	105.1	6156	0.0171	0.216				
SI-880D	*	1.500	0.333	0.333	STD	0.167	4/4/98	16	Votes	68.1	5667	0.012	0.130				

* No significant thrust or no data gathered

All Valves		
Statistics	COF-CS	COF-OS
Average	0.130	0.107
ST DEV (σ)	0.043	0.034
Avg + 2σ	0.216	0.175
Minimum	0.059	0.068
Maximum	0.280	0.172

Note that the Static Test Data is from the Latest Test of each MOV.

TABLE A

Reliable RNP Dynamic Test Stem Coefficient of Friction Data

MOV	DP Test Date	Test Number	Test Equipment	Rec. Calc. **	Rev. No.	COF-CD	COF-OD
AFW-V2-14A	4/14/98	3	Teledyne			0.135	N/A
AFW-V2-14B	4/14/98	2	Teledyne			0.101	N/A
AFW-V2-14C	4/14/98	1	Teledyne			0.122	0.159
AFW-V2-16A	4/4/98	2	Teledyne			0.179	N/A
AFW-V2-16B	4/7/98	3	Teledyne			0.145	0.159
CC-716B	3/30/98	6	Votes			0.137	N/A
CC-730	3/30/98	5	Votes			0.165	N/A
FW-V2-6A	1/19/94	11	Votes	RNP-M/MECH-1398	2	0.092	N/A
FW-V2-6B	4/10/98	2	Teledyne			0.136	0.143
FW-V2-6C	1/19/94	7	Votes	RNP-M/MECH-1400	2	0.083	N/A
RHR-744A	3/27/98	2	Teledyne			0.244	0.218
RHR-744B	3/27/98	2	Teledyne			0.110	0.058
RHR-759A	3/27/98	1	Teledyne			N/A *	0.163
RHR-759B	12/12/93	3	Votes	RNP-M/MECH-1582	1	0.082	N/A
SI-869	4/8/98	2	Teledyne			0.096	0.061
SI-870A	3/13/98	2	Teledyne			0.084	0.103
SI-870B	9/15/96	4	Votes	RNP-M/MECH-1474	1	0.186	N/A
SI-880D	4/4/98	15	Votes			0.211	N/A

All Valves		
Statistics	COF-CD	COF-OD
Average	0.136	0.133
ST DEV (σ)	0.046	0.052
Avg + 2σ	0.228	0.237
Minimum	0.082	0.058
Maximum	0.244	0.218

TABLE B

RNP Dynamic Test Stem COF Data Excluded from Statistical Analysis

MOV	DP Test Date	DP Test Number	Test Equipment	Rec. Calc.	Rev. No.	COF-CD	Reason for Exclusion
FP-248	6/2/92	4	V	RNP-M/MECH-1489	1	0.177	low flow/minimal DP effects
FP-249	6/1/92	3	V	RNP-M/MECH-1490	1	0.152	low flow/minimal DP effects
SI-862A	6/8/92	5	V	RNP-M/MECH-1487	1	0.162	hydrostatic test in open direction
SI-862B	6/8/92	3	V	RNP-M/MECH-1488	1	0.194	hydrostatic test in open direction
SI-863A	6/8/92	2	V	RNP-M/MECH-1493	1	0.144	hydrostatic test in open direction
SI-863B	6/8/92	3	V	RNP-M/MECH-1494	1	0.084	hydrostatic test in open direction
SI-880B	10/28/93	5	V	RNP-M/MECH-1576	1	0.165	low flow/minimal DP effects
FP-256	Data From RO-18	2	Teledyne	NA	NA	0.134	low flow/minimal DP effects
FP-258	Data From RO-18	1	Teledyne	NA	NA	0.091	low flow/minimal DP effects
AFW-V2-16C	Data From RO-18	2	Teledyne	NA	NA	0.208	outlier, possible test inaccuracies

* dP tested in the open direction only.

** The valves which were tested during RO-18 were evaluated per TMM-035 requirements. For valves which were previously tested, the data is evaluated in the corresponding reconciliaton calculation.

RNP Difference in Static and Dynamic Coefficient of Friction Data

MOV	Rec. Calc.	Rev. No.	Test Equipment	COF-CS	COF-OS	COF-CD		COF-OD	Close COF Difference	Open COF Difference *
AFW-V2-14A	Data From RO-18		Teledyne	0.108		0.135		N/A	0.027	
AFW-V2-14B	Data From RO-18		Teledyne	0.085		0.101		N/A	0.016	
AFW-V2-14C	Data From RO-18		Teledyne	0.119		0.122		0.159	0.003	
AFW-V2-16A	Data From RO-18		Teledyne	0.124		0.169	**	N/A	0.045	
AFW-V2-16B	Data From RO-18		Teledyne	0.142		0.145		0.159	0.003	
CC-716B	Data From RO-18		Votes	0.128		0.137		N/A	0.009	
CC-730	Data From RO-18		Votes	0.164		0.165		N/A	0.001	
FW-V2-6A	RNP-M/MECH-1398	2	Votes	0.07		0.092	*	N/A	0.022	
FW-V2-6B	Data From RO-18		Teledyne	0.115	0.133	0.136		0.143	0.021	0.01
FW-V2-6C	RNP-M/MECH-1400	2	Votes	0.074		0.083	*	N/A	0.009	
RHR-744A	Data From RO-18		Teledyne	0.149	0.172	0.212	**	0.218	0.063	0.046
RHR-744B	Data From RO-18		Teledyne	0.09		0.109	**	0.058	0.019	
RHR-759A	Data From RO-18		Teledyne	0.115	0.111	N/A *		0.163	NA	0.052
RHR-759B	RNP-M/MECH-1582	1	Votes	0.072		0.082	*	N/A	0.01	
SI-869	Data From RO-18		Teledyne	0.098		0.096		0.061	-0.002	
SI-870A	Data From RO-18		Teledyne	0.059		0.061	**	0.103	0.002	
SI-870B	RNP-M/MECH-1474	1	Votes	0.167		0.186	*	N/A	0.019	
SI-880D	Data From RO-18		Votes	0.13		0.138		N/A	0.008	

All Valves		
Statistics	COF Difference	
	Close	Open
Average	0.016	0.036
ST DEV (σ)	0.016	0.019
Avg + 2σ	0.048	0.074
Maximum	0.063	0.052

RNP Difference in Static and Dynamic Coefficient of Friction Data for Valves Excluded from the Dynamic Statistical Analysis

MOV	Rec. Calc.	Rev. No.	COF-Static	COF-DP	COF Difference
FP-248	RNP-M/MECH-1489	1	0.173	0.177	0.004
FP-249	RNP-M/MECH-1490	1	0.161	0.152	-0.009
SI-862A	RNP-M/MECH-1487	1	0.160	0.162	0.002
SI-862B	RNP-M/MECH-1488	1	0.190	0.194	0.004
SI-863A	RNP-M/MECH-1493	1	0.140	0.144	0.004
SI-863B	RNP-M/MECH-1494	1	0.072	0.084	0.012
SI-880B	RNP-M/MECH-1576	1	0.165	0.165	0.000
FP-256	Data From RO-18	NA	0.077	0.134	0.057
FP-258	Data From RO-18	NA	0.091	0.091	0.000
AFW-V2-16C	Data From RO-18	NA	0.127	0.203	0.076

*The static data from RO18 was not used for FW-V2-6A, C , RHR-759B and SI-870B as using this data will not provide a true comparison

** The COF listed is calculated from the torque and thrust at the C14 point. The COF values used in Attachment III are calcuated from either the C10 or C11 point because it is the most conservative for the particular valve.

Note that the Static Test Data in this Attachment is the data from the static test prior to the DP test.

RNP Stem Lubricant Degradation Data

MOV	Test Date	Test Number	Test Type	Thrust at TST	All Data SLD	Operating Cycle SLD	Stem Lube SLD
AFW-V2-14A	06-Feb-95	4	AL	14901	-0.04		-0.04
AFW-V2-14A	06-Feb-95	3	AF	15536			
AFW-V2-14C	09-Feb-95	2	AL	15006	0.04		0.04
AFW-V2-14C	09-Feb-95	1	AF	14417			
AFW-V2-16A	26-May-95	4	AL	13808	0.07	0.07	
AFW-V2-16A	15-Sep-96	4	AF	12778			
AFW-V2-16B	26-May-95	6	AL	12672	-0.04	-0.04	
AFW-V2-16B	17-Sep-96	6	AF	13215			
AFW-V2-16C	26-May-95	3	AL	13986	-0.04	-0.04	
AFW-V2-16C	17-Sep-96	3	AF	14568			
CC-716B	20-May-95	2	AL	7360	-0.07		-0.07
CC-716B	17-May-95	1	AF	7839			
CC-730	19-May-95	2	AL	6782	0.07		0.07
CC-730	18-May-95	1	AF	6278			
CC-735	23-May-95	2	AL	12257	-0.02		-0.02
CC-735	22-May-95	1	AF	12442			
CVC-381	30-May-95	2	AL	1453	0.07		0.07
CVC-381	17-May-95	1	AF	1356			
FCV-626	29-Sep-96	4	AL	11011	-0.12		-0.12
FCV-626	11-Sep-96	3	AF	12327			
FCV-626	24-May-95	1	AL	12282	0.00	0.00	
FP-249	19-Sep-93	2	AL	11443	0.06	0.06	
FP-249	01-May-95	4	AF	10754			
FW-V2-6C	28-Mar-98	7	AL	51949	-0.01		-0.01
FW-V2-6C	13-Mar-98	4	AF	52334			
RHR-744A	28-Sep-96	5	AL	27884	-0.02		-0.02
RHR-744A	16-Sep-96	4	AF	28336			
RHR-744B	29-Sep-96	4	AL	12533	-0.11		-0.11
RHR-744B	17-Sep-96	3	AF	13943			
SI-845B	13-Mar-98	3	AL	10599	0.04		0.04
SI-845B	10-Mar-98	3	AF	10217			
SI-861B	29-Oct-93	3	AL	18911	-0.07	-0.07	
SI-861B	23-Sep-96	1	AF	20300			
SI-863A	08-May-95	3	AL	6778	0.08		0.08
SI-863A	07-May-95	1	AF	6212			
SI-863B	13-May-95	1	AL	5412	-0.05		-0.05
SI-863B	10-May-95	2	AF	5690			
SI-864A	25-Sep-96	3	AL	22368	0.00		0.00
SI-864A	21-Sep-96	2	AF	22269			
SI-866B	12-Mar-98	5	AL	11759	0.03		0.03
SI-866B	11-Mar-98	1	AF	11353			
SI-870A	14-Sep-96	11	AL	8287	0.01		0.01
SI-870A	12-Sep-96	9	AF	8241			
SI-870B	14-Sep-96	3	AL	12579	0.06		0.06
SI-870B	12-Sep-96	2	AF	11787			
SI-880D	04-Apr-98	16	AL	5667	-0.27		-0.27
SI-880D	02-Mar-98	4	AF	7180			
				Mean SLD	-0.002	-0.004	-0.001
				Max	0.08	0.06	0.08
				Min	-0.12	-0.07	-0.12

Data is from TMM-035 Data Sheets for available As-Found and corresponding As-Left Test Data. Note that in some cases the latest test data was not used, since it was not part of an as-found/as-left data set.