ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9110100045 DOC.DATE: 91/10/04 NOTARIZED: NO DOCKET #
FACIL:50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387
50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
AUTH.NAME AUTHOR AFFILIATION
KEISER,H.W. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
BUTLER,W.R. Project Directorate I-2

SUBJECT: Forwards calculations to support available valve factors,per commitment made during insp of Generic Ltr 89-10,Suppl 3 during wk of 910923.

DISTRIBUTION CODE: A064D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 6+561
TITLE: Response to Generic Ltr 89-10, "Safety-Related MOV Testing & Surveill

NOTES:LPDR 1 cy Transcripts. 05000387
LPDR 1 cy Transcripts. 05000388

See Reports

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD1-2 LA	1	0	PD1-2 PD	1	1
	RALEIGH,J.	1	1			
INTERNAL:	ACRS	1	1	BAER,B RES	1	1
	NRR GODY,A., JR	1	1	NRR/DET/EMEB 7E	1	1
	NRR/LPEB/BC	1	1	REG FILE	1	1
	RES/DSIR/EIB/B	1	1			
EXTERNAL:	NRC PDR	1	1	NSIC	1	1
NOTES:		2	2			

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 14 ENCL 13

RIDS/ADDS

RIDS/ADDS

PP&L Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101-1179 • 215/774-5151

Harold W. Keiser
Senior Vice President–Nuclear
215/774-4194

OCT 0 4 1991

Director of Nuclear Reactor Regulation
Attention: Dr. W.R. Butler, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
GL 89-10 SUPPLEMENT NO. 3 -
AVAILABLE VALVE FACTORS **Docket Nos. 50-387**
PLA-3660 FILE R41-2 **and 50-388**

Dear Dr. Butler:

As part of the NRC Team Inspection on Generic Letter 89-10 conducted at Susquehanna SES during the week of September 23rd, Pennsylvania Power & Light Company committed to provide calculations showing the available valve factor for each of the GL 89-10 Supplement No. 3 valves. The available valve factors are attached.

The calculations to support the available valve factors are also attached.

Also, as part of the Team Inspection, the NRC requested that PP&L provide a date when the Impell recommendations from their analysis of the Susquehanna SES Supplement No. 3 valves would be dispositioned. The Impell recommendations (with the exception of Recommendation #3 which is still under evaluation) are dispositioned per the attachment.

If you have any questions, please contact Mr. C.T. Coddington at (215) 774-7915.

Very truly yours,

H. W. Keiser

Attachments

A064
1/1

cc: NRC Document Control Desk (original)
NRC Region I
Mr. G. S. Barber, NRC Sr. Resident Inspector
Mr. L. Prividy, NRC Region I
Mr. J. J. Raleigh, NRC Project Manager
Mr. T. G. Scarbrough, NRC NRR

Summary of Available Valve Factors

Tag Number	Available Valve Factor Using Nominal Motor Torque Rating (AC MOVs Only)	Available Valve Factor Using Actual Motor Stall Torque From a Typical Motor Curve (AC MOVs Only)	Available Valve Factor Using Available Motor Start Torque (DC MOVs Only)
RWCU			
HV-144F001	0.95	1.2	N/A
HV-144F004	N/A	N/A	1.25
HV-244F001	1	1.27	N/A
HV-244F004	N/A	N/A	1.26
RCIC			
HV-149F007	0.66	1.04	N/A
HV-149F008	N/A	N/A	1.52
HV-249F007	0.66	1.04	N/A
HV-249F008	N/A	N/A	1.52
HPCI			
HV-155F002	.339/.385 (See Note 4)	.422/.477 (See Note 4)	N/A
HV-155F003	N/A	N/A	0.87
HV-255F002	.366/.415 (See Note 4)	.454/.513 (See Note 4)	N/A
HV-255F003	N/A	N/A	0.83

NOTES:

1. Calculations for AC MOVs were performed using both motor nameplate torque rating and actual expected motor start torque from typical motor curves.

2. Calculations for DC MOVs used available motor torque from applicable electrical calculations.

3. Unless otherwise noted, calculations used:

   Stall efficiencies
   Application factor of .9
   Stem coefficient of friction of 0.15
   Mean seat contact diameter
   Actual voltages available at the time of valve seating

4. For purposes of comparison, the limiting valve factors for the HPCI F002 valves were also calculated without use of a .9 application factor. The application factor is in part an attempt to account for minor voltage fluctuations. Since a seperate voltage correction factor is already being applied it is overly conservative to also use an application factor of 0.9.

5. The available valve factor results for HV-155F002 are slightly different than those previously given to the NRC. This is due to a recent revision to the available voltage calculations.

Disposition to Impell Recommendations With Regards

to

Generic Letter 89-10 Supplement 3 Motor Operated Valves

Recommendation Number 1 :

Ensure/verify that the closed-direction torque switch bypass is set at 95% or greater of valve closure. Procedural enhancements may be necessary to permit quantifying the amount of stem movement between switch actuation points.

PP&L Disposition :

PP&L's philosophy , as stated in Mechanical Design Standard 03, is that the torque switch be bypassed 97% of travel on motor-operated valves (MOVs) with a closed safety function. The individual MOV Data Detail Drawing for each of the subject MOVs specifies a close torque switch bypass setting of 97% closed. Specifications M-1498 (Field Implementation of the SSES MOV Program) and M-1496 (Documentation and Control of MOV Torque Switch and Geared Limit Switch Set Points) specify the requirements for field verification of limit switch setpoints and control of the settings once established. The requirements of these two specifications are incorporated into Maintenance Procedure MT-GM-050. This procedure provides the requirements for quantifying and verifying the amount of stem movement between torque switch bypass actuation and torque switch trip. This verification has been completed for all Unit 2 Supplement 3 MOVs and will be completed for the Unit 1 counterparts during the U1-6RIO (First quarter 1992).

Recommendation Number 2 :

Ensure maximum operator torque to thrust conversion by maintaining cleanliness and lubrication of the valve stem and stem nut on a specified periodicity.

PP&L Disposition :

Prior to the end of the Unit 1-6RIO, all Supplement 3 MOVs will have had their stems lubricated since the issuance of this recommendation. Furthermore, the lubricant used by PP&L has been shown to provide

superior lubricating characteristics to other available lubricants. This has been confirmed by the EPRI grease testing project.

All MOVs are currently undergoing review as part of PP&L's Preventative Maintenance Improvement Program (PMIP). This program uses Reliability Centered Maintenance (RCM) methodology to review and evaluate :

SSES and industry component failures

Existing PM, EQ, and surveillance activities

Vendor and industry recommendations

PP&L mandated requirements

One of the outcomes of this program, to be completed by the end of 1991, will be the specification of a stem re-lubrication frequency.

Recommendation Number 3 :

For the RWCU Outboard valves, the torque switch should be set to the maximum setting , to ensure adequate torque and thrust output, regardless of conditions. For the inboard valves, the torque switch settings should be increased to provide approximately 175 to 185 ft-lbs of torque at torque switch trip. For the long term, it is recommended that the inboard valves have the spring pack replaced with the "Heavy " spring pack, and the torque setting decreased to provide 175 to 185 ft-lbs torque at torque switch trip.

PP&L Disposition :

PP&L is currently pursuing obtaining results of recently completed actuator thrust re-qualification efforts for Limitorque SMB-00 actuators. Until these results can be obtained and reviewed for acceptability, the torque switch settings cannot be adjusted beyond the point where the delivered thrust exceeds the actuator thrust rating.

An effort is also underway to work with the valve manufacturer to develop weak link analysis for the subject MOVs. The results of this effort along with the expected increased actuator thrust limit will be used to increase the range of acceptable torque switch settings and raise the allowable thrust upper limit. In conjunction with this, consideration will be given to the future installation of the "Heavy" spring pack on the inboard valves.

A schedule is currently being developed for performance of the weak link analysis and procurement of the actuator requalification results. This schedule will be dependent on the valve manufacturer's ability to prepare the weak link analysis in a timely manner. Until these efforts are complete,

PP&L cannot commit to an implementation schedule for Impell's recommendation to raise the torque switch setting on the RWCU outboard valves to their maximum value.

Recommendation Number 4 :

For the Unit 2 RCIC outboard valve, it would be prudent to increase the torque switch setting to be consistent with the Unit 1 RCIC outboard valve, to ensure future valve operator or stem lubrication degradations do not hinder the ability of the valve to close.

PP&L Disposition :

The close torque switch setting on the Unit 2 RCIC outboard valve (HV-249F008) has been set to its maximum allowed torque switch setting (2.75 with a 0301-112 spring pack).

Recommendation Number 5 :

For all of the operators, some confirmation is needed that the existing torque switch settings are permitting the operators to develop their full thrust capability. This may be accomplished through the use of thrust measuring equipment or by verifying proper torque by use of a torque wrench.

PP&L Disposition :

All GL 89-10 Supplement 3 MOVs will have been initial baseline VOTES tested prior to the end of the Unit 1-6RIO. Any modifications or changes in the torque switch setting or minimum required thrust would necessitate that the baseline be re-established.