

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

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ACCESSION NBR: 9102210009      DOC. DATE: 91/02/11      NOTARIZED: NO      DOCKET #  
 FACIL: 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylvania      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 info re contents of Tape 012023 recorded during  
 Cycle 4 end-of-cycle stability testing, in response to NRC  
 891103 request for addl info re Tech Spec changes to support  
 Cycle 4 operation.

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	NRR/DST 8E2	1	1	NRR/DST/SELB 8D	1	1
	NRR/DST/SICB 7E	1	1	NRR/DST/SRXB 8E	1	1
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	OGC/HDS2	1	0	<u>REG FILE 01</u>	1	1
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NOTES:		2	2			

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Pennsylvania Power & Light Company

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FEB 11 1991

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

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  
UNIT 2/CYCLE 4 EOC STABILITY DATA  
PLA-3519 FILES R41-2, A7-8C

Docket No. 50-388

Reference: *Letter from M.C. Thadani (NRC) to H.W. Keiser (PP&L), "Technical Specification Changes To Support Cycle 4 Operation (TAC No. 73588)", dated November 3, 1989.*

Dear Dr. Butler:

The NRC Safety Evaluation for Susquehanna SES Cycle 4 stated that stability measurements should be made during initial startup and when reasonably possible during the cycle, and the data should be presented to the NRC. The Susquehanna SES Unit 2 Cycle 4 consists of a full core of ANF 9x9 fuel.

A tape containing one file of GETARS data that was recorded during the Unit 2 Cycle 4 end of cycle stability testing is being sent under separate cover to our NRC Project Manager. This file contains the following data points stored in engineering units at every 0.033 seconds: Time, APRM A, APRM B, APRM C, APRM D, APRM E, APRM F, Total Core Flow, and Narrow Range Pressure. The tape contains IBM standard labels and a density of 6250 BPI. In addition, a POWERPLEX edit which was taken during the test and a sample JCL listing that may be used to read the tape are enclosed.

If you need additional data or information regarding the test, please contact Mr. R.R. Sgarro (215-774-7916). Also we request a copy of any analysis performed by you or your contractors as a result of using this data.

Very truly yours,

H. W. Keiser

Enclosures

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PDR ADOCK 05000388  
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cc: NRC Document Control Desk (original)  
NRC Region I  
Mr. G. S. Barber, NRC Sr. Resident Inspector  
Mr. M. C. Thadani, NRC Project Manager

VOLUME SERIAL: 012023  
IBM STANDARD LABEL  
6250 BPI  
1 FILE

CONTENTS OF TAPE 012023

<u>FILE</u>	<u>DATA SET NAME</u>	<u>LRECL</u>	<u>BLKSIZE</u>	<u>RECFM</u>
1	TEST.GETARS.DATA	8504	17012	VB

SAMPLE JCL TO UNLOAD TAPE 012394

```
//      JOBCARD
//S1 EXEC PGM=IEBGENER,REGION=500K,TIME=10,PARM='IBM'
//SYSIN DD DUMMY
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DSN=TEST.GETARS.DATA,DISP=(OLD,KEEP),
// DCB=(BLKSIZE=17012,LRECL=8504,RECFM=VB),UNIT=3420,
// VOL=(,RETAIN, , ,SER=012023),
// LABEL=(1,SL)
//SYSUT2 DD DSN=PPL.GETARS.DATA,UNIT=SYSDA,
// DISP=(NEW,CATLG),DCB=(BLKSIZE=17012,LRECL=8504,RECFM=VB),
// SPACE=(17012,(1500,1500),RLSE)
```

```

*****
*                               *
*   DATA FOR SUSQUEHANNA 2   *
*   OPERATING STATE FILE EDIT *
*                               *
* P D/T - BEGIN                * H D/T - BEGIN                *
*   91JAN04-21.32.11          *   91JAN04-21.32.11          *
*                               *
*   CORE EXPOSURE = 9240.79   *
*   CYCLE MWDE   = 394738.13  *
*   CYCLE MWDT   =1222575.00  *
* NUMBER OF SCANS IN OPSTATE = 5 TRIGGER EVENT # FOR OPSTATE *
*                               *
*   1100000000 0000000000 0000000000 *
* P D/T - END-OPS              * H D/T - END-OPS              *
*   91JAN04-21.36.10          *   91JAN04-21.36.10          *
*                               *
*****
    
```

-----  
+ CONTROL ROD NOTCH POSITIONS FOR SUSQUEHANNA 2 +  
+ (PROCESS COMPUTER COORDINATES) +  
-----

	02	06	10	14	18	22	26	30	34	38	42	46	50	54	58	
59					--	--	--	--	--	--	--					59
55				--	--	--	--	--	--	--	--	--				55
51			--	--	--	--	--	--	--	--	--	--	--			51
47	--	--	--	--	22	--	--	--	22	--	--	--	--	--		47
43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	43
39	--	--	--	22	--	18	--	--	18	--	22	--	--	--	--	39
35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	35
31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	31
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19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19
15	--	--	--	--	22	--	--	--	22	--	--	--	--	--	--	15
11			--	--	--	--	--	--	--	--	--	--	--			11
07			--	--	--	--	--	--	--	--	--	--	--			07
03					--	--	--	--	--	--	--					03

02 06 10 14 18 22 26 30 34 38 42 46 50 54 58  
\*\*\* CONTROL ROD SEQUENCE : A-2 \*\*\*

† LPRM READINGS - UNCALIBRATED FOR SUSQUEHANNA 2 †  
 † (PROCESS COMPUTER COORDINATES) †

	(1657)	(2457)	(3257)	(4057)		
	14.7	17.8	18.4	17.4		
	20.8	26.7	26.6	26.2		
	19.8	28.0	26.4	25.6		
	12.7	20.5	17.7	16.5		
(0849)	(1649)	(2449)	(3249)	(4049)	(4849)	
16.3	-0.0	26.7	27.4	27.1	27.5	
23.7	35.0	39.3	-0.1	40.6	29.8	
20.8	30.8	31.2	32.2	30.4	26.5	
12.0	20.7	25.9	25.4	22.2	15.7	
(0841)	(1641)	(2441)	(3241)	(4041)	(4841)	(5641)
23.5	28.9	31.8	29.8	30.3	26.8	17.9
34.8	42.3	39.1	35.2	38.6	40.7	28.4
32.4	30.4	29.1	27.7	28.6	30.6	26.6
22.4	20.7	21.1	20.0	20.6	20.2	15.8
(0833)	(1633)	(2433)	(3233)	(4033)	(4833)	(5633)
23.2	29.0	31.6	31.2	30.0	27.6	18.4
34.0	39.7	37.7	36.6	36.6	43.8	27.4
32.1	32.9	-0.4	27.5	29.4	33.3	27.2
22.2	22.7	18.2	21.9	21.2	25.1	16.5
(0825)	(1625)	(2425)	(3225)	(4025)	(4825)	(5625)
23.2	29.4	31.7	29.9	29.8	26.5	17.9
35.4	42.1	36.5	35.9	37.1	42.3	27.2
33.0	30.6	27.3	27.0	28.5	32.0	29.8
25.3	22.1	19.6	18.3	-0.1	24.2	19.1
(0817)	(1617)	(2417)	(3217)	(4017)	(4817)	(5617)
20.7	26.3	28.8	28.2	27.9	23.7	14.2
31.6	39.4	40.7	36.7	38.3	36.3	21.7
29.6	33.0	30.0	29.7	28.5	31.5	20.5
17.2	23.3	23.0	22.7	20.8	19.5	11.2
	(1609)	(2409)	(3209)	(4009)	(4809)	
	20.2	22.5	23.2	22.8	16.1	
	30.5	33.6	33.9	-0.2	23.8	
	29.8	32.7	32.0	32.4	20.7	
	18.7	27.9	24.2	24.2	11.7	

† XTG INPUTS AND SCAN DATA EDIT FOR SUSQUEHANNA-2 †

NAME OR POINT ID	DESCRIPTION (ALL FLOWS IN MLB/HR ALL TEMPERATURES IN DEG F)	VALUE
*WT	TOTAL CORE FLOW USED IN H.B.	45.814
*WL	ACTIVE/TOTAL CORE FLOW FRAC	0.90000
NFP51	REACTOR PRESSURE (PSIA)	967.20
*MWT	CORE THERMAL POWER (MWT)	2077.4
*DHS	CORE INLET SUBCOOLING (BTU/LB)	-37.525
*ENDEL	CORE ENERGY INCREMENT (MWHT)	42.595
NM551	APRM READING(A)-CHAN 01 (ZPWR)	63.562
NM553	APRM READING(C)-CHAN 02 (ZPWR)	62.875
NM555	APRM READING(E)-CHAN 03 (ZPWR)	63.750
NM552	APRM READING(B)-CHAN 04 (ZPWR)	63.612
NM554	APRM READING(D)-CHAN 05 (ZPWR)	63.675
NM556	APRM READING(F)-CHAN 06 (ZPWR)	63.062
*HBFLAG	CTP CALC. (0-HT BAL, 1-APRM)	0.00000
NJP51	REACTOR CORE PRES. DROP (PSID)	2.7191
NEF51*K1	CRD FLOW (MLB/HR)	0.31594E-01
MLF51*K2	CLEANUP LOOP FLOW (MLB/HR)	0.10430
MLT52	CLEANUP LOOP INLET TEMP (DEGF)	526.27
MLT51	CLEANUP LOOP EXIT TEMP (DEGF)	438.75
NFL01(DCS)	REACTOR WATER LEVEL (INCHES)	36.015
HFF51	REACTOR STEAM FLOW	8.2619
GNJ02	GROSS GENERATOR POWER (MWE)	292.50
DFWFA	FW FLOW A, WGHTD AVE (MLB/HR)	2.7356
DFWFB	FW FLOW B, WGHTD AVE (MLB/HR)	2.7165
DFWFC	FW FLOW C, WGHTD AVE (MLB/HR)	2.6099
NRJ51	RECIRC PUMP A POWER (MW)	0.20172
NRJ52	RECIRC PUMP B POWER (MW)	0.26892
NFF52	FEEDWATER FLOW, A (MLB/HR)	2.7392
NFF53	FEEDWATER FLOW, B (MLB/HR)	2.7154
NFF54	FEEDWATER FLOW, C (MLB/HR)	2.6090
NBT51	FW TEMP 1, BRANCH A (DEGF)	347.45
NBT52	FW TEMP 2, BRANCH A (DEGF)	347.04
NBT53	FW TEMP 1, BRANCH B (DEGF)	345.07
NBT54	FW TEMP 2, BRANCH B (DEGF)	344.74
NBT55	FW TEMP 1, BRANCH C (DEGF)	345.04
NBT56	FW TEMP 2, BRANCH C (DEGF)	344.37
NRF51*K3	RECIRC FLOW, A1 (MLB/HR)	5.0833
NRF53*K3	RECIRC FLOW, A2 (MLB/HR)	4.9699
NRF52*K3	RECIRC FLOW, B1 (MLB/HR)	6.6864
NRF54*K3	RECIRC FLOW, B2 (MLB/HR)	6.5313
NRT51	RECIRC TEMP, A1 (DEGF)	485.01
NRT52	RECIRC TEMP, A2 (DEGF)	511.01
NRT53	RECIRC TEMP, B1 (DEGF)	508.41
NRT54	RECIRC TEMP, B2 (DEGF)	508.54
*GENDEL	GENERATOR ENERGY INCR. (MWHE)	6.0000
*HR	HEAT RATE (MWT/MWE)	7.1022



+  
+ XTG INPUTS AND SCAN DATA EDIT FOR SUSQUEHANNA-2 +  
+

NAME OR                    DESCRIPTION                    VALUE  
POINT ID                    (ALL FLOWS IN MLB/HR ALL TEMPERATURES IN DEG F)

*WTSUB	CORE FLOW FROM FUNCTION F4	45.810
NJF51	WT FROM J.P. OR INPUT (MLB/HR)	45.814
WD	TOTAL RECIRC FLOW	11.635
*WTFLAG	CORE FLOW FLAG	2.0000
*CRD	CONTROL ROD DENSITY	0.36937E-01
*CRDSYM	CONTROL ROD SYMMETRY FLAG	0.00000

\*\*\* FAILED SENSORS \*\*\*

L16-49-D LOW | L32-49-C LOW | L24-33-B LOW | L40-25-A LOW | L40-09-C LOW

11 11 11 11 11  
12 12 12 12 12  
13 13 13 13 13  
14 14 14 14 14  
15 15 15 15 15



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