Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

July 10, 1992

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Gentlemen:

In the Matter of) Docket No. 50-260
Tennessee Valley Authority)

EMERGENCY RESPONSE DATA SYSTEM (ERDS) - DATA POINT LIBRARY

Enclosed is TVA's updated Data Point Library for Browns Ferry Nuclear Plant Unit 2. This update supplies the additional information requested by the NRC ERDS Project Manager. Please process as soon as possible so that software testing with NUS may begin.

If you have questions, please telephone S. W. Spencer at (615) 751-4778.

Sincerely,

for Mark J. Burzynski
Manager
Nuclear Licensing and Regulatory Affairs

Enclosure
cc: See page 2

A026

cc (Enclosure):
Mr. John R. Jolicoeur
ERDS Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop MNBB 3206
Washington, DC 20555

NRC Resident Inspector
Browns Ferry Nuclear Plant
Route 12, Box 637
Athens, Alabama 35611

Mr. Peter S. Tam, Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

Mr. B. A. Wilson, Project Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

BROWNS FERRY UNIT 2 - ERDS DATA POINT LIBRARY

1.	REAC VES LEV	D1001	RX WATER LEVEL 2-LI-3-58A
2.	NI POWER RNG	SPDS0001	RX POWER APRM - Composed
3.	REAC VES LEV	D1002	RX WATER LEVEL 2-LI-3-52
4.	REAC VES LEV	D1000	RX WATER LEVEL 2-LI-3-60
5.	RCS PRESSURE	SPDS0008	Rx Pressure - Composed
6.	EFF GAS RAD	SPDS0024	Stock Release Rate - Composed
7.	DW PRESSURE	SPDS0009	Drywell Pressure - Composed
8.	DW TEMP	SPDS0010	Drywell Temperature - Composed
9.	SP TEMP	SPDS0016	SUPPR PL WTR TEMP - Composed
10.	SP LEVEL	SPDS0013	SUPPL PL WTR LVL (IN) - Composed
11.	H2 CONC	SPDS0017	Drywell H2 - Composed
12.	H2 CONC	SPDS0018	Suppr Pl H2 - Composed

ERDS point number 1. REAC VES LEV D1001 Reactor Vessel Water Level

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	REAC VES LEV
Point ID:	D1001
Plant Spec Point Desc:	RX WATER LEVEL 2-LI-3-58A
Generic/Cond Desc:	Reactor Vessel Water Level
Analog/Digital:	A
Engr Units/Dig States	INCHES
Engr Units Conversion:	N/A
Minimum Instr Range:	-155
Maximum Instr Range:	60
Zero Point Reference:	528"
Reference Point Notes:	TAF= -162" (ref. to instr. zero)
PROC or SENS:	S
Number of Sensors:	1
How Processed:	N/A
Sensor Locations:	Ref. leg tap at 366" above vessel zero
Alarm/Trip Set Points:	LO LO ALARM 11.2"
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	LOW
Temperature Compensation:	N
Level Reference Leg:	WET
Unique System Desc:	The emergency systems range water level instr. is calibrated hot (rated temp) and is not compensated. (See curve) Note: Zero Point Reference is instrument zero, 528" above vessel zero.

ERDS point number 2. NI POWER RNG SPDS0001 Nuclear Instruments - Powr Range

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	NI POWER RNG
Point ID:	SPDS0001
Plant Spec Point Desc:	RX POWER APRM - Composed
Generic/Cond Desc:	Nuclear Instruments - Powr Range
Analog/Digital:	A
Engr Units/Dig States:	%
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	125
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	6
How Processed:	Weighted Average
Sensor Locations:	Incore
Alarm/Trip Set Points:	See graph
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	Multiple
Temperature Compensation:	N
Level Reference Leg:	N/A
Unique System Desc:	This point is used to indicate an EOI entry condition. The HI HI Alarm is set at 5%. This alarm is inhibited when there is no scram signal.

ERDS point number 3. REAC VES LEV D1002 Reactor Vessel Water Level

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	REAC VES LEV
Point ID.	D1002
Plant Spec Point Desc:	RX WATER LEVEL 2-LI-3-52
Generic/Cond Desc:	Reactor Vessel Water Level
Analog/Digital:	A
Engr Units/Dig States:	INCHES
Engr Units Conversion:	N/A
Minimum Instr Range:	-268
Maximum Instr Range:	32
Zero Point Reference:	528"
Reference Point Notes:	TAF = -162" (ref. to instru zero)
PROC or SENS:	S
Number of Sensors:	1
How Processed:	N/A
Sensor Locations:	Ref. leg tap at 143.5" above vessel zero
Alarm/Trip Set Points:	LO LO Alarm 11.2 in
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	LOW
Temperature Compensation:	N
Level Reference Leg:	WET
Unique System Desc:	The post accident range water level instru. is calibrated cold (212 deg. F) and is not compensated. (See curve) Indicated water level increases as forced circulation increases (offscale high at rated conditions). Note : Instrument zero, 528" above vessel zero.

ERDS point number 4. REAC VES LEV D1000 Reactor Vessel Water Level

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	REAC VES LEV
Point ID:	D1000
Plant Spec Point Desc:	RX WATER LEVEL 2-LI-3-60
Generic/Cond Desc:	Reactor Vessel Water Level
Analog/Digital:	A
Engr Units/Dig States:	INCHES
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	60
Zero Point Reference:	528"
Reference Point Notes:	TAF=-162" (REFERENCED TO INSTRU ZERO)
PROC or SENS:	S
Number of Sensors:	1
How Processed:	N/A
Sensor Locations:	REF LEG TAP AT 517" ABOVE VESSEL ZERO
Alarm/Trip Set Points:	HI 39 IN, LO 27 IN, LO LO 11.2 IN(SCRAM)
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	LOW
Temperature Compensation:	Y
Level Reference Leg:	WET
Unique System Desc:	The normal control range water level instrument is calibrated for hot (rated temp) and is pressure compensated. Note: Instrument zero, 528" above vessel zero.

ERDS point number 5. RCS PRESSURE SPDS0008 Reactor Coolant System Pressure

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	RCS PRESSURE
Point ID:	SPDS0008
Plant Spec Point Desc:	Rx Pressure - Composed
Generic/Cond Desc:	Reactor Coolant System Pressure
Analog/Digital:	A
Engr Units/Dig States:	PSIG
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	1500
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	3
How Processed:	Weighted Average
Sensor Locations:	RX Bldg. elev 593'
Alarm/Trip Set Points:	1043 (reactor SCRAM)
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	Low on loss of power
Temperature Compensation:	N
Level Reference Leg:	N/A

Unique System Desc:

ERDS point number 6. EFF GAS RAD SPDS0024 Radioactivity of Released Gases

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	EFF GAS RAD
Point ID:	SPDS0024
Plant Spec Point Desc:	Stock Release Rate - Composed
Generic/Cond Desc:	Radioactivity of Released Gases
Analog/Digital:	A
Engr Units/Dig States:	CI/SEC
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	70
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	3
How Processed:	See below
Sensor Locations:	Flow elt-elev 664', Rad elt-elev 599'
Alarm/Trip Set Points:	HI HI Alarm 30 CI/SEC
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	LOW
Temperature Compensation:	N
Level Reference Leg:	N/A
Unique System Desc:	Stack release rate is calculated using the average of 2 stack radiation points and stack flow as follows: STACK RAD (CPS) * STACK FLOW(SCFM) * 1.23E-9 CI/SEC /CPS-SCFM

ERDS point number 7. DW PRESSURE SPDS0009 Drywell Pressure

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	DW PRESSURE
Point ID:	SPDS0009
Plant Spec Point Desc:	Drywell Pressure - Composed
Generic/Cond Desc:	Drywell Pressure
Analog/Digital:	A
Engr Units/Dig States:	PSIG
Engr Units Conversion:	N/A
Minimum Instr Range:	-14.7
Maximum Instr Range:	300
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	3
How Processed:	Weighted Average
Sensor Locations:	Rx Bldg elev. 593'
Alarm/Trip Set Points:	HI Alarm 1.96 PSIG, HI HI Alarm 2.45 *
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	Low on loss of power
Temperature Compensation:	N
Level Reference Leg:	N/A
Unique System Desc:	This point is composed from 3 inputs with the following ranges: -5 to +5 PSIG, 0 to 80 PSIG, and 0 to 300 PSIG. * Reactor Scram

ERDS point number 8. DW TEMP SPDS0010 Drywell Temperature

Date:	03/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	DW TEMP
Point ID:	SPDS0010
Plant Spec Point Desc:	Drywell Temperature - Composed
Generic/Cond Desc:	Drywell Temperature
Analog/Digital:	A
Engr Units/Dig States:	DEGF
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	400
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	2
How Processed:	Weighted Average
Sensor Locations:	Drywell elev 583' azimuth 225 deg.
Alarm/Trip Set Points:	HI Alarm 145 DEGF, HI HI Alarm 160 DEGF
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	Multiple, low on loss of power
Temperature Compensation:	N
Level Reference Leg:	N/A

Unique System Desc:

ERDS point number 9 SP TEMP SPDS0016 Suppression Pool Temperature

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	SP TEMP
Point ID:	SPDS0016
Plant Spec Point Desc:	SUPPR PL WTR TEMP - Composed
Generic/Cond Desc:	Suppression Pool Temperature
Analog/Digital:	A
Engr Units/Dig States:	DEGF
Engr Units Conversion:	N/A
Minimum Instr Range:	30
Maximum Instr Range:	230
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	2
How Processed:	Weighted Average
Sensor Locations:	One RTD in each bay
Alarm/Trip Set Points:	H1 HI Alarm @ DEGF
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	Multiple, low on loss of power
Temperature Compensation:	N
Level Reference Leg:	N/A
Unique System Desc:	The composed temperature is determined from the Div I and Div II bulk temperatures which average 8 RTD inputs each (i.e. 16 total inputs are used).

ERDS point number 10. SP LEVEL SPDS0013 Suppression Water Pool Level

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	SP LEVEL
Point ID:	SPDS0013
Plant Spec Point Desc:	SUPPL PL WTR LVL (IN) - Composed
Generic/Cond Desc:	Suppression Water Pool Level
Analog/Digital:	A
Engr Units/Dig States:	Inches
Engr Units Conversion:	N/A
Minimum Instr Range:	-181.45
Maximum Instr Range:	58.55
Zero Point Reference:	536'8"
Reference Point Notes:	torus zero 521 6" elev.(bottom of torus)
PROC or SENS:	P
Number of Sensors:	3
How Processed:	Weighted Average
Sensor Locations:	RX BLDG 519' elev.
Alarm/Trip Set Points:	HIHI -1.00,HI -2.00,LO -5.50,LO LO -6.25
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	Multiple, low on loss of power
Temperature Compensation:	N
Level Reference Leg:	WET
Unique System Desc:	This point is composed using 2 narrow range inputs (-25 to +25 inches, referenced to instru. zero) and one wide range input (0 to 20 feet, referenced to torus zero).

ERDS point number 11. H2 CONC SPDS0017 Drywell Hydrogen Concentration

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	H2 CONC
Point ID:	SPDS0017
Plant Spec Point Desc:	Drywell H2 - Composed
Generic/Cond Desc:	Drywell Hydrogen Concentration
Analog/Digital:	A
Engr Units/Dig States:	%
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	70
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	2
How Processed:	Weighted Average
Sensor Locations:	RX Bldg 565 elev.
Alarm/Trip Set Points:	HI HI Alarm 24%
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	LOW on loss of power
Temperature Compensation:	N
Level Reference Leg:	N/A

Unique System Desc:

ERDS point number 11. H2 CONC SPDS0017 Drywell Hydroge: oncentration

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	H2 CONC
Point ID:	SPDS0017
Plant Spec Point Desc:	Drywell H2 - Composed
Generic/Cond Desc:	Drywell Hydrogen Concentration
Analog/Digital:	A
Engr Units/Dig States:	%
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	70
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	2
How Processed:	Weighted Average
Sensor Locations:	RX Bldg 565 elev.
Alarm/Trip Set Points:	HI HI Alarm 24%
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	LOW on loss of power
Temperature Compensation:	N
Level Reference Leg:	N/A

Unique System Desc:

ERDS point number 12. H2 CONC SPDS0018 Torus Hydrogen Concentration

Date:	06/30/92
Reactor Unit:	BF2
Data feeder:	1
NRC ERDS Parameter:	H2 CONC
Point ID:	SPDS0018
Plant Spec Point Desc:	Suppr Pl H2 - Composed
Generic/Cond Desc:	Torus Hydrogen Concentration
Analog/Digital:	A
Engr Units/Dig States:	%
Engr Units Conversion:	N/A
Minimum Instr Range:	0
Maximum Instr Range:	20
Zero Point Reference:	N/A
Reference Point Notes:	N/A
PROC or SENS:	P
Number of Sensors:	2
How Processed:	Weighted Average
Sensor Locations:	Rx Bldg 565 Elev.
Alarm/Trip Set Points:	HI HI Alarm 2.4%
NID power cutoff level:	N/A
NID power cut-on level:	N/A
Instrument Failure Mode:	Low on loss of power
Temperature Compensation:	N
Level Reference Leg:	N/A

Unique System Desc:

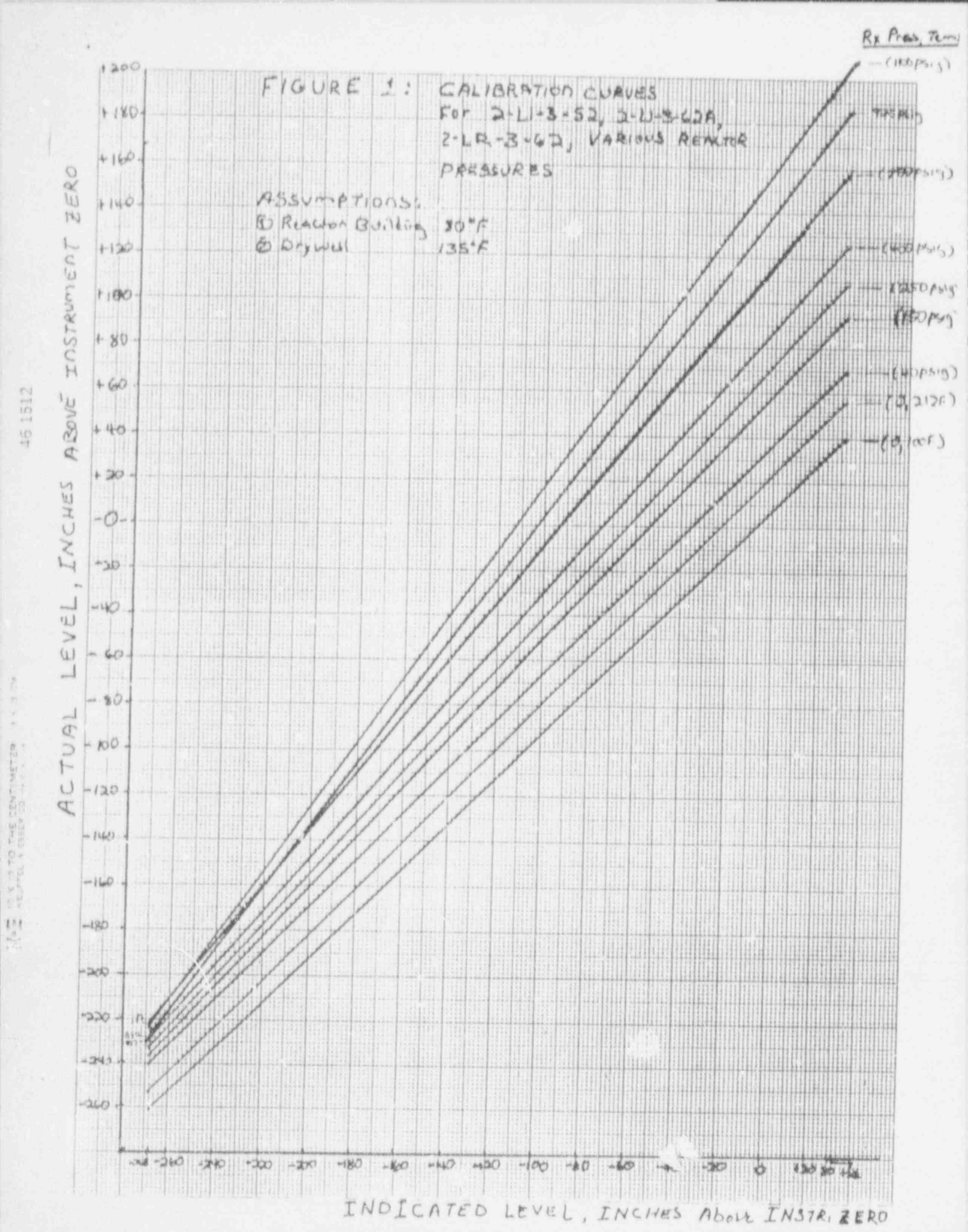
FIGURE 1: CALIBRATION CURVES For 2-LI-3-52, 2-LI-3-62A, 2-LR-3-62, VARIOUS REACTOR PRESSURES
ASSUMPTIONS:
(B) Reactor Building 80°F
(D) Drywell 135°F
Rx Press, Temp
(1100psig)
(1000psig)
(800psig)
(600psig)
(400psig)
(0, 212F)
(0, 70F)
ACTUAL LEVEL, INCHES ABOVE INSTRUMENT ZERO
INDICATED LEVEL, INCHES About INSTR. ZERO
+200
+180
+160
+140
+120
+100
+80
+60
+40
+20
-0-
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
-240
-220
-200
-180
-160
-140
-120
-100
-80
-60
-40
-20
0
20
40

APRM Trip Outputs

TRIP SIGNAL	SETPOINT	ACTION
APRM Downscale	≥3%	1. Rod Block If Mode Switch in Run 2. Scram if companion IRM High High or Inop and mode switch in Run
APRM Inop	1. Module unplugged 2. < 14 LPRMs in Operate 3. Function switch not in Operate	1. Rod Block 2. Scram
APRM High	1. ≤ (0.58W + 50%)*R 2. ≤ 12%	1. Rod Block if mode switch in Run 2. Rod Block in all mode switch positions except Run
APRM High High	1. a. ≤ (0.58W + 62%)*R with six second time constant representative of thermal power b. ≤ 120% Neutron 2. ≤ 15% Neutron	1. Scram 2. Scram in all mode switch positions except Run
APRM Flow Converter	1. ≤ 10% mismatch between Ch. A and Ch B 2. ≤ 115% 3. Mode Switch not in Operate	Rod Block
Companion Channels	APRM A B C D E F E B IRM A B C D E F G H	

LAST PAGE

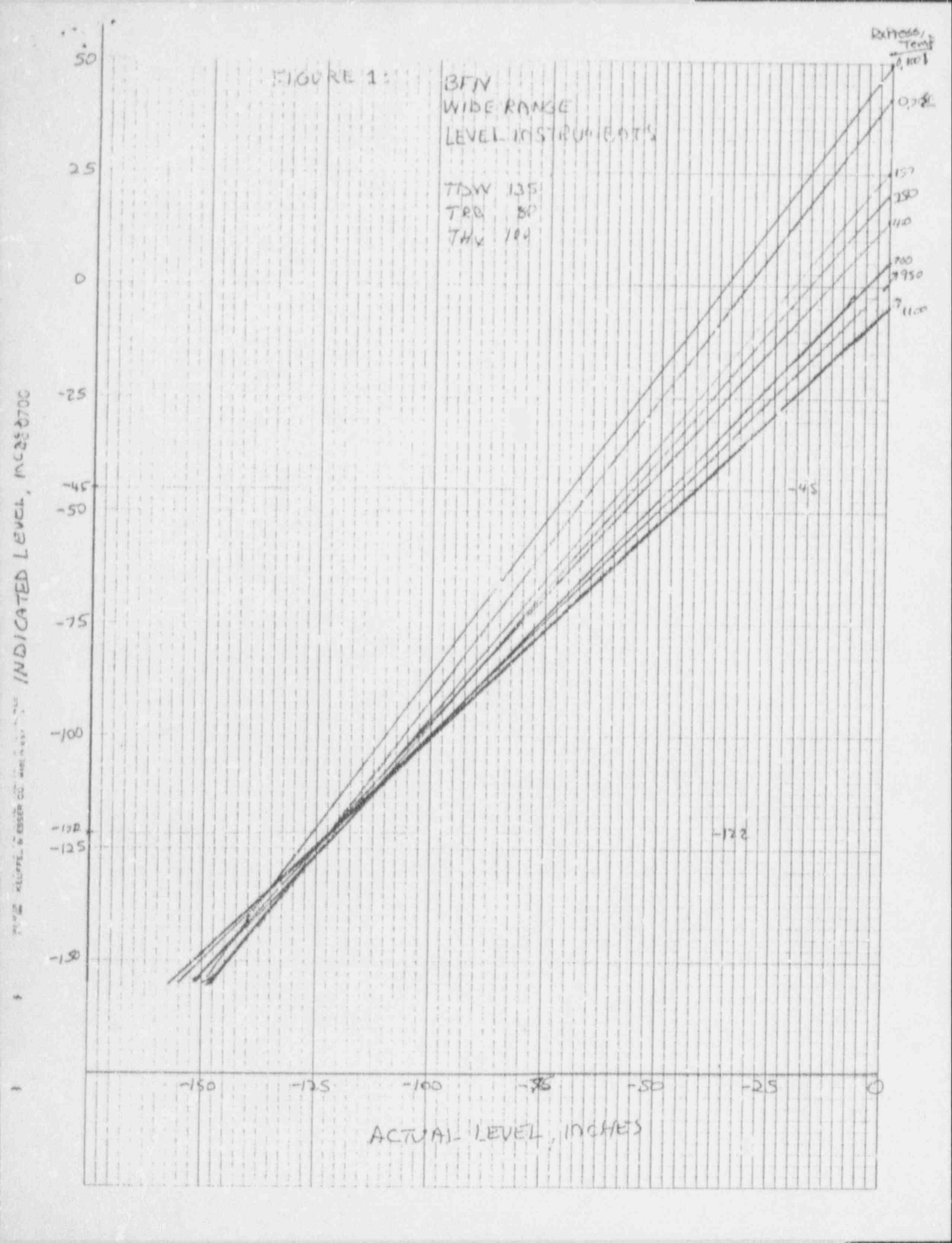
FIGURE 1:
BFN
WIDE RANGE
LEVEL INSTRUMENTS
TDW 135
TRB 80
THX 104
Pressure/Temp
0.1 psi
0.75
157
280
440
700
950
1100
50
25
0
-25
-45
-50
-75
-100
-125
-150
-122
-150
-125
-100
-75
-50
-25
0
INDICATED LEVEL, INCHES
ACTUAL LEVEL, INCHES