FLORIDA POWER & LIGHT

ST. LUCIE UNIT 2

STEAM GENERATOR INSPECTION STATUS

ATTACHMENT E

AGENDA

- Inspection Status
- Inspection Findings
- Condition Monitoring Results
- Completion of Remaining Inspections
- Operational Assessment Plans
- Summary & Closing

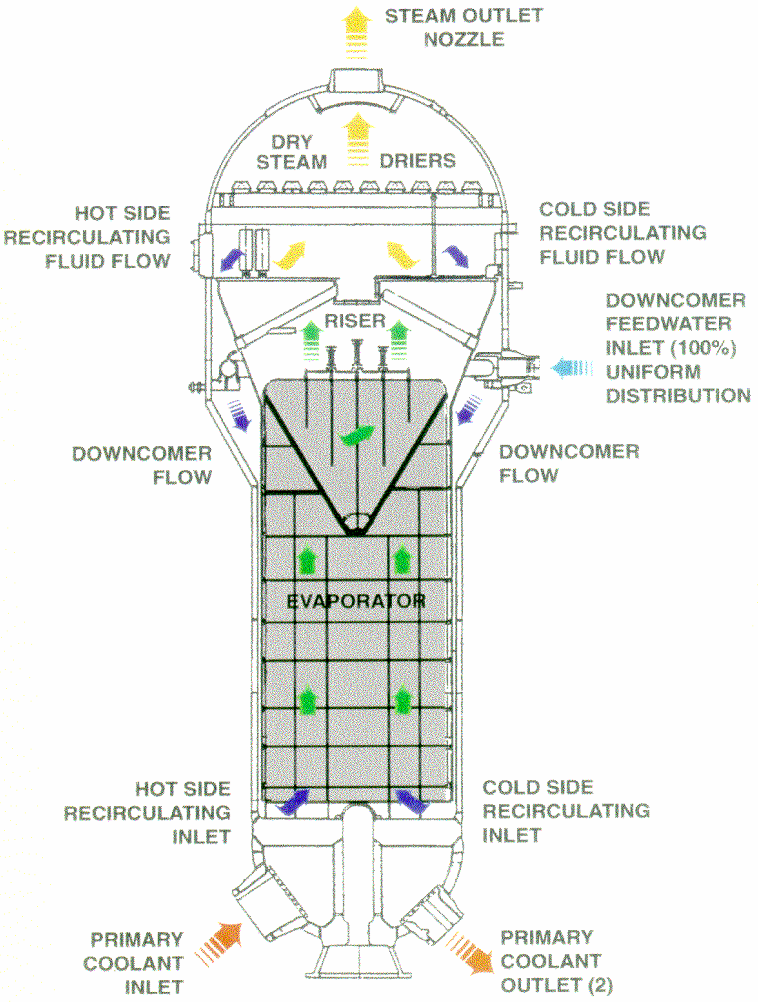
Opening Comments

- Conservative Approach to Degradation
- Compliance with Technical Specifications & NEI 97-06
- Reasonable Assurance of Tube Integrity
- Conservative In Situ Pressure Test History
- SL2-15 Inspection results bounded by OA Model
- OA Model is conservatively predicting the observed distribution of detected flaws

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

St. Lucie Unit 2 S/G

- CE Model 3410
- 8411 Tubes / SG
- ~18.3 EFPY @ SL2-15
- A-600 HTMA Tubing
- CS Lattice Support System
- Tubesheet Joint - Explosive
- Total Tubes Plugged
  - SG A - 671 (8.0%)
  - SG B - 872 (10.4%)
- T-Hot ~600°F



Inspection Status

- Scope Previously Discussed & Reviewed with Staff
- Planned Bobbin Inspection Scope Complete
  - 100% Bobbin Full Length Row 3> and Straight Length Row 1-2
  - Screen Dings <5 volts
- Planned Plus Point Probe Scope Complete
  - 100% Hot Leg Top-of-Tubesheet +3”/-13”
  - Cold Leg Periphery Tubes for FO Damage
  - 35% Row 1-2 U-bends
  - 100% Wear Scars at Eggcrates & HL Diagonal
  - 20% Wear Scars at U-bends & CL Diagonal
  - All Tubes with No Tube Expansion

Inspection Status

- Plus Point Probe for Dings Complete

	SGA	SGB
All Dings Hot Leg Tubesheet to 1st Support	43	24
All Dings >5 volts 1st Support to HL Bend	98	77
All Dings in HL & CL Square Bends Row 19-140	68	54
All Dings >5 volts in Horizontal Run Row 19-140	97	107
All Dings in Rows 1-18 U-Bends	140	104
20% Dings >5 volts CL Tubesheet to CL Bend	26	23
	472	389

- Visual Inspection of Plugs Complete

Inspection Findings - Pluggable Tubes

ID Circumferential (1st observation)	1
ID Axial	2
OD Axial Expansion Transition	15
OD Circumferential Expansion Transition	17
OD Axial Supports	877
OD Axial Freespan	0
OD Volumetric	0
Mechanical Wear	1
Preventative	0

- Increase in Diagnostic Plus Point Inspections
  - S/G 2A Approximately 300 Remaining
  - S/G 2B Approximately 650 Remaining

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

Inspection Findings

- Bobbin data quality excellent (no masking deposits)
  - Reporting criteria more conservative than Industry ETSS
  - Impact of improved analyst training & testing materials
    - Projection of 1100 - 1600 indications
    - Observing ~ 2200 indications (confirmed)
- New MIZ-70 Higher Speed Test Capability
  - +Point™ Inspections of U-bends, Tubesheet & Bobbin I-Codes
  - Pull out scan after Bobbin I-Code has tighter helix (<0.25”)
    - Was 900 rpm at ~10 ips, now 2800 rpm at ~10 ips
    - “RCL” Indications not reported by bobbin probe
    - ~ 16% of lower hot leg eggcrates supports affected
    - Consistent with expectations
    - Additional indications will be plugged

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

Inspection Findings

- Recent NRC GL 2004-01
- LAR on Tubesheet Inspection Depth
- Depth of 10.1” below expansion transition or top of tubesheet, which ever is lower
  - Variation in transition relative to top of tubesheet
  - Additional margin
  - Depth of 13” below top of tubesheet inspected

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

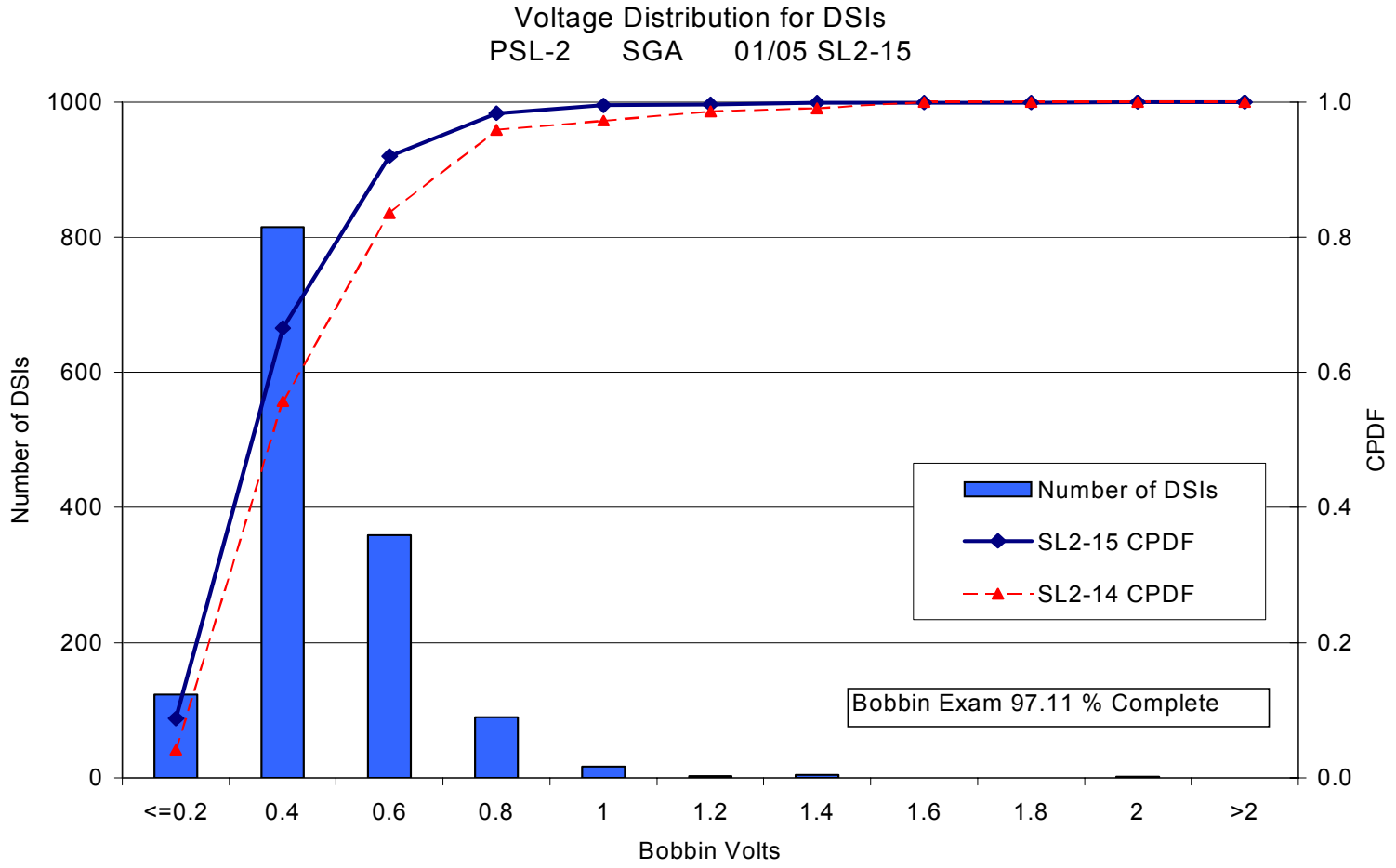
Summary of Indications Below the Expansion Transition

RFO Date	Exam Depth	Orientation	S/G	Row	Col	Elev	Inch	Max %TW	Max AxLen	Volts	ISPT Test
Apr-97	~2"	Axial	A	34	102	TSH	-1.06	99	0.22	0.40	
Nov-98	~2"	Axial	--	--	--	--	--	--	--	--	
Apr-00	2"	Axial	A	40	116	TSH	-0.14	97	0.16	0.47	
Nov-01	5"	Axial	A	39	103	TSH	-1.82	66	0.16	0.32	Yes
Nov-01	5"	Axial	A	39	103	TSH	-2.05	58	0.2	0.38	Yes
Apr-03	8"	Axial	A	27	107	TSH	-0.56	49	0.16	0.47	
Apr-03	8"	Axial	A	29	105	TSH	-1.31	43	0.1	0.34	
Apr-03	8"	Axial	A	29	105	TSH	-1.89	60	0.18	0.46	
Apr-03	8"	Axial	A	29	105	TSH	-1.74	59	0.18	0.47	
Apr-03	8"	Axial	A	29	105	TSH	-1.53	51	0.18	0.48	
Apr-03	8"	Axial	A	42	110	TSH	-1.43	69	0.25	0.50	
Apr-03	8"	Axial	B	63	103	TSH	-0.27	85	0.27	0.23	Yes
Apr-03	8"	Axial	B	63	103	TSH	-0.10	55	0.14	0.57	Yes
Jan-05	13"	Axial	A	29	103	TSH	-1.43	32	0.18	0.24	
Jan-05	13"	Axial	B	60	108	TSH	-0.14	71	0.17	0.60	
Jan-05	13"	Circ	B	49	111	TSH	-0.22	58	0.17	0.15	

Exam Scope is 100% of HL for all inspections listed

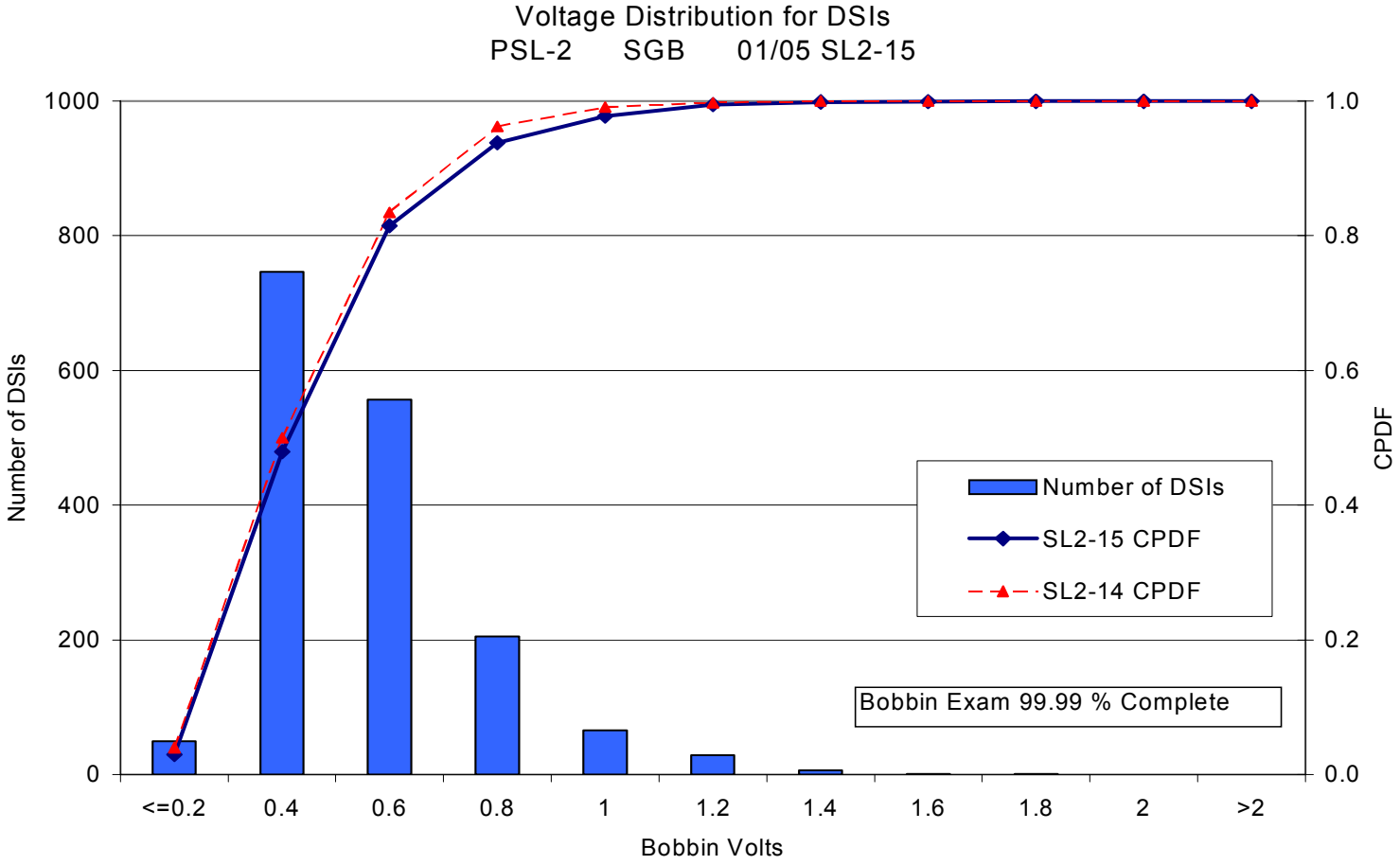
STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

CONDITION MONITORING



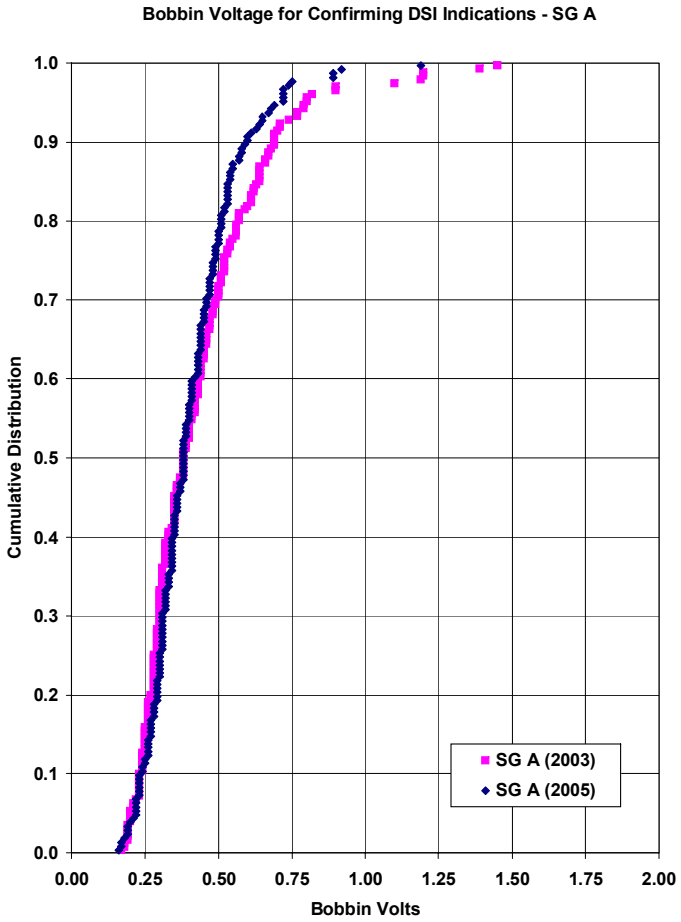
STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

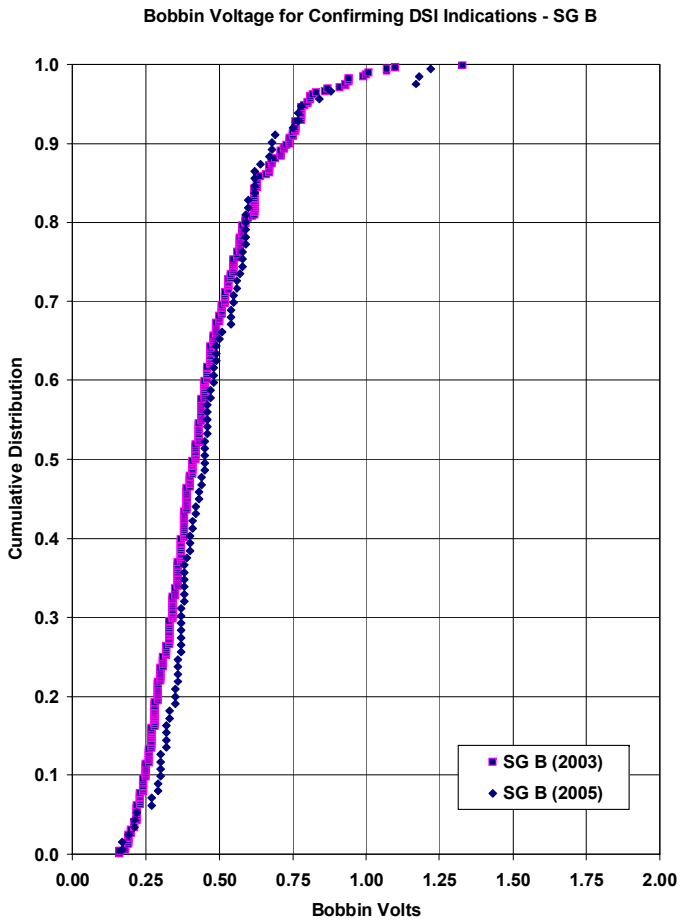
CONDITION MONITORING



STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

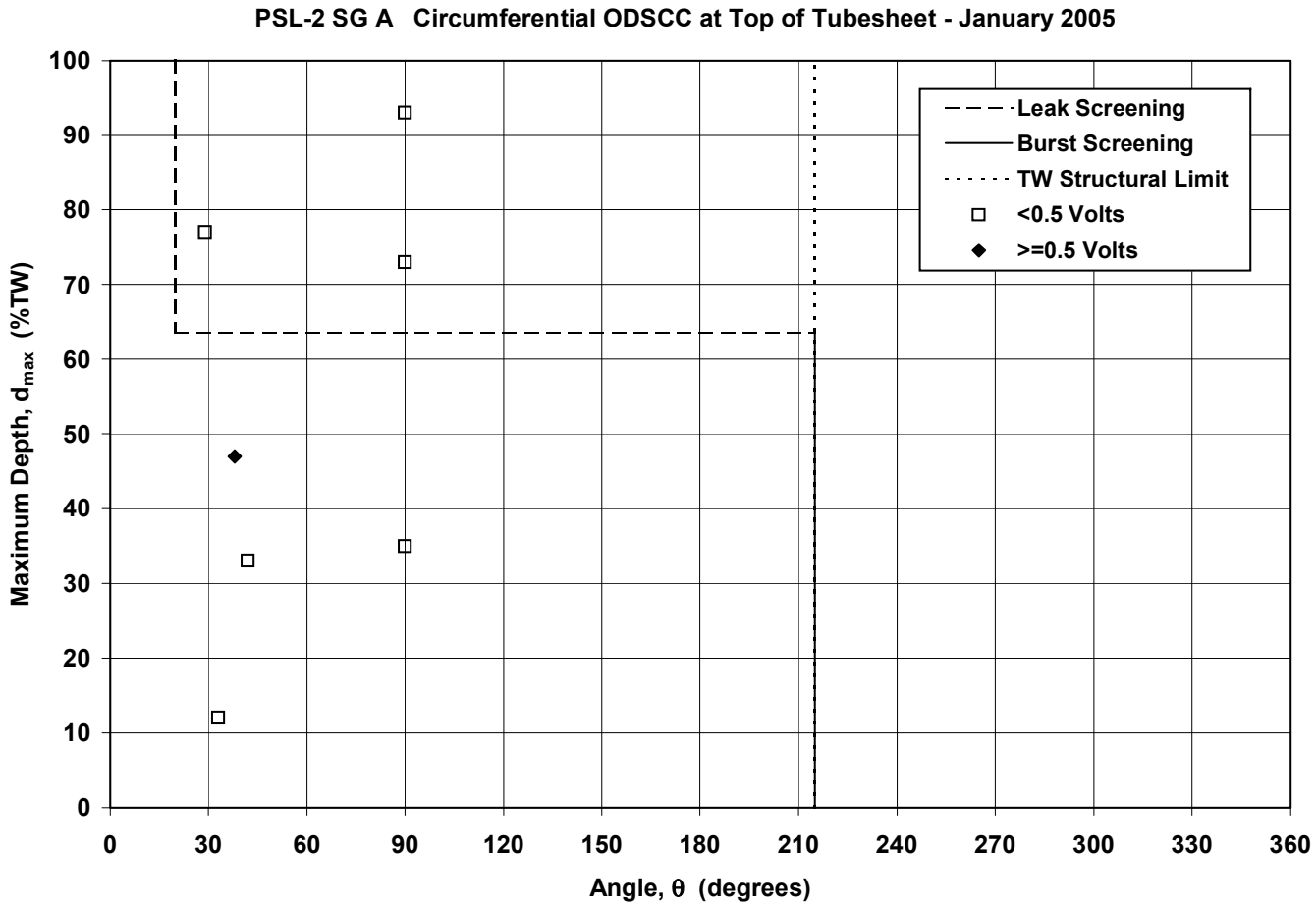
Confirmed Bobbin DSI Voltage - Historical Comparisons





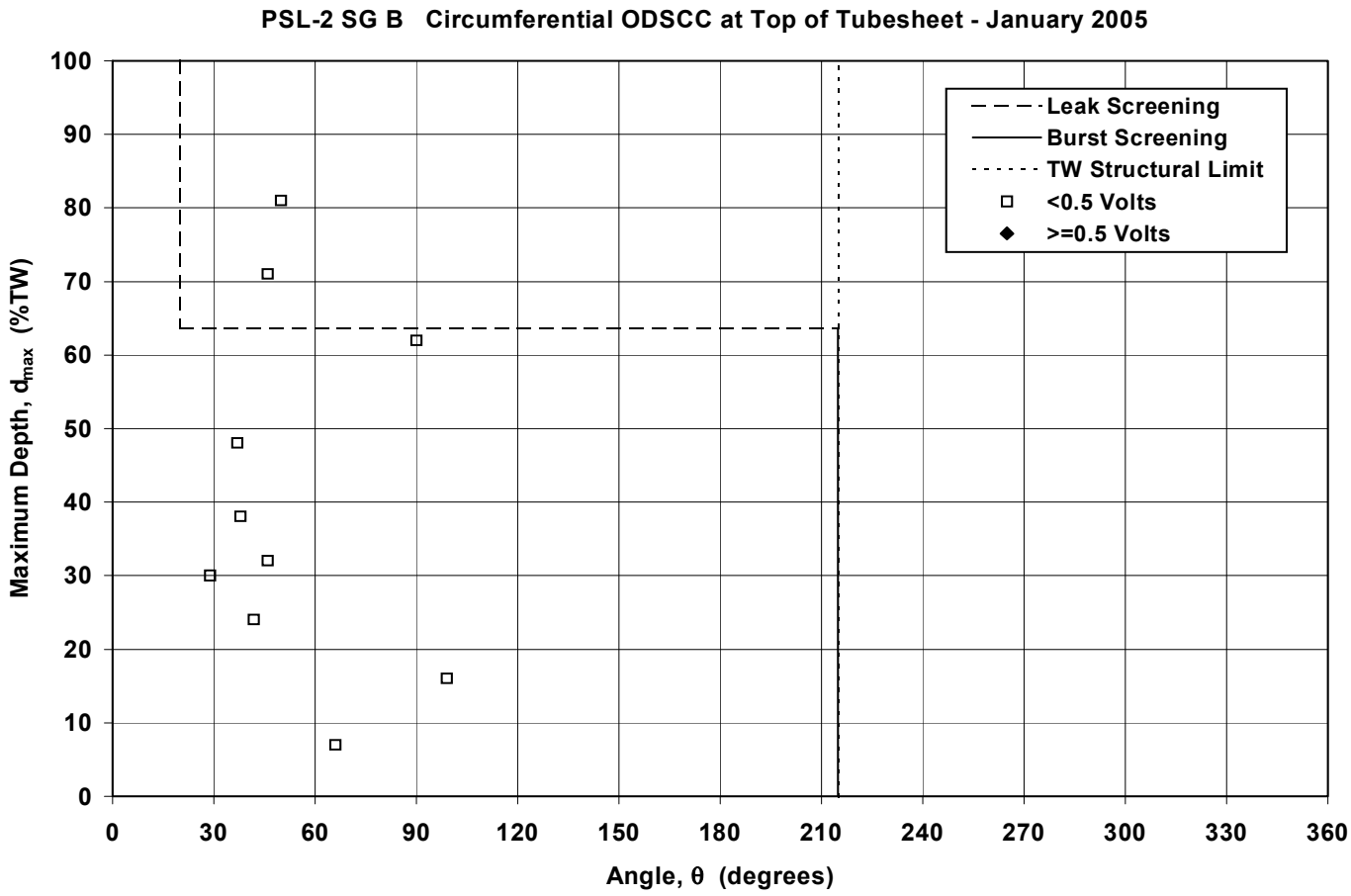
STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

Condition Monitoring Results – Circ Indications S/G 2A



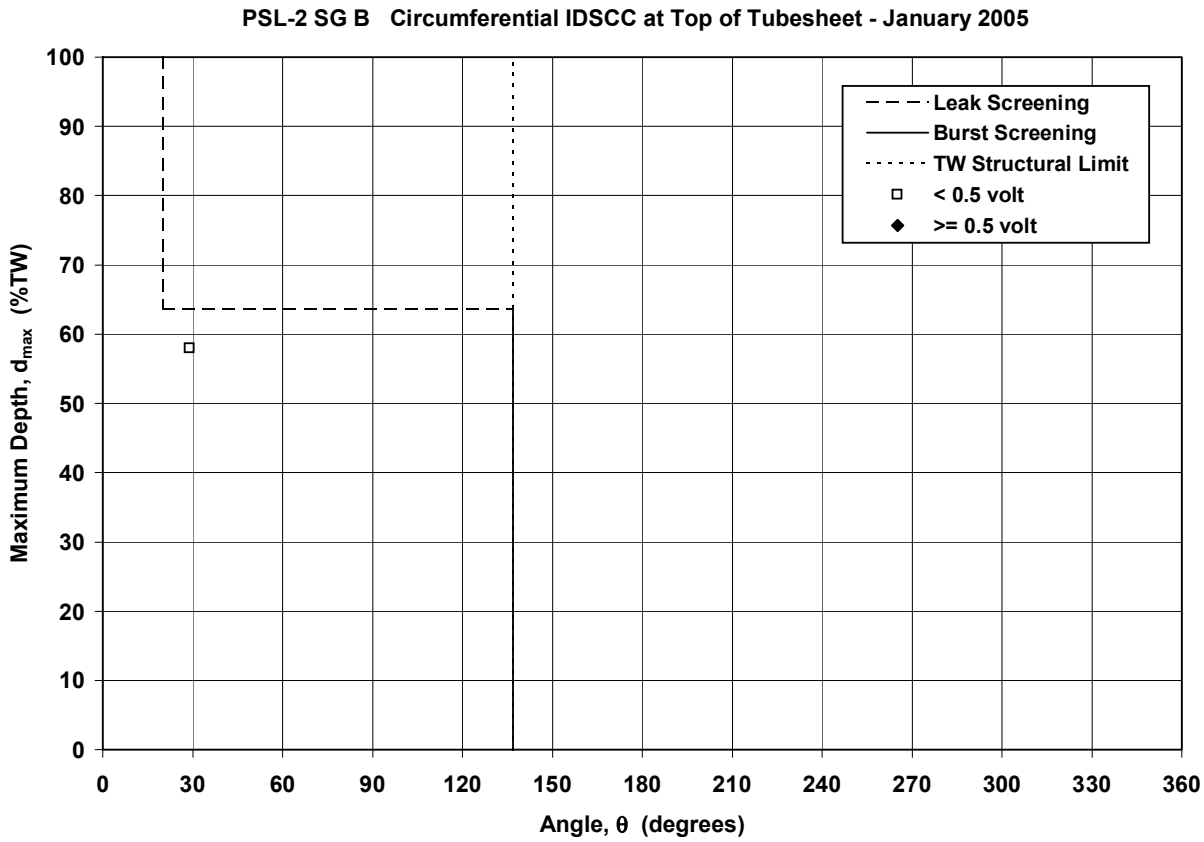
STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

Condition Monitoring Results – Circ Indications S/G 2B



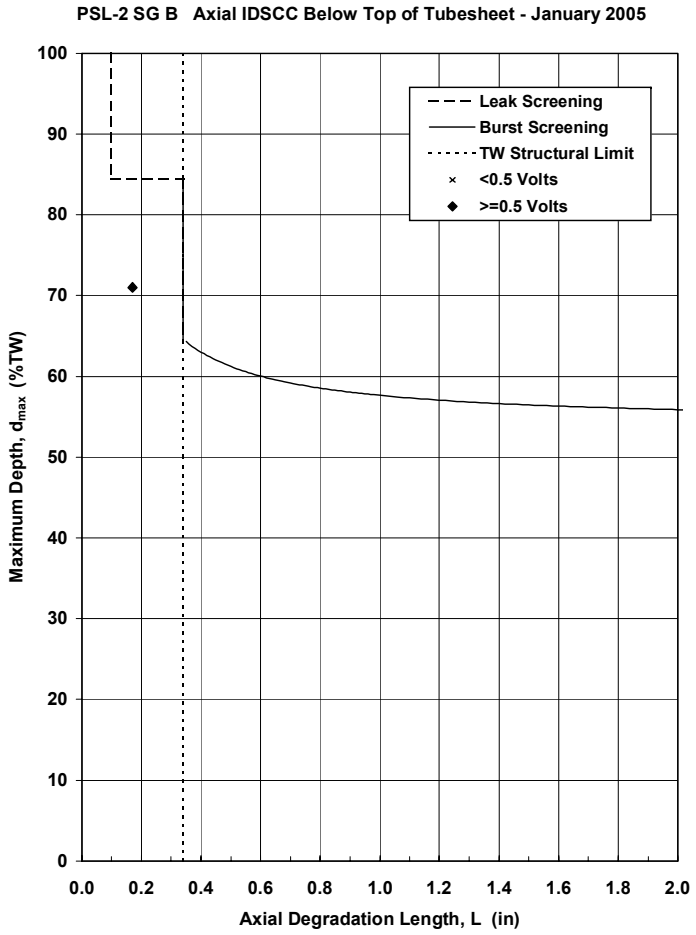
STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

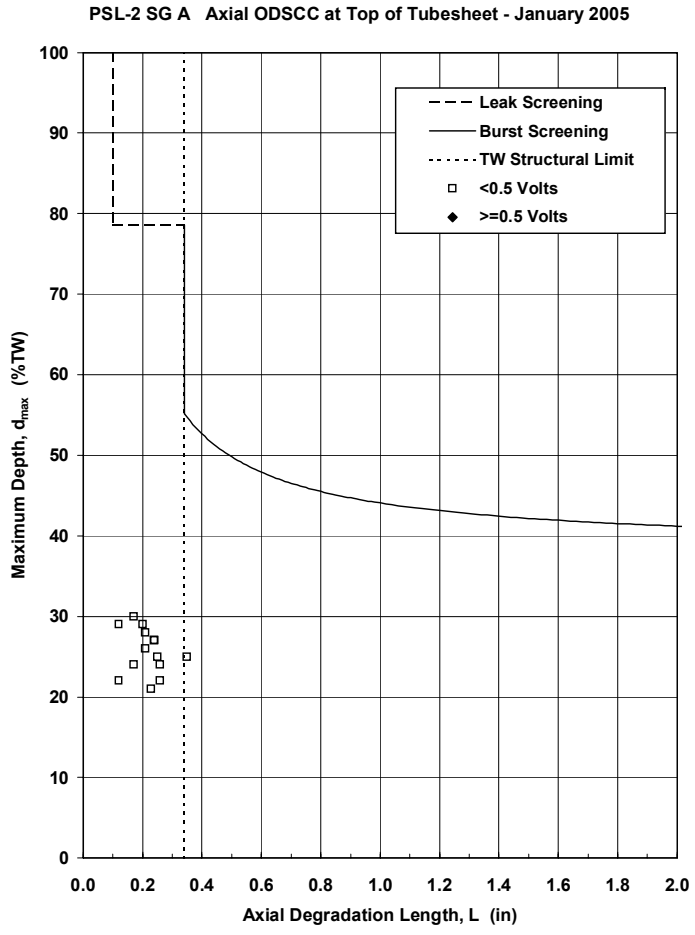
Condition Monitoring Results – ID Circ Indication



STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

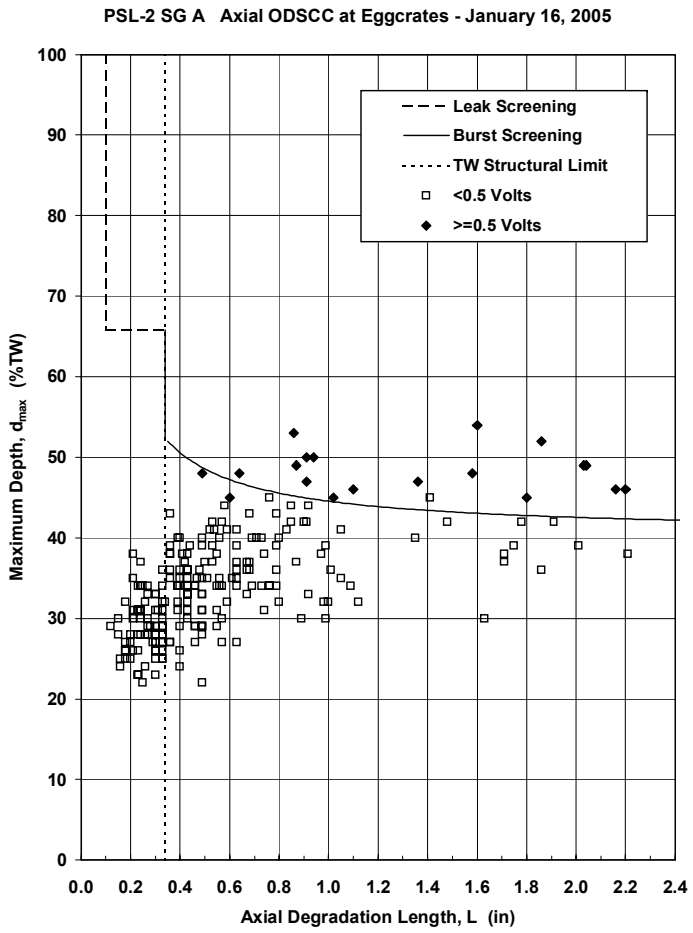
CM Results – Axial Indications at TTS

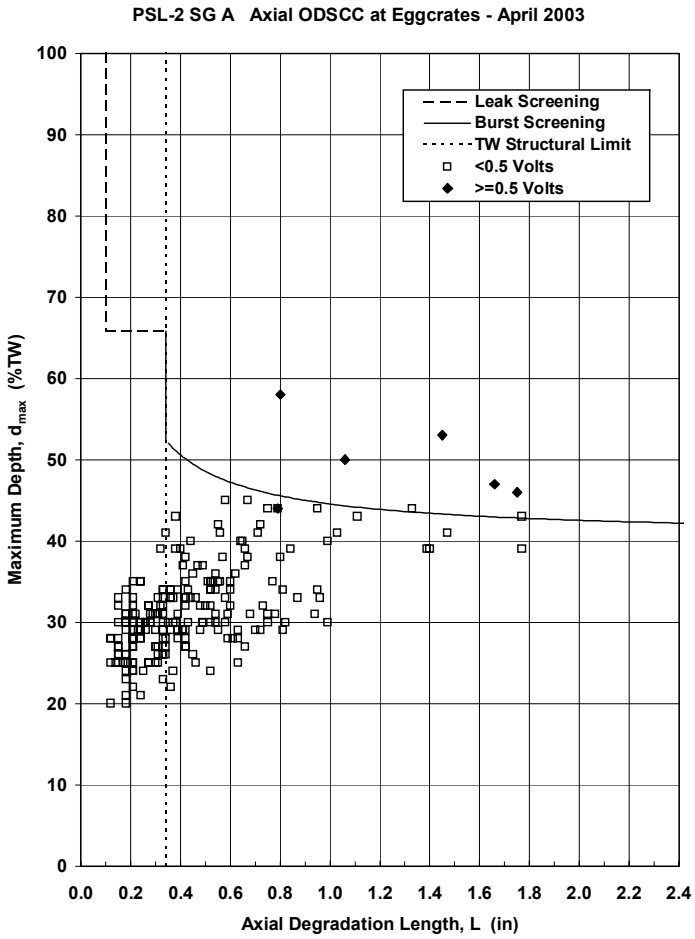




STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

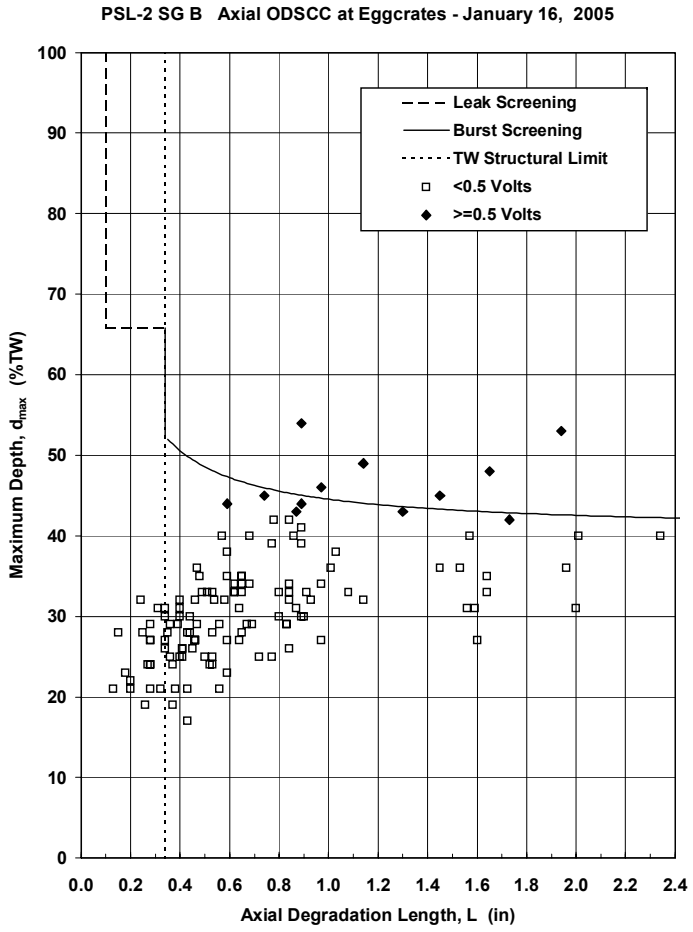
CM Results – Eggcrate Indications Bobbin Detected S/B 2A

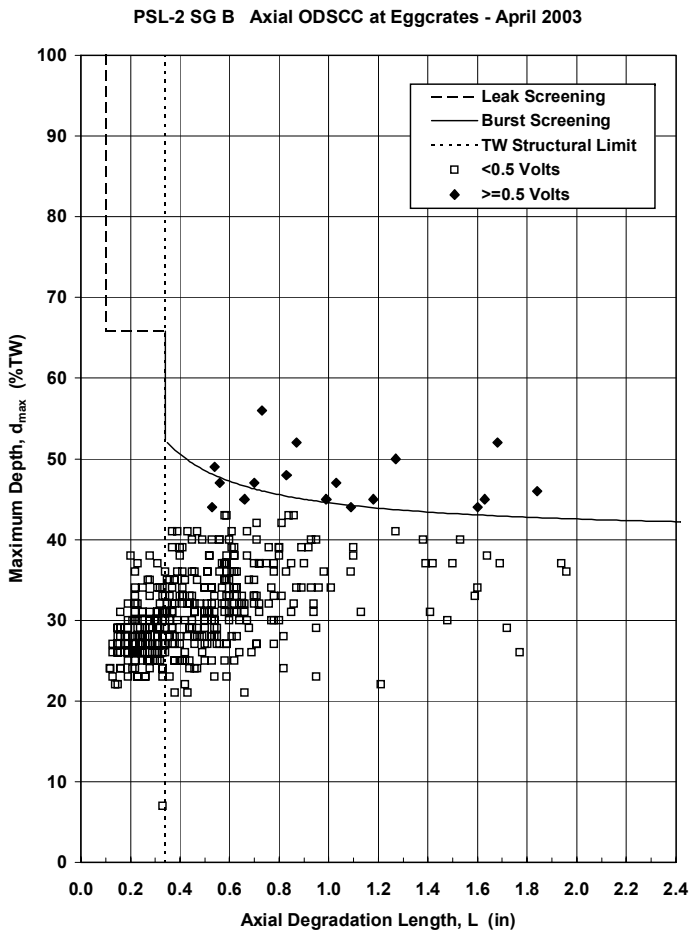




STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

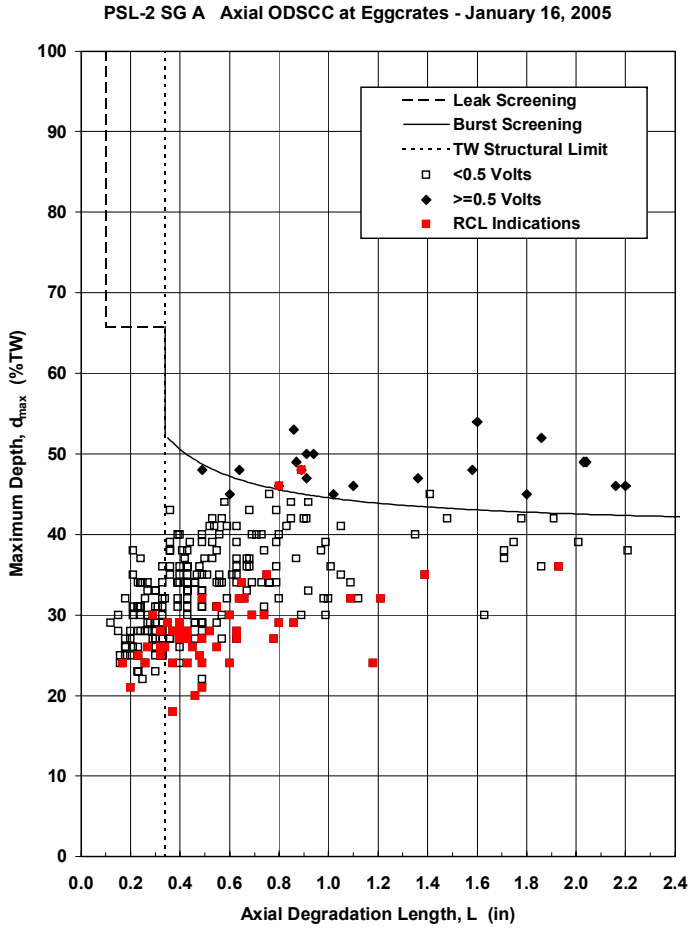
CM Results – Eggcrate Indications Bobbin Detected S/G 2B

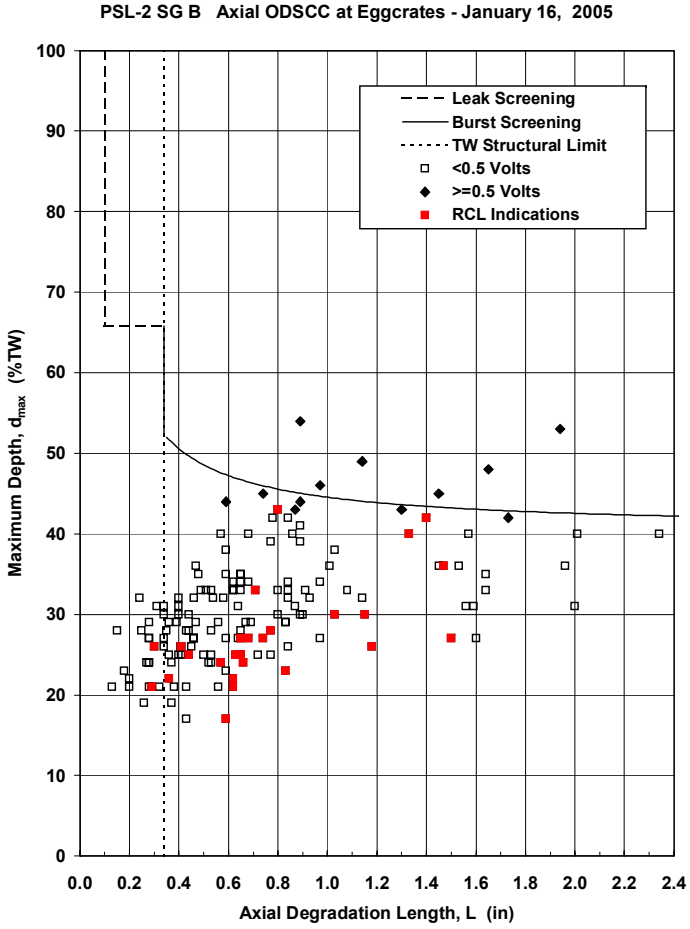




STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

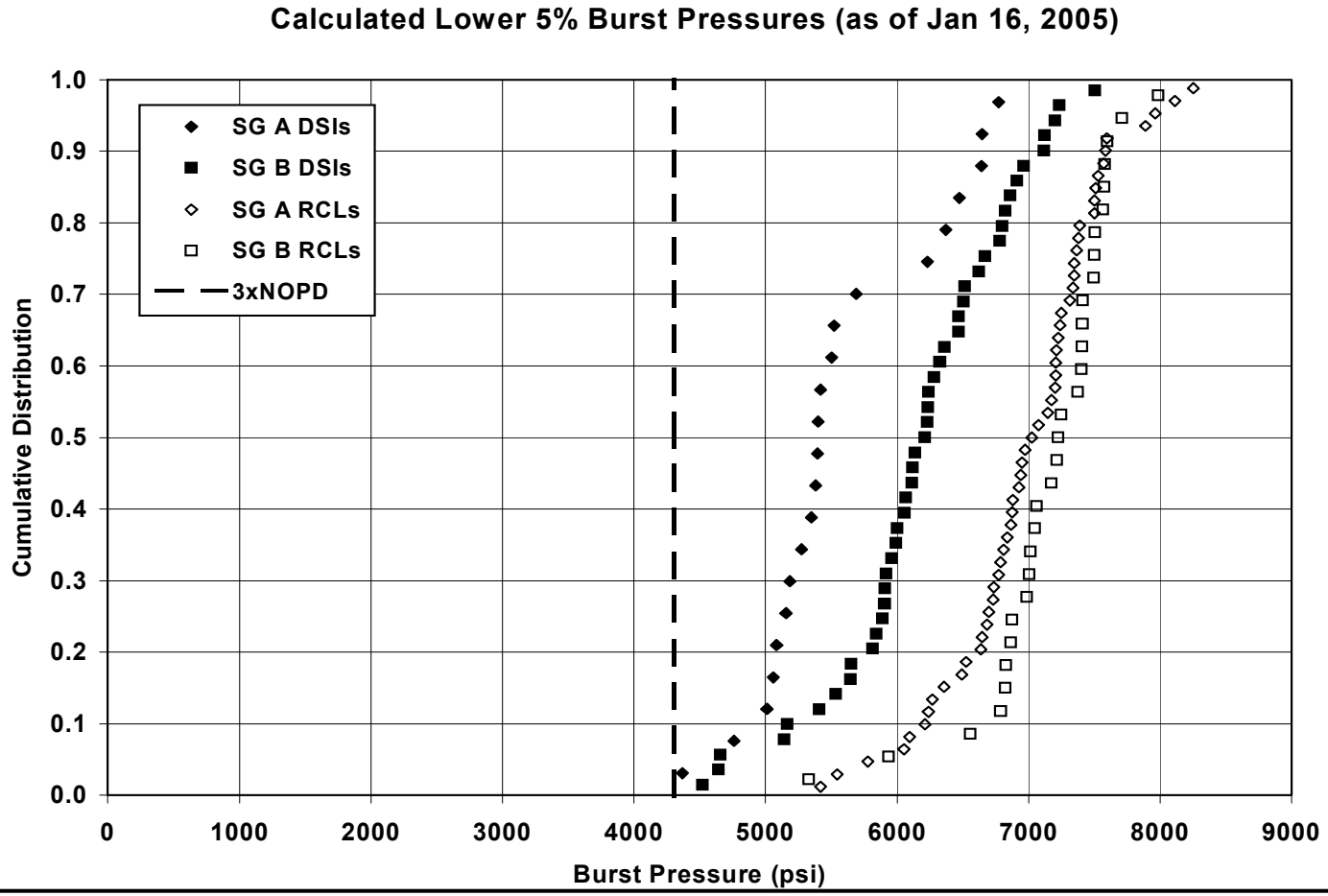
RCL Eggcrate Indications - Initial Sample





STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

Condition Monitoring Results – Eggcrate Indications



+Point™ Voltage Correlation For RCL Indications

VOLTAGE MEASUREMENT VARIATION

- INDUCED BY DIFFERENCES IN HELICAL PITCH
- COMPARITIVE DATA FROM RCL FLAWS AT EGGCRATES
  - RCL INITIAL SAMPLE WAS RETESTED WITH +Point™ QUALIFIED TECHNIQUE

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

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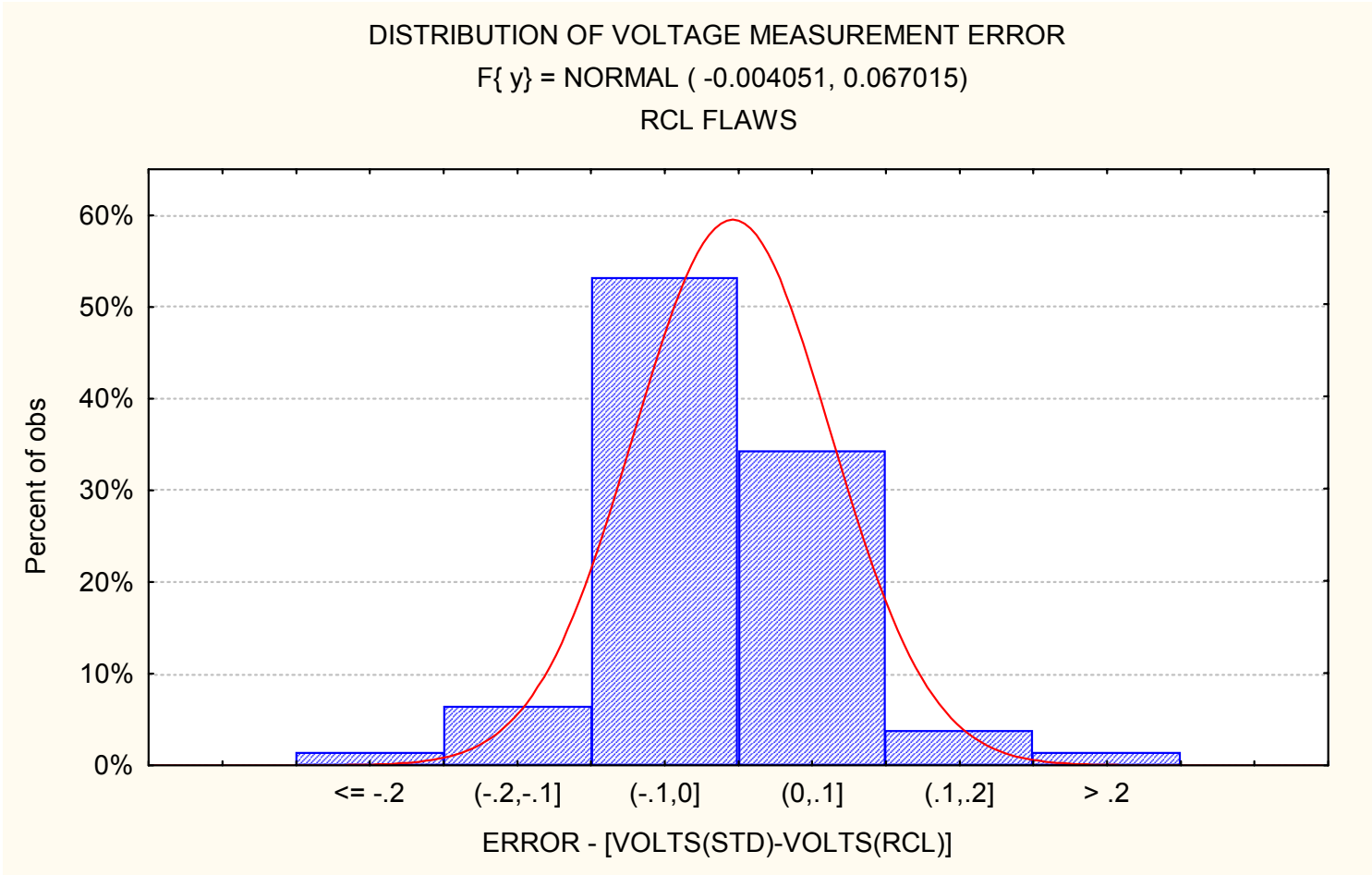

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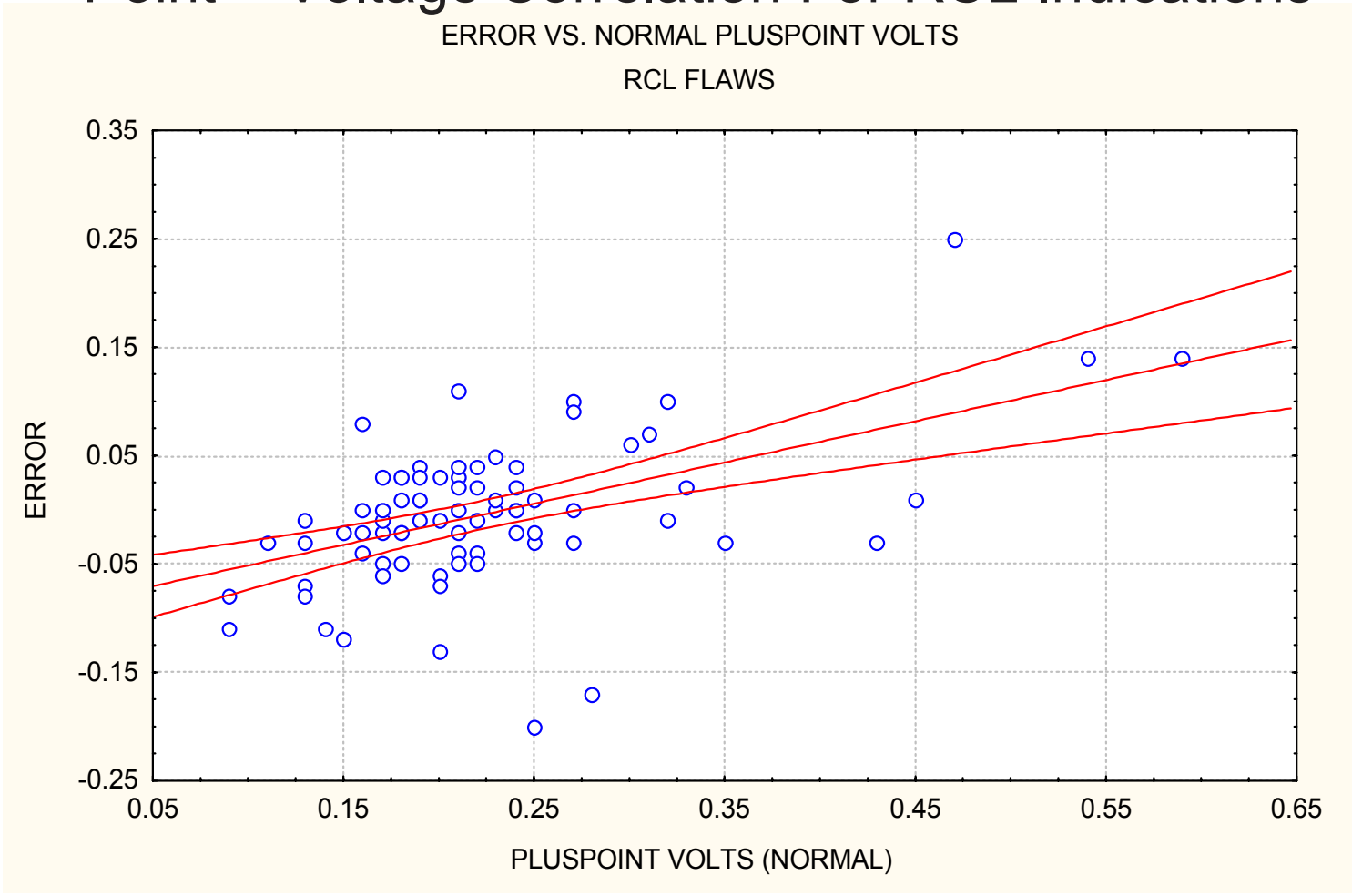

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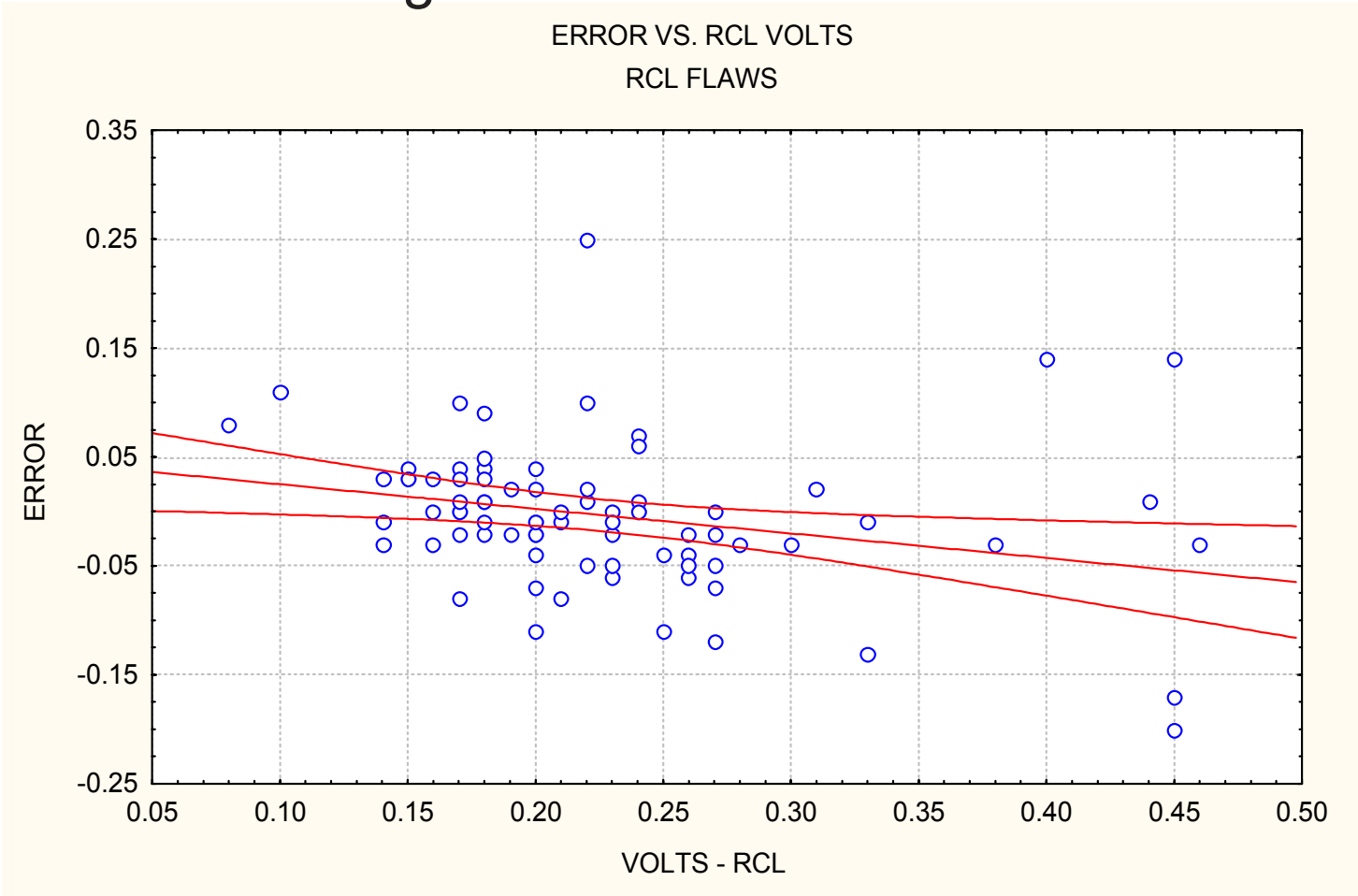


+Point™ Voltage Correlation For RCL Indications

VOLTAGE MEASUREMENT VARIATION

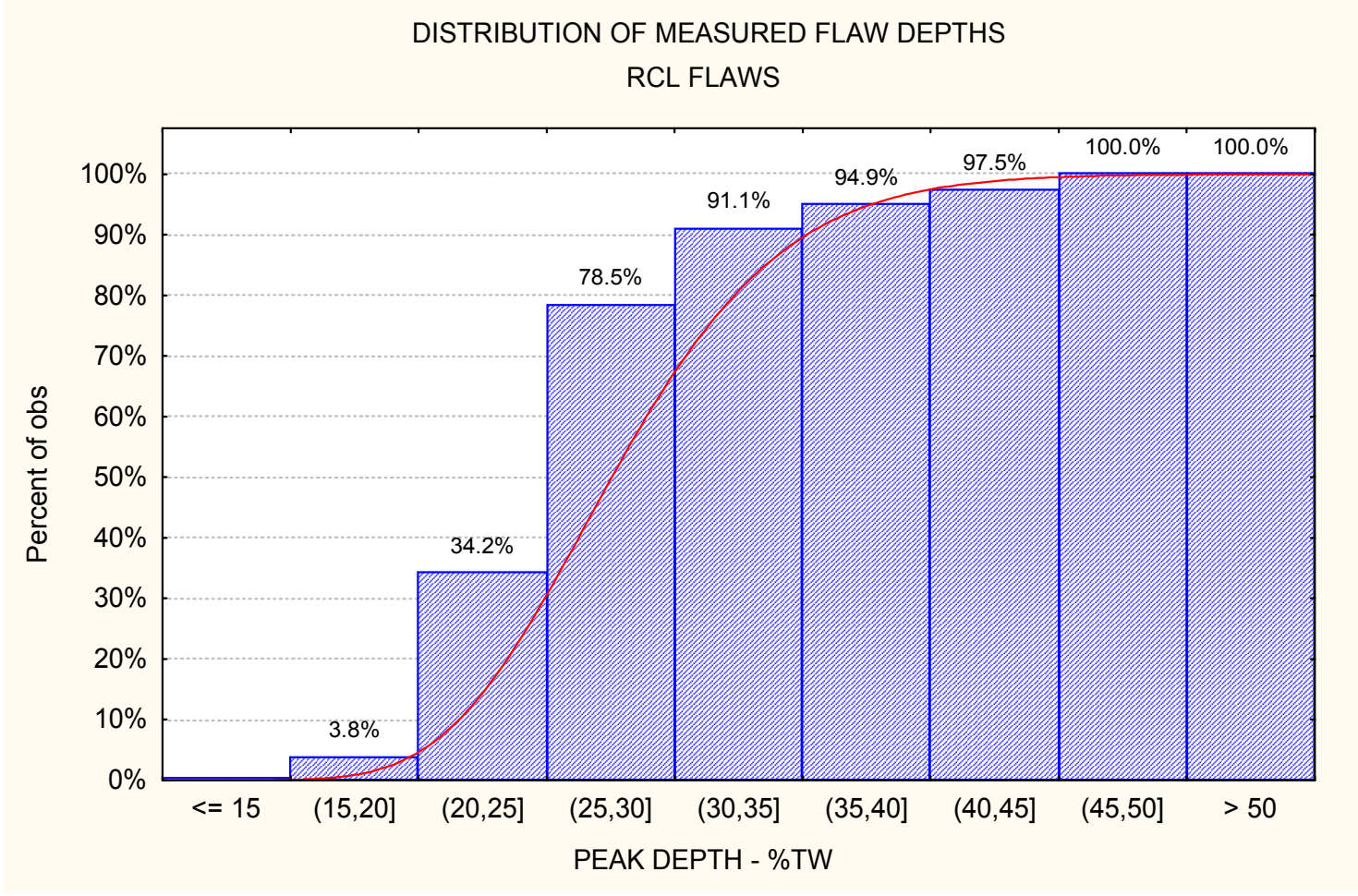
- STATISTICAL CORRECTION FACTOR [FOR SCREENING]
- VCORR = VRCL + CFACT
- CFACT = 0.15 VOLTS (ONE SIDED 95/95)
- ISPT GL CONSERVATIVE SCREENING VALUE OF 0.5 VOLTS TO BE REDUCED BY CFACT TO SCREEN RCL INDICATIONS WITH NORMAL PULL OUT SCAN AT 2800 RPM & 10 IPS

COMPARISON BETWEEN ICODE AND RCL FLAWS

- PLUSPOINT MEASURED DEPTHS
- VOLTAGES

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

COMPARISON BETWEEN ICODE AND RCL FLAWS



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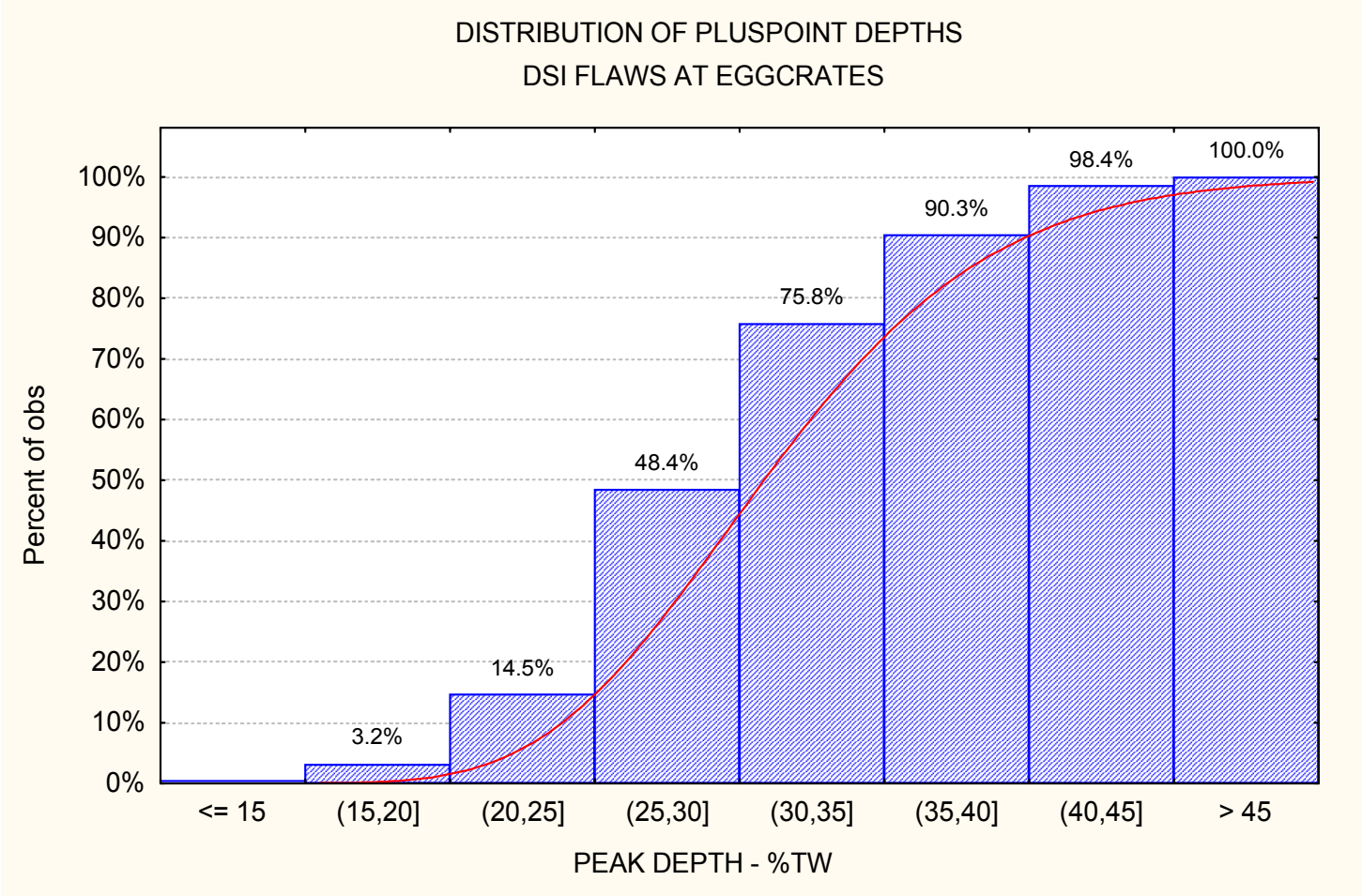

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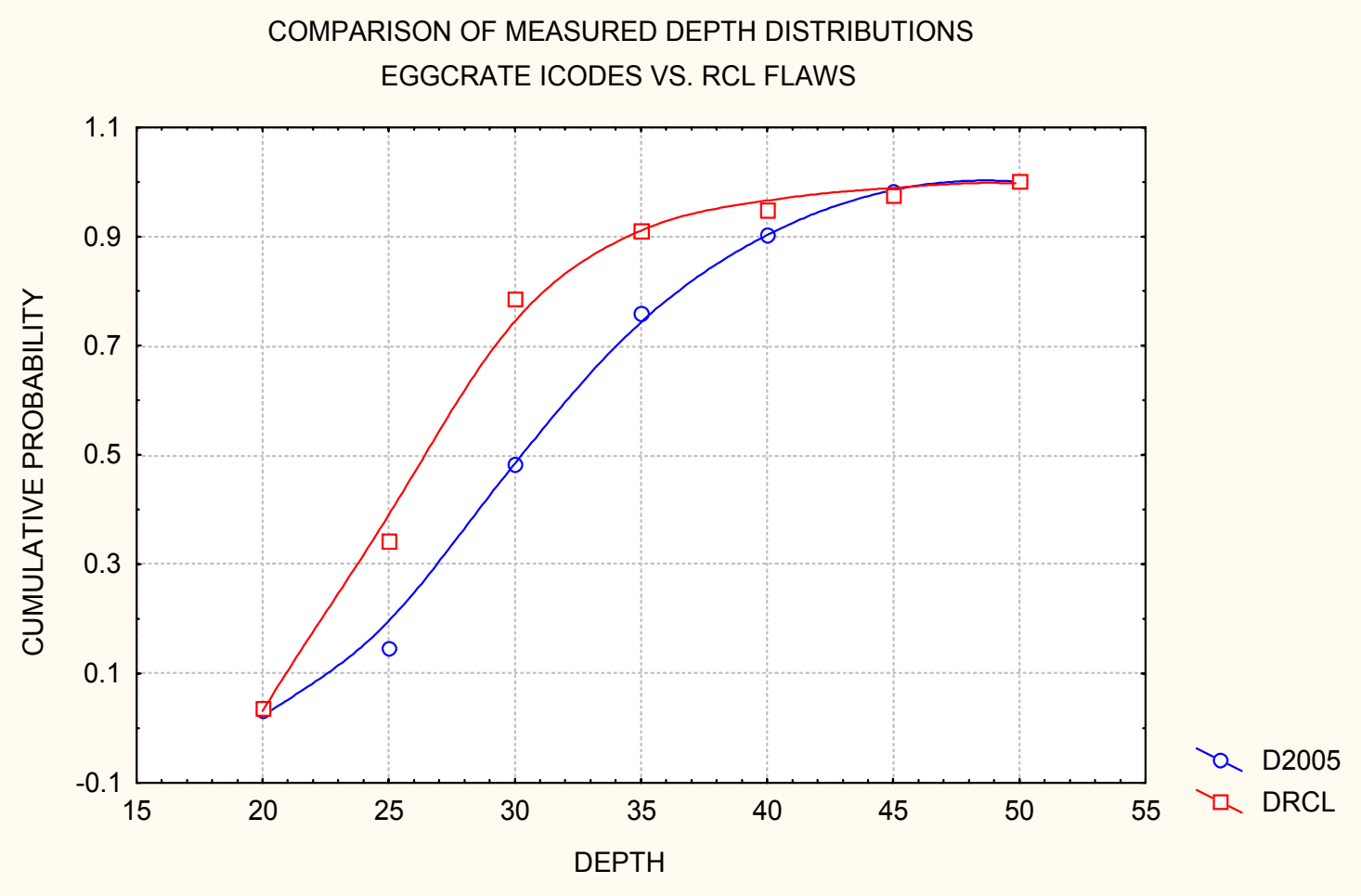

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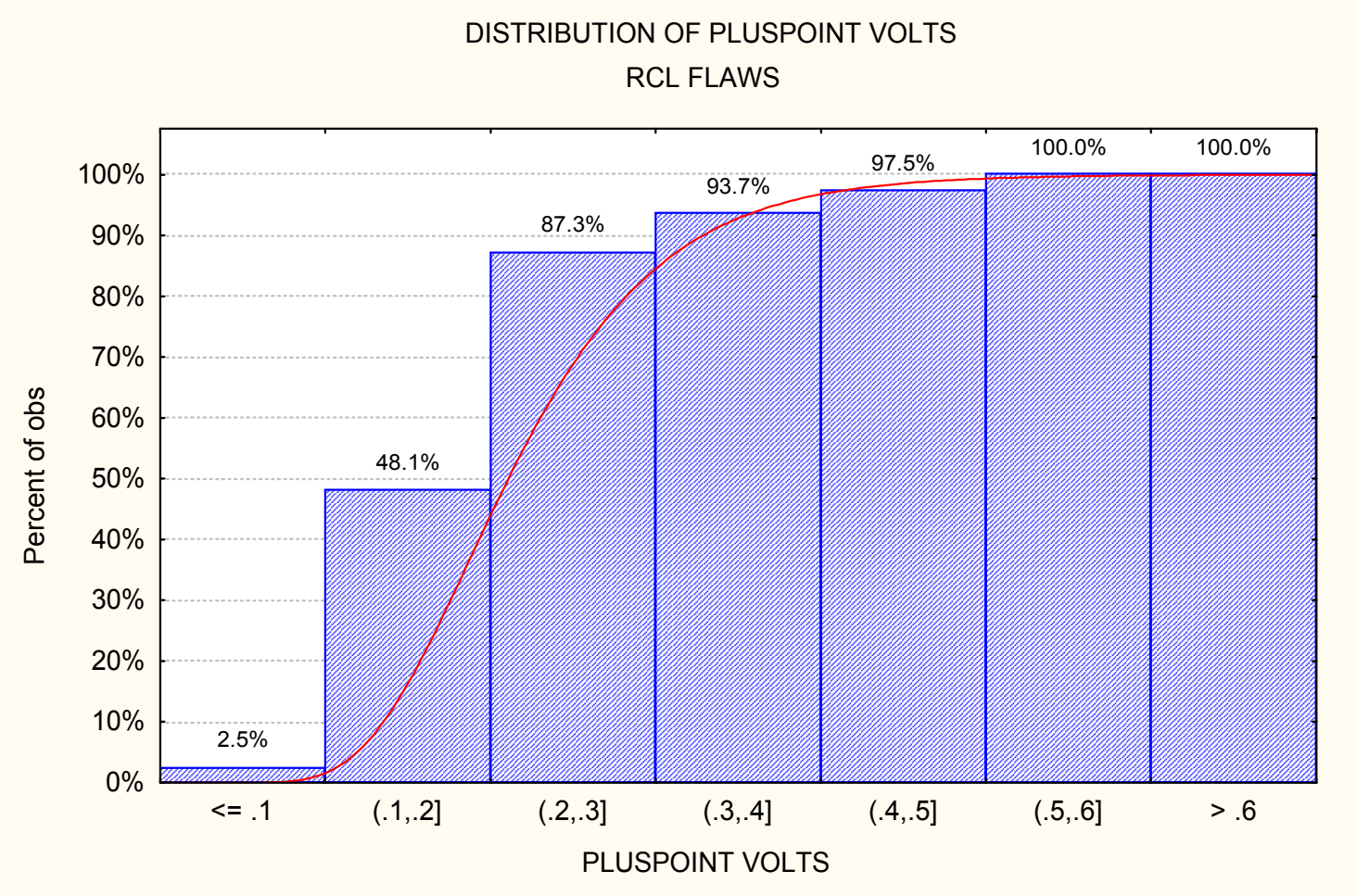

STEAM GENERATOR INSPECTION STATUS SL2-15
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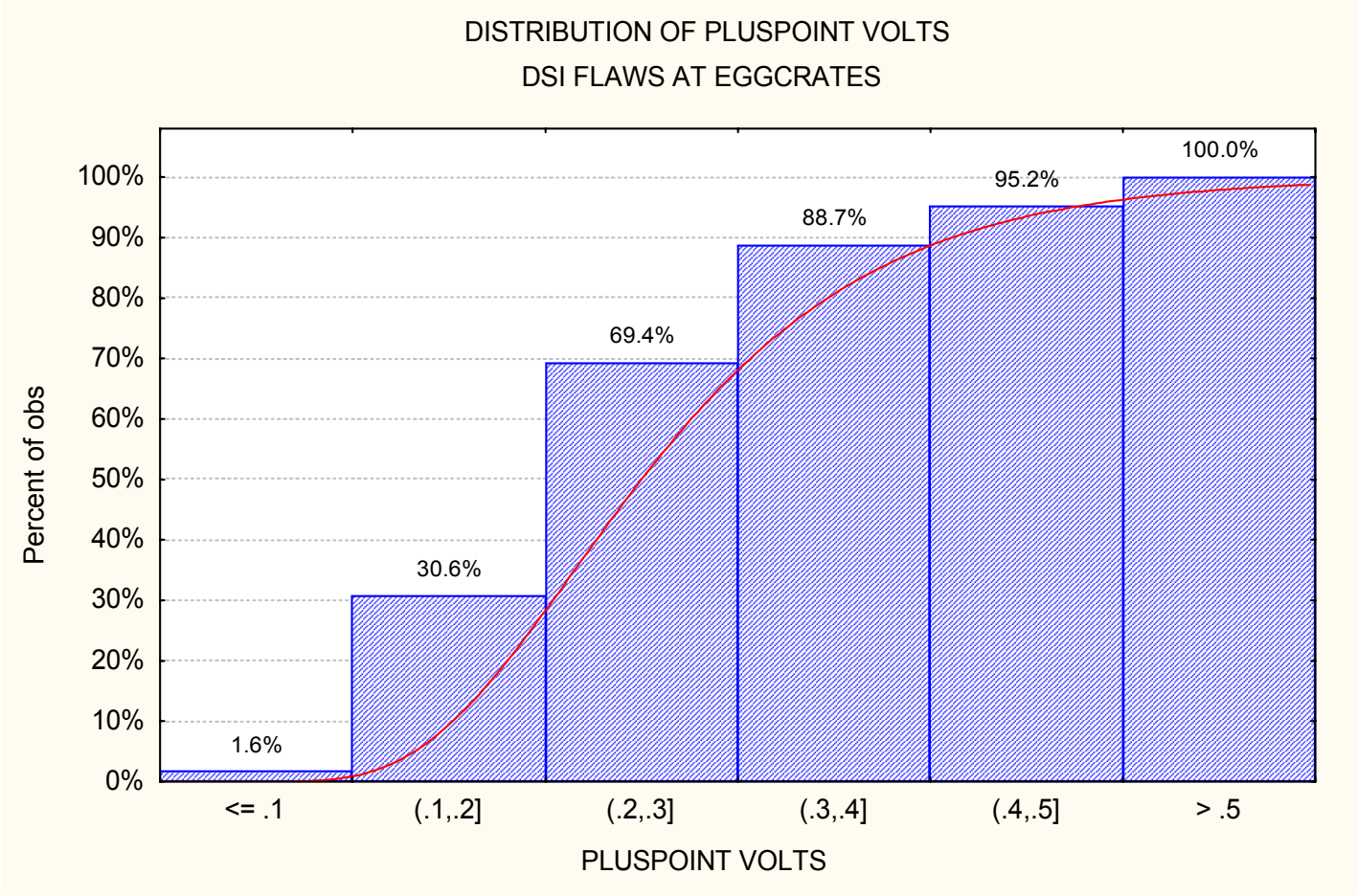

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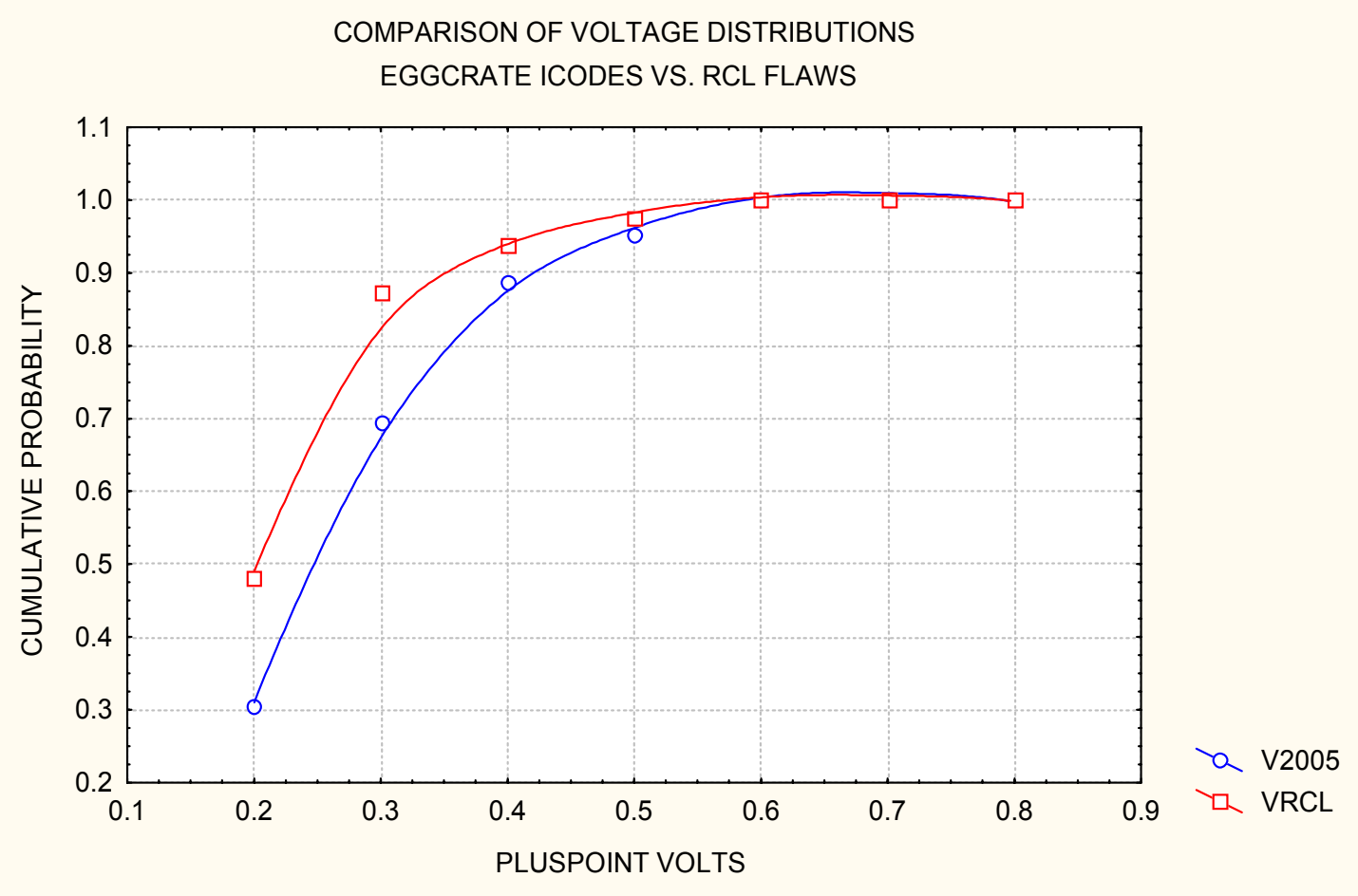
COMPARISON BETWEEN ICODE AND RCL FLAWS

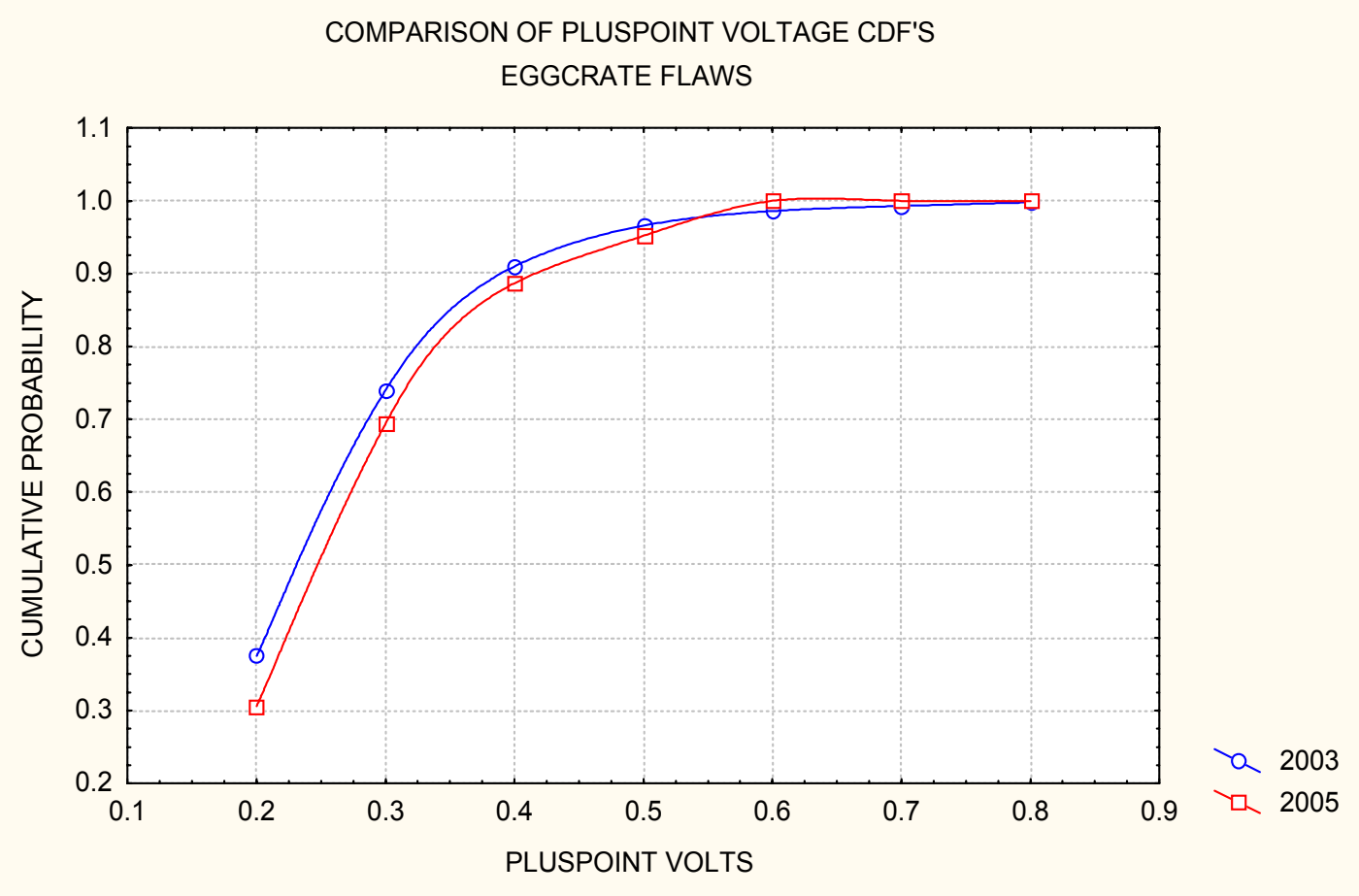


COMPARISONS OF 2003 AND 2005 DATA

- PLUSPOINT VOLTAGES
- PLUSPOINT DEPTHS
- EGGCRATE FLAWS

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

COMPARISONS OF 2003 AND 2005 DATA



STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05

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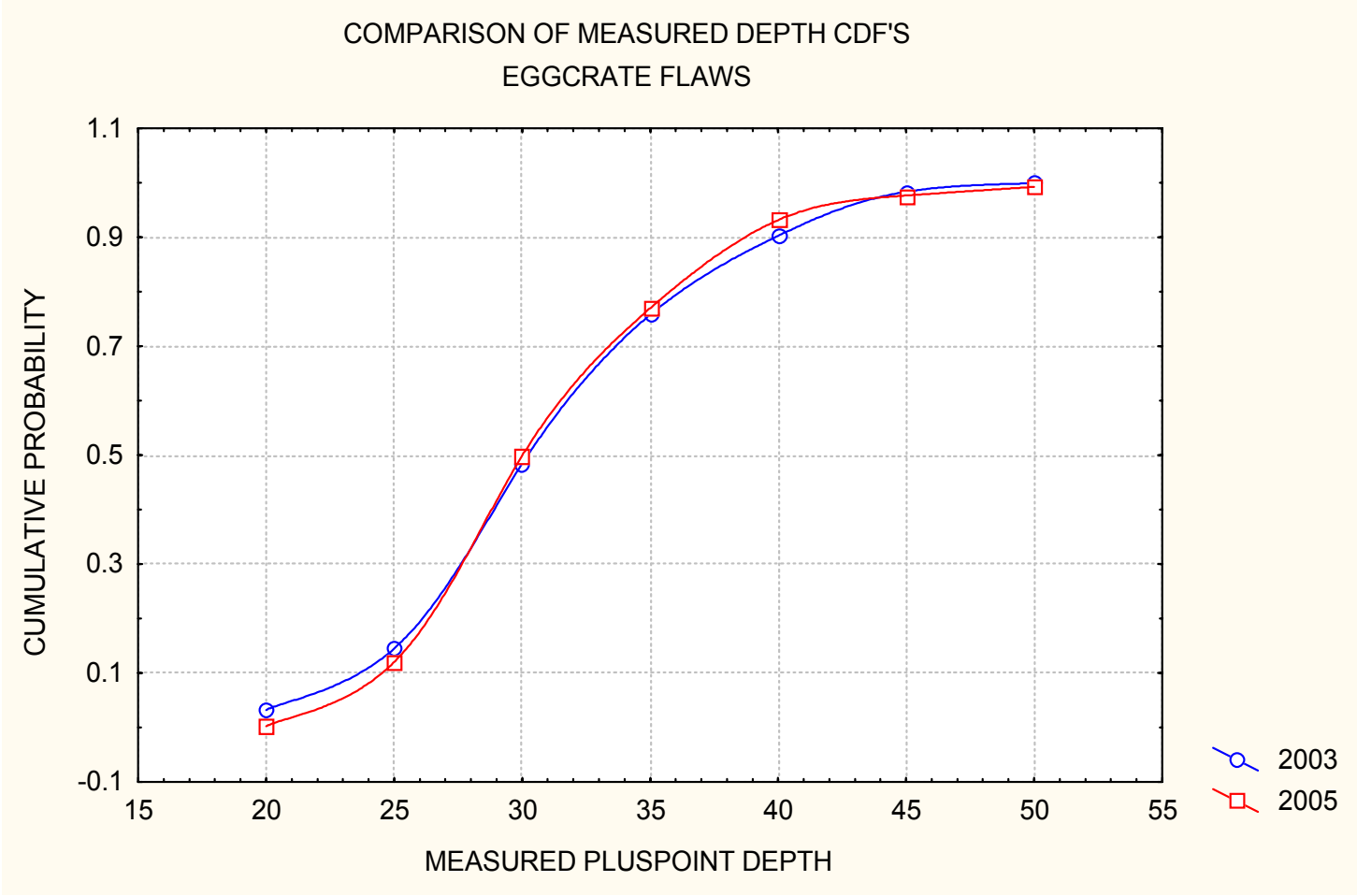


Summary of Condition Monitoring

- On-going tube degradation is as-expected from previous cycle OA
- First observation of circumferential PWSCC at TTS (very shallow and short in length)
- Additional eggcrate indications detected during pull out are expected given the more sensitive +PT probe. Voltage and sizes from retest consistent with expectations for Bobbin probe.
- Screening parameter for RCL indications based on RCL voltage has been established at 0.35 volts
- Additional axial indications at eggcrates are accounted for in OA multi-cycle model
  - Impact of improved training & test materials and RCL indications

Completion of Remaining Inspections

- Continue high speed pull out scan after test of Bobbin I-Codes
  - Provides valuable data for validating BOC population for OA Model
  - Helix pitch ensures detection of critical length flaws
    - Short & deep indications at eggcrates not observed
  - Detailed +Point™ inspection if RCL screen exceeded
  - Screen Detailed +Point™ results as usual

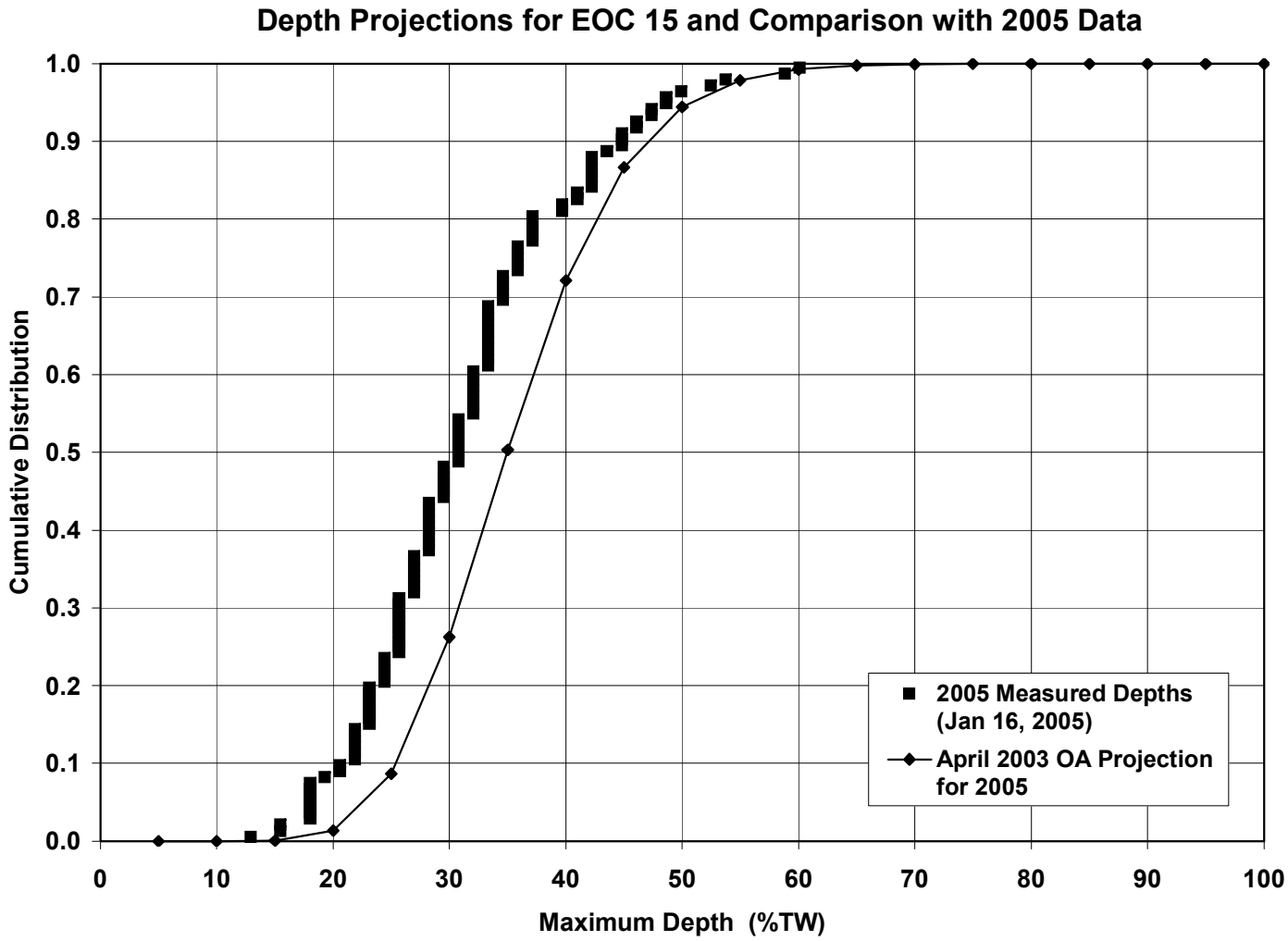
Operational Assessment

- Axial ODSCC has been assessed with a probabilistic multi-cycle model since EOC 12 using Bobbin detection
- Multi-cycle model accounts for the following key parameters as required to correctly characterize ODSCC:
  - beginning of cycle defects remaining after inspection (i.e., undetected population)
  - initiation of new sites for ODSCC during operation
  - growth of defects during operation
  - determination of EOC defect populations and comparison to NEI 97-06 performance criteria
- Model is validated through benchmarking over several cycles of St. Lucie Unit 2 inspection data

Operational Assessment

- Because multi-cycle model tracks the undetected defects, the hidden population like those partially characterized by the RCL indications are addressed in the burst and leakage calculations
- Predicted depth sizes are in close agreement with NDE results evaluated to date. The predictions were taken from EOC 13 OA results completed in June 2003 without modification to the run-time simulation.
- Observation of RCL indications is predicted with the existing OA model. This is an expected outcome when the better detection performance of the +PT probe is included in the inspection process.

STEAM GENERATOR INSPECTION STATUS SL2-15
NRC PHONE CALL 1/17/05



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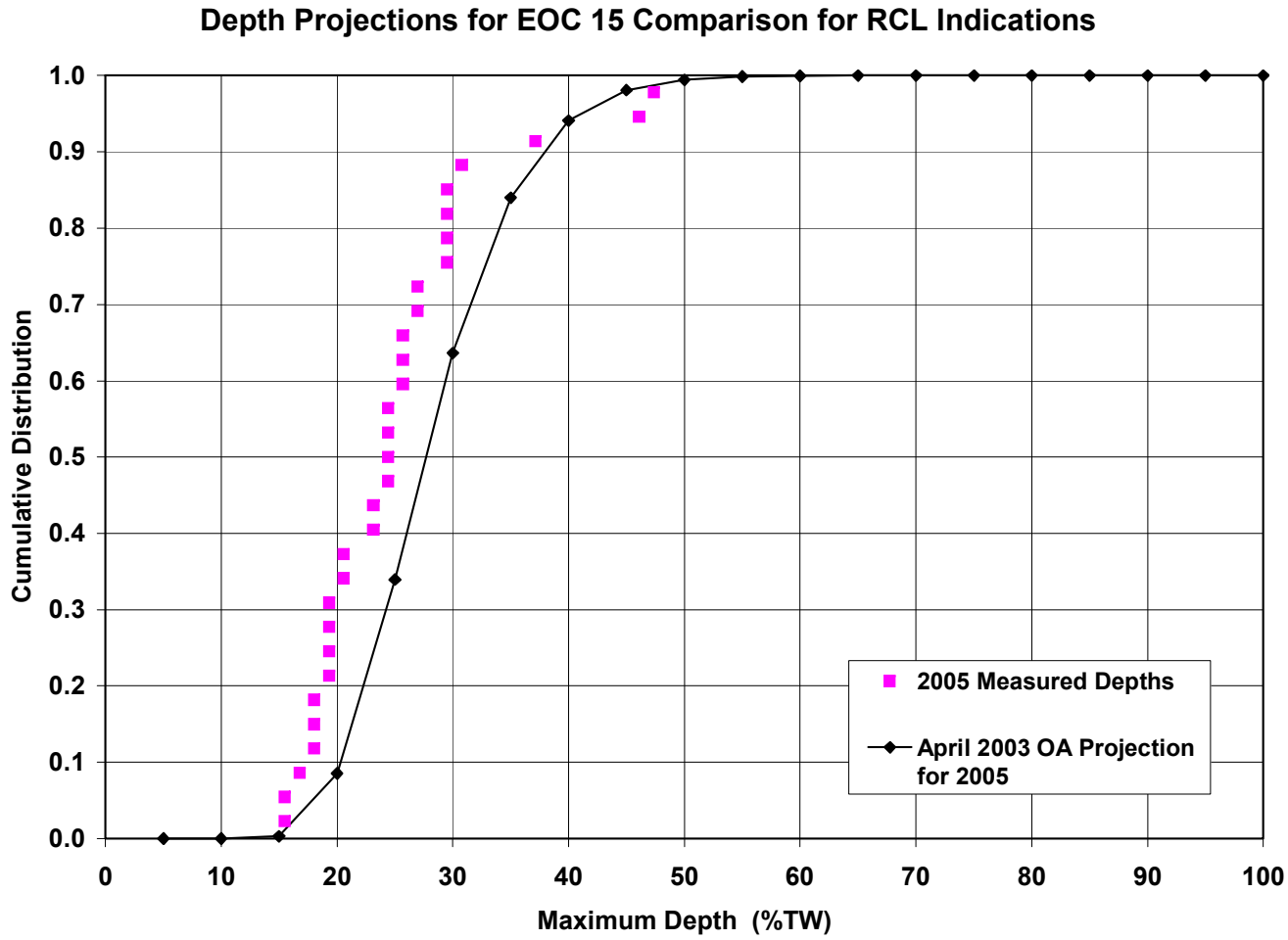

Operational Assessment Plans

- Preliminary OA will be completed based on existing OA model
- Bobbin probe for detection will be evaluated in final OA. It is expected that Bobbin detection performance will remain sufficient to maintain structural and leak integrity for Cycle 15.
- Confirmation of performance will be achieved through benchmarking of NDE results and validation of growth rate through historical data reviews.

Summary & Closing

- Conservative Approach to Degradation
- Compliance with Technical Specifications & NEI 97-06
- Reasonable Assurance of Tube Integrity
- Conservative In Situ Pressure Test History (14 eggcrates)
- SL2-15 Inspection results bounded by OA Model
- OA Model is conservatively predicting the observed distribution of detected indications