

MAY 25 1984

Docket No. 50-528

Arizona Public Service Company
P. O. Box 21666
Phoenix, Arizona 85036

Attention: Mr. E. E. Van Brunt, Jr.
Vice President

Gentlemen:

Thank you for your letter dated April 30, 1984, responding to the questions raised in the meeting held in Phoenix on March 5, 1984 to clarify our understanding of your corrective actions taken as a result of the regional team inspection findings.

The regional staff has reviewed your answers and requests certain clarifications as detailed in the attachment to this letter.

Sincerely,

Original signed by
R. J. Pate

T. W. Bishop, Director
Division of Reactor Safety and
Projects

Attachment:
Region V Staff Review of APS Response

Attachment:
Region V Staff Review of APS Response

bcc w/copy ltr dtd 4/30/84:
RSB/Document Control Desk (RIDS)
pink/green/docket file copies
Resident Inspector
Arthur C. Gehr, Esq.
P. Narbut
J. Zollicoffer

File Reference: IR 50-528/84-11

RV/dot
PPN
Narbut

PPN for
Young

PPN for
Bishop

5/24/84

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Q PDR

TEO
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MAY 25 1984

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Vice President

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[Faint signature] Original signed by
R. J. Pate

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Region V Staff Review of APS Response to Inspection Report 50-528/84-11

The following clarifications to the APS response are requested:

1. Regarding Question B, the response states a summary and evaluation of the results of the walkdown of loose structural bolts are scheduled to be completed by April 20, 1984. Please provide the summary and evaluation.
2. Regarding Question C, the response states an evaluation of the sampled concrete expansion anchors concluded that the number of defects is acceptable. Please describe the evaluation process.
3. Again regarding Question C, the response states that craft training is not required due to the confidence level, verified by walkdowns, that less than 5.7% of the installed anchors do not conform to all specifications.

This error rate is presumably that which was achieved after QC inspection and it can be assumed that the craft error rate was higher. Since Criterion II of 10 CFR 50 requires the QA program shall provide for training of personnel performing safety related activities to assure proficiency is maintained, and since ANSI N45.2, paragraph 3 states that attainment of quality objectives is accomplished by those who have been assigned responsibility for performing work, it would appear that craft training would enhance the attainment of quality objectives. Please provide further discussion regarding craft training.

Arizona Public Service Company

File w/
1R84/11

April 30, 1984
AWPP-29386 BSK/JEC

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, CA 94596-5368

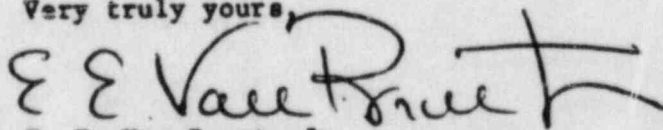
Attention: Mr. T. W. Bishop, Director
Division of Resident
Reactor Projects and Engineering Programs

Subject: NRC Meeting with APS on March 5, 1984
File: 84-019-026; D.4.33.2

Reference: NRC's letter to Mr. T. G. Woods, Jr. from Mr. T. W. Bishop,
dated March 22, 1984

This letter refers to the meeting held at APS' Corporate Office in
Phoenix, Arizona, on March 5, 1984. Our response to the open questions
which were not resolved at the meeting is enclosed in Attachment A.

Very truly yours,



E. E. Van Brunt, Jr.
APS Vice President, Nuclear
ANPP Project Director

EEVB/JEC:ru

Attachment

cc: See Page Two

FILE

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Mr. T. W. Bishop
ANPP-29386
Page Two

cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

T. G. Woods, Jr.
W. E. Ide
D. E. Fasnacht
A. C. Rogers
B. S. Kaplan
L. A. Souza
D. E. Fowler
J. Vorees
J. R. Bynum
P. P. Klute
A. C. Gehr
W. J. Stubblefield
W. G. Bingham
R. L. Patterson
R. W. Welcher
H. D. Foster
D. R. Hawkinson
L. E. Vorderbrueggen
G. A. Fiorelli
S. R. Frost
J. Self
D. Canady

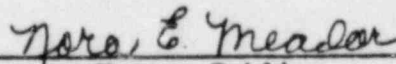
Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, GA 30339

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Edwin E. Van Brunt, Jr., represent that I am Vice President, Nuclear of Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.


Edwin E. Van Brunt, Jr.

Sworn to before me this 30th day of April, 1984.


Notary Public

My Commission Expires:

My Commission Expires April 8, 1987

ATTACHMENT A

The following responses are provided to the questions included in Inspection Report No. 50-528/84-11:

A. Question: In regards to cable tray overfill, why was Quality Control (QC) retraining not specified in Attachment (D), Section II.A.1? Was a QC oversight involved in this problem?

Response: QC involvement and retraining concerning generic tray separation requirements was included in the response to Section II.A.2. This training included the condition identified by Section II.A.1.

The condition identified by the NRC was overlooked during QC inspection because the applicable Bechtel Construction Work Plan Procedure 31.0 did not require an inspection for tray fill to the requirements of the specification. As indicated by the corrective action response to this section, Bechtel Engineering clarified specification requirements to permit cables to extend above the tray rails where there is not tray cover, provided that proper separation has been maintained. In addition, WPP/QCI 31.0 has been revised to require inspection for tray fill.

B. Question: In regards to loose structural bolts, what were the results of the walkdown specified in Attachment (D), Section II.B.1.?

Response: The walkdown program is in progress at the jobsite. It is being conducted by Engineering, QC, and the necessary crafts under a construction inspection plan (CIP No. 551.0) developed exclusively for this task. The walkdown involves 259 connections per unit which represents 100% of the critical connections in the Containment Building which require friction type connectors in order to transmit lateral loads. Partial data accumulated for over 1000 bolts indicates that 4% of the connectors experience greater than 1/12 relative rotation when subjected to the job inspection torque. A summary and evaluation are scheduled to be completed by April 20, 1984.

C. Question: In regards to concrete expansion anchors, did the walkdown specified in Attachment (D), Section II.B.2 confirm the results of the initial small sample of 226 anchor bolts, and why was no craft or QC training specified?

Response: The walkdown has been completed for 1178 randomly sampled wedge type concrete expansion anchors, representative of all buildings and all three units. The walkdown results provide a 95% confidence level that less than 5.7% of the installed anchors in Quality Class Q systems do not conform to all specification requirements. This has been calculated using standard statistical techniques. USNRC IE Bulletin Number 79-02, Revision 2, dated November 8, 1979, for "Pipe Support Baseplate Designs Using Concrete Expansion Anchor Bolts" describes the acceptable sampling method which was employed for evaluation of the walkdown data.

The walkdown results indicate that no gross or widespread violations in craft practice and QC procedures have been evidenced. An evaluation, considering the applications for which wedge type expansion anchors were used and the nature of defects identified, concluded that the number of defects identified is acceptable.

In regards to training, the normal method used to inform Field Engineers, and QC personnel of changes to the Work Plan Procedures/QC Instructions, is to route the changes with training sheets attached. The training sheet requires signature and date of each individual. This was done in this instance. A formal training session is used when there are "significant" or "important" changes. Subsequently, a formal QC training session was completed. Craft training is not required.

D. Question: How were the accuracies of the various walkdowns assessed by APS?

Response: For the most extensive walkdown, that of pipe supports, APS QA reviewed the inspection plan and sample criteria before the walkdown commenced. Additionally, as detailed in our response, QA provided an overview of the QC reinspection program by performing sample review of inspections performed by QC to assess inspection effectiveness. For the other walkdowns the sample size was reviewed and evaluated by APS as part of the review of the proposed Corrective Action. Increased samples were taken in some areas where the review found the sampling criteria to be deficient. Additionally, the summary of results of each walkdown were reviewed and evaluated by APS as part of the review of the proposed response to the Notice of Violation and associated Deficiency Evaluation Reports. Where deemed necessary, the response was modified to fully address APS' concerns and to ensure the evaluation of the results was adequate.

E. Question: Regarding missing bolts in the motor control centers, what are the results of the reinspection of other equipment? What percentage of such bolts are you examining?

Response: The reinspection of safety-related equipment installations for Units 1, 2 and 3 consisted of (1) auditing the field installation of 83 pieces of equipment in each unit and (2) reviewing the engineering documents of 247 pieces of equipment.

All base channel assembly bolts associated with the installation of the motor control centers have been reviewed. No bolts were found missing, at the interface of the equipment to the structure, other than the conditions described in the original response.

The results of the field audit indicated that all other equipment was properly installed. With ninety-percent of the engineering review complete, minor design improvements to DC motor control centers in Units 1 and 2 (1-E-PKC-M43C, 1-E-PKD-M44D, 2-E-PKC-M43C and 2-E-PKD-M44D) are being initiated solely based on good engineering practice.

F. Question: Regarding your new procedure to stroke manual valves, you stated that you have included major flow valves. Does this include all valves?

Response: In Unit 1, only safety related locked open/closed valves will be operated and Roto-hammer and similar valves will be inspected as described below:

Locked open/closed safety related major flow path valves (not including such valves as instrument root, vent and drain valves) in Unit 1 without remote position indication will be operated to verify operability and position indication, prior to fuel loading.

In addition to the response provided in Attachment C, Part III, Section 4.3 and 4.4, Unit 1 safety-related Roto-hammer and other valves with remote manual operators with position indication (where a rising stem could cause interference or mechanical binding preventing full travel of the valve) will be inspected. Discrepancies and deficiencies found will be documented and resolved through approved design control/work control programs. This inspection will exclude instrument root, vent and drain valves.

For Units 2 and 3, a generic test procedure will be developed and implemented during the normal flushing and test evolutions to verify that safety related, manually operated, main flow path valves (2 inches and larger) are fully operable and position indication is correct. This procedure will not be performed on instrument root, vent, and drain valves.

Full compliance to the paragraphs above will be achieved prior to Fuel Load for each respective unit.

G. Question: Regarding your reinspection findings in the area of pipe supports, some of the more significant findings involved missing snubbers. Was this limited to snubbers or was structure involved?

Response: This condition was limited to snubbers, no structure was involved.

H. Question: What is your current schedule for the transfer of systems to operations?

Response: Appendix A is a system acceptance schedule in histogram form. Please note the schedule can be modified as time progresses. The histogram is identified by package number which may include more than one subsystem/system.

I. Question: Why were the results of the Torrey Pines Technology Inc. Walkdown of installed systems different than the NRC's?

Response: There are considerable differences between the TPT and the NRC walkdowns. The TPT review occurred at a different time, with different emphasis on specific areas, and it differed in the degree of detail applied to the inspected items. However, both walkdowns indicated that basic construction of the portions examined was generally in compliance with applicable requirements. Both walkdowns also revealed some weakness in construction inspection activities,* and in both evaluations some of the discrepancies were judged to have potential safety impact.** Where TPT and NRC made a comparable examination the results of the examination were substantially similar, with two possible exceptions (pipe supports and procedures/records for transmitter installations, see below).

* Refer to Section 4.4 of Volume 2 of the TPT Independent QA Evaluation of Palo Verde NGS Units 1, 2, and 3.

** Refer to Section 6.3 of Volume 2 of the TPT Independent QA Evaluation of Palo Verde NGS Units 1, 2, and 3.

The major differences between the NRC and TPT walkdowns are as follows:

1. The NRC examined a significant portion of the HPSI system in detail. TPT looked at selected portions of the shutdown cooling water and auxiliary feedwater systems primarily from an overall systems installation viewpoint, and only selected a limited number of items for detailed inspection.
2. The TPT walkdown objective was to assess the conformance of the portions of the safety systems selected to requirements of design documents for Units 1, 2, and 3. Approximately one-third of the TPT effort was devoted to Units 2 and 3. The NRC walkdown objective was to provide an overall assessment of the actual as-built conditions to design requirements, and was substantially limited to Unit 1. It is estimated that the total NRC inspection effort on Unit 1 was approximately twice that of TPT.
3. The TPT walkdown occurred during construction prior to turnover to APS. Accordingly, if evidence existed that either APS or BPC was aware of a discrepancy, and a procedure existed which, if followed, could be reasonably expected to result in correction of the discrepancy, TPT did not identify the discrepancy as a valid potential finding. The NRC walkdown occurred approximately one year later, after construction of the HPSI system was essentially completed. Any observed discrepancy was considered to represent the completed installation of the item inspected, and judged to be valid.

The two possible areas of difference in conclusions where TPT and NRC made comparable examinations are:

1. Pipe Supports - The NRC walkdown revealed that approximately 20% of the 68 pipe supports inspected had deficiencies. TPT examined 3 supports in Unit 1 in detail (not inspected later by NRC) and TPT did not find such discrepancies. These two results are not surprising. Even if one assumes that 20% of all pipe supports in Unit 1 were in fact defective, there is approximately a 50% chance that TPT would not have discovered this based on a sample of 3 supports.

2. Transmitter installation records - the TPT walkdown revealed several discrepancies in the area of transmitter installation procedures and inspection records. The NRC walkdown did not reveal such discrepancies in that area. This is not surprising considering the effort subsequently put in by APS to correct the deficiencies detected by TPT.

The detailed differences between the number of items inspected by NRC and TPT for Unit 1, the areas of examination for each item, and the number of valid observed discrepancies is described in Appendix B.

Considering these differences, it is not surprising that detailed results of the two walkdowns do not totally coincide. However, it is significant that both walkdowns revealed similar trends and conclusions concerning the portion inspected.

J. Question: Has anything been identified in the additional reinspections and walkdowns performed to date which is significant or disturbing?

Response: No significant concerns were identified in areas other than structural steel joints (Item B), where the connections fall into three main categories:

- * Structural steel framing
- * Safety injection (SI) tank keyway lateral restraint brackets
- * Main steamline structural steel supports

No significant results have been obtained for the first and third categories. However, the first few Unit 1 SI tank keyway bolts (1-3/8"Ø -A490) which have been checked underwent significant rotation under the job inspection torque. Some of the plate washers covering long slotted holes have experienced measurable deformation under the bolt preload. Although these bolts do not sustain externally applied loads during normal operating conditions, Engineering is paying particular attention to the nonconforming bolts. This will be evaluated upon completion of the walkdown.

APPENDIX A

CO01
 CO01

MT01
 MT01
 MT02
 MT03
 MT04
 MT05
 MT06
 MT07
 MT08
 MT09

PH01
 PH01

ST01
 ST01

ZA01
 ZA01

ZA10
 ZA11

PB01
 PB01

ZA06
 ZA07

ZA07
 ZA08

ZJ12
 ZJ15

PG01
 PG01

ZA08
 ZA09

ZA10
 ZA11

ZJ13
 ZJ16

CD01
 CD01
 CD02
 CD03

ZA13
 ZA14

ZA14
 ZA15

NH01
 NH01
 NH70
 NH71
 NH72

ZJ06
 ZJ08

ZJ14
 ZJ17

EW01
 EW01
 EW70

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NA01
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JUNE

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APPENDIX B

COMPARISON OF NRC AND TPT WALKDOWNS
PALO VERDE NUCLEAR GENERATING STATION UNIT 1

TYPE OF EQUIPMENT EXAMINED	NUMBER OF ITEMS EXAMINED		INSPECTIONS AND OBSERVED DISCREPANCIES				
	NRC	TPT	AREA OF EXAMINATION	EXAMINED BY		NUMBER OF VALID OBSERVED DISCREPANCIES	
				NRC	TPT	NRC	TPT
Piping	530'	800'	Identification	Yes	Yes	0	0
	for total	400'	Location & Length	Yes	Yes	0	2
	Instal.		Straightness	Yes	400'	0	0
	Adequacy for Instal. Adequacy		Finish & Defects	Yes	400'	1	0
Pipe Welds	234	0	Location	200			
	visual		Appearance	234			
			Defects	Yes			
	218		Reinforcement	234	N/A	0	N/A
	NDE		Welder Qualif.	Yes			
			NDE Verification	218			
		Documentation	Yes				
Pipe Supports and Restraints	68	45	Identification	Yes	Yes	0	0
	all	total	Location	Yes	Yes	1	1
	Snubbers in detail	3 in detail	Procedure & Records	Yes	Yes	0	0
			All installed	Yes	Yes	0	0
			None Additional	Yes	Yes	0	0
			Configuration	Yes	Yes	1	0
			Dimensions	Yes	3	0	0
			Fit	Yes	3	2	0
			Adequacy of Design	Yes	Yes	2	0
			Documentation	Yes	Yes	7	0
			Welds	Yes	3	7	0
			Cold Set of Snubbers	Yes	No	0	N/A
Raceway Supports	60	6 Total	Identification	Yes	Yes	0	0
	all	2 in detail	Location	Yes	Yes	0	0
	in detail		Procedures & Records	Yes	Yes	0	0
			Mounting	Yes	2	0	0
			Configuration	Yes	Yes	0	0
			Member Size	Yes	2	0	0
			Connection Details	Yes	2	6	1
			Dimensional Details	Yes	2	1	0
			Painting	Yes	No	1	N/A
Valves	17	52	Identification	Yes	Yes	0	6
			Location & Orient.	Yes	Yes	0	1
			Procedures & Records	Yes	Yes	1	1
			Size, Type, & Mfg.	Yes	Yes	0	2
			Installation Details	Yes	No	4	N/A

COMPARISON OF NRC AND TPT WALKDOWNS
PALO VERDE NUCLEAR GENERATING STATION UNIT 1

TYPE OF EQUIPMENT EXAMINED	NUMBER OF ITEMS EXAMINED		INSPECTIONS AND OBSERVED DISCREPANCIES				
	NRC	TPT	AREA OF EXAMINATION	EXAMINED BY		NUMBER OF VALID OBSERVED DISCREPANCIES	
				NRC	TPT	NRC	TPT
Pump Motors	2	2	Identification	Yes	Yes	0	0
			Location	Yes	Yes	0	0
			Location Identif.	Yes	No	1	N/A
			Procedures & Records	Yes	Yes	2	1
Motor Operated Valve Motors	17	5	Mounting & Install.	Yes	No	1	N/A
			Bolting	Yes	No	0	N/A
			Nameplate Data	Yes	Yes	2	3
			Grounding	Yes	No	1	N/A
			Protection	Yes	No	0	N/A
Cable Raceways	1590'	50'	Identification	Yes	Yes	3	See Note A
	Tray	Tray	Location	Yes	Yes	0	0
	26	11	Procedures & Records	Yes	Yes	0	0
	Conduit	Cond.	Separation	Yes	No	3	N/A
	Runs	Runs	Color Coding	Yes	Yes	0	0
			Mech. Details	Yes	No	1	N/A
		Connection Details	Yes	No	0	N/A	
Cable Installations	31	35	Identification	Yes	Yes	1	See Note A
			Procedures & Records	Yes	Yes	1	0
			Separation	Yes	Yes	0	0
			Routing to last Raceway	Yes	Yes	0	0
			Routing along Raceway	Yes	No	2	N/A
			Supports	Yes	No	0	N/A
			Size and Type	Yes	No	0	N/A
Cable Terminations	31	15	Identification	Yes	Yes	0	0
			Location	Yes	Yes	0	0
			Procedures & Records	Yes	Yes	0	0
			Size of Conductors and Lugs	Yes	No	0	N/A
			Installation Details	Yes	No	1	N/A

NOTE A: TPT noted a similar identification discrepancy to that observed by NRC. However, there was a procedure which required replacement of damaged identification markers prior to completion of construction.

COMPARISON OF NRC AND TPT WALKDOWNS
PALO VERDE NUCLEAR GENERATING STATION UNIT 1

TYPE OF EQUIPMENT EXAMINED	NUMBER OF ITEMS EXAMINED		INSPECTIONS AND OBSERVED DISCREPANCIES				
	NRC	TPT	AREA OF EXAMINATION	EXAMINED BY		NUMBER OF VALID OBSERVED DISCREPANCIES	
				NRC	TPT	NRC	TPT
Emergency Diesel Generators	1	0	Identification	Yes		0	
			Location	Yes		0	
			Procedures & Records	Yes	N/A	0	N/A
			Mounting	Yes		0	
			Separation	Yes		0	
			Controls	Yes		0	
DC Batteries and Racks	4	0	Fluid Levels	Yes		0	
			Mounting	Yes		0	
			Panel Display	Yes		0	
			Conduit Configuration	Yes	N/A	0	N/A
DC Battery Chargers	4	0	Spacing and Alignment	Yes		0	
			Conductor Terminations	Yes		0	
			Bolting	Yes		0	
			Procedures & Records	Yes		5	
Vital AC Bus Converters	4	0	Identification	Yes		0	
DC Panels	14	0					

COMPARISON OF NRC AND TPT WALKDOWNS
PALO VERDE NUCLEAR GENERATING STATION UNIT 1

TYPE OF EQUIPMENT EXAMINED	NUMBER OF ITEMS EXAMINED		INSPECTIONS AND OBSERVED DISCREPANCIES				
	NRC	TPT	AREA OF EXAMINATION	EXAMINED BY		NUMBER OF VALID OBSERVED DISCREPANCIES	
				NRC	TPT	NRC	TPT
Concrete Tests	11 tests areas	0	Concrete strength	Yes		0	
			Steel material	Yes		0	
			Procedures & Records	Yes		0	
Steel Framing	3		Steel-Steel Bolting	Yes	N/A	6	N/A
			Welding	Yes		16	
			Weld Specifications	Yes		5	
			Material Size	Yes		0	
Cont. Pene.	6	0	Configuration	Yes		0	
Embed. Plates	68	0	Expansion Anchor Details	Yes		13	
Concrete Exp. Anchors	88	0					
Cont. Spray Pump Support Structure	0	1	Material Size	Yes		0	
			Configuration	N/A	Yes	N/A	0
			Procedures & Records	Yes		0	
			Connection Details	Yes		0	

COMPARISON OF NRC AND TPT WALKDOWNS
PALO VERDE NUCLEAR GENERATING STATION UNIT 1

TYPE OF EQUIPMENT EXAMINED	NUMBER OF ITEMS EXAMINED		INSPECTIONS AND OBSERVED DISCREPANCIES				
	NRC	TPT	AREA OF EXAMINATION	EXAMINED BY		NUMBER OF VALID OBSERVED DISCREPANCIES	
				NRC	TPT	NRC	TPT
Instruments On Panels/Cabinets	19		Identification	Yes	Yes	0	1
			Location	Yes	Yes	0	0
			Procedures & Records Separation	Yes	Yes	1	0
				Yes	No	1	N/A
Instrument Panels	34	0	Cleanliness & Workmanship	Yes	No	0	N/A
			Mounting	Yes	No	0	N/A
Instrument Cabinets	14	0	Connections	Yes	No	0	N/A
			Internal Wiring	Yes	Yes	0	0
			Functional Req'ts	Yes	Yes	0	0
Electrical Penetrations	5	0	Identification	Yes		0	
			Location	Yes	N/A	0	N/A
			Mounting Details	Yes		0	
			Type	Yes		0	
4160 V Switchgear	2	1	Identification	Yes	Yes	1	1
			Location	Yes	Yes	0	0
			Mounting Details	Yes	No	2	N/A
480 V Switchgear	2	0	Protection	Yes	No	0	N/A
			Separation	Yes	No	2	N/A
			Records & Documentation	Yes	Yes	0	0
480 V MCC	6	3	Nameplate Data	Yes	Yes	0	0
Pressure Transmitters	8	2	Identification	Yes	Yes	0	4
			Location	Yes	Yes	0	0
			Procedures & Records	Yes	Yes	0	16
Flow Transmitters	0	2	Mounting	Yes	Yes	0	3
			Functional Req's	Yes	Yes	0	0
Level Transmitters	0	2	Calibration	Yes	Yes	0	0
			Tubing & Supports Separation	Yes	Yes	2	0
Position Transmitters	0	4		Yes	No	0	N/A