

TABLE 1

SUMMARY OF NSRS INVESTIGATION FINDINGS

QUALITY ASSURANCE EVALUATION REPORT QAE 80-1
OEDC QA FINDINGS, EN DES RESPONSES, AND NSRS CONCLUSIONS

QAE 80-1 Paragraph Numbers	OEDC QA Report and Recommendation Brief	EN DES Response Brief	OEDC QA Evaluation Deficiency	*NSRS Determined Deficiency	NSRS Deficiency Basis Brief
IV.A.1.a	QEB-AI 213.02 contains instructions for implementing communication of EN DES-AI 213.01. AI 213.01 was not in the QEB EP/AI Manual. Manual should be reviewed to ensure it contains all EP's and AI's mentioned.	QEB EP/AI Manual will be reviewed to ensure all appropriate EP's and AI's referenced are in the QEB EP/AI Manual. Review to be completed by July 21, 1980.	No	No	
IV.A.1.b	TVA Inspection Manual, QEB, Section C, paragraph 1.1, required the regional field office supervisors to submit a monthly report detailing outstanding problems and to propose actions and solutions to correct these problems. QEB-Knoxville should respond in writing to these problems.	Revision 8 issued February 15, 1980, revised the requirement of the field supervisor issuing monthly reports to quarterly reports on all active contracts.	No	+No	+Failure to follow procedure.
IV.A.1.c	TVA Inspection Manual requires the QEB Branch Chief to review and approve all manual contents prior to issuance. The branch chief should indicate his approval by signing and dating each section or change in an appropriate location.	The branch chief will document his approval of the Inspection Manual contents by signing off on a revision log to be incorporated by Revision 9 to the Manual.	Yes	Yes	Failure to follow procedure.

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IV.A.1.a	QEB-AI 213.02 contains instructions for implementing communication of EN DES-AI 213.01. AI 213.01 was not in the QEB EP/AI Manual. Manual should be reviewed to ensure it contains all EP's and AI's mentioned.	QEB EP/AI Manual will be reviewed to ensure all appropriate EP's and AI's referenced are in the QEB EP/AI Manual. Review to be completed by July 21, 1980.	No	No	
IV.A.1.b	TVA Inspection Manual, QEB, Section C, paragraph 1.1, required the regional field office supervisors to submit a monthly report detailing outstanding problems and to propose actions and solutions to correct these problems. QEB-Knoxville should respond in writing to these problems.	Revision 8 issued February 15, 1980, revised the requirement of the field supervisor issuing monthly reports to quarterly reports on all active contracts.	No	+No	+Failure to follow procedure.
IV.A.1.c	TVA Inspection Manual requires the QEB Branch Chief to review and approve all manual contents prior to issuance. The branch chief should indicate his approval by signing and dating each section or change in an appropriate location.	The branch chief will document his approval of the Inspection Manual contents by signing off on a revision log to be incorporated by Revision 9 to the Manual.	Yes	Yes	Failure to follow procedure.

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IV.A.2	QEB-AI 318.02 requires a proposed weekly work schedule each Friday, but does not provide a reason why this data is submitted. This instruction should be revised to include a reason. Other branch AI's should also be reviewed and revised as applicable	The reference information is used for management planning and analyses. We do not believe that it is necessary for every procedure and instruction to contain a justification for the activities prescribed. This information will be incorporated where necessary for clarity of understanding.	No	No	
IV.A.3	A request was made for QEB to reevaluate its manpower requirements for the activities assigned to the Philadelphia and other regional offices. This should also include the Knoxville QC support organization. An impact study on CONST should also be included in the evaluation of the average number of contracts assigned to an inspector increased from 16 to 28.	Manpower requirements will be reviewed as to proper staffing and adverse impacts on design and construction by July 21, 1980.	No	Yes	°Failure to adequately staff the branch field offices and to expand procurement verification activities when supplier performance is found to be quality deficient. ²²
IV.A.4	EN DES did not respond within 30 days upon receipt of OEDC QA management Audit M79-12. The report was issued on 12-11-79. No response had been received as of 2-7-80.	EN DES will respond to audit deficiencies with the requirements in each report usually within 30 days. A response to this report was made 2-4-80.	Yes	Yes	°Failure to meet follow-up criteria of ANSI N45.2.12.

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IV.B.i	A training program and schedule needs to be developed to ensure "new" as well as "old" personnel receive adequate initial and subsequent refresher training.	A standardized program and schedule for field personnel can be developed and implemented into the existing training program. Due to the increased cost this activity will not commence until manpower ceilings and travel budgets have been increased.	Yes	Yes	°Failure to have an adequate training program fro field inspection personnel. Failure to have a written procedure for qualifying, certifying, and/or recertifying QC inspection personnel in special processes other than NDE.
IV.B.2.a	The inspection procedures in the TVA Inspection Manual should be expanded to include guidelines for all components under surveillance rather than the 20 sample procedures scheduled.	Scoping of the generic inspection procedure revealed no further additions or deletions where necessary.	No	No	
V.B.2.b	Terms to be used in inspection reports should be defined in the TVA Inspection Manual and the writer should state clearly and concisely what he did and the results found during his inspection in the inspection report.	The inspection reports are intended to be trip reports rather than detailed reports of inspection.	No	Yes	°Failure of inspection report content to meet stated requirements.

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IV.B.2.c	<p>Contracts issued by TVA for STRIDE equipment usually do not contain hold points except final inspection prior to shipment, therefore, QEB should develop a procedure defining the system for setting up QEB inspection requirements in addition to those specified in contracts. It should include hold points, witness points, in process inspections and a definition for each. It should also include criteria for what inspections can or cannot be waived and how this actions can be accomplished.</p>	<p>The system for setting up QEB inspection requirements in addition to those already specified in contracts is defined in the TVA Inspection Manual, Section C, paragraphs 1.0 and 4.2. Inspection Waivers are discussed in Section C, paragraph 5.2.2. See also inspection manual procedure D1.1.</p>	No	+No	<p>+°Failure to ensure change in procurement documents are subject to the same degree of control utilized in the preparation of the original document.</p>
IV.B.3.a	<p>Generic Component QC requirement guidelines should be made by the requisitioning branch and QEB-QC to ensure that appropriate inspection and hold points are added to the purchase requisition.</p>	<p>QEB-QC reviews the purchase requisition after it has been issued and makes recommendations prior to the bid process</p>	No	Yes	<p>°Failure to implement interface controls in preparation of purchase requisitions.</p>

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IV.B.3.b	Suppliers should submit with their bid proposal a QC inspection and test plan for approval. This plan should be reviewed against contractual requirements. With this document QEB could compose its inspection plan. This plan should be approved in Knoxville, if prepared in a field office, with a copy sent to the supplier for information.	EN DES agrees that this concept would be more orderly. QEB will perform a study, due to complete 8-15-80, to determine the impact of this recommendation on the bidding process. If beneficial the plan will be proposed to EN DES management for approval.	No	Yes	°Failure to conduct supplier preaward activities for evaluation of supplier performance prior to contract award.
IV.B.3.c	A new or potential supplier should be required, prior to contract award, to identify his reliance on outside sources for the performance of special fabricating, special processes, inspection and testing operations.	This is already being done on most major contracts.	No	Included with item IV.B.3.b	
IV.B.3.d	Expand QEB's charter to include the establishment of additional hold and witness points where appropriate.	QEB's charter currently allows establishment of additional notification and witness points where appropriate.	No	No	

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IV.B.4.a	Vendor audits should be more hardware oriented when conducted by QAB.	Vendor audits are hardware oriented to the extent necessary to satisfy the audit objectives.	No	No	Failure of management to enforce the audit report followup requirements of ANSI N45.2.12.
IV.B.4.b.1	More management attention needs to be provided to assure more timely implementation of corrective action is taken to audit findings in order to close them.	More management attention is being provided for more timely implementation of corrective actions necessary to close audit findings at vendor plants.	Yes	Yes	
IV.B.4.b.2	QEB should issue monthly instead of quarterly reports on the status of vendor corrective actions.	An evaluation was made and quarterly reports were deemed adequate for this purpose.	No	No	
IV.B.4.b.3	QEB-QC field personnel should be used more extensively to verify the implementation of corrective action. As necessary, training should be provided to field M&D scale personnel to accomplish this activity.	The use of field personnel is provided for in EN DES EP 5.34, Section 6.2. Training will be provided as necessary.	No	No	

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IV.B.5.a	TVA Inspection Manual, Section C, paragraph 2.3 indicates plant surveys are not a QA function but QC. These activities should be recognized as a QA function in accordance with 10CFR50 Appendix B. Further, QEB should recognize QC as a part of QA.	Plant Surveys will be recognized as QA where applicable. QC is recognized as part of Quality Engineering. Section 2.3 of the TVA Inspection Manual will be revised as shown in the marked copy provided	No	Yes	Failure of the TVA Inspection Manual to properly identify the QA responsibilities of its inspection personnel.
IV.B.5.b	Plant surveys are conducted by QEB-QC personnel. Vendor preaward surveys are done by QEB-QA per QEB-EP 24.63. These activities are not conducted together. Plant surveys and vendor preaward surveys simultaneously.	When both activities can be accomplished conveniently and efficiently together they will be scheduled. Due to the broader participation needed for simultaneous surveys, it is more effective to be separate. Also, one survey may be performed, the other not since plant capabilities other than QA have already been evaluated and accepted.	No	No	

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IV.B.6	Resolution to STRIDE NCR's takes 42 days while non-STRIDE NCR's average 10 days. On an expedited basis STRIDE NCR's can be processed in 10 days therefore there is a need to improve the processing time for STRIDE NCR's.	An evaluation to improve processing time of STRIDE NCR's without compromising the control functions provided by the NCR system has been conducted. This evaluation has resulted in a change to QEB methods as indicated on the attached draft revision to QEB-EP 24.57.	No	No	
IV.C.1.a	QEB Technical Supervisors should provide more guidance and make more trips to the field in setting up the inspection of vendor activities.	QEB Technical Supervisors will provide the guidance necessary to assist in setting up surveillance of vendor activities. Trips to be made will be where essential and within approved travel budgets.	No	No	
IV.C.1.b	QEB Technical Supervisors should acquire more first hand knowledge of problem contracts through more frequent field trips to vendor plants to review the situation with field inspectors.	Trips will be made where absolutely essential and within approved travel budgets.	No	No	

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IV.C.1.c	Field offices refer problems to Knoxville which are significant, therefore QEB Knoxville should give prompt attention. If an answer cannot be given immediately, then an interim response should be given on the status.	QEB Knoxville will continue to give prompt attention to significant problems referred by the field office.	No	No	
IV.C.2	Copies of QEB vendor audit reports should be sent to the applicable field offices so field personnel can know all items of contention with the vendor.	Where appropriate, QEB-QA audits will continue to be sent to the applicable field offices.	No	Yes	Failure of the QEB-QC Group to keep the branch field offices fully and promptly informed of matters which concern them or their inspection program.
IV.C.3.a	There should be feedback (with rapid instructions) to the field on meetings and decisions made in Knoxville and at construction sites on contracts that involve QEB field inspection.	EN DES will issue an instruction to ensure adequate feedback of meetings held is sent to QEB on contracts that involve QEB field inspectors. Instruction to be issued by the EN DES Manager by July 15, 1980.	No	Included with item IV.C.2 - second example	

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IV.C.3.b	When TVA personnel plan to visit a vendor site the regional QC office should be notified of the impending visit.	EN DES people will be instructed to notify the field inspection office through QEB-Knoxville of vendor visits. Instructions will be issued by EN DES Manager by July 15, 1980.	No	Included with item IV.C.2 - third example	
IV.C.3.c	When meetings are held to determine corrective action, responsible people should be present and minutes of the meeting should be issued in the minimum of time. Further, implementation of agreed upon courses of action should not be delayed while waiting for the meeting minutes.	Agreed	No	No	
IV.C.3.d	When significant problems are identified at a supplier's facility, increased expertise should be assigned to the contract. The assigned inspector or a more qualified inspector should be promptly briefed on the problem areas and directed to spend more time in these areas, e.g., welding inspection, dimensional checks.	Where significant problems are discovered at the supplier's plant, sufficient surveillance capability will be applied within budgetary constraints.	No	No	

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IV.C.4	A need exists for more direct contact between the field inspector and the QEB Technical Supervisor rather than through the regional supervisor. The inspector should advise his regional supervisor whenever he has made a call to Knoxville.	Branch instructions on-communications will be reviewed and adjusted if necessary to improve effectiveness. Review to be completed by July 11, 1980.	No	No	
IV.C.5.a	C. F. Braun Engineering personnel should accompany TVA engineers and surveillance inspectors to problem vendor plants to obtain first hand knowledge of existing fabrication problems and solutions should be identified and implemented in accordance with established procedure or method.	It is not the responsibility of EN DES to educate C. F. Braun Engineering personnel but EN DES has noticed C. F. Braun personnel have been visiting the vendor sites moroso recently.	No	No	
IV.C.5.b	The dispute between Lakeside and GE/Braun concerning but-tering should be resolved by TVA in an expeditious manner to prevent additional schedule slippages.	Agreed	No	Yes	Failure of the QEB-QC Engineering staff to investigate and provide recommended courses of action in resolving a vendor's inability or unwillingness to perform according to the contract requirements.

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IV.C.5.c	Knoxville QEB through its existing organization or through a designated GE/C.F. Braun liaison position, should assure that all STRIDE equipment changes negotiated with vendors are supplied to field inspector personnel.	Review of the system to provide this information to the field inspection personnel will be completed by July 11, 1980. If effectiveness can be improved, adjustments will be made.	No	Yes	°Failure of the EN DES procurement document control program to ensure changes made to procurement documents are distributed to and made aware of to participating organizations.
*Response provided is based upon the possibility that the background information provided by OEDC QA and its recommendation could have led to a deficiency notification, given further specifics or stated requirements.					
+Deficiencies discovered outside the areas reviewed by OEDC QA.					
°OEDC QA is requested by the NSRS Staff to reevaluate this item for significance.					

TABLE 2

Regional Field Office Monthly Meeting Summary (1/79 - 8/80)
(Partial Review)

Regional Field Office	Monthly Meeting Number	Meeting Date
Chicago	15	March 15, 1979
	16	April 23, 1979
	17	August 13, 1979
	18	February 4, 1980
	19	-
	20	April 18, 1980
Philadelphia	40	March 22, 1979
	41	May 9, 1979
	42	September 6, 1979
	43	November 19, 1979
	44	December 26, 1979
	45	February 4, 1980
	46	March 24, 1980
	47	May 12, 1980
48	July 10, 1980	
Pittsburgh	16	January 16, 1979
	17	June 28, 1979
	18	November 23, 1979
	19	February 26, 1980
	20	May 29, 1980
St. Louis	4	January 29, 1979
	5	-
	6	March 14, 1979
	7	June 4, 1979
	8	July 2, 1979
	9	July 2, 1980

TABLE 3

Problem Vendor Contract/Inspection Report Review

Vendor Contract. No. Title	TVA Hold Points Notification Points	No.	Report Date	QC Inspection Reports		Status Report Only	b Waivers Made On Release	Comments/ Inspector Identified Problems
				Fabrication, NDE Observations/Records Clearly Identified				
Lakeside 7E -86965 RPV Pedestal Structural Steel	17.1.3 of 300-5 notify the buyer 1 week prior to com- plete shop assembly of all structural sections so shop fit-up can be witnessed.	28	^a 2/12/79	In most cases		No	+°No. 24 dtd 2/8/79	
		29	^a 3/12/79	In most cases		No	+°No. 25 dtd 3/9/79	
		30	^a 4/23/79	No		No	+°No. 26 dtd 3/13/79	
				In most cases		No	+°* 27 dtd 3/20/79	
	18.1.2 of 300-05 material is not to be shipped from its point of manufac- ture before it has been inspected un- less buyer author- izes inspection to be made elsewhere.	31	^a 5/25/79	No		No	+°No. 28 dtd 3/29/79	
		32	^a 7/20/79	No		No	+°No. 29 dtd 5/14/79	
		33	^a 8/17/79	No		No	+°No. 30 - dtd 7/17/79	Weld cracking problem and communications which ensured.
		34	^a 9/24/79	No		No	+°No. 31 - dtd 7/24/79	NCR details given, RT problem defined.
						No	---	- Delay in forwarding QA data package by contractor to site.
						No	---	- Verification of importance of submitting QA data package to site which still has not been done for unit X-21.
18.1.3 of 300-05 all tests and analyses to demon- strated welding pro- cedure shall be made in presence and under the direc- tion of the buyer or his designate or unless this require- ment is waived by the buyer in each case.	35	^a 11/9/79	No		No	---		
	36	^a 1/14/80	In most cases		No	Yes 32 dtd 1/7/80 verbal auth. on minor defect, to be shipped as it		

TABLE 3 (cont.)

Problem Vendor Contract/Inspection Report Review

Vendor Contract. No. Title	TVA Hold Points Notification Points	No.	Report Date	QC Inspection Reports		Status Report Only	b Waivers Made On Release	Comments/ Inspector Identified Problems
				Fabrication, NDE Observations/Records Clearly Identified				
	20.1.1 of 300-05 notify buyer 1 week prior to sur- face prep so sur- face can be in- spected shortly be- fore primer applica- tion.	37	^a 3/3/80	In most cases		No	No. 33 dtd 2/6/80	
		38	^a 4/14/80	In most cases		No	No. 34 2/14/80 No. 35 2/22/80 No. 36 3/24/80 No. 37 3/31/80 No. 38 3/31/80	
	No provision for later identifica- tion of hold points.	39	^a 5/23/80	No		No	---	
		40	^a 7/17/80			Yes	---	
IEW 6K72-820117 RPV shield wall structural steel	17.1.3 of 300-08 notify the buyer 1 week prior to com- plete shop assembly of all structural sections so shop fit-up can be witnessed.	13	1/5/79	Yes		No	---	
		14	1/15/79	Yes		No	---	- Identified field weak joints/gaps in excess spec. - IEW, TVA, GE, Braun has meeting QEB PH RO did not attend.

TABLE 3 (cont.)

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Vendor Contract. No. Title	TVA Hold Points Notification Points	No.	Report Date	QC Inspection Reports		Status Report Only	b Waivers Made On Release	Comments/ Inspector Identified Problems
				Fabrication, NDE Observations/Records Clearly identified	Records			
18.1.2 of 300-08 material is not to be shipped from its point of manufac- ture before it has been inspected un- less buyer autho- rizes inspection to be made elsewhere.	15	2/21/79	Yes		No	*No.2 dtd 2/12/80		
	16	2/26/80	No		No	*No.3 dtd 2/22/80		
	17	4/6/79	Yes		No	*No.4 dtd 3/22/80		
	18	4/20/79	No		No	*No.5 dtd 3/27/80 *No.6 dtd 3/30/80		
18.1.3 of 300-08 all tests and analyses to demon- strate welding pro- cedure shall be made in presence and under the direc- tion of the buyer or his designate or unless this require ment is waived by the buyer in each case.	19	5/4/79	No		No			
	20	5/23/79	No		No	20.1.1 waived - by Knoxville	- Supplier failed to pro- perly prepare welds to be not inspected. Caused rejection of welds	
	21	5/30/79	No		No	---		
	22	6/11/79	No		No	---	- Insp. identified that back- ing were not welded IAW AWS D1.1 to be corrected.	

TABLE 3 (cont.)

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Vendor Contract. No. Title	TVA Hold Points Notification Points	No.	Report Date	QC Inspection Reports		Status Report Only	^b Waivers Made On Release	Comments/ Inspector Identified Problems
				Fabrication, NPE Observations/Records Clearly Identified				
	20.1.1 of 300-08	30	6/20/79	Yes		No	---	
	notify buyer 1	35	11/10/79	No		No	---	
	week prior to sur-	38	12/18/79	No		No	---	
	face prep so sur-	39	12/31/79	No		No	---	
	face can be in-	40	1/4/80	No		No	---	
	spected shortly be-	45	2/19/80	No		No	---	
	fore primer applic-	50	4/21/80	No		No	---	
	tion.	51	5/16/80	No		No	---	
		52	6/9/80	No		No	---	
		53	6/28/80	No		No	---	
		54	7/21/80	No		No	---	

*release does not identify associated inspection report

*release not with the inspection report

*release by inspector, no "inspection activities required" boxes marked as to the type of verification performed

*inspection on site dates not specified

^bwaivers made in this column are identified by a response yes/no with the associated release number and date following

Table 4
EN DES-QA Quality Assurance Audits
Report Issuance Summary

<u>Audit No.</u>	<u>Subject</u>	<u>Audit Dates</u>	<u>Report Dates</u>	<u>Delinquency</u>	<u>MEQS Acc. No.</u>
79-7	QC and Philadelphia Regional Office	061879-062279	072579	2	QAS 790725 806
79-9	QC and Chicago Regional QC Office	081379-081579	101579	28	QAS 791015 004
79-12	Dallas Regional Office	100979-101079	110679	---	QAS 791106 801
79-15	Independent Review of PR	102979-110279	112979	---	QAS 791129 804
79V-30	Structural Steel and Containment Vessels	090479-090779	103179	23	QAS 791031 002
79V-36	Insulated Conductors - Type PXJ and PXMJ	092479-092779	103179	2	QAS 791031 801
79V-41	Prestressing Sys for Primary Containment Structure	100279-100479	102279	---	QAS 791022 800
79V-42	Protective Coatings (paints)	101679-101979	103179	---	QAS 791031 800
79V-43	Structural Steel for RCS and D/W Vent	112779-112979	010780	8	QAS 800107 804
79V-44	Dial Thermometers	102379-102579	121879	29	QAS 791218 803
79V-46	Structural Steel Beams and Angles	110579-110679	121779	11	QAS 791217 801
79V-48	Oxygen and Hydrogen Analyzers	120379-120579	121279	---	QAS 791212 802
79V-49	Local Panels and Instrumentation	110779-110979	121979	10	QAS 791219 800
80-4	Quality Control Section	032480-032880	042380	---	QAS 800423 802
80-7	QEB/Los Angeles Regional QC Office	052880-052980	070180	1	QAS 800701 802
80-9	Baden, Switzerland Regional QC Office	061680-062080	081280	22	QAS 800812 800

TABLE 4 (cont.)

80V-1	IQT Contract for Welding Electrodes	011580-011680	030480	17	QAS 800304 802
80V-3	480v Motor Control Centers and Lighting Boards	011580-011780	022580	7	QAS 800225 800
80V-5	Protective Coatings (paints)	031180-031380	032480	---	QAS 800324 802
80V-10	Structural Steel, NF Round Bars, and Heavy Hex Nuts	040180-040380	042880	---	QAS 800428 802
80V-24	Nuclear Control Valves	061080-061380	071680	1	QAS 800716 803
80V-28	Shield Plugs	060980-061080	071780	7	QAS 800717 800
80V-29	Carbon Steel	061380-061880	062480	---	QAS 800624 802
80V-32	Structural Steel - Rx Bldg and Cont. Bldg.	072180-072580	081180	---	QAS 800811 801
80V-33	Structural Steel Tubing A-500	072280-072480	080580	---	QAS 800805 800
80V-34	Reactor Pressure Vessel Shield Wall	081180-081380	082180	---	QAS 800821 802
80V-35	ASME Section III Valves	082580-082880	092380	---	QAS 800923 804
80V-37	Diesel Engine-Driven Emergency Gen. Units	082580-082880	091580	---	QAS 800915 800
80V-38	Stainless Steel Liners for Fuel Bldg	081980-082280	091180	---	QAS 800911 801
80V-43	Post Tensioning System	072180-072380	073180	---	QAS 800731 801

Table 5
OEDC-QA Quality Assurance Audits
Report Issuance Summary

<u>Audit No.</u>	<u>Subject</u>	<u>Audit Dates</u>	<u>Report Dates</u>	<u>Delinquency</u>	<u>MEDS Acc. No</u>
M78-05	QA Training and Introduction	030178-051778	071178	25	QAM 780711 001
M78-06	Management Level Audit GE/Braun/CBIN	042478-061478	080178	18	EDC 780801 004
M79-01	Pre-ASME Survey	011579-030679	041379	8	QAM 790413 004
M79-02	Concrete Program	012479-012579	021379	---	QAM 790213 001
M79-03	Procurement Activities	021279-031679	040279	---	QAM 790402 002
M79-04	Organization, QA Program and Audit Program	032679-050179	050979	---	QAM 790509 003
M79-05	Calibration	041779-041879	050879	---	QAM 790508 027
M79-07	Management Level Review of CE QA Program	102979-111579	012980	47	EDC 800129 009 9
M79-08	Design Control for Modifications	052279-052579	060179	---	QAM 790601 006
M79-09	Design Control - All Nuclear Projects	062779-082279	083179	---	QAM 790831 002
M79-10	Five Protection Systems	080779-082179	091479	---	QAM 790914 002
M79-12	QA Program Implementation	102979-110579	121179	---	QAM 791211 001
M79-15	Interface Between CEO and CSO	101379-101879	120479	15	QAM 791204 003
M80-01	TVA Interface with CE	012180-020180	030380	---	QAM 800303 005
M80-04	QA Program Implementation	030380-032180	041580	---	QAM 800415 001
M80-06	QA Program - Implementation	051280-062780	072180	---	QAM 800721 001
M80-08	Implementation of Construction QA/QC Program (All Nuclear Projects)	081480-082980	091080	---	QAM 800910 001

TABLE 6

Summary of NSRS Investigation Open and Deficient Items

<u>NSRS Tracking Number</u>	<u>Description</u>
I-80-14-NPS-01	<p><u>Failure to Follow Procedure</u></p> <p>This item is considered deficient based on the need for QEB field office supervisors to conduct and report office meetings required by procedure (see Attachment B, item IV.A.1.b. for details).</p>
I-80-14-NPS-02	<p><u>Identification Controls Needed on EN DES Procedures/Manuals</u></p> <p>This item is open pending EN DES establishment of methods to ensure its procedures/manuals have proper identification controls applied (see Attachment B, item IV.A.1.c. for details).</p>
I-80-14-NPS-03	<p><u>Field Office Manpower Deficiency</u></p> <p>This item is considered deficient based on the failure of EN DES to adequately staff its branch field offices and to expand its vendor verification activities when supplier quality performance has been shown questionable. EN DES should also review the adequacy of its purchase requisition preparation procedure and contract enforcement language (see Attachment B, item IV.A.3 for details).</p>
I-80-14-NPS-04	<p><u>Audit Report Tracking System</u></p> <p>This item is open pending EN DES-QAB and OEDC QA review in establishing an audit report tracking or "tickler" system to ensure audit report issuances and responses from audited organizations are issued/received in a timely manner (see Attachment B, item IV.A.4 for details).</p>
I-80-14-NPS-05	<p><u>Qualification Procedure Required for Personnel Engaged in Special Processes</u></p> <p>This item is considered deficient based on the failure of EN DES to establish a written procedure for qualifying, certifying, and/or recertifying personnel engaged in special processes other than NDE (see Attachment B, item IV.B.1 for details).</p>

TABLE 6 (cont.)

Summary of NSRS Investigation Open and Deficient Items

<u>NSRS Tracking Number</u>	<u>Description</u>
I-80-14-NPS-06	<u>Inspection Report Content</u> This item is considered deficient based on the failure of inspection reports reviewed to meet stated requirements (see Attachment B, item IV.B.2.b for details).
I-80-14-NPS-07	<u>Addition of Hold Points</u> This item is open pending EN DES review of a potential conflict in the TVA Inspection Manual, that of specifying additional hold points not detailed in the procurement contract (see Attachment B, item IV.B.2.c for details).
I-80-14-NPS-08	<u>Waiver Release Controls</u> This item is considered deficient based on the need to ensure changes made in procurement documents, such as waivers to a specified hold point, are subject to the same degree of control as was utilized in the preparation of the original document (see Attachment B, item IV.B.2.c for details).
I-80-14-NPS-09	<u>Interface Controls in Design Document Review</u> This item is considered deficient based on the need to ensure that purchase requisitions have been reviewed by all affected groups through squad checking procedures or other approved practices for interface controls prior to the designated reviewer's concurrence (see Attachment B, item IV.B.3.a for details).
I-80-14-NPS-10	<u>Preaward Activities</u> This item is considered deficient based on the need to conduct supplier preaward activities in order to evaluate the supplier's performance or intentions to meet contract requirements prior to contract award (see Attachment B, item IV.B.3.b for details).

TABLE 6 (cont.)

Summary of NSRS Investigation Open and Deficient Items

<u>NSRS Tracking Number</u>	<u>Description</u>
I-80-14-NPS-11	<p data-bbox="683 470 1268 502"><u>Review of NRC Regulatory Guide Comments</u></p> <p data-bbox="683 534 1387 655">This item is open pending OEDC review of NRC Regulatory Guide commitments made in Table 17.1A.-4 of TVA Topical Report TVA-TR75-1 (see Attachment B, item IV.B.4.a for details).</p>
I-80-14-NPS-12	<p data-bbox="683 689 1059 721"><u>Response to Audit Reports</u></p> <p data-bbox="683 753 1361 938">This item is open pending EN DES review of EN DES-EP 5.34 to ensure it contains adequate provisions to alert the audited organization that it has failed to meet the response date specified by the audit report (see Attachment B, item IV.B.4.b.1 for details).</p>
I-80-14-NPS-13	<p data-bbox="683 972 1195 1004"><u>QEB Inspection QA Responsibilities</u></p> <p data-bbox="683 1036 1376 1221">This item is considered deficient based on the need for EN DES to revise its TVA Inspection Manual in order to properly identify the QA responsibilities of its field inspection personnel (see Attachment B, item IV.B.5.a for details).</p>
I-80-14-NPS-14	<p data-bbox="683 1255 1284 1317"><u>Regional Field Office Problem Resolution Notification</u></p> <p data-bbox="683 1349 1422 1568">This item is open pending EN DES review of Quality Engineering Branch procedure QEB-EP 24.56 to ensure that field personnel are made fully aware of inspection report, or other related reports, problem resolution findings in a timely manner (see Attachment B, item IV.C.1.c for details).</p>
I-80-14-NPS-15	<p data-bbox="683 1602 1315 1634"><u>Breakdown of a QEB QC Group Responsibility</u></p> <p data-bbox="683 1666 1376 1851">This item is considered deficient based on the need for QEB to ensure its QEB QC Group keeps the branch field offices fully and promptly informed of matters which concern them or the inspection program (see Attachment B, item IV.C.2 for details).</p>

TABLE 6 (cont.)

Summary of NSRS Investigation Open and Deficient Items

<u>NSRS Tracking Number</u>	<u>Description</u>
I-80-14-NPS-16	<p><u>Breakdown of a QEB-QC Engineering Staff Responsibility</u></p> <p>This item is considered deficient based on the need for QEB to ensure its senior QC staff engineers carry out necessary detailed investigations when problem situations arise from the vendor's inability or unwillingness to perform according to procurement contract requirements (see Attachment B, item IV.C.5.b for details).</p>
I-80-14-NPS-17	<p><u>Document Controls</u></p> <p>This item is considered deficient based on the need for EN DES to ensure changes made to its procurement documents are distributed to its field personnel (see Attachment B, item IV.C.5.c for details).</p>
I-80-14-NPS-18	<p><u>Differing Staff View Procedure</u></p> <p>This item is considered deficient based on the lack of an OEDC procedure to detail the method of handling differing staff views (see IV.D for details).</p>
I-80-14-NPS-19	<p><u>Lack of Independent Review of Nonsignificant Audit Deficiencies</u></p> <p>This item is considered deficient based on the failure of OEDC Quality Assurance organizations to have deficiencies they have considered non-significant reviewed by another designated QA or independent review organization for significance (see IV.D for details).</p>
I-80-14-NPS-20	<p><u>Revision of Significance Definition</u></p> <p>This item is open pending review by OEDC of its definition for significance (see IV.E for details).</p>

TABLE 6 (cont.)

Summary of NSRS Investigation Open and Deficient Items

<u>NSRS Tracking Number</u>	<u>Description</u>
I-80-14-NPS-21	<u>Reevaluation of QAE 80-1 Items for Significance</u> This item is open pending OEDC QA review of NSRS evaluated deficiencies in QAE 80-1 for significance (see IV.E for details).
I-80-14-NPS-22	<u>Establishment of a Procedure to Conduct Quality Assurance Evaluations</u> This item is considered deficient based on the need for OEDC QA to establish a procedure on the method of conducting quality assurance evaluations and handling associated deficiencies (see IV.F for details).

ATTACHMENT A

II EXPRESSION OF STAFF VIEWS

The following policy was approved by the Board of Directors on March 6, 1980.

Policy

TVA encourages and protects the differing views of employees on policy and execution of policy. Every employee should be able to have professional or technical views on such matters heard at a high management level when the employee considers the issue significant and the view differs from a management decision. TVA believes that every responsible view is valuable and assures that such views are heard and appropriately considered in all decisionmaking processes.

TVA encourages preception and voluntary expression of differing views involving all aspects of its operations. This policy is communicated to all employees to encourage their cooperation and participation at all working levels, thus furthering the employee's fulfillment of duties and productive effort and observance of standards. Responsible views may be voiced without fear of recrimination or retribution.

TVA places special emphasis on differing staff views on substantive public health and safety matters. It encourages expression of safety views involving all aspects of its operations, particularly those associated with the design, construction, and operation of TVA nuclear plants.

Reservations

The Board of Directors reviews and acts upon views expressed by employees which have not been resolved to the satisfaction of the employee by the organizations delegated responsibility below.

The General Manager oversees administration of the policy and reports on its effectiveness to the Board; refers unusual or novel issues to the Board for its action; and may order disciplinary action against any person found to have taken retribution or recriminatory action against an employee expressing a view under the policy. Major issues and differences of view are brought to the attention of the General Manager.

Delegations

Offices and divisions have principal responsibility for ensuring the application of the policy. They assure that differing views are heard and appropriately considered in all decisionmaking processes and provide protective measures to encourage participation without fear of recrimination or retribution. They refer major unresolved issues to the General Manager. They communicate the policy to employees.

1. For the procedure for reporting defects and noncompliances related specifically to nuclear safety, refer also to X NUCLEAR SAFETY.

The Office of Health and Safety receives, investigates, and provides for the resolution of differing views on issues of health or safety associated with all TVA activities, except as delegated below to the Nuclear Safety Review Staff. It may receive differing views:

- After line management and the employee have been unable to resolve the issue, or
- Directly, if the employee feels that pursuit of the issue with line management would be ineffective or would render the employee vulnerable to recrimination.

It may receive and act upon differing views which are made in confidence or anonymously. Confidentiality will be maintained if the employee so requests. Followup reports are provided to both the employee and the responsible organization on its findings and recommendations. Reports which disagree with the employee's views are also sent to the General Manager. Health and Safety monitors implementation of its recommendations and makes recommendations to the General Manager where further action by the responsible organization is deemed necessary. It investigates reports of retribution and recrimination which come to its attention and, where found, recommends disciplinary action to the General Manager.

The Nuclear Safety Review Staff receives, investigates, and provides for the resolution of differing views associated with the safety of the design, construction, and operation of TVA nuclear plants. It may receive differing views:

- After line management and the employee have been unable to resolve the issue; or
- Directly, if the employee feels that pursuit of the issue with line management would be ineffective or would render the employee vulnerable to recrimination.

It may receive and act upon differing views which are made in confidence or anonymously. Confidentiality will be maintained if the employee so requests. Followup reports are provided to both the employee and the responsible organization on its findings and recommendations. Reports which disagree with the employee's views are also sent to the General Manager. The staff monitors implementation of its recommendations and makes recommendations to the General Manager where further action by the responsible organization is deemed necessary. It investigates reports of retribution and recrimination which come to its attention and, where found, recommends disciplinary action to the General Manager.

TVA employees are responsible for voicing views about significant issues. They are encouraged to deal directly with line management so that corrective action may be handled promptly and at the working level. Employees may at any time express their views related to safety to the Office of Health and Safety. If not resolved through other channels, employees should bring their views about significant issues to the attention of the General Manager and through the General Manager to the Board of Directors.

Employees who disagree with the final disposition of a nonnuclear occupational health and safety issue may file a complaint in writing to the Office of Federal Agency Safety Programs, Occupational Safety and Health Administration, U.S. Department of Labor, 2100 M Street, NW, Washington, DC 20210. Employees who disagree with the final disposition of nuclear safety issues may request in writing an inspection by giving notice of an alleged violation to the Nuclear Regulatory Commission, Office of Inspection and Enforcement, 101 Marietta Street, NW, Suite 3100, Atlanta, Georgia 30303.

ATTACHMENT B

NSRS INVESTIGATION DETAILS QUALITY ASSURANCE EVALUATION REPORT QAE 80-1

The following provides an NSRS evaluation of the OEDC QA recommendations and EN DES responses made regarding Quality Assurance Evaluation Report QAE 80-1. It was not the intent of this investigation to evaluate the entire operation of QEB or a part thereof. It was to evaluate only the areas of the OEDC QA effort. Each is identified and numbered as it originally appeared in QAE 80-1.

IV. A. Management Controls

1.a. OEDC QA Recommendations

Review QEB EP/AI Manual and assure that it contains all EP's and AI's that are mentioned in the procedures contained therein. Revise and reissue the manual as necessary.

EN DES Response(s)

The QEB EP/AI Manual will be reviewed to assure that it contains all appropriate EP's and AI's that are referenced. The manual will be revised as necessary. Review scheduled for completion July 21, 1980.

NSRS Evaluation

Review of the subject instruction which led to this recommendation, QEB-AI 213.02, "Holding Section Regional Office Meetings," issued May 3, 1978, revealed that an error had been made in referencing instruction QEB-AI 213.01. The actual instruction which should have been referenced was EN DES-AI 213.01, "Meetings Internal to EN DES." The basis for QEB identifying the division procedure can readily be seen upon review of the instruction. The content of the division level AI provides all the necessary format instructions required for reporting Regional Office meetings. This communication, therefore, eliminates the need for QEB to re-issue its own redundant instruction.

QEB intends to correct the error and other errors found after completion of its EP/AI Manual review. This item is considered editorial and was appropriately identified by OEDC QA management as not constituting a deficiency.

1.b. OEDC QA Recommendation

QEB-Knoxville should respond in writing to problems identified in Field Office Supervisor's Monthly Report.

EN DES Response(s)

The referenced requirement was deleted from the manual by Revision 8 issued February 15, 1980.

NSRS Evaluation

TVA Inspection Manual, initial issuance-July 1975, Section C, paragraph C.1.1, "Preparation of Assignments," stated in part that, "before the first Wednesday of each month the regional field office supervisor will review all contracts assigned and complete the Field Office Supervisor's Monthly Report form and send it to the Chief Materials Engineer at the Knoxville Office. Additional pages may be attached to report special conditions or problems." The intent, therefore, of this report was for the supervisor to review the past month's activities on all assigned contracts and to confirm the contracts reviewed were current and in good order. A brief description of any outstanding problem areas were also to be reported.

NSRS investigator review of several Field Office Supervisor's Monthly Reports (e.g. Philadelphia Regional QC Office Supervisory Reports for November 1979 through January 1980) indicated the contract problems being identified were of status or summary nature. One report reviewed formally requested that training programs in welding and protective coatings be implemented. Though this item specifically was not a contract problem, it could be related to affecting contract inspections. Therefore, it is apparent from this review that should a significant contract problem develop during the report period it could not effectively be resolved through this correspondence channel due to the response time and time interval related to the report. These type problems were being resolved through other correspondence channels such as memorandums, NCR's, TVA 45D transmittals or through telephone communications depending on the level of significance. Additional supervisory problems such as regional administrative problems or employee feedback on division or branch items were being identified through the monthly office meeting minutes as required by QEB-AI 213.02, "Holding Section Regional Office Meetings." Problems involving vendor surveillance activities were being identified to QC, Knoxville for resolution via inspection reports or through letters or memoranda as provided for in QEB-EP 24.56, "Inspection Reports - Preparation, Review and Distribution."

From the discussion given, the monthly report was therefore an ineffective tool if the supervisor wished to resolve contract, office, or personnel problems. Due to its repetitive nature with the alternate communication paths previously

IV.A.1.b (cont.)

addressed, it was also becoming an added paper burden on the already taxed field supervisor. The field office records reviewed indicated that in many cases, the field office supervisors were not submitting the monthly report at all. Failure of QEB to respond to these reports is not considered a deficiency, however, failure of the field supervisor to submit the report, as required by procedure, is and should have been addressed as such by the OEDC QA evaluation team.

Additionally, as required by Section II.C of QEB-AI 213.02 and Section II.B.1 of QEB AI 313.1, regional field offices are to conduct monthly office meetings with time, devoted to familiarization training of procedures which affect QC activities. Investigator review of office meeting minutes for four randomly chosen regional field offices revealed that contrary to these requirements, monthly office meetings, and therefore familiarization training, were not being conducted at the prescribed intervals as depicted in Table 2. This constitutes a second example of failure to follow procedure.

As required by TVA Topical Report TVA-TR75-1, paragraph 17.1A.7.2, indoctrination and training programs for inspectors are to stress the need to follow procedures and to utilize the necessary documents supporting the inspection activity. Failure to follow procedures is considered an item of noncompliance. QEB should take appropriate action to resolve this deficiency (I-80-14-NPS-01).

1.c OEDC QA Recommendation

The Branch Chief should document his review and approval of the contents of the TVA Inspection Manual by signing and dating each section or section change in an appropriate location.

EN DES Response(s)

The Branch Chief will document his review and approval of the Inspection Manual contents and revisions by signing off on a revision log for R7 and subsequent changes. This revision log will be added to the manual by Revision 9.

This item is being handled within the scope of our previous EN DES Internal Audit 80-4. We will advise you when this has been resolved.

NSRS Evaluation

ANSI N45.2 -1971, section 7, "Document Control," requires in part that measures be established and documented to control the issuance of documents, such as instructions, including changes thereto, which prescribe activities affecting quality.

IV.A.1.c (cont.)

These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel.

As required by section A, paragraph 3.0 of the TVA Inspection Manual, the QEB Branch Chief is required to review and approve all the manual contents prior to their issuance. Review of the subject manual did not identify the Branch Chief's review and approval for the stated sections in question. This item was, therefore, appropriately identified by OEDC QA management as a deficiency.

Subsequent to the investigator's review of this item, QEB management issued Revision 9 to the Inspection Manual (QEB 800919 010). The revision added a revision log and revised the Table of Contents to show revision and date of the sample inspection procedures included in section D. Upon further review of section D - Sample Inspection Procedures, and section E - Forms, Worksheets, and Reference Standards, the NSRS investigator could find no identification on the documents themselves as to when they were approved and/or revised. This is contrary to the minimum information requirements of EN DES - EP 1.28, revision 2, "Control of Documents Affecting Quality." Section 5.1, "Identification," which states in part that each design document shall be identified with the following minimum information: type of document, originating organization, unique control number, initial issue date, revision identification, revision approval date, and a title which relates to the content of the document. Where existing procedures do not provide for the minimum information required, the minimum information shall be provided.

This information is provided in order to ensure that those personnel (in this case TVA field inspectors) participating in their respective activity are aware of and use the proper and current instruction for performing their activities. Identification of the appropriate revision and revision date on both the instruction/work sheets, as is the case with other instructions in the manual, and in the Table of Contents would preclude the possibility of using outdated or inappropriate documents.

This item requires further resolution by EN DES-QEB (I-80-14-NPS-02).

2. OEDC QA Recommendation

AI-318.01 should be revised to include the reason for the document and to require actual data. The other branch AI's should be reviewed and revised as applicable to assure that the reason for each instruction can be clearly understood by the implementor of the instruction.

IV.A.2 (cont.)

Procedures and instructions should clearly advise the purpose(s) of the stated requirement to the person or organization who has to perform the assignment.

EN DES Response(s)

The referenced information submittal is used for management planning and analyses. We do not believe that it is necessary for every procedure and instruction to contain a justification for the activities prescribed. There are cases where this practice would be counter-productive, particularly where management planning is an objective. We will incorporate such information in our procedures and instructions where necessary for clarity of understanding.

NSRS Evaluation

Figure 5 of EN DES-EP 1.01, "Preparation and Processing of EN DES Engineering Procedures," states that the purpose is "a short statement of the focus and intent of the EP." This definition is the EN DES policy definition to be used in all division-wide engineering practices. Should another procedure or instruction conflict with an EN DES-EP, the EN DES-EP shall govern as conveyed in EN DES-EP 1.02, "Preparation and Processing of Branch/Design Project/TAS Engineering Procedures," section 2.0, "Policy."

Based on the definition provided in EN DES-EP 1.01, the NSRS investigator does not consider provision of a reason within its guidance. Administrative instructions, in general, provide specific instructions for implementation and compliance with established administrative policies. Therefore, justification for the instruction itself is not necessary.

In addition, a requirement that actual data be provided with the work schedule submittals requested by QEB-AI 318.01, "Work Schedules for Regional Inspection Offices," appears to be of beneficial value, however, this option should be left to the discretion of the requesting organization.

The NSRS investigator considers this item was appropriately identified by OEDC QA management as not constituting a deficiency.

3. OEDC QA Recommendation

Re-evaluate manpower requirements for activities assigned to the Philadelphia and other regional offices. This review should also include the Knoxville QC support organization. During the re-evaluation consider the adverse impact on CONST (cost and scheduling) for increasing the average number of contracts assigned to an inspector from 16 to more than 28.

EN DES Response(s)

Manpower requirements for activities assigned to the Philadelphia and other regional offices will be re-evaluated. This review will include the Knoxville QC support organization and will consider any adverse impacts on design and construction. Review scheduled for completion July 21, 1980.

NSRS Evaluation

QEB-AI 115, "Organization and Responsibilities" defines the responsibilities and duties of each organizational division within QEB. One responsibility of Regional Inspection Offices is to assure adequate handling of the workload by staffing adequately and assigning work according to the skills and knowledge of available personnel. Further, the QC Group is charged with assuring that purchased material or equipment designated for inspection do conform to specification requirements prior to release for shipment from vendors.

ANSI N45.2.13 - 1976, Section 7.1, "General," states in part that the purchaser shall establish and implement verification activities (surveillance, inspection, and audit) as appropriate, to assure conformance of procured items and services to identified requirements. These verification activities shall be conducted as early as practicable to preclude subsequent activities from preventing disclosure of deficiencies.

ANSI N45.2.13-1976, Section 7.3.1, "Source Verification Activities," states in part that when planning requires purchaser source surveillance, it shall be implemented to monitor, witness, or observe activities. Similarly, source inspection shall be implemented in accordance with plans to perform inspections, examinations, or tests at predetermined points.

From the requirements and responsibilities noted above, manpower and therefore inspection problems should not be an issue if managed appropriately; however, OEDC QA has pointed out in its finding, along with other concerned personnel (references I through N) that QEB regional offices do lack sufficient manpower and resources to adequately perform verification activities of suppliers. The severity of this problem is evidenced by the following EN DES actions which have transpired as a result of manpower and budget shortages:

1. Formal TVA surveillance inspection activities, such as in-process monitoring and fabrication witness and hold points have all but been eliminated (see Table 3). The

IV.A.3 (cont.)

only TVA witness and hold points presently on most civil/ structural STRIDE contracts are QC inspector witnessing of all tests and analyses used to demonstrate welding procedures, surface preparation inspection prior to primer application and final inspection before shipment.

2. QEB travel restrictions are causing materials to be released without a TVA inspector being present for required inspections including the final source inspection (references O, P, Q). This restricts verification activities even further, and if specific instructions are not appropriately identified on the release form (form TVA 10526B) where TVA inspection items were missed or waived, then only normal receipt inspection occurs at the construction site and the piece escapes the added inspection necessary to assure the quality standards of the contract have been met.
3. Failure of QEB to increase QC inspection activities when materials of deficient quality are consistently being received at construction sites. When problem areas have been identified by the projects, QC surveillance inspection activities of the problem vendors have not been adequately stepped up to a more comprehensive inspection level. This can be shown through the continuing nature of fabrication problems being identified (references R, S, T, MM). A more comprehensive inspection would be in keeping with the requirements laid out in ANSI N45.2.13-1976, Sections 7.2, "Planning," and 10.2.f, "Certificate of Conformance." They state, in part, that validity of the suppliers certificates of conformance and the effectiveness of certification systems should be verified during performance of audits of the supplier or independent inspection or testing of the items. Such verifications should be conducted by the purchaser at intervals commensurate with the suppliers past quality performance. Therefore, the extent of the verification activities, including surveillance planning, is a function of the relative importance, complexity, and quantity of the item being procured and the supplier's past quality performance.

The end results of curtailed inspections as a result of manpower shortages and travel restrictions is that nonconforming materials are being shipped to TVA construction projects (references L, U, V). To help eliminate or offset these problems, EN DES-QEB has taken the following corrective actions (references W, X, Y):

IV.A.3 (cont.)

- Hired additional personnel,
- Established a new field office,
- Established additional notification and hold points to problem contracts,
- Requested CONST to provide a priority list of critical equipment and material to help establish inspection priorities,
- Given its field inspectors additional instruction to cover problem areas, such as protective coating application, surface preparation and cleanliness.

QEB also intends to utilize manpower from the Knoxville central office and from various other field offices. In addition, QEB will continue to perform manpower adequacy studies as followup of their own concerns and as requested by OEDC QA.

However, all the actions being tried by QEB have not improved the quality of vendor fabrication significantly and the manpower shortage is still present. From background review of this item, the NSRS investigator considers the entire resolution of the problem of receiving nonconforming materials at the construction site goes beyond the need for increasing the QC inspector product verification inspection effort. A good portion of the solution lies in the contract preparation effort. Resolution of this problem could enhance the overall effectiveness of the EN DES control of purchased material. Typical contract preparation problem areas discovered are discussed below:

- a. Lack of QEB review of purchase requests. A formal distribution of the draft purchase requisition to QEB-QC for review would help ensure that all necessary witness and hold points were established. QEB inspector review should be emphasized since they are in a better position to identify where the hold points should be placed in order to perform their job more effectively (see discussion of item IV.B.3.a).
- b. Lack of Contract Enforcement Provisions:
 - 1. Lack of TVA QC inspector freedom in material examination/retest. A procurement contract provision should be added to allow the QC inspector the absolute freedom of performing his own examinations (NDE, dimensional checks, etc.) of material

IV.A.3 (cont.)

quality, randomly chosen versus product verification through witnessing of vendor activities, records review, etc. The QC inspector should also have the right of product retest. Product retest should be performed if the inspector has reasonable doubt as to the validity or acceptability of the test results established either from questioning a materials certification or after personal random selection testing on a percentage basis. The amount of retest should be dependent on the size and complexity of the product. For large products, the retests should be requested formally and for small products the retests would be on-the-spot. The product retests described here are in addition to those already authorized by contract which include only ultrasonic and magnetic particle retesting if the TVA inspector questions the acceptability of their results.

2. Lack of minimum quantities or percentages for shipment specified. Since most contracts are paid for on the basis of what is shipped from the vendor plant, the supplier will request TVA inspection as often as possible, even daily, in order to bill TVA for payment upon release of shipment. There are other cases where the vendors, located a distance from the regional office thereby requiring plane travel and overnight lodging, will request inspection on very small quantities of fabricated products knowing there is a good possibility that inspection will be waived since the quantity does not justify the trip cost to TVA. Also, the vendor may request inspection but fabrication will not be complete upon inspector arrival. The vendor thereupon requests the TVA inspector to perform his inspection in conjunction with their inspector. This wastes time for in many cases the TVA inspector will identify problems missed by the vendor inspector necessitating a return trip for final inspection. A provision requiring a minimum shipment size or authority to determine shipment sizes on a case basis could reduce costs to TVA and utilize the field inspectors more effectively.
3. Lack of contract penalty provisions for vendors who make unauthorized shipments to the construction site. As specified in current contract provisions, material is not to be shipped from its point of manufacture before it has been inspected by TVA. Contrary to this requirement, some vendors will

IV.A.3 (cont.)

ship the material anyway without notifying the field office that they were ready for inspection. They know the project will accept the material either to meet schedule commitments or because of the handling costs involved in returning the material. The project rarely takes the latter course unless a major problem is suspected or develops. After receiving the material, the project will then close the paper trail by requesting from QEB or the field office a release stating the material was shipped without inspection. Provisions to perform this action have been provided in EN DES-EP 5.43, Section 5.0, step 5. Once the release is written it is documented in an inspection report which in turn keys PURCH to automatically release payment for the material shipped. Through this principle, the vendor not only eliminates the final TVA inspection prior to shipment but also receives payment for goods not necessarily acceptable for release. OEDC/EN DES needs to invoke either contract provisions or orders to:

- (1) Not allow materials and equipment beyond the construction site boundary unless a release form can be shown for the shipment because once received, CONST becomes responsible for repairs. The unauthorized shipment should then be:
 - (a) Returned at the vendor's expense or
 - (b) Held for QEB QC inspection, backcharging the contractor for the trips and expense involved to the project to make the inspection.
 - (2) Not document the unauthorized release in QC inspection reports. This release should be withheld until the project is satisfied with the material and then PURCH may be notified to make payment on the shipment.
- c. Inadequate procurement specification definitions. In several cases the procurement specifications have been identified to lack detail or have left items to interpretation (references JJ through AA). The specifications will cite a code in order to perform or certify a process; however, terminology within the code such as "should," "need not," "may be," or "or" will let the vendor choose the process or option it wants to perform versus the preferred process or option desired by TVA.

IV.A.3. (cont.)

Therefore, procurement specifications should not only cite specific codes or standards for quality performance but they should state and fully identify the processes or acceptance criteria desired by TVA.

A second option would be to reference a TVA-prepared document which provides a detailed interpretation of the codes and standards as to the quality processes TVA requires in the manufacture or fabrication of its products. A typical reference would be to the General Construction Specifications such as G-29 or G-14. In addition, workmanship samples could be provided to the supplier for a particular end-product quality desired by TVA.

These additional assurances in the contract specifications would significantly enhance the quality of the product and would involve less vendor-to-purchaser communication exchanges on code/standard interpretation since a clear definition of the requirements would have been finalized prior to the start of product fabrication.

- d. Failure to initiate or to have provisions to initiate preaward activities such as meetings with suppliers. Depending on the complexity of the item, preaward activities should be conducted in order to establish an understanding between the purchaser and supplier as to the planning, manufacturing techniques, tests, inspections, and processes to be employed by the supplier in meeting procurement requirements. This activity is in addition to the capability surveys discussed in ANSI N45.2.13-1976, section 4.2. (For additional discussion see item IV.B.3.b.)

The aggressive implementation of actions addressed to improve contract preparation may preclude the necessity of QEB staff increases by improving the effectiveness of present personnel. This increase in effectiveness may be brought about by forcing the supplier, through contract provisions of the type described, to produce a more reliable and quality-enriched product on his own. Increasing the vendor's awareness of what TVA requires in the product being fabricated, followed up by an independent TVA inspection effort of randomly sampling product compliance to contract requirements during its fabrication process, concurrent with the threat of products being returned should they be shipped without a TVA release are all actions to effectively increase product quality. With increased quality being manufactured into the product, the TVA inspection program might then again return to that of a low-profile surveillance program.

IV.A.3 (cont)

The NSRS investigator considers the failure of QEB to take prompt and necessary corrective action in resolving manpower problems identified since early 1979 and still under study to be a significant issue. This problem has led to a point where the QC field inspectors can no longer meet all the commitments required of them which constitutes a breakdown in the vendor surveillance program. OEDC QA management should have considered this item as a deficiency and is requested by the NSRS staff to reevaluate the item for significance (I-80-14-NPS-03).

IV.A.4

4. OEDC QA Recommendation

EN DES should respond to audit deficiencies with a description of the proposed corrective action and an implementation schedule within 30 days of receipt of the audit report.

EN DES Response(s)

EN DES will respond to audit deficiencies in accordance with the requirements stated in each audit report, usually within 30 days. A response to the referenced audit was made February 4, 1980.

NSRS Evaluation

ANSI N45.2.12 - 1977, section 4.5, "Followup," states in part that the management of the audited organization or activity shall review and investigate any adverse audit findings to determine and schedule appropriate corrective action including action to prevent recurrence and shall respond as requested by the audit report, giving results of the review and investigation. In the event that corrective action cannot be completed within 30 days, the audited organization's response shall include a scheduled date for the corrective action.

Review of the OEDC QA Manager's Office audit report M79-12 dated December 11, 1979, identified that the auditors had requested a response from EN DES on all deficiencies and recommendations identified during the audit within 30 days of the date of the report. If corrective action could not be accomplished within the allotted 30 days, EN DES was to respond with an interim report providing a schedule for the corrective action.

Contrary to the above, as identified in QAE 80-1, EN DES did not respond within the time frame requested by OEDC QA. Understanding of the basis for this requirement should have

IV.A.4 (cont.)

precluded EN DES from inferring in their response that this finding was without enforcement. Even its own procedure EN DES-EP 1.29, "Internal EN DES Quality Assurance Audit Program," section 4.0, item 20 under Audit Team Leader, requests response of the organizations they audit within 30 days after receipt of the report is made.

Based on the nature of the EN DES response (QAS 800530 003) and the passive acceptance of this response by OEDC QA management (QAM 800829 001 and QAS 800922 015) the NSRS investigator reviewed a common area to both organizations, that of report issuance, in order to ascertain the importance these organizations place in the transmittal of these reports.

As required by ANSI N45.2.12 - 1977, section 4.4, "Reporting" as implemented by section 2.3.14.b, Quality Assurance Procedure MO-QAP 3.1, "Manager's Office Quality Assurance Audit Program," of the OEDC QA Manager's Office Quality Assurance Procedure Manual (MOM); section 4.0, item 16 under Audit Team Leader of EN DES-EP 1.29 and section 5.6 of EN DES-EP 5.34, "Vendor QA Audit Program," the audit report shall be issued within 30 days after completion of the post-audit conference. The results of this review are tabulated in Tables 4 and 5 and attached to this report. Of the 17 sample OEDC QA staff audit reports reviewed, four, or 24 percent exceeded the required 30-day report completion period by two weeks or more. In addition, though OEDC QA management considers QAE 80-1 an evaluation report rather than an audit report, it also was delinquent by 19 days after the allowed time frame. Of the 30 sample EN DES QA staff audit reports reviewed, only five, or 17 percent were issued past the deadline for issuance by two weeks or more.

From this common comparison, the subject of EN DES not responding within the time period requested by audit report M79-12 can be overshadowed by EN DES QA and OEDC QA management's lack of understanding as to the necessity for prompt report issuance and response. The time constraint is provided to promptly identify conditions adverse to quality to responsible management of both the audited and auditing organizations and to assure that corrective action is taken as soon as practicable. Furthermore, if the condition is considered significant, measures are to be taken to assure that the cause of the condition is determined and necessary corrective action is taken to preclude repetition. These organizations should also ensure that their reports are written in a factual manner with sufficient detail to assure that the intent and meaning of the items addressed are understood by the recipient.

IV.A.4 (cont.)

The investigator considers this item was appropriately identified as a deficiency by the OEDC QA staff. The investigator further considers the EN DES response and subsequent OEDC QA acceptance of that response to be an inadequate resolution of the concern. The investigator considers this item significant enough that both organizations are requested to develop and enforce a "tickler" system to ensure that both their reports and their responses are transmitted in a more timely manner. OEDC QA is requested to reevaluate this item for significance.

Resolution of this finding is requested by the NSRS staff to preclude further noncompliance. (I-80-14-NPS-04).

IV.B. QA Program Control System

1. OEDC QA Recommendation

Develop a standard training program and schedule for all field personnel and implement the plan. It should include OJT, informal sectional training, and formal training by outside activities. The training program should cover the basic equipment and materials which are assigned for surveillance, the codes used for fabrication and installation, and the implementation of applicable procedures and instructions. It should include as a minimum for mechanical/structural inspectors the welding standards for AWS, ASME, and ANSI B31.1. Updating to maintain technical competence should be included in the program. Applicable inspectors should be trained and certified for EDDY current testing and leak testing.

It is the team's evaluation that reliance should not be placed solely on OJT or master/apprentice type training now in effect. There is an ongoing need for training and the present system provides little training for those who are older and therefore thought to be more experienced and more competent. All persons should receive refresher and requalification training.

All inspectors and field supervisors should be trained to be able to spot problem contractors early in fabrication and then work with QEB Knoxville to correct generic problems such as poor welding, inadequate vendor inspection coverage, or incorrect fabrication techniques before these materials or equipment are fabricated with the problems or before they are presented for final acceptance.

Each training module covering procedural requirements should tell why the item under discussion is needed and used; for example, training on writing inspection reports should define minimum data requirements and describe who gets the reports and how their organizations use them.

IV.B.1 (cont.)

EN DES Response(s)

A standardized training program and schedule for field personnel can be developed and implemented to supplement the existing training program. This program will include topics appropriate to the needs of potential trainees. We estimate such a program will require extensive travel and a significant increase in EN DES manpower ceiling to provide for formalized instructors and to allow for the non-productive time of trainees. We will proceed with this activity when authorization is provided to increase our manpower ceiling and travel budget for this purpose.

NSRS Evaluation

10CFR50 Appendix B, Criterion II, as implemented by paragraph 17.1A.2.1.2 of TVA Topical Report TVA-TR75-1 requires in part that an indoctrination and training program shall be provided for the training and qualifying of personnel performing QA and quality-affecting activities in the principles and techniques of the activities they perform. The proficiency of these personnel shall be maintained by retraining, reexamining, and/or recertifying.

ANSI N45.2.6-1973, Section 2.2, "Certifications," states in part that each person who verifies conformance of work activities to quality requirements shall be certified by his employer as being qualified to perform his assigned work.

ANSI N45.2.13-1976, Section 7.1, "General," states in part that purchaser verification activities shall be accomplished by qualified personnel commensurate with the verification activities being performed. Early initiation of these activities is intended to preclude subsequent activities from preventing disclosure of deficiencies.

From the discussions above, NSRS concludes that TVA personnel involved in quality-related activities such as

- QA Auditing
- QC Inspection at Vendor or Supplier facilities
- Receipt Inspection at the Construction Site
- Construction Erection and Fabrication
- Preoperational and Startup Testing, and
- Reactor Plant Operations

IV.B.1 (cont.)

should be qualified commensurate to the activities they perform. Various NRC-Nuclear Regulatory Guides committed to by TVA provide guidance and define applicable requirements as to the specific qualifications necessary to perform certain of these activities. Since the OEDC QA recommendation concerns TVA field inspector training, further discussion will be limited to this area.

QC field inspector training is a very important concern and has been the subject of several OEDC and EN DES internal audits (references CC through GG). The training of these personnel is significant in that they represent TVA's main-line of compliance verification in assuring adequate process control has been or is being taken by the supplier in providing TVA with a quality product.

Paragraph 17.1A.2.2.2 of TVA Topical Report TVA-TR75-1 specifies that the QC Group's role is that of surveillance for the purpose of verifying that the required inspection and testing activities taken by the supplier have been accomplished as specified at the location of procurement or manufacture. If unsatisfactory conditions are discovered, the TVA regional field office inspector has the authority to stop work until compliance is achieved. The inspector is therefore participating in activities affecting the quality of the safety-related component. The inspector provides the objective evidence that quality is being furnished by the contractor or subcontractor as required by Criterion VII, "Control of Purchased Material, Equipment, and Services," of 10CFR50, Appendix B.

In providing this objective evidence, applicable QC field inspectors need to be qualified in the special process areas that they inspect conformance to, such as: welding, heat treating, brazing and soldering, hardness and tensile testing, nondestructive examination (NDE), protective coating inspection, cleaning and surface preparation, plating operations, electrical insulation impregnation, and the use of special tools, calibration equipment and special applicators in activities affecting quality. Presently, applicable QC field inspectors are being certified under an established program in the area of nondestructive examination techniques (EN DES-EP 1.31, "Nondestructive Examination Personnel - Qualification and Certification").

The NDE certification program meets the requirements committed by TVA to NRC as detailed in Table 3 of the OEDC QA Program Requirements Manual (PRM) under Control of Special Processes. However, under the same commitment TVA specified that EN DES personnel engaged in other special processes, similar to those identified by the NSRS investigator, would also have appropriate qualifications and certifications in

IV.B.1 (cont.)

order to perform their assigned tasks. The only difference in these other special process certifications is that they will not correspond to the levels established in ANSI N45.2.6-1973, except for NDE personnel who are certified in accordance with SNT-TC-1A. This exception is detailed in Table 17.1A-4 of TVA Topical Report TVA-TR75-1. Further, as required by section 2.2.4, "Certificate of Qualification," of ANSI N45.2.6-1973, the qualifications of these personnel shall be documented in an appropriate form. The certificate shall include, as modified by TVA-TR75-1, the following information:

- (1) Employer's name
- (2) Persons being certified
- (3) Activity qualified to perform
- (4) Effective period of certification
- (5) Signature of Employer's Designated Representative
- (6) Basis used for certification

This record (certification form) is similar in nature to the NDE certification record except the level of capability is not specified.

The NSRS investigator's review of QEB-AI 313.1, Revision 1, "Training and Certification of QEB/QC Personnel," revealed that the AI only outlines the training categories QEB inspection personnel may receive in the areas of formal training, on-the-job training, and procedural understanding. Specific methodology for training and certification is not provided in this instruction. This can be found elsewhere such as EN DES-EP 1.31 for NDE certification. No other EN DES procedure has been established for qualifying, certifying, and/or recertifying QEB inspection personnel in the other special process areas. This is contrary to the OEDC QA program responsibilities detailed in Table 3 of the PRM which states under controls of special processes, that EN DES will establish written procedures for qualifying, certifying, and/or recertifying personnel engaged in special processes (I-80-14-NPS-05). QC field personnel have and are currently performing quality related verifications in the areas such as protective coating inspection; welding preparation, process, examination, and evaluation; cleaning; and dimensional tolerance checks. From the PRM commitment made, it is apparent that OEDC needs to establish a program

IV.B.2 (cont.)

to assure EN DES QEB field and applicable office personnel, have sufficient background and understanding in the principles and practical techniques of the activities they perform.

Assurance that all QC field personnel are appropriately qualified, certified, and/or recertified to perform their respective activities or disciplines can only be achieved through establishment of a standardized formal training program. Reliance on on-the-job training and satisfactory previous performance, as observed from the qualification records reviewed by the investigator, cannot compete with proficiency testing to demonstrate capability. TVA, being a leader in the nuclear power industry, should not strive to meet minimum requirements dictated by regulatory doctrine such as demonstrating capability in a given job through previous performance (ANSI N45.2.6-1973, Section 3.1) but should strive to establish standards of excellence, such as satisfactory completion of proficiency testing, to assure that its personnel are qualified in the quality-affecting activities they perform. This is in keeping with the policy of the Board of Directors dictating that TVA shall be the yardstick of safety in the nuclear power industry (reference 00).

In their response to the OELC QA finding, EN DES indicated establishment of a formal training program would require extensive traveling and significant manpower increases. This would be expected for a large scale formalized program, however, EN DES could have proposed in the interim, to offset the costs of such a program, the use of supplementary aids such as: videotapes - taped at training sessions paid for by TVA at Westinghouse, Magnaflux Corporation, Lincoln Electric, etc., or inhouse; study guides - multiple choice, True-False, fill-in-the-blank guides to identify to the inspector important areas the inspector needs to be made aware of and allow him the use of the completed guides as reference material; and inhouse training - QC central office instruction at the regional offices. These aids, if sufficient, could prepare the inspector adequately to pass a TVA proficiency exam.

From the discussion presented above, inference should not be construed that all TVA field inspectors should be trained sufficiently to perform the QC inspection for the vendor. The supplier is responsible for the inspection and testing of the product. The TVA quality inspector's primary role is to perform quality control or surveillance activities such as records review, verifications, examinations, and witnessing of activities during the material process as necessary to assure contract compliance (paragraphs 17.1A.1.2.2.2.(3) and 17.1A.7.2 of TVA Topical Report TVA-IR75-1). The inspectors and applicable QC central office personnel should therefore

IV.B.1 (cont.)

be trained sufficiently to (1) meet TVA certification requirements per their respective disciplines, not necessarily code certification requirements and (2) be able to perform spot retests as described in IV.A.3.b.1.

The NSRS investigator considers OEDC QA management had appropriately identified this item as a deficiency but may have underestimated the significance of the finding. The inadequacy of the field inspector training program was first identified as a significant item in July 1978 by the OEDC QA Manager's Office Audit Report No. M78-5. The fact that this deficiency is still open as identified in the OEDC QA Manager's Active Quality Assurance Audit Status Report as of September 25, 1980 (QAM 801002 003), is indicative of the seriousness of the problem and also of the inability of EN DES management to effect corrective action. In addition, the investigator can find no objective evidence of a qualification program through training, experience, or ability established for applicable TVA field personnel verifying special process (other than NDE) activities affecting quality.

The Nuclear Safety Review Staff requests OEDC QA management to reconsider the failure of EN DES to establish a formal training program in order to assure its field personnel have acquired and maintained a prescribed TVA proficiency level in the areas of special processes, QA, and inspection activities for significance. EN DES should also take prompt and necessary corrective action to resolve this deficiency by providing sufficient manpower and resources to effectively carry out its QEB portion of the QA program.

2.a. OEDC QA Recommendation

The inspection procedures that are to be included in the Inspectors Manual should be expanded to include guidelines for all components under surveillance; for example, only one procedure for valves - butterfly valves - is presently planned to be in the manual.

EN DES Response(s)

The scoping of generic inspection procedures will be evaluated and additions (or deletions) made based on this evaluation. Twenty sample inspection procedures were added to the Inspection Manual February 12, 1980, with revision 8. No further additions or deletions are considered necessary at this time.

NSRS Evaluation

When the TVA Inspection Manual was initially established in July 1975, 62 generic inspection procedures were projected to be issued to cover all areas of the material process. Of

IV.B.2.a (cont.)

these 62 procedures, only 16 procedures were ever issued; 6 more were left in the preliminary stages of review and comment. The intent of the procedures was to make them good enough and detailed enough that they could be referenced by the procurement document for the TVA inspector to use as a required checklist for the purchaser hold point verification checks. Due to manpower constraints (lack of a technical writer) and procedure criticisms the procedures were eventually removed from the manual.

On February 12, 1980, as identified in the EN DES response to QAE 80-1 (QAS 800625 001), revision 8 added 20 sample inspection procedures to the Inspection Manual. The intended purpose for reissuing the procedures was to provide a supplementary guide to the inspector to assure that all major requirements were considered in the course of inspecting equipment being processed by the vendor. The procedures were not to replace the detailed manufacturing and inspection requirements given in the purchase contract, its specifications, drawings, or procedures. The contract requirements were to be followed implicitly and not to be modified based on a conflict of an item contained within the sample procedure.

As a side note, investigator comparison of the current 20 procedures to the previous 16 procedures revealed that 14 procedures contained exactly the same content as the older version. One procedure had been expanded to some degree.

The Nuclear Safety Review Staff concurs that expansion of the sample procedures to encompass each component or class of components under surveillance would enhance the inspection program. However, the procedures as indicated were only to be used as a guide to the inspector to set up his own inspection plan, if need be, based on the requirements stipulated within the text of the purchase contract. EN DES should continue to pursue completion of these procedures and utilize them when performing verification activities.

The NSRS investigator considers this item was appropriately identified by OELC QA management as not constituting a deficiency.

2.b. OEDC QA Recommendation

Terms should be defined in the Inspectors Manual, and the I&T reports should be more specific. In the case of inspection reports, the writer should state clearly and concisely what he did and report the results of his inspections.

IV.B.2.b (cont.)

EN DES Response(s)

The inspection reports are intended as inspection trip reports rather than detailed reports of inspections. The training program (reference B.1.) will encompass this subject.

NSRS Evaluation

10CFR50 Appendix B, Criterion XVII, as implemented by ANSI N45.2-1971, Section 18, "Quality Assurance Records," states in part that sufficient records shall be prepared as work is performed to furnish documentary evidence of activities affecting quality. The records shall include the results of reviews, inspections, tests, audits, monitoring of work performance and materials analyses.

10CFR50 Appendix B, Criterion V, as implemented by ANSI N45.2-1971, Section 6, "Instructions, Procedures, and Drawings," states in part that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

ANSI N45.2.13-1976, Section 7.6, "Reporting," states in part that measures shall be established to provide for the reporting of activities performed to verify conformance to requirements of procurement documents. These measures are to include reporting of source surveillances and inspections, audits, receiving inspections, nonconformances, dispositions, waivers, and corrective action. In addition, the purchaser shall assure that these reports are evaluated to determine the supplier's QA program effectiveness.

QEB-EP 24.56, Section 2.0, revision 0, dated February 9, 1979, "Inspection Reports - Preparation, Review, and Distribution," provides some of the following instructions to the QC field inspector in preparation of inspection reports:

- The report is to be prepared in a brief, factual manner covering all the essential acceptance criteria established in the specifications for inspection, tests, witnessing, etc.; correlate the specification requirements in a logical manner; and include a statement of acceptability for each.
- Problems affecting quality are to be referenced and sufficient detail of their resolution is to be provided.

IV.B.2.b (cont.)

- Specific records reviewed are to be identified in the report.

Contrary to the above, NSRS investigator review of 34 field inspector inspection reports, involving two identified problem vendors (reference W) for the period January 1979 to August 1980 (Table 3), identified several additional problems with inspection reports other than the use of vague terms or phrases, such as:

- (1) Copy No. 1 of Release Form TVA 10526B was not attached to several inspection reports as required by EN DES-EP 5.43, Section 5.0, step 3. This deficiency was significantly more prevalent in the early part of 1979.
- (2) The "inspection activities required" portion of form TVA 10526B was not being completed as required by the instructions on the form.
- (3) Releases were not identifying the inspection report number associated with the release or completing the percent of material release heading on the form.
- (4) Acceptance criteria and applicable technical or authorizing references were not always identified.
- (5) The inspection reports for contract No. 78K61-86965 on the fabrication of the Reactor Pressure Vessel Structural Steel were period reports. Each inspection report covered approximately one month's worth of inspection activities without specifying the individual onsite dates to identify the inspection effort being utilized on this project. This is contrary to QEB-EP 24.56, Section 2.0, step 3 which requires that an inspection report is to be prepared for each significant contact with a supplier, including each inspection visit and all hold point inspections.

Based on the results of this investigation, the NSRS investigator considers the OEDC QA staff finding to have been too general and should have identified the real problem of inadequate detail in inspection reports. OEDC management upon review of this data could have then rendered a decision of identifying this item as a deficiency (I-80-14-NPS-06). The NSRS staff requests OEDC QA management to reevaluate this item for significance. In this evaluation OEDC QA should consider the following aspects:

- (a) The relative insignificance EN DES management places in the quality of the issued field inspectors inspection reports as indicated in their response,

IV.B.2.b (cont.)

- (b) Similar deficiencies involving inadequate inspection report detail have been identified to EN DES in OEDC-QA Management Audit M79-12 dated December 11, 1979 (reference EE) and Quality Assurance Evaluation QCS 78-2 dated February 13, 1978, (reference CC) with no substantive generic corrective action taken other than remedying the immediate concerns (See also reference HH for EN DES delinquency response to this item), and
- (c) The results of the inspection reports are reviewed by the QEB-Quality Assurance Audit Section (QAAS) as required by QEB-EP 24.67, "Vendor QA Program Evaluation Index - Maintenance and Handling," and evaluated to determine if there are indications of vendor QA breakdown problems thereby warranting a more indepth audit of this vendor. Inadequate detail in the inspection reports may mask the conclusions drawn by the QAAS supervisor.

Additionally, the OEDC QA concern of establishing a section in the Inspection Manual for defining terms is considered administrative since the use of "shop talk" terminology, abbreviations, trade names, or references is currently prohibited by paragraph 5.3.5, section C, of the Inspection Manual unless defined within the text of the inspection report.

2.c. OEDC QA Recommendation

Develop, issue, and implement a QEB procedure defining the system for setting up QEB inspection requirements for TVA procedures which are in addition to those specified in contracts. This procedure should include hold points, witness points, and in-process inspections and a definition for each. It should also state what inspections can or cannot be waived and how this action can be accomplished. The above inspection requirements should be included in future procurement requests.

EN DES Response(s)

The system for setting up QEB inspection requirements, which are in addition to those specified in contracts, is defined in Inspection Manual section C, paragraphs 1.0 and 4.2. Waiver of inspections is addressed in section C, paragraph 5.2.2. These sections include hold points, witness points, in-process inspection, and instruction for waiver of inspections. Current EN DES procedures provide for inspection requirements which are included in procurement requests to be included in contracts. We will review these instructions and procedures to determine if there are any definitions which may be needed for unusual terms.

IV.F.2.c (cont.)

Inspection Manual Procedure D.1, "Inspector Preparatory Activities," addresses the subject in addition to the references previously provided. These procedures do not contain unusual terms which require additional definition.

NSRS Evaluation

ANSI N45.2.13-1976, Section 3.2.4, "Right of Access," states in part that the procurement document shall provide at each tier of procurement, as deemed necessary by the purchaser, for access to the supplier's plant facilities and records for inspection or audit by the purchaser. The provisions should include or provide for later identification of the events such as witness and hold points established or considered appropriate for the purchaser's presence at the supplier's facility. Further, section 6.2, as modified by Regulatory Guide 1.123-1977, "Planning and Coordination," goes on to say that depending on the complexity or scope of the item or service, the purchaser shall initiate pre- and post-award activities. These are necessary in order to establish an understanding between the purchaser and the supplier to clarify quality requirements including how the purchaser will verify and evaluate the supplier's process methods and performance. Purchaser notification points, including additional hold and witness points, shall be identified and documented based upon mutual agreement between purchaser and supplier.

TVA Inspection Manual, paragraph 1.0, Section B, "Policy," states that authority for inspection is derived solely from contract and specification requirements. It is the responsibility of Engineering to assure that all necessary requirements for inspection are clearly set forth in the specification and applicable standards are referenced to guide the inspector. When EN DES fails to do this, the QEB inspectors' hands are tied by vague or inadequate contract language.

From this discussion, formal communication channels are to be established between the purchaser and the supplier when specifying additional witness and hold points, inspection waivers, contract revisions, etc. Guidance is not provided as to allowing the inspection personnel authority to add and enforce, at will, additional witness and hold points subsequent to contract award. This can only be accomplished through a contract provision stating the purchaser has the right to identify additional witness and hold points deemed necessary to ensure quality compliance subsequent to the award of contract. As can be seen from Table 3 this provision is not provided in the contracts reviewed.

Contrary to the above, the TVA Inspection Manual, in certain cases, and EN DES-QEB in their response have exceeded their

IV.B.2.c (cont.)

branch responsibilities by implying, and documenting the implication, that the field office inspector has the authority to add additional hold points to the agreed upon QA contract and to establish points of contact for waiver authorization with others than those specified in division instructions.

This can be shown as follows: The TVA Inspection Manual was basically written to provide all the necessary guidance needed to standardize and simplify the inspection of material process or service activities required for TVA source verification as set forth in the terms of the procurement contract and specifications. However, the manual extends, in cases, the responsibilities provided the regional field offices outlined in QEB-AI 115, "QEB Organization and Responsibilities." For example, in paragraph 3, section D, of inspection procedure D.1.1, "Inspector Preparatory Activities," the inspector is to prepare an affirmation letter of the hold points detailed by the contract for inspection and to add to this letter any additional hold points that are needed and to ensure that these hold points are recorded on the shop traveller. This is contrary to the stated policy of the manual as identified earlier in this discussion. The inspector cannot legalistically enforce additional witness and hold points added outside of the contract unless a provision to provide for later identification was established through this channel and within the text of the contract (see table 3) or through the mutual respect and understanding established between the inspector and supplier in each others' technical credibility. This conflict is considered open by the NSRS staff pending EN DES resolution (I-80-14-NPS-07).

A second example of conflict involves the inspection waiver. Paragraph 5.2.2, section C, of the manual allows waiver of the source inspection through three points of authority: (1) the TVA purchasing agent, (2) the central QC office staff, or (3) the regional field office supervisor. This is contrary to section 7.0 of EN DES-EP 5.43, "Release of QA Items from Suppliers' Shops to Construction Site," which provides waiver authority only to the central QC office staff.

Further review of EN DES-EP 5.43, revealed that the procedure itself also has several significant problems within its content. Section 6.0 states that the TVA inspector has the authority to waive inspection on a quantity of items depending on the class of the equipment, shipping priorities, scheduling, etc., subject to inspection at the construction site. This instruction along with the instruction giving the central QC office authority to waive source inspections (section 7.0)

IV.B.2.c (cont.)

is contrary to the requirements of ANSI N45.2-1971, Section 5, "Procurement Document Control," as implemented by division procedure EN DES-EP 1.28, revision 2, "Control of Documents Affecting Quality," Sections 3.0, "Policy," and 5.8, "Revisions." They require in part that control of revisions or changes to design documents shall be checked and approved by the same organizations that checked and approved the original issues unless the EN DES director or the manager or chief of the originating organization designates another responsible organization. In other words, source inspections cannot be waived without approval of the originating organization and concurred in by QA. Resolution of this deficiency should be accomplished promptly to avoid further noncompliance (I-80-14-NPS-08).

From this discussion it can be seen that some confusion exists as to who can or cannot authorize additional hold points and who has the authority to waive source inspections. To remedy a portion of this problem, QEB should develop a procedure, as described by OEDC QA, to systematically identify all necessary hold points based upon the uniqueness, complexity, and procurement frequency of the item or service. The depth and necessity of the hold points should also depend upon the types of suppliers and their previous performance history on similar items. Waivers to these hold points should be ranked in relation to their importance to safety or quality.

The QEB procedure or reference of QEB-QC review should also be identified as a separate step in EN DES-EP 5.01, "Purchase Requisitions - Evaluation of Bids and Recommendation/ Rejection of Contract Award - Revisions to Contract," preferably around step 3.19. This review would be in addition to the QAB purchase requisition audit requirements. Issuance and use of this procedure should greatly enhance the consideration given in the types of hold points needed to assure that quality requirements have been established in the contract and are enforceable. (See additional discussion on the requirement to have QEB-QC in the purchase requisition review circuit in IV.B.3.a.)

The NSRS investigator does not consider this item as identified by the OEDC QA staff to be a deficiency. The investigator does consider the conflicts which exist in QEB implementing procedures such as establishment of additional hold points by the inspector outside of contract constraints with attempts to enforce the nonbinding hold points (see reference EN DES vendor audit 78V-18) and the authorization of contract inspection point waivers by channels other than through the originating organization and QA to be deficiencies. OEDC QA management is requested to review this item for significance.

IV.B (cont.)

3.a. OEDC QA Recommendation

Generic component QC requirement guidelines should be prepared jointly by the branches and QEB and the appropriate requirement should be included in procurement specifications.

EN DES Response(s)

It is true that QEB-QC does not review purchase requisitions prior to issue for inspection or hold point requirements. QEB does have an opportunity to review the purchase requisitions after they are issued, however, and to recommend changes prior to the bid process. These recommendations are resolved jointly with the initiating branch with requirements being added as appropriate. (Also, see reply to B 3.d.)

NSRS Evaluation

As required by paragraph 17.1A.3.2, "Interface Control," of TVA-TR75-1 as implemented by EN DES-EP 1.28, Section 5.3, "Checking and Review," prior to issuing a design document which may affect other design sections or require specialized knowledge for adequate independent verification, the document shall be reviewed in accordance with squadcheck procedures (refer to EN DES-EP's 4.04 and 4.25) or other approved practices. Squadchecking assures that EN DES documents such as purchase requisitions are reviewed for technical/physical/interface compatibility by all EN DES organizations affected by, or concerned with, the document. This action is to be in addition to the independent designated reviewer identified in step 3.8 of FN DES-EP 5.01. Evidence of the checks and reviews shall be appropriately recorded for future reference. The independent reviewer's signature shall signify that these checks have been accomplished. Presently, as described in EN DES-EP 5.01, the only way a purchase requisition (PR) is sent to affected groups for review and comment prior to the designated reviewer's signature is if the PR is not on file or the preparer thinks a review is necessary (see step 3.6 of EN DES-EP 5.01).

The NSRS investigator considers the lack of instruction to ensure affected design groups, such as QEB-QC, review the purchase requisition through squadchecking or other approved practices prior to the designated reviewer's signature is indicative of a breakdown in the Interface Control Procedure established by EN DES-EP 1.28 and TVA's Topical Report (I-80-14-NPS-09). OEDC QA management should have considered this item as a deficiency and requested EN DES to take prompt and necessary corrective action. OEDC QA is requested by the NSRS staff to reevaluate this item for significance.

IV.B (cont.)

3.b OEDC QA Recommendation

A section should be included in future QA procurement requests requiring a supplier to submit with his bid proposal a QC inspection and test plan for approval. This plan should then be reviewed against contractual requirements and approved if there are no discrepancies. Using this document, QEB should then prepare their detailed inspection plan. This plan should be approved in Knoxville, if prepared in a field office, and a copy sent to the supplier for information purposes only. The above system should provide an orderly method for the surveillance of TVA material and equipment being fabricated in the field that should be acceptable to both TVA and the suppliers.

EN DES Response(s)

We agree that the recommended concept could provide an orderly method for surveillance planning. QEB now performs inspection planning as outlined in the Inspection Manual specifically as noted in B.2.c above. These plans are usually based on conference with the manufacturer rather than formal plans proposed by the contractor during the bid process.

We will perform a study to determine the impact of this recommendation on the bidding process and propose such a plan for EN DES management approval if shown to be beneficial to TVA. Review scheduled for completion August 15, 1980.

NSRS Evaluation

ANSI N45.2.13-1976, Section 6.2, "Planning and Coordination," states in part, that depending on the complexity or scope of the item or service, the purchaser shall initiate pre and postaward activities to establish an understanding between the purchaser and supplier as to the planning, manufacturing techniques, tests, inspections, and processes to be employed by the supplier to meet procurement requirements. These activities may be in the form of meetings or through other channels of communication.

NSRS investigator review of EN DES-EP 5.01, "Purchase Requisitions - Evaluation of Bids and Recommendation/ Rejection of Contract Award - Revisions to Contracts." EN DES EP 5.30, "Standard Format for Preparation of Procurement Specification;" EN DES-EP 5.59, "Postaward Meetings Between TVA and Contractors - Handling;" and other supportive requisition documents, could not establish that any preaward activity is conducted between TVA and the supplier to develop a mutual understanding as to how the supplier intends to accomplish

IV.B.3.b (cont.)

and verify the procurement contracts' requirements (this activity is in addition to a plant or capability survey which could be conducted.) The only communication activity provision authorized prior to contract award is for the Contract Engineering Branch, the requesting organization, or QEB-QA to resolve any questions about the apparent low bidder's understanding of the procurement requirements. It is understood by the investigator that such communications, intended for the purpose of clarification, must be carefully conducted in order to avoid violations of rules of competitive bidding, which, if violated could allow for an improper award to be made. Partiality should be avoided in order to ensure fairness in the bidder process, however, the purchaser still has the requirement and the obligation to ensure an understanding is achieved between itself and the supplier as to how the procurement requirements are to be accomplished prior to contract award.

The depth and necessity of these preaward activities again depends primarily on the uniqueness, complexity, procurement frequency with the same supplier and the supplier's past performance for specific items covered by the procurement document. For instance, when requisitions are made for critical plant items the market of potential bidders becomes fairly limited, as identified in EN DES-EP 5.23, "Preparation and Review of Experience Clauses in Purchase Requisitions," therefore preaward conference activities conducted with each bidder does not seem out of line when requisitioning equipment vital to the safe operation of the plant. Other options could be employed for requisitions having a large market of potential bidders such as the OEDC QA recommendation proposed.

The NSRS investigator considers that OEDC QA management should have identified the entire problem of EN DES failure to conduct supplier preaward activities for evaluation of supplier performance as a deficiency (I-80-14-NPS-10). The OEDC QA staff recommendation of this paragraph, and the one detailed in paragraph IV.B.3.c are considered excellent examples of alternative approaches to initiating supplier preaward meetings.

3.c OEDC QA Recommendation

A new or potential supplier should be required to identify prior to award of contract his reliance on outside sources for the performance of special fabricating, protective coating, inspection and testing operations.

IV.B.3.c (cont.)

EN DES Response(s)

We agree that on major contracts for critical materials or equipment, a bidder should be required to furnish a list of his planned subcontractors. This is already being done on most major contracts.

NSRS Evaluation

The EN DES response refers to the procurement specification provision of EN DES-EP 5.30, requiring the contractor to submit to the Technical Engineer a schedule of its key internal activities which will be required in order to meet the contract performance date. The schedule is to include drawing approval, procurements from subcontractors, etc., and other activities in the fabrication cycle. This schedule is prepared by the supplier, only after award of contract and is enforced by EN DES-EP 5.12, "Manufacturers' Drawings and Data - Contract Administration and Enforcement." Additionally, the Technical Engineer may or may not be TVA, e.g., for STRIDE equipment the Technical Engineer is GE, therefore TVA awareness of supplier reliance on outside sources is left in doubt.

The NSRS investigator does not consider post-notification of supplier intent to portion out all or part of its special fabrication process or testing operations through subcontractors to be within the preaward activity requirements of ANSI N45.2.13-1976, Section 4.2, previously discussed in evaluation item IV.B.3.b. Resolution therefore of IV.B.3.b. should provide resolution to this item.

3.d. OEDC QA Recommendation

Expand QEB's charter to include the establishment of additional hold and witness points where appropriate.

EN DES Response(s)

QEB's charter presently includes the authority to establish additional notification and witness points where appropriate. QEB recommends contract changes to establish additional hold points when needed.

NSRS Evaluation

The NSRS investigator considers this item to be redundant with the OEDC QA recommendation identified in IV.B.3.a. Resolution of IV.B.3.a should resolve this item.