

May 5, 1997

FAX (513) 752-4983

Mr. Robert M. Gallo, Chief
Special Inspection Branch
Division of Inspection and Support Programs
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Gallo:

Thank you for your letter of April 14, 1997 accepting our response to Nonconformance 99901308/96-01-03. Thank you for your recommendations and assistance.

I have been instructed by our President, Mr. Pike, to personally investigate and respond to your letter of April 14, 1997 concerning NRC Finding Nos. 96-01-02 & 96-01-04. Mr. Pike is concerned that there continues to be some misunderstandings concerning E&W's responses to these findings and wishes to bring these issues to a final resolution which is satisfactory to you.

Below is a detailed report of each finding including E&W's corrective action:

NRC FINDING NO. 99901308/96-01-02

E&W did not verify the adequacy of the design pressure ratings of four (4) air conditioning units (ACU's) supplied by E&W to the TVA Brown's Ferry Plant. Specifically, the shell side pressure rating of the installed ACS condenser was less than the minimum pressure necessary.

I. BACKGROUND

- A) The shell side pressure rating was specified incorrectly in TVA Design Specification 21042-M-001 as 150 psi. This document was prepared by Bechtel for TVA and "approved" and "certified" by Bechtel and TVA. See Attachment No. 1
- B) In compliance with the specification, E&W submitted data sheets from our vendor (ITT) for the condenser indicating the design pressure was 150 psi.
- C) E&W was notified of the problem on July 18, 1994. E&W immediately took action to rerate the shell and provide new tube sheets.

1/1
Jepg

9705160032 970505
PDR GA999 EMVDYNAM
99901308 PDR



ID# R-13 vendor
Inspection
(99901308)



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- D) On May 19, 1995, TVA submitted a change order to E&W to revise the TVA Design Specification. See Attachment No. 2.

II. E&W RESPONSE/CORRECTIVE ACTION

- A) Although the finding was clearly a result of a deficiency in the TVA Design Specification (see Attachment No.1), E&W has revised our engineering procedures to require a review of **customer** documents in addition to E&W generated documents. The procedure requires E&W's Project Engineer to "examine customer requirements and specifications, their adequacy for the intended purpose and the adequacy of the proposed design to meet customer requirements and applicable codes and standards". This internal review is presented at the formal Design Review Meeting attended by Engineering, Quality Assurance, Manufacturing, and Sales. The results are documented and all discrepancies resolved through "Action Items". See E&W Engineering Procedure No. 101, Page 8, Step 7, third paragraph, Attachment 3. This is in addition to any Design Review Meeting held with the customer. (Note! Design Review meetings held with TVA/Bechtel/E&W failed to discover the design specification deficiency)
- B) E&W has added periodic training classes that specifically address this issue. Specifically so that the project engineers and quality engineers understand their responsibilities and duties concerning design verification.
- C) E&W is willing to meet with NRC personnel in Washington, D.C. to review this finding and assure that all possible controls have been added to E&W's Engineering Procedures and Quality Assurance Procedures to prevent any reoccurrence.

NRC FINDING NO. 99901308/96-01-04

E&W failed to establish effective corrective action for deficiencies in its commercial-grade dedication activities, including deficiencies related to critical characteristics and certified material test reports of commercial-grade materials.



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I. BACKGROUND

- A) Based on the NRC Finding E&W revised ENG-109, "Procedure for The Dedication of Commercial Grade Items for Use in Nuclear Safety Related Applications" on March 11, 1997. This revision included the following:

Para. 4.2.1 "E&W Quality Assurance will support the dedication process by reviewing the dedication plan generated by E&W engineering to insure that critical characteristics are identified.....".

Para. 5.1 Under Requirements for Development of a Commercial Dedication Plan

Item D "Description of the item's critical characteristics and applicable industry standards. Materials must be listed as a critical characteristic."

Item I "Description of any testing required to verify critical characteristics."

Para 6.1 "Before a purchase order is issued for an item that is intended for commercial dedication, a review of the applicable design requirements shall be performed by the cognizant engineer.....Any parameter listed below, which has been identified as a critical characteristic, must be included in the purchase order text."

- B) Based on discussions with TVA, E&W again revised ENG-109 on April 17, 1997 (Rev.4). See Attachment No. 4. This revision includes the following: (See highlighted areas in Attachment 3)

Para.4.1.3 Added checklist to ensure adherence to the procedure

Para.4.2.5 Added E&W Quality Assurance independent review of dedication package and plan.

Para. 5.1 Expanded instructions for Commercial Grade Dedication Plan.

Att. 2 to ENG-109 added format for Commercial Grade Dedication Plan detailing all sections that must be included in the plan.



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Att. 4 to ENG-109 added Critical Attribute Inspection check list and Commercial Grade Dedication check list. Both documents must be signed off by Quality Assurance.

II. E&W Response/Corrective Action

- A) As noted above, Ellis & Watts has revised ENG-109 Procedure for the Dedication of Commercial Grade Items for Use in Nuclear Safety Related Applications. Formats and check lists were added which must be properly verified and signed off by Ellis & Watts Quality Assurance. See Attachment 2, ENG-109, Rev. 4.
- B) Ellis & Watts is performing periodic training to educate the project engineers and the quality assurance engineers on all aspects of Commercial Grade Dedication and their specific responsibilities concerning ENG-109. NRC's specific findings will be used as an example to assure that similar problems will not be encountered in the future.

Ellis & Watts believes the above stated corrective actions will insure that the licensee design documents are adequate before they are used to manufacture and install safety-related equipment. We also believe that changes to ENG-109 addresses configuration control and commercial grade dedication concerns.

If you feel that further action is required, Ellis & Watts is willing to meet with you at your convenience in Washington, D.C. to determine what additional actions Ellis & Watts can take to resolve this issue. Please feel free to contact me direct regarding this issue. I can be reached at 513-943-3295 or by fax at 513-752-4545.

Sincerely yours,

ELLIS & WATTS

A handwritten signature in cursive script that reads "Richard D. Porco".

Richard D. Porco
Senior Director
Thermal/Power Plant Products

RDP:jh

**ATTACHMENT NO. 1
TO
E&W LETTER DATED 5/5/97**



BROWNS FERRY NUCLEAR PLANT

Specification
21042-M-001

ENGINEERING SPECIFICATION

Q. A. RECORD

FOR


W82 930113 119

PACKAGED AIR CONDITIONING UNITSFOR THEELECTRICAL BOARD ROOMS -UNITS 1 AND 3

REV.	DATE	REASON FOR REVISION	BY	CHECK	EGS	PE	QA
0	5/21/92	Issued for Purchase Order	JWL	SML	EGJ	HBO	JMP
1	9/17/92	Issued for Fabrication	JWL	JGG	GWR	HBB	JMP
2	10/01/92	Revised per Vendor Comments	JWL	BWB	GWR	HBB	JMP
3	1/11/93	Revised per T.V.A. Comments	JWL	WRS	EGJ	RHO	JMP

SERVICE: Electrical Board Room A/C unit, Unit 3

EQUIPMENT NO.: BFN-3-CND-031-7205-1200

PERFORMANCE: (1 SHELL)		SHELL SIDE		TUBE SIDE	
FLUID		Refrigerant Gas (R-22)		Water	
FLUID QUANT. ENTERING		*		* GPM (ACT.) 150 GPM (MAX)	
SPECIFIC HEAT (liquid)	BTU/LB/°F	* al	*F	1.0	
VISCOSITY SAT. LIQUID	(CP)	* al	*F	* al	*F
VAPOR	(CP)	* al	*F	N/A	*F
GRAVITY		* al	*F	* al	*F
NUMBER OF PASSES		N/A		*	
VELOCITY	FT/SEC	N/A		* (ACTUAL) 7.0 (MAX)	
PRESSURE DROP (MAX)	PSI	6		15 FT WATER	
PRESSURE DROP (ACTUAL)	PSI	*		*	
FOULING FACTOR		N/A		0.002	
TEMPERATURE IN.	*F	*		95	
TEMPERATURE OUT	*F	*		*	
TOTAL HEAT REJECTED (Btu/Hr):	*	LOG MTD * °F		CORRECTED MTD * °F	
TRANSFER RATE: SERVICE *		CLEAN *		FOULING FACTOR OVERALL *	
TRANSFER AREA: GROSS *		SQ. FT. EFFECTIVE *		SQ. FT. *	
CONSTRUCTION CUSTOMER SPECIFIED !!					
DESIGN PRESSURE	PSIG.	150		185	
TEST PRESSURE	PSIG.	225		278	
DESIGN TEMPERATURE	*F	300		300	
CORROSION ALLOWANCE		NONE		*	
TUBES QUANT. *	O.D. *		BWG *	LENGTH *	PITCH *
SHELL	(I.D.) *		(O.D.) *		
CONNECTIONS: SHELL: INLET *				OUTLET: *	
(SIZE & RATING): CHANNEL: INLET *				OUTLET: *	
CODES AND STANDARDS APPLIED: ASME BP&V SECTION VIII, DIVISION 1					
WEIGHT: DRY: *		FLOODED: *		OPERATING: *	
				BUNDLE ONLY: *	
PART	MATERIAL		PART	MATERIAL	
TUBES	*		FLOAT. TUBE SHEET	*	
SHELL	WELDED C.S.		FIXED TUBE SHEET	*	
SHELL COVER	*		TUBE SUPPORTS	*	
CHANNEL	*		CROSS BAFFLE	*	
CHANNEL COVER	*		LONG BAFFLE	*	
FLOAT HEAD COVER	*		GASKETS	*	
MANUFACTURER	*		FOREIGN PRINT NO.:		
MODEL	*				
VENDOR	*		LOCATION DWG. NO.:		
PURCHASE ORDER NO.			P & I DIAGRAM NO.:		
 APPENDIX B CONDENSER DATA SHEET BROWNS FERRY NUCLEAR PLANT			SPEC. NO. 21042-M-001		JOB NO. 21042
			SHEET 2 OF 4		REV. 2

* DATA TO BE SUPPLIED BY SELLER

MR 21042-M-106 R2

PAGE 64 OF 103

ATTACHMENT 1

**ATTACHMENT NO. 2
TO
E&W LETTER DATED 5/5/97**

TVA

Title: BROWNS FERRY NUCLEAR PLANT - PACKAGED AIR CONDITIONING UNITS FOR THE ELECTRICAL BOARD ROOMS UNIT 1 AND 3		REVISION LOG 21042-M-001, REV 4												
REVISION NO.	DESCRIPTION OF REVISION	DATE APPROVED												
4	Revised per Vendor Comments <table><tr><th>Section</th><th>Revision</th></tr><tr><td>7.6.7.f</td><td>Revised "Fan and motor ... a refill." to "Fan and motor ... the bearings."</td></tr><tr><td>Appendix A sheet 2</td><td>Revised shell side design press. "150" to "see page 2a". Revised shell side test press. "225" to "see page 2a".</td></tr><tr><td>sheet 2a</td><td>Add page "DATA SUPPLIED BY SUPPLIER".</td></tr><tr><td>Appendix B sheet 2</td><td>Revised shell side design press. "150" to "see page 2a". Revised shell side test press. "225" to "see page 2a".</td></tr><tr><td>sheet 2a</td><td>Add page "DATA SUPPLIED BY SUPPLIER".</td></tr></table>	Section	Revision	7.6.7.f	Revised "Fan and motor ... a refill." to "Fan and motor ... the bearings."	Appendix A sheet 2	Revised shell side design press. "150" to "see page 2a". Revised shell side test press. "225" to "see page 2a".	sheet 2a	Add page "DATA SUPPLIED BY SUPPLIER".	Appendix B sheet 2	Revised shell side design press. "150" to "see page 2a". Revised shell side test press. "225" to "see page 2a".	sheet 2a	Add page "DATA SUPPLIED BY SUPPLIER".	
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sheet 2a	Add page "DATA SUPPLIED BY SUPPLIER".													

REVISION LOG

Title:

BROWNS FERRY NUCLEAR PLANT -
PACKAGED AIR CONDITIONING UNITS FOR THE
ELECTRICAL BOARD ROOMS UNIT 1 AND 3

21042-M-001, REV 4

ATTACHMENT NO. 3



ELLIS AND WATTS

CINCINNATI, OHIO 45244

7 (April 21, 1997)

~~6 (June 15, 1995)~~

~~5 (July 1, 1993)~~

~~4 (Sept. 2, 1992)~~

~~3 (May 1, 1992)~~

~~2 (April 24, 1992)~~

~~1 (November 1, 1991)~~

DOCUMENT NO. ENG-101

REVISION

ISSUE NO. _____

TITLE: ENGINEERING PROJECT CONTROL PROCEDURE

PREPARED BY:

Richard D. Porco

RICHARD D. PORCO

11/1/91

ENGINEERING APPROVAL:

~~ROY HOWARD~~

ROY HOWARD

11/1/91

Q.A. APPROVAL:

Ray Stuart

RAY STUART

11/1/91

DATE

UNCONTROLLED

DOCUMENT NO. ENG-101

PAGE 1

REV.	PAGE	CHANGE RECORD	PREP. BY	ENG. APPVL.	Q.A. APPVL.
1	A11	General Revision	(See cover sheet)		
2	2-5, 7,9	General Update	CP 4/24/92	RDP 4/24/92	RRS 4/24/92
3	5,7	Added design review meeting documentation	CP 5/1/92	RDP 5/1/92	RRS 5/18/92
4	3	Para. 4.5A - Removed first reference to QC-4000N			
	9	Appendix A - Replaced ENG-302 with ENG-302 Rev. 1	CP 9/02/92	RDP 9/02/92	EJS 9/10/92
	10	Appendix B - Replaced ENG-310 with ENG-310 Rev. 1			
5	A11	Removed Appendix A (ENG-302 & ENG-303). Changed Appendix B to Appendix A. ENG-302 and ENG-303 are referenced in ENG-100 and do not need to be appendices of ENG-101.	CP 7/1/93	RDP 7/15/93	EJS 7/21/93
6	6-7	Grammatical change section 5.0, page 6. Revised Design Review Paragraph in section 5.0, step 7	FCS 6/15/95	FCS 6/15/95	JRL 6/15/95
7	A11	General update, Revised ENG-310 to Rev. 3	<i>yes</i> 4/21/97	<i>MAD</i> 4/21/97	<i>POA</i> 4/22/97
ELLIS & WATTS BATAVIA, OHIO 45103			SIZE A	CAGE CODE 98437	
ENGINEERING PROJECT CONTROL PROCEDURE			DOCUMENT NO. ENG-101		PAGE 2
					REV. 7

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2.0 SCOPE	4
3.0 APPLICABLE DOCUMENTS	4
4.0 RESPONSIBILITIES	4
5.0 PROCEDURE	6

APPENDIX A

Engineering Shop Order Release - ENG-310, Rev. 3

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	DOCUMENT NO.		PAGE	REV.
ENGINEERING PROJECT CONTROL PROCEDURE	ENG-101		3	7

1.0 PURPOSE

The purpose of this procedure is to provide an organized and consistent approach to the execution of Engineering projects.

2.0 SCOPE

This procedure applies to all Engineering projects and contracts involving work performed in compliance with Ellis & Watts Quality Assurance Manual QC-4000N, QC-1000, or other projects designated by the Director of Engineering.

3.0 APPLICABLE DOCUMENTS

QA-101	Procedure for Supplier Selection and Qualification
QA-103	Procedure for Quality Assurance Control of Procurement Documents
ENG-103	Engineering Action Request (EAR) and Drawing & Document Change Notice (ECN) Procedure
QA-160	Critical Materials and Services List
ENG-100	Engineering Drawing & Document Control Procedure
ENG-102	Design Calculation Control
ENG-112	Engineering Documentation Control (EDC) - Procedure for Distribution and Maintenance of Controlled Documents
ENG-105	Procedure for the Control and Issuance of Bills of Material

4.0 RESPONSIBILITIES

4.1 Sales Manager, or his/her designee, is responsible for:

- A. Obtaining complete purchase order and specification package from customer.
- B. Negotiating any commercial and/or cost changes originated by the customer or Ellis & Watts.
- C. Resolving all contract issues.
- D. Preparing Shop Order.

4.2 Engineering Manager, or his/her designee, is responsible for:

- A. The technical analysis, research, design and development activities that result in an approved design.
- B. Documenting results of the design review meetings.
- C. Assignment of the project engineer.

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ENGINEERING PROJECT CONTROL PROCEDURE	ENG-101		4	7

- D. Implementation of the project control procedure.
- 4.3 Contract Administration, for those jobs designated to Contract Administration, may assume the responsibility for 4.1B, 4.1C and 4.2E.
- 4.4 Project Engineer, or his/her designee, is responsible for:
- A. Initiating and approving all design drawings specifications, procedures, and engineering/manufacturing instructions.
 - B. Identifying and selecting all applicable codes and standards.
 - C. Assuring that the product conforms with all applicable specifications and standards.
 - D. Review and approval, prior to publication, of procedures and instructions required by the purchase documents.
 - E. Initiating request for customer approvals, if applicable, and coordinating all engineering documentation presentations.
 - F. Scheduling, preparing an agenda, and documenting all Design Review Meetings internally and externally with concurring signatures.
 - G. Requisitioning all purchased parts to applicable requirements of the contract documents.
 - H. Providing Purchasing with Bill of Materials and Budget Bill of Materials per Engineering Procedure ENG-105.
 - I. Co-ordinating support personnel efforts (Design, QA, Seismic, Environmental, Electrical, Welding, etc.)
 - J. Issuing the Engineering Shop Order Release - Form Eng-310.
 - K. Maintaining the Engineering job file.
- 4.5 Document Control Supervisor, or his/her designee, is responsible for:
- A. Establishing and maintaining a file record system of accountability for contract drawings, specifications, documents, and changes thereto.
 - B. Reproducing and distributing drawings, specifications, documents and changes thereto.

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ENGINEERING PROJECT CONTROL PROCEDURE	ENG-101		5	7

4.6 Manager, Quality Assurance is responsible for:

- A. Assuring the implementation and adherence to the requirement of this procedure and the requirements of the purchase documents, and QA Manual QC-4000N or QC-1000 as applicable.
- B. Assigning a Quality Assurance Engineer.
- C. Establishing a QA plan when required by contract to ensure that the products can be inspected and tested in accordance with the drawings and specifications.

4.7 Quality Assurance Engineer is responsible for:

- A. Preparing or coordinating the preparation of all quality-related documents and submittals.
- B. Performing or coordinating the performance of all inspections, tests, audits and reviews required by the contract documents.
- C. Assure all quality-related requirements of the contract documents are performed.
- D. Approval of all bills of material and purchase orders, drawings, procedures, reports, to assure all applicable quality requirements of the contract are imposed on sub-vendors.

5.0 PROCEDURE

<u>Responsibility</u>	<u>Step</u>	<u>Action</u>
Manager, Sales	1	Receive customer purchase order (or change notice) including specifications and all related contract documents.
Manager, Sales	2	Send copy of contract documents to Engineering Director and QA Manager. Prepare Shop Order(s).
Manager, Sales Manager, QA Director, Engineering Contracts Administration	3	Review contract documents for compliance with E&W quotation. Obtain input from Manufacturing and Purchasing as necessary. Forward any discrepancies to Sales for resolution. Sales to delete price from the purchase orders. Produce a QA plan when required by contract.
Manager, Sales	4	After resolution of any discrepancies with the customer, acknowledge purchase order and forward contract documents to Engineering Document Control (EDC) Supervisor.

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ENGINEERING PROJECT CONTROL PROCEDURE	ENG-101		6	7

<u>Responsibility</u>	<u>Step</u>	<u>Action</u>
Director, Engineering Manager, Engineering	4	Assign Project Engineer.
Manager, QA	4	Assign QA Engineer.
Project Engineer	5	Forward a completed distribution matrix to Document Control Supervisor (See form ENG-302 as explained in ENG-100).
Engineering Document Control Supervisor	6	Make distribution of contract documents in accordance with distribution matrix, Form ENG-302, and Procedure for Distribution and Maintenance of Controlled Documents, Document No. ENG-112.
Project Engineer	7	<p>Determine scope of project based on Specification, Shop Order and Purchase Order.</p> <p>Establish engineering file, working copies of latest drawings, documents, ECN's, etc. per Procedure ENG-100.</p> <p>Establish and issue contract schedule with input from functions involved. Develop a plan to complete the contract on schedule. Identify critical items.</p> <p>Establish contract data requirements list.</p> <p>Coordinate the design and drafting effort in accordance with Engineering Drawing & Document Control Procedure ENG-100 and Engineering Action Request (EAR) and Drawing & Document Change Notice (ECN) Procedure, ENG-103.</p> <p>Issue a Bill of Material for purchased items in accordance with Procedure for Control and Issuance of Bill of Material, Document No. ENG-105; Procedure for Supplier Selection and Qualification, QA-101; and Procedure for Quality Control of Procurement Documents, QA-103. Use QA-160, Critical Materials and Services List, as applicable.</p> <p><u>NOTE:</u> Long lead items are to be procured as soon as practical after receipt of contract.</p>

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ENGINEERING PROJECT CONTROL PROCEDURE	ENG-101	7	7	

<u>Responsibility</u>	<u>Step</u>	<u>Action</u>						
Project Engineer (continued)	7	<p>Prepare or coordinate the preparation of all required contract submittal documents, including test procedures and acceptance criteria, shipping procedures, etc.</p> <p>Resolve customer comments to documents and/or drawings.</p> <p>Prepare or coordinate the preparation of all design calculations in accordance with Design Calculation Control Procedure, ENG-102.</p> <p>Call Design Review Meeting to examine customer requirements, applicable codes and standards, and specifications, their adequacy for intended purpose and the adequacy of proposed design to meet customer requirements. Document results with formal meeting notes and Action Items.</p> <p>Approve vendor submittals, as applicable.</p> <p>Coordinate with the customer and or vendors to obtain all necessary customer approvals. This is done through Contracts Administration if applicable.</p> <p>Establish project cost controls to maintain expenditures within the established project budget.</p>						
	8	<p>Issue the Engineering Shop Order Release. Engineering Release to include all instructions necessary to manufacture and test the product including drawing lists, manufacturing plan, procedures, etc., as applicable.</p> <p><u>NOTE:</u> It is impossible to detail all tasks required to be performed by a project engineer due to the variable nature of each contract. In general, the project engineer should perform all tasks and coordination necessary for Ellis & Watts to successfully to design, manufacture and test the product to the requirements of the customer specifications, applicable codes and standards, and good engineering and manufacturing practice.</p>						
ELLIS & WATTS BATAVIA, OHIO 45103		<table><tr><td>SIZE A</td><td colspan="2">CAGE CODE 98437</td></tr><tr><td>DOCUMENT NO. ENG-101</td><td>PAGE 8</td><td>REV. 7</td></tr></table>	SIZE A	CAGE CODE 98437		DOCUMENT NO. ENG-101	PAGE 8	REV. 7
SIZE A	CAGE CODE 98437							
DOCUMENT NO. ENG-101	PAGE 8	REV. 7						
ENGINEERING PROJECT CONTROL PROCEDURE								

APPENDIX A
ENGINEERING SHOP ORDER RELEASE FORM
ENG-310 Rev. 3

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	DOCUMENT NO. ENG-101		PAGE 9	REV. 7

Engineering Shop Order Release

Form ENG-310

Rev. 3

DOCUMENT NUMBER:

Model:

Part Number:

Shop Order Number:

Release Date:

Committed Ship Date:

Project Engineer:

Customer Required Date:

Salesperson:

Number of Units:

Customer:

Repeat Order:

Special Comments: _____

Distribution:

See form ENG-302.

Engineer: _____ Date: _____
Engr. Approval: _____ Date: _____
Q.A. Approval: _____ Date: _____

Form ENG-310

Shop Order Number:

[illegible]

NOTE: AFTER ANY CHANGES, ADDITIONS/DELETIONS, PLEASE RETURN TO
ENG. DOCUMENT CONTROL DEPT. (EDC).

Engineering Shop Order Release

Form ENG-310

Rev. 3

DOCUMENT NUMBER:

Model:

Part Number:

Shop Order Number:

DRAWING NO.	REV.	DRAWING TITLE

DOCUMENT NO.	REV.	DOCUMENT TITLE

Engineering Shop Order Release

Form ENG-310

Rev. 3

DOCUMENT NUMBER:

Model:

Part Number:

Shop Order Number:

(1) Inspection Requirements:

See QA Plan attached.

(2) Electrical Requirements:

All instrumentation, including test instruments, must be calibrated before use and/or installation.

Comments:

(3) R/A Department Requirements:

Comments:

(4) Welding Requirements:

E&W Qualified Welding, Brazing and Stud Welding Procedures apply, unless otherwise noted. (Reference QA-3)

Comments:

(5) Paint Department Requirements

Procedures - see applicable ENG-

Colors - see applicable ENG-

Comments:

Engineering Shop Order Release

Form ENG-310

Rev. 3

DOCUMENT NUMBER:

Model:

Part Number:

Shop Order Number:

(6) Test Department Requirements:

Qual Testing:

ATP:

Settings, Adjustments, Etc

	Engr Est	Actual
Refrigerant/Charge(#)		
Condenser Fan Motor Pulley Setting		
Condenser Fan RPM		
Circulating Fan Motor Pulley Setting		
Circulating Fan RPM		
High Pressure Cutout/In	/	/
Low Pressure Cutout/In	/	/
Oil Pressure Cutout/In	/	/
Crankcase Pressure Regulator		
Evaporator Pressure Regulator		
Hot Gas Bypass		
Head Pressure Control Setting		
Superheat		
Coolant GPM		
Coolant Pressure		
Coolant Temperature		
Relief Valve Setting		
Coolant Mix Ratio (% Coolant / % Water)	/	/

Special Comments:

Engineering Shop Order Release

Form ENG-310

Rev. 3

DOCUMENT NUMBER:

Model:

Part Number:

Shop Order Number:

(7) Packing and Shipping Departments Requirements:

Packing: Reference ENG-215

ASME NQA-1 Level B ____ C ____ D ____ (check one)

Skidding:

Standard E & W OPEN Crate
Standard E & W CLOSED Crate
Overseas Crate

Disposition:

Customer Shipping Address

Packing List:

	Secure Inside	Pack Separately	Qty/Unit	E&W Part No.
Unit				
Ship Loose Items:				
a)				
b)				
c)				
d)				
e)				
f)				
g)				
Warranty				
QA Documents				
IOM Manual				

Special Comments:

ATTACHMENT NO. 4



ELLIS & WATTS

CINCINNATI, OHIO 45103

DOCUMENT NO. ENG-109 REVISION 4 (April 17, 1997)
3-(March-11, 1997)-
2-(April-23, 1992)-

ISSUE NO. _____

TITLE: PROCEDURE FOR THE DEDICATION OF COMMERCIAL GRADE ITEMS FOR
USE IN NUCLEAR SAFETY RELATED APPLICATIONS

PREPARED BY: Ken Deaton April 23, 1992
KEN DEATON

ENGINEERING APPROVAL: Richard D. Porco 4/23/92
RICHARD D. PORCO

O.A. APPROVAL: Ray Stuart 4/23/92
for RAY STUART DATE

UNCONTROLLED

DOCUMENT NO. ENG-109

PAGE 1

REV.	PAGE	CHANGE RECORD	PREP. BY	ENG. APPVL	Q.A. APPVL
0	A11	Formal Release August 12, 1991.	(See cover sheet)		
2	A11	Changed document number from PPE-109 to ENG-109 (Reissue).	--	RDP 4/21/92	RRS 4/23/92
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<div> <div>ELLIS & WATTS BATAVIA, OHIO 45103</div> <div> <div>SIZE A</div> <div>CAGE CODE 98437</div> </div> </div>					
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1.0 PURPOSE

The purpose of this document is to establish an Ellis & Watts procedure for the procurement and dedication of commercial grade parts for use in nuclear safety related applications.

The requirements described in this document will ensure that adequate steps have been taken to verify the suitability of commercial grade parts in nuclear safety related applications.

2.0 SCOPE

2.1 Before concluding that the commercial dedication activities described in this document are warranted, two fundamental questions must be addressed:

- A. Does the item perform a safety related function?
- B. Does the item meet the definition of commercial grade?

2.1A If the item is not classified as safety related (passive or active), then commercial dedicated activities are not needed. The item in question may be purchased using Ellis & Watts standard procurement practices with due consideration to any special purchasing requirements which may be imposed by the customer's procurement documents (e.g. C of C's, CMTR's, etc.). If the parent equipment has previous environmental qualification, the environmental qualification report should provide guidance in determining whether or not the item performs a safety related function.

Exhibit H-1 and Appendix B to EPRI NP-5652 provide additional direction in determining the safety related classification of an item.

2.1B If the item has been classified safety related, the next step is to confirm that the item meets the definition of commercial grade.

The definition of commercial grade item given in 10CFR21 is as follows:

Commercial Grade Item

- (a) When applied to nuclear power plants licenses pursuant to 10 CFR Part 50, commercial grade item means a structure, system, or component, or part thereof that affects its safety function, that was not designed and manufactured as a basic component. Commercial grade items do not include items where the design and manufacturing process require in-process inspections and verifications to ensure that defects or failures to comply are identified and corrected (i.e., one or more critical characteristics of the item cannot be verified).

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(b) When applied to facilities and activities licenses pursuant to 10 CFR Parts 30, 40, 50 (other than nuclear power plants), 60, 61, 70, 71, 72, commercial grade items means an item that is:

- (i) Not subject to design or specification requirements that are unique to those facilities or activities;
- (ii) Used in applications other than those facilities or activities; and
- (iii) To be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (for example, a catalog).

If the item is not commercial grade but has been classified safety related it must be purchased as a "basic component." Such a component that is built strictly for nuclear industry service or has been previously qualified should have procurement requirements specified in the customer's order or prior commercial dedication plan. No commercial dedication activities are applicable if the item does not meet the definition of commercial grade. Appendix C to EPRI NP5652 contains additional details on the determination of commercial grade designation.

2.2 If the item is to be used for a safety related application and meets the definition of commercial grade, the requirements of this document apply in the following situations. The item is to be:

- A. purchased as spare/replacement part for existing equipment fabricated by Ellis & Watts.
- B. purchased for original equipment manufacture to comply with an Ellis & Watts or customer specification.

2.3 In the case of a new equipment design and build contract, dedication plans for individual commercial grade components are not necessarily required when the new equipment is qualified to IEEE-323 in accordance with E&W Procedure ENG-263 and certified by Ellis & Watts that the new equipment is designed and qualified for nuclear industry safety related service.

2.4 Credit may be taken on a new program for a safety related item's previous commercial dedication provided an engineering evaluation adequately addresses any differences in performance and/or environmental requirements. The existing dedication plan should be amended to describe the new application. If critical characteristics or acceptance methods are not appropriate for the new application, a new dedication plan must be written.

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3.0 RELATED DOCUMENTS

- Ellis & Watts Q.C. 4000N Quality Assurance Manual.
- Electric Power Research Institute (EPRI) NP-5652: Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications.
- ANSI N18.7/ANS 3.2-1976; Administrative Controls & Quality Assurance for the Operational Phase of Nuclear Power Plants.
- Ellis & Watts Procedure ENG-263, Environmental Qualification Plan.
- Code of Federal Regulations, 10CFR21.

4.0 RESPONSIBILITIES

4.1 ELLIS & WATTS ENGINEERING

- 4.1.1 The cognizant Ellis & Watts engineer is responsible for invoking this procedure and writing commercial dedication plan(s) when appropriate (see 2.0). This includes identifying the critical characteristics and the method(s) used for the acceptance process and technical evaluation.
- 4.1.2 In the case of purchased parts, the Ellis & Watts engineer will provide to purchasing a requisition detailing all relevant technical, testing, and quality assurance requirements for commercial dedication.
- 4.1.3 The Ellis & Watts engineer will complete the appropriate steps in the commercial grade dedication procedural checklist located in attachment IV to ensure adherence to this procedure.

4.2 ELLIS & WATTS QUALITY ASSURANCE DEPARTMENT

- 4.2.1 Ellis & Watts Q.A. will support the dedication process by reviewing the dedication plan generated by Ellis & Watts engineering to ensure that critical characteristics are identified and verify appropriate quality related activities detailing verification of the critical characteristics and standards are specified.
- 4.2.2 Ellis & Watts Q.A. will perform quality assurance activities in accordance with Q.C. 4000N.
- 4.2.3 Ellis & Watts Q.A. will support the dedication process by conducting vendor audits/surveys that may be required by the commercial dedication plan.
- 4.2.4 Ellis & Watts Q.A. will ensure that this procedure is properly implemented to verify commercial dedication as described in the dedication plan.

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4.2.5 Ellis & Watts Q.A. will provide independent review of dedication packages and plans.

4.2.6 The Ellis & Watts engineer will complete the appropriate steps in the commercial grade dedication procedural checklist located in attachment IV to ensure adherence to this procedure.

5.0 REQUIREMENTS

5.1 DEVELOPMENT OF A COMMERCIAL DEDICATION PLAN

Once it is established that commercial dedication activities are required for an item(s), a dedication plan must be written to document those activities. The dedication plan is prepared by the cognizant engineer. As a minimum, the plan shall include the following:

- A. A brief introduction.
- B. Description of the safety related function of the equipment in which the dedicated part is to be installed (if applicable).
- C. Description of the safety related function of the item to be dedicated.
- D. Description of the item's critical characteristics and applicable industry standards. Materials, in most cases, will be listed as a critical characteristic. The function and application of the commercial grade item will be reviewed with respect to the seismic and environmental conditions to determine whether material is a critical characteristic.
- E. Description of any engineering evaluation that may be required.
- F. Indicate the appropriate acceptance method(s) and criteria and their basis.
- G. Any documentation required to verify the quality, testing, inspection, and vendor activities needed for dedication.
- H. Dedicated item certification documents that may be required.
- I. Description of any testing required to verify critical characteristics.

The next eight paragraphs of this document provide additional description of the requirements of each dedication plan element. A sample format for a typical dedication plan is incorporated in Attachment II of this document. The commercial dedication process is also depicted in Attachment III to this document.

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5.1.1 Introduction

The dedication plan will contain a brief introduction which describes the dedication item's manufacturer, part number, Ellis & Watts purchase order number, applicable customer purchase order number, customer tag or equipment number, relevant specification number, and a description of the part.

Indicate if the dedication item is for use in new equipment or as a replacement part in existing Ellis & Watts equipment. In the case of a replacement part, provide a brief description of the parent equipment where the part is used. This description should include Ellis & Watts job number, model number, and part number, original customer contract number, specification number, and facility.

Certain descriptive information will not apply in some cases. The engineer is responsible for providing complete, applicable introductory information of the type indicated above.

5.1.2 Safety Related Function of Parent Equipment

A description of the safety related function of the parent equipment is required as applicable. If there is no parent component, or if the dedication item is the parent component, so indicate.

5.1.3 Safety Related Function of the Dedication Item

A description of the safety related function of the dedicated item is required. This description should include a description of how the dedicated item enables the parent component to perform its safety related function (as applicable).

5.1.4 Critical Characteristics

The critical characteristics for acceptance of the item and the acceptance criteria for these characteristics are required in this section. Critical characteristics are "identifiable and measurable attributes of a commercial grade item which once verified, provide reasonable assurance that the item received is the item specified."

The characteristics which identify the item and enable it to perform its intended function can be considered critical characteristics. The cognizant engineer is responsible for identifying appropriate critical characteristics based on knowledge of the item's application, complexity and intended safety function. Verification of the selected critical characteristics will provide assurance that the item specified on the E&W purchase order is the item received. Material of construction must be considered a critical characteristic.

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Items that must be considered as critical characteristics are (1) part number, and (2) dimensions. The function and application of the commercial grade item will be reviewed with respect to the seismic and environmental conditions to determine whether material is a critical characteristic. Other typical item characteristics which could be considered critical are: horsepower, torque, cycle time, voltage rating, power consumption, weight, configuration, etc. These examples as well as some additional discussion of critical characteristics can be found in Section 2.3 of EPRI NP-5652.

In addition to critical characteristics, any applicable industry standards which apply to the commercial item should also be included in this section. Invoking these standards in the purchase order will provide additional assurance that the correct item has been purchased.

5.1.5 Engineering Evaluation

This section of the dedication plan should contain any engineering evaluation which may be required to accomplish the commercial dedication.

EPRI NP-5652 Appendix A describes three basic scenarios which apply to any commercial grade procurement. They are designated as follows:

1. Like-for-like replacement
2. Alternate replacement
3. An item required for the first time

The complexity of the engineering evaluation to support the dedication of a commercial grade item depends on which one of the above procurement scenarios apply.

This section should also include a brief explanation of how the item meets the definition of commercial grade and include mention of any special conditioning which may be required.

5.1.5.1 Like-For-Like Replacement

If the proper documentation is provided by the Ellis & Watts vendor to certify that the replacement item is identical to items previously supplied, the procurement can be considered a like-for-like replacement. In this scenario, an engineering evaluation is not required. In order to adequately document a like-for-like procurement, it is critical that the Ellis & Watts purchase order contain requirements for the proper vendor certifications (see Section 6.0 of this document for further discussion). Even when a like-for-like replacement is properly documented, it is still necessary to assure equivalent item performance through activities described in the appropriate acceptance method (see 5.1.6 of this document).

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5.1.5.2 Alternative Replacement

An alternative replacement scenario is caused by one or more of the following situations:

- A. Item vendor cannot provide like-for-like certification.
- B. Technical or quality requirements of the original item cannot be determined.
- C. A design change in the item is suspected (e.g. part number has changed, materials have changed, etc.).

In the alternative replacement scenario, an engineering evaluation is required. The EPRI guideline (EP 5652, Appendix A) uses the terms "equivalency evaluation" and "equal-to-or-better" for these evaluations. These efforts are considered controlled safety related engineering activities and as such must be documented. Documented results of engineering evaluations shall be included in the dedication plan. According to ANSI N18.7/ANS 3.2-1976, the engineering evaluation "shall assure that interfaces, interchangeability, safety, fit and function are not adversely affected or contrary to applicable regulatory or code requirements."

If the alternative commercial item is intended for installation in equipment which has had seismic or environmental qualification, the engineering evaluation must address how the alternative replacement does not jeopardize these qualifications. Guidance on maintaining seismic and environmental qualification can be found in Appendix F to EPRI NP-5652.

The cognizant engineer is responsible for developing an engineering evaluation which adequately addresses the concerns regarding use of an alternative commercial item. The engineering evaluation should be a good source of critical characteristics for acceptance of the item.

The engineering evaluation by itself does not provide a means for acceptance. It is still necessary to assure acceptable performance through activities described in the appropriate acceptance method (see 5.1.6 of this document).

5.1.5.3 First Time Procurement of a Commercial Item

Most Ellis & Watts new equipment contracts for safety related applications consist of an assemblage of components that are qualified to customer specifications. In these situations, any engineering evaluation to support a commercial item dedication would most likely be the result of scenario 1 or 2 above. In the case where a commercial item would be furnished without a customer specification or where an item is procured to an Ellis & Watts specification, an engineering evaluation will determine whether or

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not the item's design will be adequate for the performance of its safety related function.

This evaluation is part of the design process and will address proper technical and quality issues for procurement documents. The evaluation will also provide a means to identify critical characteristics of the item. As in the previous scenario, the engineering evaluation alone is not the sole means for acceptance. It is still necessary to assure acceptable performance through activities described in the appropriate acceptance method (see 5.1.6 of this document).

5.1.6 Appropriate Acceptance Method

EPRI NP-5652 lists four acceptance methods for commercial grade items:

- Method 1 - Special Tests & Inspections
- Method 2 - Commercial Grade Survey of Supplier
- Method 3 - Source Verification
- Method 4 - Acceptable Supplier/Item Performance Record

The purpose of the chosen acceptance method is to provide reasonable assurance that the commercial grade item which was received meets the specified requirements of the item.

One or a combination of methods may be used for acceptance. The method(s) selected should be based on the individual circumstance and be based on such things as; information available from the vendor, selected critical characteristics and performance history of the item/vendor. The appropriate acceptance method(s) used for each critical characteristic must be identified in the Commercial Dedication Plan. All results from the chosen acceptance method(s) must be documented and included in the commercial dedication report for the item.

5.1.6.1 Special Tests and Inspections - Method 1

Special tests and inspections can be conducted on any commercial grade item when adequate data is available to perform appropriate test and inspections.

This method of acceptance will commonly be applicable to Ellis & Watts commercial item dedication plans. To use this method, the dedication plan shall describe how the selected critical characteristics will be verified by means of a documented checklist. The dedication plan will describe the tests and inspections to be performed and acceptance criteria to verify the critical characteristics.

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The dedication plan for a commercial item is the vehicle for describing the necessary tests and inspections and documenting the results. Once the critical characteristics are verified, the results are documented by Quality Assurance on Quality Assurance Form QC-13, Critical Attributes Checklist. This document provides the necessary objective evidence that the commercial grade item is acceptable for use in its safety related application.

In most Ellis & Watts commercial dedication situations, adequate technical data will be available to allow acceptance of the item by method 1. In most cases, this will be the most efficient method of acceptance.

5.1.6.2 Commercial Grade Survey of Supplier - Method 2

Method 2 may be used for acceptance of a commercial item based on a survey of the vendor's commercial quality control program. The vendor's program must show that it controls the selected critical characteristics and otherwise provides adequate control of the commercial item.

When a vendor quality program survey indicates adequate control of the commercial item, acceptance of the item can occur after Ellis & Watts Quality Assurance verification.

The survey criteria should be documented in the commercial dedication plan. The survey results in QC-33, Supplier Audit Reports, are maintained in E&W's audit file. Any deficiencies identified during the vendor survey which might hamper item acceptance can be corrected by adding additional controls or acceptance can be accomplished using other acceptance methods.

Once the vendors quality program has been accepted, Ellis & Watts should invoke the applicable vendor or industry quality documents in future purchase orders. The vendors compliance to the purchase order requirements is documented by the Certificate of Conformance or documented tests (as applicable).

EPRI NP-5652 lists the following examples of situations where a vendor survey could be appropriate for commercial dedication.

1. A single supplier of the commercial item is being used.
2. The required technical information (needed for method 1) cannot be obtained from the vendor.
3. The commercial item is a complicated assembly of many parts.
4. Critical characteristic cannot be easily verified using method 1.
5. When a large quantity of parts are repeatedly procured from the same supplier.

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If use of method 2 is necessary, the documented survey results provide the necessary objective evidence that the commercial item is acceptable for use in its safety related application.

5.1.6.3 Source Verification - Method 3

Method 3 involves verification of critical characteristics by means of a source inspection visit prior to releasing the item for shipment. What is important is confirmation that the vendors quality program adequately controls the selected critical characteristics.

Use of this method may involve witnessing fabrication and assembly, performance tests and/or final inspections. It could also include review and confirmation of the vendor's design, procurement, calibration and/or material control for the commercial item being purchased. The necessary verification requirements depend on the complexity of the item and must be described in the dedication report.

The results of the source verification must be documented and included in the dedication plan.

This method is most suitable for items procured on an infrequent or expedited basis where sufficient technical data is not available to use Method 1.

5.1.6.4 Acceptable Supplier/Item Performance Record - Method 4

Method 4 allows acceptance of a commercial item by documenting successful previous acceptance by one of the other three methods or by relevant industry wide performance data.

Use of Method 4 is based on historical performance, it eliminates the need for time consuming activities which do not add anything to the proven quality or performance of the commercial item. However, care must be taken to ensure that the performance record of an item is relevant to the specific application and selected critical characteristics listed in the dedication plan. EPRI NP-5652 section 3.4.3 provides details on the type of documentation needed to establish an acceptable performance record.

5.1.7 Documentation

The dedication plan will contain all relevant documentation that will be used as a basis to accept the commercial item for a safety related application. This includes Ellis & Watts test/inspection results, vendor certifications of conformance, and any vendor test or quality assurance documents requested by the Ellis & Watts purchase order for the item.

This supporting documentation must be included in the dedication report. Any reports documenting previous qualification must be referenced in the dedication report.

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5.1.8 Dedicated Item Certification

The dedicated item certification documents acceptance of the commercial grade item for a safety related application. The certification indicates that all appropriate activities have been performed and documented which provide reasonable assurance that the commercial grade item is acceptable for its intended use. A sample dedicated item certification is included as Attachment I to this document.

5.2 GENERAL REQUIREMENTS RELATING TO THE DEDICATION PLAN

5.2.1 The cognizant Ellis & Watts engineer develops the dedication plan file and plan number.

5.2.2 The dedication plan shall clearly specify the responsibilities of persons involved in the dedication process if they are different from the responsibilities described in this document.

5.2.3 Multiple acceptance methods may be used when necessary to verify critical characteristics.

5.2.4 Once a dedication plan has been developed for an item, it may be used to dedicate subsequently purchased replacements for that item. Depending on the dedication plan requirements, the repeat procurement may not require recertification. The Ellis & Watts purchase order shall list appropriate flow down requirements from the item's qualification plan which will be imposed on the item's supplier. Ellis & Watts engineering will generate a procurement requisition containing the appropriate requirements. Purchasing will include all requirements in the vendor purchase order. Quality Assurance will verify all requirements are included (reference Paragraph 6.1).

5.2.5 Prior to shipping a commercial grade item for use as a replacement part, the dedication plan activities must be completed and the basic component certified for safety related use.

5.2.6 If an existing dedication plan is to be used for a program/contract other than the one it was originally written for, the cognizant Ellis & Watts engineer must include an evaluation of the differences in performance, environmental and seismic criteria to ensure that the previous qualification is valid for the current program.

6.0 GUIDELINES FOR APPROPRIATE PURCHASE ORDER TEXT

One of the key aspects of commercial dedication is properly specifying the commercial item. Complete and correct specification of requirements in the Ellis & Watts purchase order is essential to assure that the commercial dedication activities are meaningful.

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6.1 Before a purchase order is issued for an item that is intended for commercial dedication, a review of the applicable design requirements shall be performed by the cognizant engineer. This review will provide appropriate purchase order specification text. The purchase order will be signed by engineering and Q.A. to indicate a completed review before release to the vendor. Any parameter listed below, which has been identified as a critical characteristic, must be included in the purchase order text. The following are examples of item parameters to consider for purchase orders.

- A. Part number - The item's part number is probably the most important parameter to be specified in a purchase order. The part number should always be a chosen critical characteristic in the dedication plan and therefore it must appear completely and correctly in the purchase order. When purchasing a replacement part for commercial dedication, the vendor should be contacted before ordering to see if the part number has changed. If it has, the requirements of the purchase order must be tailored accordingly.
- B. Description - The description should be as complete as possible and include such items as type, size, model, series, material of construction, pressure rating, range of operation as applicable.
- C. Critical Characteristics - All critical characteristics must be identified, including the method of verification, if the verification is to be performed at the vendor's facility. Material must be identified as a critical characteristic.
- D. Standards - The purchase order should include any applicable material or part standards to which the item is manufactured (e.g. ASME, ASTM, ANSI, NEMA, SAE, etc.). Any applicable standards to which the item is manufactured cannot be unique to the nuclear industry, otherwise the part is not commercial grade.
- E. Special Q.A. Requirements - Any special Q.A. requirements listed in the dedication plan or directed by Ellis & Watts Q.A. must be included in the purchase order. Some examples are: right of access, witness and hold points, shipping release instructions, non substitution clauses, etc. Our customer's purchase documents may also contain special Q.A. instructions that may need to appear in the purchase order to our vendor.
- F. Documentation - Any special documentation requirements which are critical in supporting the dedication plan must be included. For example, material test reports, certificates of conformance and copies of any test or inspection reports which are normally generated for the commercial item.

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In the case of certificates of conformance, the purchase order should specifically state the required wording of the certification. General, "blanket statement" Certificates of Conformance will usually be unacceptable (especially if the certification is relied upon to verify a critical characteristic of an item).

7.0 DEFINITION OF TERMS

The following definitions are for terms which appear in this document. The definitions are taken from EPRI Report NP5652. Any use of these terms in this document is within the context of the following definitions shown below.

GLOSSARY OF TERMS AND DEFINITIONS

Acceptable Supplier/Item Performance Record - A record of acceptable performance of a supplier's commercial grade item which provides justification for a purchaser to accept the item for safety-related use.

Acceptance - The employment of methods to produce objective evidence which provides reasonable assurance that a commercial grade item received is the item specified.

Basic Component - An item procured either as a safety-related item or as a commercial grade item which has been accepted and dedicated for safety-related application. This term is synonymous with "safety-related component."

Certificate of Conformance - A document signed or otherwise authenticated by an authorized individual certifying the degree to which items or services meet specified requirements.

Certification - The act of determining, verifying, and attesting in writing to the qualifications of personnel, processes, procedures, or items in accordance with specified requirements.

Commercial Grade Item

(a) When applied to nuclear power plants licenses pursuant to 10 CFR Part 50, commercial grade item means a structure, system, or component, or part thereof that affects its safety function, that was not designed and manufactured as a basic component. Commercial grade items do not include items where the design and manufacturing process require in-process inspections and verifications to ensure that defects or failures to comply are identified and corrected (i.e., one or more critical characteristics of the item cannot be verified).

(b) When applied to facilities and activities licenses pursuant to 10 CFR Parts 30, 40, 50 (other than nuclear power plants), 60, 61, 70, 71, 72, commercial grade items means an item that is:

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GLOSSARY OF TERMS AND DEFINITIONS (CONTINUED)

- (i) Not subject to design or specification requirements that are unique to those facilities or activities;
- (ii) Used in applications other than those facilities or activities; and
- (iii) To be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (for example, a catalog).

Commercial Grade Survey - Activities conducted by the purchaser or its agent to verify that a supplier of commercial grade items controls, through quality activities, the critical characteristics of specifically designated commercial grade items, as a method to accept those items for safety-related use.

Commodity Item - An item having a generic application throughout a nuclear unit, which lends itself to bulk procurement (e.g. nuts, bolts, materials, O-rings, gaskets, indicator lights, fuses, relays, resistors, etc.).

Conditioning - Any additional work or process imposed upon an item that makes it different from nominally similar items (definition from ANSI/IEEE STD 934-1987).

Conditioning may include calibration, adjustment, tuning, selection testing, "burn-in", heat treatment, machining, and similar processes.

Critical Characteristics - Identifiable and measurable attributes/variables of a commercial grade item, which once selected to be verified, provide reasonable assurance that the item received is the item specified.

Dedication - The point in time after which a commercial grade item is accepted for a safety-related application and deficiency reporting becomes the responsibility of the party performing the acceptance.

Equivalency Evaluation - A technical evaluation performed to confirm that an alternative item, not identical to the original item, will satisfactorily perform its intended function once in service. This term is synonymous with "Equal-to-or-Better-Than Evaluation."

Item - Any level of unit assembly, including structures, systems, subsystems, subassembly, component, part, or material.

Like-for-Like Replacement - The replacement of an item with an item that is identical.

Nonsafety-Related Item - An item which does not perform a safety-related function.

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GLOSSARY OF TERMS AND DEFINITIONS (CONTINUED)

Part Number - A supplier's assigned identifier for a commercial grade item. Part number as used herein can also include identifiers such as model number, material type, grade, catalog reference number, etc.

Post-Installation Tests - Activities conducted after installation of a commercial grade item to verify required critical characteristics prior to placement in operation. An element of the "Special Tests and Inspection" method to accept an item for safety-related use.

Safety-Related Component - A plant structure, system, component or part thereof, necessary to assure:

1. The integrity of the reactor coolant pressure boundary,
2. The capability to shut down the reactor and maintain it in a safe shutdown condition, or
3. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite radiation exposures comparable to those referred to in 10CFR Part 100.11 (definition also applies to a basic component per 10CFR21).

Source Verification - Activities witnessed at the supplier's facilities by the purchaser or its agent for specific items to verify that a supplier of a commercial grade item controls the critical characteristics of that item, as a method to accept the item.

Special Tests and Inspections - Activities conducted after receipt of a commercial grade item to verify one or more critical characteristics as a method to accept the item for safety-related use.

Standard Receipt Inspection - Activities conducted upon receipt of items, including commercial grade items, in accordance with ASME NQA-1-1994 to check such elements as the quantity received, part number, general condition of items, and damage.

Supplier - Any individual or organization who furnishes items or services in accordance with a procurement document. An all-inclusive term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, consultant, and their subtier levels.

Technical Evaluation - An evaluation performed to assure that the correct requirements for an item are specified in a procurement document.

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ATTACHMENT I
Dedicated Item Certification

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DEDICATED ITEM CERTIFICATION

The commercial grade item described below is certified for use in the nuclear safety related application as designated in the Ellis & Watts Commercial Dedication Plan No. _____ due to successful completion and documentation of the commercial dedication activities.

Commercial Item: _____

Ellis & Watts Engineering _____ Date _____

Ellis & Watts Q.A. _____ Date _____

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ATTACHMENT II

Format for Commercial Grade Dedication Plan

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ELLIS & WATTS
BATAVIA, OH 45103

DOCUMENT NO. _____ REVISION _____

ISSUE NO. _____

TITLE: _____

PREPARED BY: _____

ENGINEERING
APPROVAL: _____

Q.A. APPROVAL: _____
CRAIG E. HUNT

DATE _____

DOCUMENT NO. _____

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ATT. II

AII-1

1.0 Introduction
(per 5.1.1 of ENG-109)

The QA signature on the Commercial Dedication Plan cover sheet will verify review was completed and approved.

2.0 Safety Related Function of Parent Equipment
(per 5.1.2 of ENG-109)

3.0 Safety Related Function of the Dedication Item
(per 5.1.3 of ENG-109)

4.0 Critical Characteristics
(per 5.1.4 of ENG-109)

5.0 Engineering Evaluation
(as applicable per 5.1.5 of ENG-109)

6.0 Acceptance Method
(as applicable per 5.1.6 of ENG-109)

7.0 Documentation Supporting Dedication
(per 5.1.7 of ENG-109)

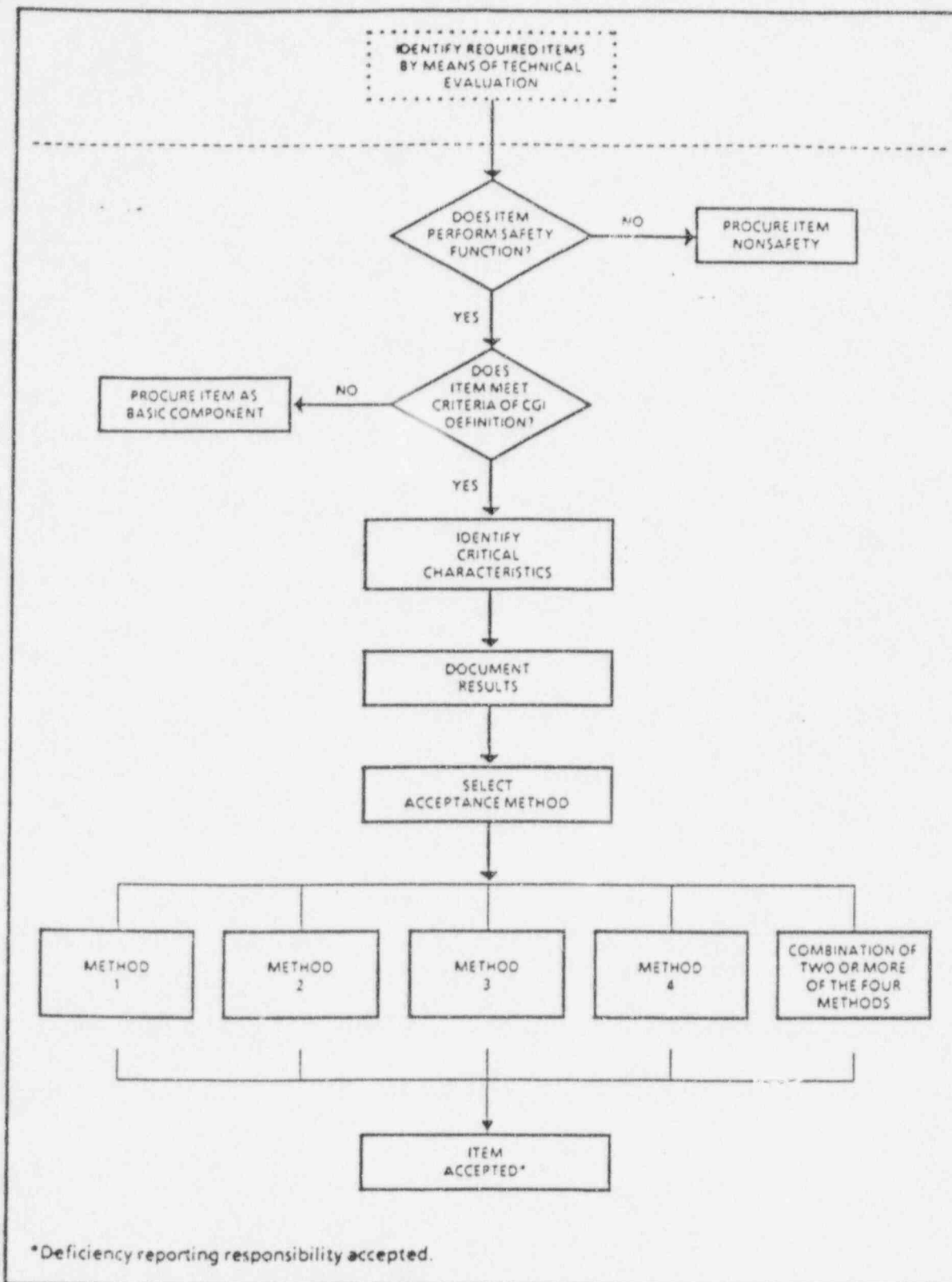
8.0 Dedicated Item Certification
(see ATTACHMENT I to ENG-109 for sample)

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ATTACHMENT III

Generic Process for Acceptance of
Commercial Grade Items from
EPRI-NP5652

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ATTACHMENT IV

ENG-109 Commercial Grade Dedication Procedural Checklist

and

Form QC-13 Critical Attribute Inspection Checklist

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ENG-109 COMMERCIAL GRADE DEDICATION
PROCEDURAL CHECKLIST

Purpose This checklist shall be used for dedication of all commercial grade items to verify all steps of ENG-109 are completed.

Commercial grade dedication plan no. _____

E&W job no. _____

Customer contract no. _____

Engineer/QA
Initials

1. The E&W engineer shall review customer contract by means of technical evaluation.
2. The E&W engineer shall determine whether item performs safety function (safety related).
3. The E&W engineer shall determine whether item meets criteria of commercial grade item definition.
4. The E&W engineer shall identify critical characteristics and method(s) used for the acceptance process and technical evaluation. This information shall be documented in the commercial grade dedication plan. The plan shall conform to the requirements of ENG-109.
5. E&W QA shall review the commercial grade dedication plan to verify the appropriate quality assurance requirements are specified.
6. The E&W engineer shall provide to purchasing a requisition detailing all relevant technical, testing, and quality assurance requirements.
7. E&W QA shall review the purchase order to the vendor to verify all quality assurance requirements are specified.

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8. E&W QA shall support the dedication process by conducting vendor audits/surveys required by the plan.
9. E&W QA shall verify that E&W form QC-13 "Critical Attribute Inspection Checklist" documents all results of the critical characteristics and that the acceptance criteria identified in the plan is met. (E&W form QC-13 is attached).
10. The E&W engineer shall review the documented results of the commercial grade dedication plan and verify completion of the plan.
11. E&W QA shall review the documented results of the commercial grade dedication plan, verify completion of the plan and that all acceptance criteria has been met. All documents as required by the plan shall be verified complete and within the acceptance criteria.
12. The E&W engineer and QA shall complete the Dedicated Item Certification (Form ENG-326).

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