

S

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 660111

Proj.
ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedeure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. T. Nuxall, CVDF, R3-86, 372-3739		4. USQ Required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. Date 4/25/00
	6. Project Title/No./Work Order No. SNF/W-441 Spent Nuclear Fuel Cold Vacuum Drying		7. Bldg./Sys./Fac. No. CVDF 142-K	8. Approval Designator S ^N Q
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) SNF-6218, Rev. 0		10. Related ECN No(s). N/A	11. Related PO No. N/A
12a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 12b) <input checked="" type="checkbox"/> No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A Design Authority/Cog. Engineer Signature & Date	
13a. Description of Change Facility Changed from Part number U to E. Was part number U3E-Z3P-B1C1F is now E3E-Z3P-B1C1F. USQ Approval: CVD-00-0228 gpb 4/26/00				
13b. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
14a. Justification (mark one) Criteria Change <input type="checkbox"/> Design Improvement <input checked="" type="checkbox"/> Environmental <input type="checkbox"/> Facility Deactivation <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const <input type="checkbox"/> Const. Error/Omission <input type="checkbox"/> Design Error/Omission <input type="checkbox"/>				
14b. Justification Details Different type of relay required. The design verification method for SS/SC components is by independent review in accordance with EN-6-027-01. Documentation of this review is accomplished by the independent review approval signature provided on page 2 of this ECN.				
15. Distribution (include name, MSIN, and no. of copies) See distribution sheet.				

DATE:		HANFORD		ID: 2
STA: A		RELEASE		
APR 26 2000				

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1. ECN (use no. from pg. 1)

660111

16. Design Verification Required	17. Cost Impact	NA	18. Schedule Impact (days)
	ENGINEERING		CONSTRUCTION
<input checked="" type="checkbox"/> Yes	Additional <input type="checkbox"/> \$ NA	Additional <input type="checkbox"/> \$ NA	NA
<input type="checkbox"/> No	Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	Improvement <input type="checkbox"/>
			Delay <input type="checkbox"/>

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>	Tickler File	<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below

indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number Revision

NA

21. Approvals

[illegible]

SNF-6218
Revision 1

BASLER ELECTRIC BEI- 51/27R E3E-Z3P-B1C1F OVERCURRENT RELAY

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford
P.O. Box 1000
Richland, Washington

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SNF- 6218, Rev 1

12 total pages.

SNF-6218
Revision 1
ECN 660111

BASLER ELECTRIC BEI-51/27R E3E- Z3P-B1C1F OVERCURRENT RELAY

G. Singh
Fluor Hanford

Date Published
April 2000

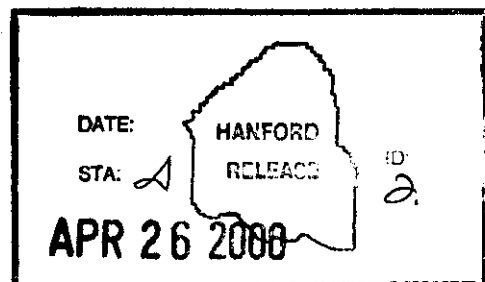
Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford
P.O. Box 1000
Richland, Washington


Release Approval

4/26/00
Date



RECORD OF REVISION

(1) Document Number

SNF-6218

Page 1

(2) Title

BASLER ELECTRIC OVERCURRENT RELAY

Change Control Record

[illegible]

Commercial Grade Item Upgrade Dedication Form

SNF-6218, Rev. 1

ECN No. N/A

CGI No. CGI-SNF-D-20-1-C1-065

Page 1 of 8

Title: **Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay**

Section 1 Part Information

Item No.: N/A	Manufacturer: N/A	Supplier: N/A
Mfg. Part/Model No.: N/A	Supplier's P/N: N/A	
Part Description: N/A		
End Use Description: N/A		

Section 2a Component Information

Equipment No.: 51, 51V, 51G	Specification No.: W-441-C1, W-379 (SNF/CSB Spec. for Diesel Generator)	Manufacturer: Basler Electric	Past P.O. No.: N/A
Procurement and/or Model No.: BEI-51/27R E3E-Z3P-B1C1F	Equipment Supplier (if different from manufacturer): N/A		Equip. Supplier's Part No.: N/A

Component Description: **Control Panels upgrade – Over-current Relays**

Section 2b Commercial Availability of the Item

- Is the Item available from a catalogue from a qualified NQA1 supplier or ISO 9000 supplier (coordinate with project CGI interface Engineer or BTR)? ☐ YES (go to #2 below) ☒ NO (go to procedure step 6.3.2, proceed to dedicate Item)
If not available from a qualified NQA1 supplier, is it available from an ISO 9000 supplier? (coordinate w/ project CGI Interface Engineer or BTR): ☐ YES (go to #2 below, dedicate Item) ☒ NO (dedicate Item)
- List of Candidate qualified suppliers or ISO 9000 suppliers: **N/A**
- Recommended Procurement Strategy (coordinate with project CGI interface Engineer or BTR): **N/A**

Section 2c CGI Determination

CGI Determination Questions:

- #1: Is the Item subject to design or specification requirements that are unique to nuclear facilities or activities?
☐ YES (the Item is not commercial grade) ☒ NO (continue)
- #2: Is the Item used in applications other than nuclear facilities or activities?
☐ NO (the item is not commercial grade) ☒ YES (continue)
- #3: Is the Item ordered from manufacturer/supplier on the basis of specifications set forth in the manufacturer's catalog?
☐ NO (the item is not commercial grade) ☒ YES (continue)
- [X] All three criteria have been satisfied. The Item meets the definition of commercial grade.**

Section 2d Reason for Dedication

The above Commercial Grade (CG) described Item is being Dedicated for use in the application cited for the following reason(s):

	Item is being purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Class application.
X	Item is being purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.
	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Class application.
	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.
	Other ('like-for-like', similar, substitution, replacement evaluation)

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Title: **Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay**

Section 3 Failure Effects Evaluation

A. Part/Component Safety Function:

1. **Maintain overcurrent protection of generators**

B. Part/Component Functional Mode:

Safety Function #1:	<input checked="" type="checkbox"/>	Active	<input type="checkbox"/>	Passive
Safety Function #2:	<input type="checkbox"/>	Active	<input type="checkbox"/>	Passive
Safety Function #3:	<input type="checkbox"/>	Active	<input type="checkbox"/>	Passive

Active - Mechanical or Electrical change of state is required to occur for the component to perform its safety function

Passive - Change of state is not required for the component to perform its safety function

C. Host Component Safety Function (if applicable): **N/A**

1.

D. Failure Mode(s) and the effects on component or system safety function (see Worksheet 1):

1. **External events that causes structural component failure**

2. **Seismic 3/1 Protection for adjacent SS SSCs -Containment**

Section 4 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required:

Yes	<input type="checkbox"/>	
No	<input checked="" type="checkbox"/>	Environmental Condition A

If yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

Required Safety Functions:

Qualification Period:

Natural Phenomena Hazard (NPH) Design Required:

Yes	<input checked="" type="checkbox"/>	HNF-PRO-97, Rev. 0, W-441-C1
No	<input type="checkbox"/>	

If yes: NPH Design Requirements

Performance Category: **PC-2**

NPH Design Req'ts.:

Required Safety Functions: **Seismic 3/1 Protection for adjacent SS SSCs - Containment**

Section 5 Component Functional Classification

Safety Class (SC)	General Service	<input checked="" type="checkbox"/>	Safety Significant (SS)
-------------------	-----------------	-------------------------------------	-------------------------

If part/component classification is different from host component/system, document basis. **N/A**

Sections 6 and 7 (Reserved)

Section 8 References (for Functional Classification)

National Codes/Standards: **NEC**

Safety Analysis Report (SAR): **HNF- 3553, Rev. 0** *PA 11/26/00* Annex B

Drawings: **Nutherm Dwg. # 59729**

Vendor Manual/Manufacturer/Supplier Information: **Catalog Cut Sheets - Basler Electric**

Commercial Grade Item Upgrade Dedication Form

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Title: **Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay**

Section 9 Critical Characteristics				
Critical Characteristics	Acceptance Criteria/Tolerances	Acc.Method	ID	Function
1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified)				
Manufacturer	Basler Electric	1, IN	X	
Model Number	BEI-51/27R E3E-Z3P-B1C1F	1, IN	X	
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
Markings	UL Logo	1, IN	X	
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
Current carrying capability	0.5V max. voltage drop across closed contacts at 7 amps VAC, resistive.	1, T		X
Insulation resistance	10 Megohm across open contact terminals and terminals to ground.	1, T		X
Compatibility with existing CTs	Engineering evaluation based on test data finds compatibility between existing and these CTs.	1, T, A		X
Calibration	Actual current readings are within $\pm 2\%$ amps of trip curves. Identify set points(s) for current trips.	1, T, A		X
Operation comparison	Data taken above is compared with characteristics of existing relays by analysis	1, A		X
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
Environmental	Note 1			
Seismic Condition A	Note 2			
Notes and Legend:		Acceptance Method:		
1. These devices have phenolic non-metallic material. These materials are not subject to degradation at 60°F and 40% RH or 75°F and 25% RH and are suitable for Condition A Application.		1. Special Test and Inspection		
2. This equipment is seismically rugged. Evaluation shall be performed to determine potential impact to SS & SC SSCs.		1, IN for Inspection		
Rev. 0: Initial Issue.		1, T for Test		
		2. Commercial Grade Survey		
		3. Source Verification		
		4. Vendor/Item History		
Section 10 Initial Review and Approval				
Approvals:				
Designated Engineer <u>[Signature] 4/26/00</u>		QA Engineer: <u>Hank M. Chapin 4/26/00</u>		
Design Authority: <u>[Signature] 4/25/00</u>		Other:		

4/25/00

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Title: **Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay**

WORKSHEET 1

DETERMINATION OF FAILURE MECHANISMS

Section 1			
Typical Failure Mechanisms	Definition	X = Applicable to Component under Evaluation X?	Indicate Failure Mode
Fracture	Separation of a solid accompanied by little or no macroscopic plastic deformation.		
Corrosion	The gradual deterioration of a material due to chemical or electrochemical reactions, such as oxidation, between the material and its environment.	X	Deterioration of the insulation resulting in a short and loss of power.
Erosion	Destruction of materials by the abrasive action of moving fluids, usually accelerated by the presence of solid particles carried with the fluid.		
Open Circuit	An electrical circuit that is unintentionally broken so that there is no complete path for current flow.	X	An unintentional break of the wire would result in a loss of power.
Short Circuit	An abnormal connection by which an electrical current is connected to ground, or to some conducting body, resulting in excessive current flow.	X	An unintentional connection to ground would result in a loss of power.
Blockage	Clogging of a filtering medium resulting in the inability to perform its purification function or blockage of flow.		
Seizure	Binding of a normally moving item through excessive pressure, temperature, friction, jamming.		
Unacceptable Vibration	Mechanical oscillations produced are beyond the defined permissible limits due to unbalancing, poor support, or rotation at critical speeds.		
Loss of Properties	A loss of mechanical and physical properties of a material due to exposure to high temperatures, radiation exposure.		
Excess Strain	Under the action of excessive external forces the material of the part has been deformed or distorted.		
Mechanical Creep	From prolonged exposure to high temperature and stress, the object will show a slow change in its physical (shape and dimension) and mechanical characteristics.		
Ductile Fracture	Fracture characterized by tearing of metal accompanied by appreciable gross plastic deformation.		
Section 2 Additional Failure Modes Applicable to the Component Under Evaluation			
1. Structural Failure that affects neighboring SS or SC SSCs.			

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Title: **Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay**

Checklist 1 – Acceptance Method 1 – Special Test/Inspection Verification

SECTION 1			
Item Description: Control Panels Overcurrent Protection		Equip #: Overcurrent Trip Relays	
System #: 20-6		Procurement and/or Model #: BEI-51/27R E3E-Z3P-B1C1F	
Manufacturer (Address/Phone): Basler Electric P.O. Box 269, Highland, ILL 518-654-2341		Supplier (Address/Phone):	
SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.			
Insp	Test	Post-Test	
X			1. Manufacturer
X			2. Model Number
X			3. Marking
	X		4. Current carrying Capability
	X		5. Insulation Resistance
	X		6. Compatibility with existing CTs
	X		7. Calibration
	X		8. Operation comparison
SECTION 3 BY INSPECTION * See Attachment H, Table H-1 of Desk Instruction for Sampling Size: References (See Section 7)			
Characteristic: Manufacturer			Sample Size*: 100%
Acceptance Criteria: Basler Electric			Receipt Inspection Plan / Report #:
Characteristic: Model Number			Sample Size*: 100%
Acceptance Criteria: BEI-51/27R E3E-Z3P-B1C1F			Receipt Inspection Plan / Report #:
Characteristic: Marking			Sample Size*: 100%
Acceptance Criteria: UL Logo			Receipt Inspection Plan / Report #:

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Title: **Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay**

Section 4 By Special Test* See Attachment H, Table H-1 of Desk Instruction for Sampling Size; References (See Section 7)	
Characteristic for Test: Current carrying Capability	Samp Size*: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Reduced <input type="checkbox"/> Tightened
Acceptance Criteria: 0.5V max. voltage drop across closed contacts at 7 amps VAC, resistive	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Insulation Resistance	Samp Size*: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Reduced <input type="checkbox"/> Tightened
Acceptance Criteria: 10 Megohms min across open contact terminals and terminals to ground.	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Compatibility with existing CTs	Samp Size*: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Reduced <input type="checkbox"/> Tightened
Acceptance Criteria: Engineering evaluation based on test data finds compatibility between existing and these CTs.	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Calibration	Samp Size*: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Reduced <input type="checkbox"/> Tightened
Acceptance Criteria: Actual current readings are within $\pm 2\%$ amps of trip curves. Identify set points(s) for current trips.	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Operation comparison	Samp Size*: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Reduced <input type="checkbox"/> Tightened
Acceptance Criteria: Data taken above is compared with characteristics of existing relays by analysis	
Actual Test Value:	Test Plan and Report #:

**If Supplier/Manufacturer or Other, Refer to CGI Checklist-2 for Support Information

Commercial Grade Item Upgrade Dedication Form

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ECN No. N/A CGI No. CGI-SNF-D-20-1-C1-065

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Title: Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay

Section 5 Test / Inspection Summary (Acceptance Method 1)

1. Summary Of Verified Critical Characteristics , Their Verification Methods, and Results

ITEM DESCRIPTION: Overcurrent Trip Relay

Critical Characteristics				Verification Results							
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/IN	Procedure or RR#	Check- list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer	Basler Electric	X		1, IN							
Model No.	BEI-51/27R E3E-Z3P-B1C1F	X		1, IN							
Markings	UL Logo	X		1, IN							
Current carrying Capability	0.5V max. voltage drop across closed contacts at 7 amps VAC, resistive		X	1, T							
Insulation Resistance	10 Megohms min across open contact terminals and terminals to ground.		X	1, T							
Compatibility with existing CTs	Engineering evaluation based on test data finds compatibility between existing and these CTs.		X	1, T							
Calibration	Actual current readings are within $\pm 2\%$ amps of trip curves. Identify set points(s) for current trips.		X	1, T							
Operation Comparison	Data taken above is compared with characteristics of existing relays by analysis		X	1, T							

2. Disposition Of Unverified or Failed Critical Characteristics

Critical Characteristic	Disposition

3. Signature Indicates All Critical Characteristics Verified Satisfactory or Acceptably Dispositioned and Commercial Grade Dedication Is Satisfactory and Complete.

Testing Agency Approval: _____

Date _____

Design Authority: _____

Date _____

Testing Agency QA Engineer: _____

Date _____

QA Engineer: _____

Date _____

Commercial Grade Item Upgrade Dedication Form

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Title: **Basler Electric BEI-51/27R E3E-Z3P-B1C1F Overcurrent Relay****Section 6 Contacts / Phone Numbers**

Title	Name	Phone
Design Authority		
QA		
QC		
Cog - Engineer		
CGI Engineer	Larry Price	372-8770
Procurement Engineer	Carl van Katwijk	376-9385
Other		

Section 7 Supporting Documentation for This Checklist

Initial Procurement Documents		For Critical Characteristics
<input type="checkbox"/>	Drawings:	
<input type="checkbox"/>	Manuals (specify type & number):	
<input type="checkbox"/>	Design Calculations	
<input type="checkbox"/>	Installation Instructions	
<input type="checkbox"/>	Operation Instructions	
<input type="checkbox"/>	Calibration Instructions	
<input type="checkbox"/>	Manufacturer's Recommended Spare Parts List	
<input checked="" type="checkbox"/>	Other: : Catalog Cut Sheets - Basler Electric	All
Procurement Documents		
<input type="checkbox"/>	Certificate of Conformance/Compliance	
<input type="checkbox"/>	Seismic Qualification Certificate	
<input type="checkbox"/>	Environmental Qualification Certificate	
<input type="checkbox"/>	Test Report (s):	
<input type="checkbox"/>	Inspection Report (s):	
<input type="checkbox"/>	CMTRs for ASME Pressure Retaining Materials	
<input type="checkbox"/>	Valve Seat Leakage Report	
<input type="checkbox"/>	Weld Records	
<input type="checkbox"/>	Material Traceability Record	
<input type="checkbox"/>	Other:	

[illegible]