

APR 13 2000

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 628538

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) SNF CVD Project	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: SNF Project W-441	6. Design Authority/ Design Agent/Cog. Engr.: G. Singh	7. Purchase Order No.: N/A
8. Originator Remarks: Initial Release. 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 reviewer approval signature on page 2 of this EDT ^{EDT} . <i>ra 4/13/00</i>		9. Equip./Component No.: NA
11. Receiver Remarks: N/A		12. Major Assm. Dwg. No.: N/A
11A. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		13. Permit/Permit Application No.: N/A
USQ No.		14. Required Response Date:

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	SNF-6217	N/A	0	Diesel Generator Bldg. - Wiring, Disconnect Switch, Comb. Starter, Panelboard, etc.	S ^N Q	2	1	N/A
2	SNF-6218	N/A	0	Basler Electric BEI-51/27R U3E-Z3P-B1C1F Overcurrent Relay	S ^N Q	2	1	N/A

16. KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)		1. Approval	4. Review	1. Approved	4. Reviewed no/comment
		2. Release	5. Post-Review	2. Approved w/comment	5. Reviewed w/comment
		3. Information	6. Dist. (Receipt Acknow. Required)	3. Disapproved w/comment	6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
2	1	Design Authority	G. Singh	<i>G. Singh</i>	4/13/00			See Distribution			
2	1	Engineer	C. Van Katwijk	<i>C. Van Katwijk</i>	4/13/00						
2	1	Rep Mgr.	T. Choho	<i>T. Choho</i>	4/13/00						
2	1	QA	H. Chaffin	<i>H. Chaffin</i>	4/13/00						
2	1	Safety	J. Brehm	<i>J. Brehm</i>	4/13/00						
2	1	Ind. Review	J. Irwin	<i>J. Irwin</i>	4/13/00						
			* C. Haller	<i>C. Haller</i>	4/13/00						
											USQ-like: CVO-00-0182808 4/13/00
											* Approval authorized, parallel preparation of USQ
											Screening with implementation of ECN per NSDI-02.

18. T. Nuxall <i>T. Nuxall</i> 4/13/00 Signature of EDT Originator Date	19. T. Choho <i>T. Choho</i> 4/13/00 Authorized Representative Date for Receiving Organization	20. G. Singh <i>G. Singh</i> 4/13/00 Design Authority/ Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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SNF-6218
Revision 0

Basler Electric BEI-51/27R U3E-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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Revision 0
EDT 628538

Basler Electric BEI-51/27R U3E-Z3P- B1C1F Overcurrent Relay

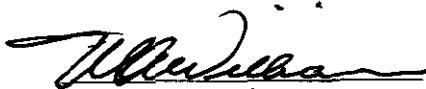
C Van Katwijk
FH

Date Published
April 2000

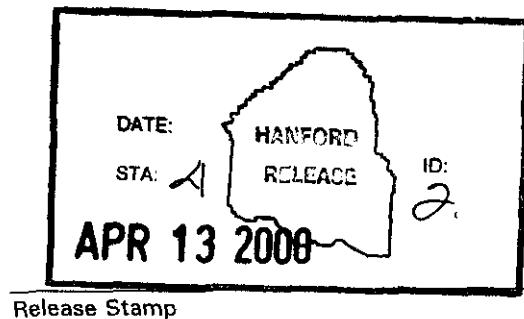
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Fluor Hanford
P.O. Box 1000
Richland, Washington


Release Approval

4/13/00
Date



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Total Pages: 10

SNF-6218, Rev0

Commercial Grade Item Upgrade Dedication Form

SNF-6218, Rev. 0

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

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Title: **Basler Electric BEI-51/27R U3E-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	Manufacturer: Basler Electric	Past P.O. No.: N/A
Procurement and/or Model No.: BEI-51/27R U3E-Z3P-B1C1F	Equipment Supplier (if different from manufacturer): N/A	Equip. Supplier's Part No.: N/A	
Component Description: Control Panels upgrade - Overcurrent Relays			
Section 2b Commercial Availability of the Item			
1. Is the Item available from a catalogue from a qualified NQA1 supplier or ISO 9000 supplier (coordinate with project CGI interface Engineer or BTR)? <input type="checkbox"/> YES (go to #2 below) <input checked="" type="checkbox"/> 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): <input type="checkbox"/> YES (go to #2 below, dedicate Item) <input checked="" type="checkbox"/> NO (dedicate Item)			
2. List of Candidate qualified suppliers or ISO 9000 suppliers: N/A			
1. 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? <input type="checkbox"/> YES (the Item is not commercial grade) <input checked="" type="checkbox"/> NO (continue)			
#2: Is the Item used in applications other than nuclear facilities or activities? <input type="checkbox"/> NO (the item is not commercial grade) <input checked="" type="checkbox"/> YES (continue)			
#3: Is the Item ordered from manufacturer/supplier on the basis of specifications set forth in the manufacturer's catalog? <input type="checkbox"/> NO (the item is not commercial grade) <input checked="" type="checkbox"/> 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 U3E-Z3P-B1C1F Overcurrent Relay**

Section 3 Failure Effects Evaluation

A. Part/Component Safety Function:

1. **Maintain overcurrent protection of the control panels**

B. Part/Component Functional Mode:

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

No

Environmental Condition A

If yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

Required Safety Functions:

Qualification Period:

Natural Phenomena Hazard (NPH) Design Required:

Yes

No

HNF-PRO-97, Rev. 0, W-441-C1

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

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, Annex B**

Drawings: **Nutherm 59729**

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

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Title: **Basler Electric BEI-51/27R U3E-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 U3E-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 20 amps VAC, resistive	1, T		X
Insulation resistance	10 Megohm min across open contact terminals and terminals to ground at 500 VDC	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. 2. This equipment is seismically rugged. Evaluation shall be performed to determine potential impact to SS & SC SSCs. Rev. 0: Initial Issue.		1. Special Test and Inspection 1, IN for Inspection 1, T for Test 2. Commercial Grade Survey 3. Source Verification 4. Vendor/Item History		

Section 10 Initial Review and Approval	
Approvals: Designated Engineer: <i>[Signature]</i> 4/13/00 Design Authority: <i>[Signature]</i> 4/12/00	QA Engineer: <i>[Signature]</i> 4-12-00 Other:

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Title: **Basler Electric BEI-51/27R U3E-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 U3E-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 U3E-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 U3E-Z3P-B1C1F		Receipt Inspection Plan / Report #:	
Characteristic: Marking			Sample Size*: 100%
Acceptance Criteria: UL Logo		Receipt Inspection Plan / Report #:	

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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[]Reduced[]Tightened
Acceptance Criteria: 0.5V max. voltage drop across closed contacts at 20 amps VAC, resistive	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Insulation Resistance	Samp Size*: <input checked="" type="checkbox"/> Normal[]Reduced[]Tightened
Acceptance Criteria: 10 Megohms min across open contact terminals and terminals to ground (500VDC megger)	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Compatibility with existing CTs	Samp Size*: <input checked="" type="checkbox"/> Normal[]Reduced[]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[]Reduced[]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[]Reduced[]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

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Title: Basler Electric BEI-51/27R U3E-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	Critical Characteristics					Verification Results					
	Acceptance Criteria/Tolerances	ID	Function	Method T/IN	Procedure or RP#	Check-list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer	Basler Electric	X		1, IN							
Model No.	BEI-51/27R U3E-Z3P-B1C1F	X		1, IN							
Markings	UL Logo	X		1, IN							
Current carrying Capability	0.5V max. voltage drop across closed contacts at 20 amps VAC, resistive		X	1, T							
Insulation Resistance	10 Megohms min across open contact terminals and terminals to ground (500VDC megger)		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: _____

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Title: **Basler Electric BEI-51/27R U3E-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		
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:	

