STA 4 (5)

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1. EDT

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<p>18.</p> <p>T. Nuxall</p> <p><i>T. Nuxall</i> 5/9/00</p> <p>Signature of EDO Date</p> <p>Originator</p>	<p>19.</p> <p>T. Choho</p> <p><i>T. Choho</i> 5-9-00</p> <p>Authorized Representative Date for Receiving Organization</p>	<p>20.</p> <p>G. Singh</p> <p><i>G. Singh</i> 5/11/00</p> <p>Design Authority/ Cognizant Manager Date</p>	<p>21. DOE APPROVAL (if required)</p> <p>Ctrl. No.</p> <p>☐ Approved</p> <p>☐ Approved w/comments</p> <p>☐ Disapproved w/comments</p>
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Basler Electric BE1-50-51B Time Overcurrent Relay- Alarm System

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

Basler Electric BE1-50-51B Time Overcurrent Relay-Alarm System

C Van Katwijk
FH

Date Published
May 2000

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Fluor Hanford
P.O. Box 1000
Richland, Washington

Release Approval Date

SWF-6361
Rev 0

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Commercial Grade Item Upgrade Dedication Form

SNF-6361, Rev. 0

ECN No. **N/A**

CGI No. **CGI-SNF-D-20-1-C1-067**

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Title: **Basler Electric BE1-50-51B Time Overcurrent Relay - Alarm System**

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.: **Relay: 51G**

Specification No.:
W-441-C1, W-379

Manufacturer:
Basler Electric

Past P.O. No.:
N/A

Procurement and/or Model No.:
OC Relay: BEI-50/51B

Equipment Supplier (if different from manufacturer):
N/A

Equip. Supplier's Part No.:
N/A

Component Description: **Control Panels upgrade - Alarm Overcurrent Relay**

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)? ☐ 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)

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?

☐ 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)

☒ **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.

☒ 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 BE1-50-51B Time Overcurrent Relay - Alarm System**

Section 3 Failure Effects Evaluation

A. Part/Component Safety Function:

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

B. Part/Component Functional Mode:

Safety Function #1:	☒	Active	☐	Passive
Safety Function #2:	☐	Active	☐	Passive
Safety Function #3:	☐	Active	☐	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 BE1-50-51B Time Overcurrent Relay - Alarm System**

Section 9 Critical Characteristics				
Critical Characteristics	Acceptance Criteria/Tolerances	Acc.Method	ID	Function
Overcurrent Trip Relay:				
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	BE1-50/51B	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 5 amps VAC, resistive	1, T		X
Insulation resistance	10 Megohm min across open contact terminals and terminals to ground at Ohmeter VDC.	1, T		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: Rev. 0: Initial Issue		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 1,T for Test		
		2. Commercial Grade Survey		
		3. Source Verification		
		4. Vendor/Item History		

Section 10 Initial Review and Approval

Approvals:

Designated Engineer

Carla K. King 5/9/00

QA Engineer:

Hank M. Chafin 5-9-00

Design Authority:

LSM 5/9/00 Other:

5/9/00

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Title: **Basler Electric BE1-50-51B Time Overcurrent Relay - Alarm System**

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 alarm.
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 alarm.
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 alarm.
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 BE1-50-51B Time Overcurrent Relay - Alarm System**

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 #: BE1-50-51B	
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. Calibration
	X		7. Operation comparison
SECTION 3 BY INSPECTION * See Attachment H, Table H-1 of Desk Instruction for Sampling Size; References (See Section 7)			
Overcurrent Trip Relay:			
Characteristic: Manufacturer			Sample Size*: 100%
Acceptance Criteria: Basler Electric			Receipt Inspection Plan / Report #:
Characteristic: Model Number			Sample Size*: 100%
Acceptance Criteria: BE1-50-51B			Receipt Inspection Plan / Report #:
Characteristic: Marking			Sample Size*: 100%
Acceptance Criteria: UL Logo			Receipt Inspection Plan / Report #:

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Title: **Basler Electric BE1-50-51B Time Overcurrent Relay - Alarm System****Section 4 By Special Test **See Attachment H, Table H-1 of Desk Instruction for Sampling Size References (See Section 7)**Characteristic for Test: **Relay - Current carrying Capability**Samp Size*: ☒Normal ☐Reduced ☐TightenedAcceptance Criteria: **0.5V max. voltage drop across closed contacts at 5 amps VAC, resistive**

Actual Test Value:

Test Plan and Report #:

Characteristic for Test: **Relay - Insulation Resistance**Samp Size*: ☒Normal ☐Reduced ☐TightenedAcceptance Criteria: **10 Megohm min across open contact terminals and terminals to ground at Ohmeter VDC.**

Actual Test Value:

Test Plan and Report #:

Characteristic for Test: **Relay - Calibration**Samp Size*: ☒Normal ☐Reduced ☐TightenedAcceptance 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: **Relay - Operation comparison**Samp Size*: ☒Normal ☐Reduced ☐TightenedAcceptance 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 BE1-50-51B Time Overcurrent Relay - Alarm System

Section 5 Test / Inspection Summary (Acceptance Method 1)											
1. Summary Of Verified Critical Characteristics , Their Verification Methods, and Results											
ITEM DESCRIPTION: Overcurrent Alarm Trip Relay											
Critical Characteristics				Verification Results							
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/I/N	Procedure or RR#	Check-list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer	Basler Electric	X		1, IN							
Model No.	BE1-50-51B	X		1, IN							
Markings	UL Logo	X		1, IN							
Current carrying Capability	0.5V max. voltage drop across closed contacts at 5 amps VAC, resistive		X	1, T							
Insulation Resistance	10 Megohm min across open contact terminals and terminals to ground at Ohmmer VDC.		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 BE1-50-51B Time Overcurrent Relay - Alarm System****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
☐	Drawings:	
☐	Manuals (specify type & number):	
☐	Design Calculations	
☐	Installation Instructions	
☐	Operation Instructions	
☐	Calibration Instructions	
☐	Manufacturer's Recommended Spare Parts List	
☒	Other: : Catalog Cut Sheets - Basler Electric	All
Procurement Documents		
☐	Certificate of Conformance/Compliance	
☐	Seismic Qualification Certificate	
☐	Environmental Qualification Certificate	
☐	Test Report (s):	
☐	Inspection Report (s):	
☐	CMTRs for ASME Pressure Retaining Materials	
☐	Valve Seat Leakage Report	
☐	Weld Records	
☐	Material Traceability Record	
☐	Other:	

DISTRIBUTION SHEET

To
Distribution

From
SNF-CVD

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Project Title/Work Order

Date 5/9/00

W-441, CGI Package

EDT No. 629029

ECN No. NA

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