

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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(203) 666-6911

August 18, 1982

Docket No. 50-245
A02657

Director of Nuclear Reactor Regulation
Attn: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Reference: (1) D. M. Crutchfield letter to W. G. Council, dated
July 21, 1982.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 1
Reactor Protection System (RPS) Power Monitoring System Design Modification

Reference (1) requested Northeast Nuclear Energy Company (NNECO) to provide a schedule for submitting the design information and proposed changes for the Millstone Unit No. 1 Technical Specifications, and the implementation schedule for the RPS power monitoring system.

Six sets of the required design information are attached. This information consists of the following:

1. Drawing 25202-30030 - One Line Diagram RPS
2. Drawing 25202-29123, Sht. 29 - Schematic Diagram RPS
3. Drawing 25202-30031 - Cabinet Outline & Bill of Materials RPS Electrical Protection Assemblies
4. Drawing 25202-34018 - Turbine Building Conduit and Tray Sections - Sht. 3
5. Relay manufacturer's Bulletin 7.4.1-1B, 7.4.6-B and 7.7.1-1B.

The proposed changes to the Technical Specifications will be included in the Cycle 9 reload package scheduled for submittal on September 1, 1982. Installation of the system is planned for the September 1982 refueling outage.

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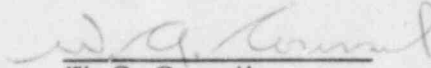
Drawings to:

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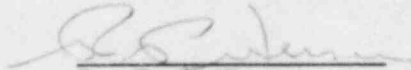
We trust that this adequately addresses the Staff's concerns.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



W. G. Council
W. G. Council
Senior Vice President



R. P. Werner
By: R. P. Werner
Vice President
Generation Engineering and Construction

SEE

APERTURE

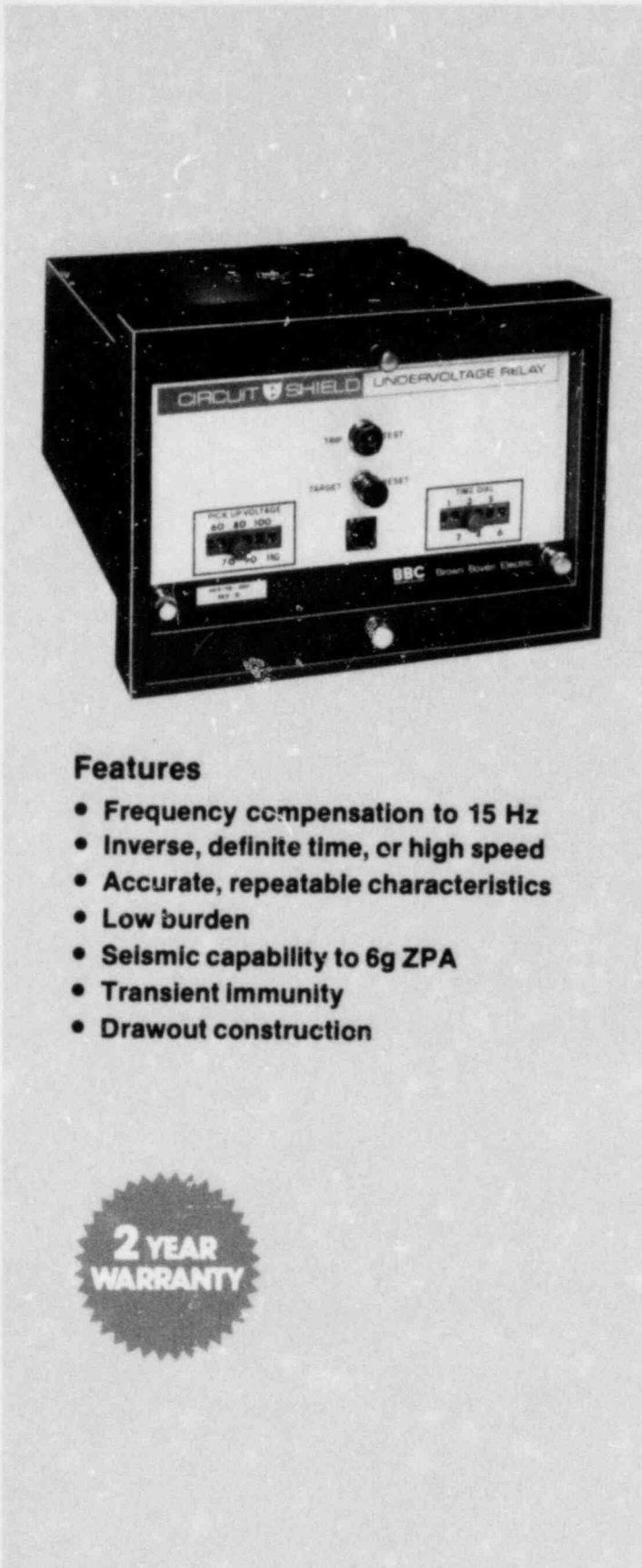
CARDS

APERTURE CARD NO# _____

AVAILABILITY PDR CF HOLD _____

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**I-T-E Type Protective Relays
Drawout**



Features

- Frequency compensation to 15 Hz
- Inverse, definite time, or high speed
- Accurate, repeatable characteristics
- Low burden
- Seismic capability to 6g ZPA
- Transient immunity
- Drawout construction



I-T-E-27, I-T-E-27D,
I-T-E-27H, I-T-E-59, I-T-E-59D,
I-T-E-59H

Undervoltage and Overvoltage Relays

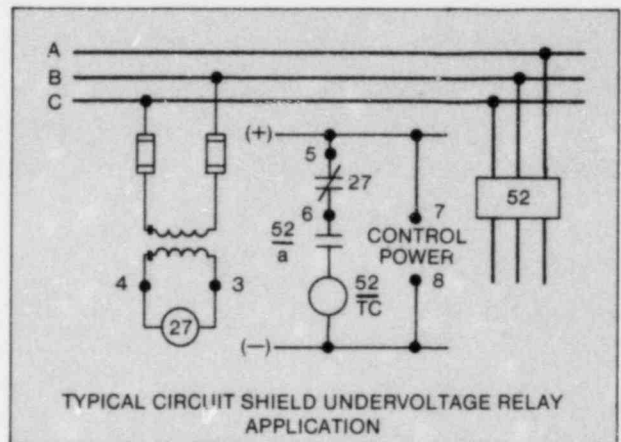
Application

Circuit-Shield Voltage Relays provide a wide range of protective functions, including undervoltage protection of motors, overvoltage protection, and automatic bus transfer. Inherently high seismic and transient immunity allow the use of these relays in generating stations or substations where the performance of electromechanical or other types of static relays is marginal.

All types are frequency compensated for reliable operation from 15 to 400 Hz, and have a dual nominal frequency rating of 50 or 60 Hz.

The unique design of the output circuit does not require seal-in contacts, allowing simplification of bus-transfer schemes. Operation indicators, however, are provided as standard features on all types.

The operating characteristic of each relay in this series is indicated as follows: H suffix for high speed; D suffix for definite time; no suffix for inverse time.



Undervoltage and Overvoltage Relays I-T-E-27, I-T-E-27D, I-T-E-27H, I-T-E-59, I-T-E-59D, I-T-E-59H

Specifications

	Type 27 Type 27D Type 27H	Type 27H	Type 59 Type 59D Type 59H
PICKUP TAPS (volts)			100 110 120 130 140 150
DROPOUT TAPS (volts)	60 70 80 90 100 110	30 35 40 45 50 55	

Input Circuit Rating: 160V, 50/60 Hz continuous
Burden: 1.2 VA, 1.0 p.F. at 120V
Control Power: 48/125 Vdc, dual rated, .08A max; 24 Vdc, 0.08A max
Output Circuit Rating: 30 Amps Tripping Duty
 @ 125 Vdc 5 Amps Continuous
 1 Amp, Opening Resistive
 0.3 Amp, Opening Inductive

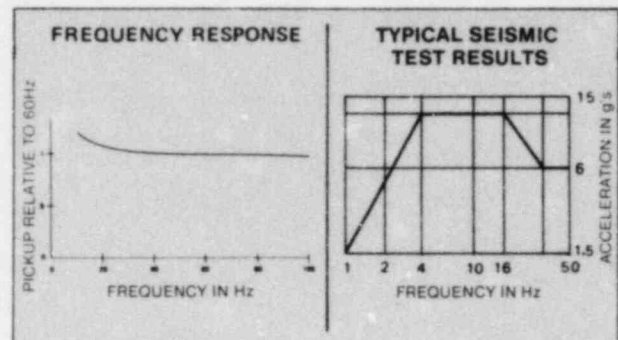
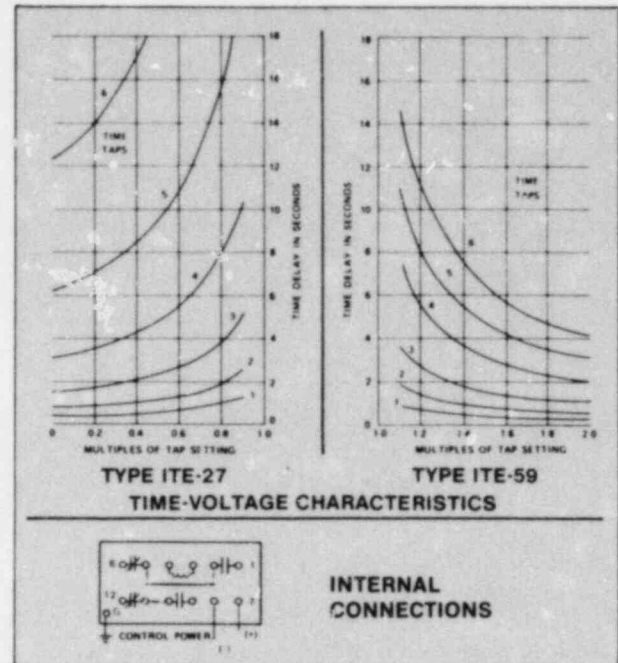
Temperature: Minus 20° to Plus 75°C
Seismic Capability: More than 6g ZPA biaxial multifrequency vibration without damage or malfunction.
Transient Immunity: More than 3000V, 1 MHz bursts at 60 Hz repetition rate, continuous.
Operating Time: models available:
 ● high speed
 ● inverse time delay (see curves)
 ● definite time delay, ranges 0.1 - 1.0 seconds, and 1.0 - 10 seconds

How To Specify

Undervoltage relay shall be type I-T-E-27 or approved equal, drawout case, capable of withstanding up to 6g ZPA seismic stress without damage or malfunction, at minimum voltage and time settings. A magnetic operation indicator shall be provided which retains position on loss of control power. Built-in means shall be provided to allow operational tests without additional equipment.

Additional Information

Instruction Book IB 18.4.7-2
 Relay Selection Sheet 7.4.0.3
 IEEE Southeastcon Paper April 1975



How To Order

For a complete listing of available versions of single and three phase voltage relays see selection sheet 7.4.0.3.

All types operate from 48 or 125 Vdc control power, and 120 Vac potential transformers. For other control voltages contact the nearest District Office.

To place an order, or for further information, contact the nearest District Office, or the Sales Manager, Protective Relays.

**I-T-E Type Protective Relays
Drawout****Features**

- High accuracy
- Easy to set
- Low burden
- High seismic capability - 6g ZPA
- Transient immunity

**2 YEAR
WARRANTY****I-T-E—81
Underfrequency Relay****Application**

The ITE-81 is a reliable solid state single set point underfrequency relay designed to provide accurate underfrequency protection for electrical power systems and equipment.

The relay has operating characteristics which make it ideal for application on closely coordinated system load shedding programs. The accuracy and stability of the relay characteristics permits settings much closer to system frequency, and closer steps between settings of relays in a load shedding program, than possible with electromechanical relays. Also the ITE-81 is not affected by the rate of change of frequency.

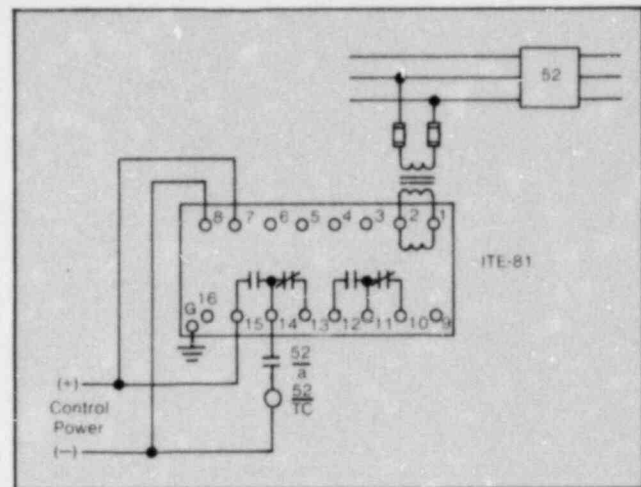
Another application is typical to large industrial plants which have some local generation. Normally they depend on a tie line with a utility for some portion of their power needs. If the tie breaker at the utility end should open, the generator in the plant would be overloaded especially if it also attempts to pick up utility load tapped on the tie line. This overload causes an underfrequency condition on the industrial system. The ITE-81 can be used to open the tie to the utility system and drop non-essential load. Essential loads can be maintained to the limit of the generator capability.

The relay uses digital counting techniques to provide an accurate measure of underfrequency. The time base measurement is provided by an extremely stable crystal oscillator reference. The set point accuracy is 0.005 Hz. The relay is provided with TRIP POINT and TIME DELAY settings. These settings are easily made on the front panel of the relay. The time delay period begins when the relay has counted three consecutive cycles below the trip frequency. The time delay counter will be fully reset if one cycle occurs above the trip frequency. This prevents tripping on system frequency variations.

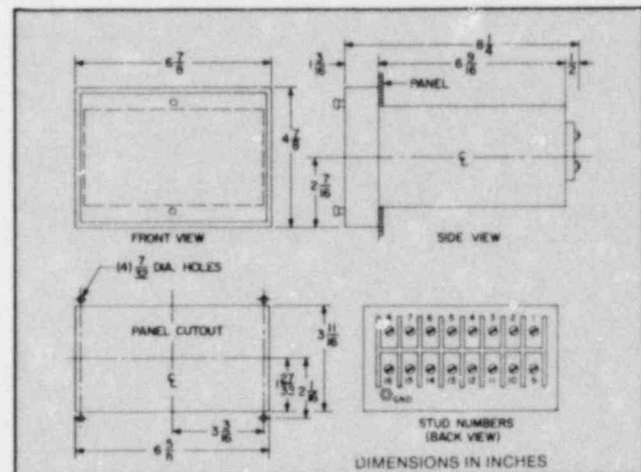
I-T-E—81 Underfrequency Relay

Specifications

Operating Range:	Models available for - 60 - 54 Hz 50 - 40 Hz
Input Circuit Rating:	50 - 140 Vac
Undervoltage Cutoff Function:	Adjustable 60 - 120 volts Factory set at 60 volts
Burden:	0.7 VA
Control Power:	Models available for 48/125 Vdc @ 0.05A.
Operating Time:	Adjustable 1 - 99 cycles (must have 3 consecutive cycles underfrequency before timing begins)
Output Circuit Rating:	@ 125 Vdc 30A tripping 5A continuous 1A opening resistive 0.3A opening inductive
Temperature:	Minus 30 to Plus 75 C
Seismic Capability:	More than 6g ZPA biaxial multifrequency vibration without damage or malfunction. (IEEE501 - 1978)
Transient Immunity:	More than 3000 V, 1 MHz bursts at 60 Hz repetition rate, continuous (ANSI C37.90a - 1974); fast transient test; EMI immunity.
Weight:	Unboxed - 3.3 lbs (1.5 Kg) Boxed - 4.0 lbs (1.8 Kg) - 0.26 cubic feet



Typical Connections



Outline and Drilling

How To Specify

Underfrequency Relay shall be ITE-81 or approved equal. Relay operating point shall be settable in 0.05 Hz increments. Time delay shall be adjustable in 1 cycle increments. Relay shall be capable of withstanding 6g ZPA seismic stress without malfunctions. Operation indicator shall be provided. An undervoltage cutoff function shall be provided to block operation for low line voltage conditions.

Additional Information

Instruction Book	IB 18.4.7-9
Relay Selection Sheet	7.4.0.3
Prices	7.10.0.5

How To Order

For a complete listing of available underfrequency relays, see selection sheet 7.4.0.3.

To place an order, or for further information, contact your nearest District Office, or the Sales Manager, Protective Relays.

Switchgear Division

207 Witmer Road, Horsham, PA 19044
Telephone (215) 674-5990

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Brown Boveri Electric

I-T-E Type Protective Relays Drawout



Features

- Time delay on pickup, or drop-out, or both
- Operation indicator
- Built-in test
- High seismic capability to 6g ZPA
- Drawout construction
- Transient immunity

**2 YEAR
WARRANTY**

I-T-E—62K Time Delay Relays

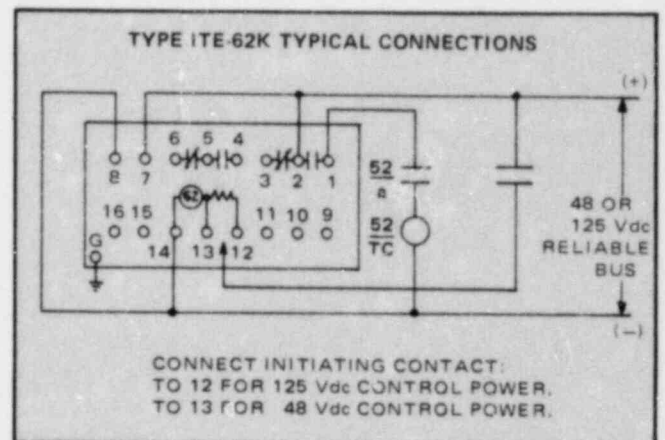
Application

These general purpose time delay relays may be used in a wide variety of applications such as bus transfer or breaker failure schemes.

ITE-62K time delay relays are DC operated and are available with the following characteristics: (1) Adjustable delay on pickup, instantaneous dropout; (2) Instantaneous pickup, adjustable delay on dropout. (3) Adjustable delay on pickup, adjustable delay on dropout.

Inherently high seismic capability allows the use of these relays in generating stations where the performance of other types of relays may be marginal.

The ITE-62K relay includes a target. On relays with adjustable delay on both pickup and dropout, separate targets are provided for indication of pickup and dropout operation.



- Notes: 1. contacts shown de-energized for units with time delay on pickup.
2. contacts shown energized for relays with time delay on dropout.

I-T-E—62K Time Delay Relays

SPECIFICATIONS

Time Delay: Models available for delay on pickup or delay on dropout: 0.05-1, 0.2-4, 0-10, 0-100

Models available for delay on both pickup and dropout: 0.2-4, 0-100

Time Delay vs Control Voltage: The greater of $\pm 1\%$ or ± 5 ms for -20% , $+10\%$ control voltage variation.

Reset Time: Approximately 7 ms.

Input Burden: 2.5 VA at 125 Vdc
1.0 VA at 48 Vdc

Control Power: 48/125 Vdc at 0.04A (contact factory for other voltages)

Output Circuit: Two Form C contacts

Output Circuit Rating: Each contact:
At 125 VDC:

30 amps, Tripping Duty
5 amps, Continuous
1 amp, Opening Resistive
0.3 amp, Opening Inductive

At 120 VAC:

30 amps, Tripping Duty
5 amps, Continuous
3 amps, Opening Resistive
1 amp, Opening Inductive

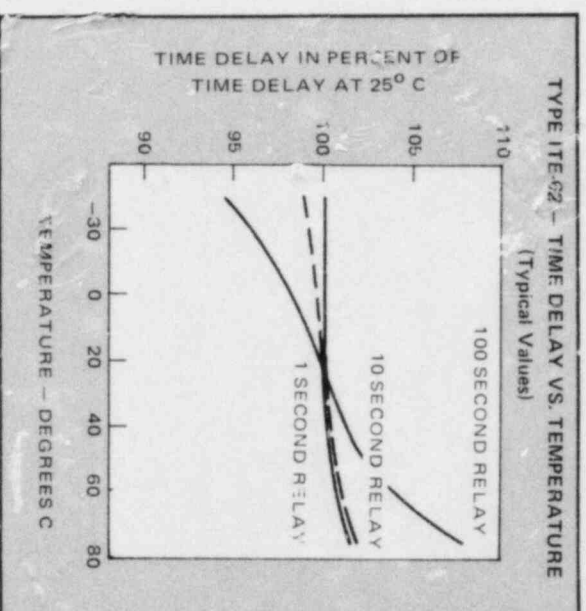
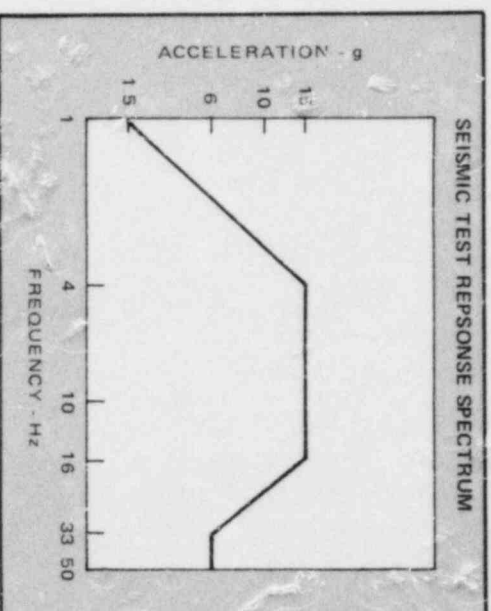
Operating Temperature: Minus 20° to Plus 75° C

Seismic Capability: More than 6g's ZPA either axis, biaxial, broadband multifrequency without damage or malfunction. (IEEE-501)

Transient Immunity: More than 3000V, 1 Mhz bursts at 60 Hz repetition rate, continuous.

How To Specify

Relay shall be type ITE-62K or equal. Relay shall be capable of withstanding up to 6g ZPA seismic stress without malfunction. A magnetic operation indicator which retains position on loss of control power shall be provided. Built-in means shall be provided to allow operational tests without additional equipment.



How To Order

For a complete listing of available time delay relays, see selection bulletin 7.7.0.3. To place an order, or for further information contact the nearest District Office, or Sales Manager, Protective Relays.

Additional Information

Instruction Book
Relay Selection List

IB 18.7.7-1
7.7.0.3

Distribution Apparatus Division
207 Witmer Road, Horsham, PA 19044
Telephone (215) 674-5990

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Brown Boveri Electric