



**LOUISIANA
POWER & LIGHT**

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September 9, 1983

W3P83-2858
3-A1.01.04
3-A1.10

Director of Nuclear Reactor Regulation
Attention: Mr. C.W. Knighton, Chief
Licensing Branch No. 3
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Waterford SFS Unit 3 - Docket No. 50-382
HVAC Fire Dampers

Dear Sir:

The purpose of this letter is to request an exemption to our previously approved study on fire dampers in safety ducts (FSAR Appendix 9.5B) in which a commitment was made to install a fire damper in a fire barrier at El +21.0' in the Reactor Auxiliary Building. This barrier separates Fire Areas RAB 25 and RAB 32. However, our constructability review revealed that the installation of the fire damper was not possible due to interferences, without a major rework in the vicinity in order to provide access for installation, maintenance and testing.

The solution decided upon makes use of a Microtemp thermal cutoff as described below.

Attachment 1 shows the location of the fire barrier, as well as the 42" diameter butterfly valves on either side of the barrier. Each of these valves has a separate Microtemp thermal cutoff device associated with it. It is essential that the design prevent fire on one side of the barrier from being transferred to the other side. Our review of the Microtemp thermal cutoff concluded that its application would be simple, cost effective and at least equivalent to the fusible link on a fire damper.

Attachment 2 depicts the installation and operation of the Microtemp device. Basically, the thermal cutoff will open the electrical circuit to the solenoid valve when it senses a high temperature (165°F) in the duct. This will cut off the air supply to the air operated butterfly valve which, subsequently, will close and isolate the fire area. The butterfly valves are Nuclear Safety Class 3, Seismic Category I, and are 150 lb. rated. The valves are designed to fail closed. Inadvertent operation of the device during non-fire conditions, therefore, would not affect safe shutdown. In addition to the above, the section of ductwork between the two valves mentioned above will be provided with a one hour fire resistant barrier.

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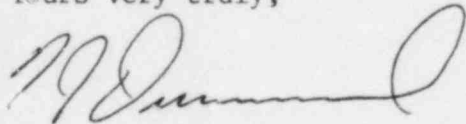
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Attachment 3 is a copy of a letter from W.H. Bornhoeft of American Nuclear Insurers (ANI) indicating acceptance by ANI of this special case fire damper.

On the basis of low combustible loading on either side of the fire barrier, the alternative actions taken in Attachments 1, 2 and 3 provide an acceptable level of fire protection in lieu of installing a 1½ hour fire damper. Additionally both fire areas are equipped with portable fire extinguishers and smoke detectors.

Your early review and approval of this exemption is requested in order to facilitate construction activities associated with this fire damper configuration change. If there are any questions, please call Mr. E. Senac at (504) 467-2791 or Mr. K. Curley at (504) 363-8950.

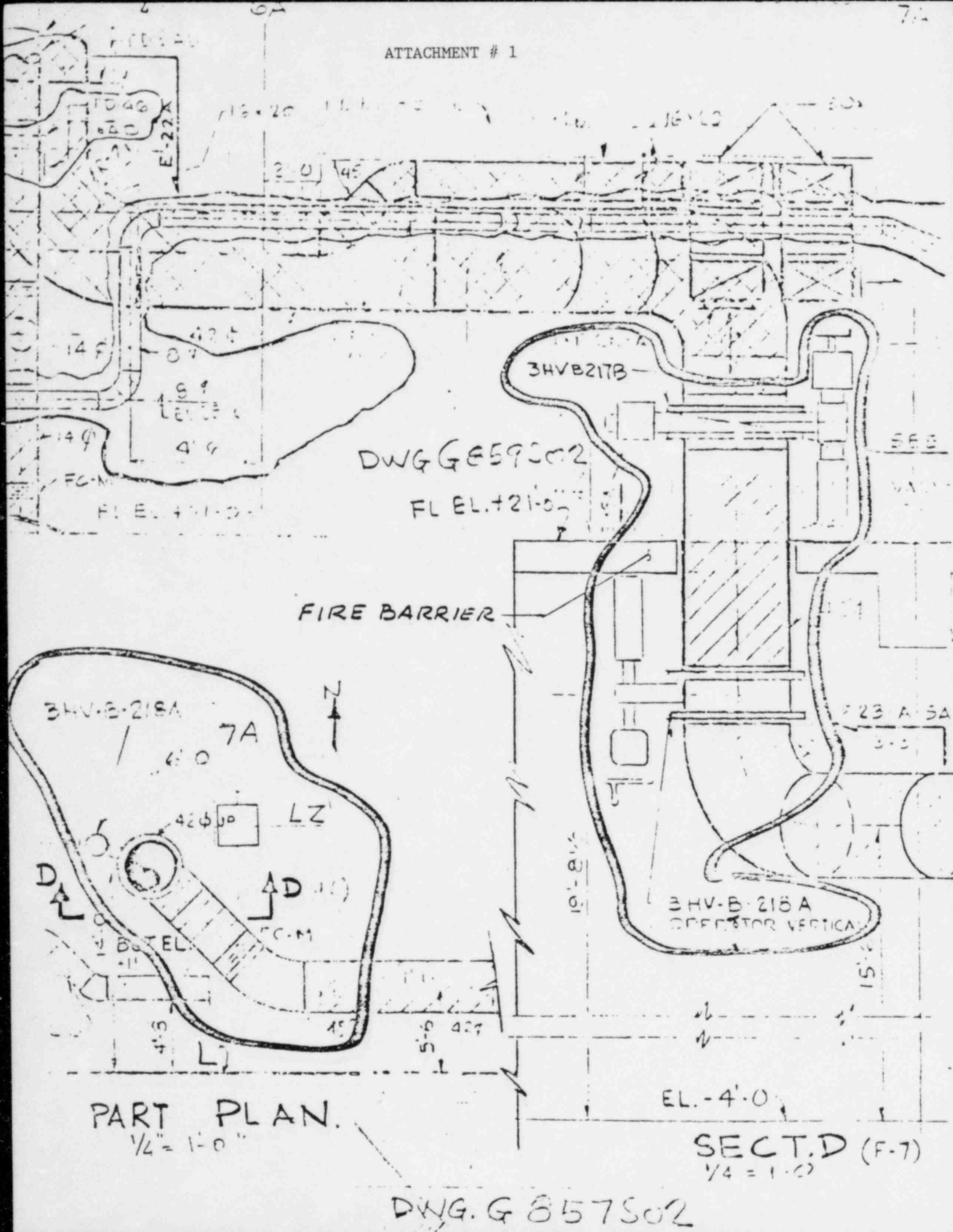
Yours very truly,



F.J. Drummond
Nuclear Services Manager

FJD/WAC/KNC/ch
Attachments

cc: J. Wilson (NRC), D. Kubicki (NRC), L. Constable (NRC, Resident Inspector), W.M. Stevenson, E.L. Blake, Central Record, Nuclear Records, Licensing Library



MICROTEMP® Thermal Cutoff, Designed For Safety . . . What it is and how it works

ATTACHMENT # 2

Sheet 1 of 4



The unique MICROTEMP® thermal cutoff is a reliable, accurate, easy to install "one shot" thermal limiter.

It helps assure positive, low-cost protection against hazardous overheating caused by electrical or mechanical malfunctions.

Its patented design incorporates an exclusively formulated electrically non-conductive pellet. The performance of this pellet is not significantly affected by use. Under normal operating temperatures, the solid pellet combined with a spring hold the contacts together forming a closed circuit. When a fault temperature is reached, the pellet melts and allows the spring to move the contact and open the circuit.

The case of the thermal cutoff which contains all of the working components is epoxy sealed.

It's important to keep the epoxy seal intact to insure the integrity of the MICROTEMP® thermal cutoff and avoid nuisance tripping. Bending and/or cutting of the leads can potentially damage the seal. Subsequent drawings suggest minimum dimensions to use when performing these operations to protect the seal.

Several series of thermal cutoffs are available with an opening temperature range from 58° to 240°C, (136° to 468°F). To determine which series is best applicable to a product, normal and abnormal currents should be considered for each product application.

Since current passing through the MICROTEMP® thermal cutoff can generate I²R, self heating, it must be considered when selecting the proper series and opening temperatures required for each application.

The outer case of the MICROTEMP® thermal cutoff is electrically live and may require insulation depending upon the product application. Because the insulation can reduce heat transfer it must be considered in the selection of the final opening temperature.

Micro Devices' Engineering should be consulted on applications which can exhibit high current and/or voltage transients or pulses, high overshoot temperature during or after failure or other unusual application conditions.

THE MICROTEMP® THERMAL CUTOFF . . . WHAT IT DOES

The MICROTEMP® thermal cutoff acts like a non-resettable thermostat. It necessitates correction of the fault that activated it and replacement of the thermal cutoff before operation of the monitored equipment can resume.

The proper application and use of the thermal cutoff will anticipate abnormal conditions and remove them prior to their causing a hazard. This is a benefit to you and your customer, since it assures minimum product liability difficulties.

Designing MICROTEMP® thermal cutoffs into your product at the outset allows you to build to meet consumer protection demands.

- Reliable
- Accurate
- Fast response
- High operating and interrupt current capacity.
- High breakdown voltage, over 1200 VAC when fully open.

MICROTEMP® THERMAL CUTOFF APPROVALS

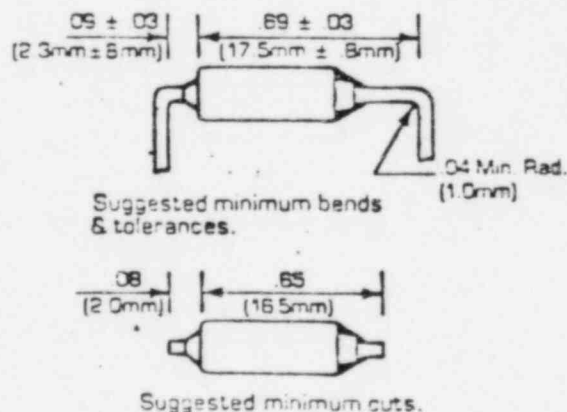
Recognized under the Component Program of Underwriters' Laboratories, Inc. UL File #E40667A CSA Guide No. 400-E-0. Recognized by MITI, VDE, BSI and others.

It should be noted that the use of Testing Agency recognized components assists your product's approval and minimizes the cost of product approval and/or listing.

Type 1000 is a high reliability product designed specifically for military or airborne type of applications. This product is not covered under the UL Recognized Component program, but has passed many of the military environmental requirements including shock, vibration and deep space.

MICROTEMP® THERMAL CUTOFF BENEFITS, SUMMARIZED

- One shot—assures removal of a fault condition.
- Compact size—diameter is .158", length is .457" (exclusive of leads)

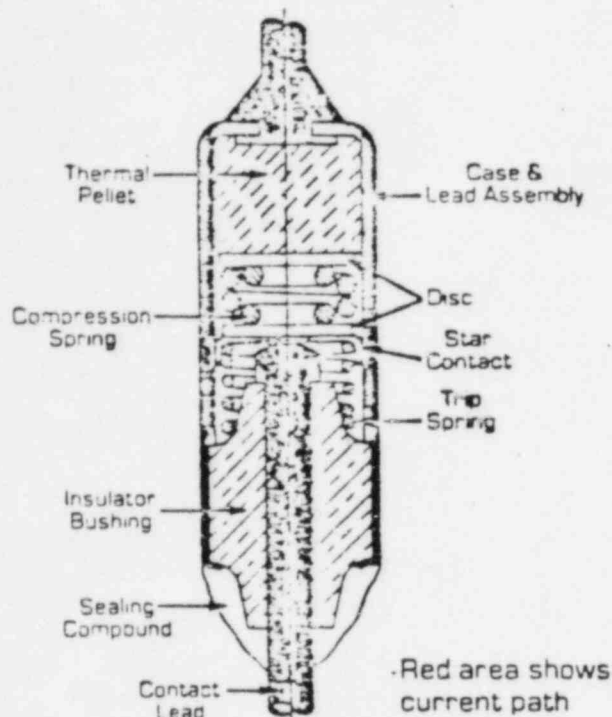


MICROTEMP® Thermal Cutoff ratings and specifications

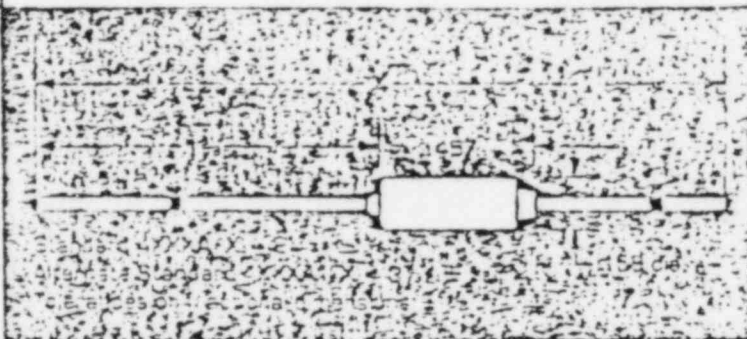
ATTACHMENT # 2

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MICROTEMP® THERMAL CUTOFF Closed



DIMENSIONS



ELECTRICAL SPECIFICATIONS

These are our readily available products built on high volume production lines. Other MICROTEMP® thermal cutoff series are available for special applications.

CUTOFF SERIES	RECOMMENDED OPERATING CURRENT*
4000	Up to 15 amp.
5000	Up to 15 amp.
9000	Up to 22 amp.

*Cutoffs may carry more current than shown depending upon the application. Since each application varies, Micro Devices' engineering staff should be consulted to assist in proper thermal cutoff selection.

NOTE—MICROTEMP® thermal cutoffs listed above all have same physical size. Type 4000 and 5000 have 18 AWG gauge leads. Type 9000 has 15 AWG gauge leads.

AVAILABLE TEMPERATURE RATINGS

Ratings are based upon actual MICROTEMP® thermal cutoff temperatures. High currents in some applications may cause some temperature rise on the MICROTEMP® thermal cutoff from self-heating (I^2R) or other factors which could require derating of the MICROTEMP® thermal cutoff. Resistance of MICROTEMP® thermal cutoffs is less than 1.5 milli-ohm over a one inch span.

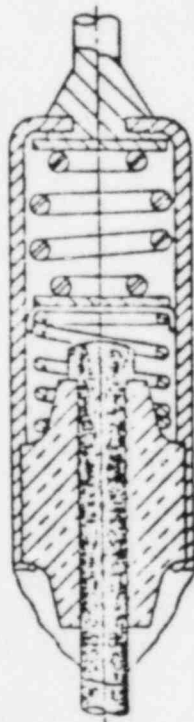
XXX	Opening Temp. °C	XXX	Opening Temp. °C	XXX	Opening Temp. °C	XXX	Opening Temp. °C	XXX	Opening Temp. °C
136	60	191	91	227	109	300	152	438	229
145	66	194	93	239	117	333	174	458	240
158	72	204	98	244	121	358	184		
168	77	208	100	257	128	377	194		
178	84	218	104	293	141	415	216		

Tolerance +0°C -4°C

Recognized under the Components Program of Underwriters Laboratories, Inc. UL File #40657A. MITI approved. CSA Guide No. 400-3-0.

Thermocoupled dummy thermal cutoffs are available for engineering test purposes upon request.

MICROTEMP® THERMAL CUTOFF Open



Red area shows opened or broken current . . . no current path

Determining MICROTEMP Thermal Cutoff Temperature Settings

ATTACHMENT # 2

Sheet 3 of 4

The simplest method to determine the correct temperature selection is to use a thermocoupled dummy, installed in the product circuit.

The system is then run normally and the normal operating temperatures noted.

By introducing a fault into the system, the temperature of the dummy thermal cutoff at the desired moment of shutdown will provide the maximum cutoff rating. A MICROTEMP thermal cutoff rating should be as far above the "normal" operating temperature as possible. (At least 30°F)

The thermocouple method gives the difference between the normal operating temperature plus overshoots and the required abnormal shutdown temperature.

Careful selection of optimum location and position of the thermal cutoff will maximize this difference and eliminate nuisance openings.

After tests have been run and the thermal cutoff temperature setting determined, the test should be re-run with a live MICROTEMP thermal cutoff in place.

INSULATION AND INSTALLATION PRECAUTIONS

Insulation As noted earlier, the outer case of the MICROTEMP thermal cutoff is electrically hot/live. For this reason, insulation over the thermal cutoff may be required in some cases.

If it is required, the type of insulation selected could be very important since any insulation will reduce thermal conductivity to the MICROTEMP thermal cutoff. For this reason, it is recommended that all tests be run with insulation installed to insure best possible results.

Insulation properties, such as temperature rating, insulation thickness, abrasion resistance, cold flow, puncture resistance, and dielectric strength must be considered, always keeping in mind the desire for maximum thermal conductivity.

Materials such as thermal greases and thermally conductive epoxies may be used to provide additional thermal conductivity to the MICROTEMP thermal cutoff.

Installation The MICROTEMP thermal cutoff can be easily applied to a circuit by welding, soldering, riveting, crimping, or with terminals. Some typical configurations are illustrated.

It's important that soldering be done as quickly as possible to avoid heat build-up. If, during the soldering operation, the heat that reaches the thermal pellet approaches the rated

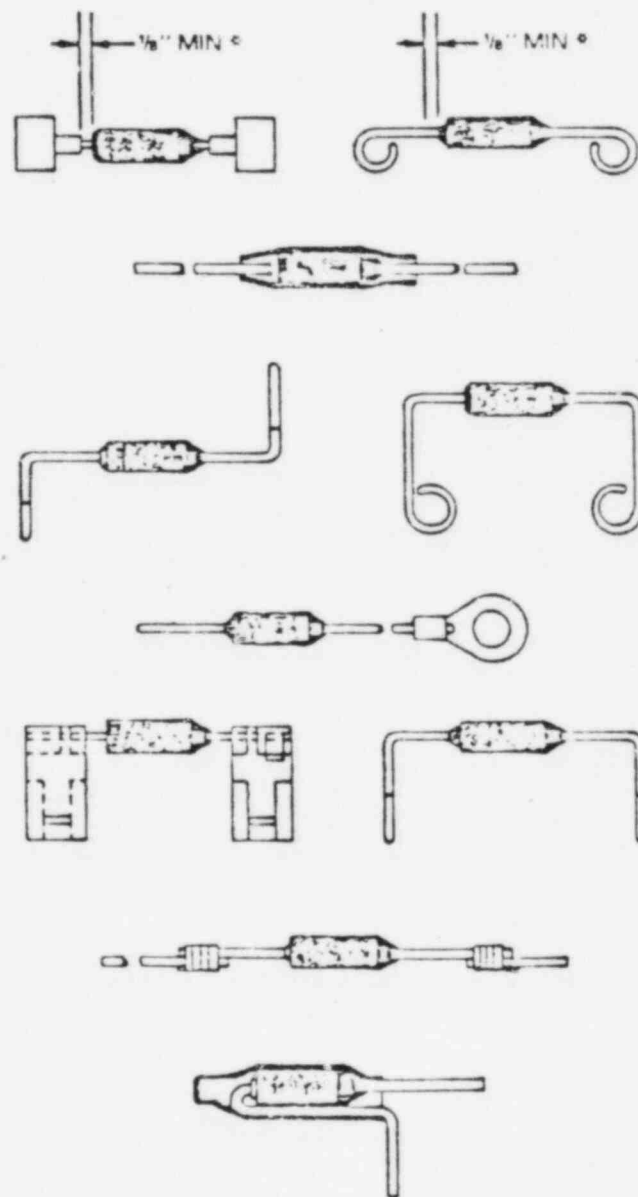
opening temperature, the thermal pellet may partially melt. This will reduce the expected life of the thermal cutoff.

Also, the epoxy seal must be kept airtight and intact. When bending the lead on the epoxy side to minimum tolerances, as shown in the drawing, on page 2, support the lead

near the epoxy to prevent breaking the seal.

Adherence to these few precautionary measures will assure that the MICROTEMP thermal cutoff you put in your product will provide the highly reliable, accurate, positive protection that you desire.

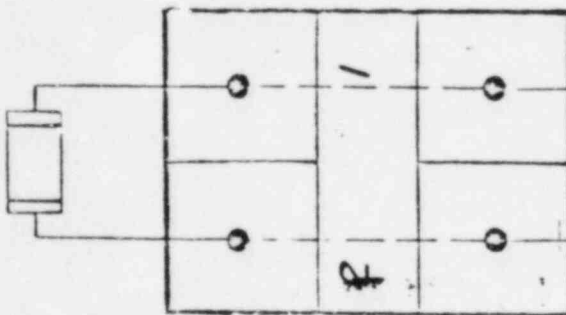
TYPICAL MICROTEMP TERMINATIONS



*1/8" minimum straight lead required both ends prior to any termination of form

Micro Devices "Microtemp" No. 4168AI

Thermal



Black

Out

110V In (Customers Wiring)

White



BURT C. PROOM, CPCU
President and Chief Executive Officer

ATTACHMENT # 3

PROPERTY ENGINEERING DEPARTMENT
John J. Carney, Vice President

June 28, 1983

RECEIVED
NUCLEAR RECORDS

AUG 2 1983

Mr. George G. Buxton
Assistant Manager
Risk Control
Middle South Services, Inc.
Box 61000
New Orleans, Louisiana 70161

ILN: _____

Dear George:

LOUISIANA POWER & LIGHT COMPANY
WATERFORD 3 SES
ANI F.P. FILE NO. N-197

RE: REACTOR AUXILIARY BUILDING 21.0 FT. EL.
42 INCH DIAMETER "SPECIAL CASE" FIRE DAMPERS

We have reviewed the information submitted with your letter of May 26, 1983 and the additional information requested, from Ebasco Services in their letter of June 15, 1983, relative to the above, "Special Case", subject at the Waterford SES Unit 3 site.

ANI will accept, For Insurance Purposes Only, your proposed arrangement of a 42 inch diameter butterfly valve, on either side of the fire barrier controlled by a microtemp device, in this area where you cannot provide an approved fire damper installation.

Final acceptance of the installation will be given by our Regional Field Engineer, at the time of his inspection and witnessing of test.

Sincerely,

W. H. Bornhoeft
Director - Property
Technical Review Section

WHB:dm

cc: Mr. T. Ruddock - Johnson & Higgins, New Orleans, Louisiana
Mr. L. Dlugos - Johnson & Higgins, New York, New York