

# Summary of Qualification for TEC-156 Analog Signal Isolators

(prepared November 2011)

## Isolation Integrity (type tested):

Output (non-IE) faults without significant impact to input (IE) side:

*(as reported in 156-TR-02 R2)*

short -                    output to common  
                              supply to common  
                              supply and output to common

open -                    supply  
                              output  
                              common  
                              output and common  
                              supply and common  
                              supply and output  
                              supply, output and common

120 Vac @ 20A\* -    output to common  
                              supply to common

*\* Expected and observed destruction of some components on non-IE side but isolation integrity was maintained*

*(as reported in 156-TR-03 R1)*

2000 Vdc @ 20ma - output to common

Common-mode input side fault without significant deviation at output side:

*(as reported in 156-TR-02 R2)*

2000 Vdc applied to input and common terminals

## Aging:

Equivalent to 20 years @ 135 °F plus 100 days @ 146 °F (Activation Energy 0.86 eV)

*(as reported in 156-TR-04 R2)*

## Radiation:

Equivalent to 880 R operational exposure of 40 years plus 11,000 R accident exposure

*(as reported in 156-TR-04 R2)*

## Seismic:

Two separate RRS curves applied on two separate test sequences.

*(as reported in 157-TR-01 R0 and 156-TR-04 R2)*

Tested to IEEE standards 323-1974, 323-1983, 344-1975, 344-1987,  
381-1977, 384-1981, 472-1974

Safe Shutdown Earthquake (SSE)  
 Horizontal Acceleration  
 Vertical Acceleration is 2/3  
 of Horizontal Acceleration  
 Operating Basis Earthquake = 1/2 SSE

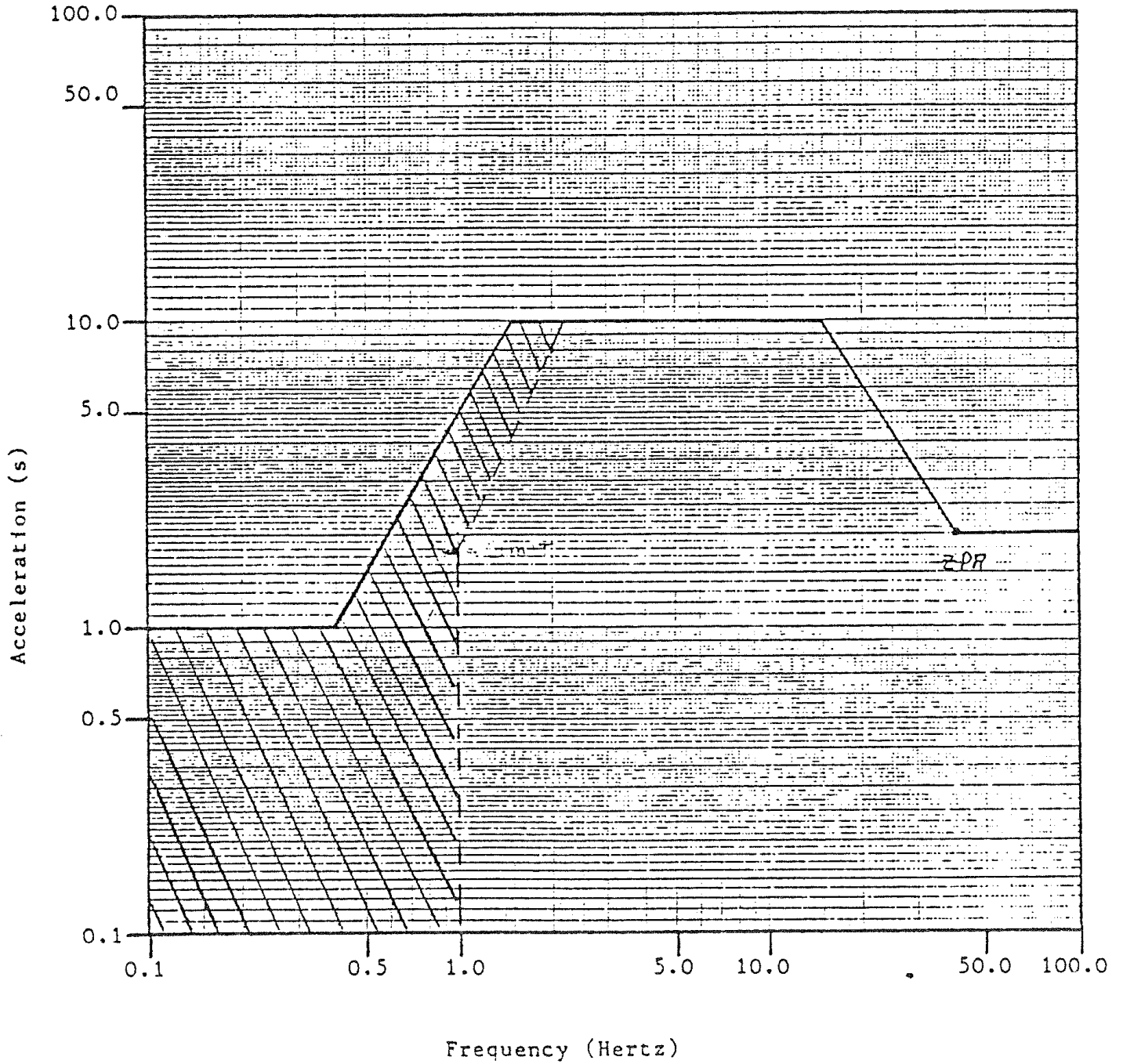
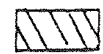


Figure 1. Required Response Spectra (RRS) for 2% of Critical Damping

 TABLE LIMIT

SOUTHERN TESTING SERVICES, INC. (STS)

TITLE: SEISMIC TEST PROCEDURE FOR TECHNOLOGY  
FOR ENERGY CORPORATION MODEL 156  
ANALOG SINGLE CHANNEL ISOLATORS

PROCEDURE NO. S945-TP-03  
REVISION NO. 2  
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FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 □ 10 □ 100 ✕ 1000 □

DAMPING

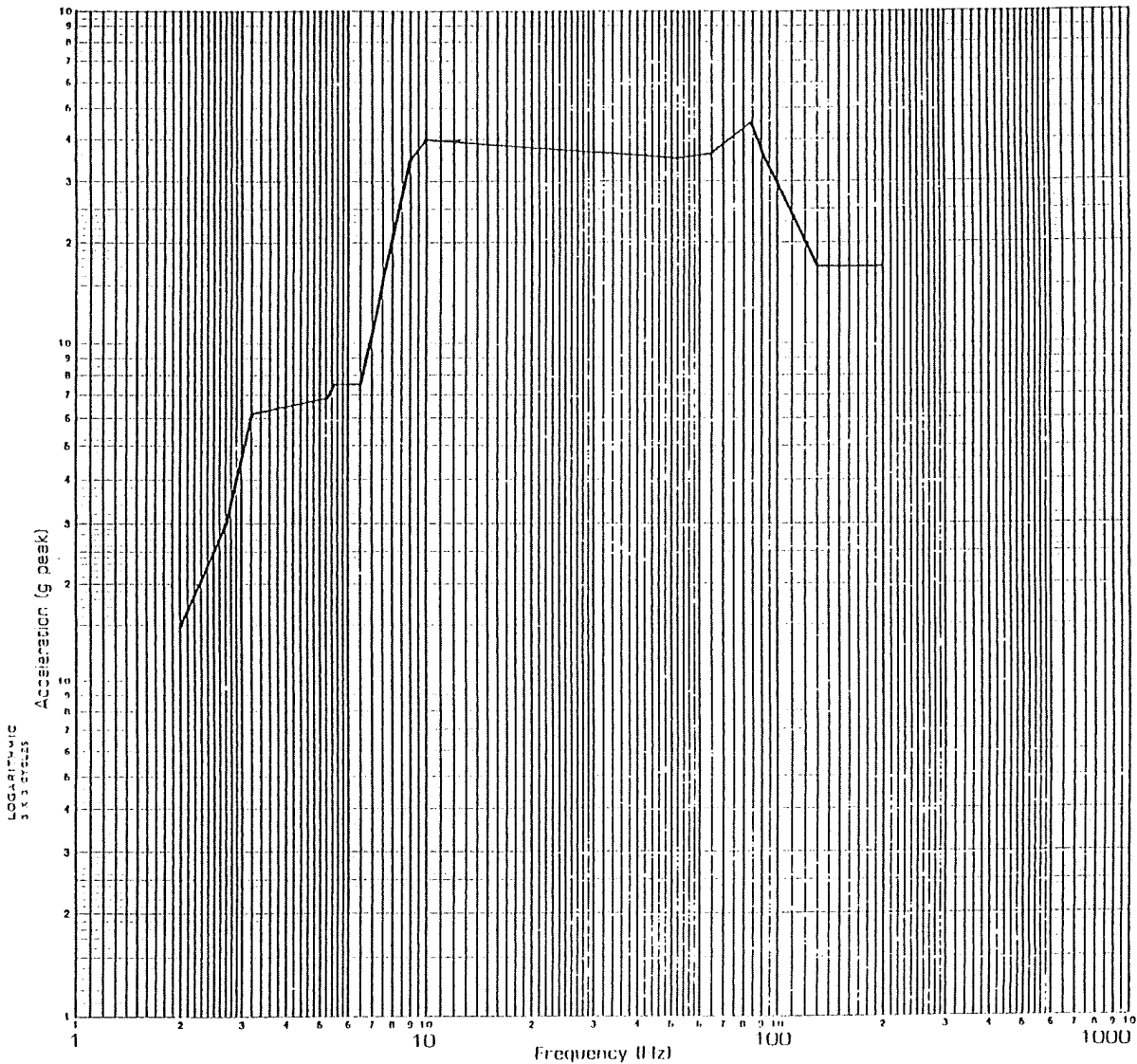


FIGURE 5.2 SAFE SHUTDOWN EARTHQUAKE (SSE)  
REQUIRED RESPONSE SPECTRA  
(HORIZONTAL AND VERTICAL)