

# NRC INSPECTION MANUAL

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## PART 9900: TECHNICAL GUIDANCE

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STS10D.TG

### STANDARD TECHNICAL SPECIFICATIONS SECTION 1.0 DEFINITIONS

#### A. PURPOSE

To provide guidance on Standard Technical Specifications (STS) Section 1.0 as it relates to channel functional test (CFT).

#### B. BACKGROUND

Region I requested NRR's position on what scope of testing is necessary to meet the STS definitions of a CFT. The NRR response is discussed below.

#### C. DISCUSSION

The NRR staff's position is that channel functional tests for instrumentation channels must test all components up to the point where single-action signals are combined. This also includes relays in the channel upstream of the point where single-action signals are combined. A channel functional test is defined as follows:

A CHANNEL FUNCTIONAL TEST shall be

- a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions and channel failure trips.
- b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.

THE CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is tested.

This definition is based on industry standards (IEEE-279 and 380) which define a "channel" as: "An arrangement of components and modules as required to generate a single protective action signal

when required by a generating station condition. A channel loses its identity where single-action signals are combined."

Therefore, CFT must test to the point where single-action signals are combined. An entire channel includes all contacts, relays, indications, and alarms which precede the point where the single signals are combined. In the example circuit

(Figure 1), the channel extends to the K45 contacts and status indication light (W). The E41-K45 relay and status indication should be included in the CFT.

D. REFERENCES

The guidance provided in this directive was extracted from a memorandum from R. Bernero, Director, Division of BWR Licensing, NRR, for R. Starostecki, Director, Division of Reactor Projects, Region I, dated February 20, 1986, Subject: Channel Functional Tests - Technical Specification Interpretation. The memorandum is available in the Document Control System (DCS 36806/359).

END

Enclosure:  
Figure

FIGURE 1  
TYPICAL HIGH LEVEL TURBINE TRIP

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