



UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

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OCT 27 1969

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THRU: V. Moore, Chief, Instrumentation & Power Technology Branch, DRL
ODI for VAM

MINUTES OF MEETING WITH WESTINGHOUSE ON PROCESS INSTRUMENTATION,
OCTOBER 21, 1969

During the initial review of Indian Point #2 the writer asked Consolidated Edison to discuss the process instrumentation which provides signals to the reactor protection and engineered safety feature actuation circuitry. As a result of this question, Westinghouse proposed a meeting with DRL to discuss process instrumentation in an attempt to avoid discussing the subject in each POL review.

Westinghouse stated that their process instrumentation basically consists of two types:

1. Pressure - For pressure or differential pressure measurements Westinghouse uses Foxboro, Fischer-Porter or Hagen detectors. Each manufacturer supplies their commercial grade detectors with minor modifications for nuclear applications such as wiring and seals around access screws.

The detector design is based on the force balance concept. Changes in process pressure cause the detector diaphragm to move thus causing movement of a lever or balance arm. This movement is sensed by a pickup which sends a signal to an amplifier which is integral to the detector. An amplified signal is provided to a force motor which attempts to force the lever arm to its original position. The amplifier and force motor are part of the loop which contains the power source and readout.

2. Temperature - Process temperatures are monitored by resistance thermometers. Westinghouse stated that they used two suppliers for providing these "non-catalog" instruments. Platinum resistance elements are used for those temperature applications which exceed 600°F and nickel for less than 600°F. These detectors are used without wells. The wiring scheme is a four-wire system, two wires from each side of the resistance element. While all four wires are brought out to the control room, only three are utilized with the Westinghouse readout. Westinghouse stated that their readout circuitry utilizes dual constant current sources.

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Westinghouse stated that consideration would be given to providing this information in a topical report.

A brief discussion was presented as to the instrumentation differences between Ginna and subsequent plants. Westinghouse stated that the only differences which exist, other than those which are loop dependent, are the steam line break instrumentation changes. For steam line breaks which occur inside the check valves four-loop plants will compare the steam pressure of each of the four steam lines to the pressure in the other three. For breaks outside the check valves, the signals will be high steam flow and ~~steam~~ T avg or steam pressure.

Westinghouse was interested in the depth of DRL review of drawings. Westinghouse was told that our review of instrumentation is limited to the depth necessary to determine that known concepts with previous operating history are being used. Once this is determined, we then treat the detectors as "black boxes" and concentrate our review on the detector installation, power sources and cabling. If new detector concepts are introduced, our review is conducted in depth which gives reasonable insurance that the detector can perform its intended function.

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DRL:I&PTB:ODP

Enclosure:
Attendees

cc w/encl:
P. A. Morris
F. Schroeder
→ R. S. Boyd
D. J. Skovholt
R. C. DeYoung
Karl Kniel
Branch Attendees

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WESTINGHOUSE MEETING - OCTOBER 21, 1969

ATTENDEES

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