

INSTRUMENTATION

TRAVERSING IN-CORE PROBE SYSTEM

LIMITING CONDITION FOR OPERATION

3.3.7.7. The traversing in-core probe system shall be OPERABLE with ~~X~~ either:

- a. Five movable detectors, drives and readout equipment to map the core, and
- ✓ b. Indexing equipment to allow all five detectors to be calibrated in a common location.

OR

- b. With one or more TIP measurement locations inoperable, data may be replaced by data obtained from that location's symmetric counterpart if the substitute TIP data was obtained from an operable measurement location; provided the reactor core is operating in a type A control rod pattern and the total core TIP uncertainty for the present cycle has been determined to be less than 8.7 percent (standard deviation).

APPLICABILITY: When the traversing in-core probe is used for:

- a. * Recalibration of the LPRM detectors, and
- b. * Monitoring the APLHGR, LHGR, MCPR, or MFLPD.

ACTION:

With the traversing in-core probe system inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.7 The traversing in-core probe system shall be demonstrated OPERABLE by normalizing each of the above required detector outputs within 72 hours prior to use when required for the LPRM calibration function.

*Only the detector(s) in the location(s) of interest are required to be OPERABLE.

INSTRUMENTATION

BASES

MONITORING INSTRUMENTATION (Continued)

3/4.3.7.4 REMOTE SHUTDOWN INSTRUMENTATION AND CONTROLS

The OPERABILITY of the remote shutdown monitoring instrumentation and controls ensures that sufficient capability is available to permit shutdown and maintenance of HOT SHUTDOWN of the unit from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criteria 19 of 10 CFR 50.

3/4.3.7.5 ACCIDENT MONITORING INSTRUMENTATION

The OPERABILITY of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess important variables following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1975 and NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980. The CHANNEL CHECK for the Primary Containment Isolation Valve Position consists of the verification that indication of valve position (open or closed) can be determined by the valve position lights in the control room. The CHANNEL CALIBRATION for the Primary Containment Isolation Valve Position consists of the Position Indicator Test (PIT), which is conducted in accordance with Specification 4.0.5.

3/4.3.7.6 SOURCE RANGE MONITORS

The source range monitors provide the operator with information of the status of the neutron level in the core at very low power levels during startup and shutdown. At these power levels, reactivity additions shall not be made without this flux level information available to the operator. When the intermediate range monitors are on scale, adequate information is available without the SRMs and they can be retracted.

The SRMs are required OPERABLE in OPERATIONAL CONDITION 2 to provide for rod block capability, and are required OPERABLE in OPERABLE CONDITIONS 3 and 4 to provide monitoring capability which provides diversity of protection to the mode switch interlocks.

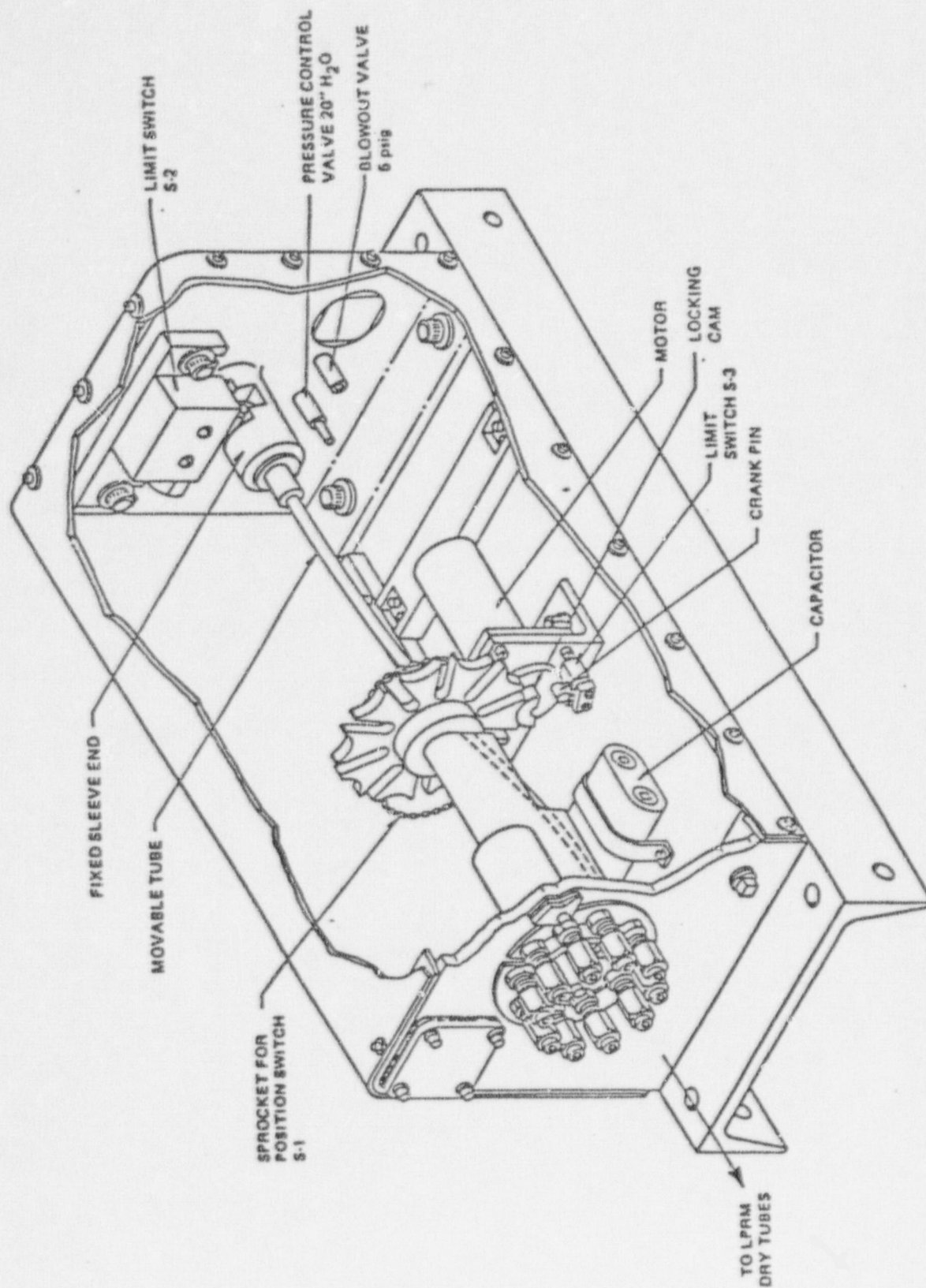
3/4.3.7.7 TRAVERSING IN-CORE PROBE SYSTEM

The OPERABILITY of the traversing in-core probe system with the specified minimum complement of equipment ensures that the measurements obtained from use of this equipment accurately represent the spatial gamma flux distribution of the reactor core. INSERT A

The TIP system OPERABILITY is demonstrated by normalizing all probes (i.e., detectors) prior to performing an LPRM calibration function. Monitoring core thermal limits may involve utilizing individual detectors to monitor selected areas of the reactor core, thus all detectors may not be required to OPERABLE. The OPERABILITY of individual detectors to be used for monitoring is demonstrated by comparing the detector(s) output with data obtained during the previous LPRM calibrations.

Insert A

With less than the specified complement of equipment, the spatial gamma flux distribution of the reactor core can still be accurately represented by using replacement data from symmetrical strings (LPRM locations), provided the conditions specified in the LCO are met.



TIP Indexing Mechanism

CORE POSITION MAP

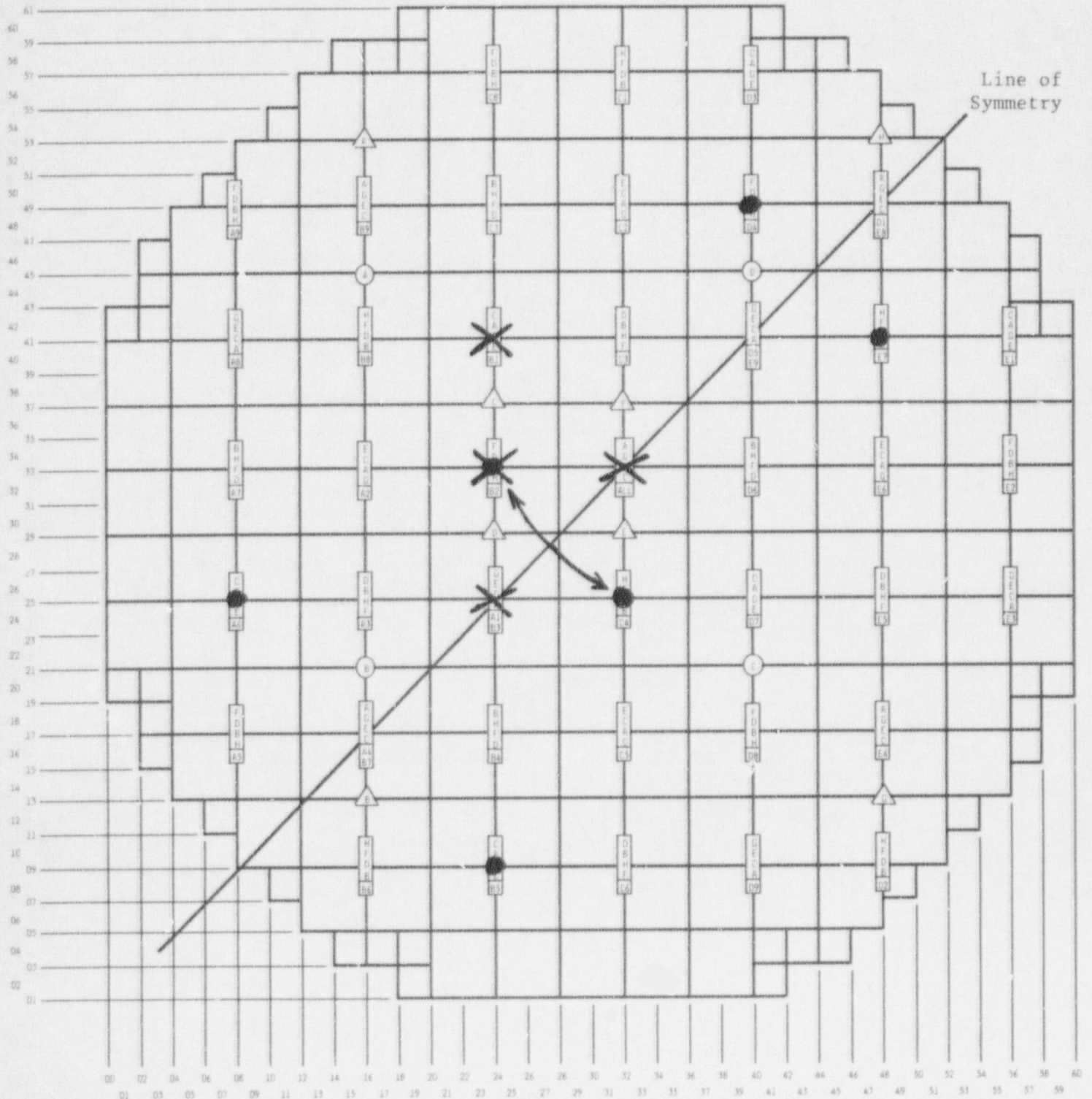
Unit 1

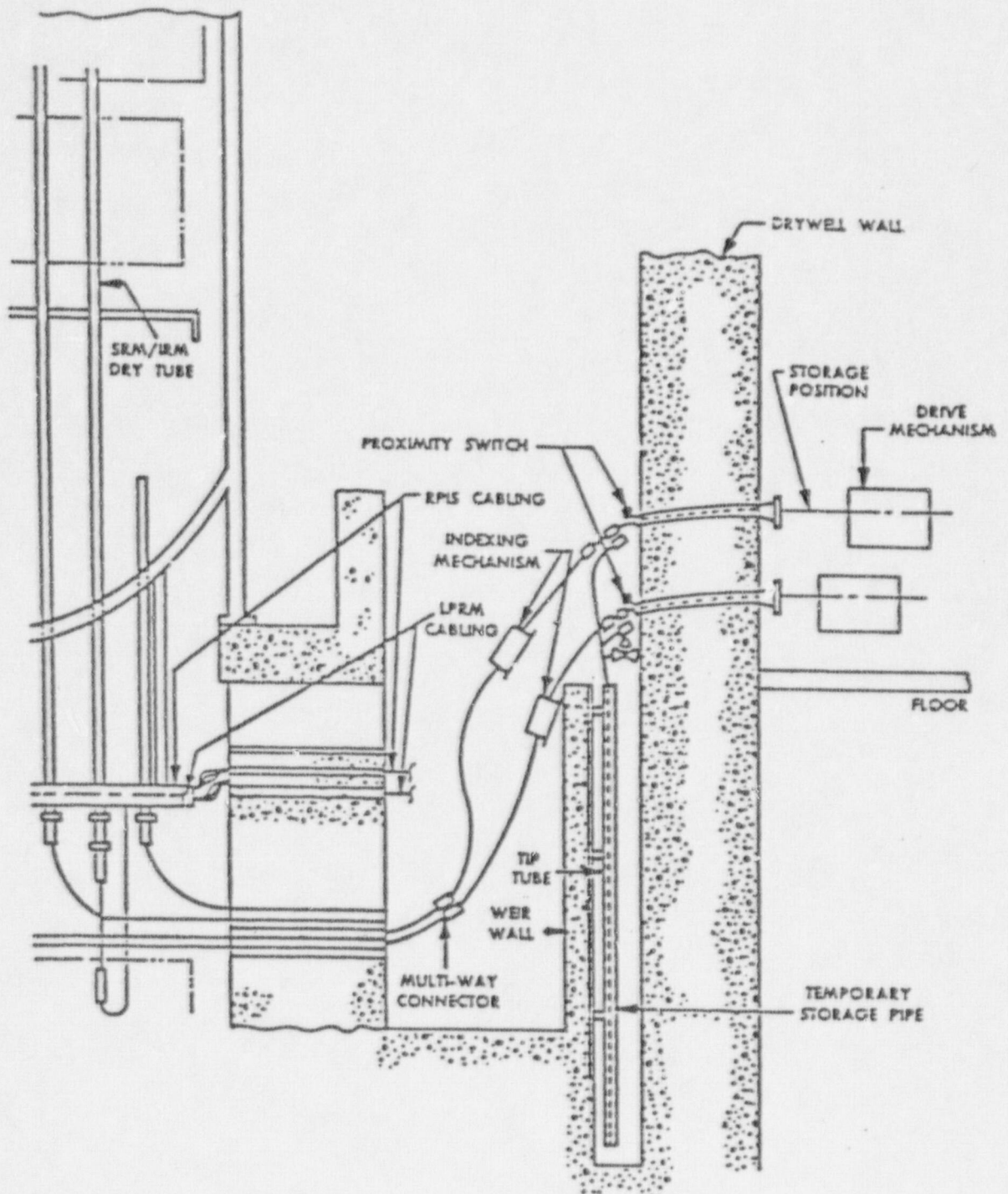


- SOURCE RANGE MONITORS
- INTERMEDIATE RANGE MONITORS
- LOCAL POWER RANGE MONITORS

X - inaccessible locations to
B TIP machine

● - examples of symmetric LPRM locations





TIP GUIDE TUBE LAYOUT