

May 27, 1983
NRC/TMI-83-033

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Bernard J. Snyder, Program Director
TMI Program Office

FROM: Lake H. Barrett, Deputy Program Director
TMI Program Office

SUBJECT: NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT FOR
MAY 22-28, 1983

Data from effluent and environmental monitoring systems indicated no plant releases in excess of regulatory limits. Waste shipments and water processing tasks continued on a routine basis. Plant parameters showed no significant changes. General clean-up and preparations for headlift continued. Head lift remains at least several months away. As schedules develop, they will be reported. Major activities this week included Underhead Characterization SER review, ongoing Auxiliary and Fuel Handling Building decontamination, and continued following of polar crane issues. Five reactor building entries supported miscellaneous tasks. (For more details see appropriate paragraph below).

Significant items included in the enclosure to this report are:

- Auxilliary and Fuel Handling Activities
- Reactor Building Activities
- Polar Crane Status
- Defueling Preparation Activities
- Waste Management Activities
- NRC Continuous Air Sampler History
- TMI Exposure Report
- Scheduled Activities for the Coming Week
- Public Meetings

Data summary sheets included in this report are:

- ```
-- Liquid Effluents
-- Environmental Data
-- Radioactive Material/Radwaste Shipment Data
-- Water Processing Data
-- Plant Status Data
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Lake H. Barrett  
Deputy Program Director  
TMI Program Office

Enclosure: As stated

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Section File

|        |                  |                 |                 |                  |                 |  |  |
|--------|------------------|-----------------|-----------------|------------------|-----------------|--|--|
| OFFICE | TMIPD <i>KLB</i> | TMIPD <i>JB</i> | TMIPD <i>AF</i> | TMIPD <i>PLB</i> | TMIPD <i>LB</i> |  |  |
| INAME  | KBarr/wa         | JB              | AFavano         | PLB              | LBarrett        |  |  |
| DATE   | 5/27/83          | 5/27/83         | 5/27/83         | 5/27/83          | 5/27/83         |  |  |



## ENCLOSURE

### AUXILIARY AND FUEL HANDLING ACTIVITIES:

Tasks in the Auxiliary Fuel Handling Building areas during the week of May 23, 1983, consisted of accelerated waste segregation/tool separation/decontamination and trash compaction in support of the on-going Reactor Building cleanup program.

Decontamination of concrete floor surfaces via scabbling/scarifying (specialized equipment that can remove a layer of concrete up to 1" deep) continued on the 282' elevation. Equipment shielding and penetration sealing continued in some of the more highly contaminated cubicles in preparation for gross flushing with hot (150°F), high pressure water. These spraying operations are accomplished remotely using the robot "Fred" (See Weekly Status Report May 23, 1983)

Decontamination of closed systems such as the chemical addition system and nitrogen system continued.

Inspection and photo tours of the decontaminated areas occurred periodically.

### REACTOR BUILDING ACTIVITIES:

Five reactor building entries were completed during the week of May 22, 1983. The general housekeeping and air cooler internal decontamination tasks were continued. Work necessary in order to extend the guide rails for the gantry crane (crane normally used for the manipulation of small reactor vessel components and fuel transfer) was also accomplished.

Major work activities scheduled for the week of May 30, 1983, includes (1) pumping accident water from the elevator pit, flushing, and radiation profile of that area, (2) decontamination of ductwork, (3) resin column removal, and (4) dose rate reduction tasks such as continued shielding of the floor penetrations on the 305' elevation.

On Friday, May 27, 1983, two reactor building purge exhaust units were placed in service; one unit in a recirculation mode. The effects of filtered recirculation of reactor building air and reactor building airborne radioactivity measurements will be studied.

### POLAR CRANE STATUS:

The NRC has received the polar crane operating procedure for review. This revision is supposed to address comments generated by the NRC staff during the licensee's initial submittal. The staff is continuing to review the 5 ton hoist procedures on a case by case basis.



## DEFUELLING PREPARATION ACTIVITIES:

In support of the eventual head lift and defueling activities, licensee furnished NRC with the Safety Evaluation Report for Radiation Characterization Under the Reactor Vessel Head (Revision 0). Information gathered during this important task will provide the basis for selection of methods, equipment and time frames for the defueling progression. The report addresses the following major safety concerns: system depressurization, decay heat removal, boron concentration, radiation safety, and pyrophoricity.

NRC is presently reviewing this report.

## WASTE MANAGEMENT ACTIVITIES:

1. EPICOR II Prefilter (PF) Shipments. No EPICOR prefilter shipments were made this week. Two prefilters (PF-41 and PF-30) are scheduled for shipment May 31, 1983, and June 1, 1983, respectively. Currently PF-30 is being sampled and inerted with nitrogen in preparation for future shipment. The special inerting and sampling device (i.e., prototype gas sampler) will require modifications to the sample chamber position because of the raised elevation of the vent plugs on top of four EPICOR liners. These modifications will be made after all remaining EPICOR PF's have been prepared for shipment. GPU anticipates shipment of the remaining 11 prefilters to the Idaho National Engineering Laboratory (INEL) by July 9, 1983.
2. SDS Liner Shipments. No SDS shipments were made this week. The licensee is making preparations for shipment of the tenth SDS liner (D20026). This zeolite waste liner, which contains approximately 10,400 curies, is currently being vacuum dried to remove excess water. As with previous shipments, the liner will be loaded with a catalytic recombiner and monitored to demonstrate non-combustible gas conditions. Shipment is tentatively scheduled for the week of June 20, 1983.
3. Lancaster Sewage Samples. The results of the digested sludge, oxidized sludge and filter cake samples from the City of Lancaster Water Treatment Plant analyzed by the EPA's Middletown Office (see Weekly Status Report May 16, 1983) are as follows:

| <u>Sample Identification</u>                             | <u>Collection Date</u> | <u>Results*</u> |
|----------------------------------------------------------|------------------------|-----------------|
| 1. North Plant, Digested Sludge #1<br>(8 hr. composite)  | 4-29-83                | GSN             |
| 2. North Plant, Digested Sludge #2<br>(8 hr. composite)  | 4-29-83                | GSN             |
| 3. North Plant, Digested Sludge #3<br>(8 hr. composite)  | 4-29-83                | GSN             |
| 4. South Plant, Oxidized Sludge #4<br>(24 hr. composite) | 5-3-83                 | GSN             |



|                                                          |        |     |
|----------------------------------------------------------|--------|-----|
| 5. South Plant, Oxidized Sludge #5<br>(24 hr. composite) | 5-3-83 | GSN |
| 6. South Plant, Oxidized Sludge #6<br>(24 hr. composite) | 5-3-83 | GSN |
| 7. South Plant, Filter Cake #7<br>(24 hr. composite)     | 5-3-83 | GSN |
| 8. South Plant, Filter Cake #8<br>(24 hr. composite)     | 5-3-83 | GSN |
| 9. South Plant, Filter Cake #9<br>(24 hr. composite)     | 5-3-83 | GSN |

Samples were analyzed using a GeLi detector with a lower limit of detection of approximately 10 pCi for Iodine-131, Cesium-134, Cesium-137, Cobalt-60, and Antimony-125.

No reactor-related radioactivity was detected. No radiation above normally occurring background was detected in any of these samples.

\*GSN - Gamma Scan Negative.

4. Groundwater Monitoring. The TMI groundwater monitoring program was instituted to detect possible radioactive liquid leakage from TMI-2 into the ground. Since the monitoring program commenced in January 1980, tritium has been the only radioisotope detected consistently in the groundwater. It was detected adjacent to the TMI reactor facility (within approximately 100 feet). Tritium concentrations in the groundwater have ranged from background (approximately 300 pCi/l) to  $1.1 \times 10^6$  pCi/l. In all cases the tritium concentrations have been below the maximum permissible concentrations for restricted areas. Periodically, trace concentrations of radioactive cesium and strontium have been detected in some of the monitoring locations. When detected, the cesium and strontium concentrations were very close to the laboratory lower limit of detection and typically, the radioactivity was not seen when the sample was re-analyzed or when the monitoring location was resampled. The most recent samples taken from the groundwater monitoring locations indicate that tritium concentrations in the groundwater have remained in the same range as reported in previous weekly status reports.

Enclosed (Figure 1), is a sketch of six of the groundwater sampling locations in the immediate area of the BWST. The most recently recorded tritium concentration and the highest recorded tritium concentration are noted at each location. Pre-accident TMI monitoring data indicate that surface water, drinking water and rain precipitation in the TMI area will contain an average of 300 pCi/L of tritium with values as high as 600 pCi/L. The monitoring locations are in an area considered "restricted" and the maximum permissible concentration (MPC) for tritium in restricted areas is  $1 \times 10^6$  pCi/L.

5. NRC Continuous Air Sampler History. The NRC onsite air sampler was located on the west side of the Island (behind green administration building) from early 1979 through October 20, 1982. When that location



became congested with many trailer additions, the air sampler was temporarily relocated to the TMI Station Meteorological Tower (northwest side of Island) from October 27, 1982 through December 29, 1982. Beginning December 29, 1982, the air sampler was relocated to its present and permanent location, at the southeast corner of the Island, near the "paint shed" area (see attached Figures 2 - 4).

The NRC air sampler was out-of-service during the period October 20 - 27, 1982, for overhaul and repair.

6. TMI Occupational Exposure. Licensee TLD (Thermoluminescent Dosimeter) records indicate the following Unit 2 occupational radiation exposures for 1983:

|                            |               |
|----------------------------|---------------|
| March 1983                 | 41.0 man-rem* |
| April 1983                 | 31.4 man-rem  |
| Total 1983 (January-April) | 154.4 man-rem |

During the period April 1 - April 30, 1983, licensee TLD records indicated the following personnel occupational radiation exposure ranges:

Unit 1 and Unit 2 Exposure Range

| <u>Category in Rem</u> | <u>Number of Station Personnel</u> |
|------------------------|------------------------------------|
| No Measurable Exposure | 1,295                              |
| Exposure Less Than 0.1 | 316                                |
| 0.1 to 0.25            | 105                                |
| 0.25 to 0.5            | 56                                 |
| 0.5 to 0.75            | 25                                 |
| 0.75 to 1              | 6                                  |
| 1 to 2                 | 24                                 |
| 2 to 3                 | 14                                 |

Total Plant Exposure (April; 1983) - 136.5 Man-Rem\*

Unit 2 Reactor Building Entries (TLD Data) During April 1983

|                                          |        |
|------------------------------------------|--------|
| Number of Personnel:                     | 112    |
| Highest Whole Body<br>TLD Reading (Rem): | 0.438  |
| Total Man-Rem                            | 19.652 |

\*Man-rem is an expression for the summation of whole body doses to individuals in a group. Thus, if each member of a population group of 1,000 people were to receive a dose of 0.001 rem (1 millirem), or if two people were to receive a dose of 0.5 rem (500 millirem) each, the total man-rem dose in each case would be one man-rem.

SCHEDULED ACTIVITIES FOR THE COMING WEEK:

- Preparations for the reactor coolant drain down to support the underhead characterization study is in progress with a target completion date of June 20, 1983.
- The fuel handling building crane will be out of service for about four weeks to facilitate the re-alignment of the rails.
- The SDS system is presently undergoing design modifications for future use in RCS/fuel transfer canal processing. This will be completed prior to headlift.
- Shipment of EPICOR prefilter liners No. 30, 14 and 41 are scheduled for the week of May 30, 1983.

PUBLIC MEETINGS:Future Meeting

On June 2, 1983, Lake H. Barrett and William D. Travers will meet with the Concerned Mothers of Middletown to discuss TMI related issues.

## APPENDIX 1

### LIQUID EFFLUENT DATA

#### GPU Nuclear

Liquid effluents from the TMI site released to the Susquehanna River, after sampling and monitoring, were within regulatory limits and in accordance with NRC requirements and the City of Lancaster Agreement.

During the period May 20, 1983, through May 26, 1983, the effluents contained no detectable radioactivity at the discharge point, and individual effluent sources originating within Unit 2 contained no detectable radioactivity.

#### Environmental Protection Agency

|                          |                        |
|--------------------------|------------------------|
| Lancaster Water Samples: | (12 samples)           |
| Covering period:         | April 24 - May 6, 1983 |
| Results:                 | Gamma scan negative    |
| <br>TMI Water Samples:   | <br>(6 samples)        |
| Covering period:         | April 30 - May 7, 1983 |
| Results:                 | Gamma scan negative    |



## APPENDIX 2

### ENVIRONMENTAL DATA

#### EPA Environmental Data

The EPA measured Kr-85 concentrations at several environmental monitoring stations and reported the following results:

| <u>Location</u>        | <u>April 29, 1983 - May 13, 1983</u><br>(pCi/m <sup>3</sup> ) |
|------------------------|---------------------------------------------------------------|
| Goldsboro              | 27                                                            |
| Middletown             | 24                                                            |
| Yorkhaven              | 24                                                            |
| TMI Observation Center | 29                                                            |

- No radiation above normally occurring background levels was detected in any of the samples collected from the EPA's air and gamma rate networks during the period from May 18, 1983, through May 26, 1983.

#### NRC Environmental Data

Results from NRC monitoring of the environment around the TMI site were as follows:

- The following are the NRC air sample analytical results for the onsite continuous air sampler:

| <u>Sample</u> | <u>Period</u>               | <u>I-131</u><br>(uCi/cc) | <u>Cs-137</u><br>(uCi/cc) |
|---------------|-----------------------------|--------------------------|---------------------------|
| HP-371        | May 20, 1983 - May 26, 1983 | <7.4 E-14                | <7.4 E-14                 |

### APPENDIX 3

#### SHIPMENTS: RADIOACTIVE MATERIALS/RADIOACTIVE WASTE

- On May 24, 1983, 3 steel liners and 10 boxes containing Unit 1 LSA-non compacted trash were shipped to Chem-Nuclear Systems, Barnwell, South Carolina.
- On May 27, 1983, 113 drums containing contaminated laundry from Units 1 and 2 were shipped to Interstate Uniform, New Kensington, Pennsylvania.

### APPENDIX 4

#### WATER PROCESSING DATA

##### Submerged Demineralizer System (SDS)

SDS began processing of the eleventh batch of reactor coolant system (RCS water) on May 24, 1983. This batch comprised of approximately 9,000 gallons, had been staged to the "C" reactor coolant bleed tank by the RCS feed and bleed process. (See Weekly Status Report of May 17, 1983 for feed and bleed process description) SDS performance parameters will be included in the next Weekly Status Report.

##### EPICOR II

EPICOR II processed approximately 16,000 gallons of SDS effluents during the week; its performance parameters are shown below.

##### EPICOR Performance Parameters May 25, 1983 to May 26, 1983

| <u>Radionuclide</u> | <u>Average Influent</u><br><u>(uc/ml)</u> | <u>Average Effluent</u><br><u>(uc/ml)</u> | <u>Percent Removed</u> |
|---------------------|-------------------------------------------|-------------------------------------------|------------------------|
| Cesium 137          | $9.0 \times 10^{-5}$                      | $1.7 \times 10^{-7}$                      | 99.81                  |
| Strontium 90        | $3.0 \times 10^{-3}$                      | $3.3 \times 10^{-5}$                      | 98.90                  |
| Antimony 125        | $3.9 \times 10^{-3}$                      | $< 2.9 \times 10^{-7}$                    | $> 99.99$              |



## APPENDIX 5

### PLANT PARAMETERS

Core Cooling Mode: Heat transfer from the reactor coolant system (RCS) to reactor building ambient.

Available Core Cooling Mode: Mini Decay Heat Removal (MDHR) system.

RCS Pressure Control Mode: Standby Pressure Control System.

Major Parameters (as of 5:30 AM, May 27, 1983) (approximate values)

Average Incore Thermocouples\*: 90°F

Maximum Incore Thermocouple\*: 135°F

RCS Loop Temperatures:

|              | A    | B    |
|--------------|------|------|
| Hot Leg      | 85°F | 83°F |
| Cold Leg (1) | 74°F | 76°F |
| (2)          | 74°F | 74°F |

RCS Pressure: 64 psig

Reactor Building: Temperature: 69°F

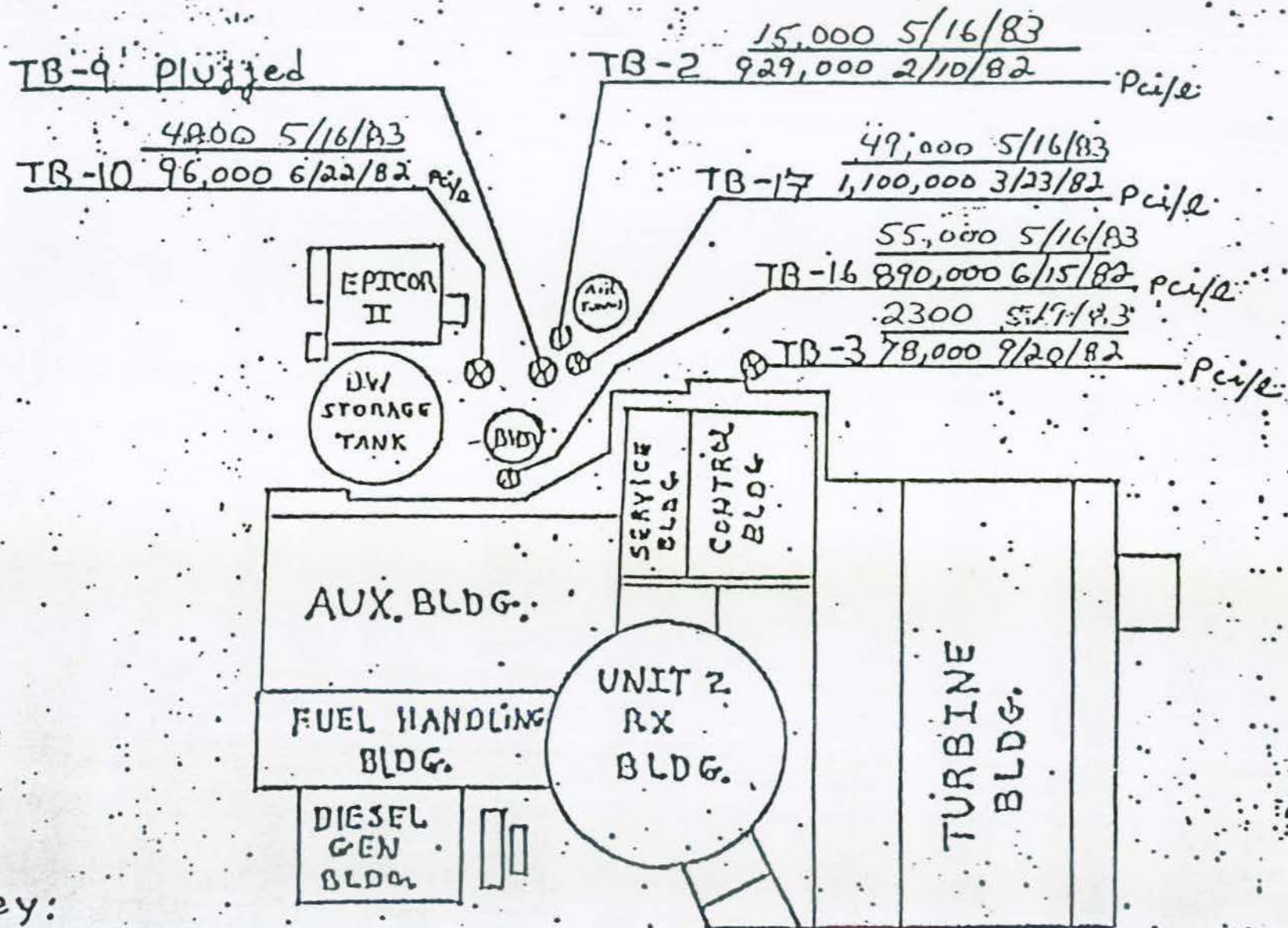
Pressure: -0.1 psig

Airborne Radionuclide Concentrations:

2.1 E-7 uCi/cc H<sup>3</sup> (Tritium)  
(sample taken 5/26/83)

6.9 E-9 uCi/cc particulates  
(predominately Cs-137)  
(sample taken 5/17/83)

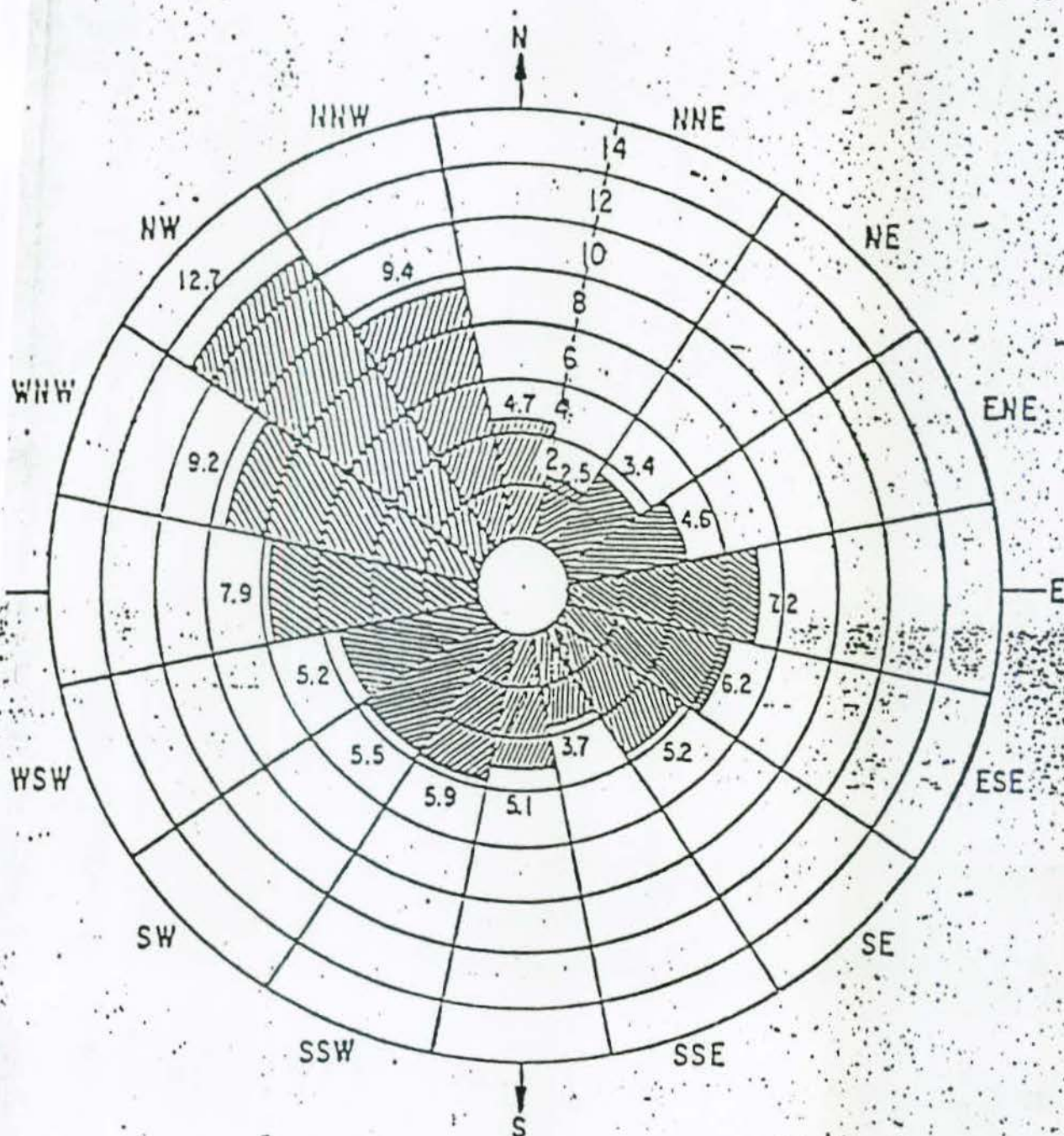
# U-2 TEST BORING H-3 CONCENTRATION



Key:

analysis of latest sample / date






 INDICATES PERCENT OF TIME WIND BLOWS FROM DIRECTION SHOWN

Figure 3.4. TH1 Annual Average Wind Rose at 100 ft, 1972-1975 Data.







