

CONTRACTOR REPORT

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Solar One
Solar Thermal Central Receiver
Pilot Plant
1983 Meteorological Data Report

McDonnell Douglas Astronautics Company

Prepared by Sandia National Laboratories, Albuquerque, New Mexico 87185
and Livermore, California 94550 for the United States Department of Energy
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SOLAR ONE
SOLAR THERMAL CENTRAL RECEIVER
PILOT PLANT
1983 METEOROLOGICAL DATA REPORT

JUNE 1984

MCDONNELL DOUGLAS ASTRONAUTICS COMPANY

ABSTRACT

Meteorological data recorded at the Solar One 10 MWe Pilot Plant during a Startup and Initial Evaluation Test Program during 1983 are presented. Additionally, a General Plant Description is provided, plus specific information on the type, quantity, and location of meteorological equipment and instrumentation at the Power Plant which are being used to record the meteorological data.

PREFACE

This document is provided by the McDonnell Douglas Astronautics Company in accordance with Sandia Contract 84-8173. The data contained in this document were recorded as part of the Solar One Startup and Initial Evaluation Test Program being conducted for Sandia under the subject contract.

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SECTION 1

INTRODUCTION

This report contains meteorological data which were recorded during the January 1 - December 31, 1983 time period at the Solar One site in parallel with the startup and initial evaluation program.

The contents of this report are organized to contain: a plant description for general orientation, an identification, location, and description of meteorological equipment and instrumentation used at the Solar One site, a description of summary data tapes that have been developed in parallel with this report, and finally, presentation and discussion of the meteorological data.

The intent of this report is to provide a description of the meteorological data system and of the data that are available on data tapes. Summary data are included for temperature, wind, rainfall, direct normal insolation, and the nephelometer. Rainfall data for the years 1956 through 1970 are included for comparison with 1983, which shows that 1983 had higher than average rainfall and more than the average number of occurrences of rain. Barstow insolation data for 1976 are compared to the 1983 data, which shows that 1983 was a bad year for total insolation and that the peak values are also lower. The average peak insolation values for 1983, however, are higher than the 1975-76 data in all but two months of the year.

Insolation data plots are included for three partially cloudy days and three clear days as measured by pyranometers located throughout the field. These plots show the type of data that is available if someone wishes to make cloud passage studies. Direct normal insolation data plots are shown for 289 days between January 1 and December 31, 1983. These were days that had NIP activity, when the data acquisition system was operating. The plots show that the amount of time when the peak direct normal insolation exceeded 900 W/m^2 was small, relating to the total operating time. These plots also show the type of cloud passage transients that the plant must operate through.

Annual and monthly summary wind speed and direction data from Solar One are included in this report, based on wind data recorded during 312 days of data acquisition system operation. The number of days in each month when the wind speed exceeded 30 miles per hour are identified, as well as the fraction of time when this is true. Wind speed exceeded 30 miles per hour on 67 days in 1983 when data were being recorded and the NIP values were greater than 450 watts/m².

The range of high and low temperatures for each month is included. There were five months when the maximum temperature exceeded 100°F and three months when it was below 32°F. Dewpoints were also recorded and compared to mirror module temperatures on two instrumented heliostats to determine times when the dewpoint exceeded mirror module temperatures. This did occur on 32 days during which the data acquisition system was operating.

The nephelometer became operational during the last half of 1983 at the Solar One location, and representative data for 8 days are included to show a mix of partly cloudy and clear days, some of which are the same days as those used for the NIP and pyranometer plots.

The meteorological instrumentation at Solar One was kept in better working order during 1983 than in 1982, and the data acquisition system was on-line recording meteorological data for 312 days during the year, thus making this meteorological data report far more complete than the 1982 version.

SECTION 2

PLANT DESCRIPTION

2.1 GENERAL

Solar One is a 10 MWe Solar Thermal Central Receiver Pilot Plant which generates electricity exclusively from solar energy. The pilot plant is a joint undertaking between the U.S. Department of Energy and the Utility Associates, which consists of the Southern California Edison Company, the Los Angeles Department of Water and Power, and the California Energy Resources Conservation and Development Commission.

Since this pilot plant is the first large scale demonstration of the generation of electricity using a solar central receiver, the pilot plant design, construction, and operation activities are intended to support the program objectives as defined by the Department of Energy and the Utility Associates. These program objectives are:

- 1) To establish the technical feasibility of a solar thermal power plant of the central receiver type, and to identify areas where research and development may lead to significant performance improvements and increased capabilities.
- 2) To obtain development, production, operating, and maintenance cost data to (a) support private sector decisions to invest in solar central receiver energy systems, and (b) identify areas where research and development may most effectively be applied to reduce costs and extend areas of application of such systems.
- 3) To determine the environmental impacts of the construction, operation and maintenance of solar thermal central receiver plants.

The plant is designed to produce at least 10 MWe of electrical power to the utility grid (after supplying the plant parasitic power requirement) for a period of 4 hours on the plant "Worst Design Day" (Winter solstice) and for a period of 7.8 hours on the plant "Best Design Day" (Summer solstice). The "Worst" and "Best Design Days" are based on assumed insolation (solar intensity) conditions which have been developed from actual site insolation measurements. During actual plant operation, the plant capability and electrical output will depend on the current sun and atmospheric conditions. During certain periods of the year (near noon from March through September), the plant energy collection capability can exceed the 12.5MWe turbine-generator rating.

An aerial photograph of Solar One is shown in Figure 1.

2.2 LOCATION

The pilot plant is located on a 130-acre site of Southern California Edison property near the Coolwater Generating Station which is located east of Daggett, California and approximately 12 miles east of Barstow, California. The site is at a latitude of 34.8 °N and longitude of 116.83°W. The site is contained in the western half of Section 13, Township 9N - Range 1E, San Bernardino County: San Bernardino Meridian. The reference location for the pilot plant is the receiver tower vertical centerline with coordinates N 501, 260 and E 2, 349, 950. The nominal elevation of the site is 1,946 feet above mean sea level. A vicinity map is shown in Figure 2.

2.3 GENERAL ARRANGEMENT

A general arrangement of the pilot plant site is shown in Figure 3. The site boundary, excluding the main parking area, is established by a perimeter security fence shown as a dashed line in the Figure.

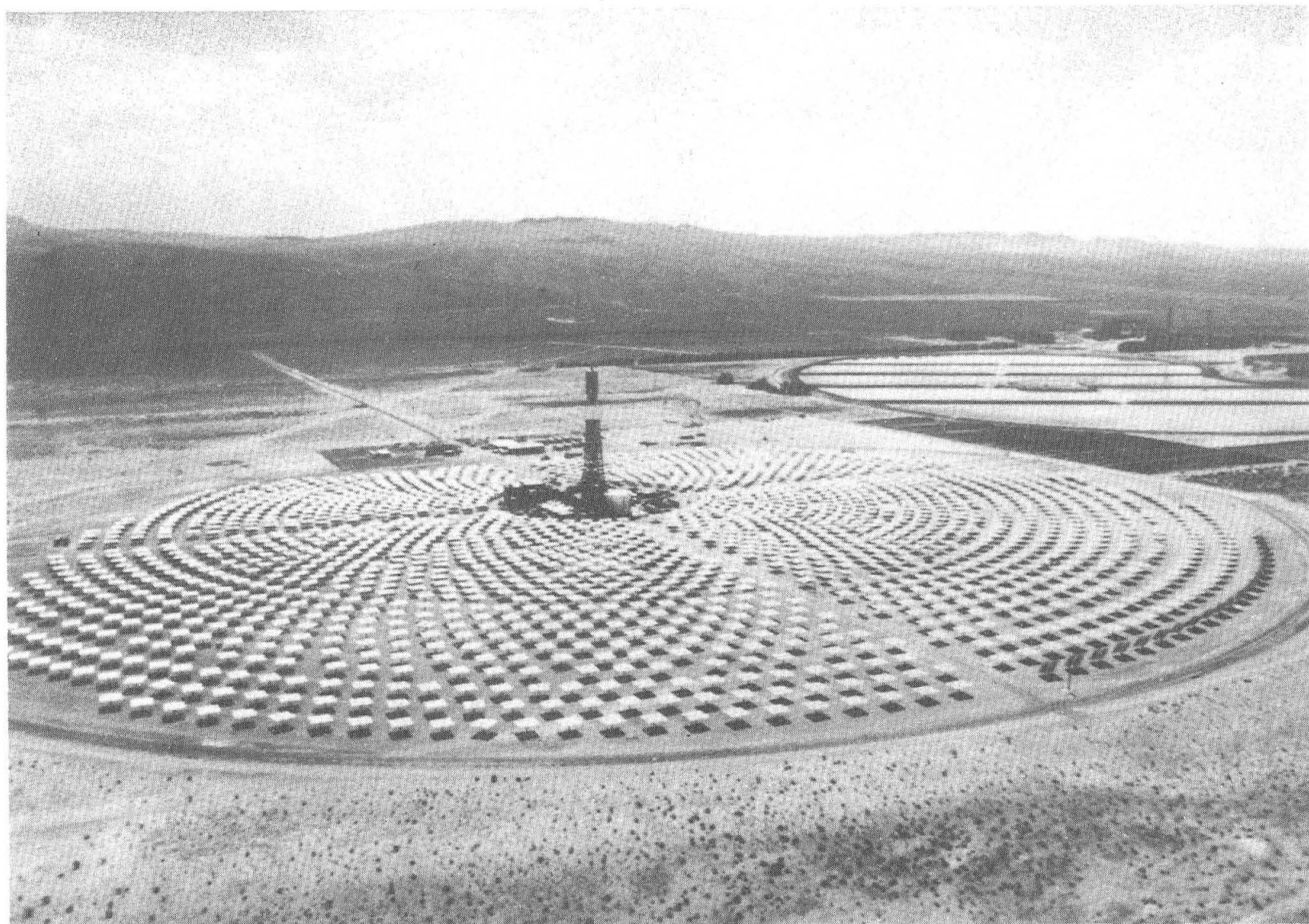


FIGURE 1. AERIAL PHOTOGRAPH OF SOLAR ONE

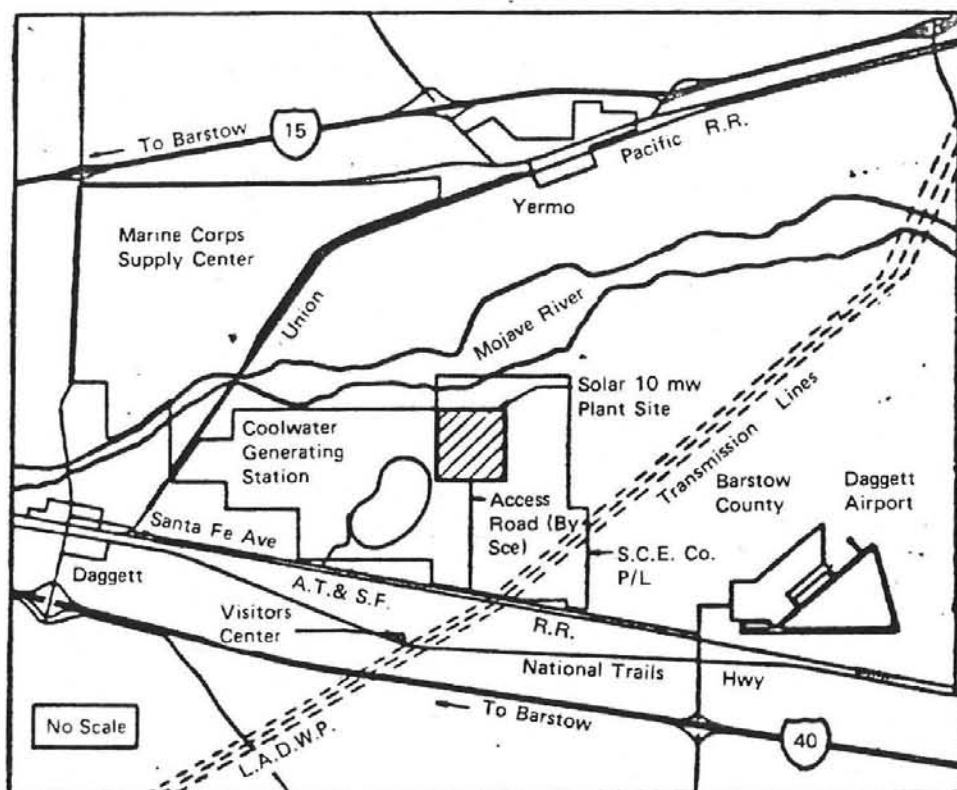


Figure 2 Vicinity Map

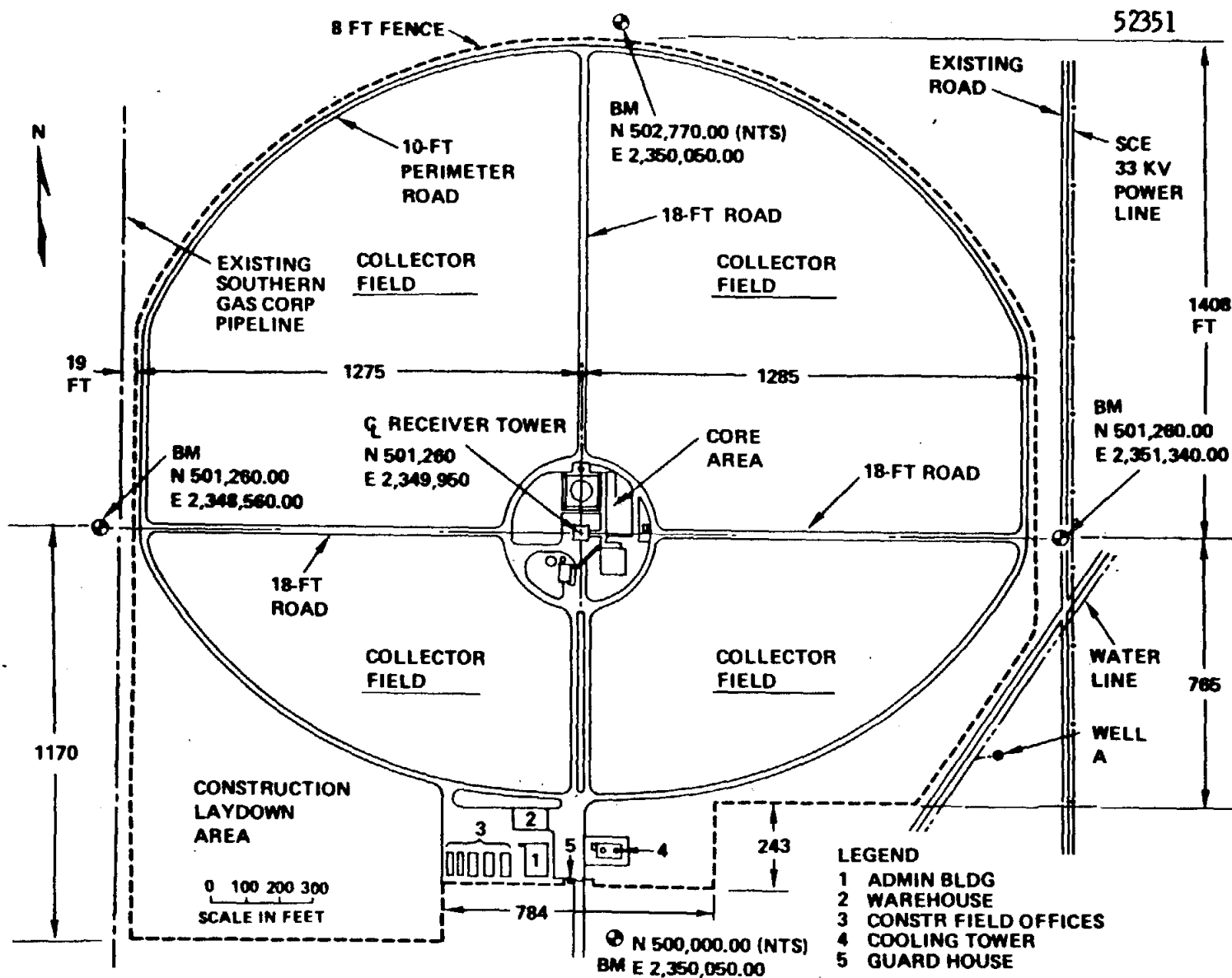


Figure 3 General Arrangement

A central core area of approximately three acres is utilized for the receiver tower and the support equipment for the solar system, such as the receiver system, thermal storage system and electrical power generating system, as well as other necessary support systems. The core area also contains electrical power generation equipment, related peripheral equipment and a plant control room. The core area has a radius of 201 ft, with its center coincident with the tower centerline. The center of the receiver tower is located at coordinates N501, 260 and E 2, 349, 950. The center of the receiver panels is at an elevation of 260 feet above the theoretical intersection of the collector field planes with the receiver tower centerline.

A 75-acre collector field surrounds the receiver tower. The northern field boundary can be described by an arc of 1,390 feet radius from the receiver tower centerline. The southern field boundary can be described by an arc of 2,145 feet radius whose center is 1,395 feet north of the receiver tower center. An area 243 feet by 784 feet within the perimeter fence and near the (southern) main entrance has been utilized for placement of the administrative building, warehouse, cooling tower and other service equipment not required in the central core area.

The collector field occupies 75 acres and contains 1818 heliostats in an optimized arrangement around the tower. The heliostat locations are depicted on Figure 4. In addition, numerous monitoring and measurement devices are located in the collector field, as shown in Figure 5. The collector field is graded to provide adequate drainage and to minimize elevation differentials between heliostats. It is also compacted to permit vehicular access to the heliostats and ancillary electrical equipment for installation, maintenance and washing functions.

2.4 TOWER AND BUILDINGS

2.4.1 Tower

The receiver tower is designed to support the receiver assembly at the required elevation above the collector field. In addition to the receiver panels, the tower supports a heliostat beam characterization system (BCS) target as well as the piping and auxiliary equipment for the receiver.

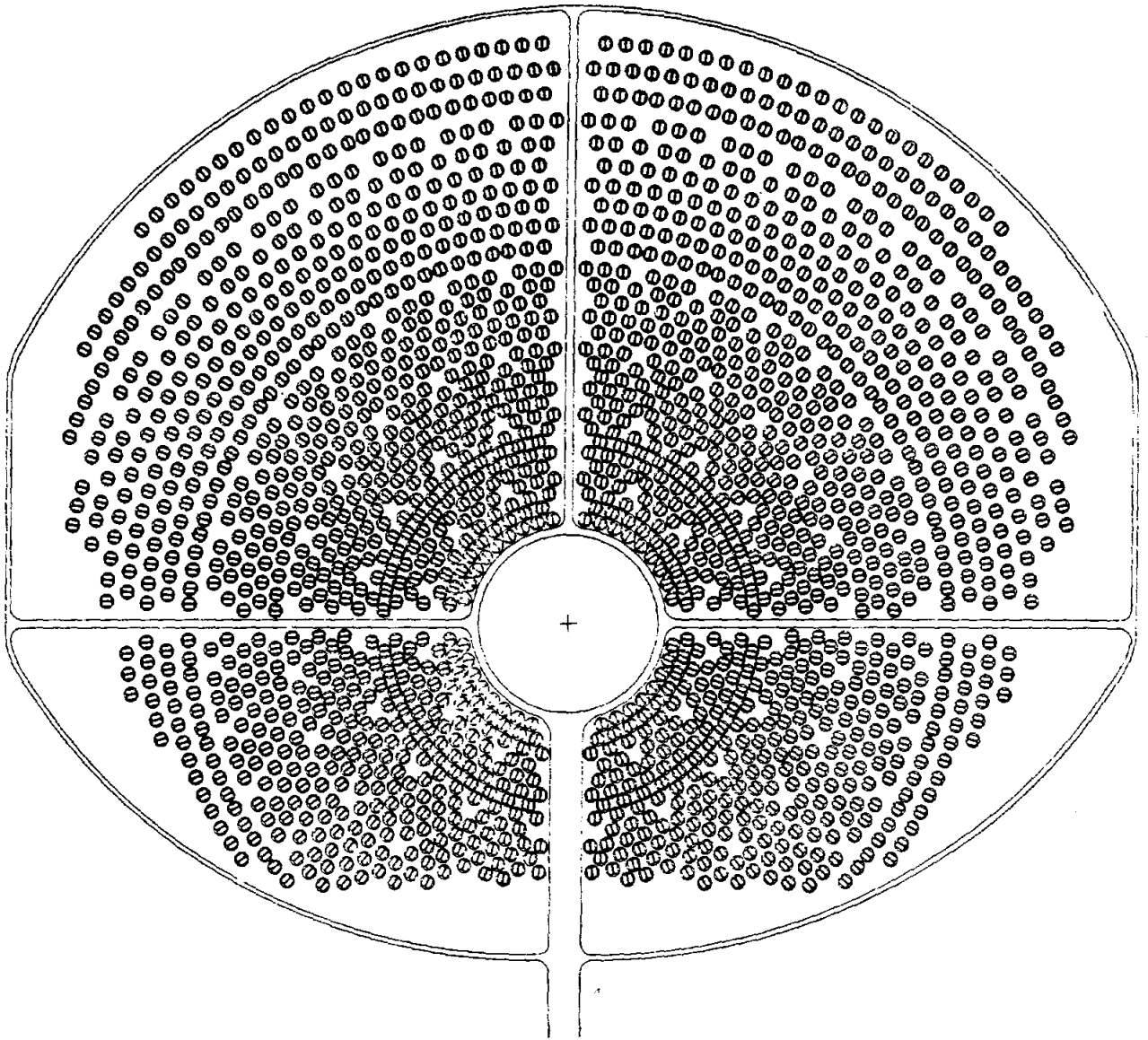


Figure 4 10 MW Central Receiver Collector Field Layout

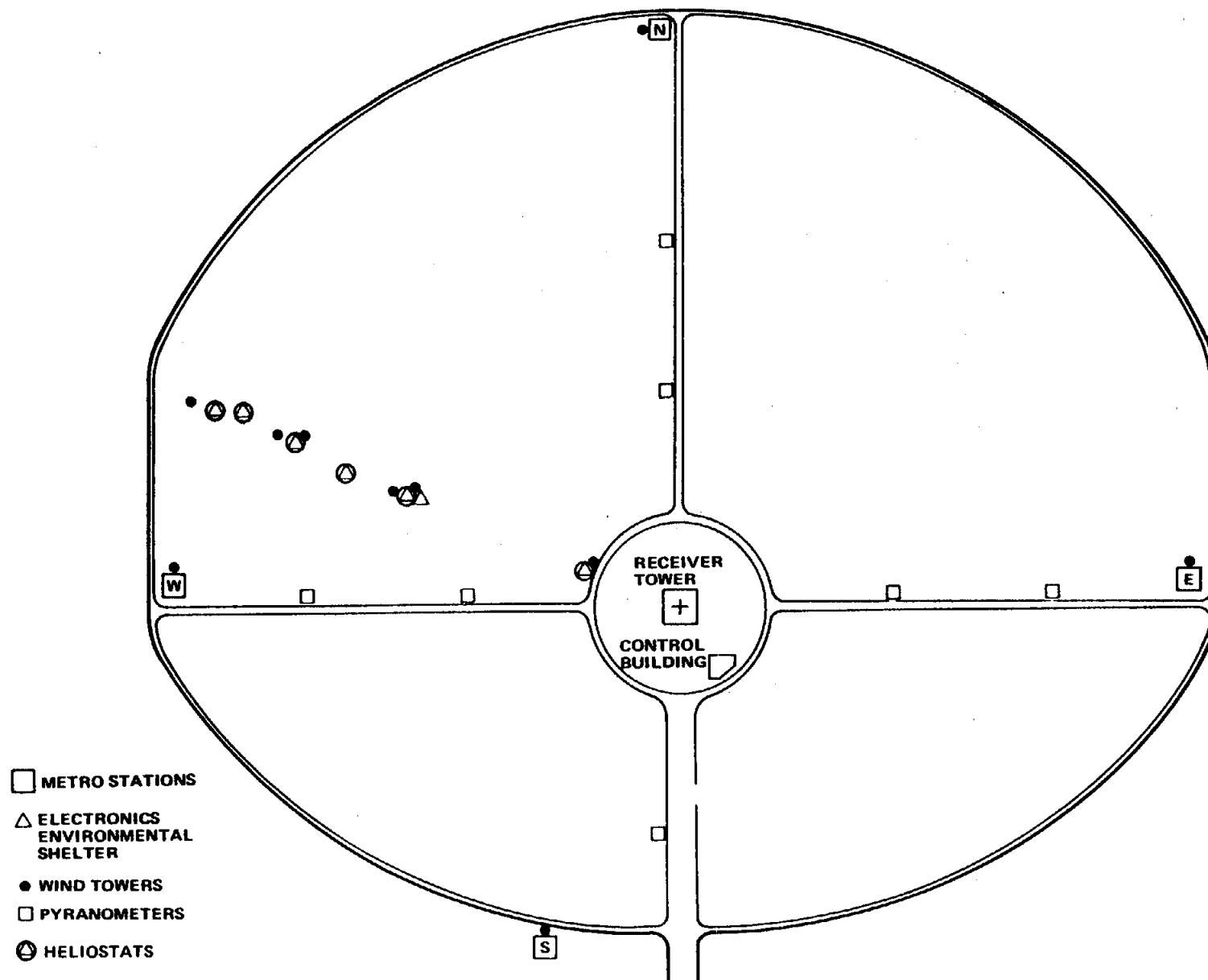


Figure 5 Collector Field Instrumentation and Meteorological Equipment

The tower (depicted in Figure 6) has a total height of approximately 295 feet above ground level, including 22 working levels above ground. It is an open, four-sided steel structure resting on a reinforced concrete foundation. At the base, the tower is 39 ft. 11 in. square, and tapers to 15 ft. 1/2 in. square at the 15th level (211 ft above ground level). However, at that level, the structure extends to support the BCS target, and is 47 ft. 8 in x 37 ft. 8 in. The tower has a stairway up to the base of the receiver and an elevator to transport three personnel and/or small parts to a working level near the top of the tower and other appropriate working levels. Ladders are provided from the base of the receiver to the top of the receiver assembly. A photograph of the receiver and tower assembly is shown in Figure 7. The heliostat beams are reflecting moisture droplets in the air, with the concentrations of the beams shown as bright spots at the collector field standby points.

2.4.2 Control Building

The control building is a two-story reinforced masonry block structure shown at the base of the tower in Figure 7. The Plant Control Room, Equipment Room and Personnel Office space are located on the second floor, with the electrical switchgear and battery rooms located on the first floor. Building plan dimensions are approximately 45'-0" by 7'-0". The elevation of the second floor is 20'-0" to allow direct access to the Auxiliary Bay structural deck. The roof is of timber construction and the second floor is a reinforced concrete slab supported by structural steel members.

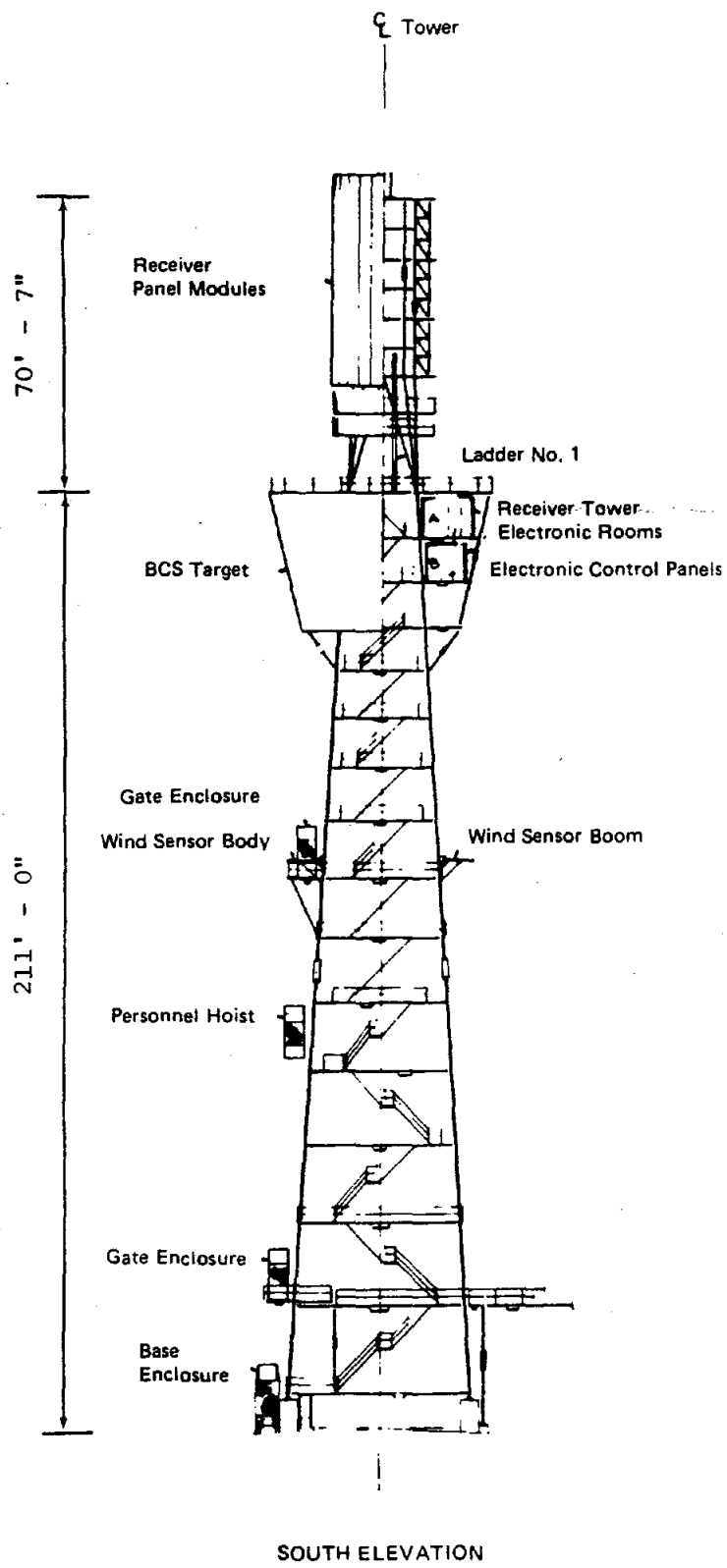


FIGURE 6 RECEIVER TOWER



FIGURE 7. RECEIVER TOWER ASSEMBLY


SECTION 3

METEOROLOGICAL EQUIPMENT AND INSTRUMENTATION

The meteorological measurements equipment consists of wind velocity and direction devices, fixed position pyranometers (measures total insolation), normal incidence pyrhelimeter (NIP), which measures direct insolation, hail cubes (measure size and velocity of hail impact), rain gages, various temperature, pressure and humidity measurement devices, and a nephelometer. This equipment is placed in various stations throughout the site, as follows:

- South Station
- West Station
- North Station
- East Station
- Receiver Station (7th level)
- WNW Station
- Control Room Roof

3.1 LOCATION

Figure 8 shows the locations of the meteorological instrumentation for the Solar One Site. There is one meteorological station (shown as a hexagon) at each compass point of the field, at the central receiver tower, and at the Control Room roof. There are wind towers plus an environmental enclosure within the field in the West-North-West (WNW) direction adjacent to heliostats instrumented for structural, thermal and power studies. One hail cube is in the middle of the northwest field and one in the middle of the northeast field. These are shown as  in the figure. In addition, there are seven pyranometers distributed along the spoke roads for cloud obscuration studies.

3.2 DESCRIPTION

Figure 9 provides a schematic of the overall system, including the sensors, the remote acquisition systems (RAS) at the various stations, the collector field interface cabinet, and the interfacing hardware connecting the meteorological system with the data acquisition system (DAS). Dashed lines also indicate the physical locations of the various equipment. The displays available in

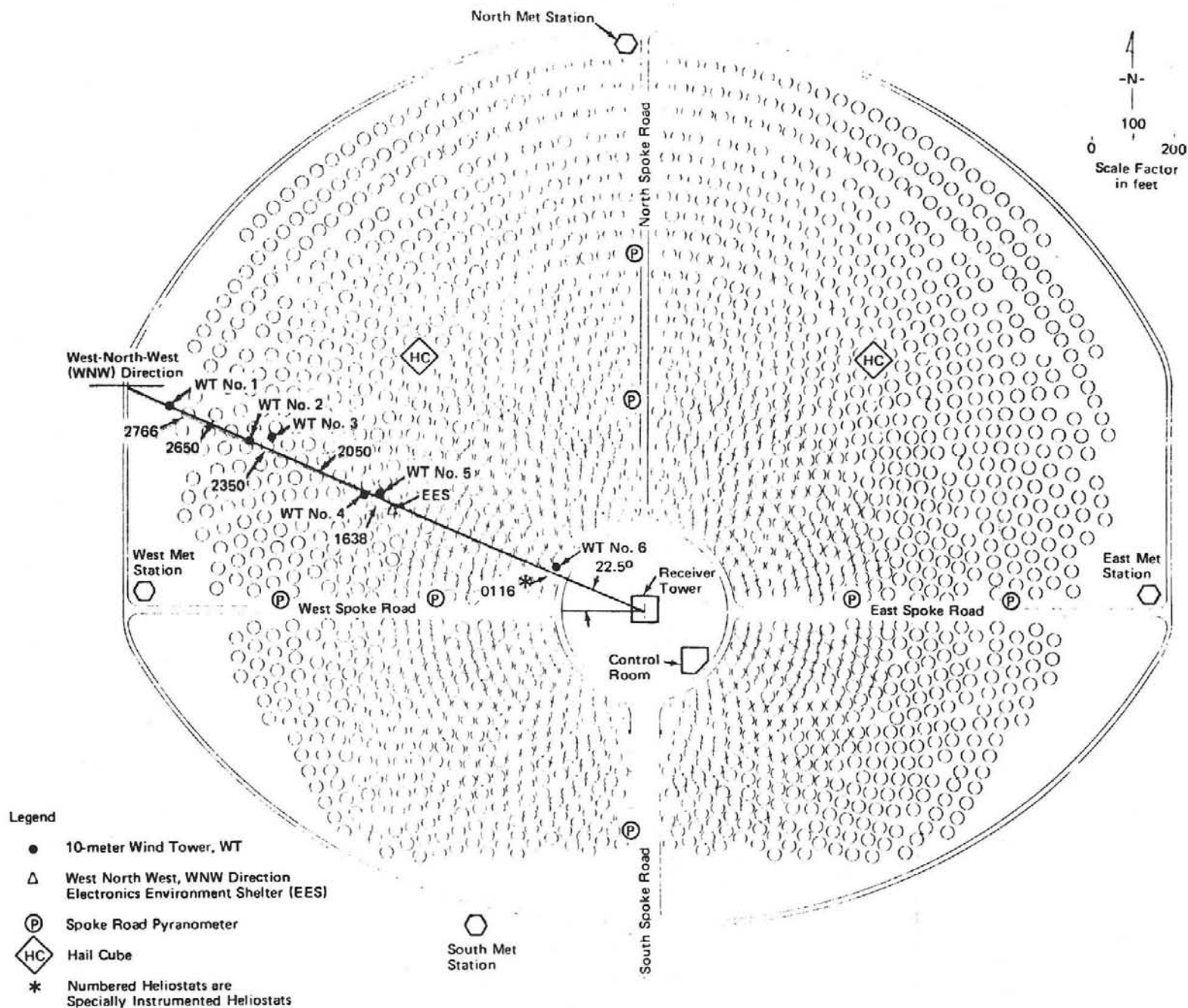


Figure 8 Collector Field Locations of Meteorological and Specially Instrumented Heliostats Measurements

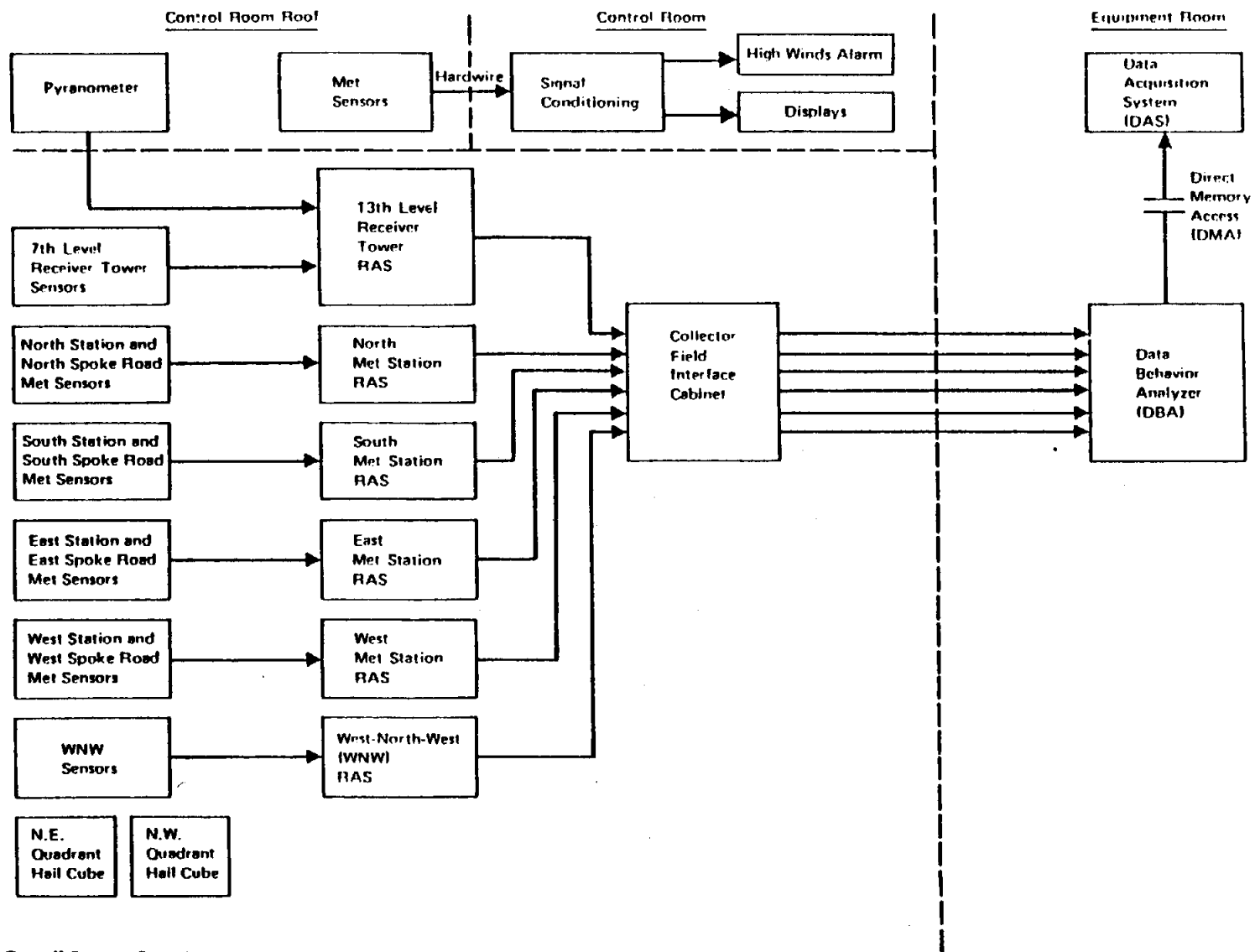


Figure 9 Overall System Description

the control room are the normal incidence pyrheliometer (NIP) readings, plus wind speed and wind direction.

3.2.1 General

Each compass point station has a concrete base to provide the stability and levelness required by the instruments. The base is at least 2 inches above the surrounding finished grade.

On top of each compass point station base is an environmental enclosure for sensitive equipment such as power supplies, signal conditioners, and the remote acquisition system (RAS). The enclosure is designed to maintain the enclosure area temperature and dust level within the most sensitive temperature and dust range dictated by the electronics hardware environmental specifications. The enclosure is capable of easy access and removal of the electronic equipment.

A power/signal cable distribution panel is mounted within the enclosure. A two-panel door is located at one end for easy access to the front of the electronic packages. A lock is provided on the door to allow access to the equipment for authorized personnel only. All power and signal cables running to and from the enclosure are environmentally protected.

3.2.2 South Station

The south station (see Figures 10 and 11) is the main meteorological station, and it is located south of the collector field perimeter road and west of the main entrance road to the core area. The specific XY coordinates are: $X = +725 \pm 3$ ft, $Y = -450 \pm 3$ ft. (It should be noted that the coordinate convention used for the Solar One Site has the origin (0,0) located at the tower vertical center line, with the +X direction due south and the +Y direction due east.) The station is equipped with instrumentation for measuring rainfall, wind speed, wind direction, barometric pressure, temperature, and dew-point. Additionally, the signal conditioning for the south spoke road pyranometer is done here, and there are provisions for a circumsolar telescope (CT) installation and a portable precision spectral pyranometer (PSP), as indicated in the schematic of Figure 10 and the general arrangement of Figure 11. These instruments are not currently installed and operating.

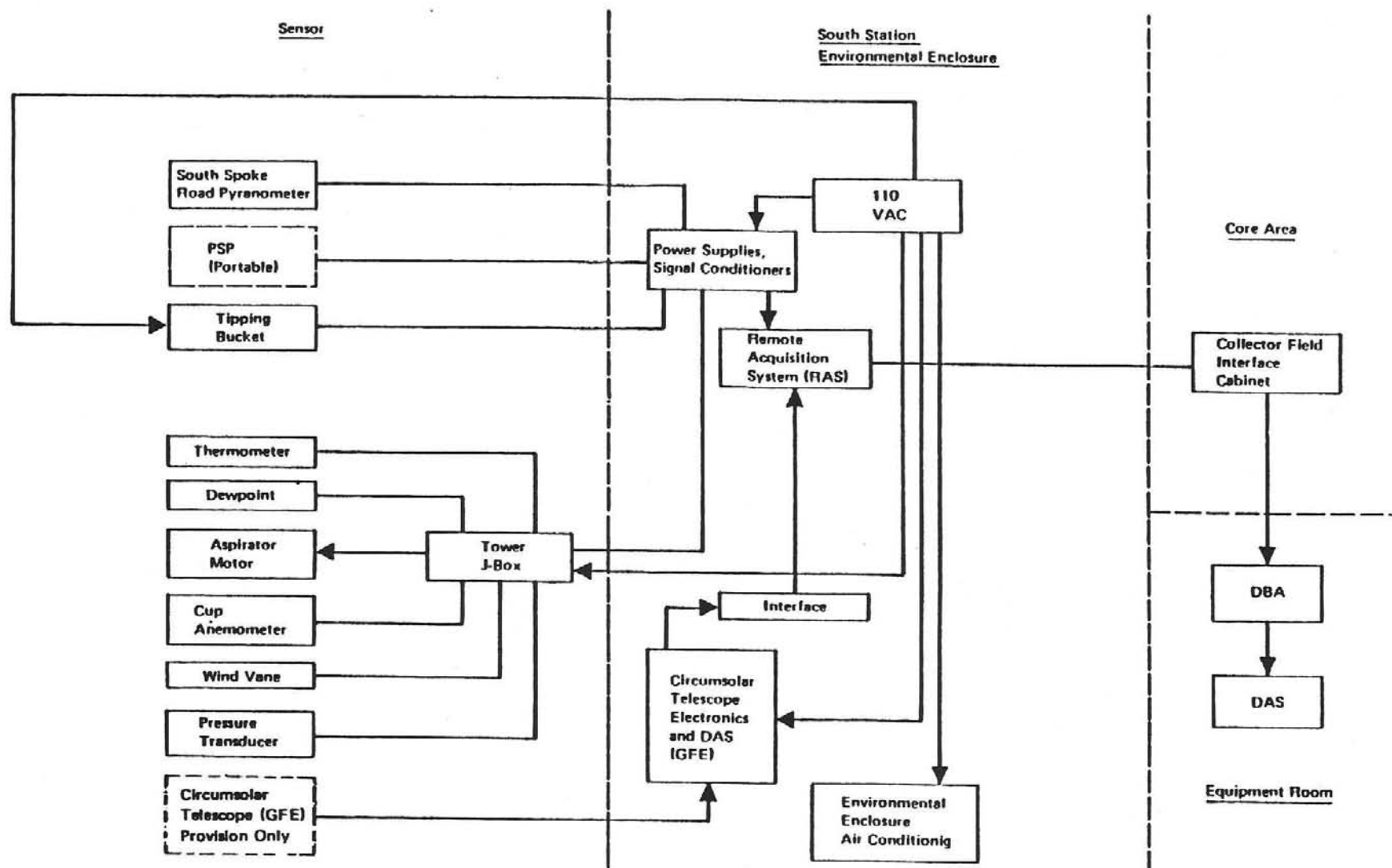


Figure 1 South MET Station (Main Station) System Schematic

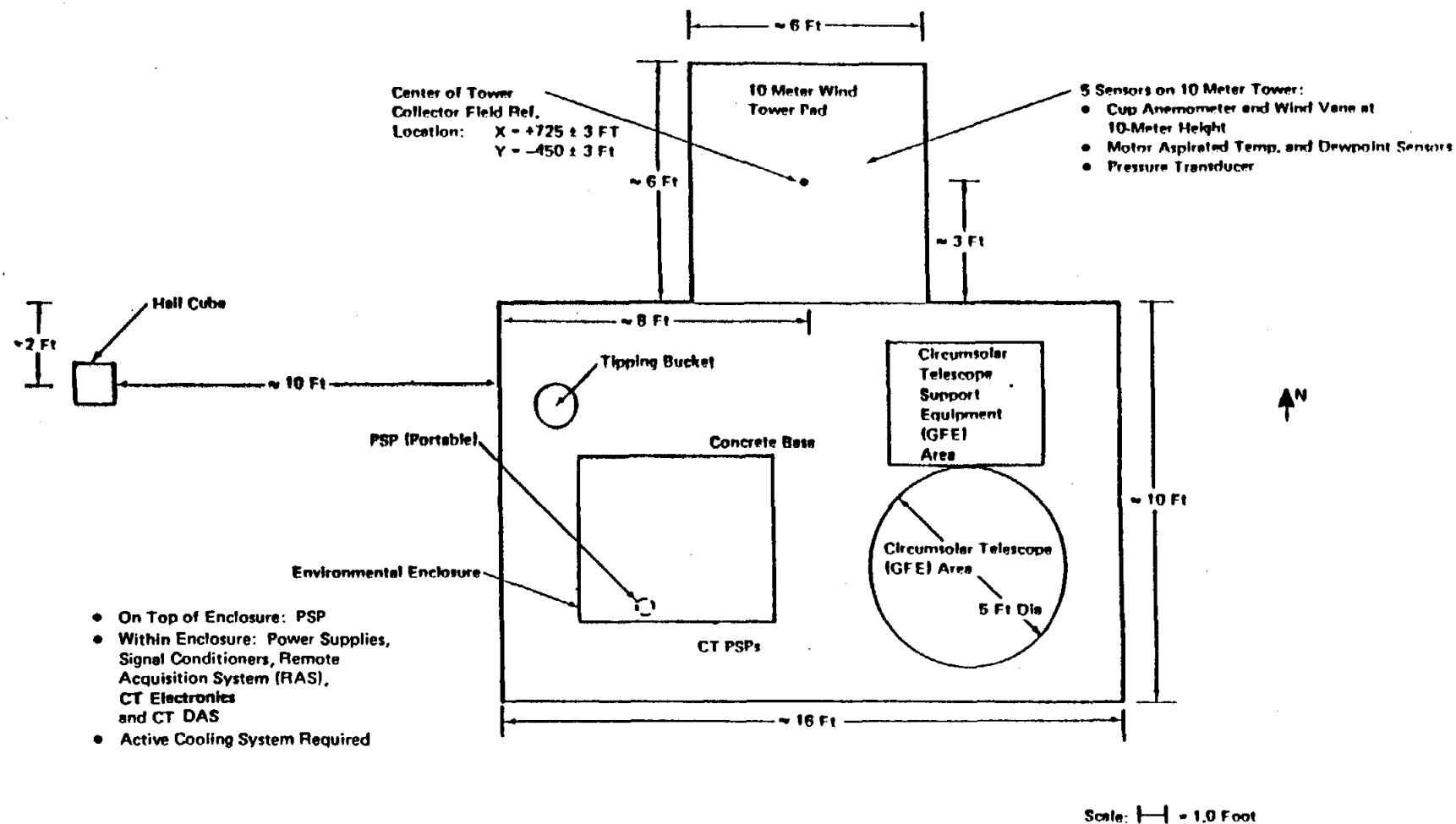


Figure 11. SOUTH STATION GENERAL ARRANGEMENT

The south station has a concrete slab base of approximately 16 by 10 ft, as indicated in Figure 11. A rigid environmental enclosure is sized to accommodate all instrumentation electronics (power supplies, signal conditioners, RAS electronics, CT electronics and CT data acquisition system (DAS)). The approximate size of this enclosure is 80 inches wide by 96 inches high by 72 inches deep. It is located on the southwest end of the concrete base, 2 feet away from the base's edge with the long dimension in the east-west direction.

The CT electronics and CT DAS would dissipate approximately 1 kW of heat during operation and it requires a dust-free operational environment at a temperature of $70 \pm 10^{\circ}\text{F}$. This dictated the major cooling capacity requirement of the enclosure's cooling system. The top of the enclosure has provisions for mounting one portable PSP. Figure 12 shows a photograph of the south station, as viewed from the west.

On the southeast corner of the base is a 5 foot diameter vacant area where the circumsolar telescope could be located. The 5 foot diameter vacant area is at least 1 foot from the base's edge and at least 2.5 feet from the environmental enclosure.

North of the circumsolar telescope area is a 3 by 4 foot area reserved for the circumsolar telescope support equipment.

A tipping bucket rain gauge is located on the west end of the base and at least 1.0 foot in from the edge of the base. Figure 13 shows the instrument.

Adjacent to the base (north of base) is a 6 by 6 foot square concrete area where a 10 meter tower is located. On the tower at the 10 meter level is a cup anemometer and wind vane mounted on a cross arm. (See Figure 14). A motor aspirated temperature and dewpoint sensor is mounted just below the wind sensors (see Figure 15). A pressure transducer is mounted at the 6 foot level of the tower. A hail cube is mounted on a pole 10 feet from the concrete base in the westerly direction. This installation can be seen in Figure 12.

3.2.3 West Station

The west station (Figures 16 and 17) is located per collector field reference XY coordinates as indicated in Figure 17. It is a 9 by 6.5 feet concrete slab base with the long end in the east-west direction. The surface of the base is at least 2 inches above the surrounding finished grade.

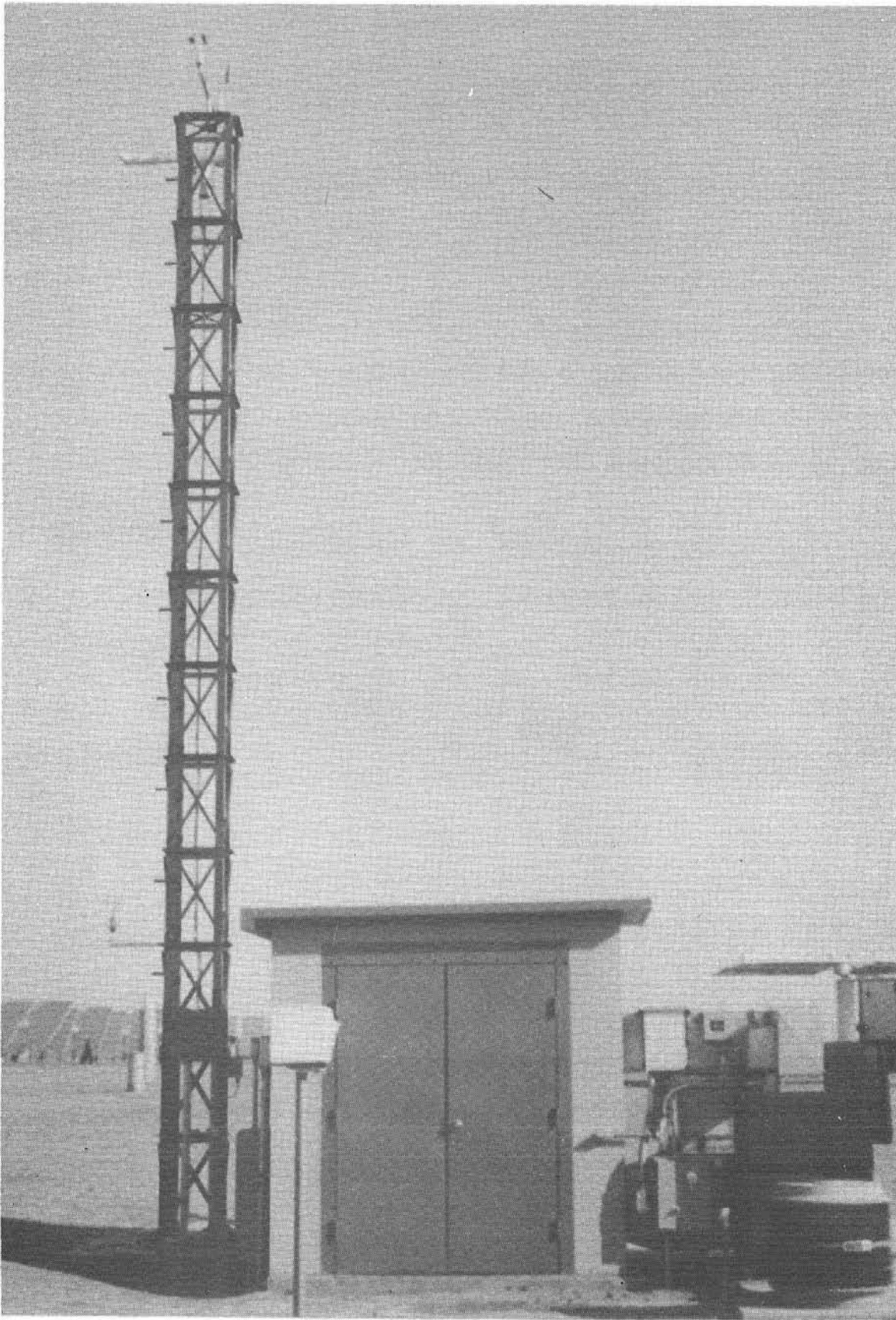


FIGURE 12. SOUTH STATION - VIEWED FROM THE WEST

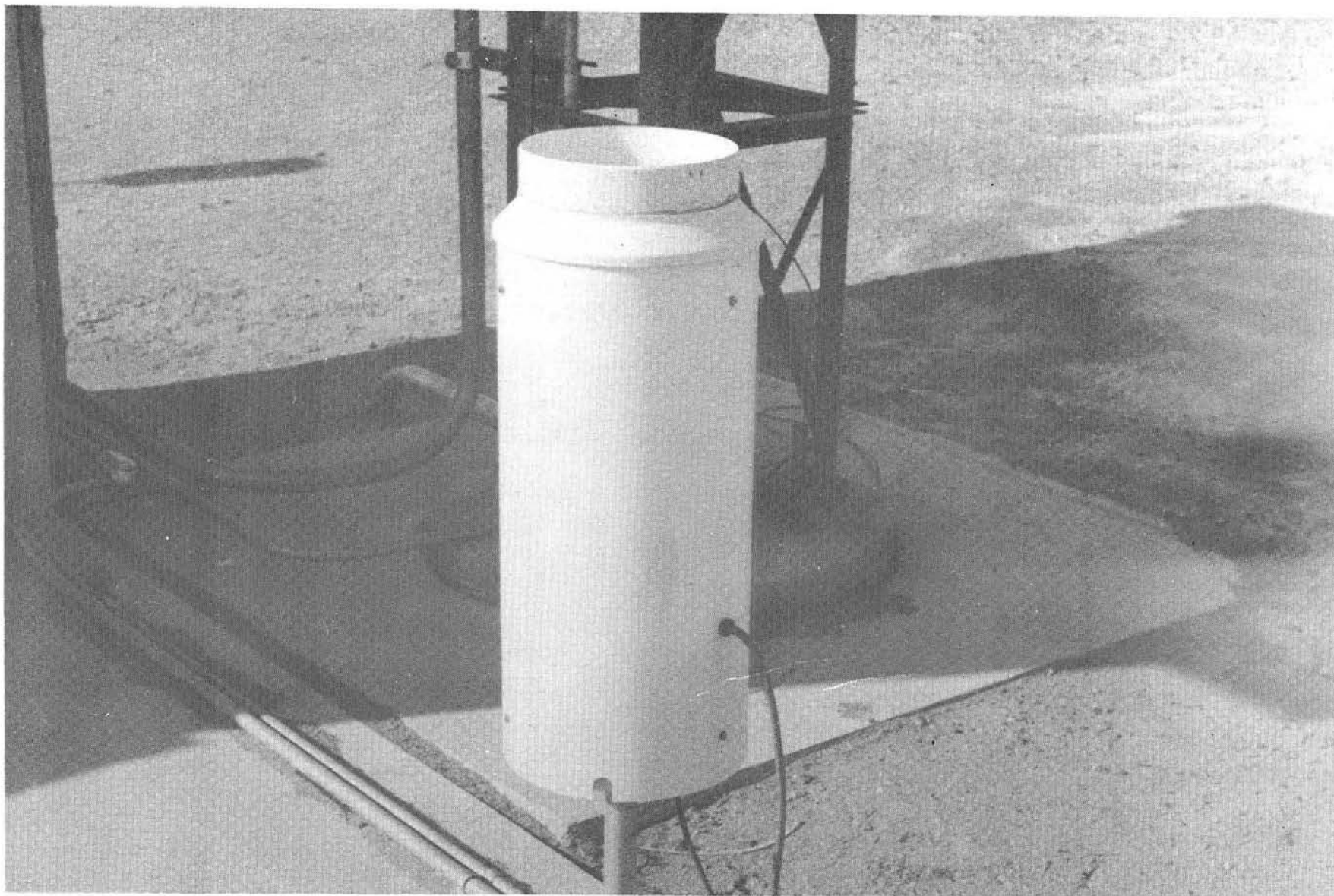


FIGURE 13. TIPPING BUCKET RAIN GAUGE INSTALLATION

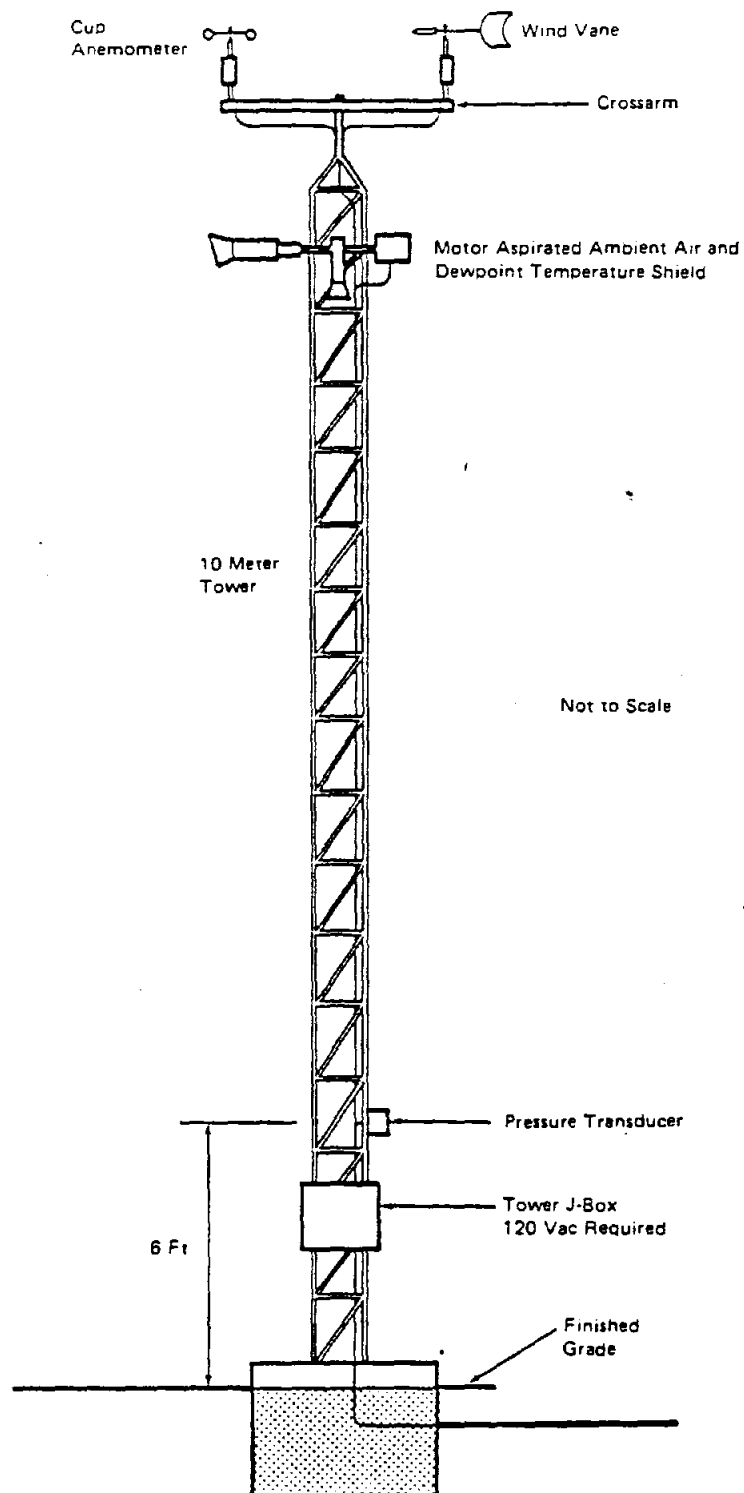


Figure 4 Mounting Location of Meteorological Sensors on 10-Meter Tower

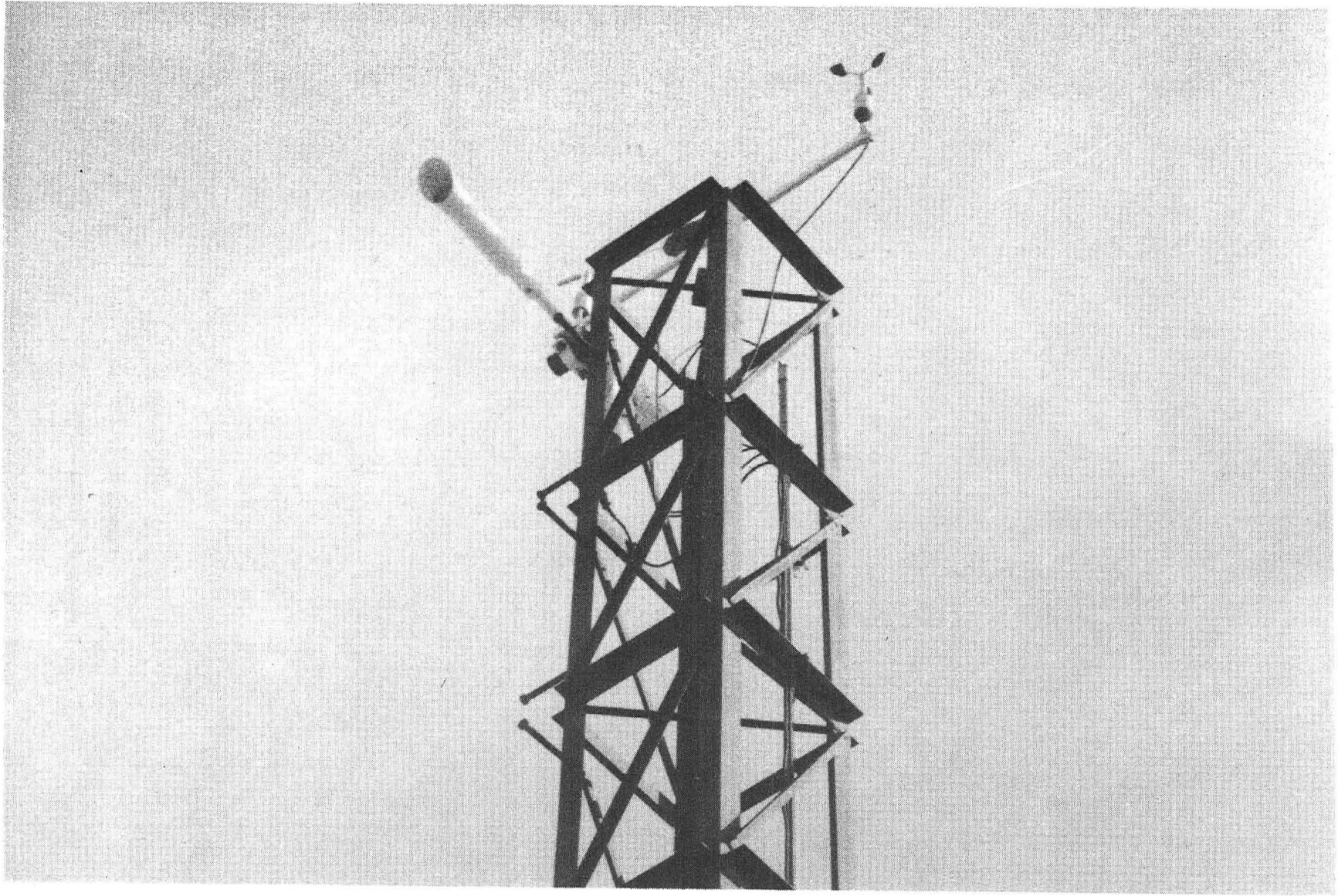


FIGURE 15. SOUTH STATION TEMPERATURE AND DEWPOINT SENSOR

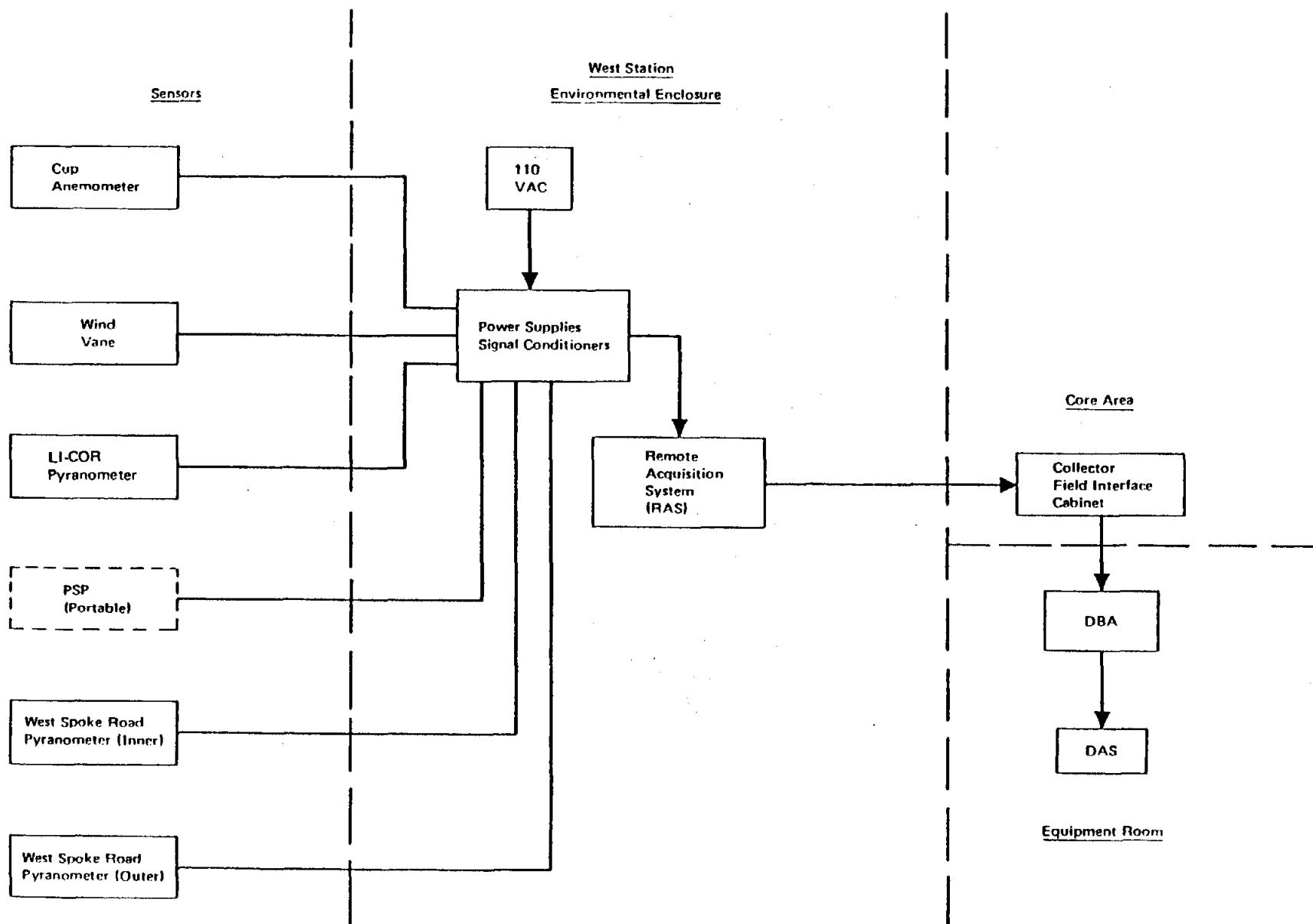


Figure 16 West MET Station System Schematic

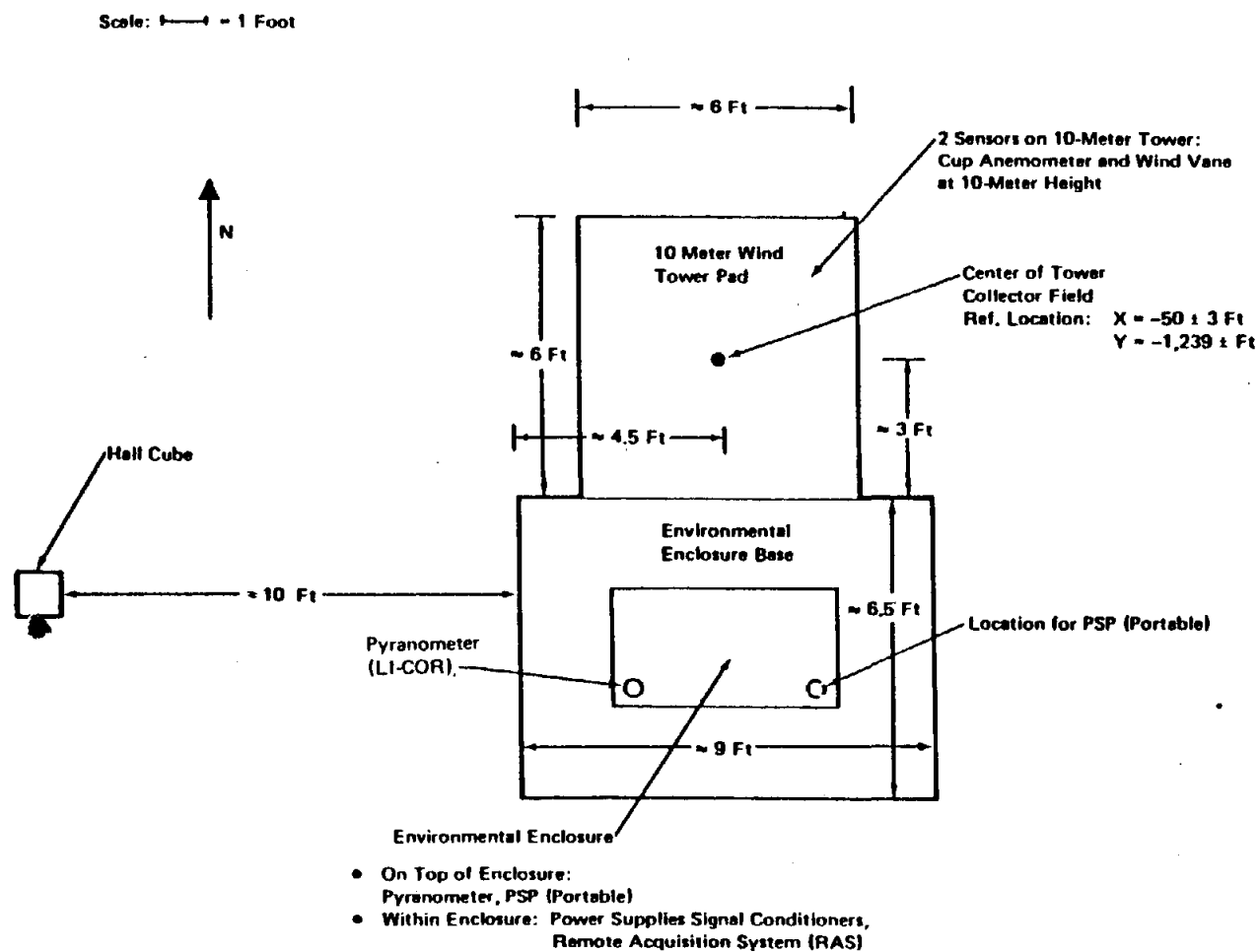


Figure 17. WEST MET STATION GENERAL ARRANGEMENT

An environmental enclosure approximately 24 inches wide by 72 inches high by 30 inches deep to accommodate all station electronics is located at the south side of the base. A pyranometer is permanently located on top of the enclosure, as well as cabling provisions for the portable PSP. Requirements for electronics environmental protection, access, drainage, cable connections, and safe guarding are the same as that for the south station environmental enclosure. An active cooling system is provided.

A 6 ft by 6 ft wind tower base is located north of the environmental enclosure base. A cup anemometer and a wind vane are mounted on a crossarm at the 10 meter height. A hail cube is located 10 feet west of the concrete base. The environmental enclosure, wind tower, and hail cube can be seen on Figure 18.

3.2.4 North Station

The north station (Figures 19 and 20) is located per collector field reference XY coordinates as indicated in Figure 20. The specifications of the base, environmental enclosure, wind sensors and 10 meter tower are identical to that of the west station. There is a pyranometer on top of the environmental enclosure, as well as provisions for a portable PSP. A NIP is mounted on a solar tracker on a table adjacent to the environmental enclosure. Space for an active cavity radiometer (ACR) is also provided. A hail cube is located 10 feet north of the base. The NIP installation and the environmental enclosure for the north station are shown on Figure 21.

3.2.5 East Station

The east station system schematic is identical to that of the west station, as depicted on Figure 16. The general arrangement for the east station is shown in Figure 22, including the collector field coordinates. The station characteristic dimensions and requirements are identical to those of the west station, except for the hail cube, which is located 10 feet east of the concrete base. Figure 23 shows the east station environmental enclosure, the wind tower, and the hail cube pedestal.

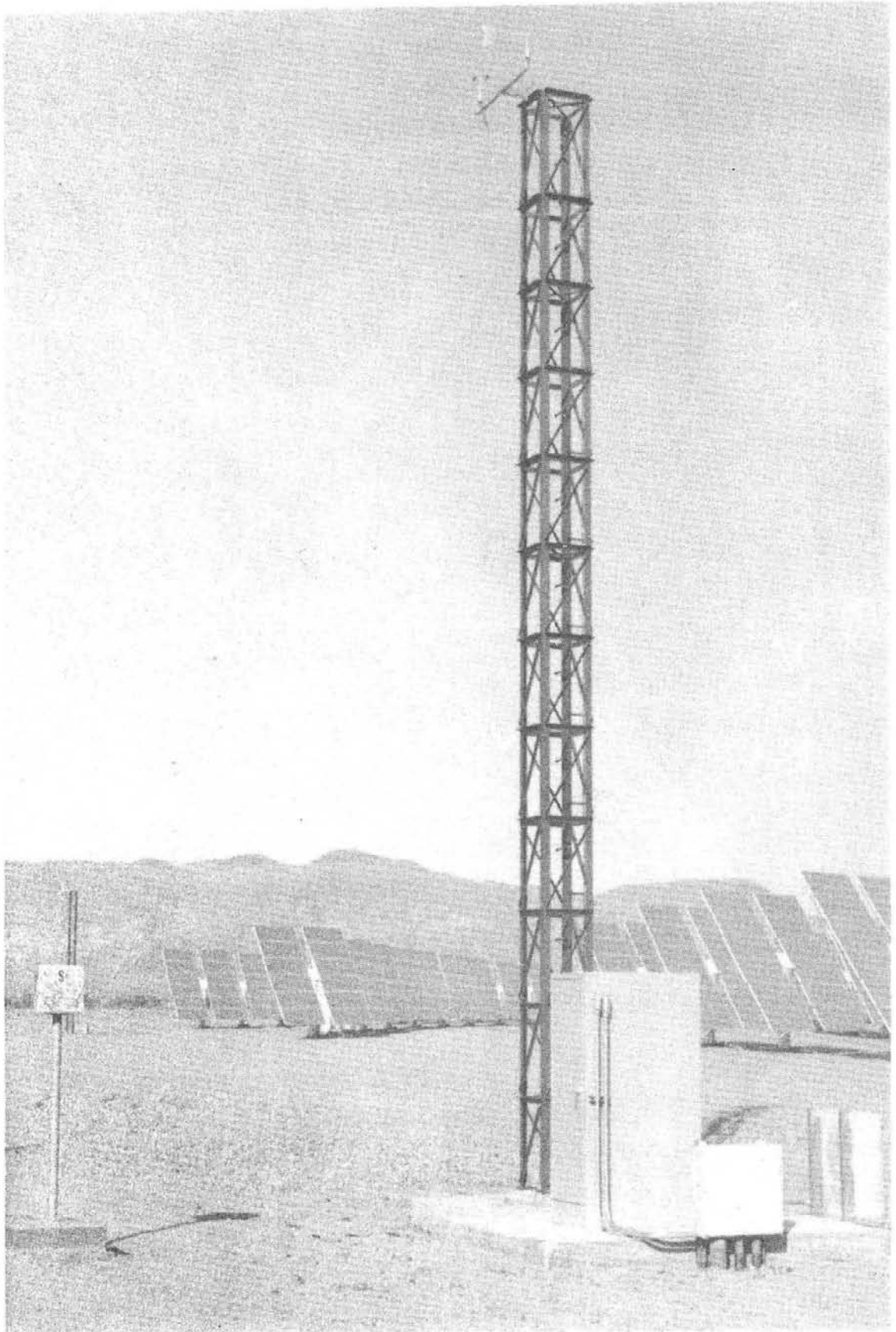


FIGURE 18. WEST STATION INSTALLATION

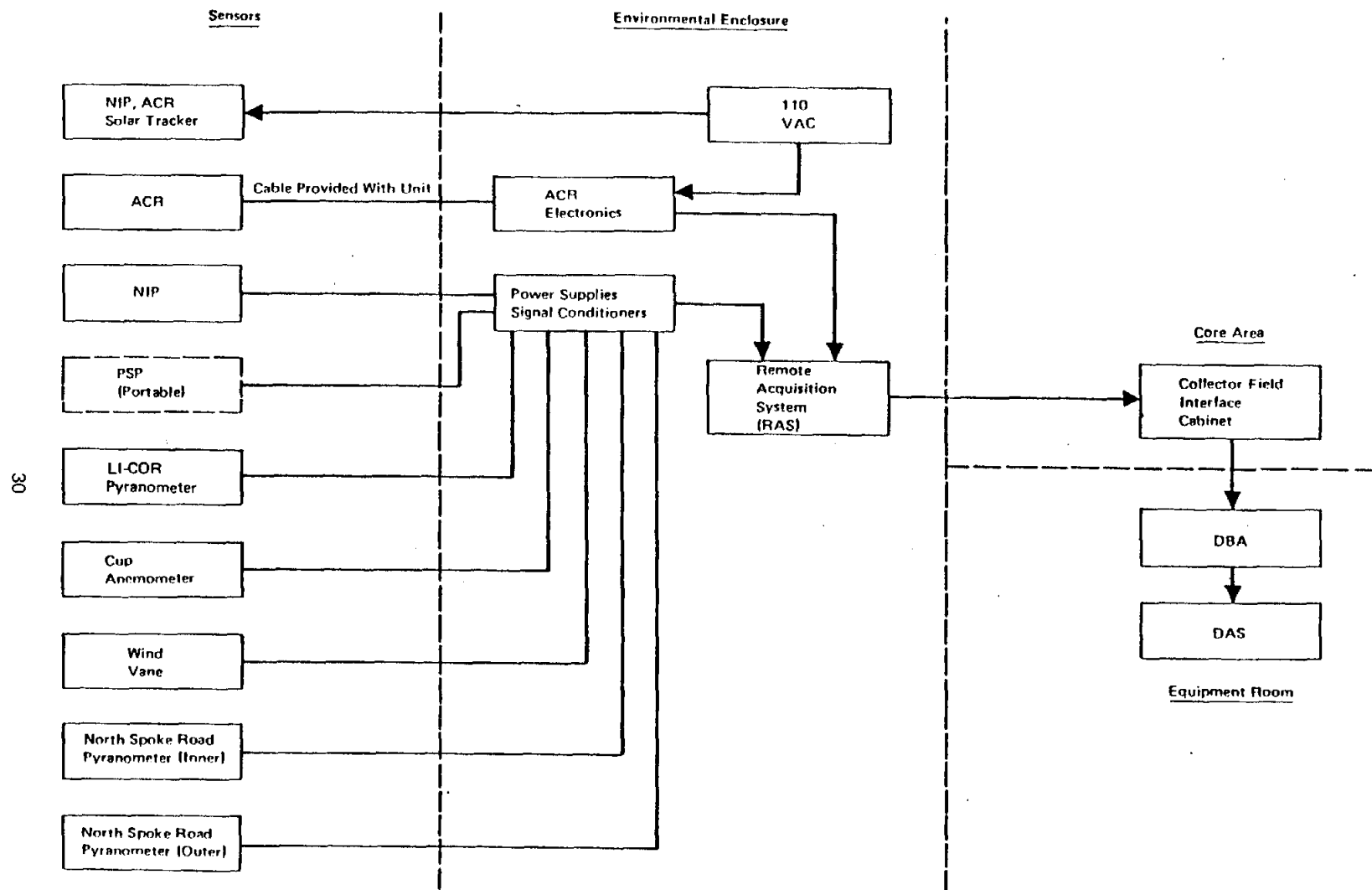


Figure 19 North MET Station System Schematic

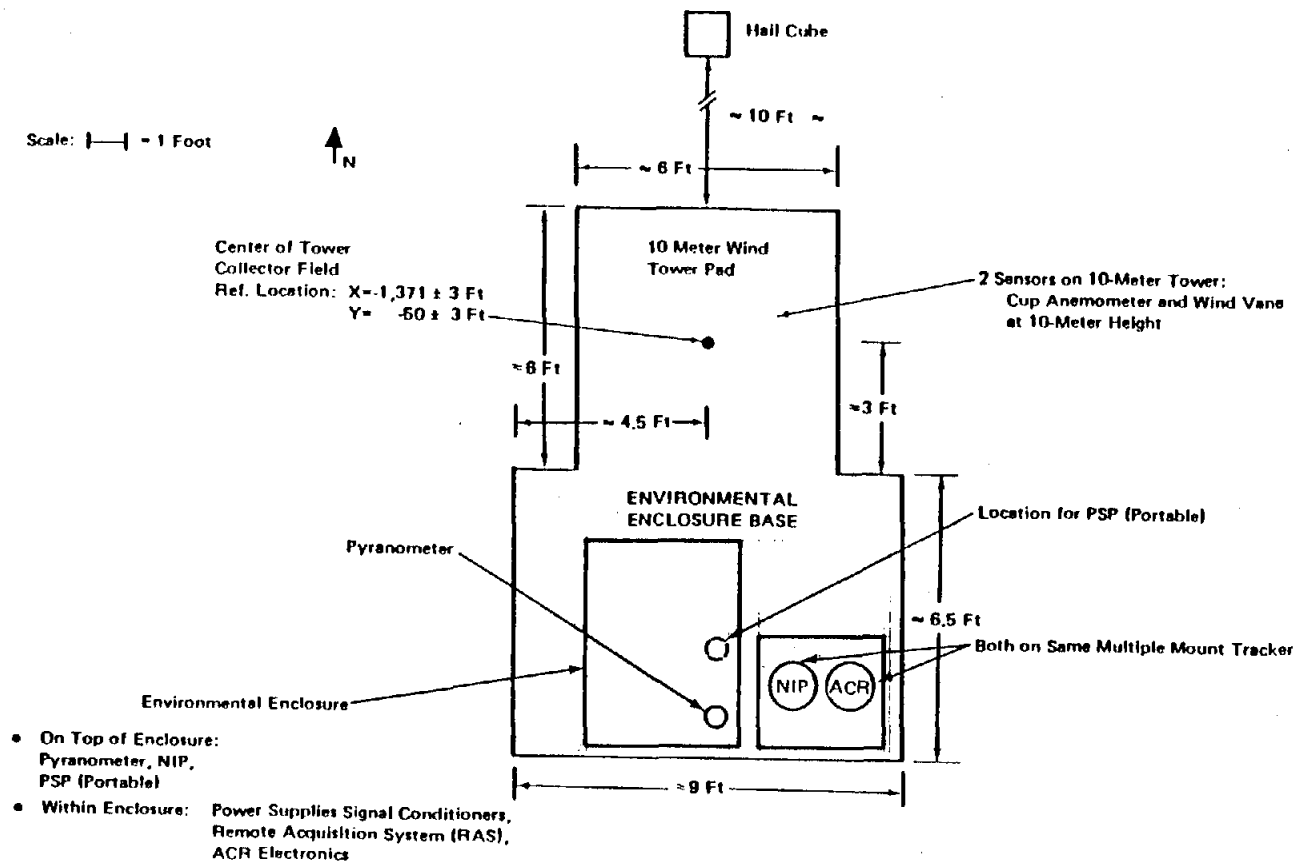


Figure 20. NORTH MET STATION GENERAL ARRANGEMENT

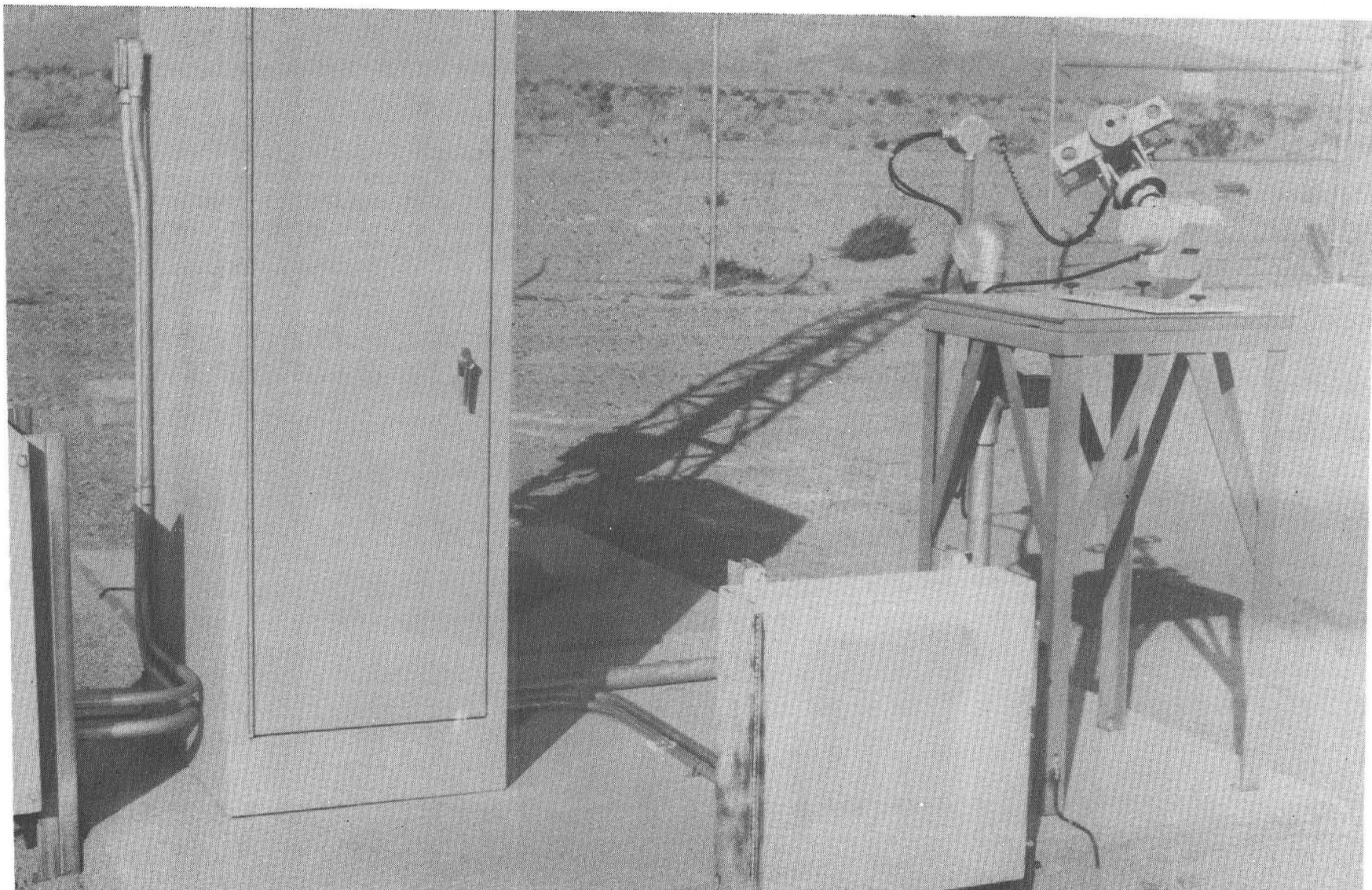


FIGURE 21. NORTH STATION NIP INSTALLATION

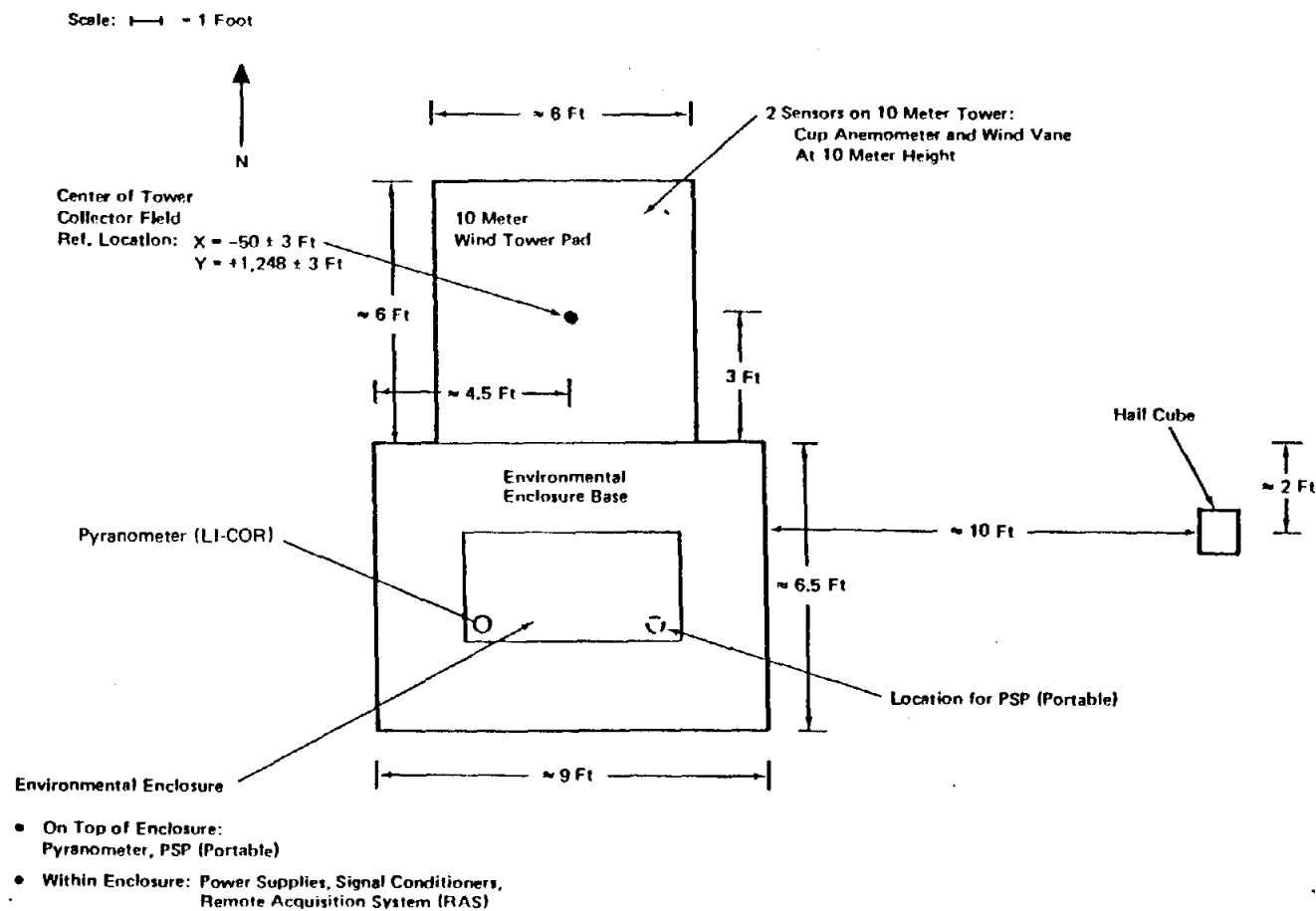


Figure 22. EAST MET STATION GENERAL ARRANGEMENT

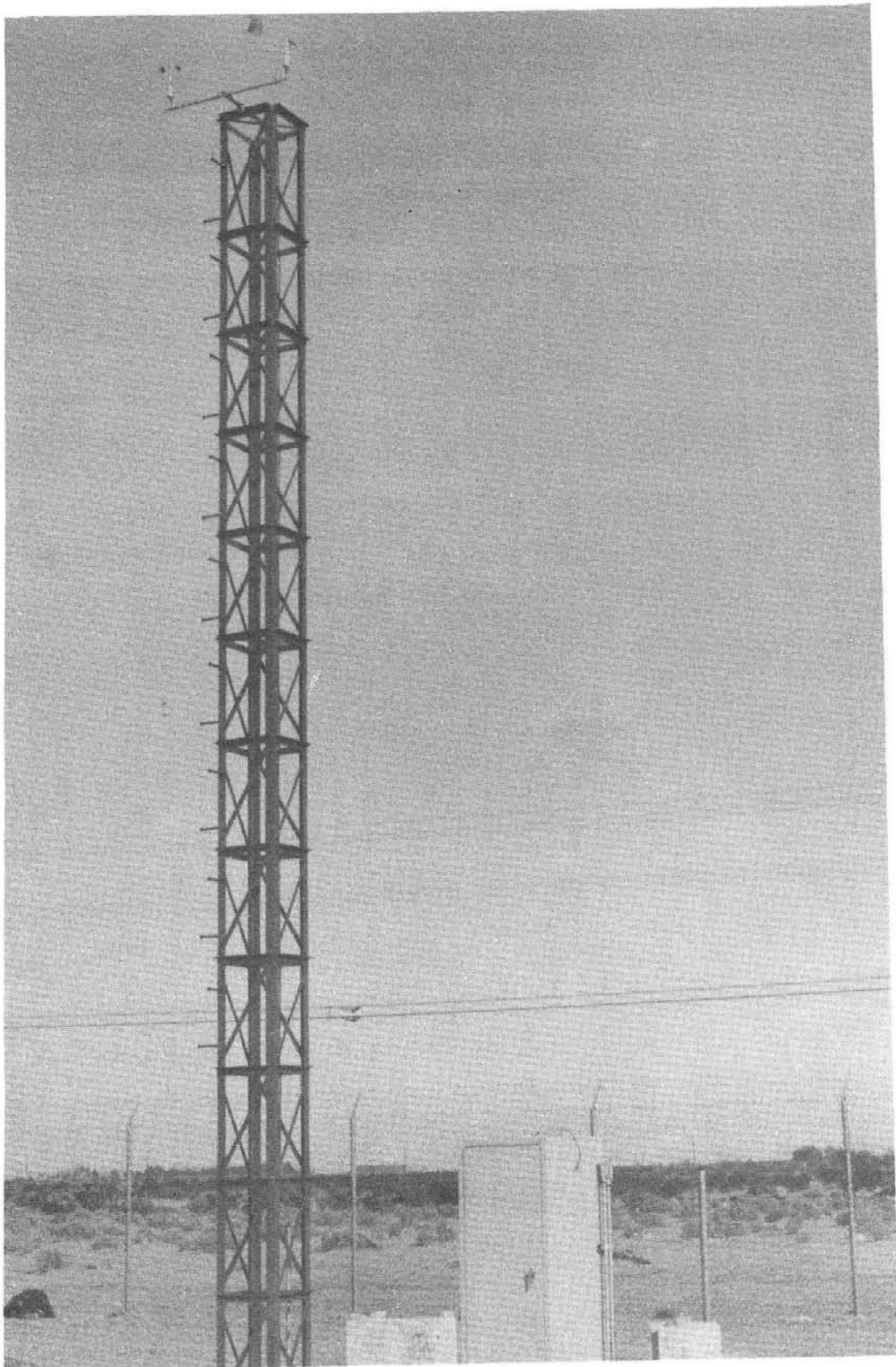


FIGURE 23. EAST STATION INSTALLATION

3.2.6 Receiver Station

Two sets of wind measuring sensors, each set consisting of a cup anemometer and a wind vane mounted on a crossarm which in turn is mounted on an 8 foot boom, are located in the easterly direction on the east side and also in the westerly direction on the west side of the receiver tower at level 7. The tower MET station system schematic is shown in Figure 24. The instrument and electronics locations are shown in Figure 25, and the eastern and western installations are shown in Figures 26 and 27, respectively.

A nephelometer, motor aspirated temperature, and dewpoint sensor are located within the tower structure on the same level as the wind sensors. The nephelometer is mounted in the environmental enclosure in a vertical position with the sample inlet port down. The nephelometer electronics are located not more than 6 feet from the sensor and are environmentally protected. Power supplies, signal conditioning, and the RAS are located in the environmentally protected area on the 13th level of the receiver tower.

3.2.7 West-Northwest Station

A system schematic of the west-northwest station is shown in Figure 28. Six 10 meter towers are located at the designated spots in the west-northwest (WNW) direction in the field. These towers are adjacent to the heliostats that are instrumented by SNLL for wind loading and temperature studies. Each tower (Figure 29) has four sensors: one cup anemometer on a 2 foot boom in the WNW direction at the 10 and 20 foot levels, and one cup anemometer and a wind vane mounted on a crossarm at the 32.8 foot (10 meter) level. The boom mounted cup anemometers are in the WNW direction, i.e., 292.5° (0° is north, angle measured clockwise). The crossarm is mounted perpendicular to the boom. Two of the tower installations are shown in Figures 30 and 31.

An electronics environmental shelter used to house power supplies, signal conditioners, and RAS is located adjacent to wind tower 5 as shown in Figure 32. The shelter has an active cooling system to maintain the temperature limits required by the electronics housed. The shelter is on a concrete base designed to accommodate a light load. The shelter is oriented with the long axis parallel to the circle radius and has double doors and a lock which will permit access only to authorized personnel.

The collector field coordinates for the wind towers and the electronics

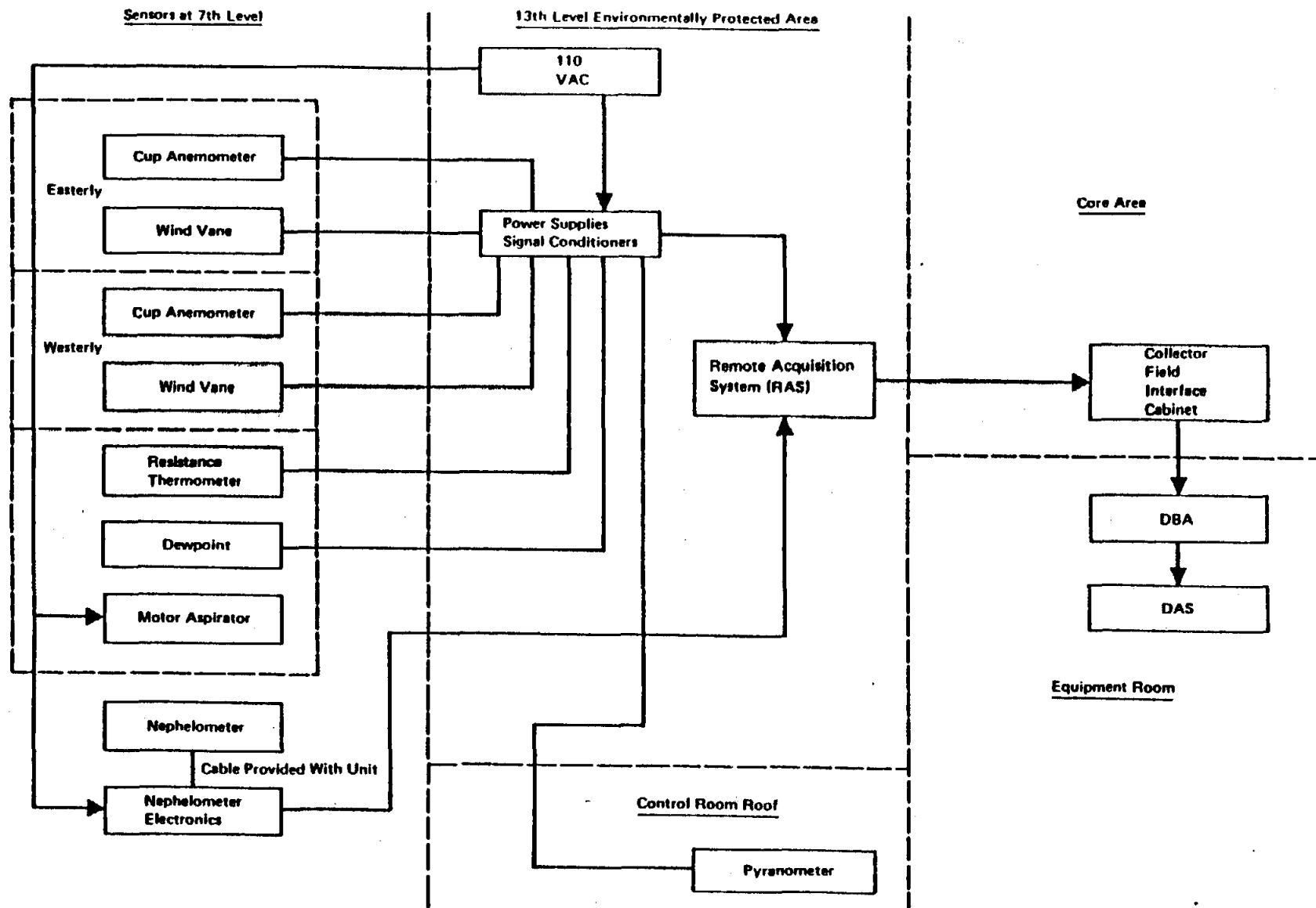


Figure 24 Central Receiver Tower MET Station System Schematic

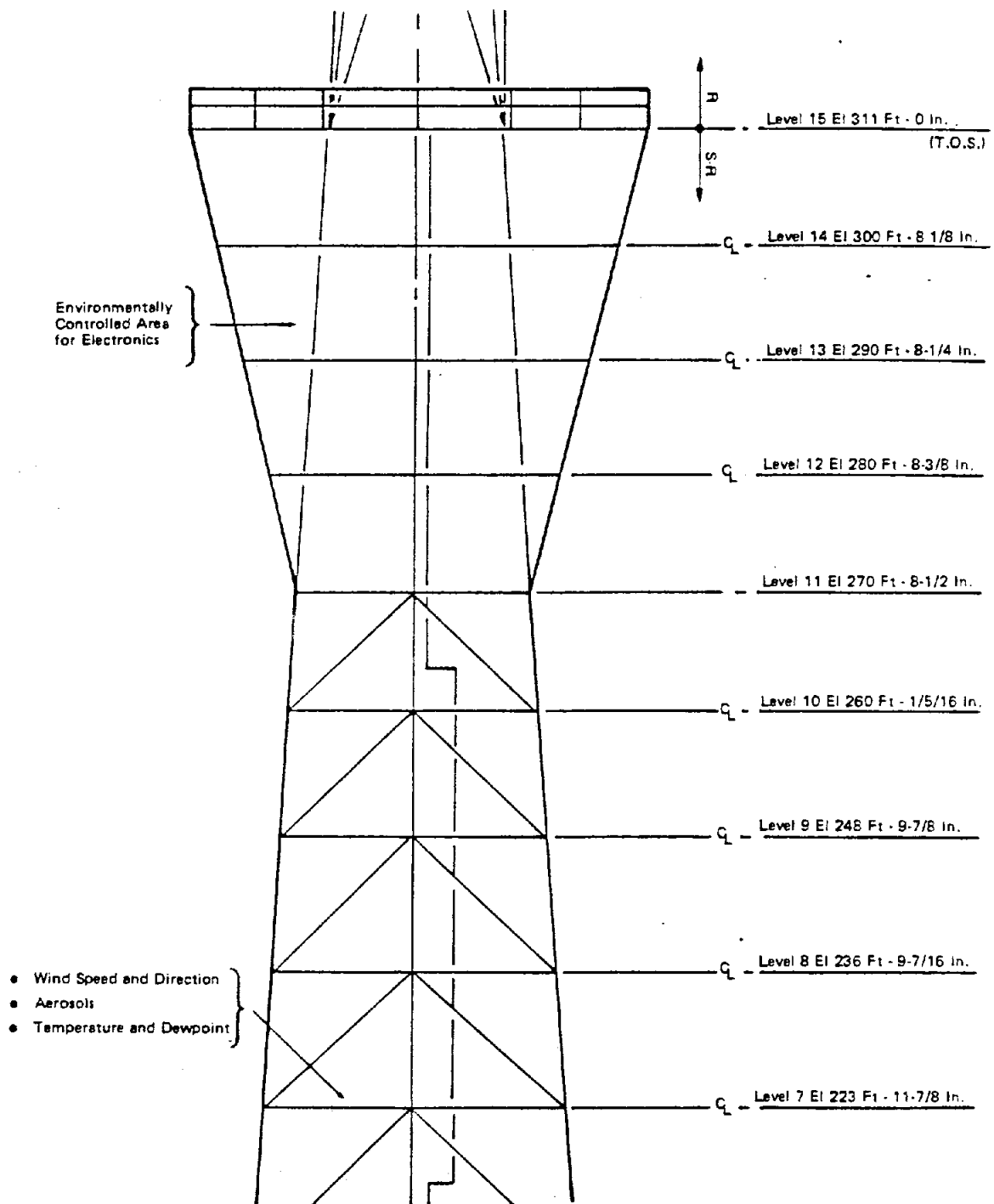


Figure 25. TOWER MET STATION LOCATIONS

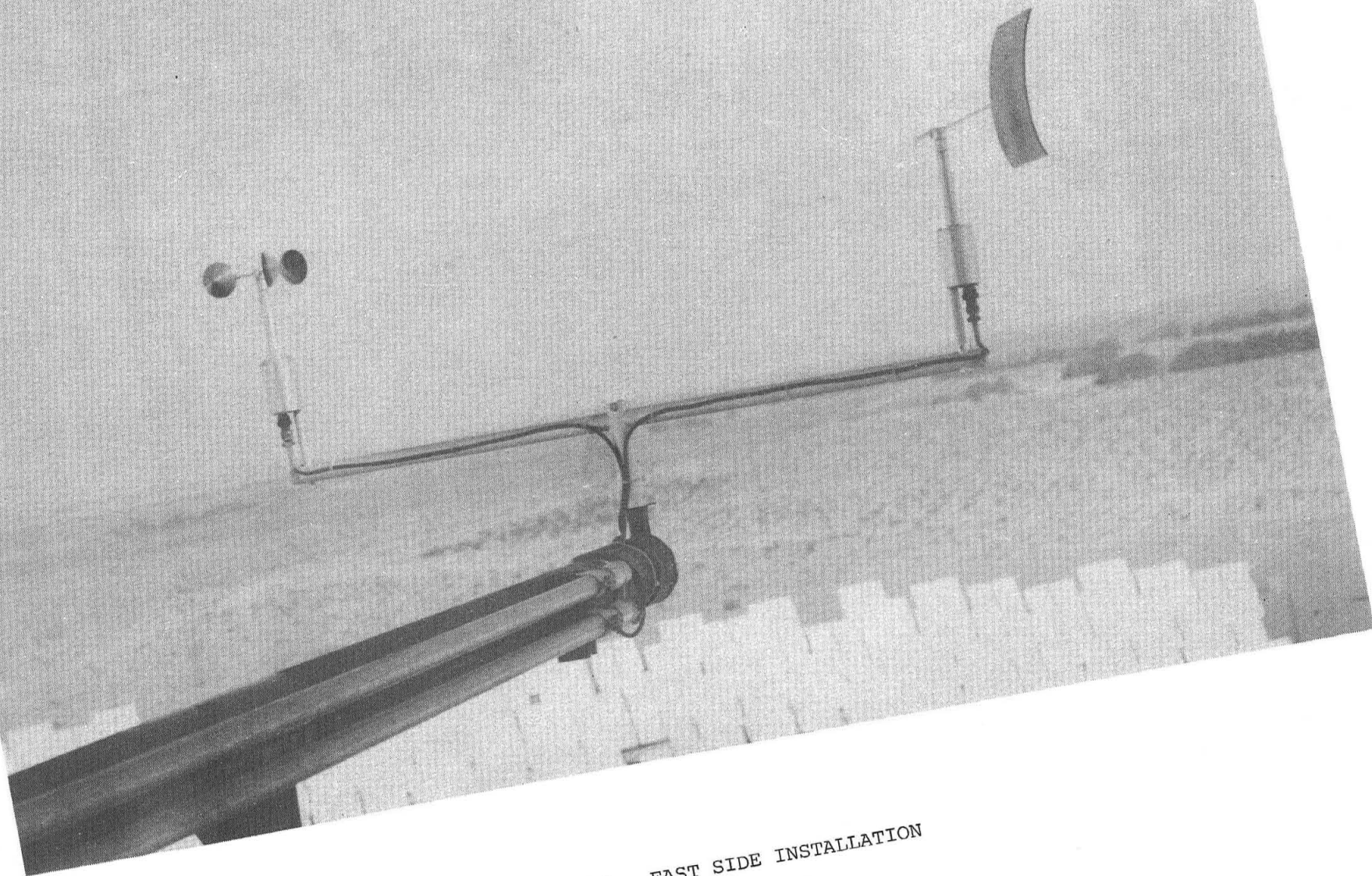


FIGURE 26. EAST SIDE INSTALLATION

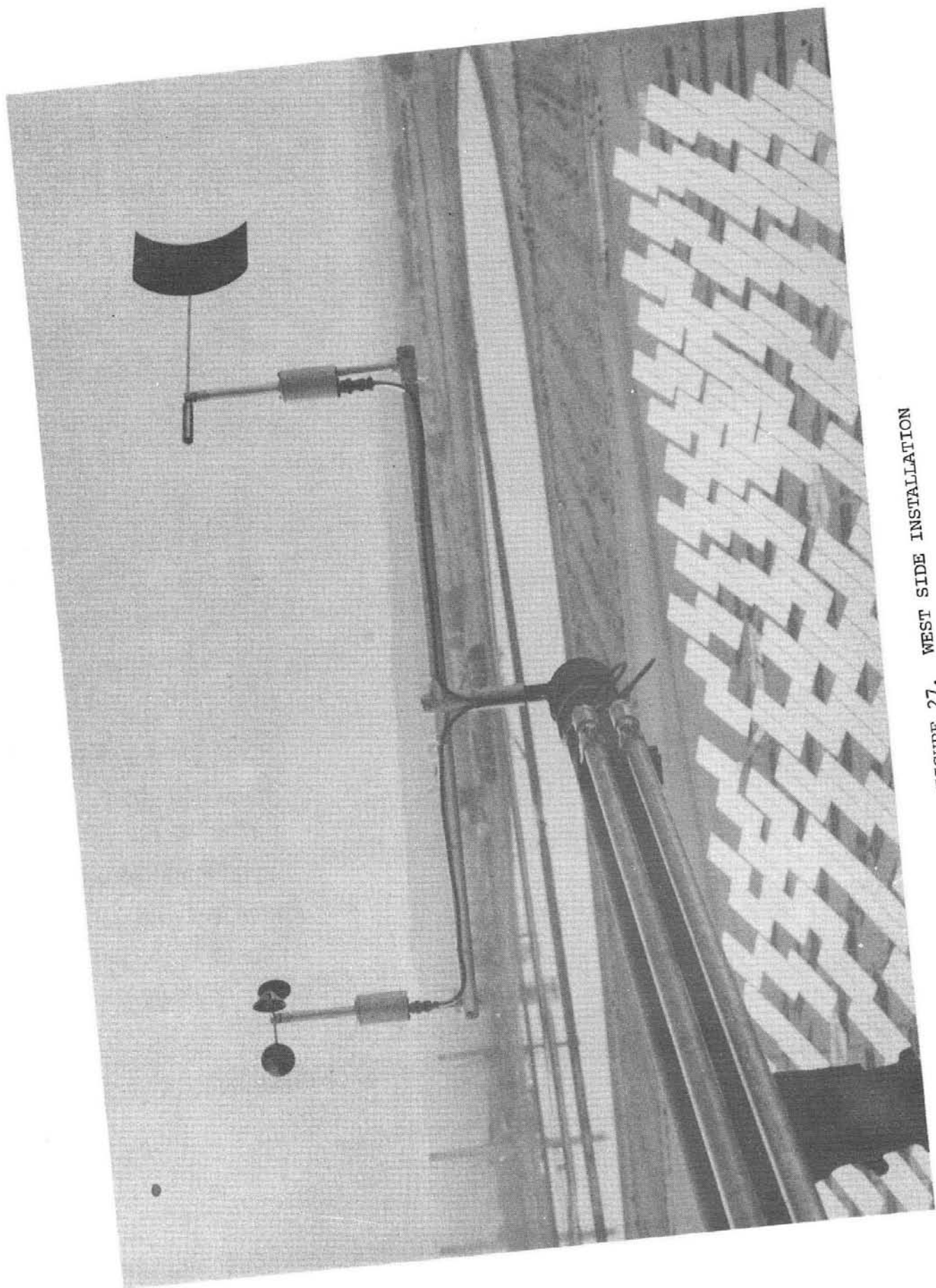


FIGURE 27. WEST SIDE INSTALLATION

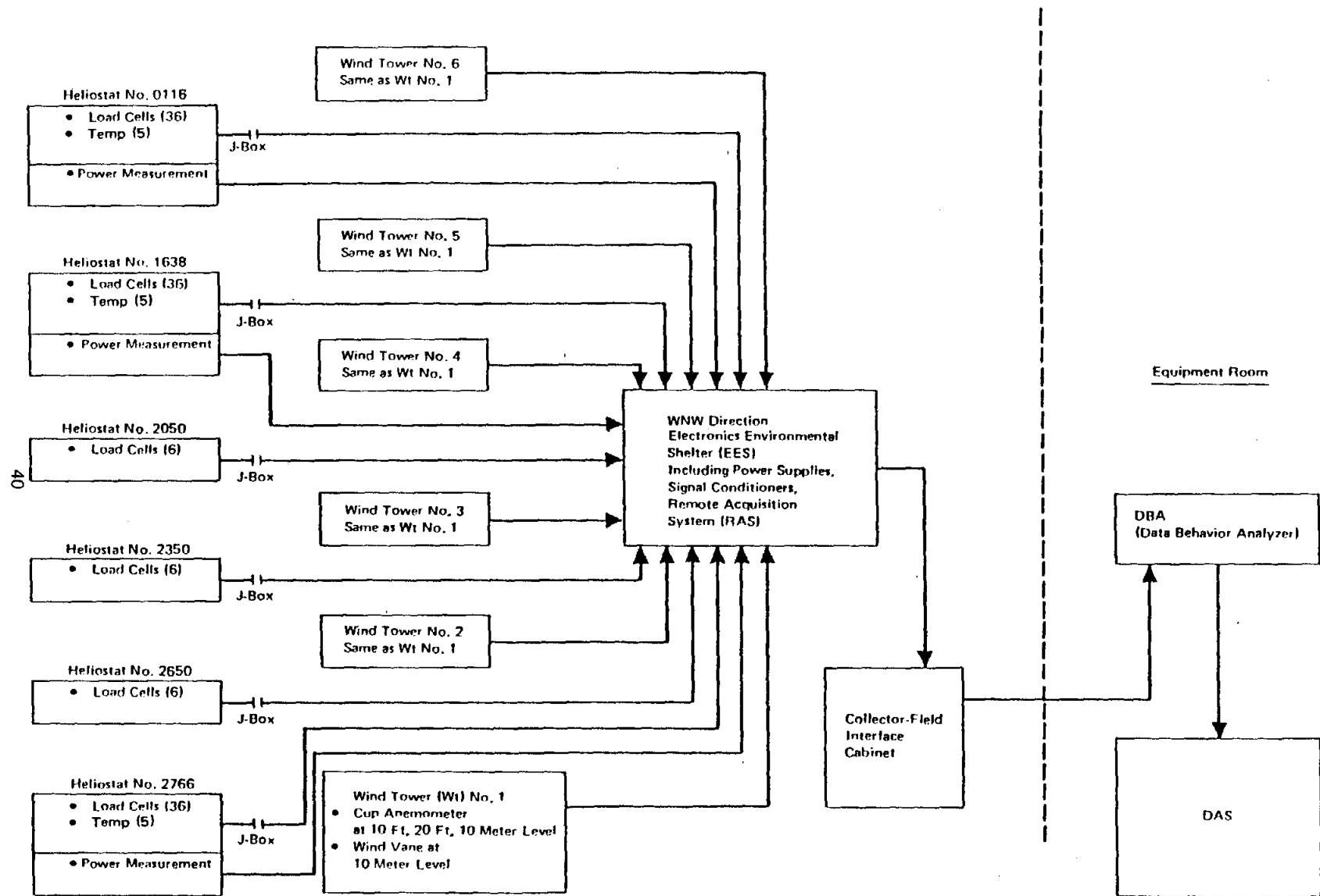
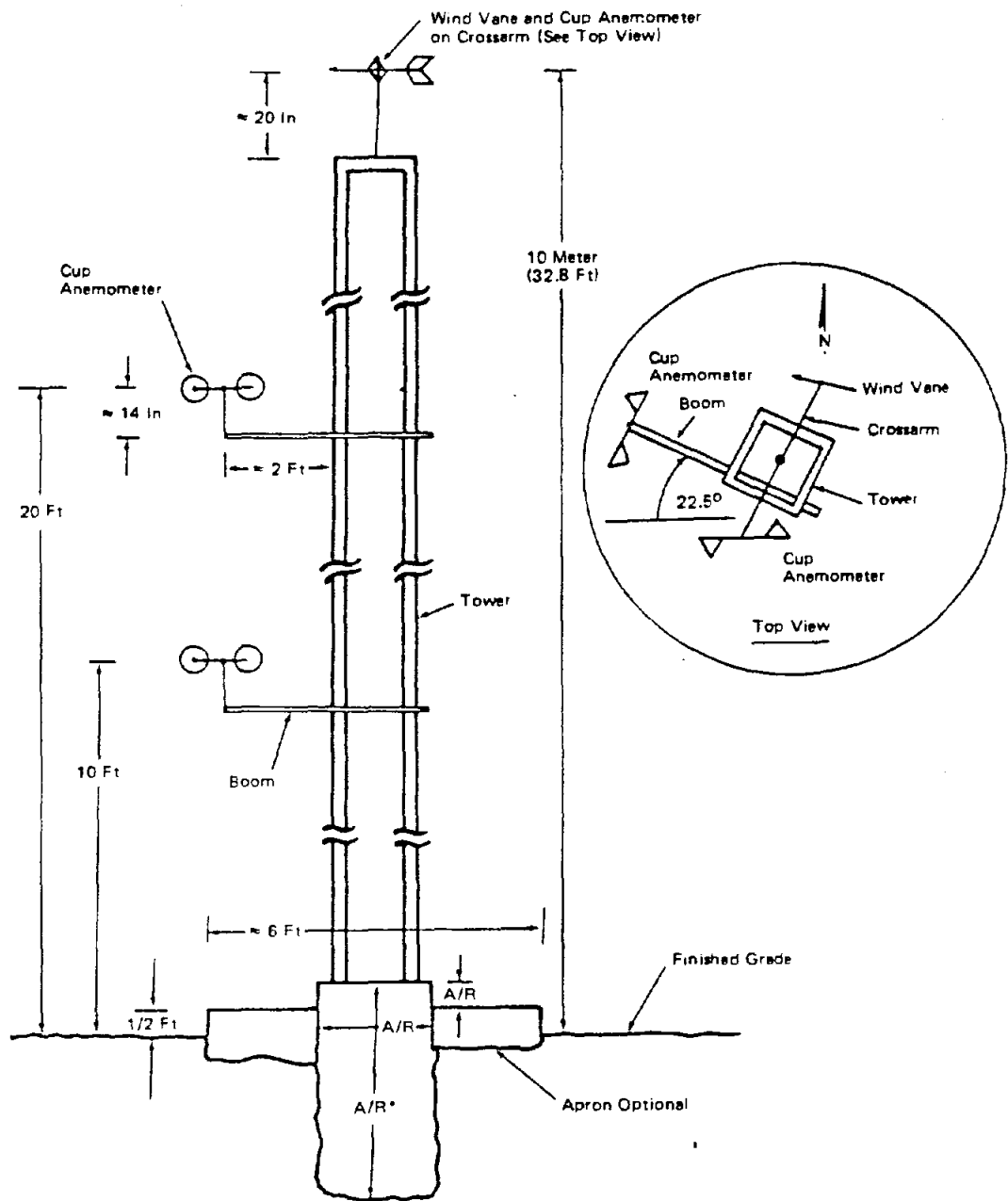


Figure 28 West-North-West (WNW) Direction Meteorological and Special Heliostat Measurements System Schematic



* As Required to Withstand Moment from 90 MPH Winds with Ice Load

Figure 29 In Field Wind Tower (WNW Direction)

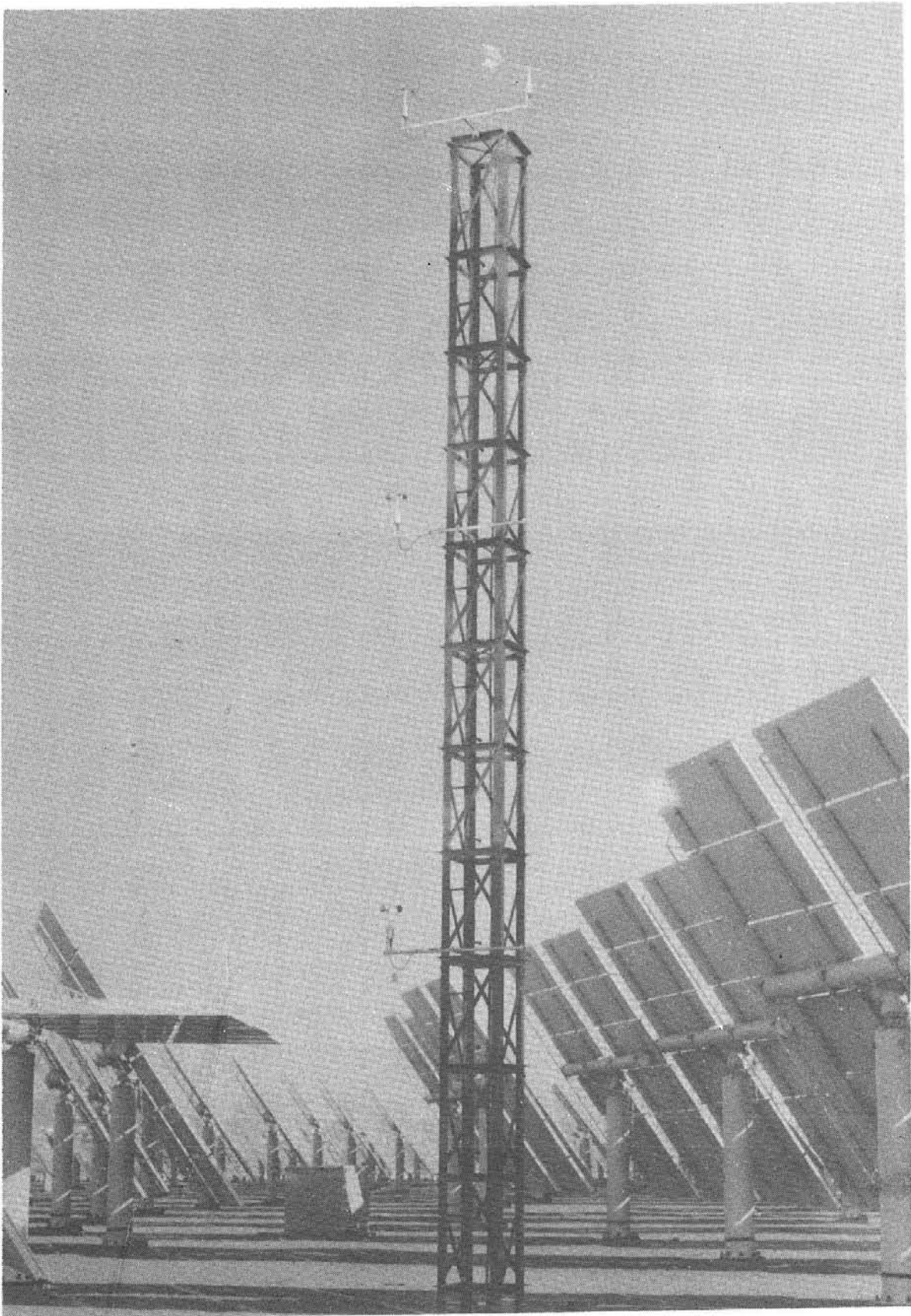


FIGURE 30. WNW WIND TOWER INSTALLATION -1

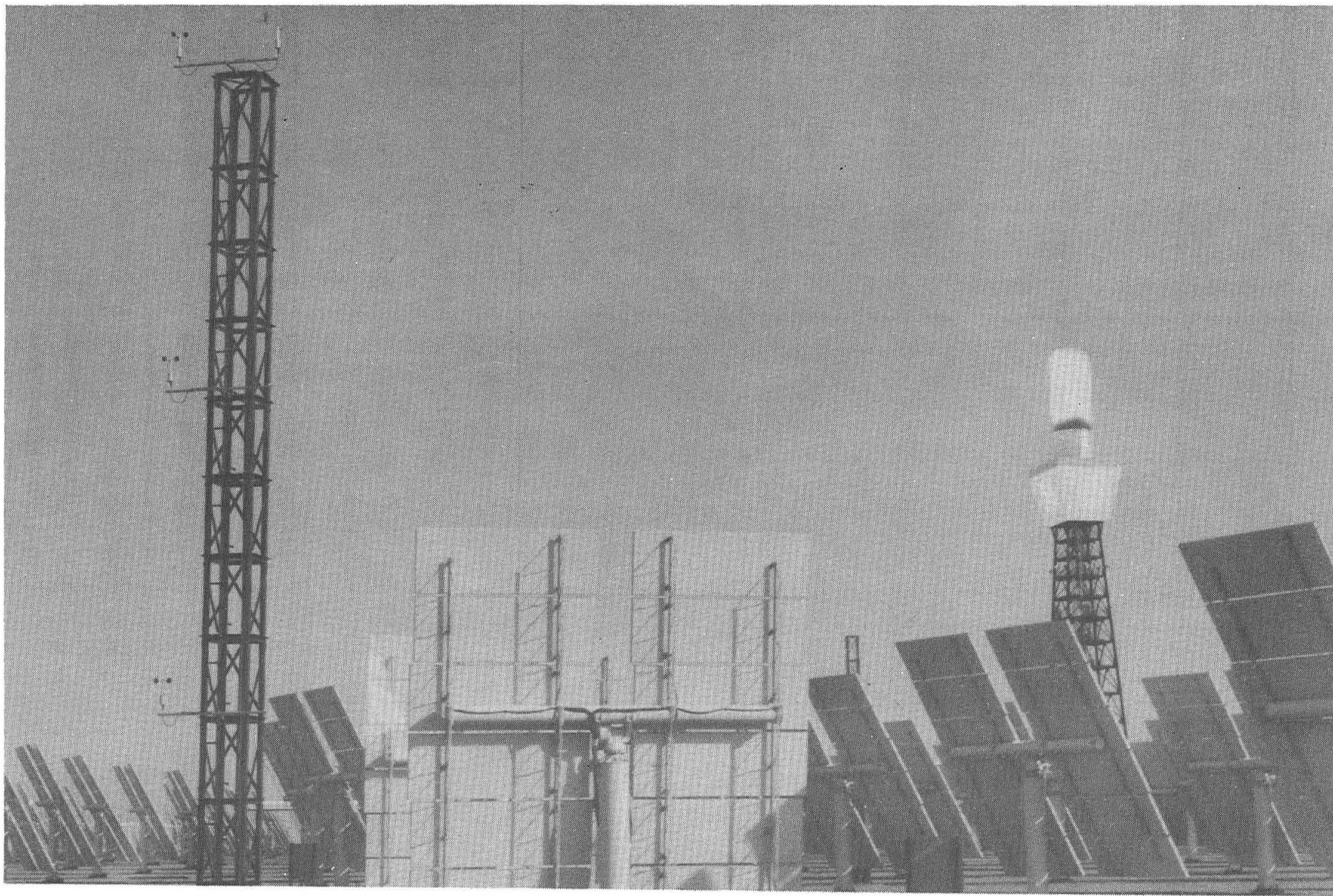


FIGURE 31. WNW WINDTOWER INSTALLATION -2

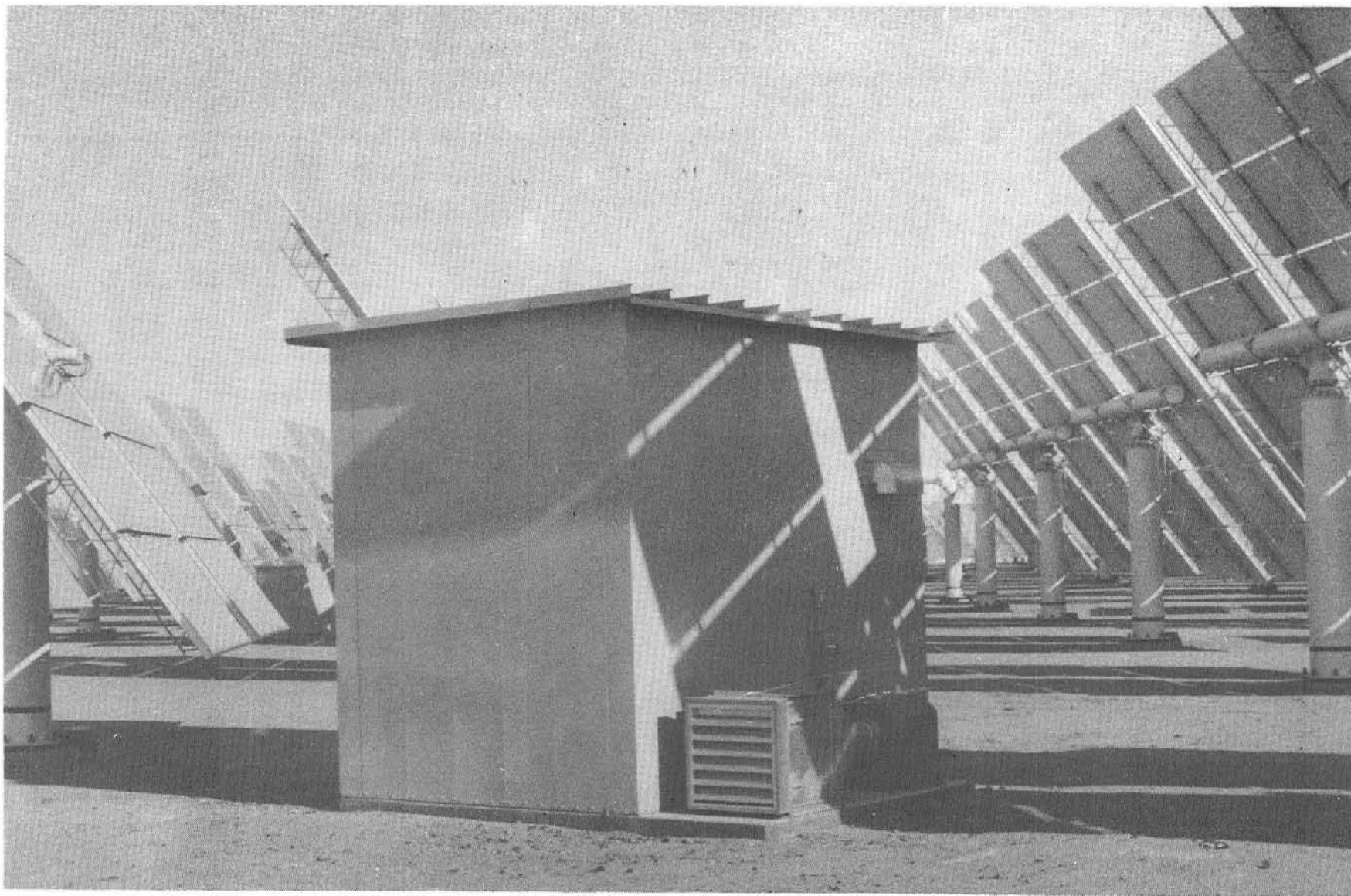


FIGURE 32. WNW ELECTRONICS ENVIRONMENTAL SHELTER

environmental shelter (EES) are shown in Table 1.

Table 1. WNW Wind Towers and EES Collector Field Location Coordinates

<u>TOWER No. or EES</u>	<u>Collector Field Coordinates (Ft)</u>	
	X	Y
1	-481.72	-1162.98
2	-405.54	-958.82
3	-408.75	-906.75
4	-275.25	-680.87
5	-281.84	-639.15
6	-105.75	-214.53
EES	-247.07	-614.47

3.2.8 Control Room Roof

Four sensors are located on the control room roof: a normal incidence pyrheliometer (NIP), a pyranometer, a cup anemometer, and a wind vane. The pyranometer and the NIP are placed on a rigid table of approximately 40 inches in height and 3 feet square in table top dimensions. Figure 33 shows the design of the table. The pyranometer is located on the southwest corner of the table and the NIP on the northeast corner. The pyranometer installation is shown in Figure 34. The NIP is mounted on a solar tracker, as shown in Figure 35. The table is located within a 10' by 10' square 10' away from the edge of the building.

The cup anemometer and wind vane are mounted on a crossarm at least 5 feet above the roof floor. Figure 36 shows the design of the sensors and the mount. The assembly is located within the 10 foot by 4 foot area 20 feet north of the south face. The actual installation is shown in Figure 37.

3.2.9 In-Field Hail Cubes

Two hail cubes are located within the field in addition to the four at the weather stations. One is in the northwest quadrant of the collector field in heliostat row 19, between heliostats 1930 and 1932. The other is in the northeast quadrant of the collector field in heliostat row 19, between heliostats 1929 and 1931. The collector field layout reference XY coordinates

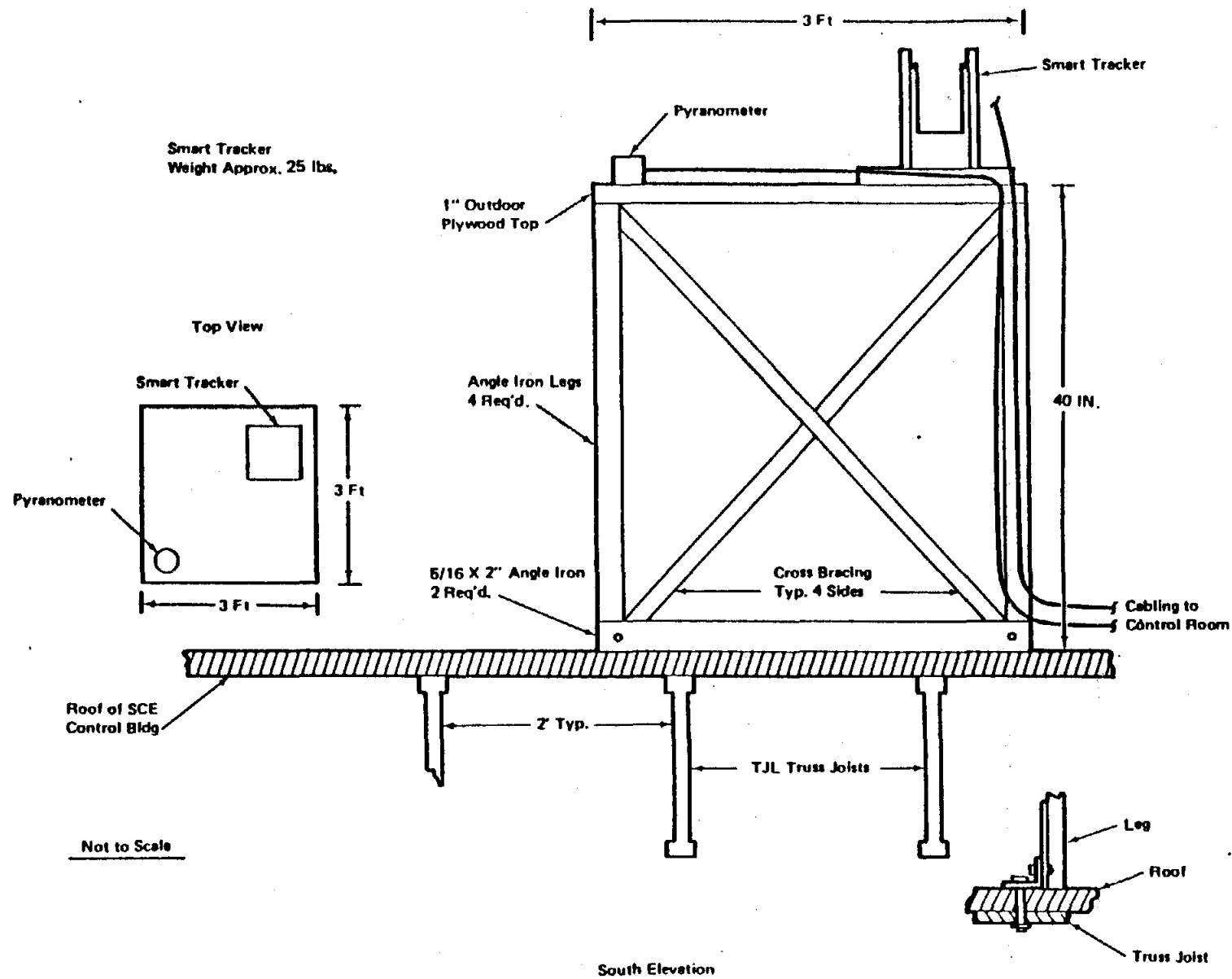


Figure 33 Smart Tracker Support Installation

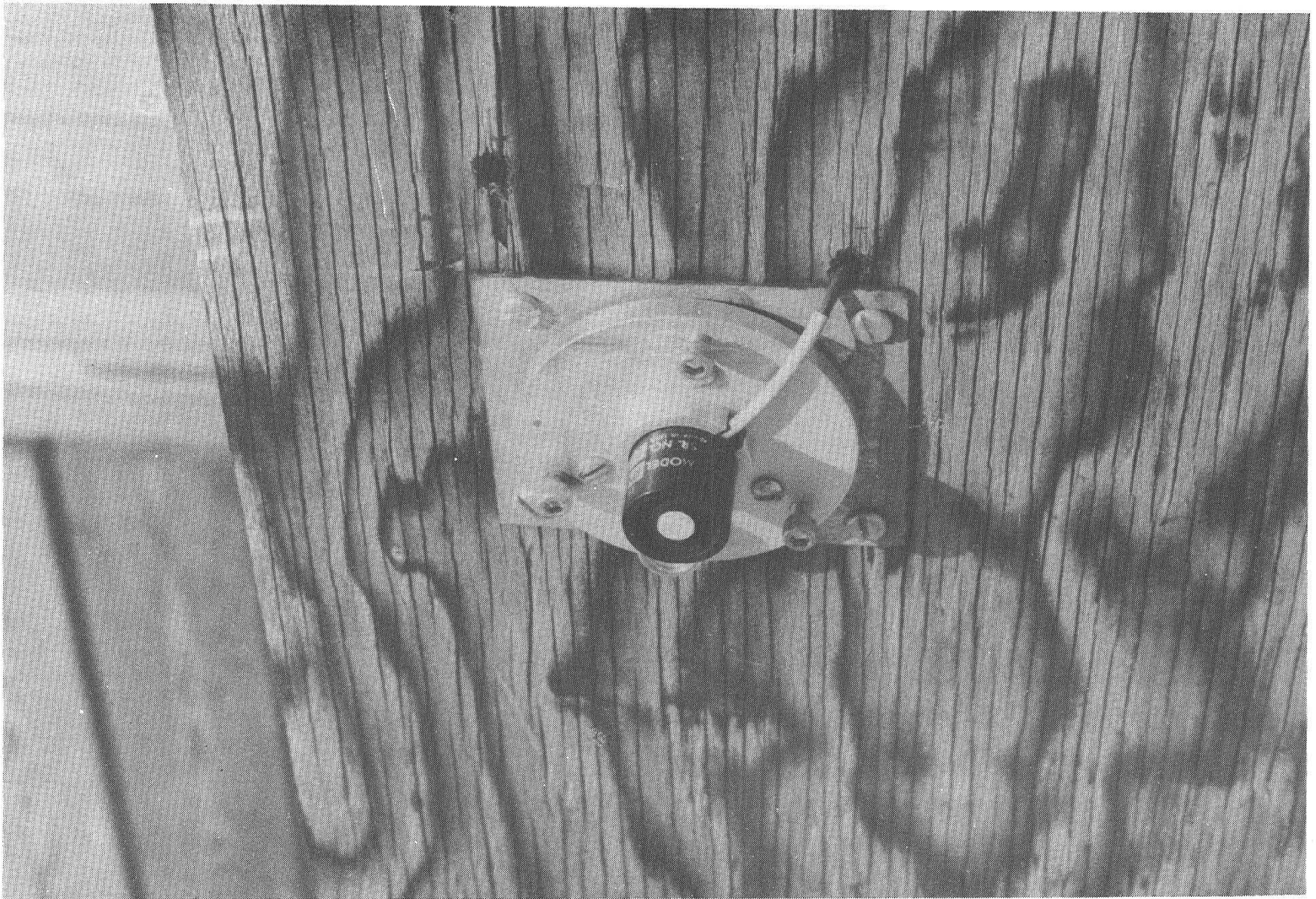


FIGURE 34. PYRANOMETER INSTALLATION - CONTROL ROOM ROOF

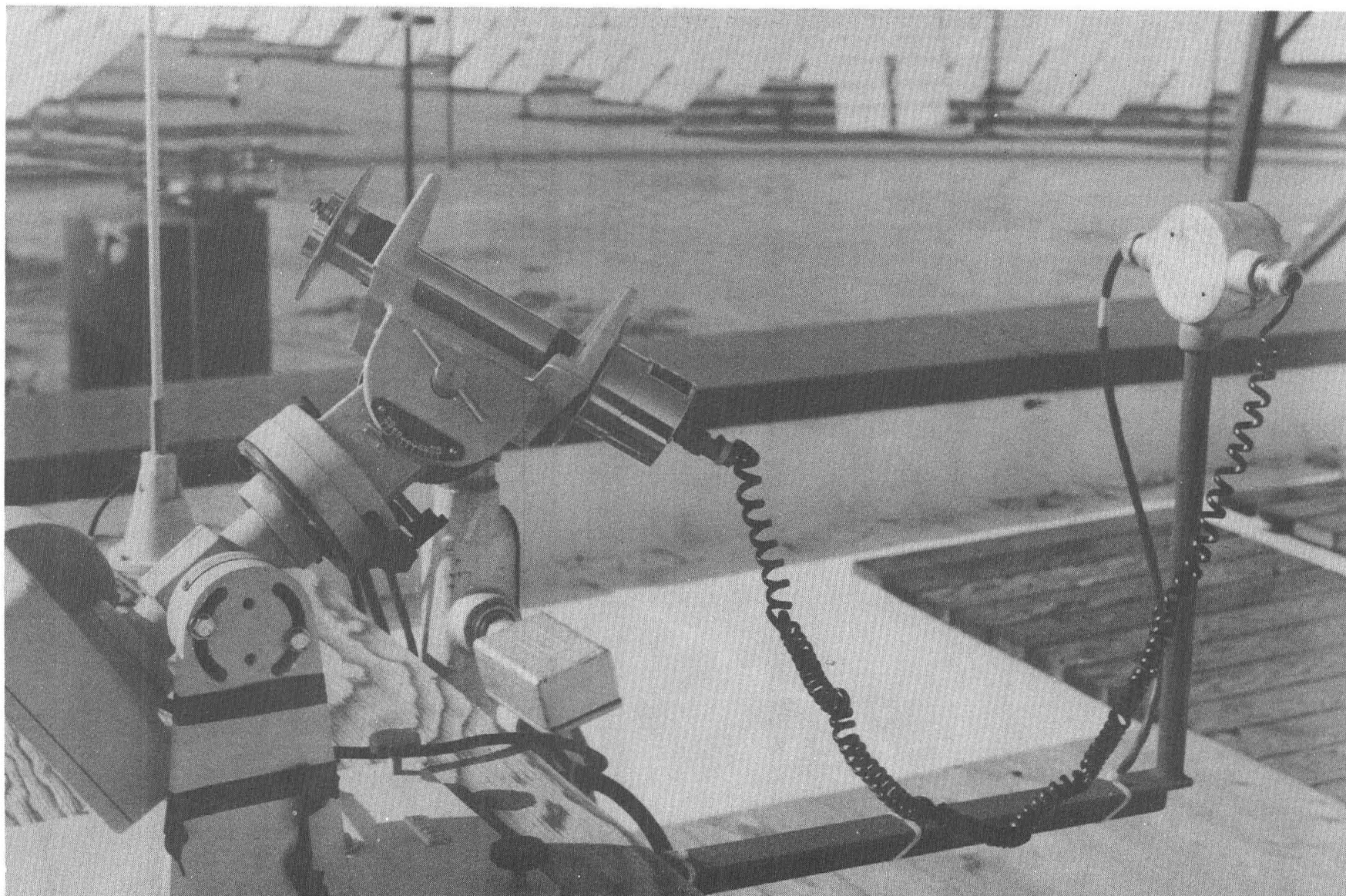


FIGURE 35. NIP-TRACKER INSTALLATION - CONTROL ROOM ROOF

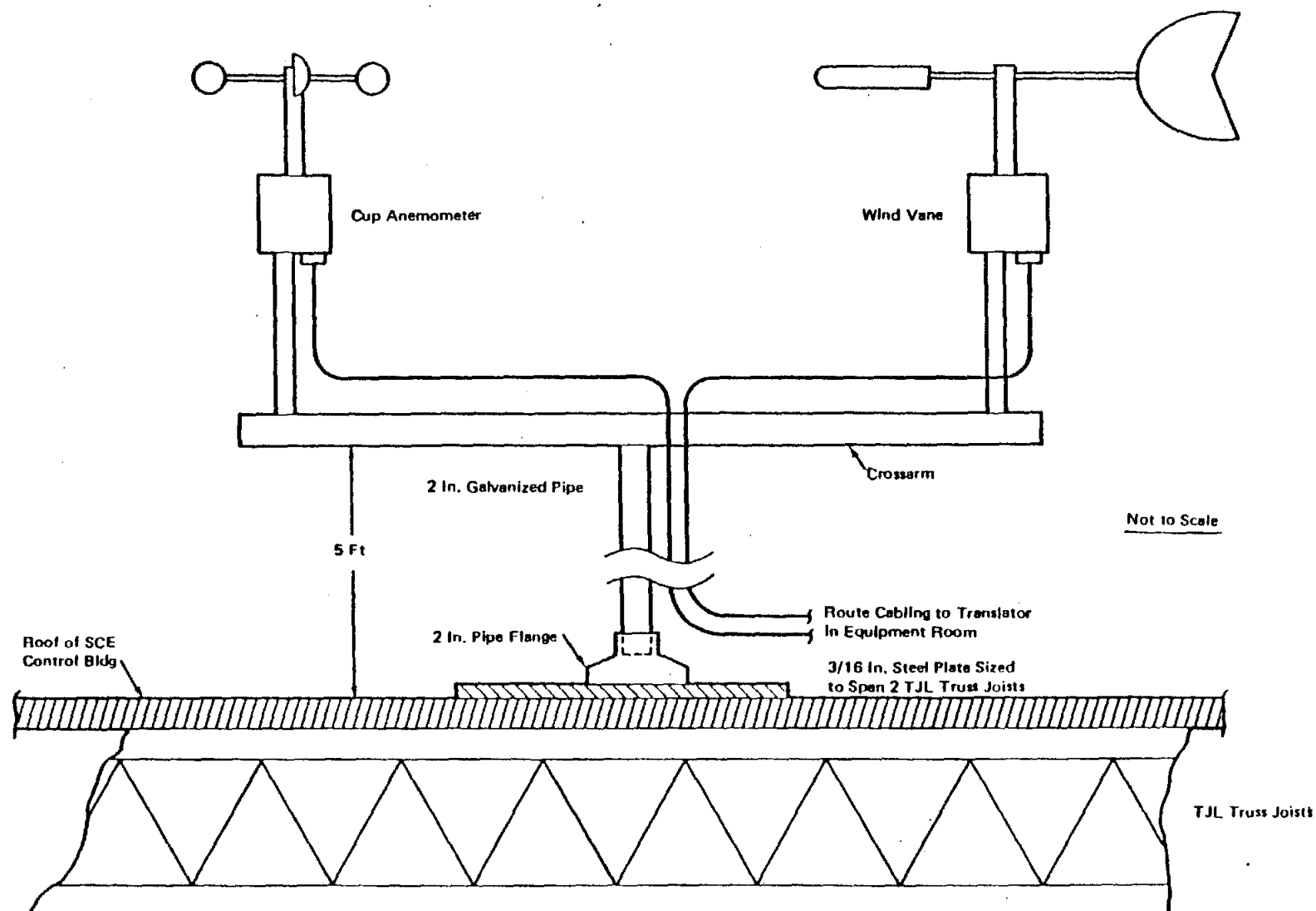


Figure 36. WIND SENSOR DESIGN - CONTROL ROOM ROOF

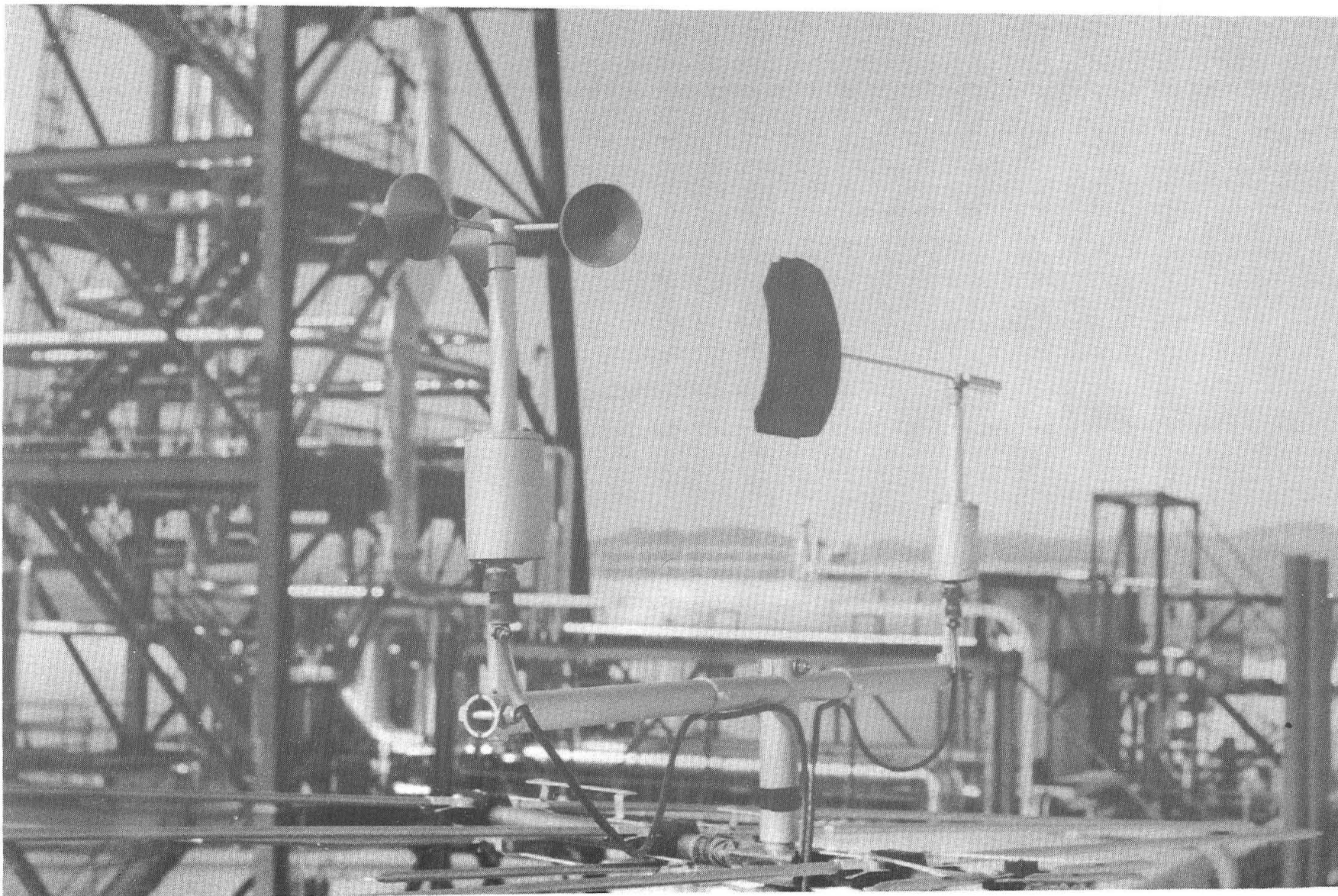


FIGURE 37. WIND SENSOR INSTALLATION - CONTROL ROOM ROOF

are:

	X	Y
Hail Cube No. 1 (NW)	-476.473 ft	-650.038 ft
Hail Cube No. 2 (NE)	-476.473 ft	+650.038 ft
(tolerance of ± 2 ft)		

The cubes consist of five 1 ft by 1 ft faces of 1 inch thick polystyrofoam which are covered with 1.5 mil thick aluminum foil. A closeup of a hail cube is shown in Figure 38. During 1983, sand shields were installed around the hail cubes located at the four compass point met stations to minimize sand blast damage to the hail cube foil. A sketch of the sand shields is shown in Figure 39. A photo of the south station installation is shown in Figure 40.

3.2.10 Pyranometers

Seven pyranometers are located on the four spoke roads for cloud obscuration studies, as shown previously in Figure 8. The specific collector field coordinates for the pyranometers are shown in Table 2.

Table 2. Pyranometer Collector Field Location Coordinates

<u>Pyranometer</u>	<u>Collector Field Coordinates</u>	
	X	Y
South Spoke Road	503.556	-30
West Spoke Road (inner)	-20	-502.282
West Spoke Road (outer)	-22.0	-864.00
North Spoke Road (inner)	-500.701	-20
North Spoke Road (outer)	-853.478	-20
East Spoke Road (inner)	-20	502.282
East Spoke Road (outer)	-22.0	864.00

The pyranometers used are identical to the one installed on the control room roof, as shown in Figure 34. They are each mounted on a tower which is identical to the wind tower design. A spoke road pyranometer tower installation is shown in Figure 41.

3.2.11 Instrument Data

The pertinent data for each of the types of meteorological instruments used at the Solar One Site are shown in Table 3.

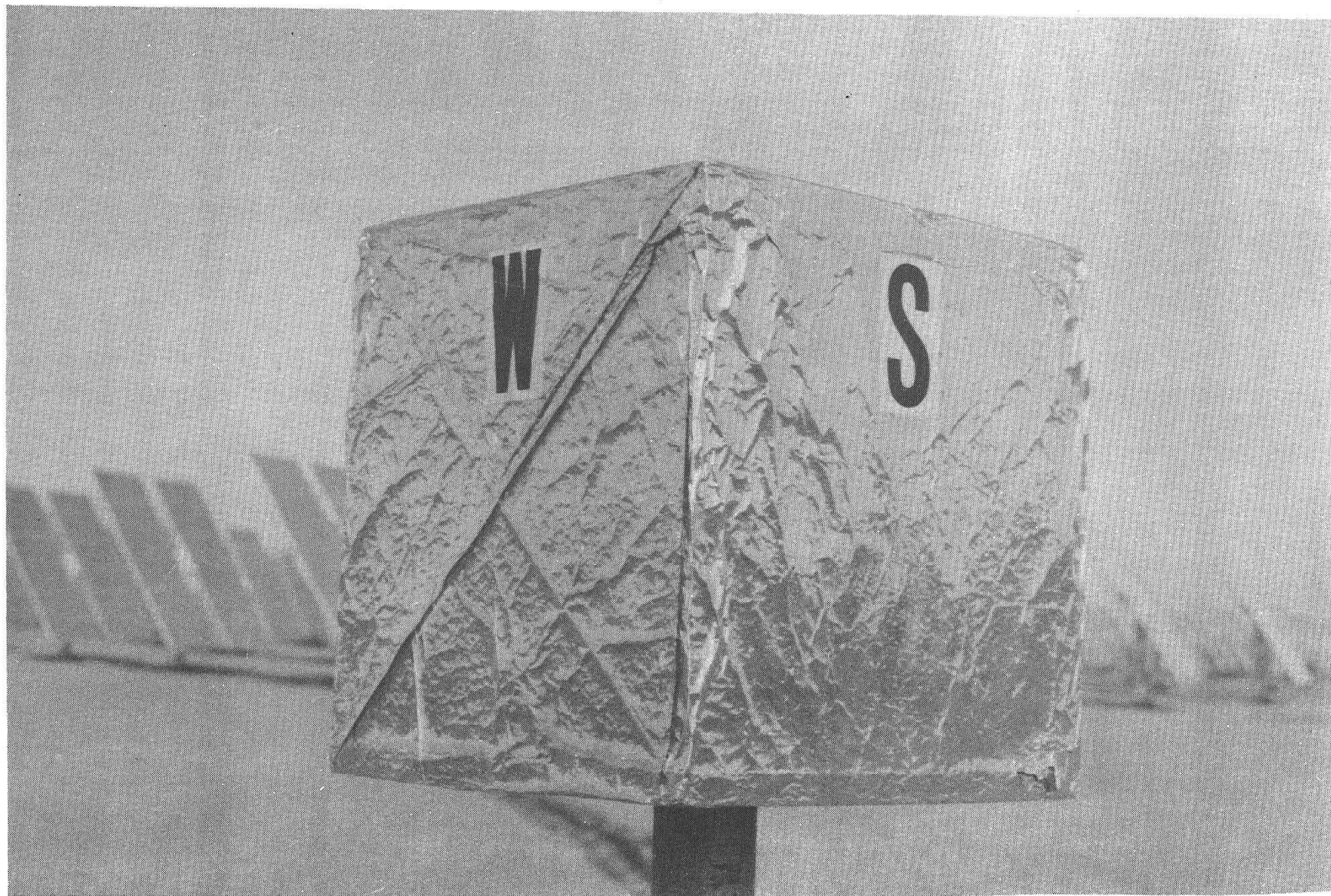


FIGURE 38. HAIL CUBE

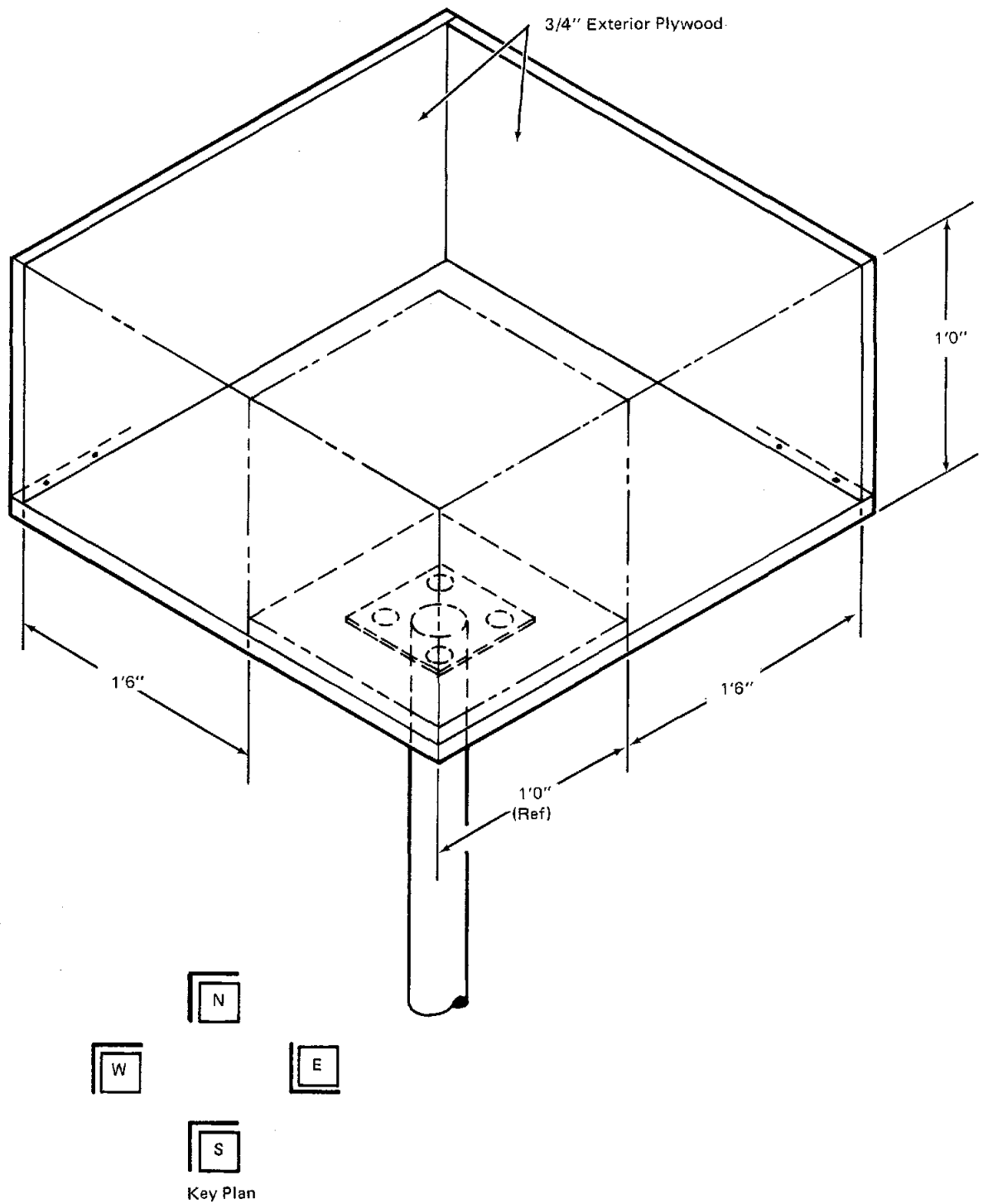


Figure 39. Hail Cube Sand Shield

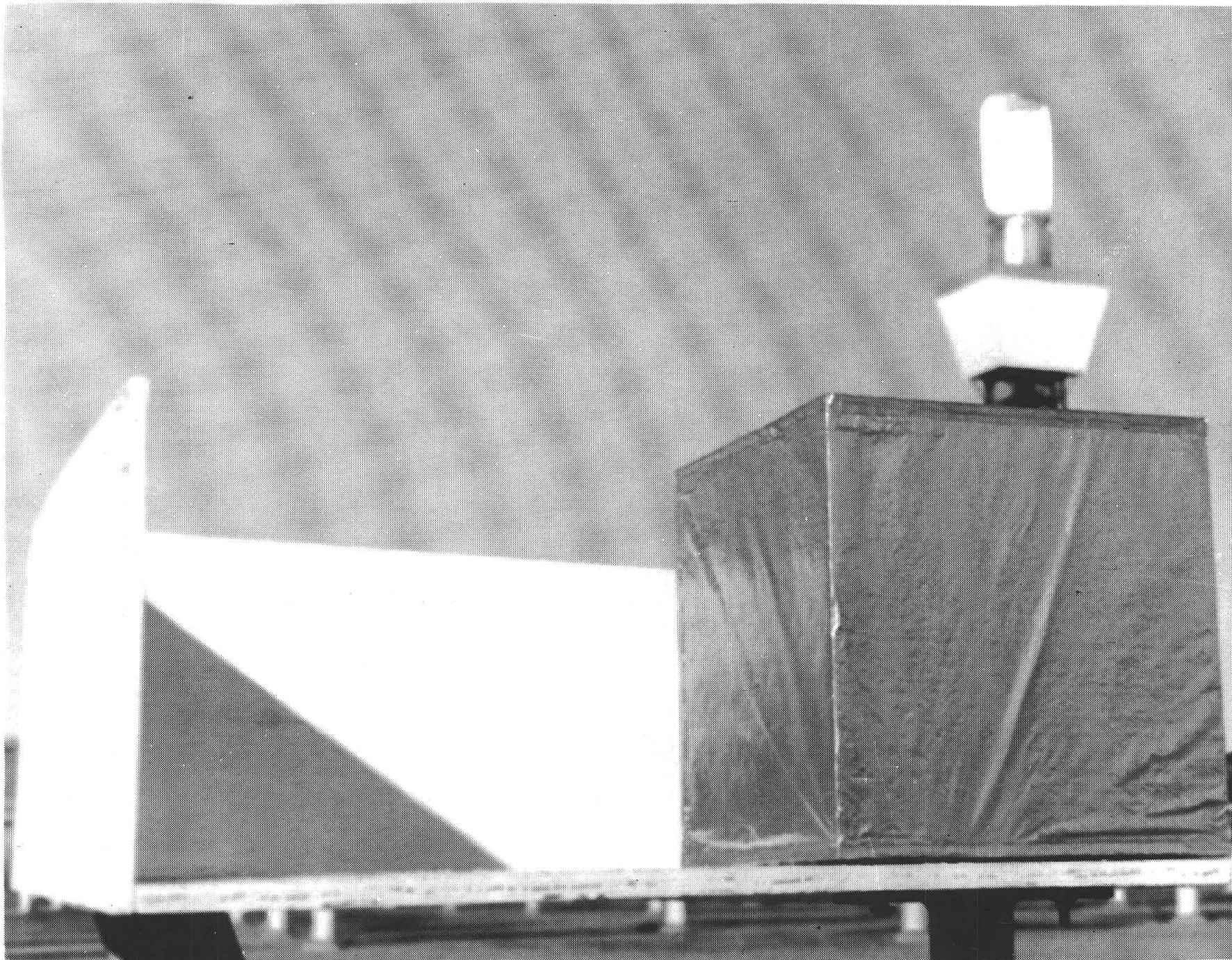


Figure 40. Hail Cube Sand Shield Installation – South Station

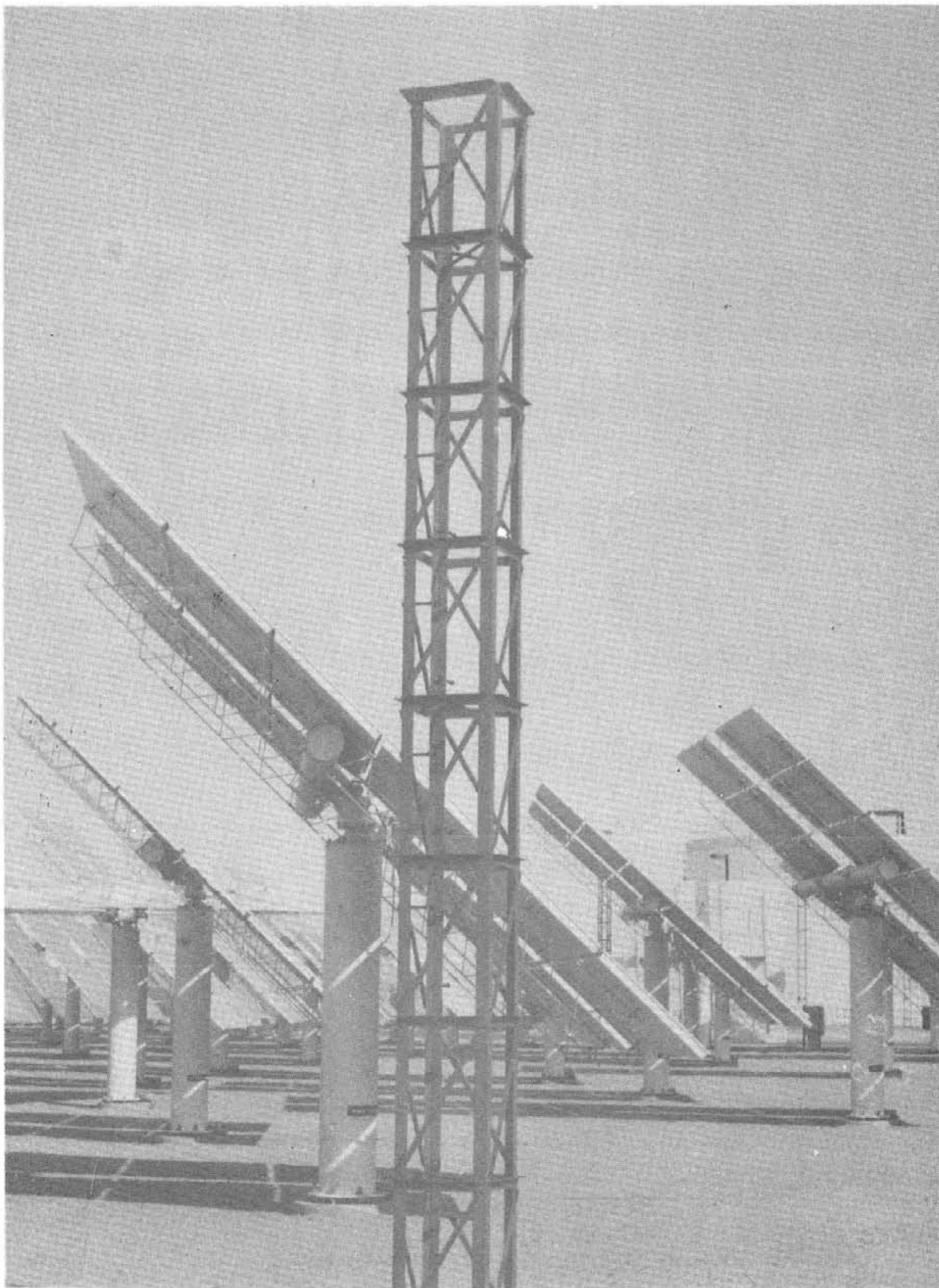


Figure 41. Spoke Road Pyranometer Tower Installation

Table 3
METEOROLOGICAL INSTRUMENT DATA

INSTRUMENT	MANUFACTURER	RANGE	SYSTEM ACCURACY
• NORMAL INCIDENCE PYHELIOMETER (NIP)	THE EPPLEY LAB, INC. 12 SHEFFIELD AVE. NEWPORT, RI 02840	0-1394 WATTS/m ²	+ 0.6%
• PYRANOMETER	LI-COR, INC.----- BOX 4425 LINCOLN, NEBRASKA 68504	0-1250 WATTS/m ²	+ 12 1/4%
• TIPPING BUCKET RAIN GAUGE	METEOROLOGY RESEARCH INC BOX 637 464 W. WOODBURY RD ALTADENA, CA 91001	1/100 IN PER TIP 3 IN/HR 10 IN/HR	+ 1% + 5%
• NEPHALOMETER	METEOROLOGY RESEARCH INC BOX 637 464 W. WOODBURY RD ALTADENA, CA 91001	40 MILES	+ 10%
• DEW POINT SENSOR	CLIMET INSTRUMENT CO. P.O. BOX 151 1320 W. COLTON AVE REDLANDS, CA 92373	0-120°F	+ 4%
• CUP ANEMOMETER	CLIMET INSTRUMENTS CO. P.O. BOX 151 1320 W. COLTON AVE. REDLANDS, CA 92373	0-100 MPH -50° - +115°F OPERATING TEMP.	+ 1% OR 0.15 MPH (WHICHEVER IS GREATER)
• WIND VANE	CLIMET INSTRUMENTS CO P.O. BOX 151 1320 W. COLTON AVE. REDLANDS, CA 92373	0-360°	+ 3.2%
• HAIL CUBE	NONE (LOCAL FABRICATION)	--	--
• PLATINUM RESISTANCE TEMPERATURE SENSOR	ROSEMOUNT, INC. P.O. BOX 35129 MINNEAPOLIS, MINN 55435	0-120°F	+ 1/2%
• BAROMETRIC PRESSURE SENSOR	YELLOW SPRINGS INSTR. CO. INDUSTRIAL DIVISION YELLOW SPRINGS, OHIO 45387	24.6-31.5 IN HG -30°F - +180°F OPER. TEMP.	+ 0.4%

FOR MORE DETAILS ON THE OPERATION AND MAINTENANCE OF THIS EQUIPMENT, PLEASE REFER
TO THE PLANT MAINTENANCE MANUAL, RADL ITEM 2-37, SECTION 8

SECTION 4

DATA TAPES

4.1 DESCRIPTION

Summary data tapes have been prepared at McDonnell Douglas and delivered to Sandia for a limited number of tag identifications (ID's), including all of the meteorological measurements of interest, and these data can be used for additional analyses by interested parties. The description of the data tapes is as follows:

- Data have been taken from the archive tapes which contain information for all tag ID's and for the actual data scan rates in effect at the time of the test. The data tapes contain information for approximately 500-900 tag ID's of particular interest, depending upon the month of the year being considered. The data have been written to this tape at 3 minute intervals, with no time averaging.
- Data have been written to tape in 8-bit ASCII. The tapes are 9-track, and have been written at 1600 BPI density through May. All summary data tapes prepared and delivered from June through December have been written at 6250 BPI.
- Each summary data tape contains two weeks of data for the months of January through June. Tapes prepared from July through December contain an entire month's data on a single tape.

4.2 AVAILABILITY

The summary data tapes are currently available from Sandia Livermore for all 12 months of 1983.

SECTION 5

METEOROLOGICAL DATA

5.1 GENERAL

This section contains the meteorological data which were selected from the available data between 1 January and 31 December 1983 for inclusion in this report. The data were principally derived through the computer-centered data reduction system being used at McDonnell Douglas to support the Solar One test program. This system uses a PDP-10 Computer in conjunction with data reduction programs and a Tektronix 4014 printer to produce the plots and tabulations desired.

The plot format has a 10 by 10 grid, on which a maximum of five tag ID's can be plotted. They are identified at the bottom of the page, below the grid. The values of each of the elements of the vertical scale are equal to one-tenth of the range shown for the tag ID. The horizontal time scale is variable, with 1500 minutes being chosen to cover a full day plus, with each element equal to two and one-half hours. The reference time shown is the date of the year, with 1 January being day 001, etc. The start time is shown beside the day, with 00 signifying midnight. The Nth sample average of 1 indicates the data were plotted at 1 minute intervals. In addition to the PDP-10 system, data were obtained from the midnight readings of insolation recorded on the Beckman MV 8000 system, an off-site analysis was performed on the hail cubes, and the rainfall data for this report were obtained from the Barstow-Daggett airport. Additional specific comments are included with the data packages in the following sections.

5.2 LIST OF TAG ID'S AND INSTRUMENT

The tag ID's and instruments of interest for the meteorological data report are shown below:

LTX	1806	Tipping Bucket Rain Gauge
TTX	1803	Air Temperature, South Station

TTX	9002C	Heliostat 1638, MM 7 Temp, Front
TTX	9002D	Heliostat 1638, MM 7 Temp, Rear
TTX	9005C	Heliostat 2766, MM 7 Temp, Front
TTX	9005D	Heliostat 2766, MM 7 Temp, Rear
MTX	1805	Dewpoint, South Station
MTX	1832	Dewpoint, Receiver Tower Level 7
ATX	1817	Normal Incidence Pyrheliometer, North Station
##ATX	1817A	Normal Incidence Pyrheliometer, Control Room Roof
ATX	1808	South Station Pyranometer
ATX	1809	South Spoke Road Pyranometer
ATX	1812	West Station Pyranometer
ATX	1813	West Spoke Road Pyranometer, Outer
ATX	1814	West Spoke Road Pyranometer, Inner
ATX	1819	North Station Pyranometer
ATX	1820	North Spoke Road Pyranometer, Outer
ATX	1821	North Spoke Road Pyranometer, Inner
ATX	1824	East Station Pyranometer
ATX	1825	East Spoke Road Pyranometer, Outer
ATX	1826	East Spoke Road Pyranometer, Inner
ATX	1833	Nephelometer, Receiver Tower Level 7
ATX	1834	Control Room Roof Pyranometer

Wind Speed

STX	1801	South Station
STX	1810	West Station
STX	1815	North Station
STX	1822	East Station
STX	1827	Receiver Tower Level 7, East
STX	1829	Receiver Tower Level 7, West
STX	1835	Control Room Roof
STX	1839	Wind Tower 1, 32.2 Feet
STX	1840	Wind Tower 1, 20 Feet
STX	1841	Wind Tower 1, 10 Feet
STX	1843	Wind Tower 2, 32.2 Feet
STX	1844	Wind Tower 2, 20 Feet
STX	1845	Wind Tower 2, 10 Feet

STX	1847	Wind Tower 3, 32.2 Feet
STX	1848	Wind Tower 3, 20 Feet
STX	1849	Wind Tower 3, 10 Feet
STX	1851	Wind Tower 4, 32.2 Feet
STX	1852	Wind Tower 4, 20 Feet
STX	1853	Wind Tower 4, 10 Feet
STX	1855	Wind Tower 5, 32.2 Feet
STX	1856	Wind Tower 5, 20 Feet
STX	1857	Wind Tower 5, 10 Feet
STX	1859	Wind Tower 6, 32.2 Feet
STX	1860	Wind Tower 6, 20 Feet
STX	1861	Wind Tower 6, 10 Feet

Wind Direction

OTX	1802	South Station
OTX	1811	West Station
OTX	1816	North Station
OTX	1823	East Station
OTX	1828	Receiver Tower Level 7, East
OTX	1830	Receiver Tower Level 7, West
OTX	1836	Control Room Roof
OTX	1842	Wind Tower 1, 32.2 Feet
OTX	1846	Wind Tower 2, 32.2 Feet
OTX	1850	Wind Tower 3, 32.2 Feet
OTX	1854	Wind Tower 4, 32.2 Feet
OTX	1858	Wind Tower 5, 32.2 Feet
OTX	1862	Wind Tower 6, 32.2 Feet

5.3 SPECIFIC COMMENTS ON DATA

The data included in this report have been chosen following an informal discussion of the report format and contents between Sandia and MDAC. Data not published in this report have been submitted to Sandia separately. The total data base recorded on the data acquisition system between 1 January and 31 December 1983 consists of 312 data days. All of these days have been processed and insolation data and summary wind data are included in the report.

Additional comments pertinent to the particular type of meteorological data presented are contained in the following major paragraphs of this section.

Specific comments about the data shown or not shown on the plots are as follows:

1. If a tag ID listing is followed by a "tag ID not available," this tag ID was not on the scan list on the day the data were recorded. This may be the case even though the instrument was working.
2. If a tag ID listed on the plot shows no data, the instrument was not operating at all, or was operating and reading zero.
3. If the data for a tag ID show for only part of a day, the data acquisition system was very probably not archiving data for the missing time periods.

5.4 RAINFALL DATA

A tipping bucket rain gauge (tag ID LTX 1806) is installed at the south meteorological station at Solar One. It is operational, but because of uncertainty in the accuracy of the data, and because it cannot be guaranteed that the data acquisition system will be operating at any time that precipitation occurs, a summary of rainfall as recorded at the Barstow-Daggett airport has been included in Table 4 to provide representative data for the Solar One Site.

The total rainfall recorded for 1983 was 9.48 inches, as compared to 6.32 inches for 1982. The data indicate that 1983 was an unusually heavy rainfall year, since the average annual rainfall for the 15 year period from 1956-1970 is 3.6 inches. In spite of the heavy annual rainfall, it is interesting to note that there was no rainfall during the months of May, June, and July, during 1983. June was the only month in 1982 during which there was no rainfall. The 1956-1970 data indicates that May and June are the lowest rainfall months, but that July generally does have some rainfall. August was the heaviest rainfall month in both 1983 and 1982, which is also consistent with the 1956-1970 data, which indicate that August is the month for heaviest rainfall during the year.

Table 4. Daggett Rainfall Summary (All Rainfall Values are in Inches)

	MONTH											
<u>1956 - 1970 Data</u>	J	F	M	A	M	J	J	A	S	O	N	D
Ave/Month	0.31	0.32	0.28	0.21	0.07	0.05	0.31	0.60	0.51	0.22	0.37	0.35
Max/Month	0.90	1.50	1.01	1.83	0.49	0.32	0.96	3.22	2.31	1.01	1.74	2.02
Max/24 Hours	0.73	0.70	0.88	0.65	0.37	0.32	0.96	2.06	1.11	0.66	1.08	1.01
Ave Occur/Month	3.20	3.30	2.40	2.10	0.70	0.50	1.80	2.40	1.60	1.90	3.30	2.70
Months With No Rain	-0-	2	2	3	10	10	2	4	6	5	1	4
<u>1983 Data</u>												
Rainfall	1.15	1.08	1.83	0.54	-0-	-0-	-0-	2.59	0.14	1.15	0.30	0.70
Max/24 Hours	0.42	0.33	0.72	0.38	-0-	-0-	-0-	1.01	0.12	0.73	0.28	0.49
No. of Occurrences	7	12	13	6	-0-	-0-	-0-	13	4	5	3	3

5.5 TEMPERATURE DATA

Monthly ranges of low and high air temperatures recorded at Solar One during 1983 are shown in Table 5. The data show that low temperatures below freezing were recorded during January, November, and December, during 1983, with 27°F being the lowest temperature recorded for the year. During 1982, below freezing temperatures were recorded during the months of January, February, and December, with 21°F being recorded in January as the lowest temperature for the year. The range of low temperatures recorded at Solar One was basically the same for 1983 and 1982. Similarly, the range of high temperatures for 1983 and 1982 showed about the same characteristics when compared on a month to month basis. Temperatures in excess of 100°F were recorded during May, June, July, August, and September during 1983, with 108°F recorded as the highest temperature, which occurred during July and August. In 1982, temperatures in excess of 100°F were recorded during June, July, August, and September, with the yearly high of 107°F occurring during August and September.

During 1983, the temperatures of the front and rear of mirror module 7 on two specially instrumented heliostats (1638 and 2766) were recorded and compared to the dewpoint at the south station to identify days when the dewpoint equalled or exceeded the mirror module temperatures. The time period examined was from 0400 to 0900 hours. From the total number of 312 data days examined, there were 32 days when the dewpoint equalled or exceeded the mirror module temperatures on at least one of the heliostats. The days when this occurred were:

022	091	281
023	231	282
036	233	289
037	264	306
038	266	333
043	267	336
055	273	345
057	274*	348
059	276	357
071	278	359*
083	280*	

*On these days, the dewpoint equalled or exceeded the mirror module temperatures on both heliostats 1638 and 2766.

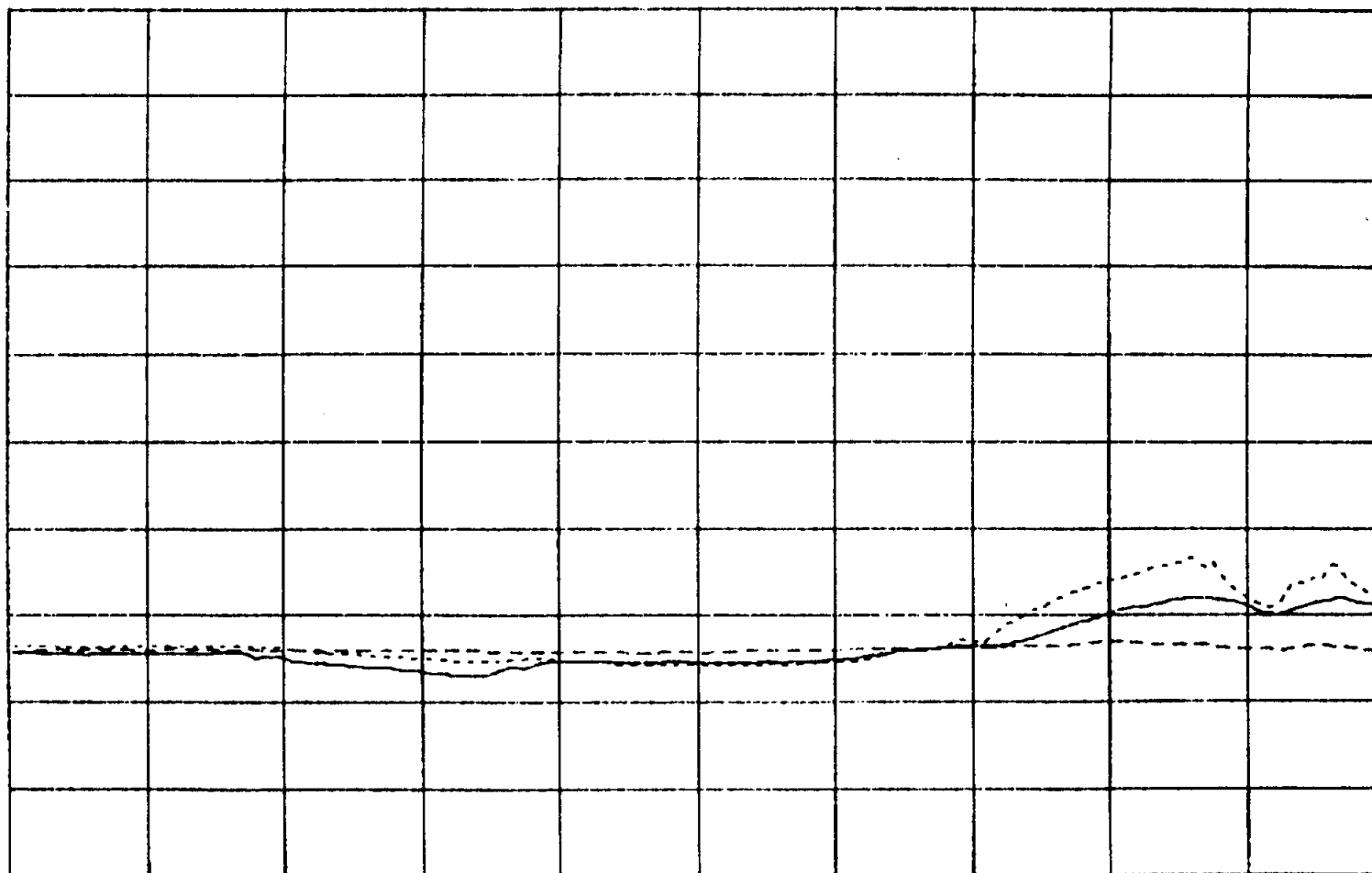
Table 5. HIGH AND LOW TEMPERATURE RANGES AT SOLAR ONE - 1983

<u>MONTH</u>	<u>RANGE OF LOW TEMPERATURES (°F)</u>	<u>RANGE OF HIGH TEMPERATURES (°F)</u>
January	27-49	48-69
February	34-50	40-72
March	37-55	62-75
April	36-51	57-80
May	44-75	63-105
June	53-77	76-104
July	58-81	88-108
August	60-84	72-108
September	60-79	69-104
October	50-62	60-84
November	29-55	50-81
December	31-54	50-67

Plots for 6 days of data are included in this report for heliostat 1638. The specific days are 273, 274, 276, 281, 282, and 359. The plots show that the dewpoint reaches or exceeds the mirror module temperatures at around 0400 to 0515 hours. This condition continues until around 0715 to 0800, at which time the mirror modules warm up to stop any further condensation. It should be noted that the wiring for the front and rear mirror module temperatures on heliostat 1638 (TTX 9002C and TTX 9002D) were reversed until 12 October 1983 (day 285), so the data shown on the first five plots are indicating temperatures for the opposite side of the mirror modules relative to what the plot legend indicates. Mirror module temperature traces for day 359 are labelled correctly. With this clarification, it can be seen that the mirror module front face temperatures warm up faster than the back after the sun comes up. The history of the mirror orientation has not been specifically defined for each of these plots, but presumably the mirror modules are in a face-down stow position at the beginning of these plots, with a transition from face-down stow to standby position being completed before sunrise.

SOLAR DATA PLOT PLOT # NTMP4
REFERENCE TIME: 273 04 00 00.000

FOR NTH SAMPLE AVERAGE = 1
300.0000 MINUTE(S)



0.00

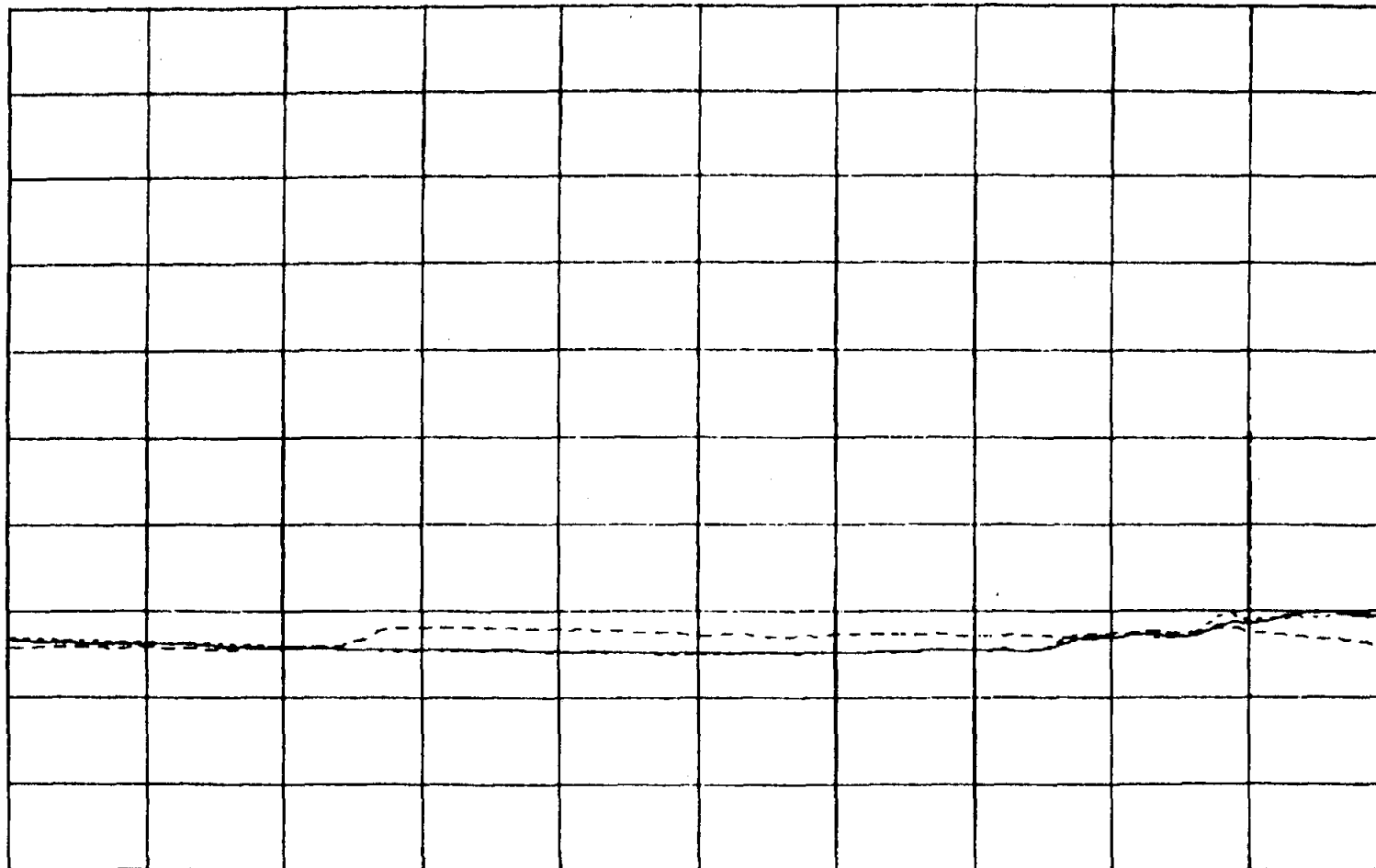
300.00

TTX9002C H1638 TMP MM7 FRNT
TTX9002D H1638 TMP MM7 REAR
MTX1805 DEUPT (SOUTH STATION)

0.00 - 200.00 F _____
0.00 - 200.00 F
0.00 - 200.00 DEG F -----

SOLAR DATA PLOT PLOT # MTMP4
REFERENCE TIME: 274 04 00 00.000

FOR NTH SAMPLE AVERAGE = 1
300.0000 MINUTE(S)



0.00

300.00

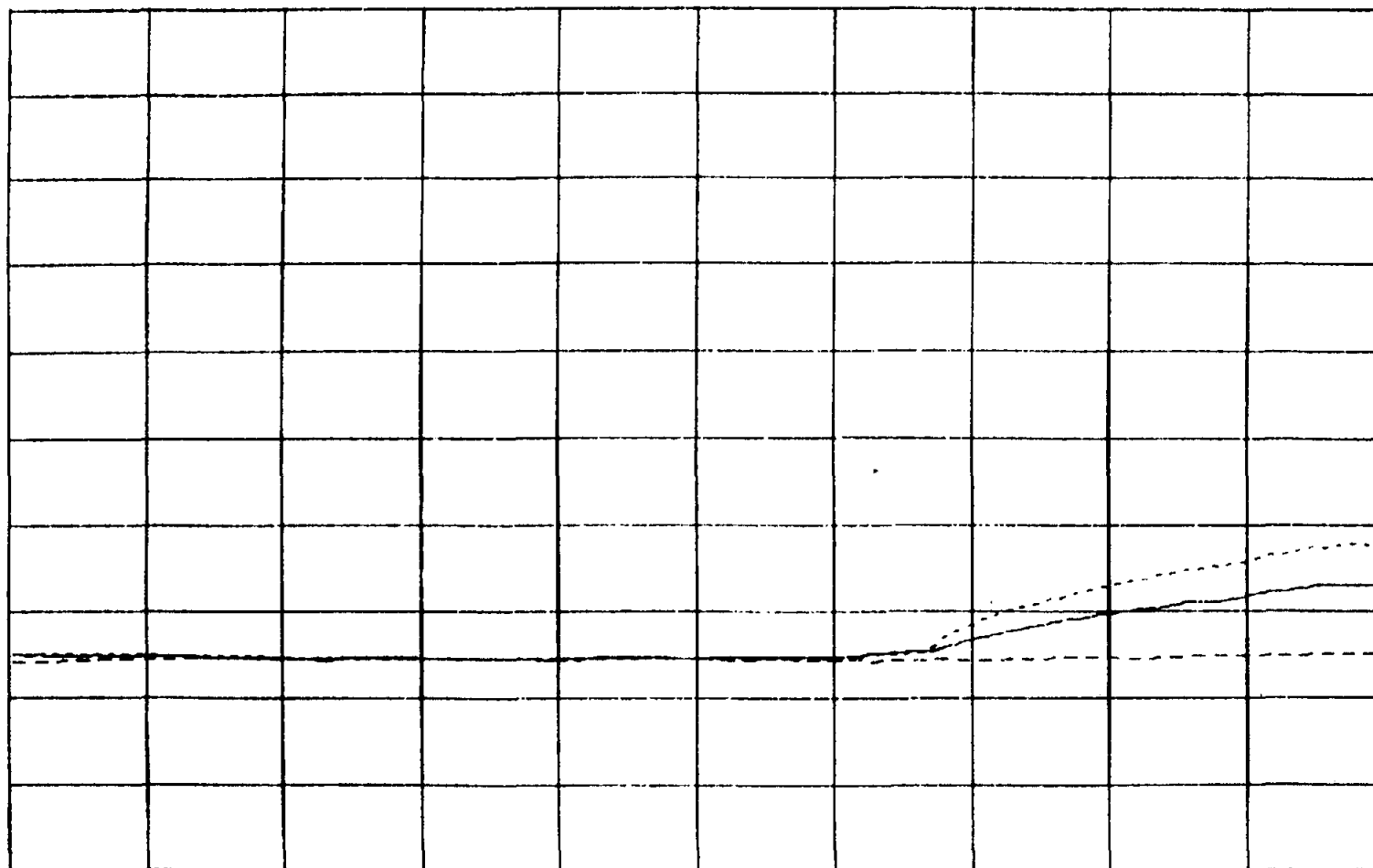
TTX9002C
TTX9002D
MTX1805

H1638 TMP MM7 FRNT
H1638 TMP MM7 REAR
DEUPT (SOUTH STATION)

0.00 - 200.00 F
0.00 - 200.00 F
0.00 - 200.00 DEG F

SOLAR DATA PLOT PLOT # NTMP4
REFERENCE TIME: 276 04 00 00.000

FOR NTH SAMPLE AVERAGE = 1
300.0000 MINUTE(S)



0.00

300.00

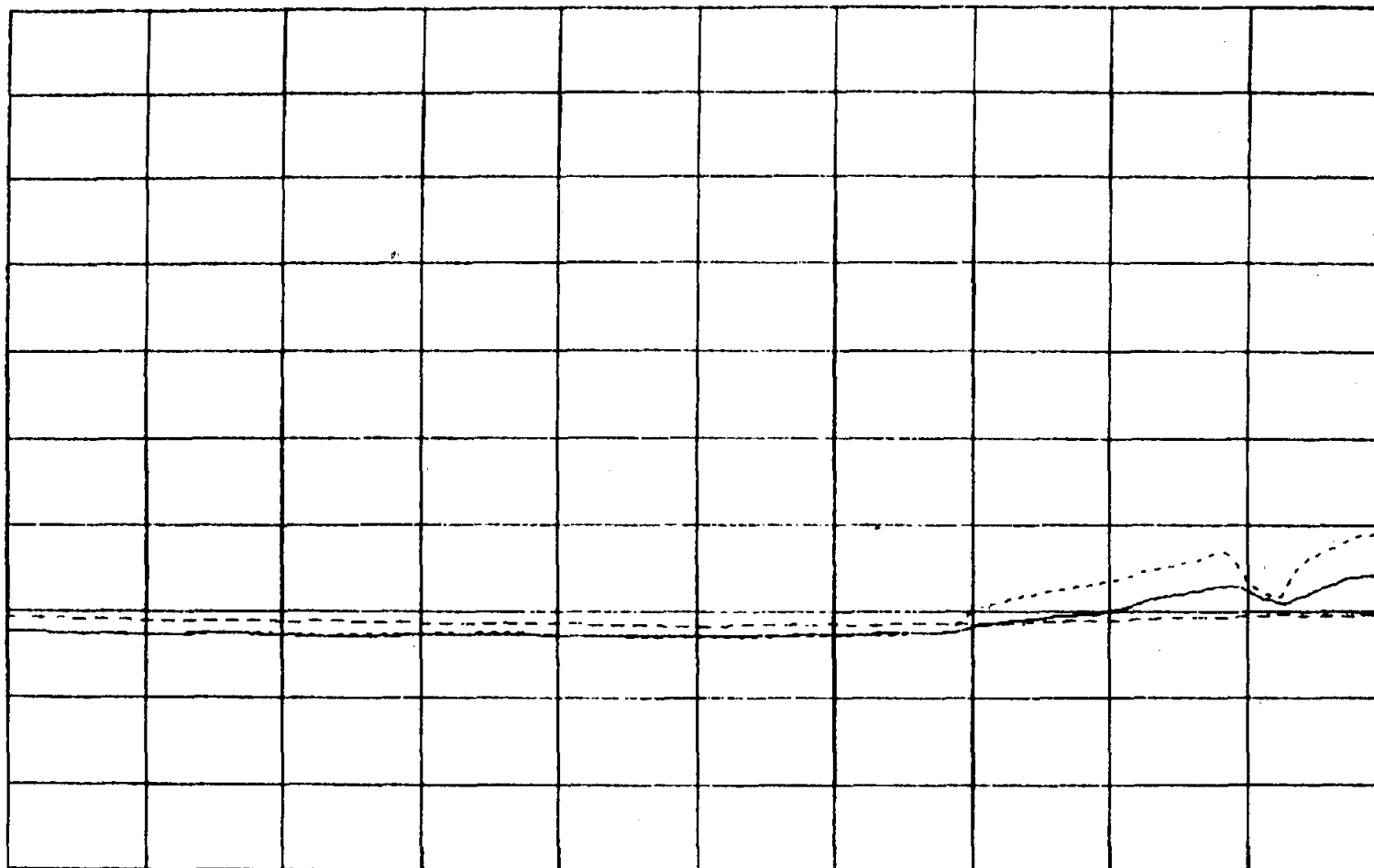
TTX9002C
TTX9002D
MTX1805

H1638 TMP MM7 FRNT
H1638 TMP MM7 REAR
DEWPT (SOUTH STATION)

0.00 - 200.00 F _____
0.00 - 200.00 F
0.00 - 200.00 DEG F -----

SOLAR DATA PLOT PLOT # MTMP4
REFERENCE TIME: 281 04 00 00.000

FOR NTH SAMPLE AVERAGE = 1
300.0000 MINUTE(S)



0.00

300.00

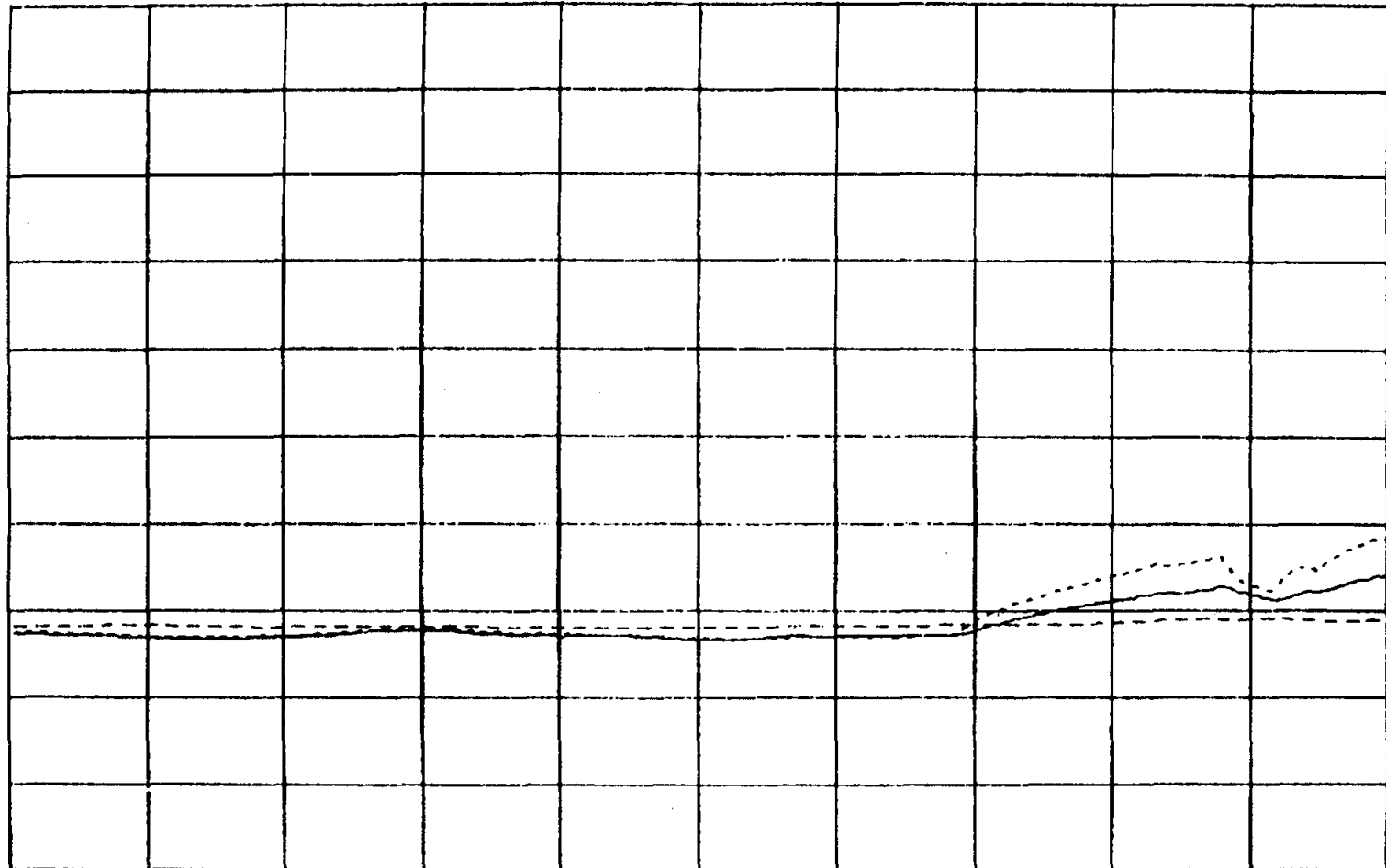
TTX9002C
TTX9002D
MTX1805

H1638 TMP MM7 FRNT
H1638 TMP MM7 REAR
DEWPT (SOUTH STATION)

0.00 -	200.00 F	_____
0.00 -	200.00 F	-----
0.00 -	200.00 DEG F	-.-.-.-

SOLAR DATA PLOT PLOT # MTMP4
 REFERENCE TIME: 282 04 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 300.0000 MINUTE(S)



0.00

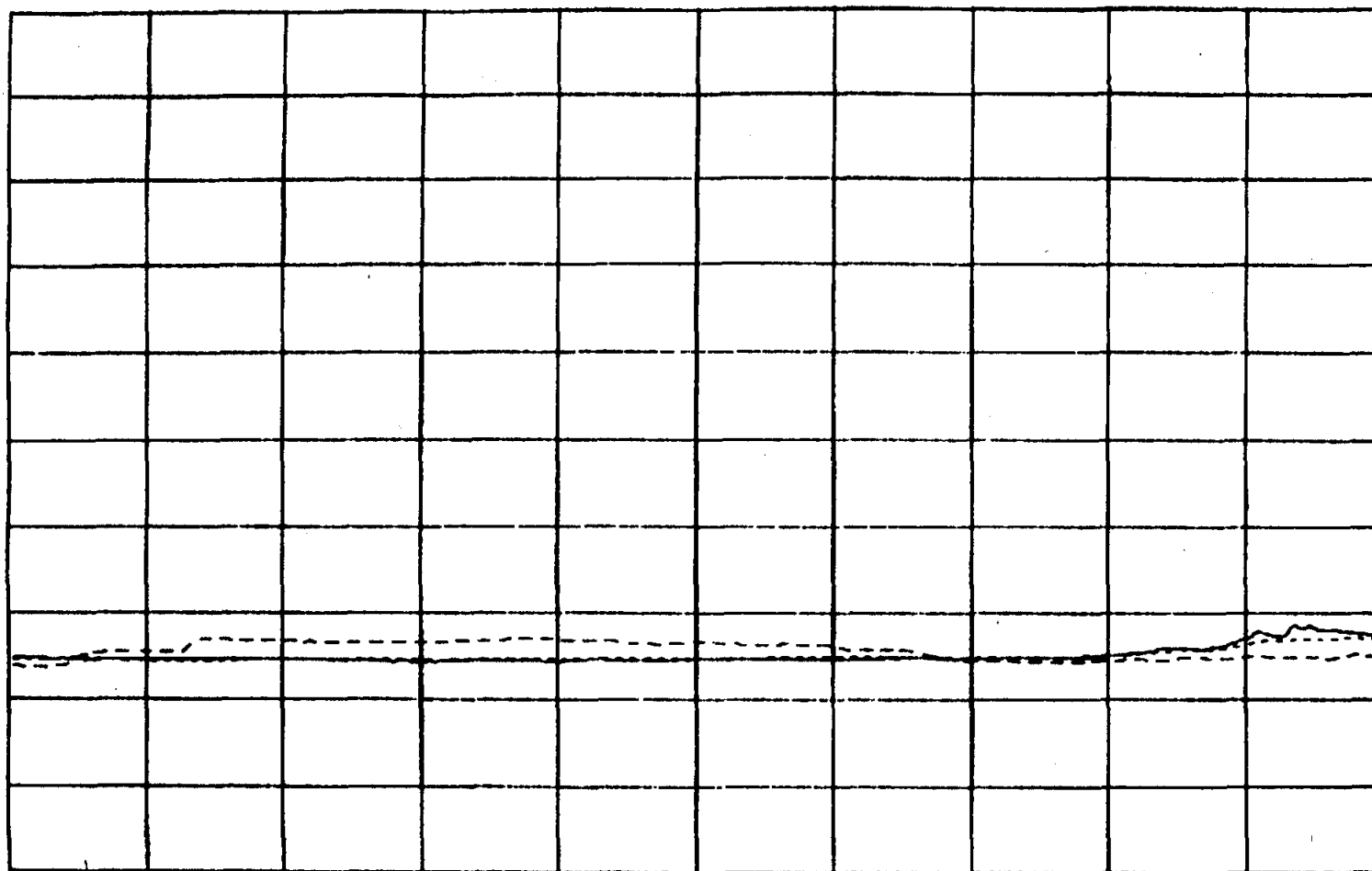
300.00

TTX9002C H1638 TMP MM7 FRNT
 TTX9002D H1638 TMP MM7 REAR
 MTX1805 DEWPT (SOUTH STATION)

0.00 - 200.00 F
 0.00 - 200.00 F
 0.00 - 200.00 DEG F

SOLAR DATA PLOT PLOT # NTMP4
REFERENCE TIME: 359 04 00 00.000

FOR NTH SAMPLE AVERAGE # 1
300.0000 MINUTE(S)



0.00

300.00

TTX9002C
TTX9002D
MTX1805

H1638 TMP MM7 FRNT
H1638 TMP MM7 REAR
DEUPT (SOUTH STATION)

0.00 - 200.00 F
0.00 - 200.00 F
0.00 - 200.00 DEG F

5.6 WIND DATA

Wind data were recorded for 312 days at Solar One during 1983. Wind speed and wind direction were recorded for all of the STX and OTX tag ID's listed in Section 5.2 during each of the data days, with the exceptions of any days when a particular instrument was not operational, and for STX 1835 and OTX 1836, which are wind speed and direction instruments on the control room roof that were control room readouts only until they were also wired to DAS in August. Wind speed and direction data for the south, west, north, and east meteorological stations and the control room roof were selected and included in this report following discussions with Sandia.

The wind speed and direction data included in this report are summarized on an annual and monthly basis. These data are derived from the daily summaries, which have been sent to Sandia separately. Figure 42 shows the wind velocity distribution at Solar One for 1983 when the data acquisition system was archiving data (312 days), and when the NIP value exceeded 450 watts/m² sometime during the day. This NIP value qualification caused wind data from 36 of the 312 days to be zeroed out, with the inference being that the wind data for a given day are not of interest in this report unless insolation values reach at least 450 watts/m² to permit startup of the Solar One plant. The figure indicates that there were 276 days during which the wind velocity reached speeds in excess of 5 miles per hour. Figure 42 also shows that there were 263 days when the wind speed exceeded 10 miles per hour. This means there were 13 days (276-263) with maximum wind speeds in the 5-10 miles per hour range. The number of days when wind velocities were reached in each of the 5 mph ranges can be determined by taking the difference between the number of days indicated in parentheses at adjacent wind velocities. The wind velocity distribution shown on the figure indicates that high winds, that is, values above 40 miles per hour, have not been a major constraint on Solar One operations during 1983. The maximum wind velocity recorded in each month of 1983 was as follows:

<u>Month</u>	<u>Maximum Wind Velocity, MPH</u>
Jan	44
Feb	56
Mar	50
Apr	54

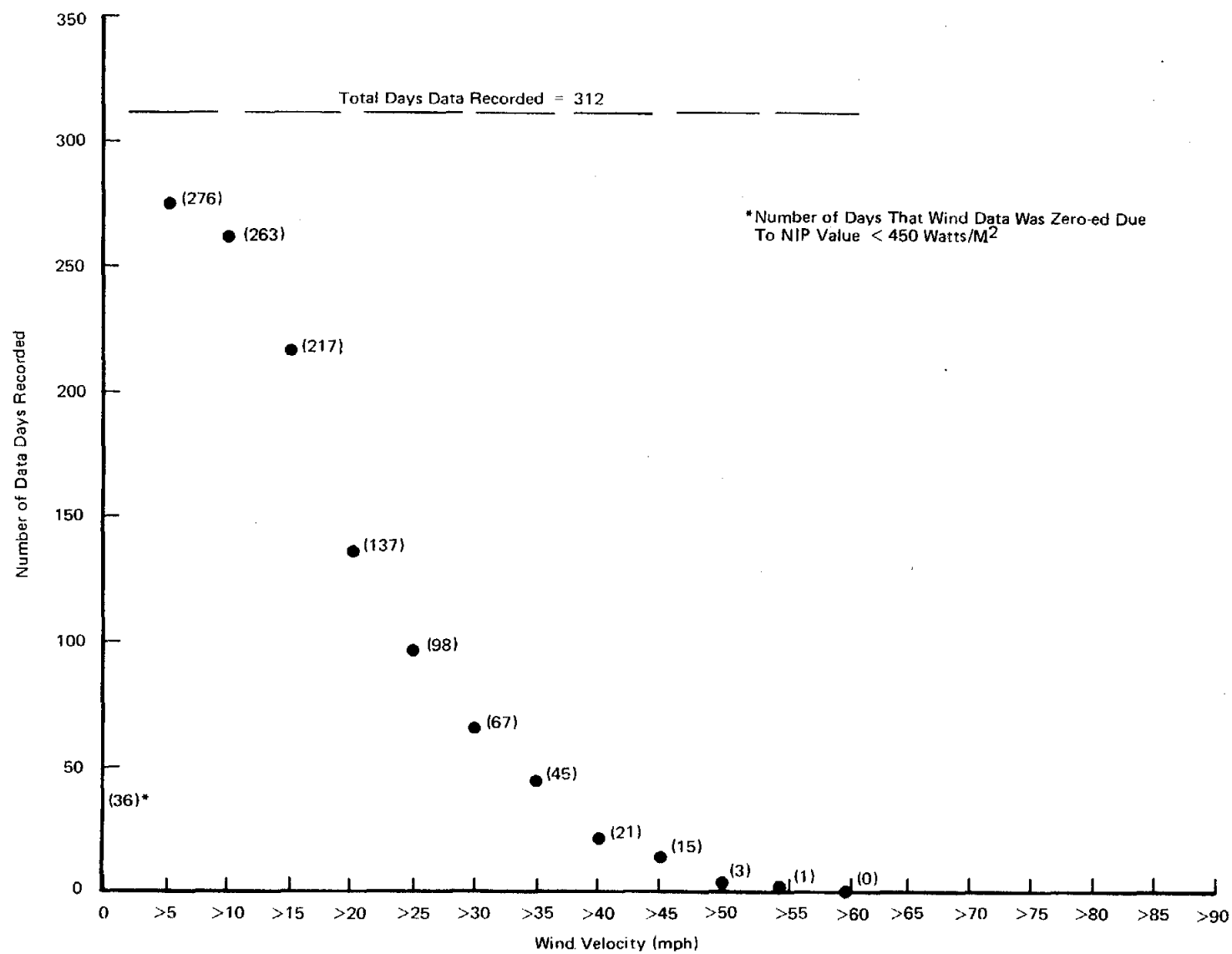


Figure 42. Solar One Wind Velocity Distribution (When Recording Data and With NIP Value > 450 Watts/m²)

<u>Month</u>	<u>Maximum Wind Velocity, MPH</u>
May	48
Jun	48
Jul	40
Aug	38
Sep	36
Oct	42
Nov	60
Dec	52

Table 6 shows the number of days during each month when wind speeds exceeded 30 miles per hour at Solar One during 1983. The total number for the year was 67, compared to 48 days for 1982, as measured at the Daggett airport. Data are also shown for each of 5 cup anemometers to indicate the total number of data samples recorded by each instrument per month, and the number of data samples within that population that were taken with wind speeds over 30 miles per hour. The equivalent percentage value is tabulated for each instrument and each month. Because of the integer arithmetic used by the computer, the ratio of data samples above 30 miles per hour to total data samples has to equal at least 1 percent in order to register anything above 0 percent, etc. It can be seen from the data on Table 6 that wind speeds at Solar One were not above 30 miles per hour for any significant time periods. This finding also substantiates the statement that high winds were not a major factor influencing Solar One plant operation during 1983. It should be noted that the meteorological data are recorded at 1 minute intervals when wind speeds are below 45 miles per hour and at 1 second intervals above 45 miles per hour, so the number of data samples are recorded at a rate 60 times faster at the high velocities. Even with this bias, the percent of data samples recorded above 30 miles per hour is still small.

Table 6. Solar One Wind Summary For 1983 With Winds In Excess Of 30 MPH

DAYS			STX1801	STX1810	STX1815	STX1822	STX1835
JAN	TOT	27	27476 100	27366 100	27465 100	0 0	0 0
	> 30	2	162 0	167 0	176 0	0 0	0 0
FEB	TOT	24	13643 100	13692 100	13510 100	12620 100	0 0
	> 30	2	832 6	714 5	775 5	507 4	0 0
MAR	TOT	25	13359 100	21692 100	21691 100	11170 100	0 0
	> 30	8	1273 9	1086 5	1119 5	23 0	0 0
APR	TOT	26	29930 100	30642 100	29959 100	24546 100	0 0
	> 30	9	2492 8	2372 7	2423 8	201 0	0 0
MAY	TOT	31	19684 100	19682 100	19670 100	19674 100	0 0
	> 30	10	964 4	739 3	1023 5	327 1	0 0
JUN	TOT	26	14544 100	14544 100	14541 100	14544 100	0 0
	> 30	6	120 0	65 0	134 0	80 0	0 0
JUL	TOT	18	11662 100	11662 100	11663 100	11663 100	0 0
	> 30	8	68 0	51 0	84 0	59 0	0 0
AUG	TOT	20	5951 100	5951 100	5951 100	5951 100	4902 100
	> 30	1	0 0	0 0	1 0	0 0	0 0
SEP	TOT	26	29334 100	27874 100	29334 100	29334 100	29158 100
	> 30	2	5 0	1 0	5 0	0 0	1 0
OCT	TOT	29	13337 100	13337 100	13337 100	13337 100	11767 100
	> 30	2	81 0	43 0	107 0	2 0	78 0
NOV	TOT	29	27371 100	8558 100	27312 100	27337 100	24981 100
	> 30	8	2858 10	526 6	2909 10	474 1	3590 14
DEC	TOT	31	18175 100	18862 100	19789 100	20038 100	4571 100
	> 30	9	785 4	780 4	709 3	591 2	194 4

Annual and monthly wind speed and wind direction summaries for the 4 meteorological stations and the control room roof are included in this report on the following pages. Pertinent comments about wind speeds have already been made in previous paragraphs while discussing Figure 42 and Table 6; however, it is interesting to look at the annual wind direction distribution and draw some conclusions regarding the prevailing wind directions at Solar One for 1983. An analysis of the tabular data presented for annual wind direction, including some adjustments in percentage values to compensate for the rounding-off errors associated with the integer arithmetic, yields the following observations:

<u>Wind Direction</u> <u>(360° = N = 0°)</u>	<u>Percentage of Time</u> <u>(Average of 5 Sensors)</u>
NW-NE Quadrant (315° - 45°)	17
NE-SE Quadrant (45° - 135°)	20
SE-SW Quadrant (135° - 225°)	14
SW-NW Quadrant (225° - 315°)	49

Prevailing winds at the Solar One site are from a westerly direction, with minimal wind activity from the south, and moderate activity from the north and east.

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR PERIOD - FULL YEAR 83 - WITH NIPS IN EXCESS OF 450 U/M2

MPH	STX1801*		9TX1810*		STX1815*		STX1822*		STX1835*	
0	3078	1%	4158	1%	4481	1%	1172	0%	270	0%
2	14151	6%	14226	6%	13523	5%	12551	6%	10767	14%
4	29355	13%	29778	13%	29483	12%	25396	13%	17222	22%
6	38878	17%	35796	16%	38348	16%	34565	18%	11100	14%
8	33970	15%	32509	15%	33306	14%	30914	16%	6834	9%
10	22036	9%	25219	11%	25455	10%	22419	11%	5127	6%
12	20594	9%	17730	8%	18481	7%	16056	8%	3115	4%
14	8471	3%	11559	5%	12843	5%	12218	6%	2641	3%
16	6849	3%	8148	3%	9567	4%	9369	4%	1948	2%
18	5943	2%	6772	3%	7932	3%	7310	3%	1859	2%
20	5904	2%	5603	2%	7095	3%	5383	2%	1829	2%
22	6158	2%	4560	2%	6151	2%	3767	1%	1797	2%
24	5095	2%	3678	1%	5444	2%	2474	1%	1783	2%
26	4301	1%	2938	1%	4812	2%	1897	0%	1818	2%
28	5507	2%	2524	1%	4258	1%	1395	0%	1683	2%
30	4536	2%	2120	0%	3578	1%	1064	0%	1723	2%
32	3162	1%	1643	0%	2814	1%	723	0%	1376	1%
34	2135	0%	1367	0%	2048	0%	485	0%	858	1%
36	1446	0%	1081	0%	1378	0%	368	0%	639	0%
38	1339	0%	882	0%	952	0%	243	0%	408	0%
40	690	0%	665	0%	695	0%	149	0%	208	0%
42	437	0%	459	0%	471	0%	95	0%	187	0%
44	238	0%	225	0%	293	0%	74	0%	88	0%
46	151	0%	167	0%	536	0%	91	0%	63	0%
48	36	0%	44	0%	208	0%	26	0%	19	0%
50	5	0%	9	0%	55	0%	8	0%	7	0%

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR PERIOD - FULL YEAR 83 - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
52	1	0%	2	0%	11	0%	2	0%	4	0%
54	0	0%	0	0%	4	0%	0	0%	3	0%
56	0	0%	0	0%	0	0%	0	0%	2	0%
58	0	0%	0	0%	0	0%	0	0%	0	0%
60	0	0%	0	0%	0	0%	0	0%	1	0%
62	0	0%	0	0%	0	0%	0	0%	0	0%
64	0	0%	0	0%	0	0%	0	0%	0	0%
66	0	0%	0	0%	0	0%	0	0%	0	0%
68	0	0%	0	0%	0	0%	0	0%	0	0%
70	0	0%	0	0%	0	0%	0	0%	0	0%
72	0	0%	0	0%	0	0%	0	0%	0	0%
74	0	0%	0	0%	0	0%	0	0%	0	0%
76	0	0%	0	0%	0	0%	0	0%	0	0%
78	0	0%	0	0%	0	0%	0	0%	0	0%
80	0	0%	0	0%	0	0%	0	0%	0	0%
82	0	0%	0	0%	0	0%	0	0%	0	0%
84	0	0%	0	0%	0	0%	0	0%	0	0%
86	0	0%	0	0%	0	0%	0	0%	0	0%
88	0	0%	0	0%	0	0%	0	0%	0	0%
90	0	0%	0	0%	0	0%	0	0%	0	0%
92	0	0%	0	0%	0	0%	0	0%	0	0%
94	0	0%	0	0%	0	0%	0	0%	0	0%
96	0	0%	0	0%	0	0%	0	0%	0	0%
98	0	0%	0	0%	0	0%	0	0%	0	0%
100	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND (DEGREE) DISTRIBUTION FOR PLOT MD01

TEST DATA FOR PERIOD - FULL YEAR 83 - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	3017	1%	12333	5%	5141	2%	9362	4%	1003	1%
15	3076	1%	4465	1%	3987	1%	4620	2%	2176	2%
30	3327	1%	4057	1%	5107	2%	4493	2%	2959	3%
45	4795	2%	6097	2%	7618	3%	6009	3%	3660	4%
60	7740	3%	9164	3%	10111	4%	7950	4%	3441	4%
75	13909	6%	11641	5%	10836	4%	10099	5%	2488	3%
90	12141	5%	10032	4%	10917	4%	10341	5%	1501	1%
105	8655	3%	9040	3%	8628	3%	8237	4%	1277	1%
120	5177	2%	6667	2%	4446	1%	6012	3%	2581	3%
135	2525	1%	4853	2%	2827	1%	3457	1%	2809	3%
150	2808	1%	3479	1%	1920	0%	2372	1%	1826	2%
165	1876	0%	2290	0%	1896	0%	1786	0%	1578	2%
180	1605	0%	2092	0%	2326	0%	1763	0%	1089	1%
195	2542	1%	4044	1%	4333	1%	2151	1%	1208	1%
210	3336	1%	4193	1%	11266	4%	3887	2%	2372	3%
225	4873	2%	7414	3%	20599	8%	7885	4%	2957	3%
240	13529	5%	11483	4%	35144	14%	12411	6%	5835	7%
255	27702	12%	21693	9%	32664	13%	15088	7%	9207	12%
270	23071	10%	30602	13%	23580	10%	16183	8%	11874	15%
285	32402	14%	25007	10%	14956	6%	19229	9%	7983	10%
300	21339	9%	17128	7%	6294	2%	17199	8%	2759	3%
315	10746	4%	12075	5%	3771	1%	11422	5%	985	1%
330	7603	3%	6460	2%	2759	1%	5651	2%	690	0%
345	7219	3%	3310	1%	2462	1%	3239	1%	746	0%
360	1936	0%	1588	0%	1350	0%	1717	0%	512	0%

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - JANUARY - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	770	2%	1425	5%	1677	6%	0	0%	0	0%
2	2544	9%	2336	8%	2655	9%	0	0%	0	0%
4	3771	13%	4169	15%	4027	14%	0	0%	0	0%
6	7014	25%	6529	23%	6985	25%	0	0%	0	0%
8	5622	20%	5324	19%	4909	17%	0	0%	0	0%
10	2950	10%	2884	10%	2693	9%	0	0%	0	0%
12	2414	8%	2014	7%	1725	6%	0	0%	0	0%
14	656	2%	942	3%	942	3%	0	0%	0	0%
16	359	1%	414	1%	445	1%	0	0%	0	0%
18	275	1%	293	1%	323	1%	0	0%	0	0%
20	235	0%	203	0%	242	0%	0	0%	0	0%
22	239	0%	176	0%	224	0%	0	0%	0	0%
24	186	0%	197	0%	177	0%	0	0%	0	0%
26	5	0%	2	0%	5	0%	0	0%	0	0%
28	156	0%	164	0%	144	0%	0	0%	0	0%
30	118	0%	127	0%	116	0%	0	0%	0	0%
32	64	0%	69	0%	73	0%	0	0%	0	0%
34	48	0%	43	0%	59	0%	0	0%	0	0%
36	25	0%	35	0%	24	0%	0	0%	0	0%
38	21	0%	13	0%	10	0%	0	0%	0	0%
40	3	0%	3	0%	8	0%	0	0%	0	0%
42	1	0%	1	0%	1	0%	0	0%	0	0%
44	0	0%	3	0%	1	0%	0	0%	0	0%
46	0	0%	0	0%	0	0%	0	0%	0	0%
48	0	0%	0	0%	0	0%	0	0%	0	0%
50	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - JANUARY - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	146	0%	1969	7%	230	0%	0	0%	0	0%
15	240	0%	1064	3%	179	0%	0	0%	0	0%
30	350	1%	470	1%	324	1%	0	0%	0	0%
45	659	2%	749	2%	786	2%	0	0%	0	0%
60	927	3%	1160	4%	1328	4%	0	0%	0	0%
75	1635	5%	1695	6%	1920	6%	0	0%	0	0%
90	1664	5%	1422	5%	1816	6%	0	0%	0	0%
105	747	2%	1434	5%	1086	3%	0	0%	0	0%
120	868	3%	1033	3%	509	1%	0	0%	0	0%
135	361	1%	601	2%	422	1%	0	0%	0	0%
150	325	1%	484	1%	315	1%	0	0%	0	0%
165	219	0%	317	1%	269	0%	0	0%	0	0%
180	155	0%	249	0%	280	1%	0	0%	0	0%
195	144	0%	311	1%	302	1%	0	0%	0	0%
210	279	1%	386	1%	1406	5%	0	0%	0	0%
225	587	2%	504	1%	4243	15%	0	0%	0	0%
240	3222	11%	1373	4%	4797	17%	0	0%	0	0%
255	6975	25%	3599	13%	3305	11%	0	0%	0	0%
270	3164	11%	3216	11%	1909	6%	0	0%	0	0%
285	2386	8%	2103	7%	1316	4%	0	0%	0	0%
300	942	3%	1437	5%	435	1%	0	0%	0	0%
315	591	2%	1134	4%	320	1%	0	0%	0	0%
330	408	1%	524	1%	133	0%	0	0%	0	0%
345	468	1%	224	0%	110	0%	0	0%	0	0%
360	349	1%	77	0%	120	0%	0	0%	0	0%

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - FEBRUARY - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	467	3%	567	3%	225	1%	208	1%	0	0%
2	1432	9%	1463	9%	1534	10%	1027	7%	0	0%
4	2587	17%	2871	19%	2312	15%	2460	18%	0	0%
6	2966	20%	2571	17%	2725	18%	2752	20%	0	0%
8	1662	11%	1634	11%	2138	14%	2090	15%	0	0%
10	928	6%	1070	7%	1148	7%	1114	8%	0	0%
12	1199	8%	792	5%	847	5%	707	5%	0	0%
14	408	2%	538	3%	482	3%	530	3%	0	0%
16	217	1%	312	2%	319	2%	366	2%	0	0%
18	143	0%	206	1%	231	1%	346	2%	0	0%
20	150	1%	172	1%	186	1%	279	2%	0	0%
22	232	1%	235	1%	197	1%	229	1%	0	0%
24	281	1%	305	2%	262	1%	216	1%	0	0%
26	203	1%	355	2%	272	1%	193	1%	0	0%
28	340	2%	346	2%	291	1%	144	1%	0	0%
30	326	2%	277	1%	305	2%	142	1%	0	0%
32	229	1%	278	1%	274	1%	130	0%	0	0%
34	232	1%	195	1%	219	1%	106	0%	0	0%
36	213	1%	151	1%	146	0%	98	0%	0	0%
38	195	1%	106	0%	135	0%	78	0%	0	0%
40	86	0%	89	0%	104	0%	49	0%	0	0%
42	75	0%	63	0%	60	0%	39	0%	0	0%
44	30	0%	31	0%	49	0%	40	0%	0	0%
46	84	0%	53	0%	100	0%	15	0%	0	0%
48	32	0%	23	0%	31	0%	6	0%	0	0%
50	11	0%	6	0%	13	0%	8	0%	0	0%

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - FEBRUARY - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
52	0	0%	1	0%	1	0%	1	0%	0	0%
54	0	0%	0	0%	0	0%	1	0%	0	0%
56	0	0%	0	0%	0	0%	1	0%	0	0%
60	0	0%	0	0%	0	0%	0	0%	0	0%
62	0	0%	0	0%	0	0%	0	0%	0	0%
64	0	0%	0	0%	0	0%	0	0%	0	0%
66	0	0%	0	0%	0	0%	0	0%	0	0%
68	0	0%	0	0%	0	0%	0	0%	0	0%
70	0	0%	0	0%	0	0%	0	0%	0	0%
72	0	0%	0	0%	0	0%	0	0%	0	0%
74	0	0%	0	0%	0	0%	0	0%	0	0%
76	0	0%	0	0%	0	0%	0	0%	0	0%
78	0	0%	0	0%	0	0%	0	0%	0	0%
80	0	0%	0	0%	0	0%	0	0%	0	0%
82	0	0%	0	0%	0	0%	0	0%	0	0%
84	0	0%	0	0%	0	0%	0	0%	0	0%
86	0	0%	0	0%	0	0%	0	0%	0	0%
88	0	0%	0	0%	0	0%	0	0%	0	0%
90	0	0%	0	0%	0	0%	0	0%	0	0%
92	0	0%	0	0%	0	0%	0	0%	0	0%
94	0	0%	0	0%	0	0%	0	0%	0	0%
96	0	0%	0	0%	0	0%	0	0%	0	0%
98	0	0%	0	0%	0	0%	0	0%	0	0%
100	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - FEBRUARY - WITH NIPS IN EXCESS OF 450 U/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	176	1%	1583	10%	134	0%	694	5%	0	0%
15	155	1%	374	2%	107	0%	78	0%	0	0%
30	118	0%	353	2%	146	0%	64	0%	0	0%
45	194	1%	407	2%	355	2%	148	1%	0	0%
60	506	3%	630	4%	739	5%	267	1%	0	0%
75	1277	8%	759	5%	1255	8%	648	4%	0	0%
90	974	6%	768	5%	1012	6%	865	6%	0	0%
105	642	4%	829	5%	698	4%	931	6%	0	0%
120	526	3%	797	5%	339	2%	761	5%	0	0%
135	170	1%	670	4%	204	1%	416	3%	0	0%
150	208	1%	410	2%	151	1%	276	2%	0	0%
165	122	0%	237	1%	165	1%	173	1%	0	0%
180	172	1%	206	1%	187	1%	141	1%	0	0%
195	93	0%	191	1%	205	1%	147	1%	0	0%
210	213	1%	260	1%	391	2%	181	1%	0	0%
225	324	2%	366	2%	991	6%	245	1%	0	0%
240	956	6%	559	3%	1937	13%	456	3%	0	0%
255	2185	14%	923	6%	2544	17%	1128	8%	0	0%
270	1811	12%	1030	7%	1266	8%	1648	11%	0	0%
285	1586	10%	1167	7%	740	5%	1968	14%	0	0%
300	561	3%	760	5%	341	2%	1210	8%	0	0%
315	513	3%	496	3%	305	2%	638	4%	0	0%
330	502	3%	435	2%	210	1%	364	2%	0	0%
345	590	4%	321	2%	181	1%	240	1%	0	0%
360	122	0%	144	0%	76	0%	85	0%	0	0%

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF MARCH - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	3	0%	6	0%	7	0%	281	3%	0	0%
2	117	1%	147	0%	129	0%	530	6%	0	0%
4	451	4%	464	2%	378	2%	608	7%	0	0%
6	678	7%	741	4%	748	4%	731	9%	0	0%
8	799	8%	1958	11%	1749	9%	906	11%	0	0%
10	784	8%	3215	18%	2818	16%	1067	13%	0	0%
12	1100	11%	2569	14%	2671	15%	1199	15%	0	0%
14	736	7%	1843	10%	1947	11%	950	12%	0	0%
16	704	7%	1118	6%	1333	7%	567	7%	0	0%
18	663	7%	833	4%	988	5%	280	3%	0	0%
20	528	5%	818	4%	896	5%	173	2%	0	0%
22	419	4%	746	4%	821	4%	122	1%	0	0%
24	306	3%	629	3%	674	3%	58	0%	0	0%
26	268	2%	547	3%	535	3%	43	0%	0	0%
28	298	3%	440	2%	416	2%	24	0%	0	0%
30	293	3%	420	2%	350	1%	23	0%	0	0%
32	264	2%	316	1%	304	1%	6	0%	0	0%
34	221	2%	281	1%	230	1%	8	0%	0	0%
36	221	2%	178	1%	187	1%	3	0%	0	0%
38	199	2%	122	0%	146	0%	0	0%	0	0%
40	98	1%	79	0%	98	0%	0	0%	0	0%
42	47	0%	63	0%	70	0%	3	0%	0	0%
44	31	0%	19	0%	46	0%	3	0%	0	0%
46	10	0%	22	0%	22	0%	0	0%	0	0%
48	7	0%	6	0%	13	0%	0	0%	0	0%
50	2	0%	0	0%	3	0%	209	2%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - MARCH - WITH NIPS IN EXCESS OF 450 U/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	727	2x	1399	4x	611	1x	673	2x	0	0x
15	672	2x	745	2x	627	2x	1132	3x	0	0x
30	561	1x	681	2x	722	2x	1022	3x	0	0x
45	634	2x	881	2x	916	2x	1161	3x	0	0x
60	791	2x	991	3x	882	2x	1064	3x	0	0x
75	1121	3x	845	2x	746	2x	991	3x	0	0x
90	861	2x	597	1x	589	1x	682	2x	0	0x
105	453	1x	494	1x	573	1x	471	1x	0	0x
120	338	1x	528	1x	335	1x	493	1x	0	0x
135	205	0x	515	1x	229	0x	249	0x	0	0x
150	253	0x	410	1x	282	0x	211	0x	0	0x
165	187	0x	292	0x	339	1x	219	0x	0	0x
180	147	0x	280	0x	460	1x	228	0x	0	0x
195	255	0x	307	1x	1111	3x	472	1x	0	0x
210	511	1x	722	2x	2360	7x	1223	4x	0	0x
225	1187	3x	1964	6x	3600	11x	2394	8x	0	0x
240	2445	7x	2696	8x	5363	17x	3108	10x	0	0x
255	4864	15x	3334	11x	4183	13x	2354	7x	0	0x
270	2998	9x	3356	11x	2322	7x	1823	6x	0	0x
285	4047	13x	3114	10x	1638	5x	2265	7x	0	0x
300	3106	10x	1985	6x	939	3x	2527	8x	0	0x
315	1554	5x	1450	4x	671	2x	2115	7x	0	0x
330	1196	3x	1216	4x	600	1x	1443	4x	0	0x
345	1349	4x	848	2x	613	1x	903	3x	0	0x
360	495	1x	454	1x	283	0x	395	1x	0	0x

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01

TEST DATA FOR MONTH OF - APRIL - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	107	0%	1487	4%	364	1%	424	1%	0	0%
2	1339	4%	1056	3%	1131	3%	1455	6%	0	0%
4	3235	11%	3107	10%	3068	10%	3309	13%	0	0%
6	4280	14%	4409	14%	4072	13%	4331	18%	0	0%
8	4629	15%	4186	14%	4088	14%	3885	16%	0	0%
10	3409	11%	3819	12%	3979	13%	3257	13%	0	0%
12	3452	11%	2524	8%	2825	9%	2097	8%	0	0%
14	1321	4%	1751	5%	1887	6%	1287	5%	0	0%
16	1002	3%	1040	3%	1213	4%	876	3%	0	0%
18	746	2%	826	2%	862	2%	646	2%	0	0%
20	672	2%	750	2%	744	2%	566	2%	0	0%
22	654	2%	696	2%	670	2%	443	1%	0	0%
24	504	1%	601	2%	637	2%	342	1%	0	0%
26	404	1%	490	1%	489	1%	284	1%	0	0%
28	482	1%	400	1%	399	1%	228	0%	0	0%
30	419	1%	345	1%	325	1%	132	0%	0	0%
32	385	1%	389	1%	345	1%	92	0%	0	0%
34	397	1%	393	1%	352	1%	56	0%	0	0%
36	382	1%	416	1%	341	1%	20	0%	0	0%
38	508	1%	415	1%	310	1%	13	0%	0	0%
40	359	1%	310	1%	292	1%	6	0%	0	0%
42	219	0%	238	0%	250	0%	5	0%	0	0%
44	135	0%	112	0%	152	0%	0	0%	0	0%
46	81	0%	70	0%	223	0%	8	0%	0	0%
48	22	0%	25	0%	102	0%	1	0%	0	0%
50	3	0%	4	0%	47	0%	0	0%	0	0%

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - APRIL - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
52	1	0%	0	0%	6	0%	0	0%	0	0%
54	0	0%	0	0%	3	0%	0	0%	0	0%
56	0	0%	0	0%	0	0%	0	0%	0	0%
58	0	0%	0	0%	0	0%	0	0%	0	0%
60	0	0%	0	0%	0	0%	0	0%	0	0%
62	0	0%	0	0%	0	0%	0	0%	0	0%
64	0	0%	0	0%	0	0%	0	0%	0	0%
66	0	0%	0	0%	0	0%	0	0%	0	0%
68	0	0%	0	0%	0	0%	0	0%	0	0%
70	0	0%	0	0%	0	0%	0	0%	0	0%
72	0	0%	0	0%	0	0%	0	0%	0	0%
74	0	0%	0	0%	0	0%	0	0%	0	0%
76	0	0%	0	0%	0	0%	0	0%	0	0%
78	0	0%	0	0%	0	0%	0	0%	0	0%
80	0	0%	0	0%	0	0%	0	0%	0	0%
82	0	0%	0	0%	0	0%	0	0%	0	0%
84	0	0%	0	0%	0	0%	0	0%	0	0%
86	0	0%	0	0%	0	0%	0	0%	0	0%
88	0	0%	0	0%	0	0%	0	0%	0	0%
90	0	0%	0	0%	0	0%	0	0%	0	0%
92	0	0%	0	0%	0	0%	0	0%	0	0%
94	0	0%	0	0%	0	0%	0	0%	0	0%
96	0	0%	0	0%	0	0%	0	0%	0	0%
98	0	0%	0	0%	0	0%	0	0%	0	0%
100	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - APRIL - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	727	2X	1399	4X	611	1X	673	2X	0	0X
15	672	2X	745	2X	627	2X	1132	3X	0	0X
30	561	1X	681	2X	722	2X	1022	3X	0	0X
45	634	2X	881	2X	916	2X	1161	3X	0	0X
60	791	2X	991	3X	882	2X	1064	3X	0	0X
75	1121	3X	845	2X	746	2X	991	3X	0	0X
90	861	2X	597	1X	589	1X	682	2X	0	0X
105	453	1X	494	1X	573	1X	471	1X	0	0X
120	338	1X	528	1X	335	1X	493	1X	0	0X
135	205	0X	515	1X	229	0X	249	0X	0	0X
150	253	0X	410	1X	282	0X	211	0X	0	0X
165	187	0X	292	0X	339	1X	219	0X	0	0X
180	147	0X	280	0X	460	1X	228	0X	0	0X
195	255	0X	307	1X	1111	3X	472	1X	0	0X
210	511	1X	722	2X	2360	7X	1223	4X	0	0X
225	1187	3X	1964	6X	3600	11X	2394	8X	0	0X
240	2445	7X	2696	8X	5363	17X	3108	10X	0	0X
255	4864	15X	3334	11X	4183	13X	2354	7X	0	0X
270	2998	9X	3356	11X	2322	7X	1823	6X	0	0X
285	4047	13X	3114	10X	1638	5X	2265	7X	0	0X
300	3106	10X	1985	6X	939	3X	2527	8X	0	0X
315	1554	5X	1450	4X	671	2X	2115	7X	0	0X
330	1196	3X	1216	4X	600	1X	1443	4X	0	0X
345	1349	4X	848	2X	613	1X	903	3X	0	0X
360	495	1X	454	1X	283	0X	395	1X	0	0X

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01

TEST DATA FOR MONTH OF - MAY - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	25	0%	11	0%	25	0%	26	0%	0	0%
2	803	4%	797	4%	807	4%	821	4%	0	0%
4	1845	9%	1958	10%	1790	9%	1925	10%	0	0%
6	2482	13%	2375	12%	2314	12%	2635	14%	0	0%
8	3009	15%	2651	14%	2534	13%	3236	17%	0	0%
10	2530	13%	2752	14%	2493	13%	3095	16%	0	0%
12	2904	15%	2354	12%	2445	13%	2375	12%	0	0%
14	1123	5%	1537	8%	1840	9%	1480	7%	0	0%
16	791	4%	962	5%	1076	5%	919	4%	0	0%
18	655	3%	672	3%	742	3%	579	3%	0	0%
20	506	2%	565	3%	500	2%	461	2%	0	0%
22	434	2%	474	2%	386	2%	357	1%	0	0%
24	244	1%	377	2%	353	1%	259	1%	0	0%
26	233	1%	335	1%	295	1%	197	1%	0	0%
28	263	1%	242	1%	235	1%	138	0%	0	0%
30	238	1%	215	1%	196	1%	111	0%	0	0%
32	191	1%	167	0%	169	0%	79	0%	0	0%
34	161	0%	121	0%	133	0%	50	0%	0	0%
36	133	0%	94	0%	94	0%	29	0%	0	0%
38	134	0%	60	0%	75	0%	18	0%	0	0%
40	43	0%	52	0%	47	0%	8	0%	0	0%
42	38	0%	12	0%	22	0%	2	0%	0	0%
44	7	0%	1	0%	6	0%	2	0%	0	0%
46	18	0%	24	0%	168	0%	8	0%	0	0%
48	2	0%	2	0%	54	0%	2	0%	0	0%
50	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - MAY - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	239	1x	269	1x	376	2x	245	1x	0	0x
15	285	1x	337	1x	439	2x	343	1x	0	0x
30	311	1x	407	2x	489	2x	390	2x	0	0x
45	375	2x	503	2x	542	3x	457	2x	0	0x
60	491	2x	543	3x	598	3x	517	2x	0	0x
75	859	4x	585	3x	528	2x	615	3x	0	0x
90	609	3x	434	2x	404	2x	595	3x	0	0x
105	377	2x	393	2x	384	2x	447	2x	0	0x
120	321	1x	364	2x	285	1x	356	1x	0	0x
135	160	0x	314	1x	218	1x	294	1x	0	0x
150	257	1x	270	1x	137	0x	252	1x	0	0x
165	235	1x	239	1x	107	0x	172	0x	0	0x
180	167	0x	156	0x	144	0x	128	0x	0	0x
195	106	0x	162	0x	276	1x	113	0x	0	0x
210	183	1x	191	1x	774	4x	192	1x	0	0x
225	234	1x	316	1x	1335	7x	607	3x	0	0x
240	596	3x	683	3x	2790	15x	1131	6x	0	0x
255	1537	8x	1716	9x	3156	17x	1702	9x	0	0x
270	1678	9x	2928	16x	2480	13x	1841	10x	0	0x
285	3382	18x	2680	14x	1234	6x	2465	13x	0	0x
300	2494	13x	2125	11x	390	2x	2419	13x	0	0x
315	1192	6x	1363	7x	224	1x	1425	7x	0	0x
330	960	5x	514	2x	245	1x	608	3x	0	0x
345	835	4x	276	1x	265	1x	409	2x	0	0x
360	107	0x	136	0x	179	0x	228	1x	0	0x

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - JUNE - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	4	0%	11	0%	10	0%	9	0%	0	0%
2	490	3%	445	3%	467	3%	537	3%	0	0%
4	1201	8%	1154	7%	1152	7%	1322	9%	0	0%
6	1859	12%	1642	11%	1463	10%	2030	13%	0	0%
8	2351	16%	2042	14%	1784	12%	2604	17%	0	0%
10	2045	14%	2214	15%	2056	14%	2502	17%	0	0%
12	2349	16%	1934	13%	2026	13%	1873	12%	0	0%
14	1114	7%	1462	10%	1662	11%	1275	8%	0	0%
16	820	5%	1088	7%	1205	8%	822	5%	0	0%
18	656	4%	784	5%	806	5%	551	3%	0	0%
20	522	3%	595	4%	609	4%	340	2%	0	0%
22	384	2%	391	2%	440	3%	233	1%	0	0%
24	196	1%	304	2%	274	1%	152	1%	0	0%
26	149	1%	199	1%	212	1%	90	0%	0	0%
28	171	1%	131	0%	152	1%	69	0%	0	0%
30	113	0%	83	0%	89	0%	55	0%	0	0%
32	67	0%	32	0%	54	0%	31	0%	0	0%
34	25	0%	19	0%	35	0%	20	0%	0	0%
36	17	0%	11	0%	23	0%	16	0%	0	0%
38	9	0%	3	0%	8	0%	1	0%	0	0%
40	1	0%	0	0%	5	0%	5	0%	0	0%
42	0	0%	0	0%	4	0%	1	0%	0	0%
44	0	0%	0	0%	1	0%	1	0%	0	0%
46	1	0%	0	0%	3	0%	4	0%	0	0%
48	0	0%	0	0%	1	0%	1	0%	0	0%
50	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - JUNE - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	180	1%	141	0%	283	1%	159	1%	0	0%
15	162	1%	174	1%	171	1%	195	1%	0	0%
30	128	0%	183	1%	170	1%	176	1%	0	0%
45	131	0%	190	1%	195	1%	170	1%	0	0%
60	171	1%	201	1%	188	1%	206	1%	0	0%
75	288	1%	196	1%	157	1%	204	1%	0	0%
90	167	1%	142	0%	129	0%	211	1%	0	0%
105	152	1%	98	0%	124	0%	142	0%	0	0%
120	84	0%	86	0%	84	0%	111	0%	0	0%
135	45	0%	67	0%	71	0%	72	0%	0	0%
150	51	0%	68	0%	57	0%	49	0%	0	0%
165	47	0%	57	0%	72	0%	55	0%	0	0%
180	41	0%	37	0%	115	0%	56	0%	0	0%
195	60	0%	89	0%	268	1%	67	0%	0	0%
210	95	0%	83	0%	608	4%	130	0%	0	0%
225	201	1%	254	1%	1161	7%	613	4%	0	0%
240	632	4%	700	4%	2255	15%	1058	7%	0	0%
255	1236	8%	1433	9%	2833	19%	1228	8%	0	0%
270	1195	8%	2110	14%	2627	18%	1446	9%	0	0%
285	2587	17%	2416	16%	1637	11%	2337	16%	0	0%
300	2669	18%	2422	16%	589	4%	2712	18%	0	0%
315	1709	11%	1943	13%	305	2%	1730	11%	0	0%
330	1368	9%	843	5%	232	1%	818	5%	0	0%
345	1005	6%	374	2%	156	1%	415	2%	0	0%
360	143	0%	167	1%	68	0%	165	1%	0	0%

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - JULY - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	5	0%	13	0%	4	0%	23	0%	0	0%
2	403	3%	474	4%	424	4%	454	4%	0	0%
4	1229	11%	1216	11%	1161	10%	1114	10%	0	0%
6	1431	13%	1469	13%	1502	14%	1633	15%	0	0%
8	1433	13%	1451	13%	1576	14%	1681	15%	0	0%
10	1225	11%	1220	11%	1194	11%	1405	13%	0	0%
12	1145	10%	799	7%	851	8%	916	8%	0	0%
14	517	4%	574	5%	725	6%	701	6%	0	0%
16	573	5%	626	5%	663	6%	538	5%	0	0%
18	662	6%	663	6%	636	6%	501	4%	0	0%
20	640	6%	631	5%	568	5%	420	3%	0	0%
22	523	4%	549	5%	442	4%	384	3%	0	0%
24	285	2%	411	3%	302	2%	290	2%	0	0%
26	186	1%	253	2%	223	2%	246	2%	0	0%
28	161	1%	120	1%	152	1%	140	1%	0	0%
30	101	0%	67	0%	81	0%	83	0%	0	0%
32	45	0%	34	0%	45	0%	34	0%	0	0%
34	17	0%	14	0%	24	0%	17	0%	0	0%
36	6	0%	3	0%	10	0%	3	0%	0	0%
38	0	0%	0	0%	4	0%	5	0%	0	0%
40	0	0%	0	0%	1	0%	0	0%	0	0%
42	0	0%	0	0%	0	0%	0	0%	0	0%
44	0	0%	0	0%	0	0%	0	0%	0	0%
46	0	0%	0	0%	0	0%	0	0%	0	0%
48	0	0%	0	0%	0	0%	0	0%	0	0%
50	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - JULY - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	130	1%	81	0%	180	1%	74	0%	0	0%
15	144	1%	155	1%	212	2%	131	1%	0	0%
30	117	1%	203	1%	228	2%	196	1%	0	0%
45	180	1%	244	2%	246	2%	237	2%	0	0%
60	278	2%	309	2%	287	2%	291	2%	0	0%
75	395	3%	261	2%	258	2%	260	2%	0	0%
90	267	2%	163	1%	184	1%	247	2%	0	0%
105	246	2%	181	1%	113	1%	221	2%	0	0%
120	149	1%	177	1%	72	0%	185	1%	0	0%
135	101	0%	156	1%	70	0%	118	1%	0	0%
150	96	0%	100	0%	40	0%	80	0%	0	0%
165	43	0%	67	0%	54	0%	62	0%	0	0%
180	45	0%	46	0%	108	1%	51	0%	0	0%
195	30	0%	67	0%	378	3%	60	0%	0	0%
210	94	0%	109	1%	929	8%	161	1%	0	0%
225	310	2%	515	4%	1427	13%	850	8%	0	0%
240	926	8%	985	9%	1941	18%	1290	12%	0	0%
255	1362	12%	1529	14%	1552	14%	1158	10%	0	0%
270	994	9%	1605	15%	973	9%	1235	11%	0	0%
285	1834	17%	1371	13%	605	5%	1373	12%	0	0%
300	1298	12%	908	8%	249	2%	1000	9%	0	0%
315	558	5%	587	5%	182	1%	679	6%	0	0%
330	457	4%	373	3%	133	1%	328	3%	0	0%
345	435	4%	203	1%	104	0%	199	1%	0	0%
360	93	0%	126	1%	63	0%	87	0%	0	0%

SOLAR WIND SPEED DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - AUGUST - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	4	0%	12	0%	2	0%	15	0%	249	5%
2	480	9%	488	9%	443	8%	504	9%	886	18%
4	1124	21%	1223	23%	1078	20%	1094	20%	1429	29%
6	1323	24%	1403	26%	1367	25%	1453	27%	963	19%
8	1258	23%	1142	21%	1132	21%	1249	23%	598	12%
10	760	14%	670	12%	690	12%	666	12%	386	7%
12	294	5%	264	4%	451	8%	231	4%	204	4%
14	37	0%	72	1%	86	1%	66	1%	126	2%
16	16	0%	16	0%	9	0%	25	0%	46	0%
18	10	0%	14	0%	0	0%	4	0%	13	0%
20	2	0%	5	0%	0	0%	3	0%	2	0%
22	2	0%	1	0%	0	0%	0	0%	0	0%
24	0	0%	0	0%	14	0%	0	0%	0	0%
26	0	0%	0	0%	37	0%	0	0%	0	0%
28	0	0%	0	0%	0	0%	0	0%	0	0%
30	0	0%	0	0%	0	0%	0	0%	0	0%
32	0	0%	0	0%	0	0%	0	0%	0	0%
34	0	0%	0	0%	0	0%	0	0%	0	0%
36	0	0%	0	0%	0	0%	0	0%	0	0%
38	0	0%	0	0%	1	0%	0	0%	0	0%
40	0	0%	0	0%	0	0%	0	0%	0	0%
42	0	0%	0	0%	0	0%	0	0%	0	0%
44	0	0%	0	0%	0	0%	0	0%	0	0%
46	0	0%	0	0%	0	0%	0	0%	0	0%
48	0	0%	0	0%	0	0%	0	0%	0	0%
50	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - AUGUST - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	168	1%	110	1%	240	2%	165	1%	113	2%
15	229	2%	244	2%	356	3%	250	2%	233	4%
30	249	2%	258	2%	512	5%	314	3%	267	5%
45	422	4%	486	4%	704	6%	613	6%	343	6%
60	808	7%	735	7%	865	8%	751	7%	299	6%
75	1005	9%	847	8%	698	6%	745	7%	203	4%
90	635	6%	646	6%	591	5%	652	6%	110	2%
105	473	4%	516	5%	352	3%	437	4%	84	1%
120	313	3%	346	3%	147	1%	402	3%	170	3%
135	192	1%	295	2%	96	0%	209	2%	171	3%
150	160	1%	234	2%	73	0%	142	1%	94	1%
165	112	1%	135	1%	83	0%	97	0%	77	1%
180	52	0%	124	1%	75	0%	61	0%	56	1%
195	49	0%	85	0%	129	1%	77	0%	61	1%
210	159	1%	101	0%	399	3%	86	0%	90	1%
225	92	0%	113	1%	637	6%	140	1%	121	2%
240	154	1%	202	1%	1010	9%	274	2%	293	5%
255	508	4%	656	6%	917	8%	767	7%	490	9%
270	911	8%	1122	11%	820	8%	851	8%	642	13%
285	1117	10%	825	8%	554	5%	1091	10%	515	10%
300	864	8%	694	6%	344	3%	804	7%	192	3%
315	395	3%	592	5%	214	2%	563	5%	89	1%
330	430	4%	393	3%	149	1%	346	3%	65	1%
345	620	6%	232	2%	161	1%	246	2%	71	1%
360	95	0%	135	1%	86	0%	111	1%	52	1%

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - SEPTEMBER - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	202	0%	224	0%	63	0%	63	0%	12	0%
2	2516	8%	3402	12%	2261	7%	1850	6%	5543	19%
4	5587	19%	6186	22%	6763	23%	5507	18%	9164	31%
6	7995	27%	6353	22%	7975	27%	8528	29%	5967	20%
8	6059	20%	4869	17%	5536	18%	6232	21%	3038	10%
10	2620	8%	2720	9%	3086	10%	3023	10%	1517	5%
12	2059	7%	1657	5%	1436	4%	1462	4%	1121	3%
14	925	3%	944	3%	923	3%	879	2%	942	3%
16	719	2%	712	2%	612	2%	591	2%	672	2%
18	340	1%	426	1%	340	1%	487	1%	564	1%
20	180	0%	245	0%	208	0%	371	1%	331	1%
22	92	0%	100	0%	85	0%	202	0%	178	0%
24	21	0%	29	0%	30	0%	97	0%	73	0%
26	9	0%	3	0%	8	0%	30	0%	23	0%
28	4	0%	2	0%	2	0%	11	0%	11	0%
30	1	0%	1	0%	1	0%	1	0%	1	0%
32	5	0%	1	0%	2	0%	0	0%	1	0%
34	0	0%	0	0%	2	0%	0	0%	0	0%
36	0	0%	0	0%	1	0%	0	0%	0	0%
38	0	0%	0	0%	0	0%	0	0%	0	0%
40	0	0%	0	0%	0	0%	0	0%	0	0%
42	0	0%	0	0%	0	0%	0	0%	0	0%
44	0	0%	0	0%	0	0%	0	0%	0	0%
46	0	0%	0	0%	0	0%	0	0%	0	0%
48	0	0%	0	0%	0	0%	0	0%	0	0%
50	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - SEPTEMBER - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	438	1%	252	0%	1028	3%	522	1%	620	2%
15	707	2%	611	2%	1217	4%	1063	3%	1273	4%
30	873	2%	700	2%	1552	5%	1254	4%	1492	5%
45	1265	4%	1473	5%	2148	7%	1805	6%	2409	8%
60	2167	7%	2387	8%	2837	9%	2296	7%	2137	7%
75	3184	10%	2629	9%	2681	9%	2428	8%	1590	5%
90	3108	10%	2039	6%	2672	9%	2692	9%	886	3%
105	2582	8%	1917	6%	1742	5%	2549	8%	742	2%
120	1199	4%	1288	4%	682	2%	1812	6%	1513	5%
135	634	2%	1091	3%	374	1%	850	2%	1474	5%
150	699	2%	627	2%	322	1%	465	1%	898	3%
165	483	1%	325	1%	393	1%	368	1%	570	1%
180	454	1%	411	1%	514	1%	546	1%	689	2%
195	502	1%	2155	7%	962	3%	559	1%	763	2%
210	1026	3%	1332	4%	1317	4%	903	3%	1330	4%
225	856	2%	1573	5%	1317	4%	1395	4%	1276	4%
240	1661	5%	1393	4%	1520	5%	1329	4%	1900	6%
255	1400	4%	1015	3%	1531	5%	967	3%	1941	6%
270	818	2%	1081	3%	1409	4%	896	3%	1918	6%
285	1271	4%	1296	4%	962	3%	1421	4%	1758	5%
300	1363	4%	1317	4%	455	1%	1324	4%	751	2%
315	862	2%	996	3%	372	1%	841	2%	379	1%
330	750	2%	613	2%	482	1%	409	1%	315	1%
345	766	2%	415	1%	520	1%	342	1%	384	1%
360	258	0%	237	0%	325	1%	226	0%	302	1%

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - OCTOBER - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	219	1%	43	0%	152	1%	54	0%	2	0%
2	1020	7%	1181	8%	1122	8%	1282	9%	1361	11%
4	2347	17%	2404	18%	2101	15%	2169	16%	2703	22%
6	2577	19%	2658	19%	2497	18%	2942	22%	1847	15%
8	2328	17%	2391	17%	2488	18%	2711	20%	1517	12%
10	1898	14%	1896	14%	1978	14%	1910	14%	1941	16%
12	1502	11%	1187	8%	1213	9%	1062	7%	748	6%
14	407	3%	482	3%	602	4%	542	4%	550	4%
16	231	1%	241	1%	269	2%	287	2%	279	2%
18	143	1%	165	1%	196	1%	176	1%	165	1%
20	140	1%	163	1%	167	1%	94	0%	137	1%
22	123	0%	127	0%	120	0%	59	0%	116	0%
24	96	0%	114	0%	107	0%	22	0%	98	0%
26	75	0%	102	0%	86	0%	13	0%	111	0%
28	87	0%	84	0%	73	0%	10	0%	52	0%
30	63	0%	56	0%	59	0%	2	0%	62	0%
32	46	0%	23	0%	50	0%	1	0%	33	0%
34	20	0%	14	0%	29	0%	1	0%	24	0%
36	11	0%	6	0%	16	0%	0	0%	12	0%
38	3	0%	0	0%	6	0%	0	0%	4	0%
40	1	0%	0	0%	6	0%	0	0%	3	0%
42	0	0%	0	0%	0	0%	0	0%	2	0%
44	0	0%	0	0%	0	0%	0	0%	0	0%
46	0	0%	0	0%	0	0%	0	0%	0	0%
48	0	0%	0	0%	0	0%	0	0%	0	0%
50	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - OCTOBER - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	147	1%	123	0%	288	2%	237	1%	128	1%
15	203	1%	179	1%	312	2%	222	1%	308	2%
30	229	1%	189	1%	405	3%	244	1%	281	2%
45	297	2%	336	2%	725	5%	377	2%	413	3%
60	440	3%	610	4%	918	6%	545	4%	514	4%
75	977	7%	1044	7%	901	6%	758	5%	352	2%
90	1080	8%	912	6%	676	5%	920	6%	260	2%
105	899	6%	734	5%	493	3%	867	6%	206	1%
120	414	3%	525	3%	252	1%	651	4%	408	3%
135	228	1%	303	2%	172	1%	353	2%	403	3%
150	212	1%	214	1%	119	0%	217	1%	253	2%
165	136	1%	151	1%	106	0%	147	1%	152	1%
180	124	0%	90	0%	124	0%	102	0%	118	1%
195	117	0%	118	0%	169	1%	123	0%	148	1%
210	155	1%	172	1%	544	4%	156	1%	556	4%
225	160	1%	248	1%	1131	8%	260	1%	398	3%
240	316	2%	367	2%	1636	12%	446	3%	721	6%
255	1039	7%	1271	9%	1351	10%	770	5%	1315	11%
270	1278	9%	1632	12%	1342	10%	1107	8%	2460	20%
285	1684	12%	1291	9%	815	6%	1575	11%	1413	12%
300	1365	10%	1083	8%	313	2%	1566	11%	498	4%
315	724	5%	935	7%	148	1%	1004	7%	172	1%
330	493	3%	487	3%	135	1%	351	2%	94	0%
345	502	3%	198	1%	168	1%	176	1%	110	0%
360	113	0%	82	0%	94	0%	90	0%	77	0%

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - NOVEMBER - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	372	1%	57	0%	532	1%	104	0%	5	0%
2	1027	3%	661	7%	1028	3%	1461	5%	2351	9%
4	2122	7%	1020	11%	2073	7%	2202	8%	3121	12%
6	2278	8%	958	11%	2043	7%	2503	9%	1734	6%
8	1807	6%	1102	12%	1795	6%	2257	8%	1370	5%
10	1205	4%	906	10%	1211	4%	2176	7%	1084	4%
12	907	3%	489	5%	777	2%	2491	9%	853	3%
14	511	1%	287	3%	630	2%	2851	10%	799	3%
16	650	2%	197	2%	774	2%	2866	10%	794	3%
18	965	3%	189	2%	1181	4%	2496	9%	943	3%
20	1576	5%	257	3%	1669	6%	1862	6%	1184	4%
22	2211	8%	347	4%	2040	7%	1340	4%	1328	5%
24	2046	7%	378	4%	2261	8%	833	3%	1454	5%
26	1973	7%	440	5%	2363	8%	619	2%	1494	5%
28	2624	9%	425	4%	2183	7%	445	1%	1525	6%
30	2242	8%	322	3%	1846	6%	360	1%	1352	5%
32	1562	5%	216	2%	1355	4%	219	0%	1281	5%
34	833	3%	156	1%	801	2%	124	0%	806	3%
36	326	1%	71	0%	421	1%	72	0%	589	2%
38	110	0%	37	0%	166	0%	33	0%	370	1%
40	14	0%	23	0%	57	0%	12	0%	192	0%
42	8	0%	7	0%	23	0%	8	0%	182	0%
44	2	0%	7	0%	8	0%	2	0%	83	0%
46	3	0%	9	0%	49	0%	4	0%	56	0%
48	0	0%	0	0%	19	0%	0	0%	18	0%
50	0	0%	0	0%	4	0%	0	0%	3	0%

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - NOVEMBER - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*	STX1810*	STX1815*	STX1822*	STX1835*
52	0 0%	0 0%	5 0%	0 0%	4 0%
54	0 0%	0 0%	1 0%	0 0%	3 0%
56	0 0%	0 0%	0 0%	0 0%	2 0%
58	0 0%	0 0%	0 0%	0 0%	0 0%
60	0 0%	0 0%	0 0%	0 0%	1 0%
62	0 0%	0 0%	0 0%	0 0%	0 0%
64	0 0%	0 0%	0 0%	0 0%	0 0%
66	0 0%	0 0%	0 0%	0 0%	0 0%
68	0 0%	0 0%	0 0%	0 0%	0 0%
70	0 0%	0 0%	0 0%	0 0%	0 0%
72	0 0%	0 0%	0 0%	0 0%	0 0%
74	0 0%	0 0%	0 0%	0 0%	0 0%
76	0 0%	0 0%	0 0%	0 0%	0 0%
78	0 0%	0 0%	0 0%	0 0%	0 0%
80	0 0%	0 0%	0 0%	0 0%	0 0%
82	0 0%	0 0%	0 0%	0 0%	0 0%
84	0 0%	0 0%	0 0%	0 0%	0 0%
86	0 0%	0 0%	0 0%	0 0%	0 0%
88	0 0%	0 0%	0 0%	0 0%	0 0%
90	0 0%	0 0%	0 0%	0 0%	0 0%
92	0 0%	0 0%	0 0%	0 0%	0 0%
94	0 0%	0 0%	0 0%	0 0%	0 0%
96	0 0%	0 0%	0 0%	0 0%	0 0%
98	0 0%	0 0%	0 0%	0 0%	0 0%
100	0 0%	0 0%	0 0%	0 0%	0 0%

SOLAR ONE WIND DIRECTION DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - NOVEMBER - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	118	0%	79	0%	1460	5%	4332	17%	123	0%
15	164	0%	126	0%	344	1%	683	2%	319	1%
30	226	0%	162	0%	440	1%	482	1%	840	3%
45	311	1%	331	1%	670	2%	528	2%	403	1%
60	518	1%	628	2%	731	2%	670	2%	386	1%
75	876	3%	836	3%	609	2%	709	2%	268	1%
90	728	2%	659	2%	732	2%	642	2%	181	0%
105	610	2%	744	2%	705	2%	559	2%	189	0%
120	361	1%	613	2%	550	2%	596	2%	398	1%
135	255	0%	333	1%	426	1%	542	2%	569	2%
150	345	1%	244	0%	256	0%	456	1%	493	1%
165	148	0%	140	0%	198	0%	372	1%	730	2%
180	164	0%	142	0%	229	0%	312	1%	187	0%
195	117	0%	120	0%	353	1%	231	0%	195	0%
210	169	0%	157	0%	1337	4%	269	1%	314	1%
225	262	0%	348	1%	1865	6%	585	2%	955	3%
240	1117	4%	1304	4%	6910	25%	1651	6%	2246	8%
255	2764	10%	3356	12%	5430	19%	2332	9%	4507	18%
270	4766	17%	8077	29%	2079	7%	2052	8%	6054	24%
285	8185	29%	5988	21%	984	3%	1934	7%	3775	15%
300	3677	13%	1843	6%	443	1%	1807	7%	1138	4%
315	614	2%	591	2%	281	1%	1832	7%	292	1%
330	353	1%	351	1%	193	0%	824	3%	188	0%
345	457	1%	158	0%	95	0%	232	0%	161	0%
360	106	0%	55	0%	41	0%	71	0%	64	0%

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - DECEMBER - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
0	898	4%	302	1%	1537	7%	119	0%	2	0%
2	1723	9%	1337	7%	1185	5%	2497	12%	626	13%
4	3161	17%	3328	17%	3029	15%	3281	16%	805	17%
6	3331	18%	4029	21%	4123	20%	4527	22%	589	12%
8	2570	14%	3320	17%	3063	15%	3587	17%	311	6%
10	1461	8%	1595	8%	1764	8%	1747	8%	199	4%
12	1087	5%	820	4%	901	4%	970	4%	189	4%
14	520	2%	567	3%	540	2%	641	3%	224	4%
16	396	2%	454	2%	533	2%	500	2%	157	3%
18	391	2%	404	2%	377	1%	394	1%	174	3%
20	457	2%	426	2%	378	1%	293	1%	175	3%
22	418	2%	398	2%	414	2%	236	1%	175	3%
24	314	1%	345	1%	359	1%	181	0%	158	3%
26	209	1%	293	1%	335	1%	179	0%	190	4%
28	240	1%	253	1%	272	1%	167	0%	95	2%
30	225	1%	222	1%	270	1%	139	0%	308	6%
32	179	0%	154	0%	176	0%	102	0%	61	1%
34	157	0%	134	0%	162	0%	82	0%	28	0%
36	119	0%	113	0%	99	0%	103	0%	38	0%
38	138	0%	112	0%	84	0%	86	0%	34	0%
40	75	0%	93	0%	67	0%	65	0%	13	0%
42	47	0%	71	0%	37	0%	36	0%	3	0%
44	32	0%	51	0%	26	0%	24	0%	5	0%
46	33	0%	36	0%	42	0%	62	0%	7	0%
48	5	0%	9	0%	15	0%	21	0%	1	0%
50	0	0%	5	0%	1	0%	8	0%	4	0%

SOLAR WIND (SPEED) DISTRIBUTION FOR PLOT MS01
 TEST DATA FOR MONTH OF - DECEMBER - WITH NIPS IN EXCESS OF 450 W/M2

MPH	STX1801*		STX1810*		STX1815*		STX1822*		STX1835*	
52	0	0%	2	0%	0	0%	2	0%	0	0%
54	0	0%	0	0%	0	0%	0	0%	0	0%
56	0	0%	0	0%	0	0%	0	0%	0	0%
58	0	0%	0	0%	0	0%	0	0%	0	0%
60	0	0%	0	0%	0	0%	0	0%	0	0%
62	0	0%	0	0%	0	0%	0	0%	0	0%
64	0	0%	0	0%	0	0%	0	0%	0	0%
66	0	0%	0	0%	0	0%	0	0%	0	0%
68	0	0%	0	0%	0	0%	0	0%	0	0%
70	0	0%	0	0%	0	0%	0	0%	0	0%
72	0	0%	0	0%	0	0%	0	0%	0	0%
74	0	0%	0	0%	0	0%	0	0%	0	0%
76	0	0%	0	0%	0	0%	0	0%	0	0%
78	0	0%	0	0%	0	0%	0	0%	0	0%
80	0	0%	0	0%	0	0%	0	0%	0	0%
82	0	0%	0	0%	0	0%	0	0%	0	0%
84	0	0%	0	0%	0	0%	0	0%	0	0%
86	0	0%	0	0%	0	0%	0	0%	0	0%
88	0	0%	0	0%	0	0%	0	0%	0	0%
90	0	0%	0	0%	0	0%	0	0%	0	0%
92	0	0%	0	0%	0	0%	0	0%	0	0%
94	0	0%	0	0%	0	0%	0	0%	0	0%
96	0	0%	0	0%	0	0%	0	0%	0	0%
98	0	0%	0	0%	0	0%	0	0%	0	0%
100	0	0%	0	0%	0	0%	0	0%	0	0%

SOLAR ONE WIND (DEGREE) DISTRIBUTION FOR PLOT MD01
 TEST DATA FOR MONTH OF - DECEMBER - WITH NIPS IN EXCESS OF 450 W/M2

DEG	OTX1802*		OTX1811*		OTX1816*		OTX1823*		OTX1836*	
0	629	3%	121	0%	341	1%	101	0%	19	0%
15	118	0%	78	0%	80	0%	109	0%	43	0%
30	154	0%	192	0%	138	0%	168	0%	79	1%
45	263	1%	341	1%	266	1%	484	2%	92	2%
60	701	3%	814	4%	667	3%	1014	5%	105	2%
75	2407	12%	1778	9%	1249	6%	2134	10%	75	1%
90	2009	10%	2078	10%	2190	10%	2384	11%	64	1%
105	1535	7%	1655	8%	2445	12%	1388	6%	56	1%
120	678	3%	862	4%	1235	6%	676	3%	92	2%
135	232	1%	473	2%	565	2%	345	1%	192	4%
150	248	1%	364	1%	198	0%	211	1%	88	1%
165	184	0%	248	1%	131	0%	123	0%	49	1%
180	97	0%	241	1%	100	0%	135	0%	39	0%
195	145	0%	294	1%	140	0%	295	1%	41	0%
210	506	2%	491	2%	323	1%	552	2%	82	1%
225	560	2%	592	3%	583	2%	553	2%	207	4%
240	661	3%	600	3%	640	3%	717	3%	675	14%
255	1363	7%	1507	7%	978	4%	1705	8%	954	20%
270	1473	7%	2705	13%	2498	12%	2061	10%	800	17%
285	2121	10%	1672	8%	2295	11%	2204	10%	522	11%
300	1605	8%	1275	6%	1612	8%	1546	7%	180	3%
315	931	4%	697	3%	873	4%	655	3%	53	1%
330	386	1%	344	1%	308	1%	252	1%	28	0%
345	338	1%	165	0%	128	0%	164	0%	20	0%
360	102	0%	39	0%	34	0%	69	0%	17	0%

5.7 INSOLATION DATA

Insolation data were recorded at Solar One during 1983 from two normal incidence pyrheliometers (tag ID ATX 1817 at the north station and tag ID ##ATX 1817A on the control room roof) to provide direct normal data, and from twelve pyranometers located at the four meteorological stations, the four spoke roads, and the control room roof to provide global insolation data. There were a total of 289 days during 1983 when the data acquisition system was recording and there was sufficient insolation to have some NIP activity. NIP plots for each of the 289 days are included in this report, with data from one of the instruments selected for each day. There were 104 clear days, 53 days with light cloud activity, and 132 days with heavy cloud activity in the 289 data days. Pyranometer data from 8 of the data days were selected and are also included in this report to represent 1 clear day, 3 days with light cloud activity, and 4 days with heavy cloud activity.

In addition to the 289 data days recorded by the data acquisition system, daily readings of integrated insolation values were taken from the Beckman MV8000 system in the control room, which records and integrates the insolation from the same normal incidence pyrheliometer on the control room roof that feeds tag ID ##ATX1817A; however, the integrated data are recorded on the Beckman system under the tag ID NIP 1000, and serve as the source of the monthly direct normal insolation data presented in tabular form in this report. The daily integrated values of insolation were recorded for a total of 357 data days during 1983.

The Solar One direct normal insolation data recorded at Solar One from the control room roof NIP during 1983 are shown on Table 7. Monthly totals and daily averages are shown for three Solar One parameters, as follows:

NIP 1000 - The total integrated value of direct normal insolation from horizon to horizon, as recorded by a normal incidence pyrheliometer (NIP).

NIP Hours -The useable portion of the total, with cutoffs at 500 W/m^2 on startup and shutdown.

NIP Time - A total value of time, per day, as determined by a counter, when insolation levels were above 450 W/m^2 .

Table 7. Solar One Direct Normal Insolation Data - 1983

MONTH	NIP (TOTAL) kw hr/m ²		NIP 1000 (TOTAL) kw hr/m ²		NIP HRS (≥ 500 WATTS/m ²) kw hr/m ²		NIP TIME (TIME ABOVE 450 WATTS/m ²) hours		NO. OF DATA DAYS
	1976 DAILY AVERAGE*	25-year** DAILY AVERAGE	MONTHLY TOTAL	DAILY AVERAGE	MONTHLY TOTAL	DAILY AVERAGE	MONTHLY TOTAL	DAILY AVERAGE	
JANUARY	7.10	4.87	134.260	4.630	103.820	3.580	164.740	5.681	29
FEBRUARY	6.15	5.51	104.811	4.031	69.823	2.686	127.150	4.890	26
MARCH	7.33	6.60	134.993	4.655	97.312	3.356	160.430	5.532	29
APRIL	8.00	8.01	192.278	6.409	138.043	4.601	229.390	7.646	30
MAY	8.95	8.69	258.922	8.352	212.212	6.846	318.960	10.289	31
JUNE	10.56	9.39	247.117	8.521	204.019	7.035	304.162	10.488	29
JULY	8.23	8.76	289.846	9.350	241.422	7.788	327.729	10.572	31
AUGUST	10.13	8.32	178.513	5.758	134.774	4.348	214.060	6.905	31
SEPTEMBER	5.78	7.59	185.106	6.170	142.689	4.756	230.481	7.683	30
OCTOBER	7.47	6.65	182.346	5.882	145.547	4.695	222.600	7.181	31
NOVEMBER	7.19	5.52	158.823	5.477	120.176	4.144	195.460	6.740	29
DECEMBER	6.40	4.83	154.651	4.989	110.801	3.574	187.400	6.045	31

*C. M. Randall, "Barstow Insolation and Meteorological Data Base," The Aerospace Corporation,

Report ATR-78(7695-05)-2, 3/13/78

**"Direct Normal Solar Radiation Data Manual," Solar Energy Research Institute, SERI/SP-281-1658, 10/82.
(These direct normal insolation values are estimated from total global data.).

Daily averages for observed total direct normal insolation at Barstow during 1976 are also included in Table 7 for comparison, as well as a set of 25 year daily average direct normal values which were estimated from total global data. The number of data days recorded per month and used for calculating the daily averages is also included.

A comparison of the 1976, 25 year average, and the NIP 1000 daily average values indicates that the 1983 insolation was lower than the 1976 and 25 year average values for all months except July, which was a very good insolation month during 1983. The daily average value for September 1983 also exceeded the September 1976 value slightly. A comparison of 1983 with 1976 on an annual basis, using the same number of data days per month to calculate a comparable 1976 total, indicates that the total available direct normal insolation for 1983 was 20 percent less than 1976. In 1982, considering the time period of only April through December where Solar One data were available, and comparing those insolation data to a comparable period in 1976 with the same number of data days per month for 1976 and 1982, the 1982 total available insolation was 16 percent less than 1976.

The direct normal insolation data were examined to identify the days when the plant was operating, or could have operated as far as insolation values and wind speeds were concerned. The number of data days was adjusted to eliminate the low insolation and windy days and provide modified monthly totals and daily averages. These data are shown in Table 8. A comparison between those values and 1976 data cannot be made, since the number of days per month in 1976 when the plant could have been operating is unknown. Table 8 provides monthly and daily average values for the operable days of the total number of days analyzed.

A comparison of maximum and average peak insolation values for 1976 and 1983 is shown in Table 9. The 1983 peak and average peak insolation was lower than in 1976 for each month. Plots of peak insolation values and average peak insolation values for 1976 and 1983 are shown in Figures 43 and 44.

Table 8. Useful Solar One Direct Normal Insolation Data - 1983

MONTH	NIP (TOTAL) kw hr/m ²		NIP 1000 (TOTAL) kw hr/m ²		NIP HRS (>500 WATTS/m ²) kw hr/m ²		NIP TIME (TIME ABOVE 450 WATTS/m ²) hours		NO. OF DATA DAYS
	1976 DAILY AVERAGE*	25-year** DAILY AVERAGE	MONTHLY TOTAL	DAILY AVERAGE	MONTHLY TOTAL	DAILY AVERAGE	MONTHLY TOTAL	DAILY AVERAGE	
JANUARY	7.10	4.87	121.238	5.511	98.415	4.473	150.010	6.819	22
FEBRUARY	6.15	5.51	76.312	6.359	59.672	4.973	96.370	8.031	12
MARCH	7.33	6.60	106.557	6.660	85.560	5.348	129.270	8.079	16
APRIL	8.00	8.01	165.838	7.538	131.500	5.977	201.620	9.165	22
MAY	8.95	8.69	231.887	8.588	191.722	7.101	286.040	10.594	27
JUNE	10.56	9.39	241.235	8.616	202.889	7.246	296.872	10.603	28
JULY	8.23	8.76	287.443	9.581	241.422	8.047	327.729	10.924	30
AUGUST	10.13	8.32	161.206	8.060	129.176	6.459	194.740	9.737	20
SEPTEMBER	5.78	7.59	160.713	7.653	134.598	6.409	201.381	9.590	21
OCTOBER	7.47	6.65	159.920	6.953	136.629	5.940	196.290	8.534	23
NOVEMBER	7.19	5.52	125.625	6.612	106.259	5.593	156.560	8.240	19
DECEMBER	6.40	4.83	111.965	5.893	90.514	4.764	139.460	7.340	19

*C. M. Randall, "Barstow Insolation and Meteorological Data Base," The Aerospace Corporation,

Report ATR-78(7695-05)-2, 3/13/78

**"Direct Normal Solar Radiation Data Manual," Solar Energy Research Institute, SERI/SP-281-1658, 10/82.
(These direct normal insolation values are estimated from total global data.).

Table 9

MAXIMUM AND AVERAGE PEAK INSOLATION VALUES FOR 1976 AND 1983*

MONTH	1976			1983		
	PEAK INSOLATION	AVERAGE PEAK INSOLATION	DATA DAYS	PEAK INSOLATION	AVERAGE PEAK INSOLATION	DATA DAYS
JAN	1003	943	31	910	820	27
FEB	1006	942	27	911	820	18
MAR	1036	949	31	968	824	18
APR	992	918	30	941	880	22
MAY	991	902	30	979	889	30
JUN	992	943	30	951	874	26
JUL	995	878	31	945	876	18
AUG	1000	946	30	935	862	13
SEP	961	879	24	948	855	24
OCT	994	927	28	959	869	25
NOV	987	907	29	950	863	29
DEC	999	920	25	916	829	30

*Insolation values are in watts per square meter, peak values were not used for averaging when the peak for the day did not exceed 450 W/m^2 .

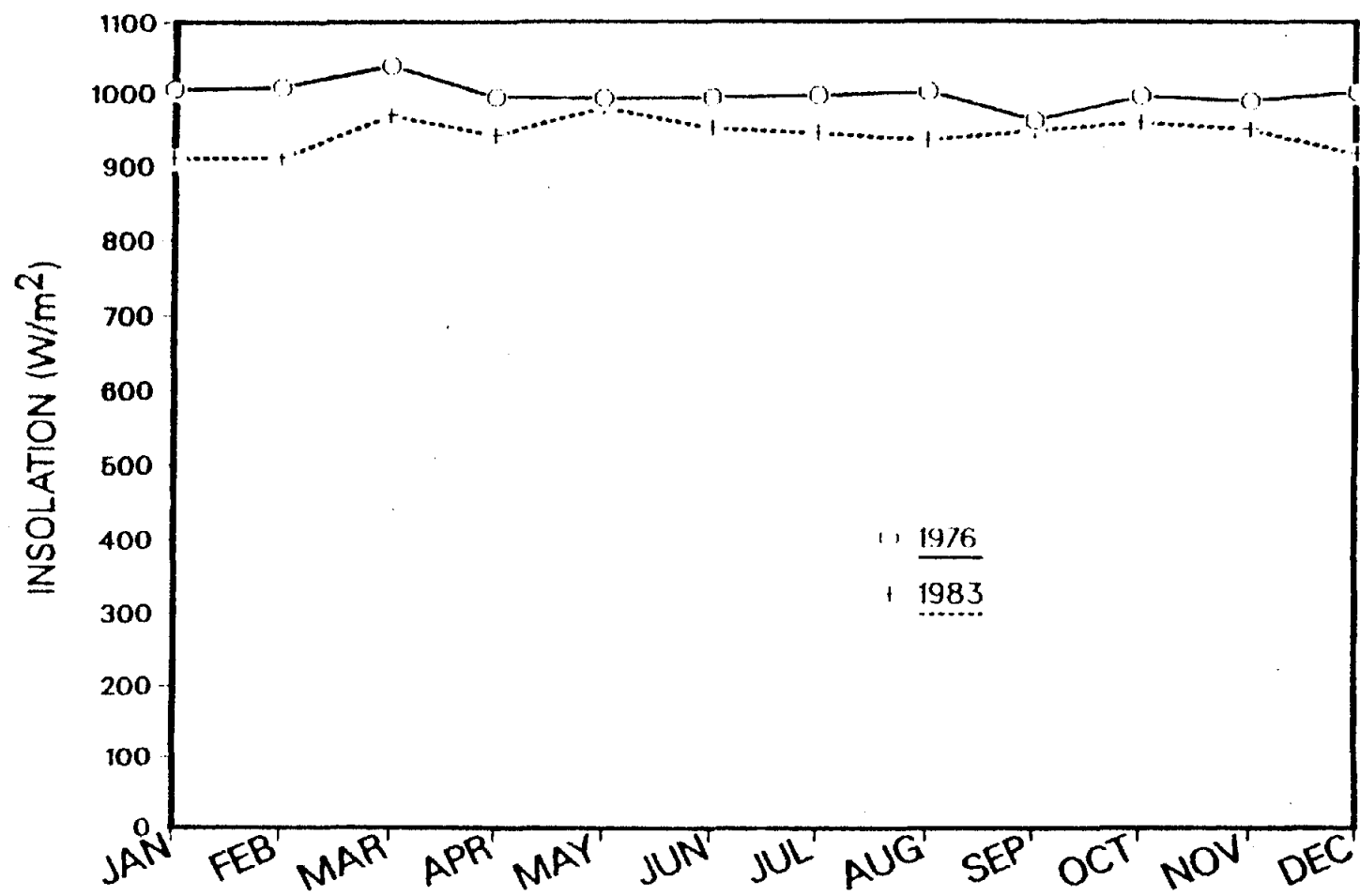


Figure 43. Peak Insolation Values for 1976 and 1983

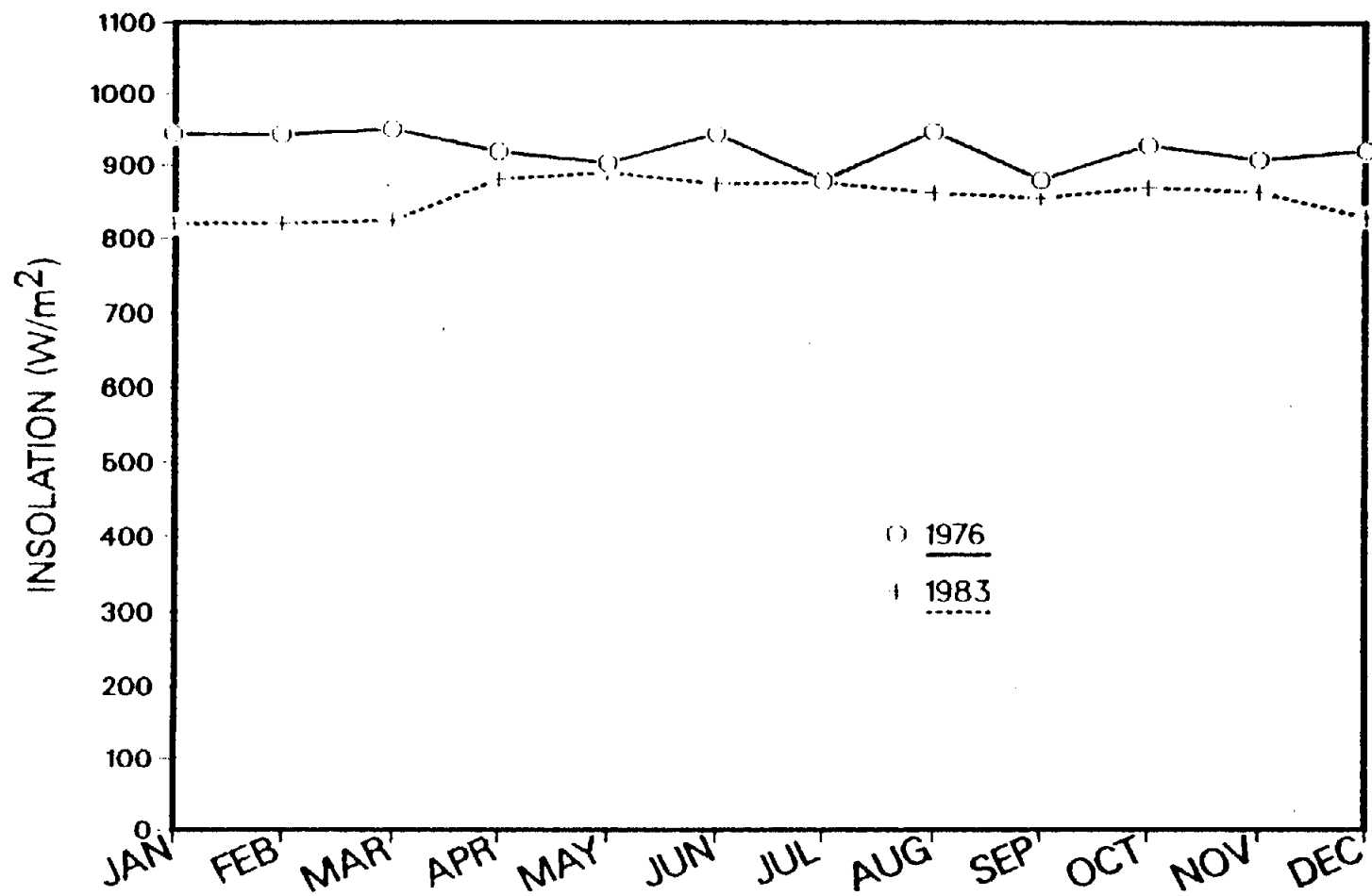


Figure 44. Average Peak Insolation Values for 1976 and 1983

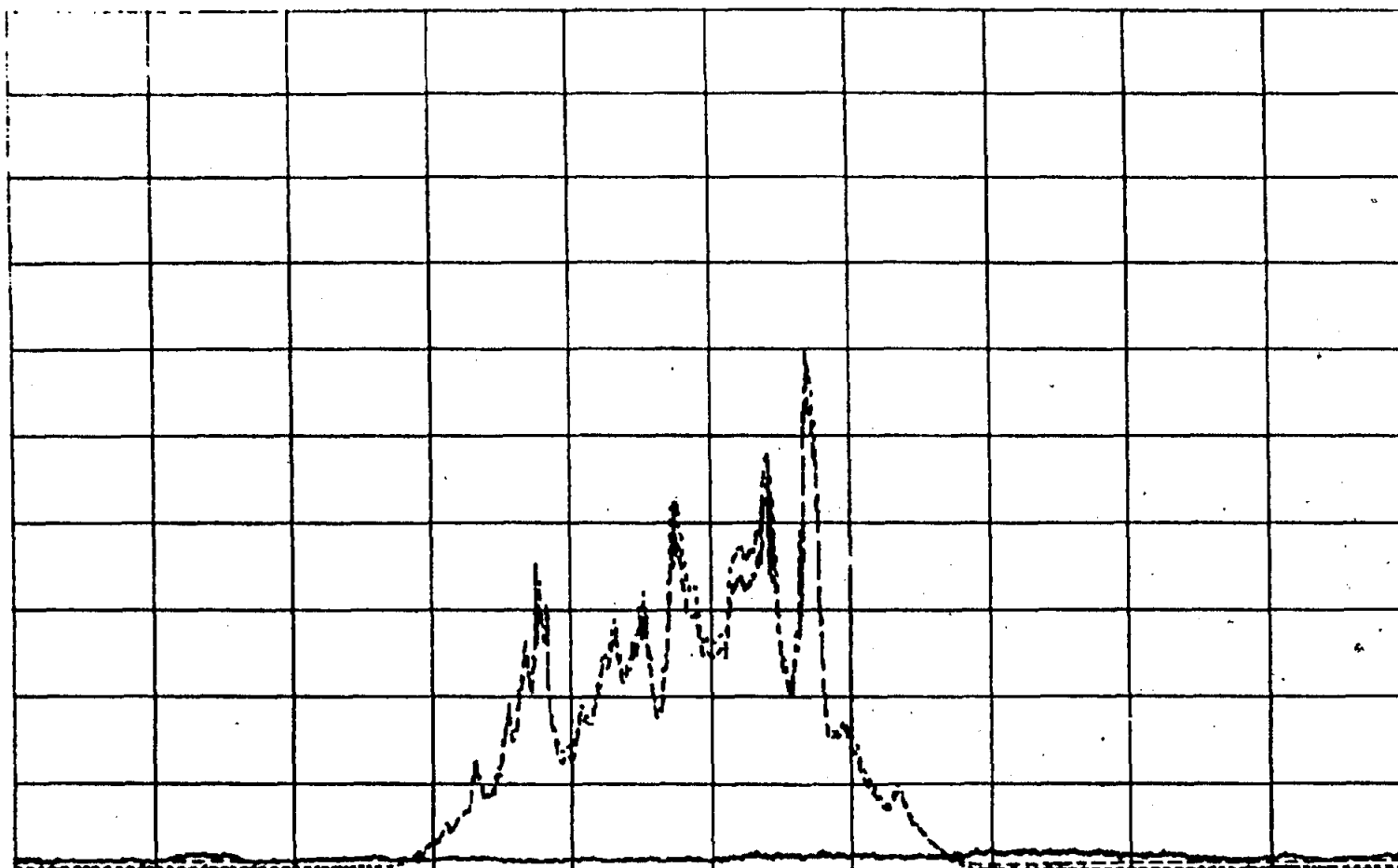
Pyranometer data for 12 instruments are included on the following pages for 6 days which were selected from the total 289 days processed. The specific days selected were 022, 058, 131, 211, 348, 353, 355, and 362. This selection is intended to provide data for a mixture of clear days and days with light and heavy levels of cloud activity. These pyranometers were installed for cloud passage studies and as a potential means of heliostat control during cloudy periods. The purpose of these plots is to show what type of data are available. The start time and date for each plot are noted as "reference time." The day of the year is listed first, followed by the time of day in hours, minutes, seconds, and milliseconds. For example, on the next page, the day is 022 (22 January), and the time is midnight. Table 10 may be used to convert the day of the year to the date. The plot goes for 25 hours. The scale for the ordinate is shown on the bottom of the page, with full scale being 1000 watts/m².

Table 10. DAY OF THE YEAR AND DATE FOR 1983

<u>Day</u>	<u>Date</u>	<u>Day</u>	<u>Date</u>
1	Jan 1	182	Jul 1
32	Feb 1	213	Aug 1
60	Mar 1	244	Sep 1
91	Apr 1	274	Oct 1
121	May 1	305	Nov 1
152	Jun 1	335	Dec 1

SOLAR DATA PLOT PLOT # MINS1
REFERENCE TIME: 022 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

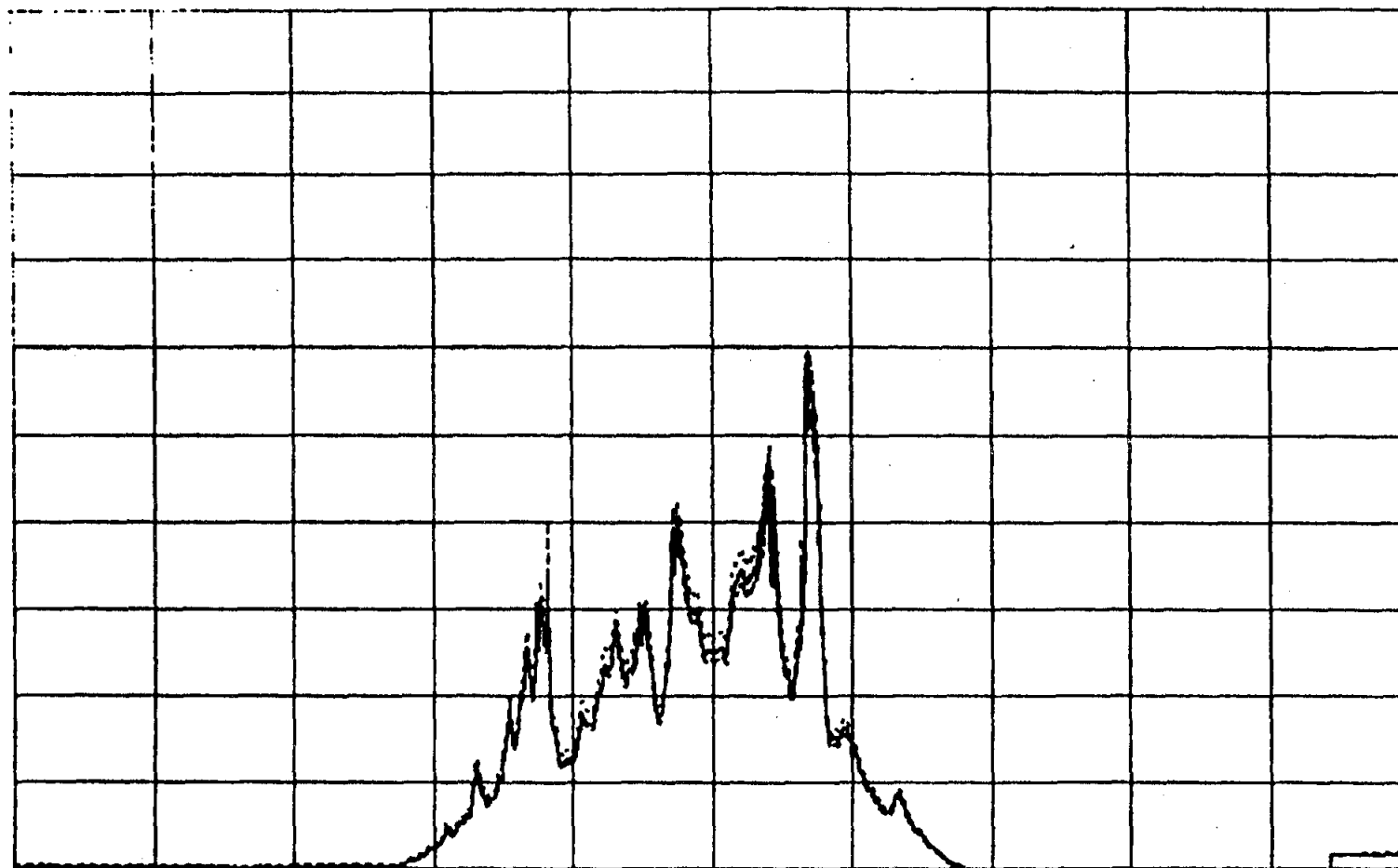
ATX1808 PYRAMTR (SOUTH STATION)
ATX1809 PYRAMTR (SOUTH SPOKE RD)
ATX1834 PYRA (CNTRL RM RF) 13TH LVL

0.00 - 1000.00 W/M2
0.00 - 1000.00 W/M2
0.00 - 1000.00 W/M2

*

SOLAR DATA PLOT PLOT # MINS2
 REFERENCE TIME: 022 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1812
 ATX1813
 ATX1814

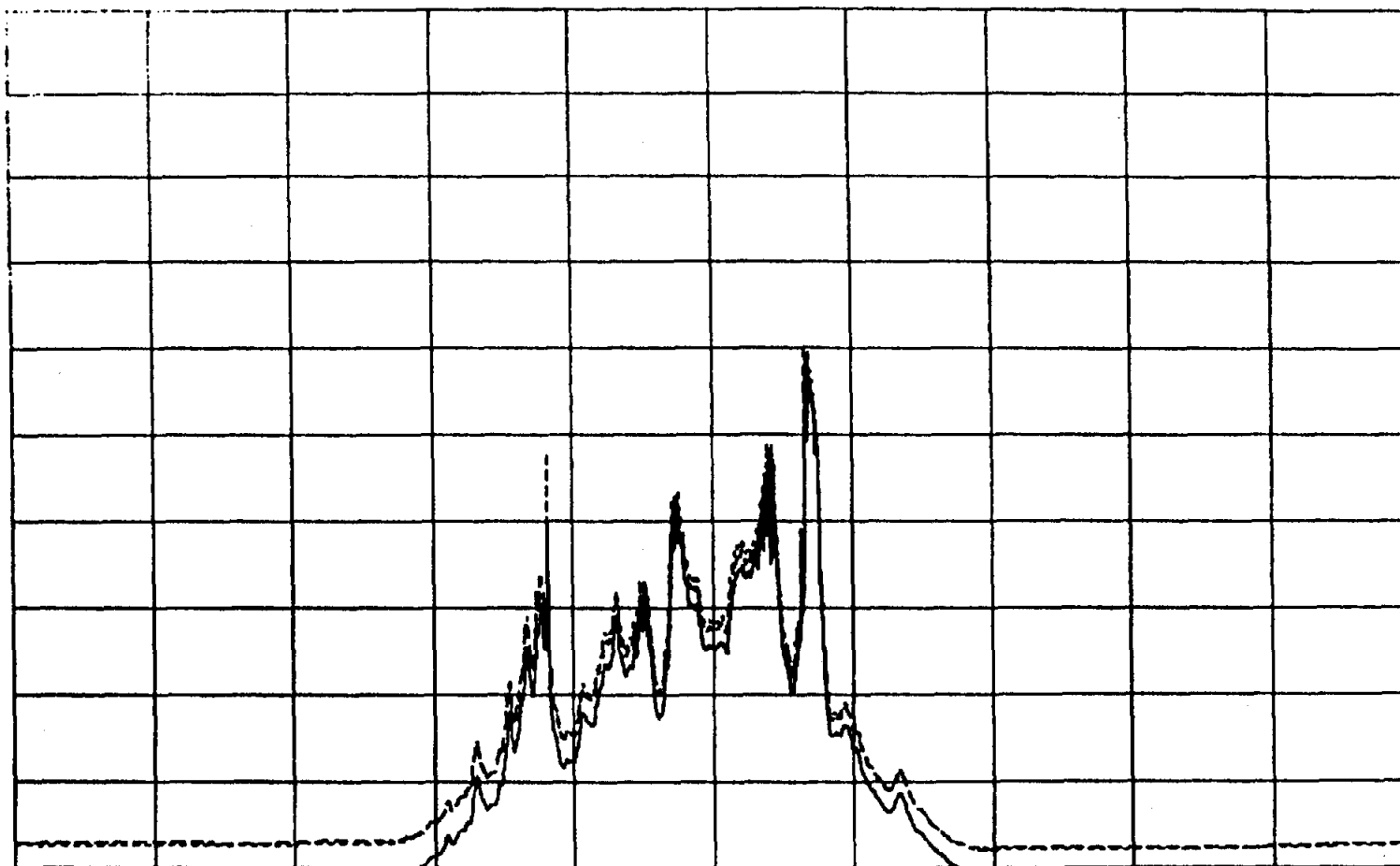
PYRAMTR (WEST STATION)
 PYRAMTR (WST SPOKE RD-OUTR)
 PYRAMTR (WST SPOKE RD INNR)

0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

*

SOLAR DATA PLOT PLOT # MINS3
 REFERENCE TIME: 022 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

ATX1819
 ATX1820
 ATX1821

PYRAMTR (NORTH STATION)
 PYRAMTR (NORTH SPOKE RD-OTR)
 PYRAMTR (NRTH SPOKE RD-INNR)

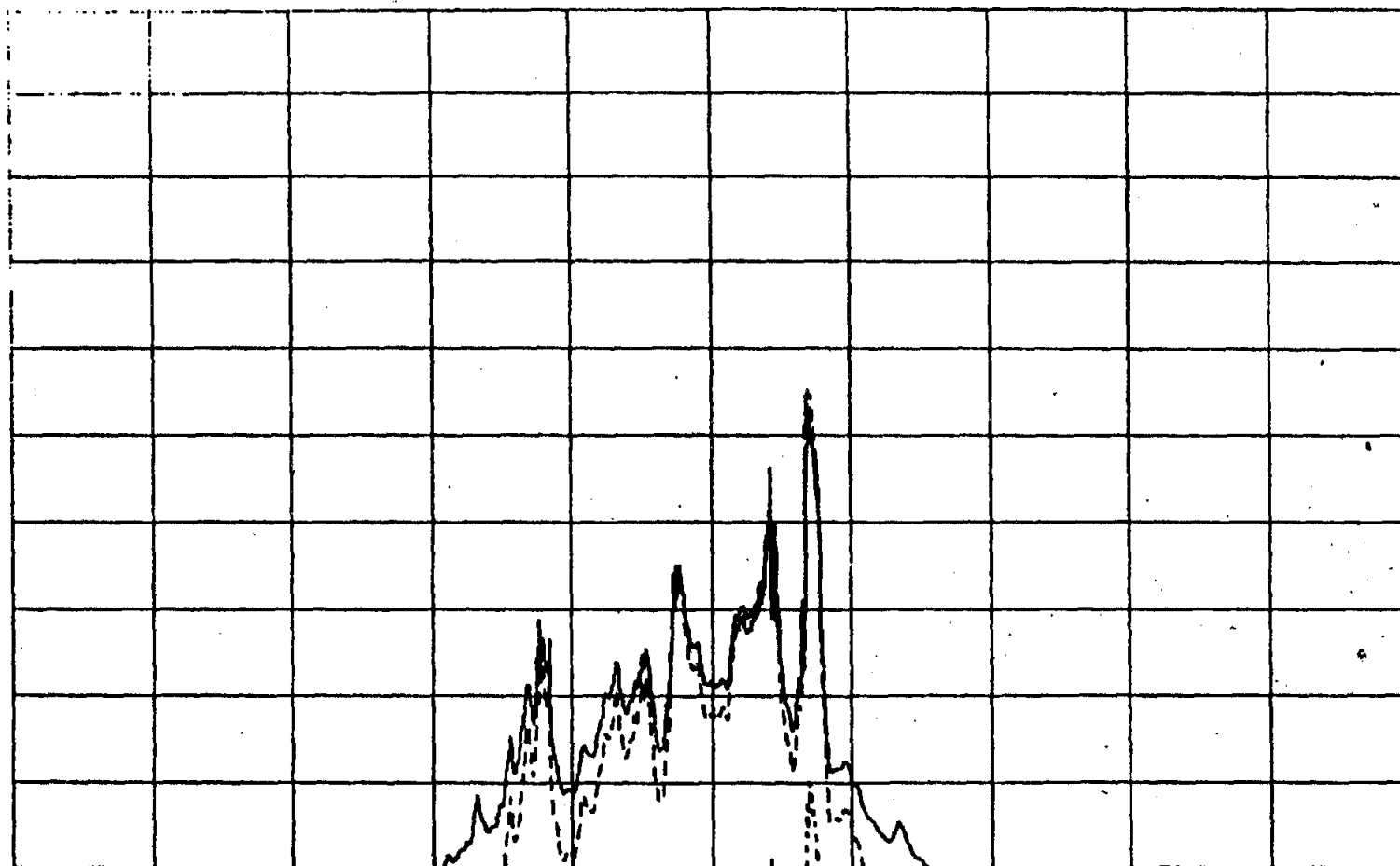
0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

—————
 - - - - -
 - . - . -

*

SOLAR DATA PLOT PLOT # MINS4
 REFERENCE TIME: 022 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

ATX1824

PYRAMTR (EAST STATION)

0.00 - 1000.00 W/M2

———

ATX1825

PYRAMTR (EAST SPOKE RD-OTR)

0.00 - 1000.00 W/M2

ATX1826

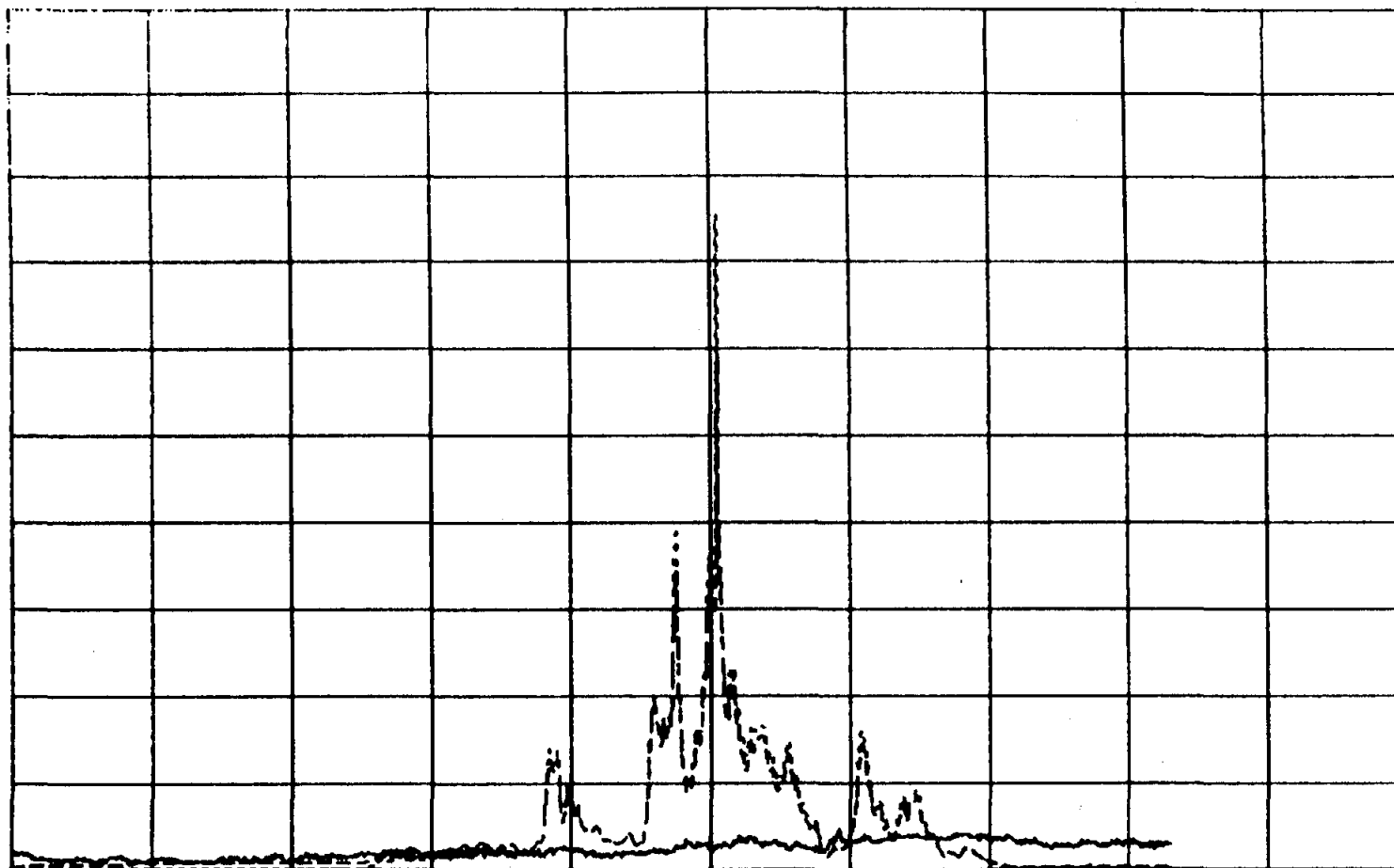
PYRAMTR (EAST SPOKE RD-INNR)

0.00 - 1000.00 W/M2

*

SOLAR DATA PLOT PLOT # MINS1
 REFERENCE TIME: 058 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

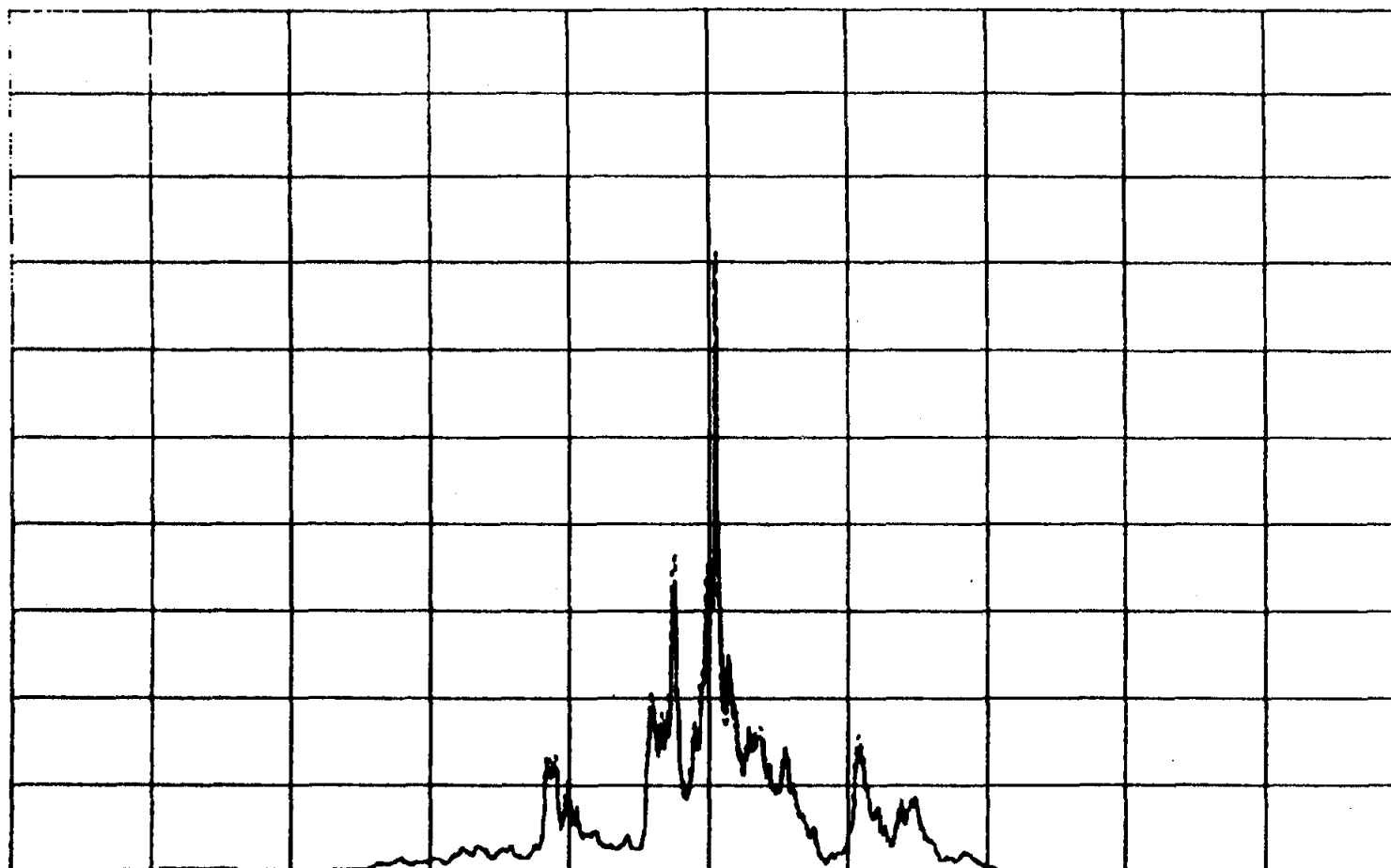
ATX1808
 ATX1809
 ATX1834

PYRAMTR (SOUTH STATION)
 PYRAMTR (SOUTH SPOKE RD)
 PYRA (CNTRL RM RF) 13TH LVL

0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MINS2
 REFERENCE TIME: 058 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

ATX1812
 ATX1813
 ATX1814

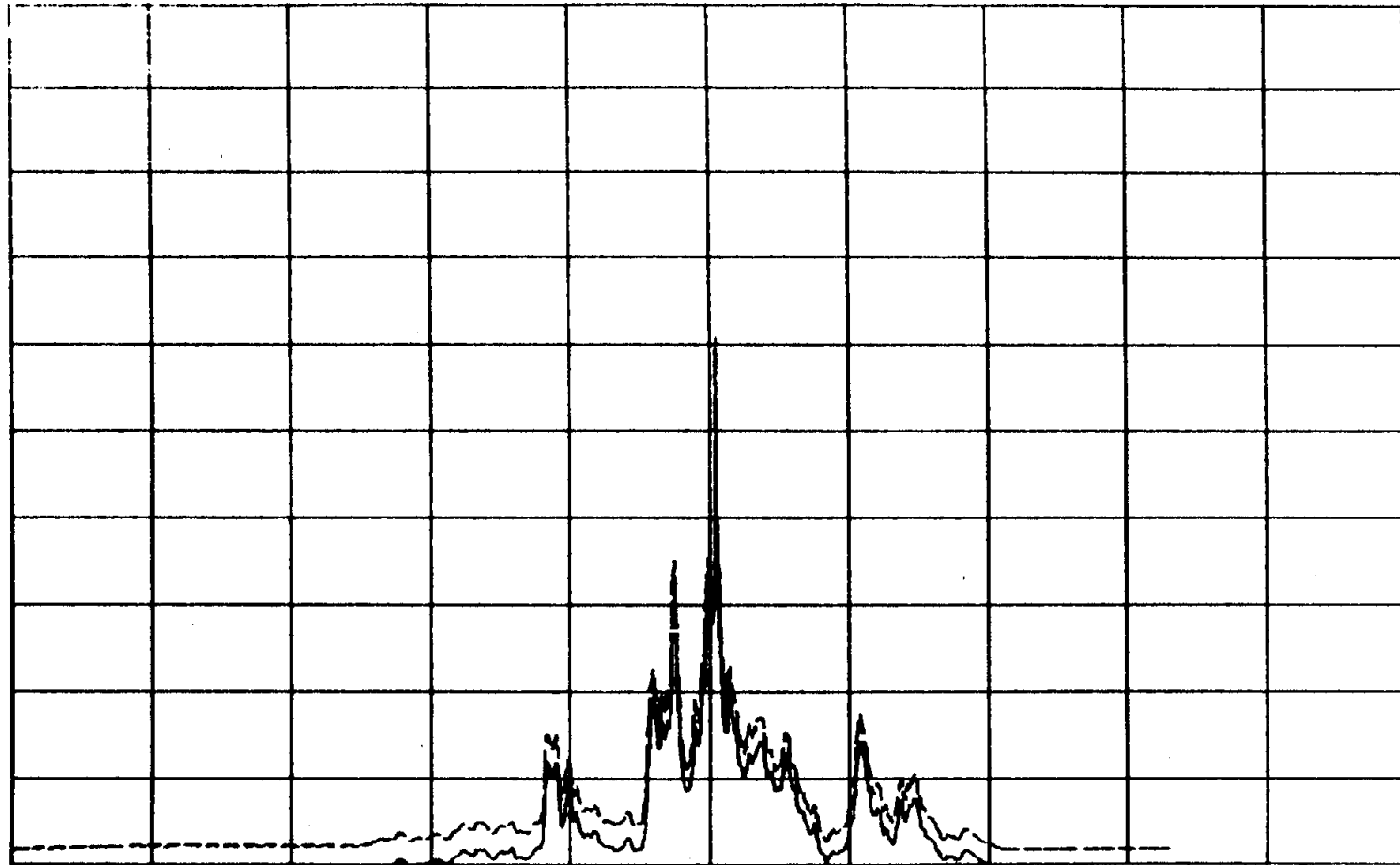
PYRAMTR (WEST STATION)
 PYRAMTR (WST SPOKE RD-OUTR)
 PYRAMTR (WST SPOKE RD INNR)

0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

*

SOLAR DATA PLOT PLOT # MINS3
 REFERENCE TIME: 058 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

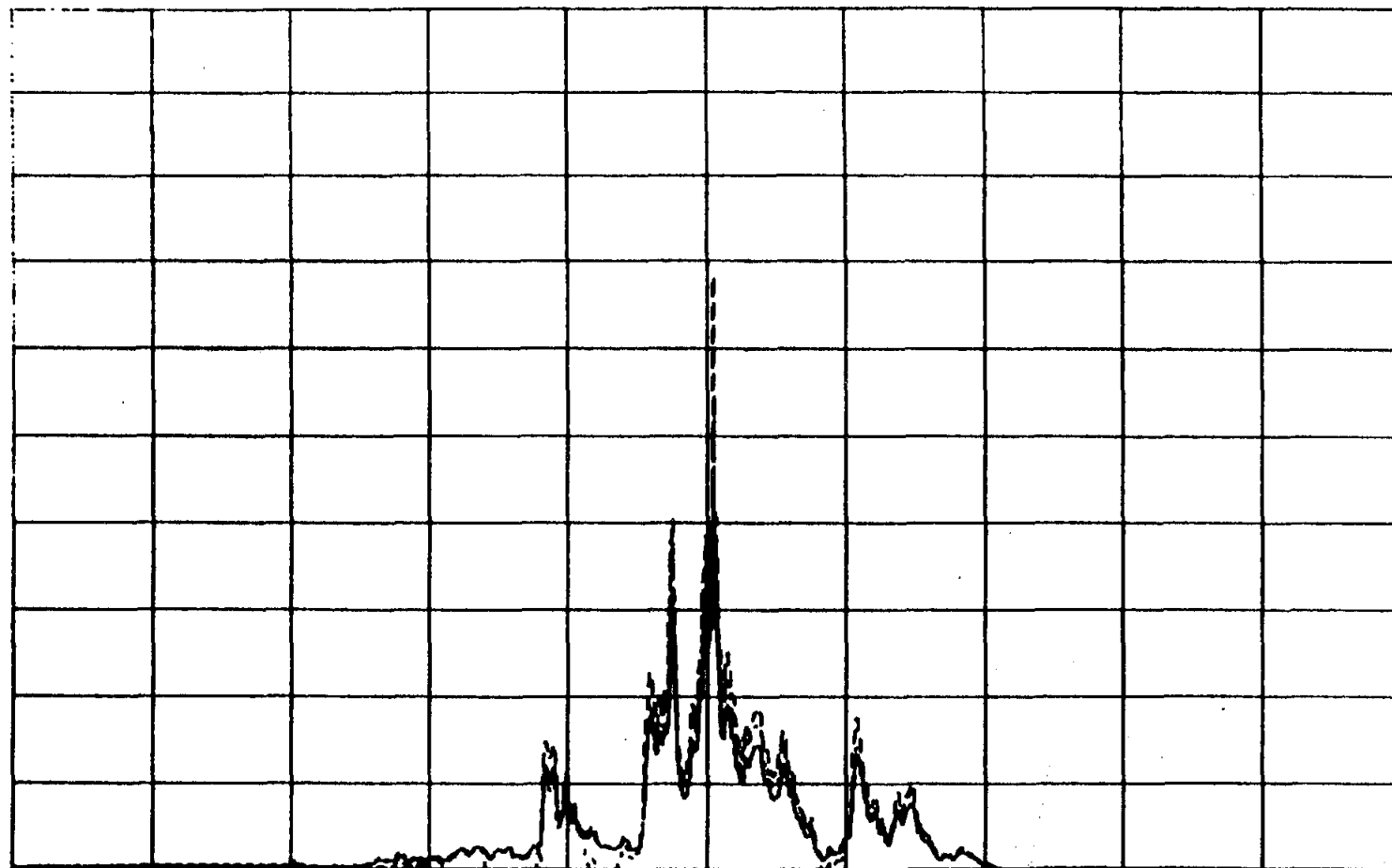
ATX1819
 ATX1820
 ATX1821

PYRAMTR (NORTH STATION)
 PYRAMTR (NORTH SPOKE RD-OTR)
 PYRAMTR (NRTH SPOKE RD-INNR)

0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MINS4
REFERENCE TIME: 058 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1824
ATX1825
ATX1826

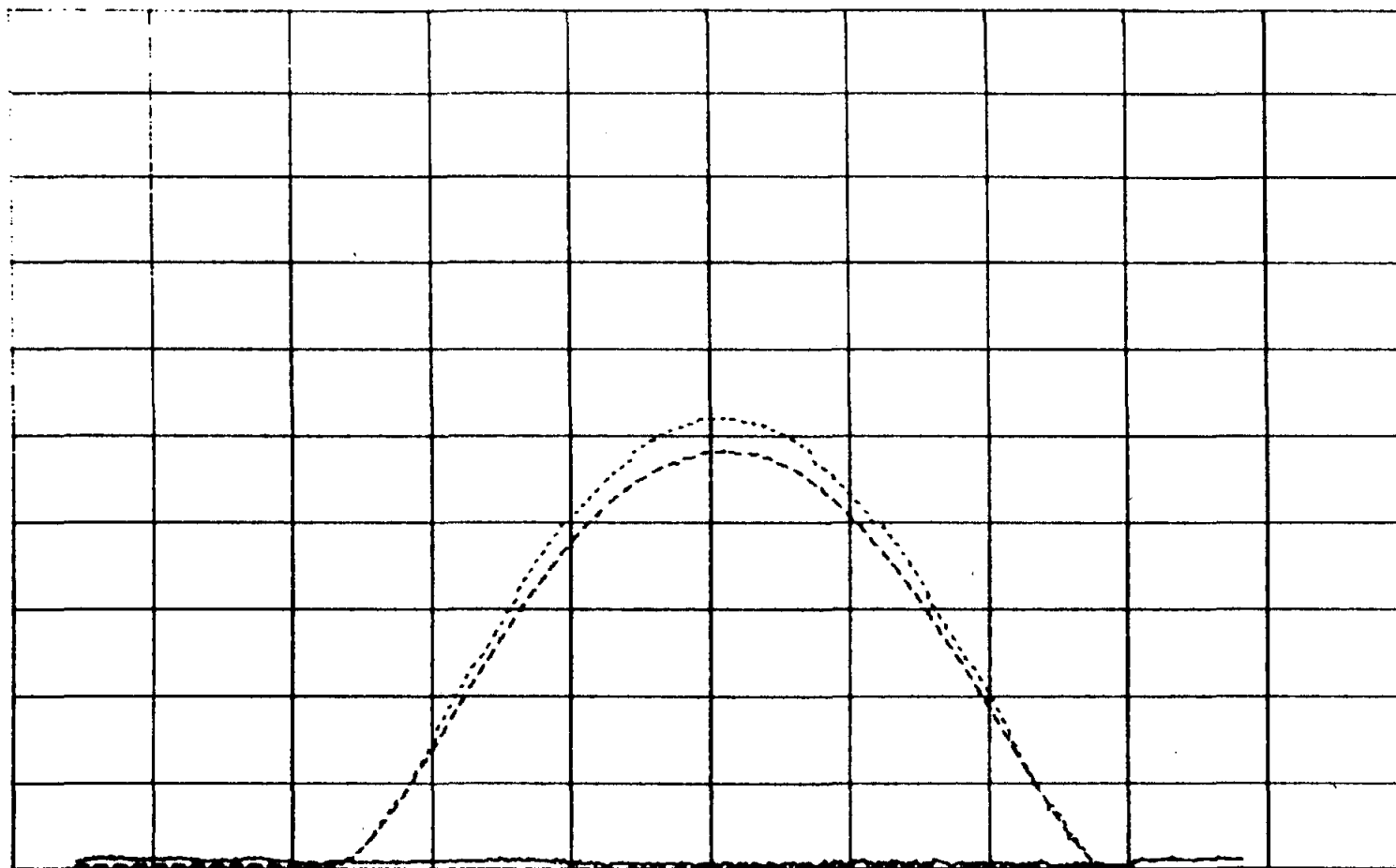
PYRAMTR (EAST STATION)
PYRAMTR (EAST SPOKE RD-OTR)
PYRAMTR (EAST SPOKE RD-INNR)

0.00 - 1000.00 W/M2
0.00 - 1000.00 W/M2
0.00 - 1000.00 W/M2

X

SOLAR DATA PLOT PLOT # MINS1
 REFERENCE TIME: 131 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



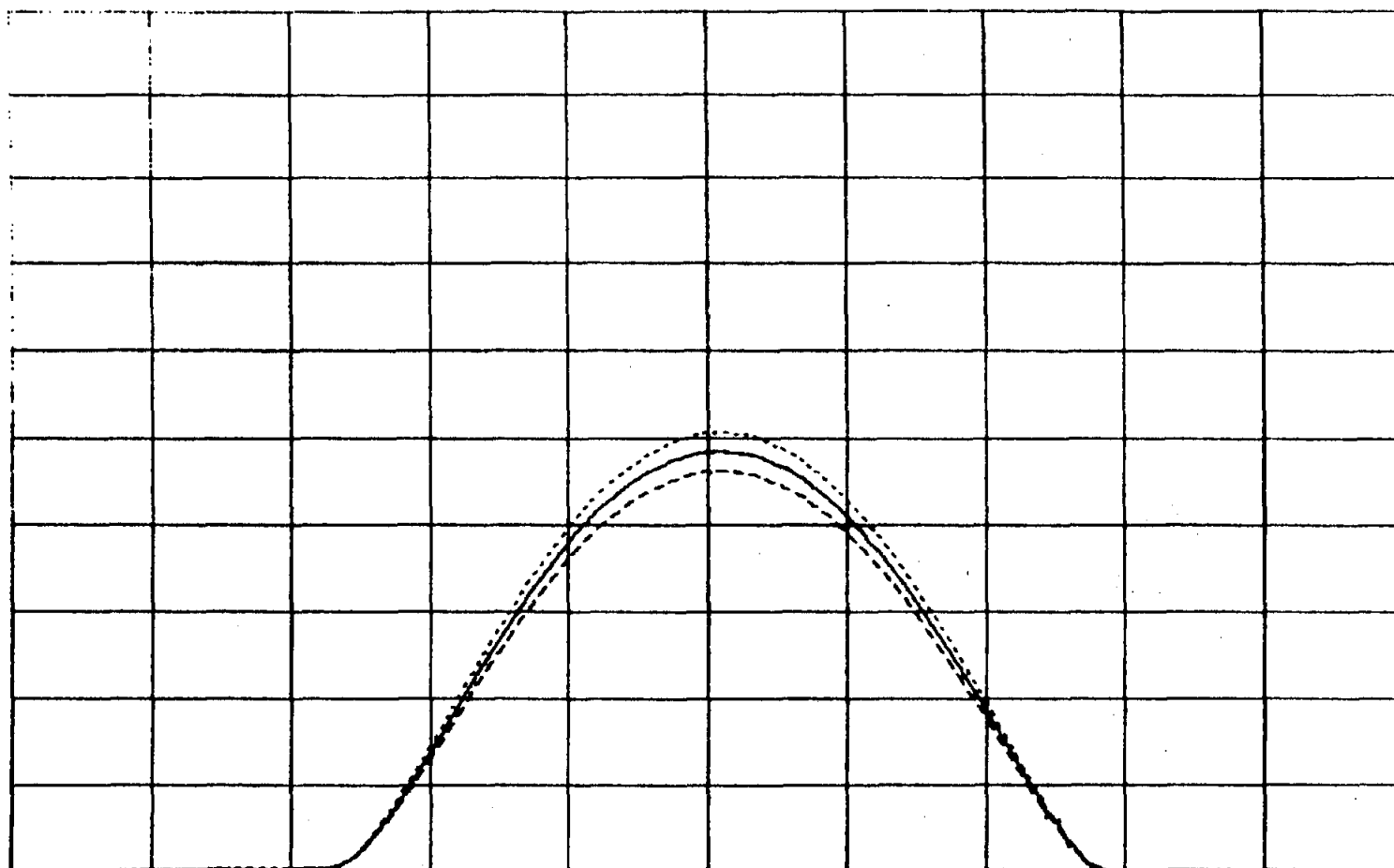
0.00

1500.00

ATX1808	PYRAMTR (SOUTH STATION)	0.00 -	2000.00 W/M2	_____
ATX1809	PYRAMTR (SOUTH SPOKE RD)	0.00 -	2000.00 W/M2	-----
ATX1834	PYRA (CNTRL RM RF) 13TH LVL	0.00 -	2000.00 W/M2	-.-.-.-

SOLAR DATA PLOT PLOT # MINS2
 REFERENCE TIME: 131 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)

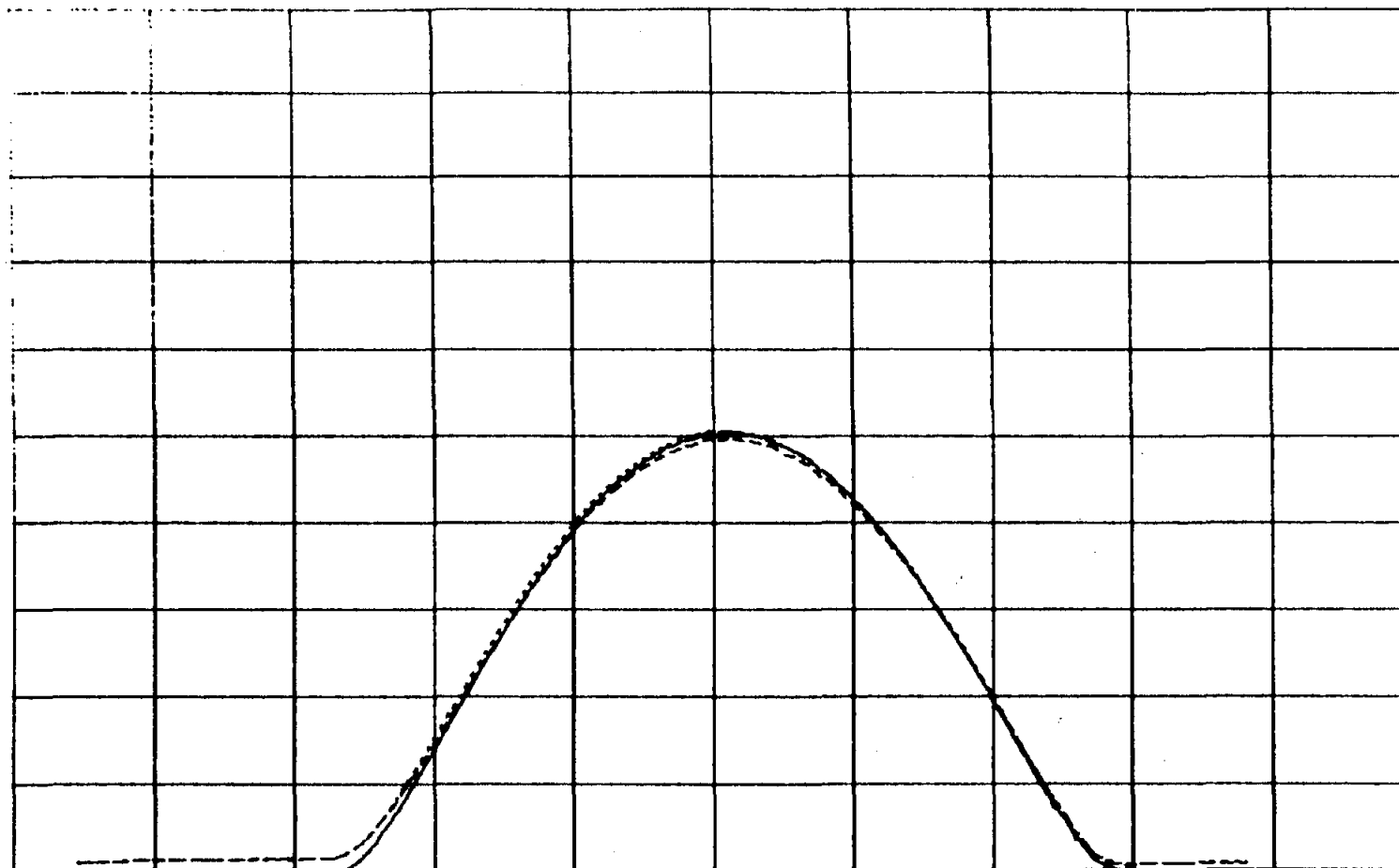


0.00		1500.00
ATX1812	PYRAMTR (WEST STATION)	0.00 - 2000.00 W/M2 _____
ATX1813	PYRAMTR (WEST SPOKE RD-OUTR)	0.00 - 2000.00 W/M2 - - - - -
ATX1814	PYRAMTR (WEST SPOKE RD INNR)	0.00 - 2000.00 W/M2 - . - . -

*

SOLAR DATA PLOT PLOT # MINS3
 REFERENCE TIME: 131 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

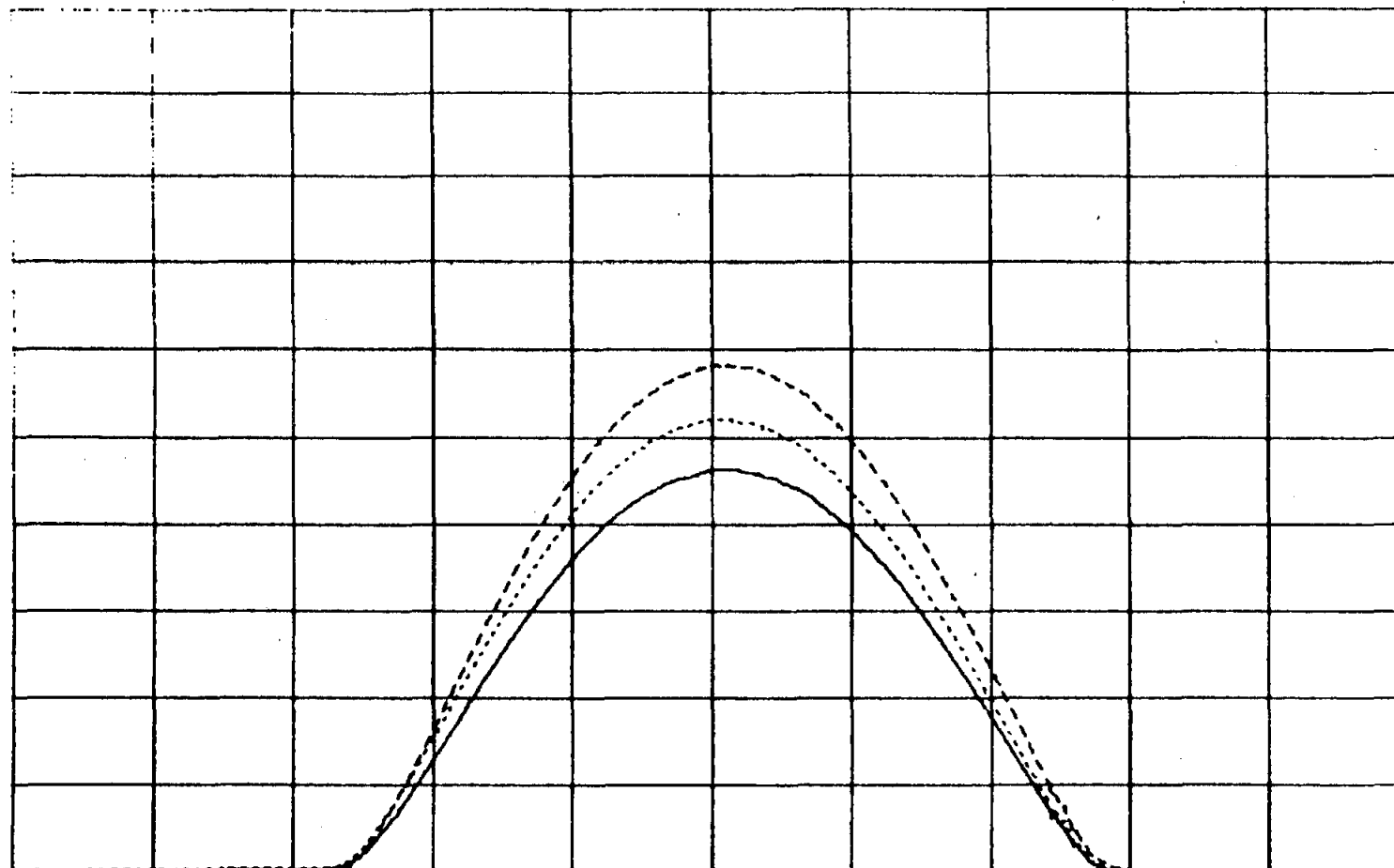
ATX1819
 ATX1820
 ATX1821

PYRAMTR (NORTH STATION)
 PYRAMTR (NORTH SPOKE RD-OTR)
 PYRAMTR (NRTH SPOKE RD-INNR)

0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2

SOLAR DATA PLOT PLOT # MINS4
REFERENCE TIME: 131 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1824
ATX1825
ATX1826

PYRAMTR (EAST STATION)
PYRAMTR (EAST SPOKE RD-OTR)
PYRAMTR (EAST SPOKE RD-INNR)

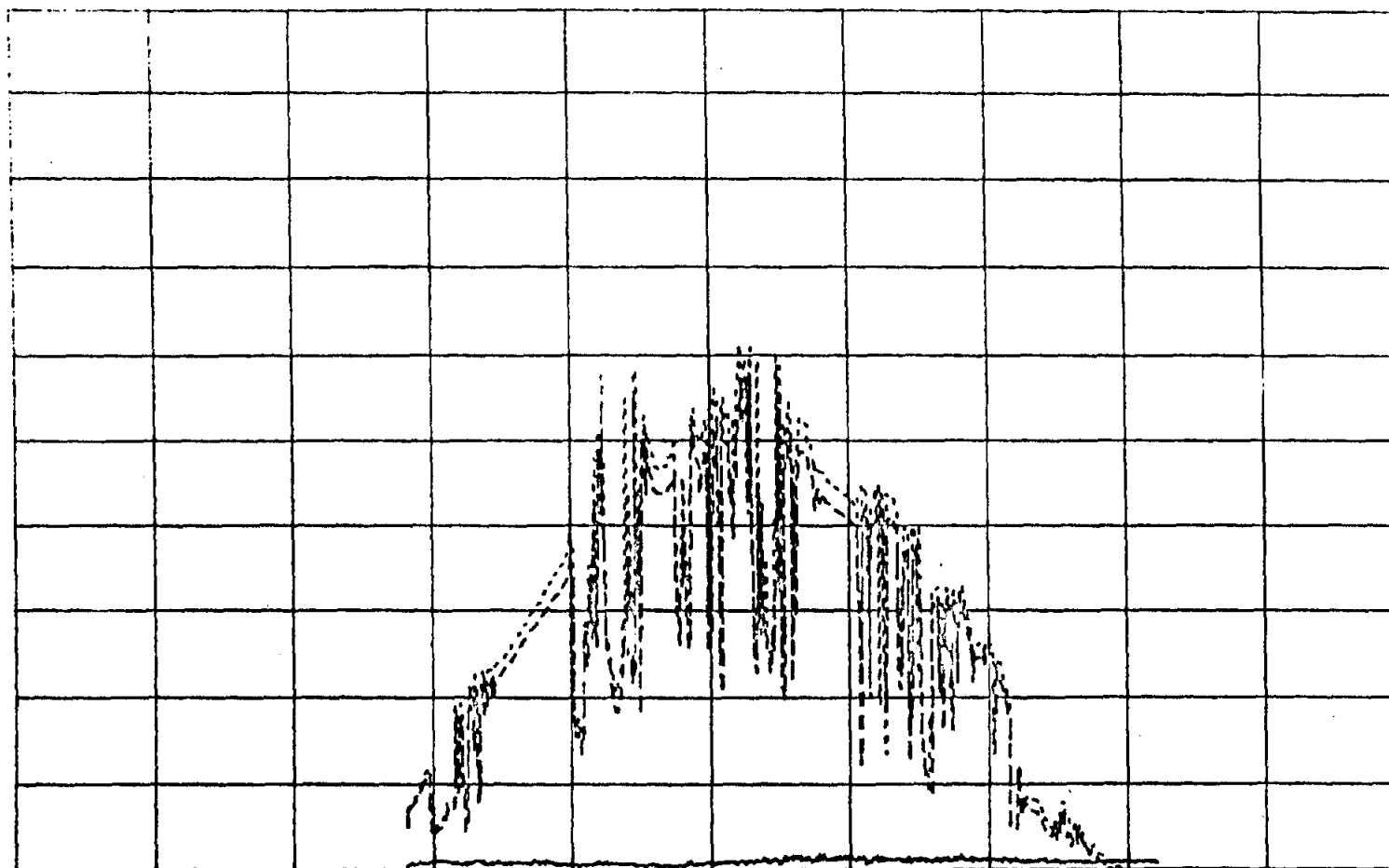
0.00 - 2000.00 W/M2
0.00 - 2000.00 W/M2
0.00 - 2000.00 W/M2

.....

*

SOLAR DATA PLOT PLOT # MINS1
 REFERENCE TIME: 211 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1808
 ATX1809
 ATX1834

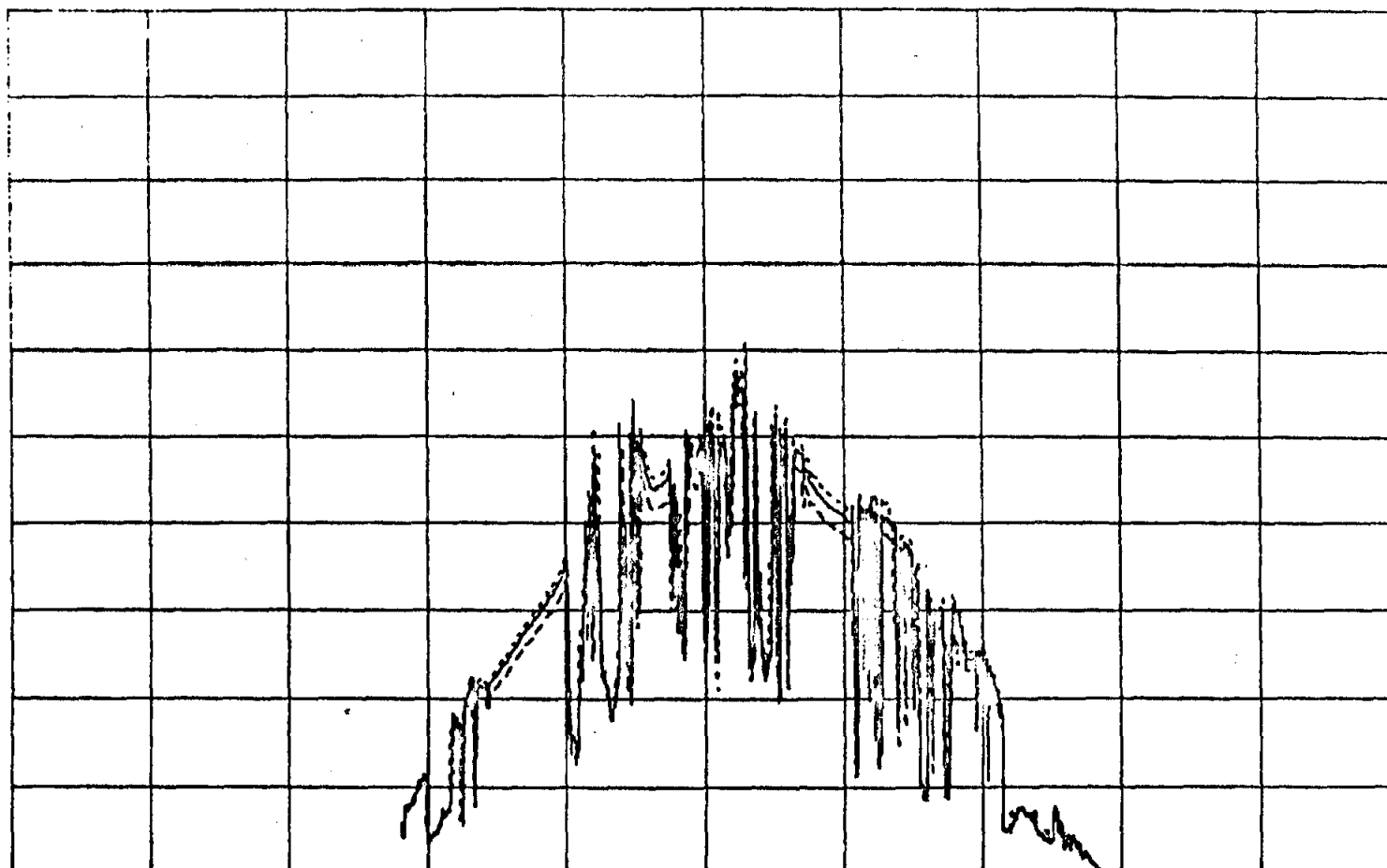
PYRAMTR (SOUTH STATION)
 PYRAMTR (SOUTH SPOKE RD)
 PYRA (CNTRL RM RF) 13TH LVL

0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2

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 - - - - -

SOLAR DATA PLOT PLOT # MINS2
 REFERENCE TIME: 211 00 00 00.000

NTH SAMPLE AVERAGE * 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1812
 ATX1813
 ATX1814

PYRAMTR (WEST STATION)
 PYRAMTR (WST SPOKE RD-OUTR)
 PYRAMTR (WST SPOKE RD INNR)

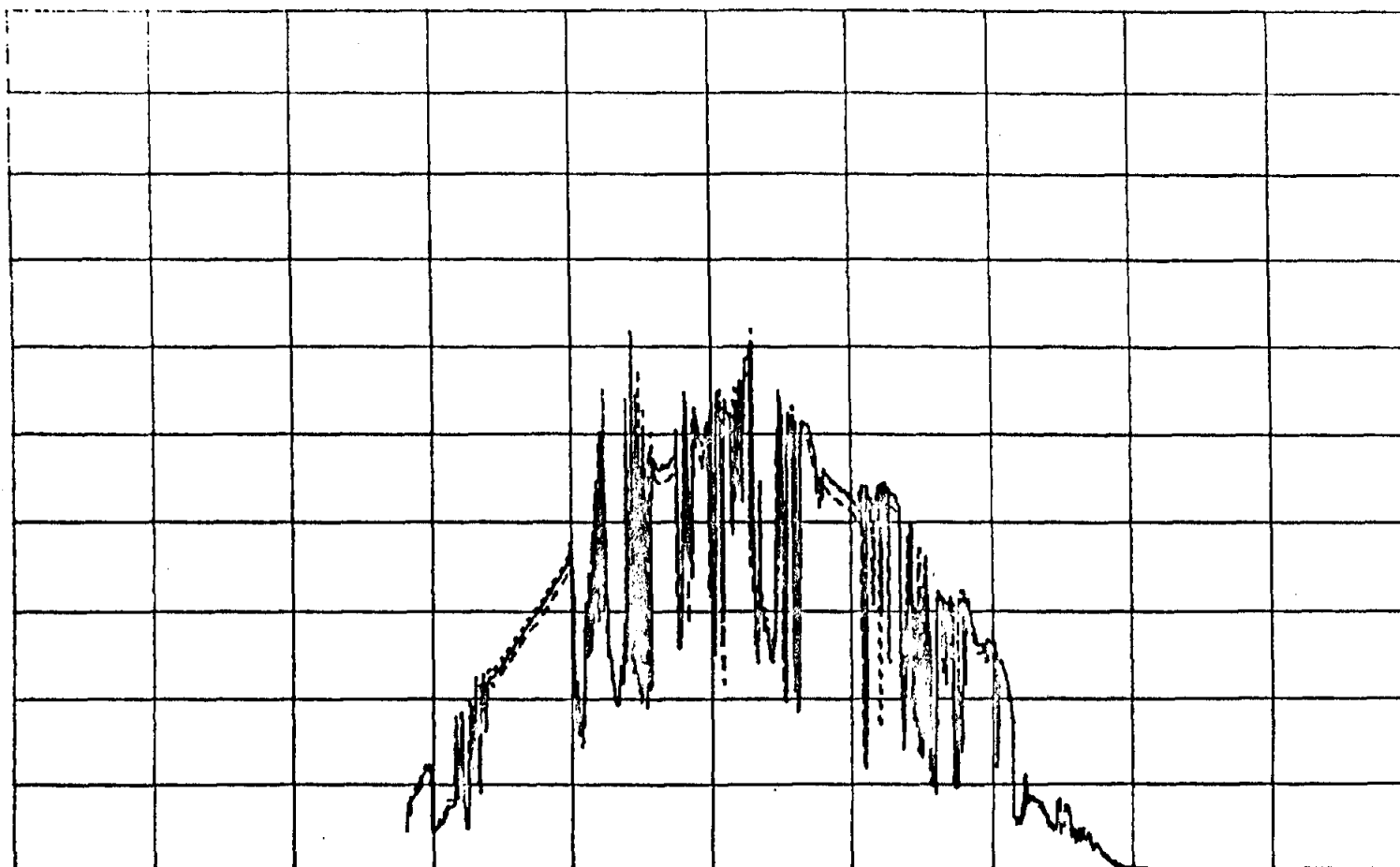
0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2

 -.-.-.-

*

SOLAR DATA PLOT PLOT # MIN53
 REFERENCE TIME: 211 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

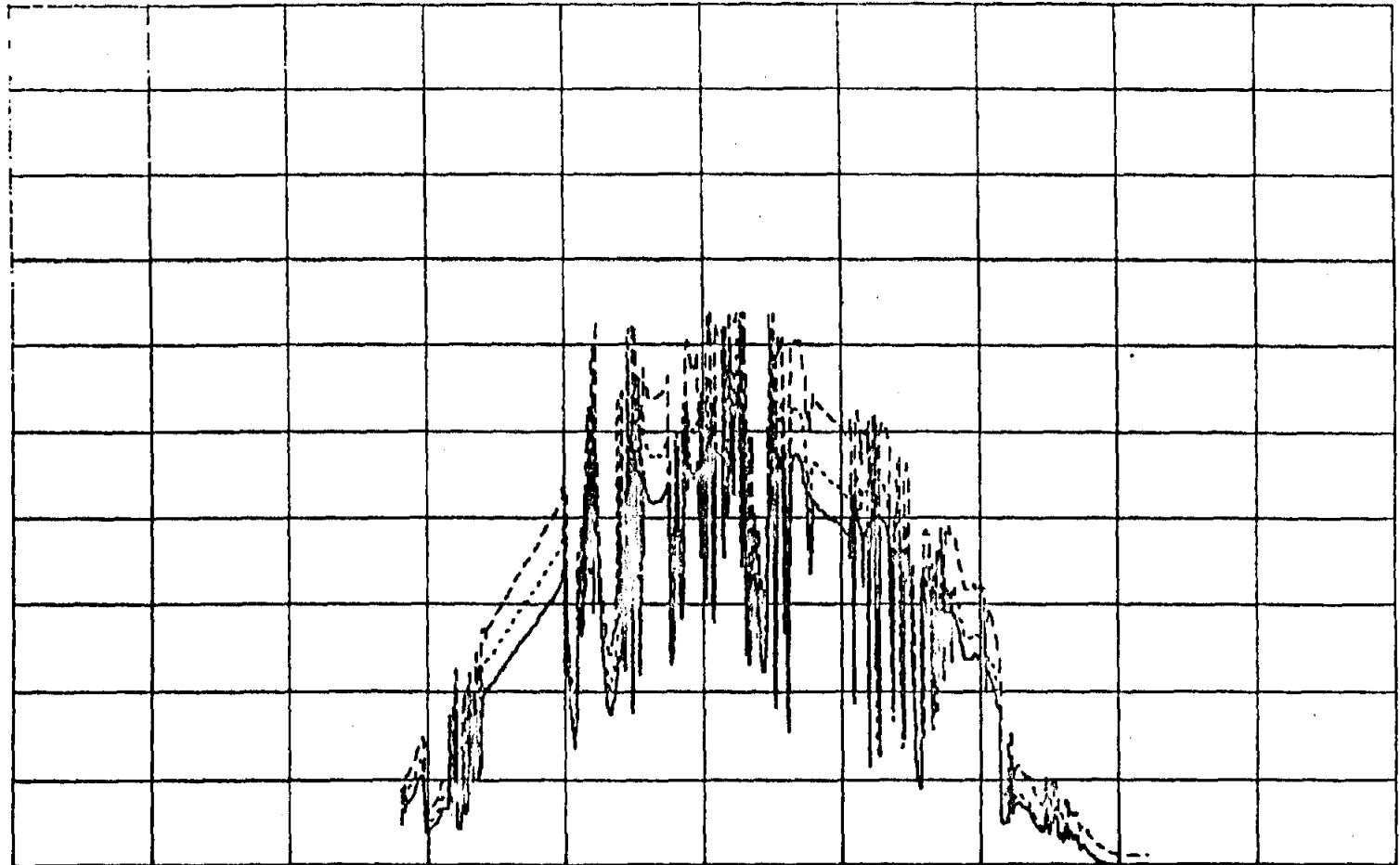
ATX1819
 ATX1820
 ATX1821

PYRAMTR (NORTH STATION)
 PYRAMTR (NORTH SPOKE RD-OTR)
 PYRAMTR (NRTH SPOKE RD-INNR)

0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2
 0.00 - 2000.00 W/M2

SOLAR DATA PLOT PLOT # MINS4
 REFERENCE TIME: 211 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



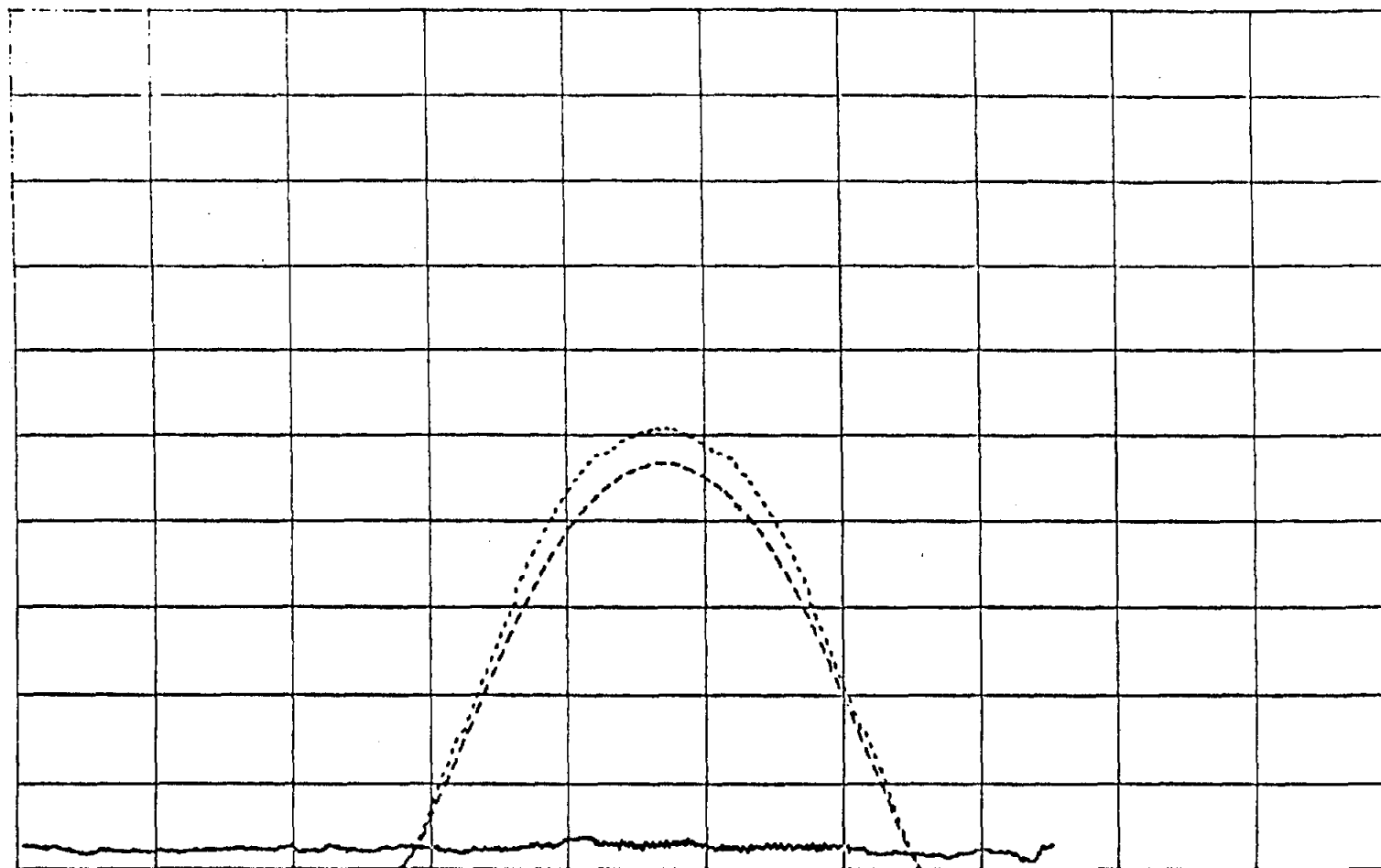
0.00

1500.00

ATX1824	PYRAMTR (EAST STATION)	0.00 -	2000.00 W/M2	_____
ATX1825	PYRAMTR (EAST SPOKE RD-OTR)	0.00 -	2000.00 W/M2	-----
ATX1826	PYRAMTR (EAST SPOKE RD-INNR)	0.00 -	2000.00 W/M2	-.-.-.-

SOLAR DATA PLOT PLOT # MINS1
 REFERENCE TIME: 348 00 00 00.000

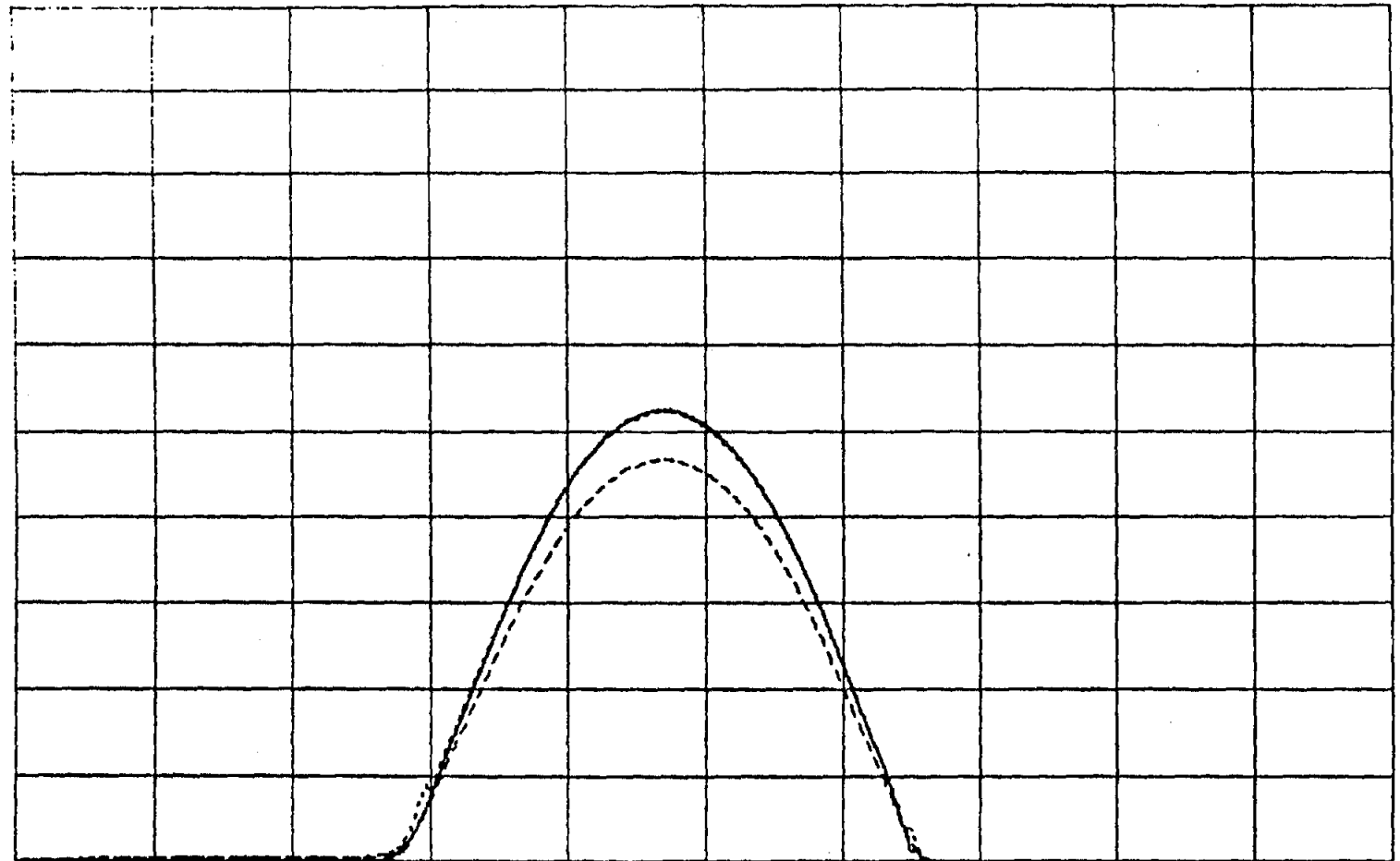
NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



0.00				1500.00
ATX1808	PYRAMTR (SOUTH STATION)	0.00 -	1000.00 W/M2	_____
ATX1809	PYRAMTR (SOUTH SPOKE RD)	0.00 -	1000.00 W/M2	-----
ATX1834	PYRA (CNTRL RM RF) 13TH LVL	0.00 -	1000.00 W/M2	-----

SOLAR DATA PLOT PLOT # MINS2
REFERENCE TIME: 348 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1812
ATX1813
ATX1814

PYRAMTR (WEST STATION)
PYRAMTR (WST SPOKE RD-OUTR)
PYRAMTR (WST SPOKE RD INNR)

0.00 - 1000.00 W/M2
0.00 - 1000.00 W/M2
0.00 - 1000.00 W/M2

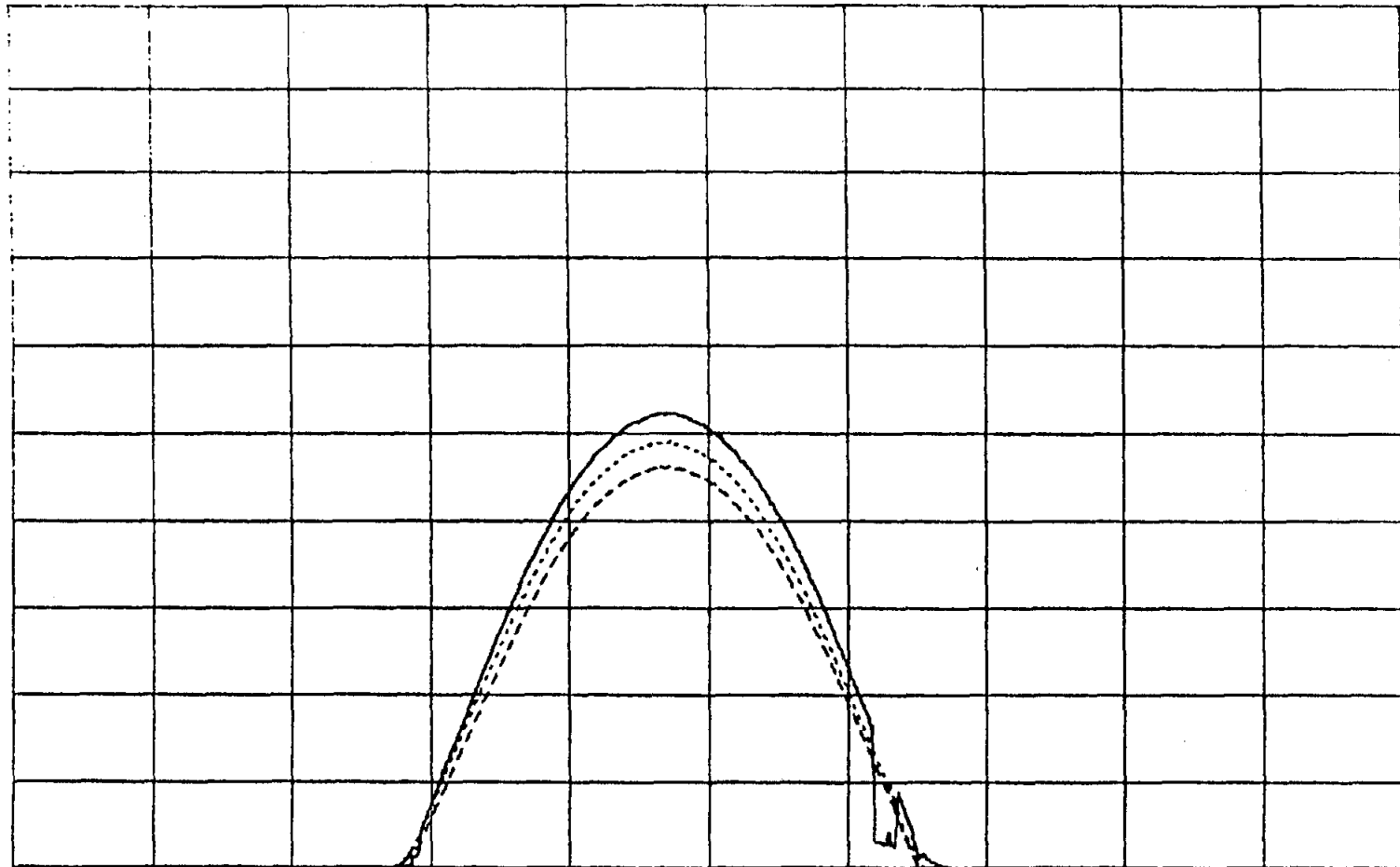
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SOLAR DATA PLOT PLOT # MINS3
 REFERENCE TIME: 348 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



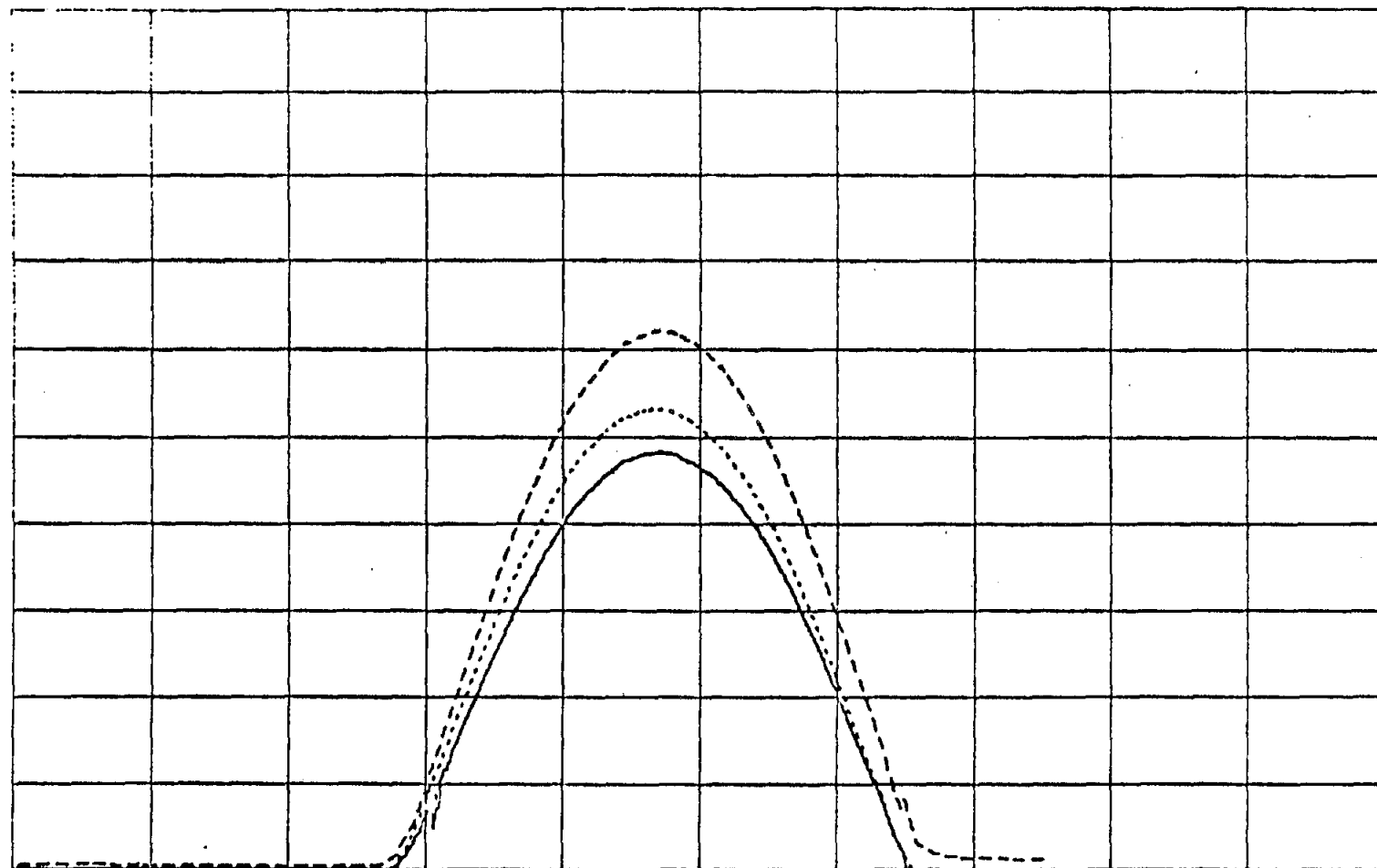
0.00

1500.00

ATX1819	PYRAMTR (NORTH STATION)	0.00 -	1000.00 W/M2	_____
ATX1820	PYRAMTR (NORTH SPOKE RD-OTR)	0.00 -	1000.00 W/M2
ATX1821	PYRAMTR (NRTH SPOKE RD-INNR)	0.00 -	1000.00 W/M2	-----

SOLAR DATA PLOT PLOT # MIN54
 REFERENCE TIME: 348 00 00 00.000

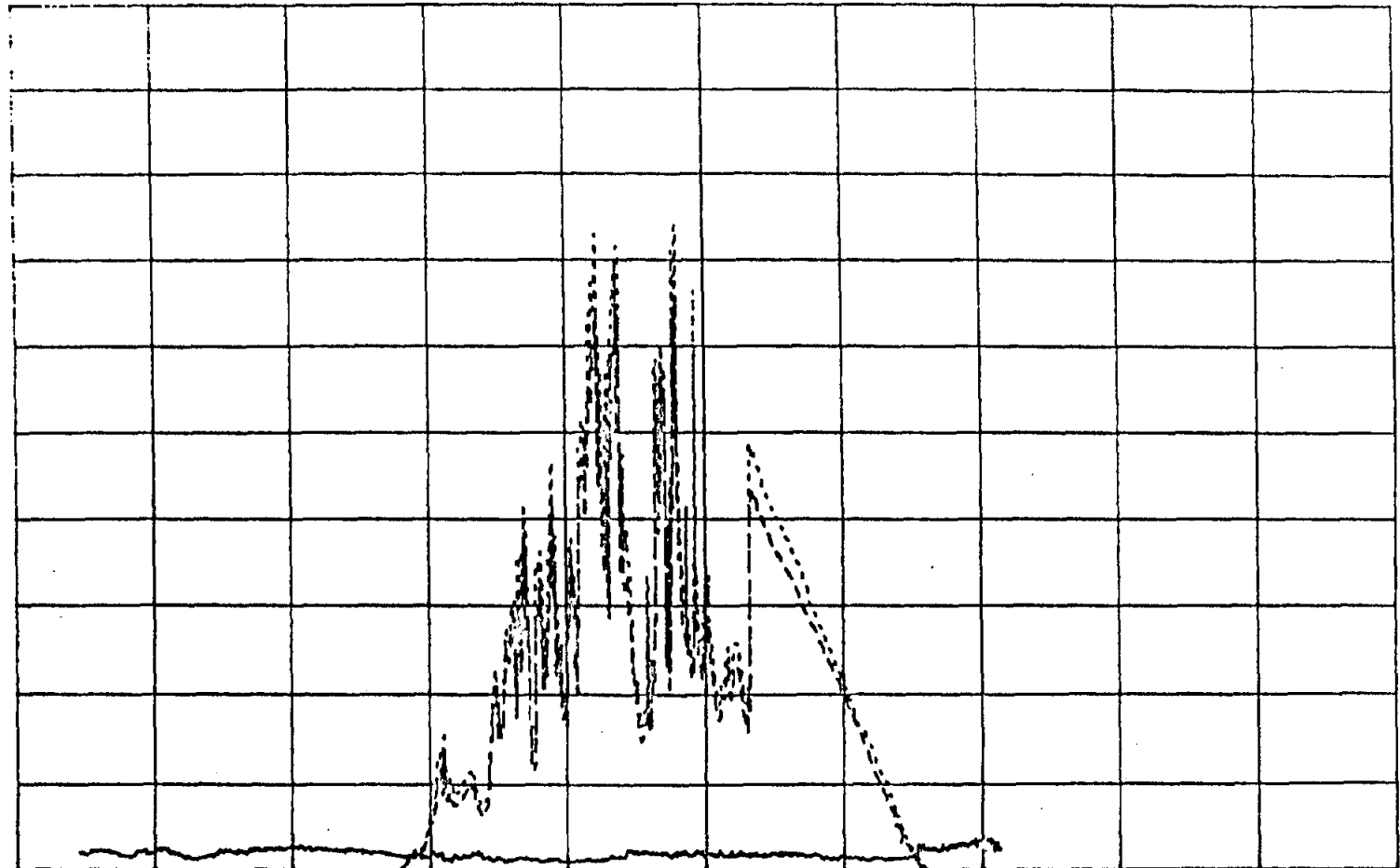
FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00				1500.00
ATX1824	PYRAMTR (EAST STATION)	0.00 -	1000.00 W/M2	_____
ATX1825	PYRAMTR (EAST SPOKE RD-OTR)	0.00 -	1000.00 W/M2
ATX1826	PYRAMTR (EAST SPOKE RD-INNR)	0.00 -	1000.00 W/M2	-----

SOLAR DATA PLOT PLOT # MINS1
 REFERENCE TIME: 353 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



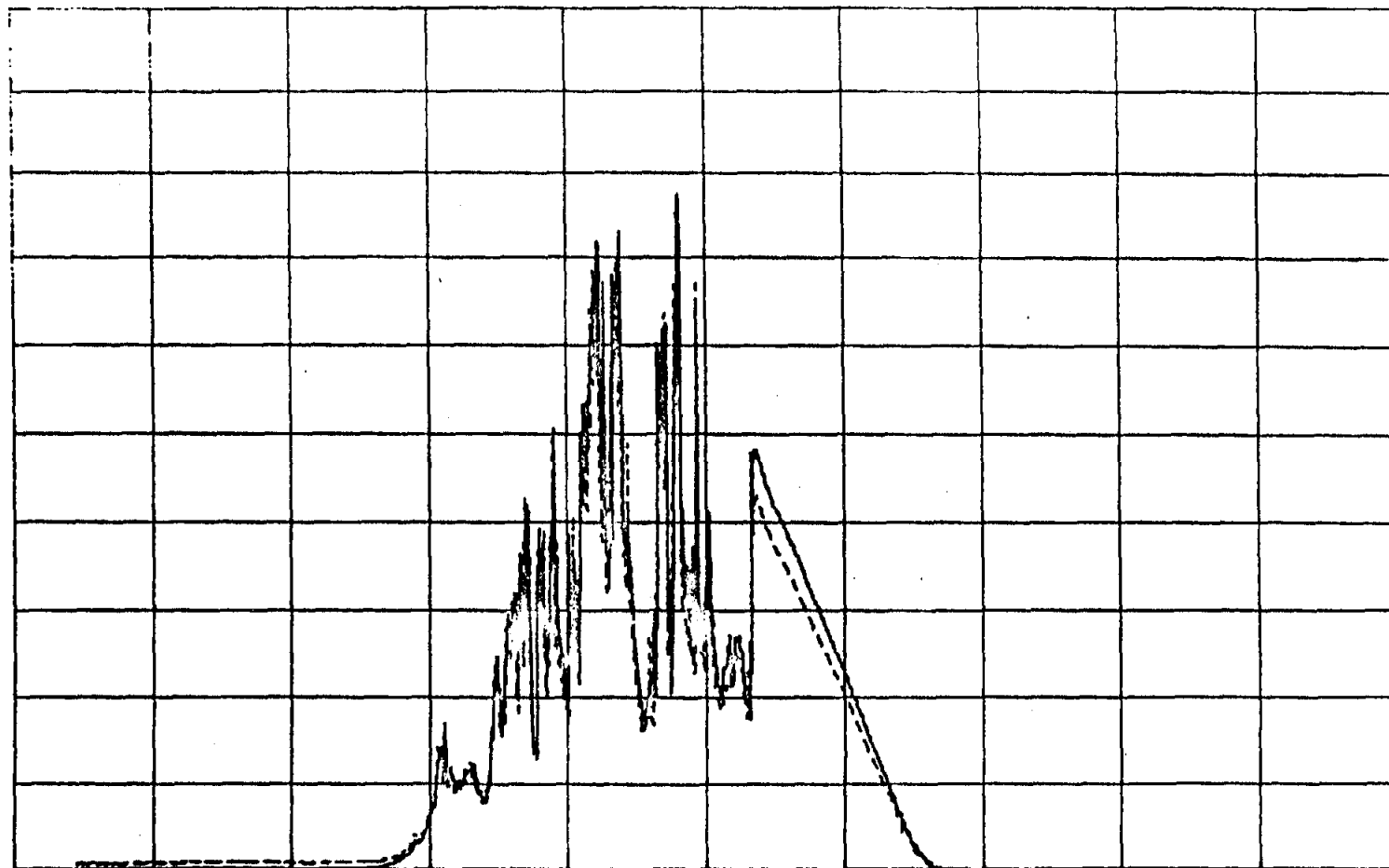
0.00

1500.00

ATX1808	PYRAMTR (SOUTH STATION)	0.00 -	1000.00 W/M2	_____
ATX1809	PYRAMTR (SOUTH SPOKE RD)	0.00 -	1000.00 W/M2	-----
ATX1834	PYRA (CNTRL RM RF) 13TH LVL	0.00 -	1000.00 W/M2	-.-.-.-

SOLAR DATA PLOT PLOT # MINS2
 REFERENCE TIME: 353 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

ATX1812
 ATX1813
 ATX1814

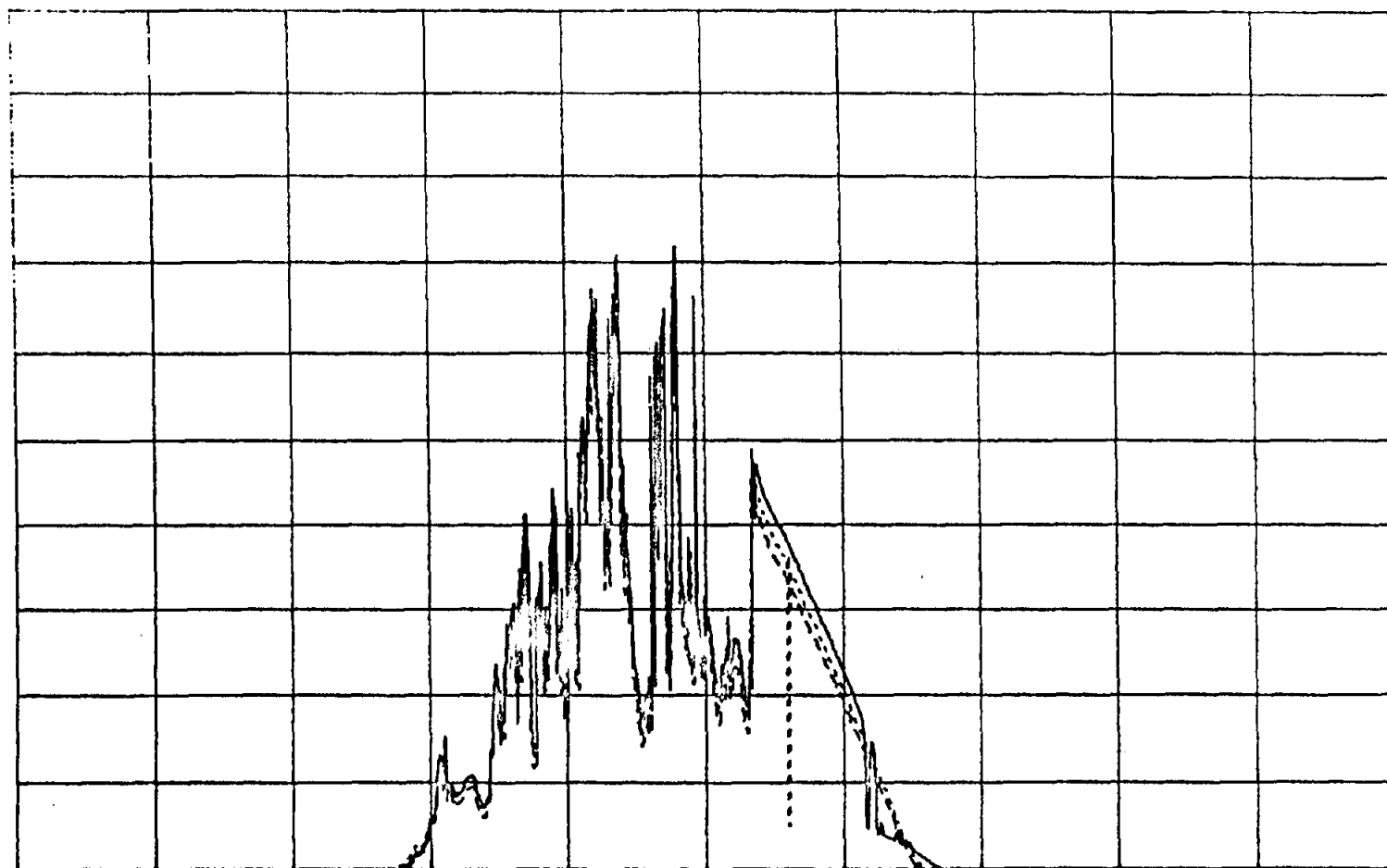
PYRAMTR (WEST STATION)
 PYRAMTR (WST SPOKE RD-OUTR)
 PYRAMTR (WST SPOKE RD INNR)

0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

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SOLAR DATA PLOT PLOT # MIN53
 REFERENCE TIME: 353 00 00 00.000

NTH SAMPLE AVERAGE - 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

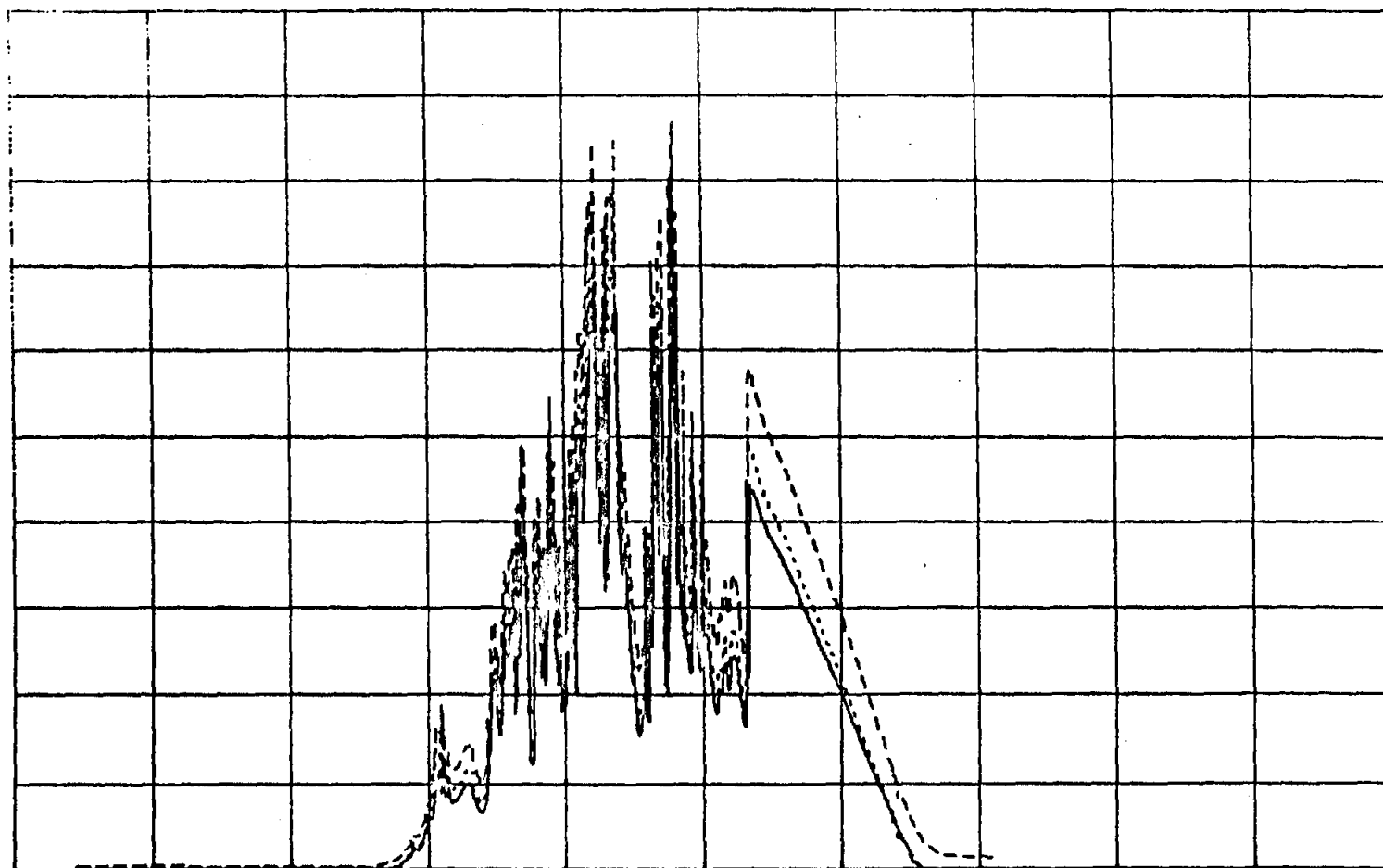
ATX1819
 ATX1820
 ATX1821

PYRAMTR (NORTH STATION)
 PYRAMTR (NORTH SPOKE RD-OTR)
 PYRAMTR (NRTH SPOKE RD-INNR)

0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MINS4
 REFERENCE TIME: 353 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

ATX1824 PYRAMTR (EAST STATION)
 ATX1825 PYRAMTR (EAST SPOKE RD-OTR)
 ATX1826 PYRAMTR (EAST SPOKE RD-INNR)

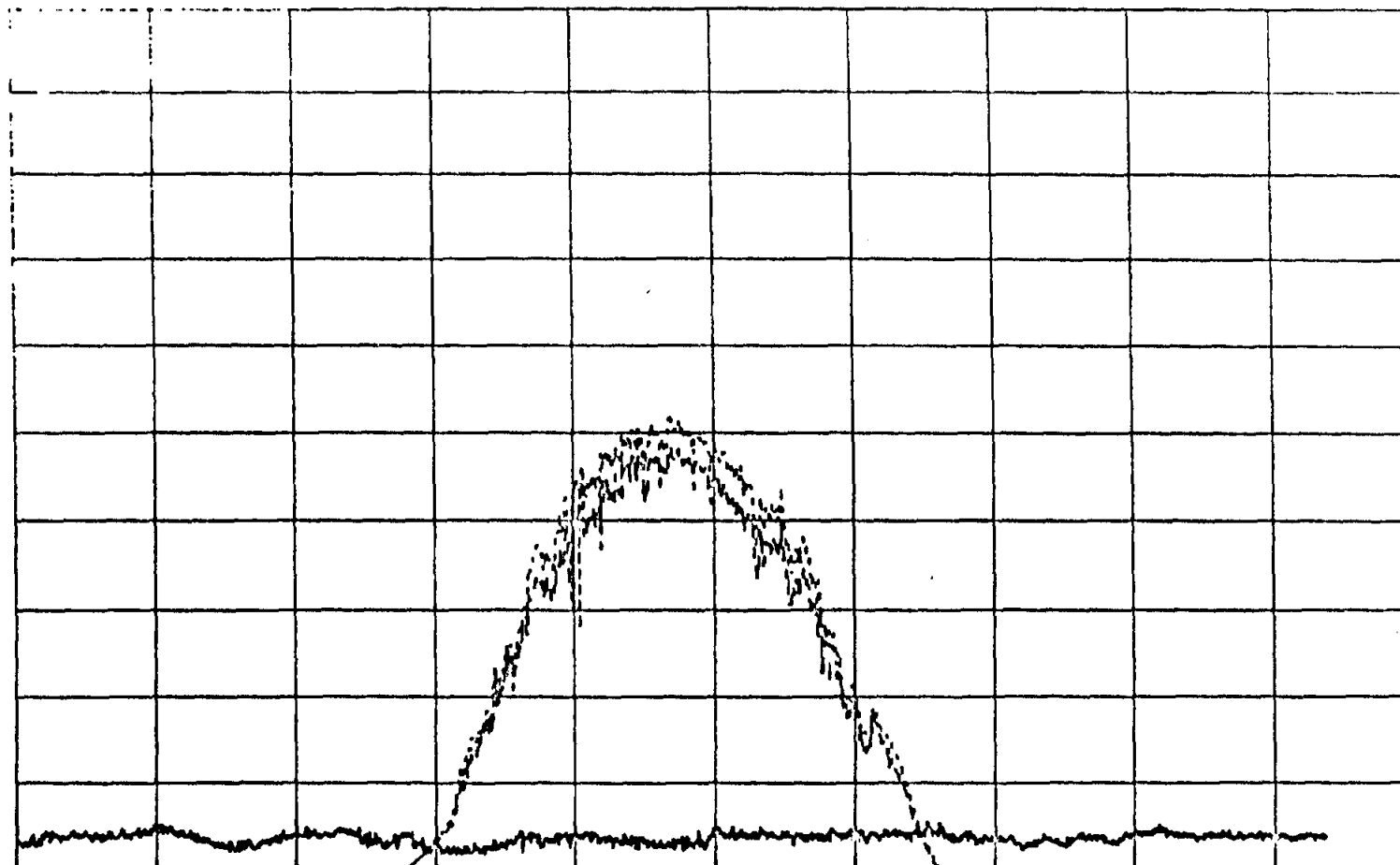
0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

 -.-.-.-

*

SOLAR DATA PLOT PLOT # MINS1
 REFERENCE TIME: 355 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



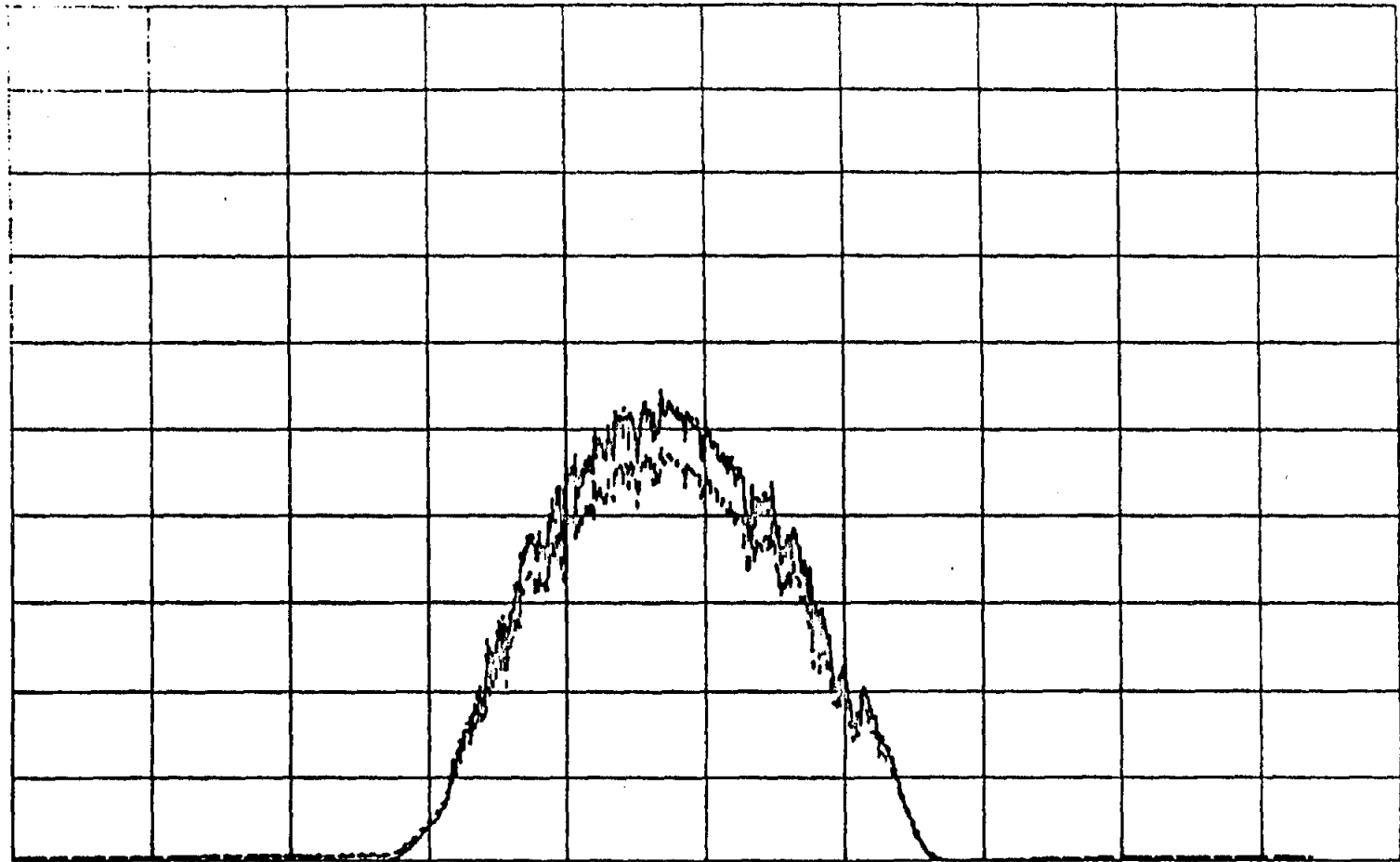
0.00

1500.00

ATX1808	PYRAMTR (SOUTH STATION)	0.00 -	1000.00 W/M2	_____
ATX1809	PYRAMTR (SOUTH SPOKE RD)	0.00 -	1000.00 W/M2	-----
ATX1834	PYRA (CNTRL RM RF) 13TH LVL	0.00 -	1000.00 W/M2	-----

SOLAR DATA PLOT PLOT # MINS2
 REFERENCE TIME: 355 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)

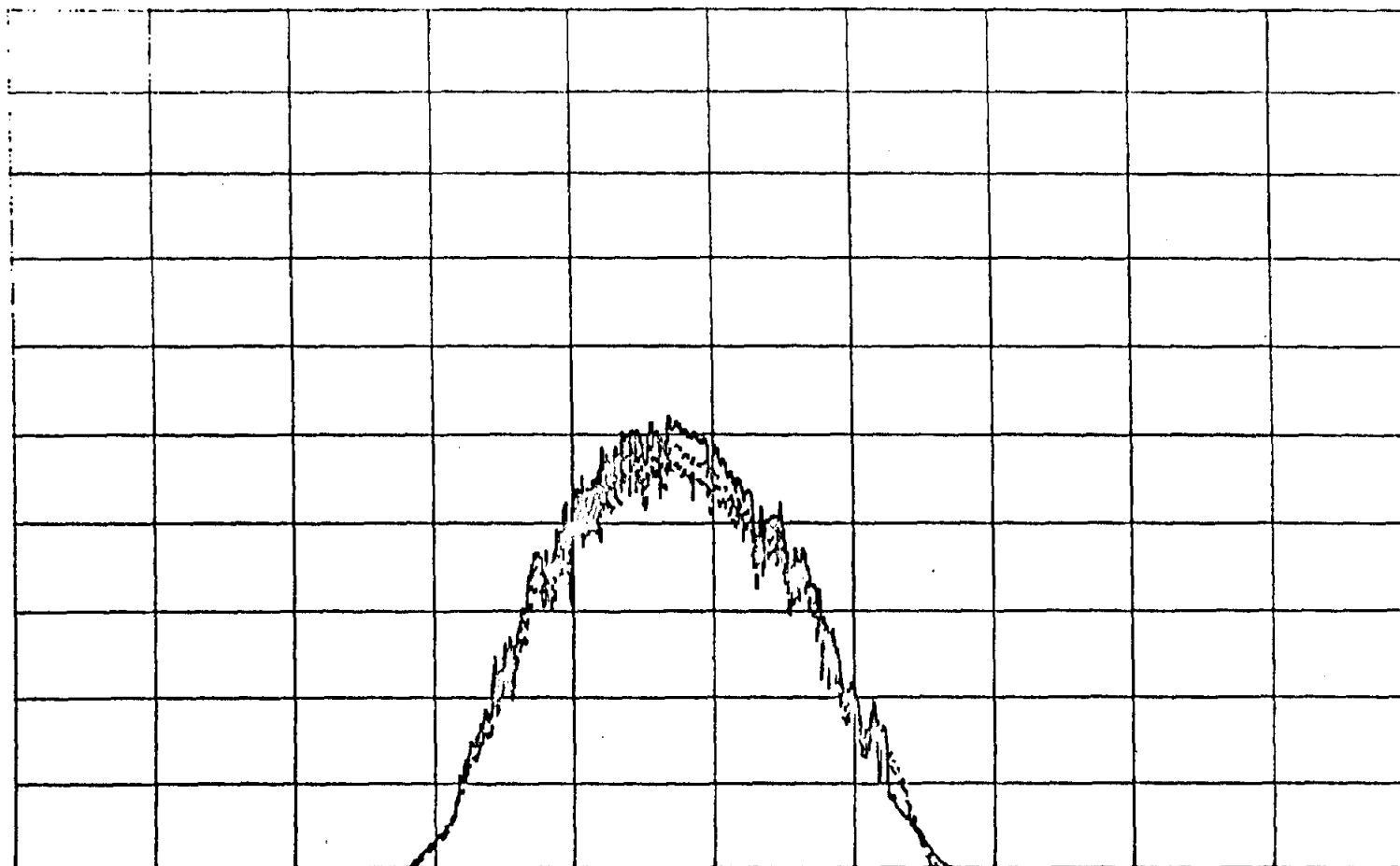


0.00				1500.00
ATX1812	PYRAMTR (WEST STATION)	0.00 -	1000.00 W/M2	_____
ATX1813	PYRAMTR (WST SPOKE RD-OUTR)	0.00 -	1000.00 W/M2	-----
ATX1814	PYRAMTR (WST SPOKE RD INNR)	0.00 -	1000.00 W/M2	-----

*

SOLAR DATA PLOT PLOT # MINS3
 REFERENCE TIME: 355 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

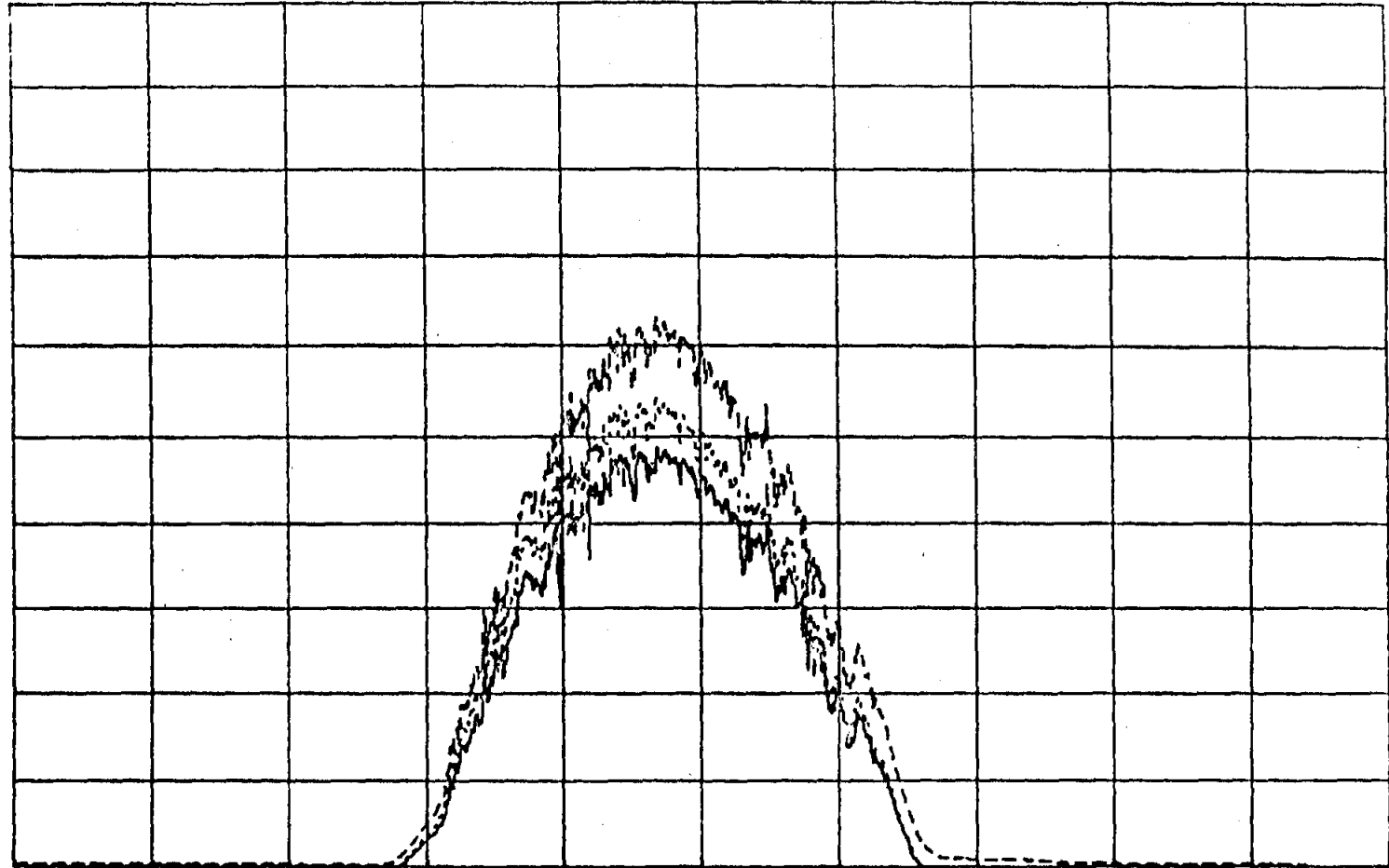
ATX1819
 ATX1820
 ATX1821

PYRAMTR (NORTH STATION)
 PYRAMTR (NORTH SPOKE RD-OTR)
 PYRAMTR (NRTH SPOKE RD-INNR)

0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MINS4
REFERENCE TIME: 355 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



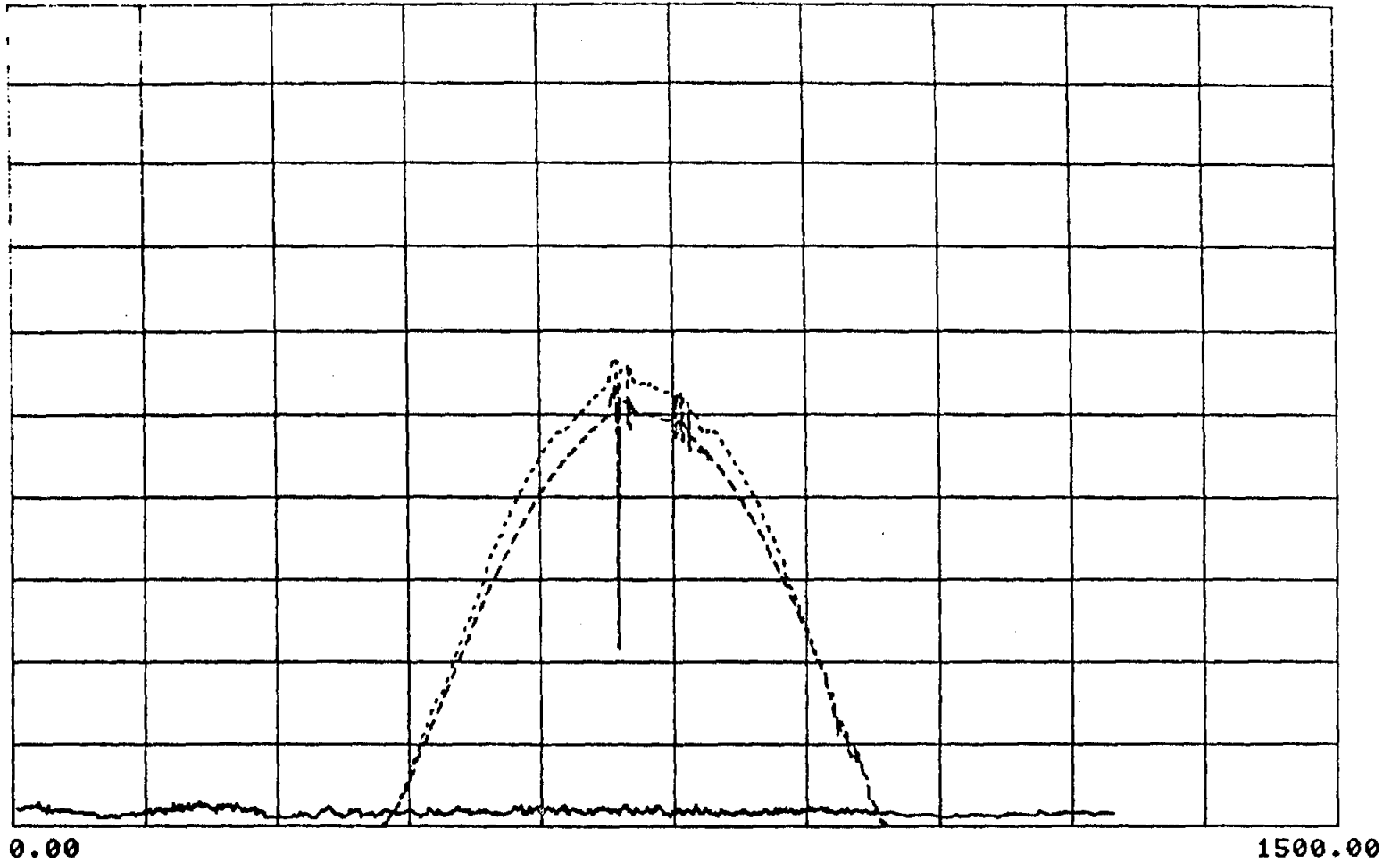
0.00

1500.00

ATX1824	PYRAMTR (EAST STATION)	0.00 -	1000.00 W/M2	_____
ATX1825	PYRAMTR (EAST SPOKE RD-OTR)	0.00 -	1000.00 W/M2	-----
ATX1826	PYRAMTR (EAST SPOKE RD-INNR)	0.00 -	1000.00 W/M2

SOLAR DATA PLOT PLOT # MINS1
REFERENCE TIME: 362 00 00 00.000

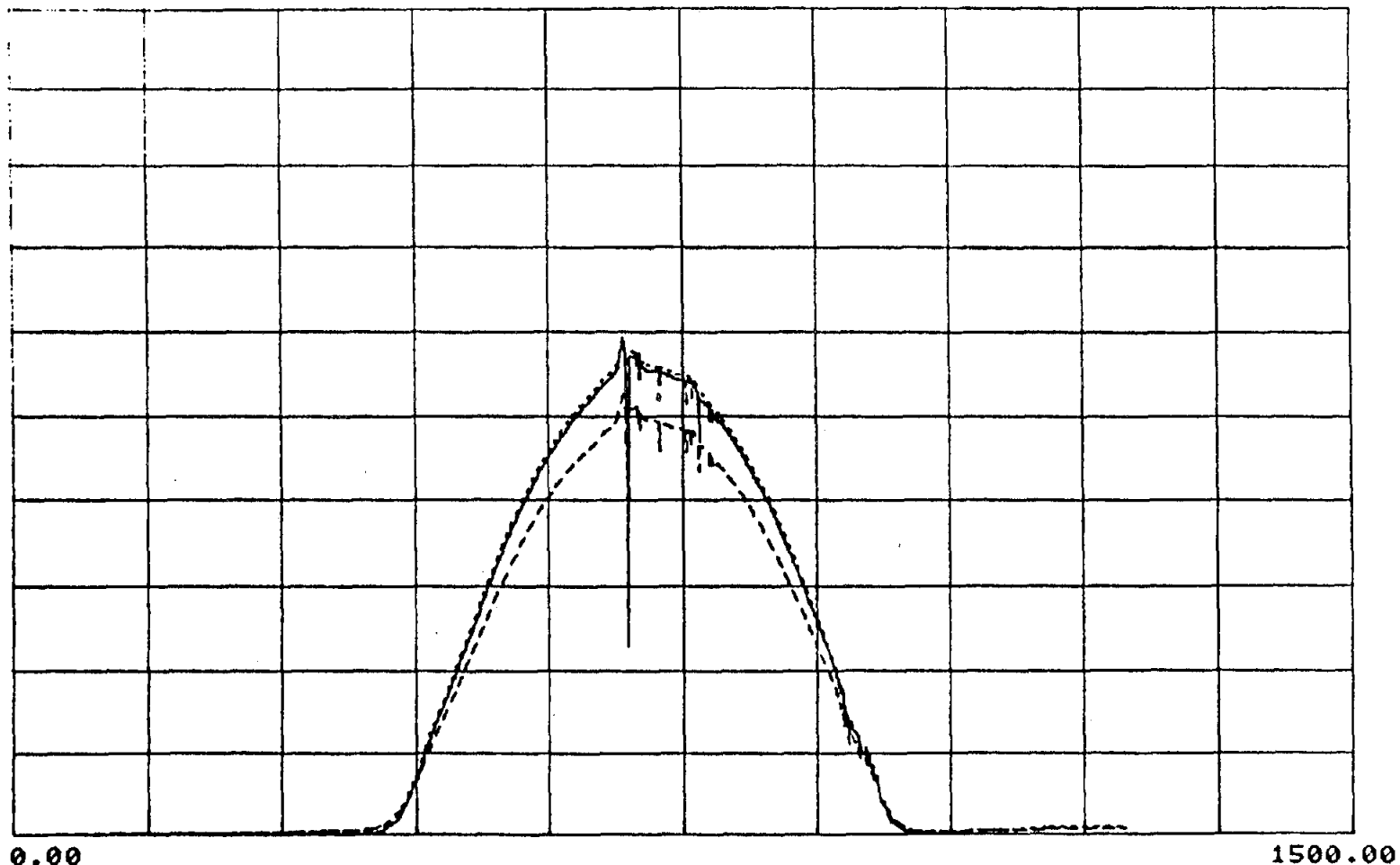
FOR NTH SAMPLE AVERAGE 1
1500.0000 MINUTE(S)



ATX1808	PYRAMTR (SOUTH STATION)	0.00 -	1000.00 W/M2	_____
ATX1809	PYRAMTR (SOUTH SPOKE RD)	0.00 -	1000.00 W/M2	-----
ATX1834	PYRA (CNTRL RM RF) 13TH LVL	0.00 -	1000.00 W/M2

SOLAR DATA PLOT PLOT # MINS2
 REFERENCE TIME: 362 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)

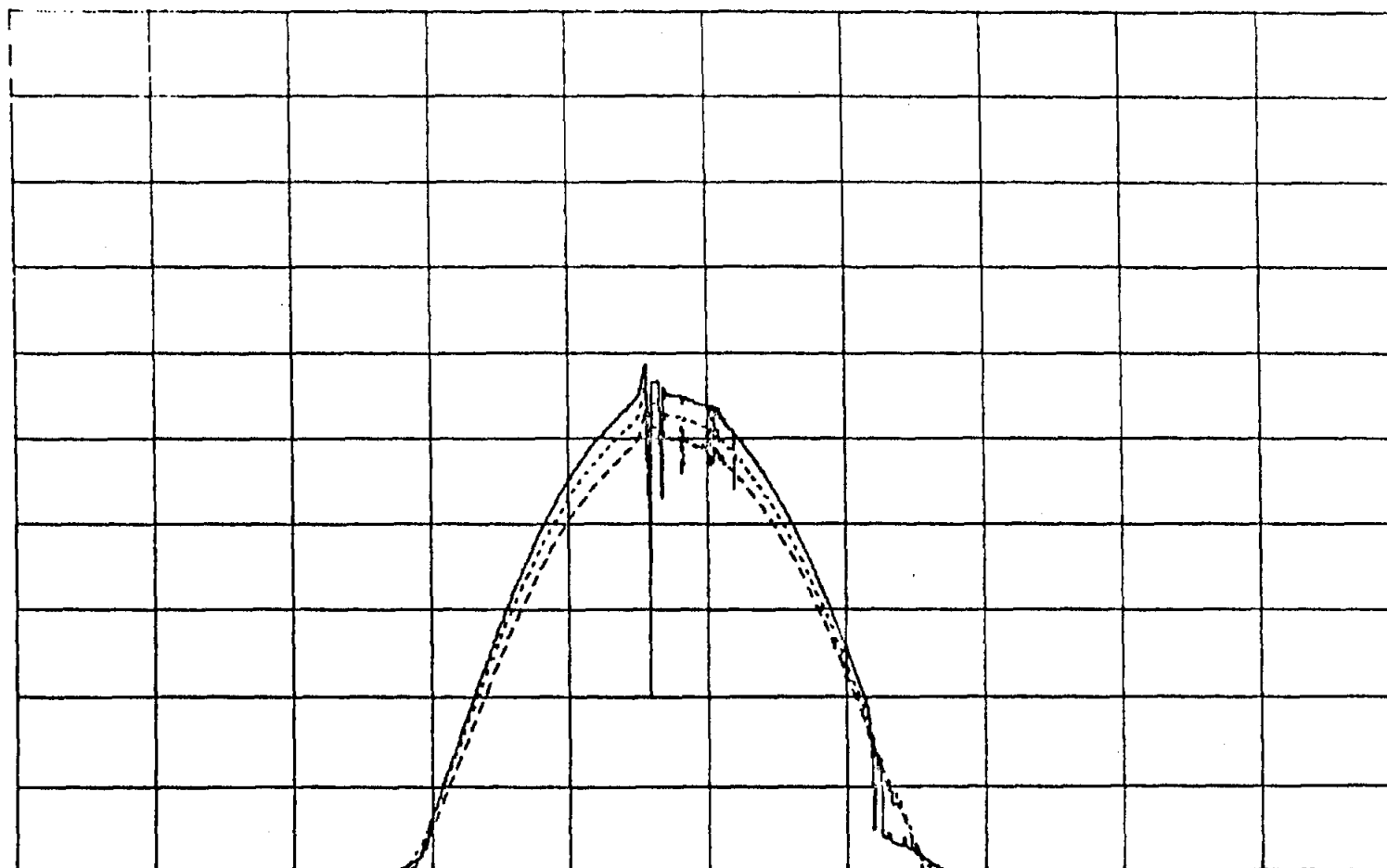


0.00										1500.00
ATX1812	PYRAMTR (WEST STATION)	0.00 -	1000.00	W/M2						
ATX1813	PYRAMTR (WST SPOKE RD-OUTR)	0.00 -	1000.00	W/M2						
ATX1814	PYRAMTR (WST SPOKE RD INNR)	0.00 -	1000.00	W/M2						

*

SOLAR DATA PLOT PLOT # MINS3
 REFERENCE TIME: 362 00 00 00.000

NTH SAMPLE AVERAGE 1
 FOR 1500.0000 MINUTE(S)



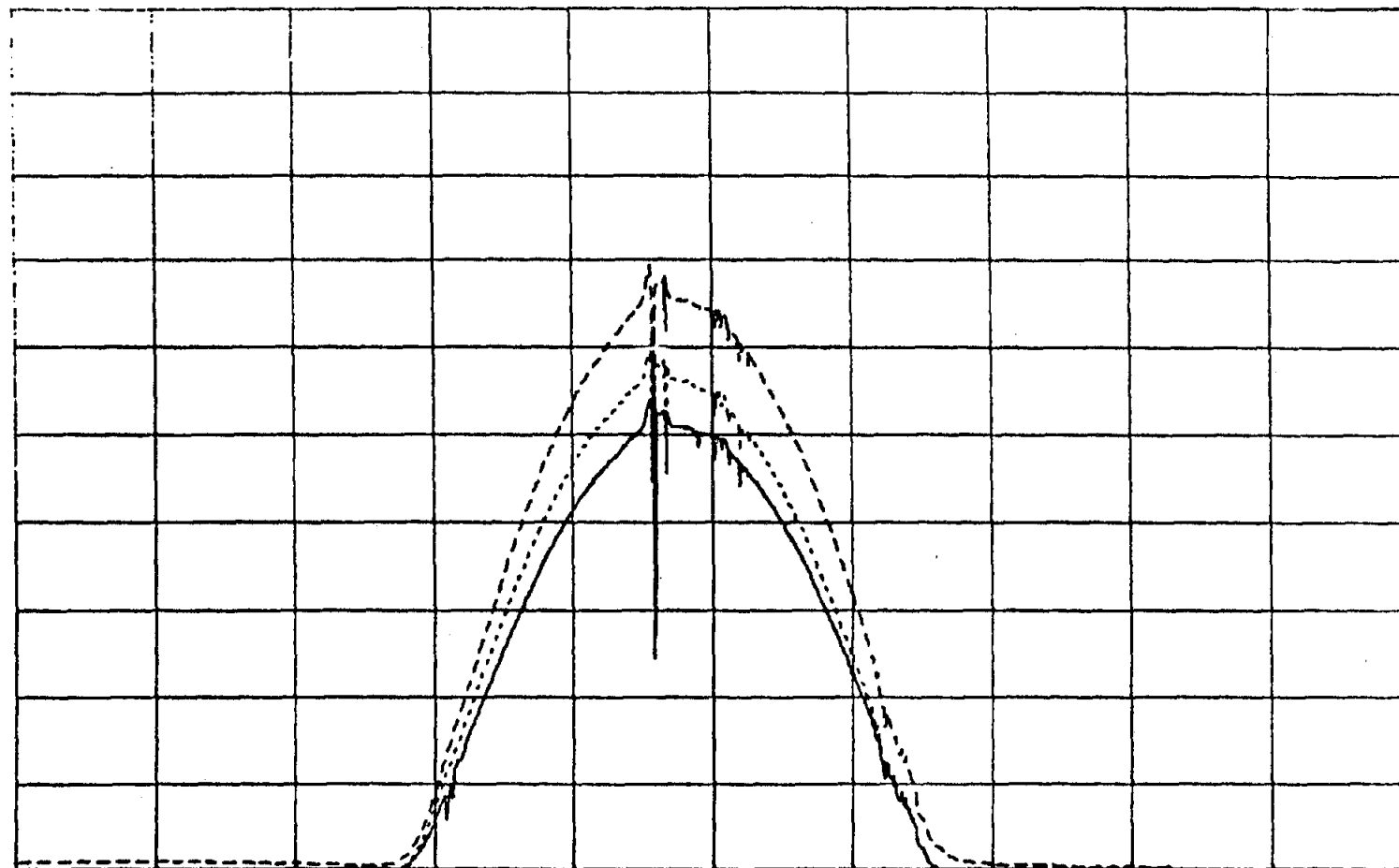
0.00 1500.00

ATX1819	PYRAMTR (NORTH STATION)	0.00 -	1000.00 W/M2	_____
ATX1820	PYRAMTR (NORTH SPOKE RD-OTR)	0.00 -	1000.00 W/M2	-----
ATX1821	PYRAMTR (NRTH SPOKE RD-INNR)	0.00 -	1000.00 W/M2	-.-.-.-

*

SOLAR DATA PLOT PLOT # MINS4
 REFERENCE TIME: 362 00 00 00.000

NTH SAMPLE AVERAGE = 1
 FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1824
 ATX1825
 ATX1826

PYRAMTR (EAST STATION)
 PYRAMTR (EAST SPOKE RD-OTR)
 PYRAMTR (EAST SPOKE RD-INNR)

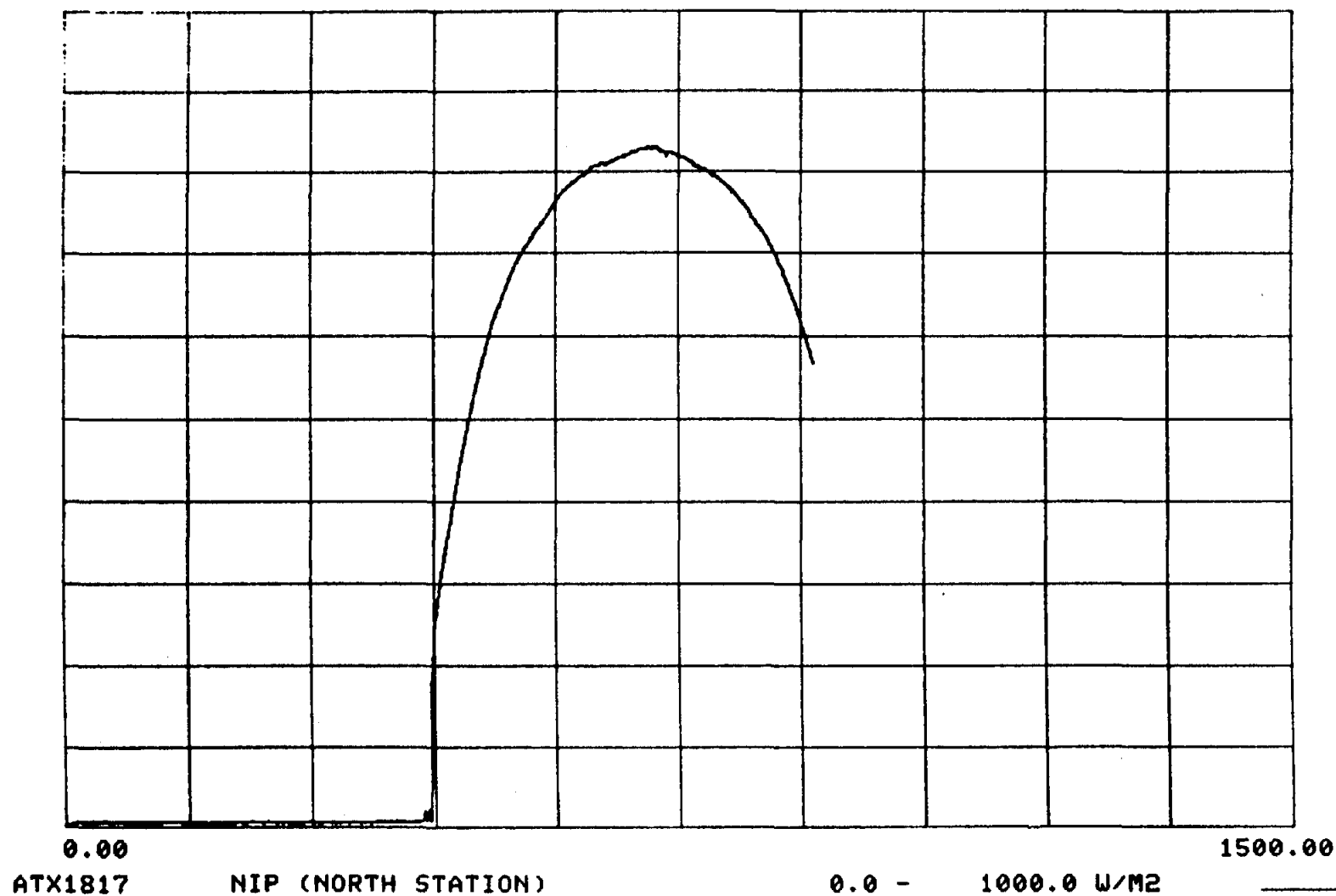
0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2
 0.00 - 1000.00 W/M2

*

Direct normal insolation plots for one of the two normal incidence pyrheliometers (ATX 1817 at the north station, or ##ATX 1817A on the control room roof) are included on the following pages for each of the 289 days that were recorded with some NIP activity. The data include 104 clear days, 53 days with light cloud activity, and 132 days with heavy cloud activity. The data show that peaks of 900 watts/m^2 occurred each month, but not very frequently. Moreover, this average peak values for each month are considerably lower than 900 watts/m^2 . The reference time (start time) for each plot is shown on the top of each page, starting with the day of the year, followed by the time in hours, minutes, seconds, and milliseconds. For example, on the following page, the day is 001 (1 January), the start time is midnight, and the stop time is 1500 minutes (25 hours) later. The scale for the ordinate is 0.0 to 1000 watts/m^2 .

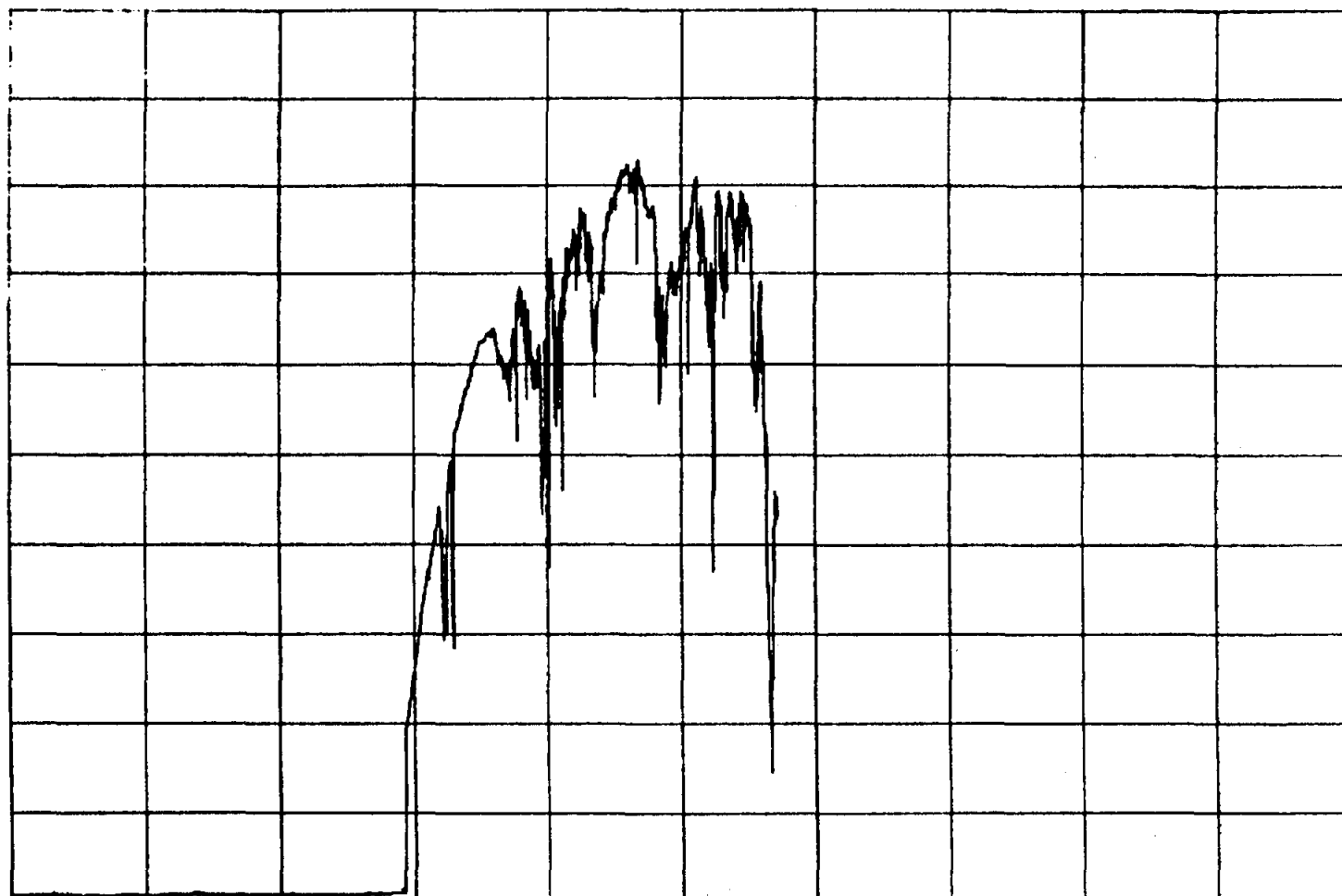
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 001 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 002 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

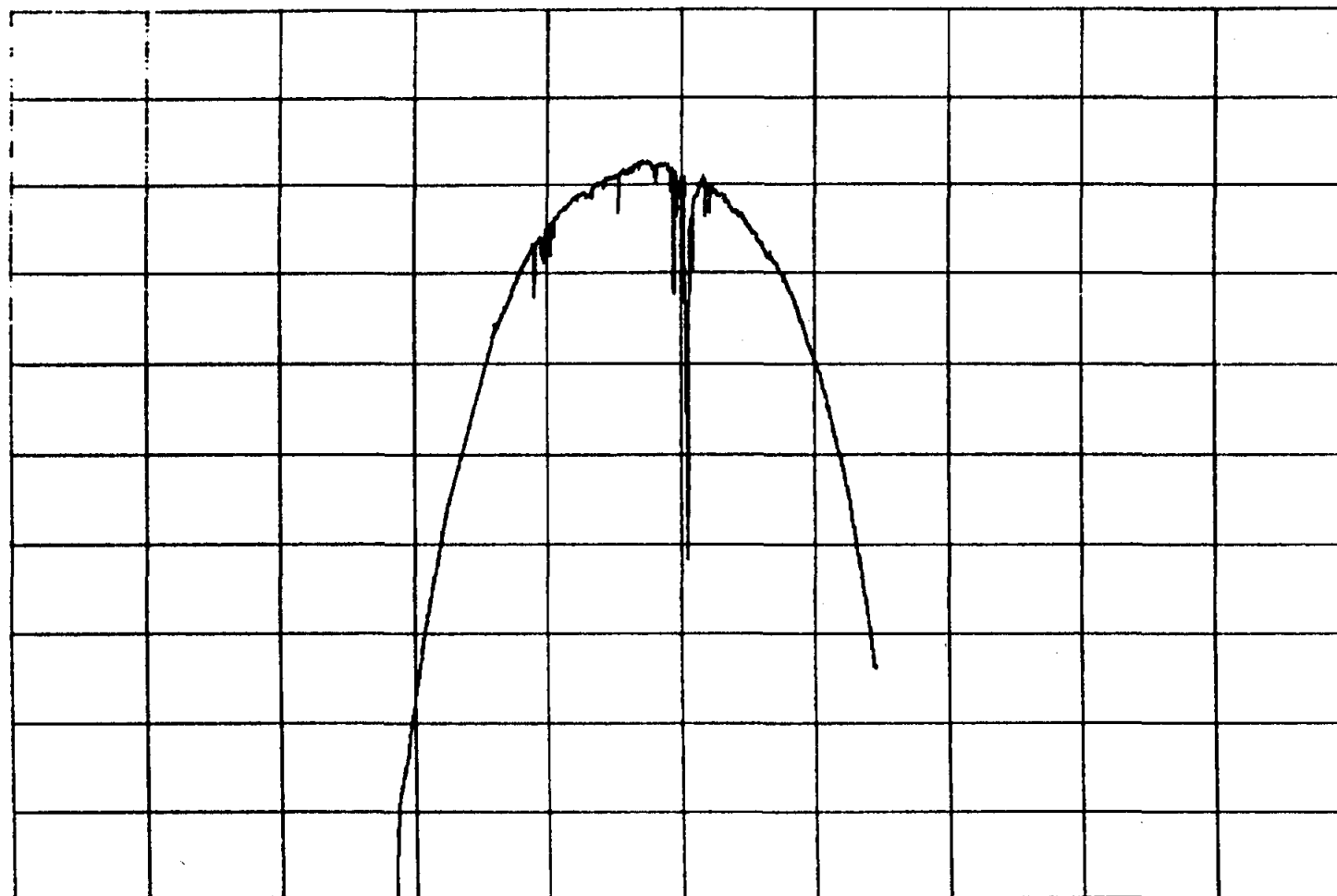
NIP (NORTH STATION)

0.0 - 1000.0 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 003 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

##ATX1817A

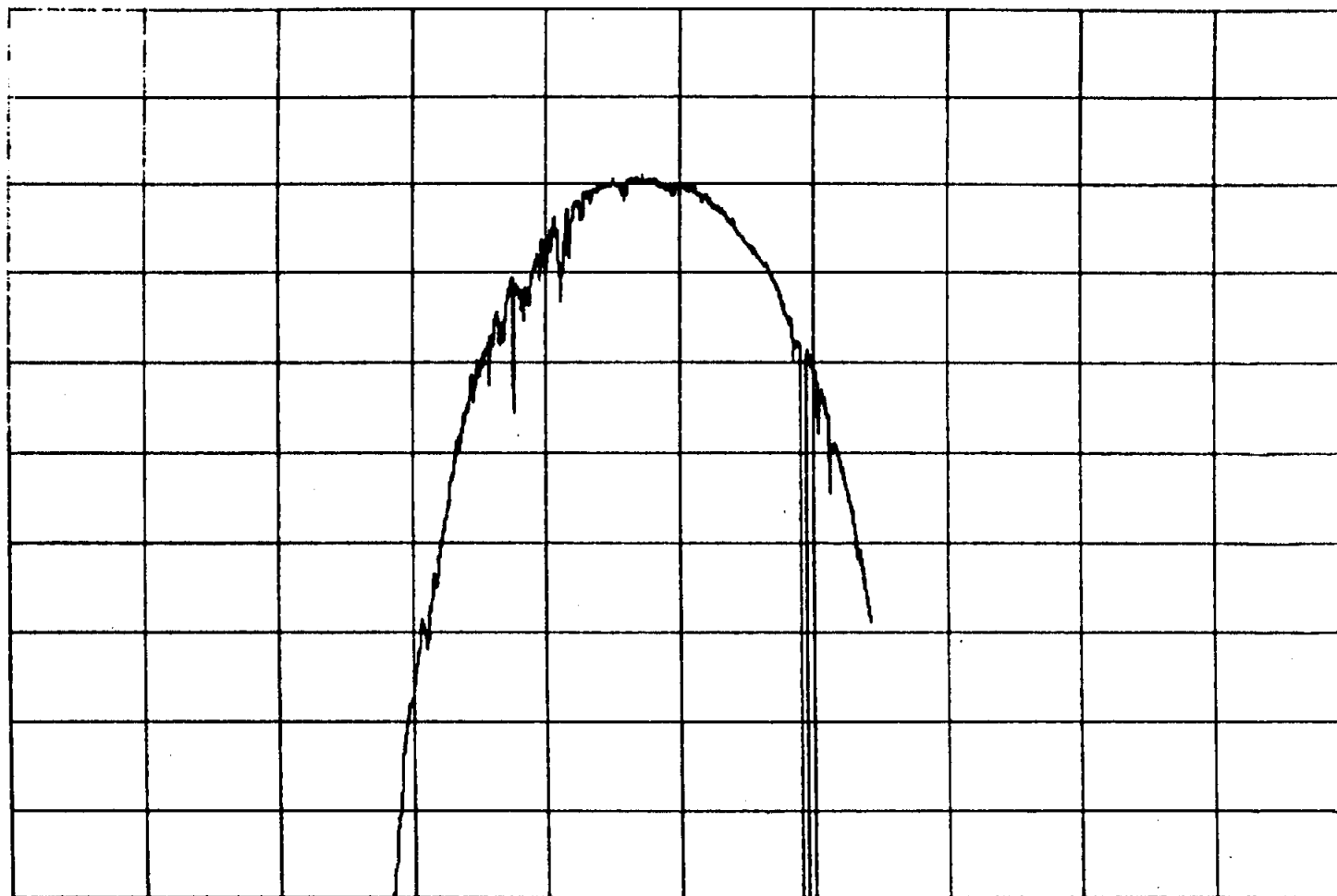
CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 004 00 00 00.000

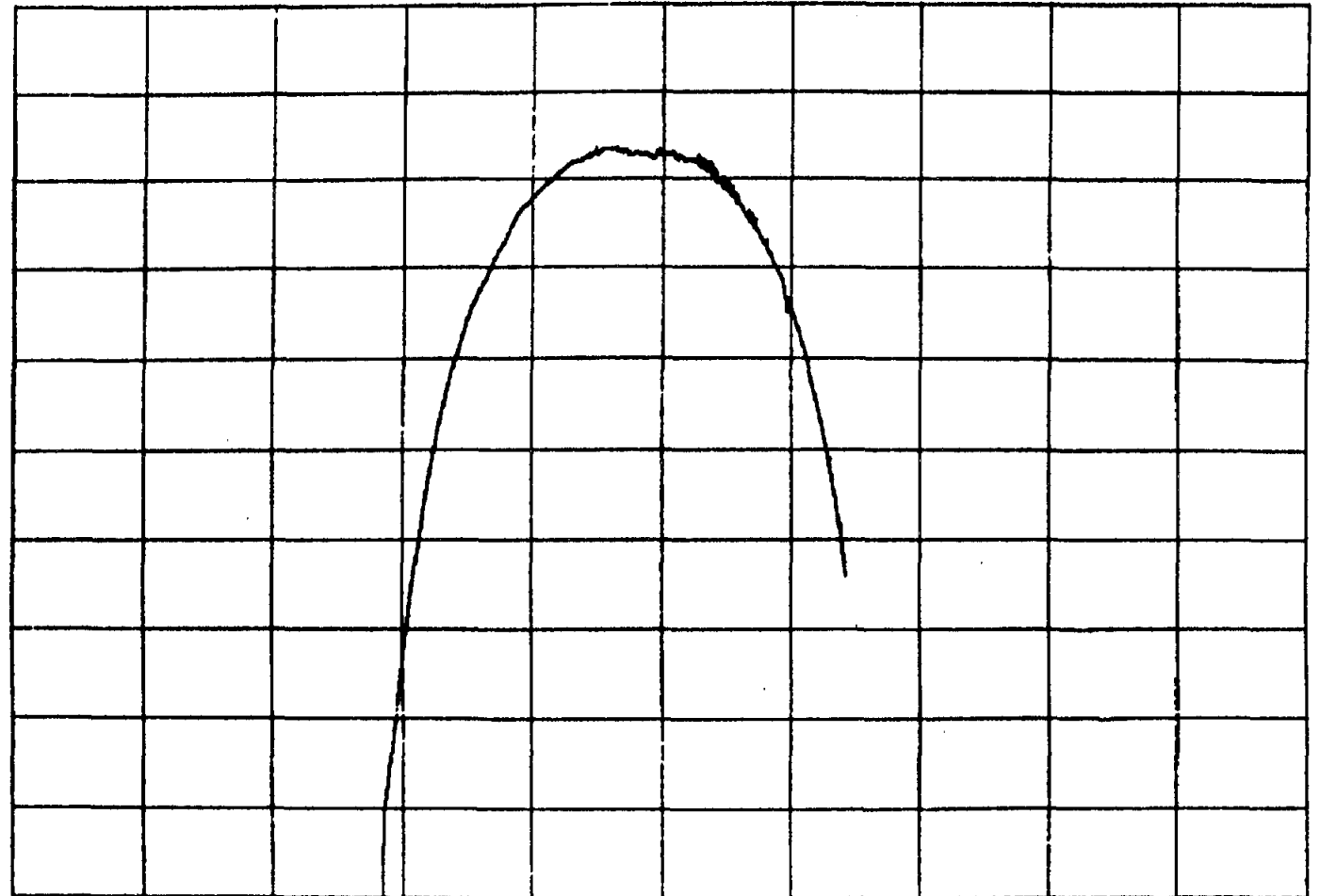
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00 1500.00
##ATX1817A CNTRL ROOM ROOF NIP 0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 005 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

##ATX1817A

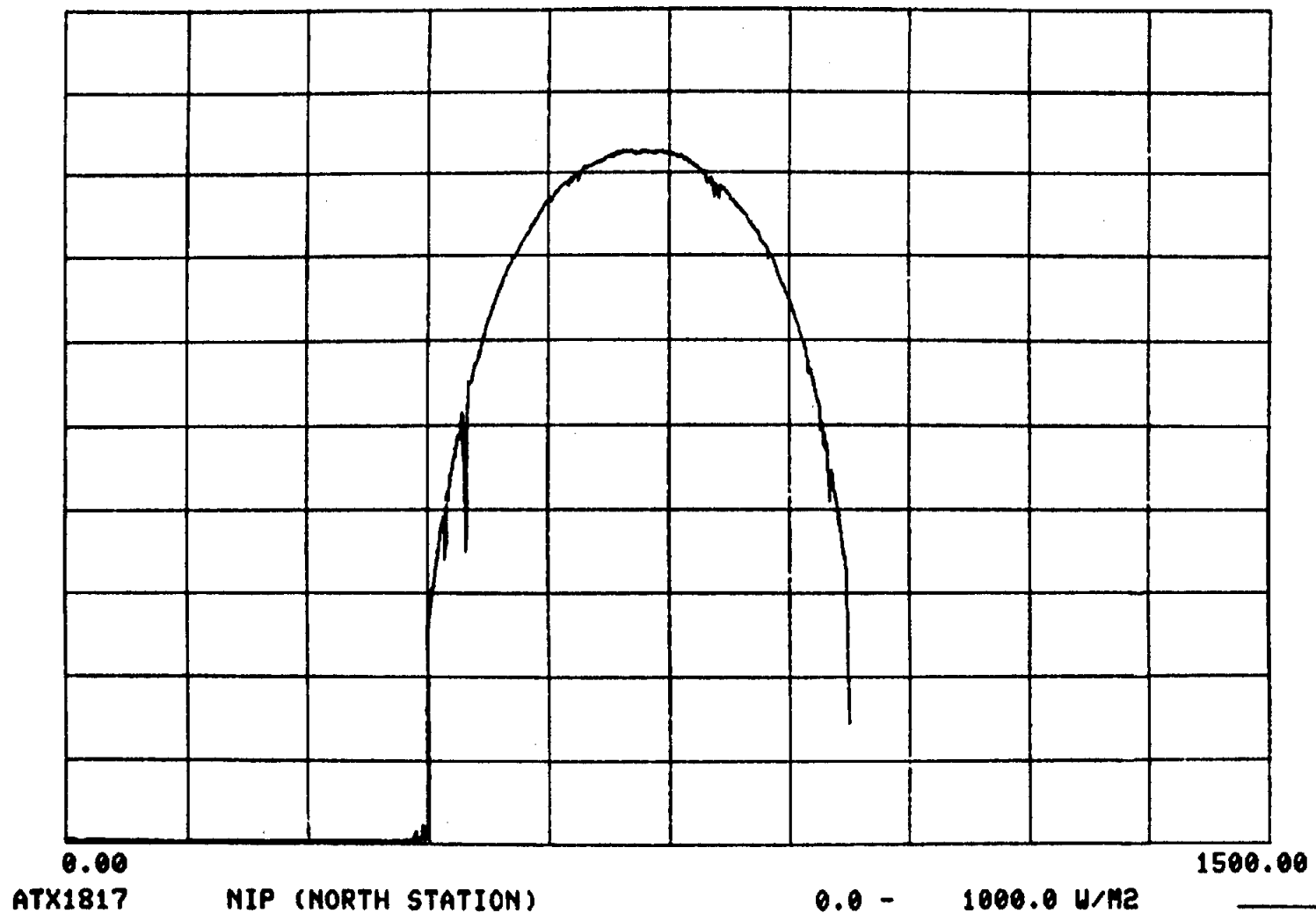
CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2

1500.00

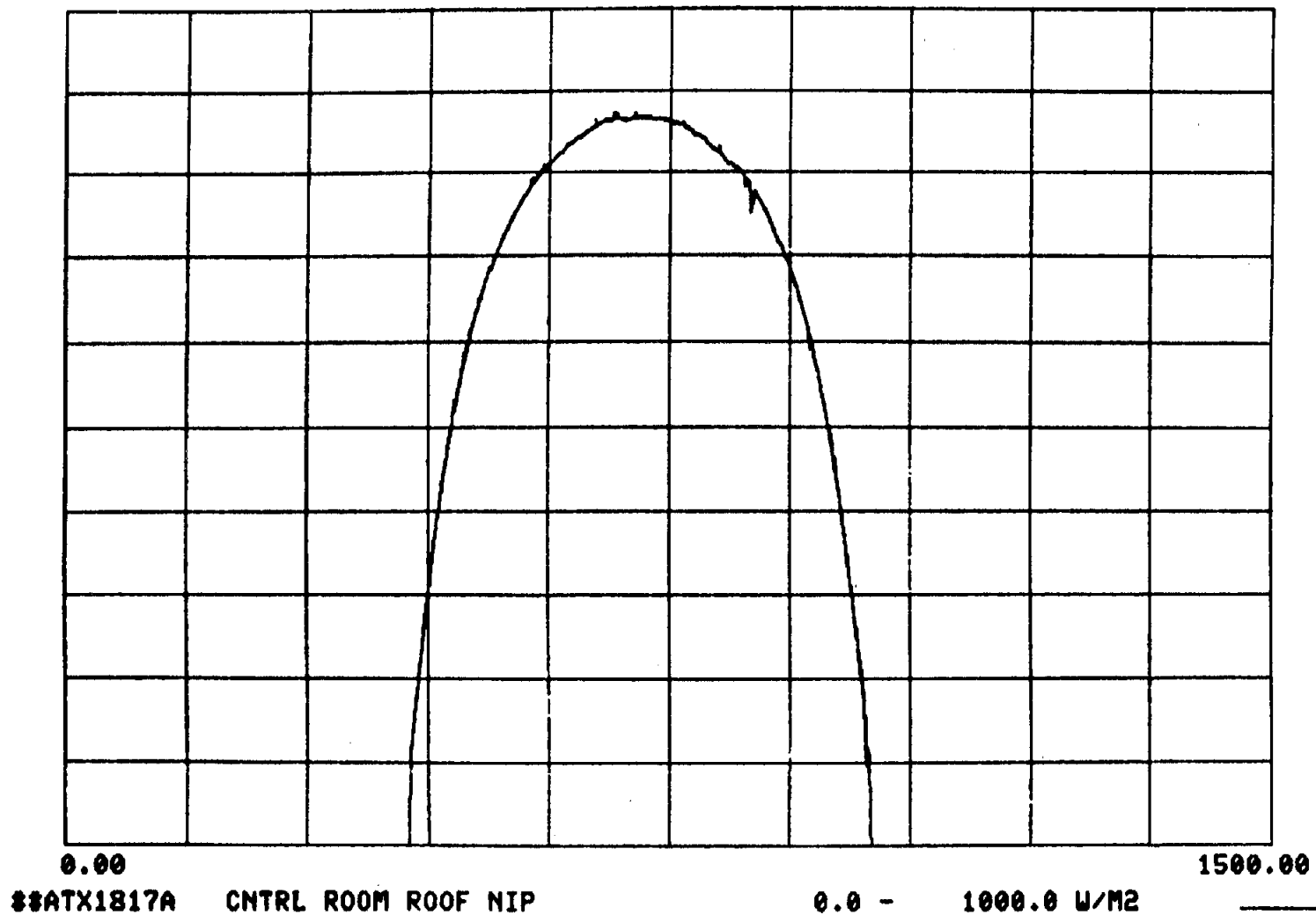
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 007 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



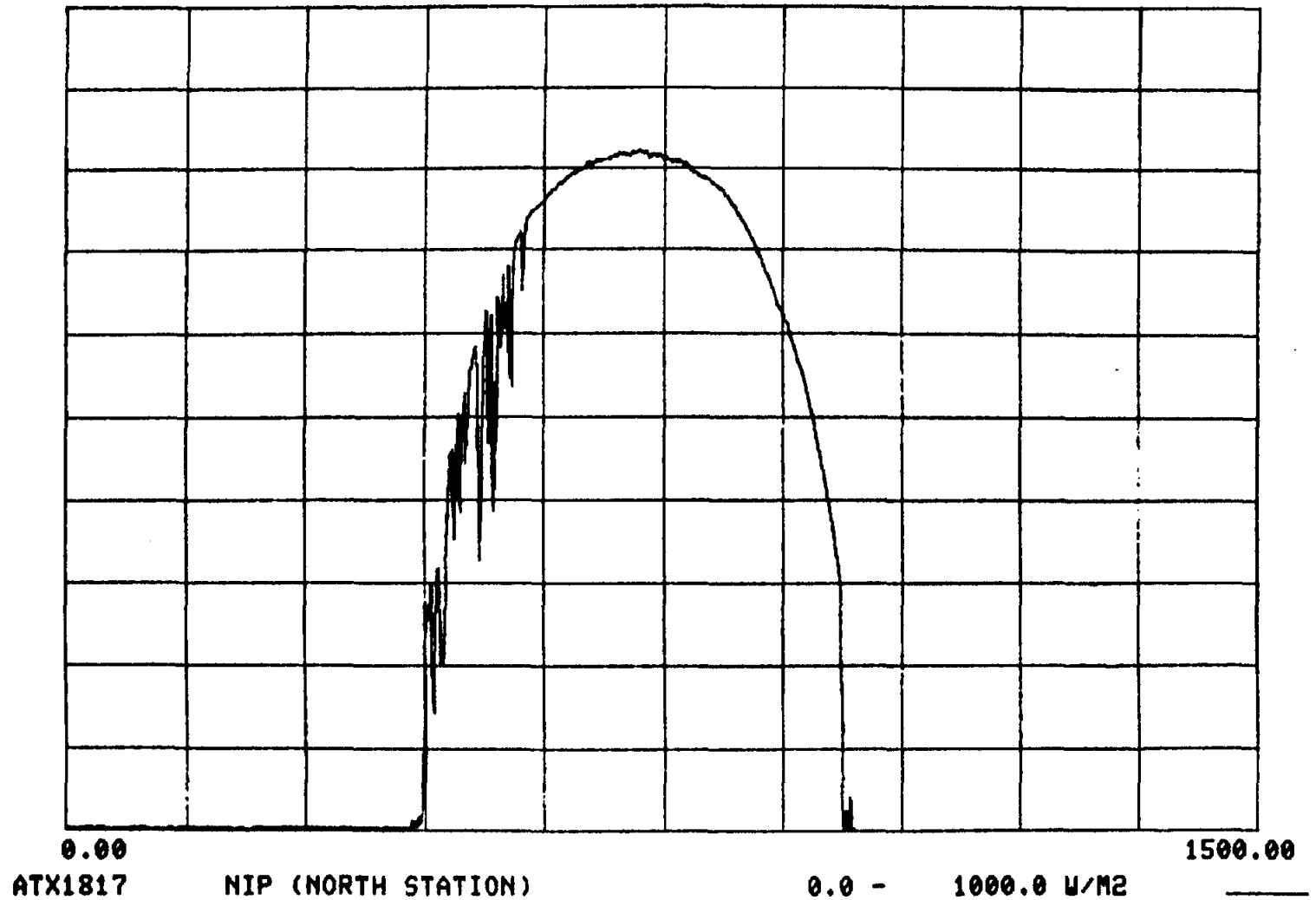
SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 008 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

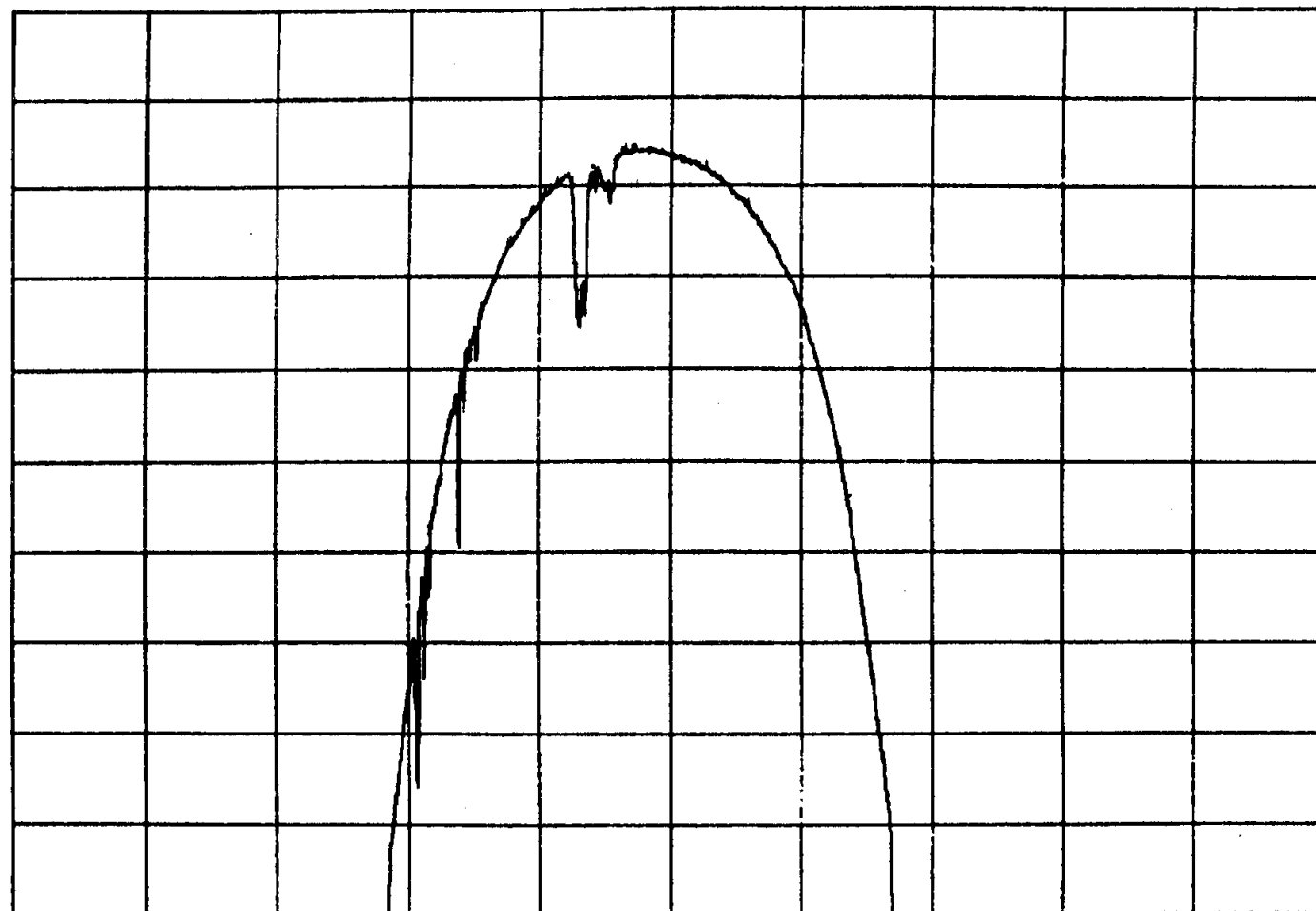


SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 009 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



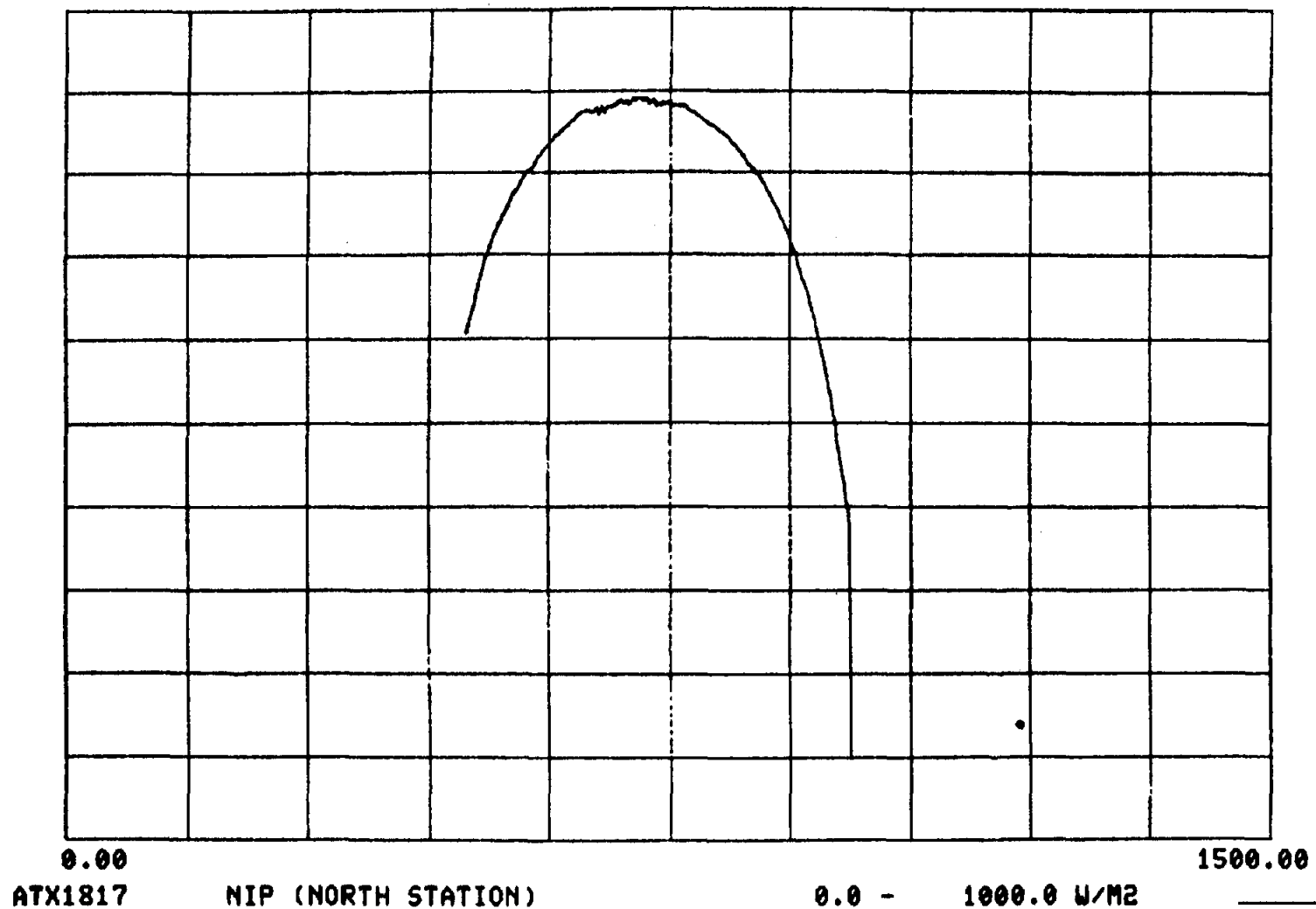
SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 010 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00 1500.00
##ATX1817A CNTRL ROOM ROOF NIP 0.0 - 1000.0 W/M2

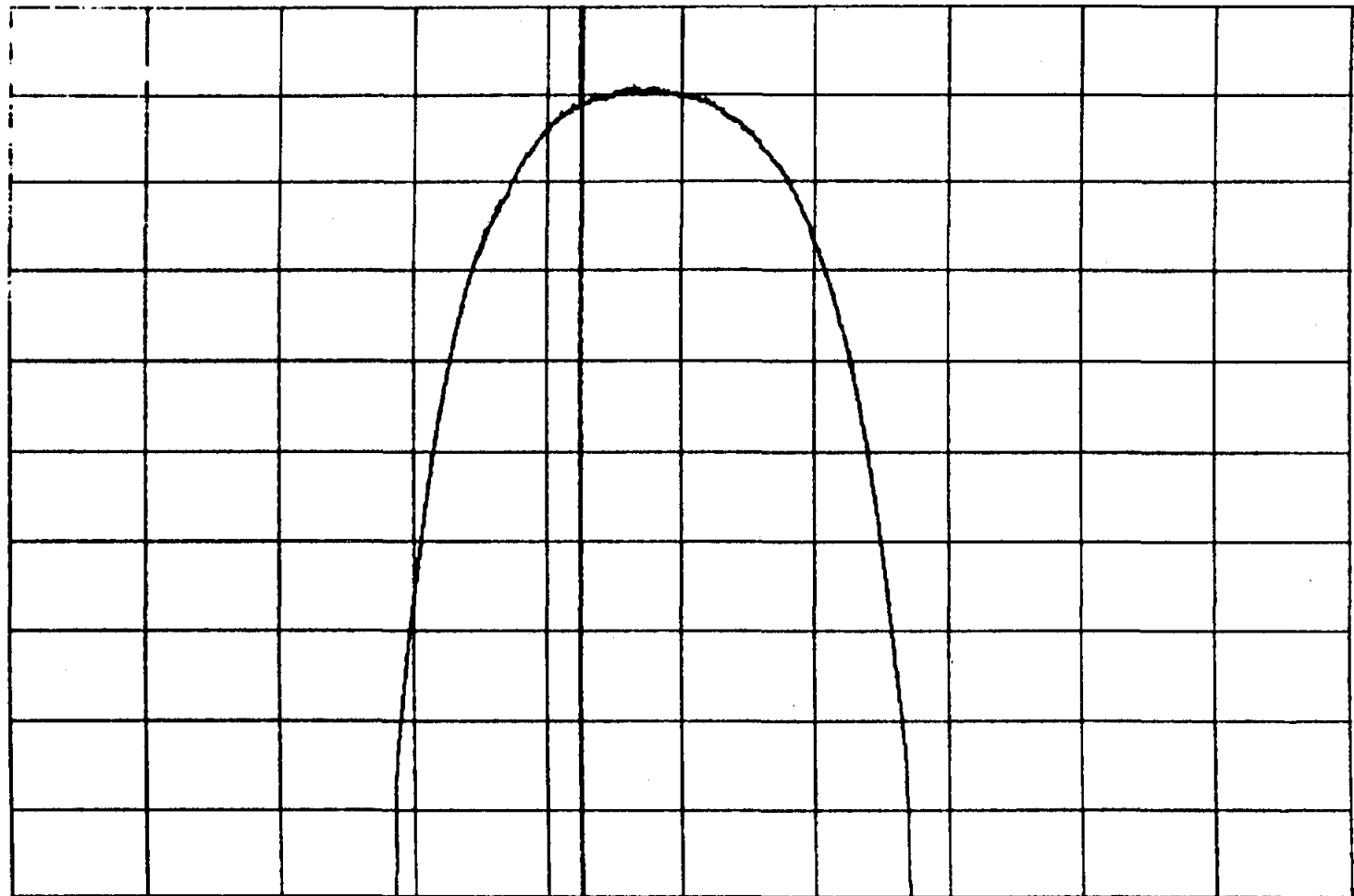
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 011 00 00 00.000

FOR NTH SAMPLE AVERAGE " 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 012 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

##ATX1817A

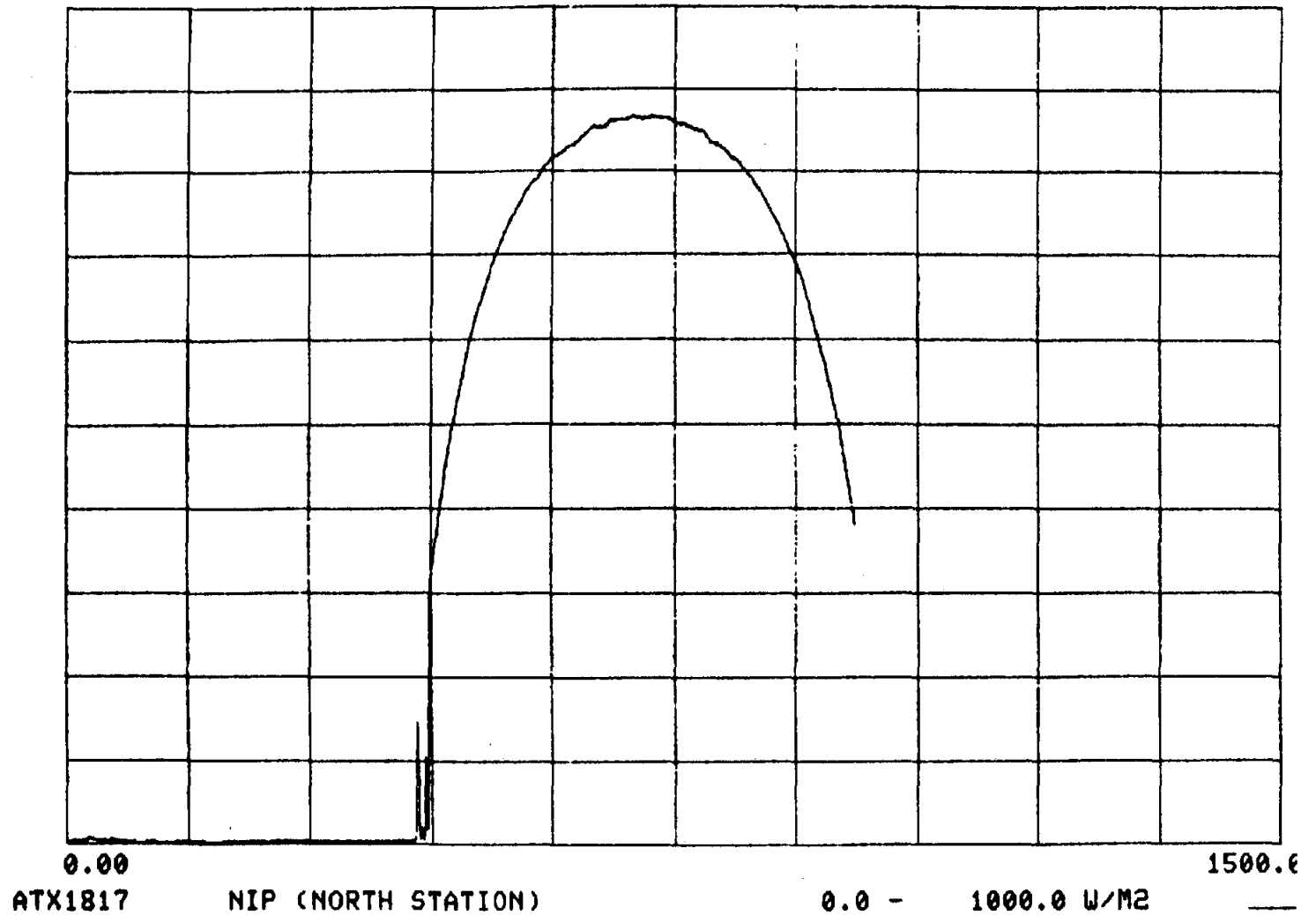
CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2

1500.00

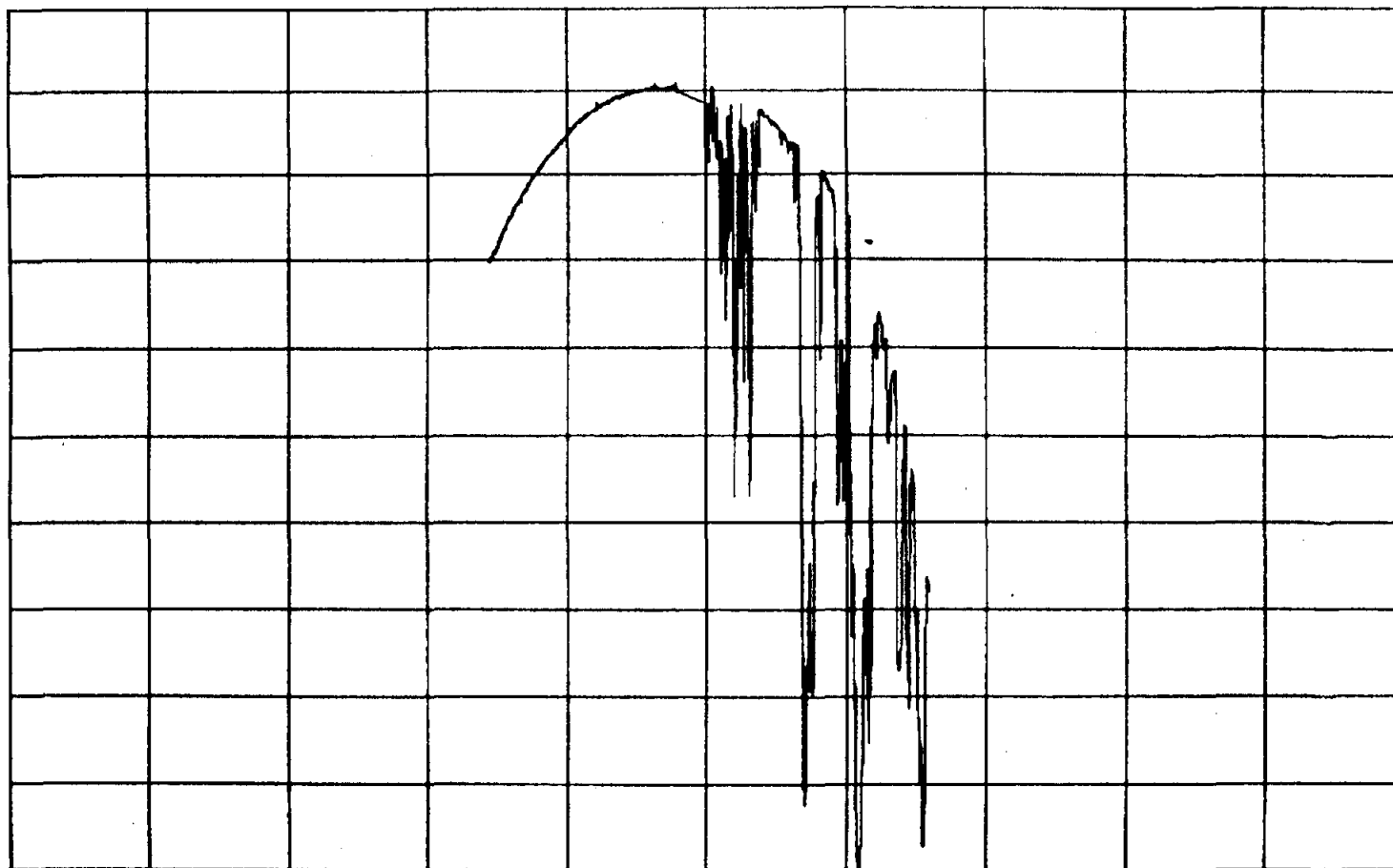
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 013 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 014 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

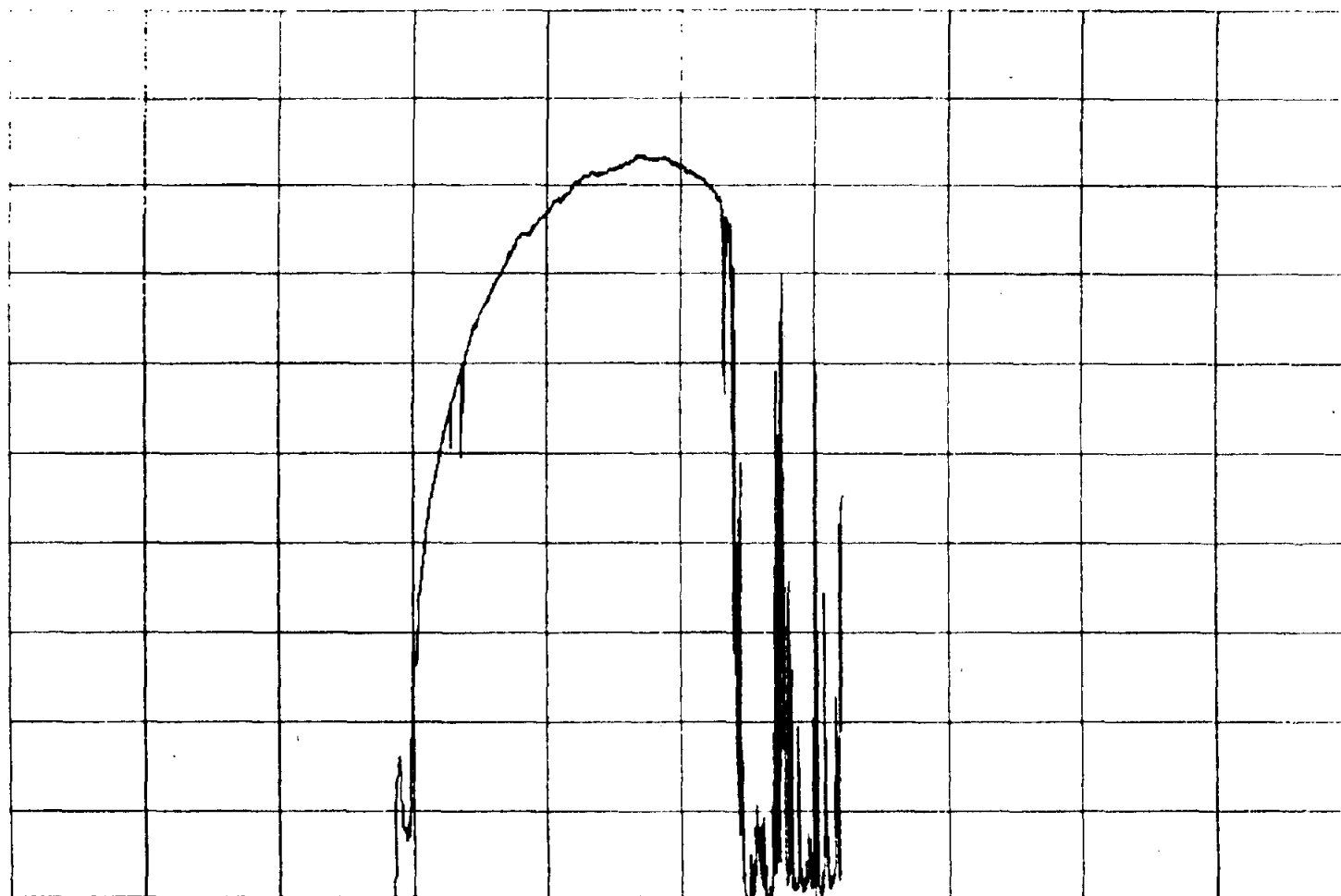


0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 015 00 00 00.000

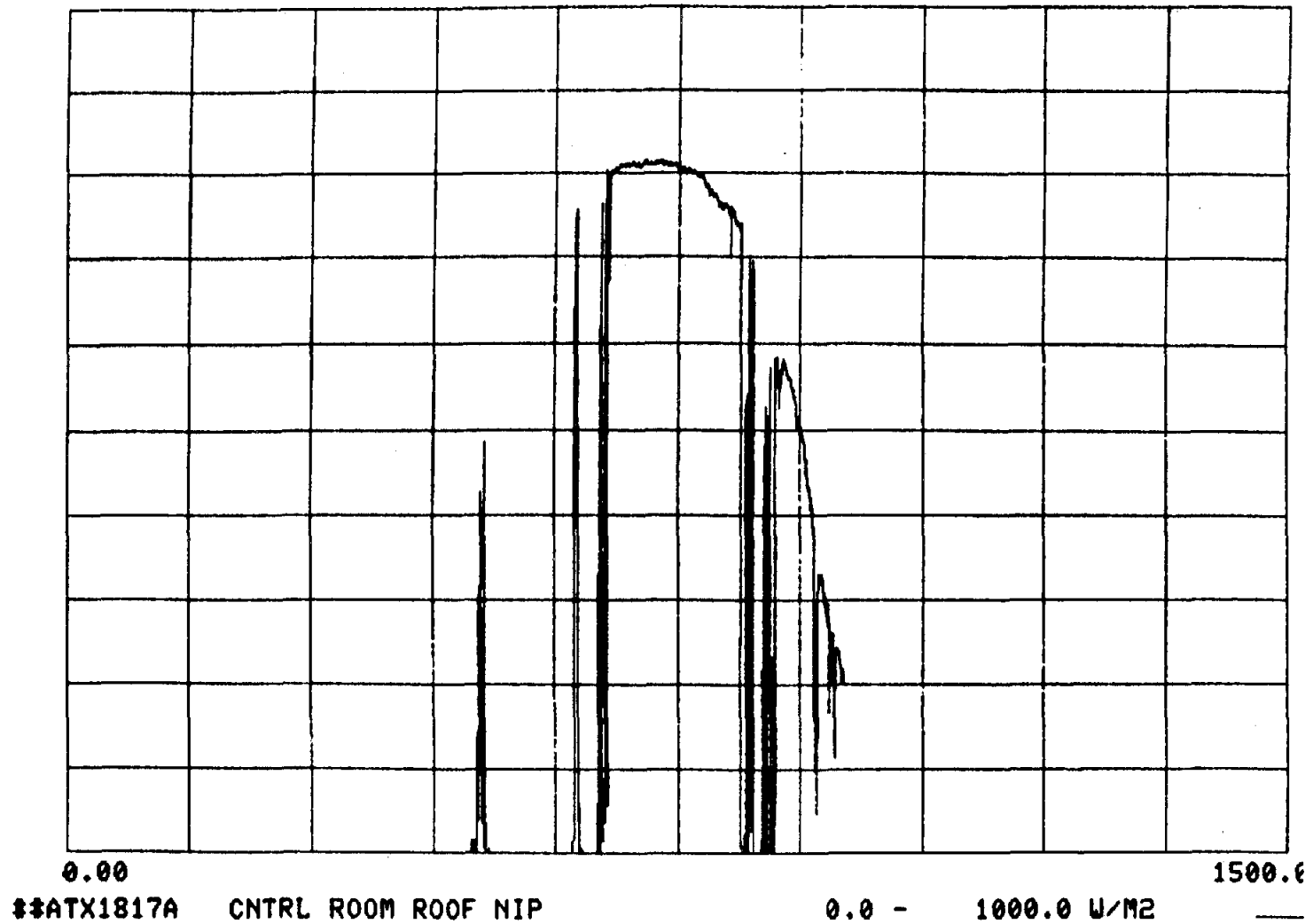
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



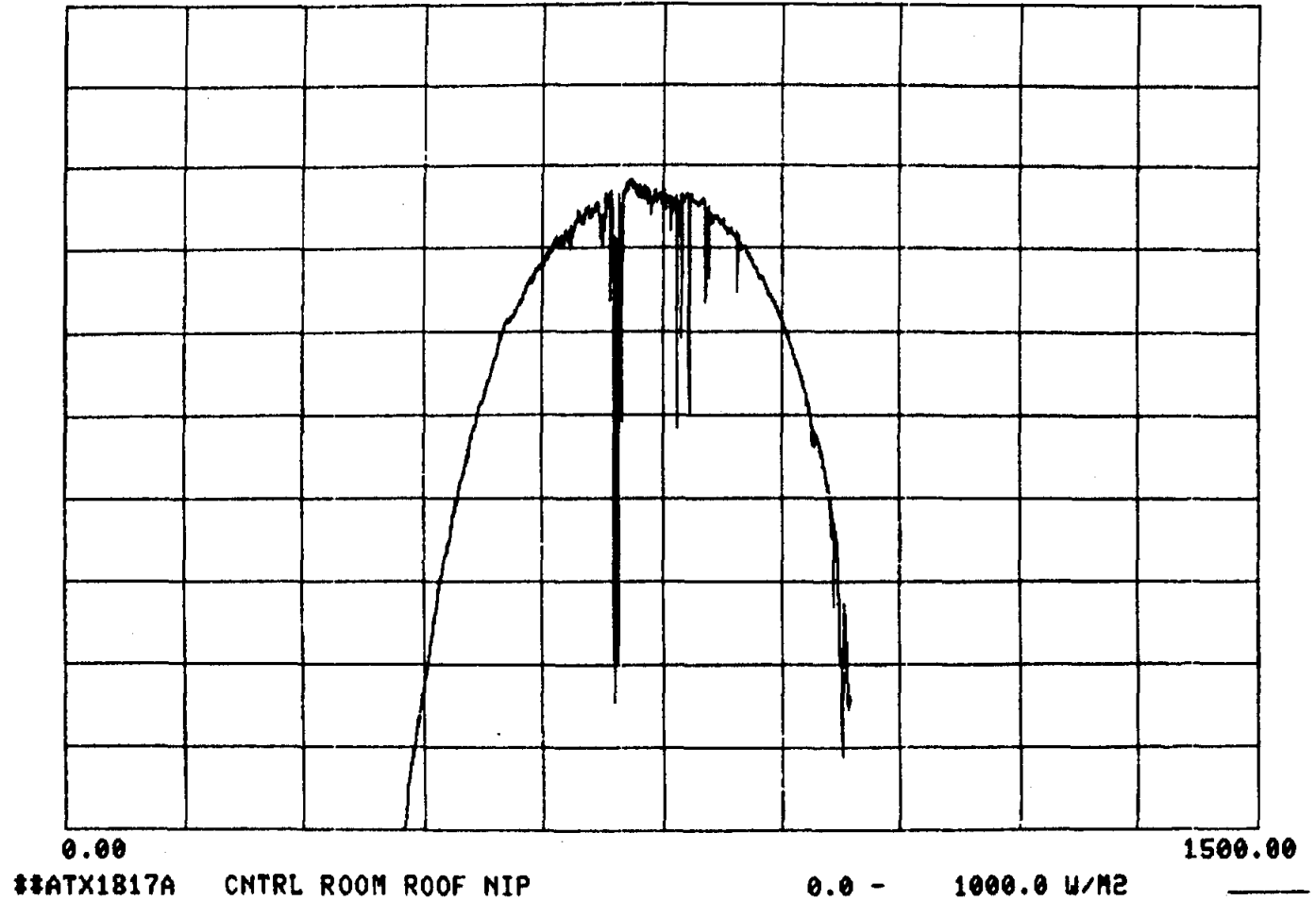
0.00 1500.00
##ATX1817A CNTRL ROOM ROOF NIP 0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 016 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

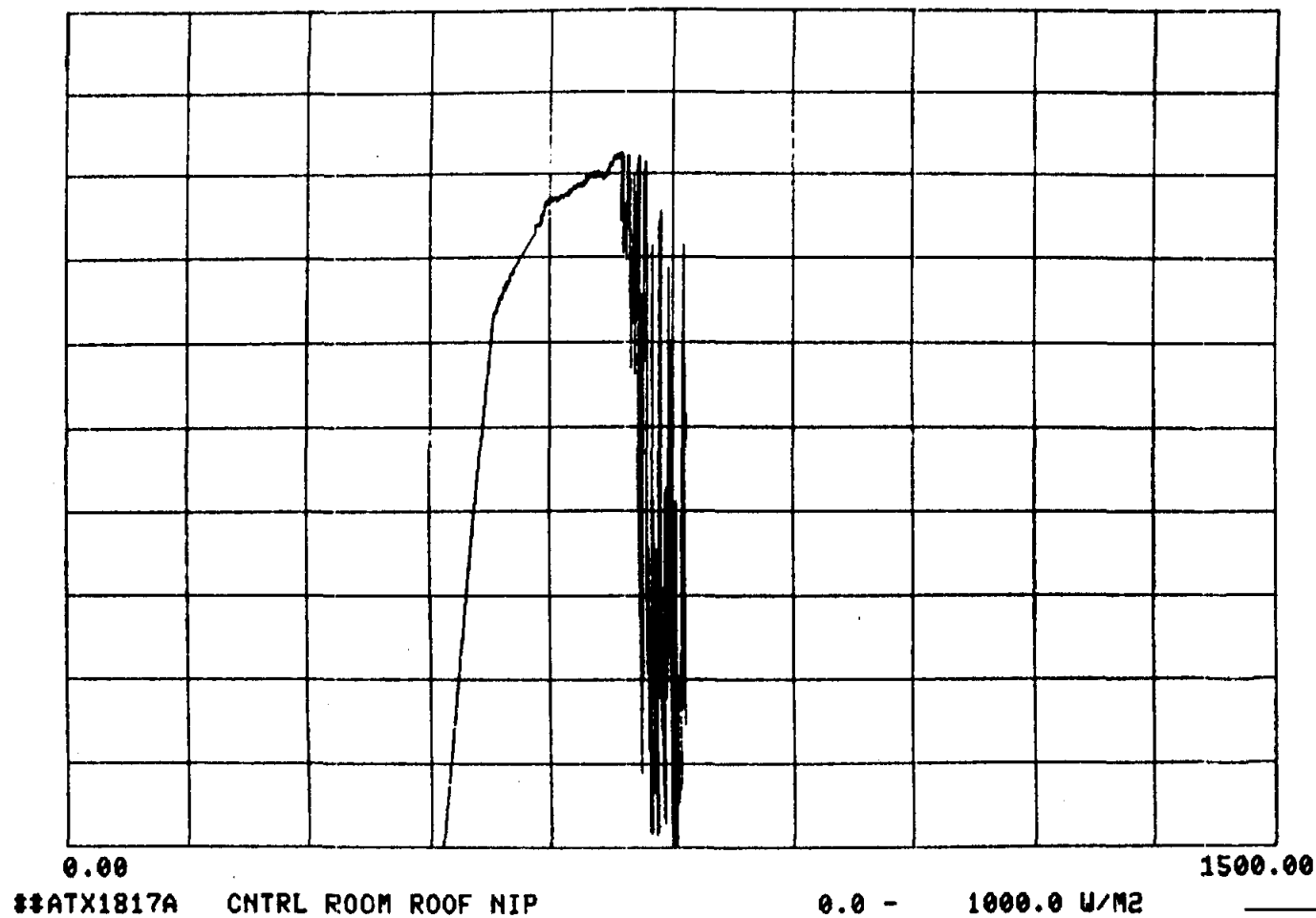


SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 017 00 00 00.000 FOR 1500.0000 MINUTE(S)



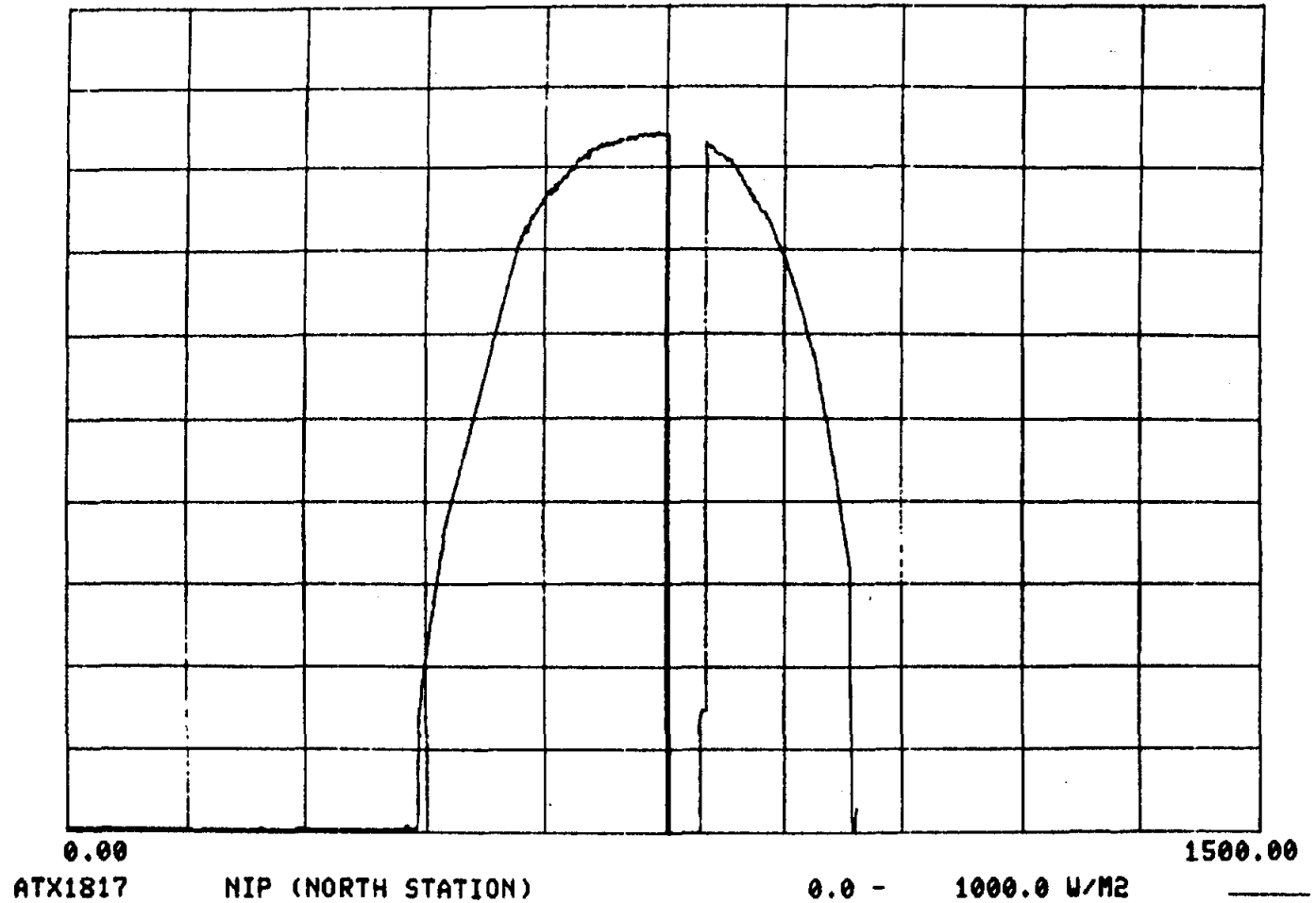
SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 019 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

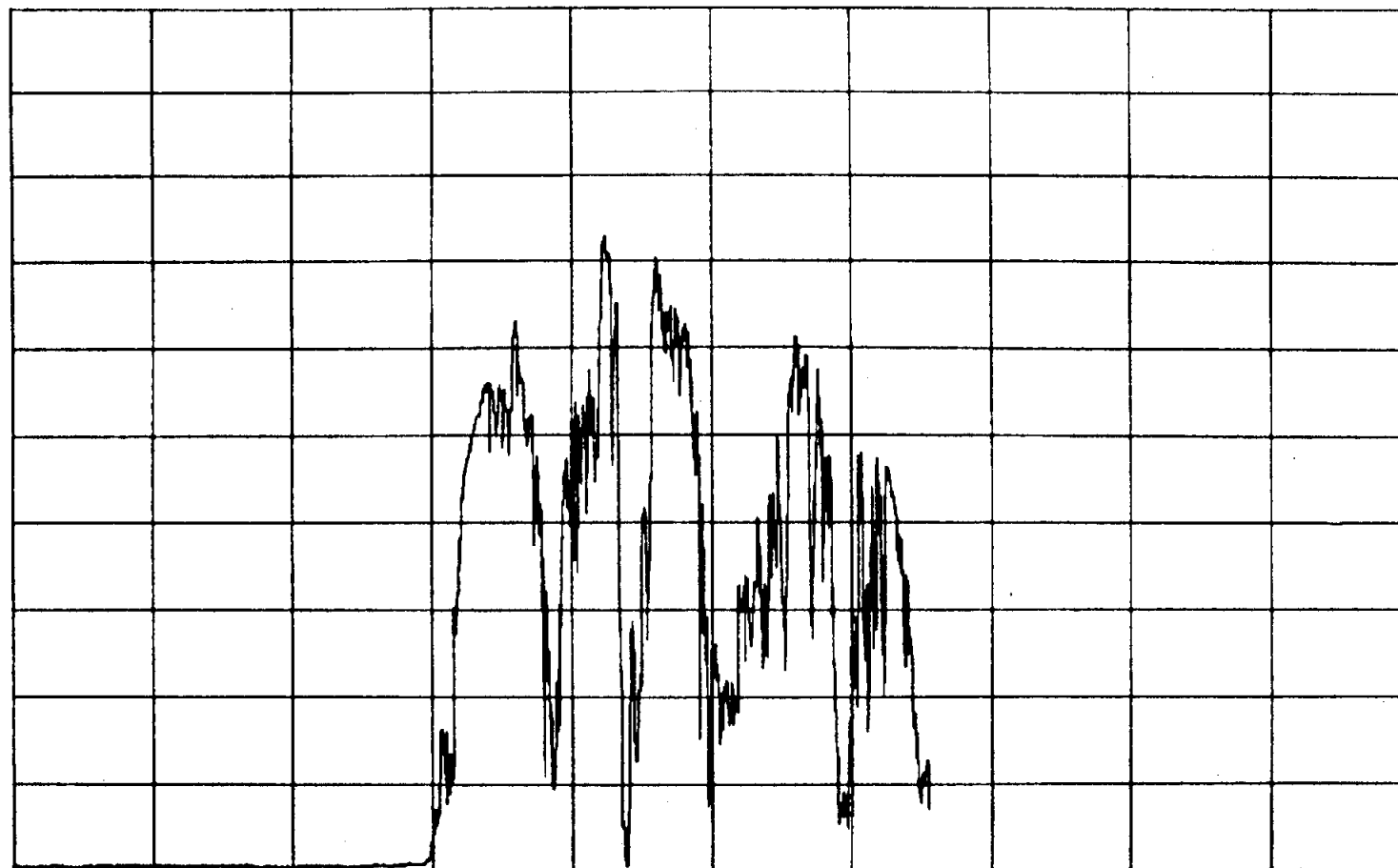


SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 020 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 021 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00 1500.00
ATX1817 NIP (NORTH STATION) 0.0 - 1000.0 W/M2

SOLAR DATA PLOT
REFERENCE TIME: 022 00 00 00.000

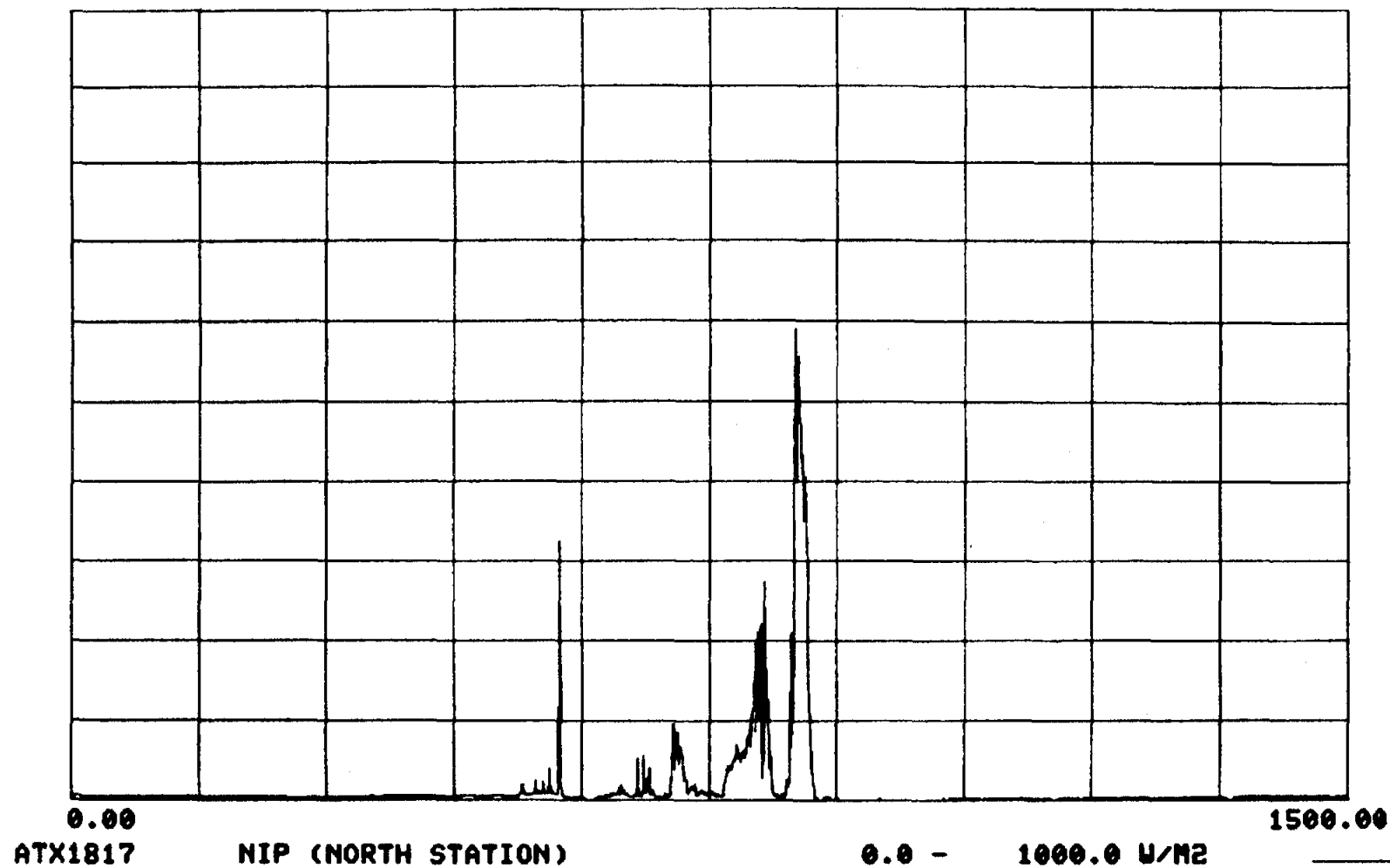
PLOT # MISL1

FOR

NTH SAMPLE AVERAGE =
1500.0000 MINUTE(S)

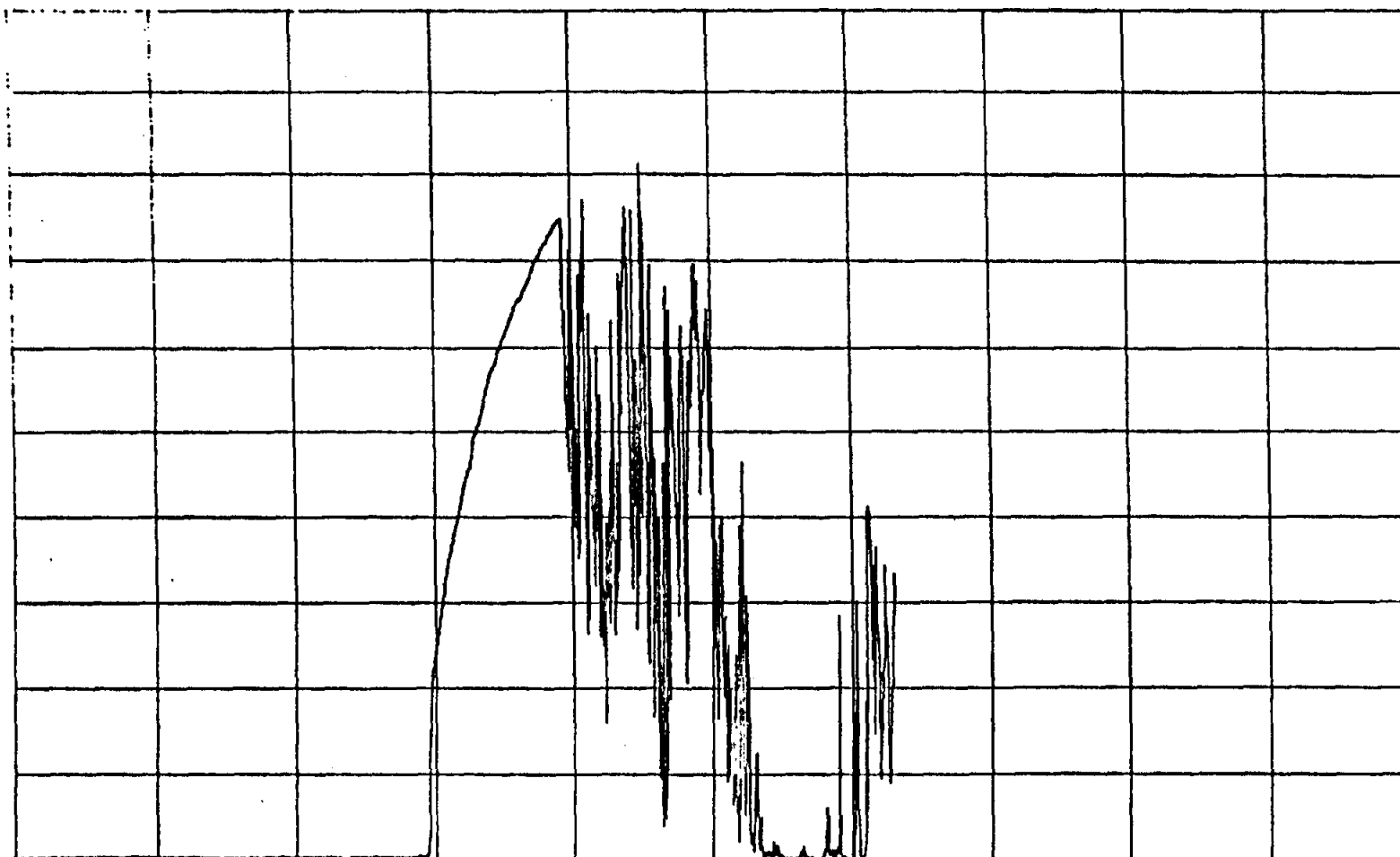
1

170



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 023 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

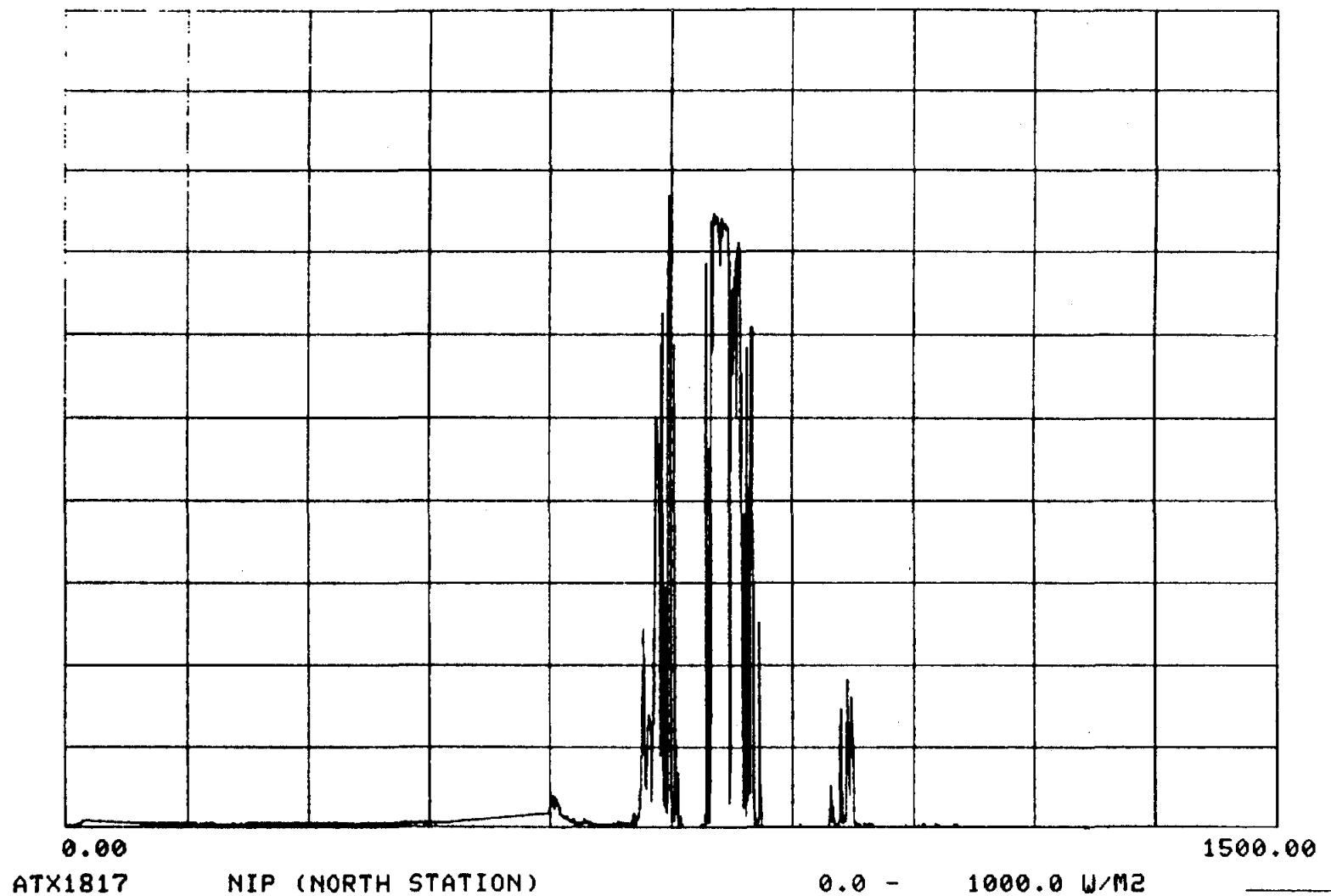
NIP (NORTH STATION)

0.0 - 1000.0 W/M2

1500.00

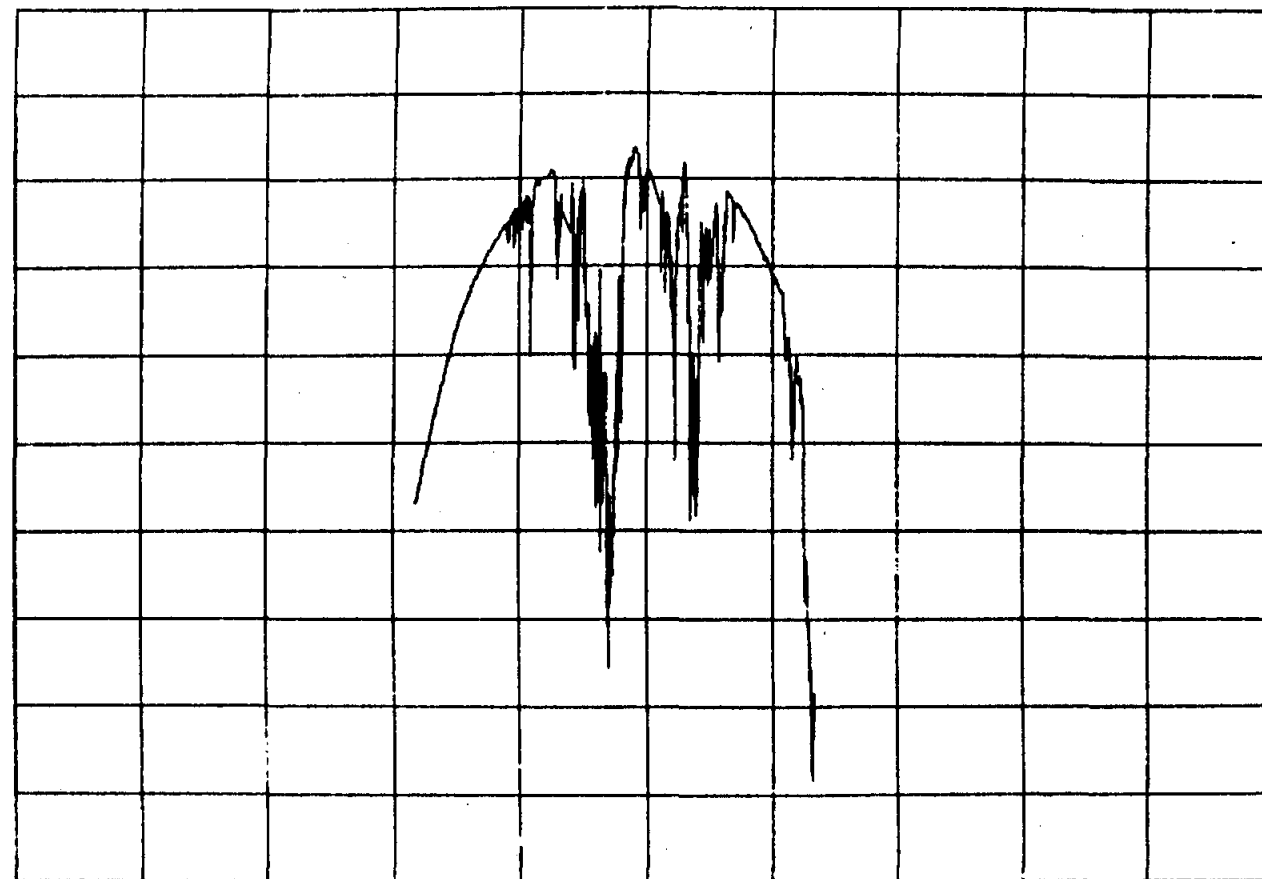
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 024 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 025 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



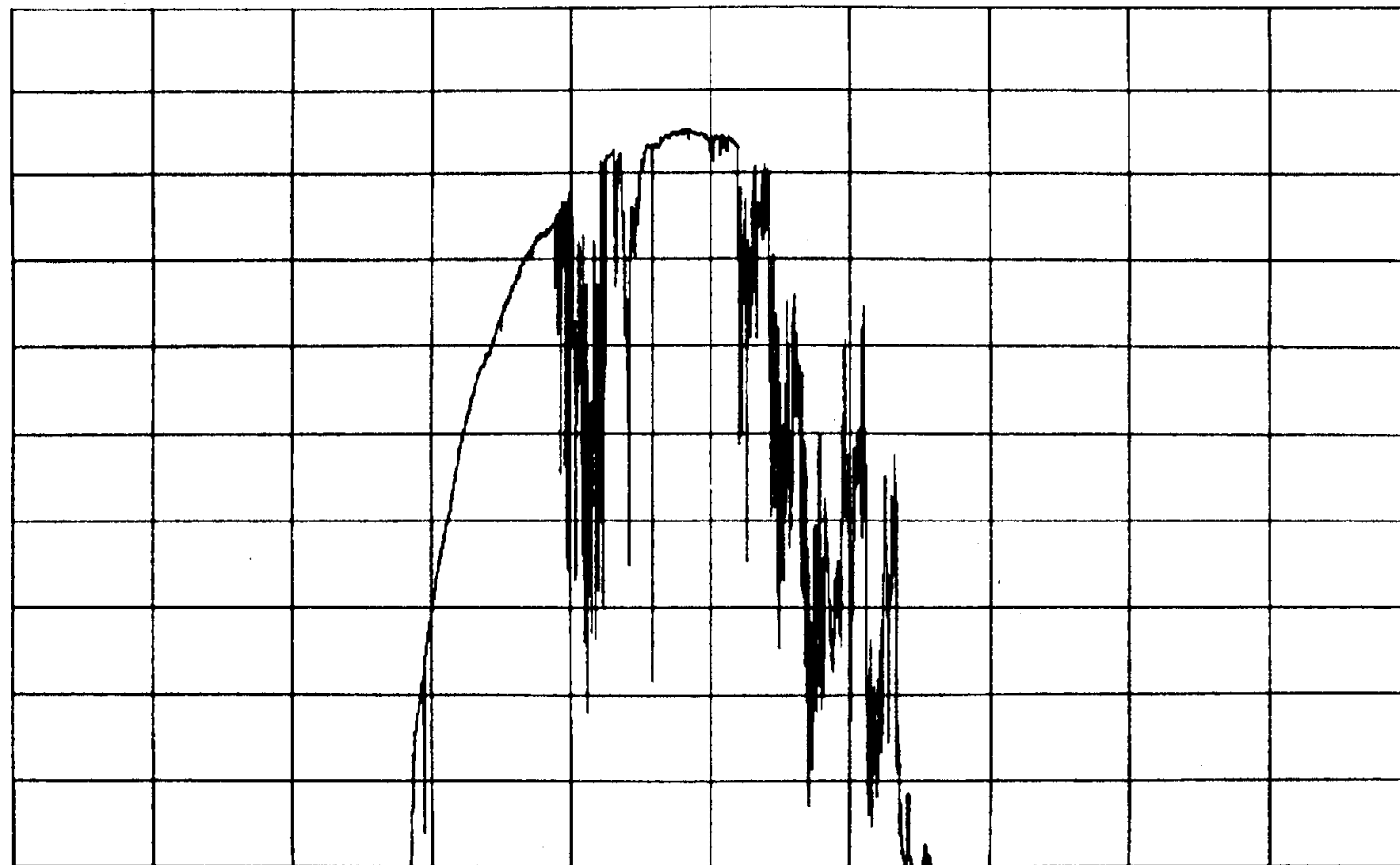
0.00
ATX1817

NIP (NORTH STATION)

0.0 - 1000.0 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 029 00 00 00.000

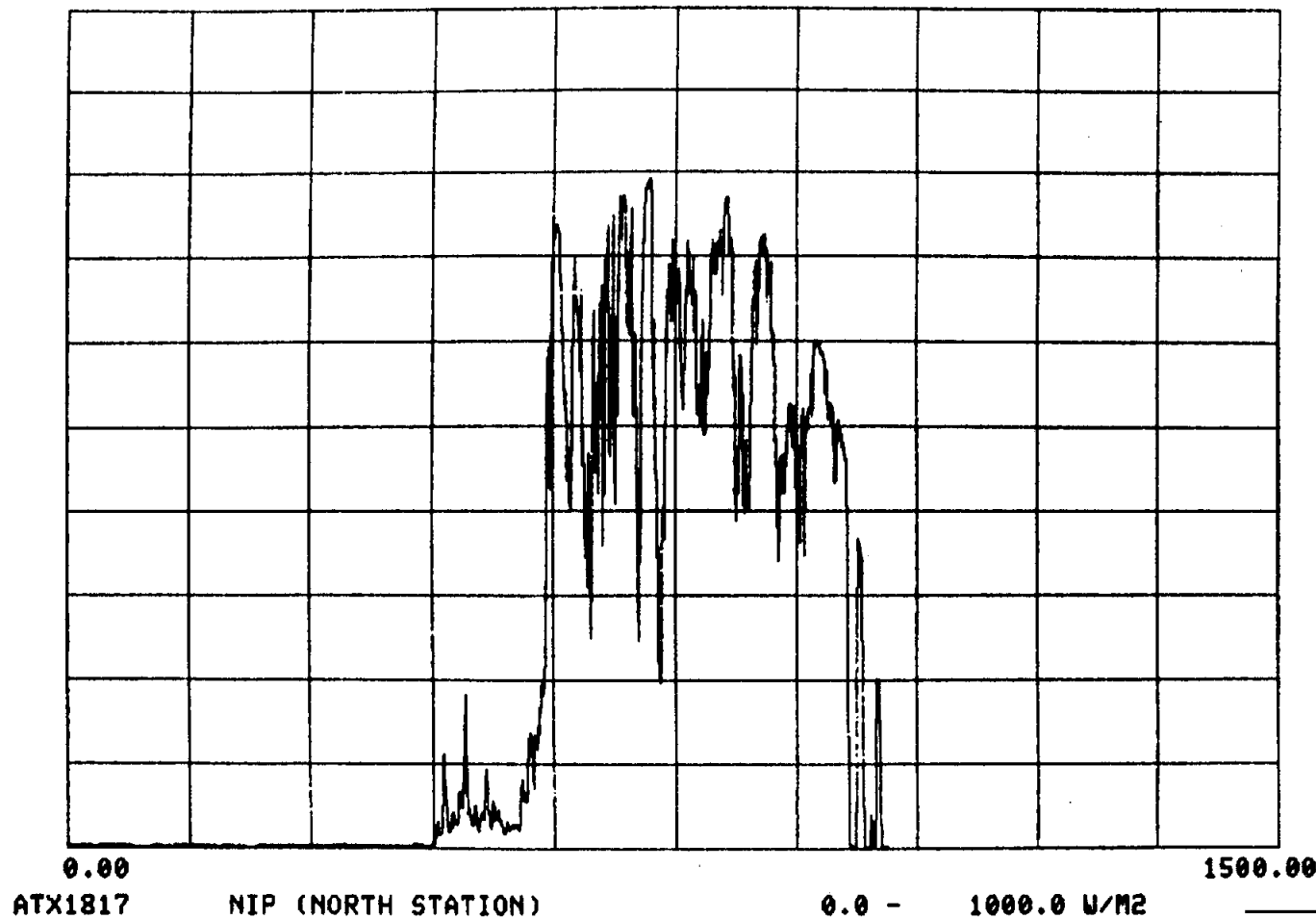
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1 NTH SAMPLE AVERAGE 1
REFERENCE TIME: 030 00 00 00.000 FOR 1500.0000 MINUTE(S)



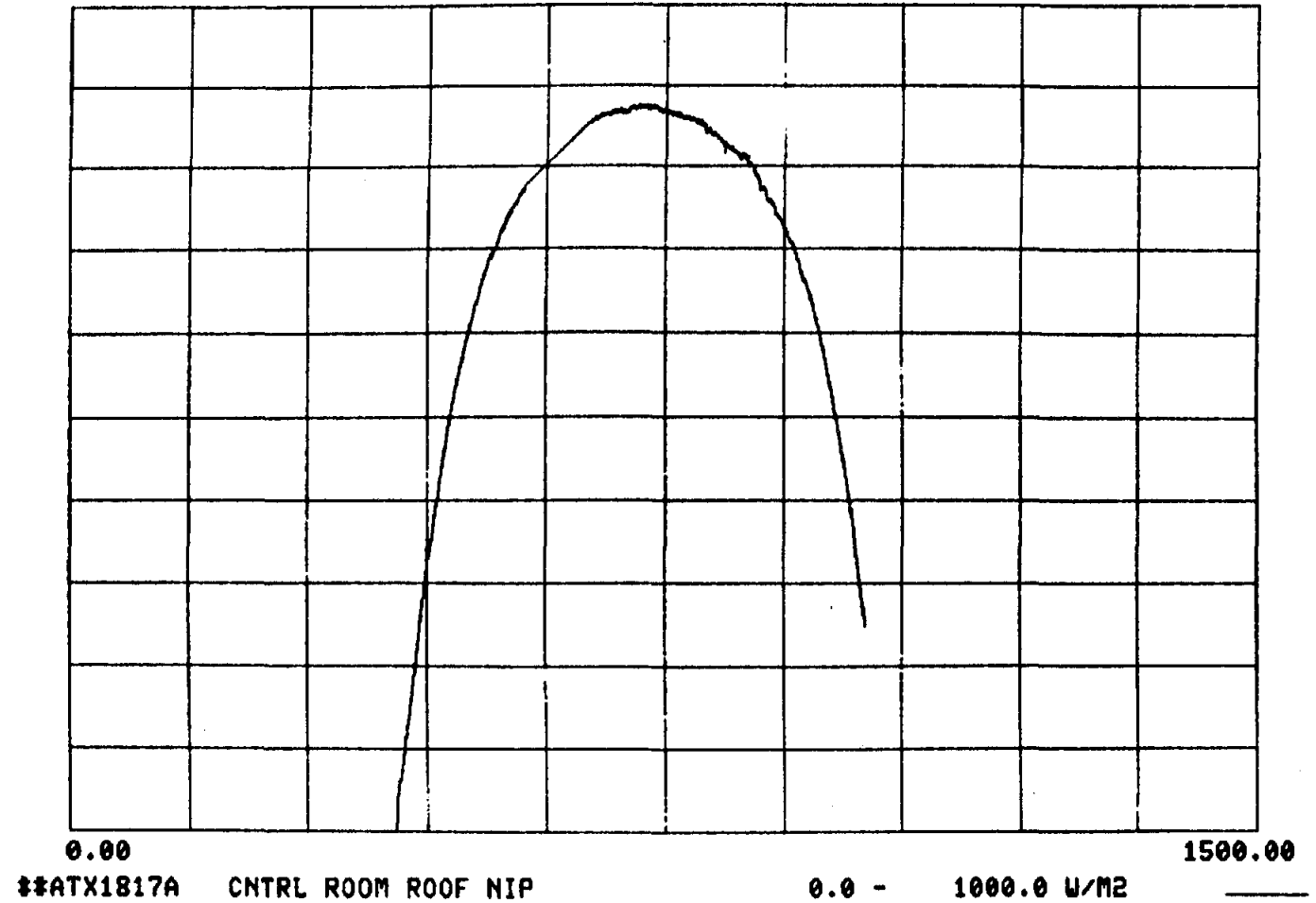
SOLAR DATA PLOT
REFERENCE TIME: 031 00 00 00.000

PLOT # MISL3

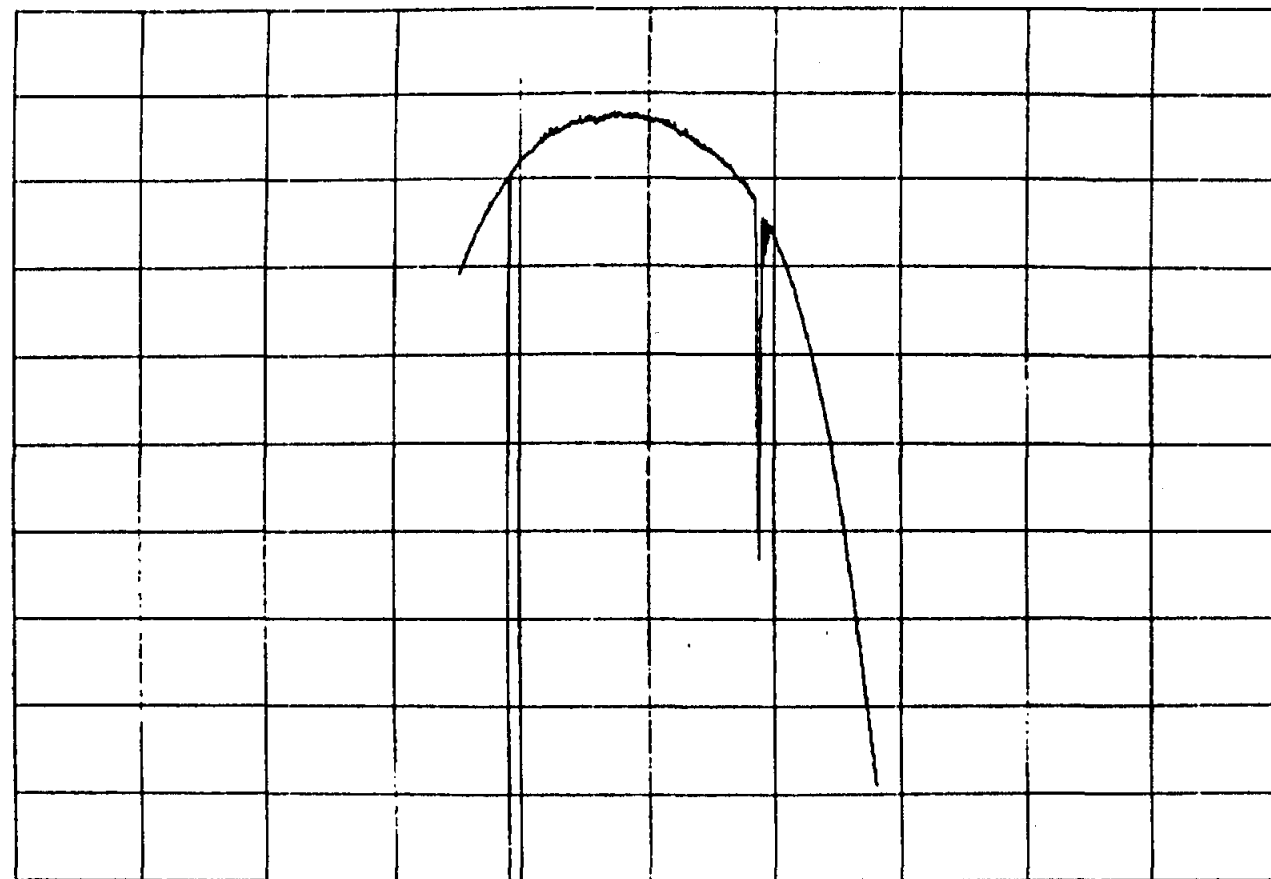
FOR

NTH SAMPLE AVERAGE =
1500.0000 MINUTE(S)

1



SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
 REFERENCE TIME: 032 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00 1500.00
 ***ATX1817A CNTRL ROOM ROOF NIP 0.0 - 1000.0 U/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 035 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

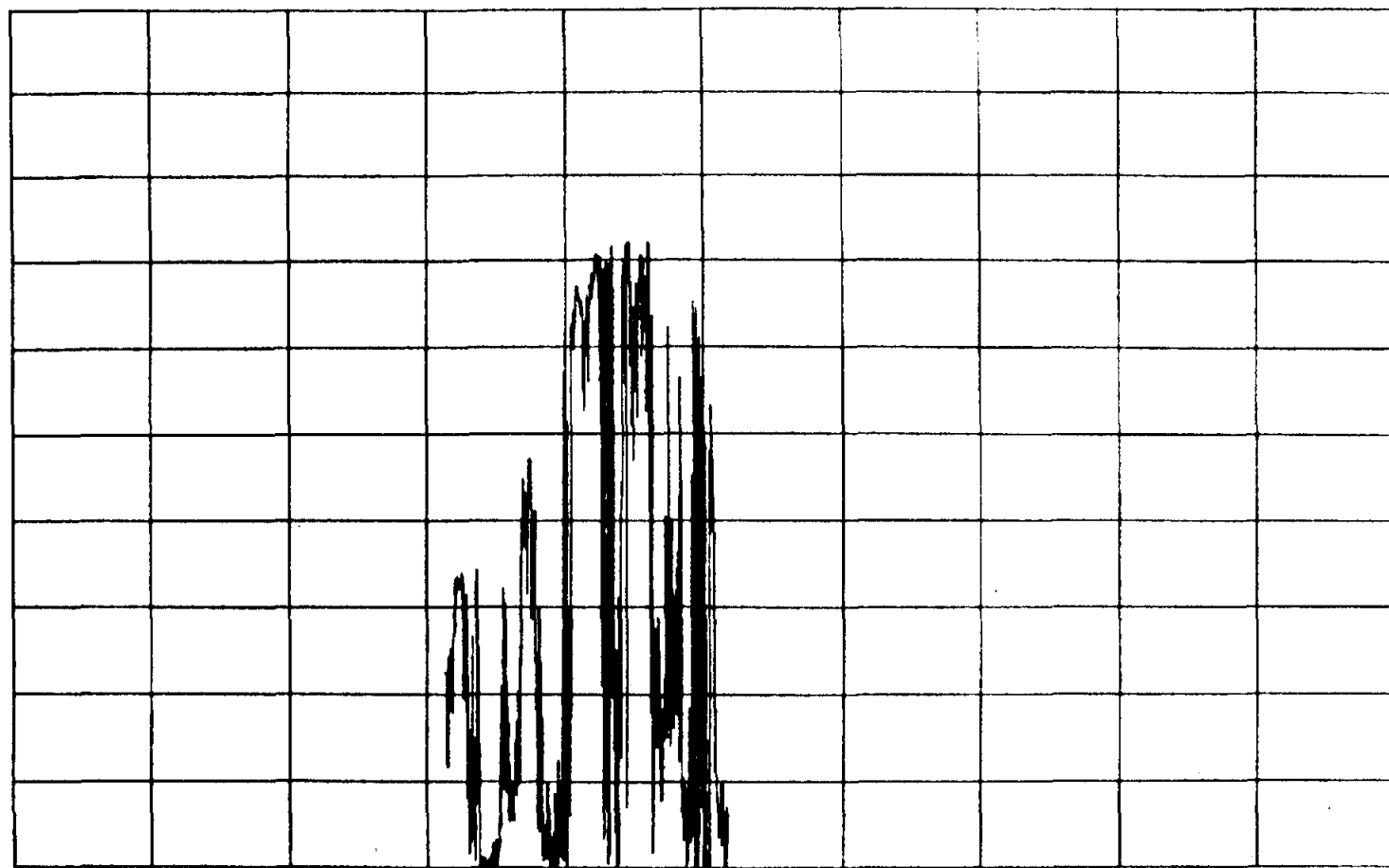


0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 036 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

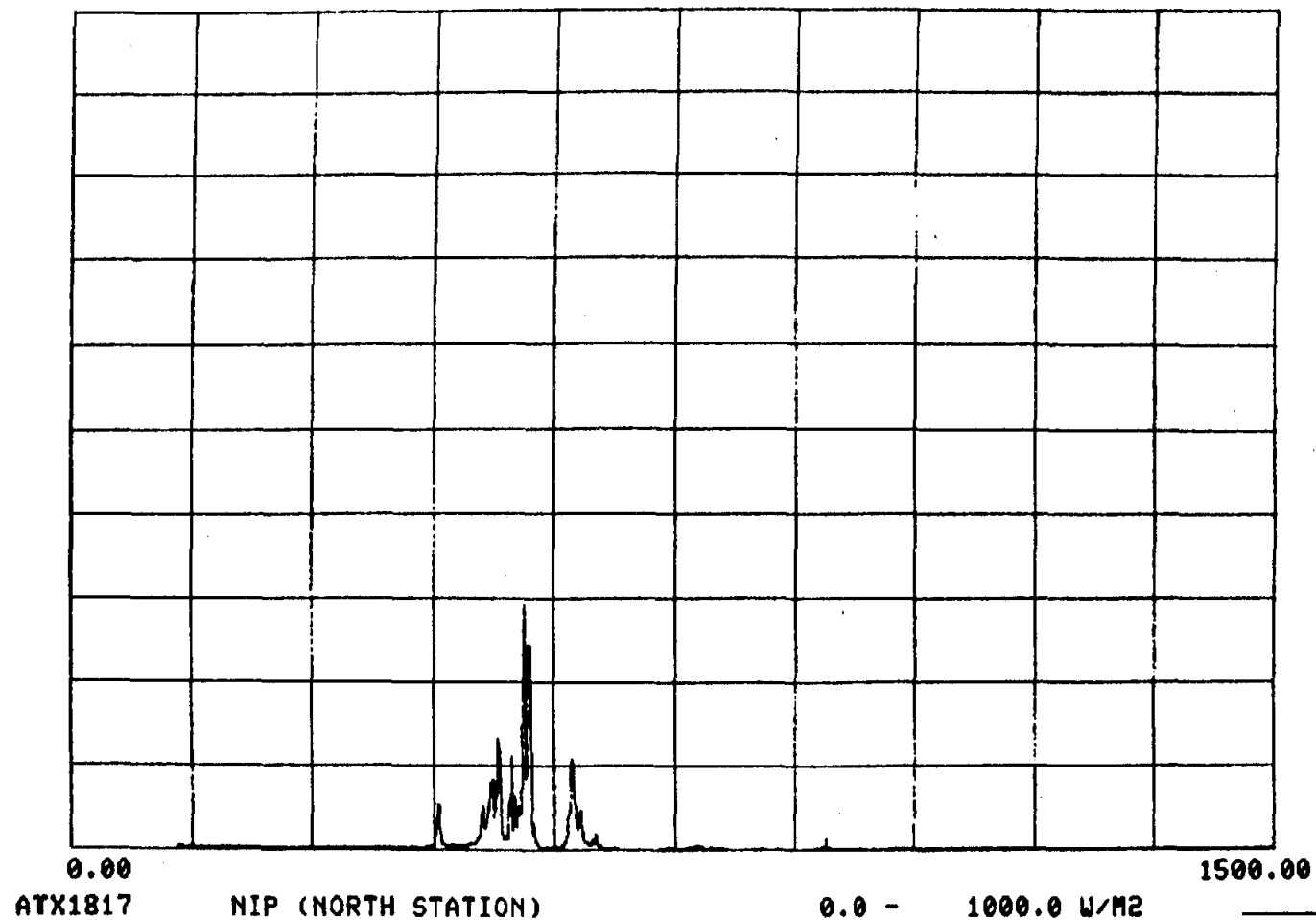


0.00
##ATX1817A CNTRL ROOM ROOF NIP

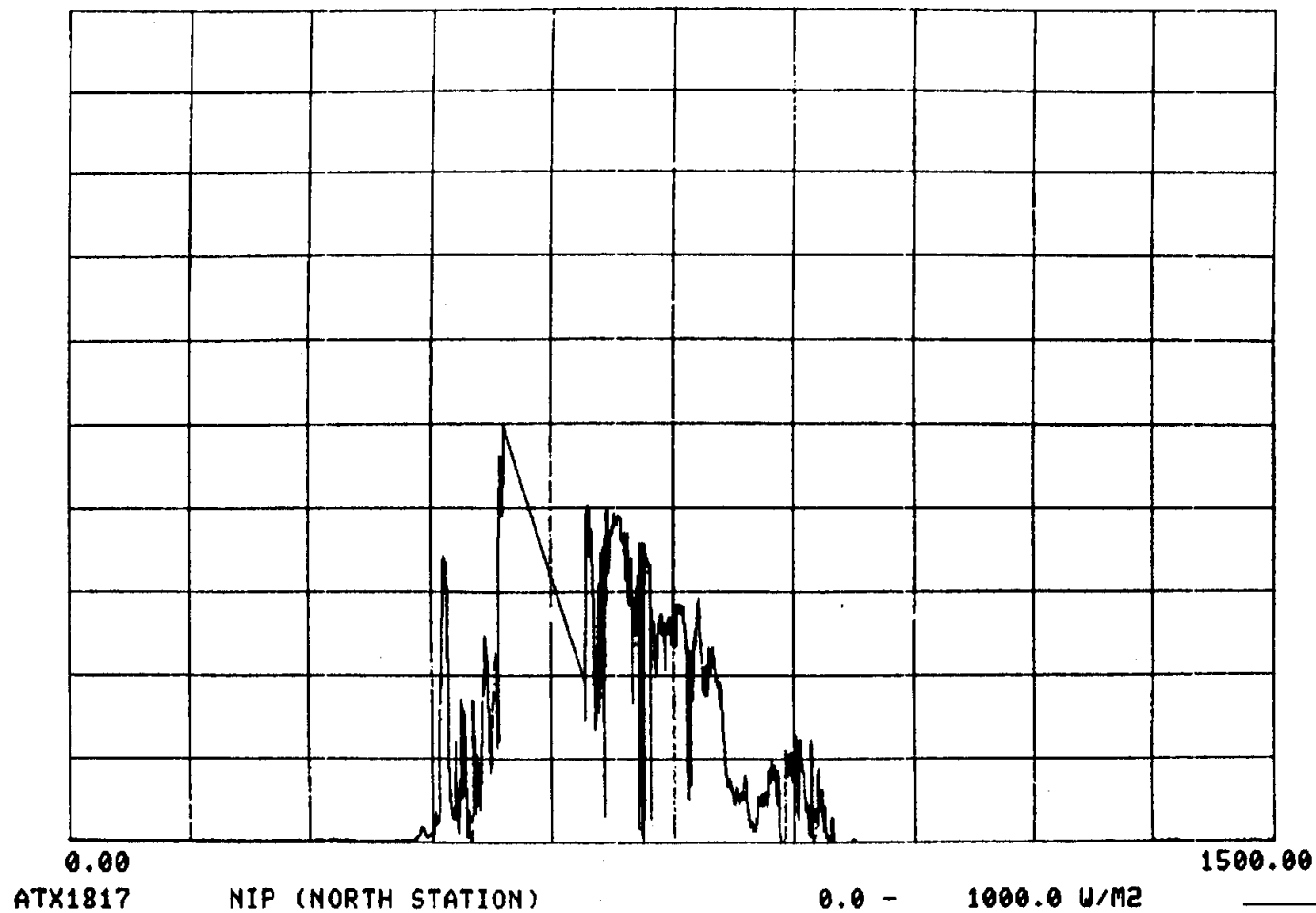
0.0 - 1000.0 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 037 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 038 00 00 00.000 FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 039 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

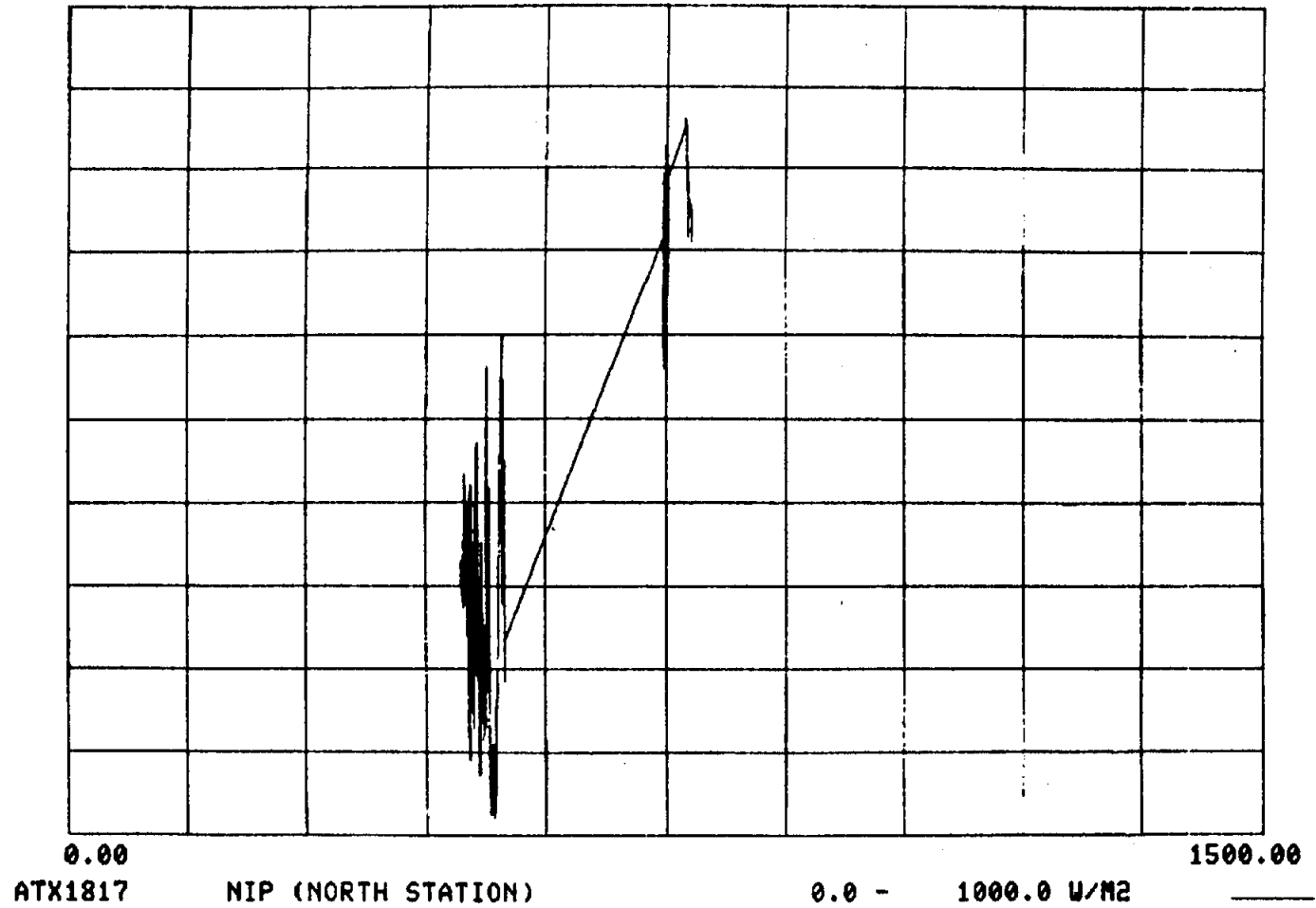
##ATX1817A

CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2

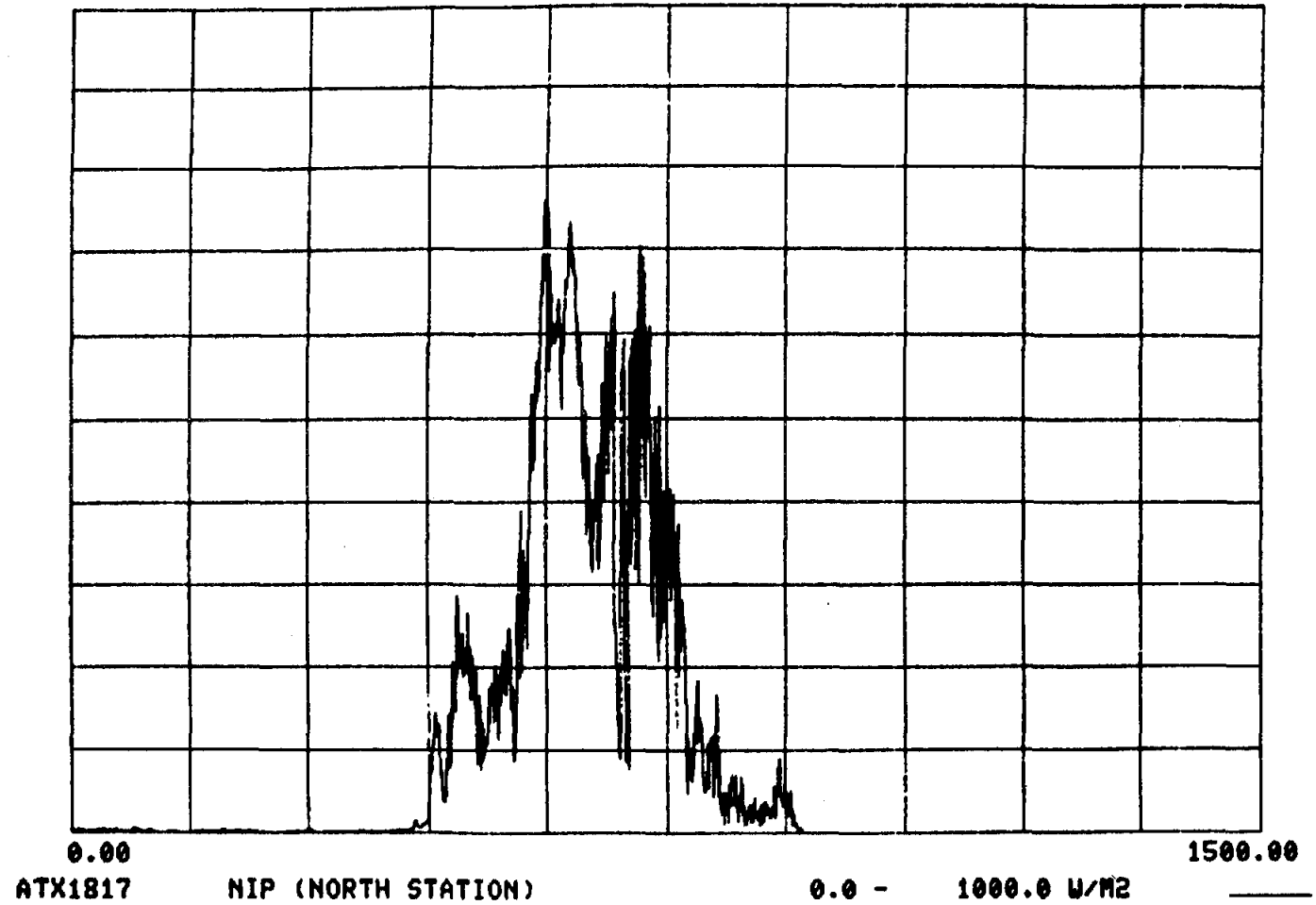
1500.00

SOLAR DATA PLOT PLOT # MISL1 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 040 00 00 00.000 FOR 1500.0000 MINUTE(S)



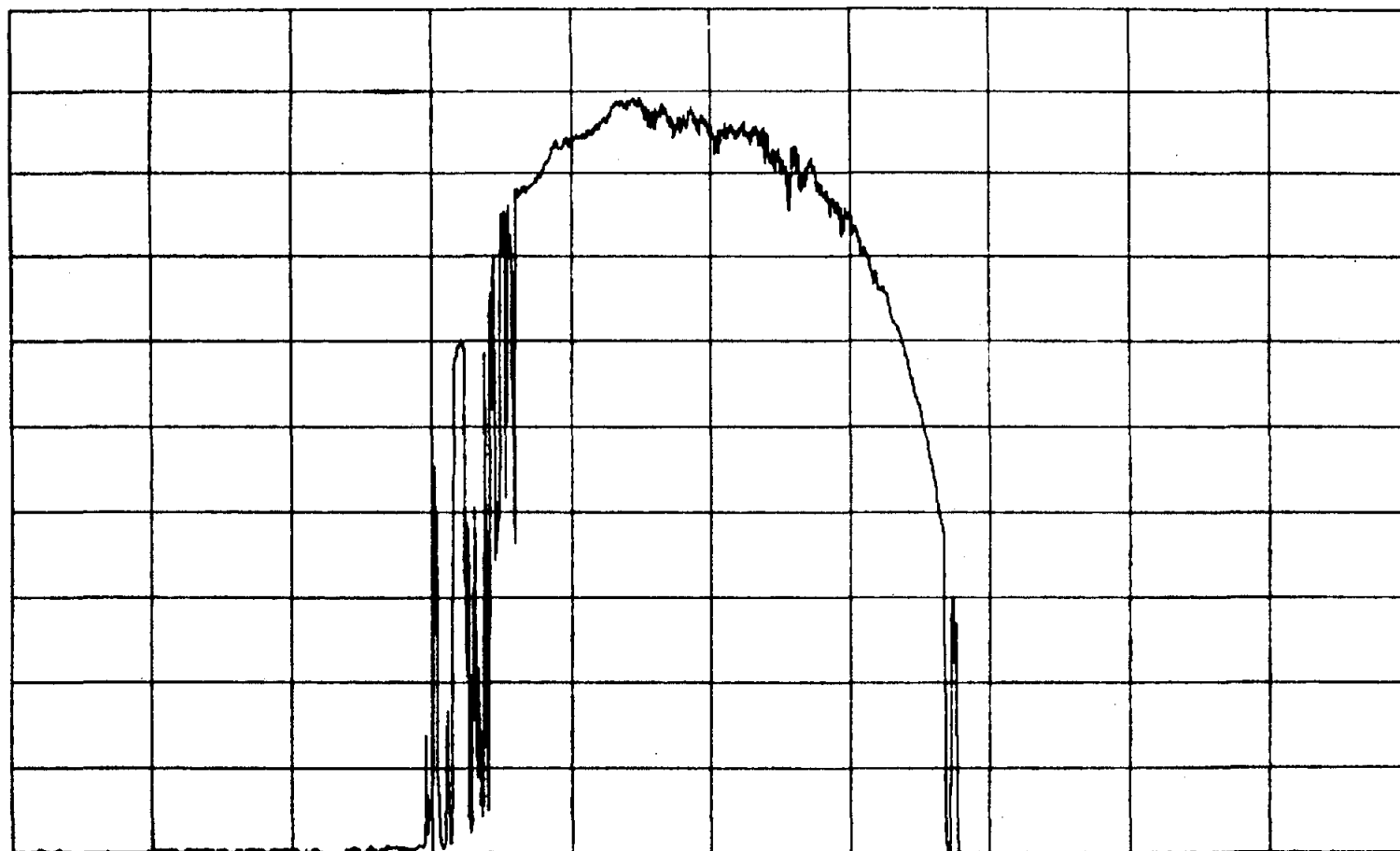
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 043 00 00 00.000 FOR

NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 044 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

NIP (NORTH STATION)

0.0 - 1000.0 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 045 00 00 00.000

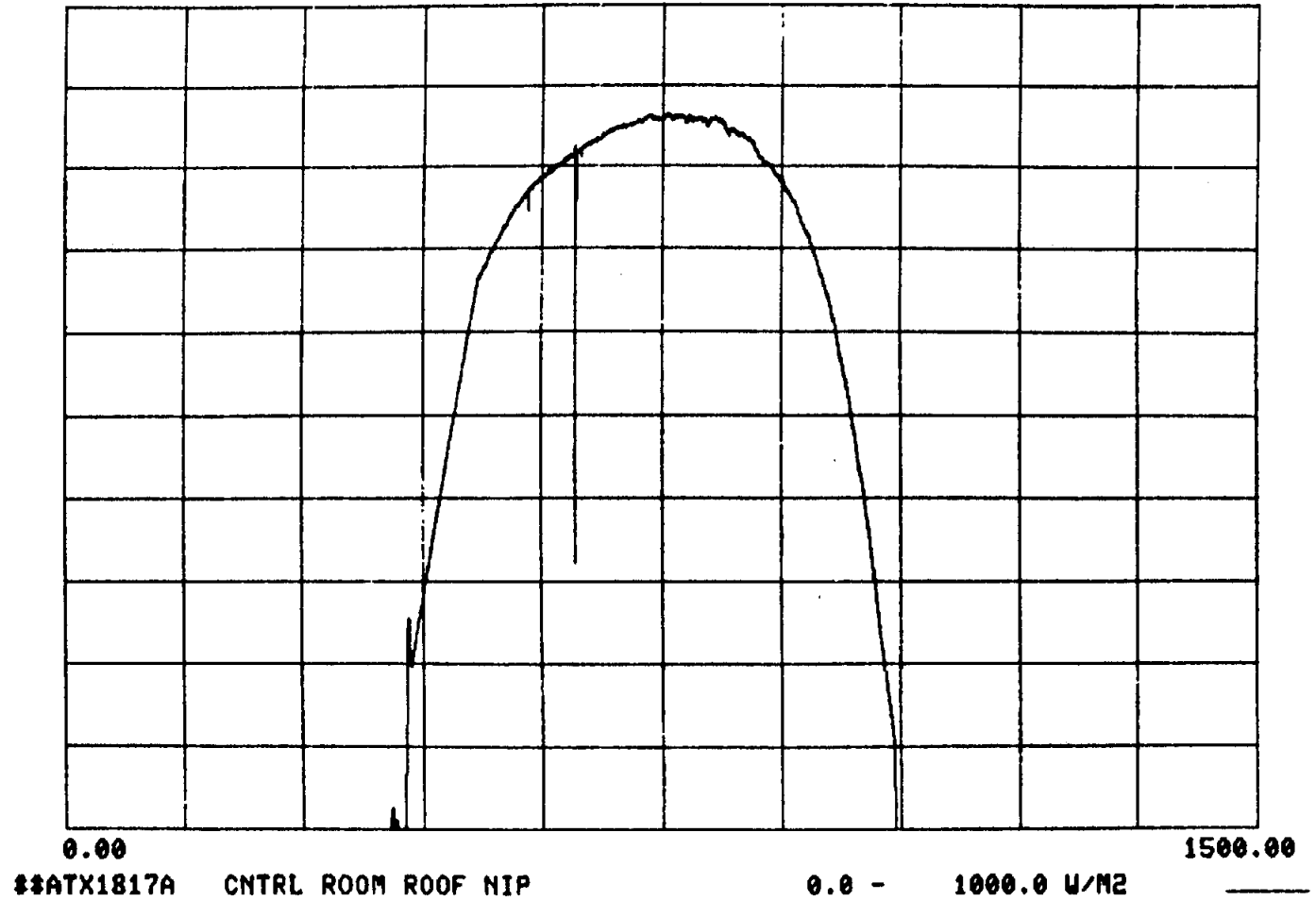
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
##ATX1817A CNTRL ROOM ROOF NIP

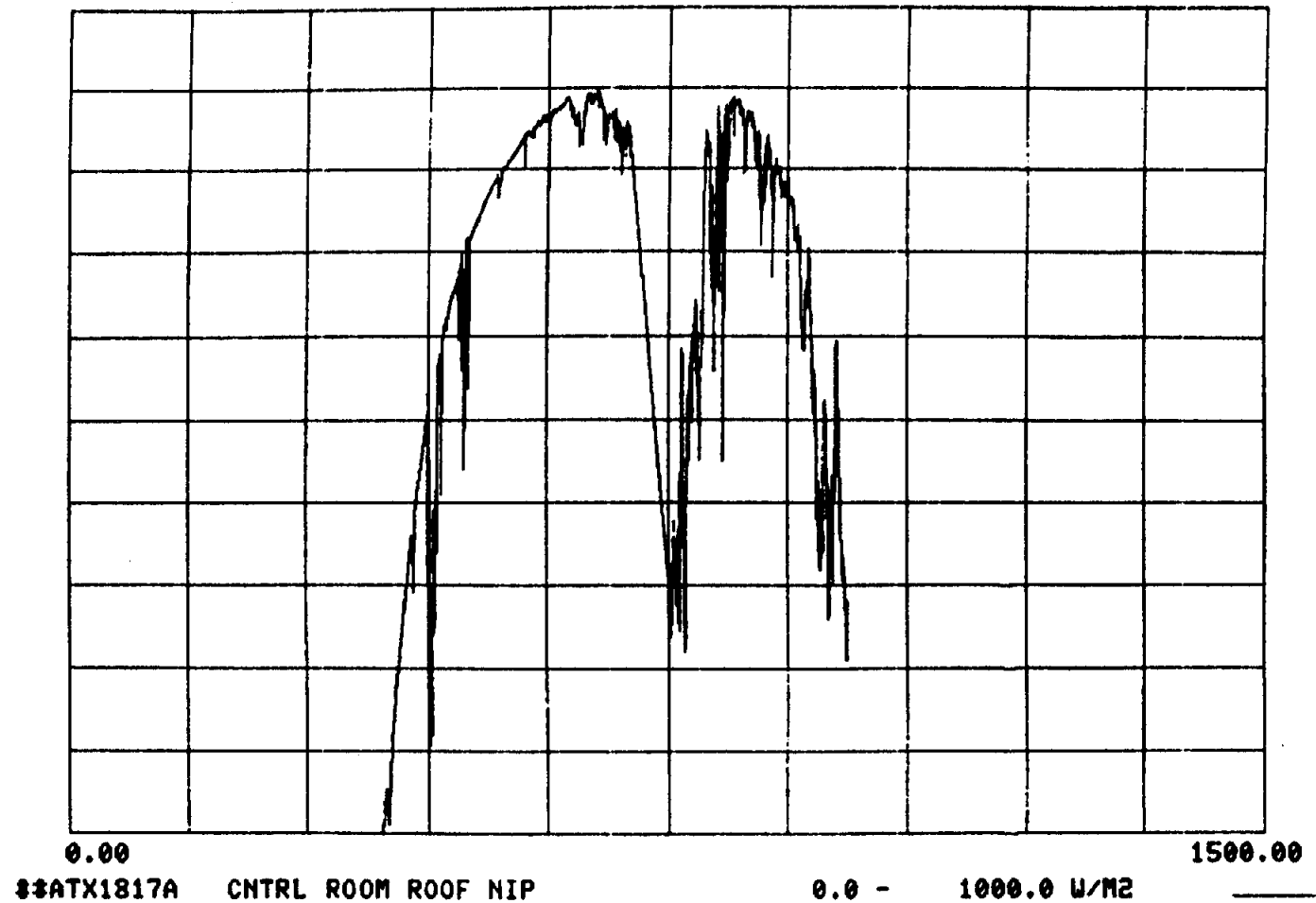
0.0 - 1000.0 W/M2
1500.00

SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 047 00 00 00.000 FOR 1500.0000 MINUTE(S)



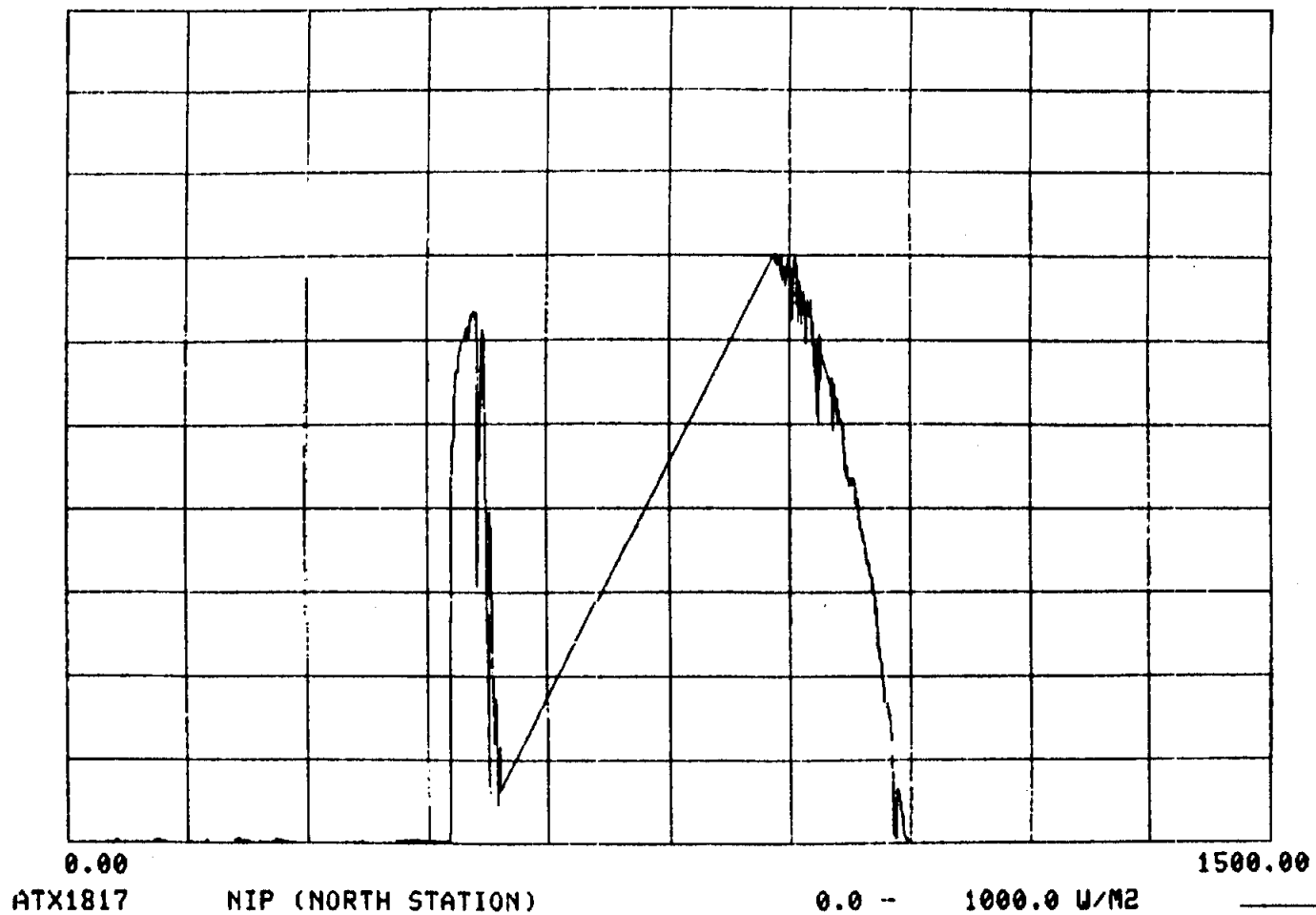
SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 048 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

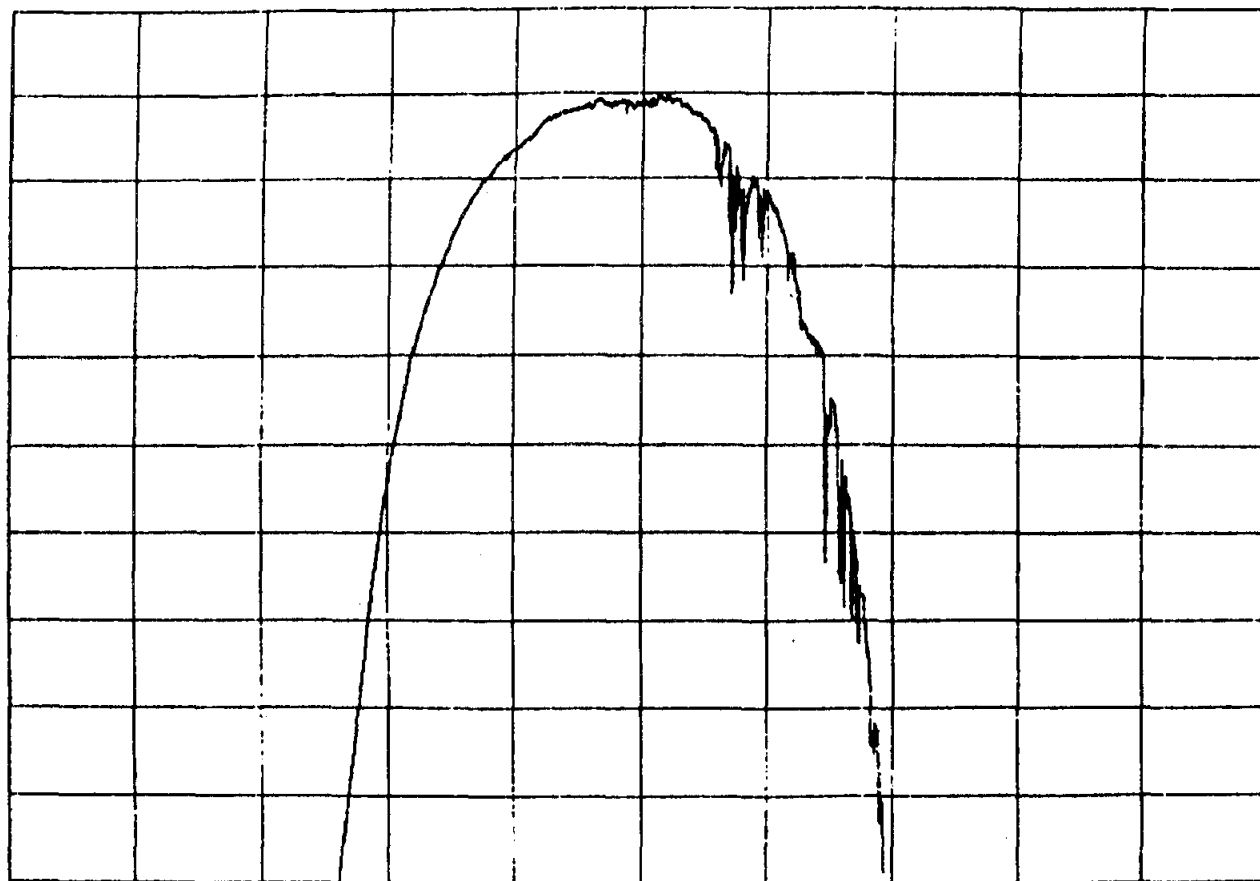


SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 049 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



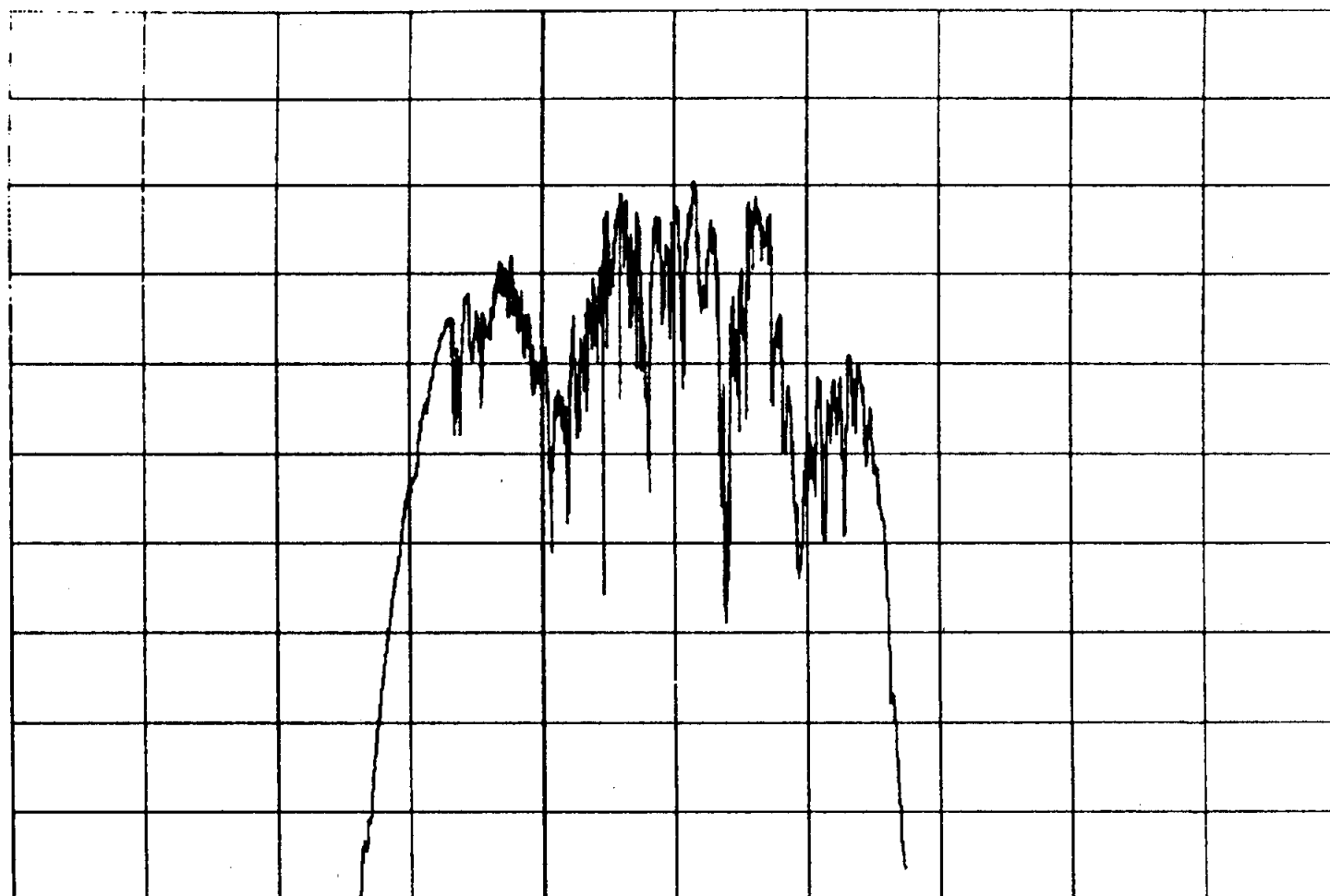
SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
 REFERENCE TIME: 050 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00 1500.00
 ***ATX1817A CNTRL ROOM ROOF NIP 0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 051 00 00 00.000

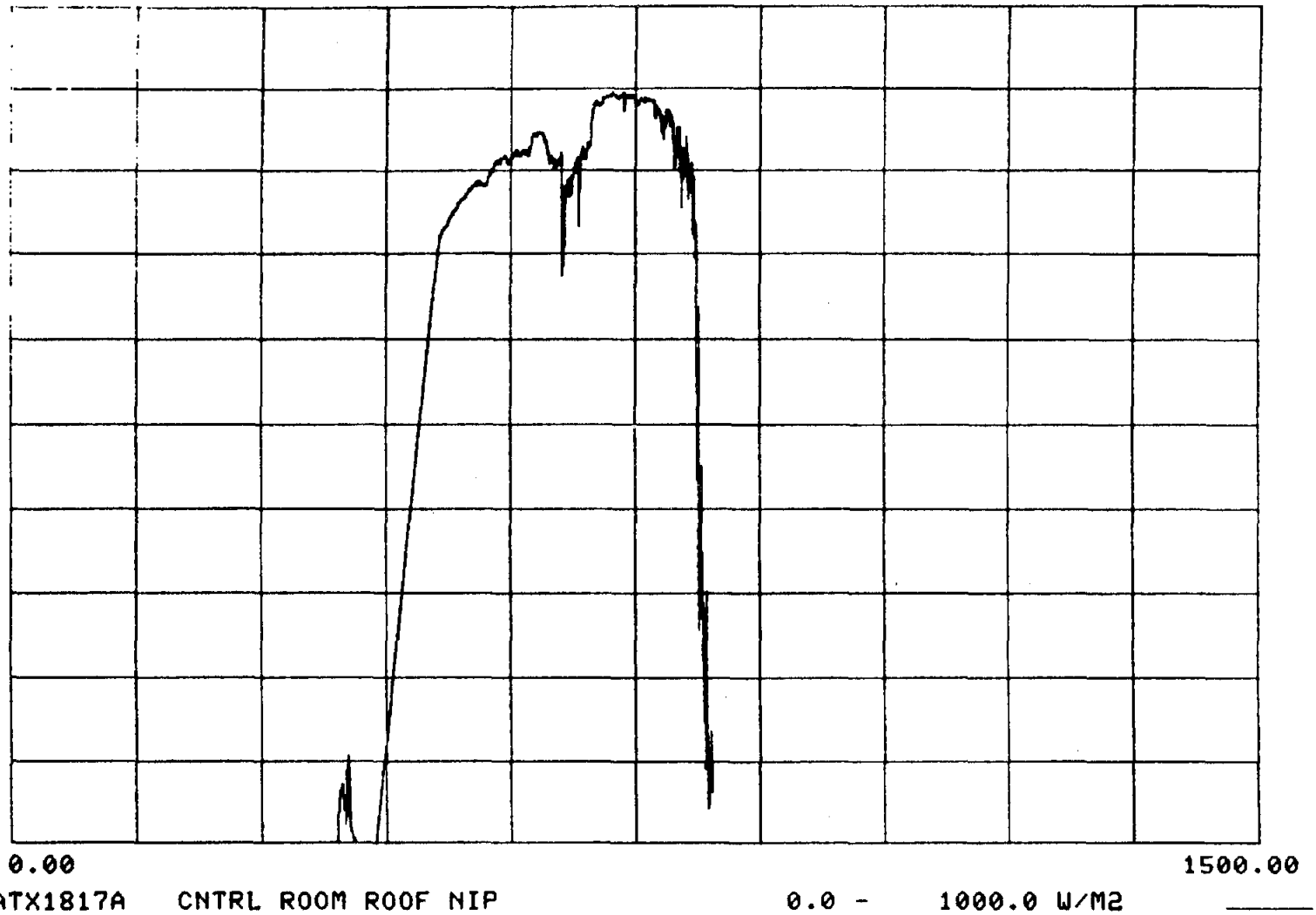
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
##ATX1817A CNTRL ROOM ROOF NIP

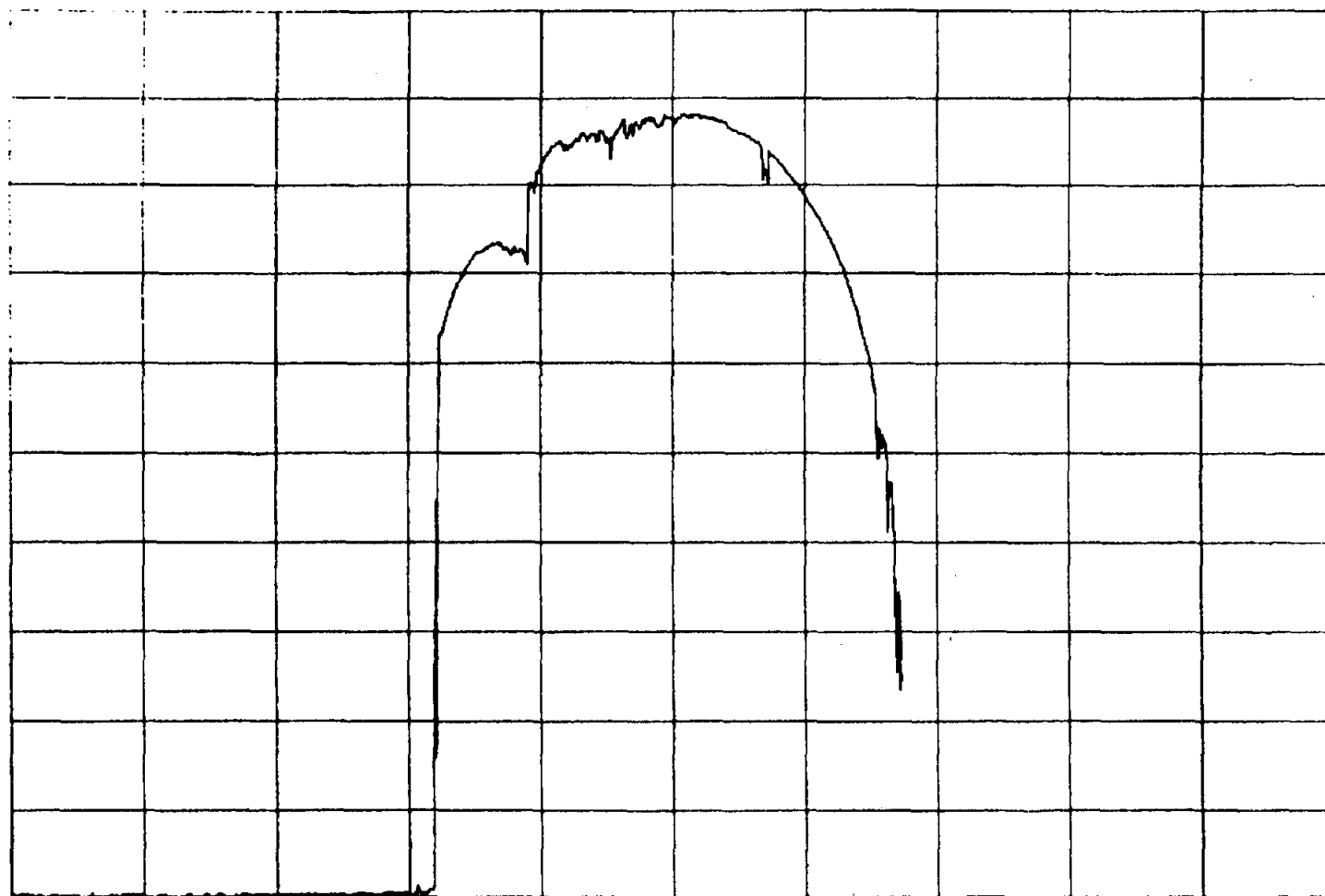
0.0 - 1000.0 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 052 00 00 00.000 FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 053 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

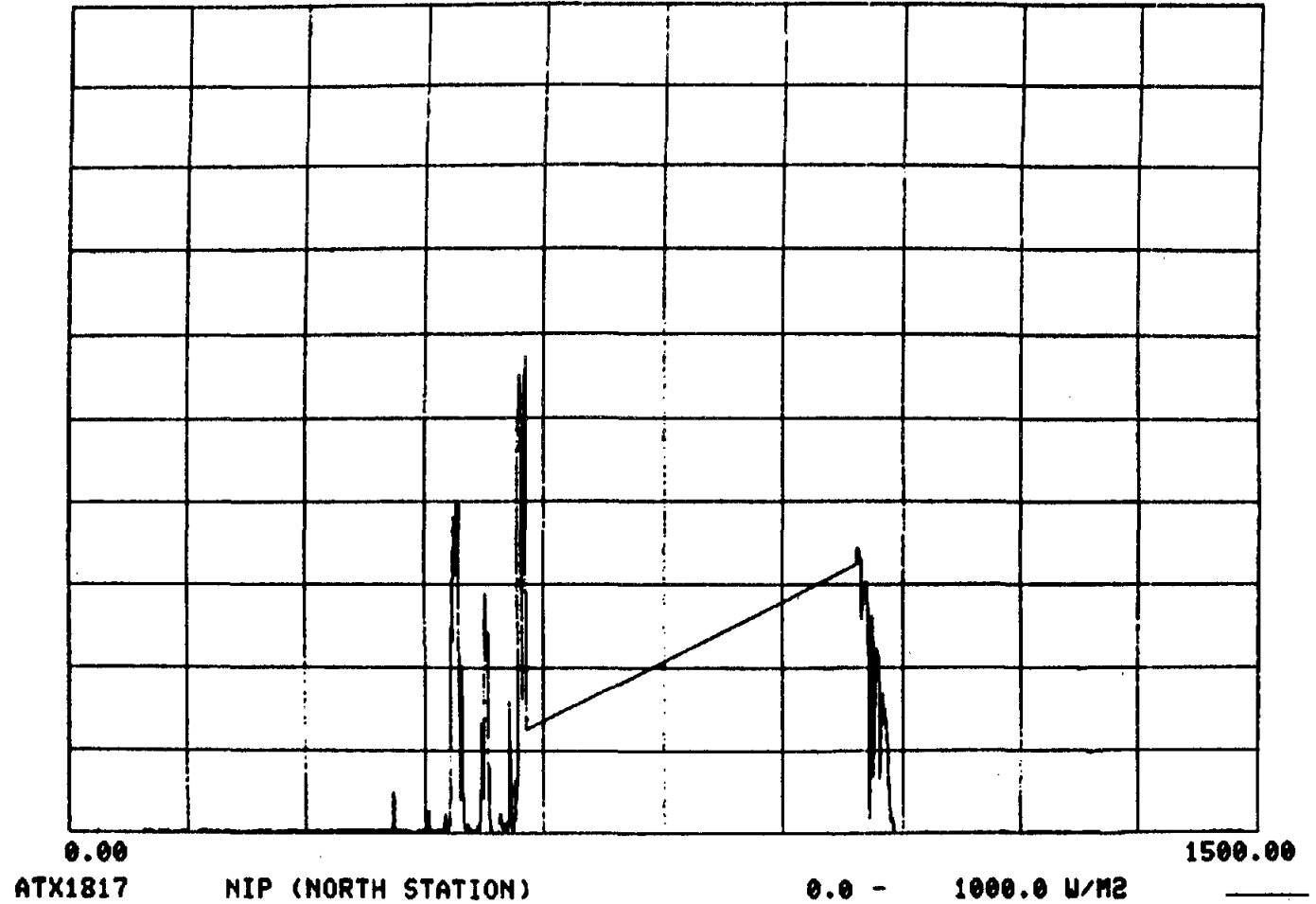
NIP (NORTH STATION)

0.0 - 1000.0 W/M2

1500.00

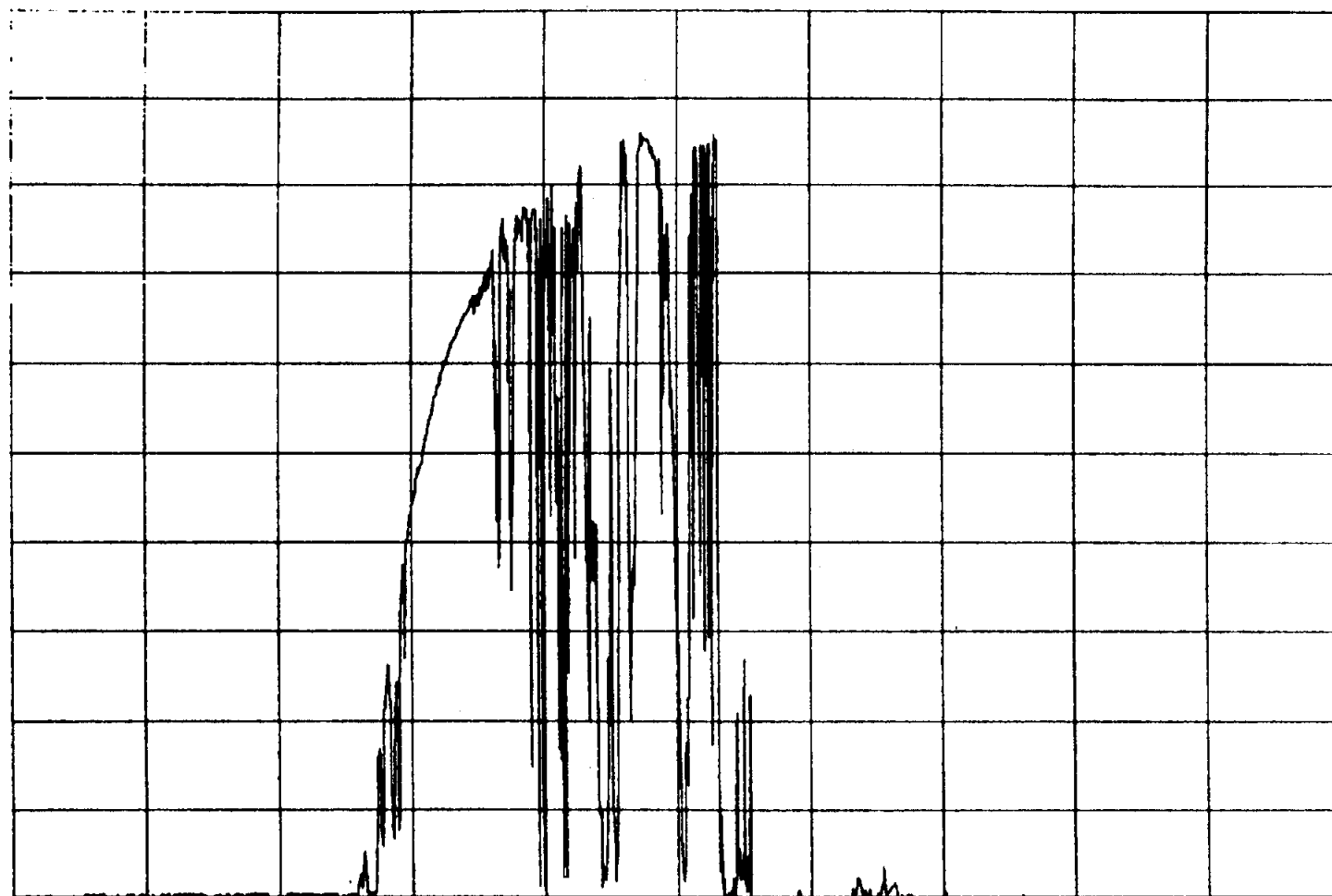
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 055 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 056 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



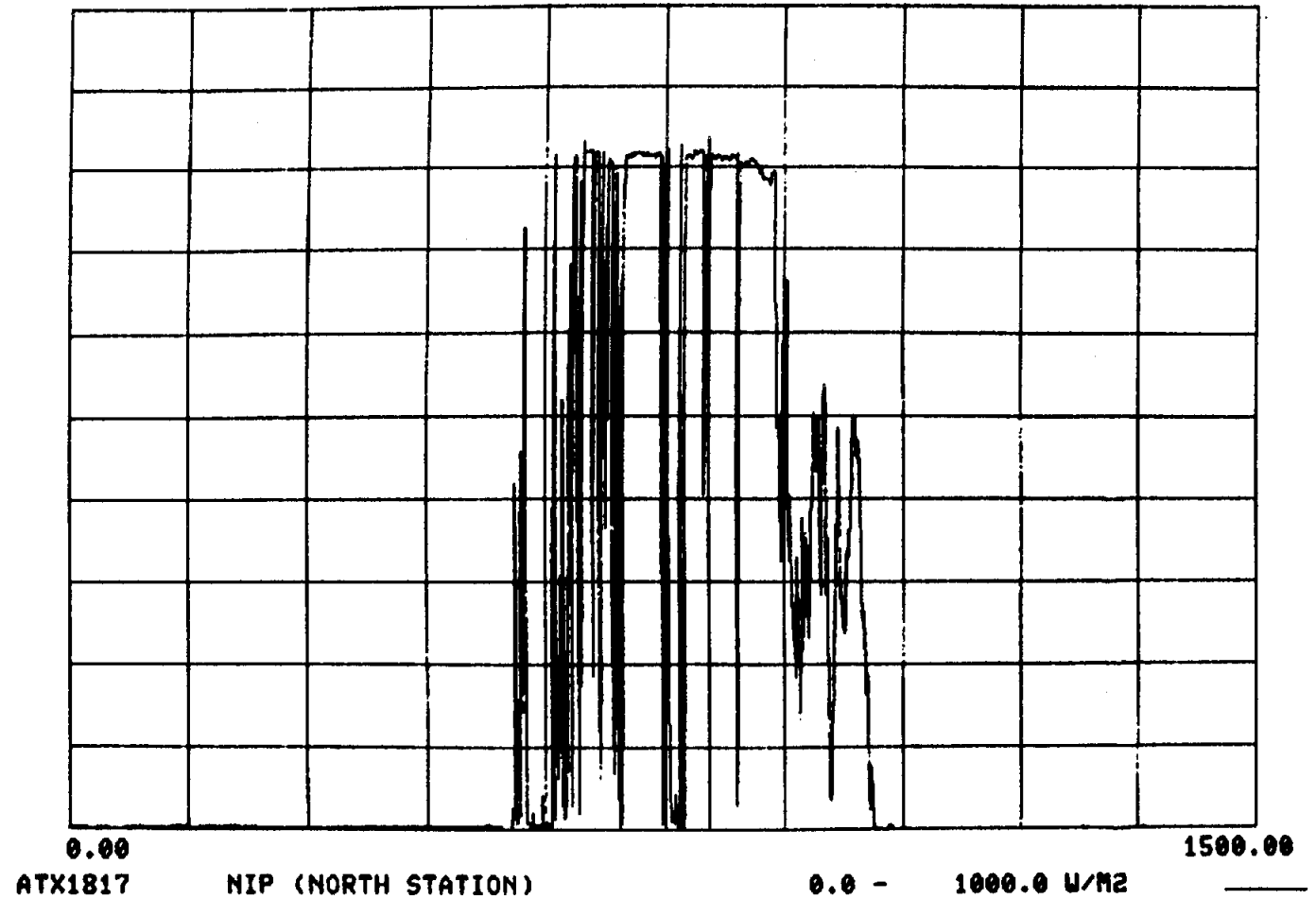
0.00
ATX1817

NIP (NORTH STATION)

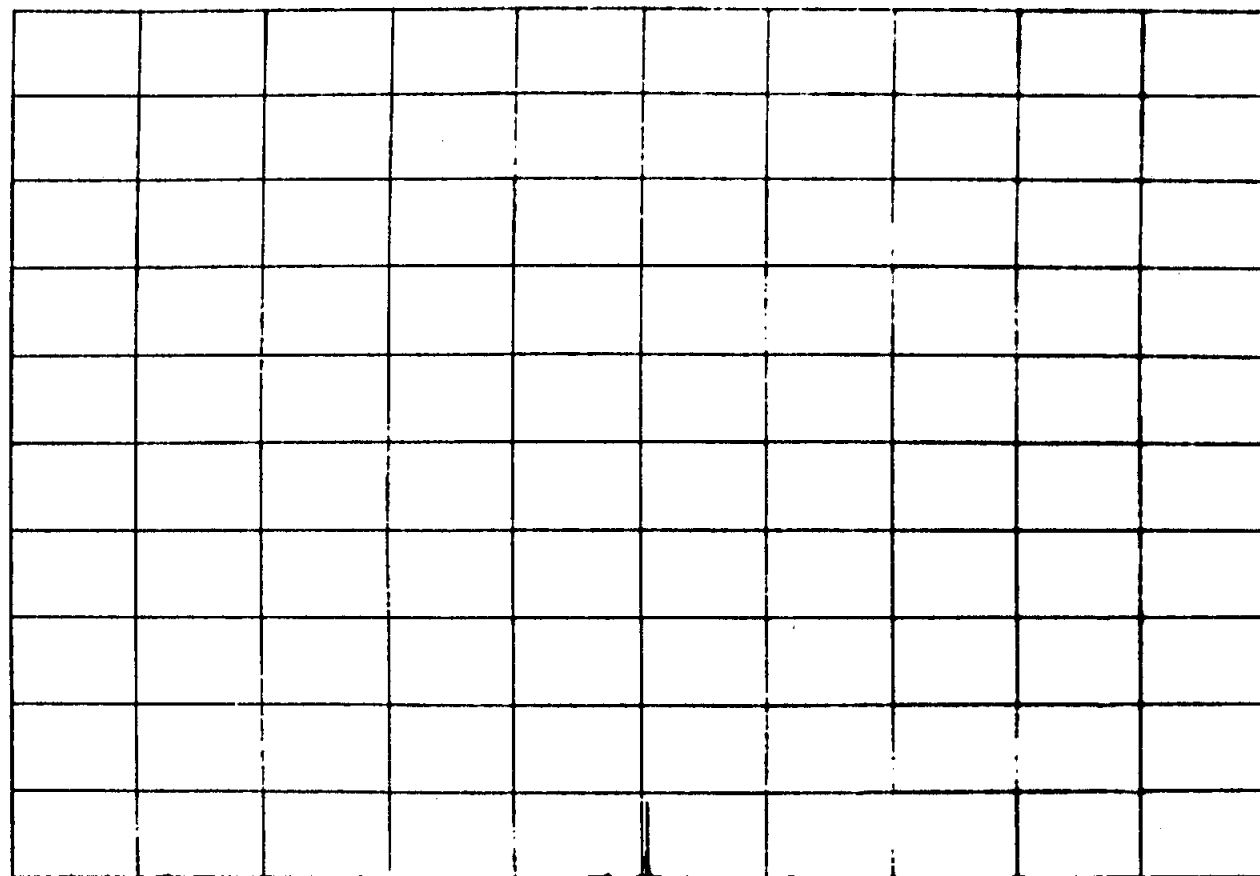
0.0 - 1000.0 W/M2
1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 057 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



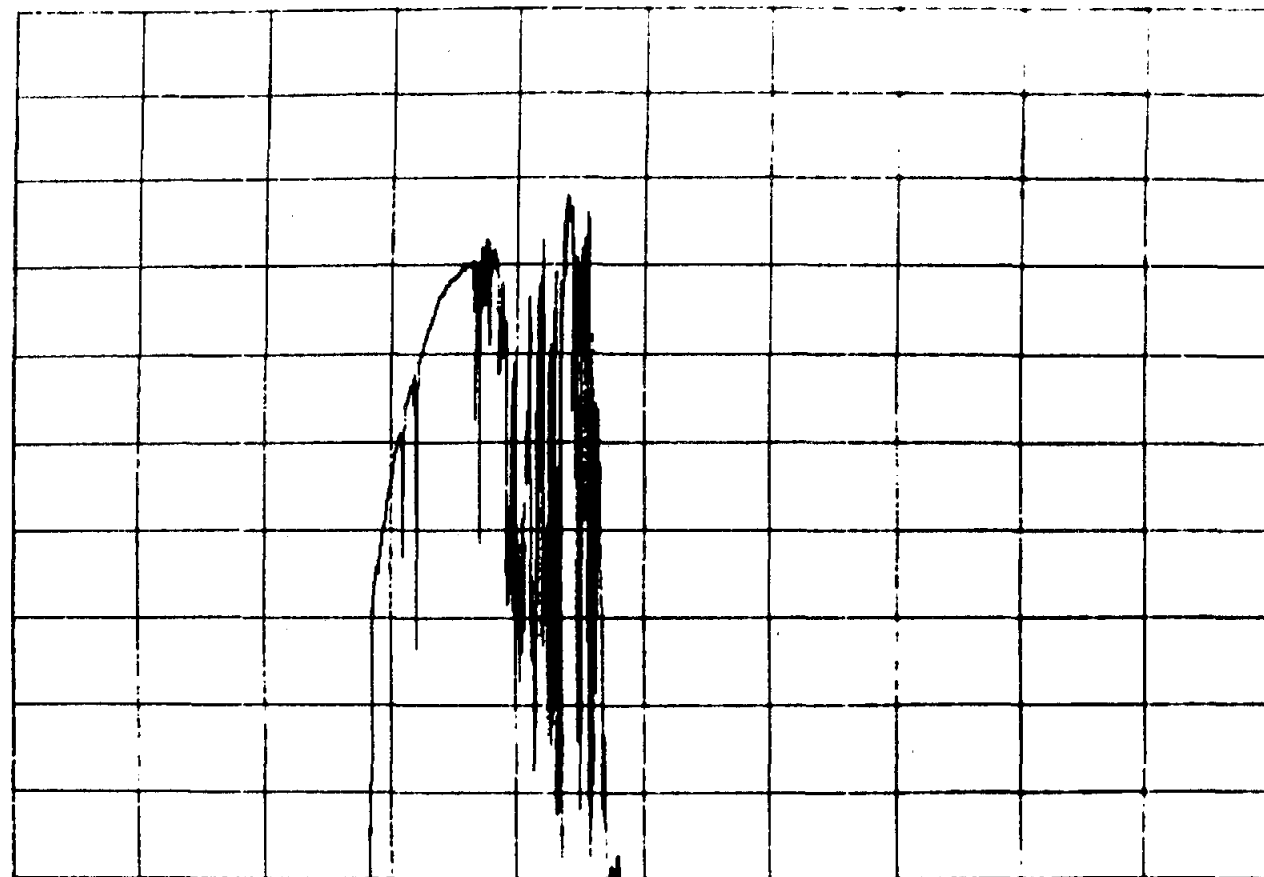
SOLAR DATA PLOT PLOT # MISL1 NTH SAMPLE AVERAGE = 1
 REFERENCE TIME: 058 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00 1500.00
 ATX1817 NIP (NORTH STATION) 0.0 - 1000.0 U/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 059 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

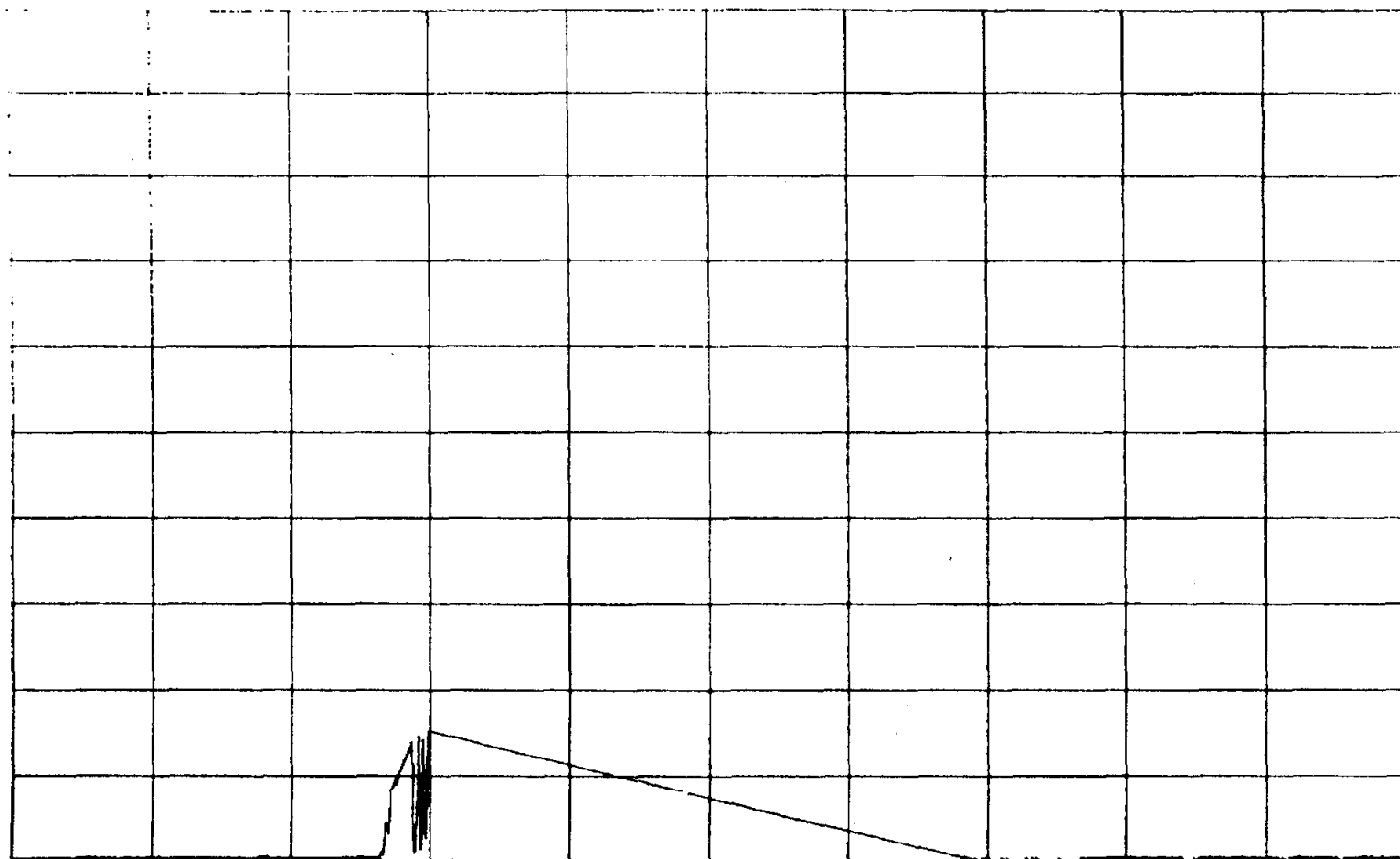
1500.00

\$\$\$ATX1817A CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 062 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

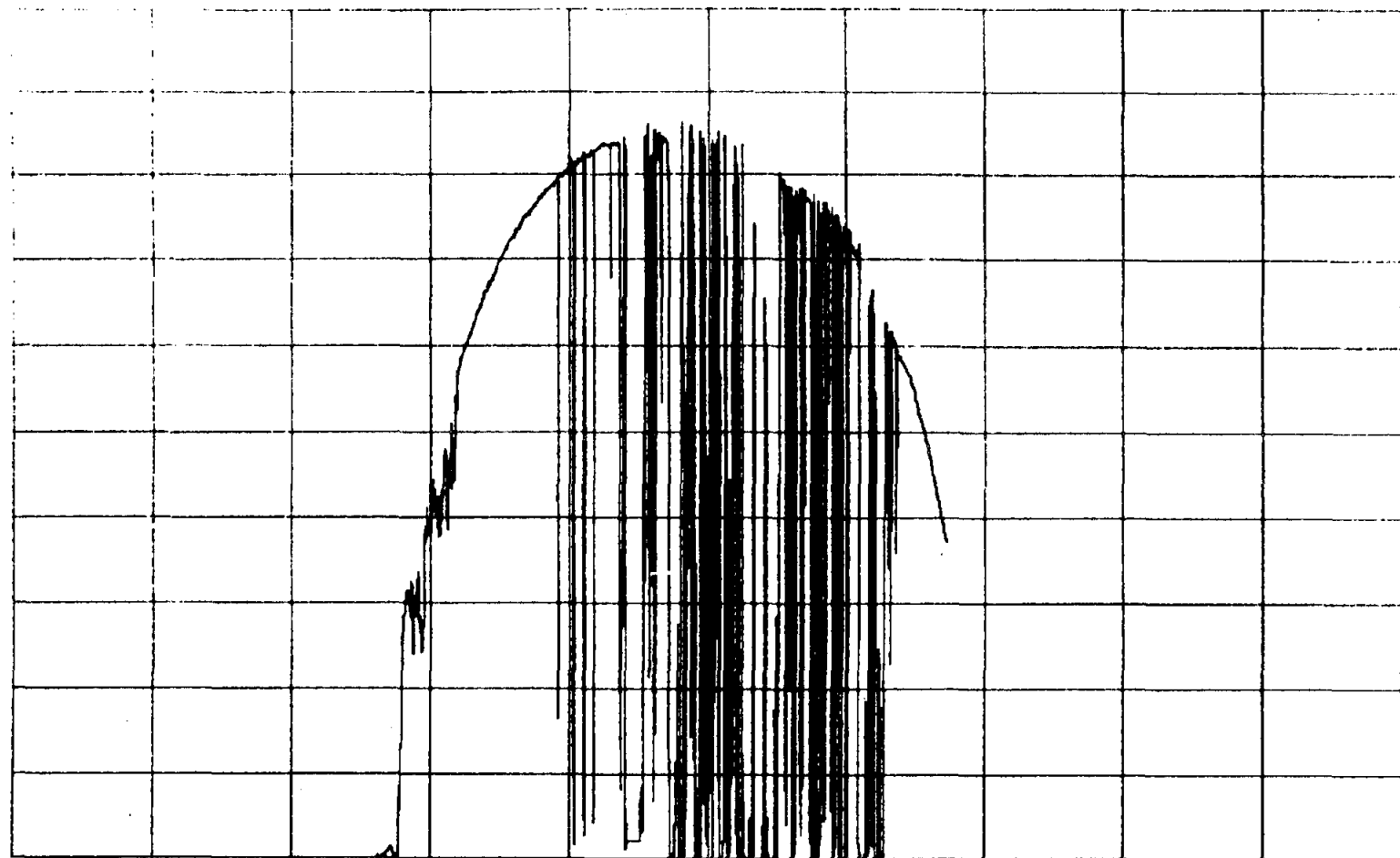
NIP (NORTH STATION)

0.0 - 1000.0 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 063 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



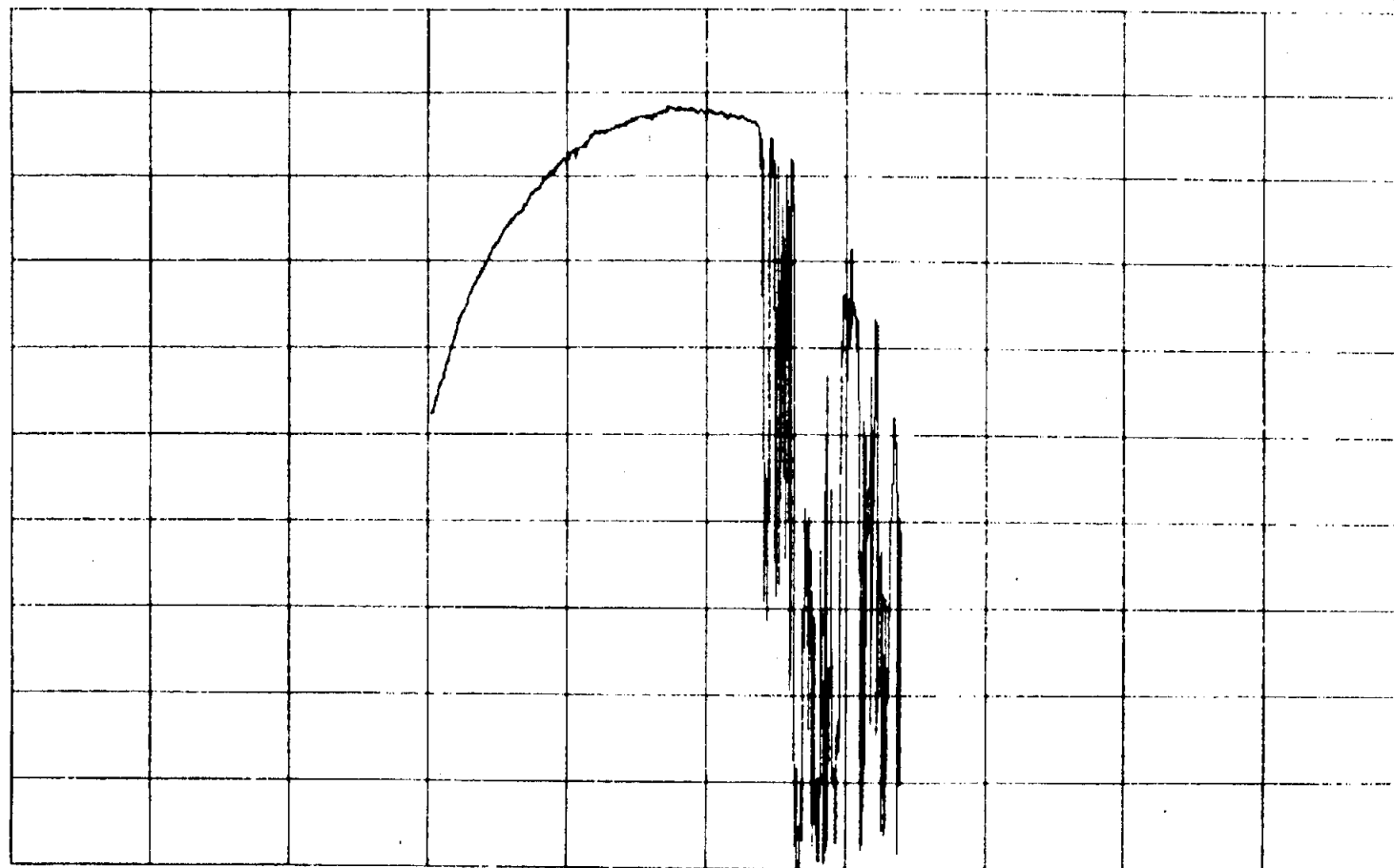
0.00

1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2

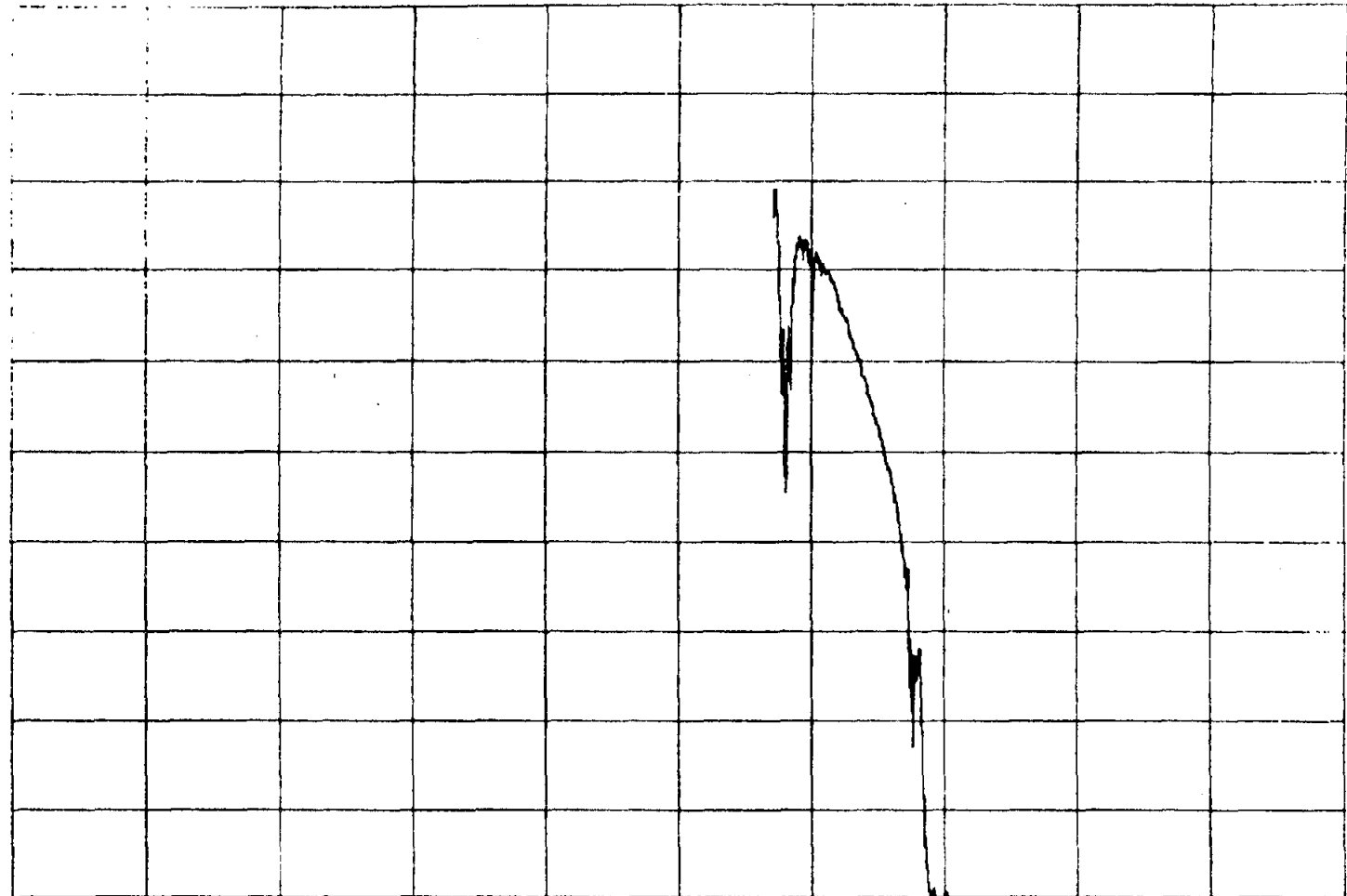
SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 064 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00 1500.00
##ATX1817A CNTRL ROOM ROOF NIP 0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 065 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



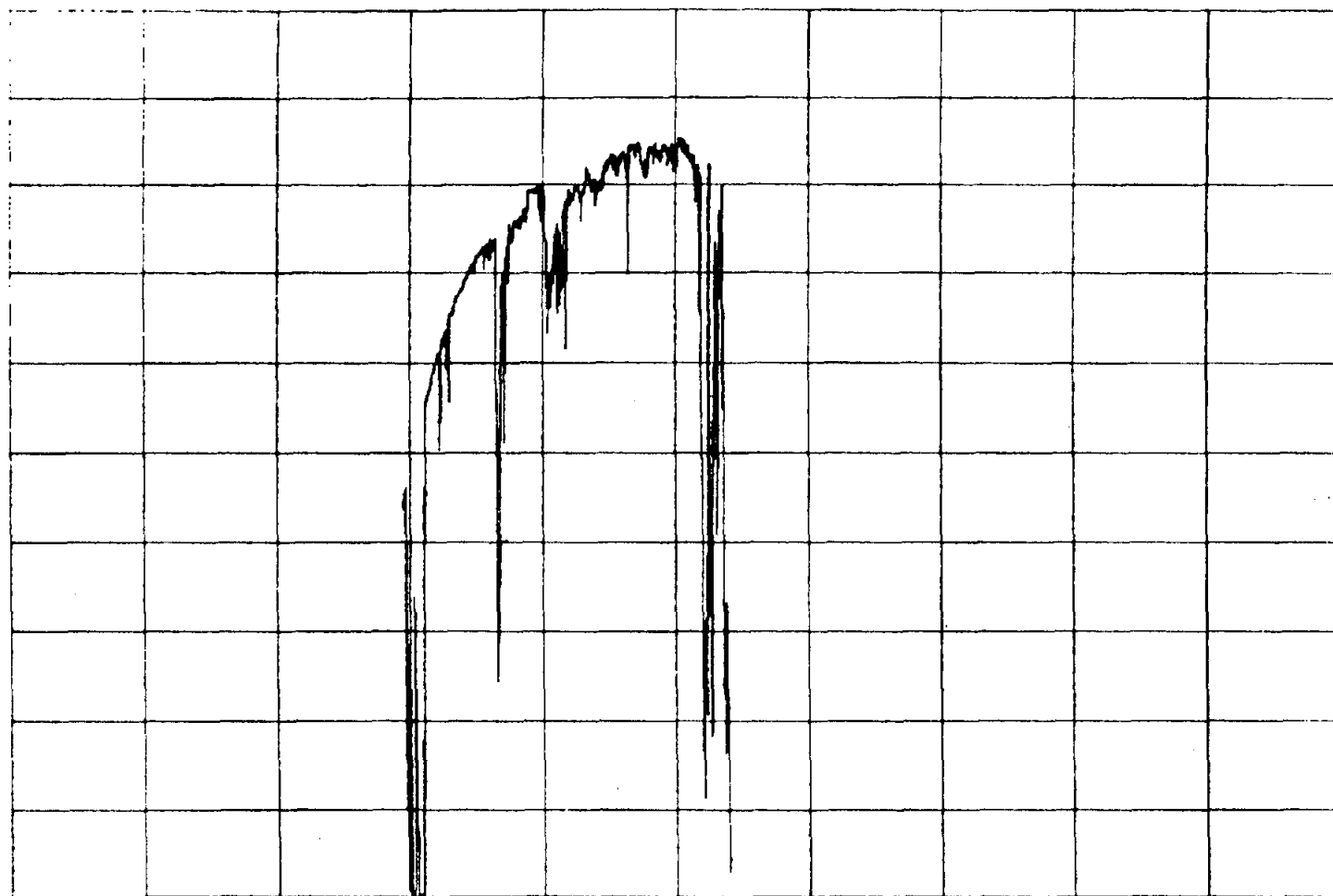
0.00

**ATX1817A CNTRL ROOM ROOF NIP

0.0 - 1500.00
0.0 - 1000.0 W/M2

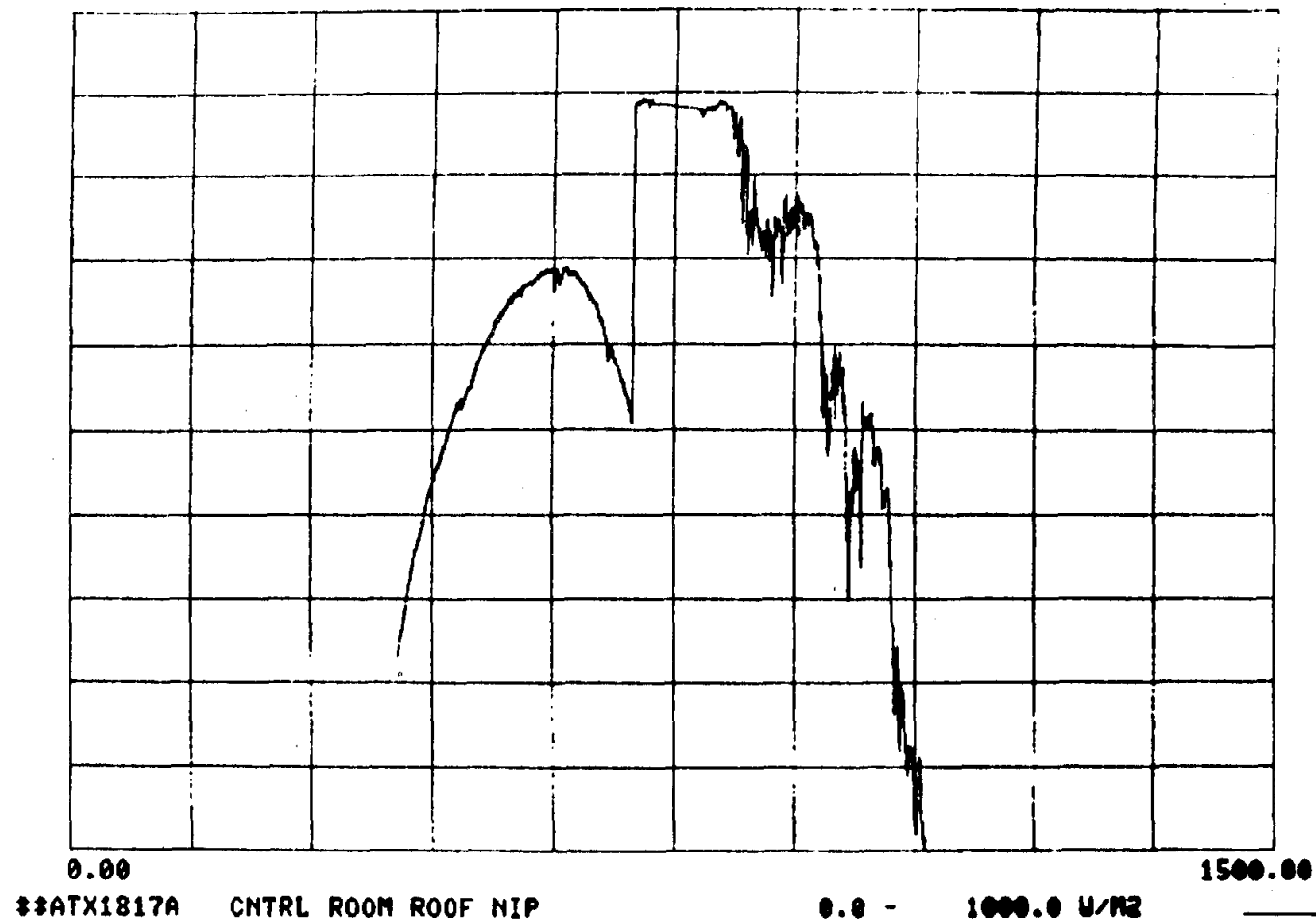
SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 066 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



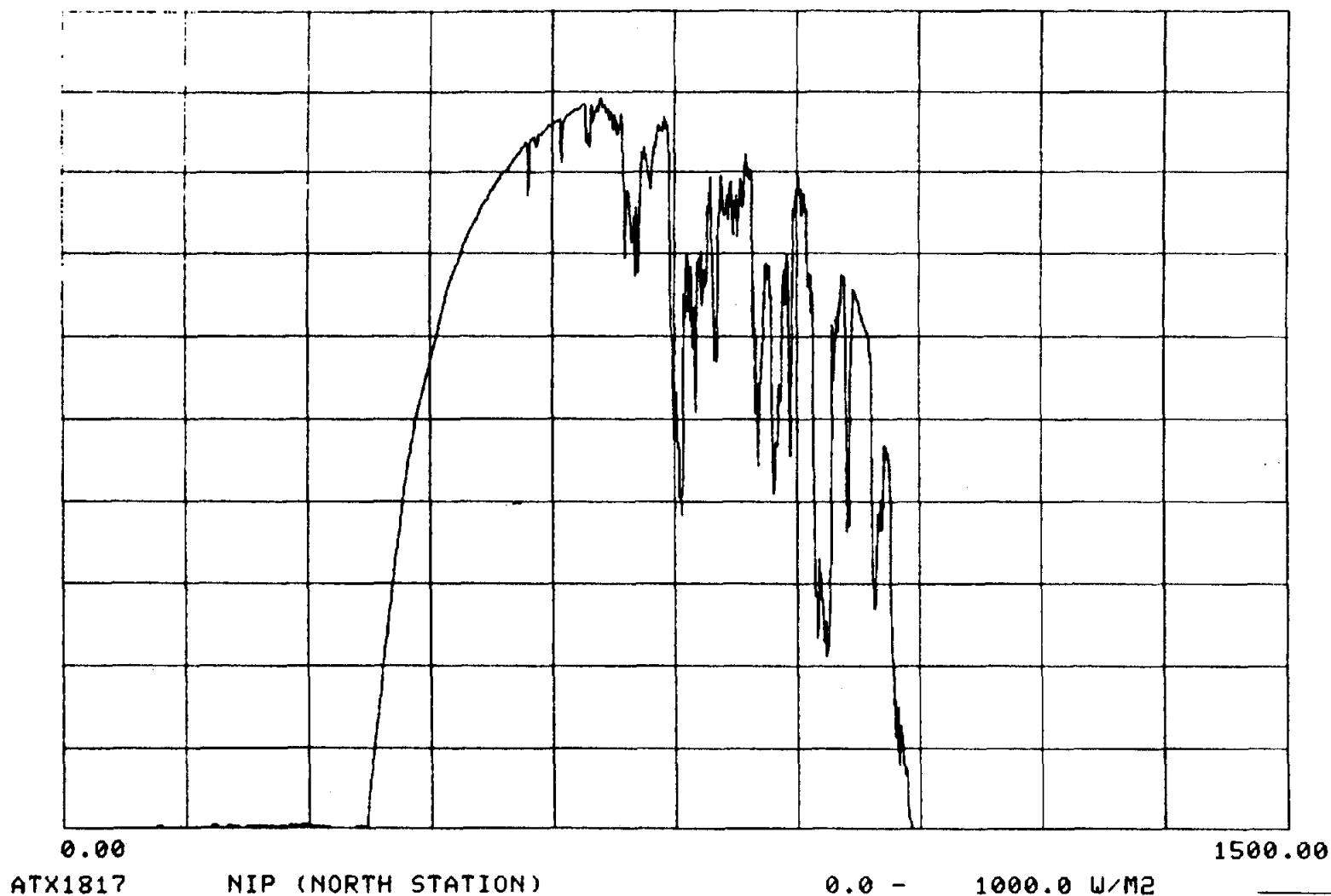
0.00 1500.00
##ATX1817A CNTRL ROOM ROOF NIP 0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
 REFERENCE TIME: 067 00 00 00.000 FOR 1500.0000 MINUTE(S)



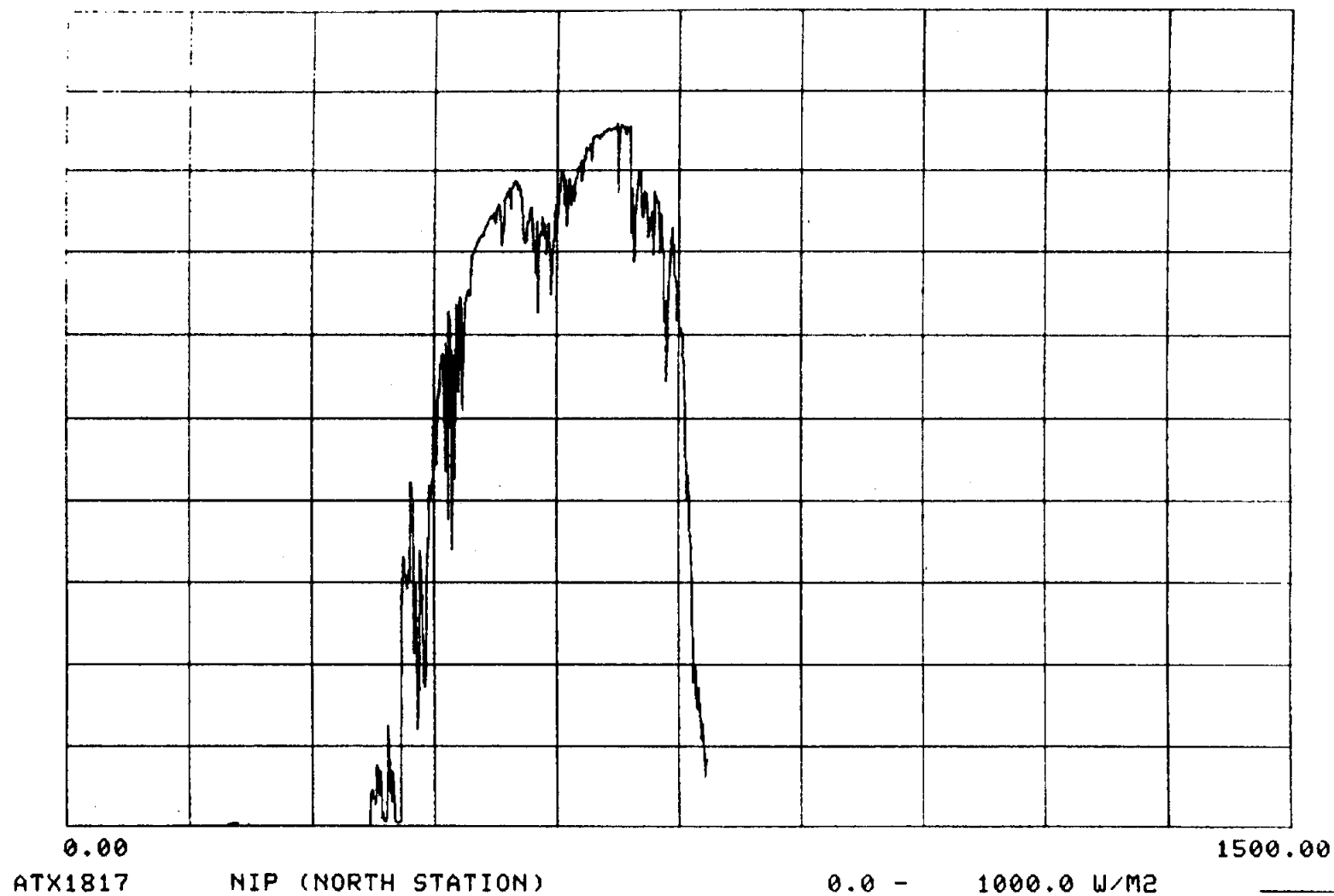
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 068 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



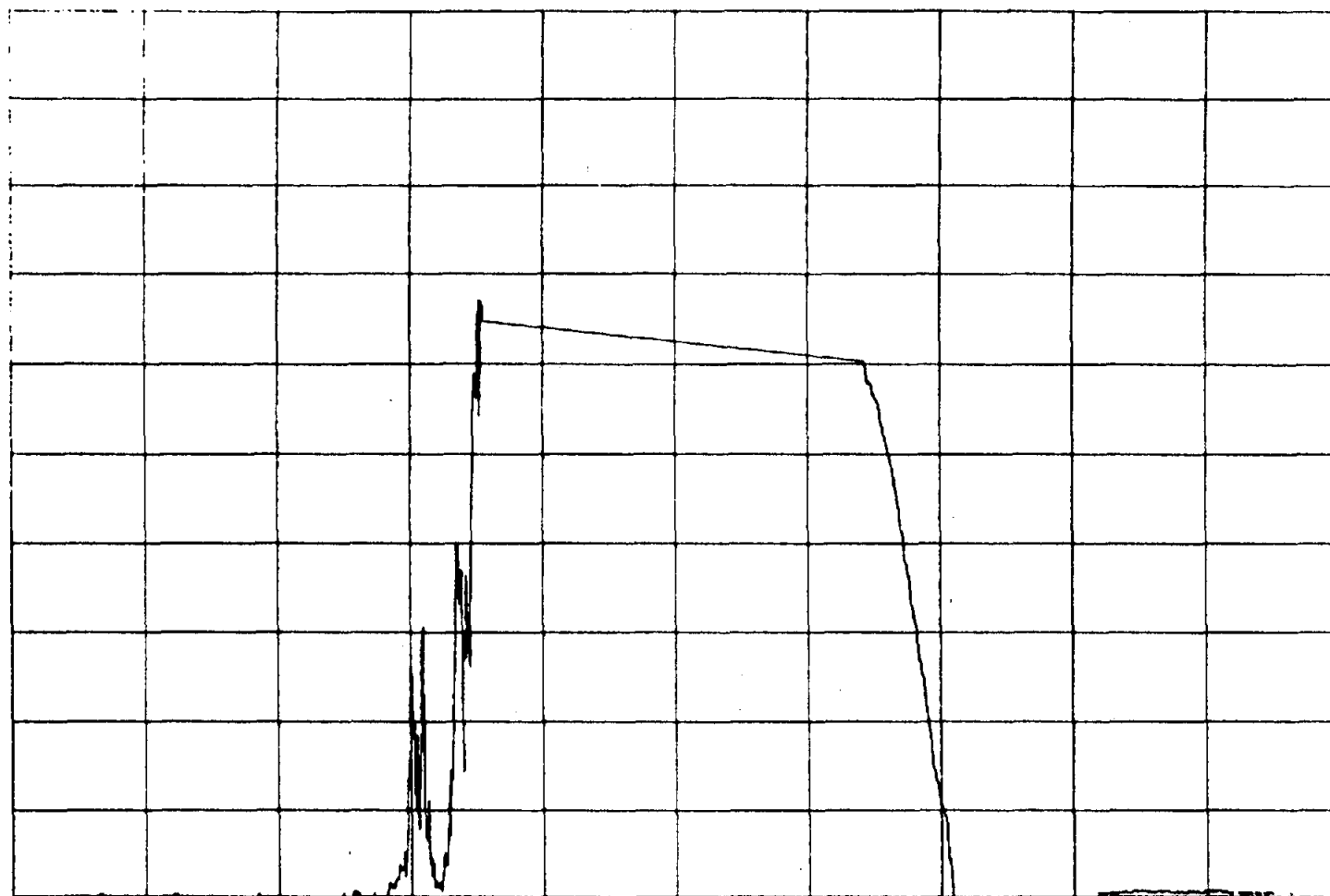
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 069 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 070 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

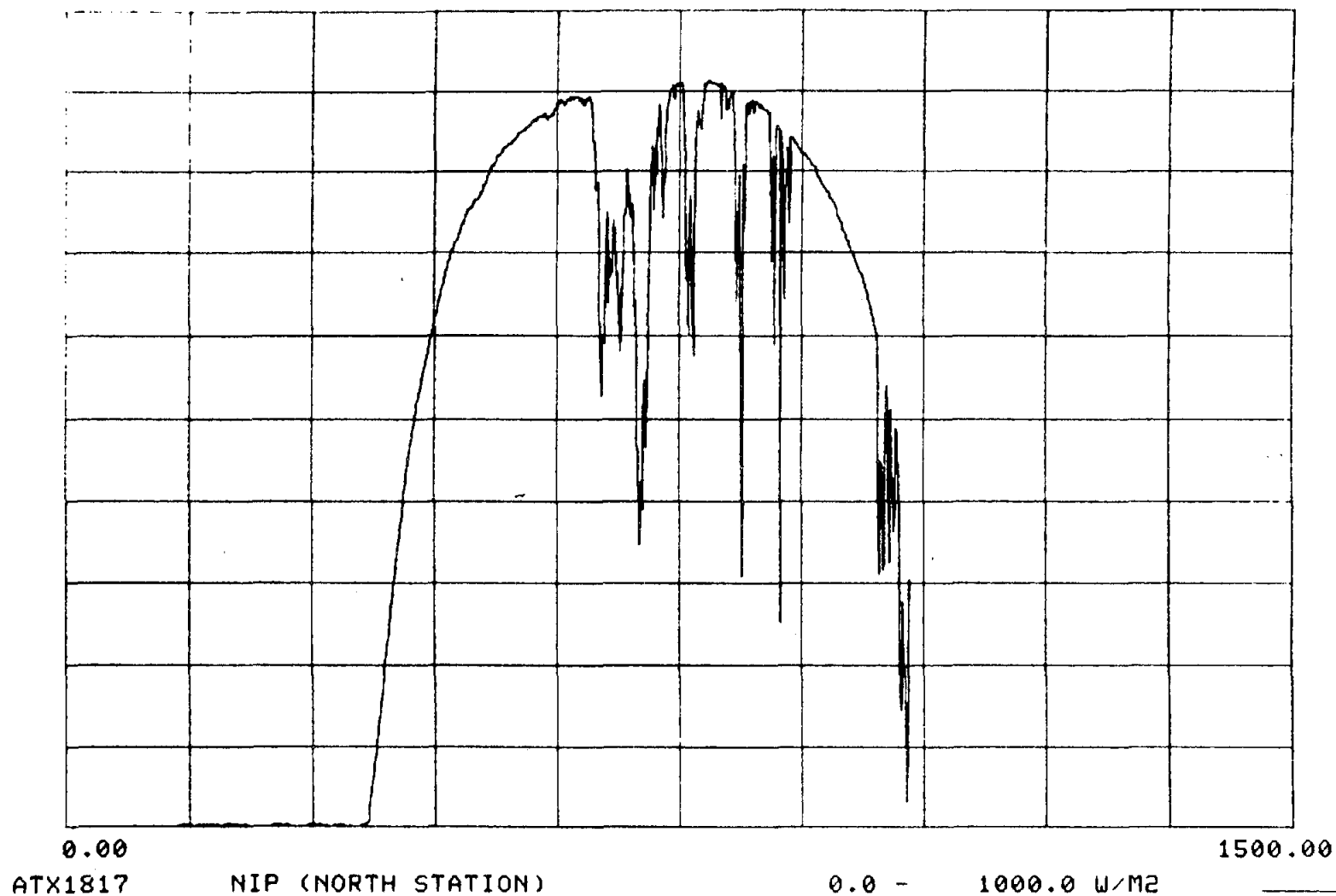
NIP (NORTH STATION)

0.0 - 1000.0 W/M2

1500.00

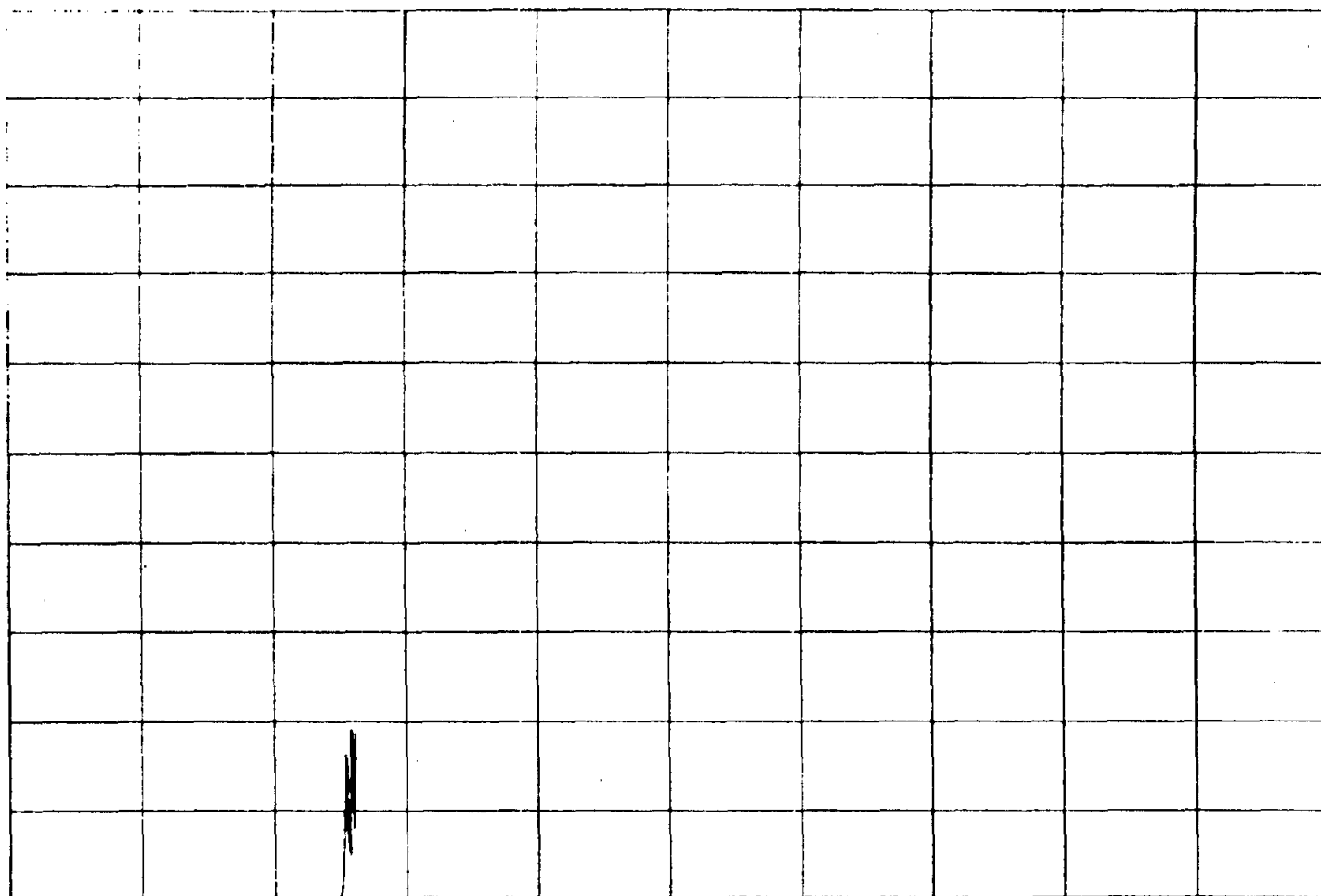
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 071 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 072 00 00 00.000

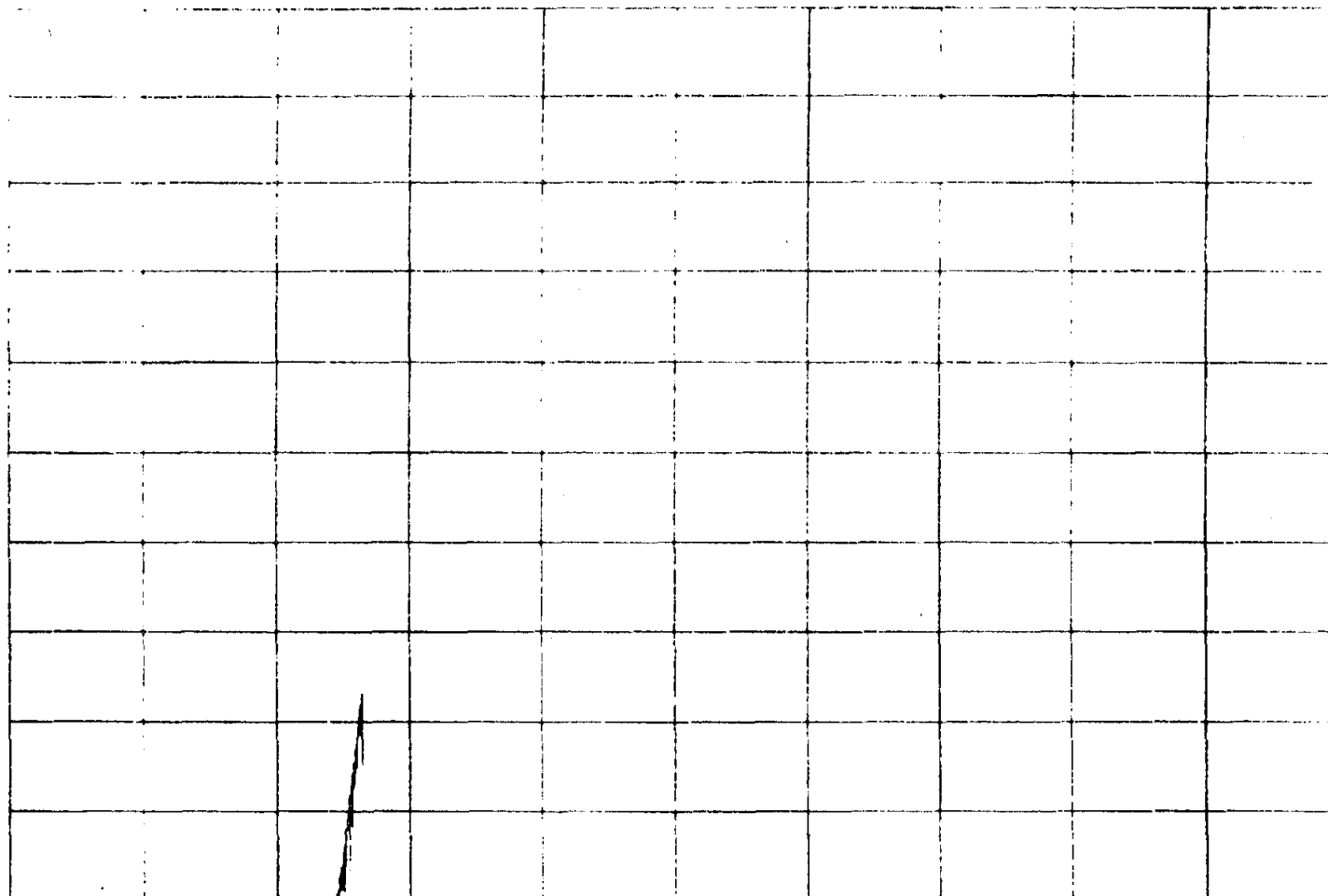
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00 1500.00
ATX1817 NIP (NORTH STATION) 0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 073 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

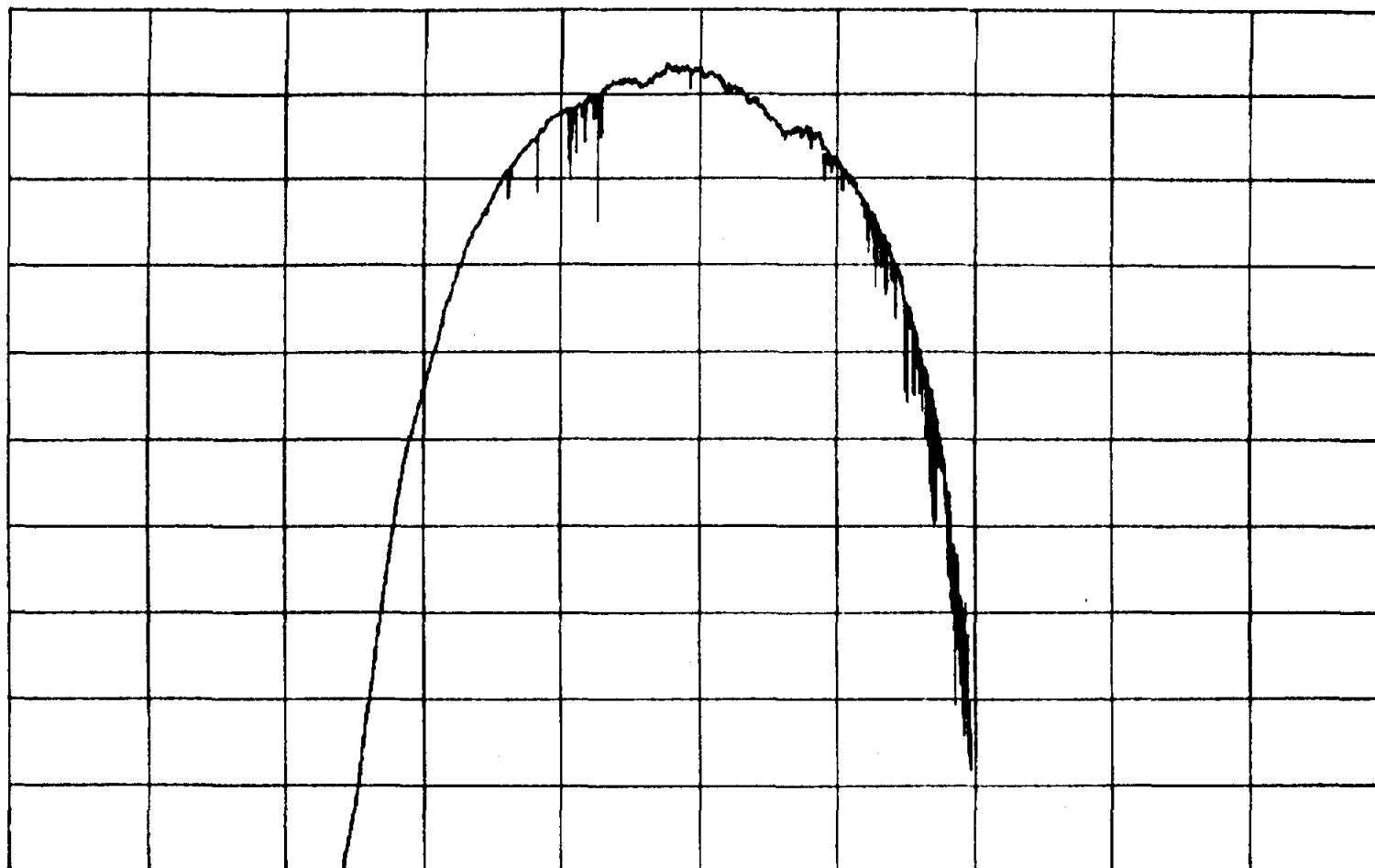
1500.00

**ATX1817A CNTRL ROOM ROOF NIP

0.0 - 1000.0 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 074 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

STATX1817A

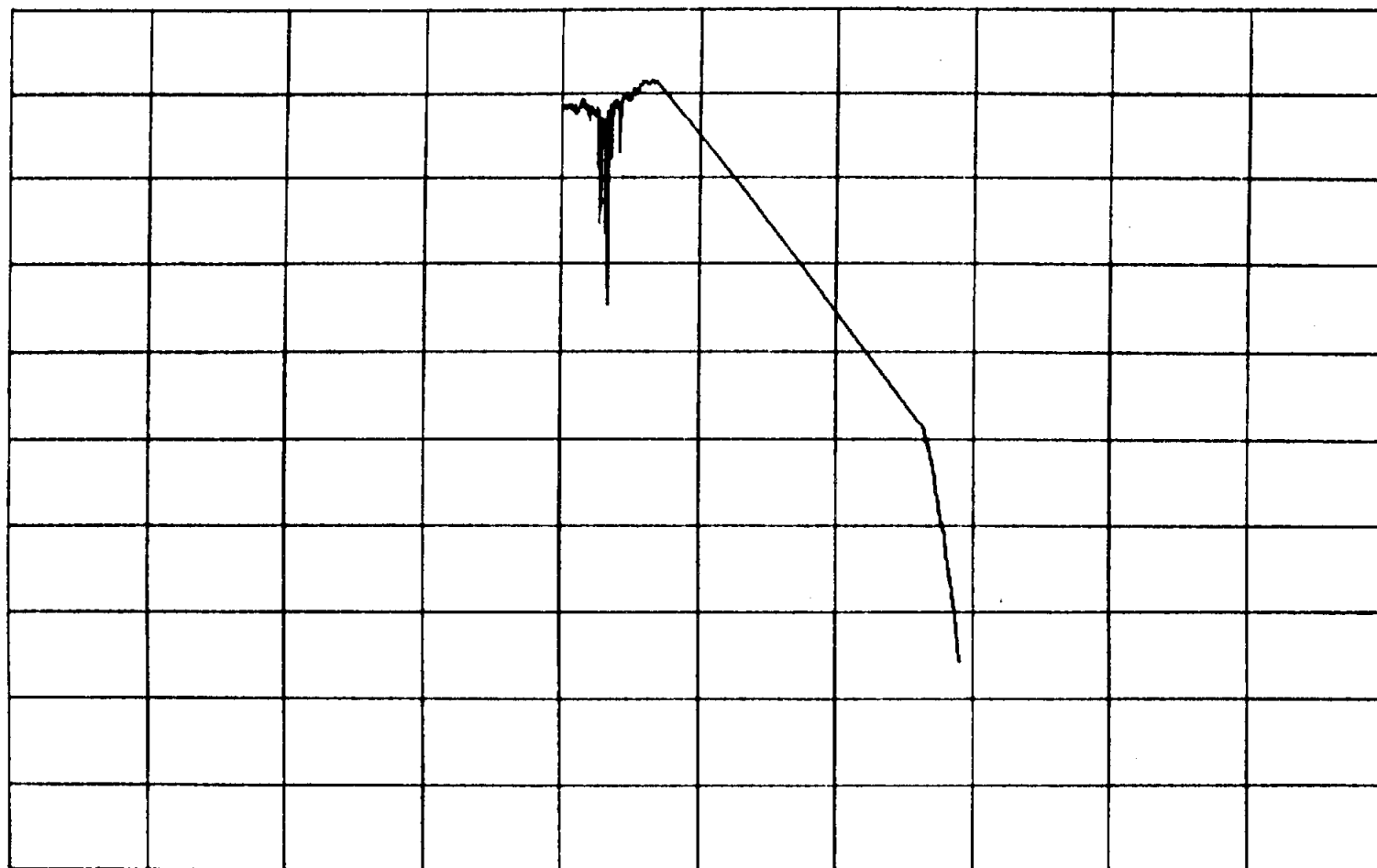
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 075 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

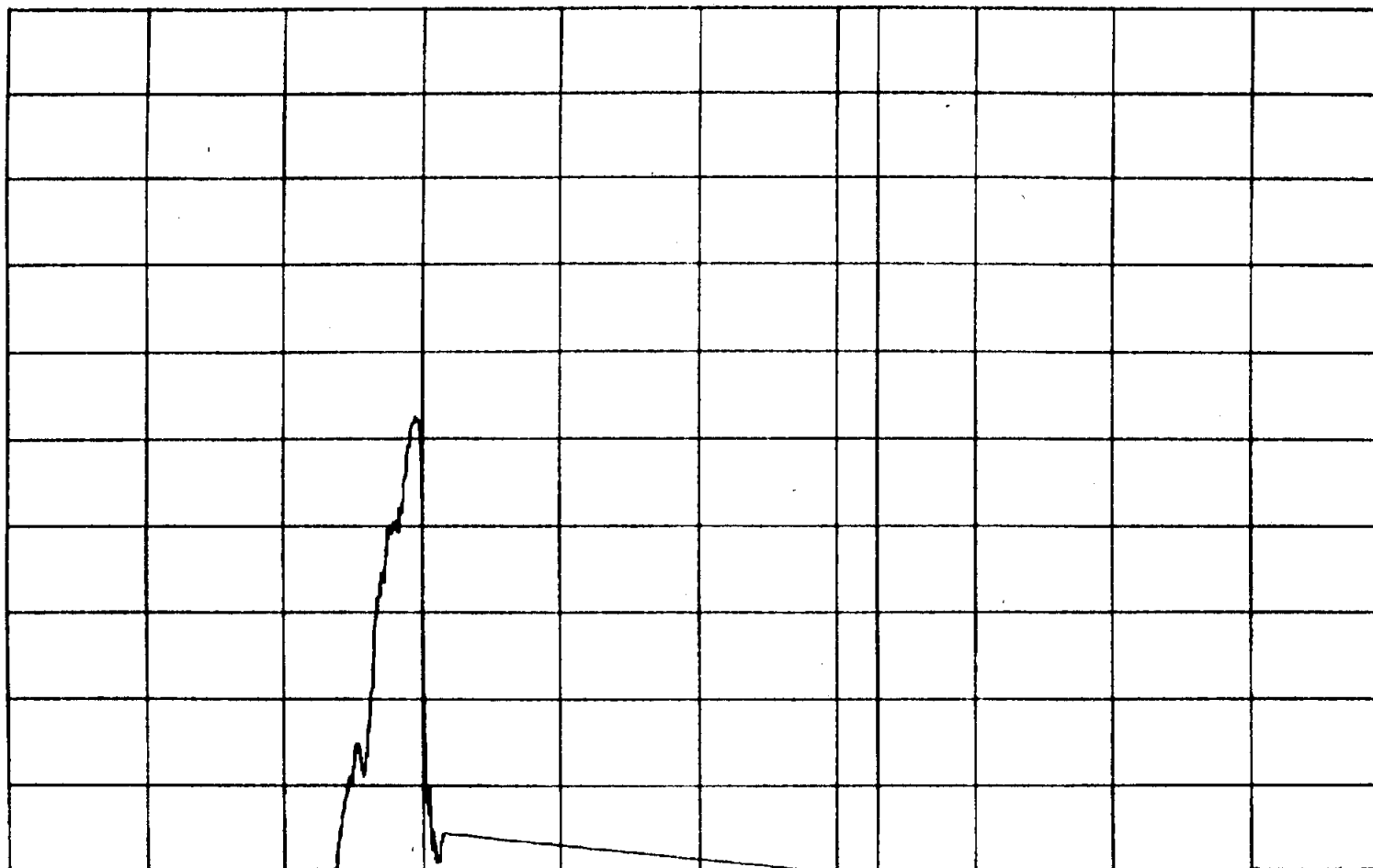
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 080 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



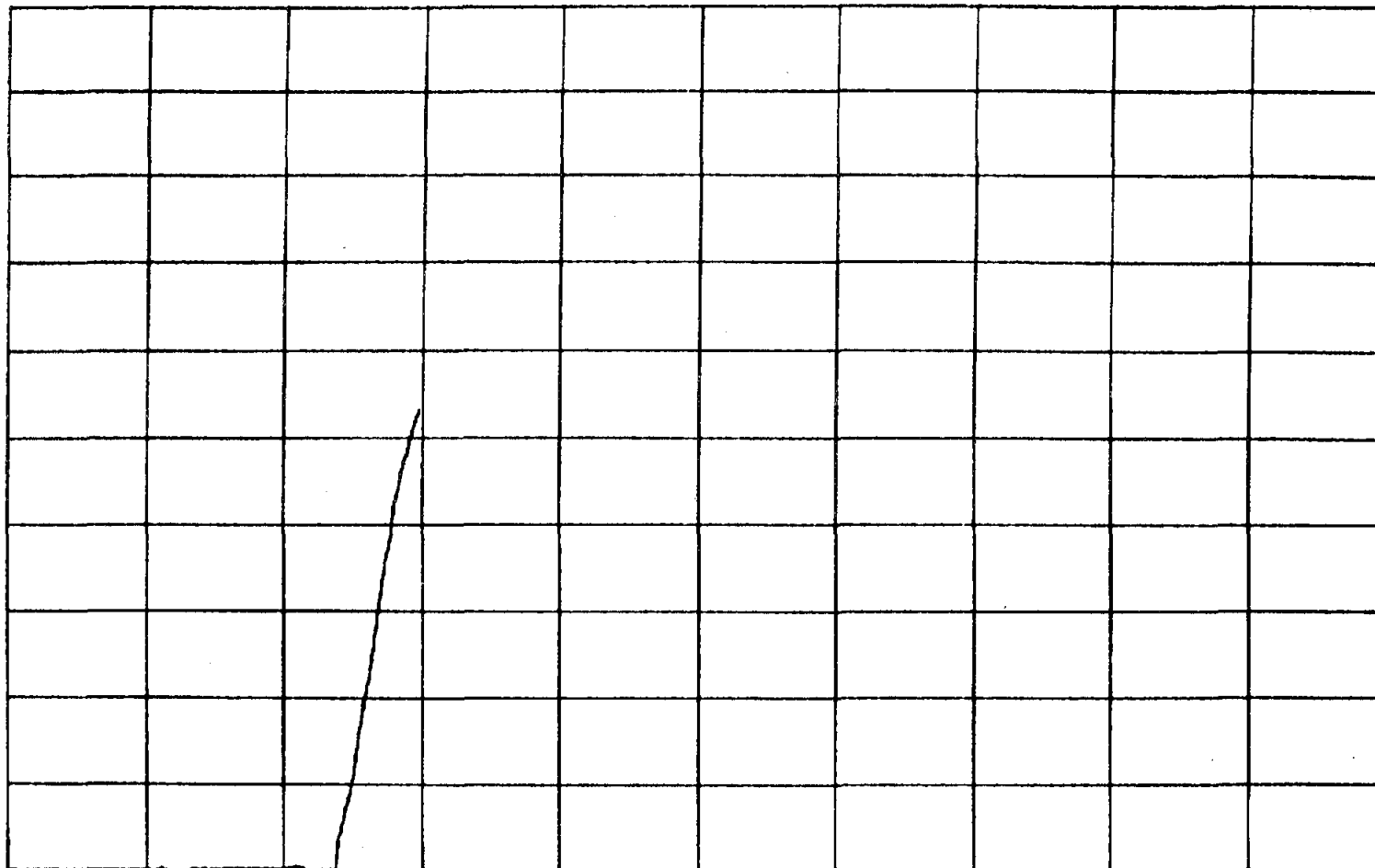
0.00
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 083 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



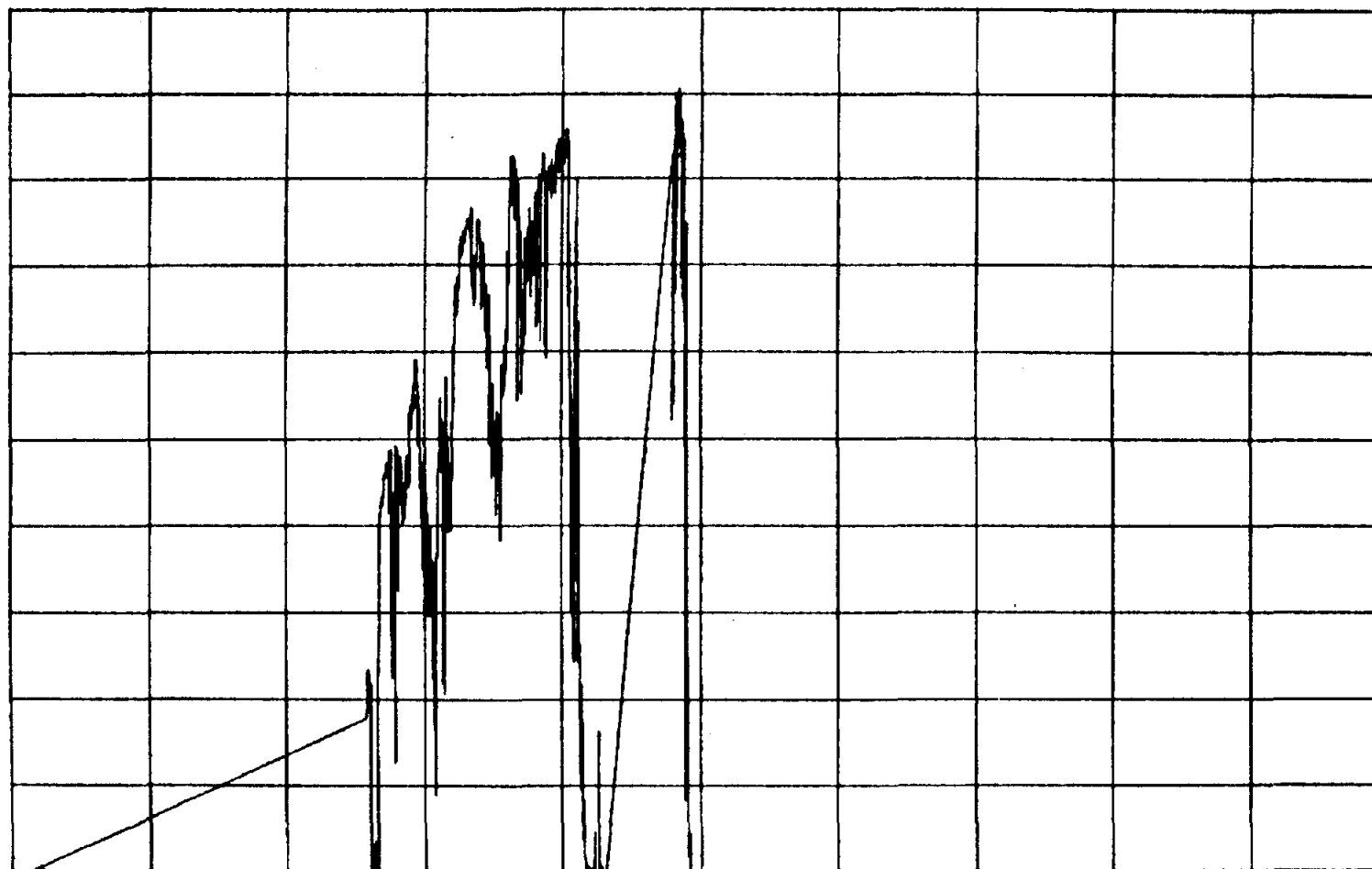
0.00
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 U/M2
1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 087 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

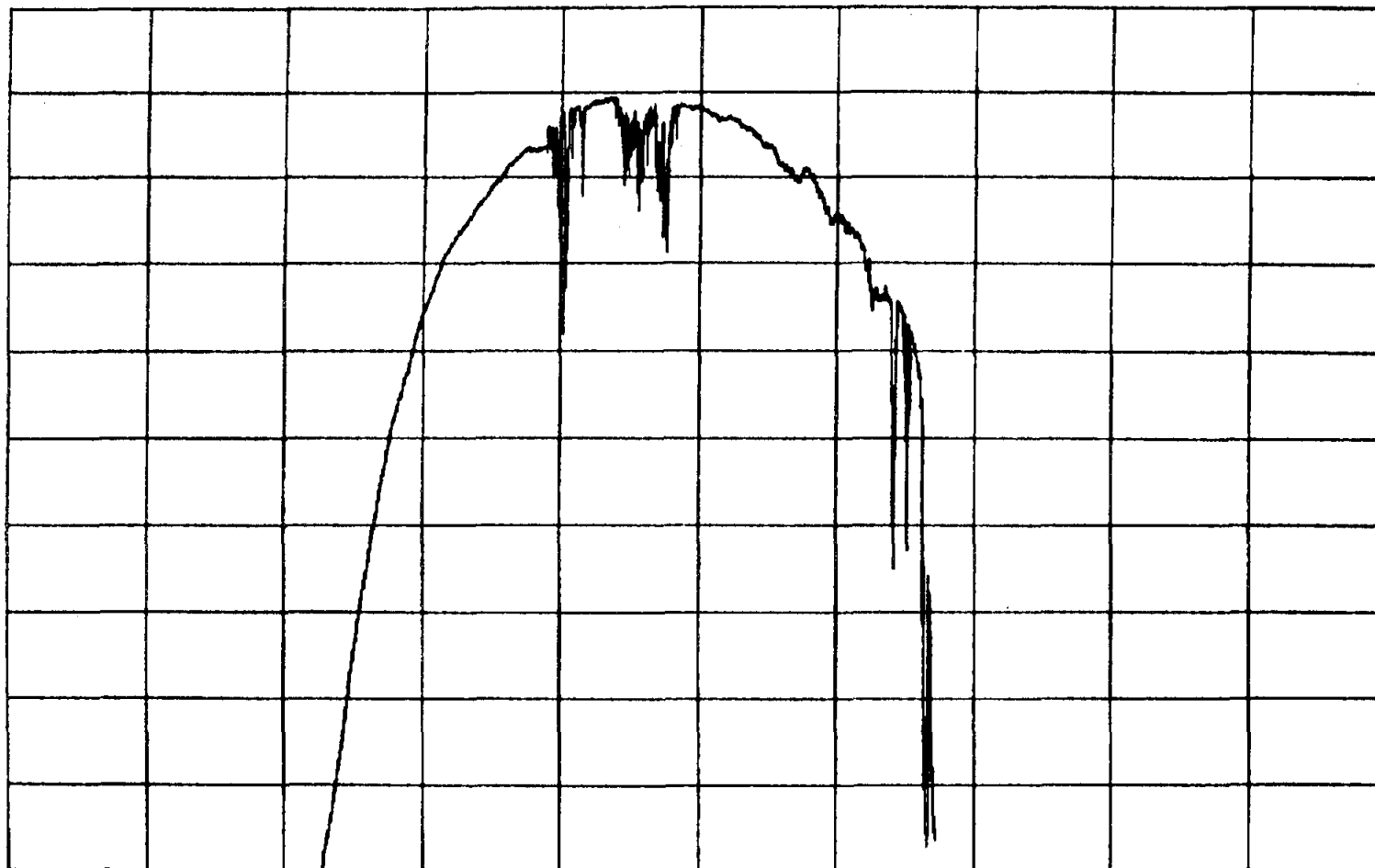
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 088 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

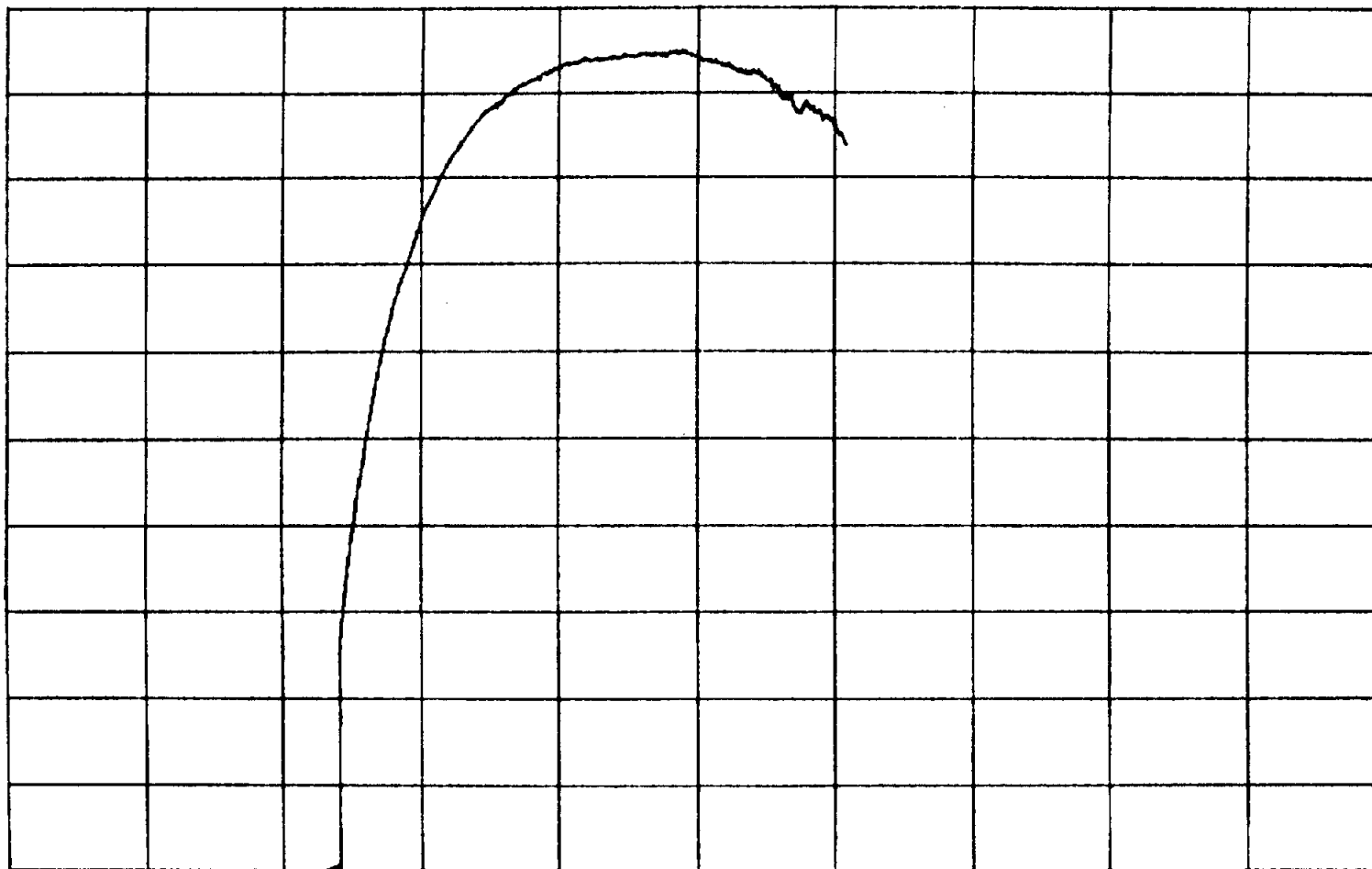
\$\$ATX1817A

CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 089 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

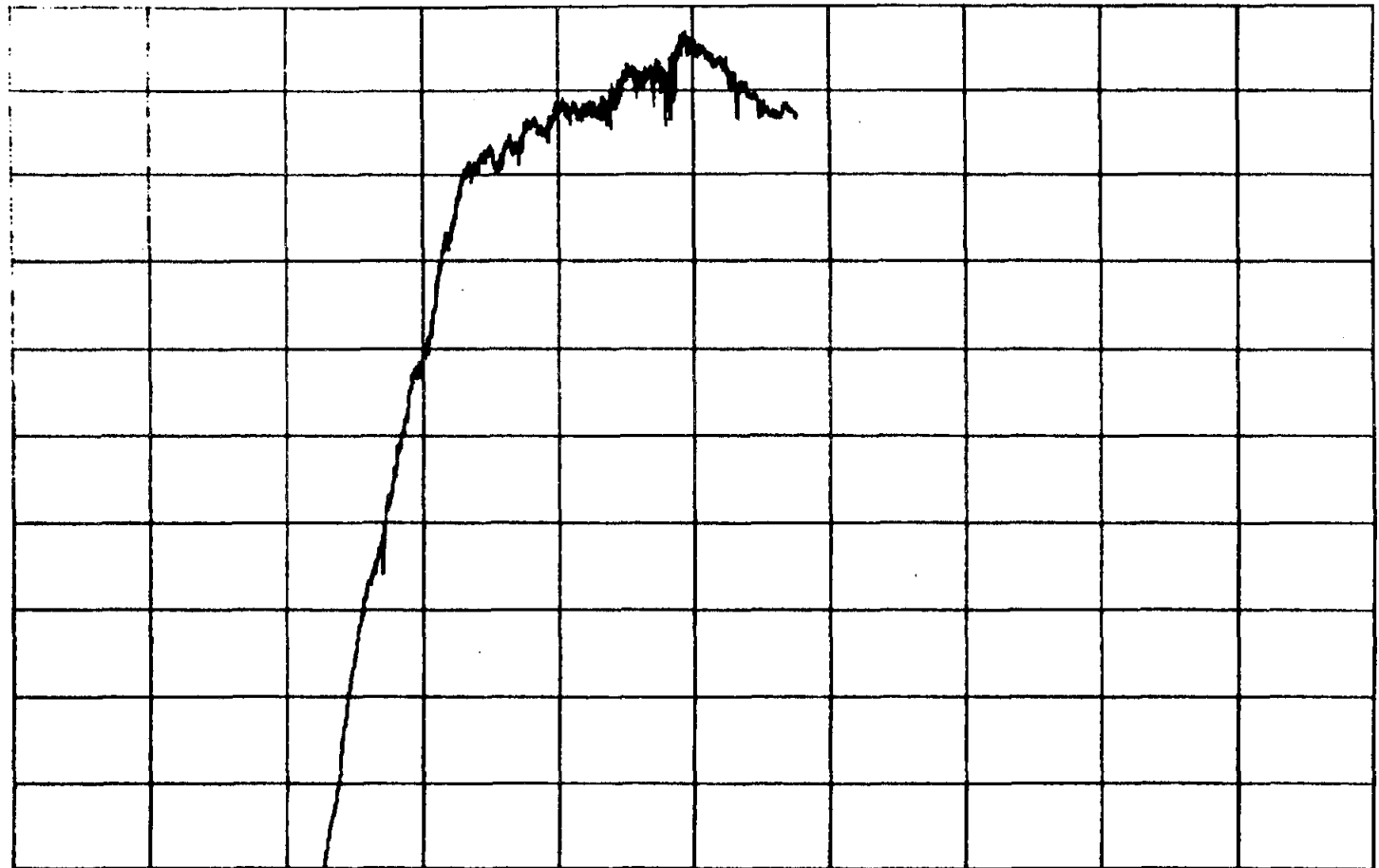
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 090 00 00 00.000

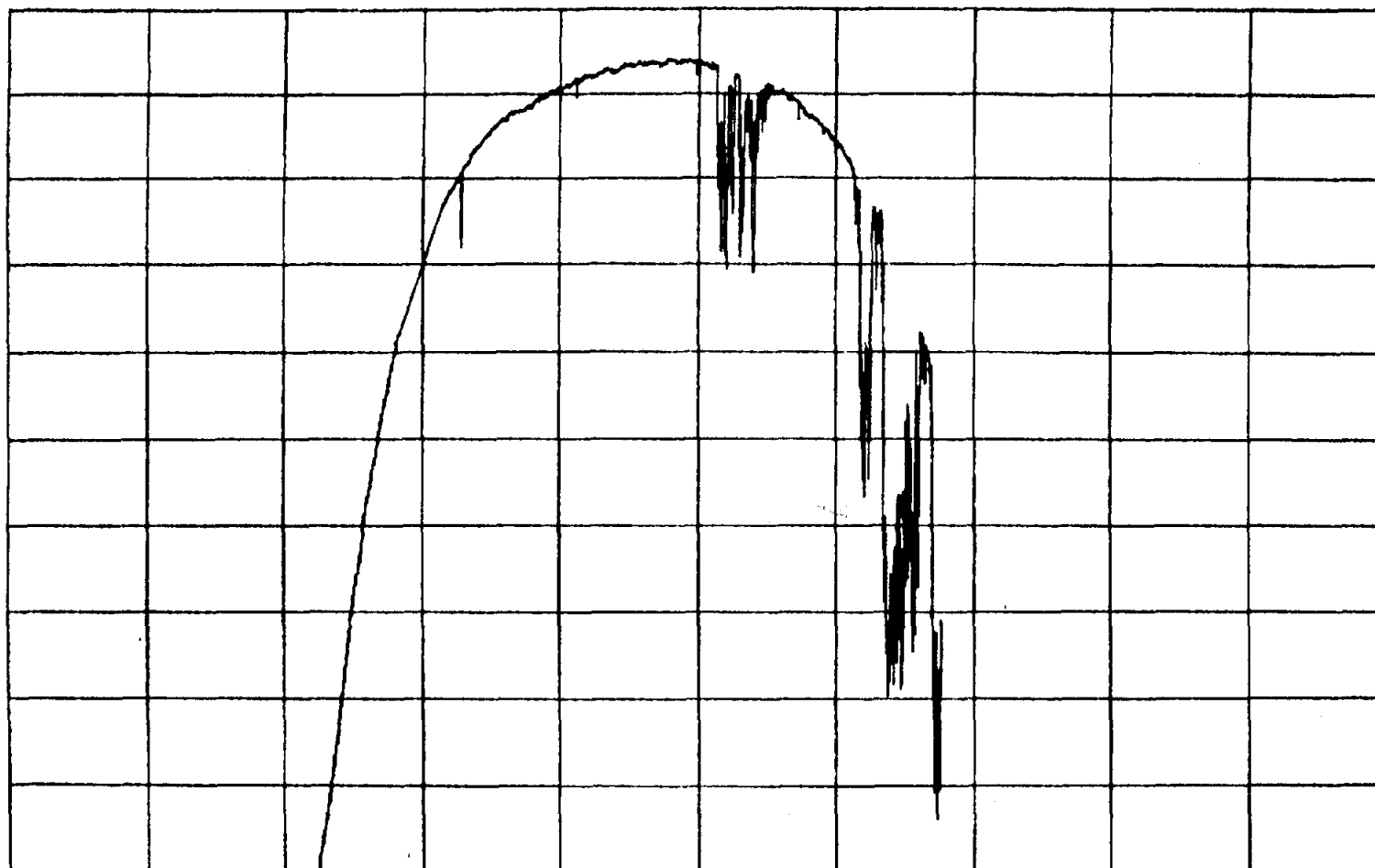
FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00 1500.00
##ATX1817A CNTRL ROOM ROOF NIP 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 091 00 00 00.000

NTH SAMPLE AVERAGE • 1
FOR 1500.0000 MINUTE(S)

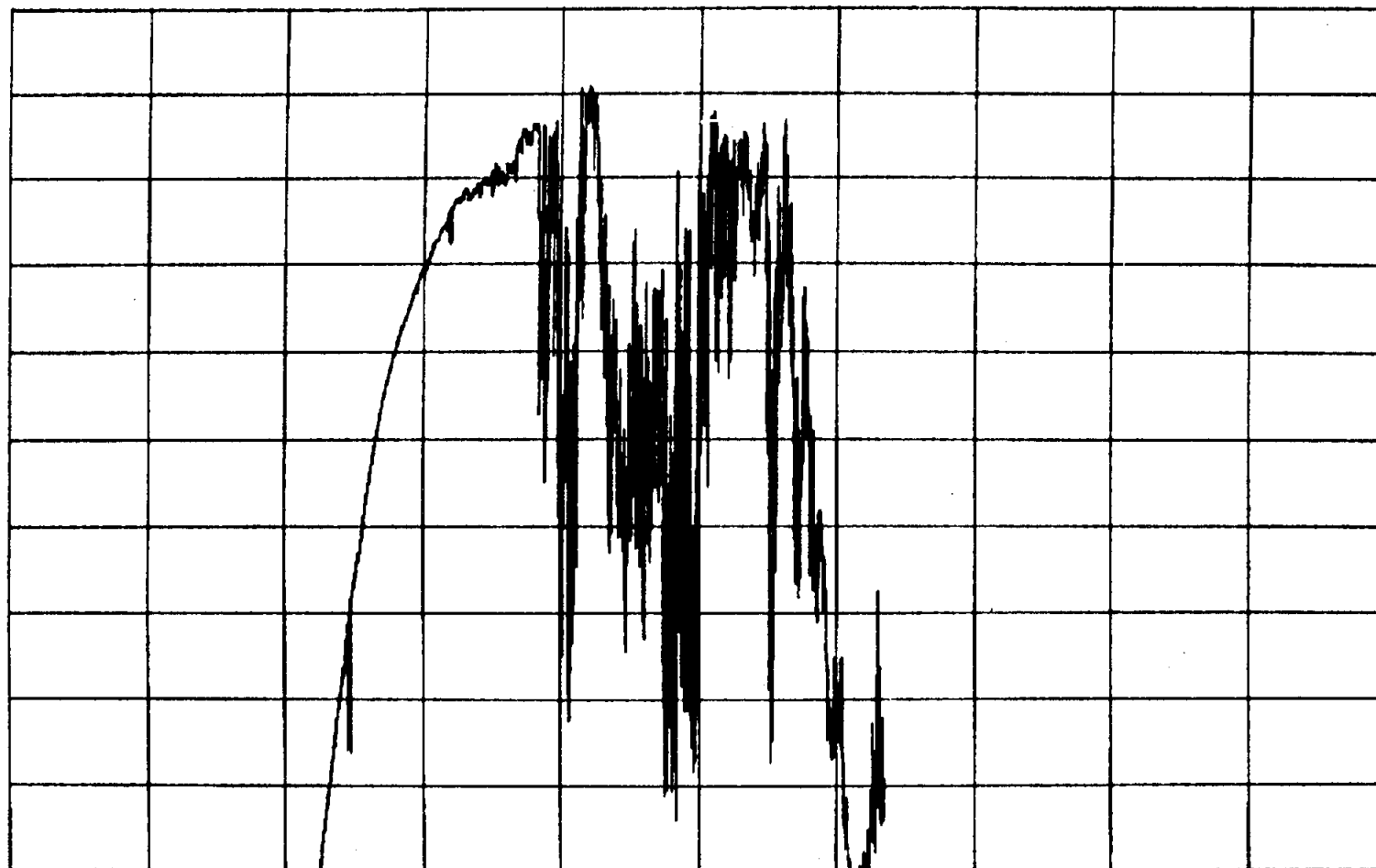


0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 092 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

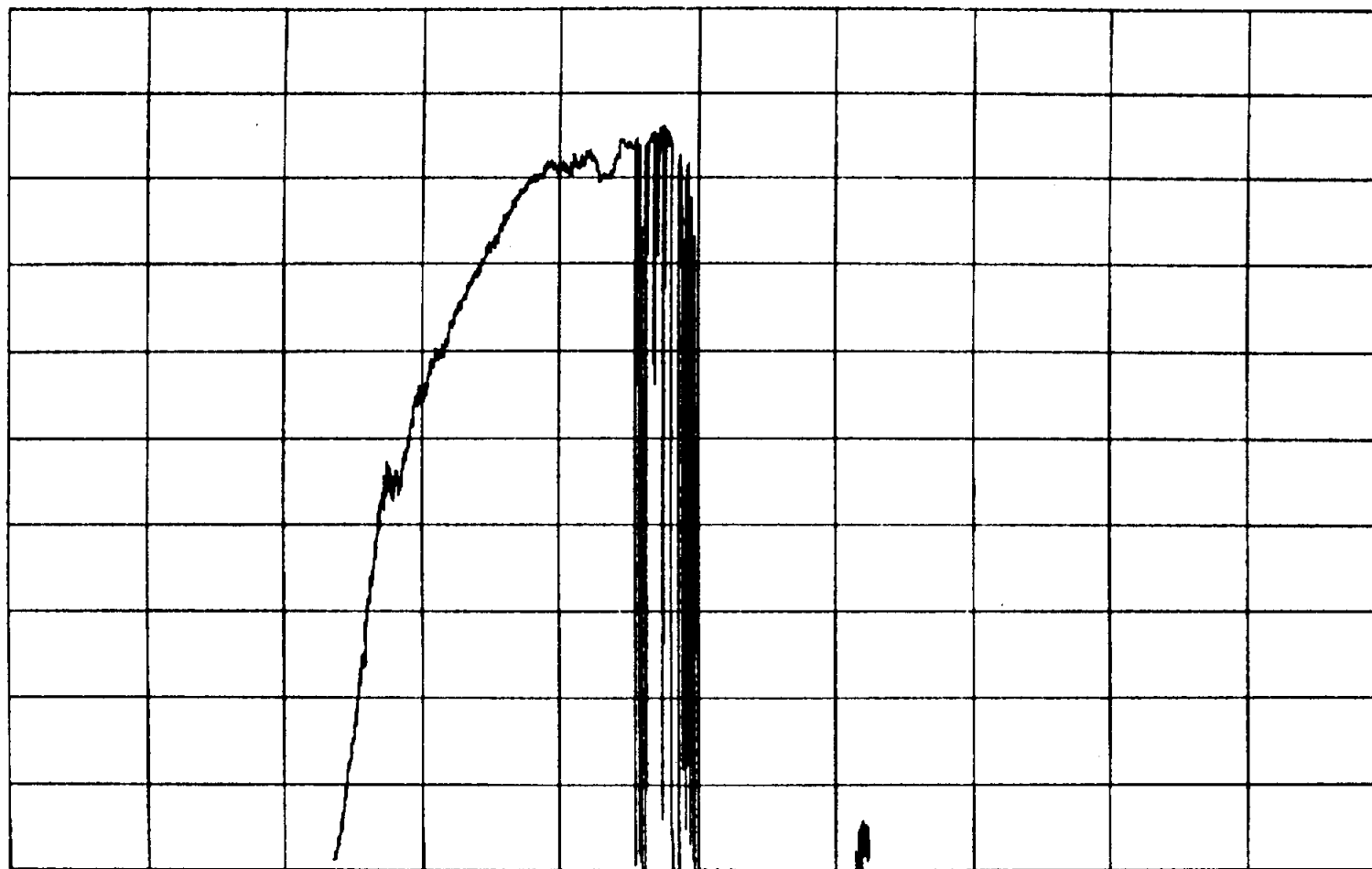


0.00
\$SATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 093 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)

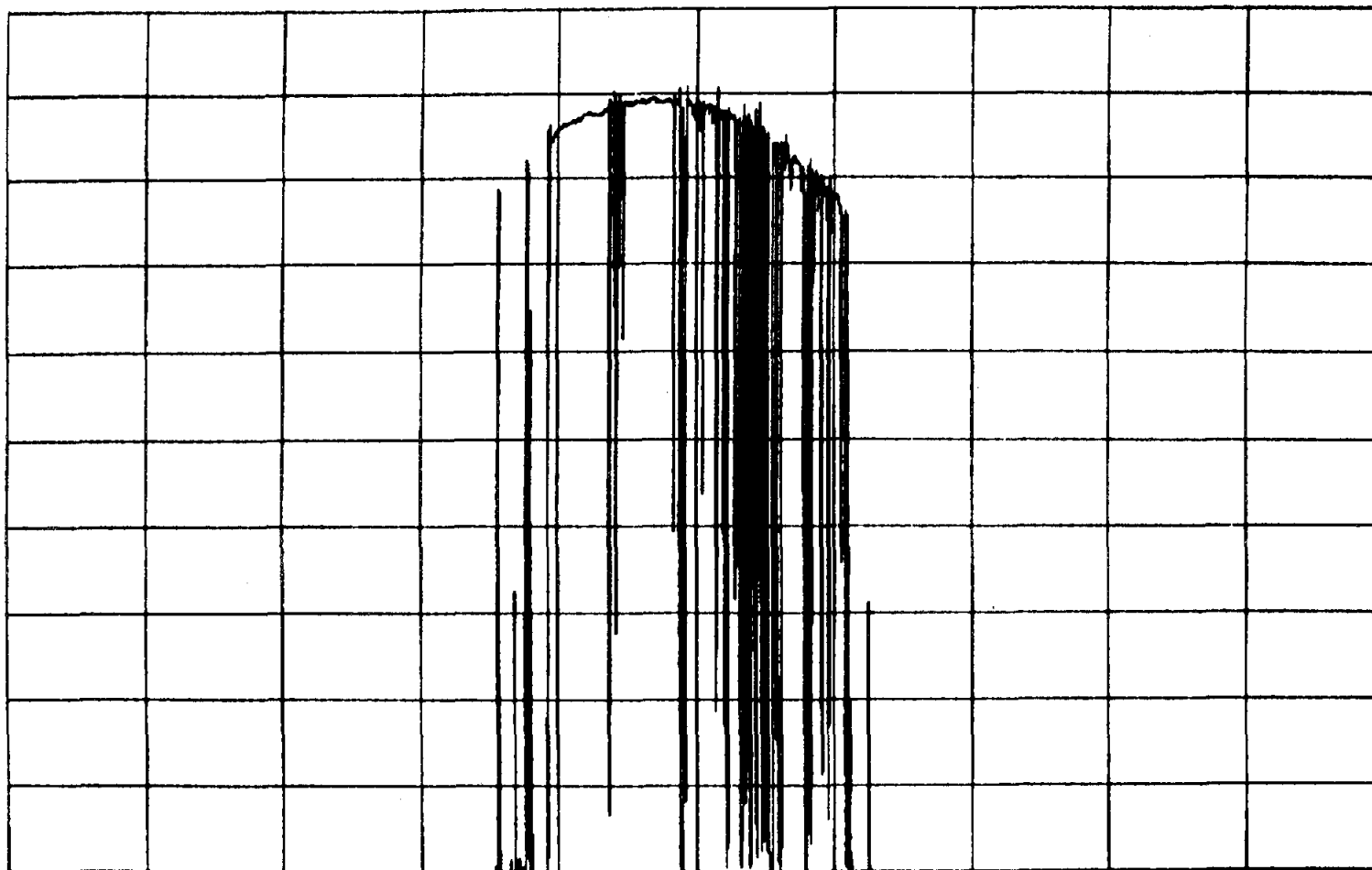


0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 094 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

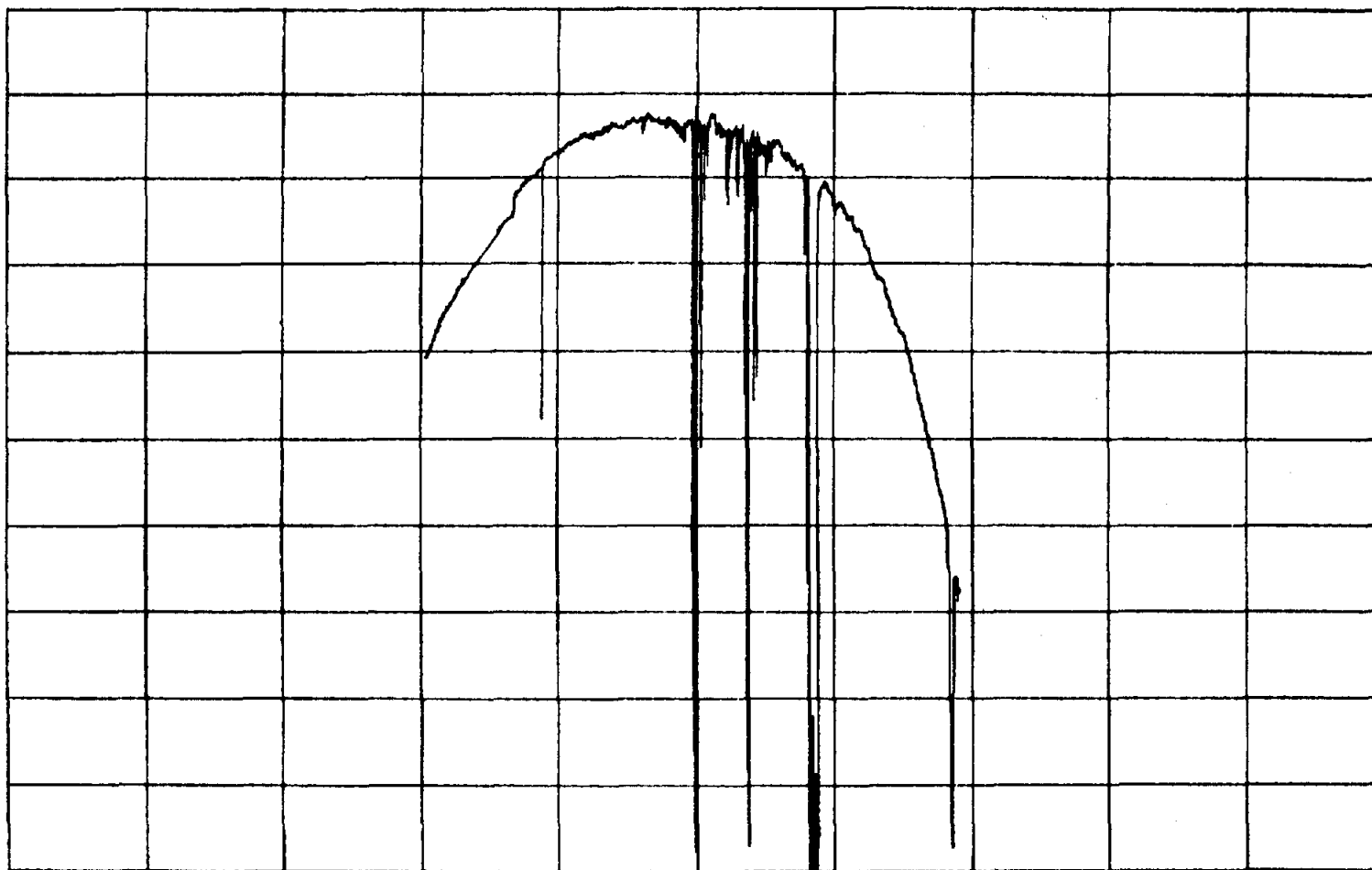
1500.00

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 096 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

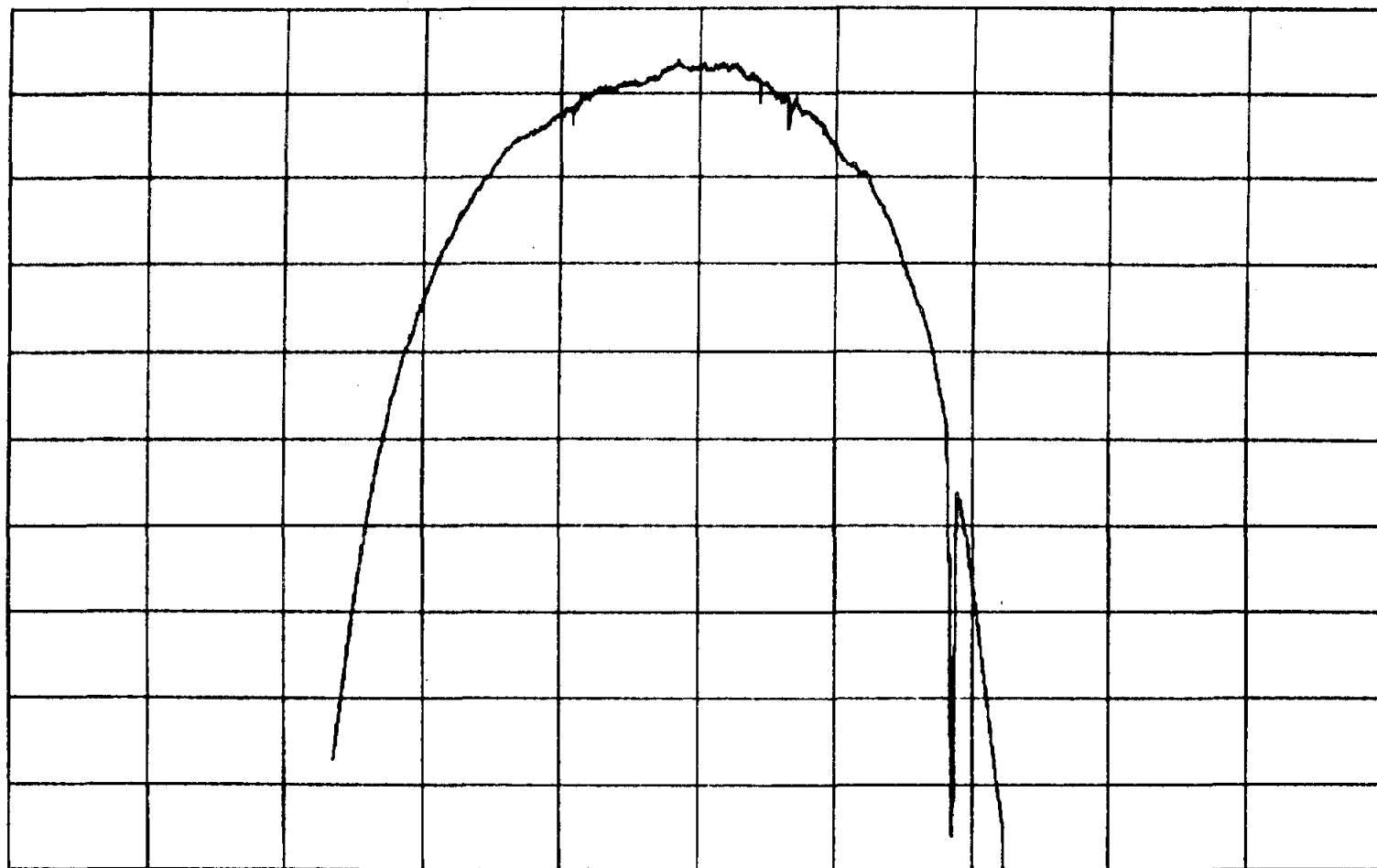
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 097 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

\$\$ATX1817A

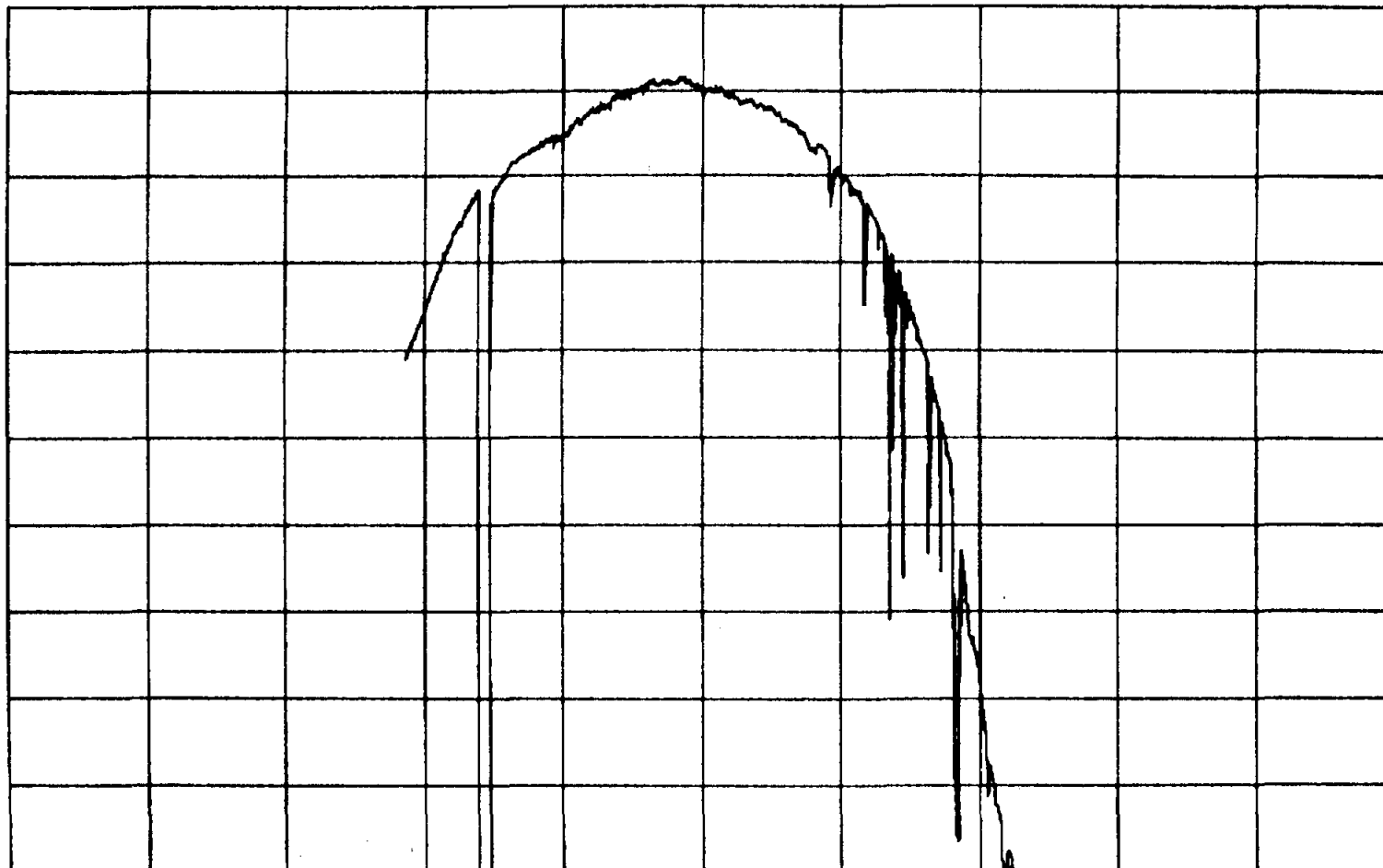
CNTRL ROOM ROOF NIP

1500.00

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 098 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

88ATX1817A

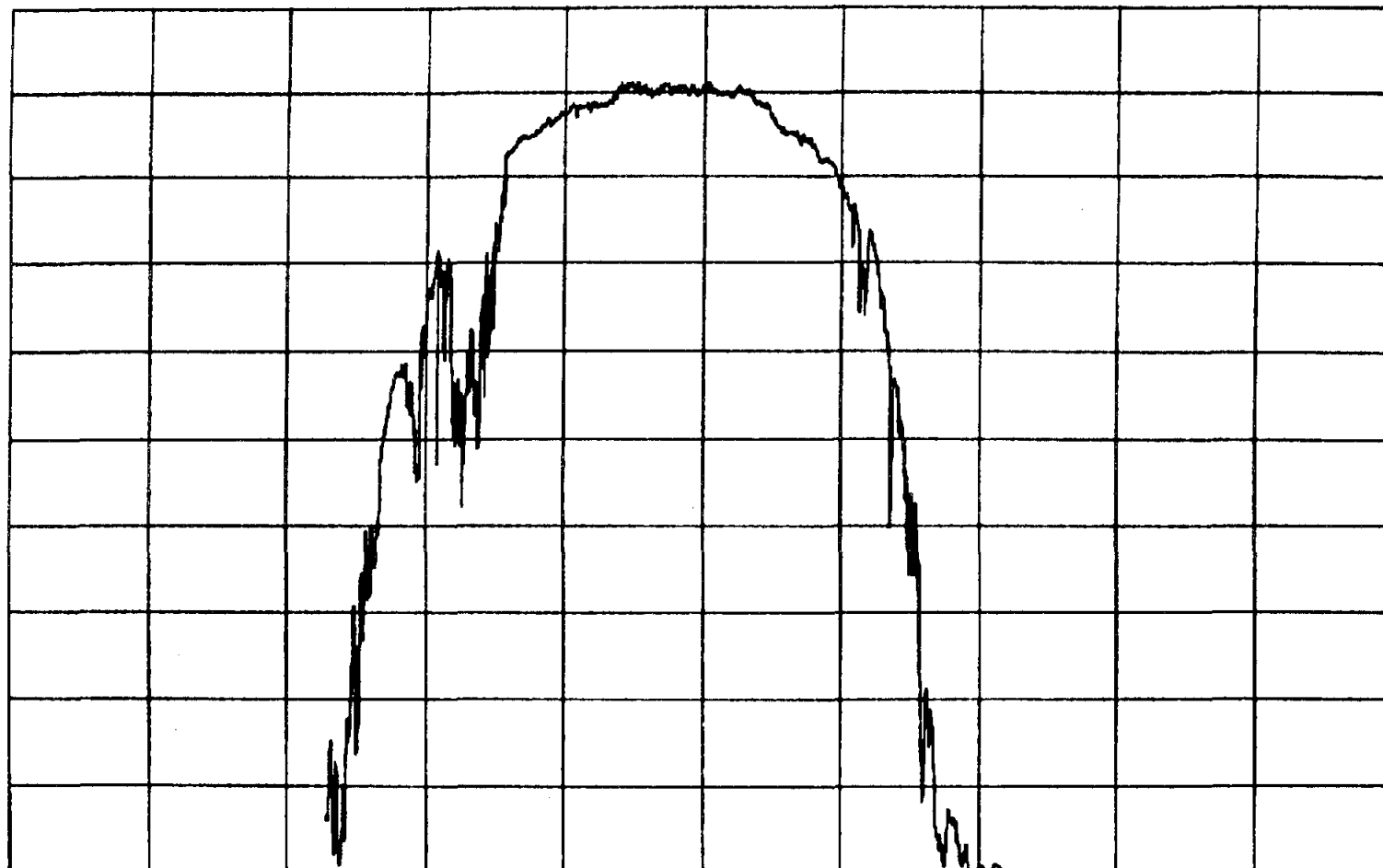
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 099 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



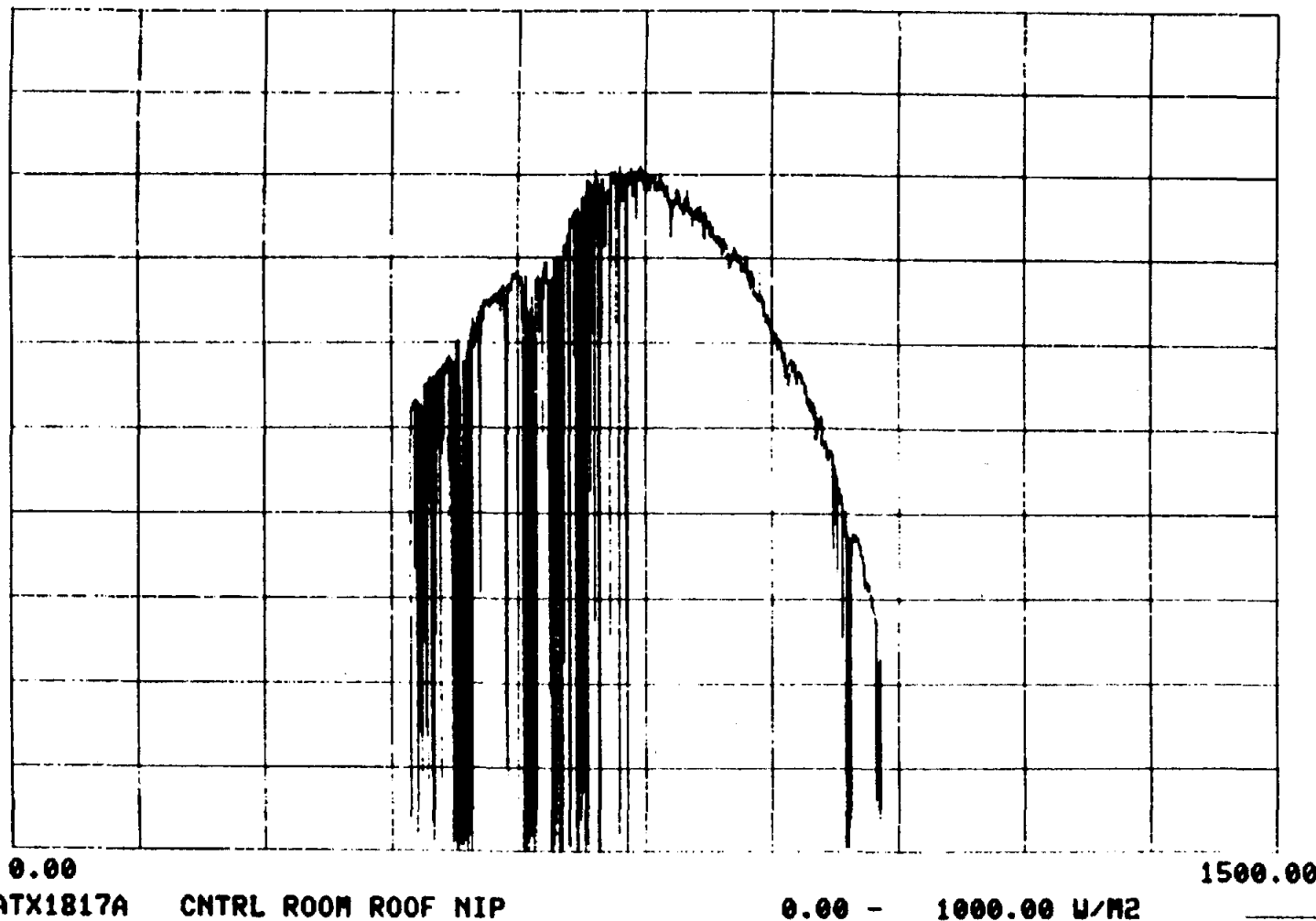
0.00

1500.00

88ATX1817A CNTRL ROOM ROOF NIP

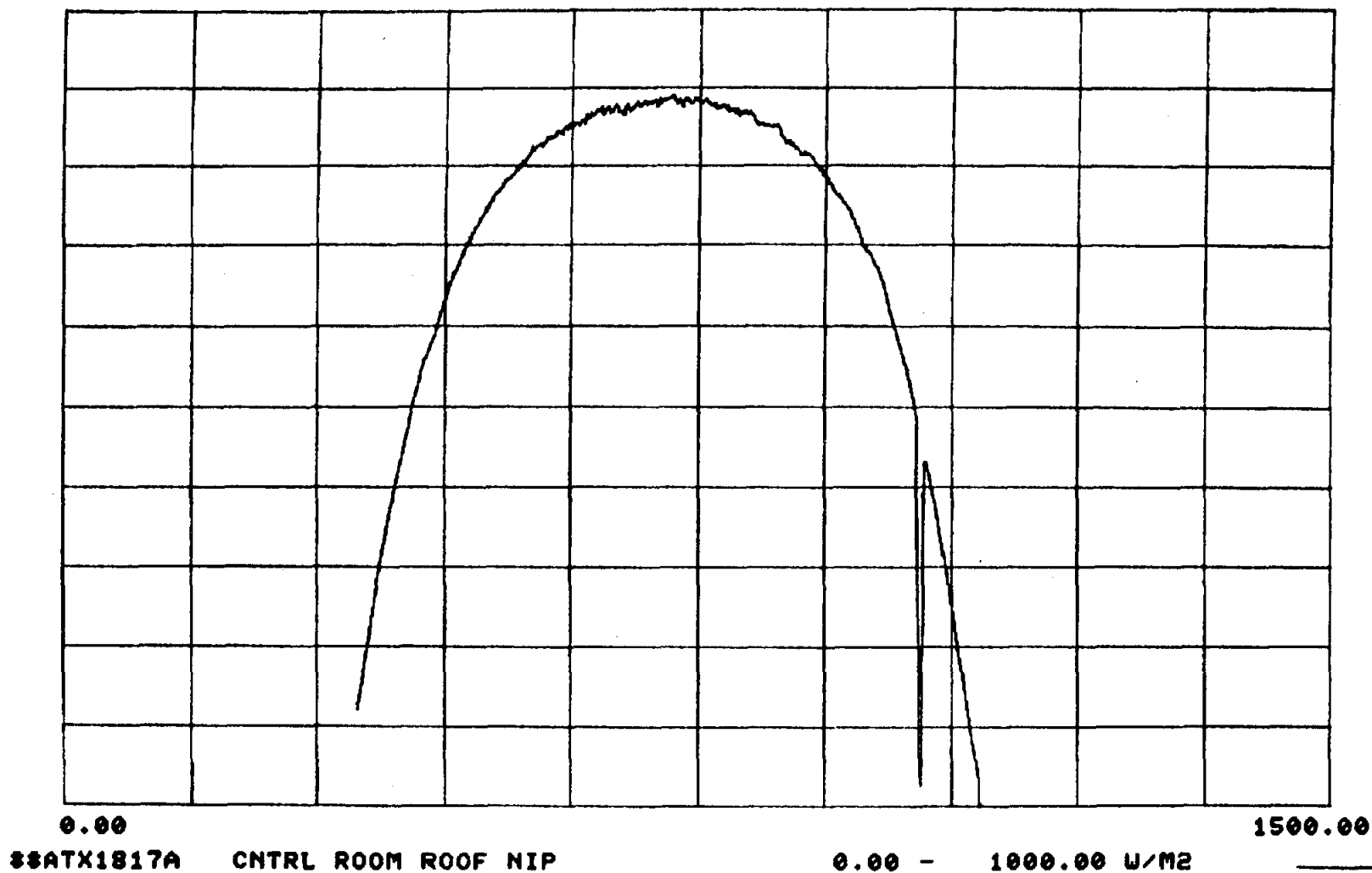
0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3 NTH SAMPLE AVERAGE = 1
 REFERENCE TIME: 101 00 00 00.000 FOR 1500.0000 MINUTE(S)



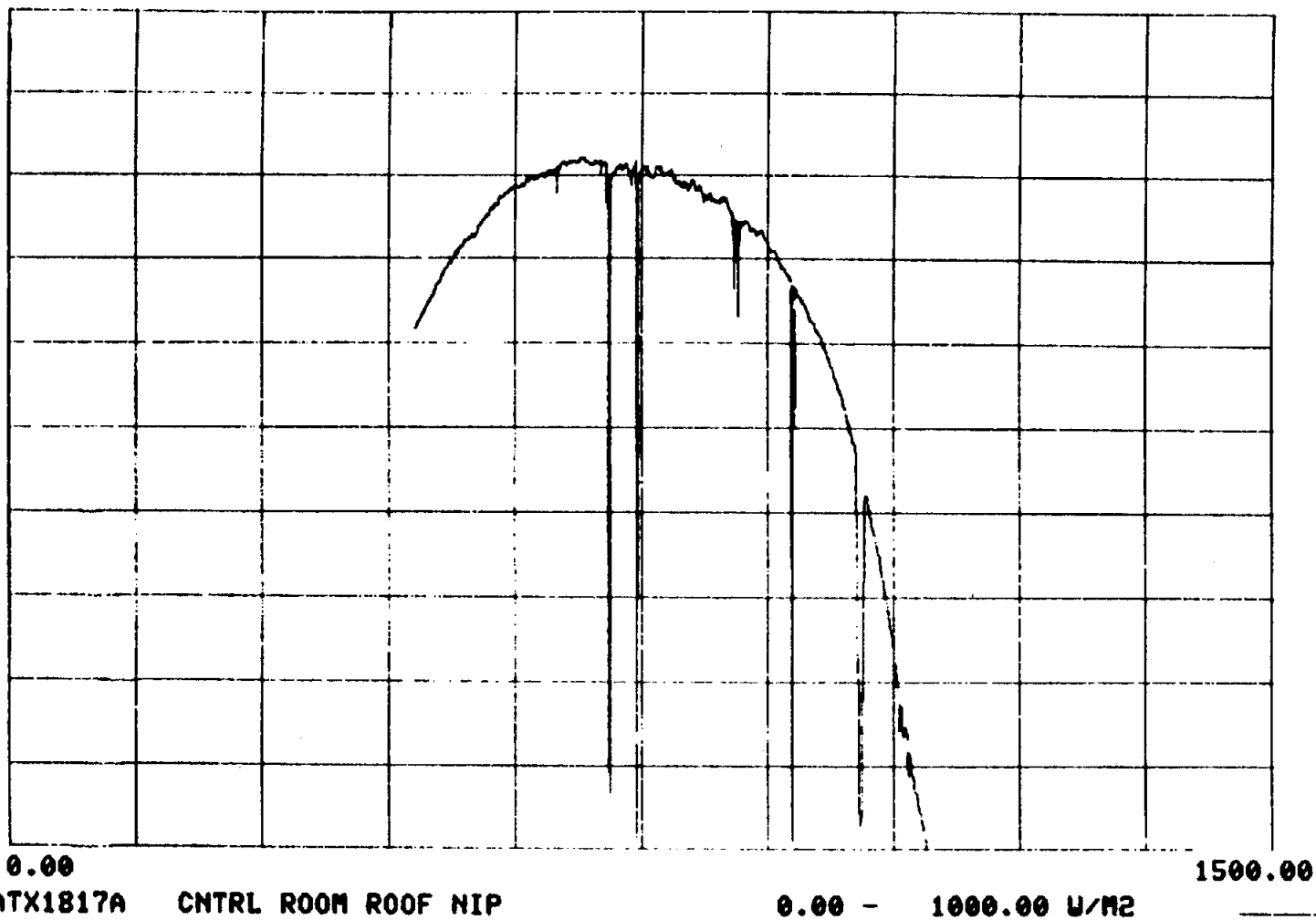
SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 103 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



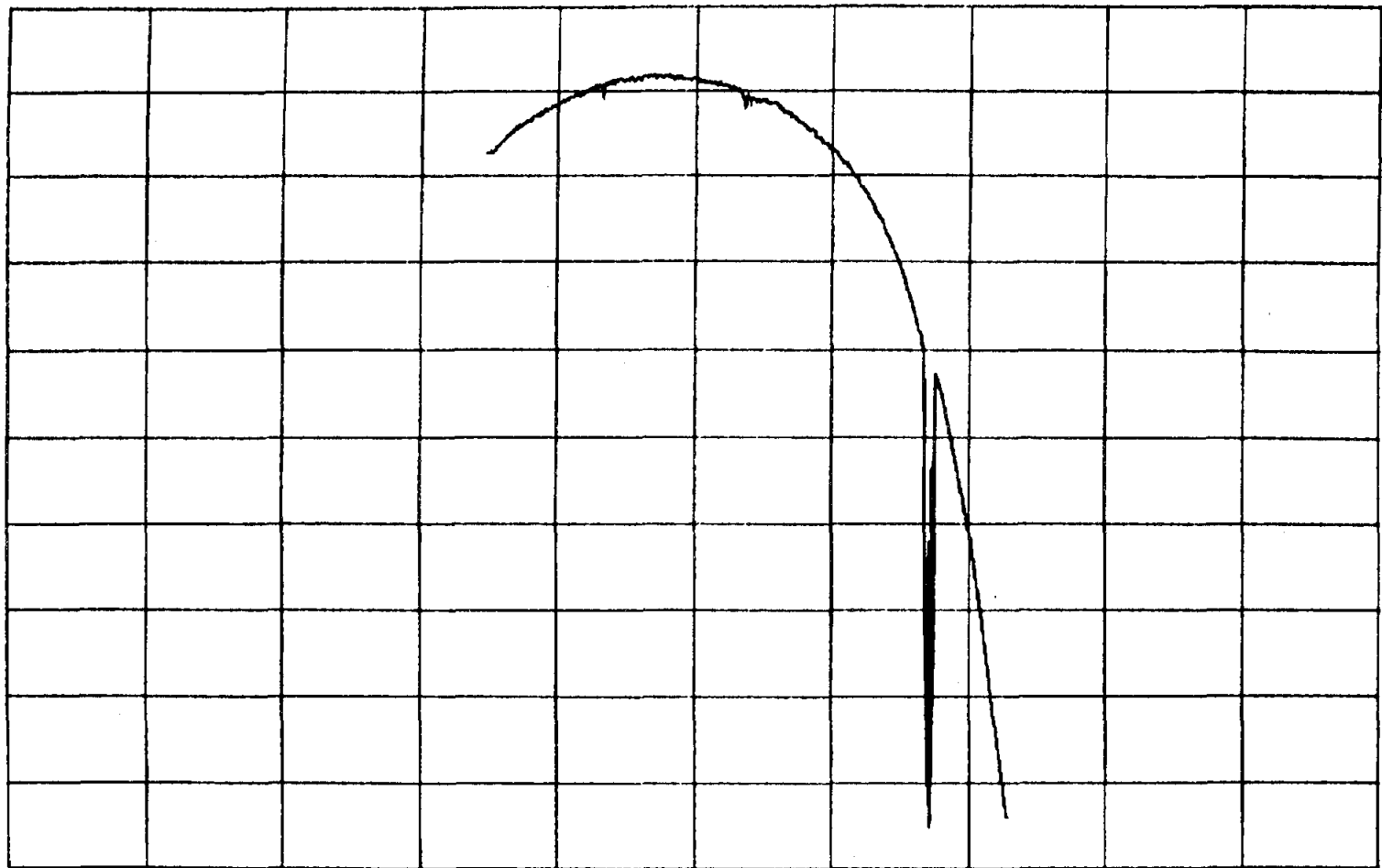
SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 104 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 106 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

\$\$\$ATX1817A

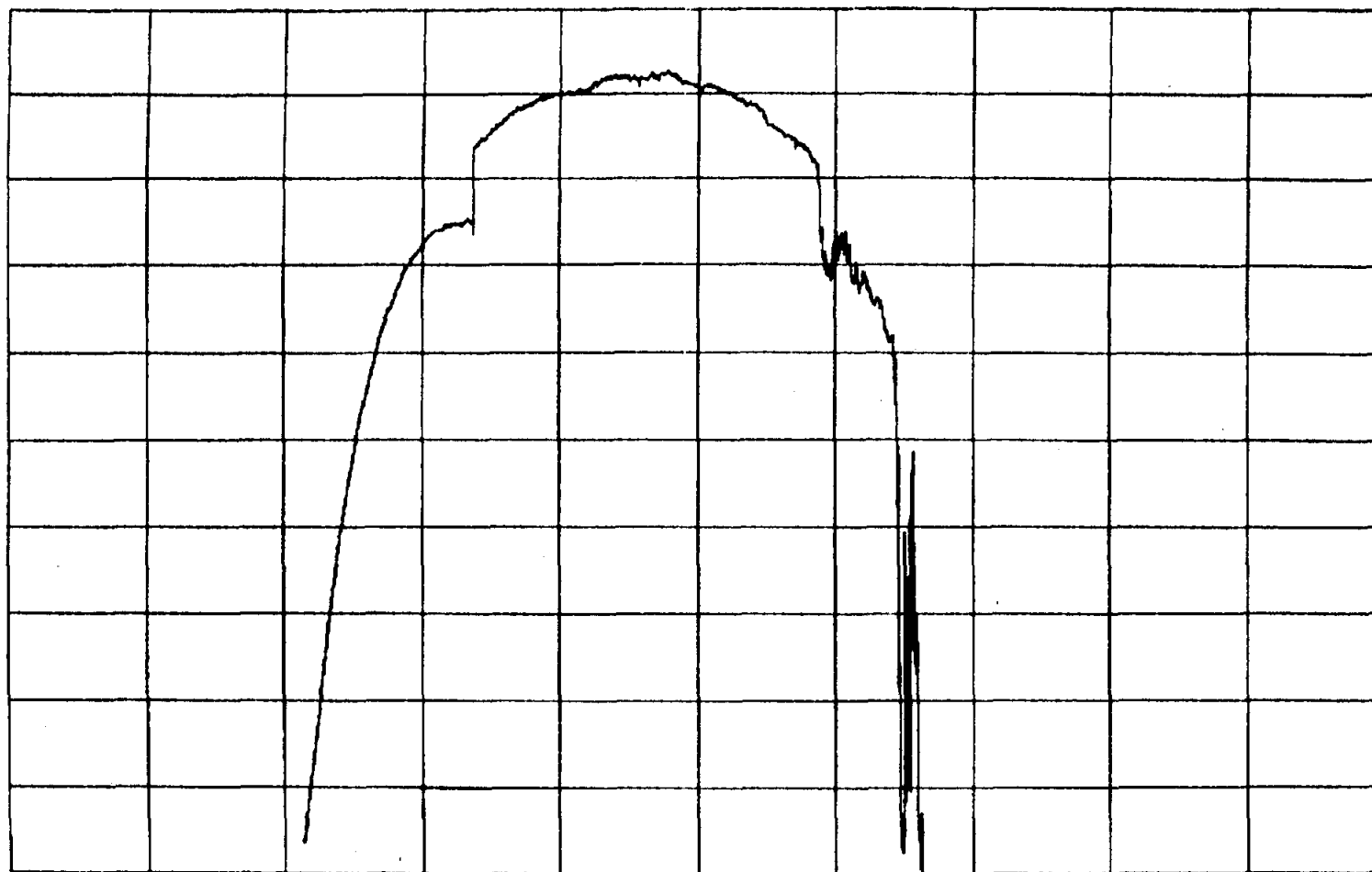
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 107 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

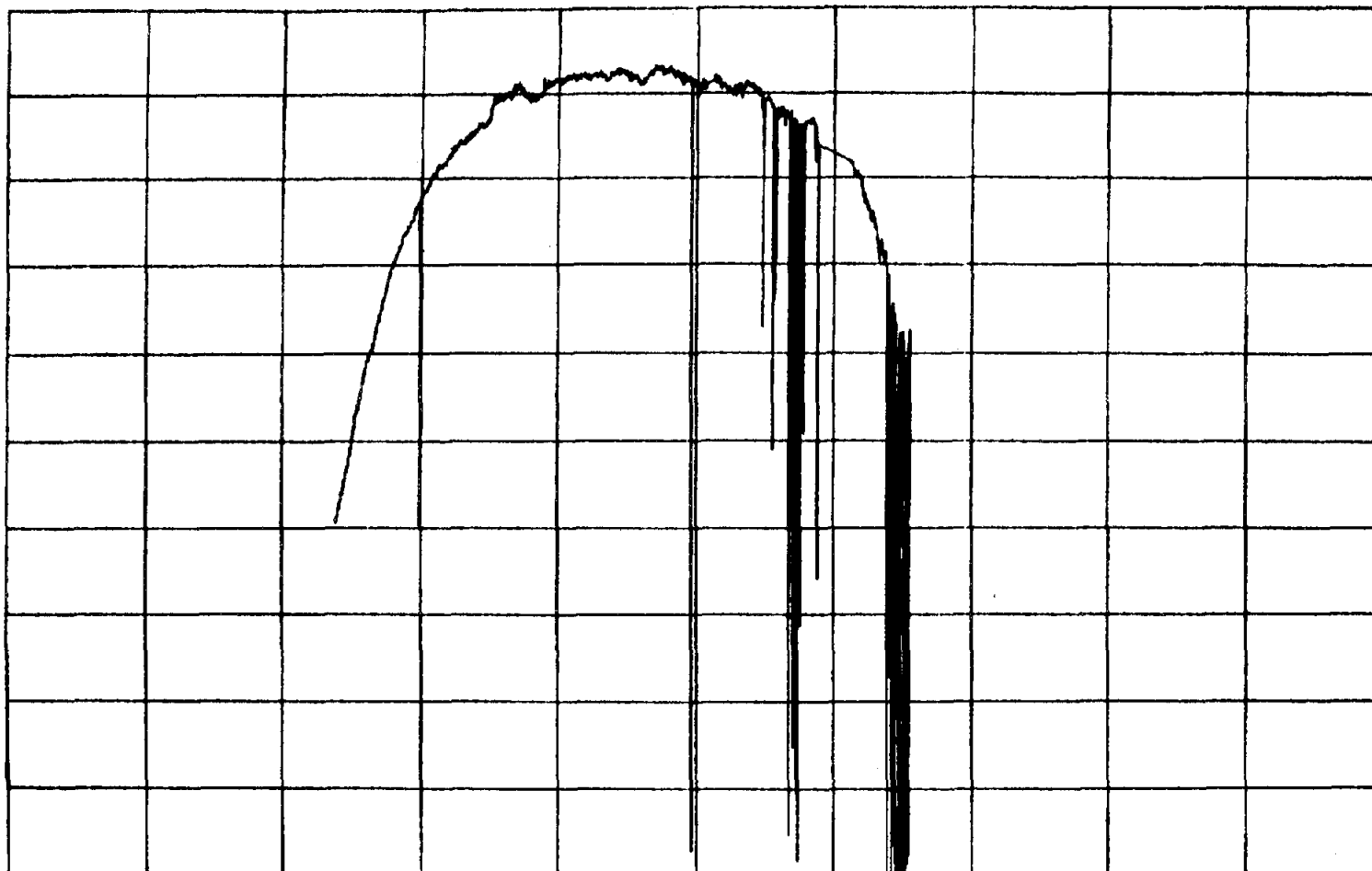
1500.00

STATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 108 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)

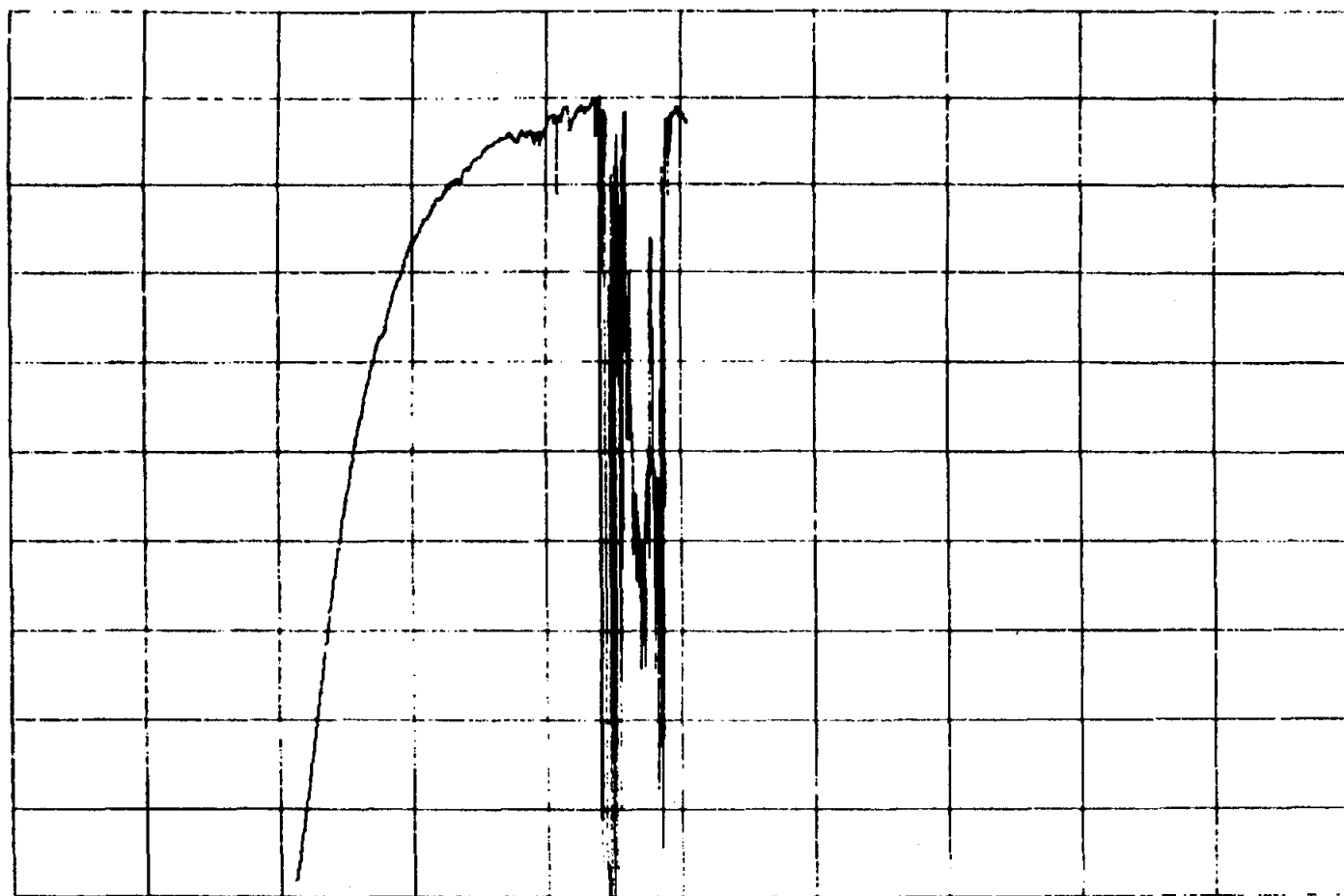


0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 109 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

##ATX1817A

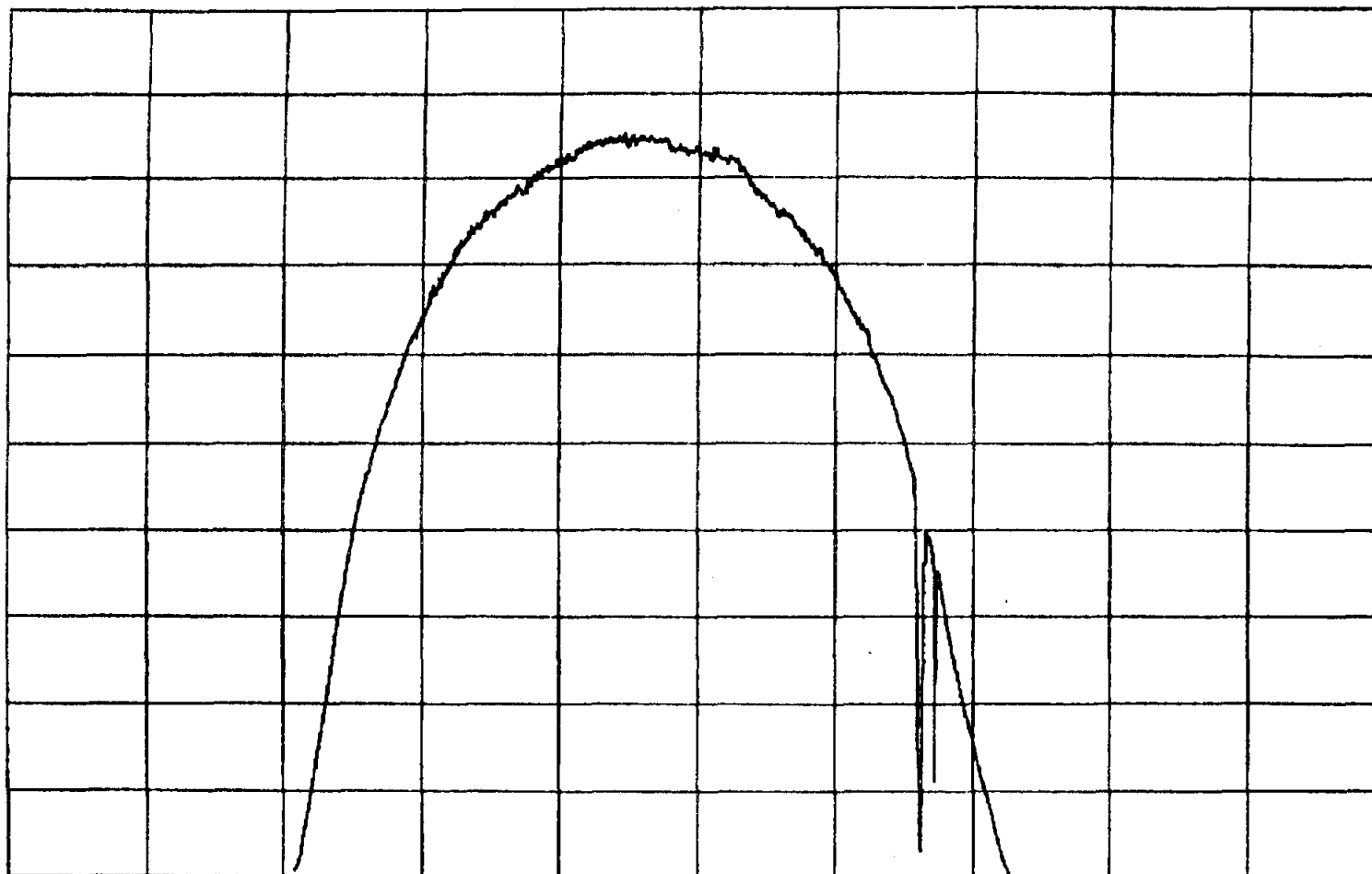
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 112 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

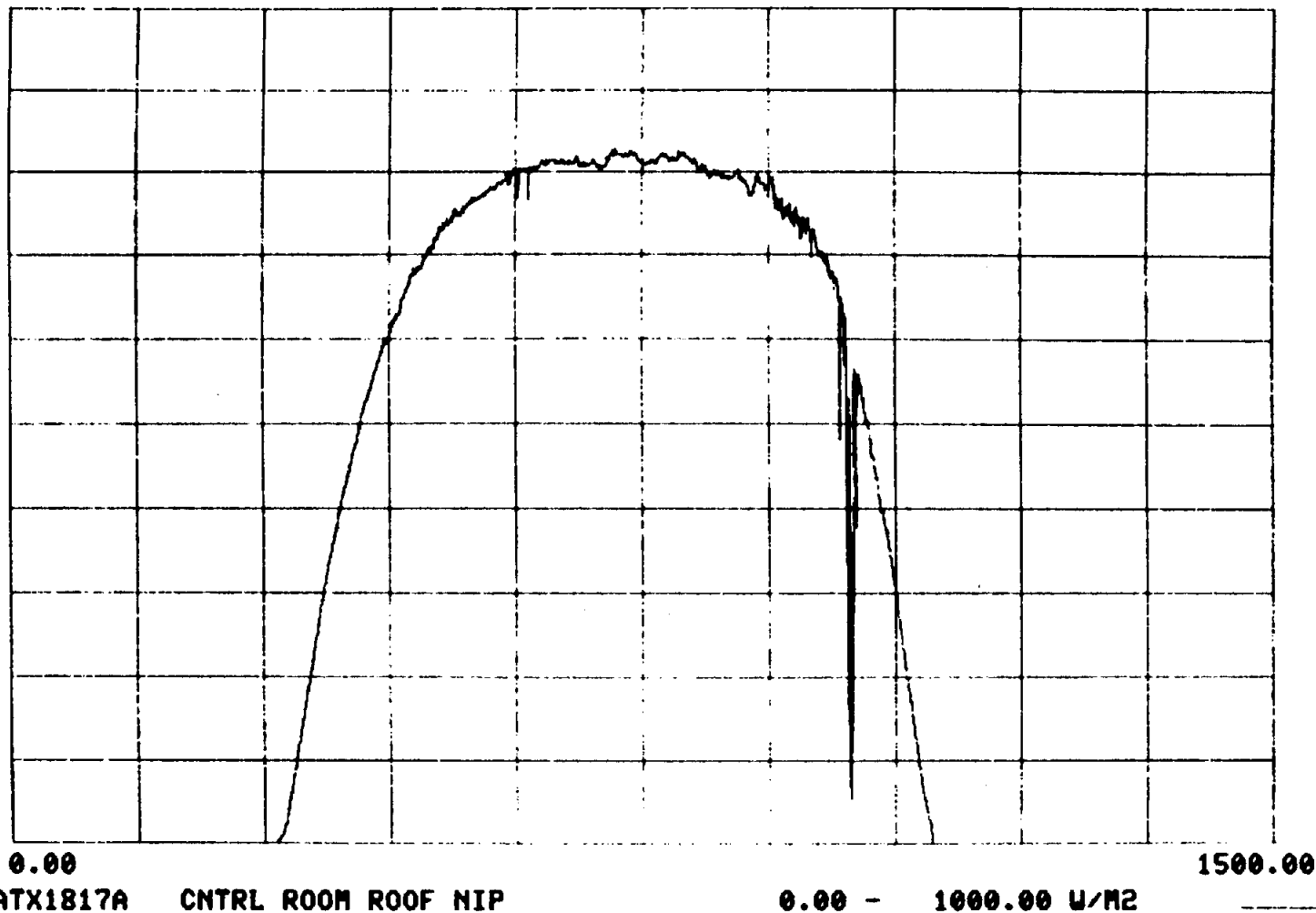


0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

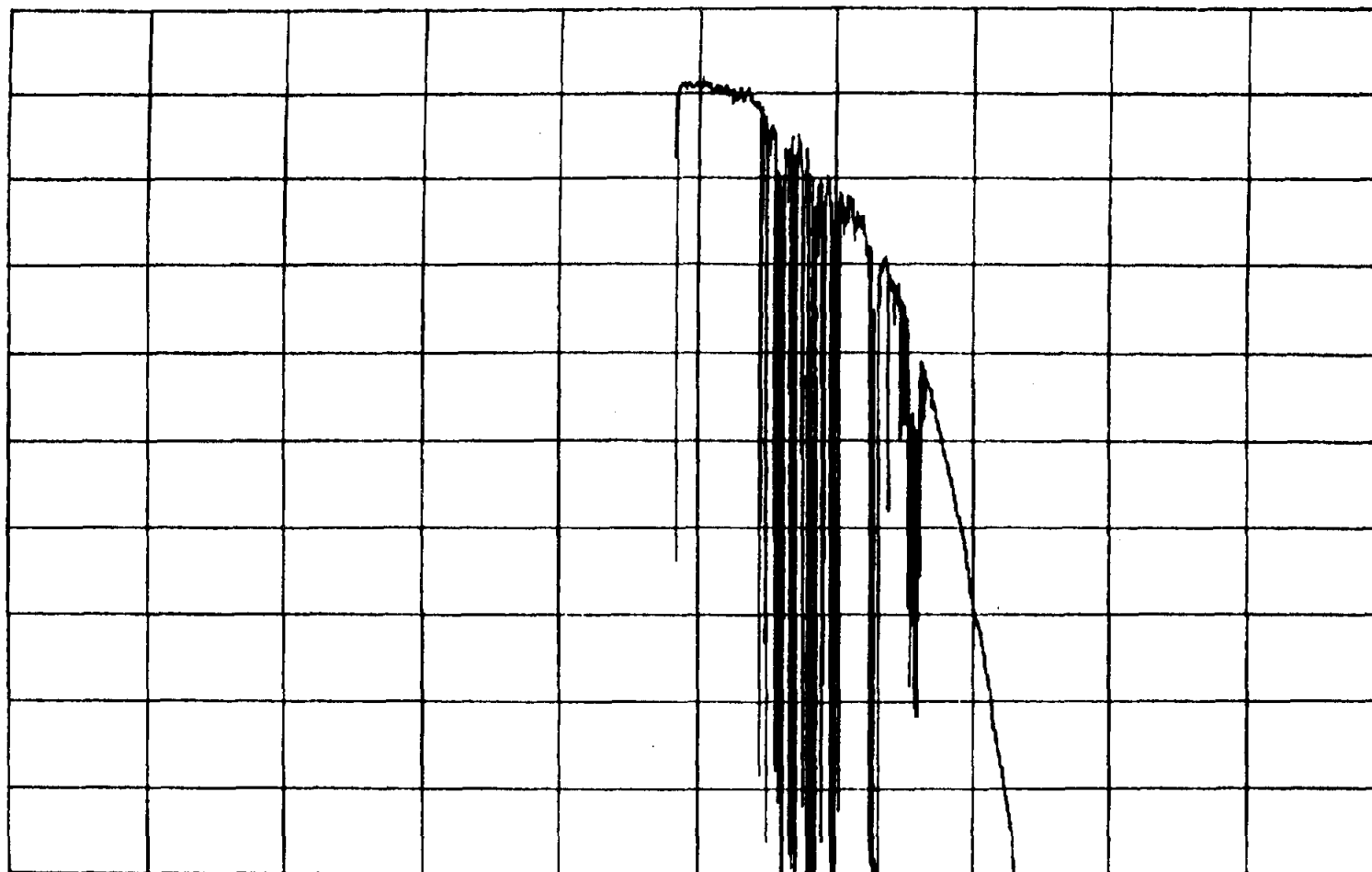
SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 113 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 114 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 115 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

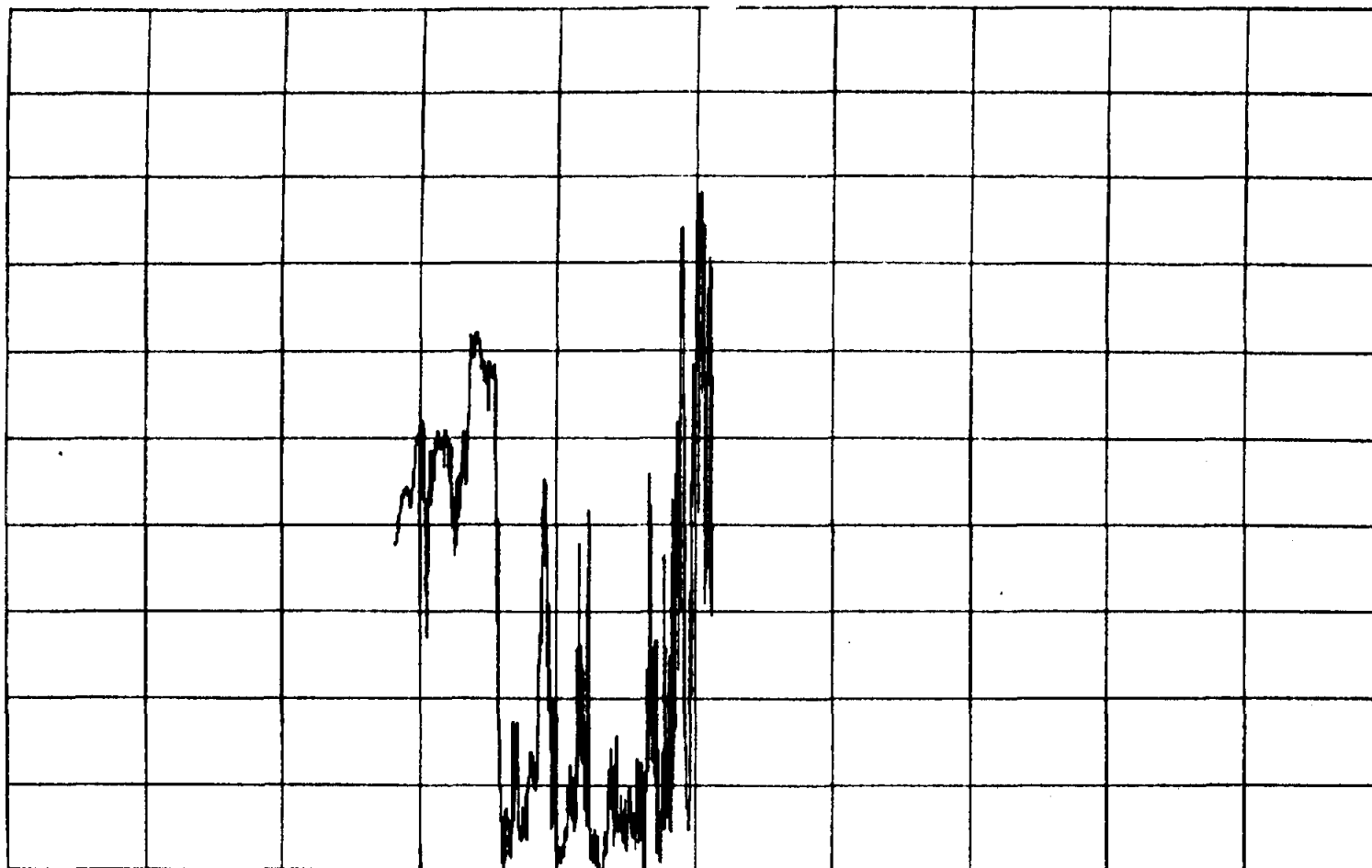
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 116 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

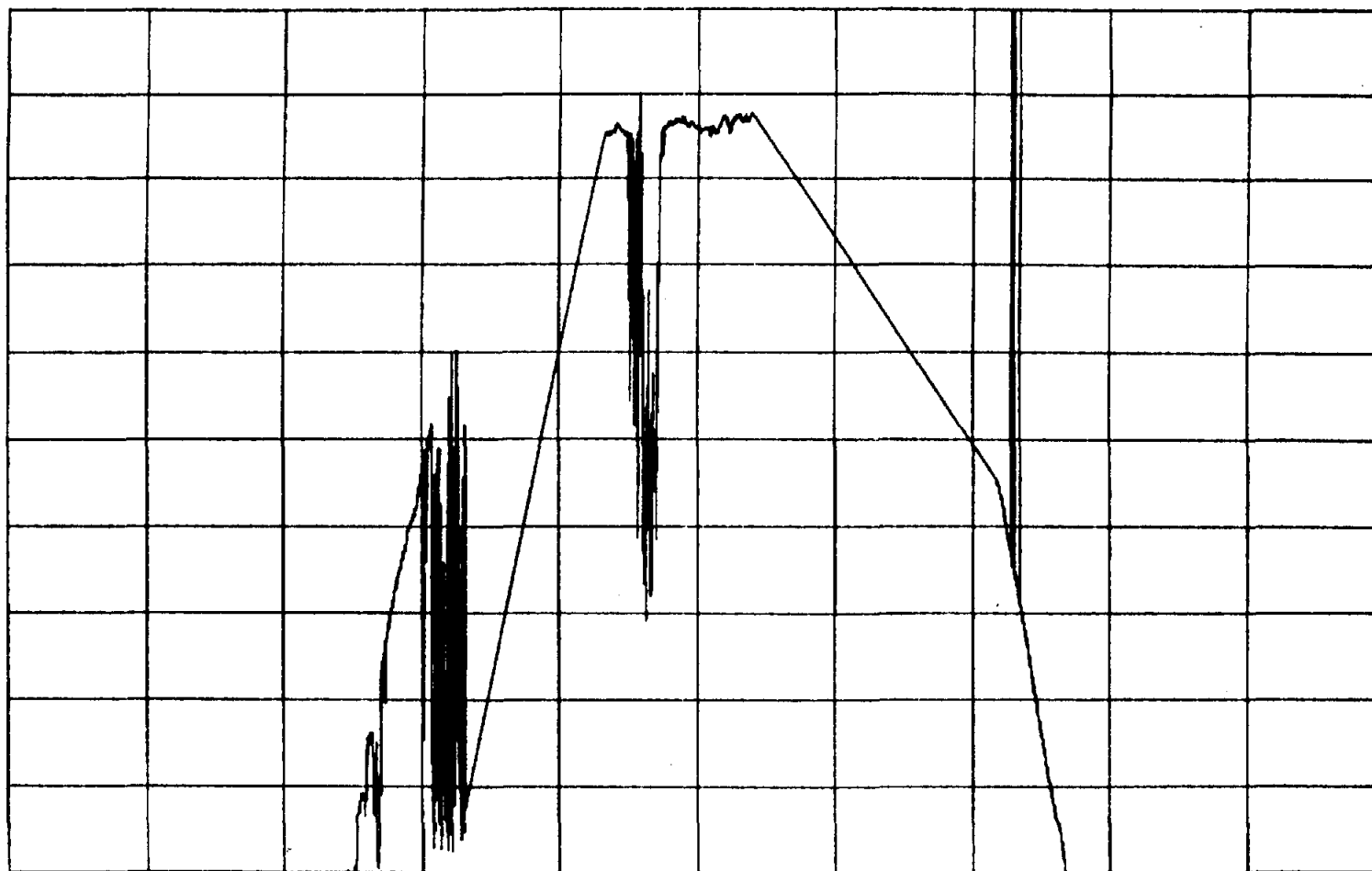


0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 117 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

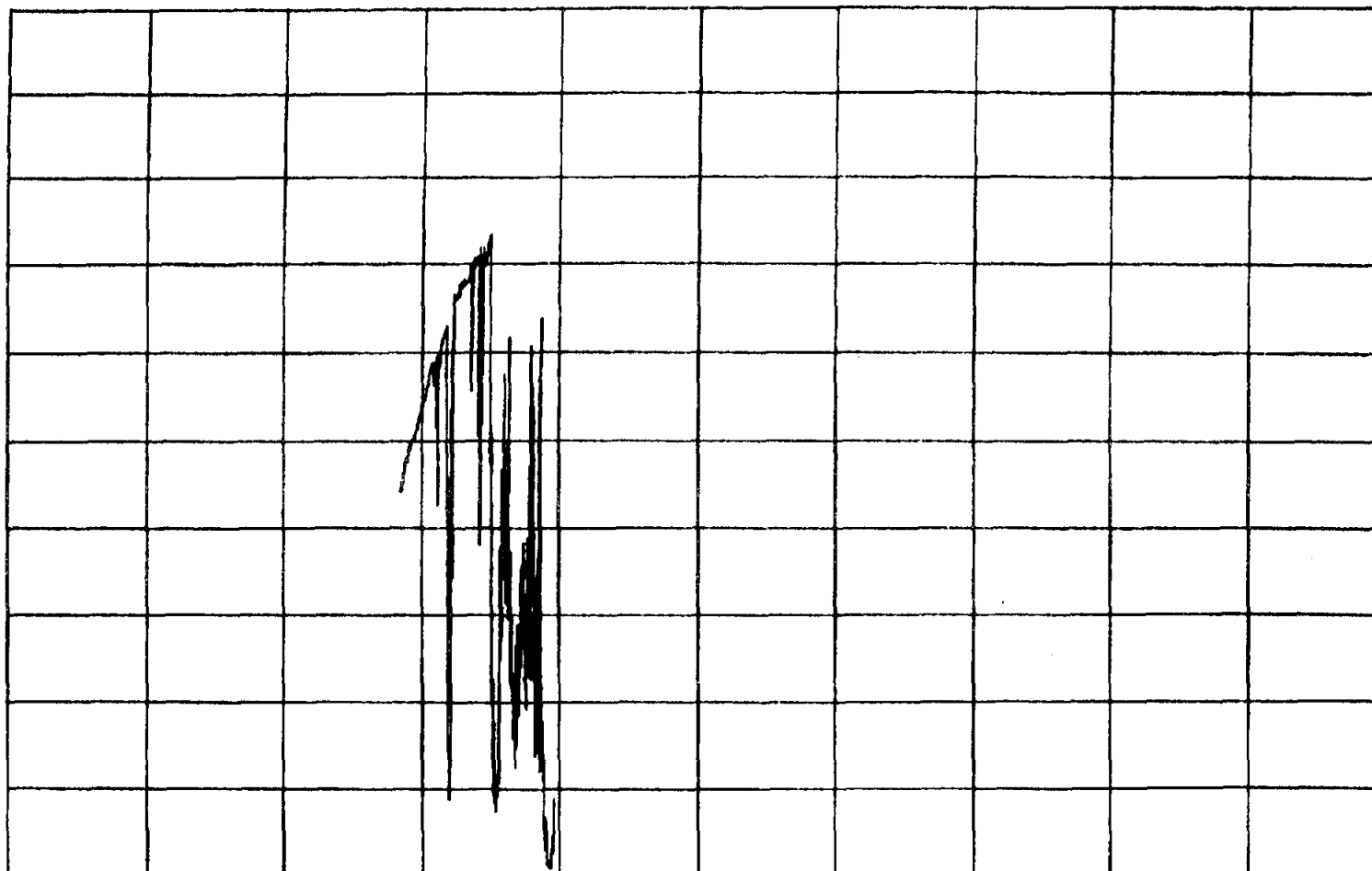
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 118 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

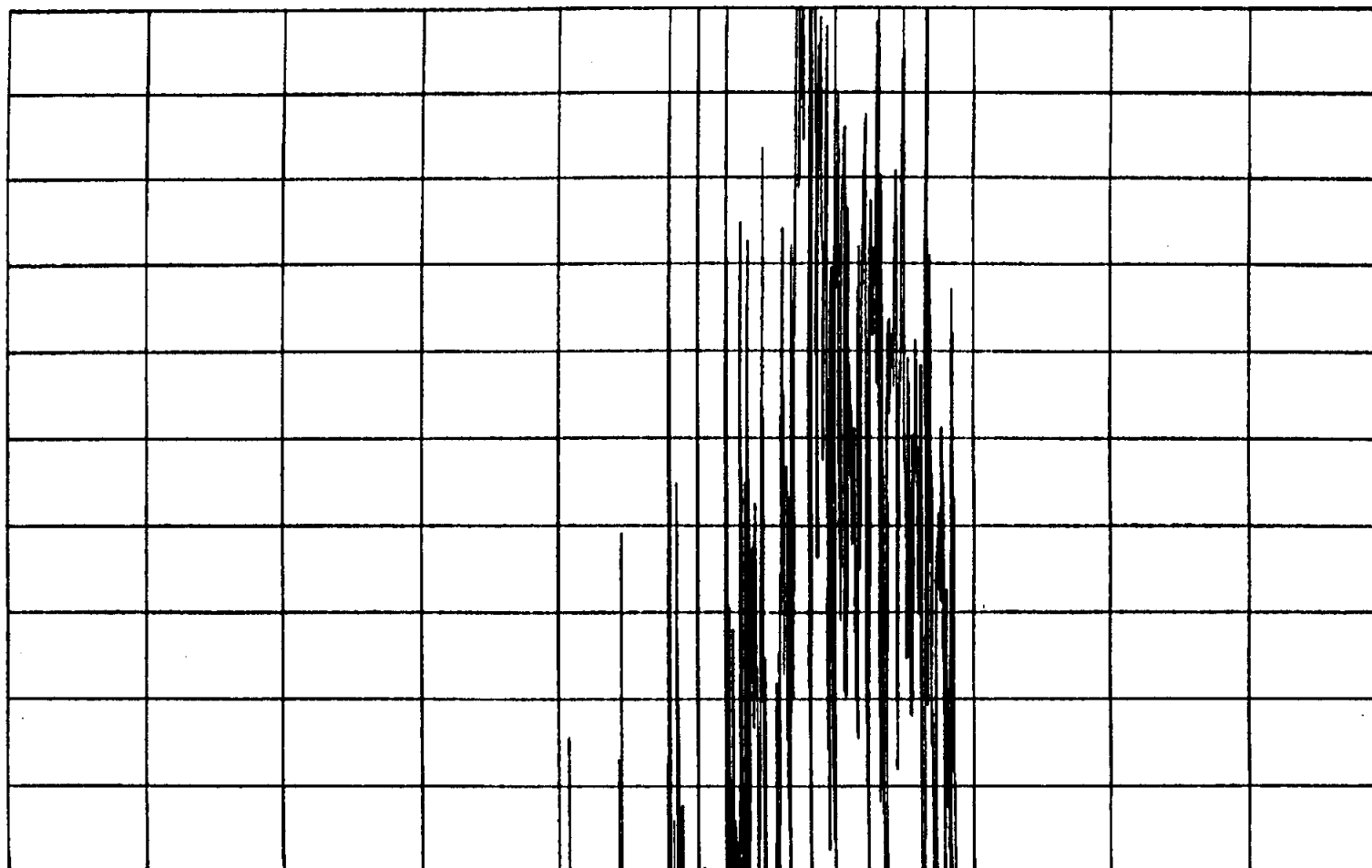
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 122 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1817

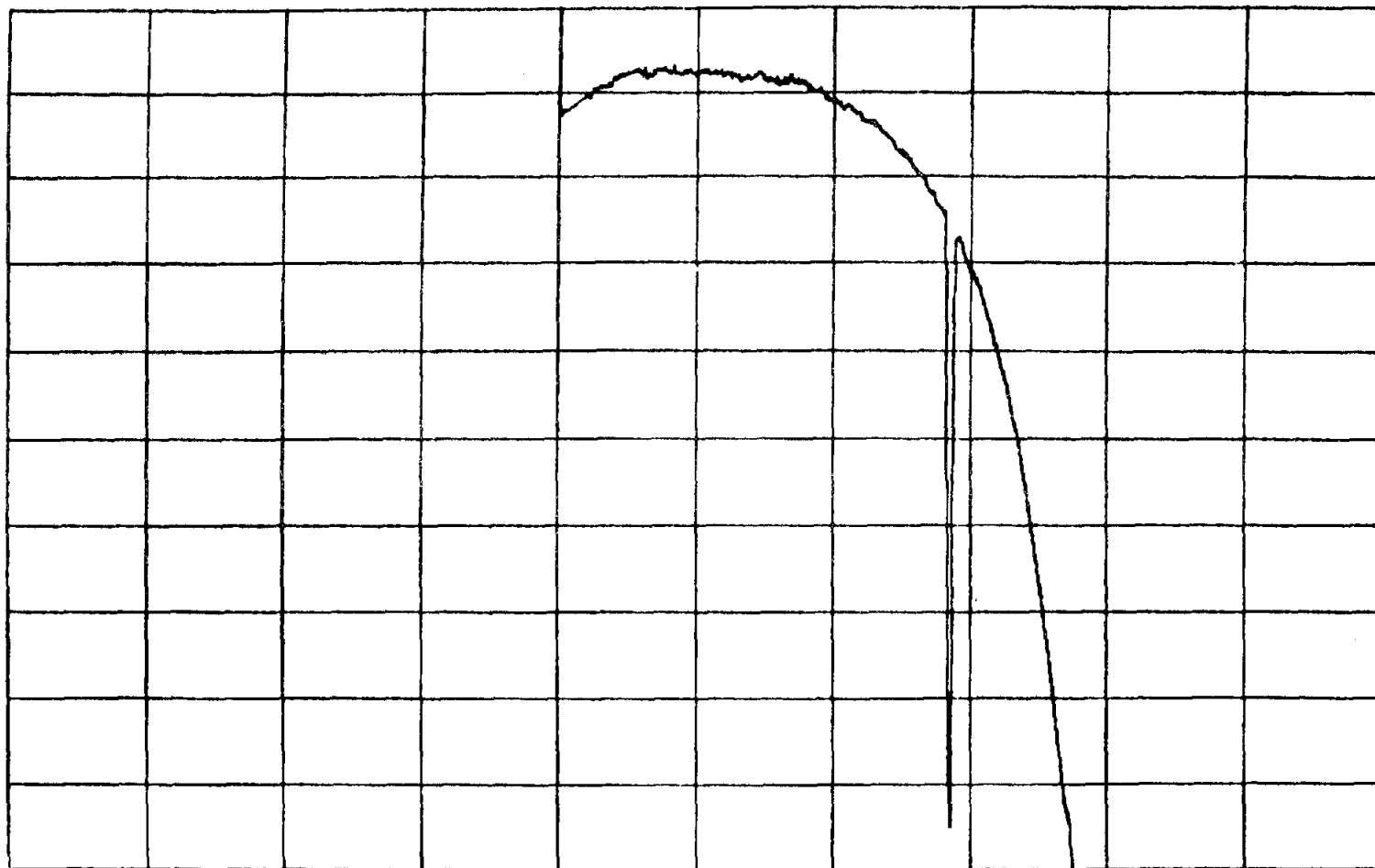
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT
REFERENCE TIME: 123 00 00 00.000

PLOT # MISL3

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

\$\$\$ATX1817A

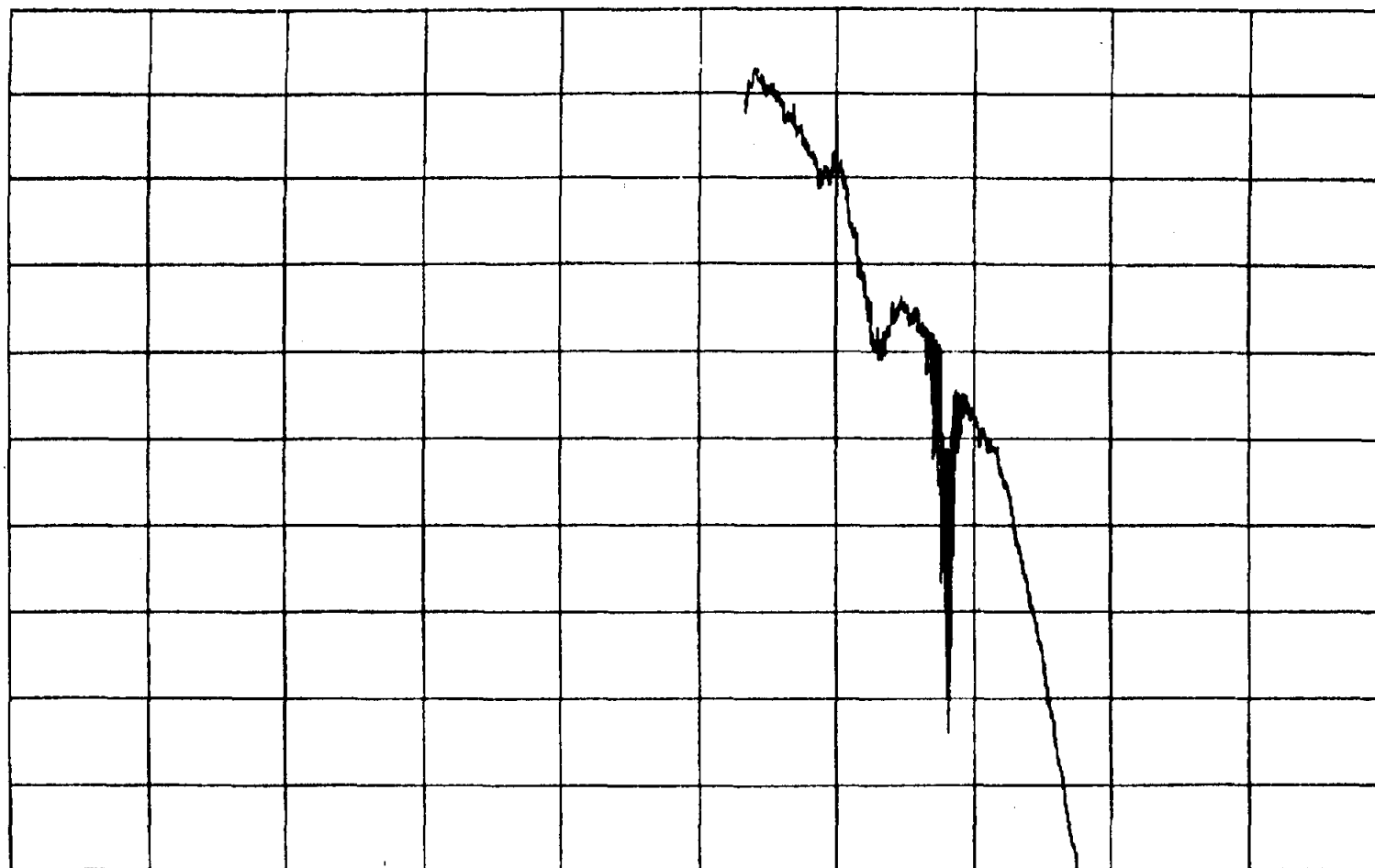
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 124 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

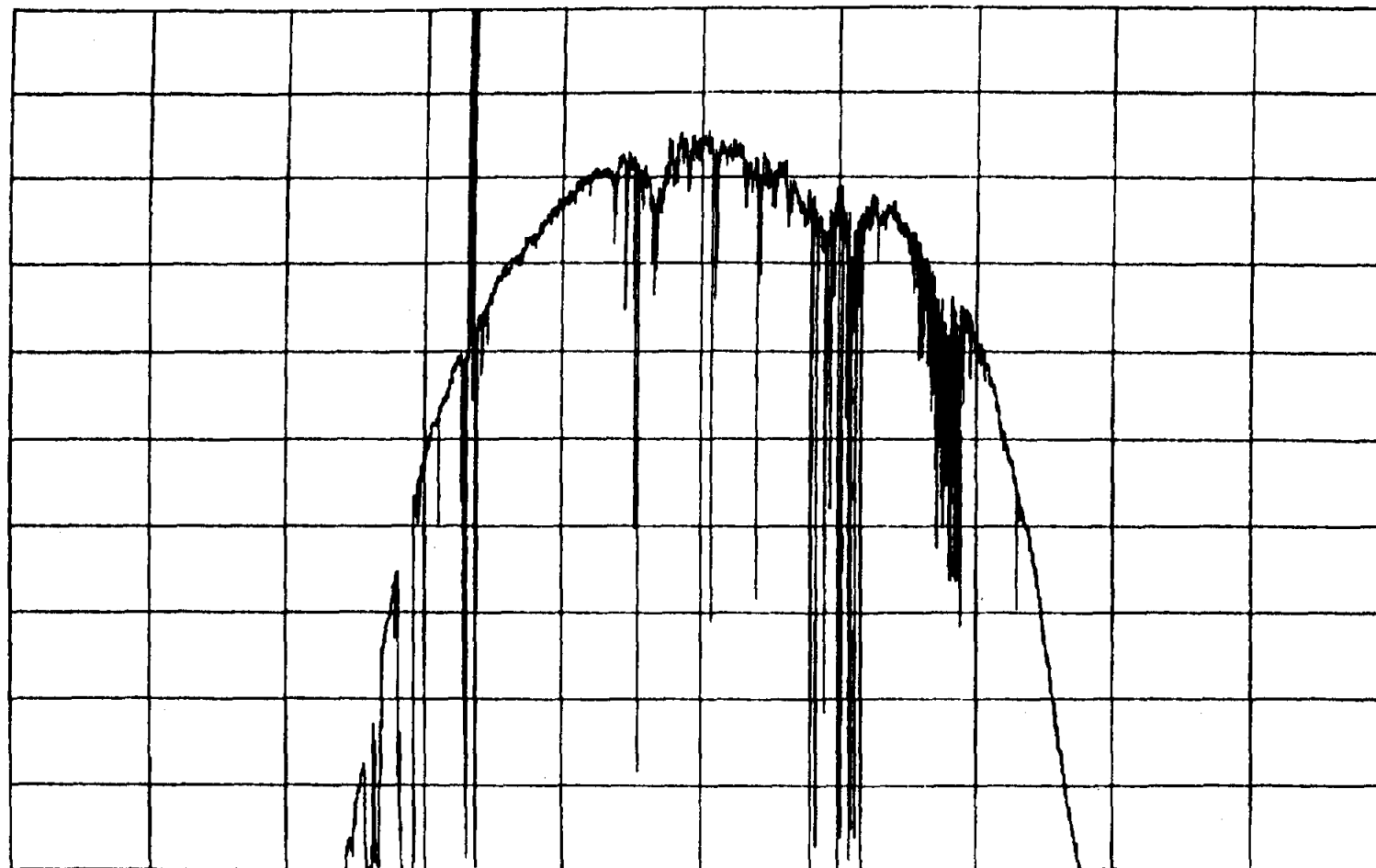
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 125 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

STATX1817A

CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

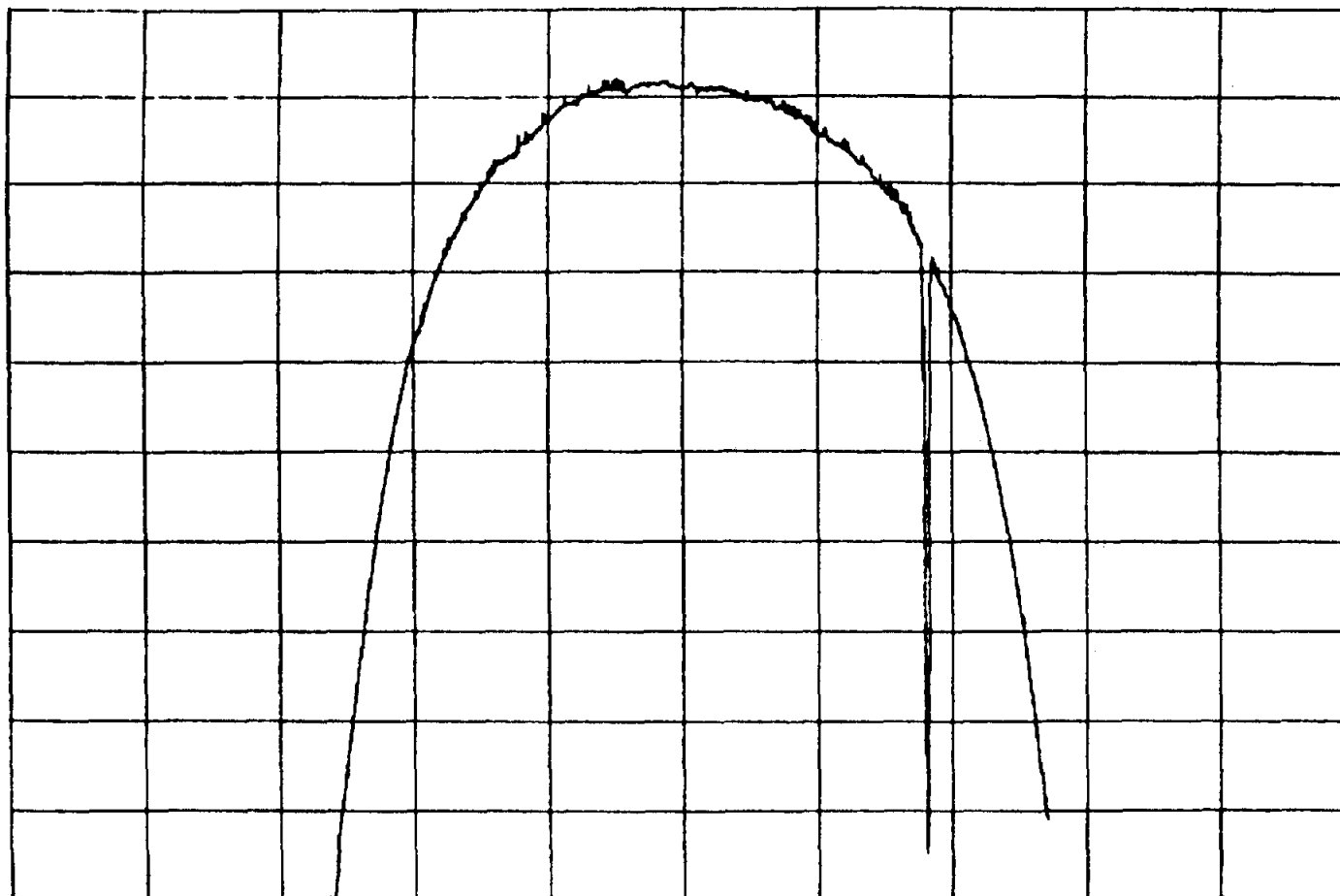
SOLAR DATA PLOT
REFERENCE TIME: 126 00 00 00.000

PLOT # MISL3

FOR

NTH SAMPLE AVERAGE =
1500.0000 MINUTE(S)

1



0.00

\$\$\$ATX1817A

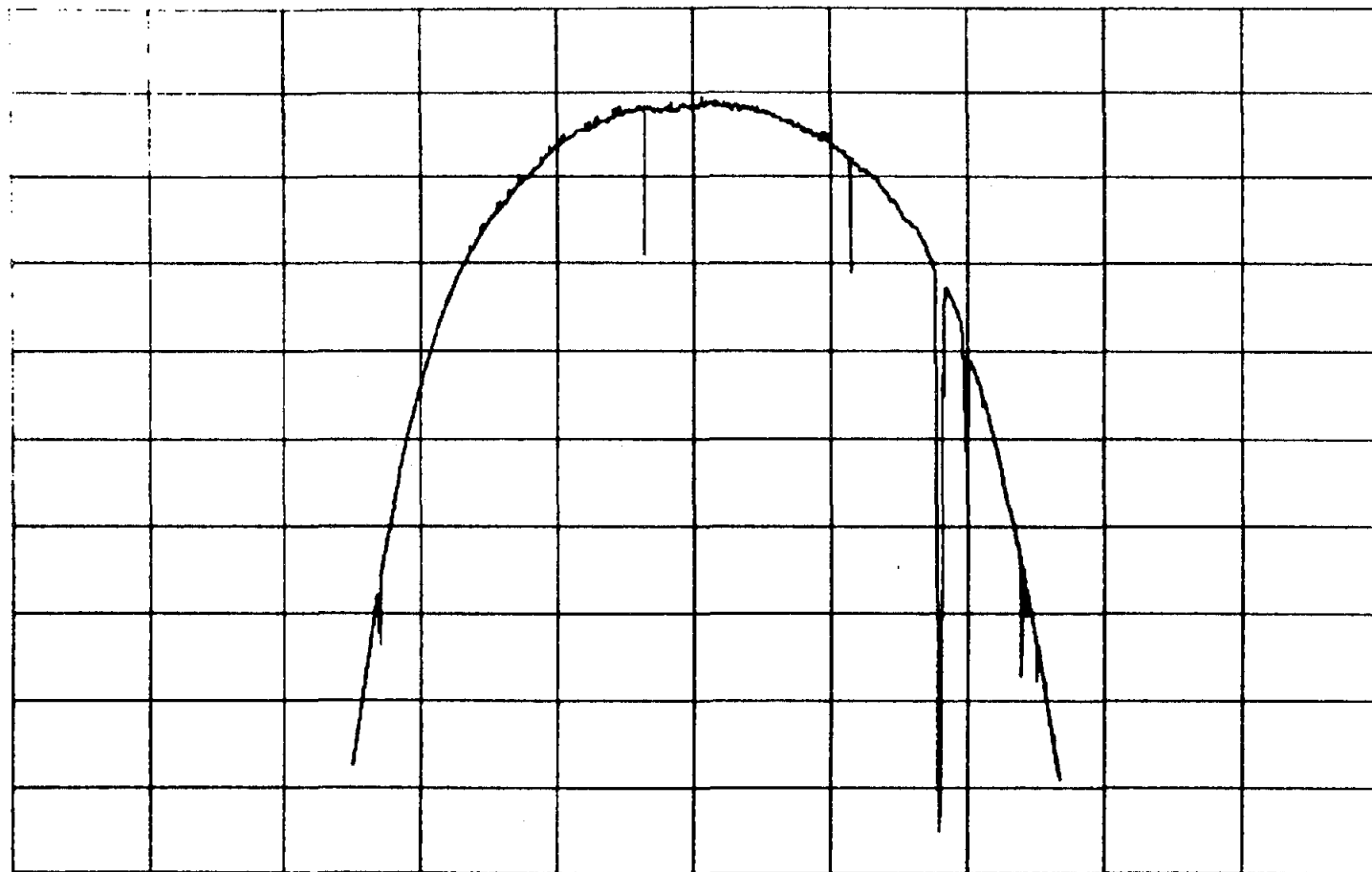
CNTRL ROOM ROOF NIP

0.00 - 1000.00 U/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 127 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

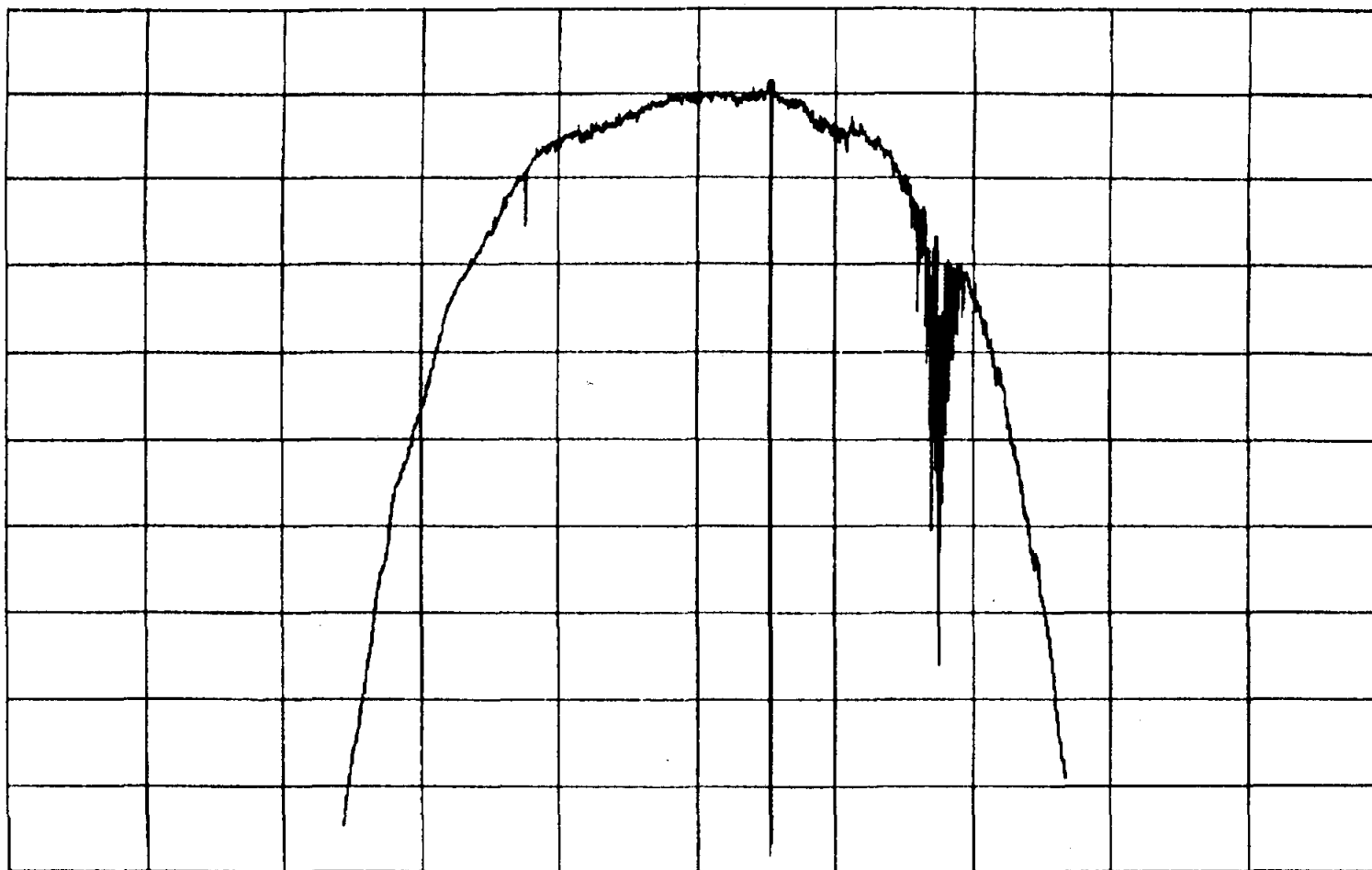


0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1500.00 W/M2
1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 128 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

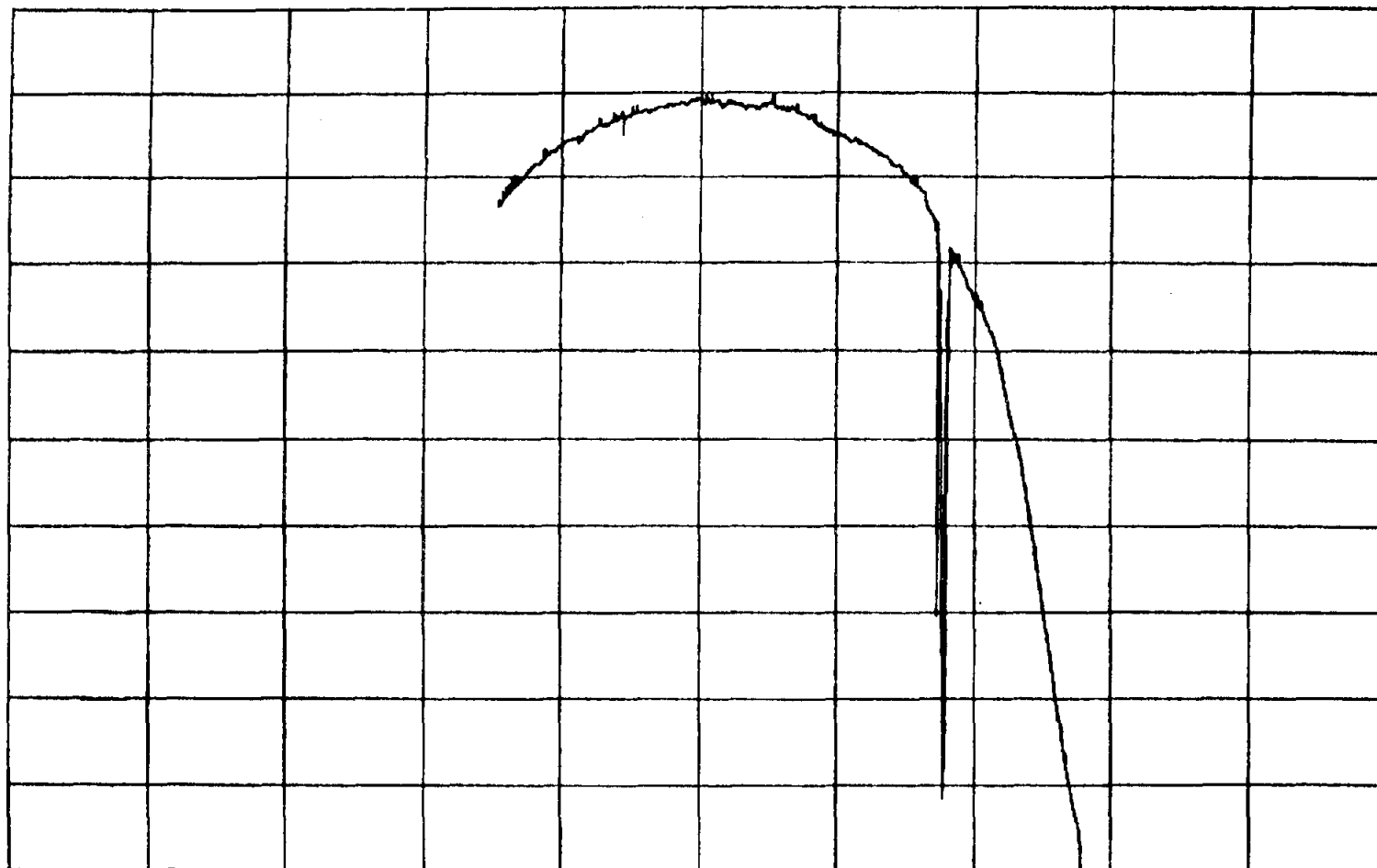
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 129 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

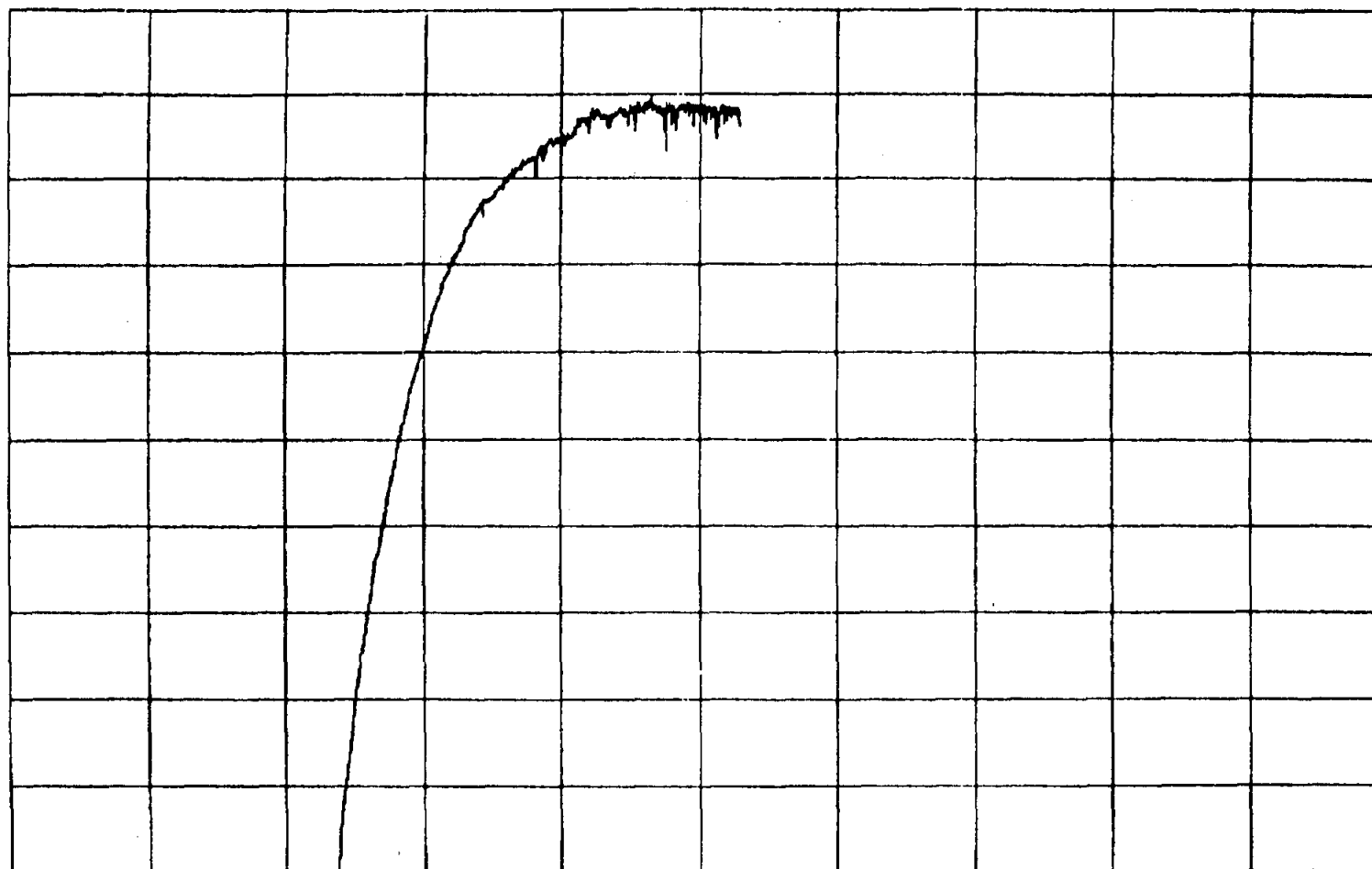
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 130 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)

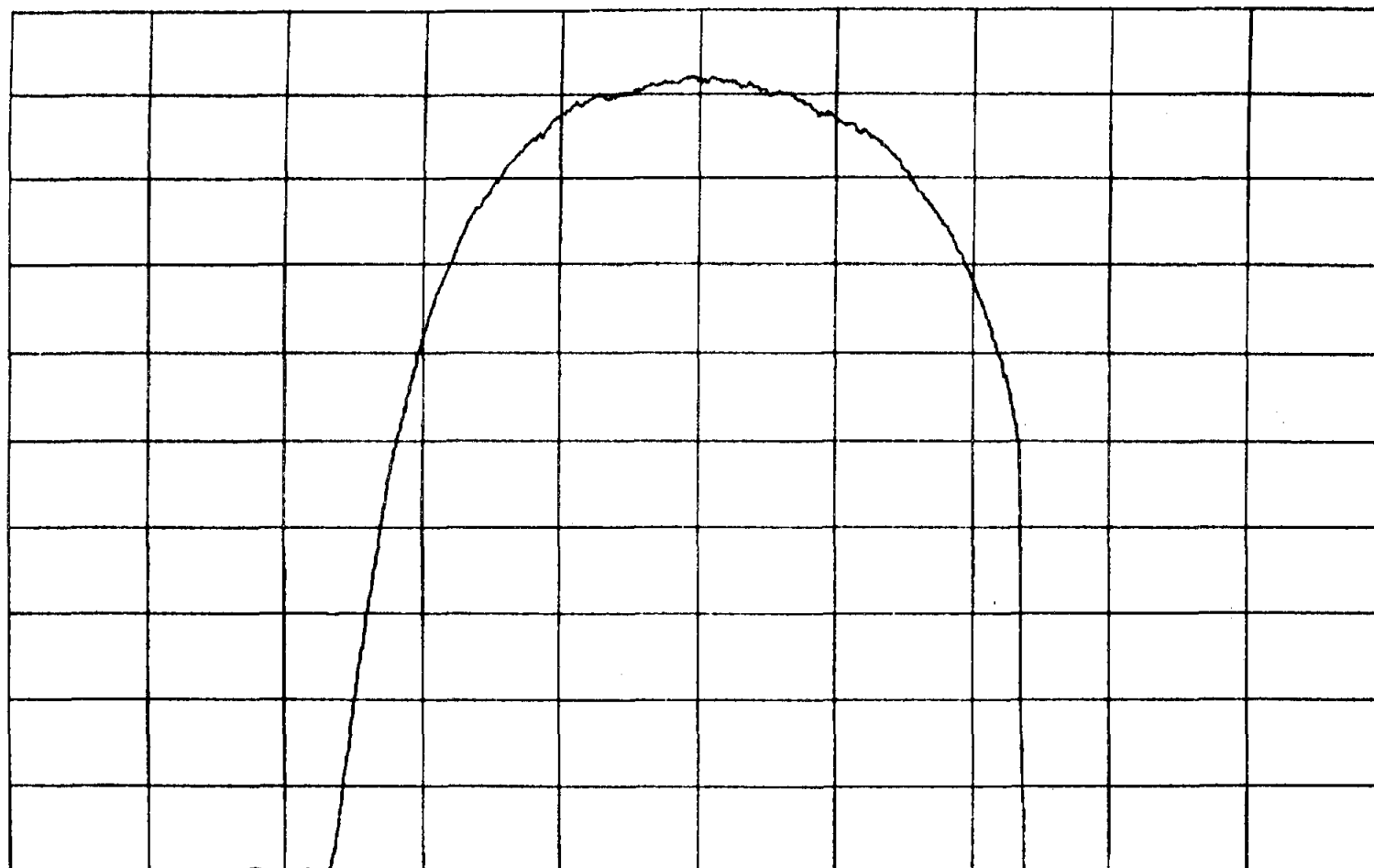


0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 131 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

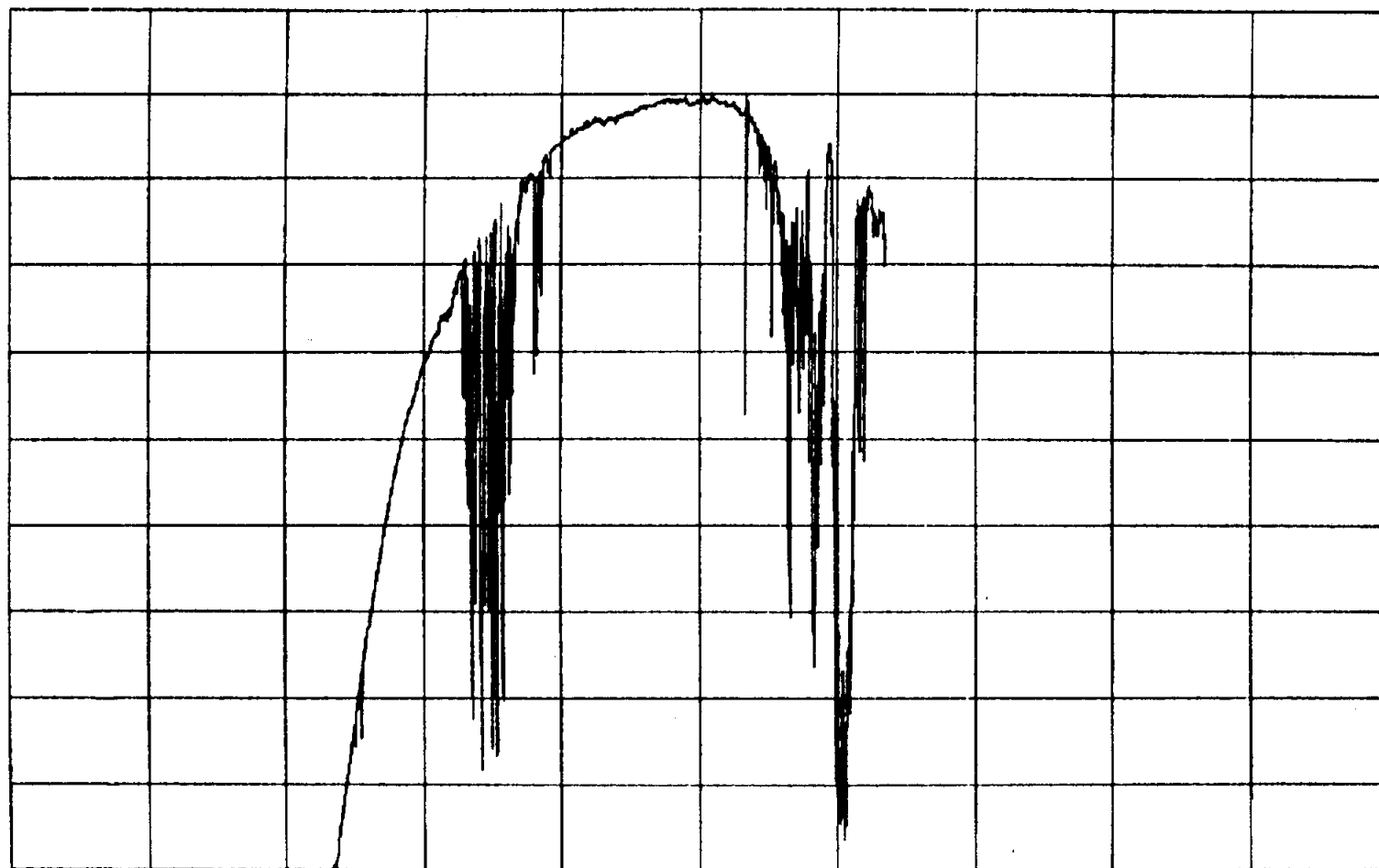
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 132 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)

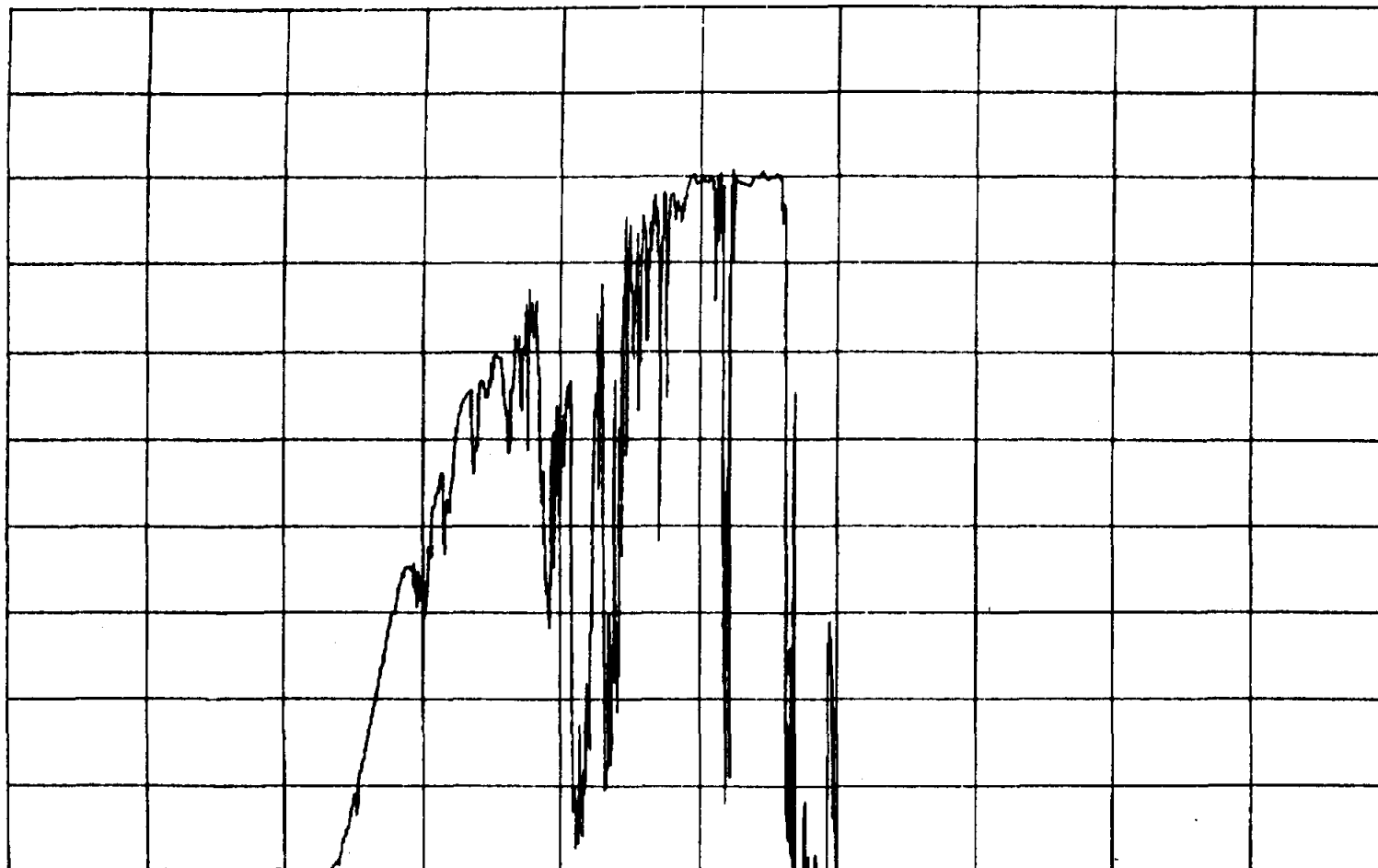


0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 133 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

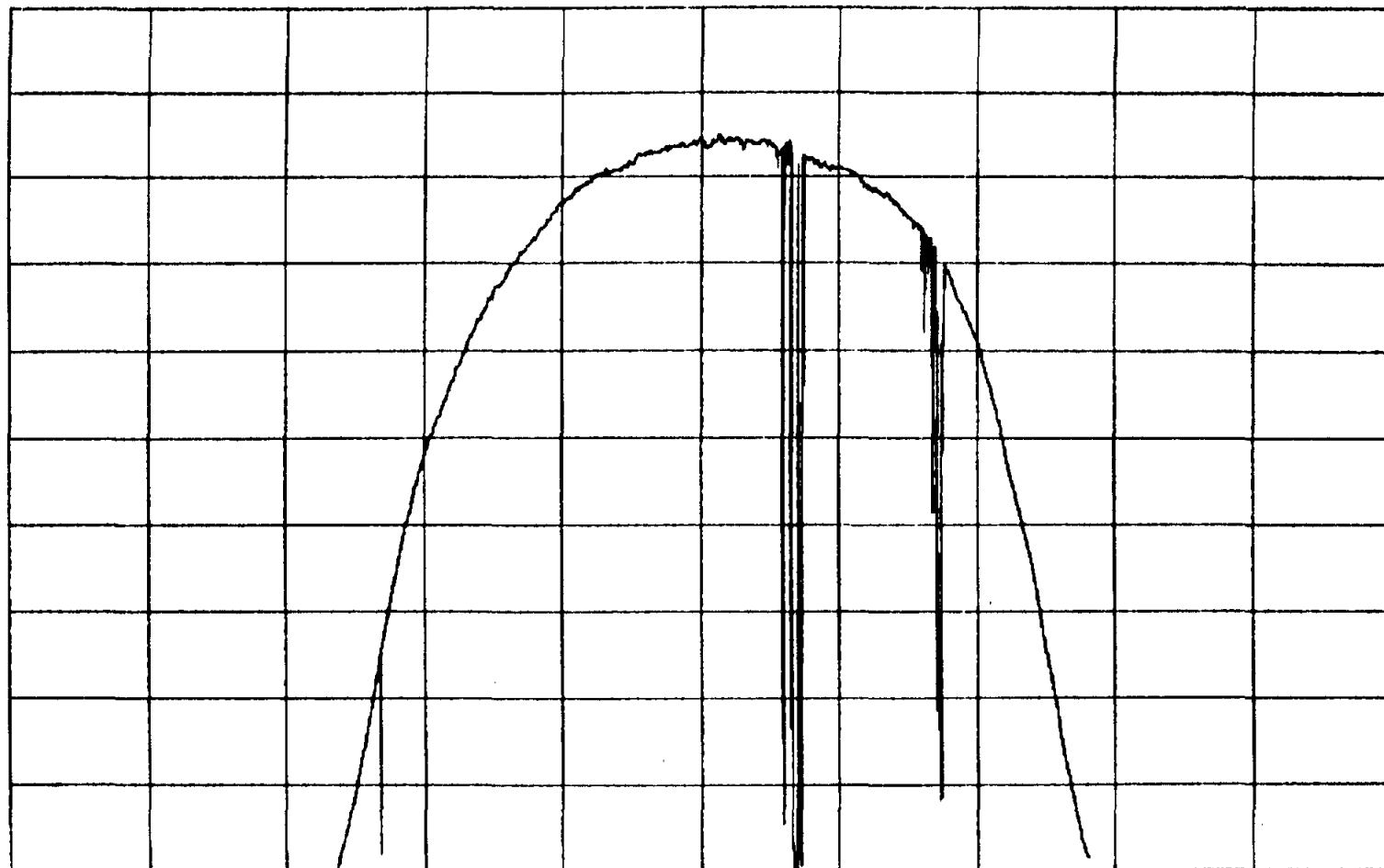
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 134 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
\$ATX1817A CNTRL ROOM ROOF NIP

1500.00
0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 135 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

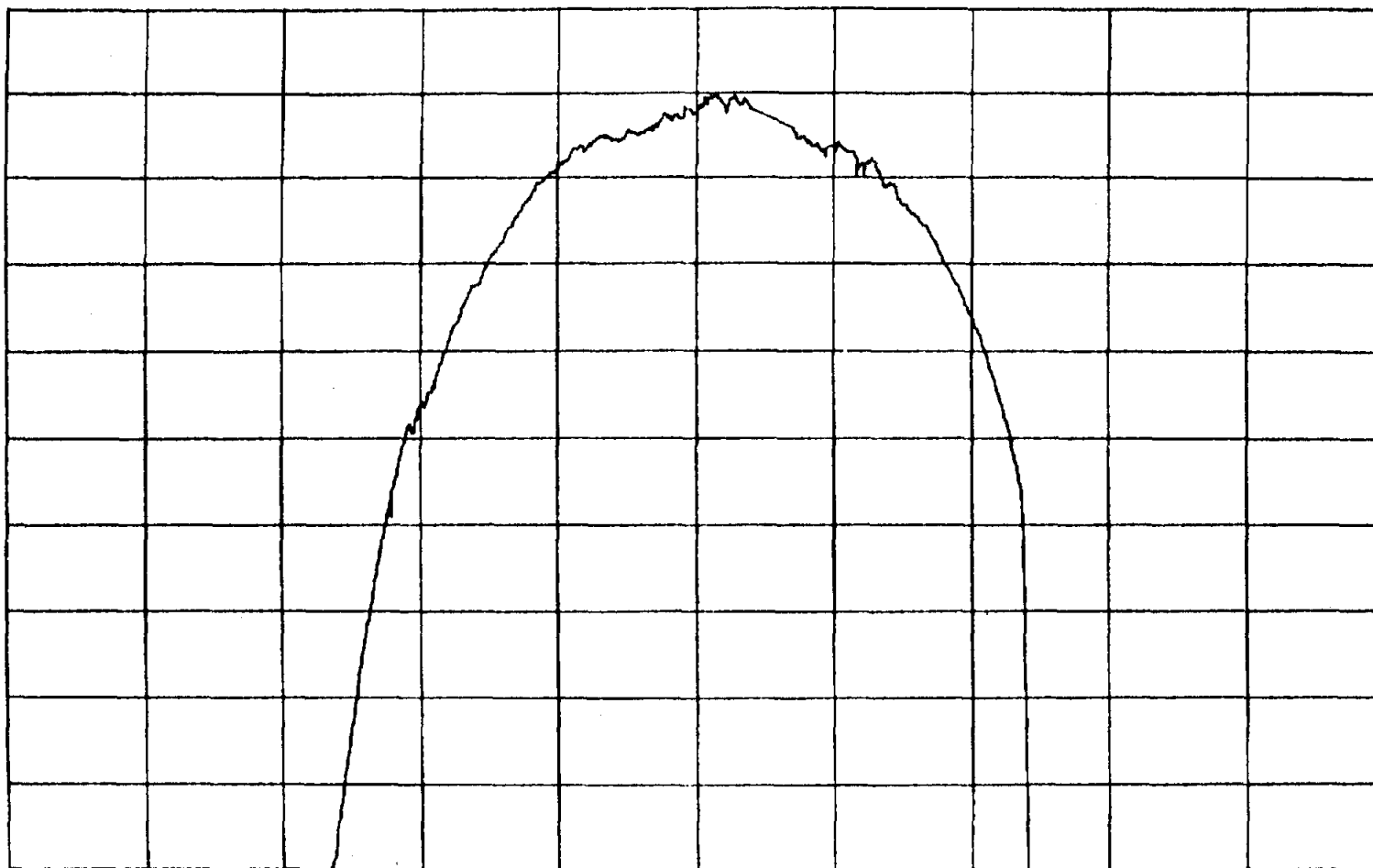
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 136 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

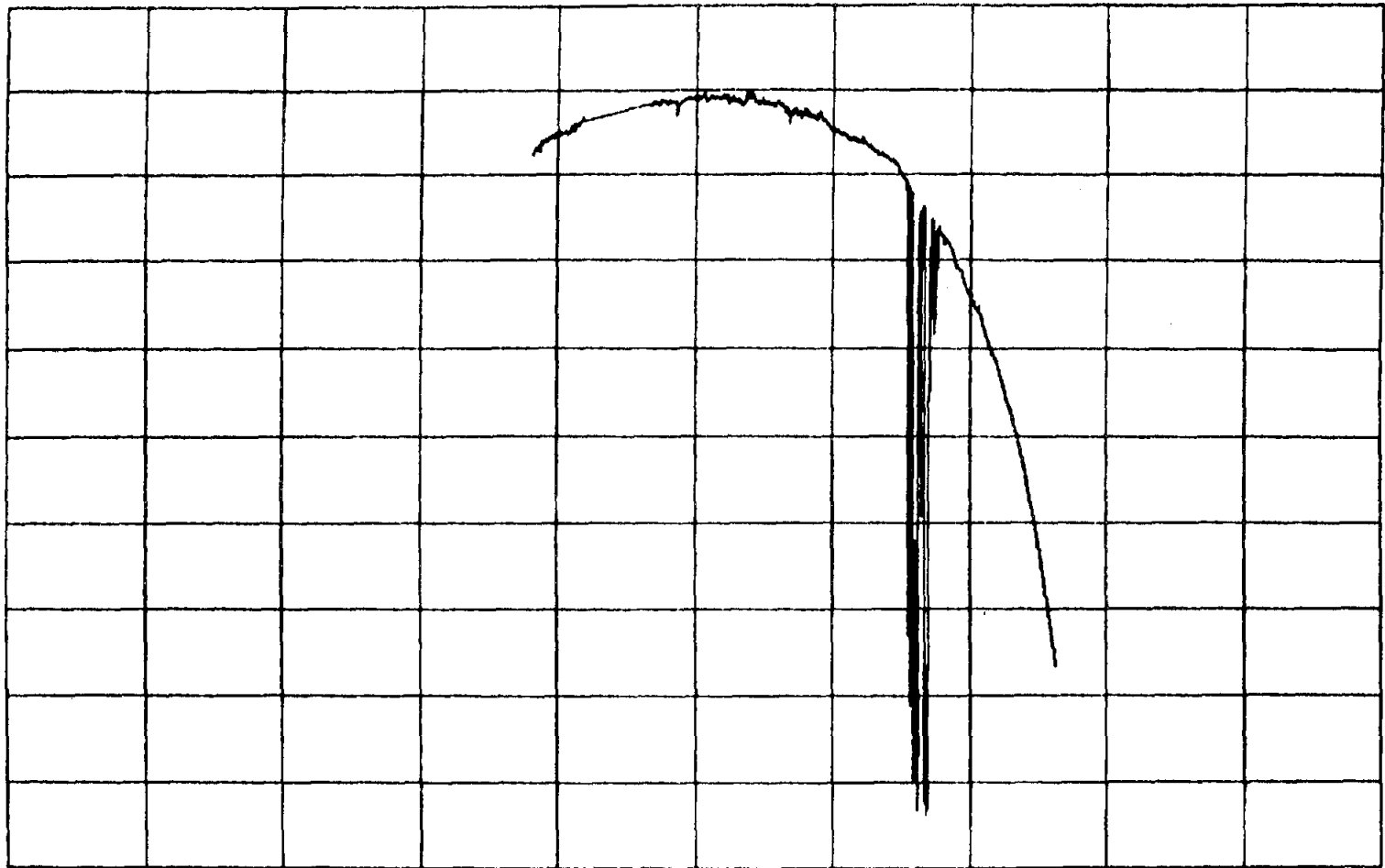
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 137 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

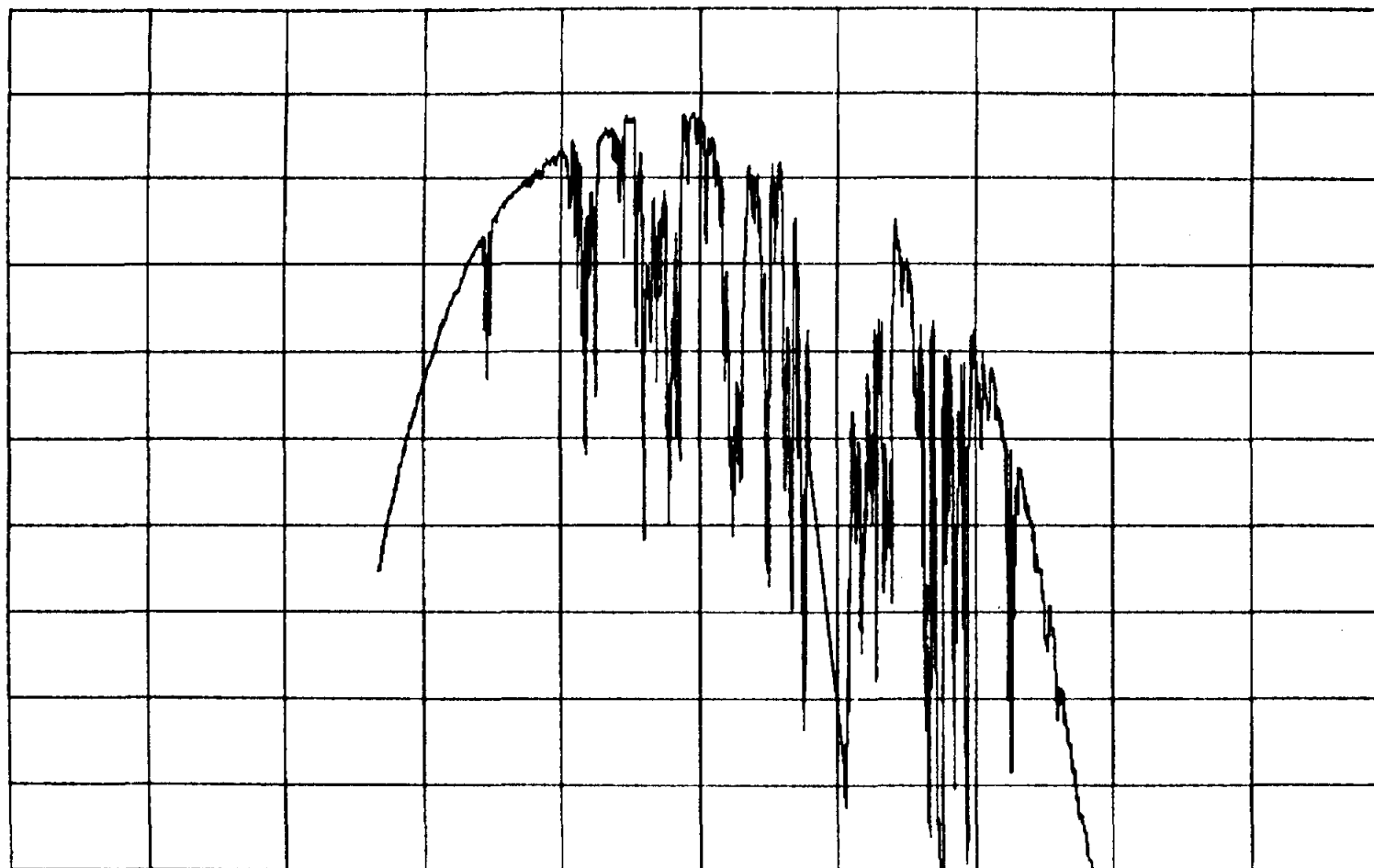
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 138 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

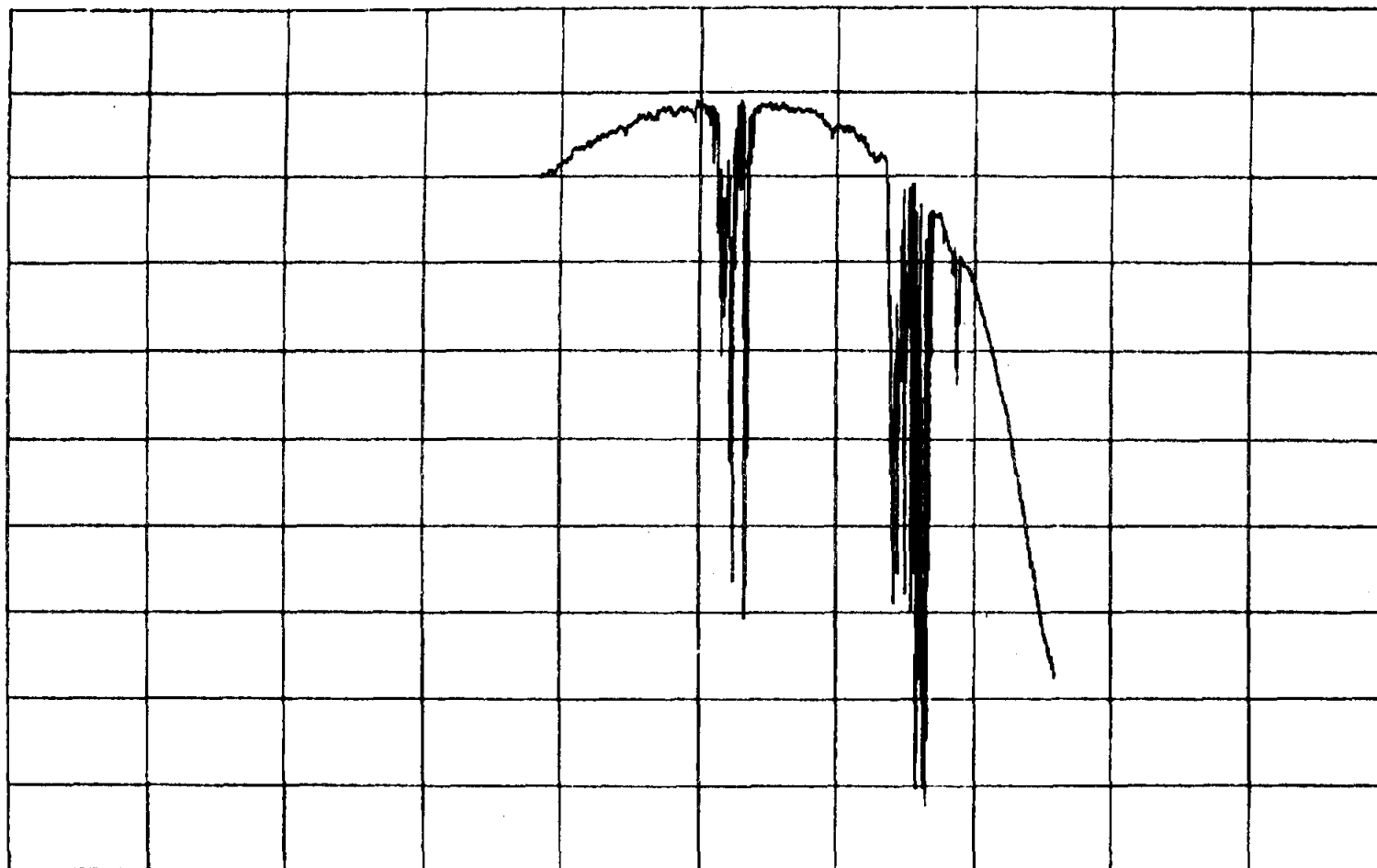
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 139 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

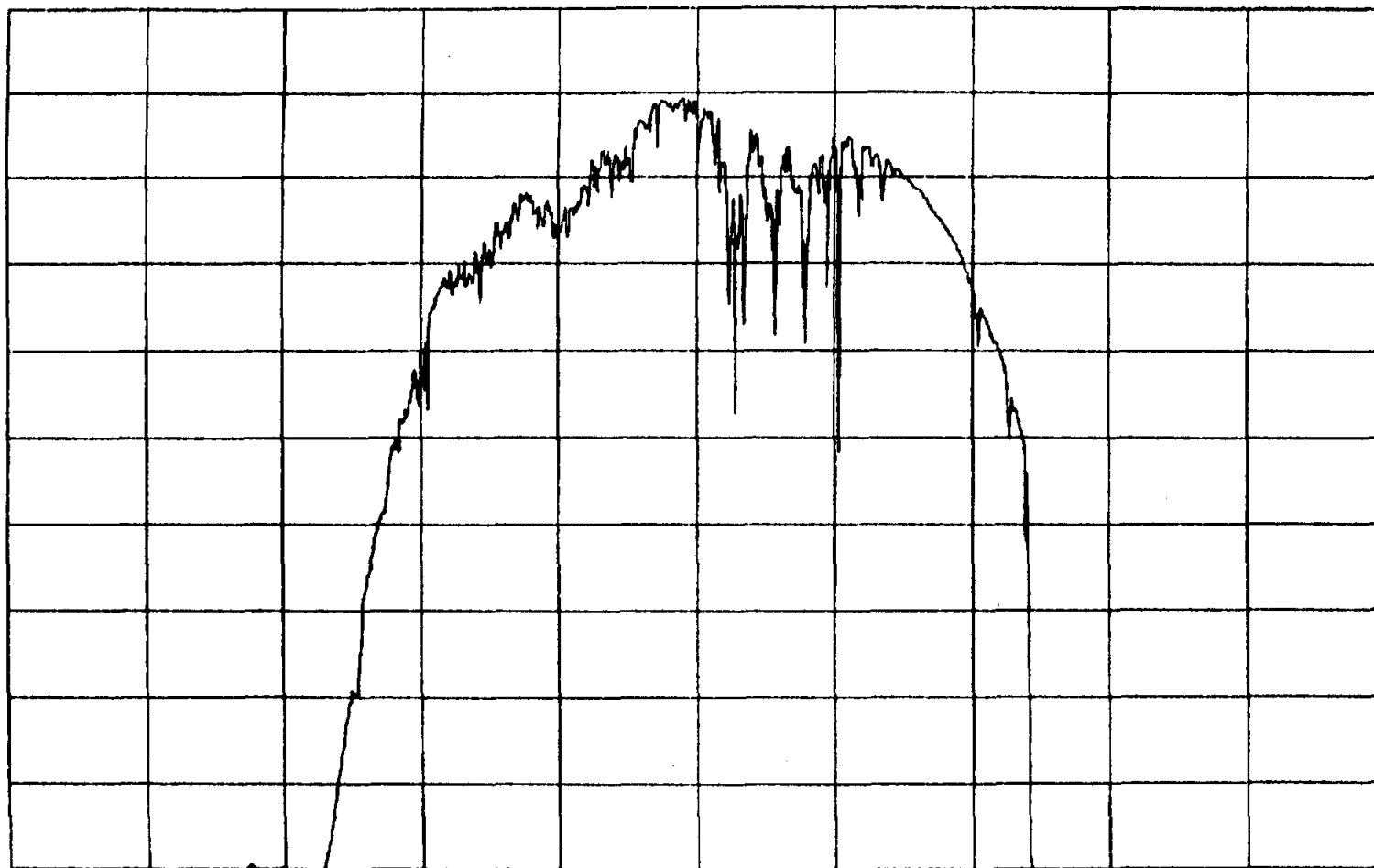


0.00
\$SATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 140 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

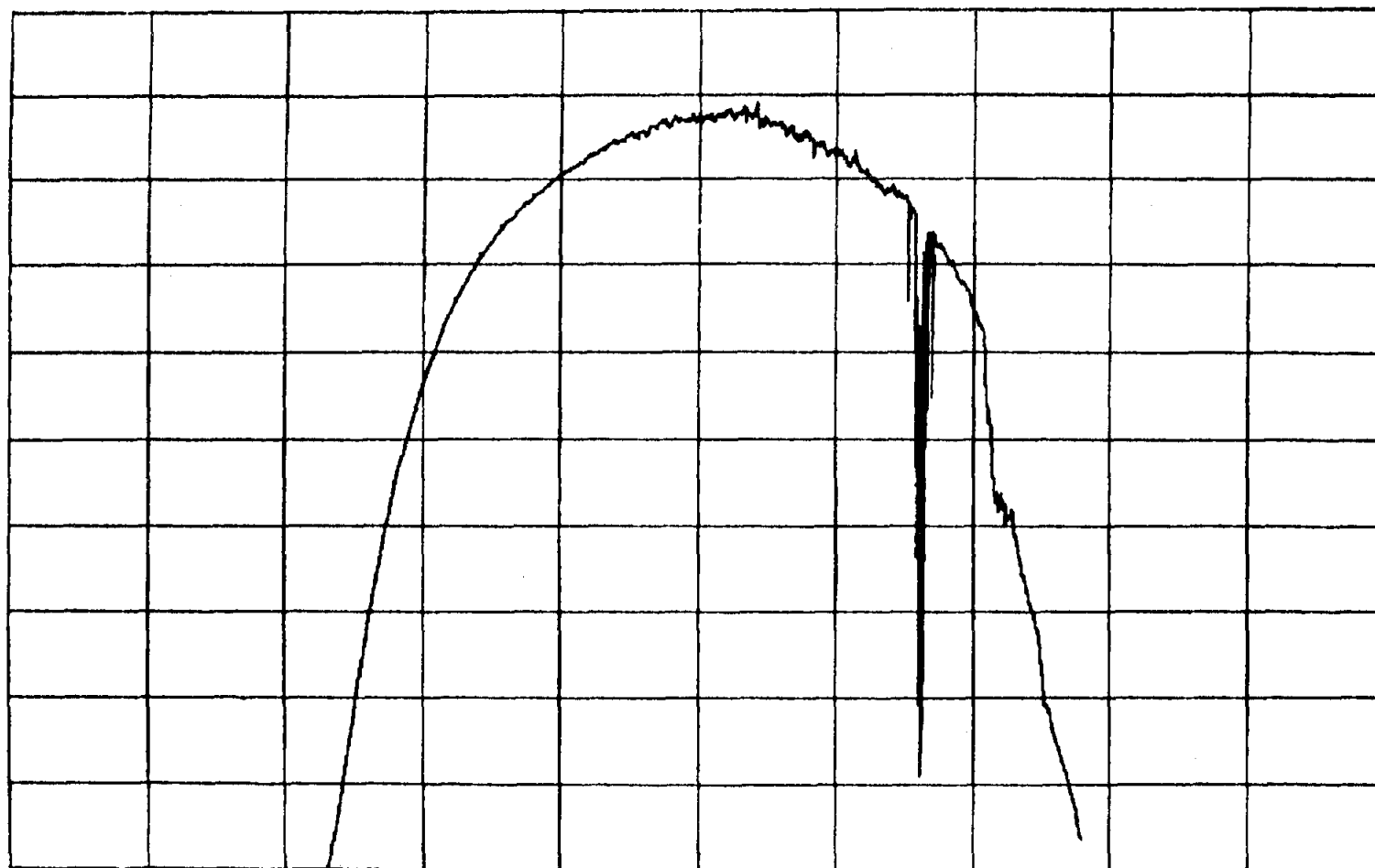
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 141 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



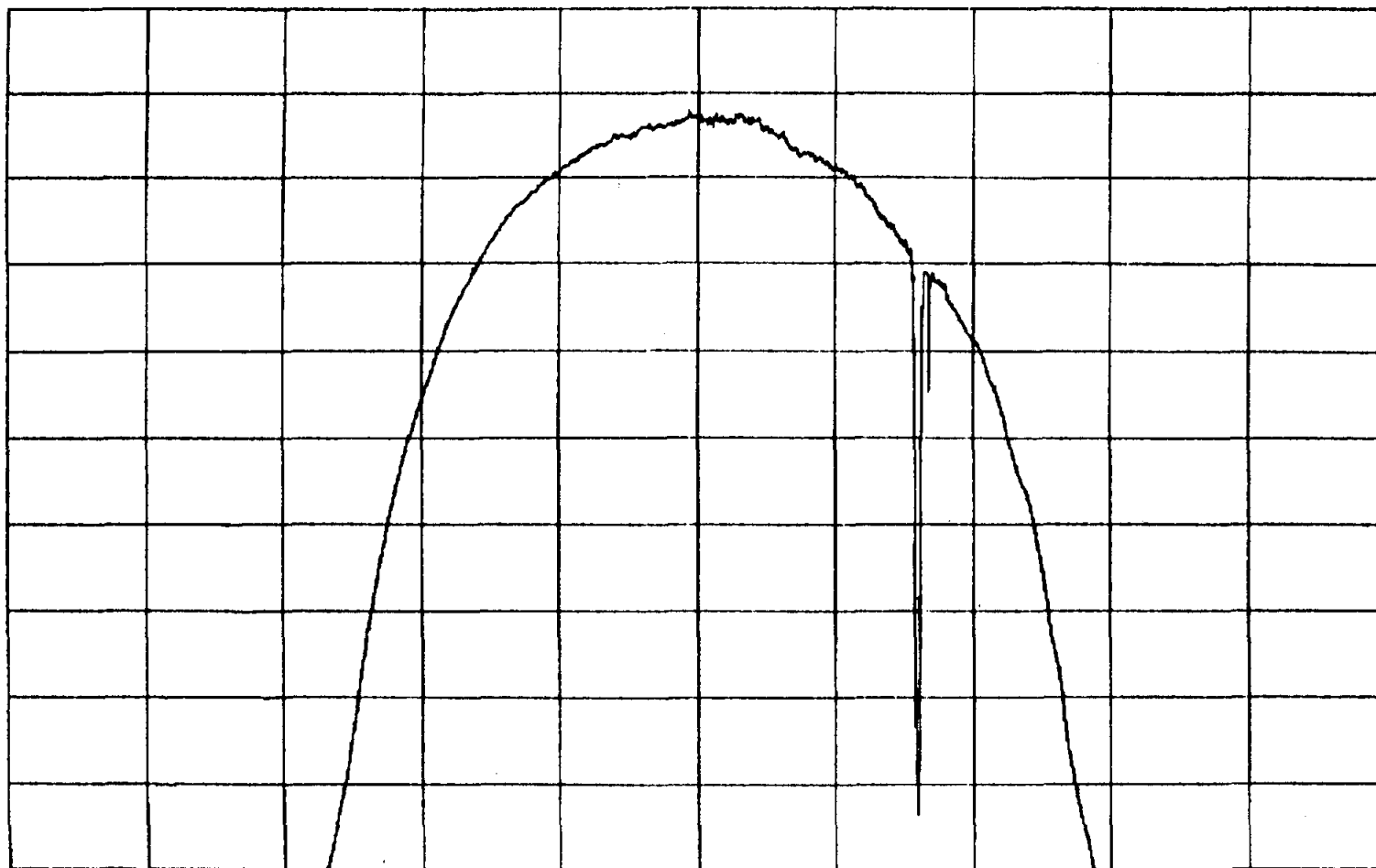
0.00
\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT
REFERENCE TIME: 142 00 00 00.000

PLOT # MISL3

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

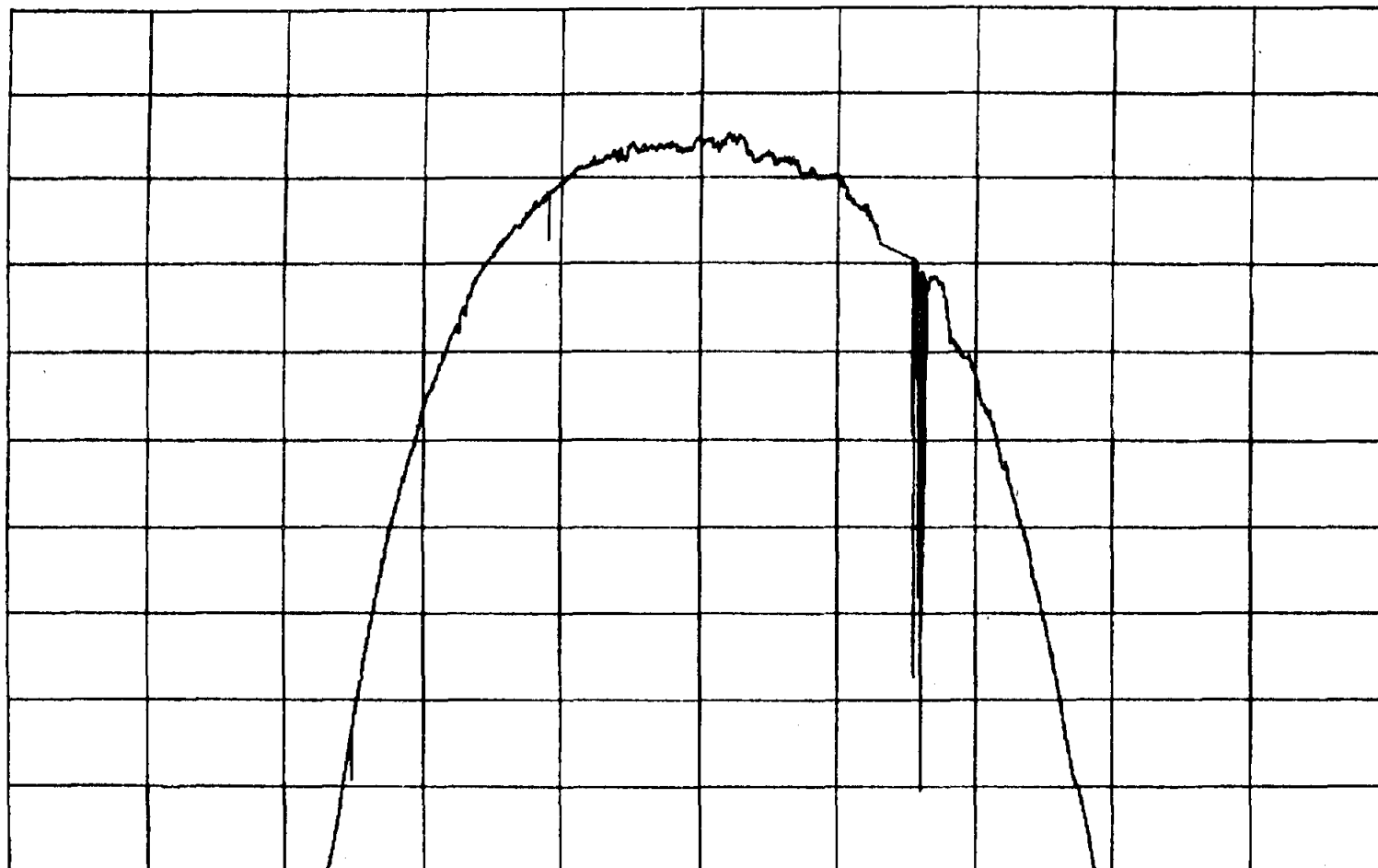
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 143 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

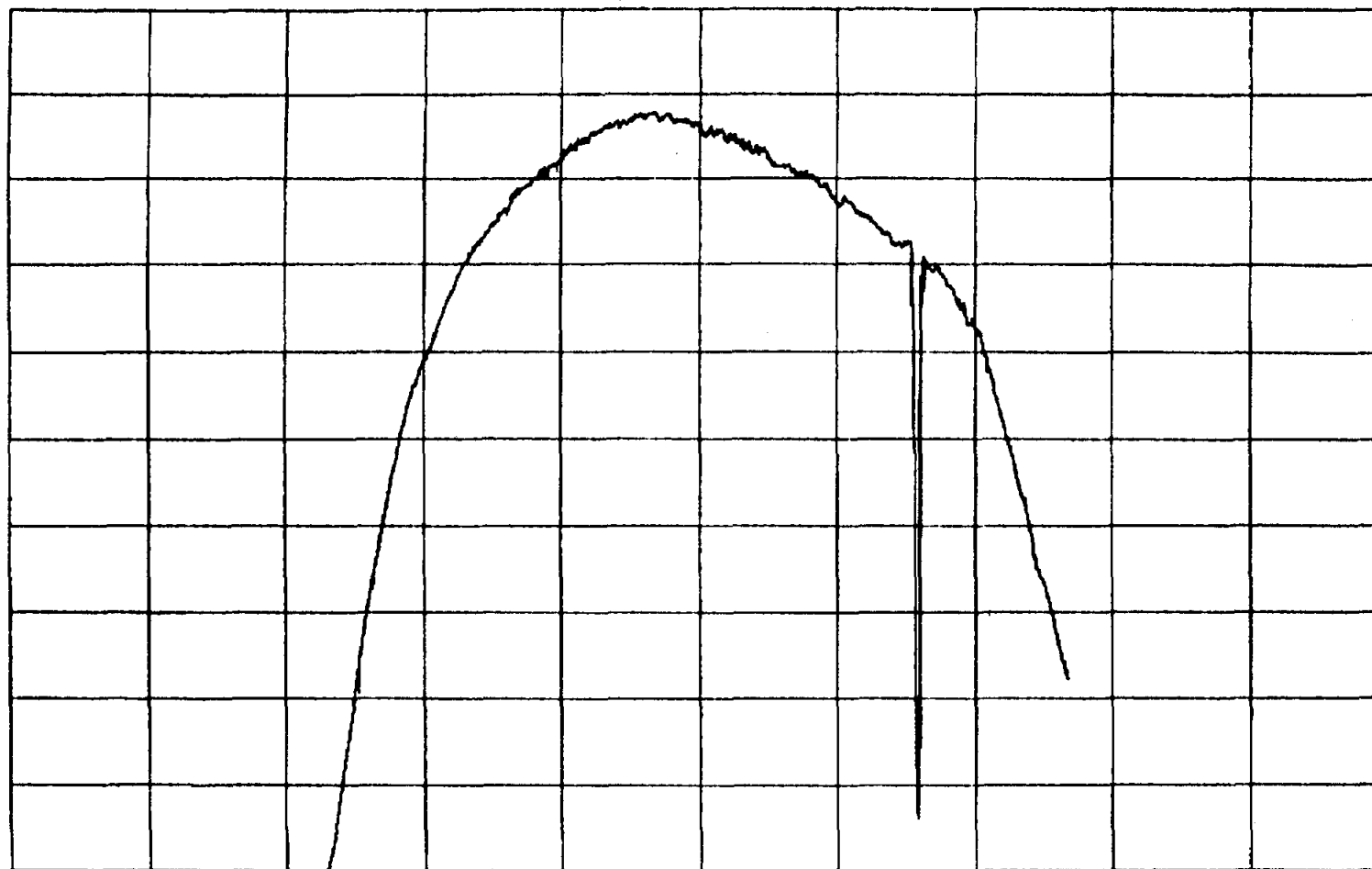


0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 144 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

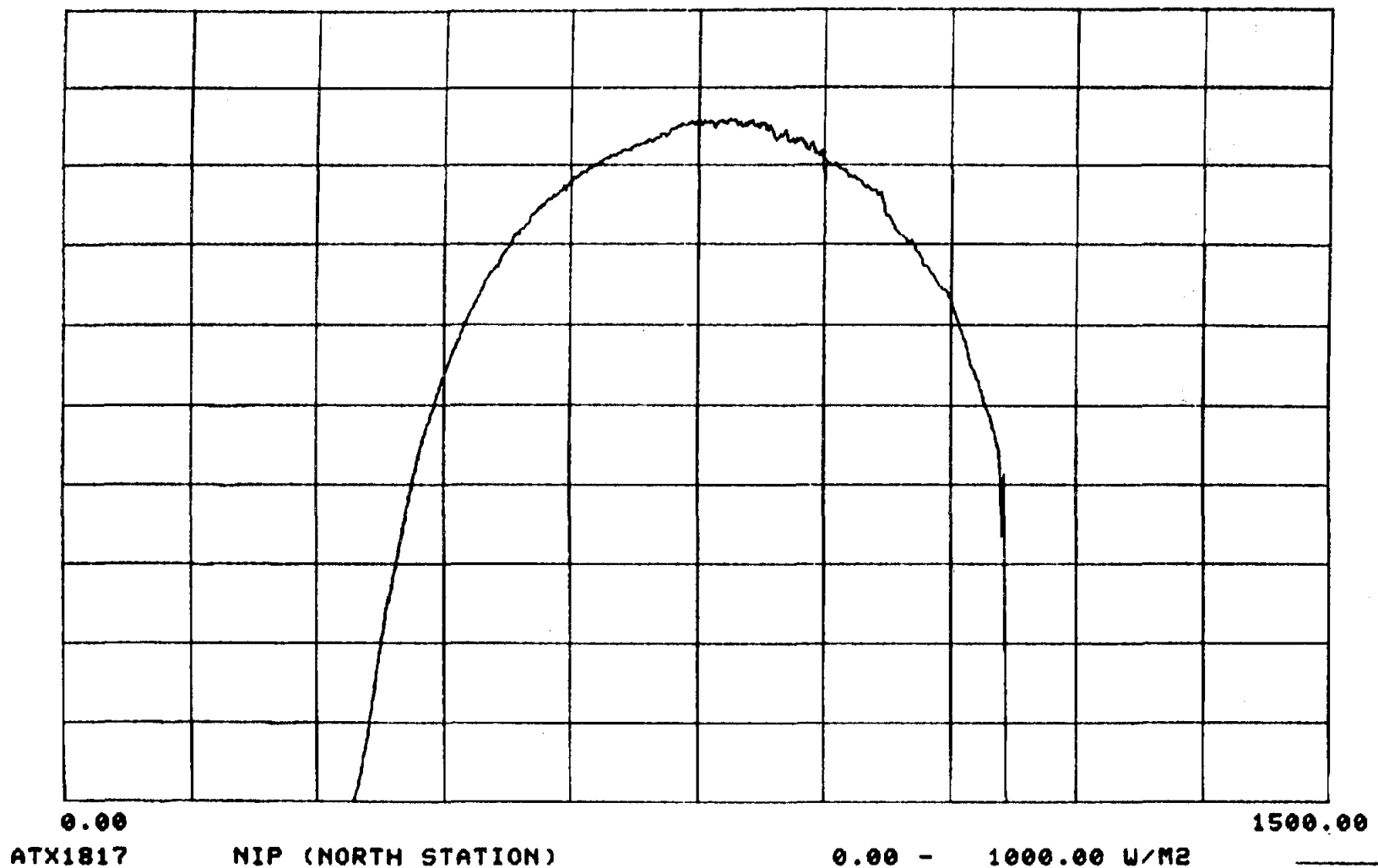


0.00
\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

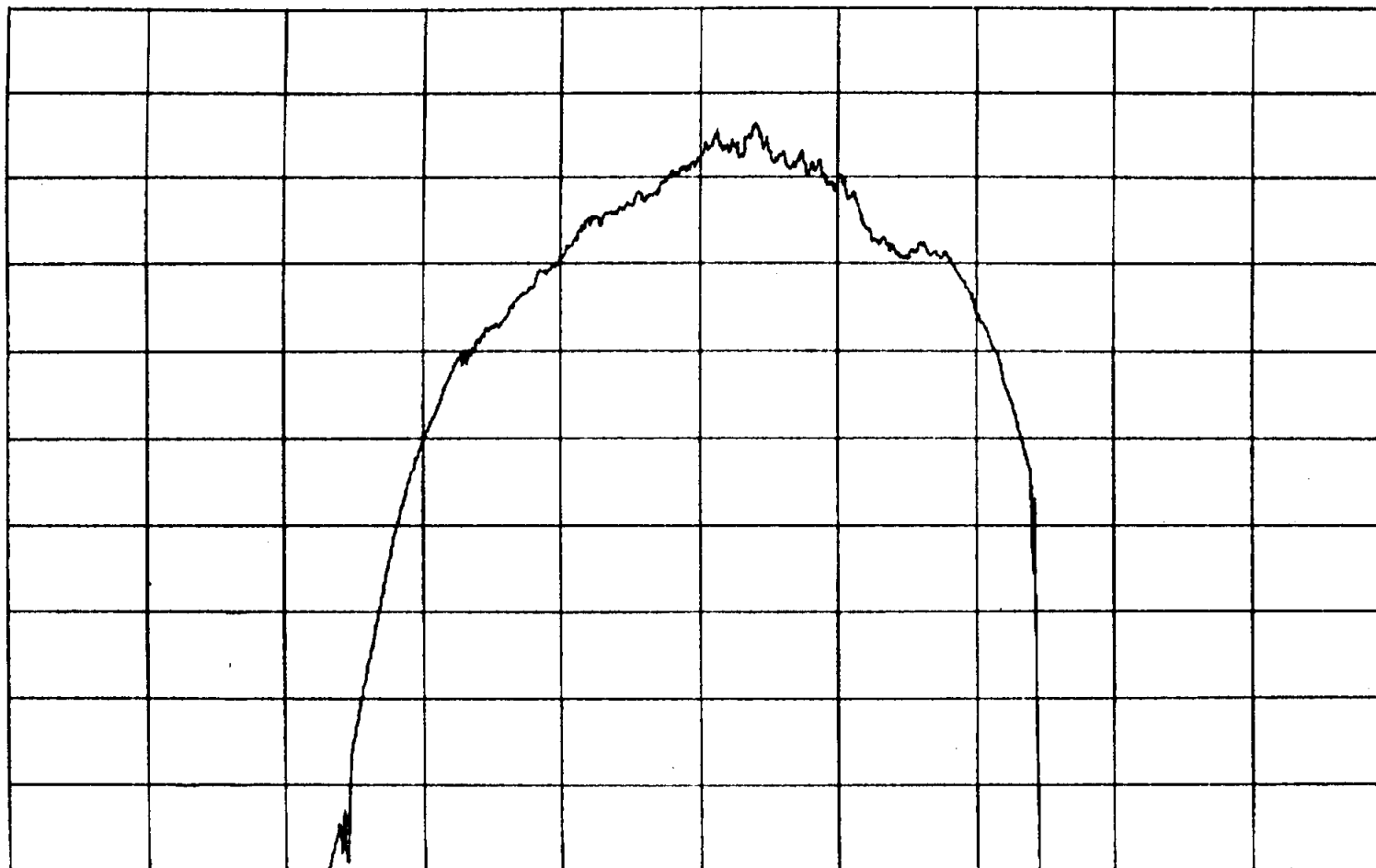
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 145 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 146 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

ATX1817

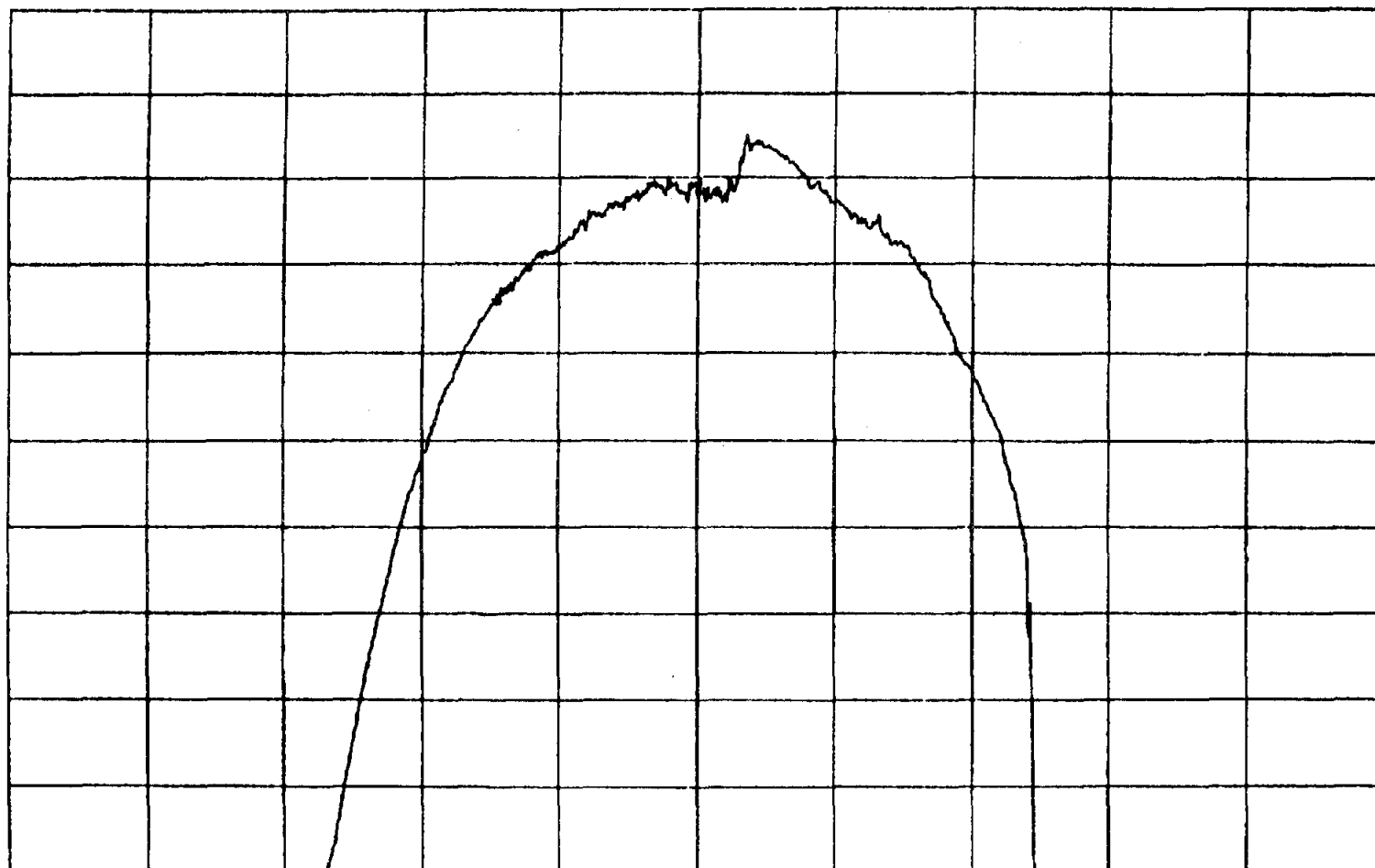
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 147 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

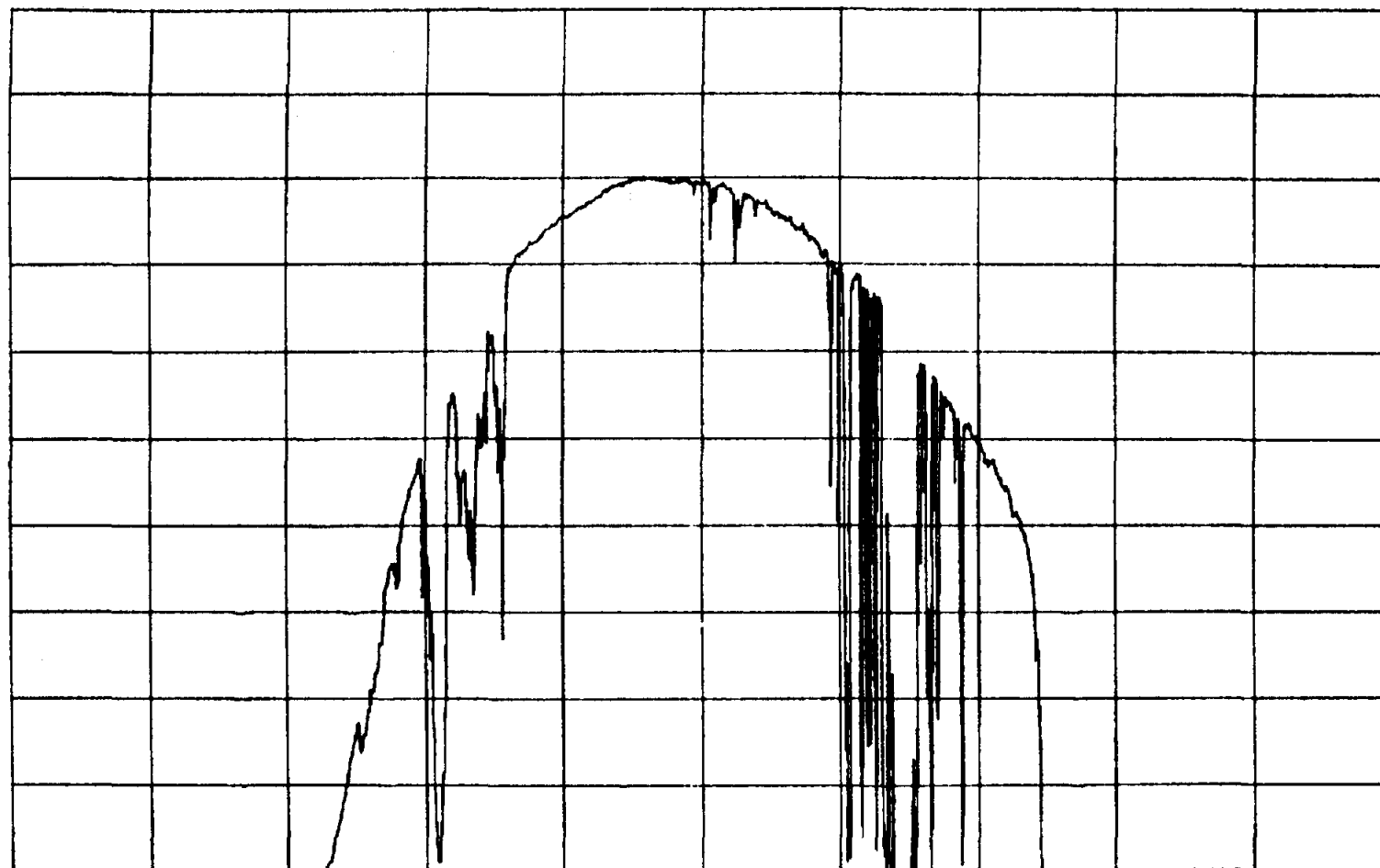
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 148 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



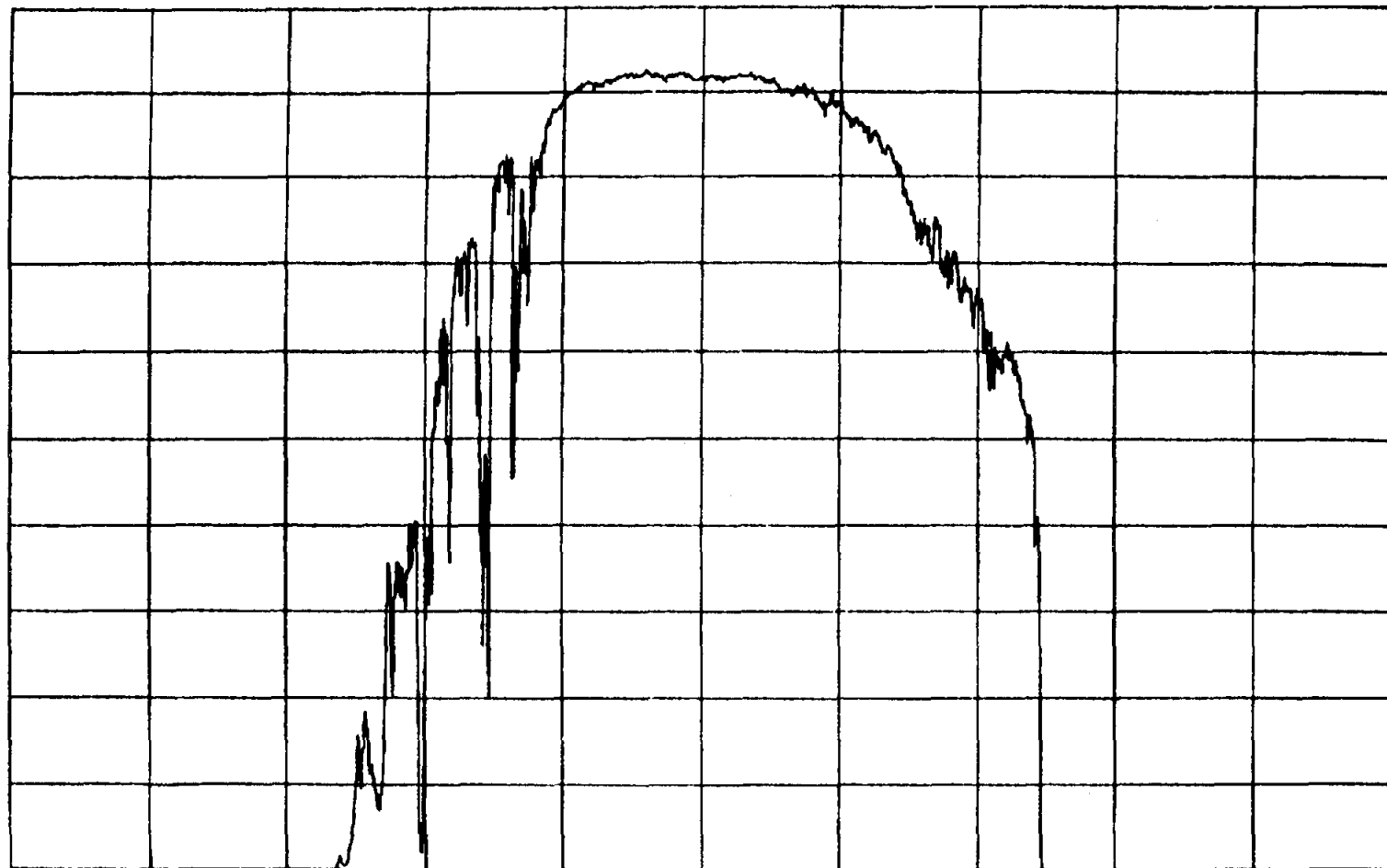
0.00
ATX1817 NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 149 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

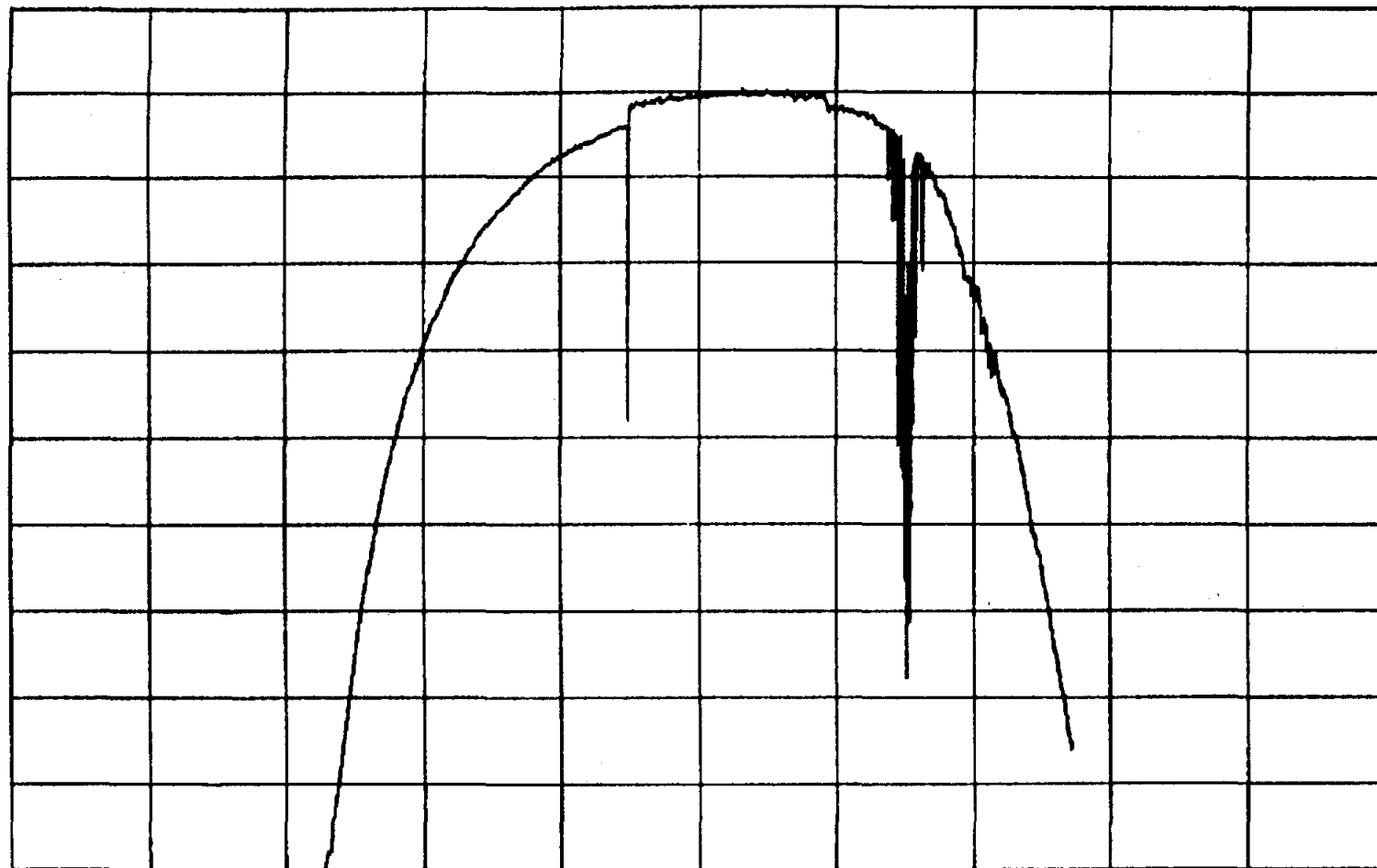
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 150 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

\$\$\$ATX1817A

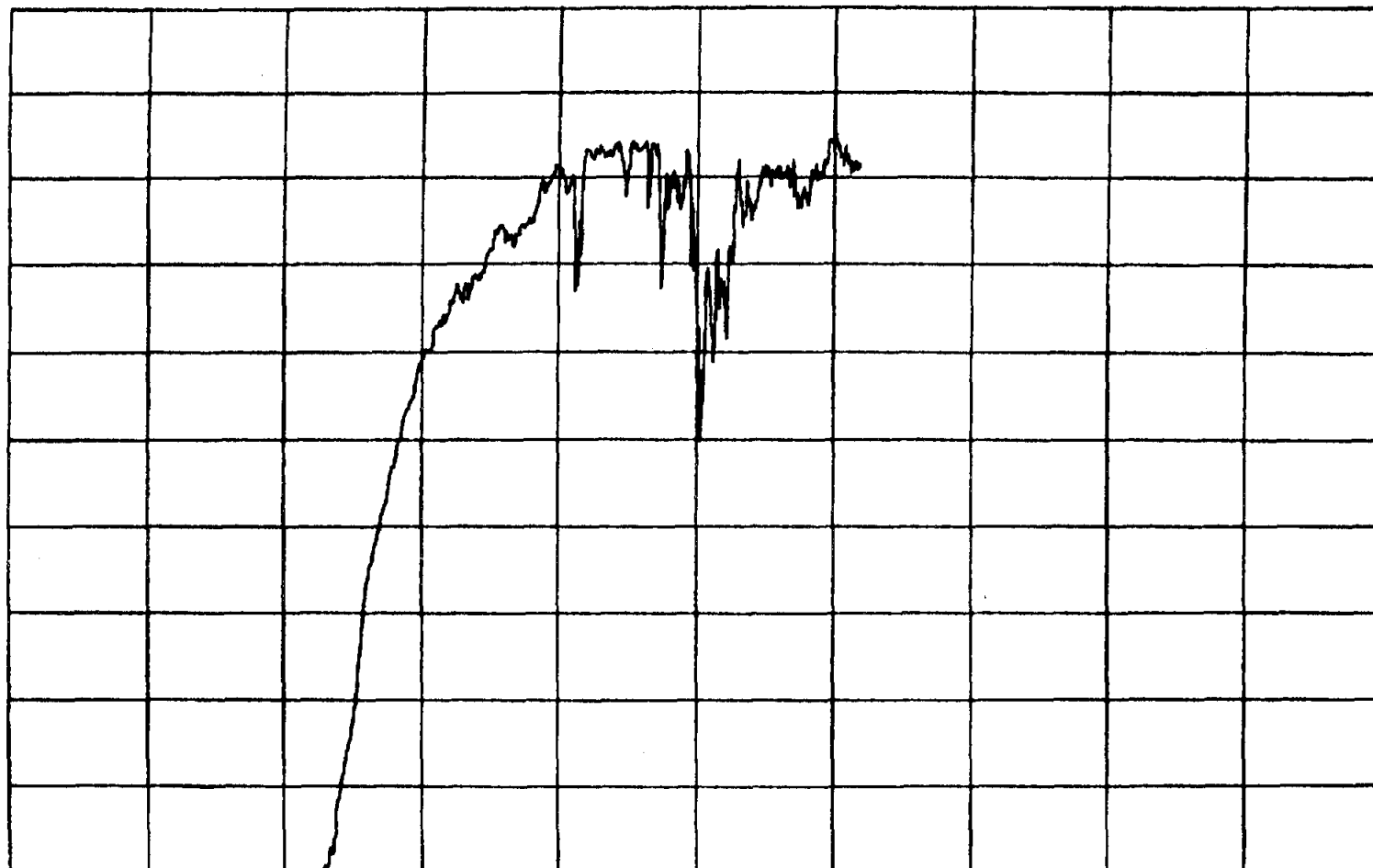
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 151 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2
1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 152 00 00 00.000

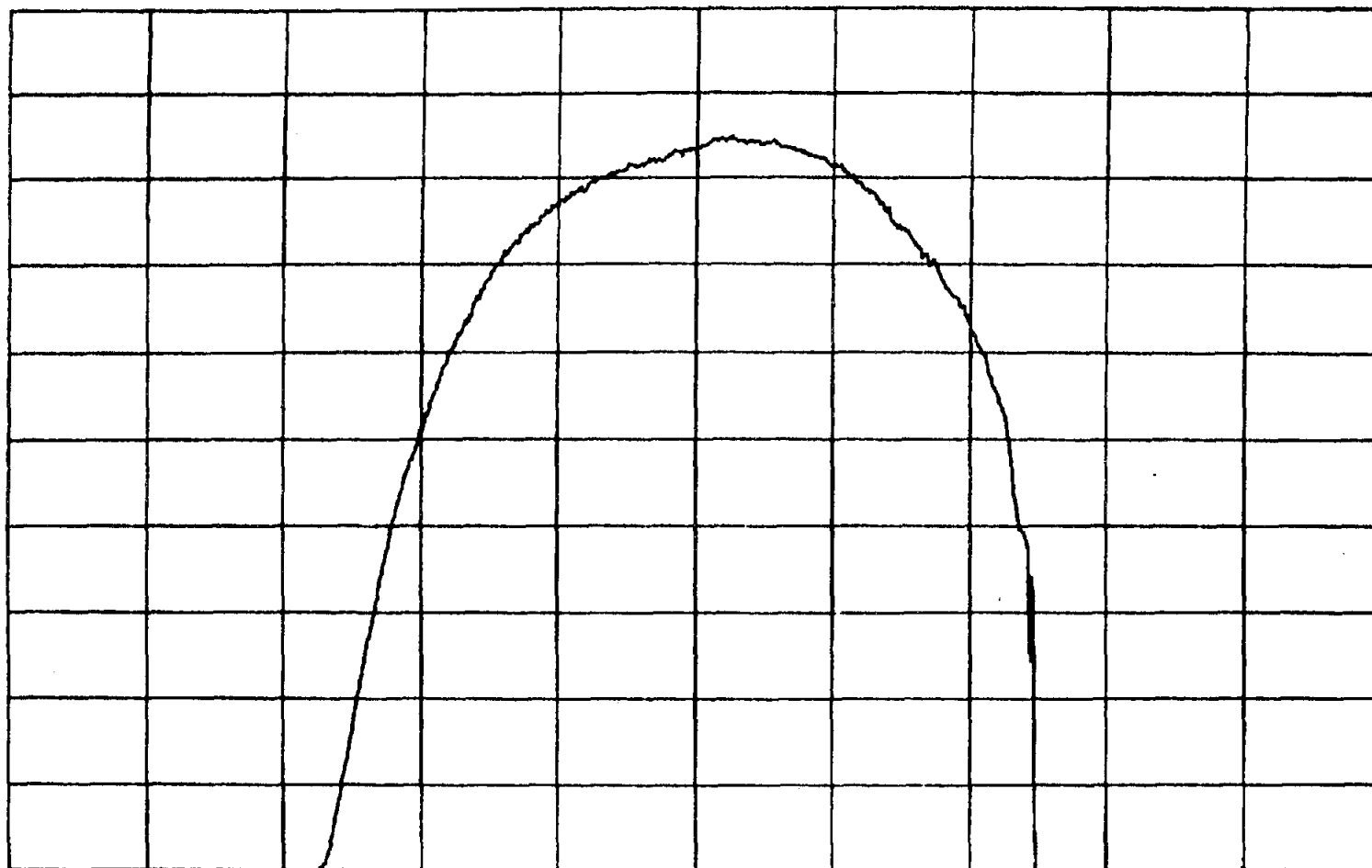
FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00 1500.00
ATX1817 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 153 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

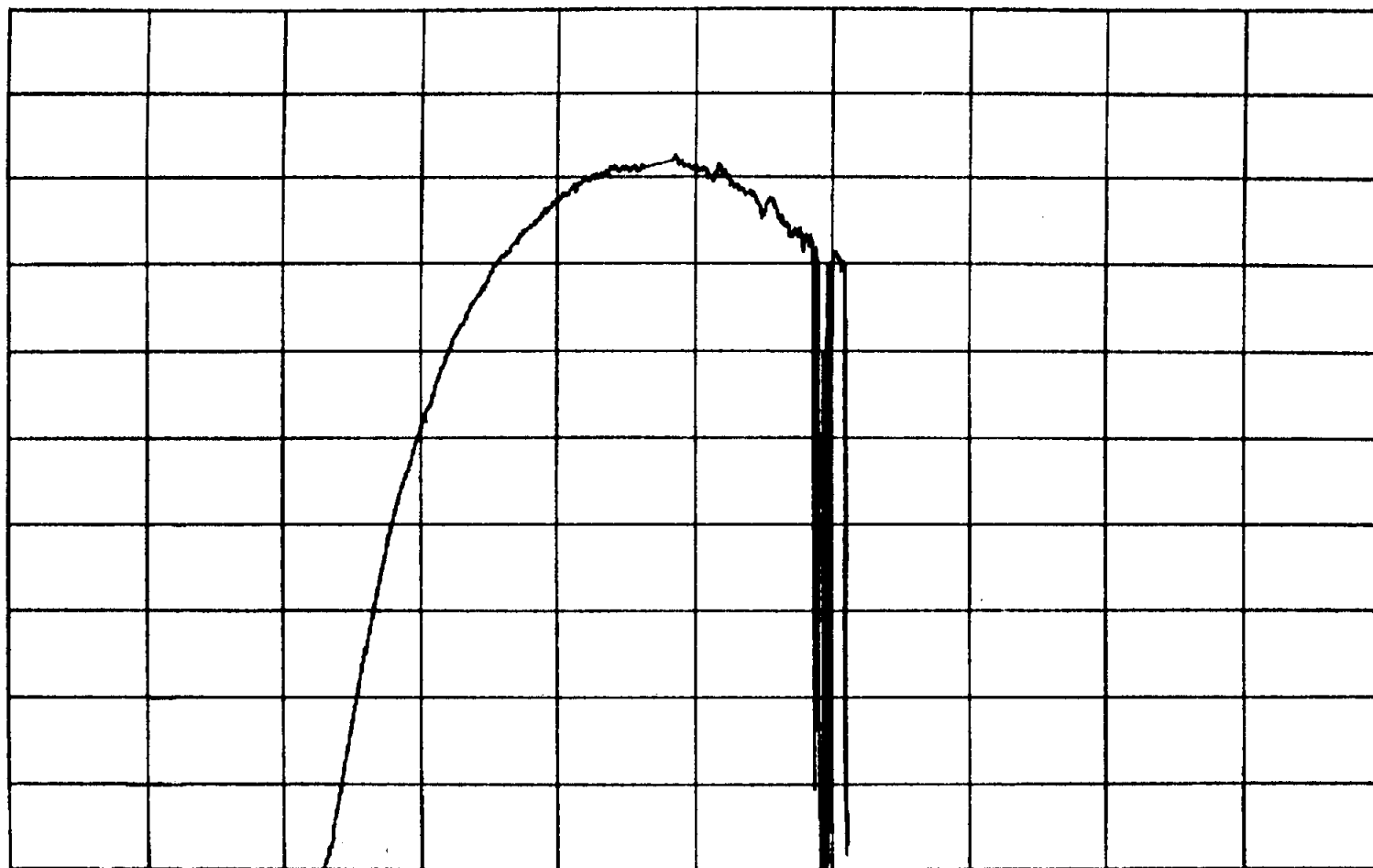
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 154 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

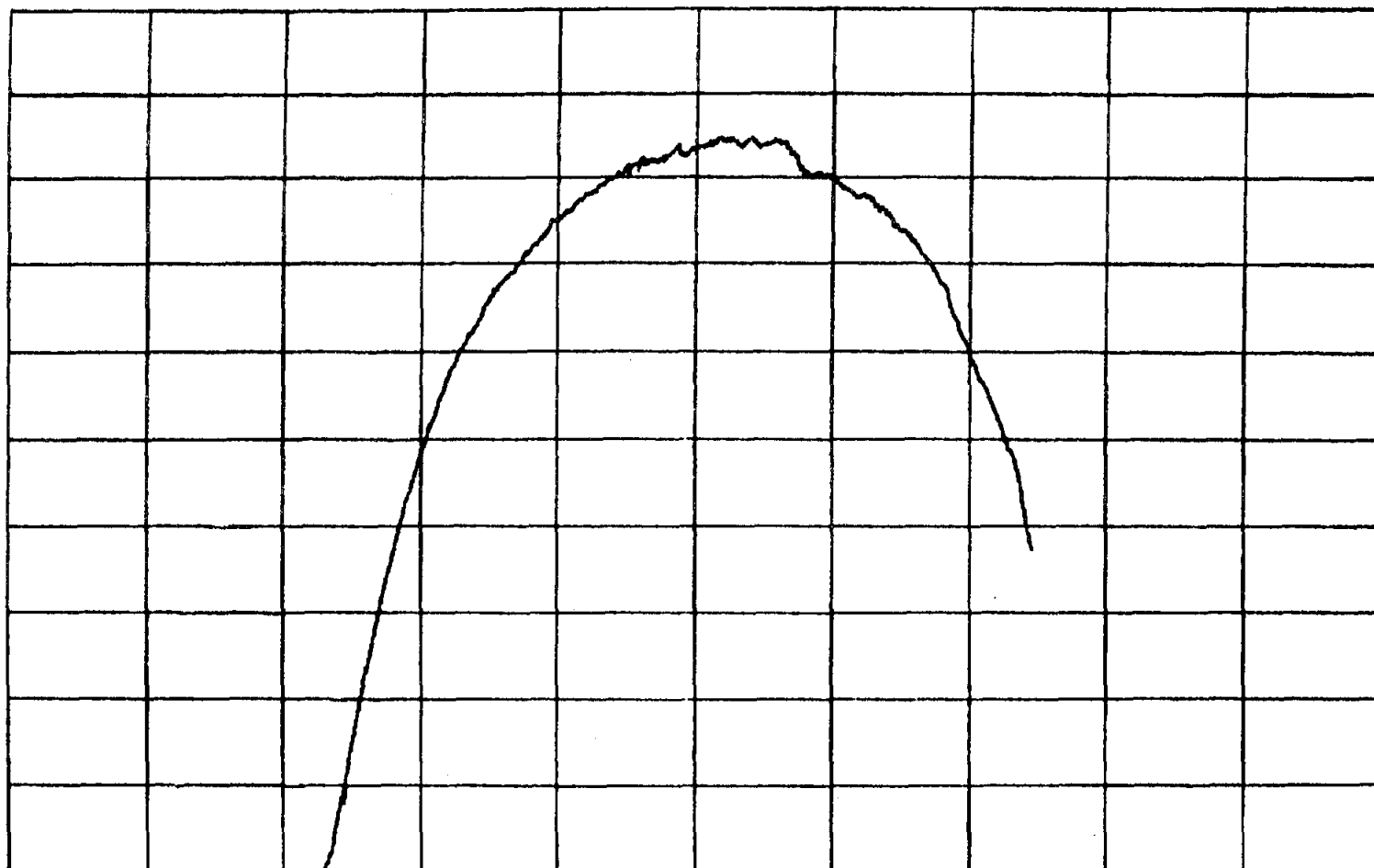
1500.00

\$\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 155 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

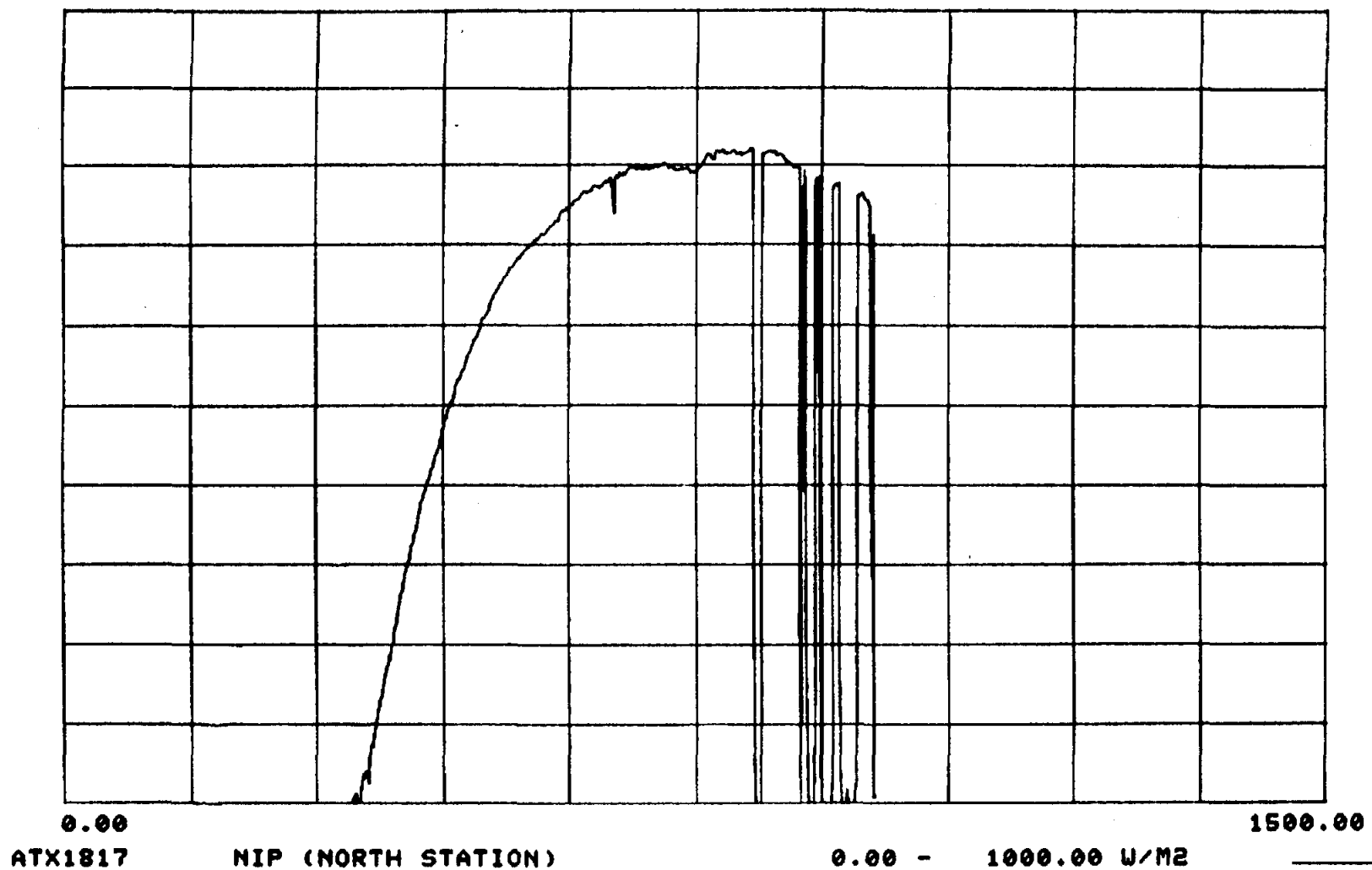
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

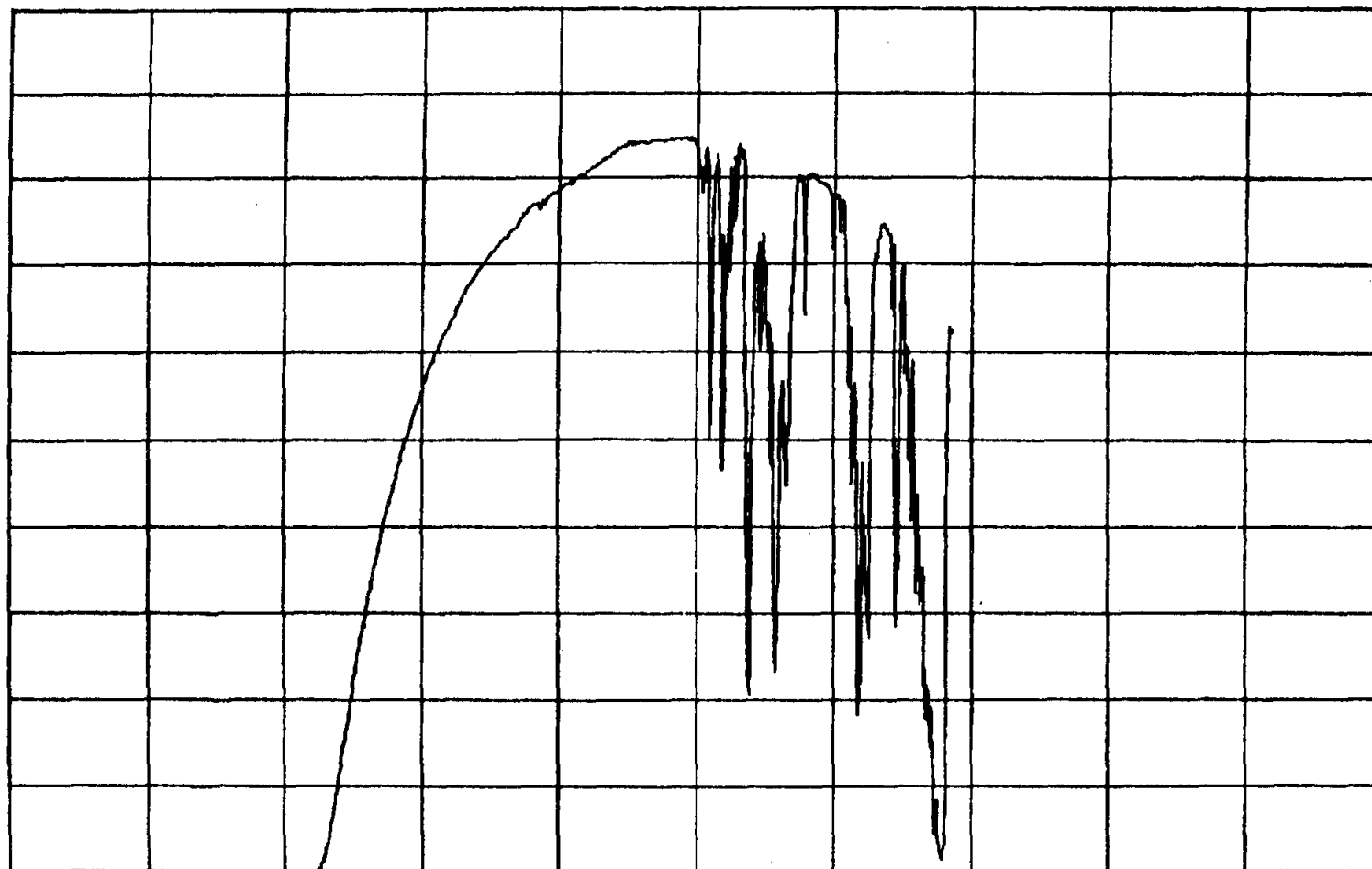
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 156 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 157 00 00 00.000

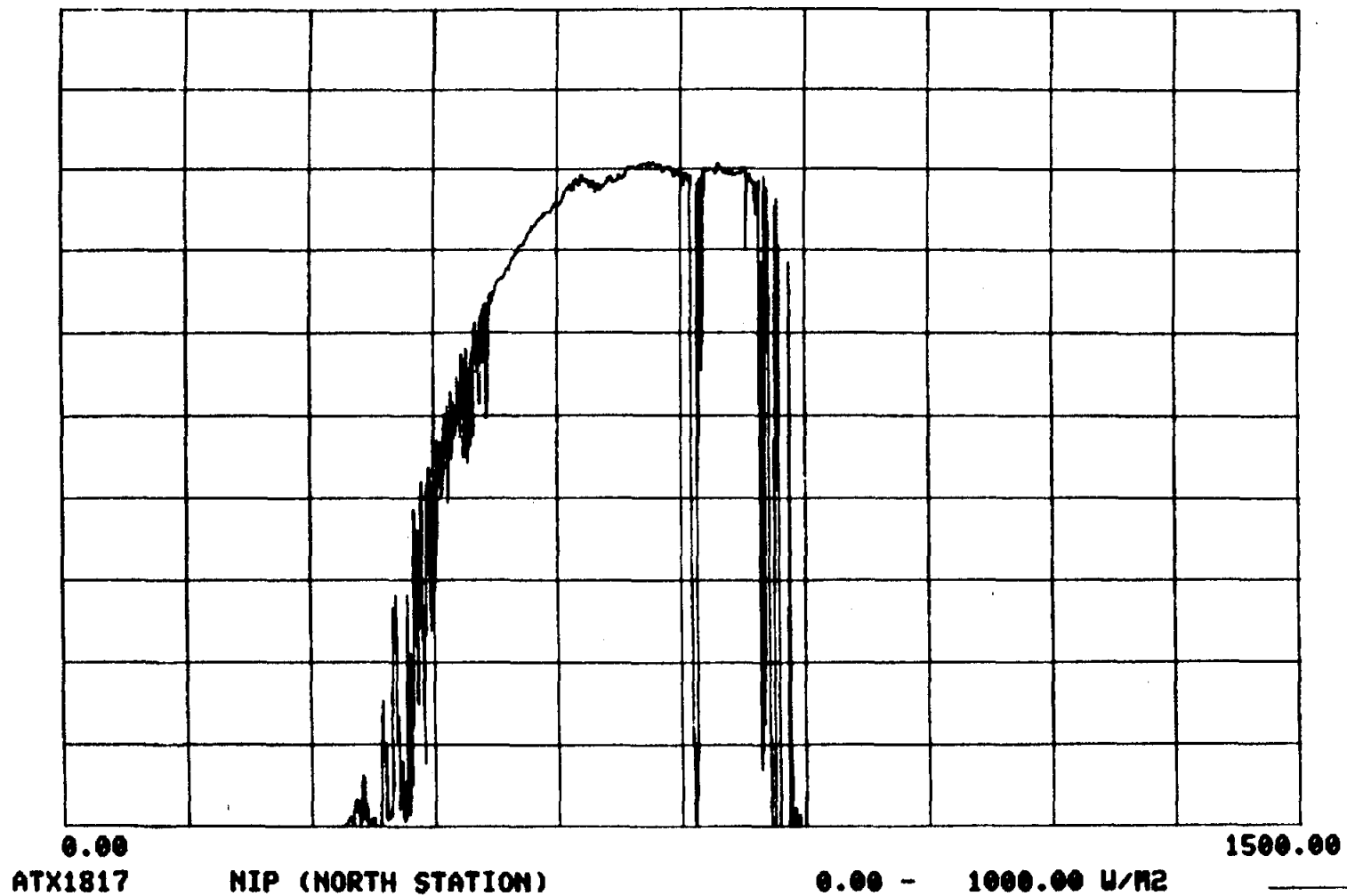
NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00 1500.00
ATX1817 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

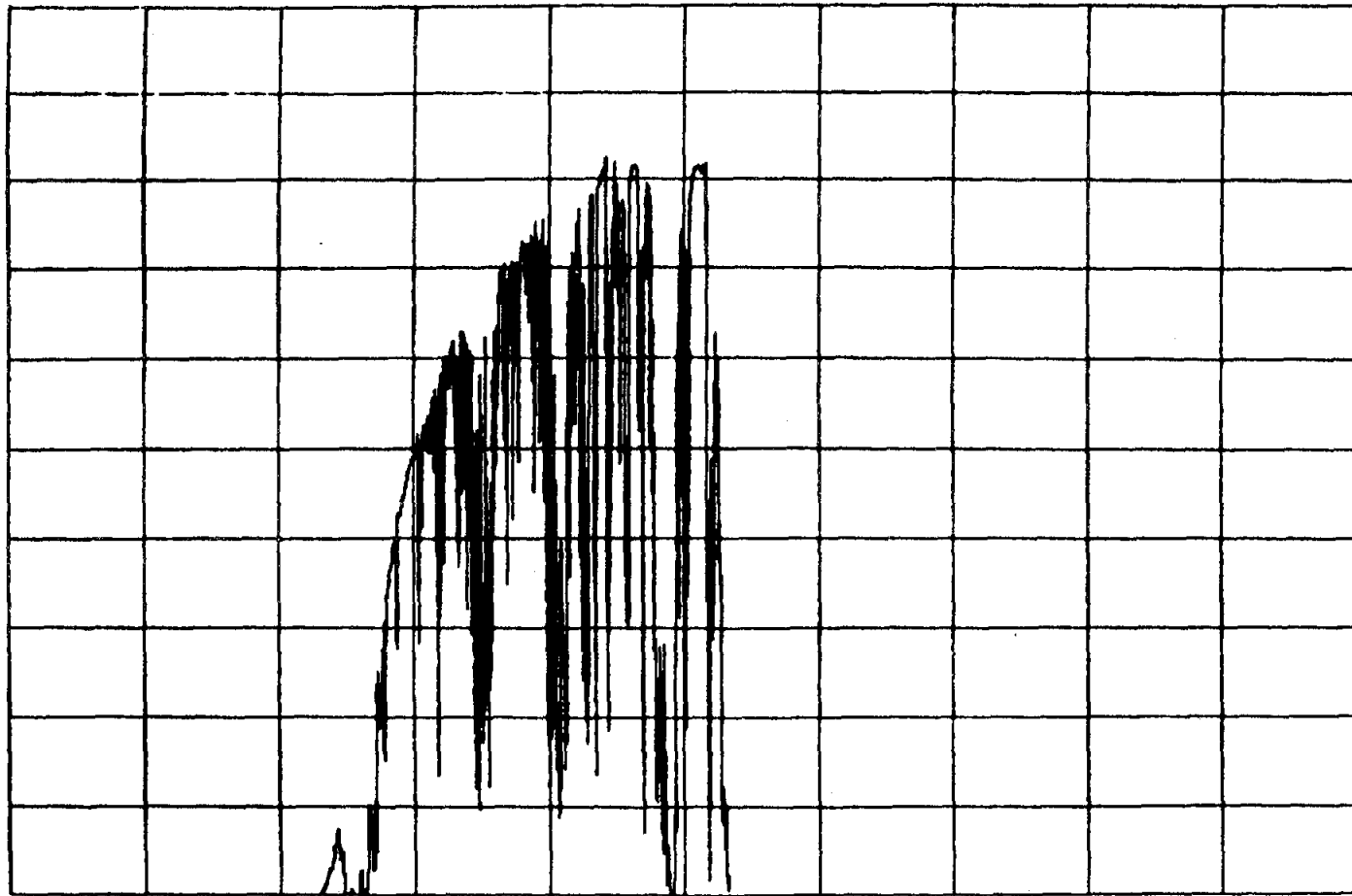
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 158 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 159 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



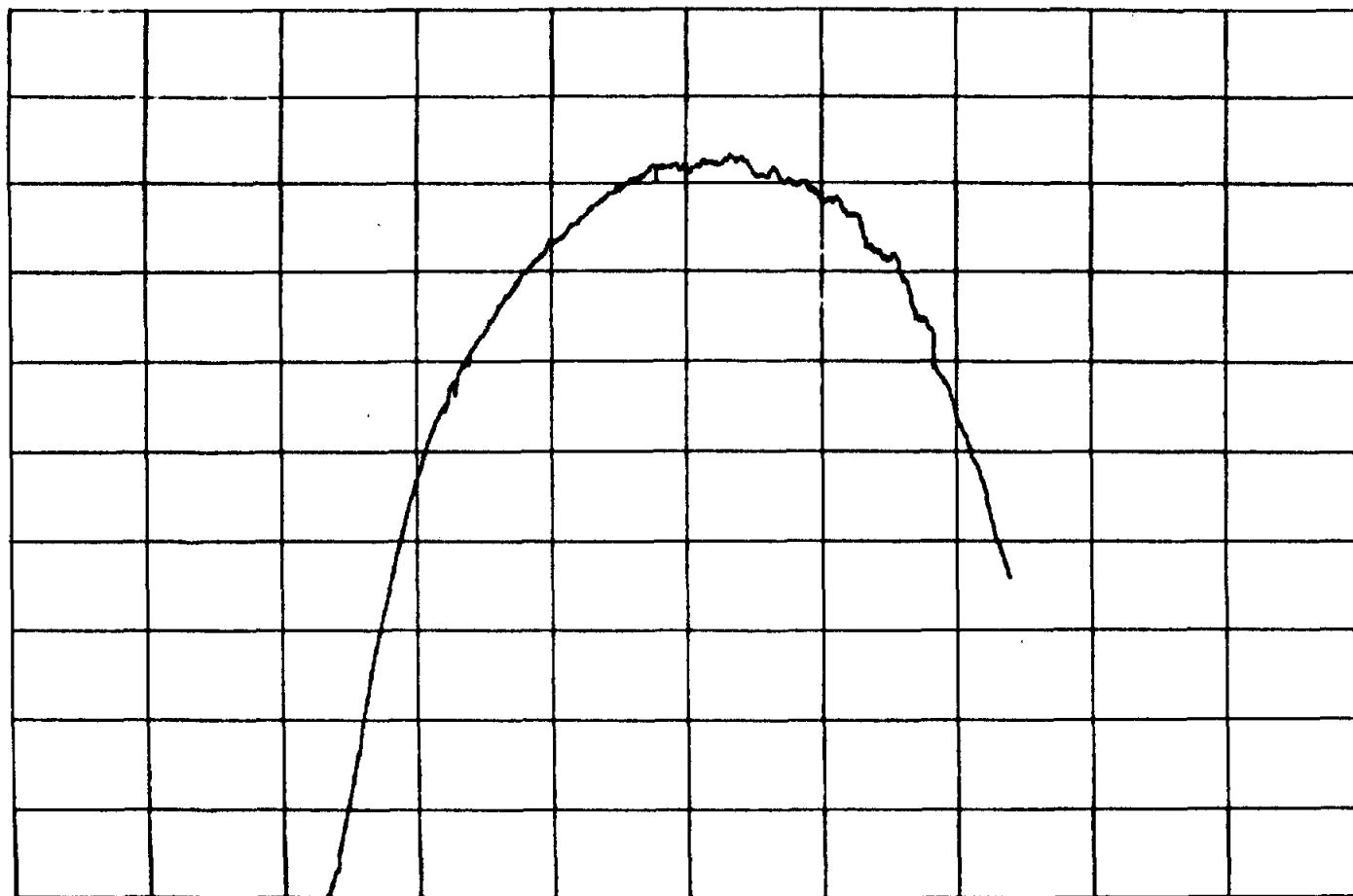
0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 U/M2 1500.00

SOLAR DATA PLOT
REFERENCE TIME: 160 00 00 00.000

PLOT # NISL3

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

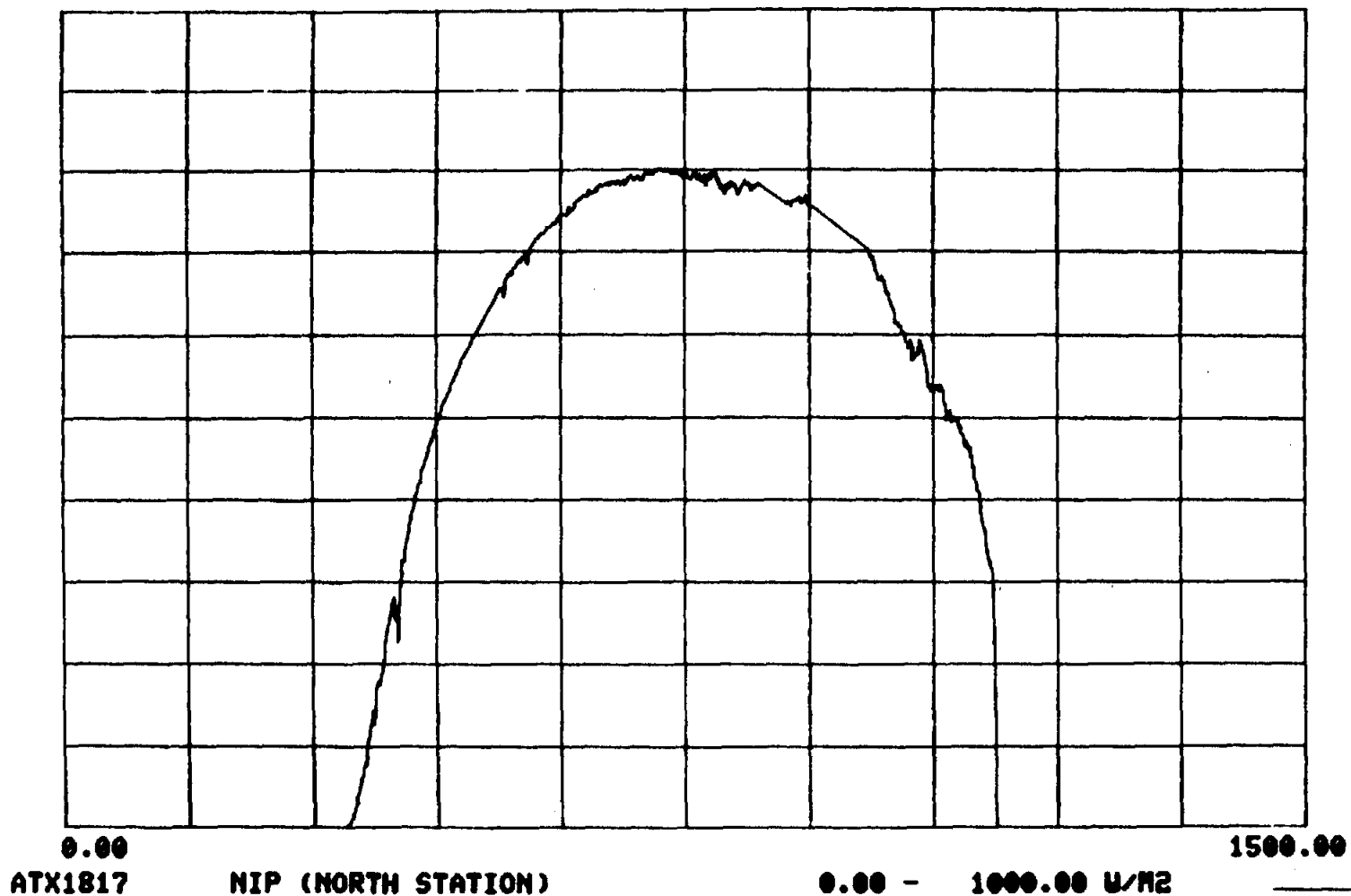
\$\$\$TX1817A

CNTRL ROOM ROOF NIP

0.00 - 1000.00 U/M2

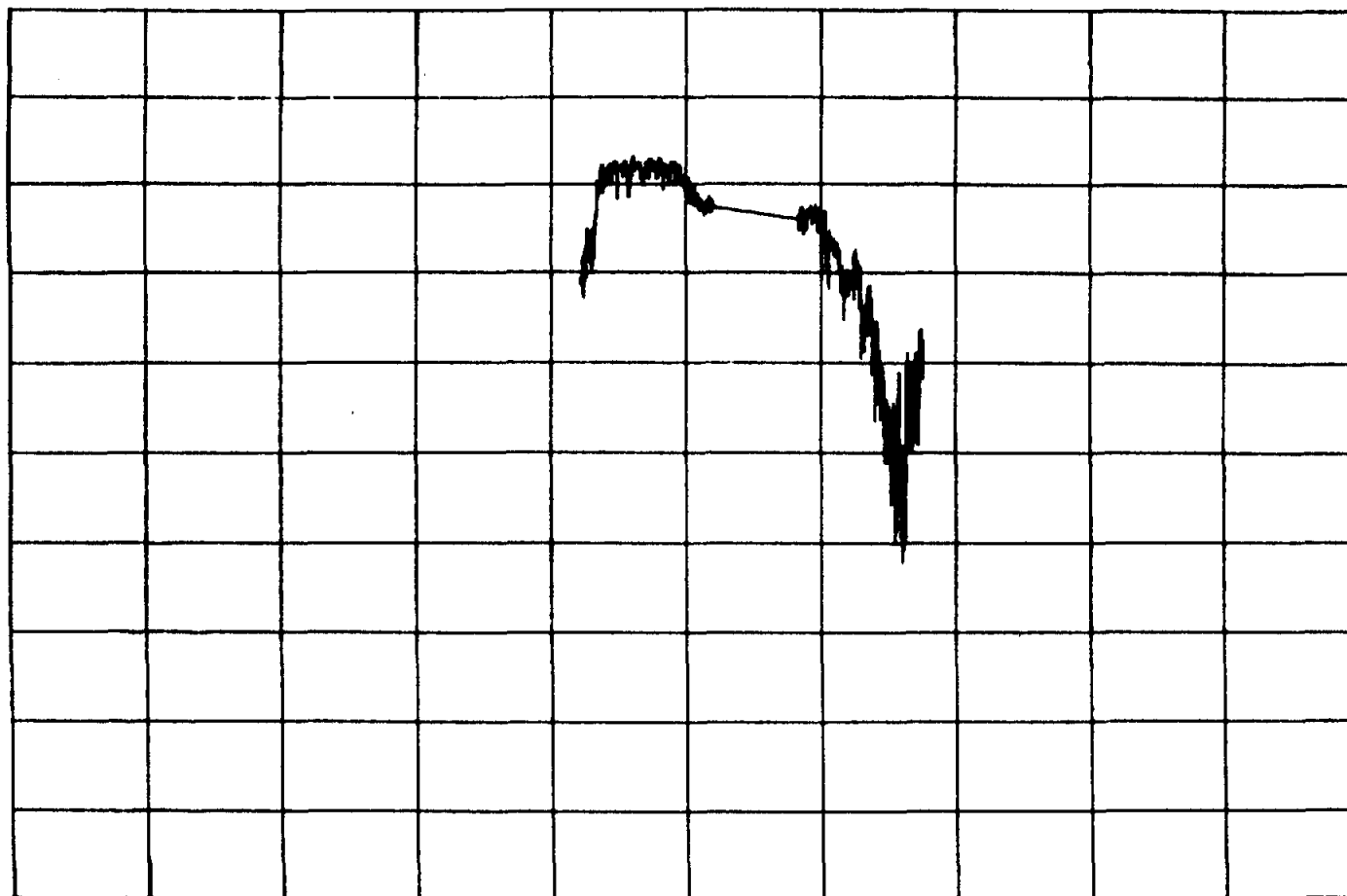
1500.00

SOLAR DATA PLOT PLOT # MISL1 NTH SAMPLE AVERAGE = 1
REFERENCE TIME: 161 00 00 00.000 FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 162 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



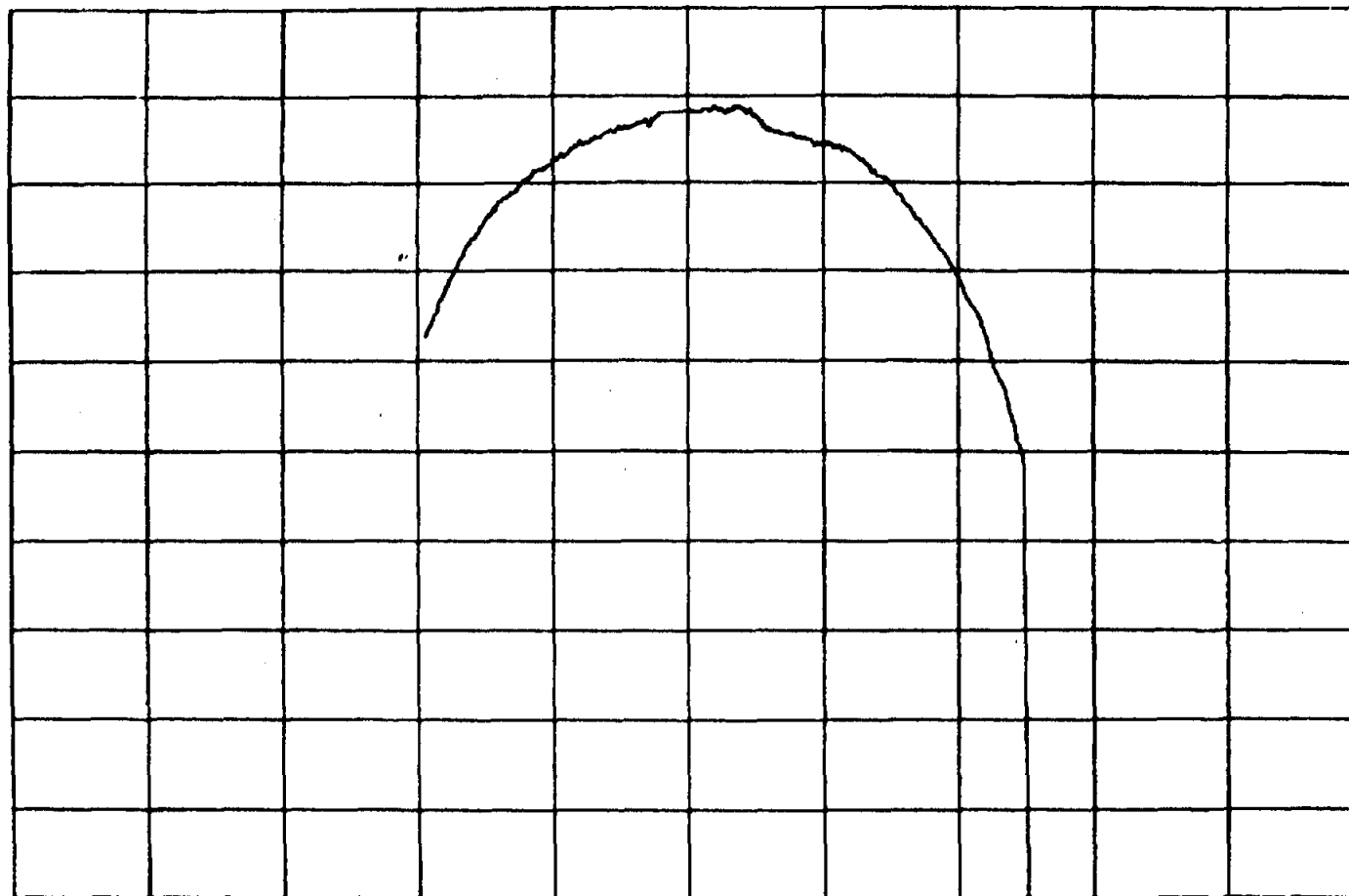
0.00
\$\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1500.00 U/M2
1500.00

SOLAR DATA PLOT
REFERENCE TIME: 163 00 00 00.000

PLOT # MISL1

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

NIP (NORTH STATION)

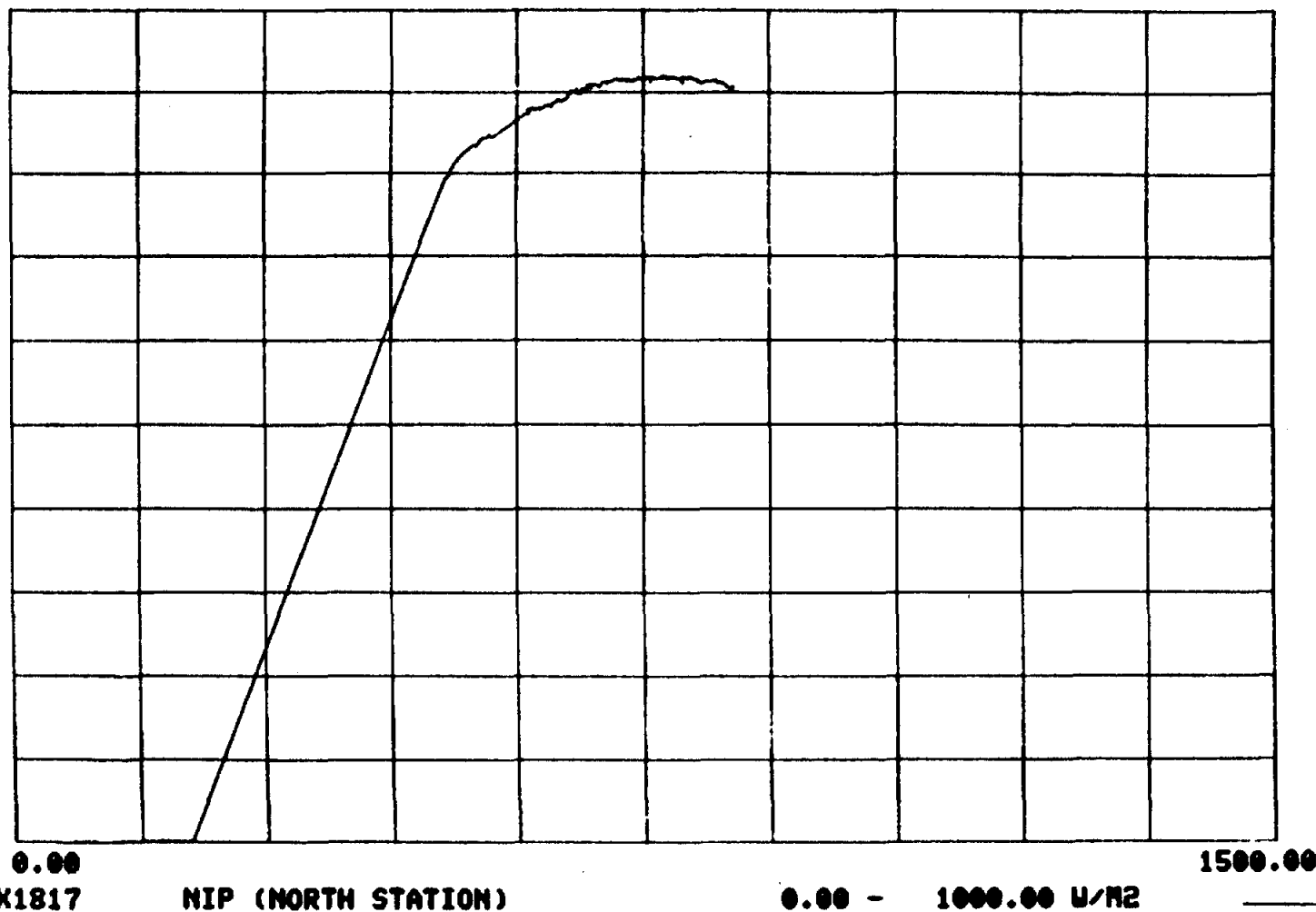
0.00 - 1000.00 U/M2

1500.00

SOLAR DATA PLOT
REFERENCE TIME: 164 00 00 00.000

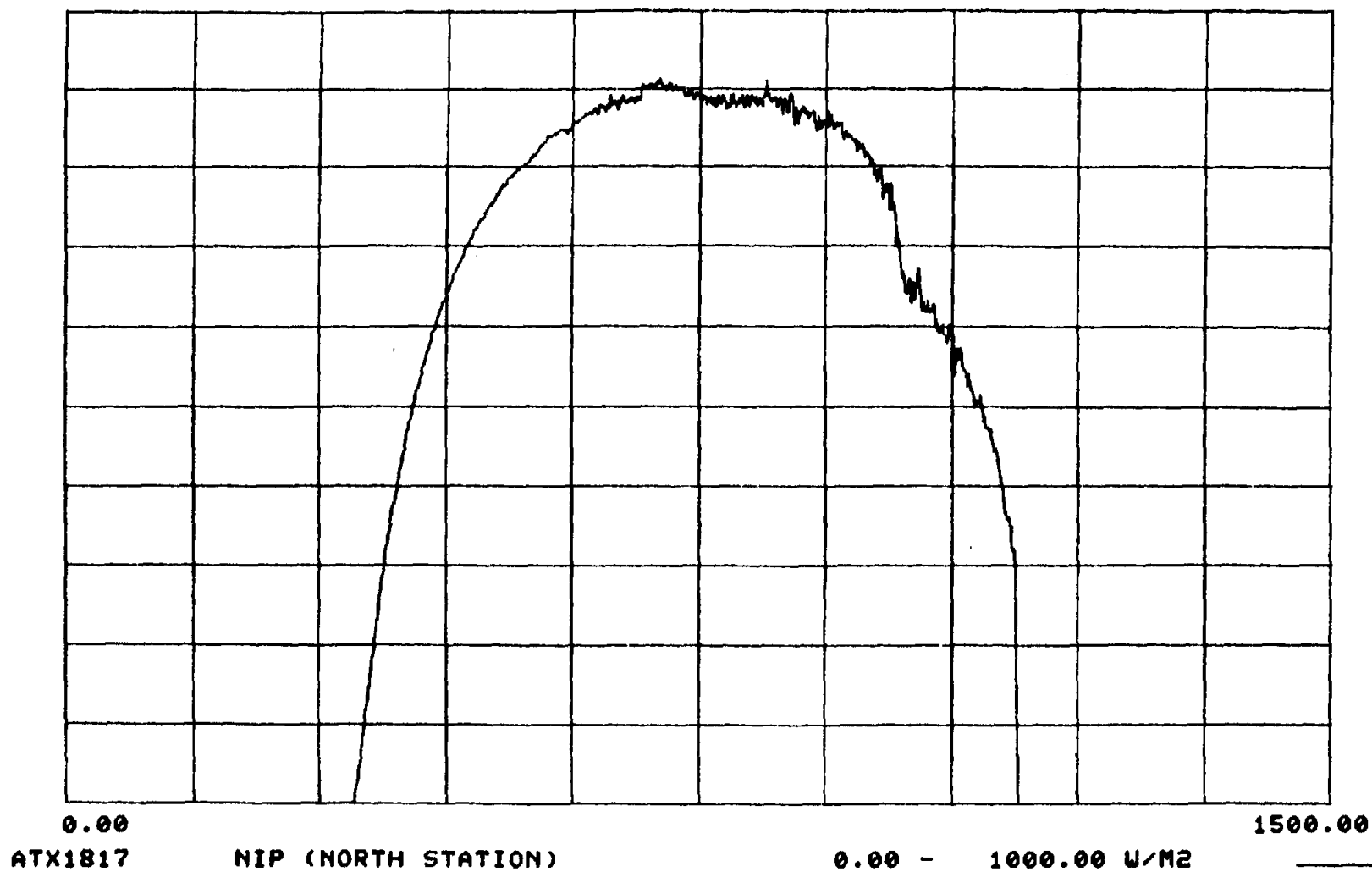
PLOT # MISL1

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



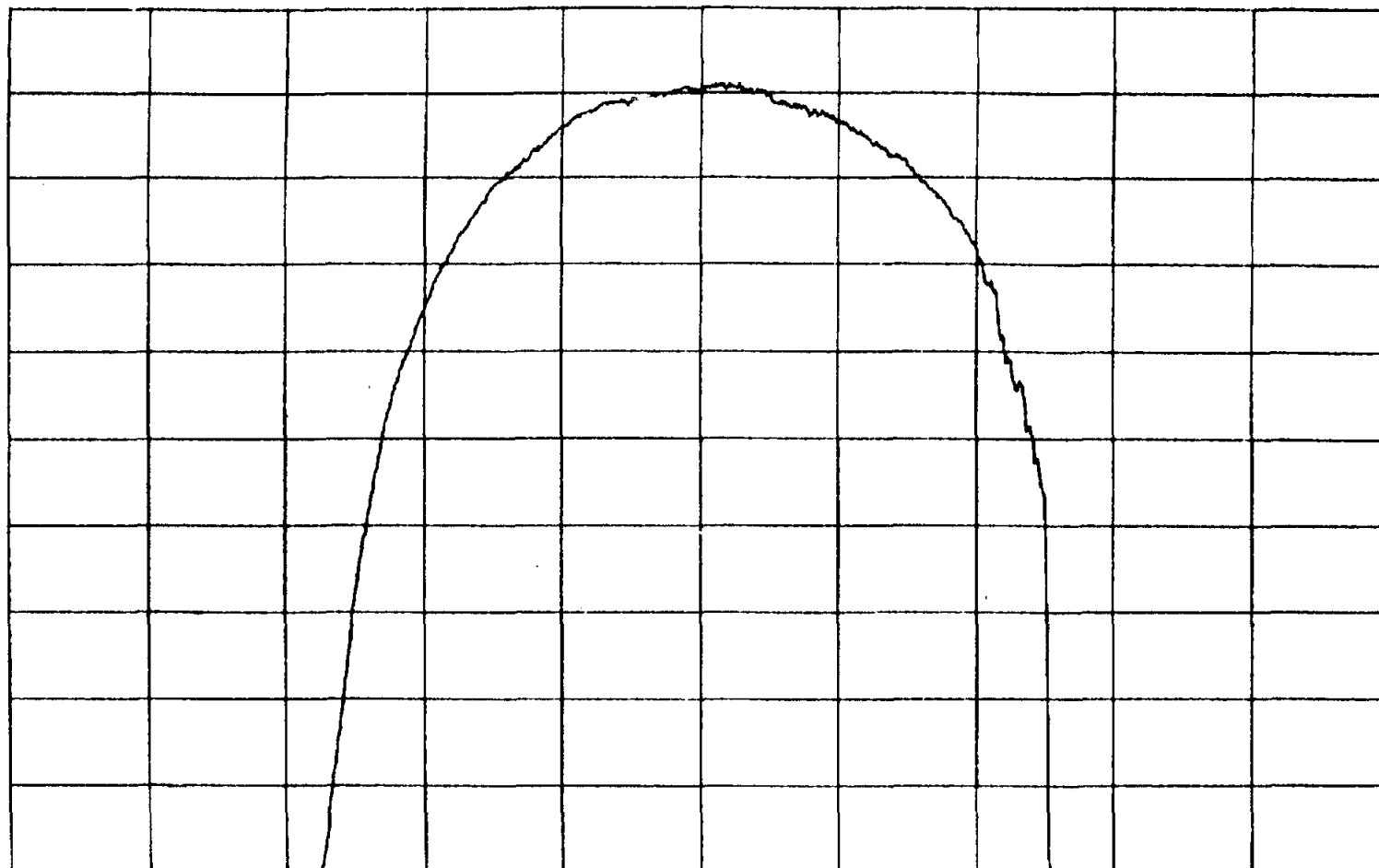
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 169 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 170 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



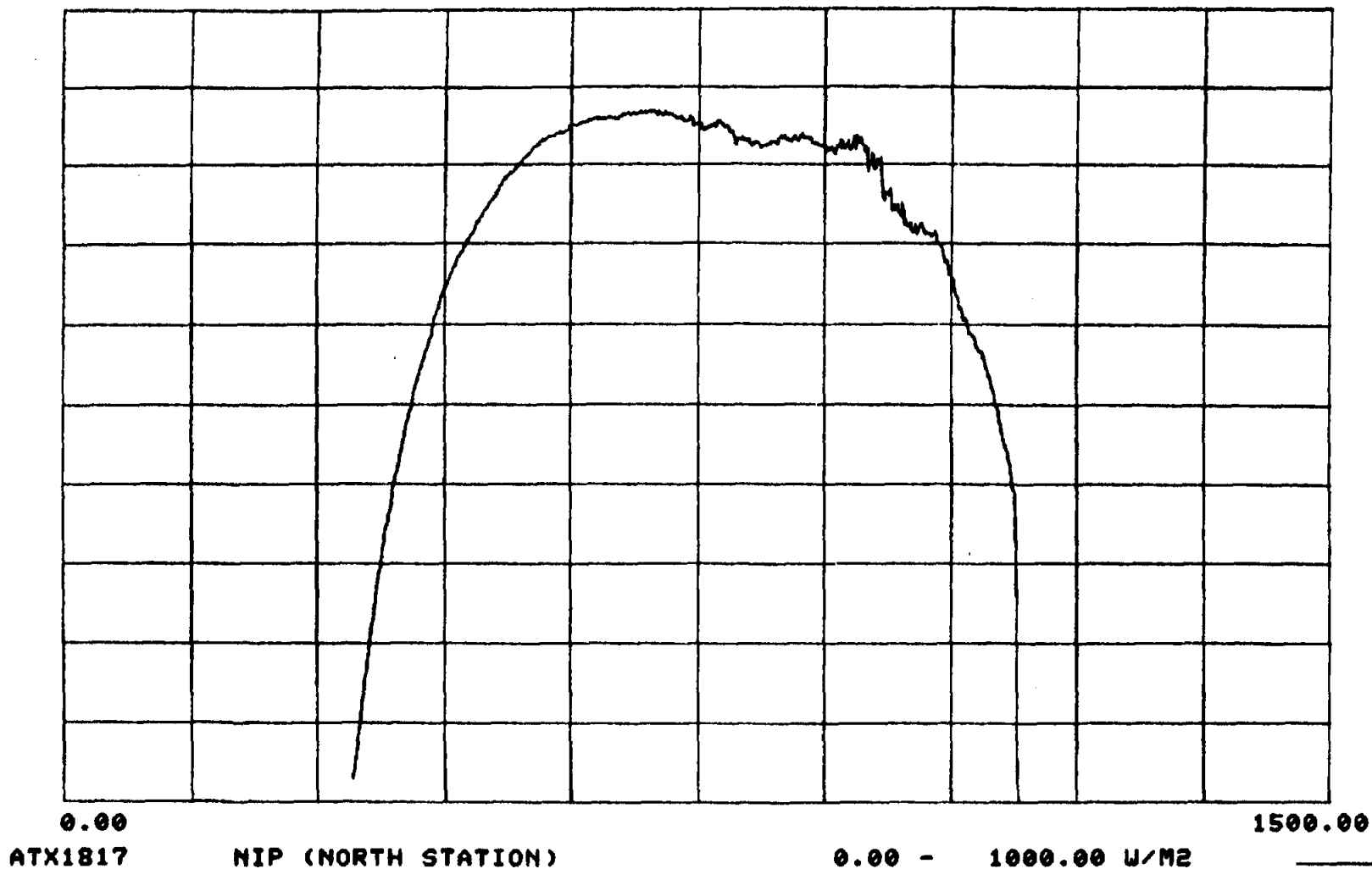
0.00
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2
1500.00

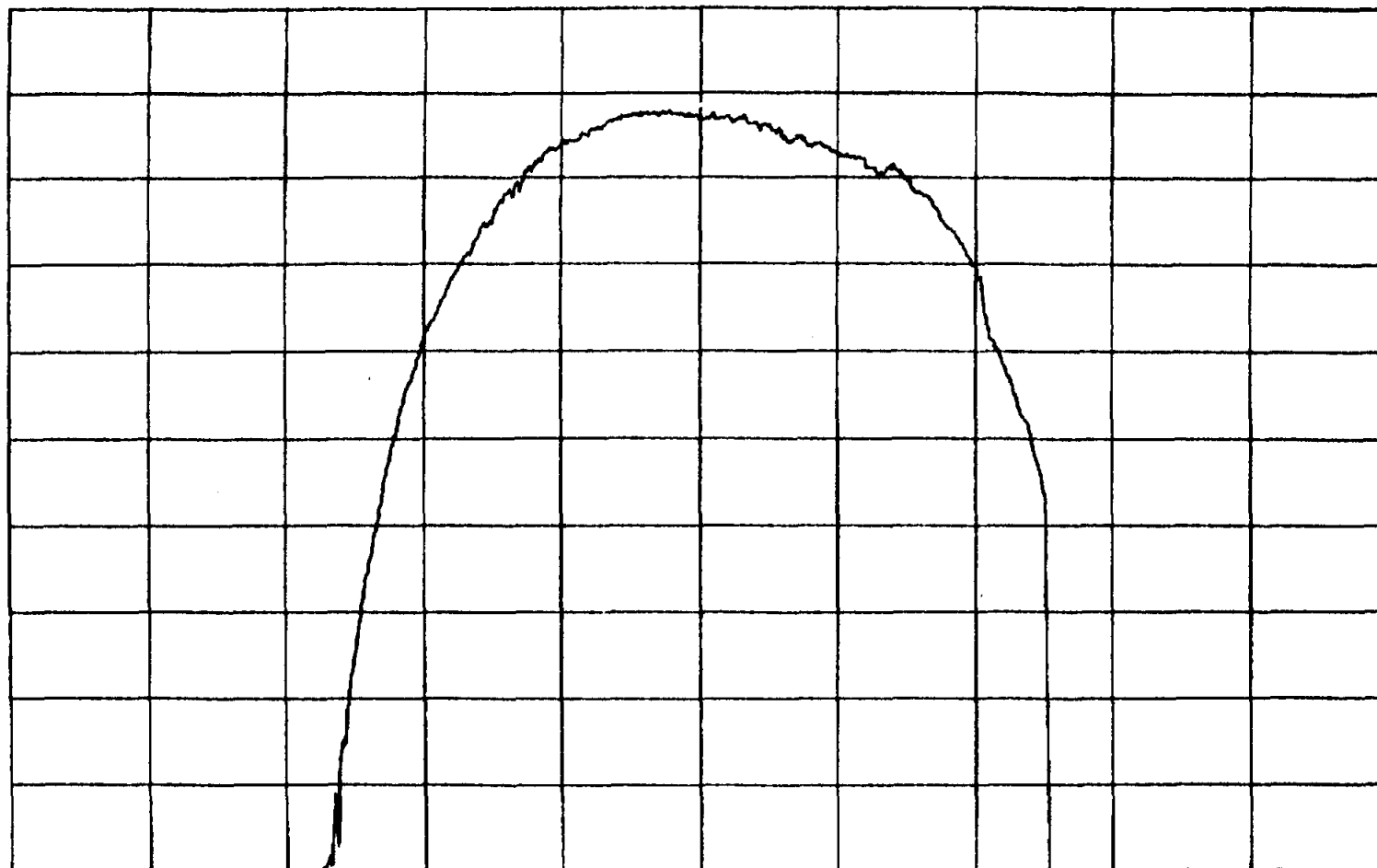
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 171 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 172 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

ATX1817

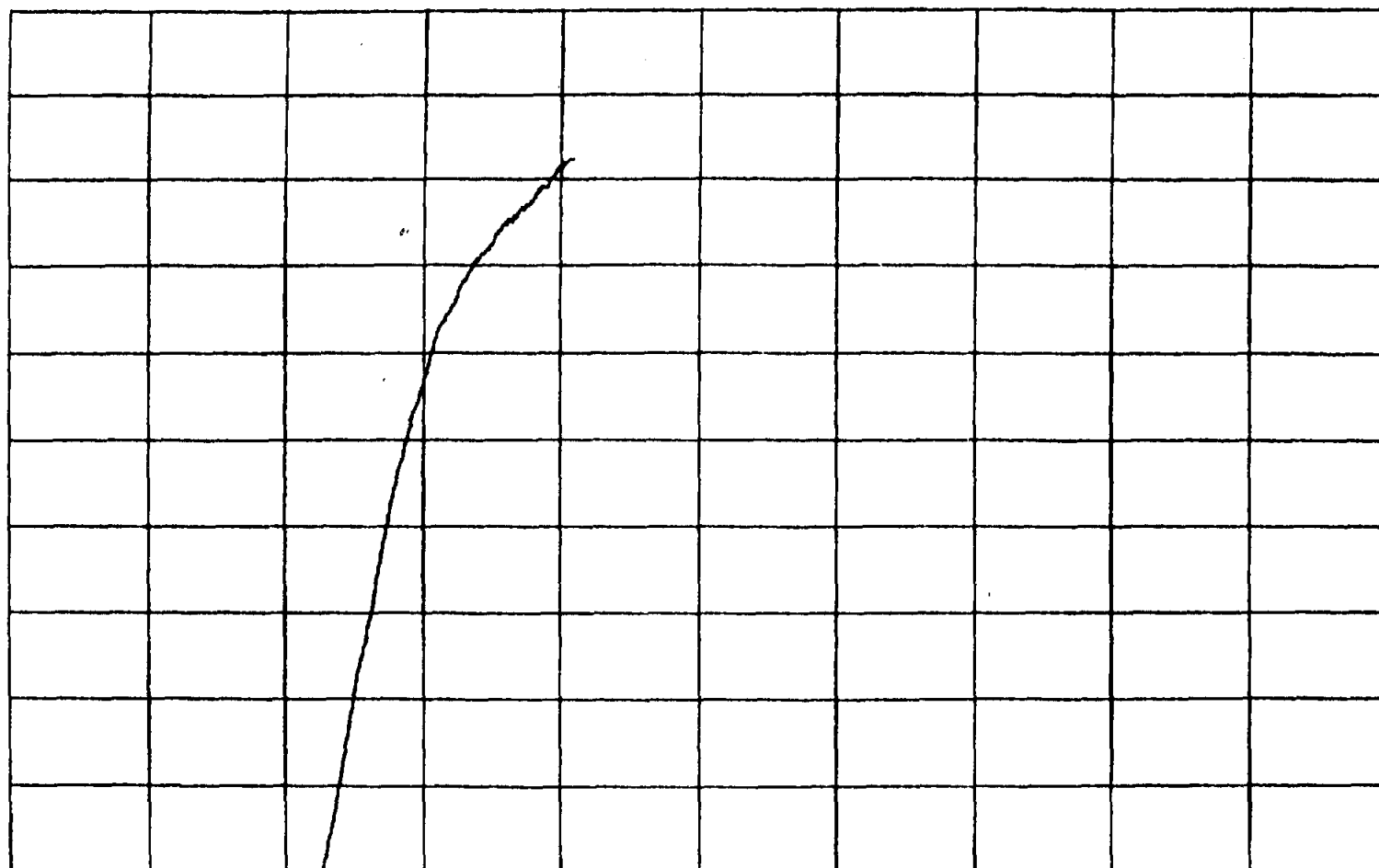
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 173 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

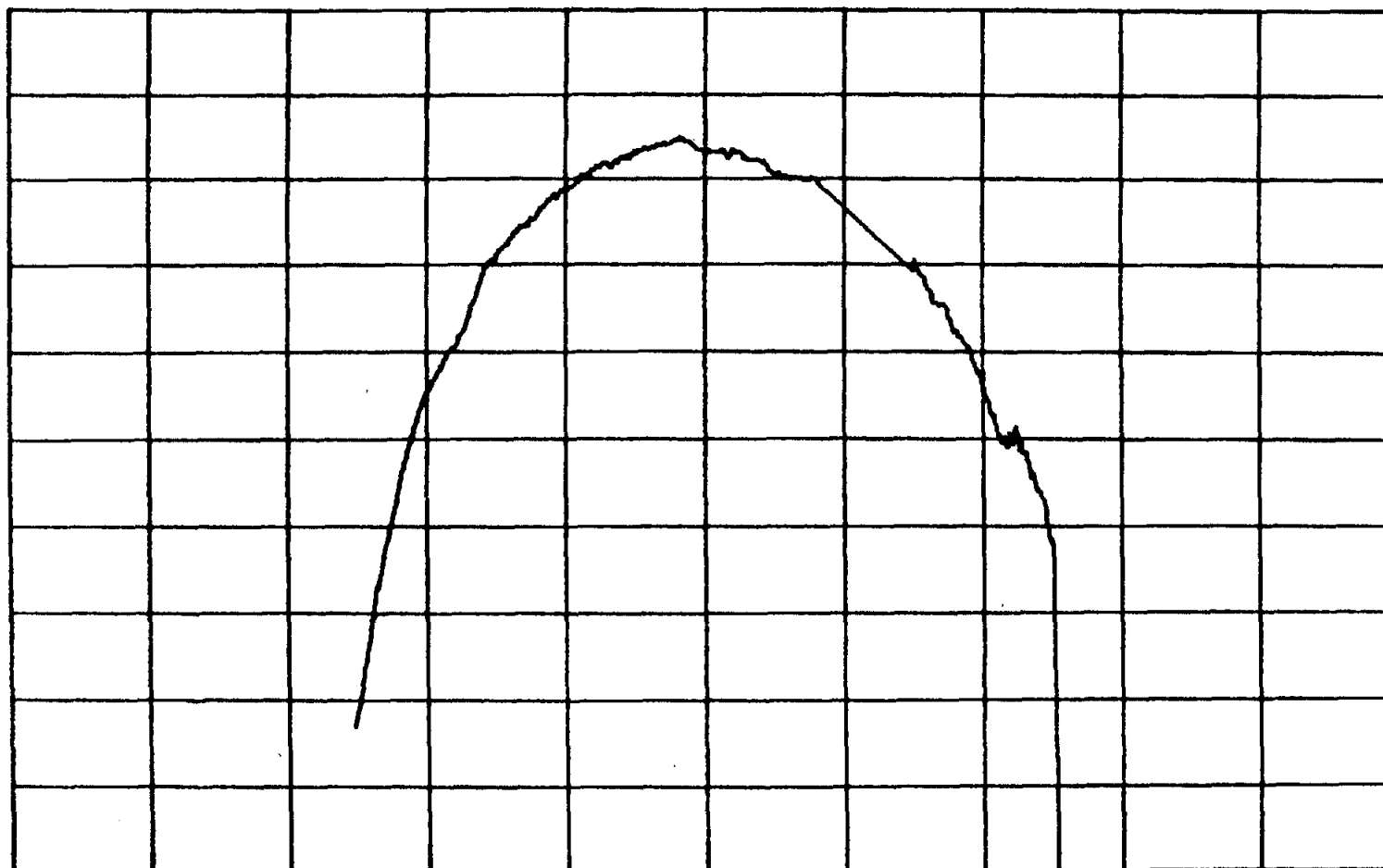


0.00
ATX1817 NIP (NORTH STATION)

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 174 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00
ATX1517

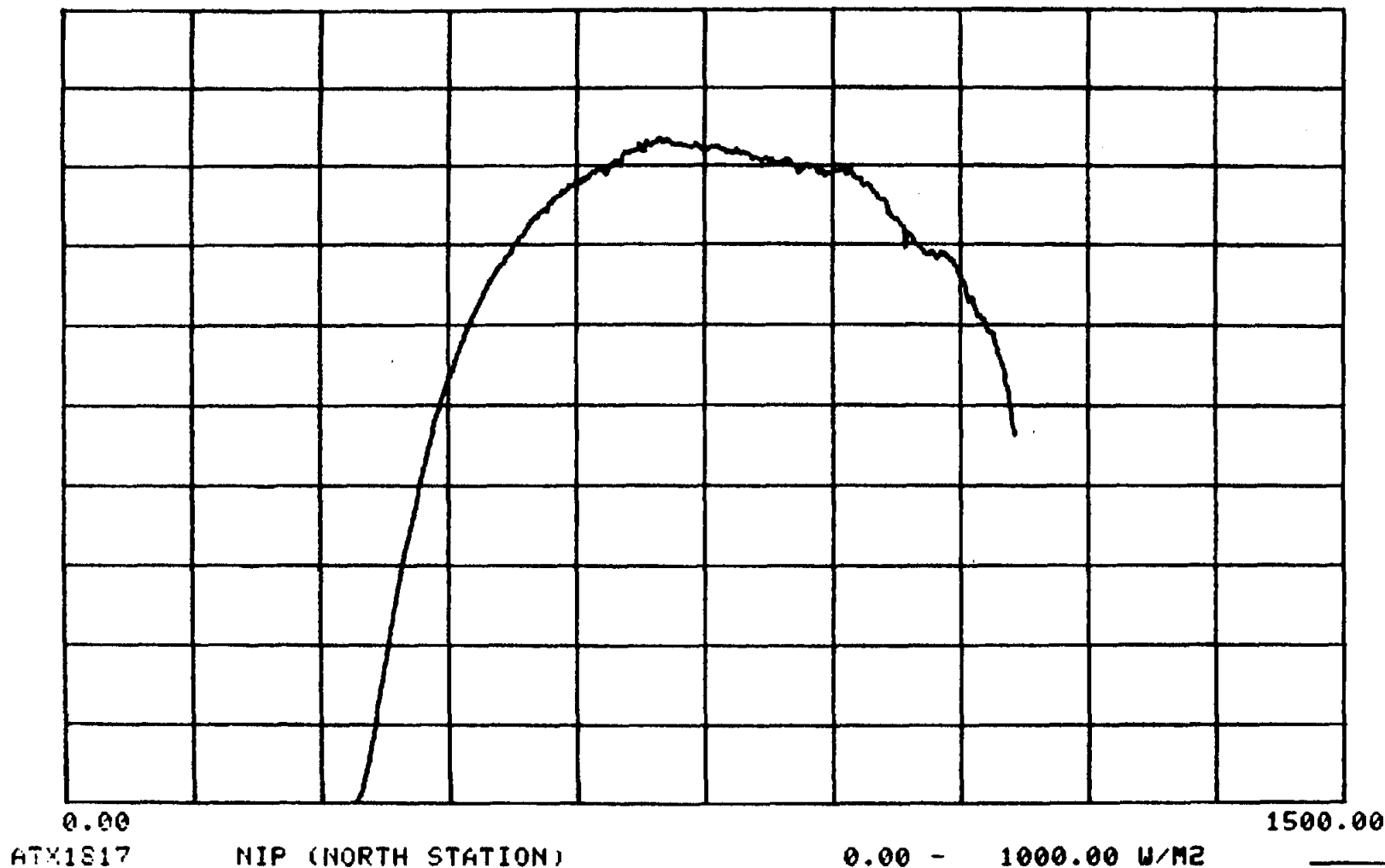
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

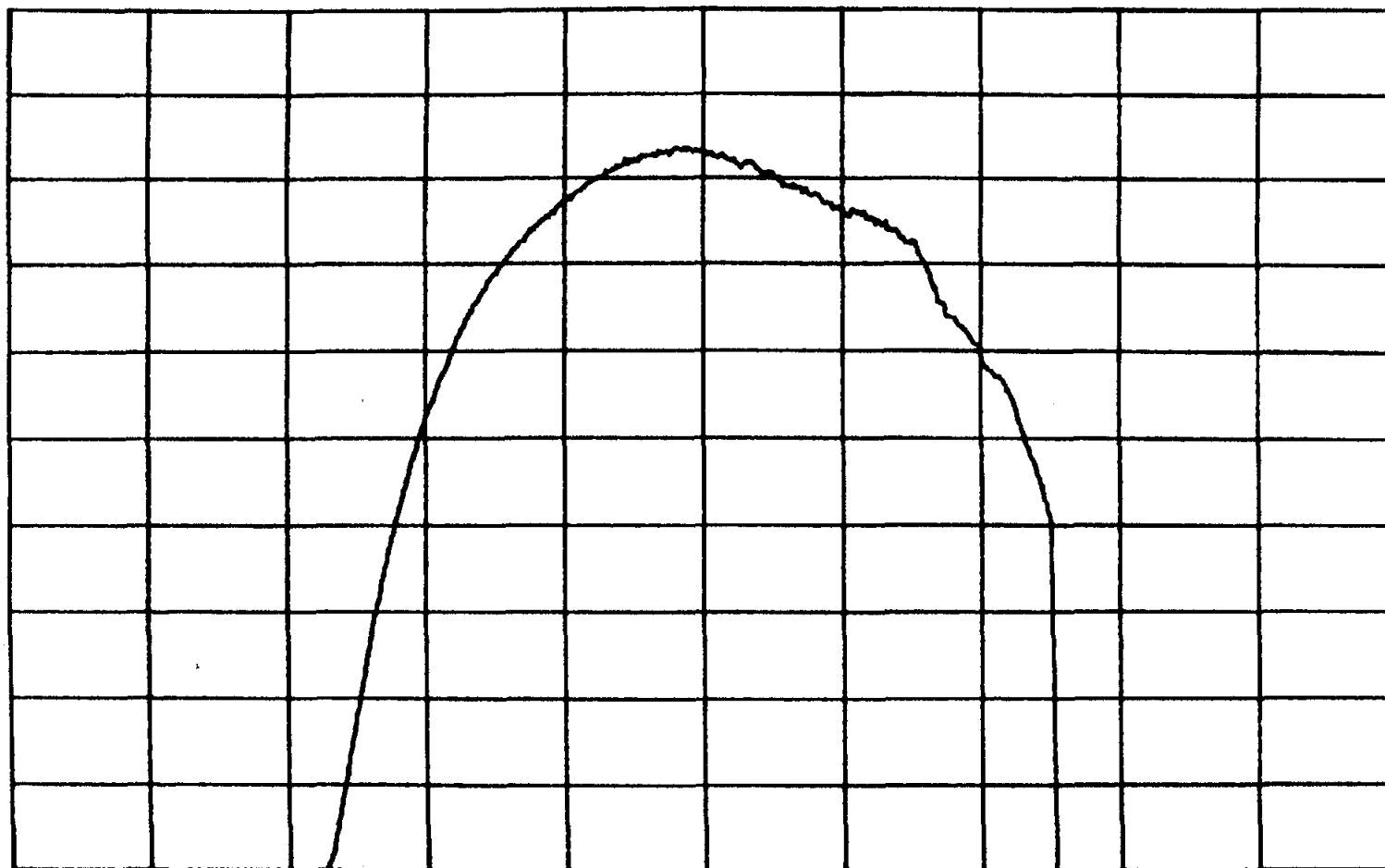
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 175 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 176 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)

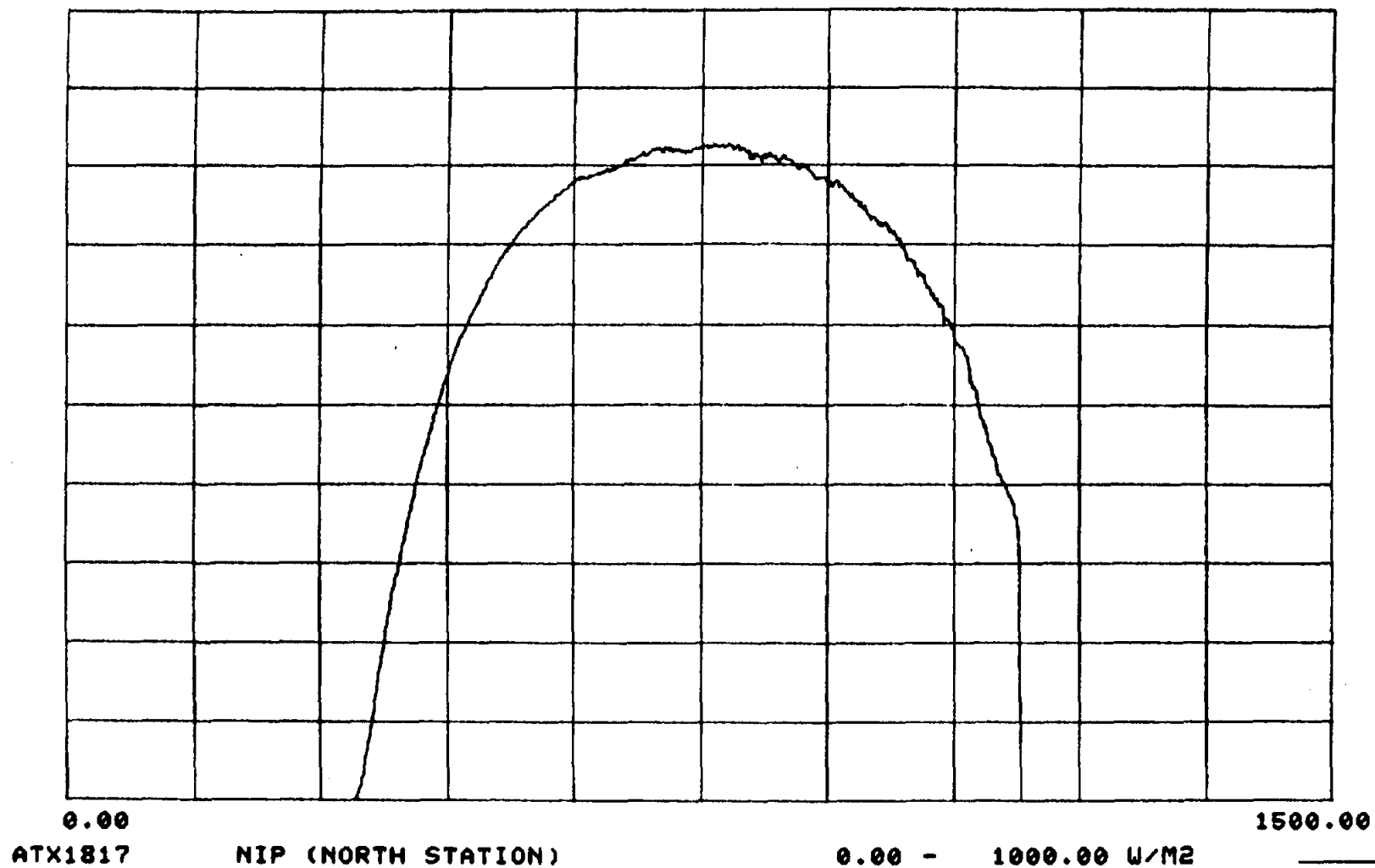


0.00
ATX1817 NIP (NORTH STATION)

0.00 - 1000.00 W/M2 1500.00

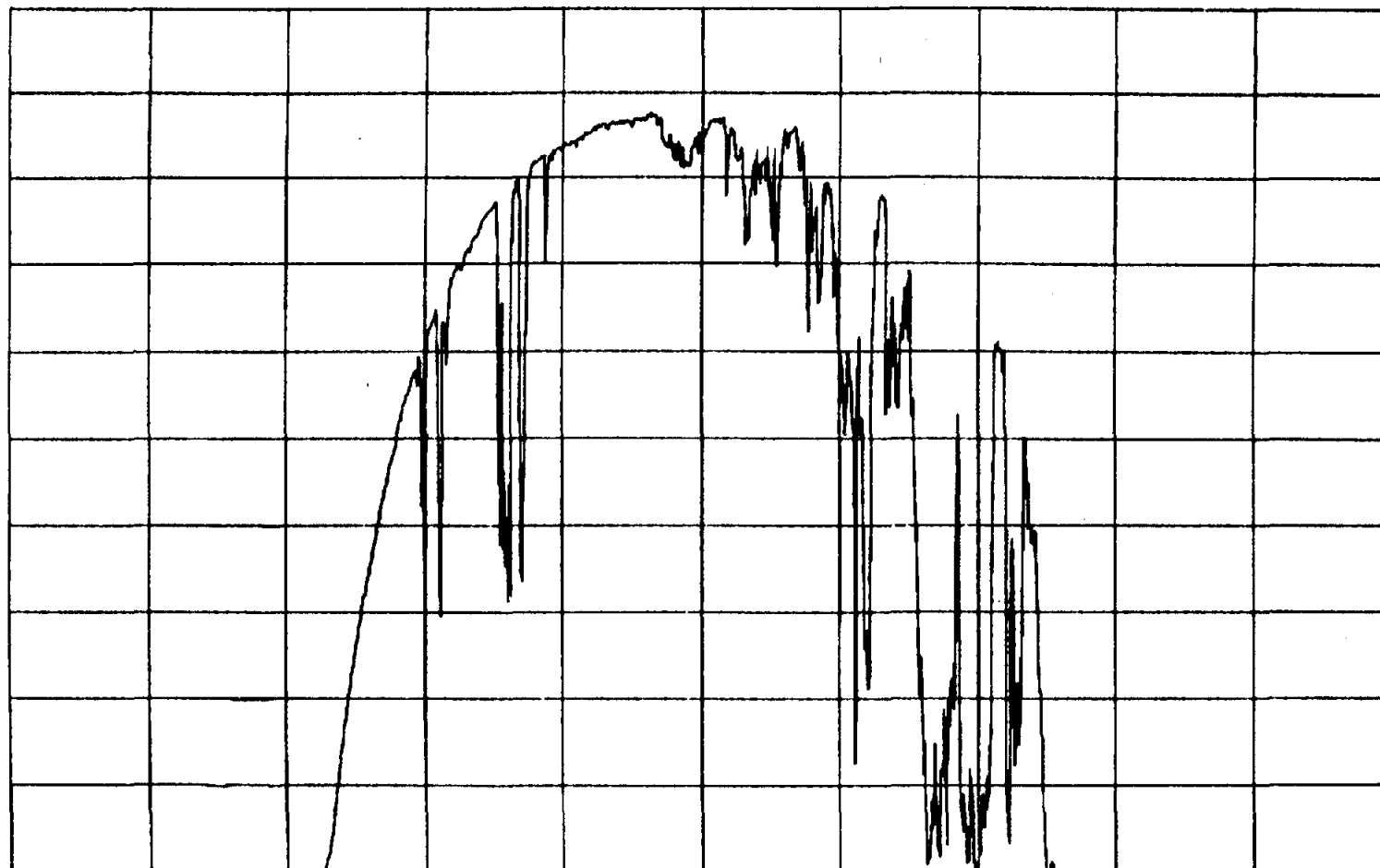
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 177 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 178 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



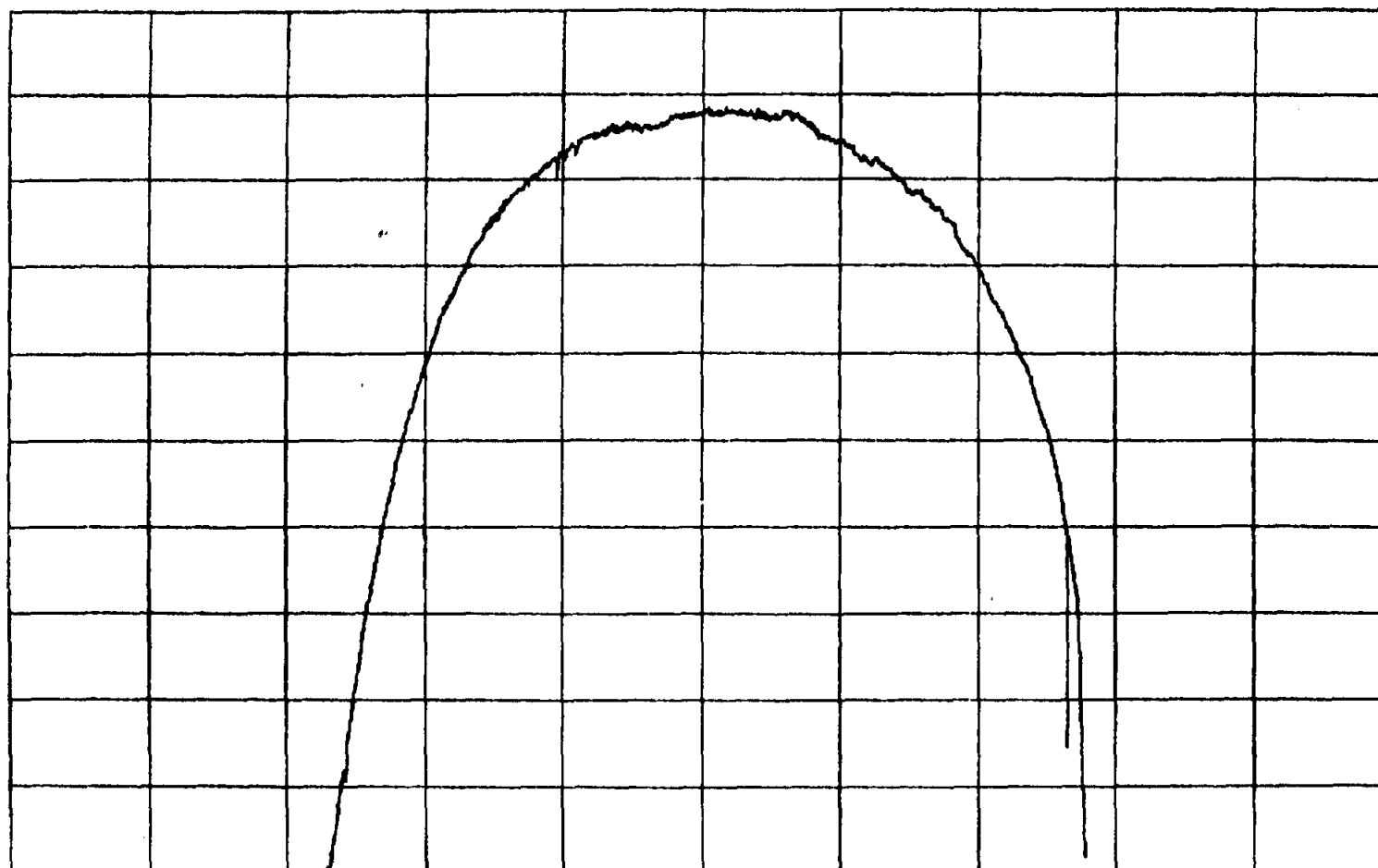
0.00
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 U/M2
1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 179 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

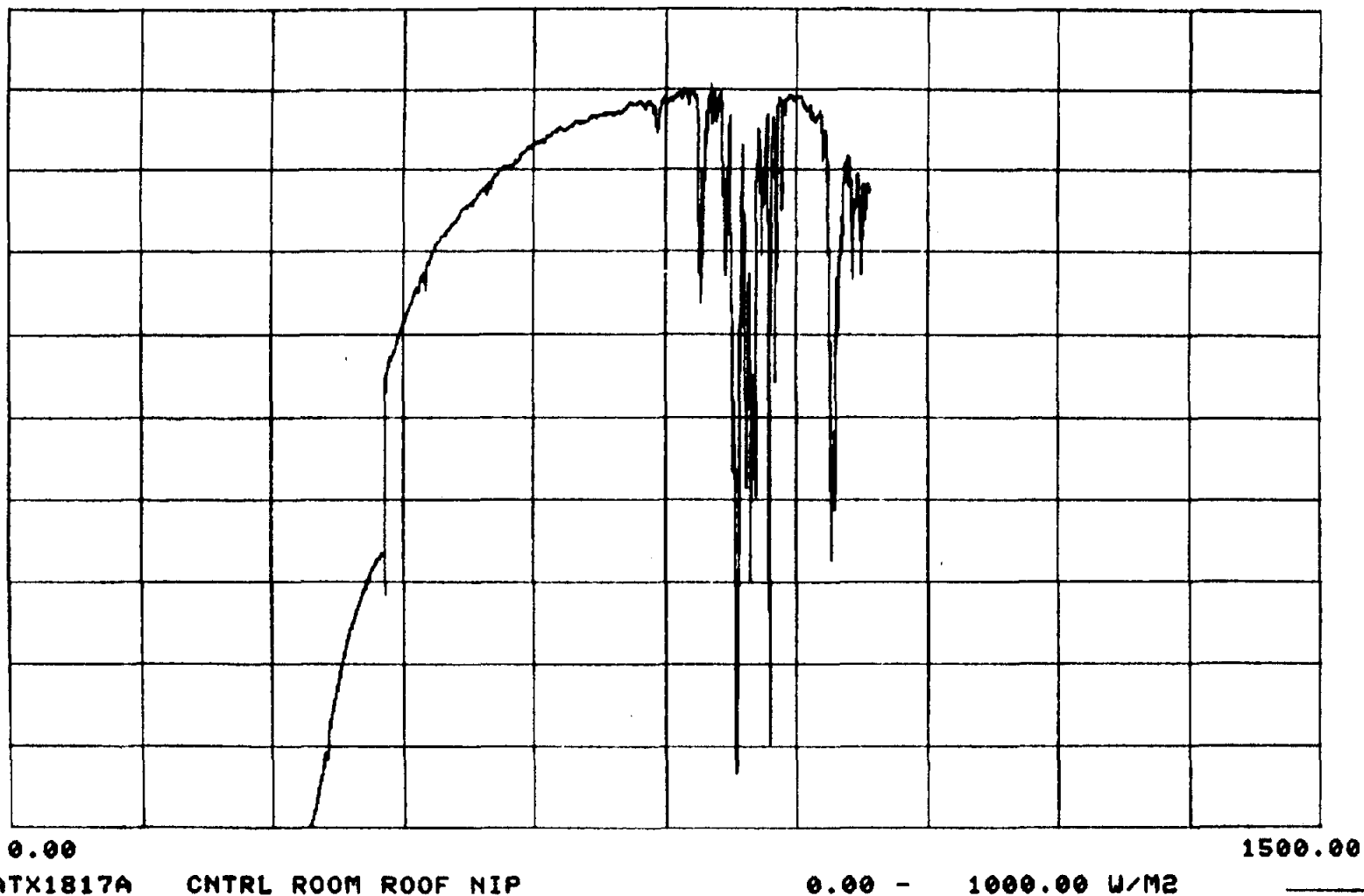
CNTRL ROOM ROOF NIP

1500.00

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 180 00 00 00.000

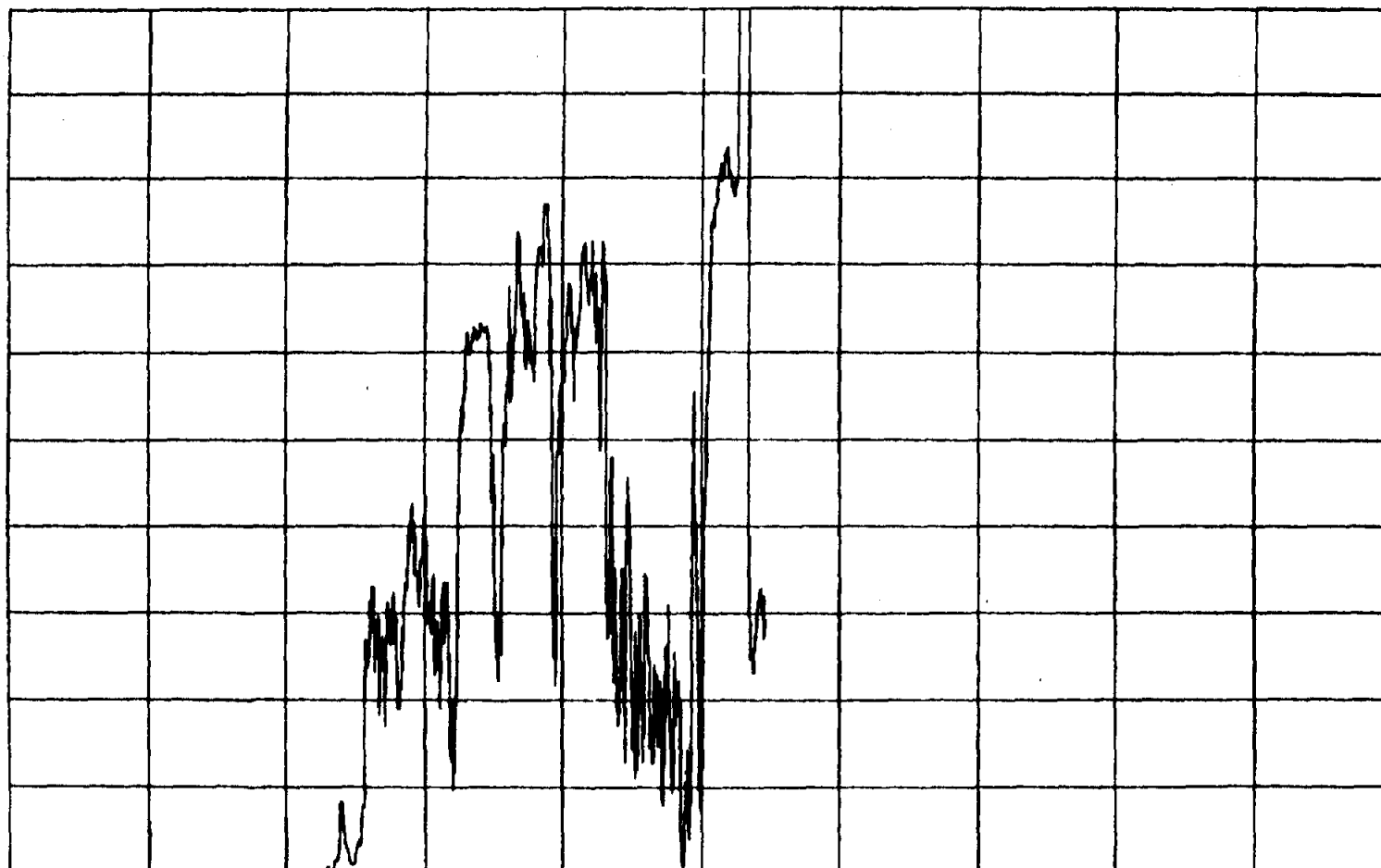
NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT
REFERENCE TIME: 181 00 00 00.000

PLOT # MISL1

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

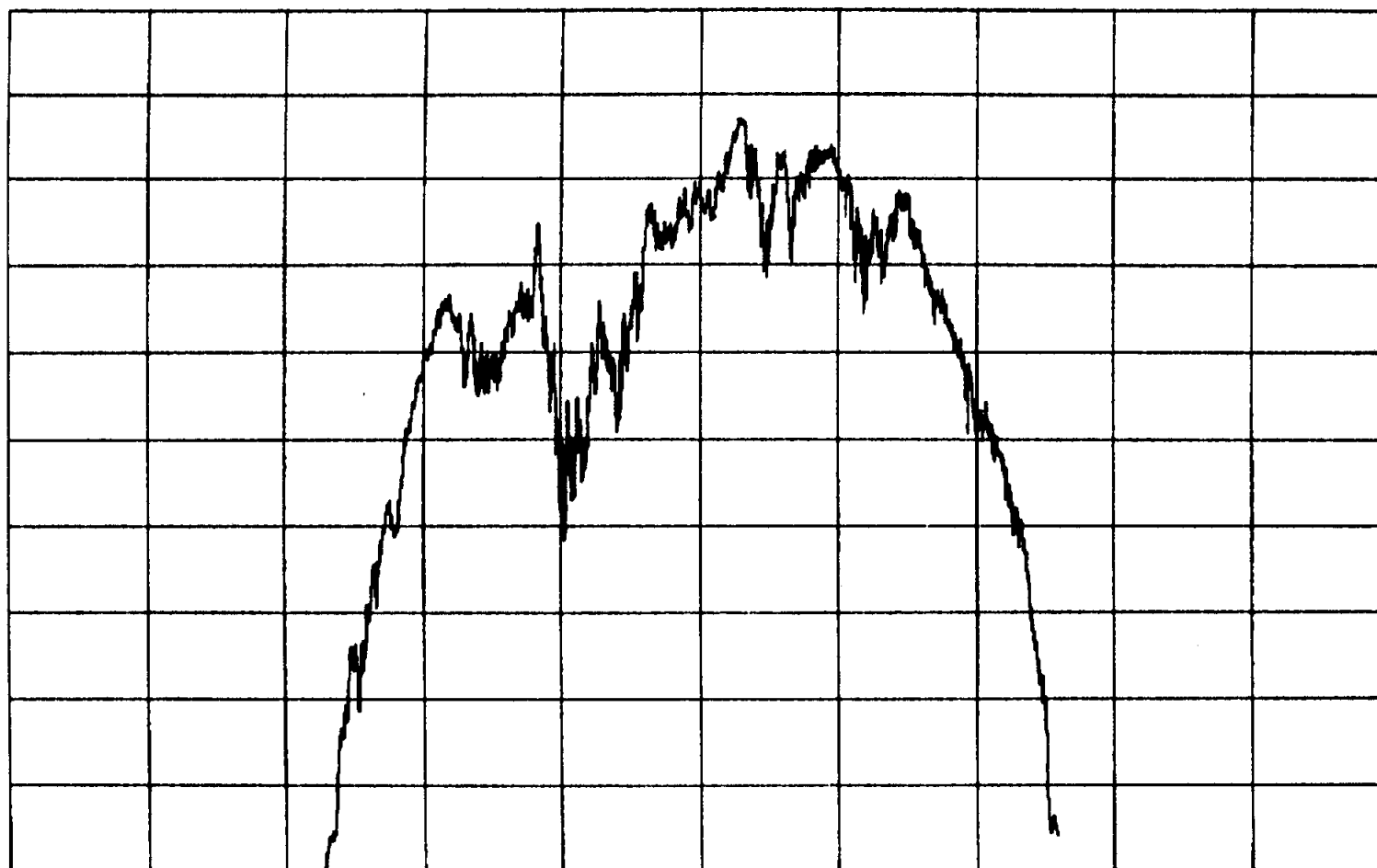
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 183 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

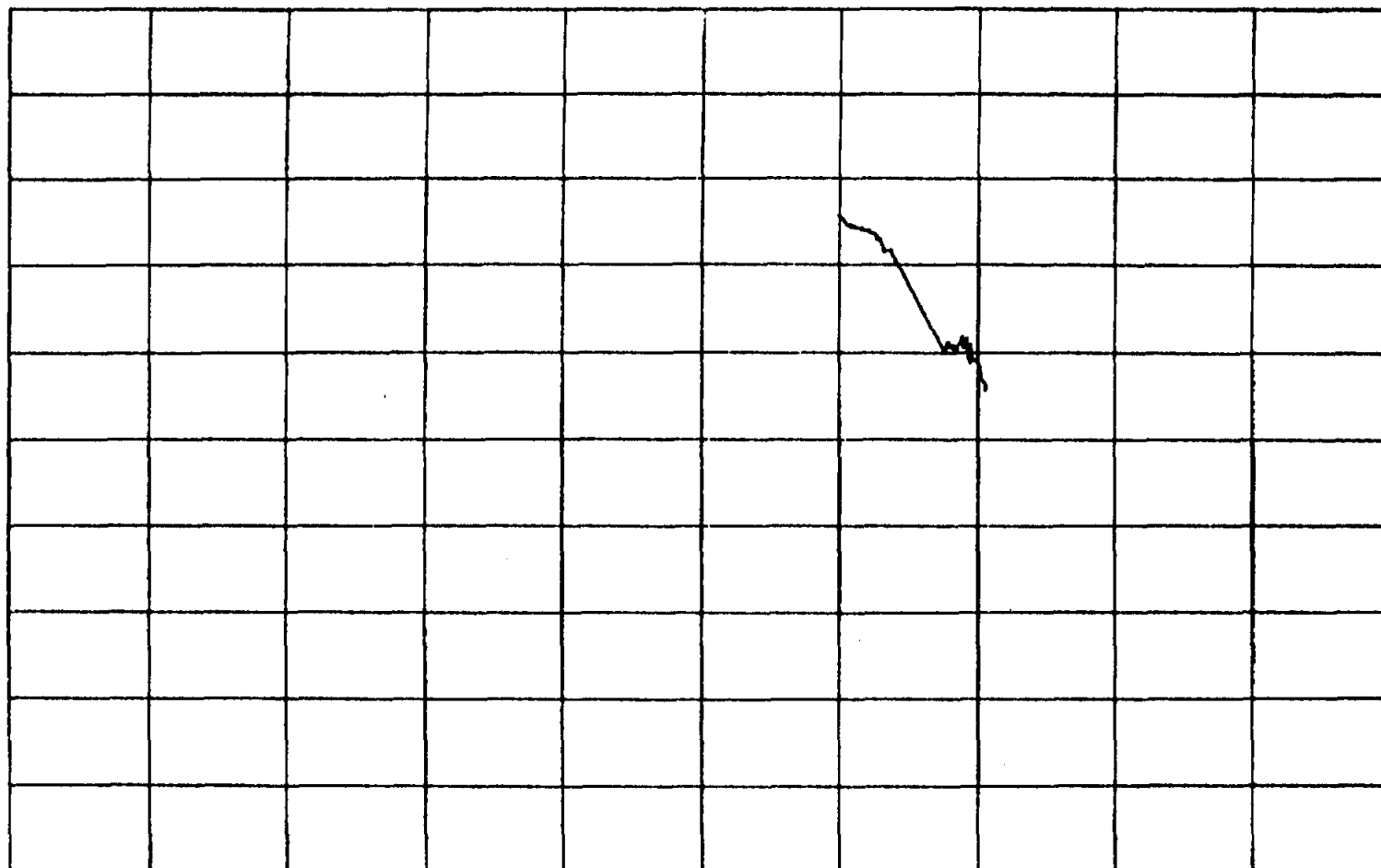


0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 186 00 00 00.000

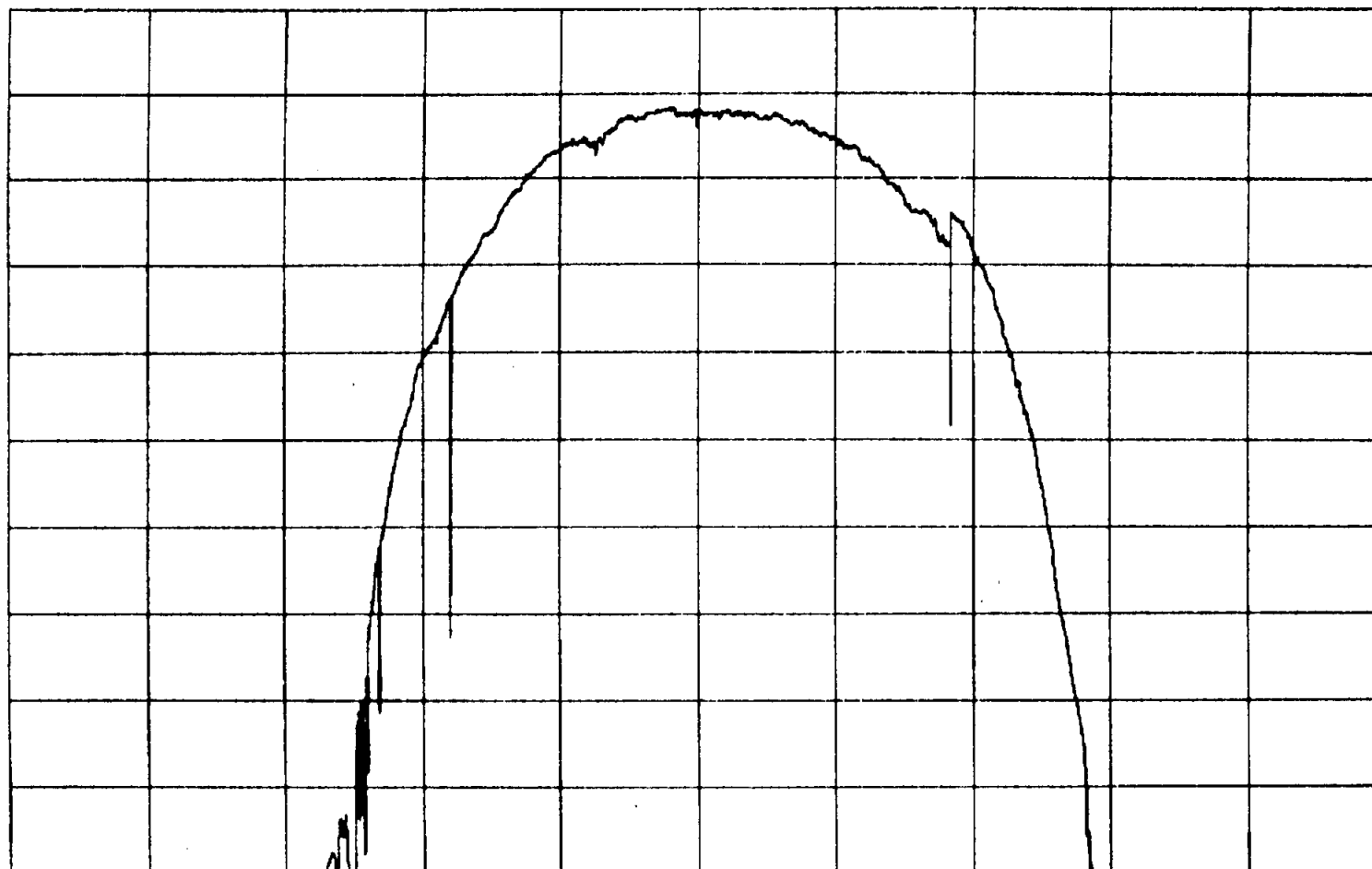
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00 1500.00
ATX1817 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 187 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

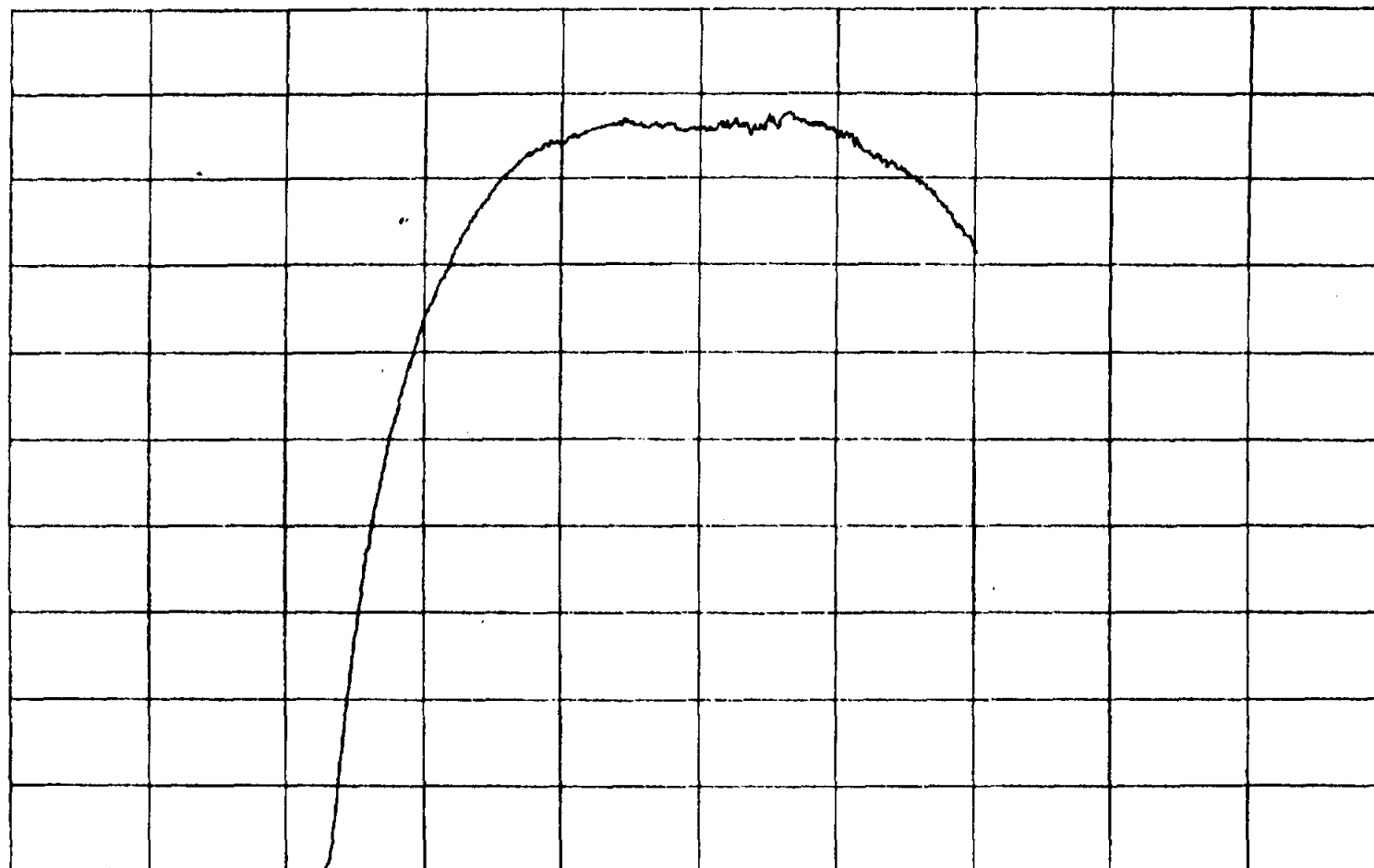
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 188 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

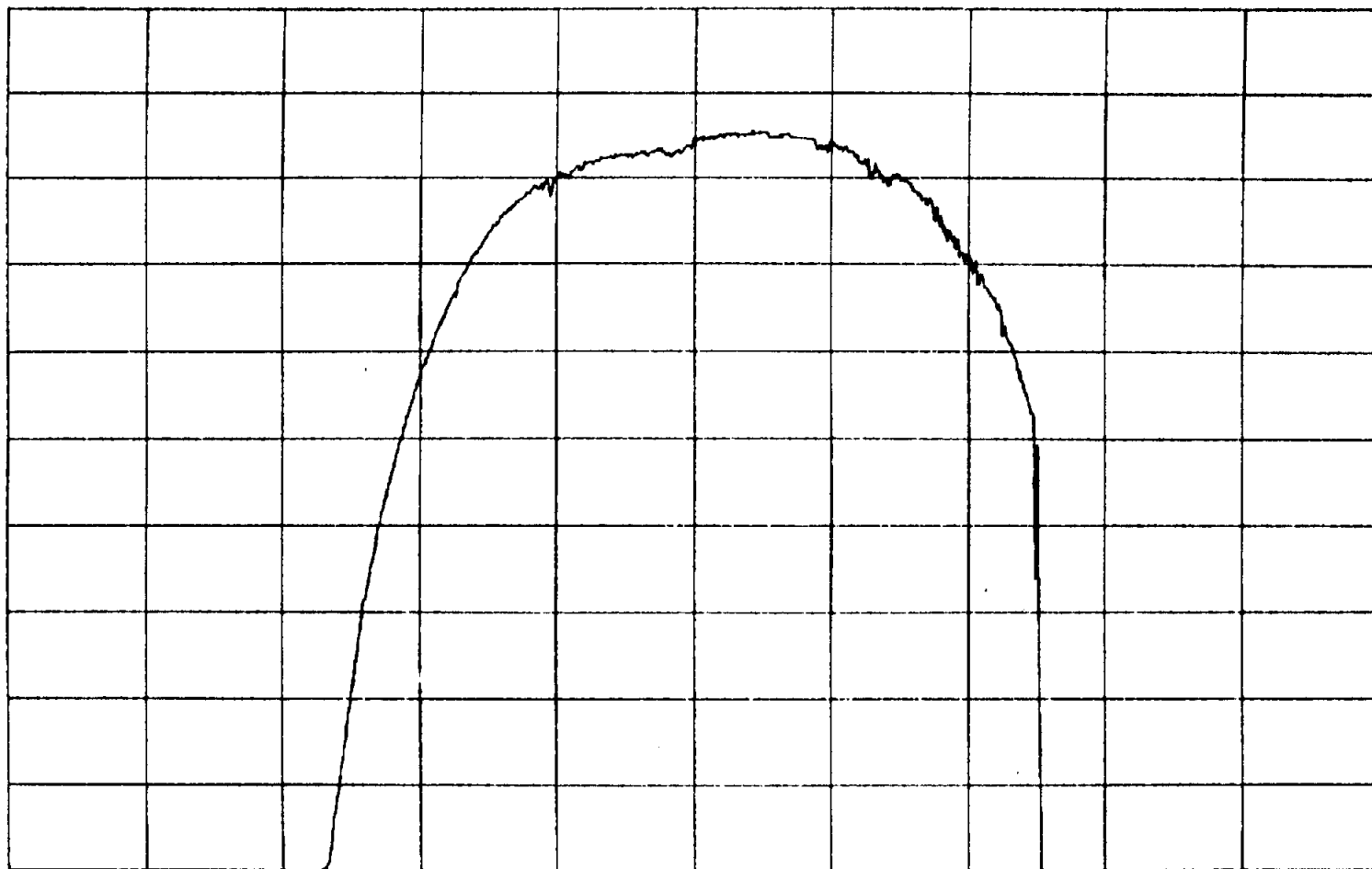


0.00
ATX1817 NIP (NORTH STATION)

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 189 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

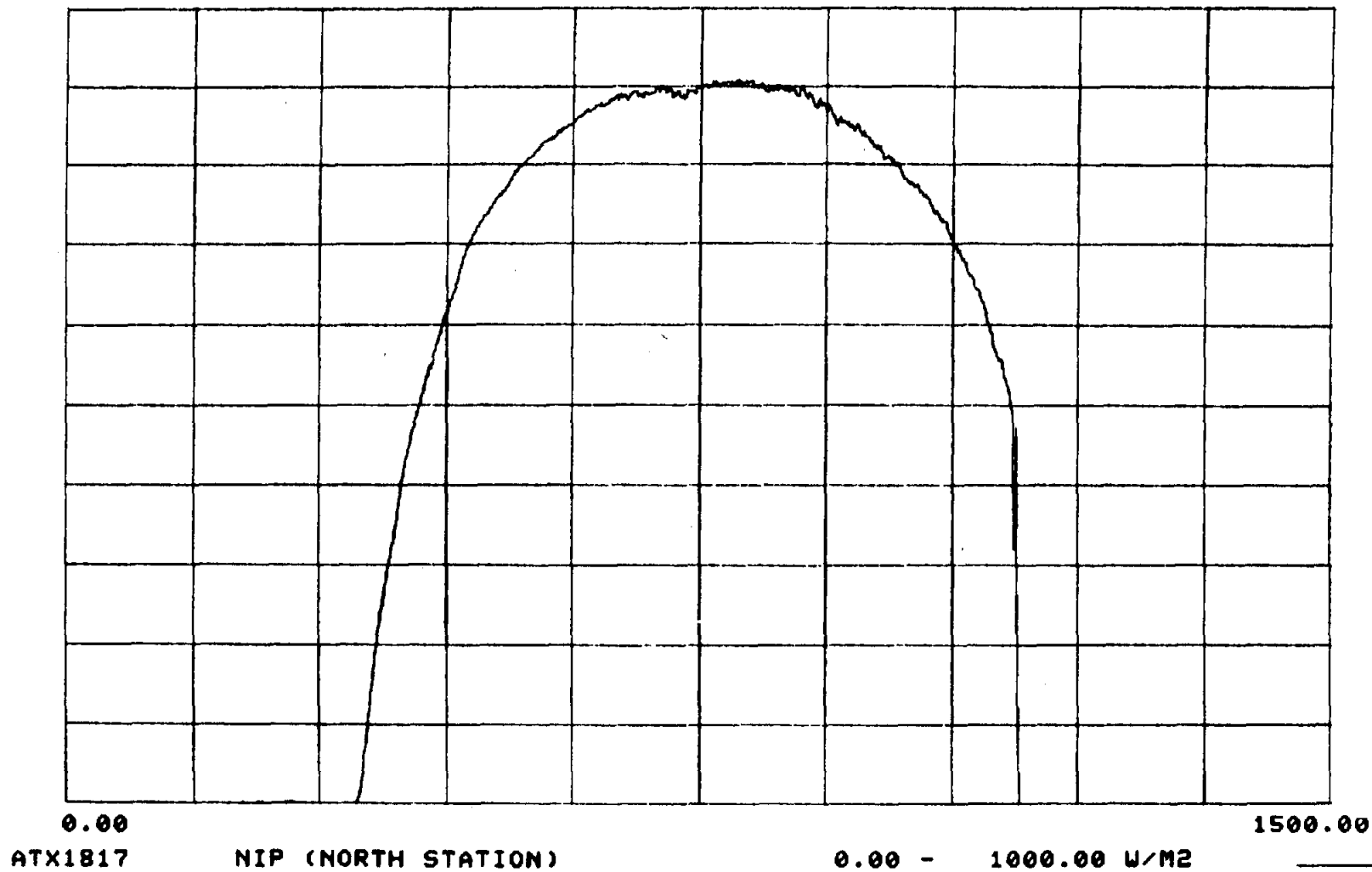
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

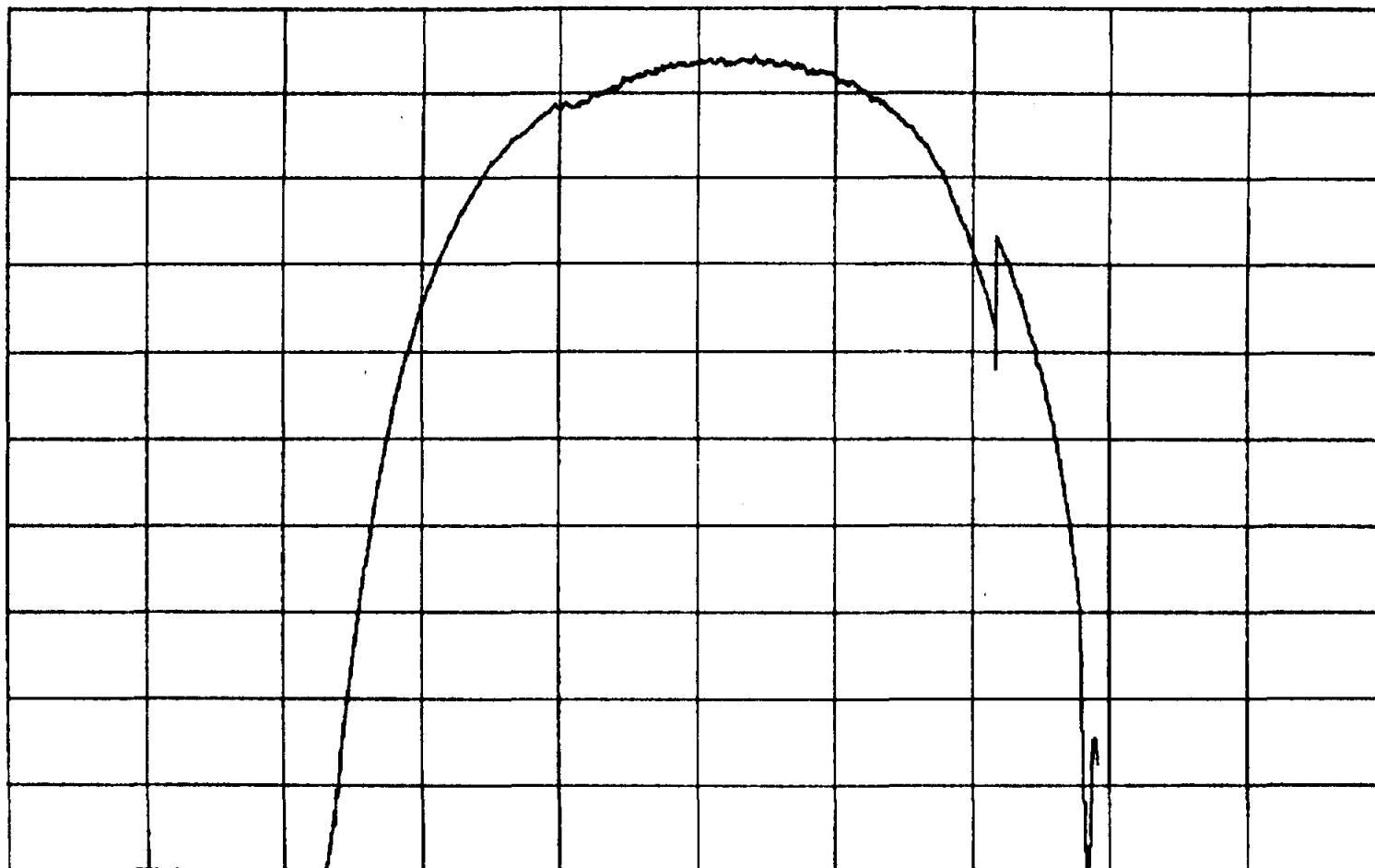
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 190 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 191 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

\$\$ATX1817A

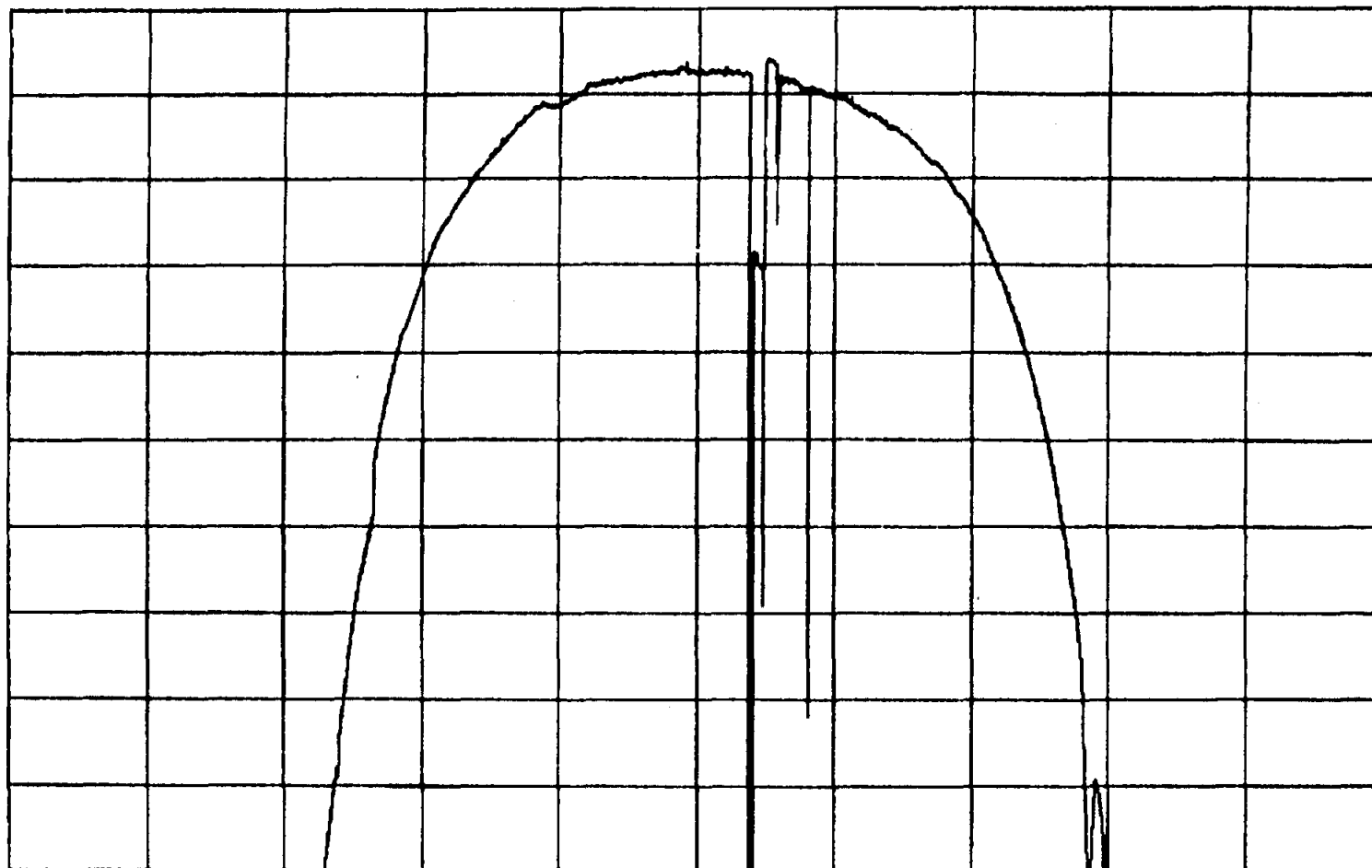
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 192 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

***ATX1817A

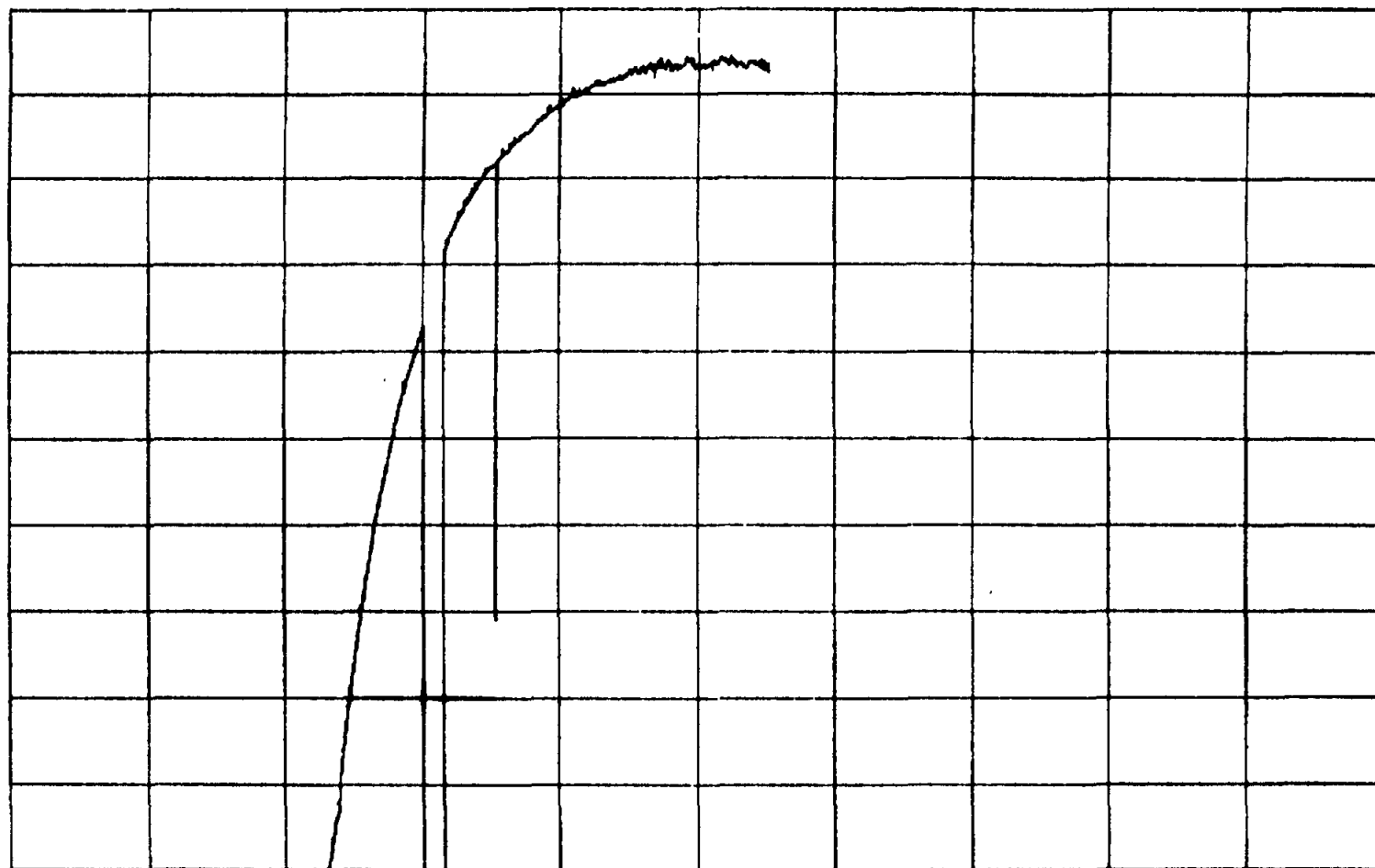
CNTRL ROOM ROOF NIP

0.00 - 1000.00 U/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 193 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

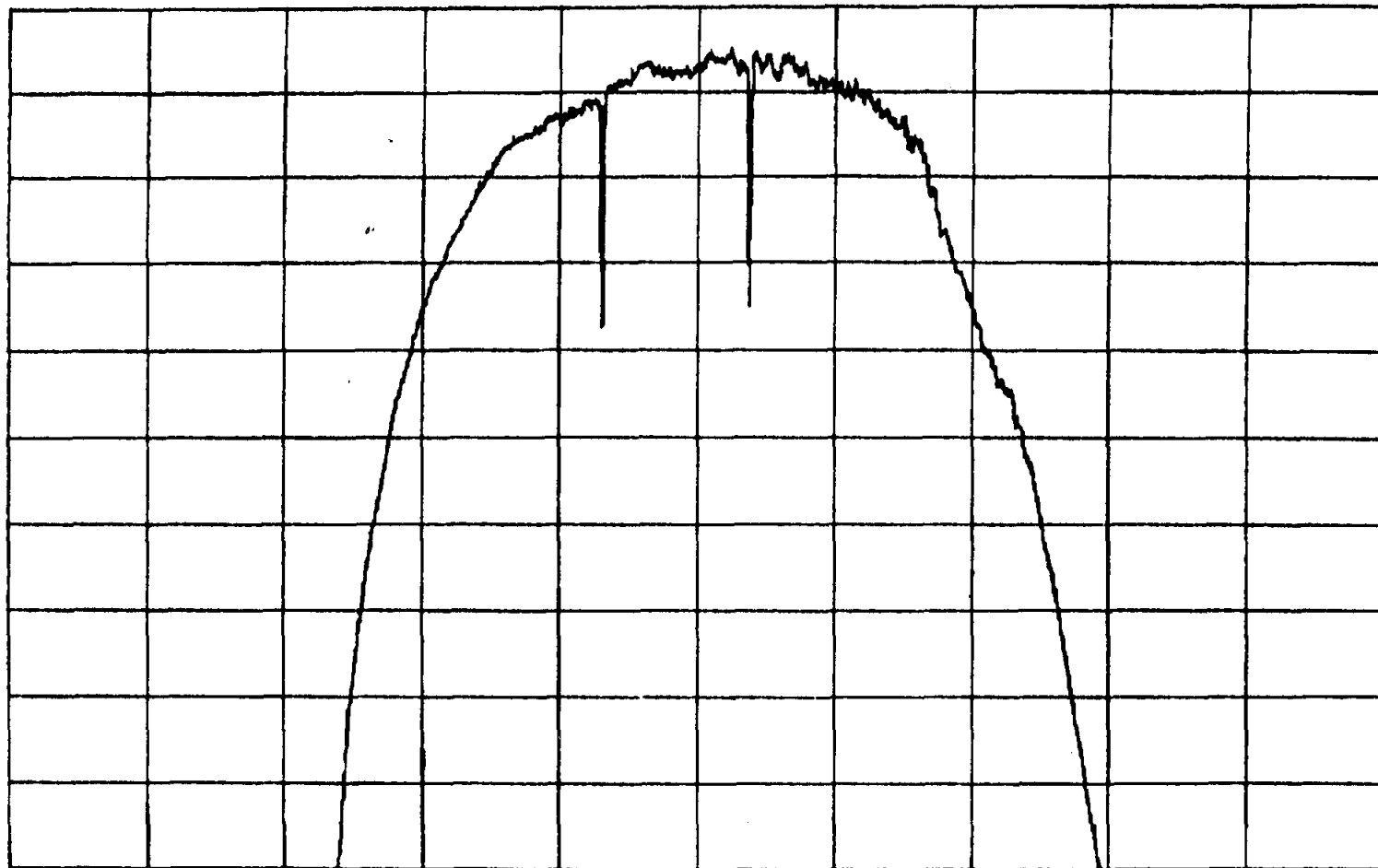
1500.06

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 197 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

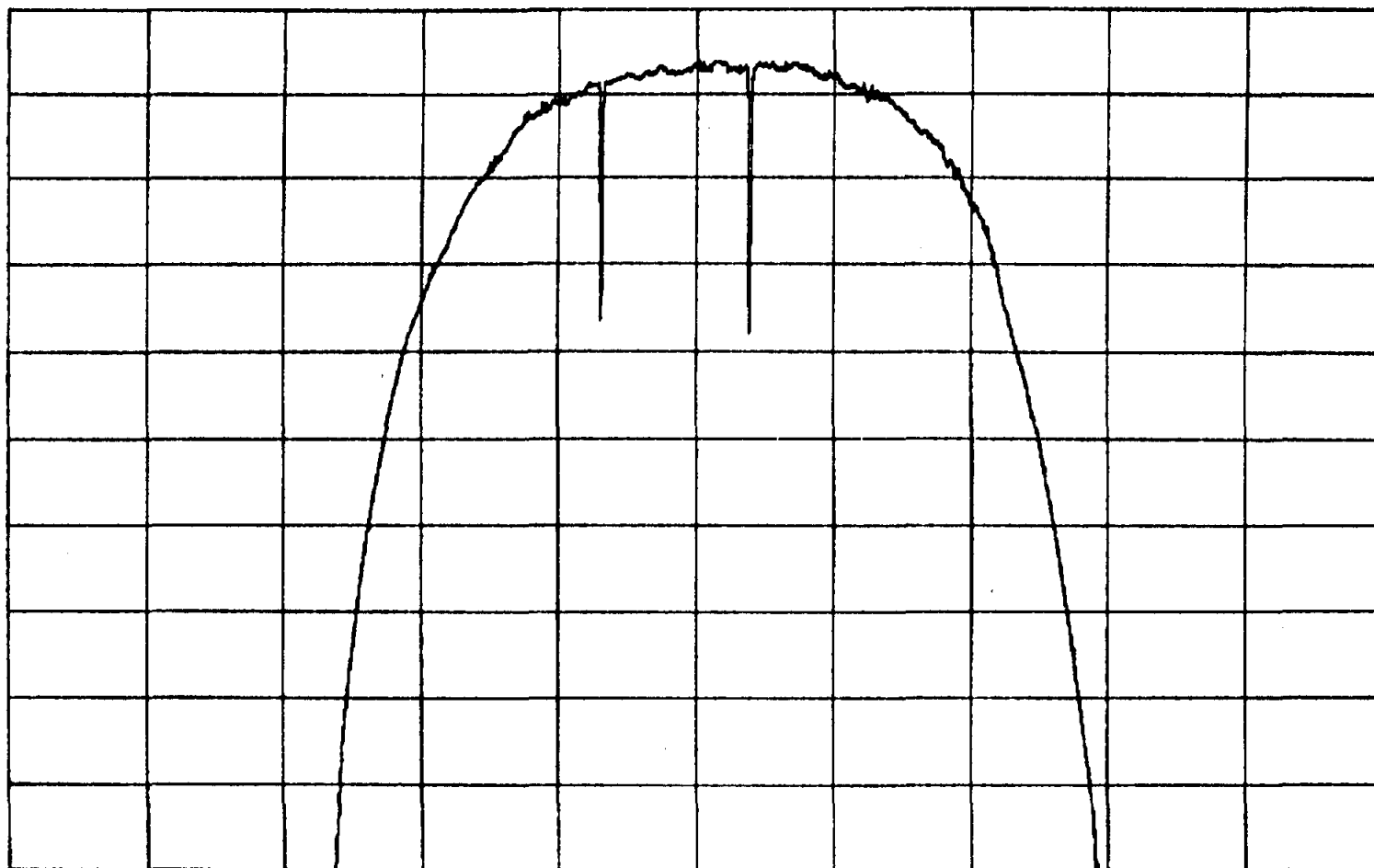
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 198 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 199 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

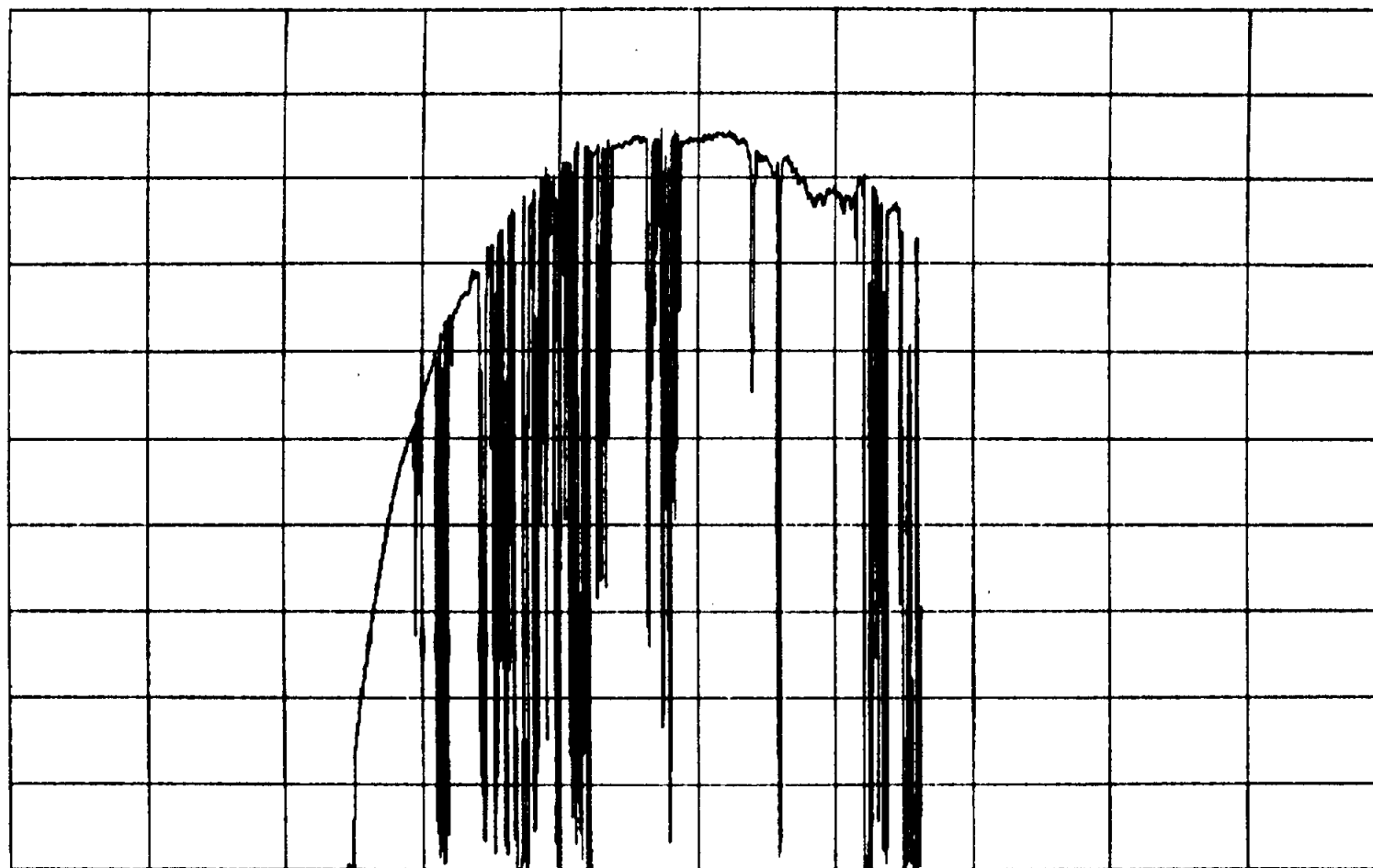
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 202 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

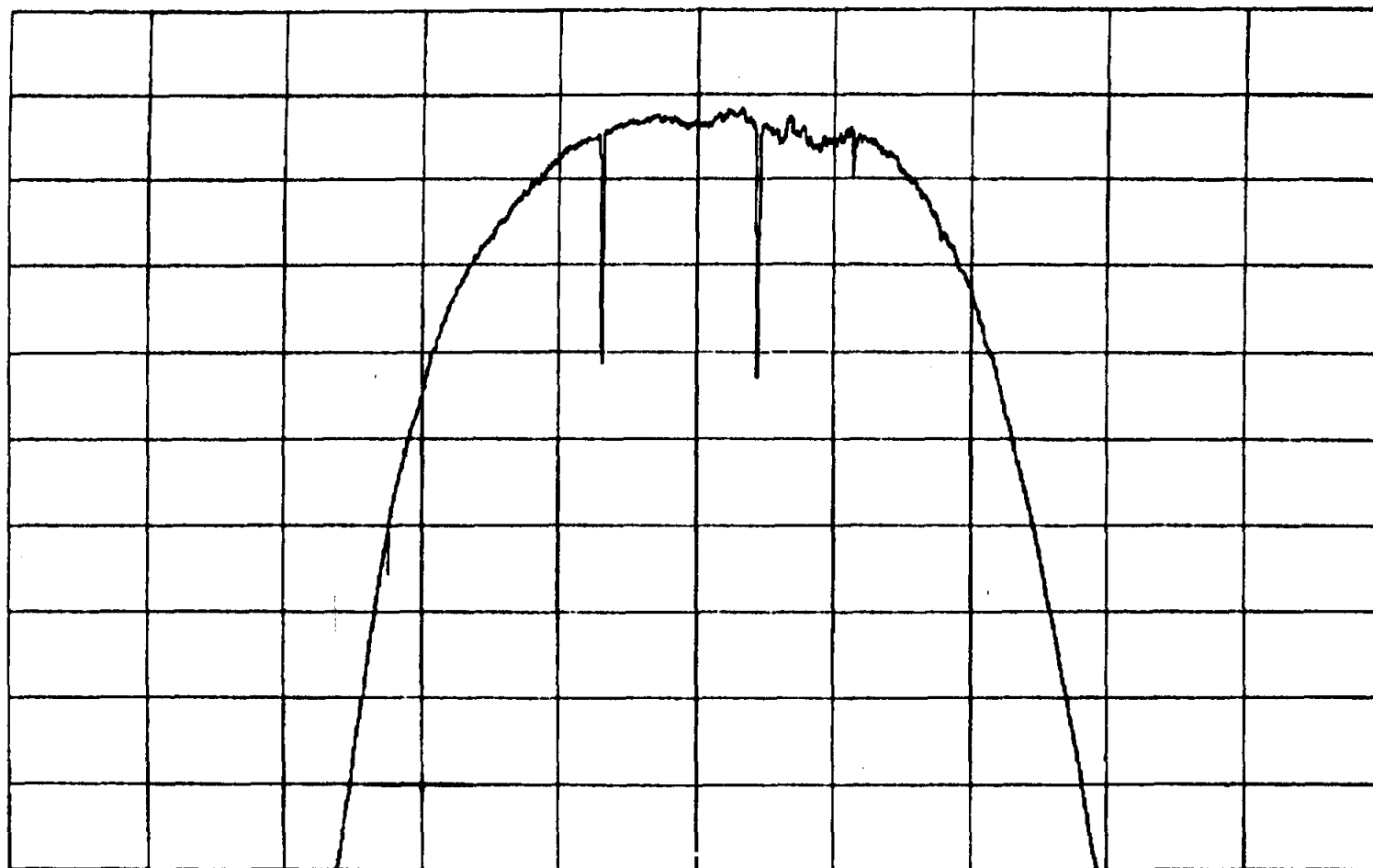
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 203 00 00 00.000

NTH SAMPLE AVERAGE * 1
FOR 1500.0000 MINUTE(S)



0.00
\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT

PLOT # MISL3

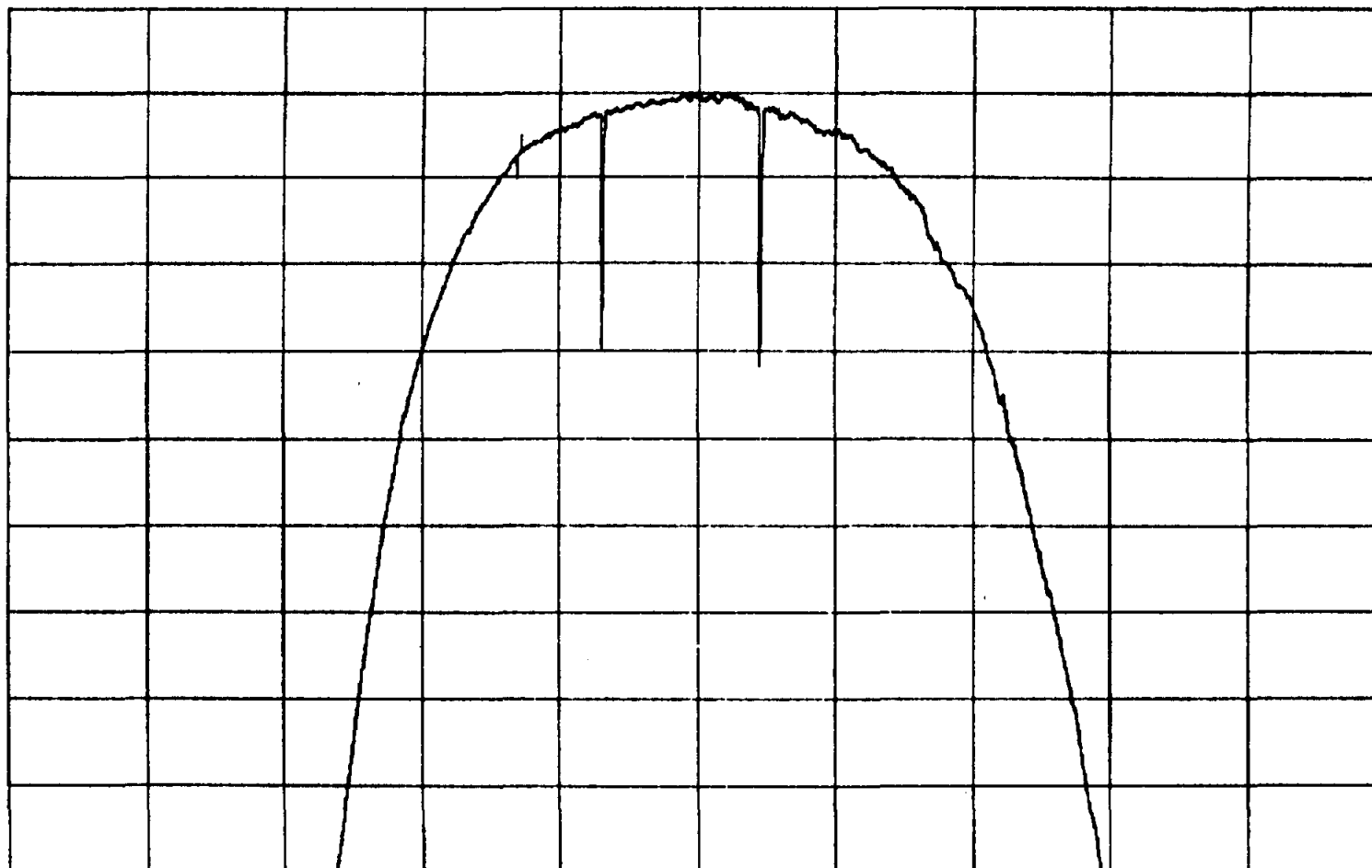
NTH SAMPLE AVERAGE =

1

REFERENCE TIME: 204 00 00 00.000

FOR

1500.0000 MINUTE(S)



0.00

1500.00

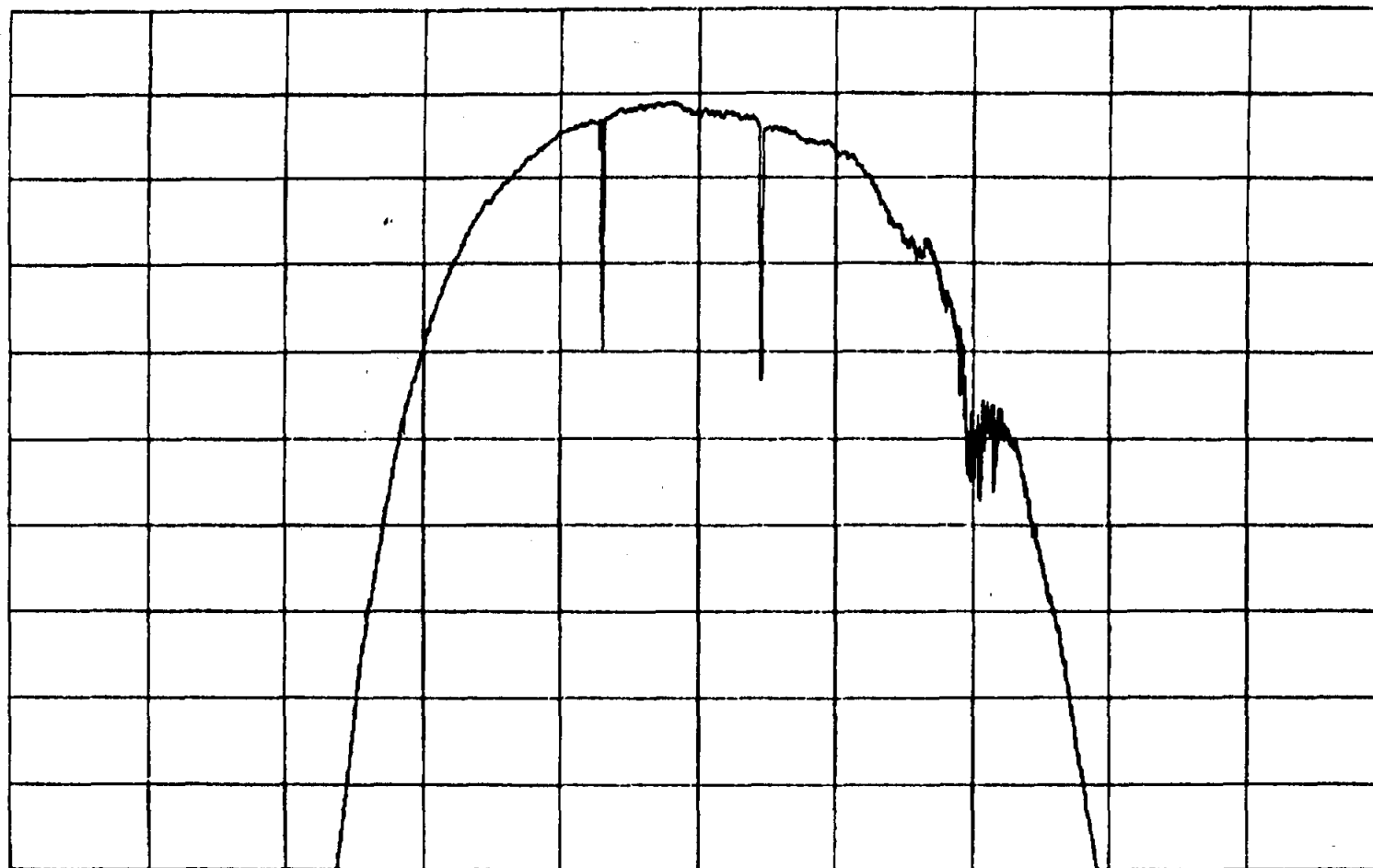
STATX1817A

CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 205 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

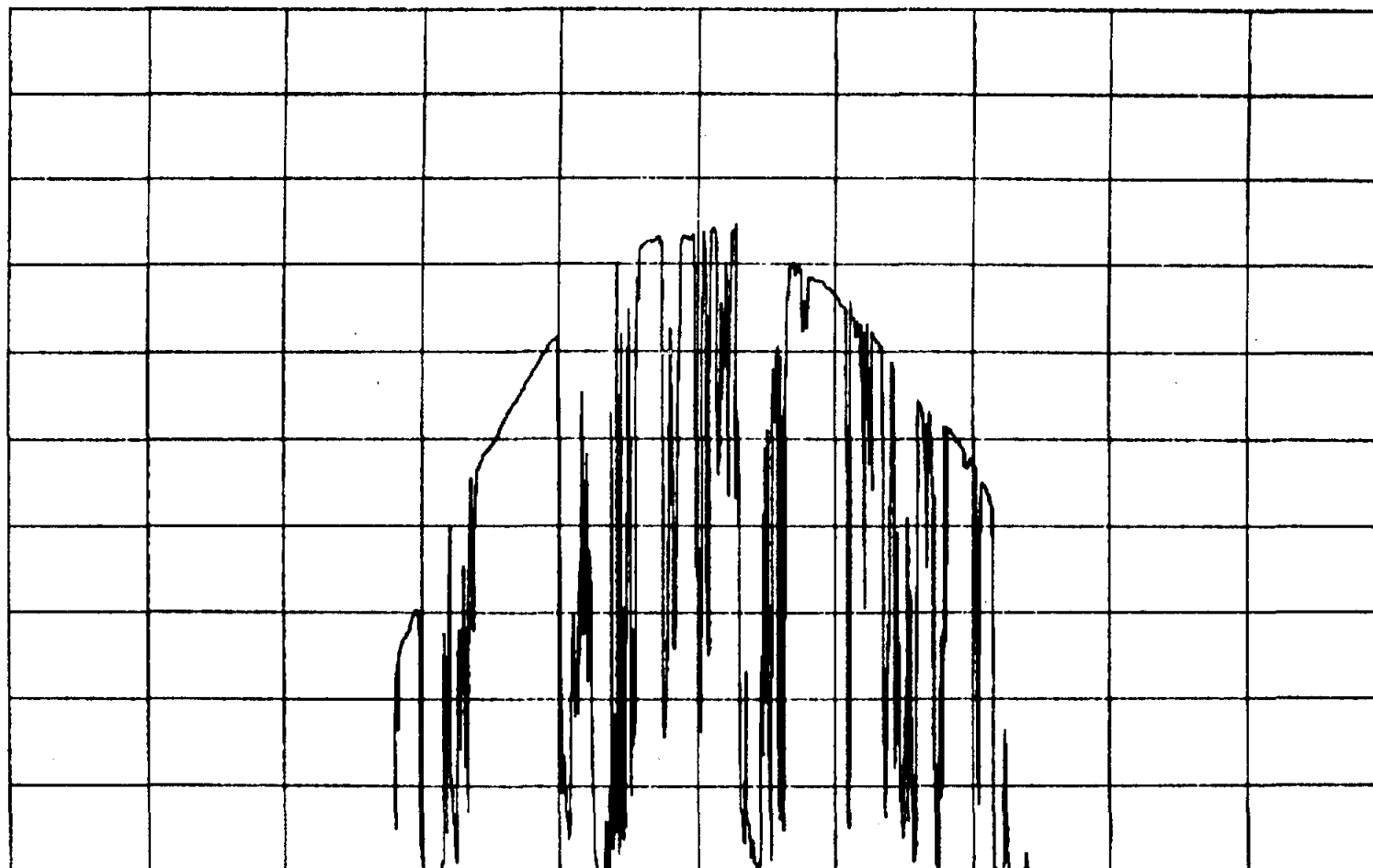
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 211 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

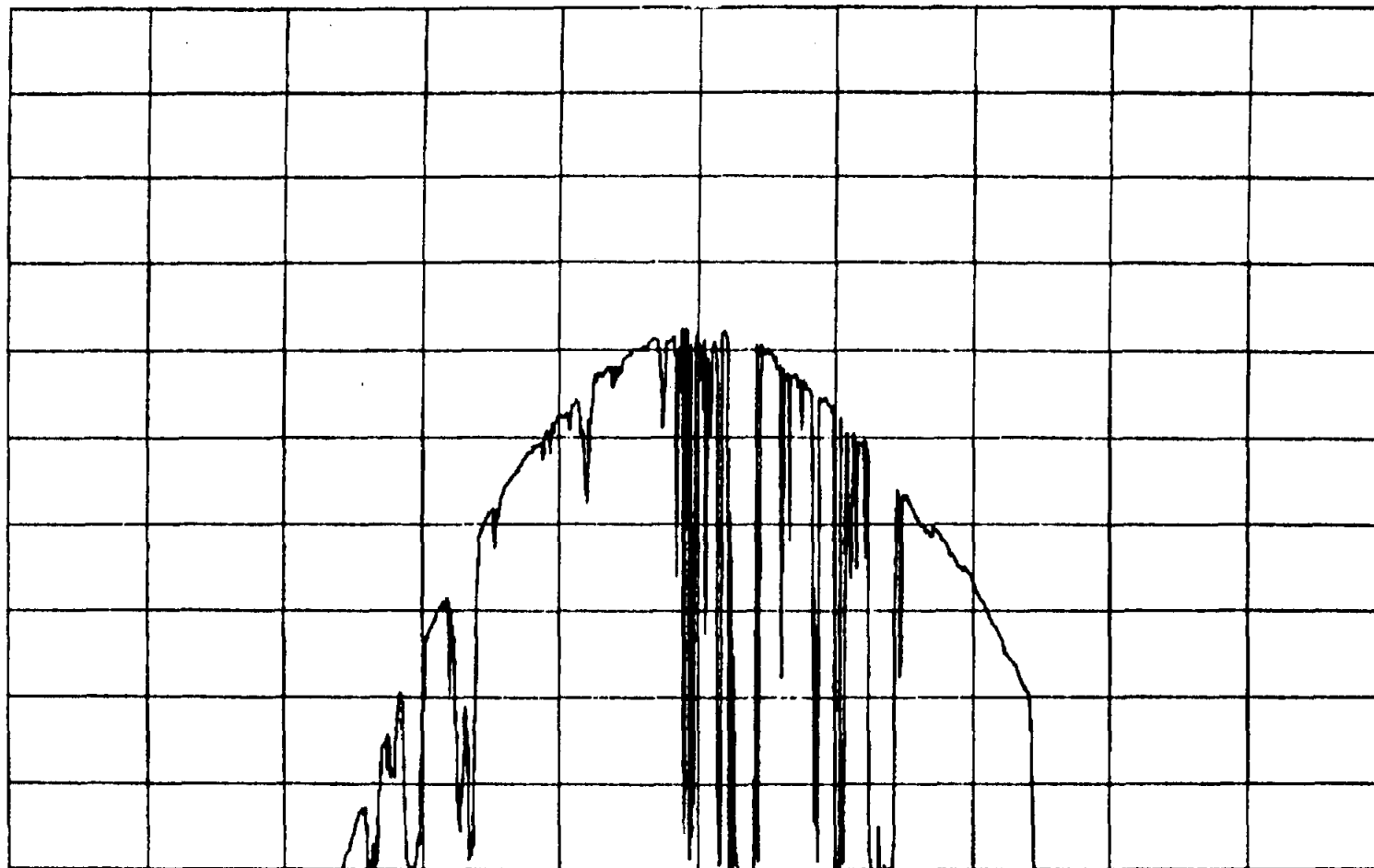
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 212 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

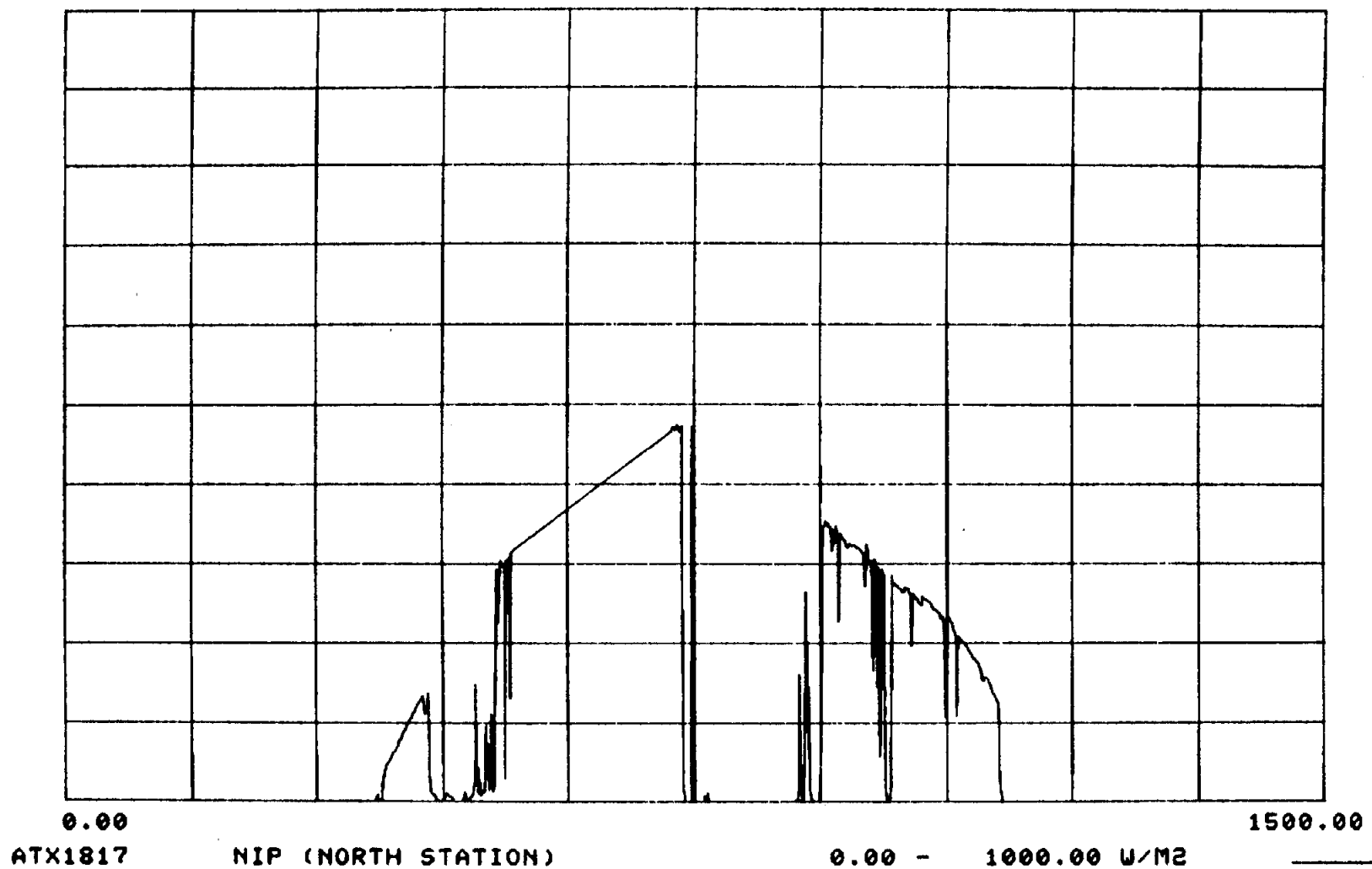
NIP (NORTH STATION)

0.00 - 1000.00 U/M2

1500.00

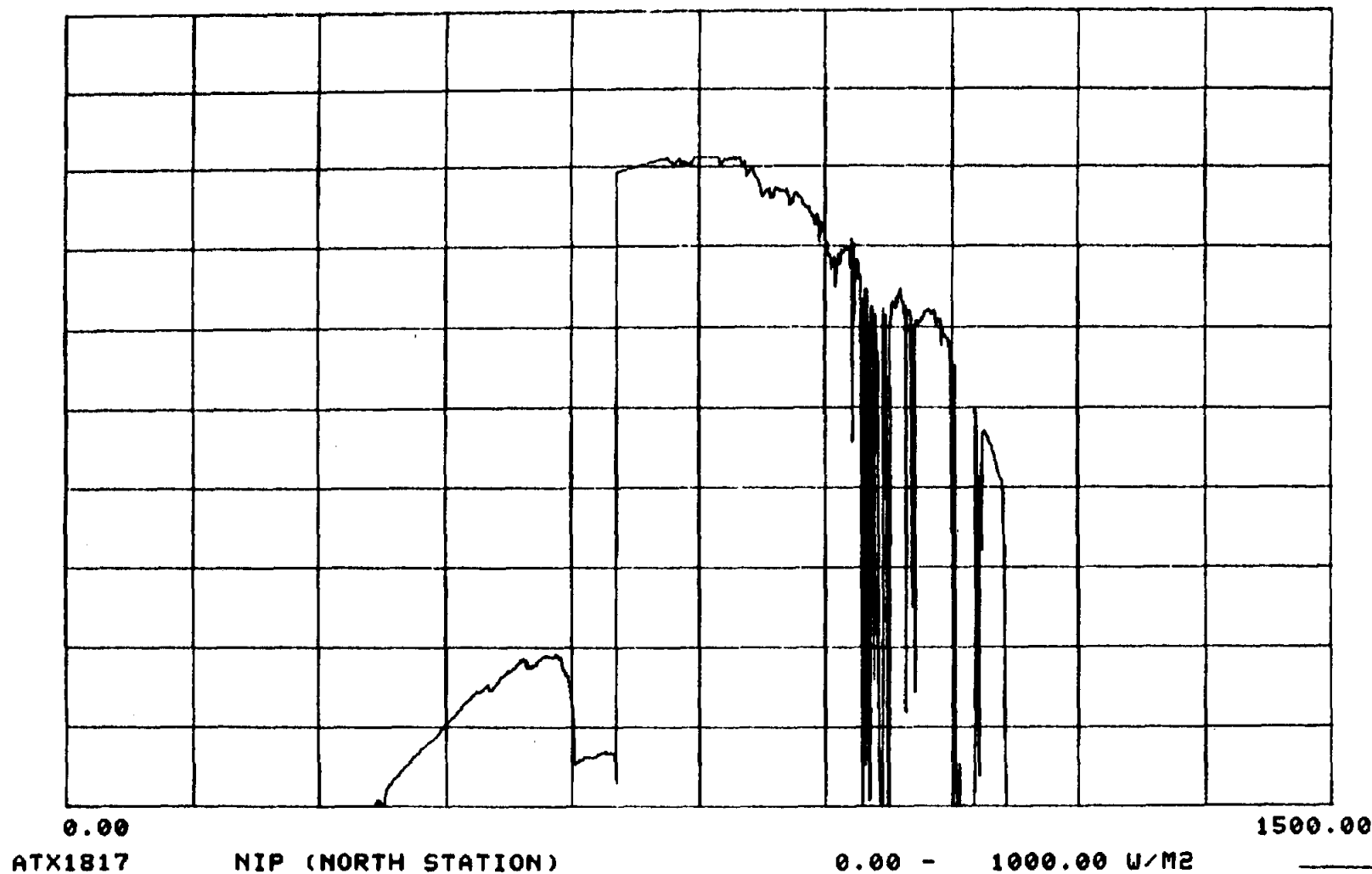
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 213 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



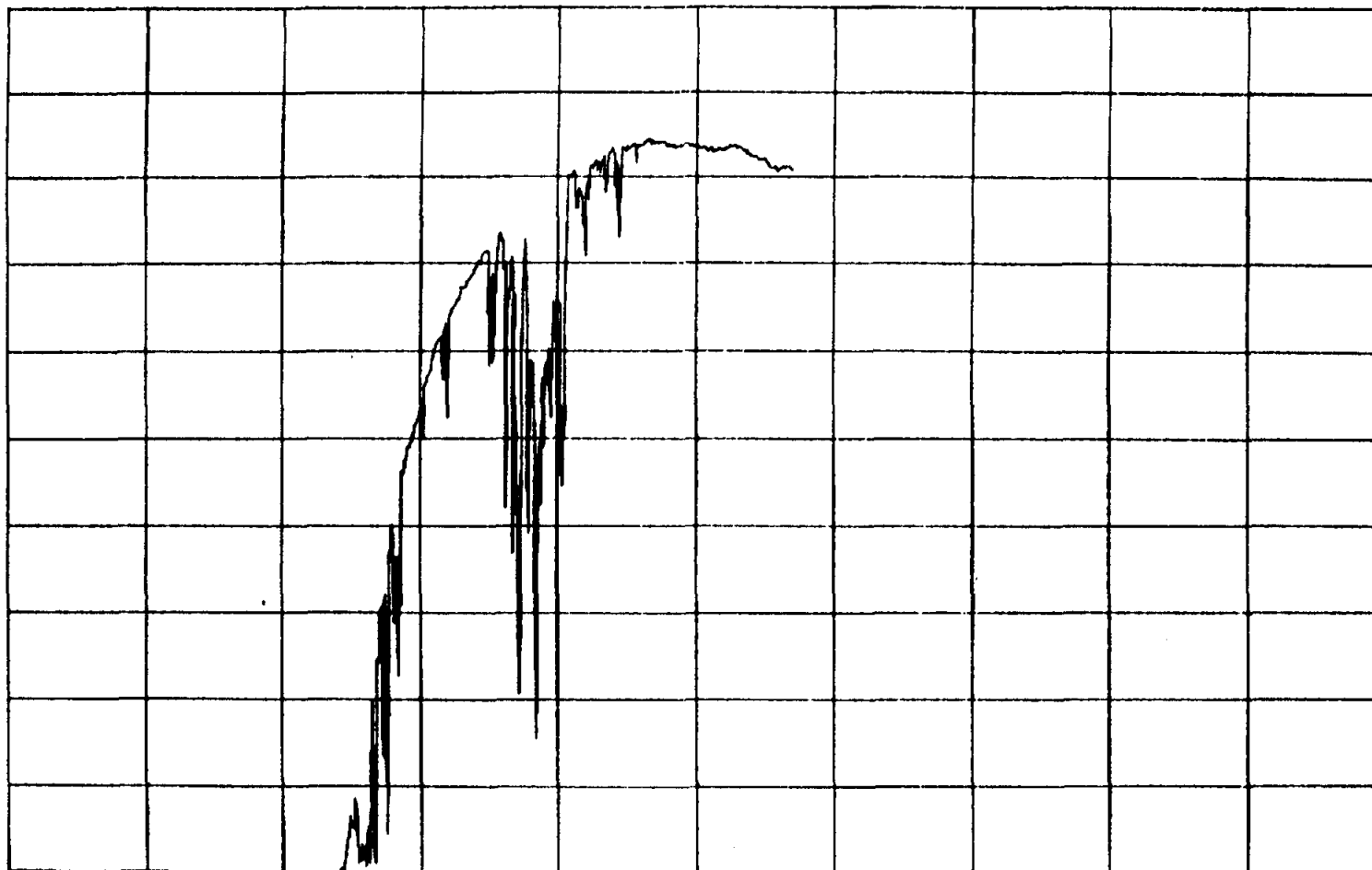
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 214 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 216 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

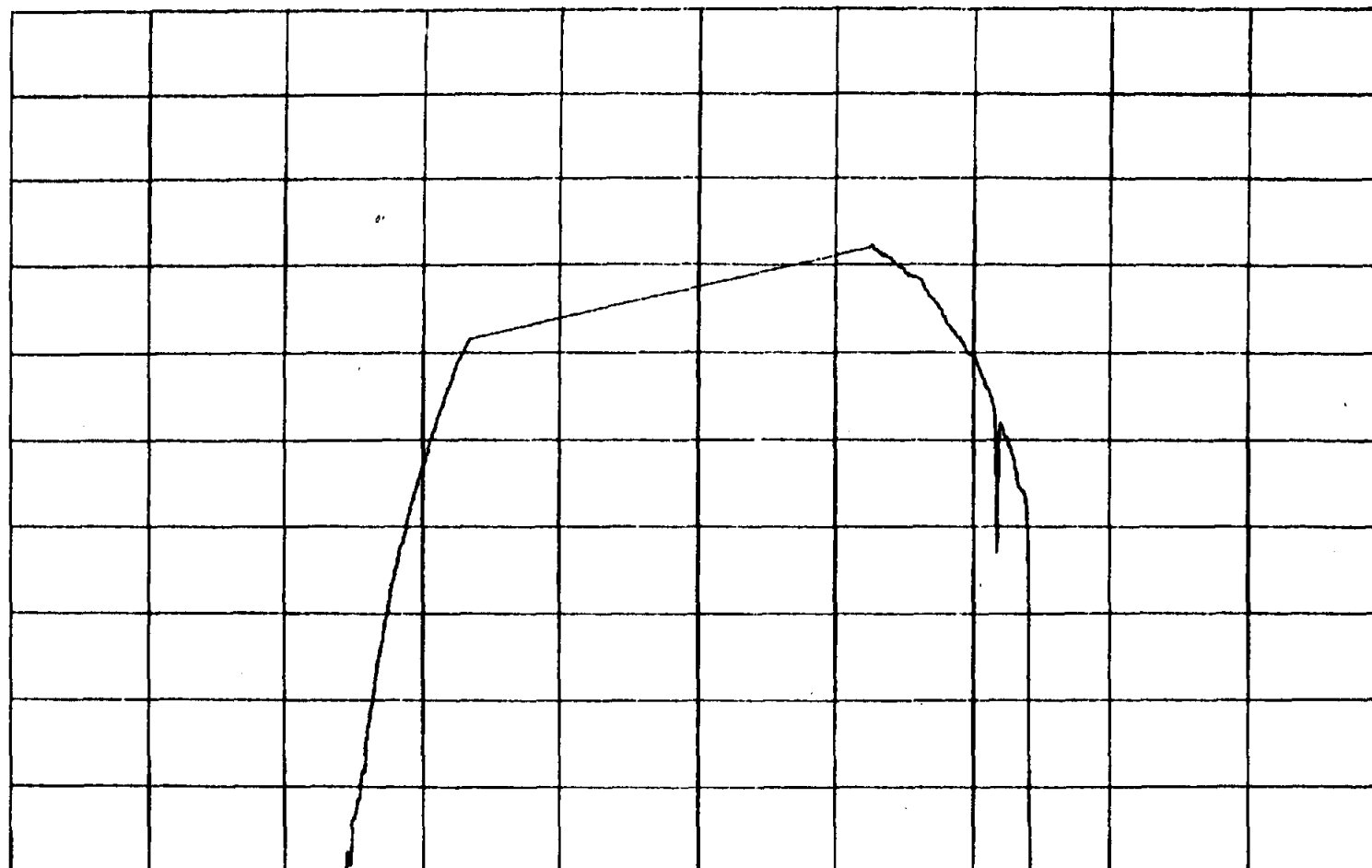


0.00
ATX1817 NIP (NORTH STATION)

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 217 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

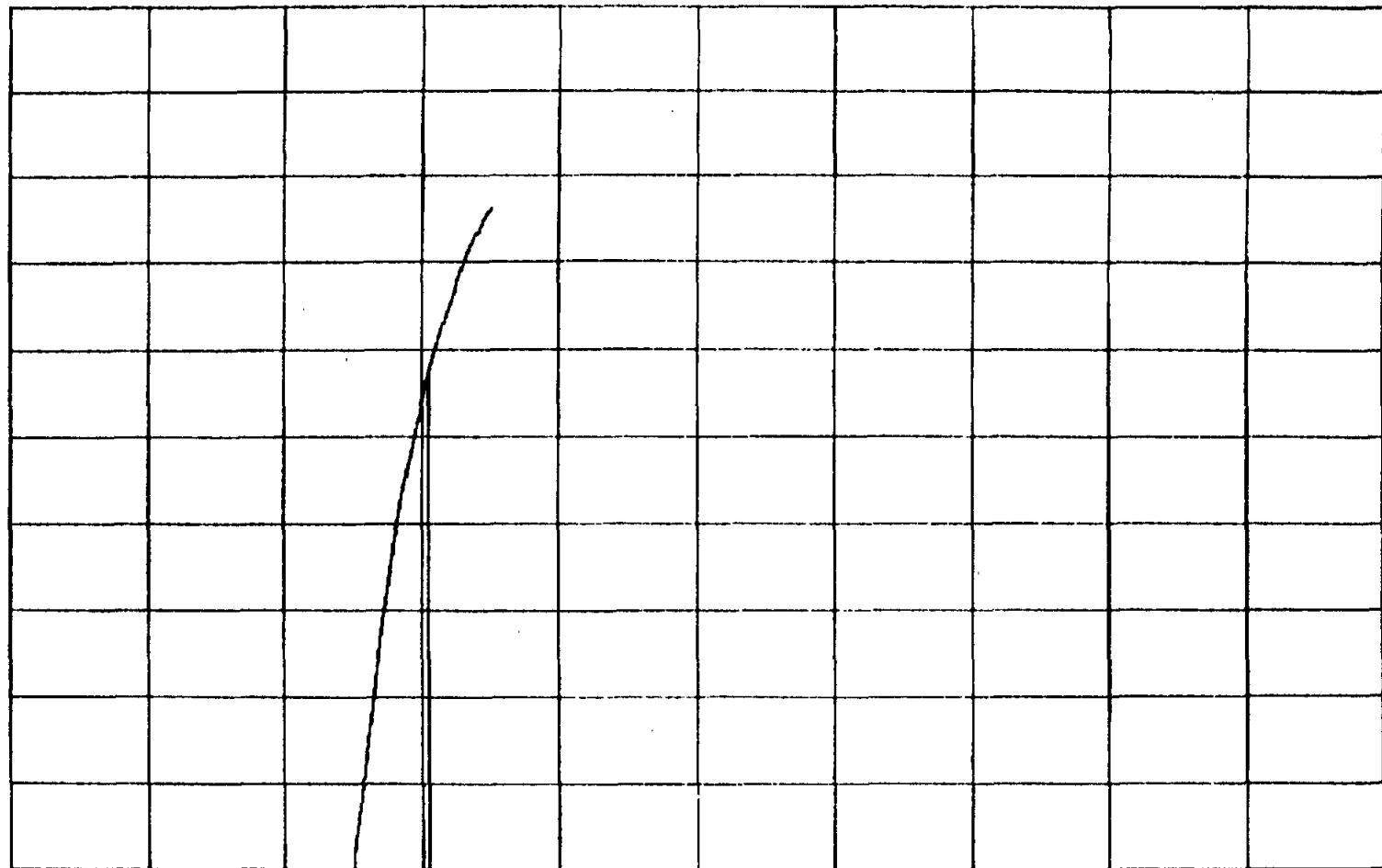
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 234 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

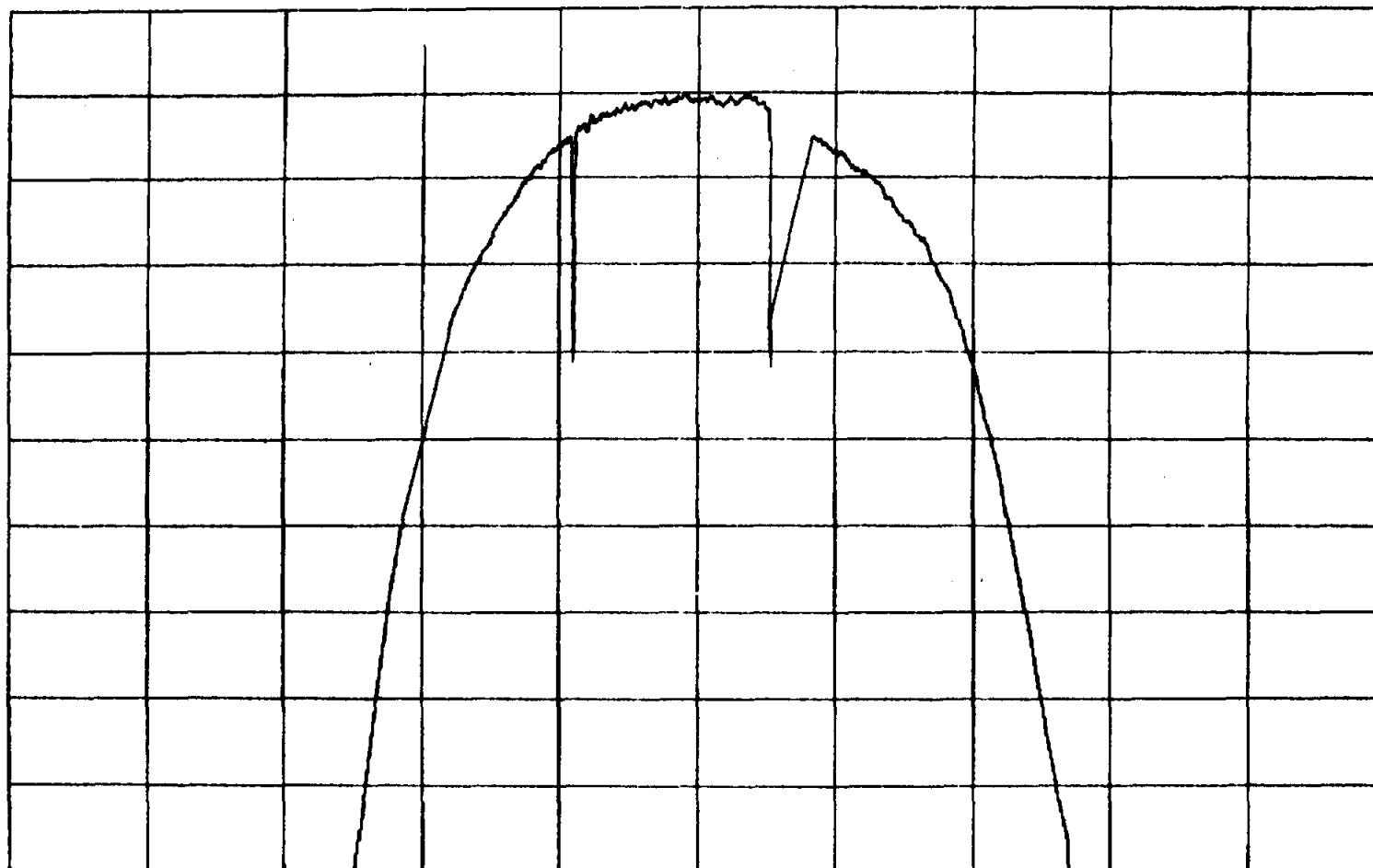
1500.00

***ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 235 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

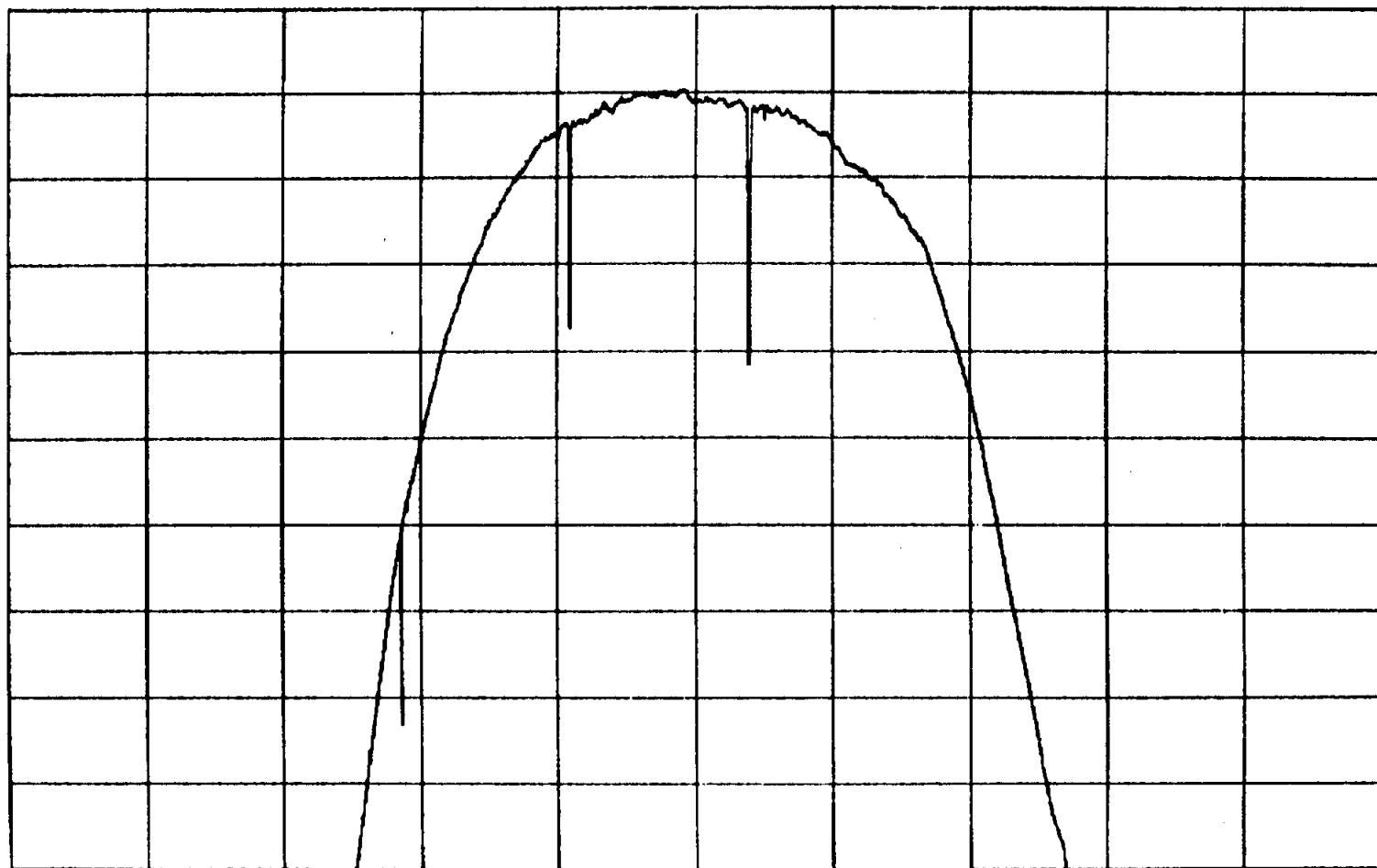
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 236 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)

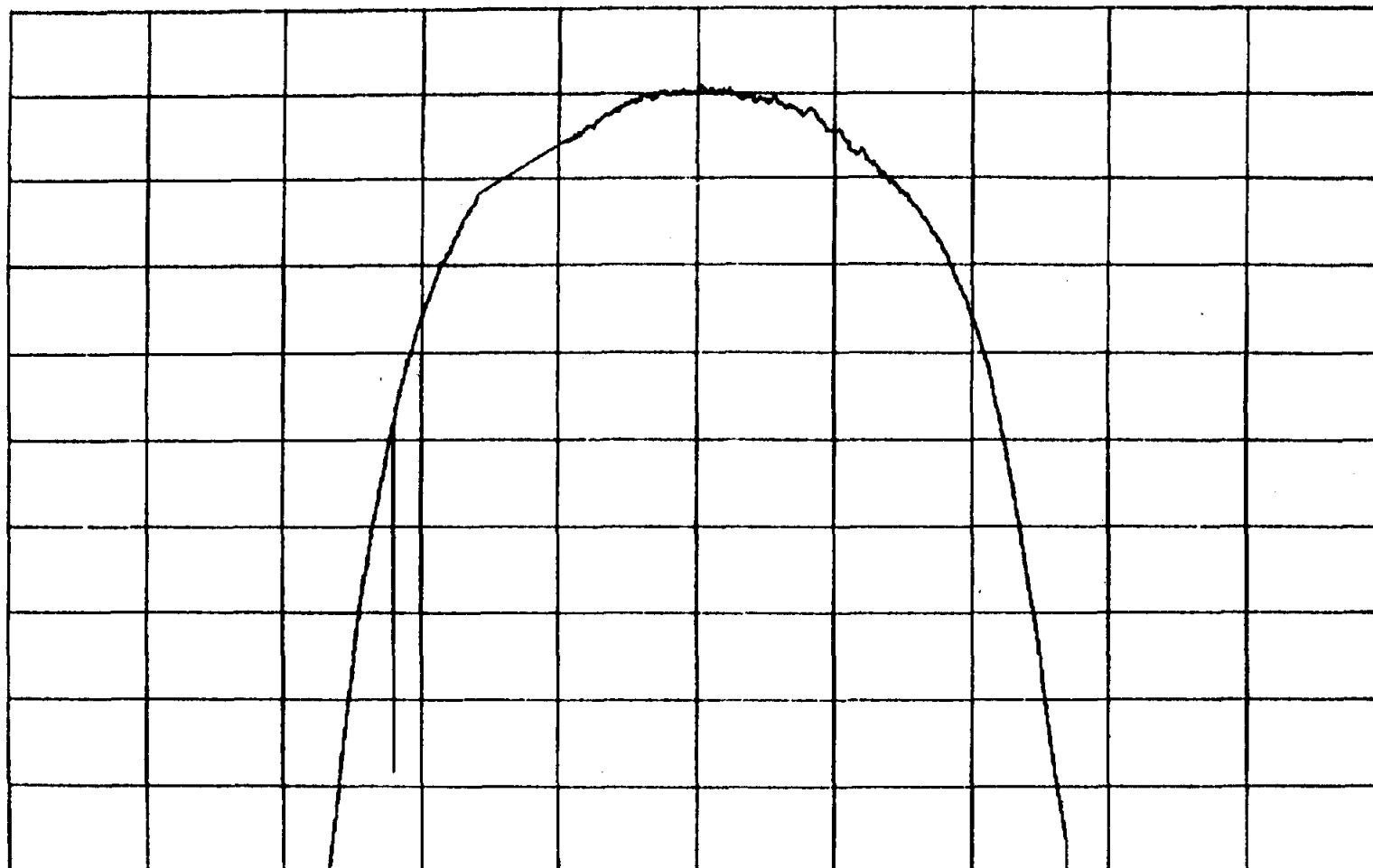


0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 237 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

\$\$ATX1817A

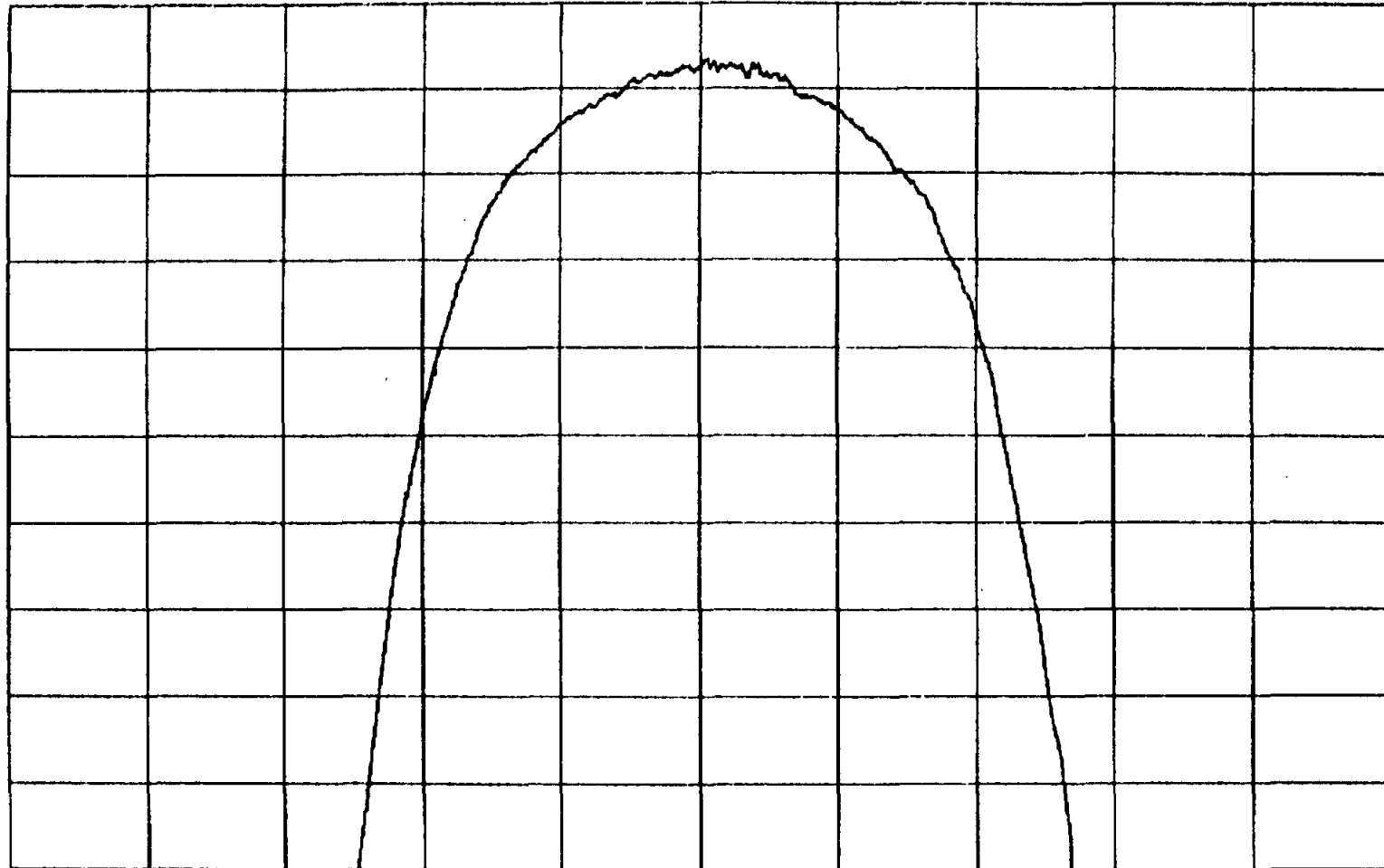
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 238 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

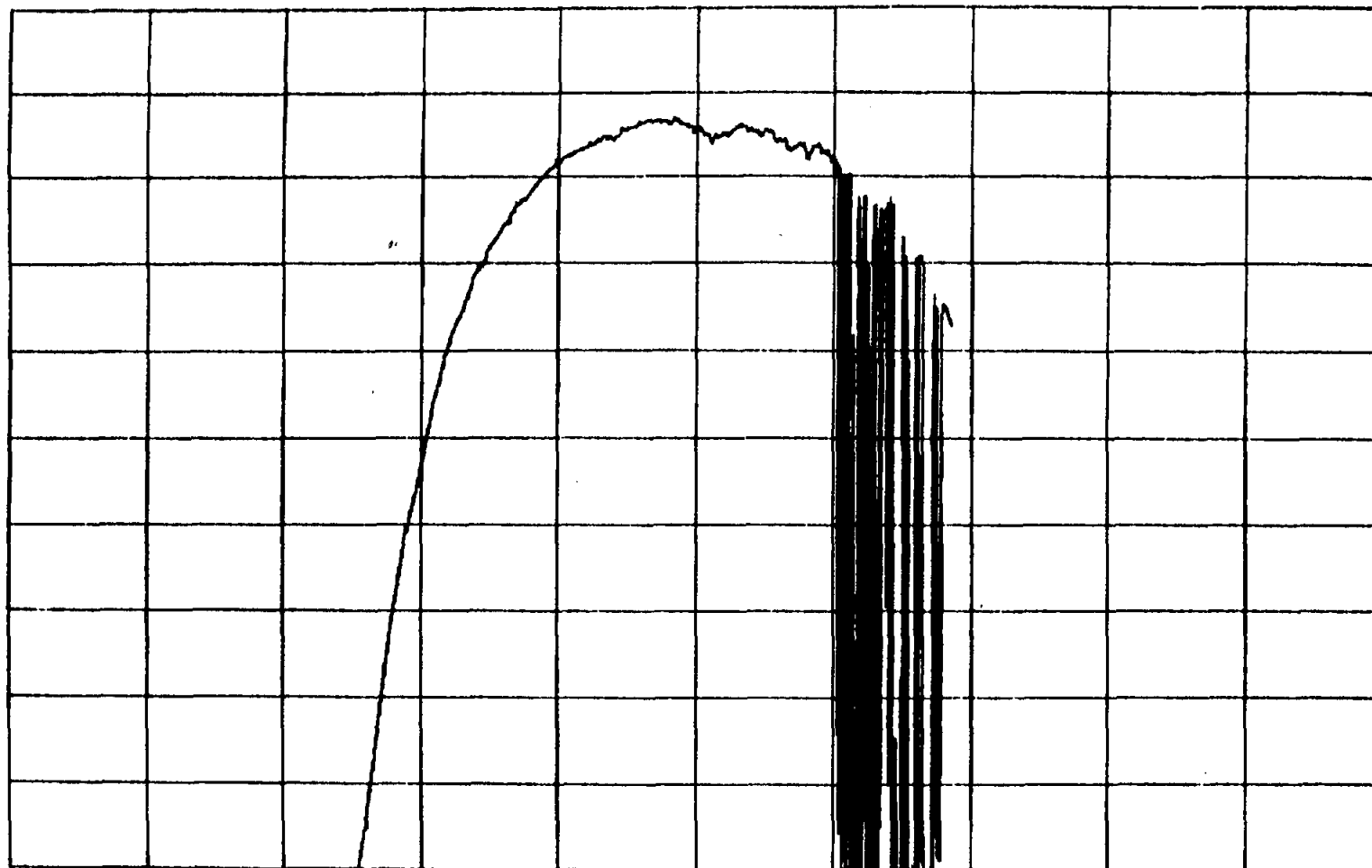
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 239 00 00 00.000

NTH SAMPLE AVERAGE 1
FOR 1500.0000 MINUTE(S)

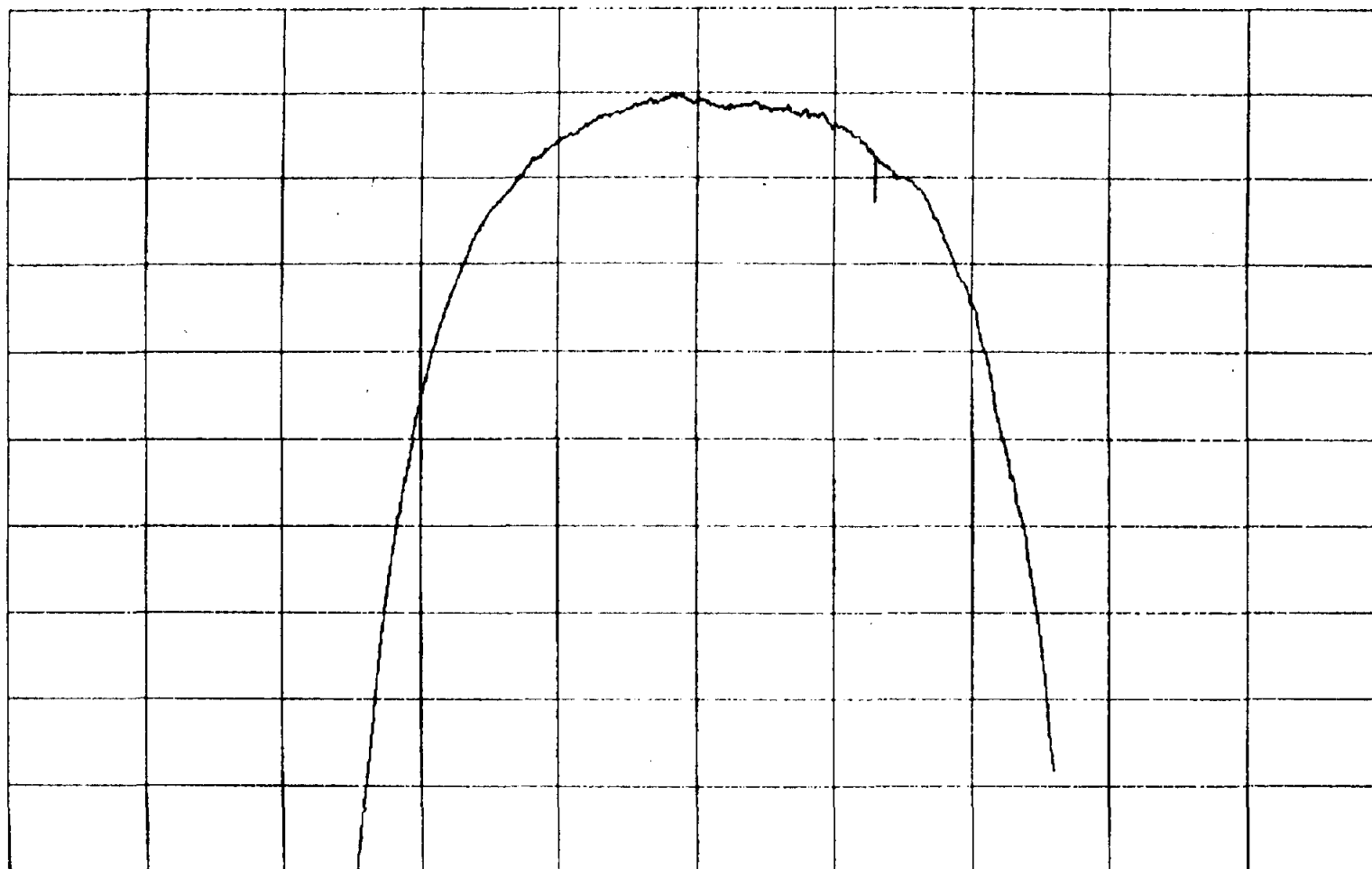


0.00
324
38ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 240 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

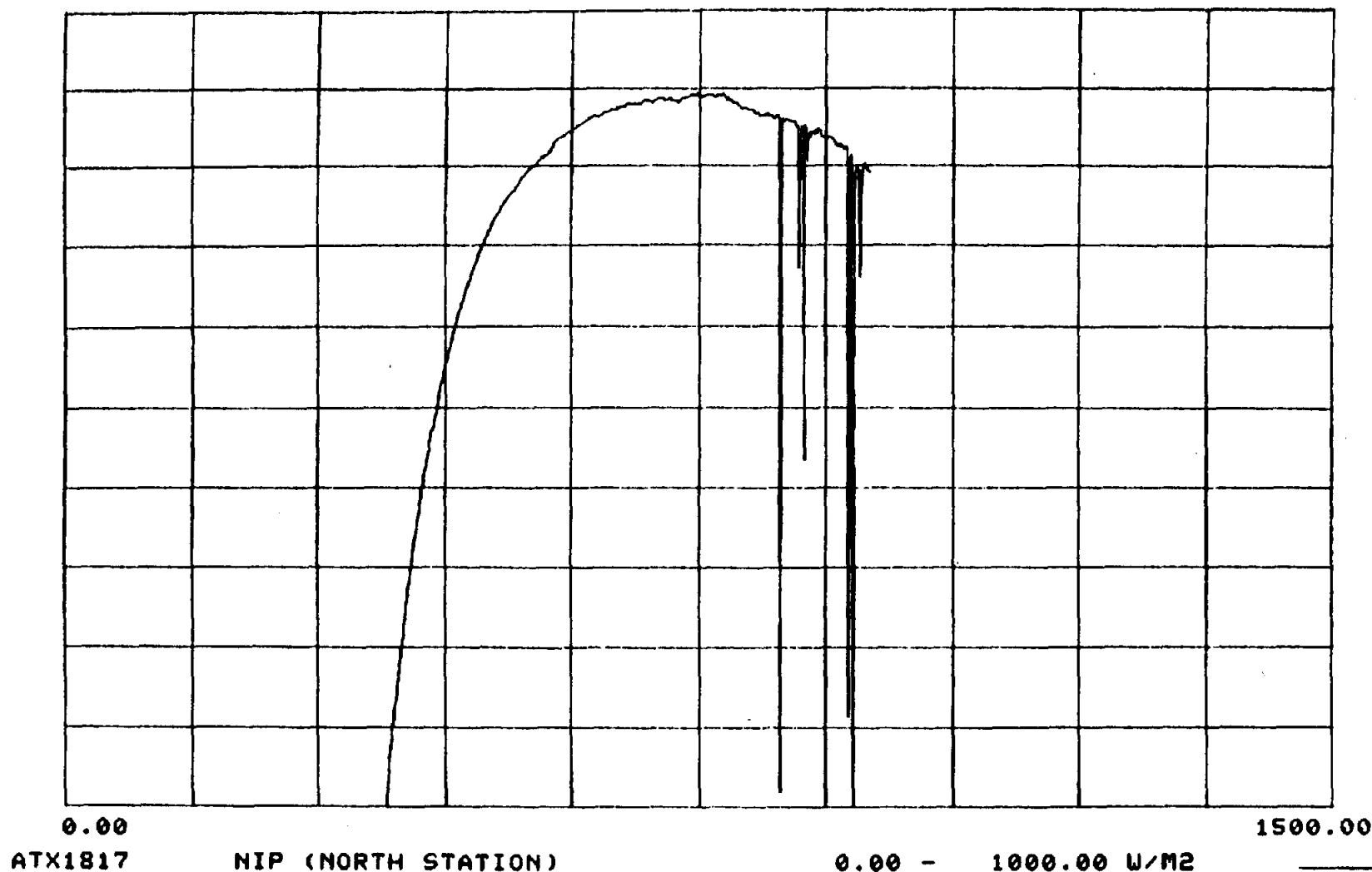
1500.00

**ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

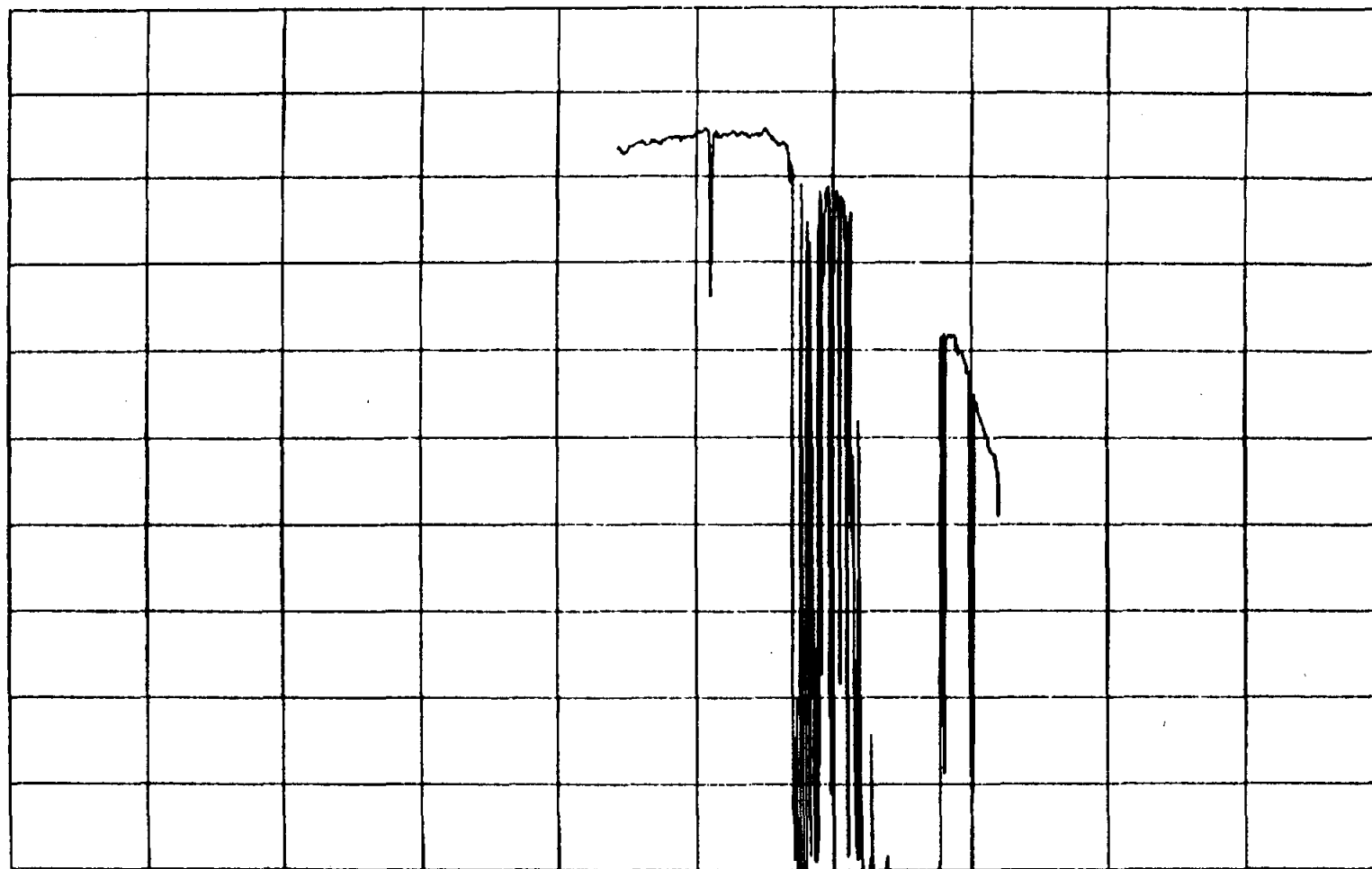
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 241 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 242 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

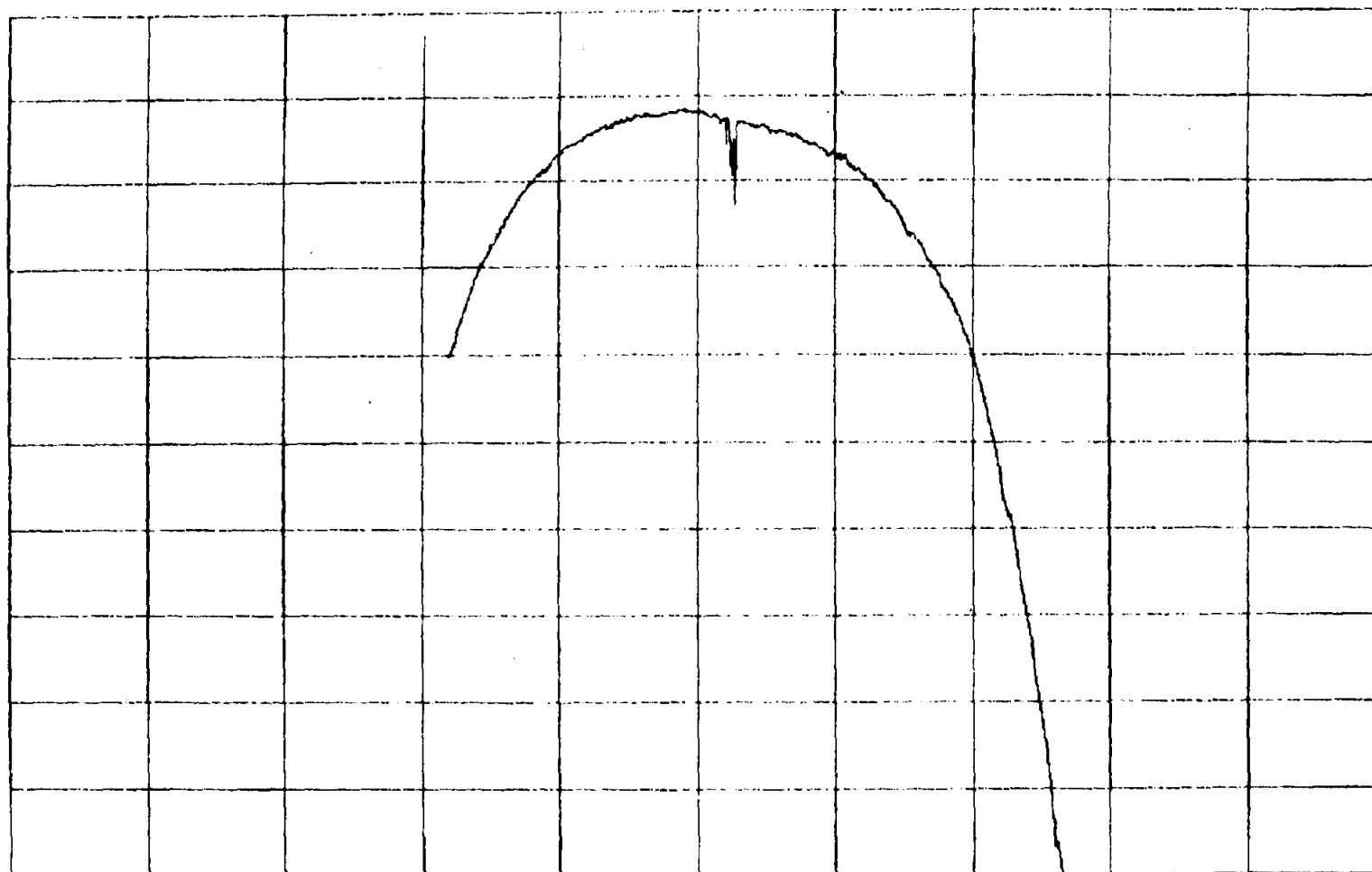


ATX1817 NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 243 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

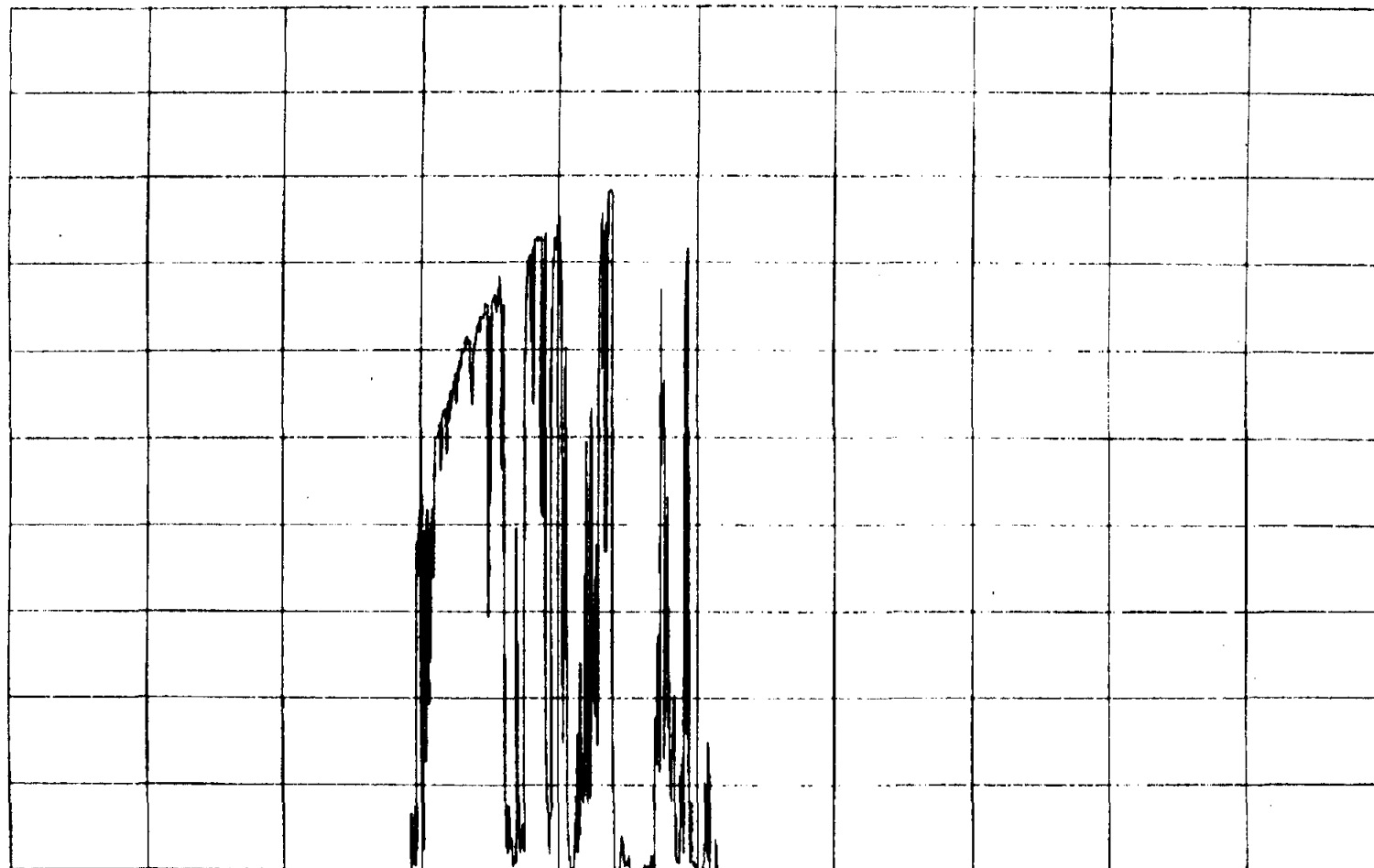
1500.00

**ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 244 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

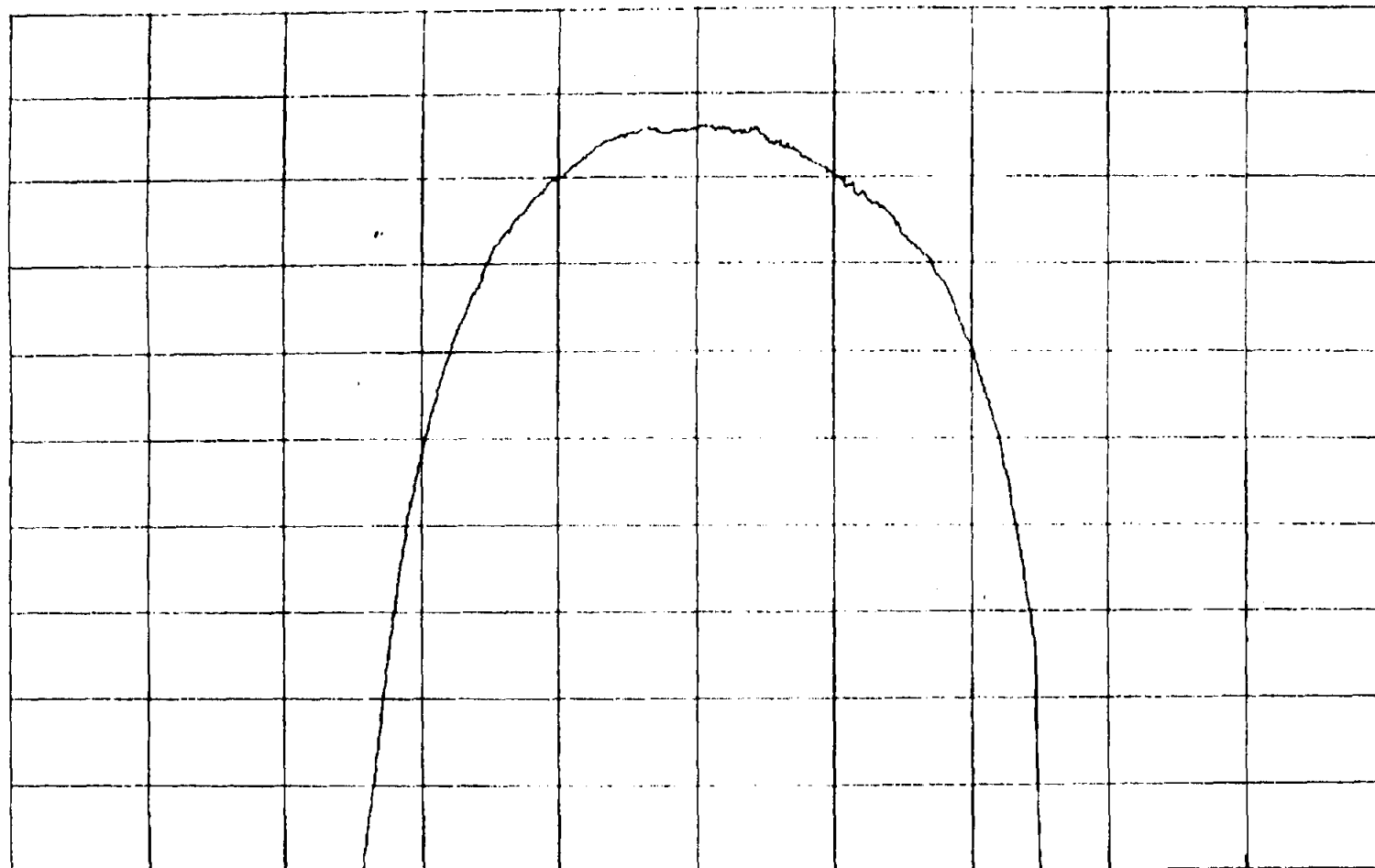
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 245 00 00 00.000

NTH SAMPLE AVERAGE • 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

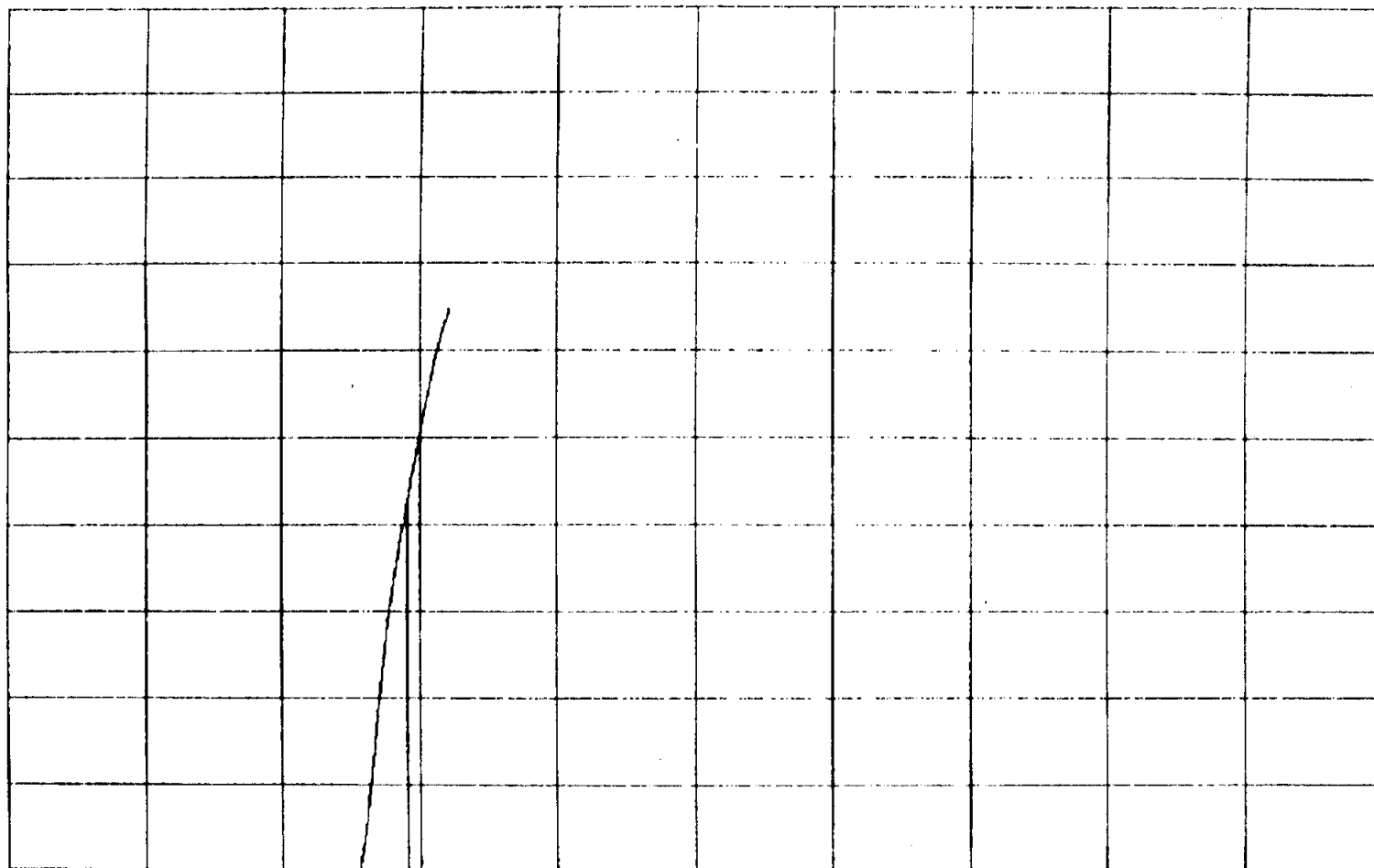
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 246 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

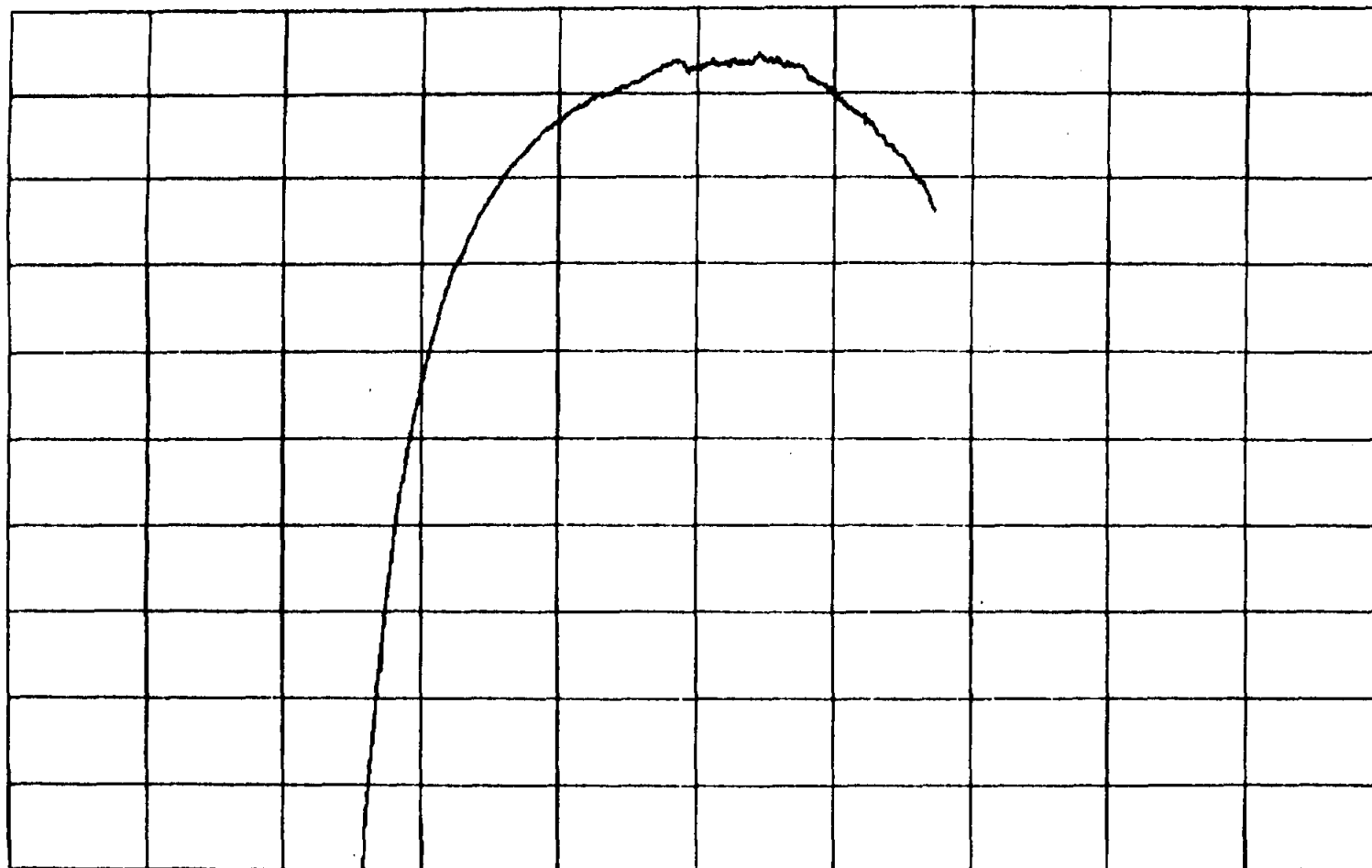
1500.00

**ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 247 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

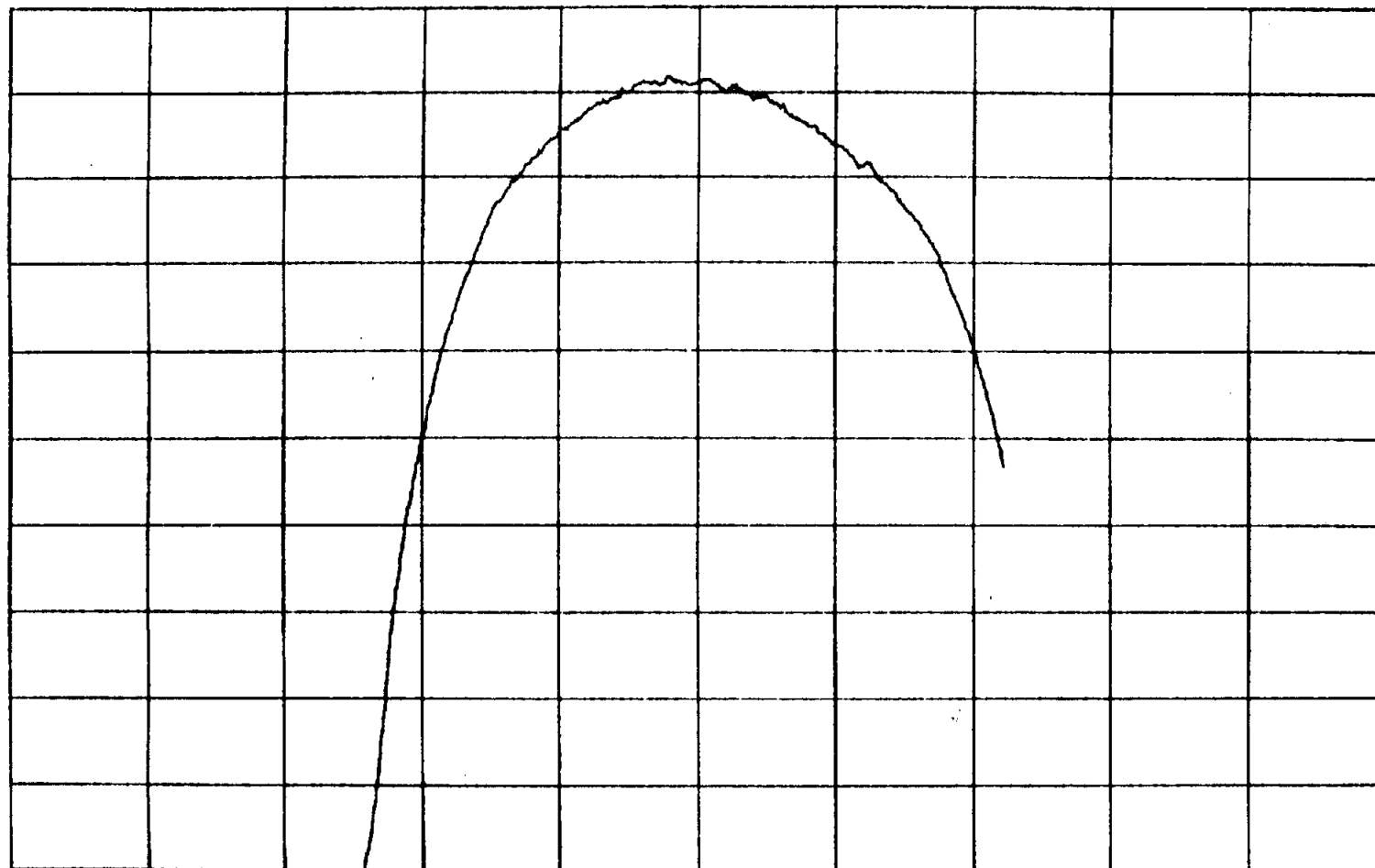
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 248 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

ATX1817

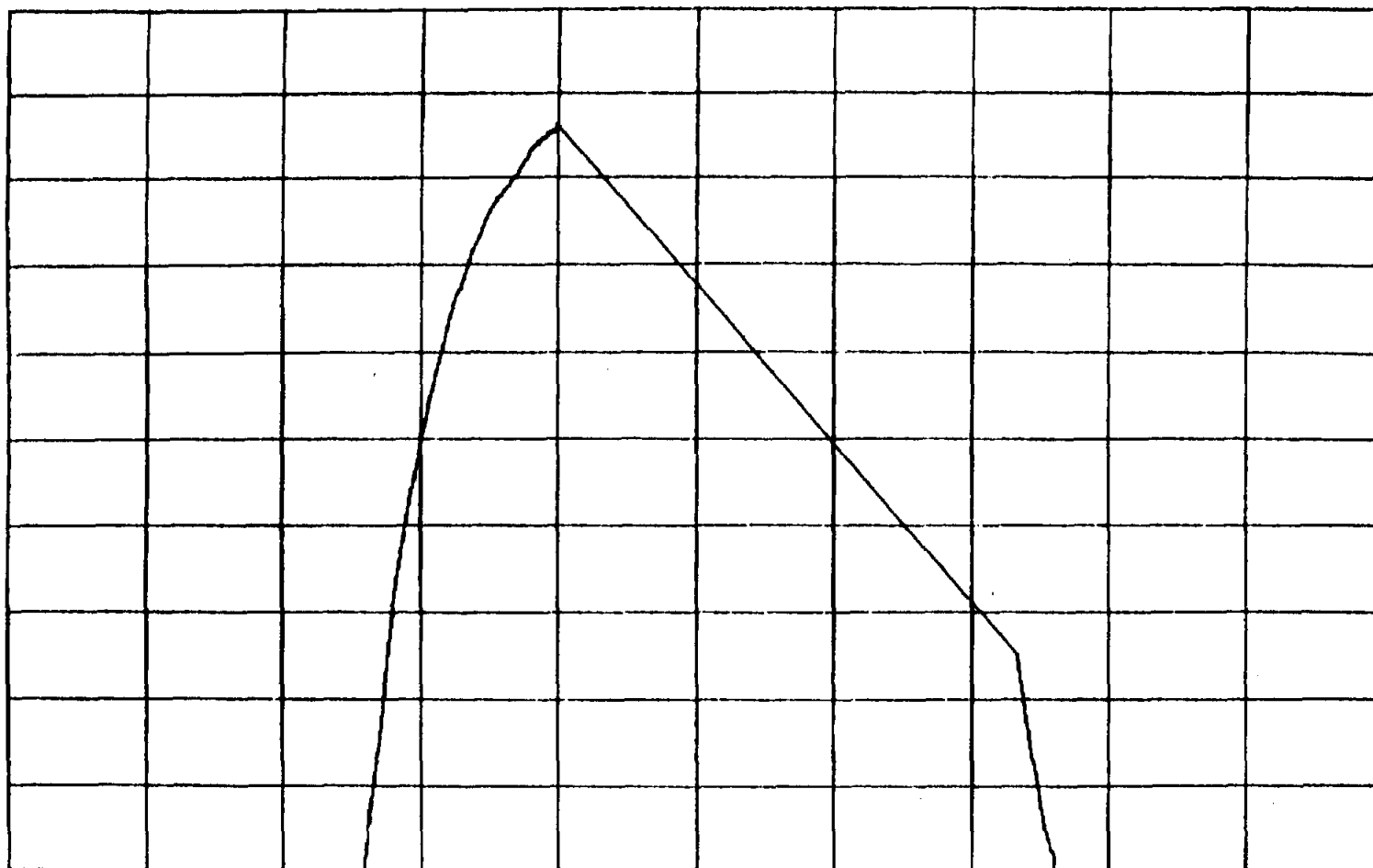
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 249 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

\$\$\$ATX1817A

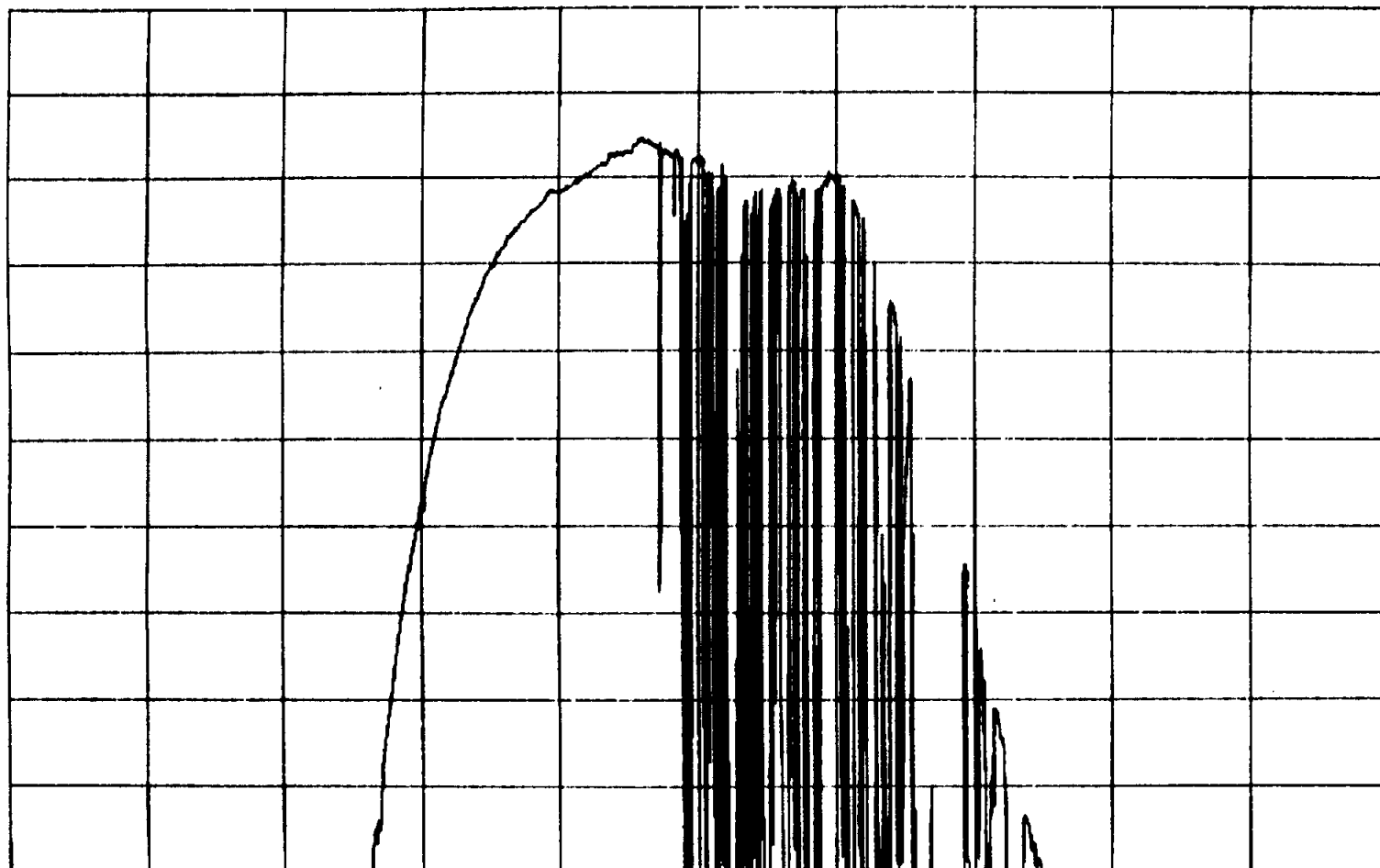
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 250 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

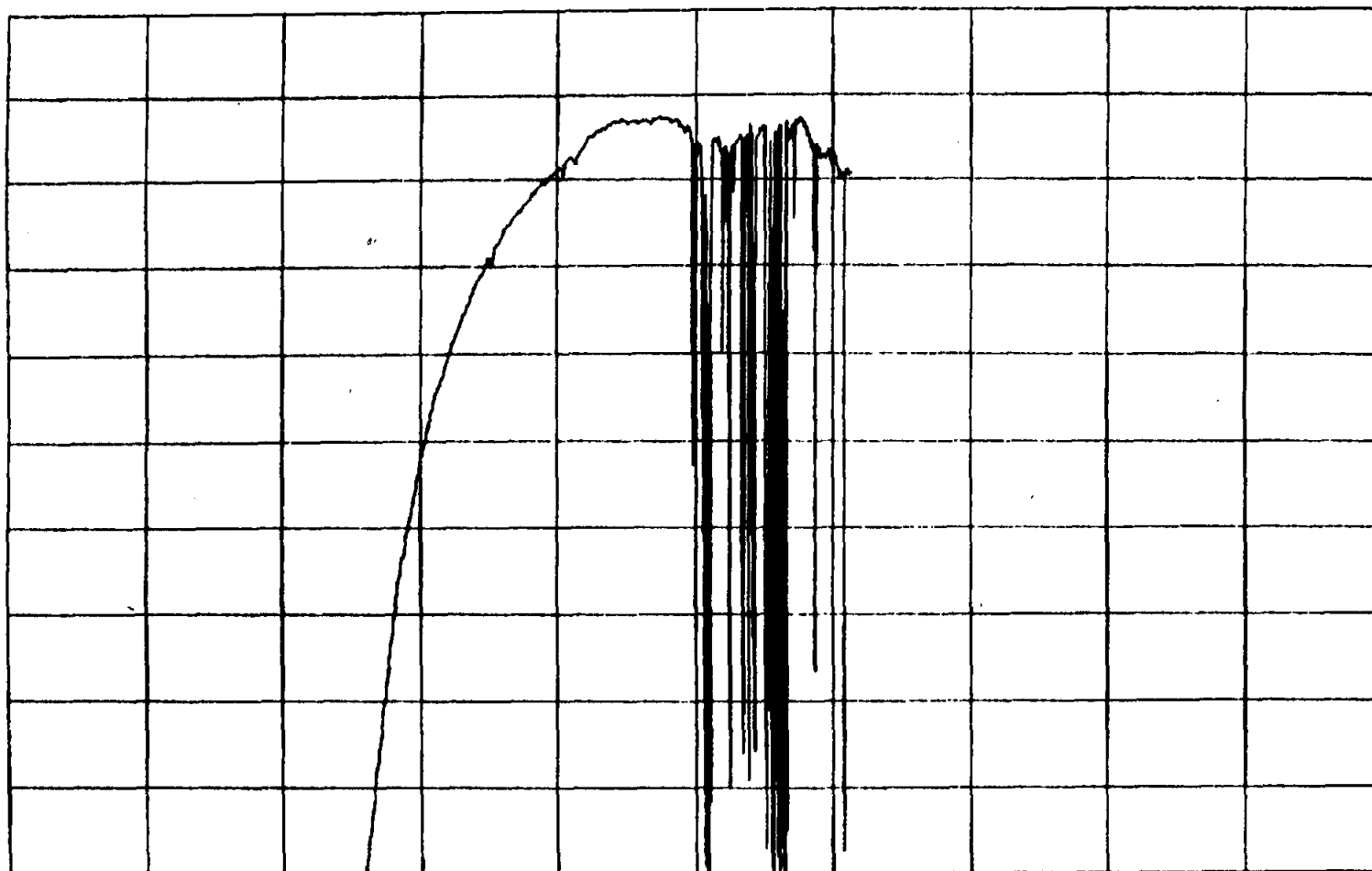
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 251 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
ATX1817

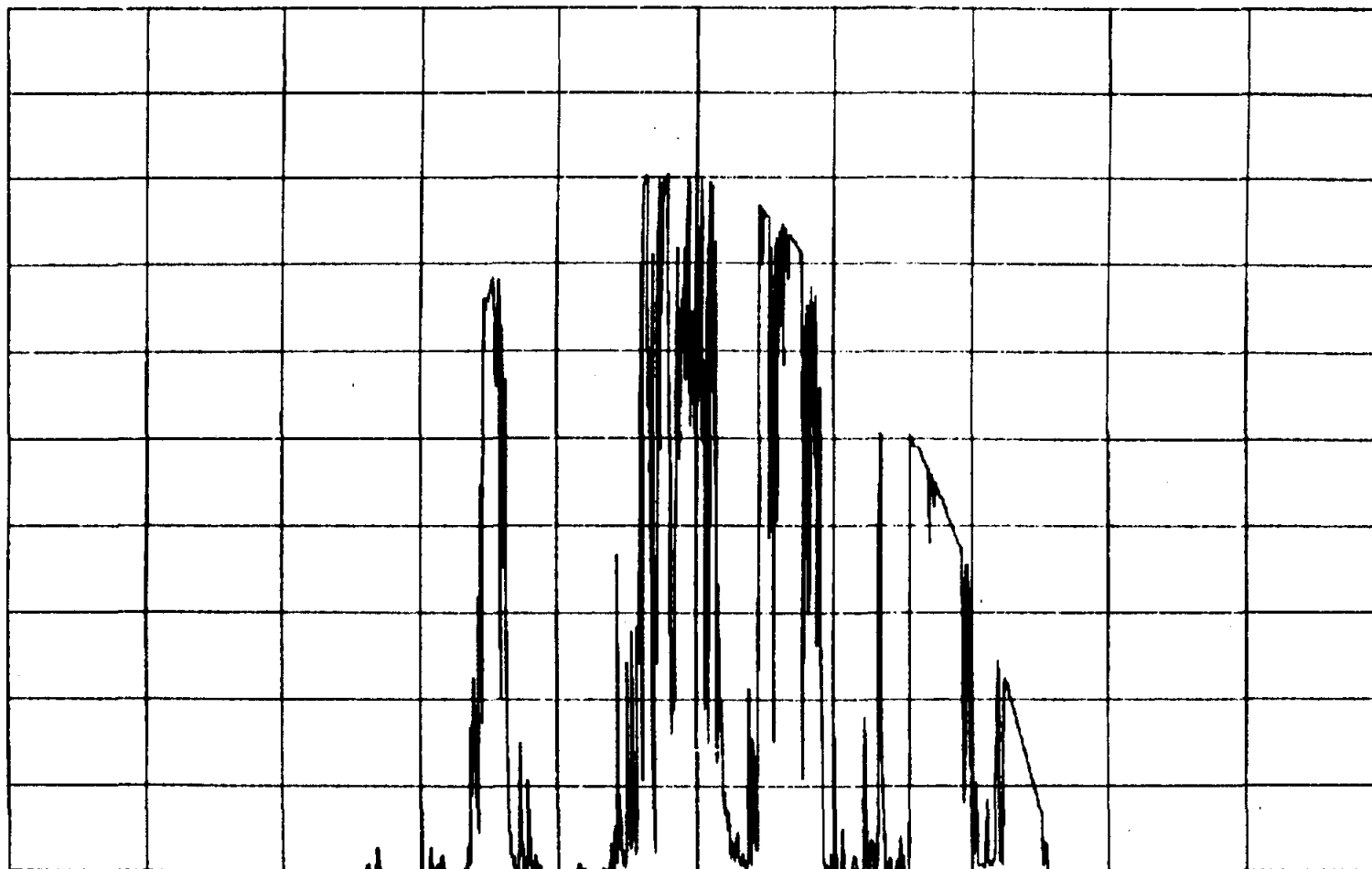
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 253 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

ATX1817

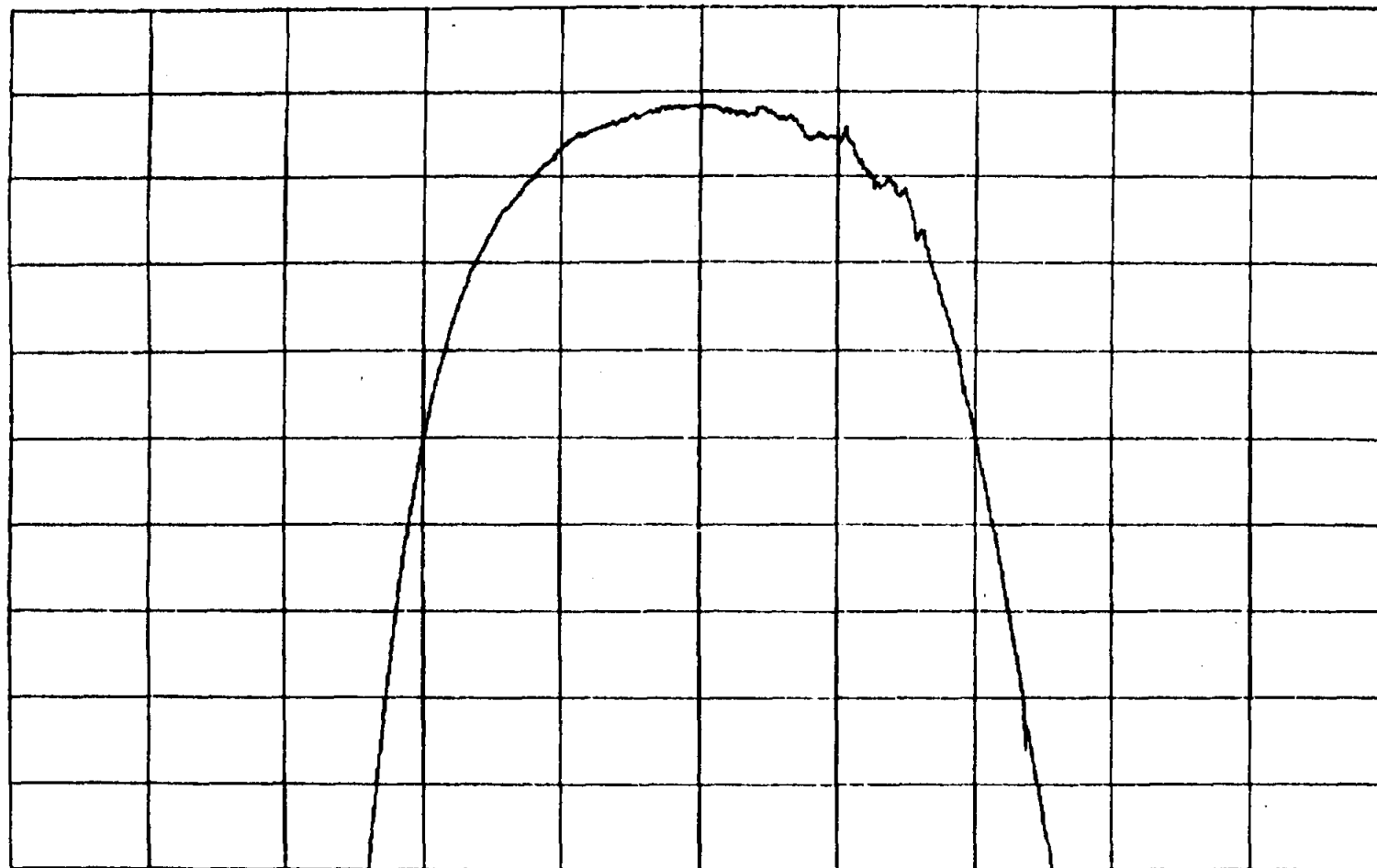
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 254 00 00 00.000

NTH SAMPLE AVERAGE * 1
FOR 1500.0000 MINUTE(S)

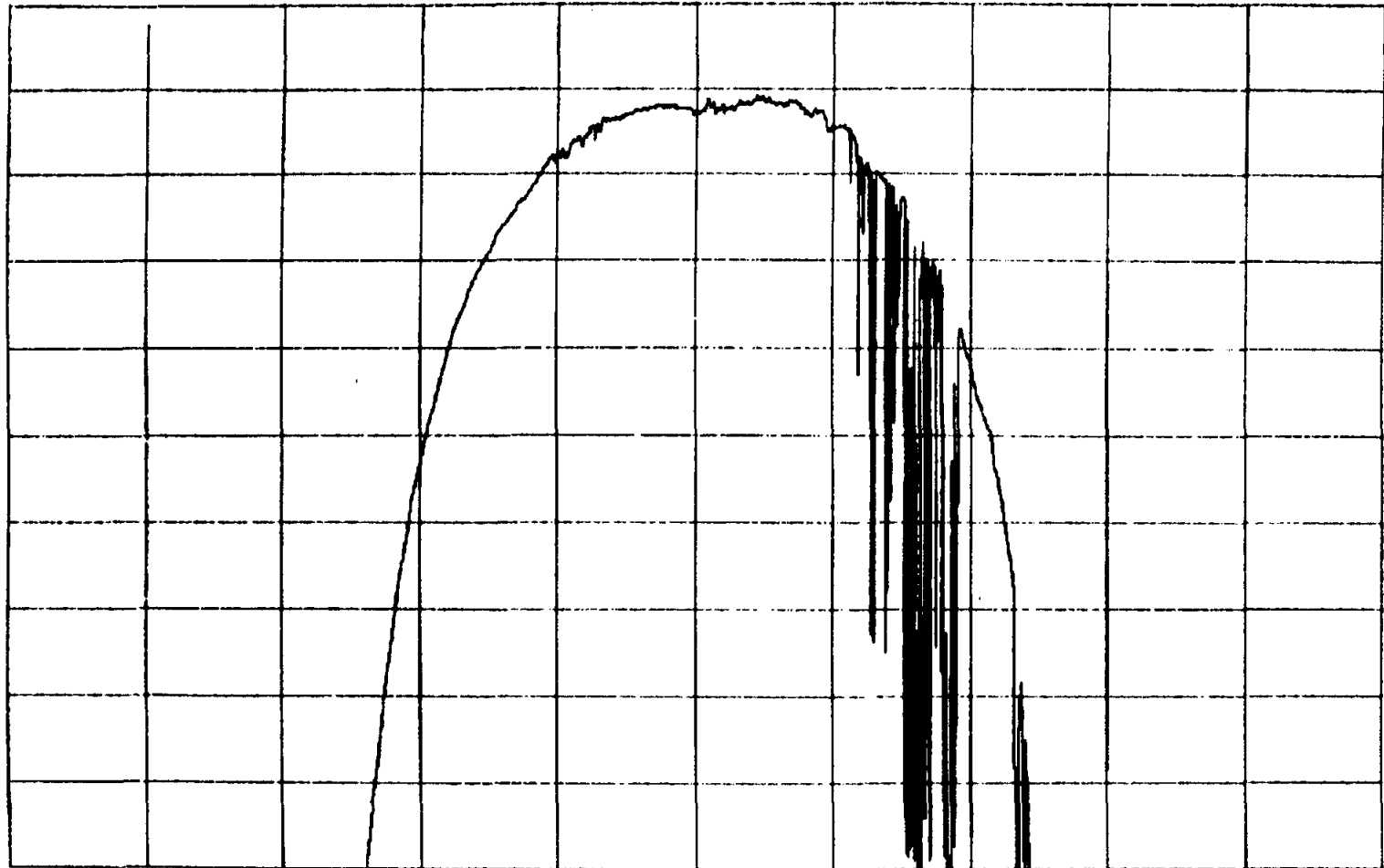


0.00
SATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 255 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

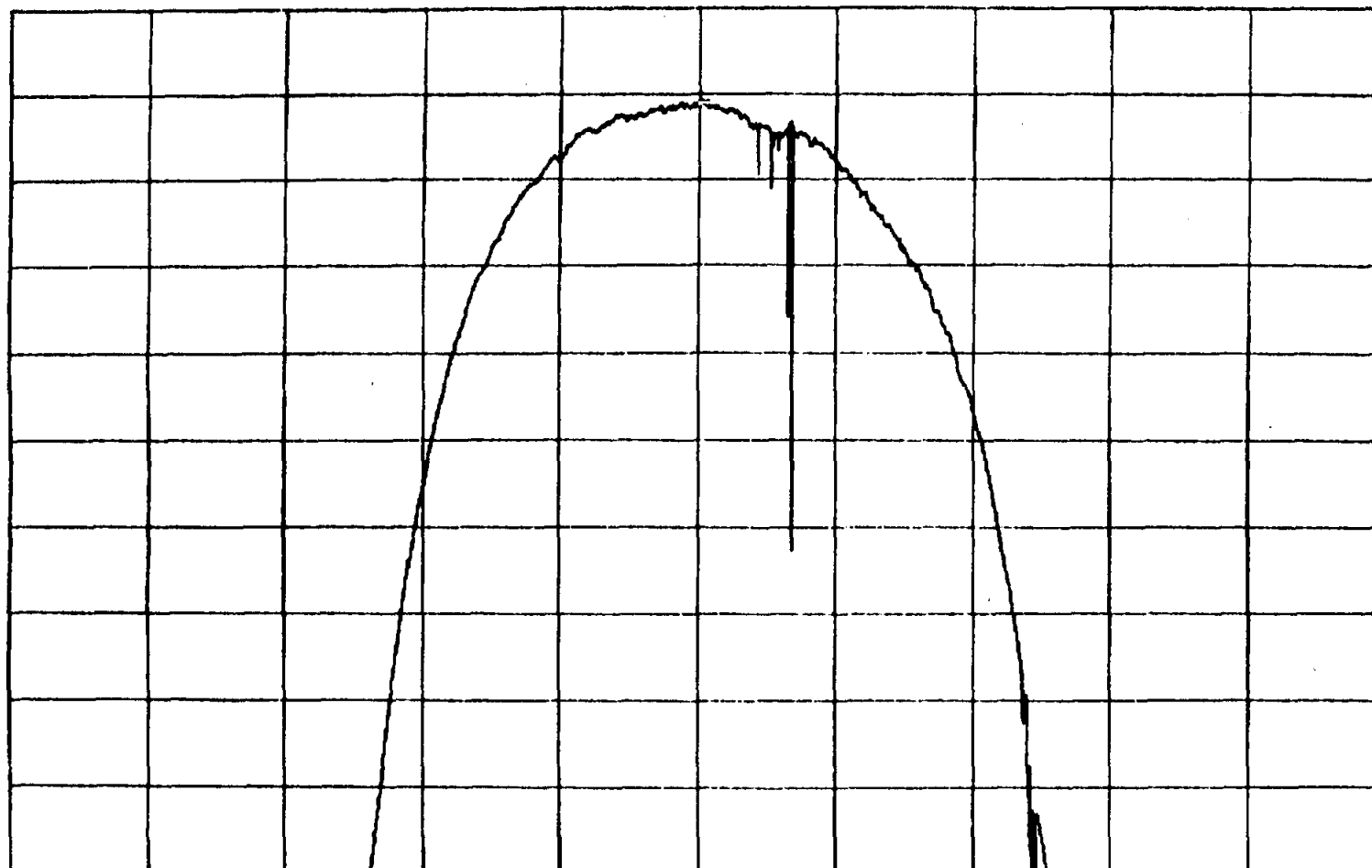
CNTRL ROOM ROOF NIP

1500.00

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 256 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

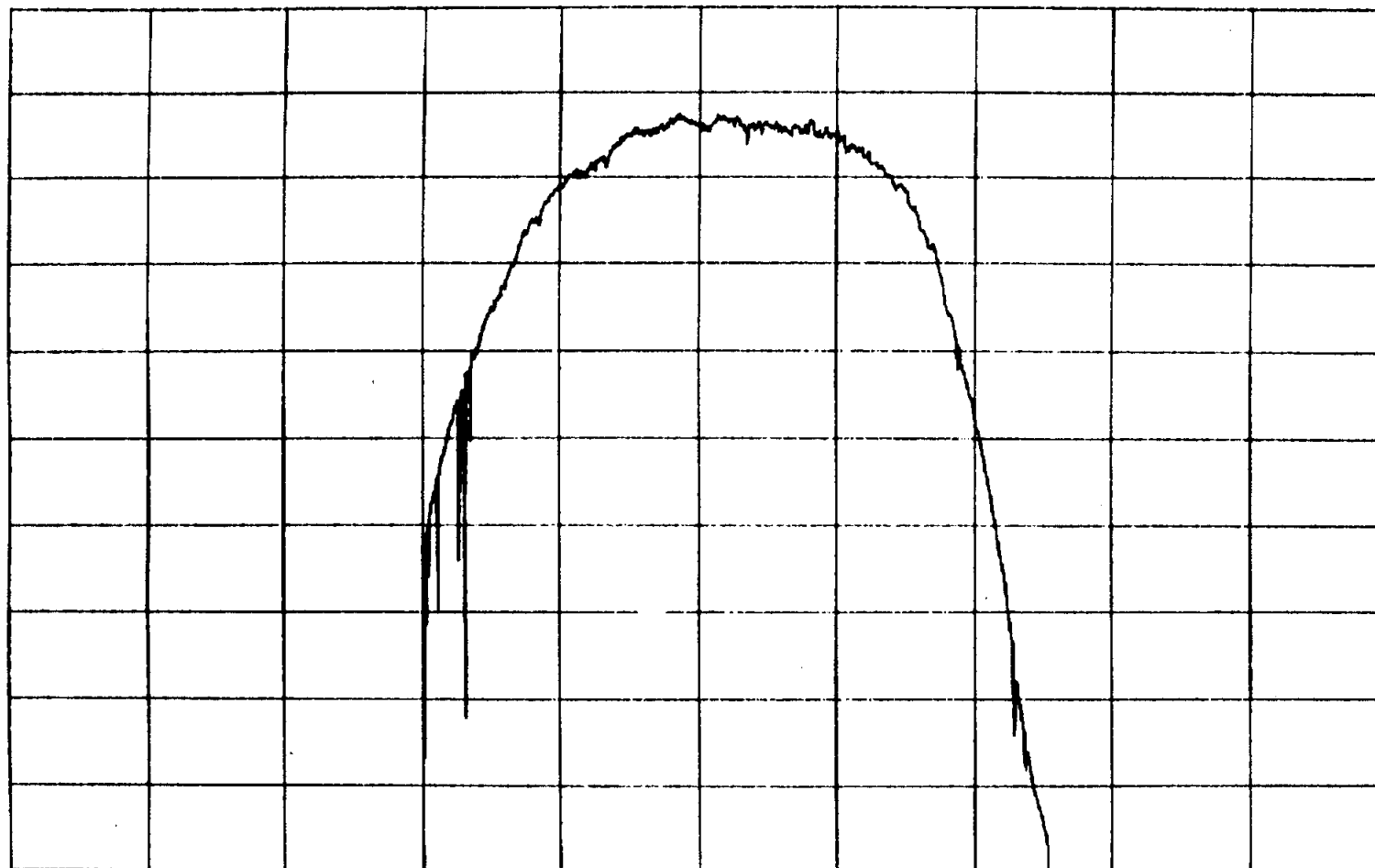
##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 257 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

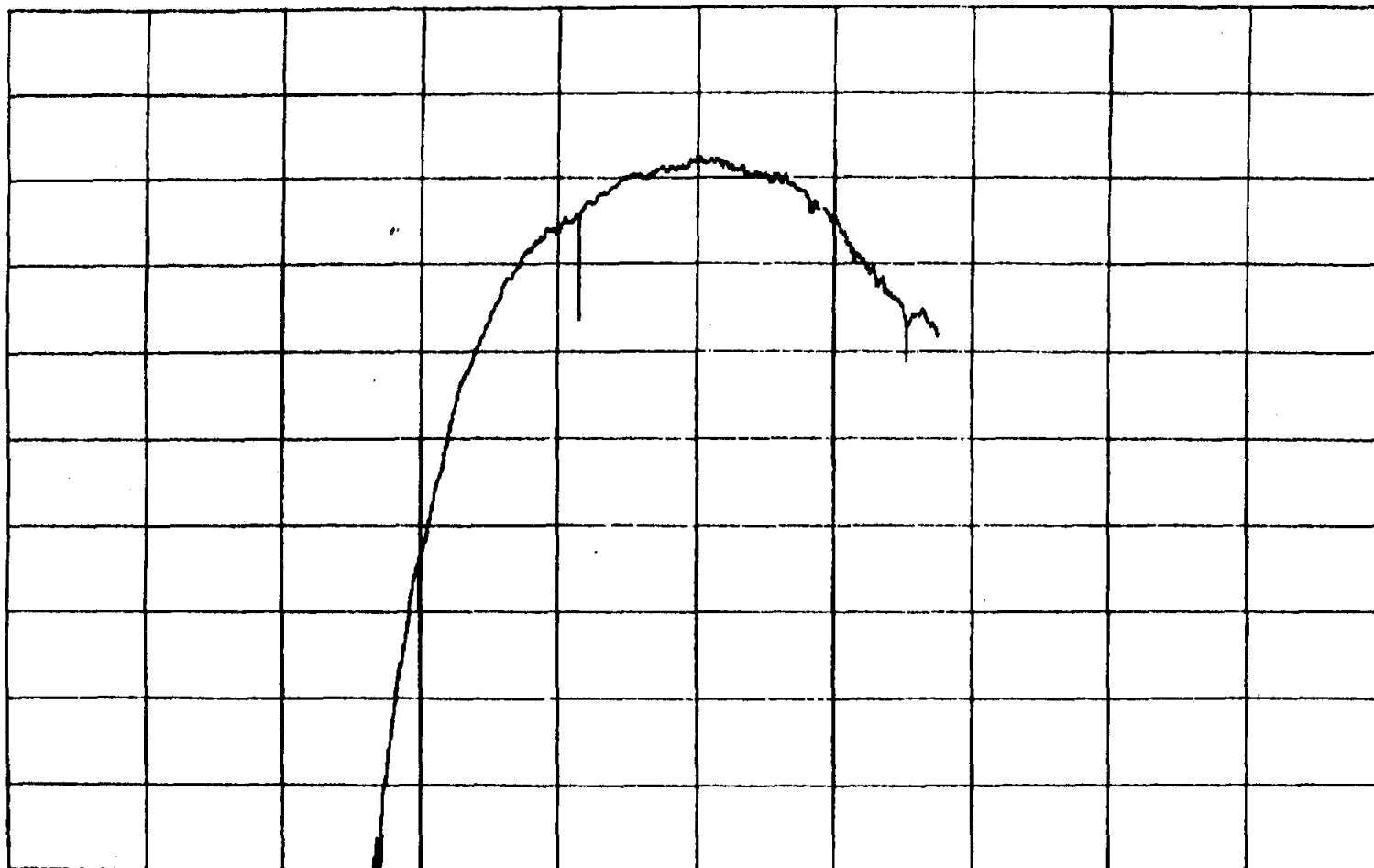
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 259 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

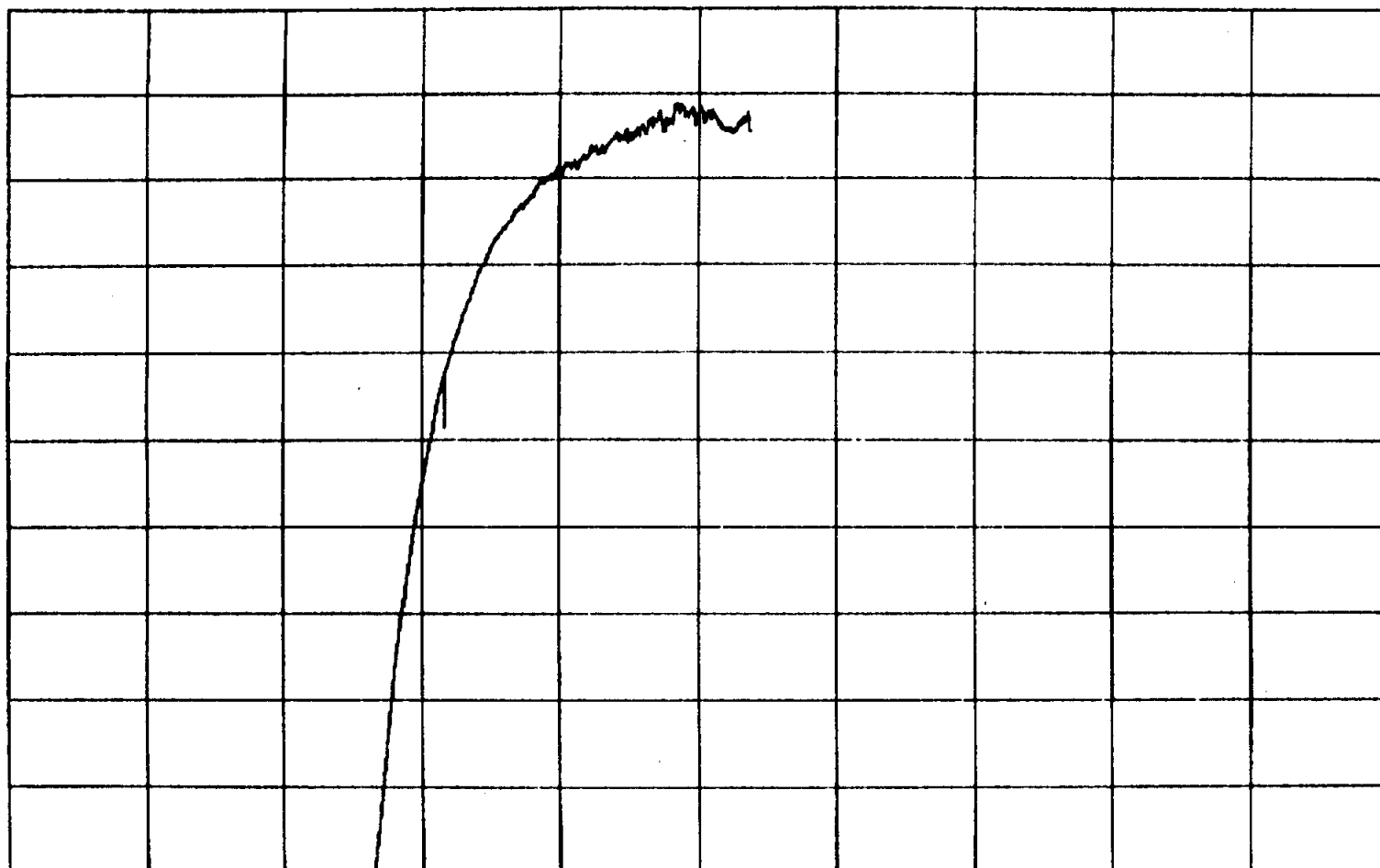
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 261 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

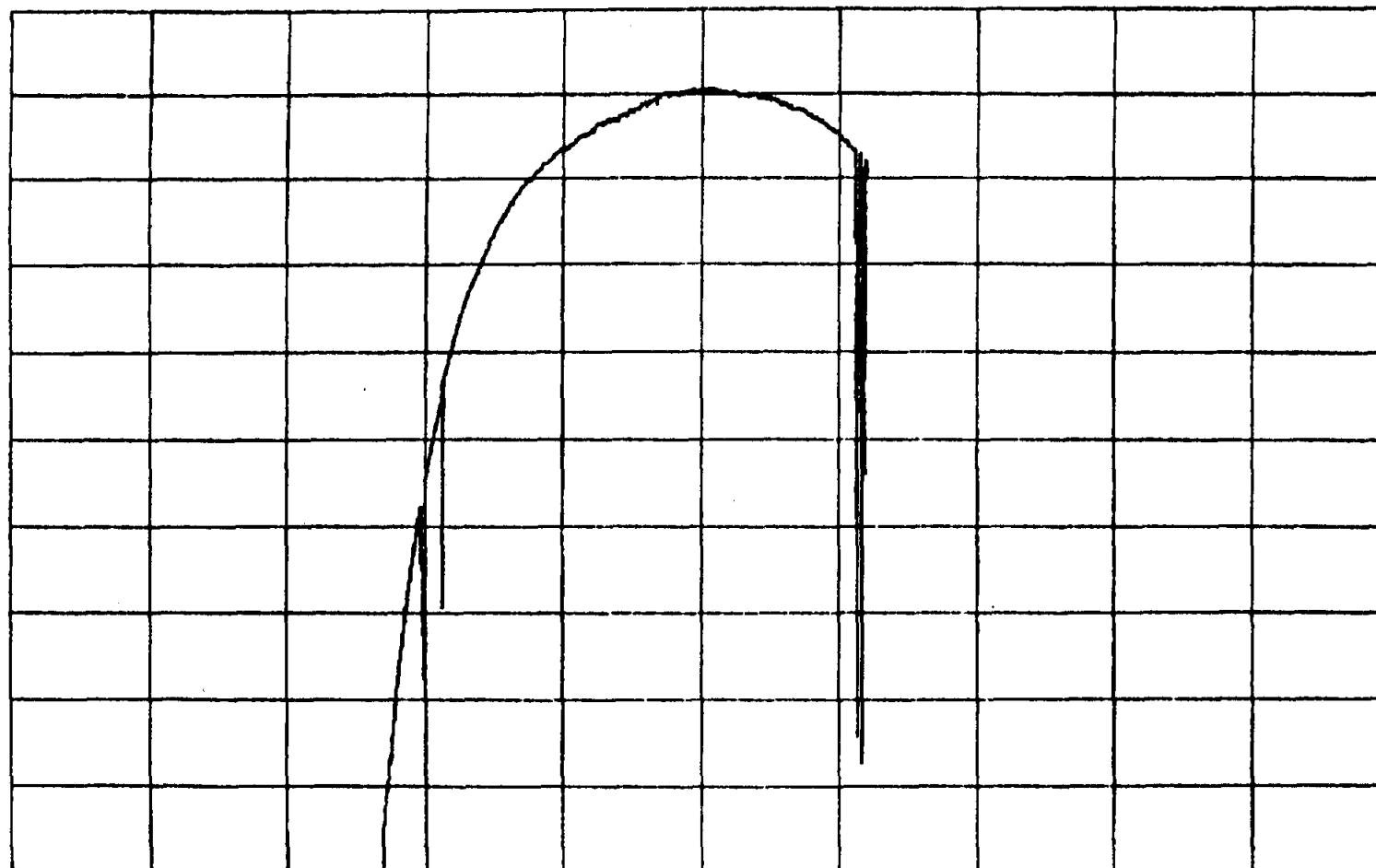


0.00
88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 264 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
SATX1817A CNTRL ROOM ROOF NIP

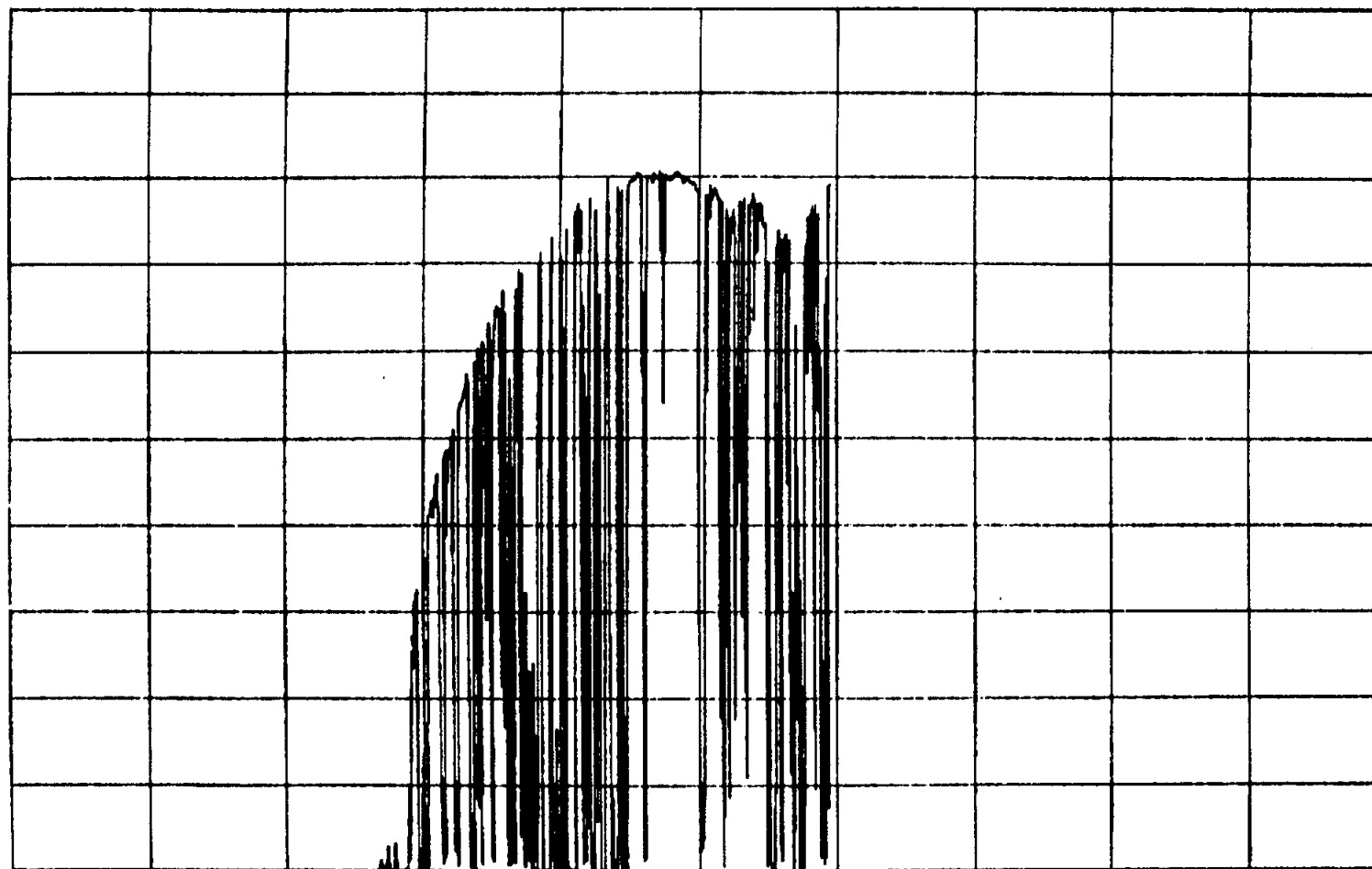
0.00 - 1000.00 W/M2
1500.00

34

SOLAR DATA PLOT
REFERENCE TIME: 265 00 00 00.000

PLOT # MISL1

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

1500.00

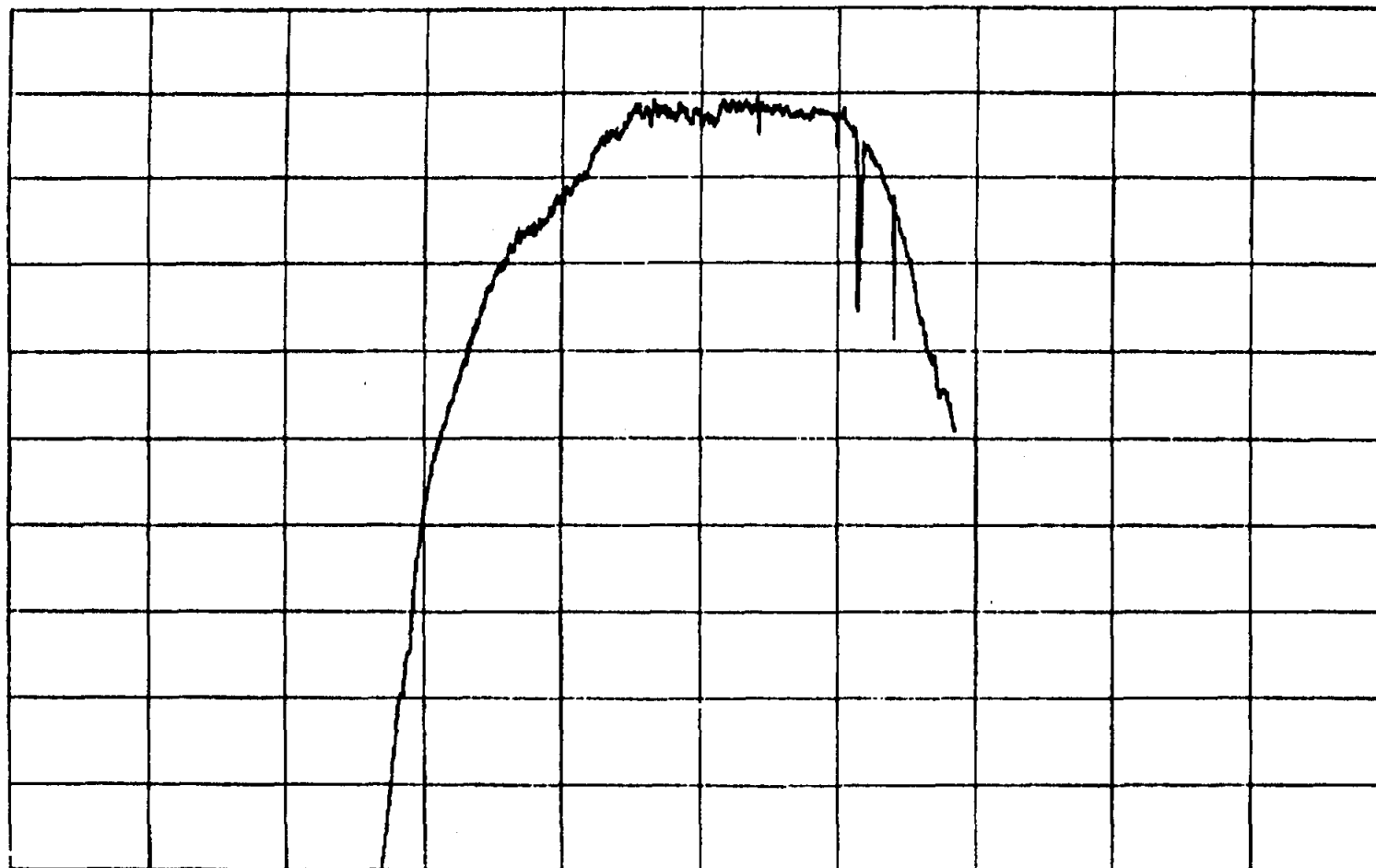
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 266 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



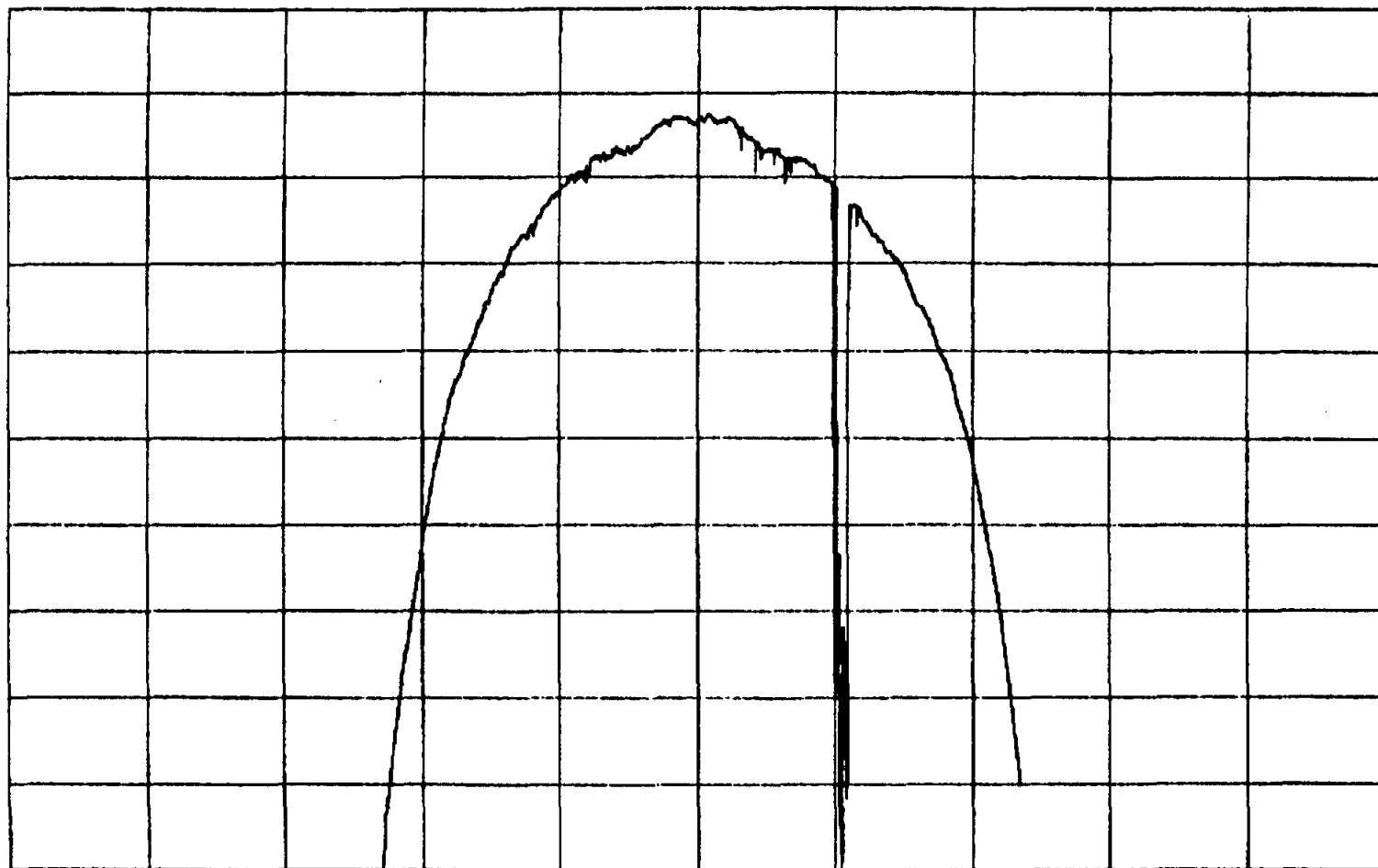
0.00
SATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 267 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

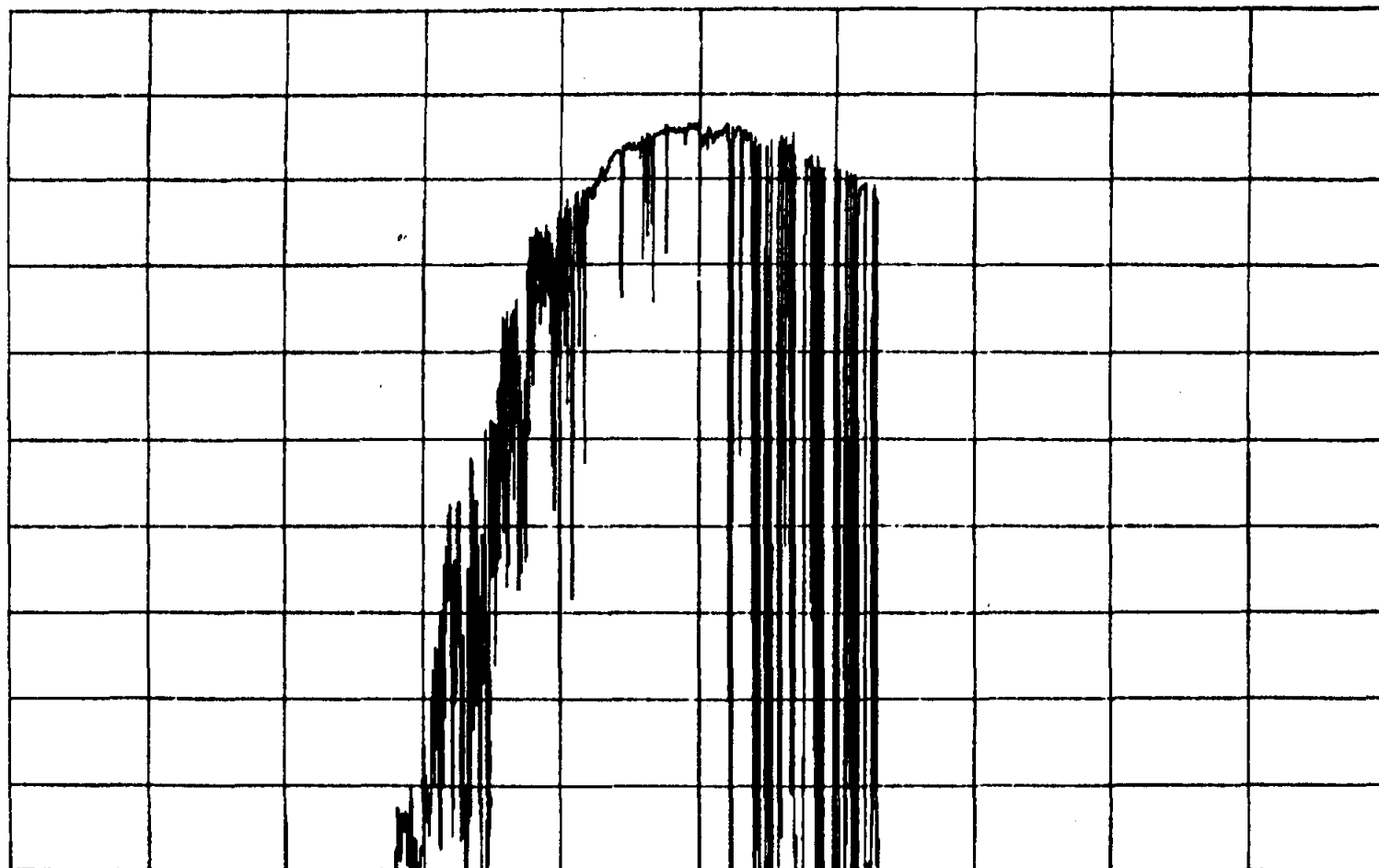
1500.00

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 268 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

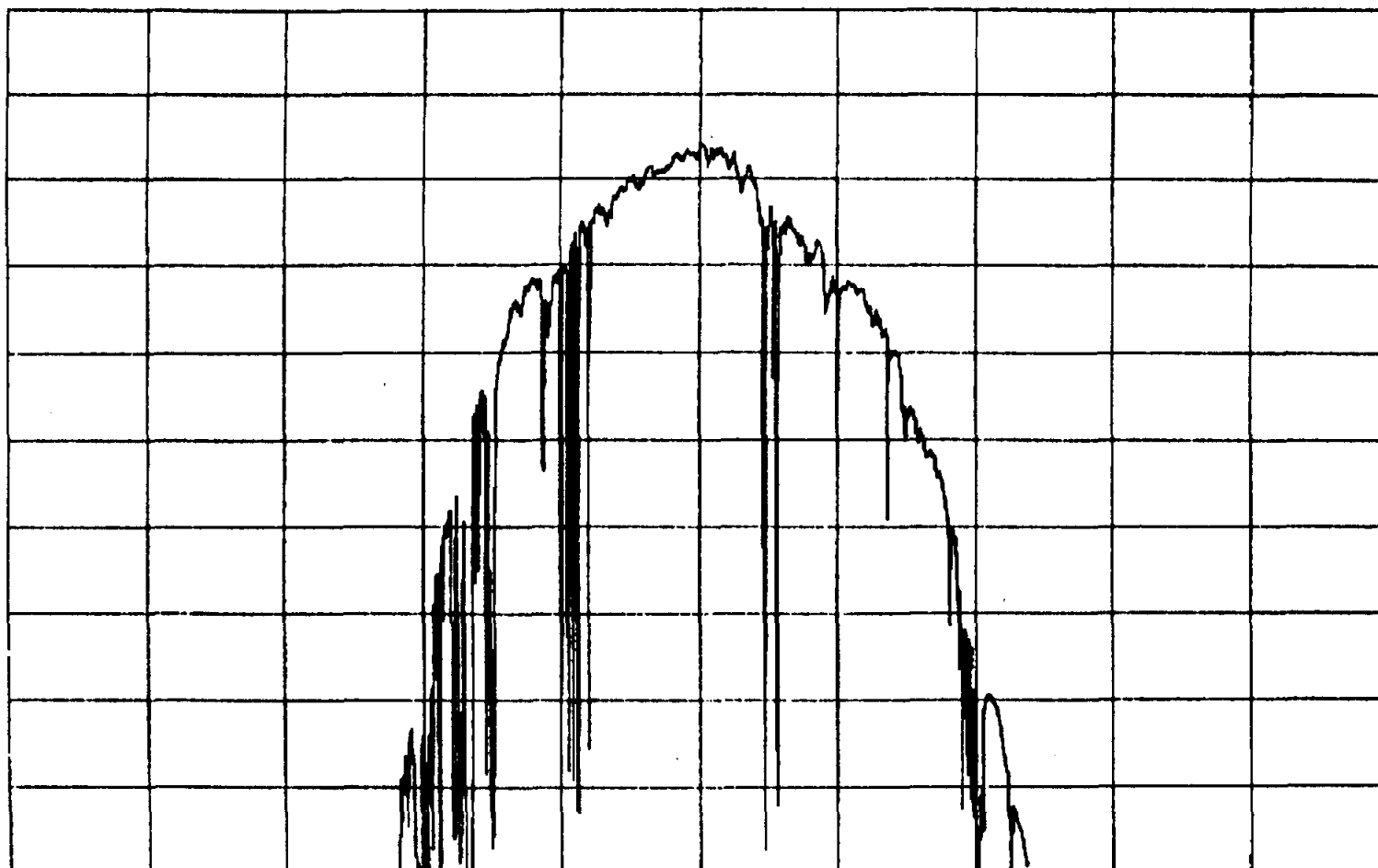
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 270 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

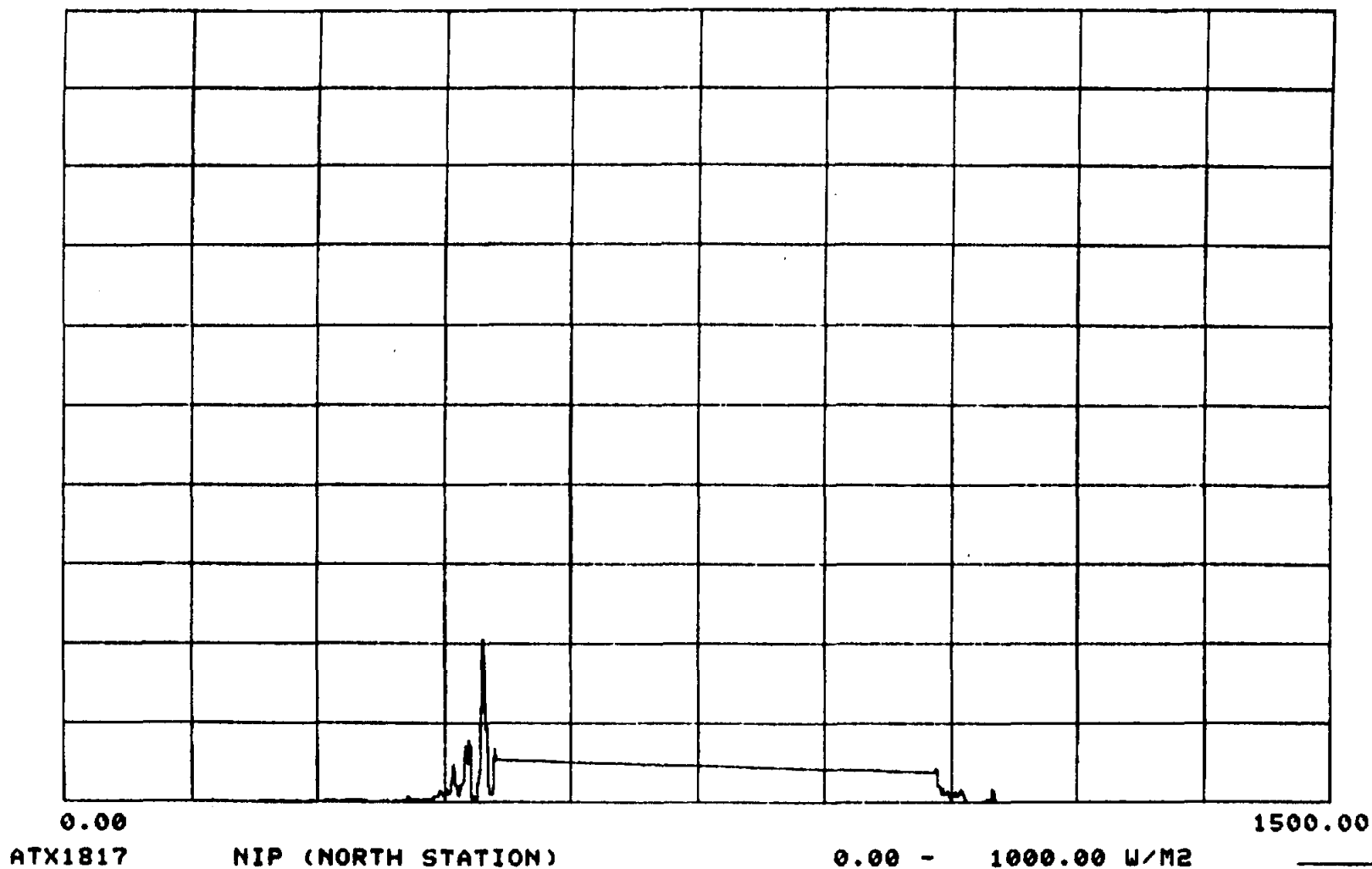
1500.00

\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

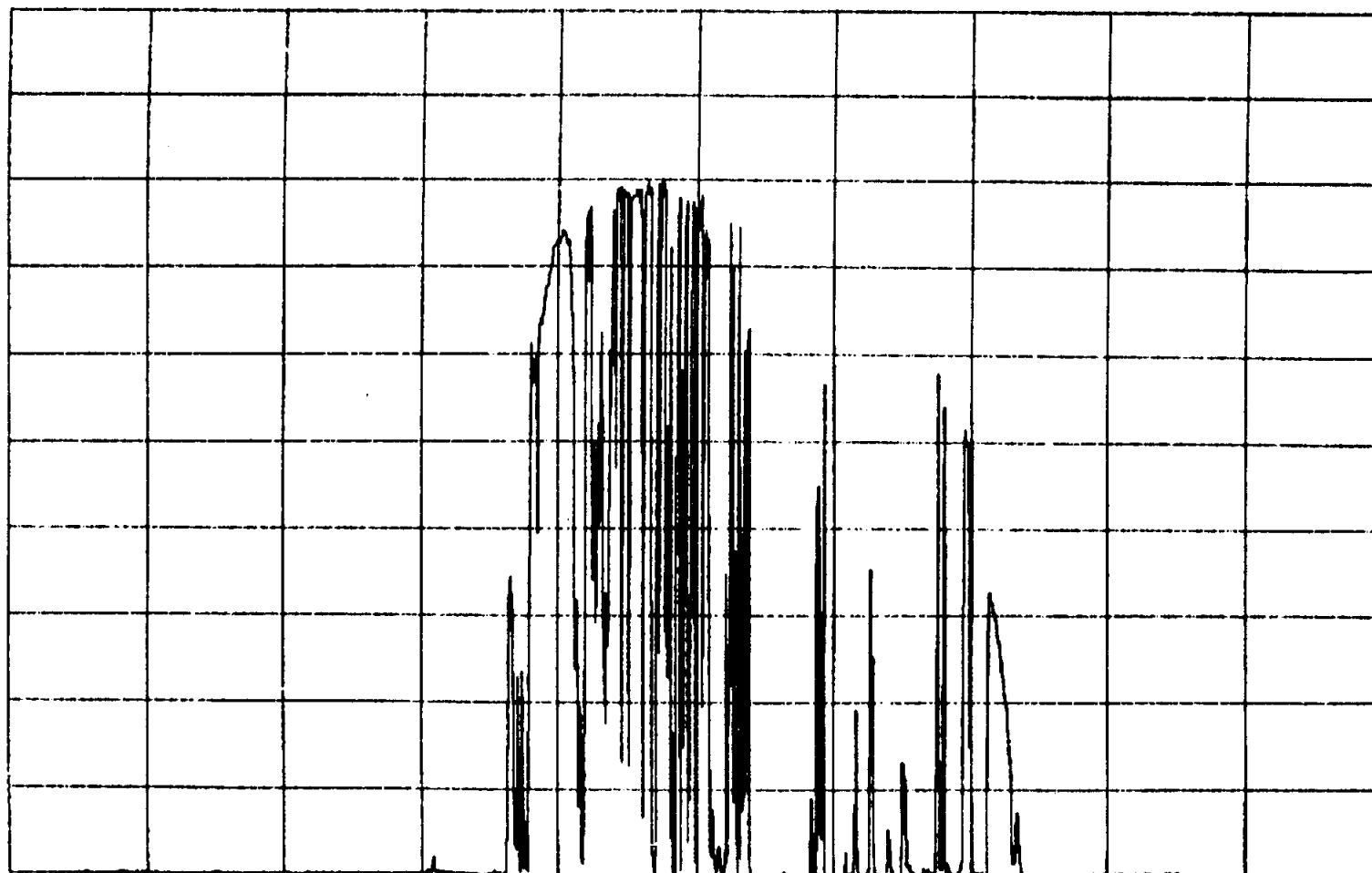
SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 271 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 272 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

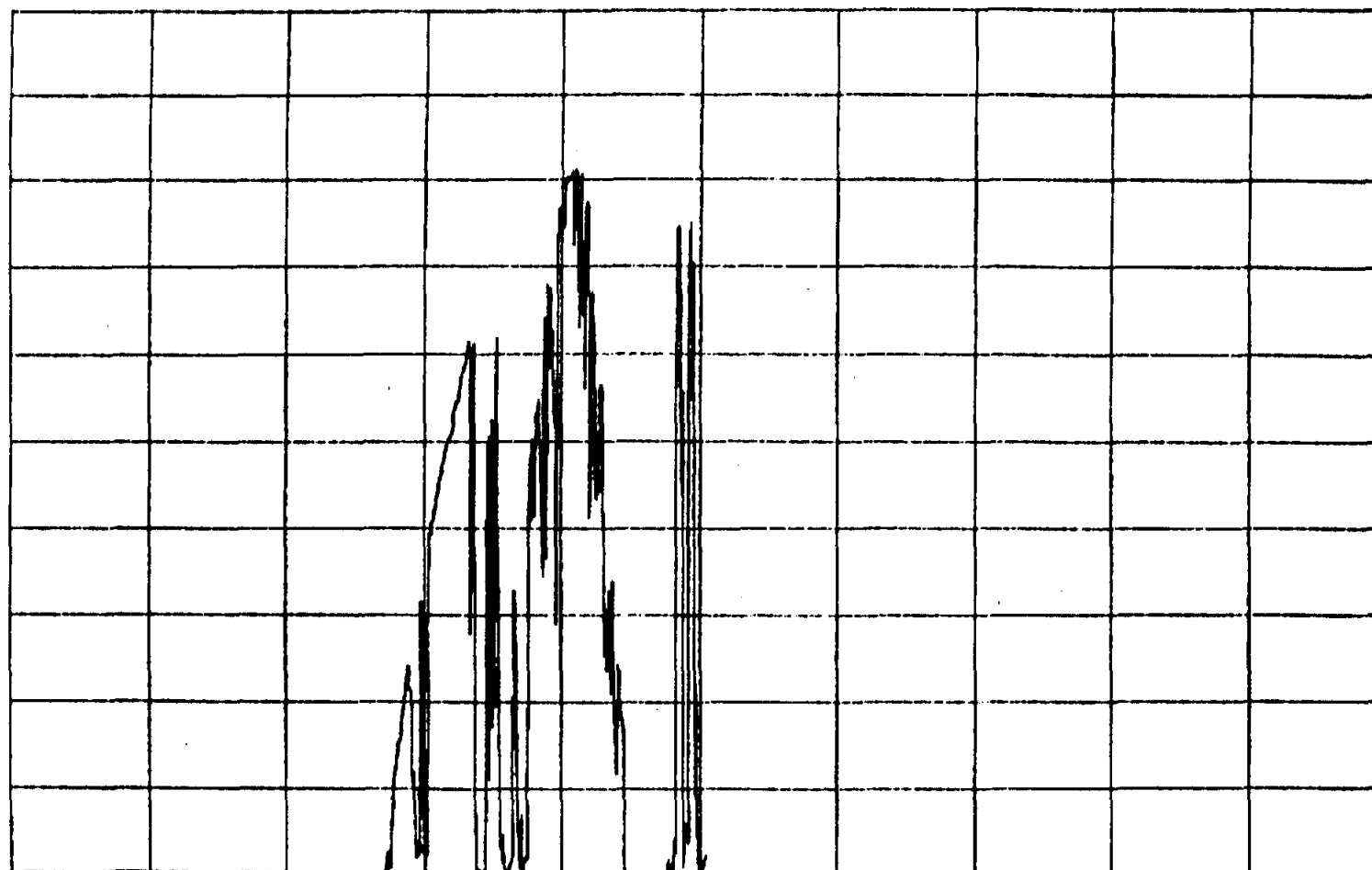
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 273 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

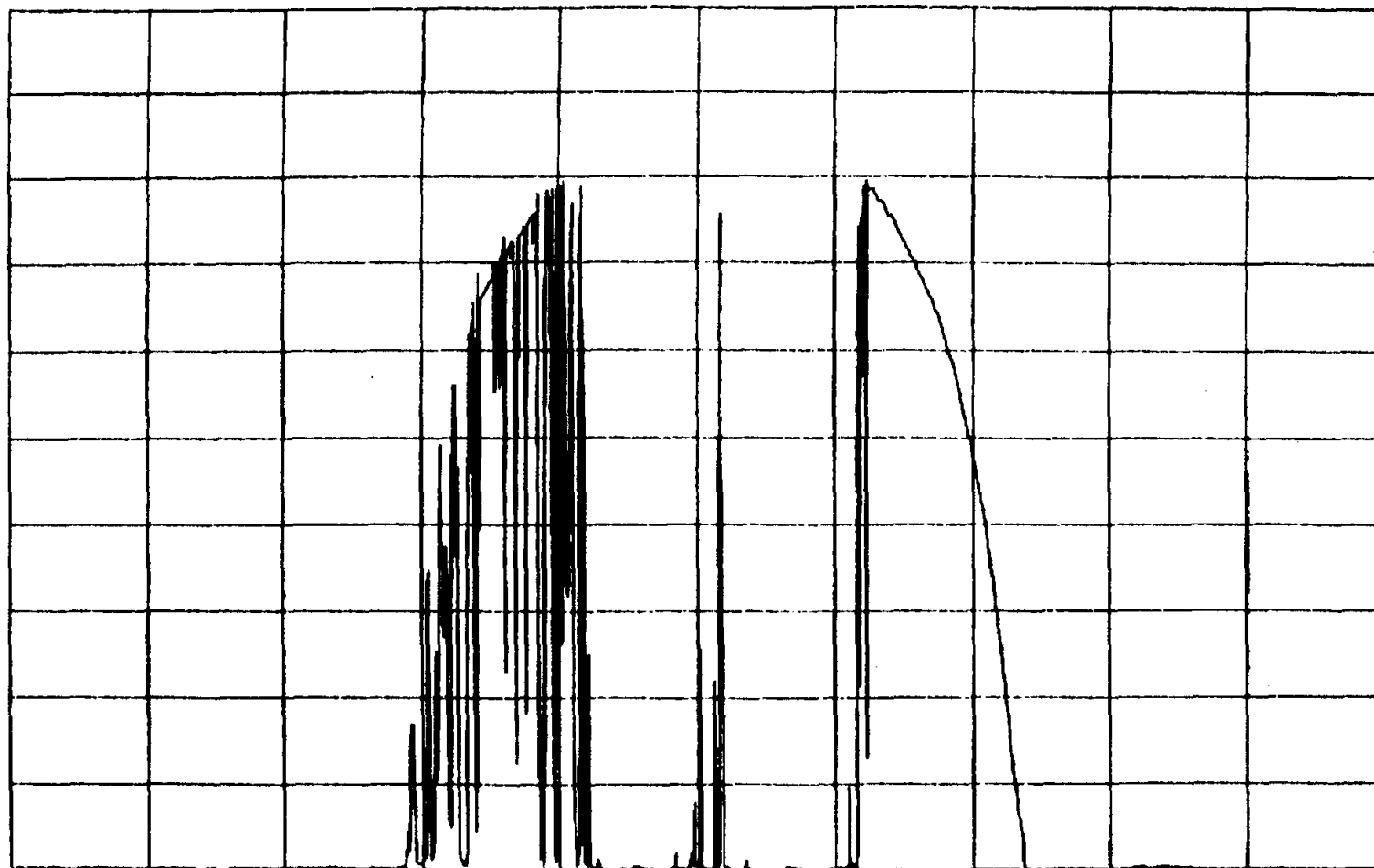
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 274 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1817

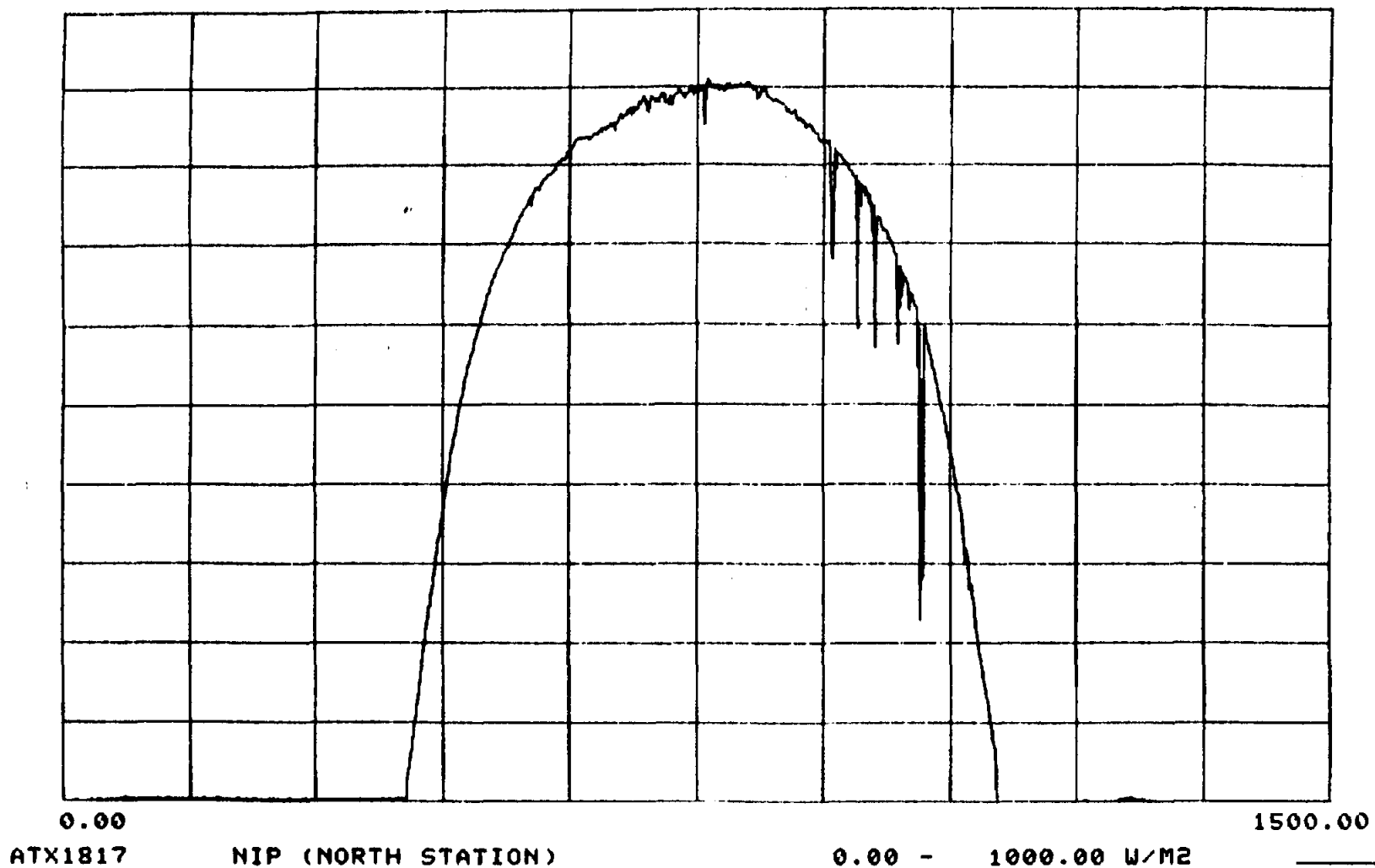
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT
REFERENCE TIME: 275 00 00 00.000

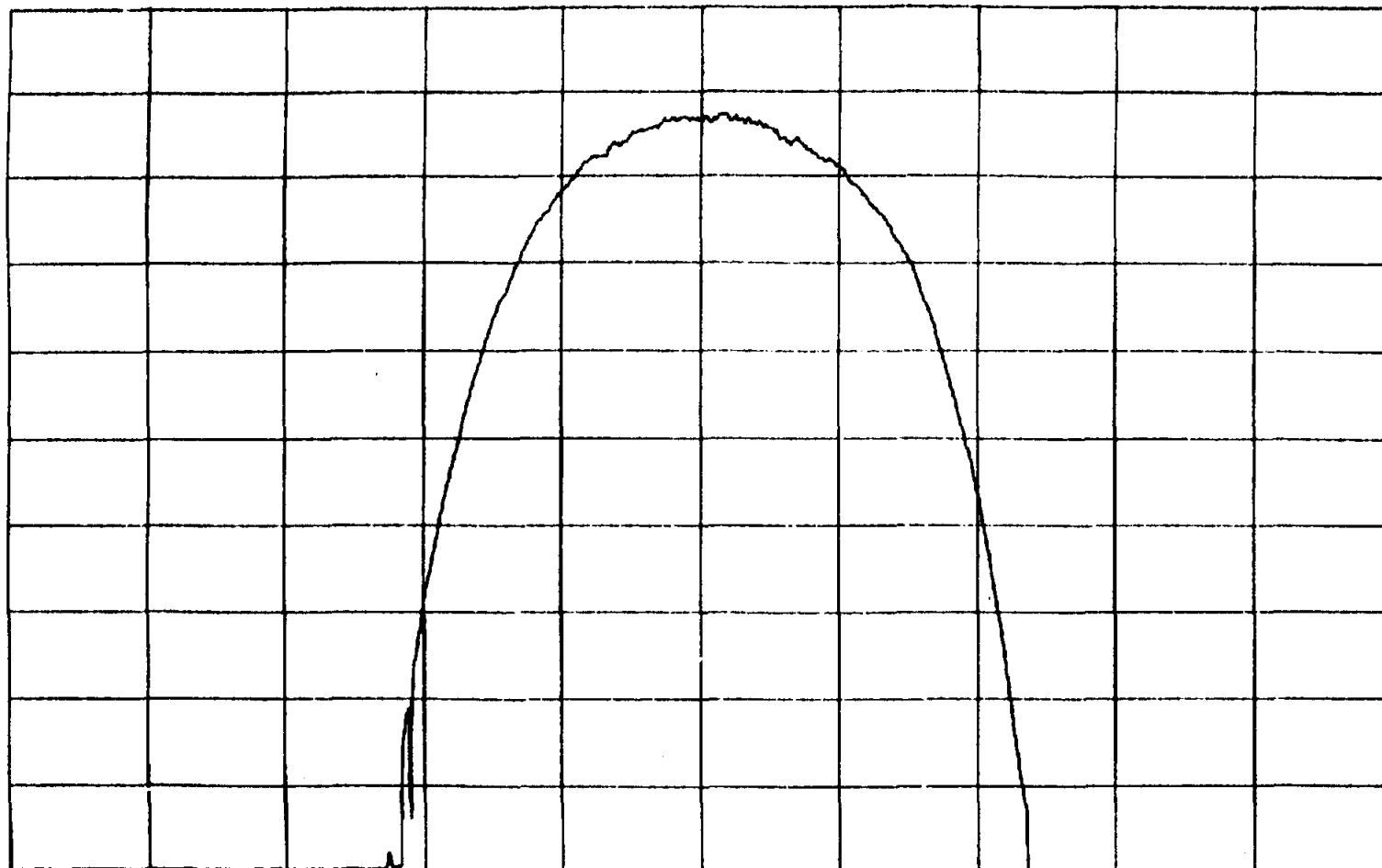
PLOT # MISL1

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 276 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

ATX1817

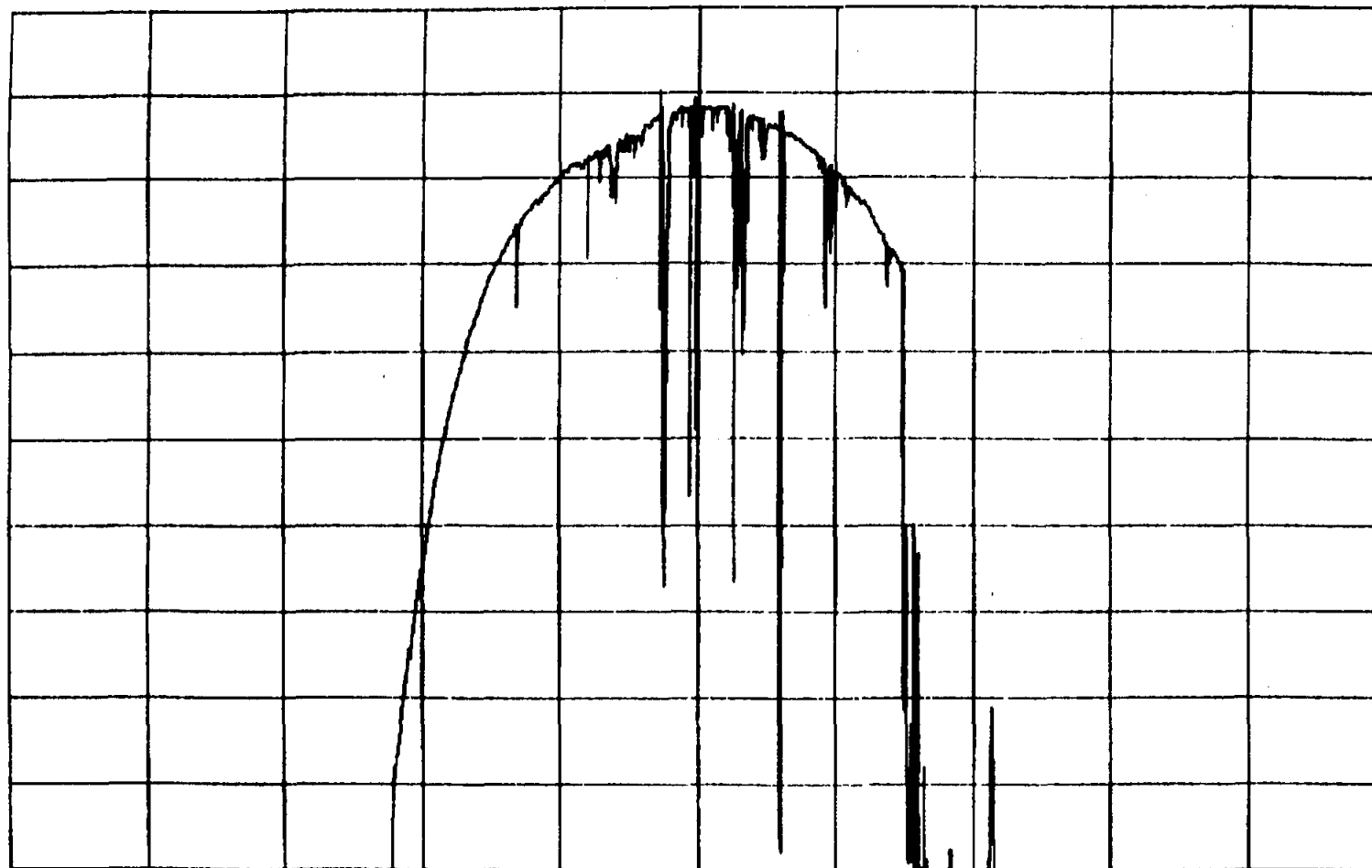
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 277 00 00 00.000

NTH SAMPLE AVERAGE • 1
FOR 1500.0000 MINUTE(S)



0.00

##ATX1817A

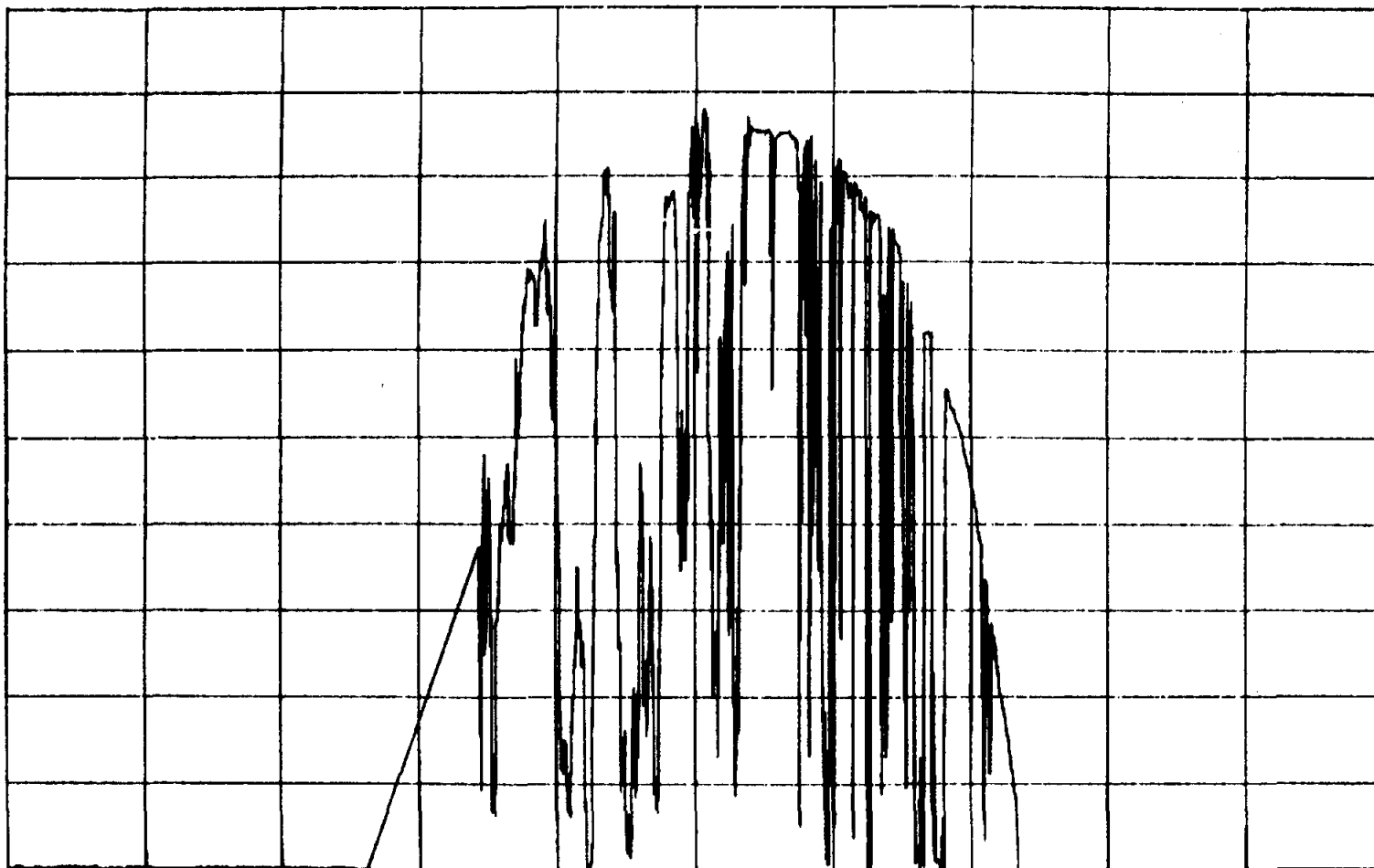
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 278 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

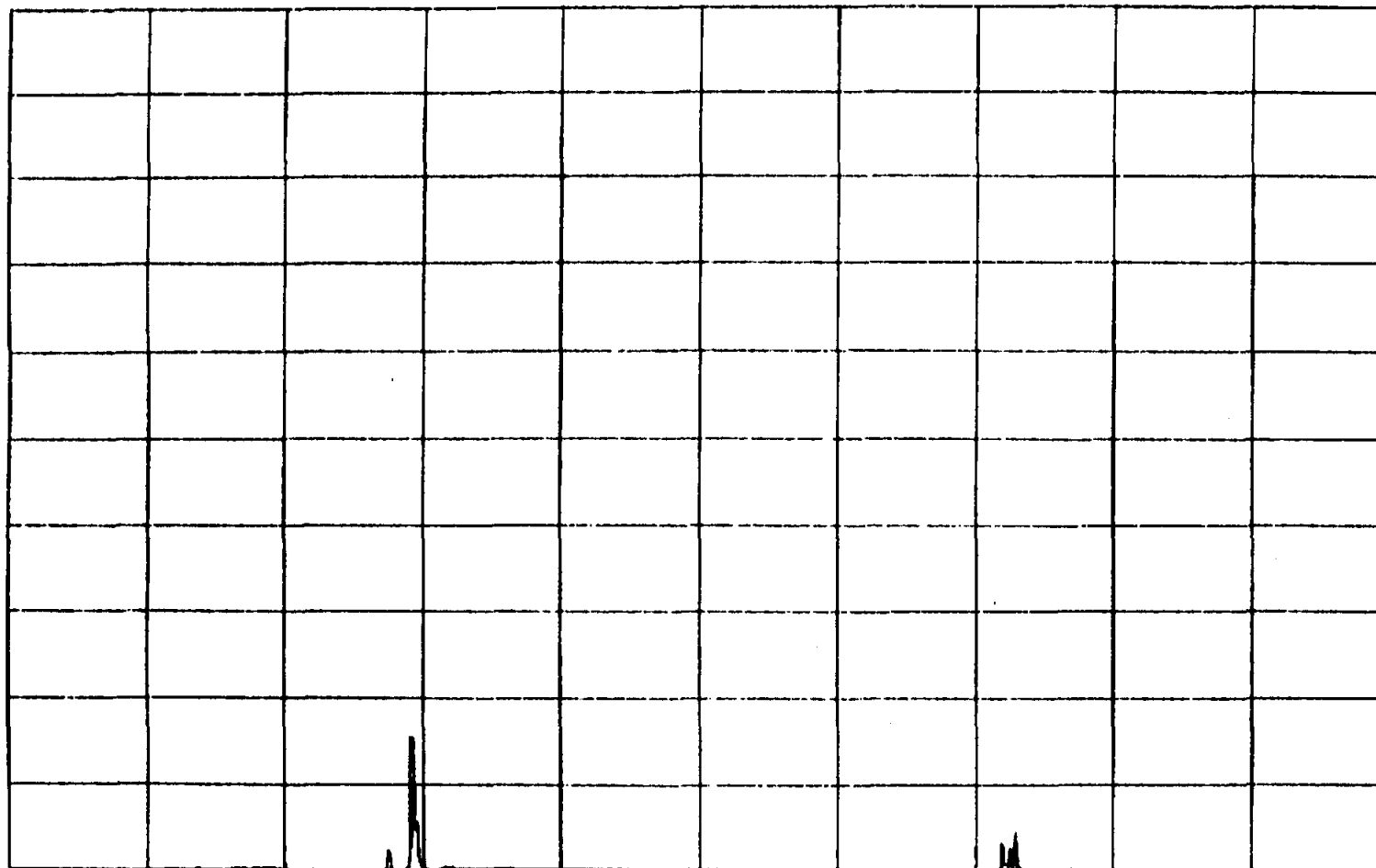
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 280 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

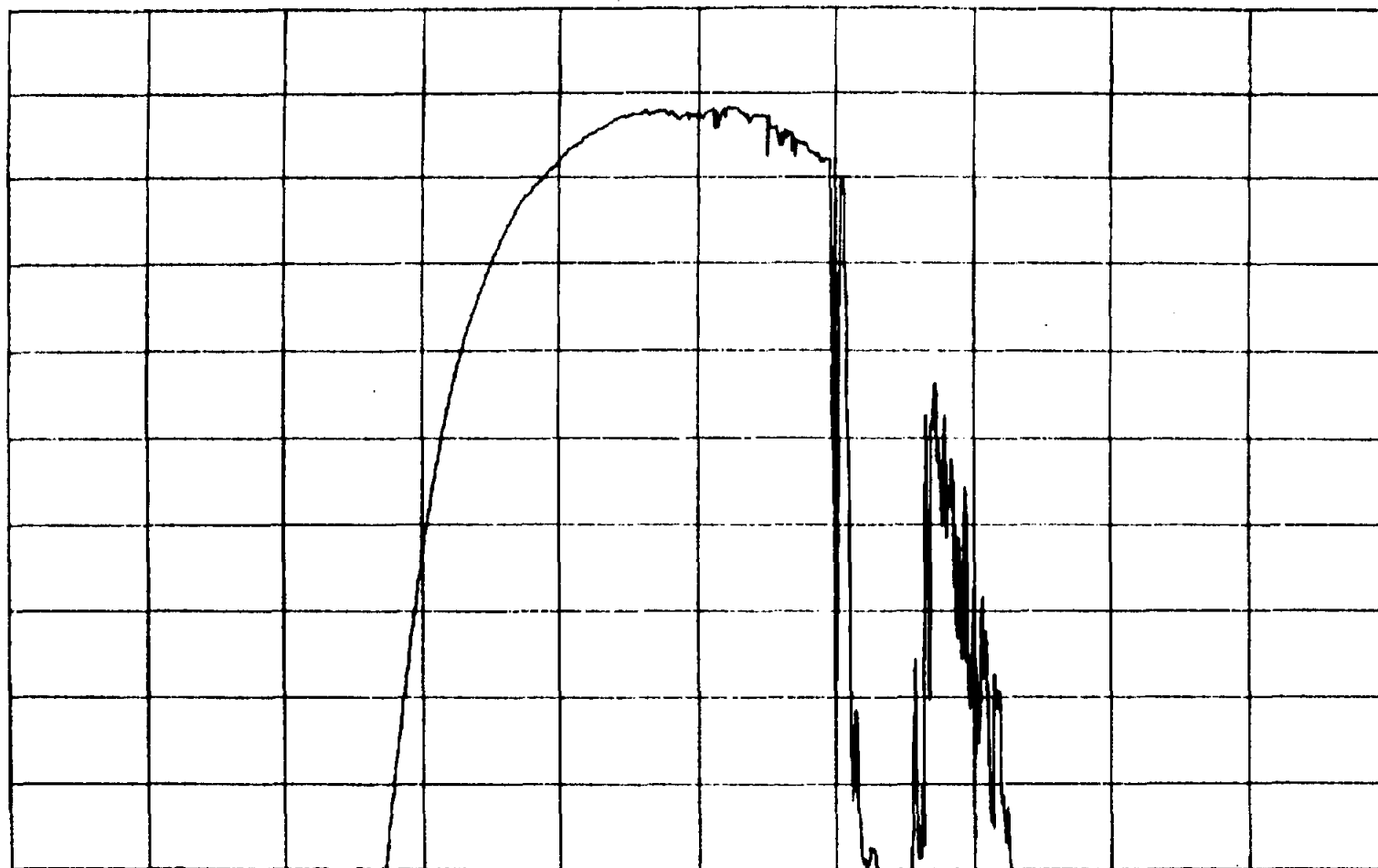
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 281 00 00 00.000

FOR NTH SAMPLE AVERAGE * 1
 1500.0000 MINUTE(S)



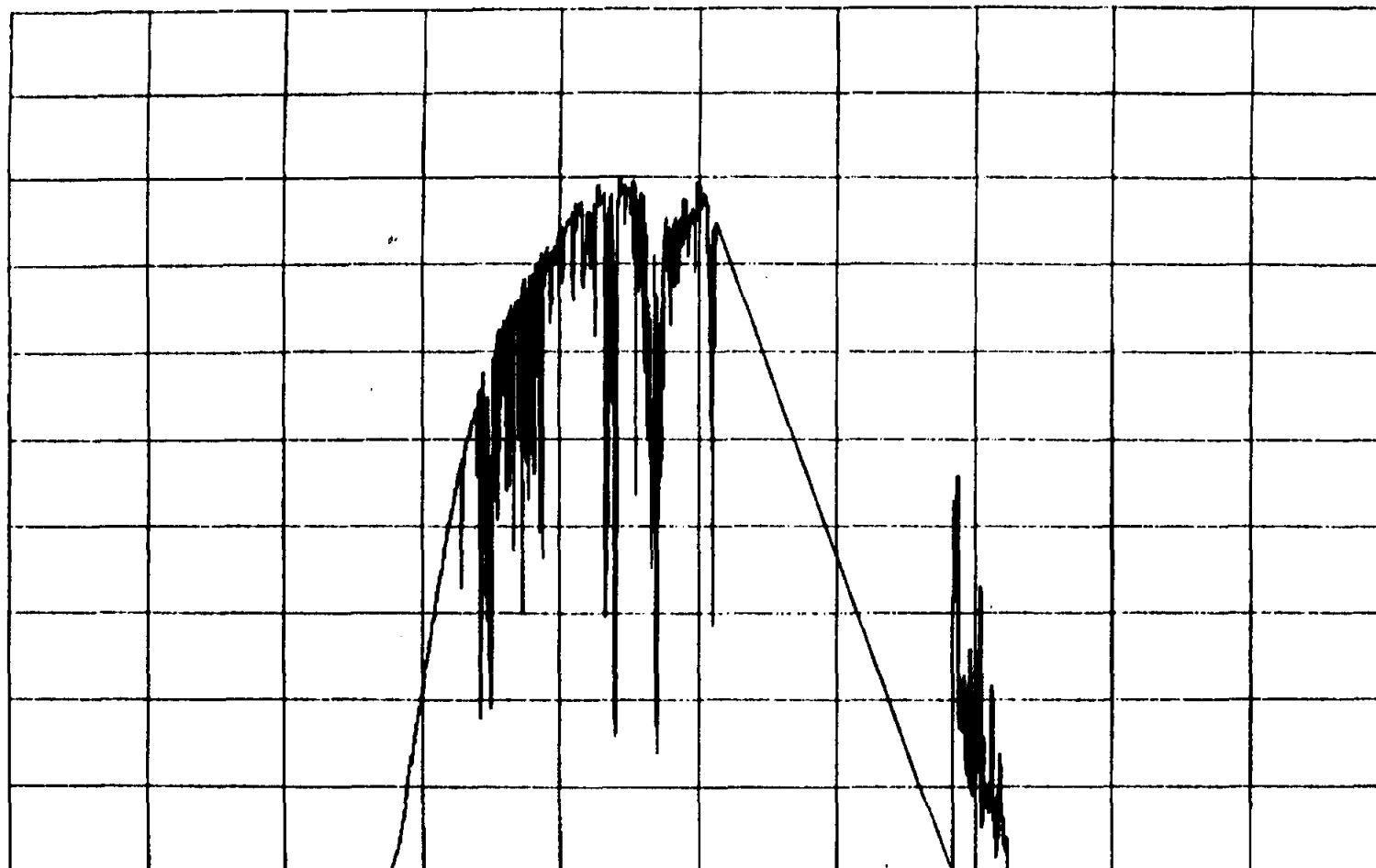
0.00
ATX1817

NIP (NORTH STATION)

0.00 - 1500.00
0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 282 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



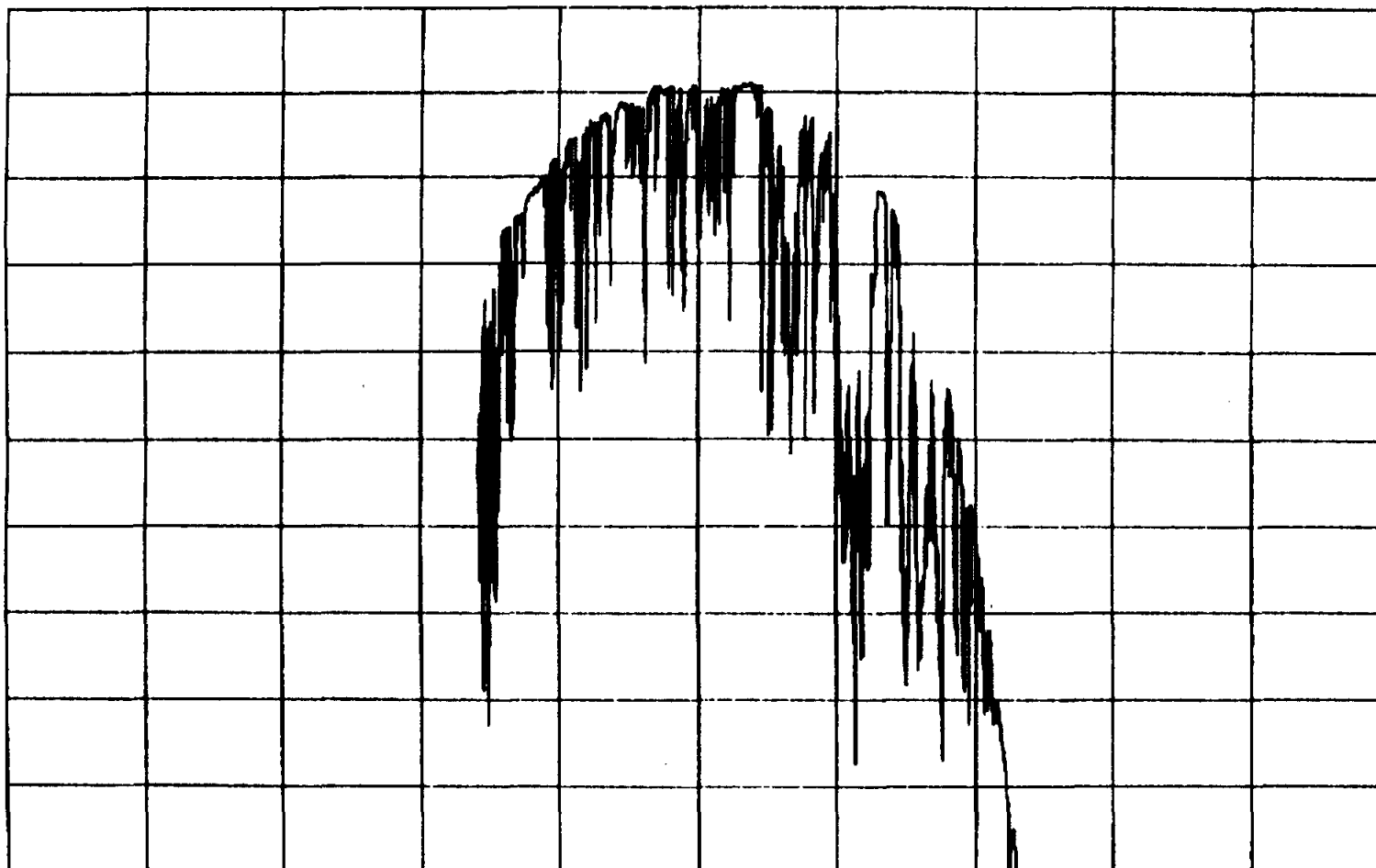
0.00
\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 283 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

##ATX1817A

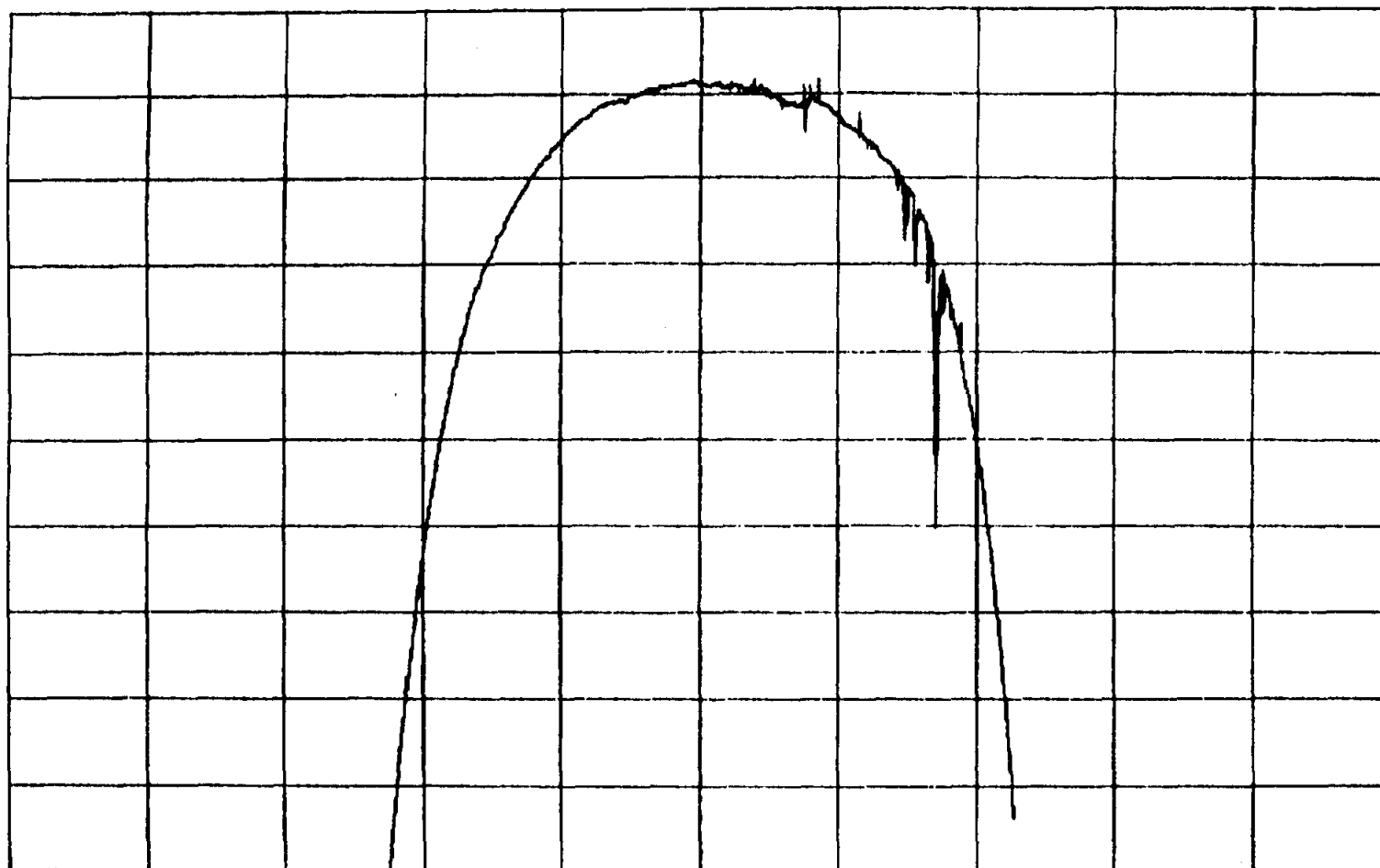
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 284 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

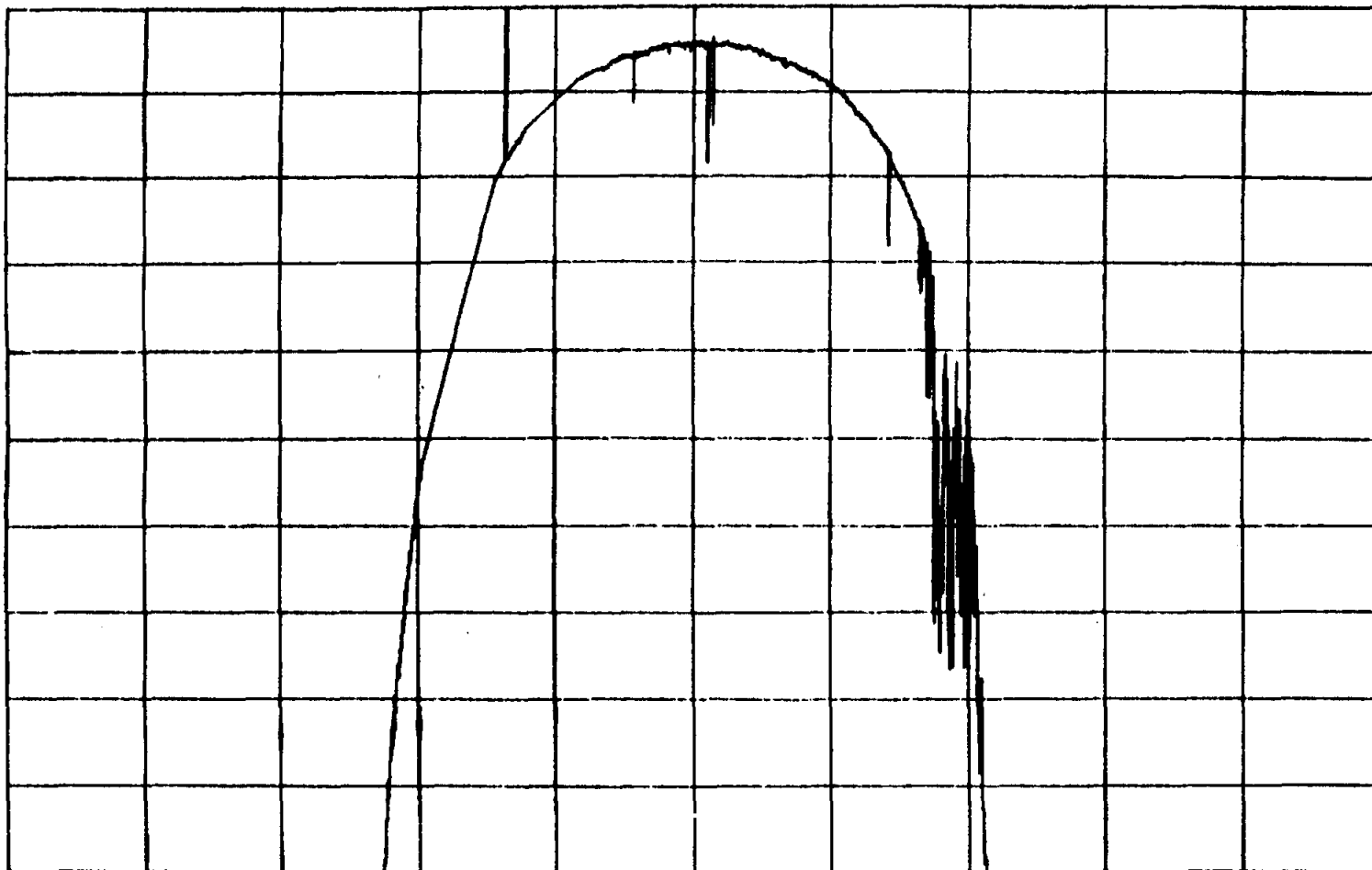
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 285 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

88ATX1817A

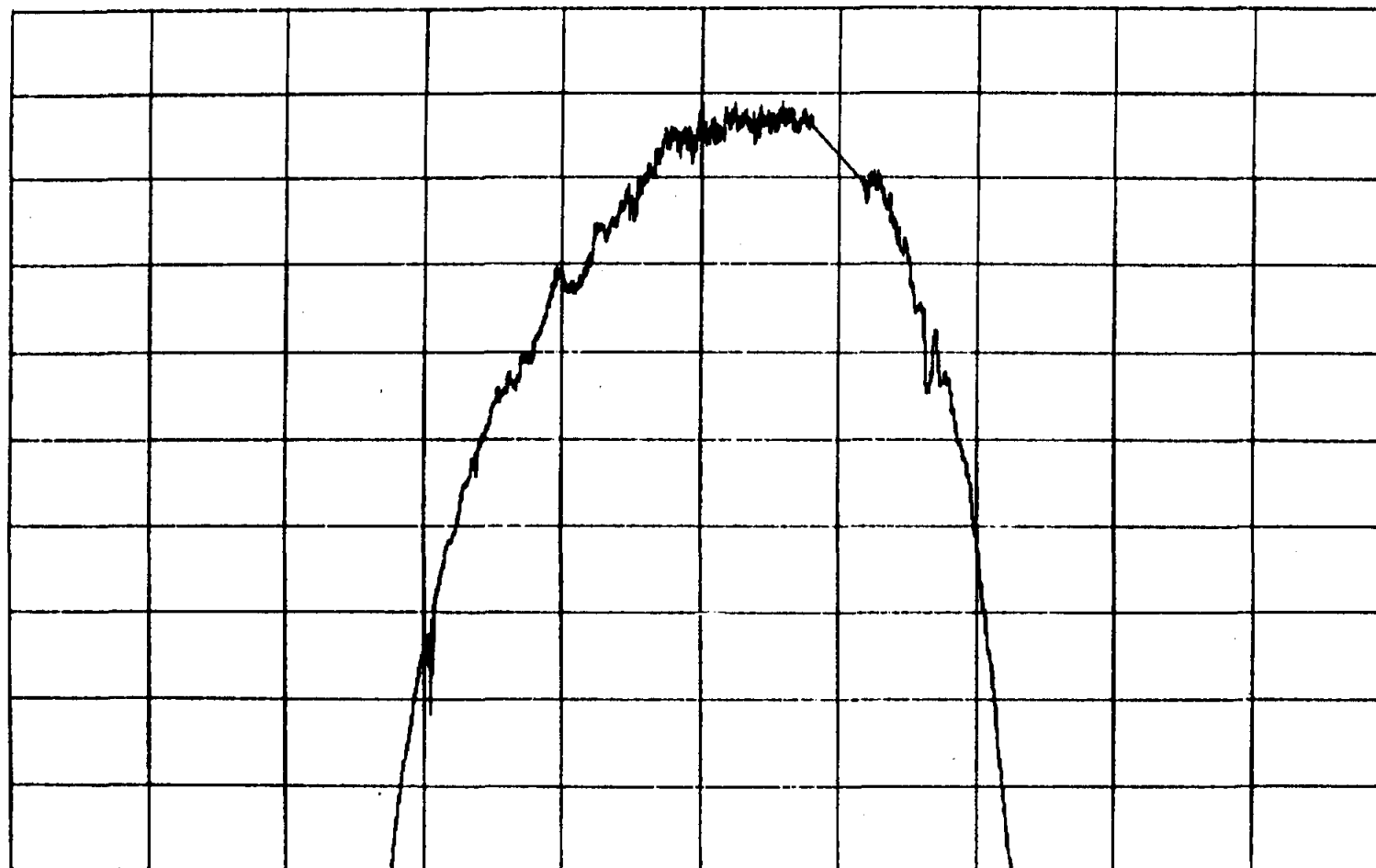
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 286 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

\$\$ATX1817A

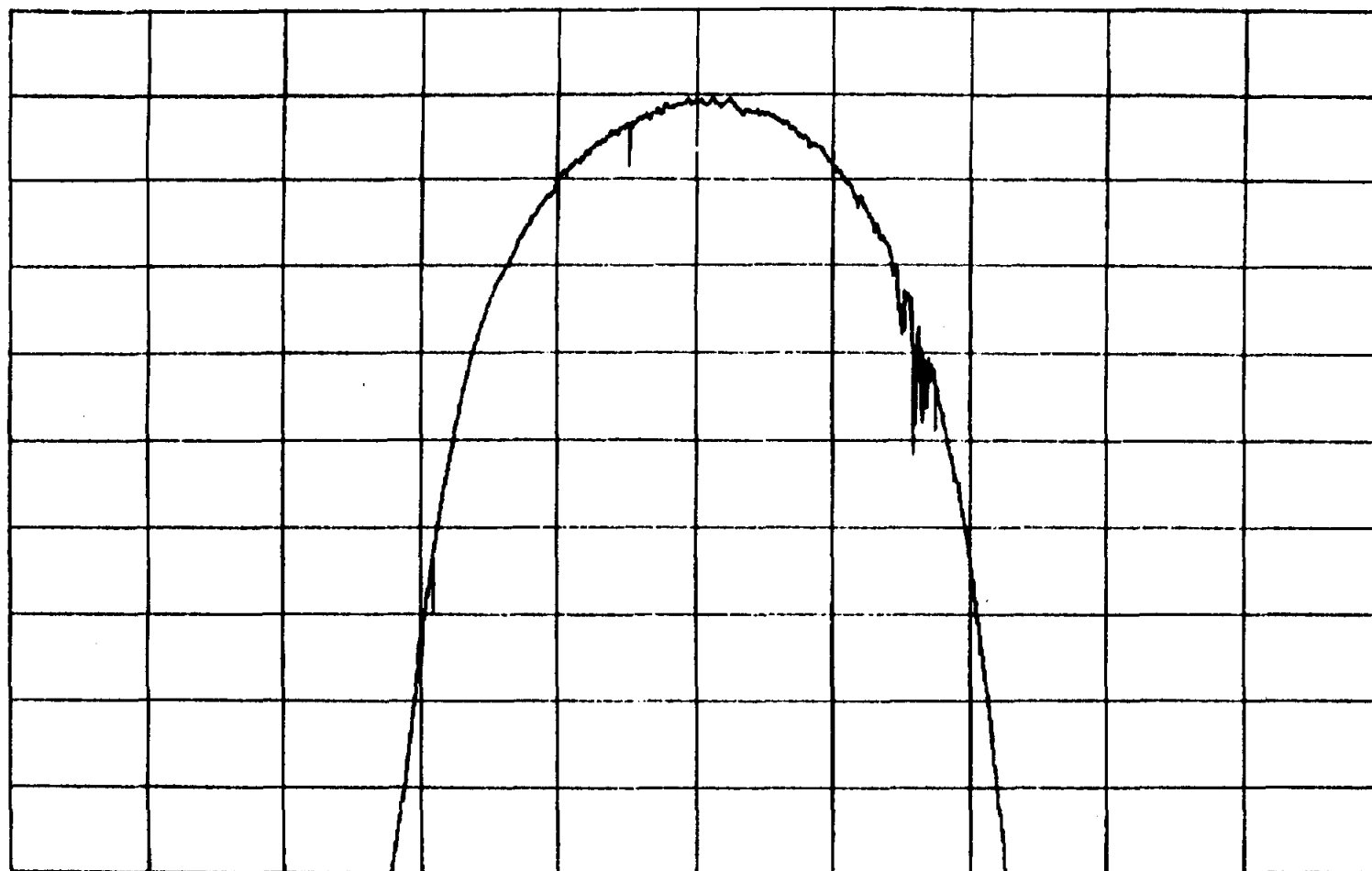
CNTRL ROOM ROOF NIP

0.00 - 1000.00 U/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 287 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

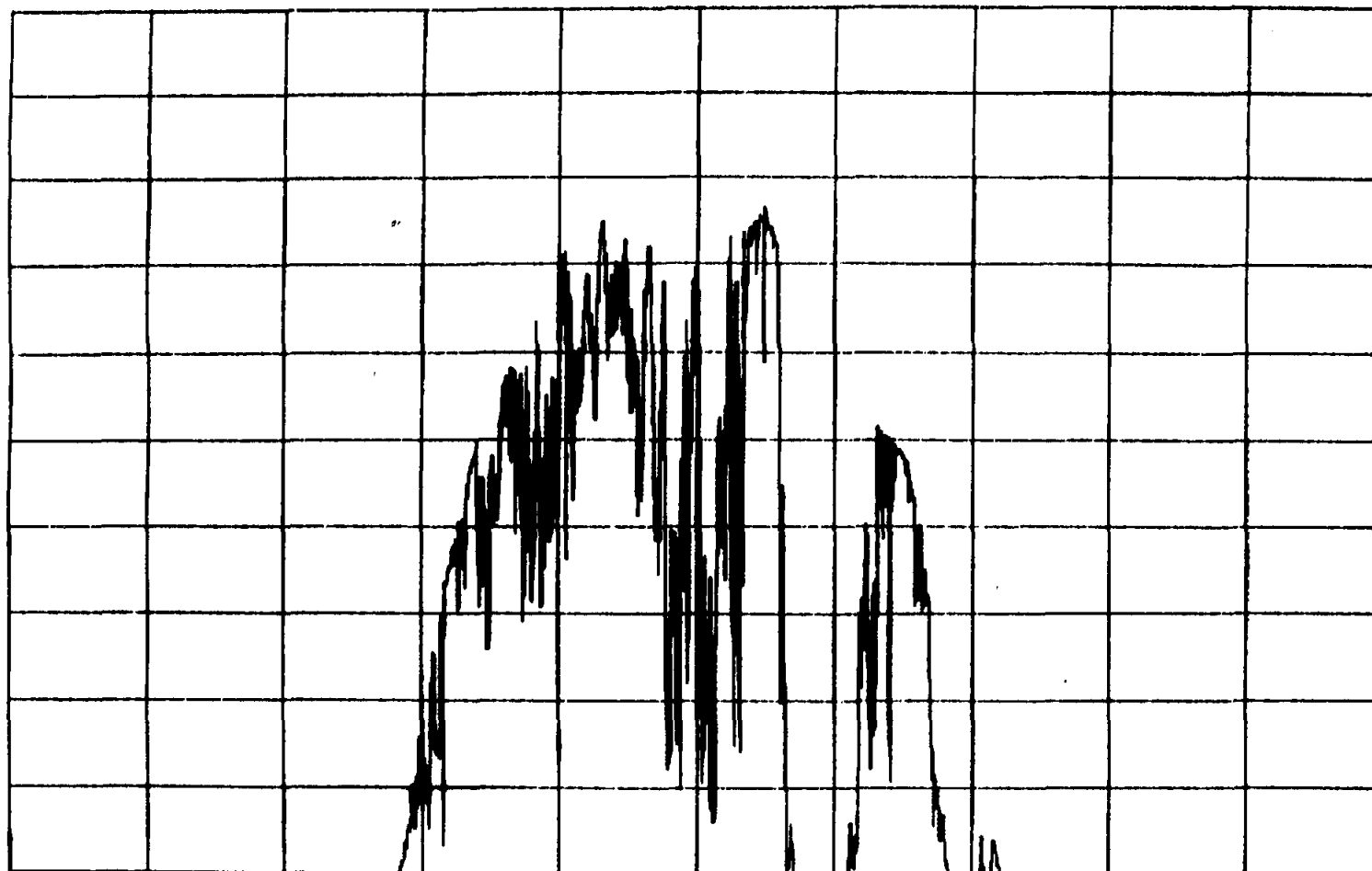
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 288 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



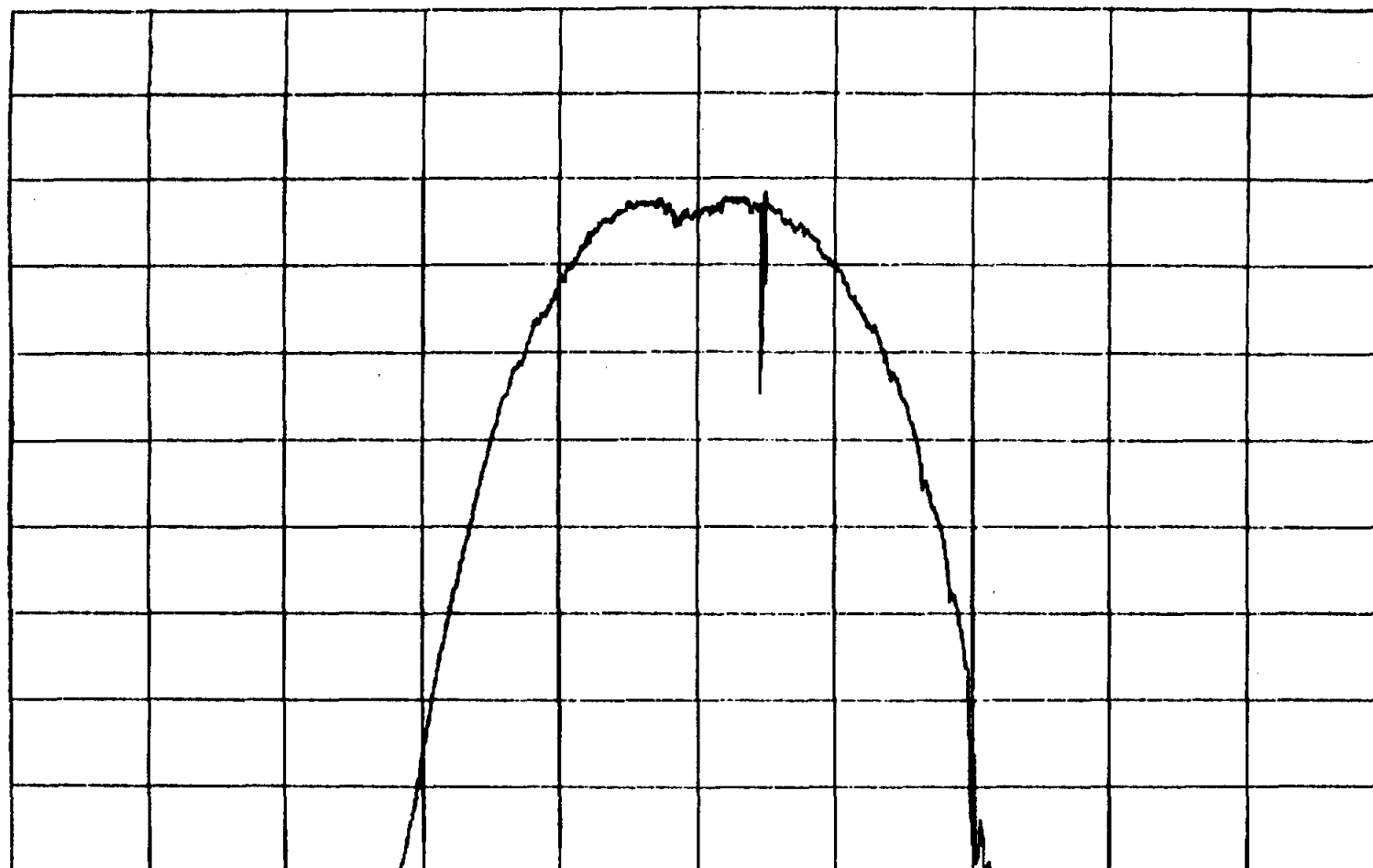
0.00
88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 289 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

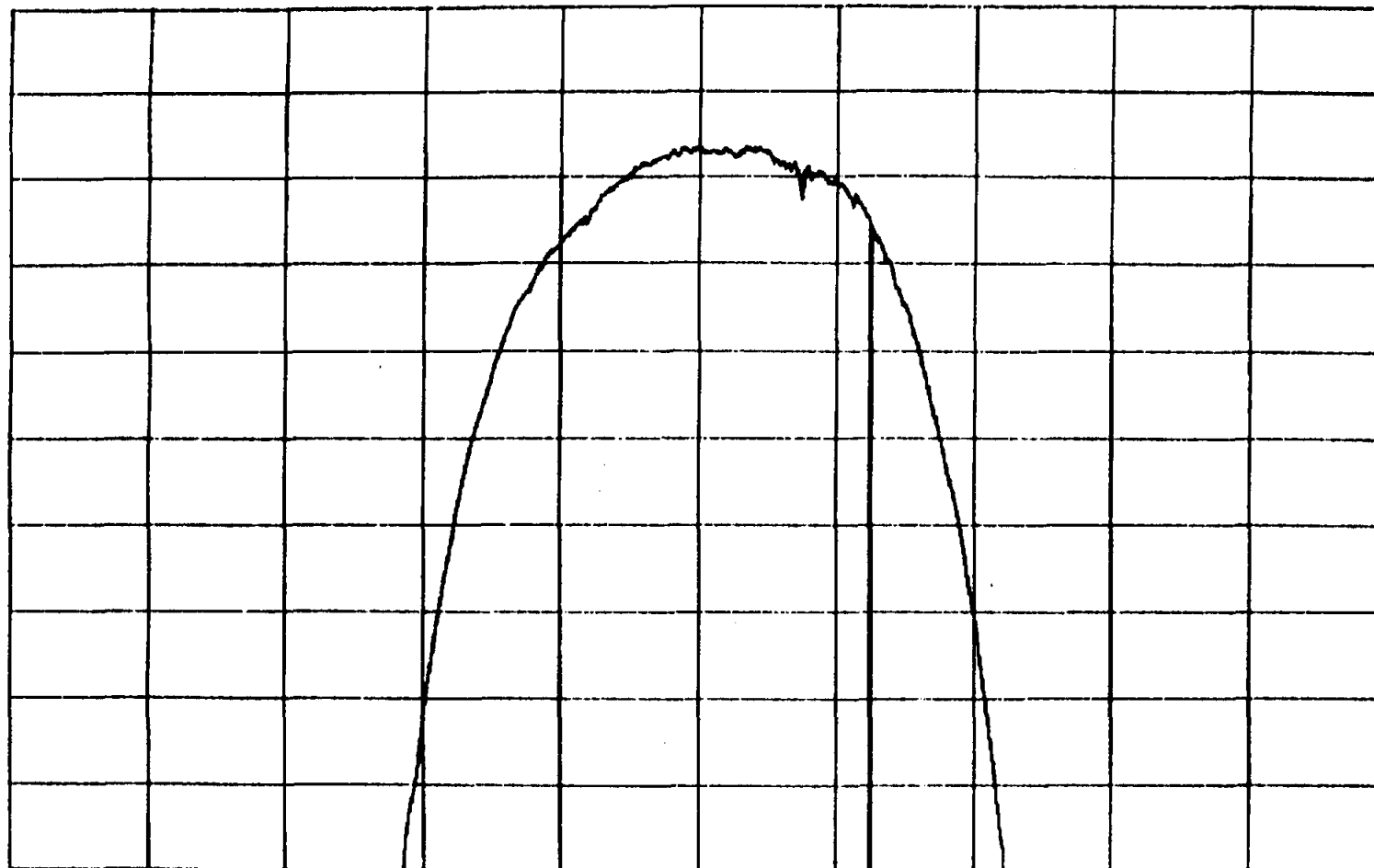
1500.00

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 291 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



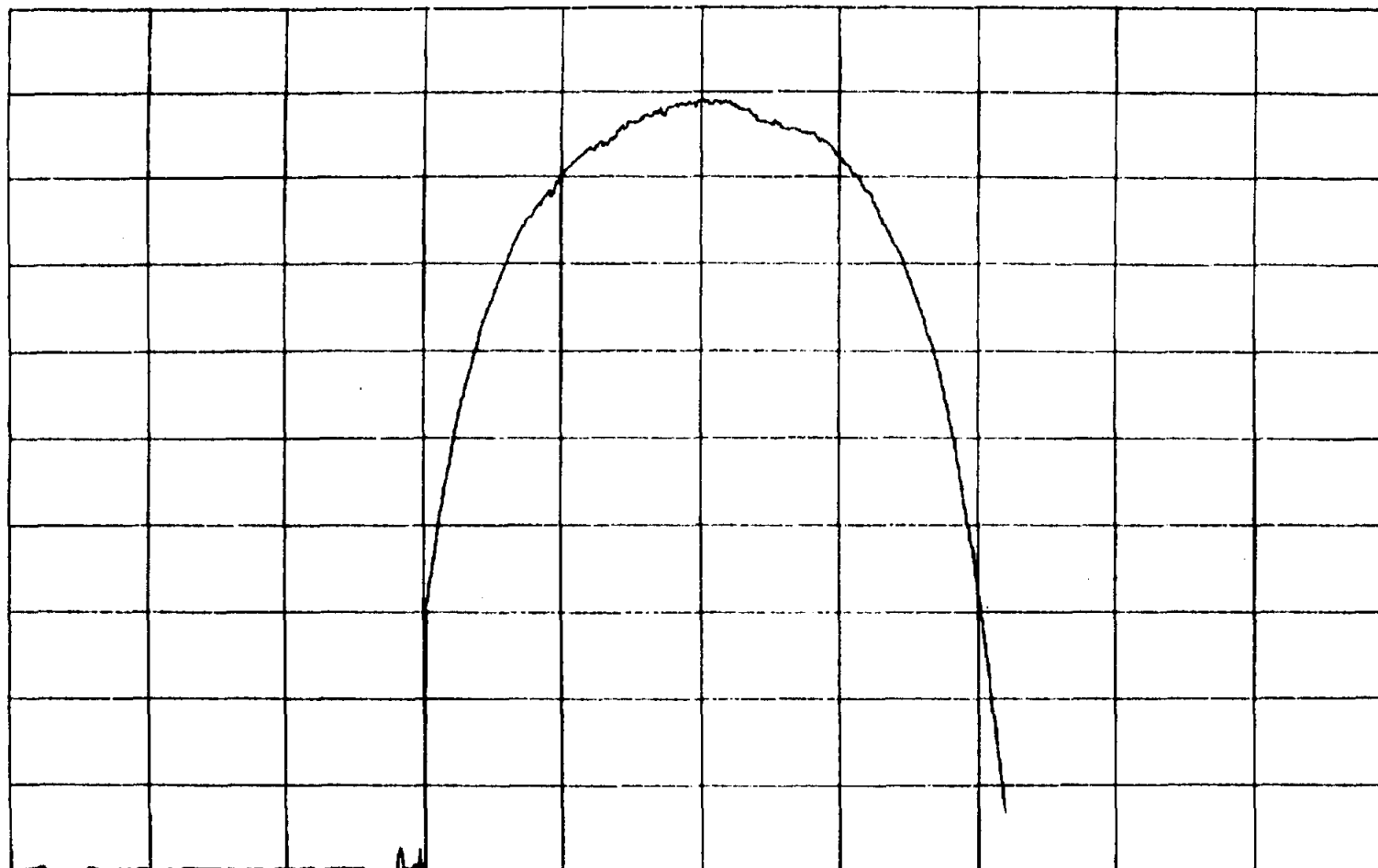
0.00
**ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 292 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
HTX1817

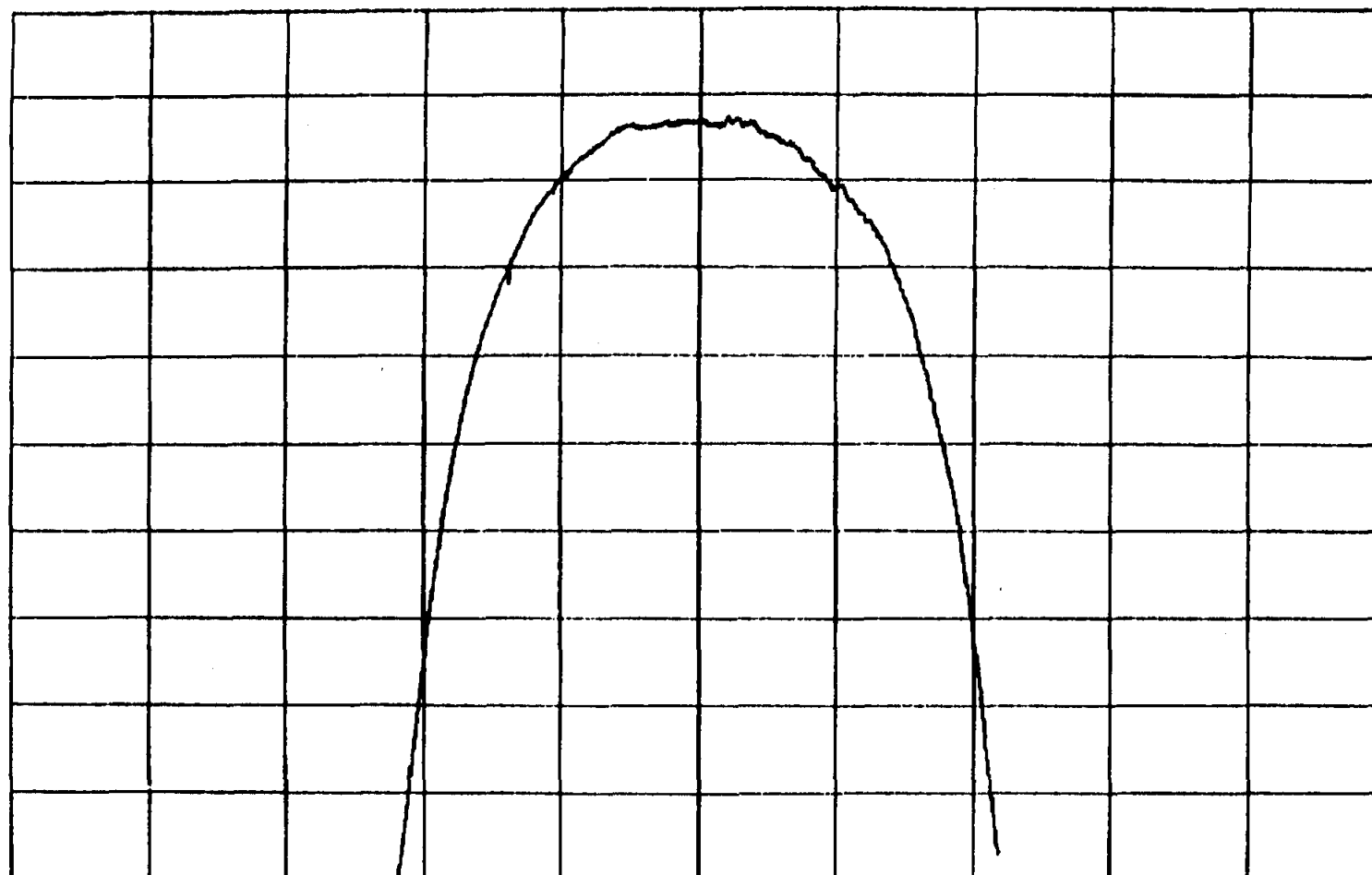
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 293 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

\$\$\$ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 294 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

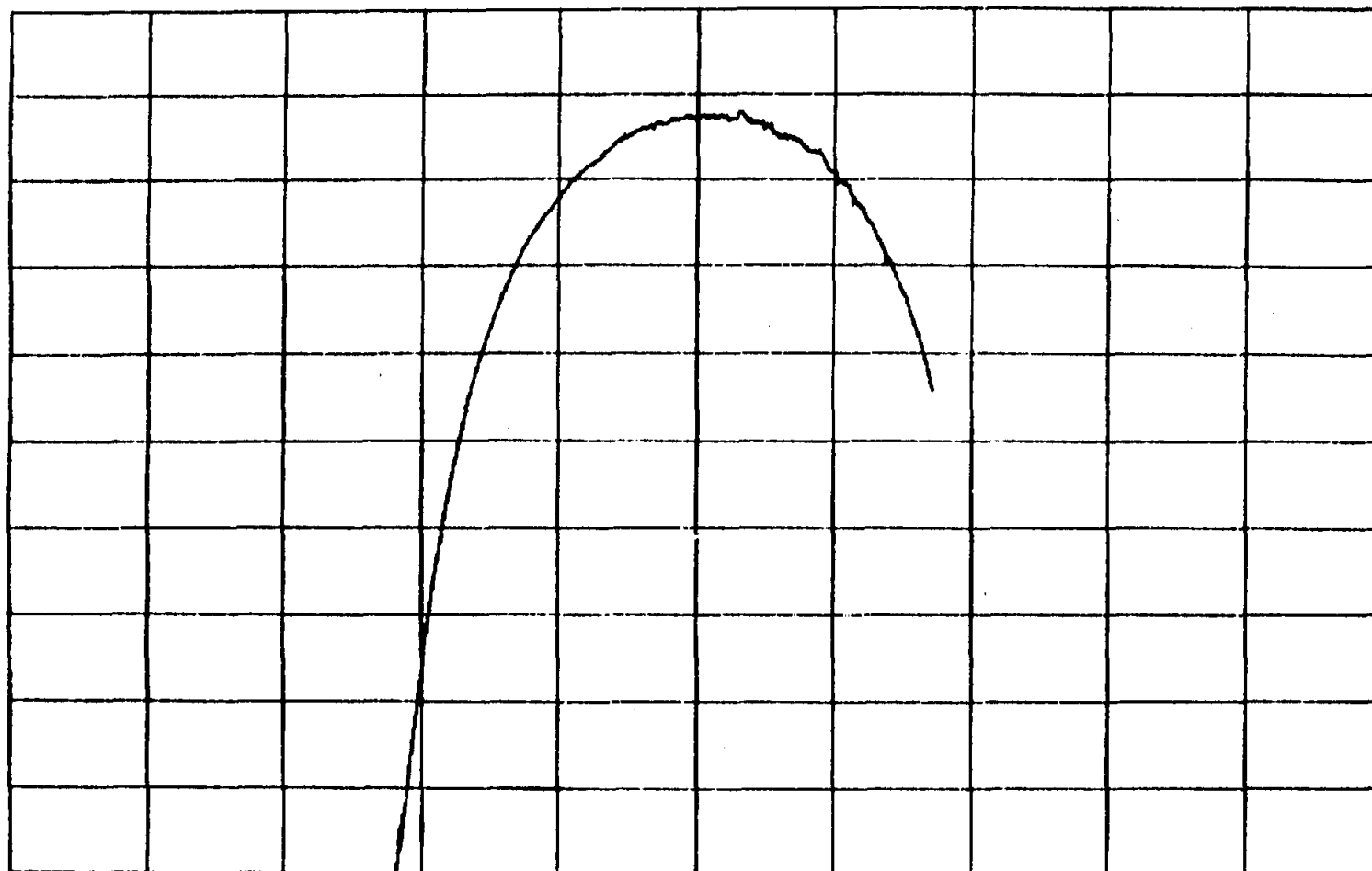
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 295 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

STATX1817A

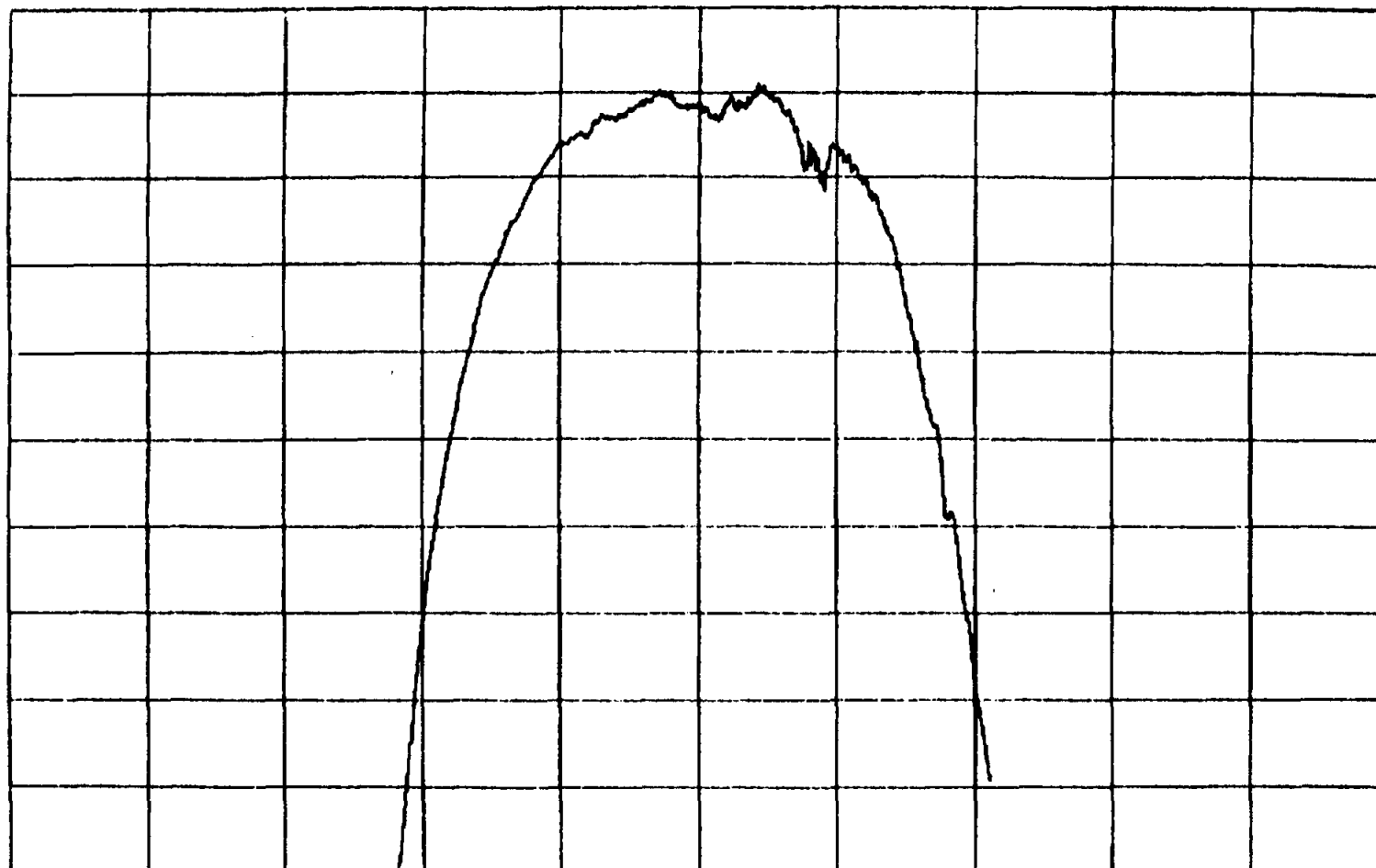
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 296 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

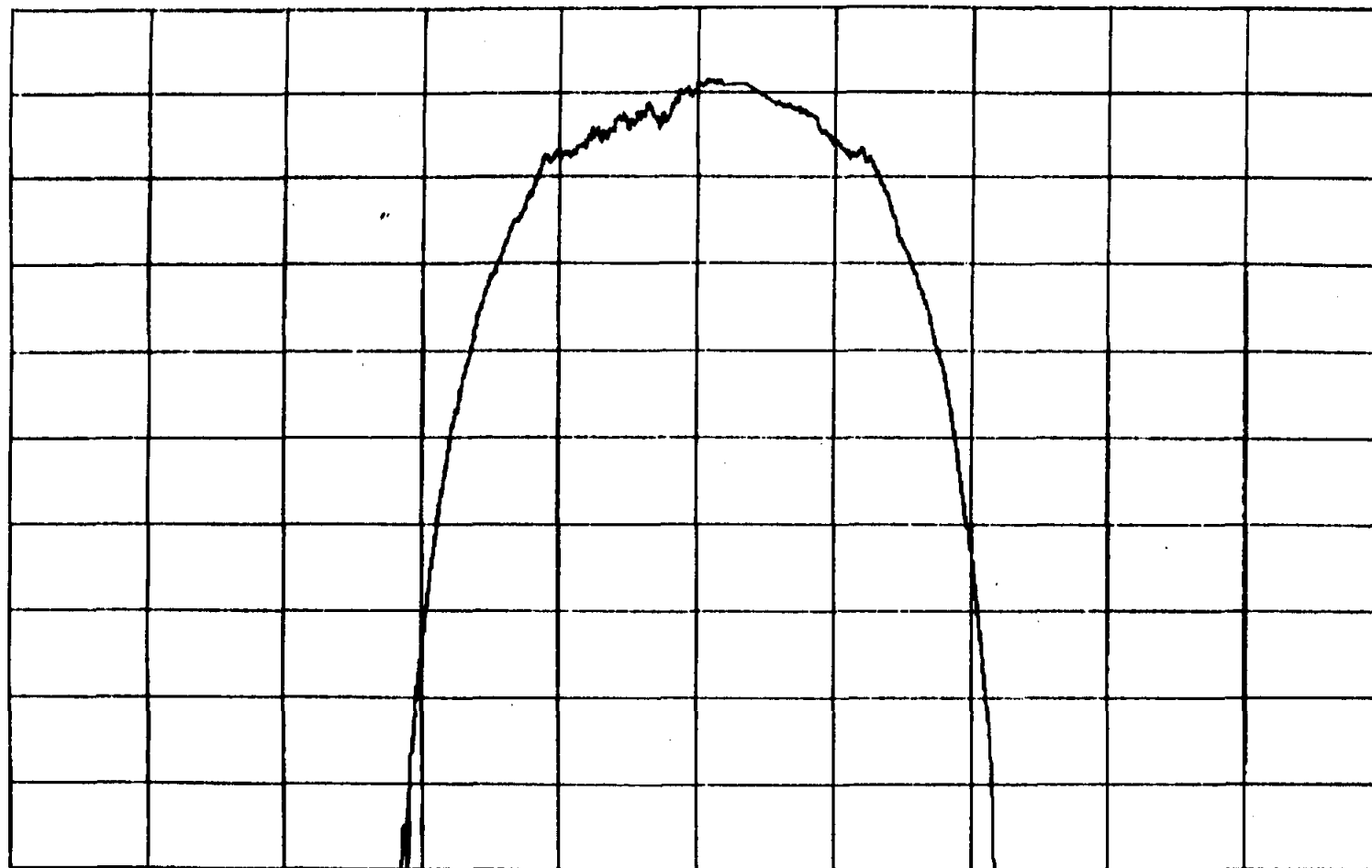
1500.00

\$\$\$TX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 297 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

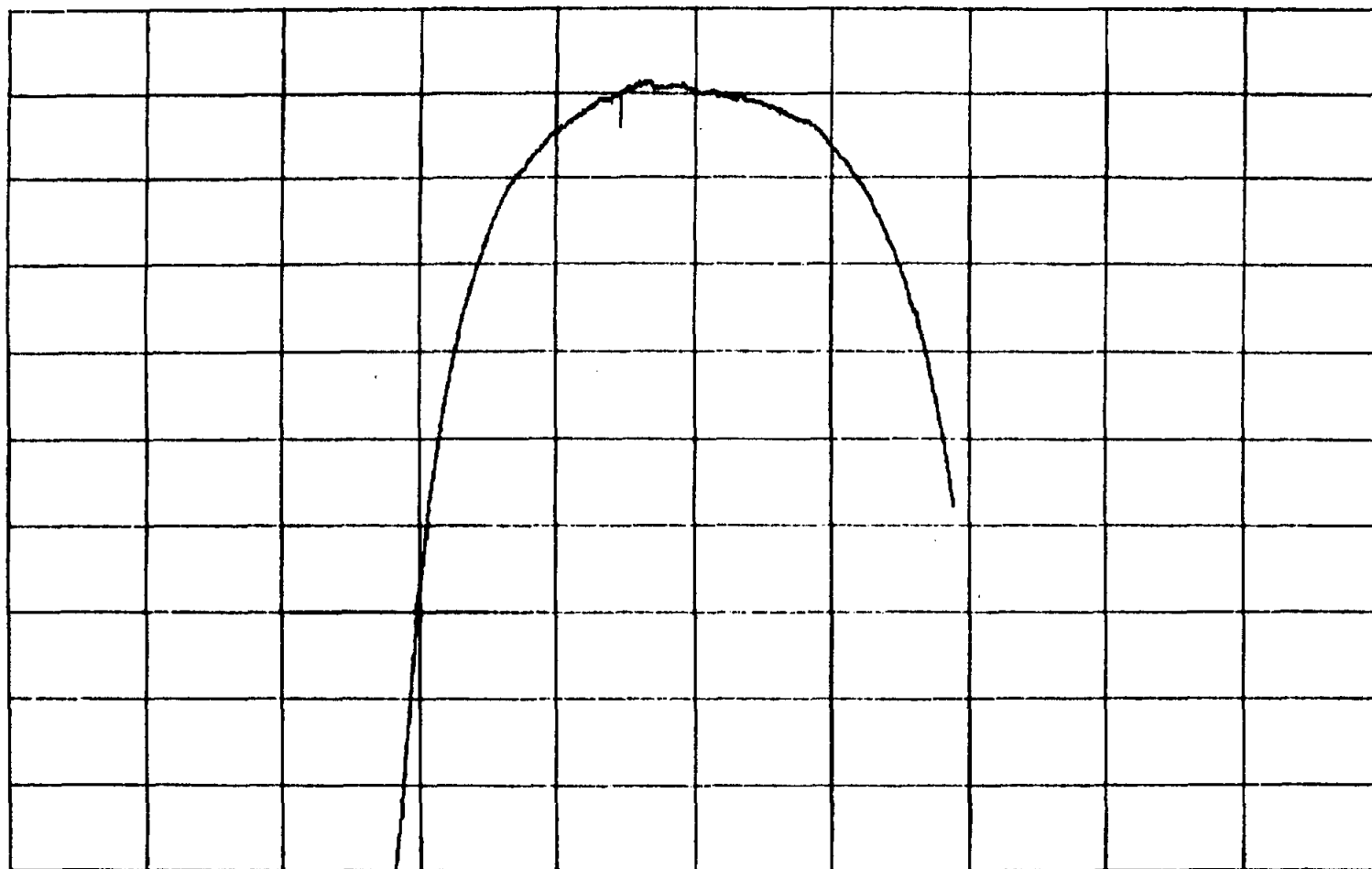
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 298 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

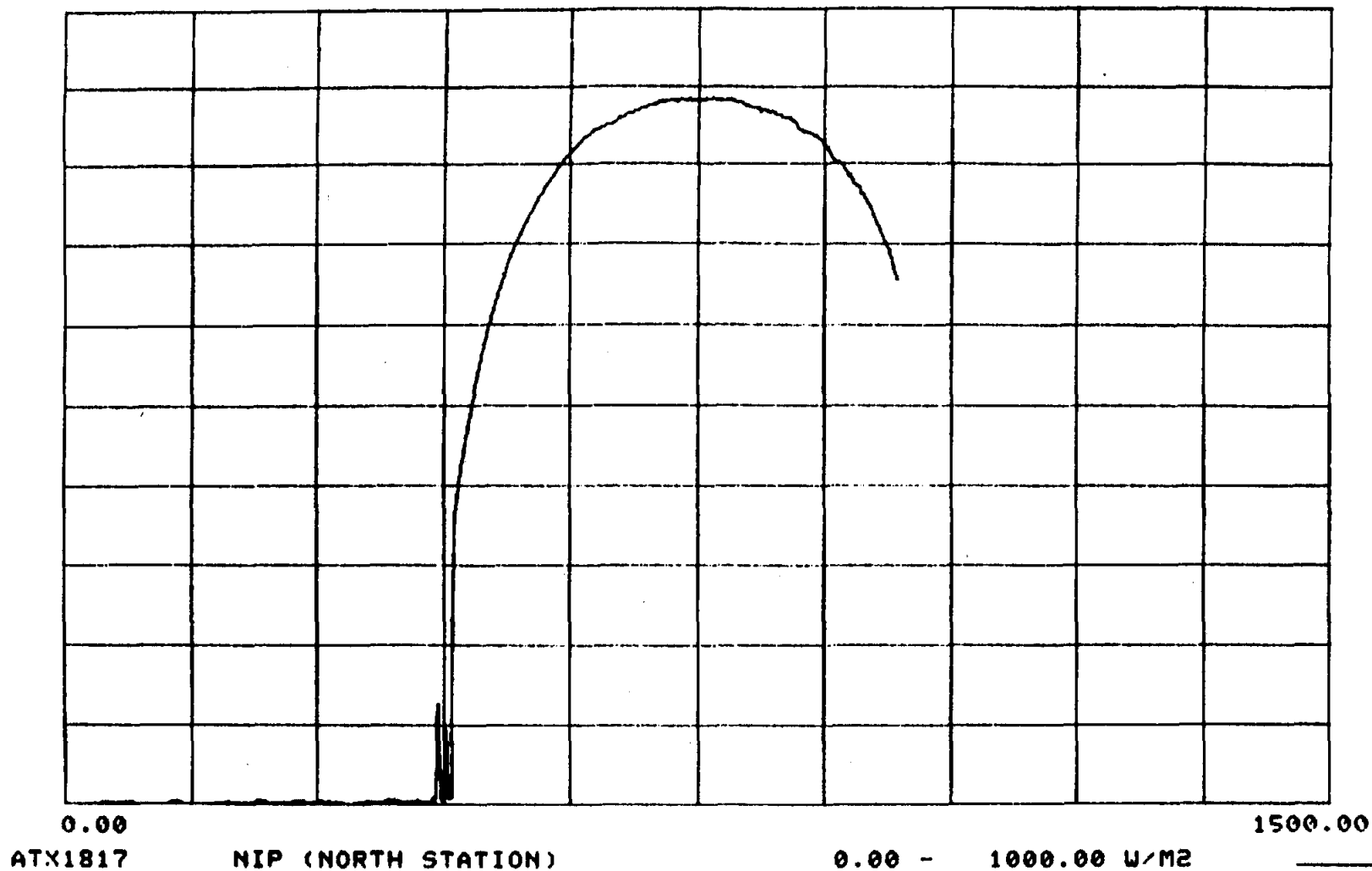


0.00
##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

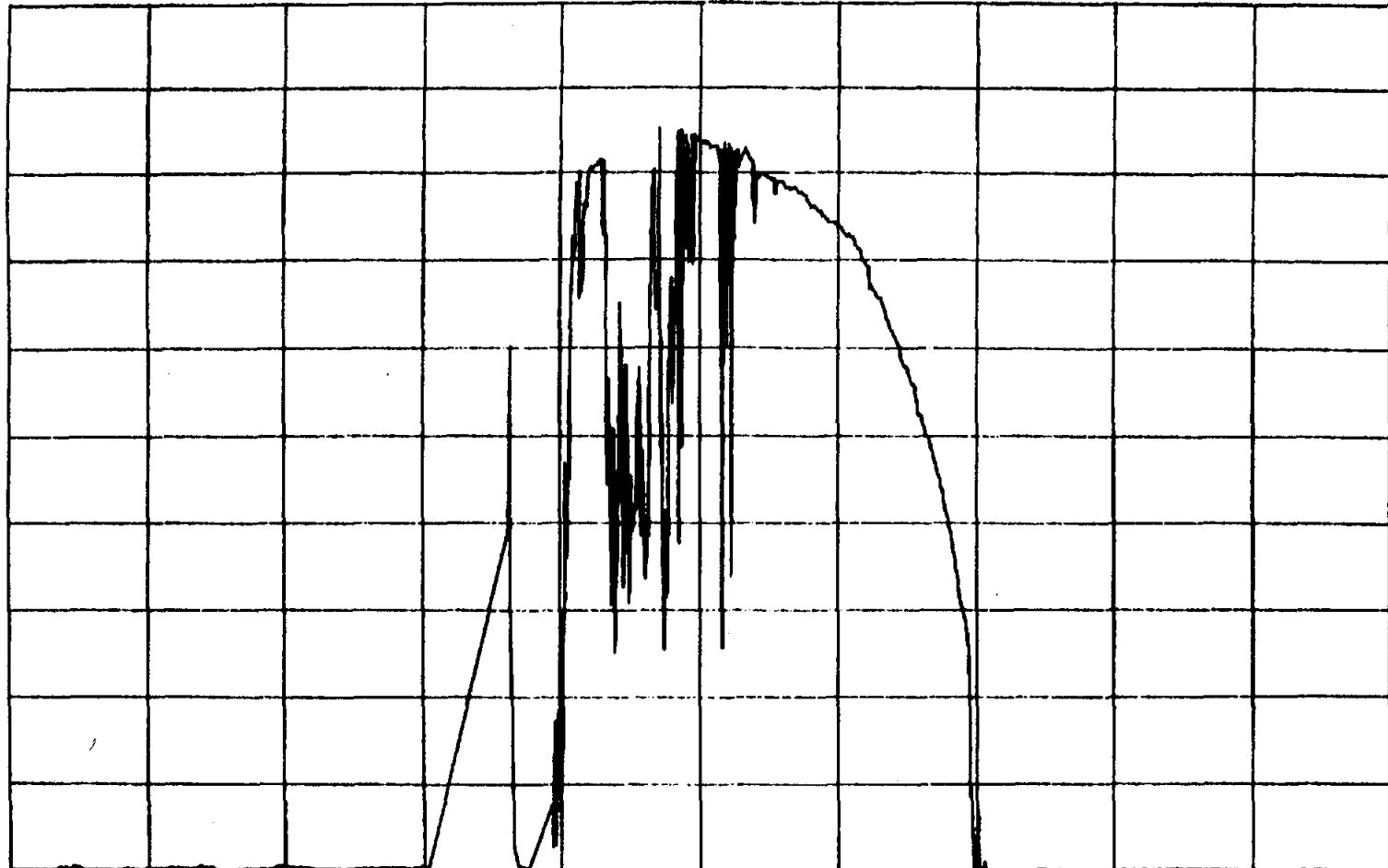
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 299 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 301 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT

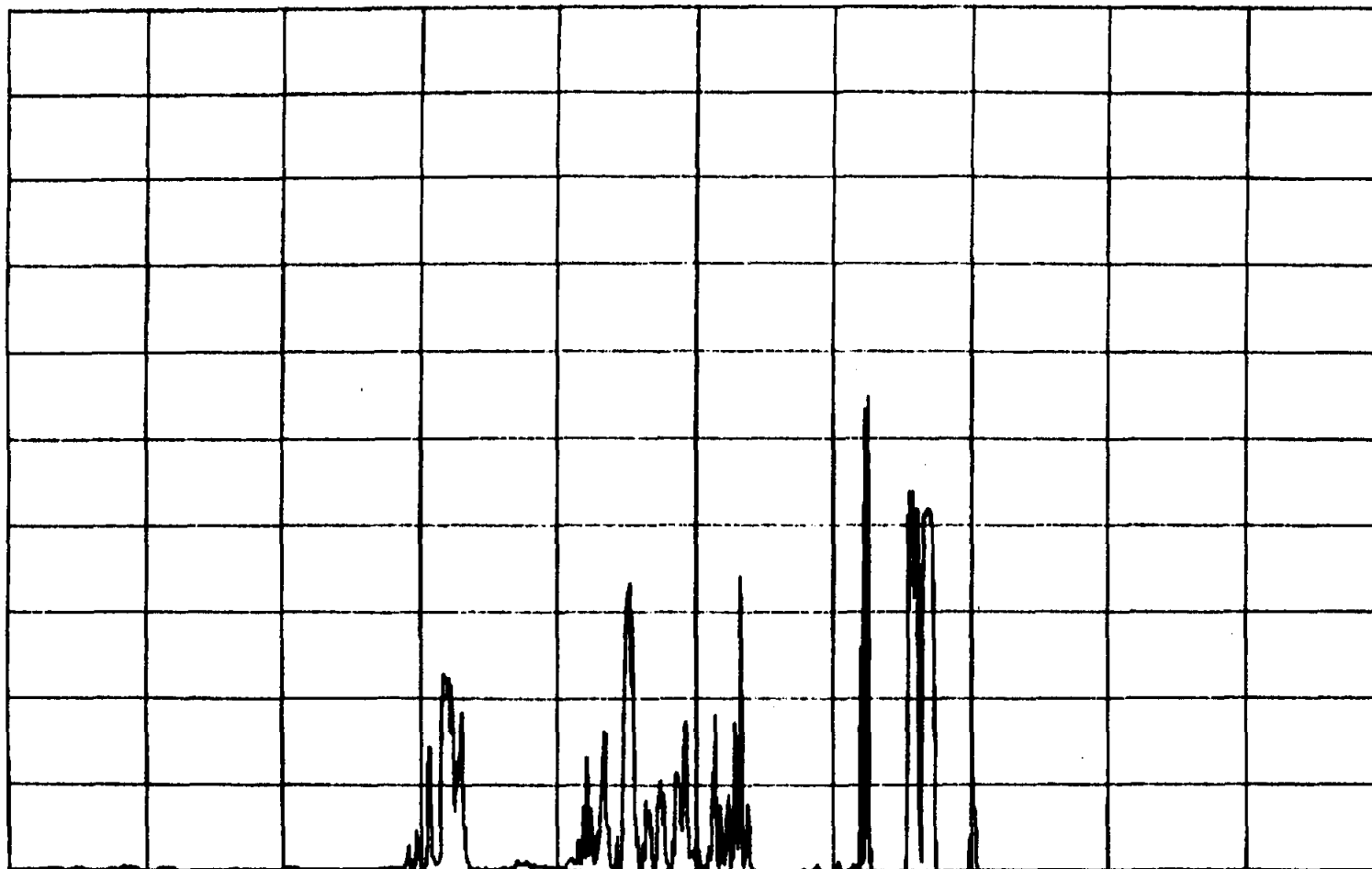
PLOT # MISL1

NTH SAMPLE AVERAGE = 1

REFERENCE TIME: 302 00 00 00.000

FOR

1500.0000 MINUTE(S)



0.00

1500.00

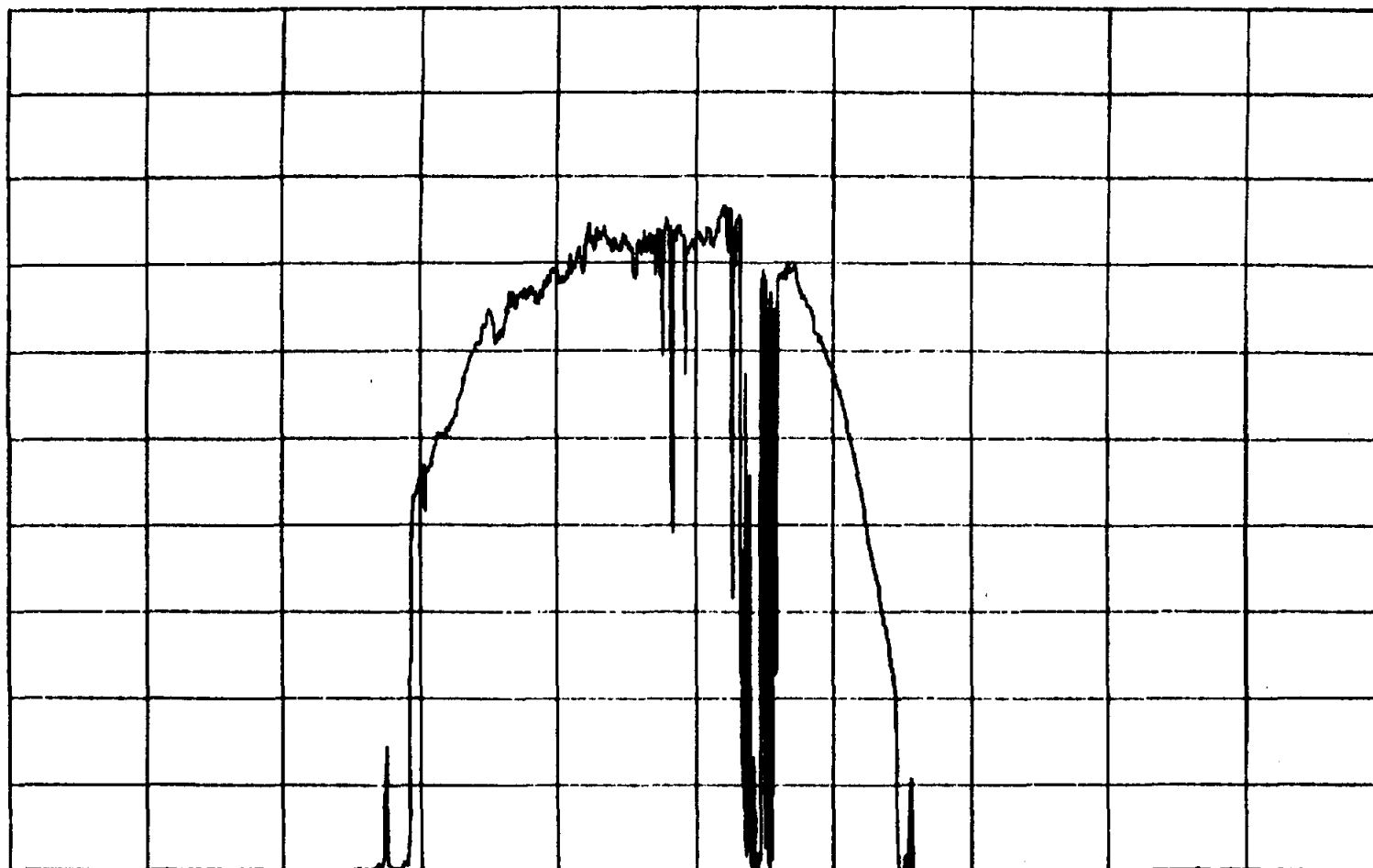
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 U/M2

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 303 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

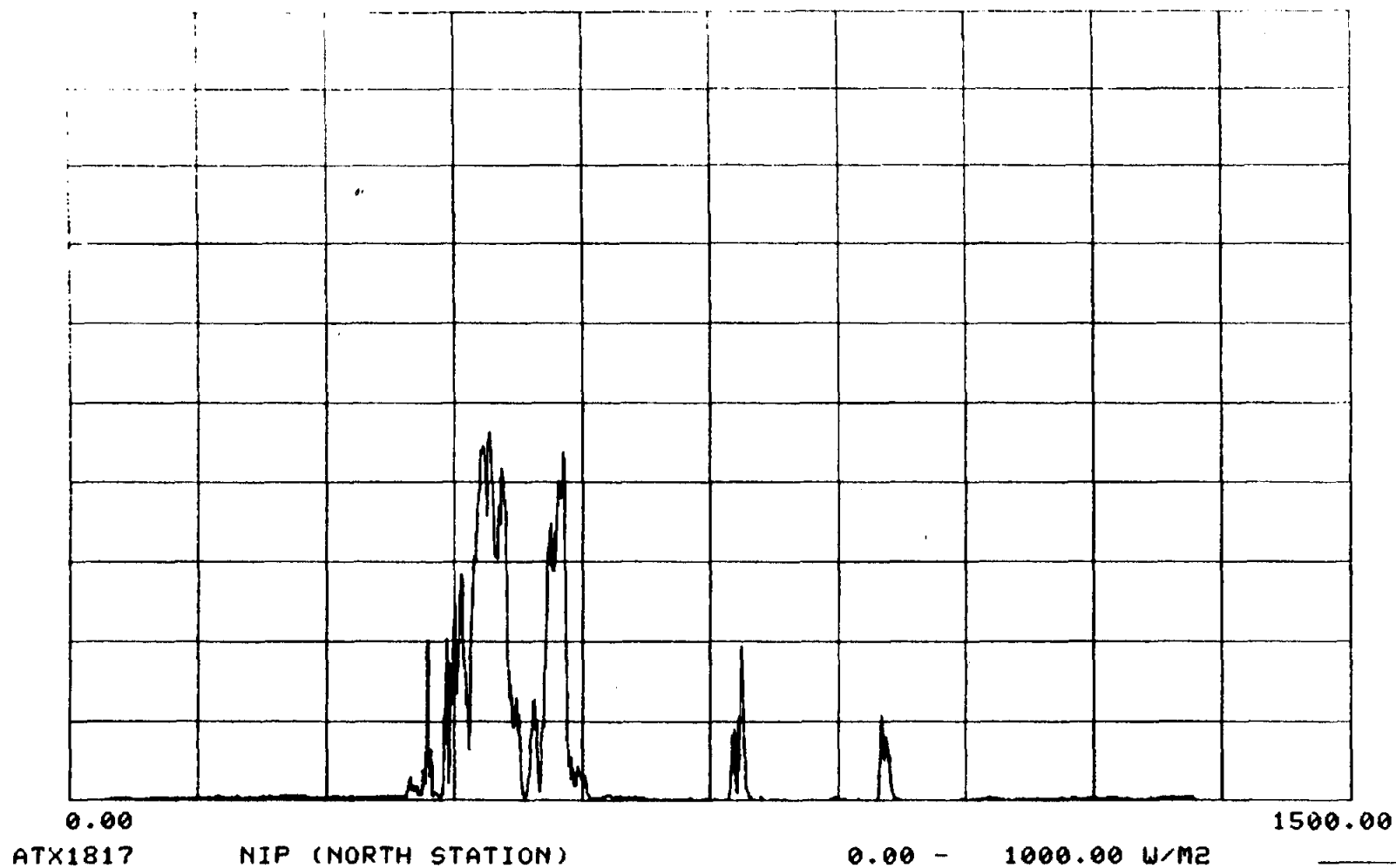
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

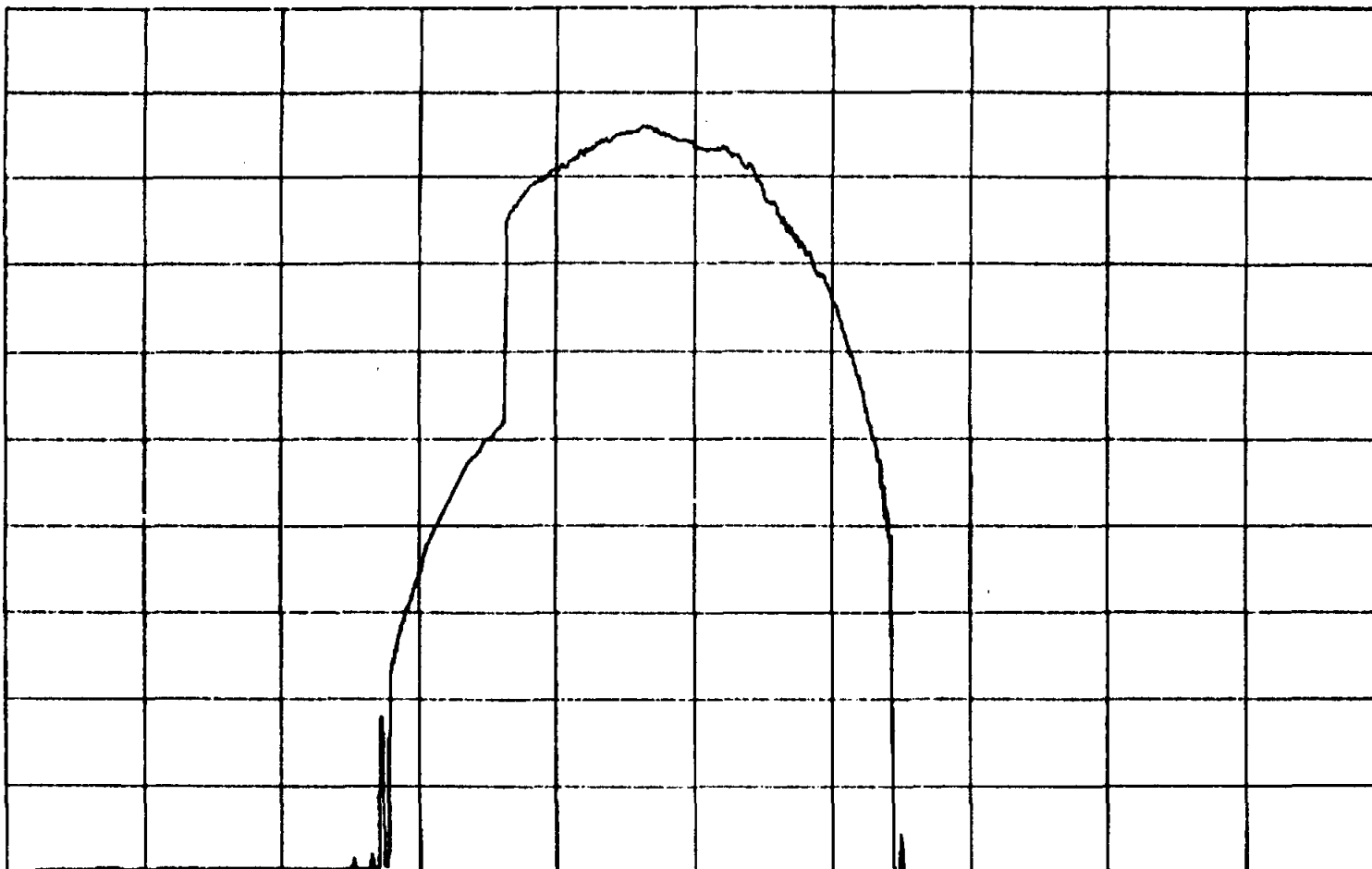
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 305 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 306 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

ATX1817

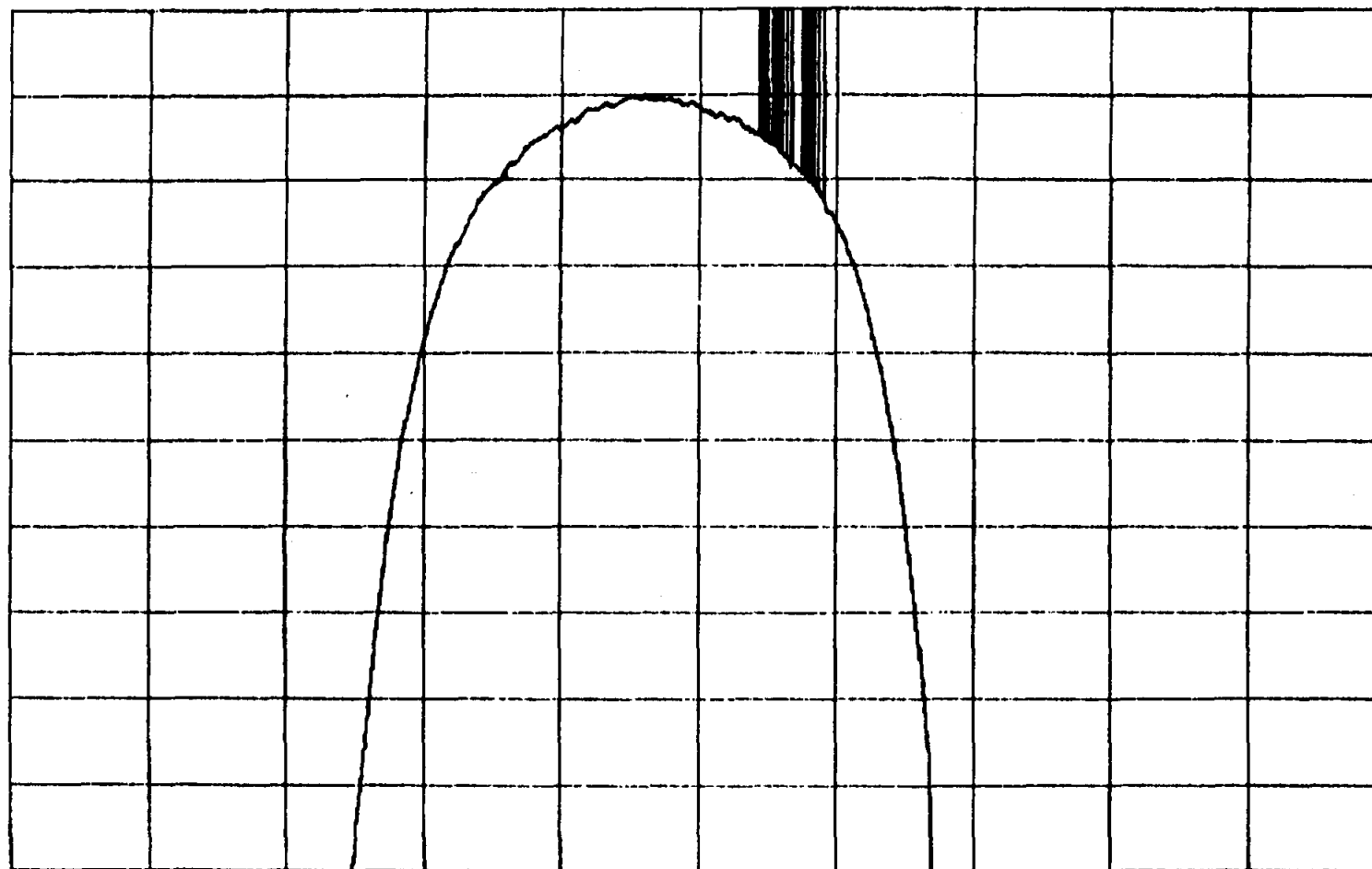
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 307 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

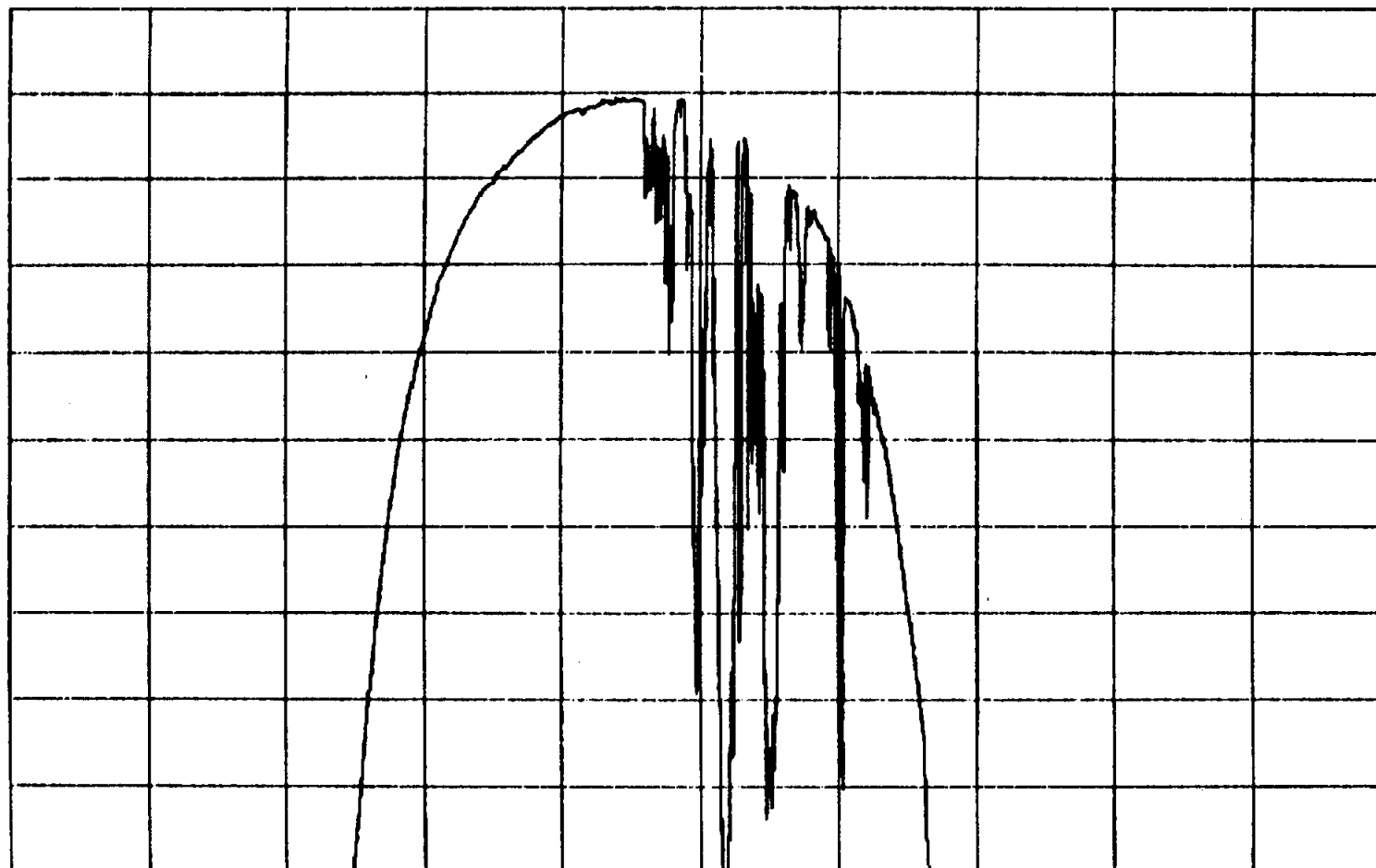
1500.00

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 308 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

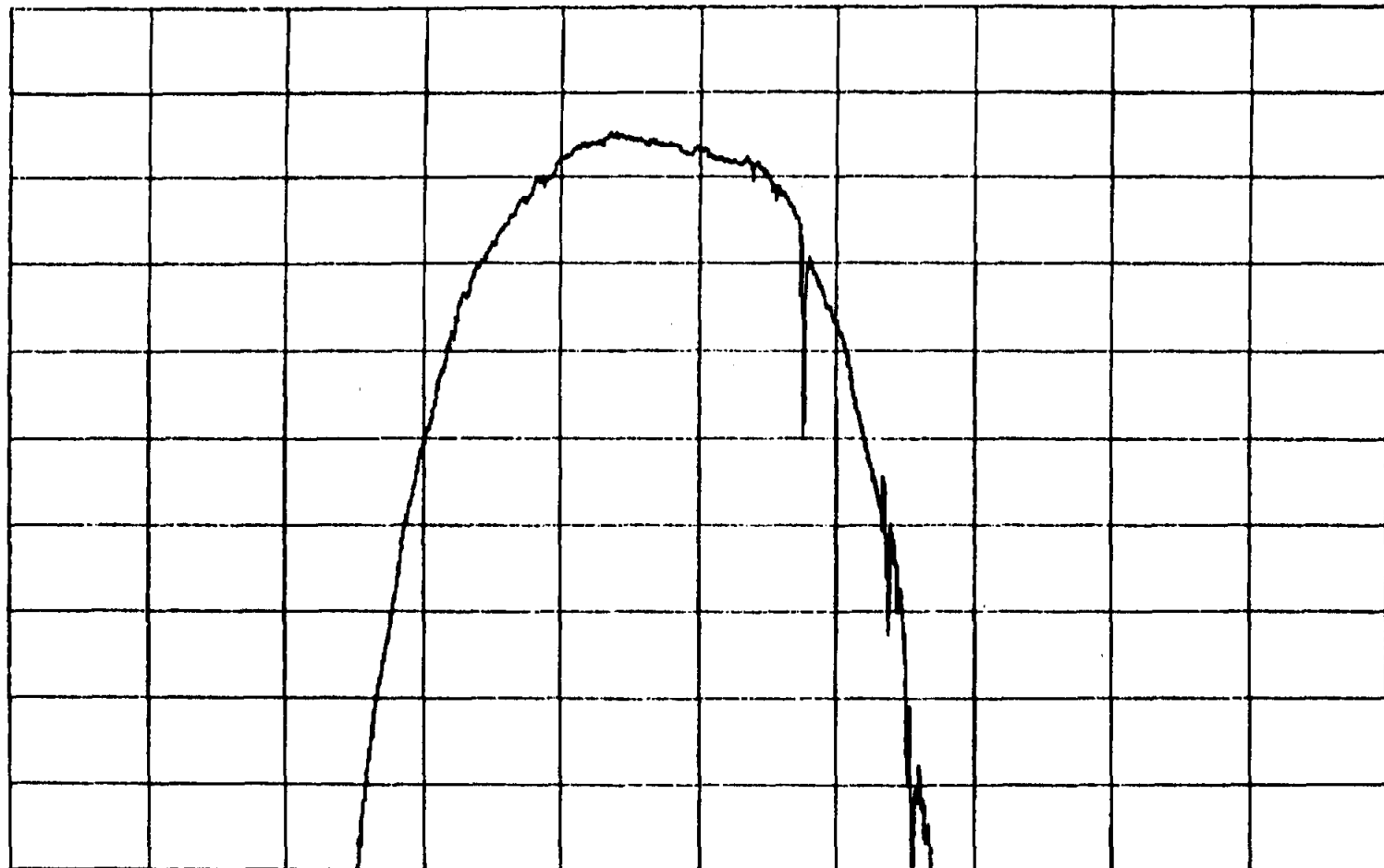
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 309 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

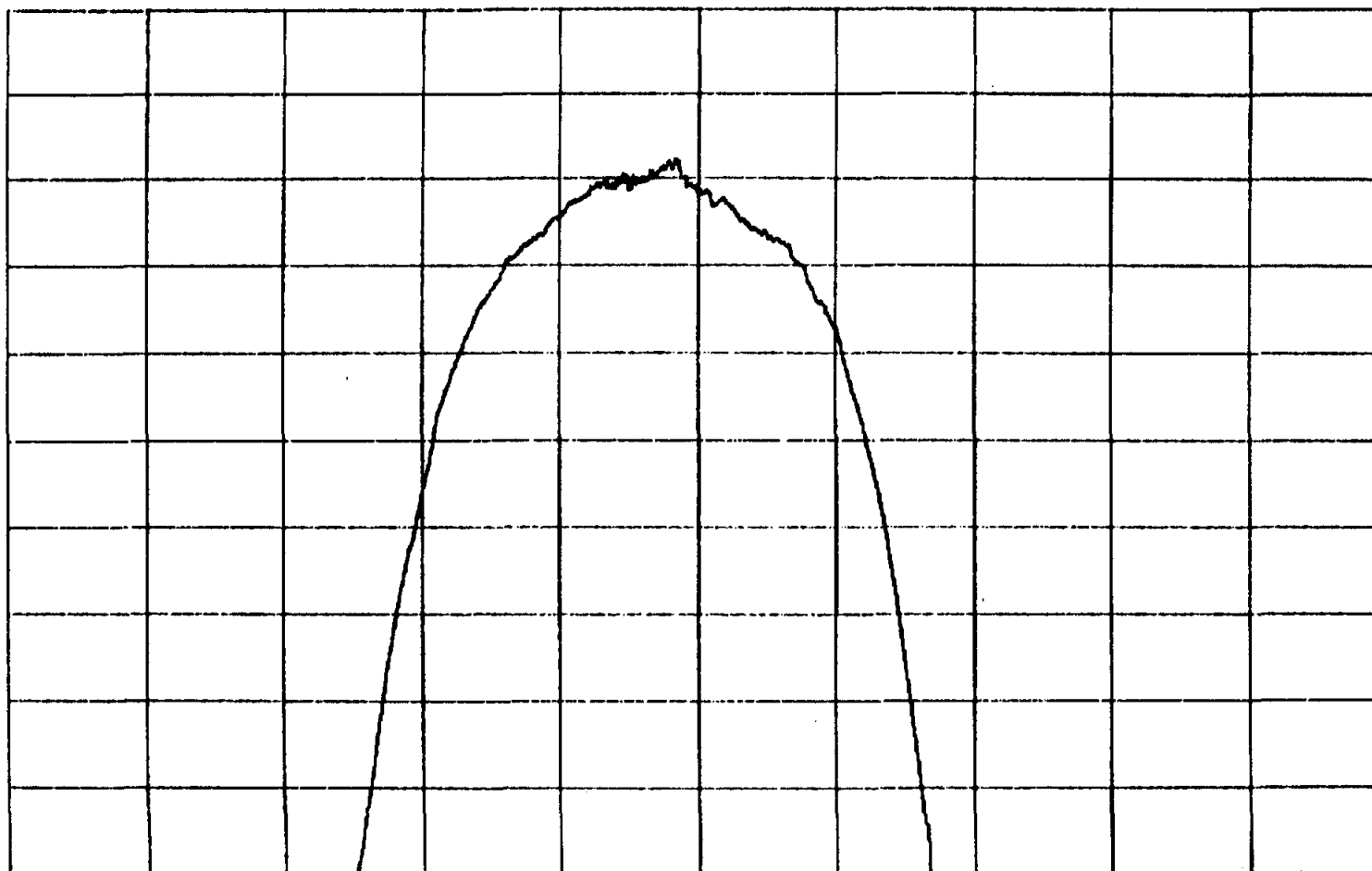


0.00
**ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 310 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)

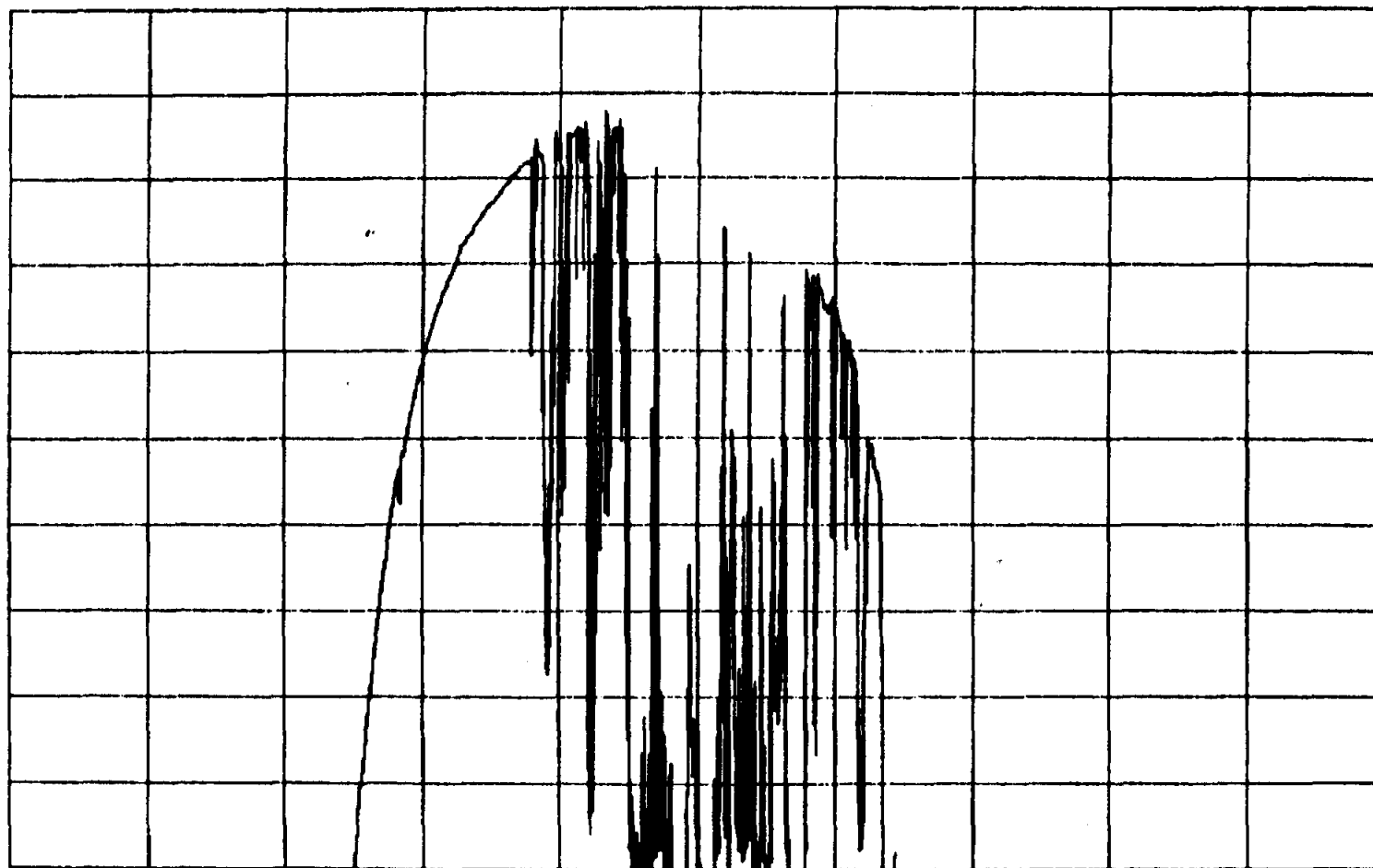


0.00
88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 311 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
STATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 312 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

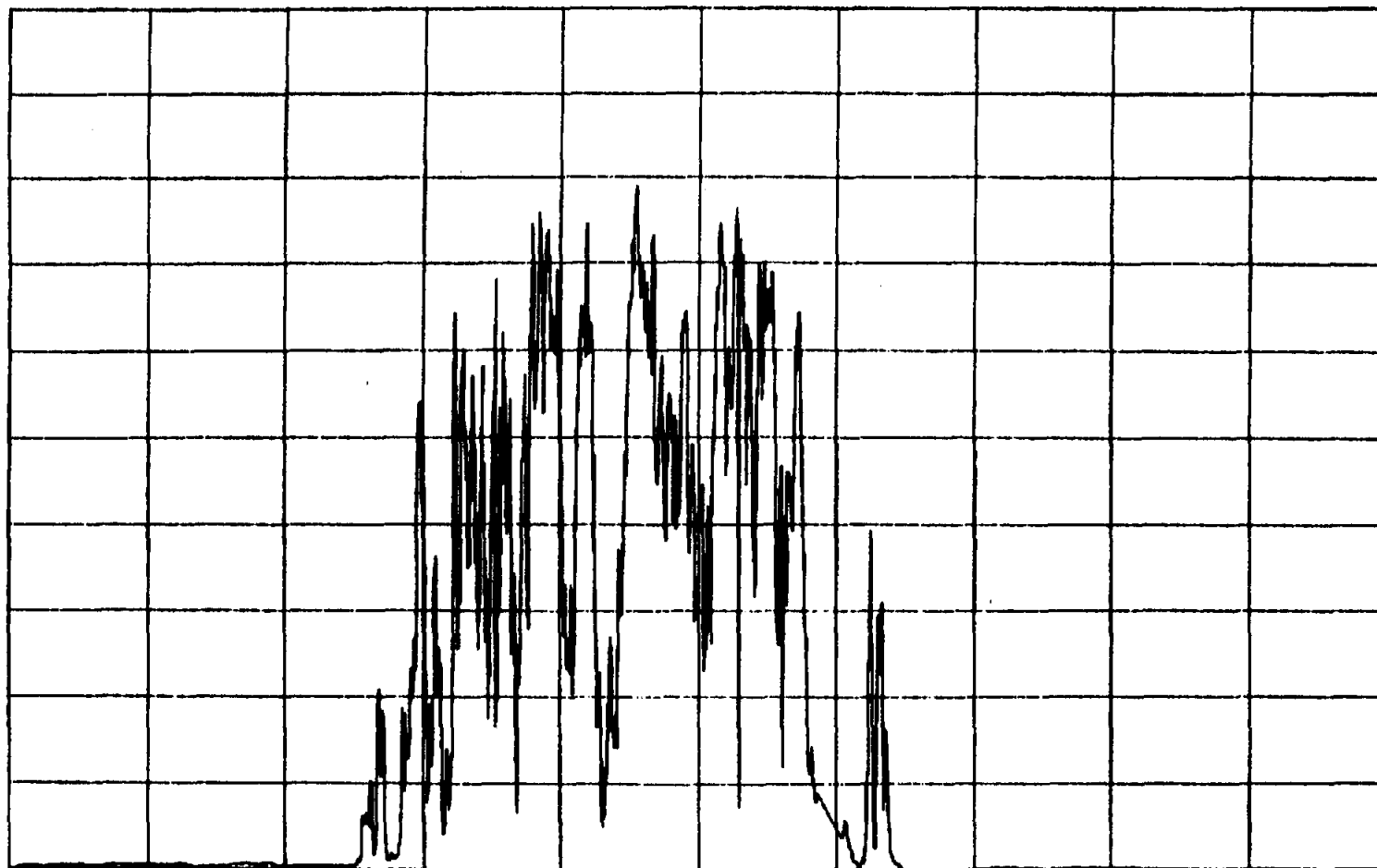
88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 313 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



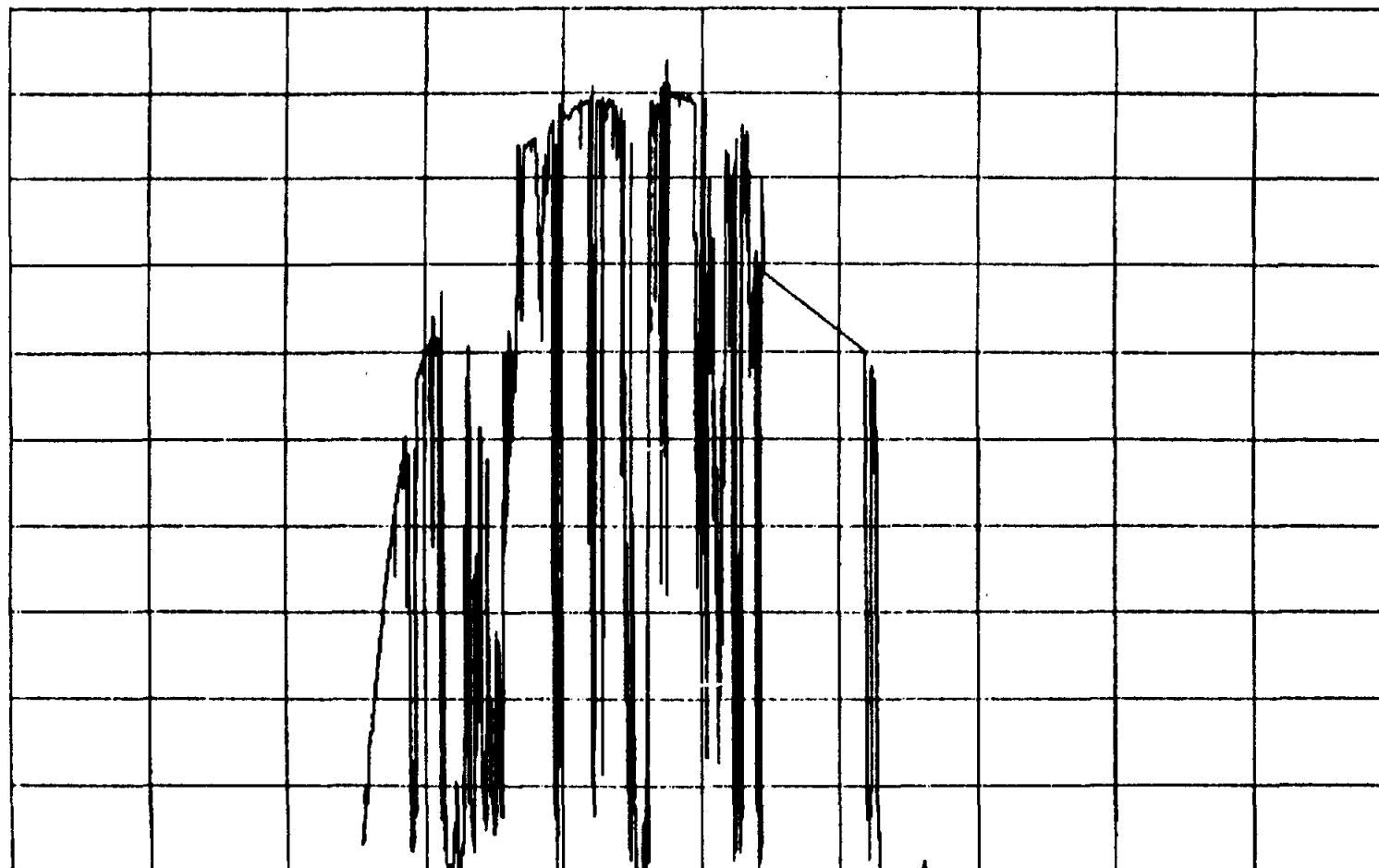
ATX1817 NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 314 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

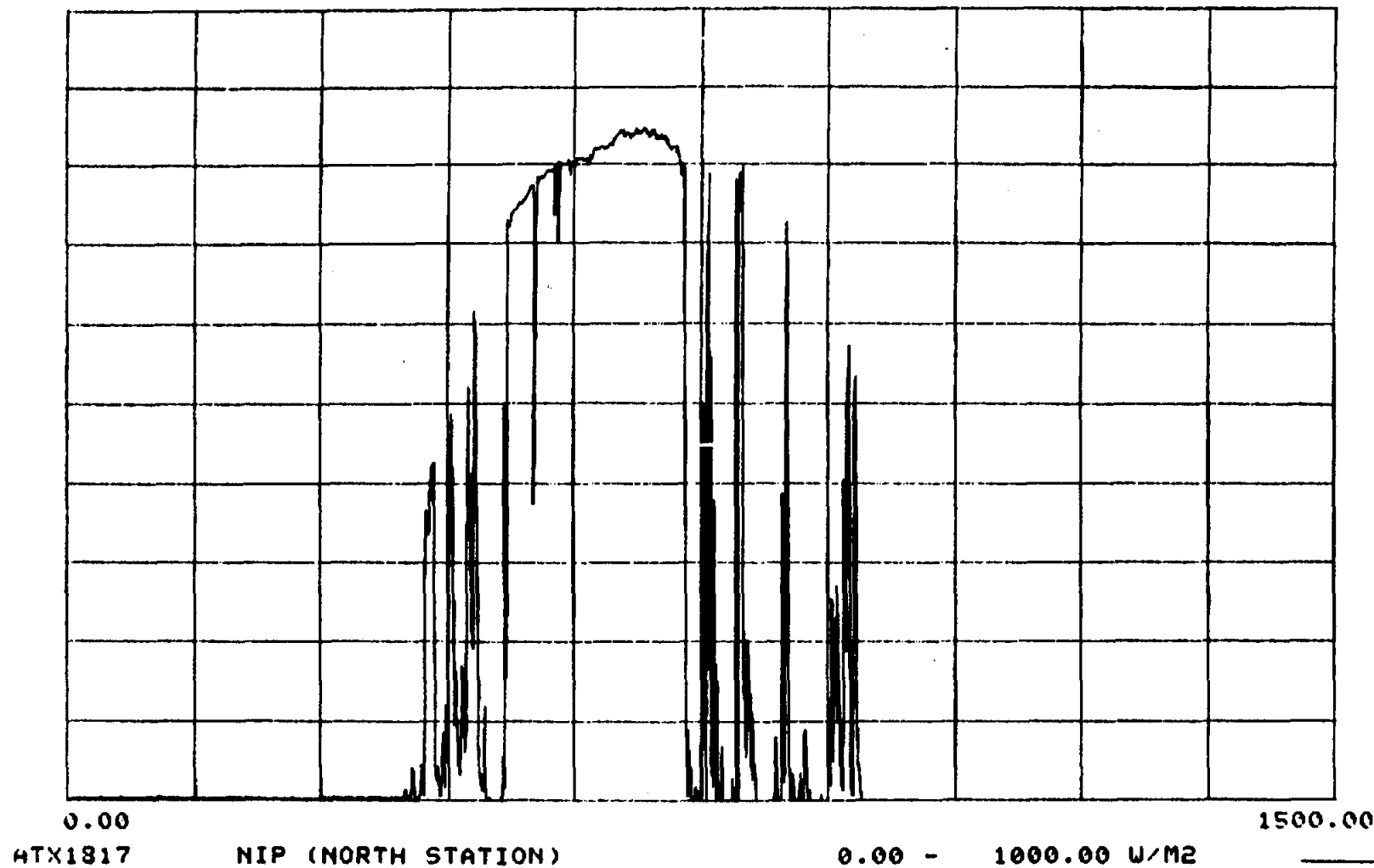
1500.00

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

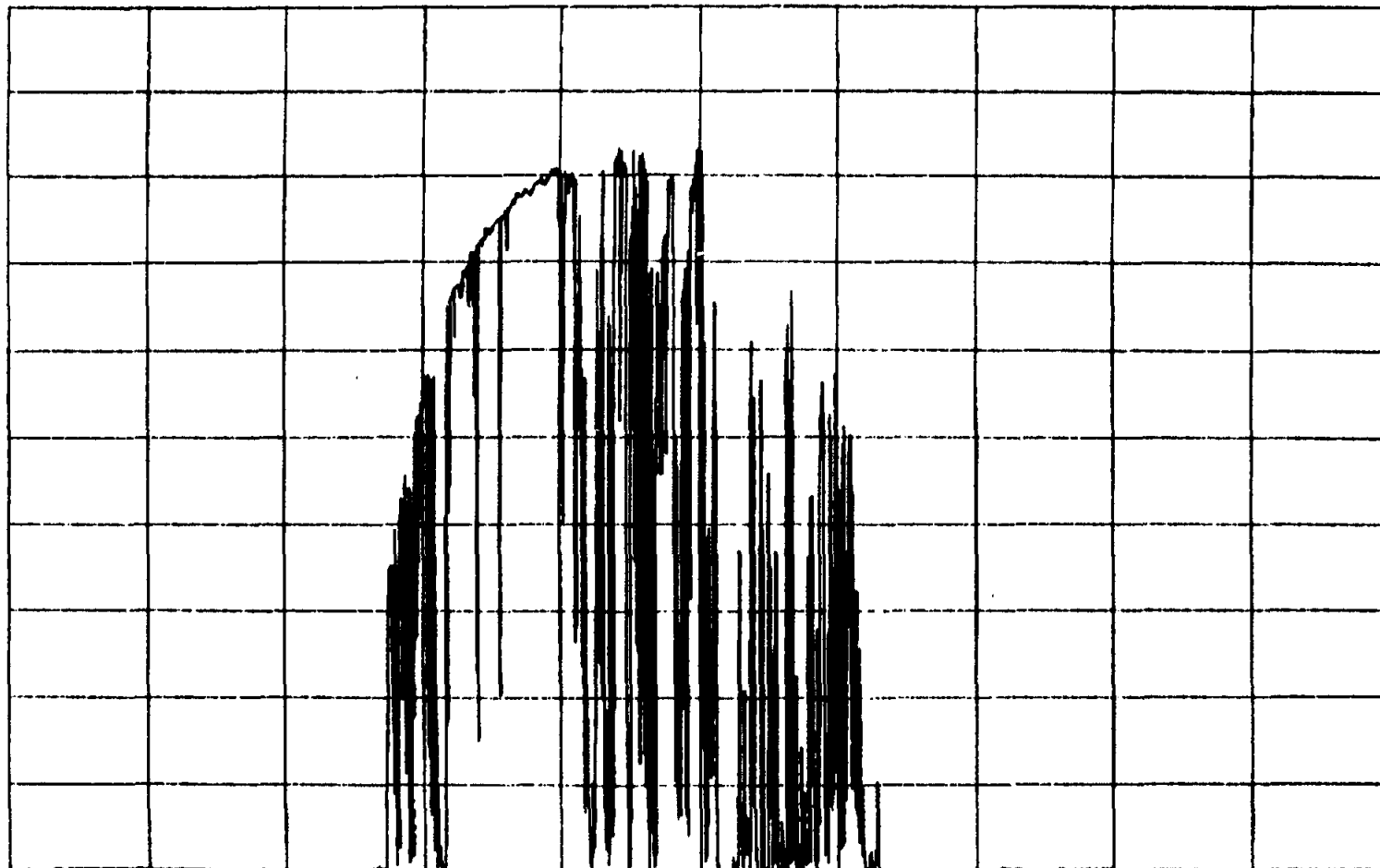
SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 315 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 316 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

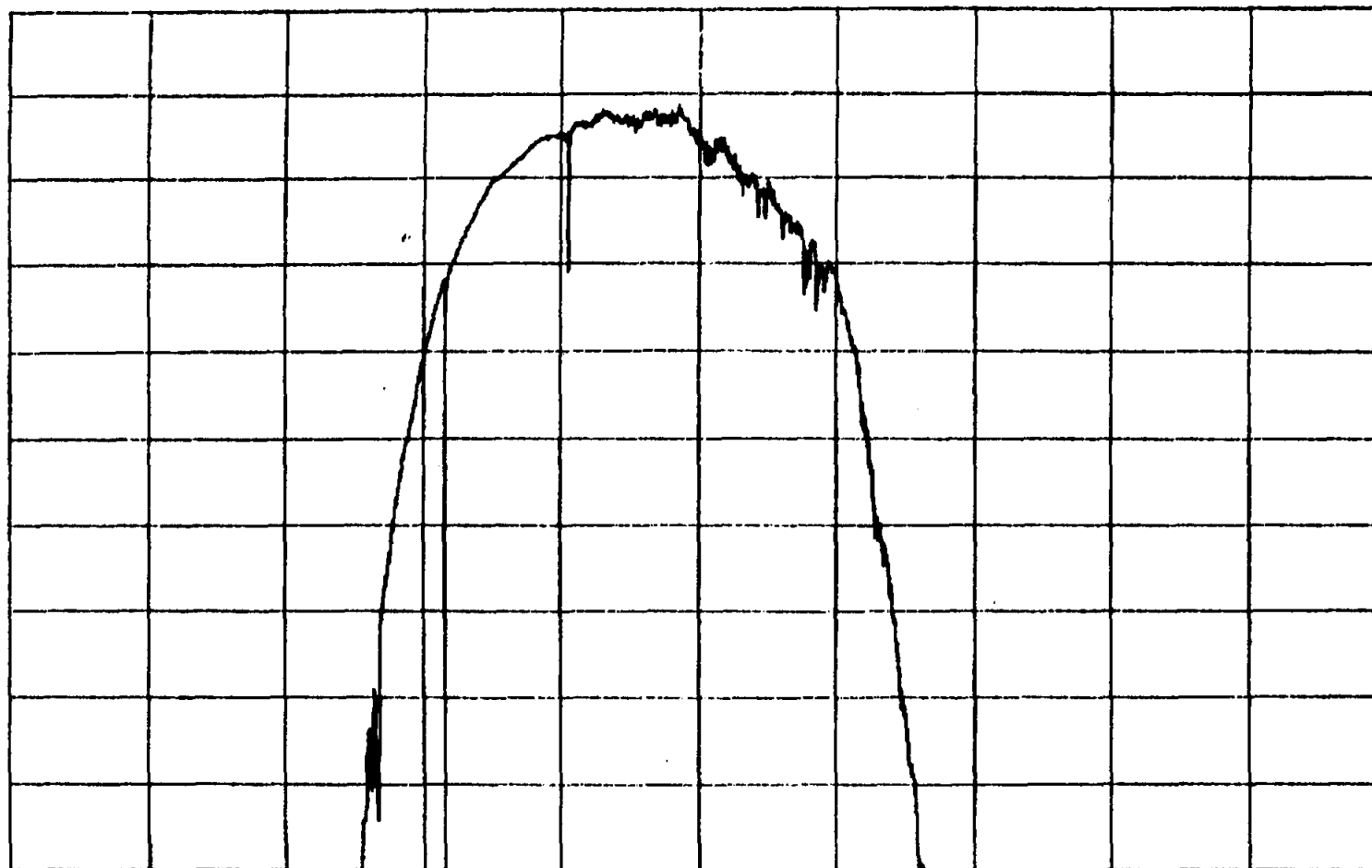
HTX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 317 00 00 00.000

NTH SAMPLE AVERAGE * 1
FOR 1500.0000 MINUTE(S)



0.00

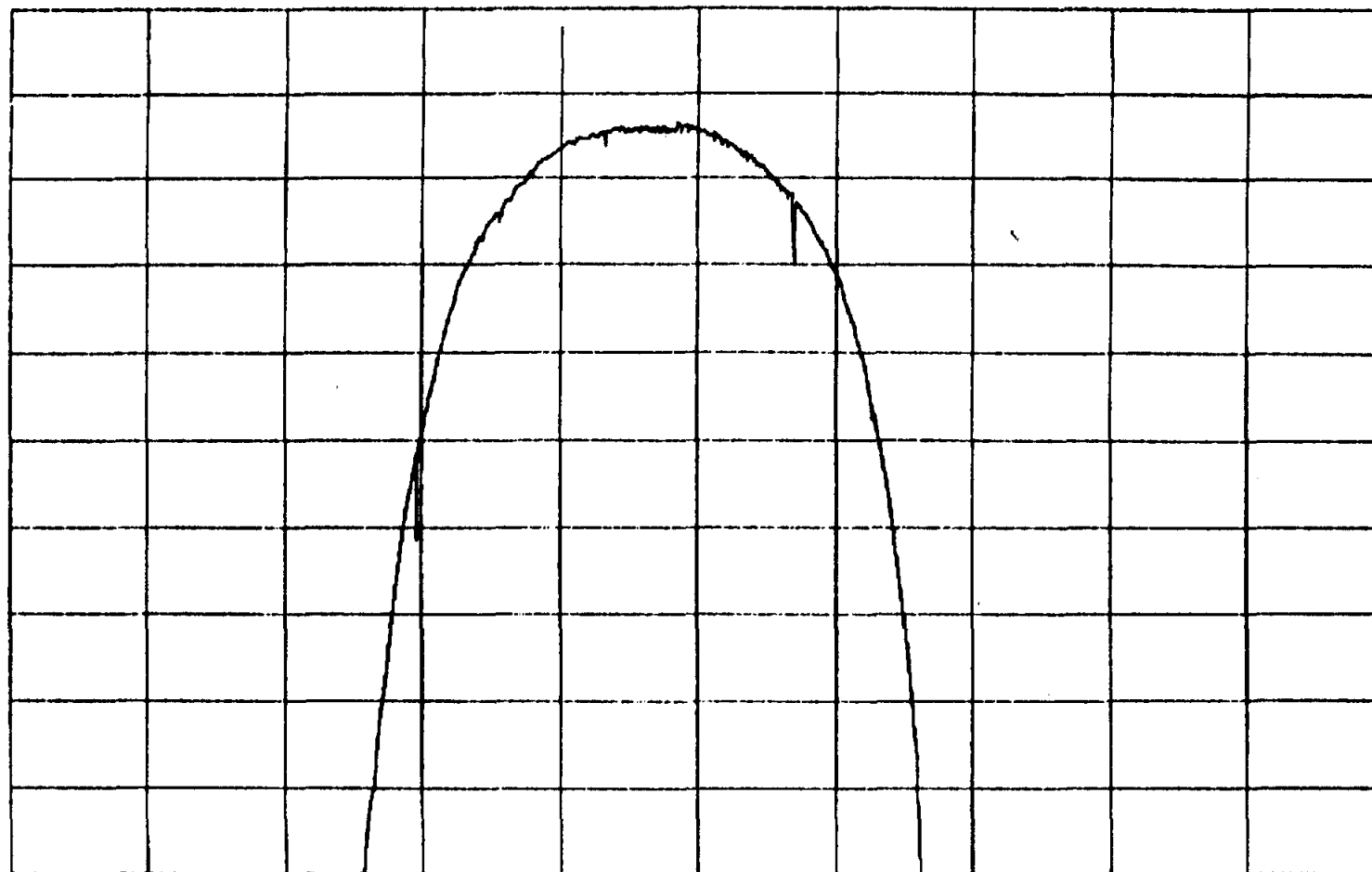
884TX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 318 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

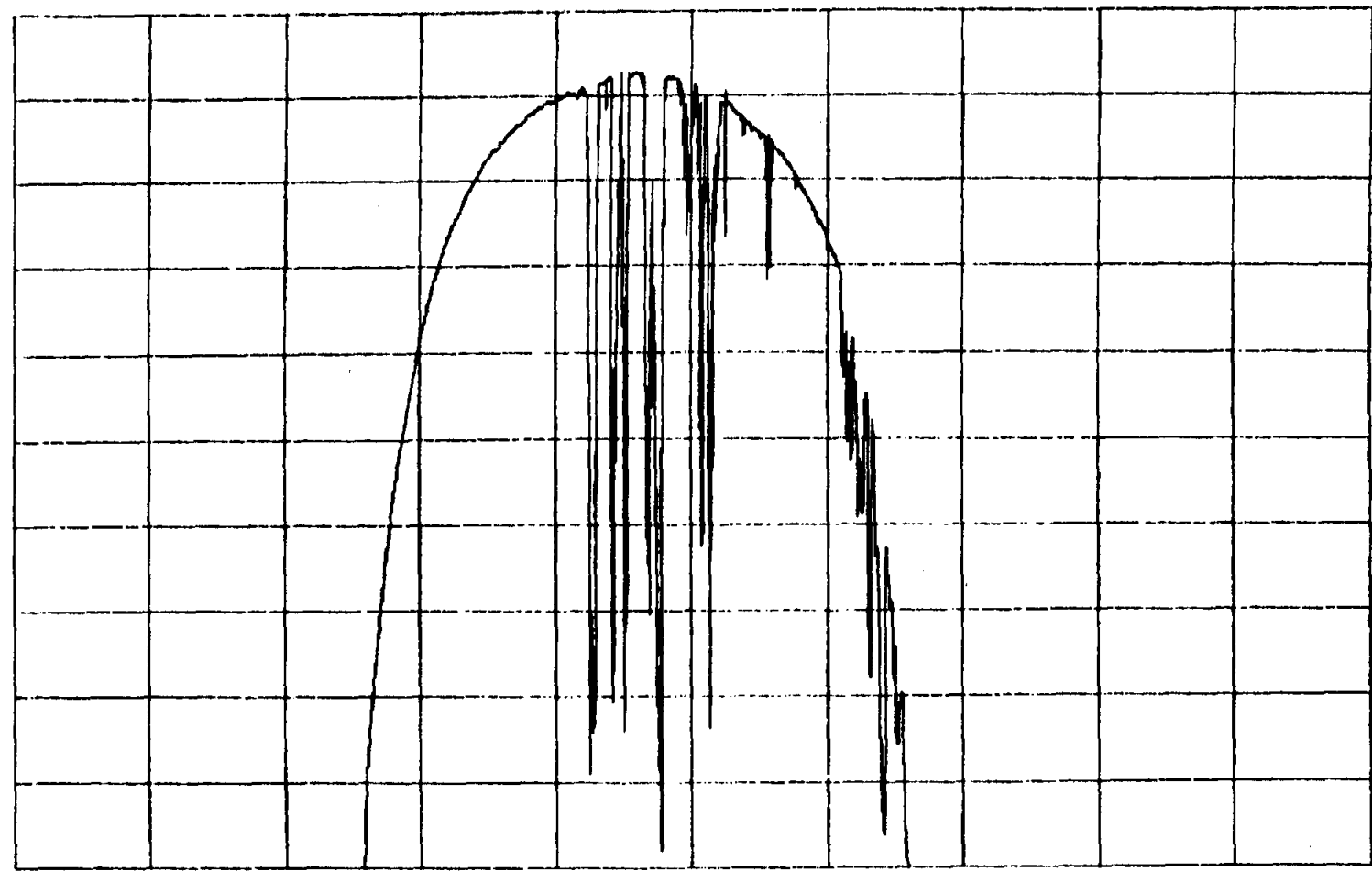
1500.00

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 319 00 00 00.000

NTH SAMPLE AVERAGE * 1
FOR 1500.0000 MINUTE(S)

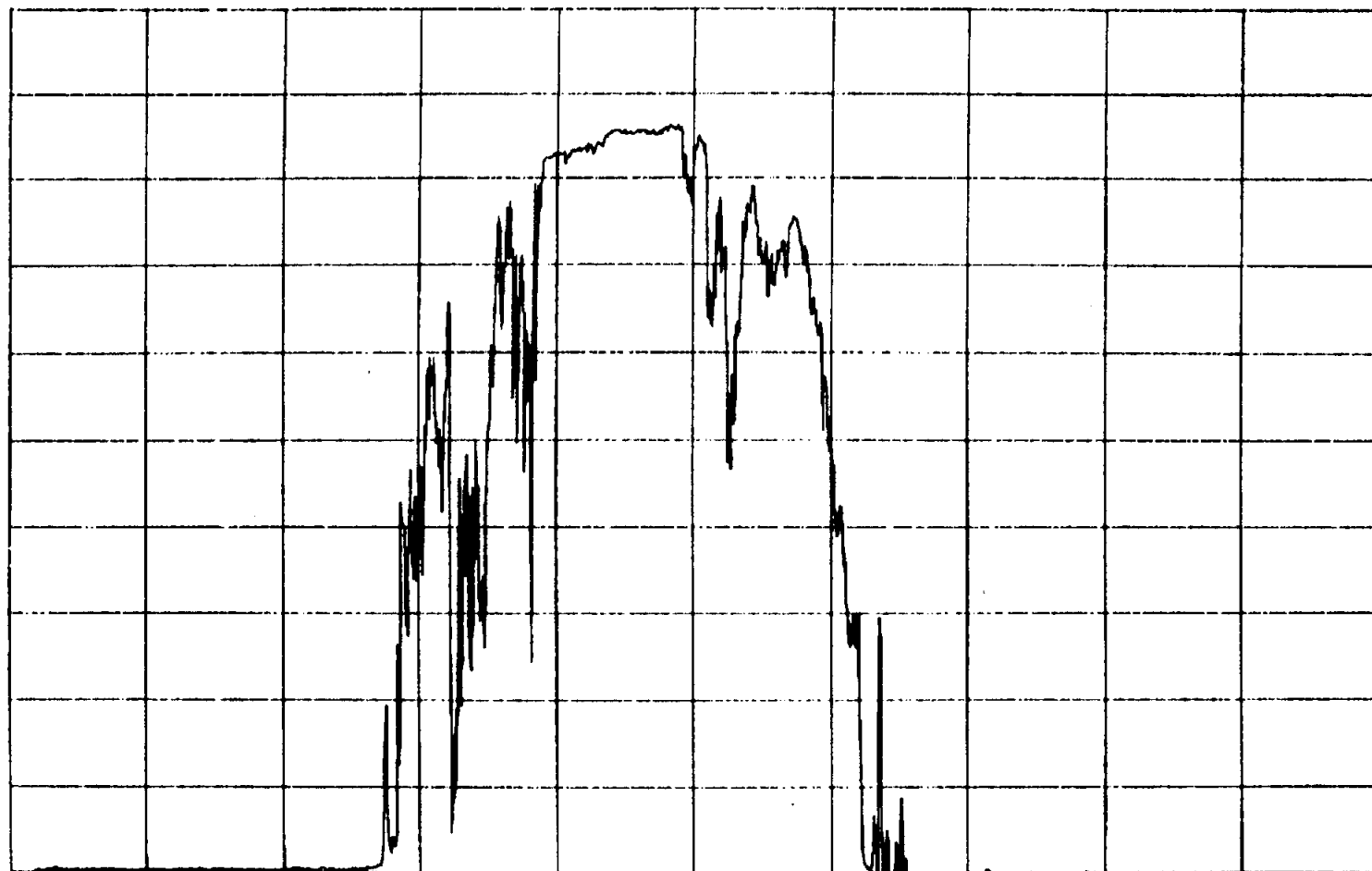


0.00
884TX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 320 00 00 00.000

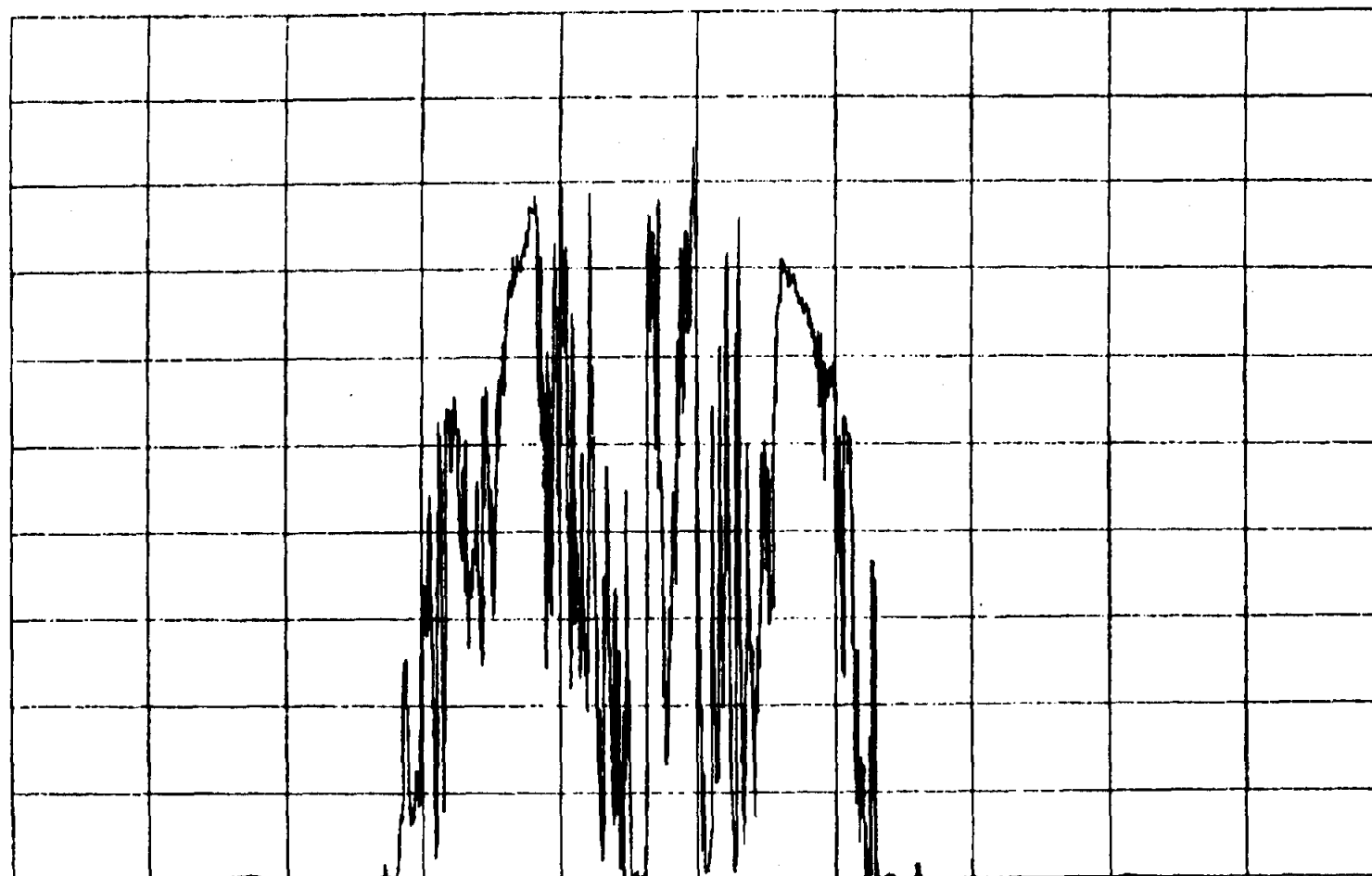
FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00 1500.00
HTN1817 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 321 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

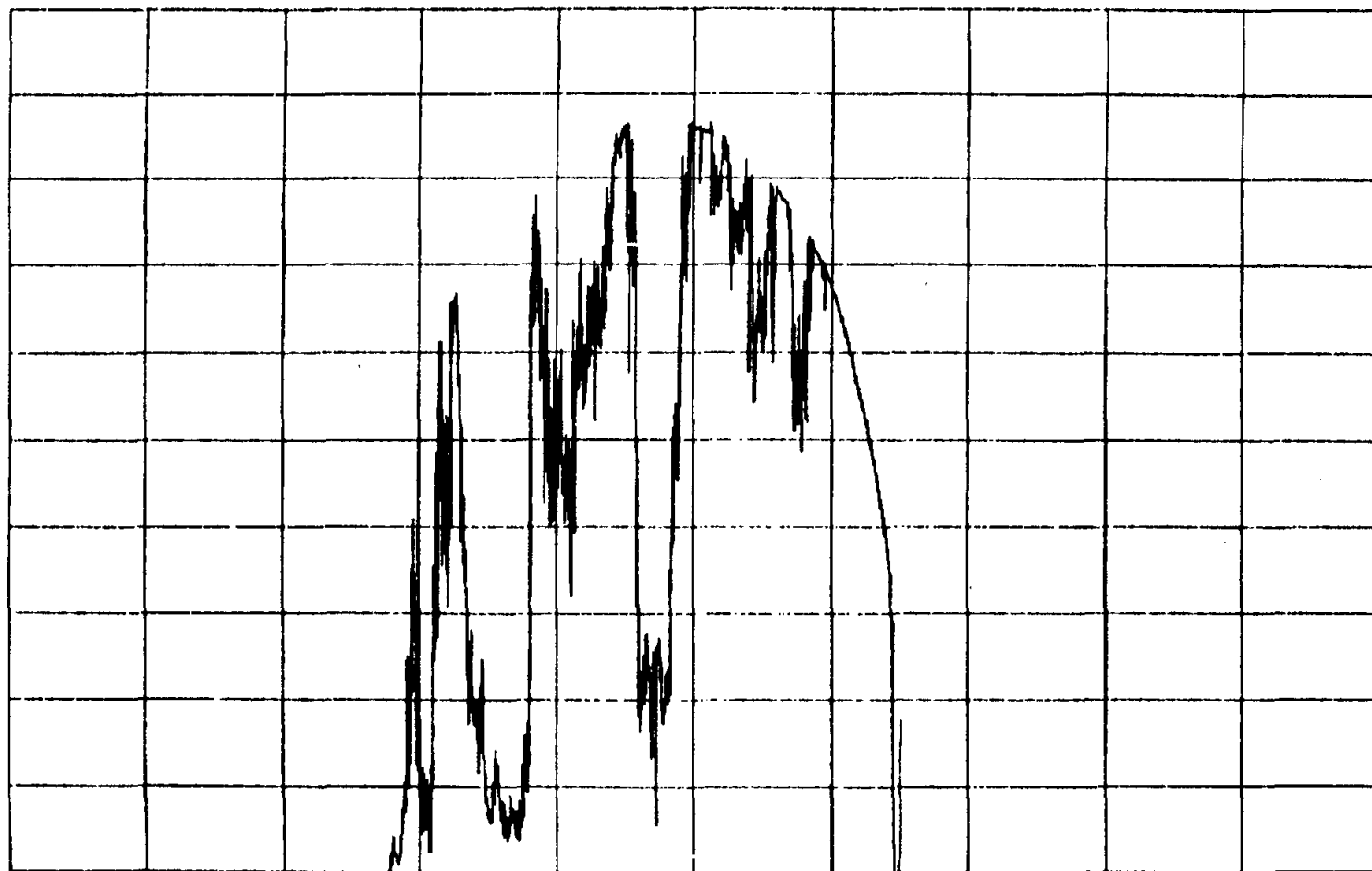
ATX1917

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 322 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

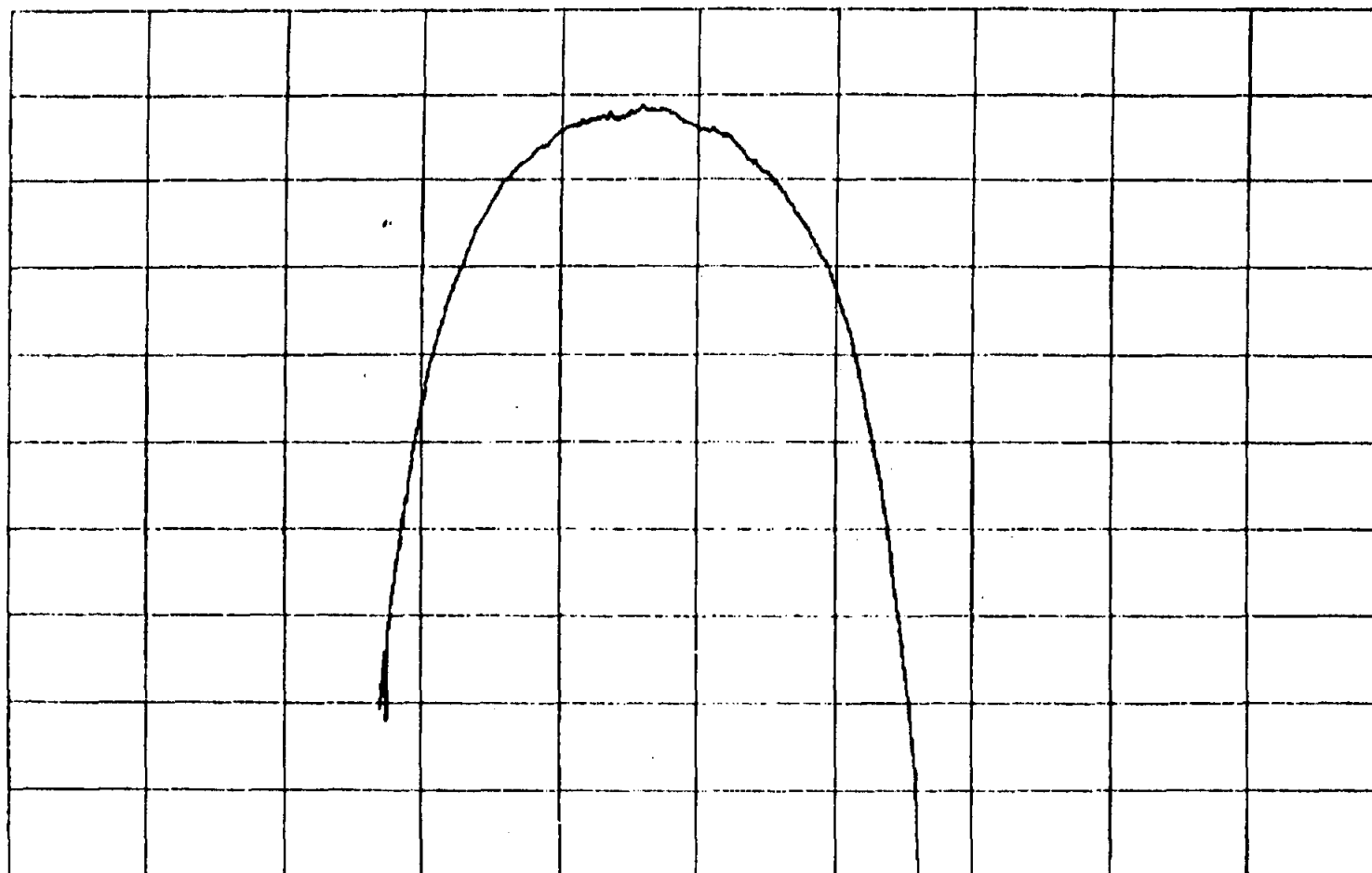
1500.00

***ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 323 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

**ATX1817A

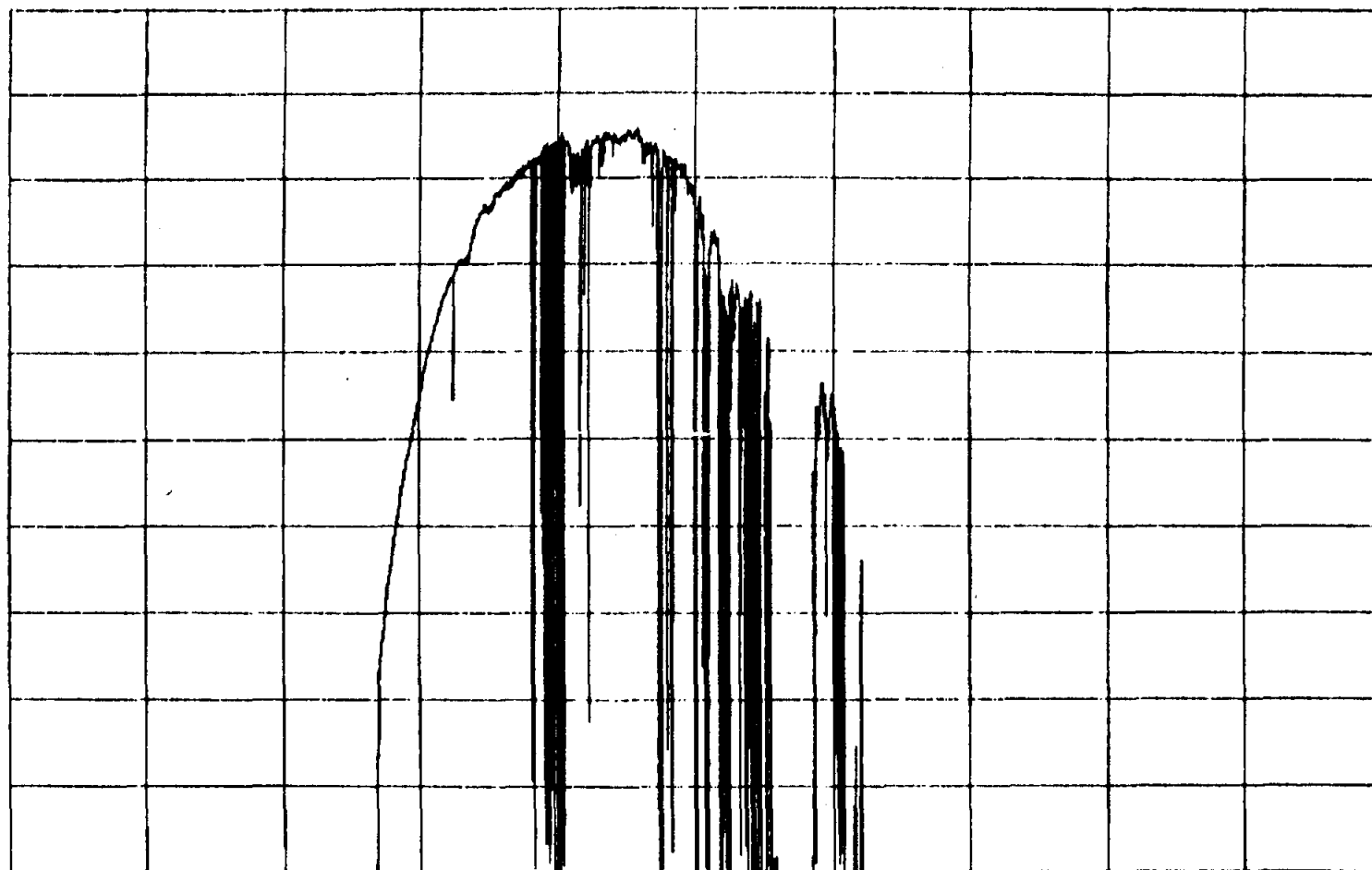
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 324 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

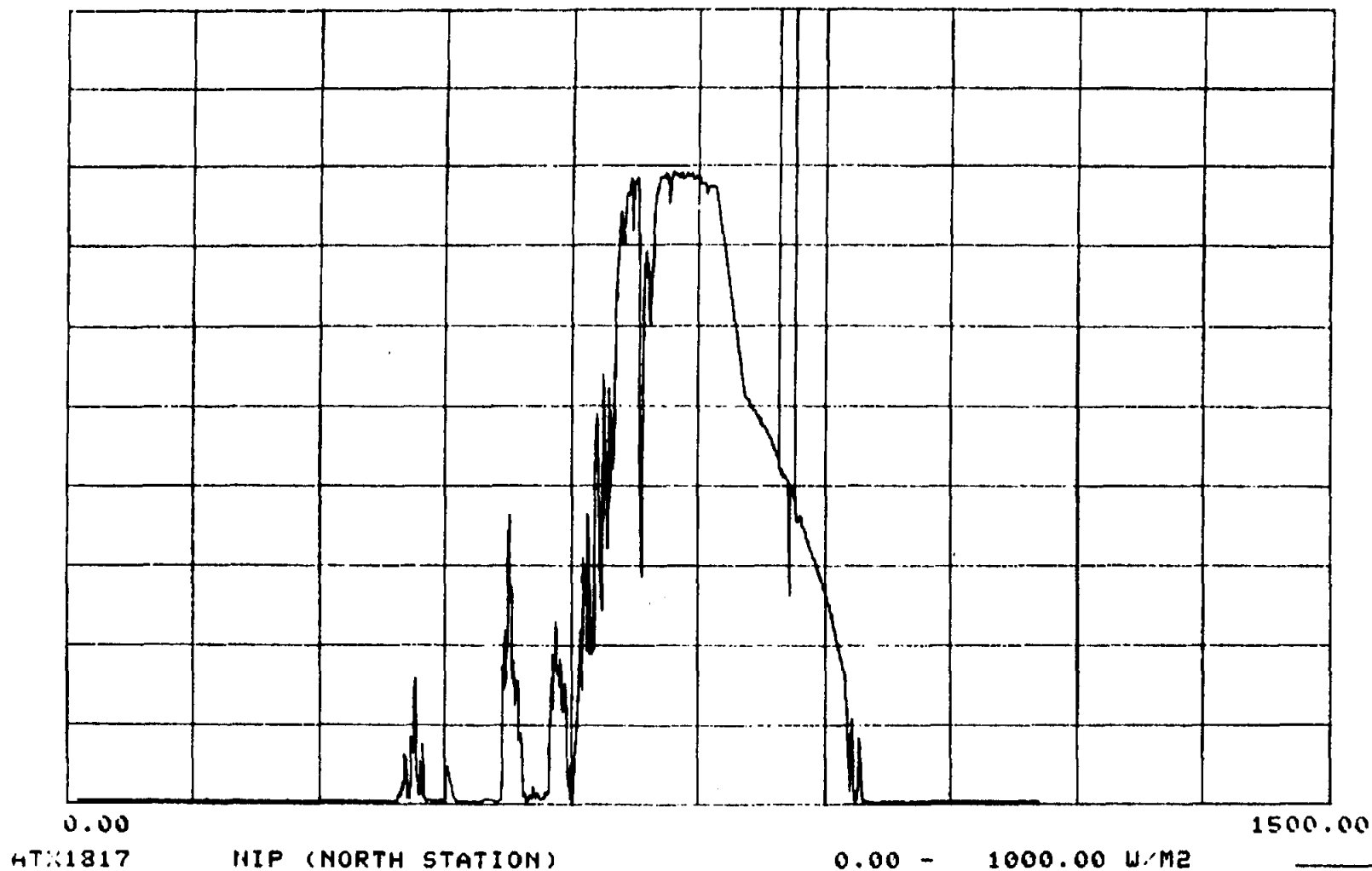
1500.00

***ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

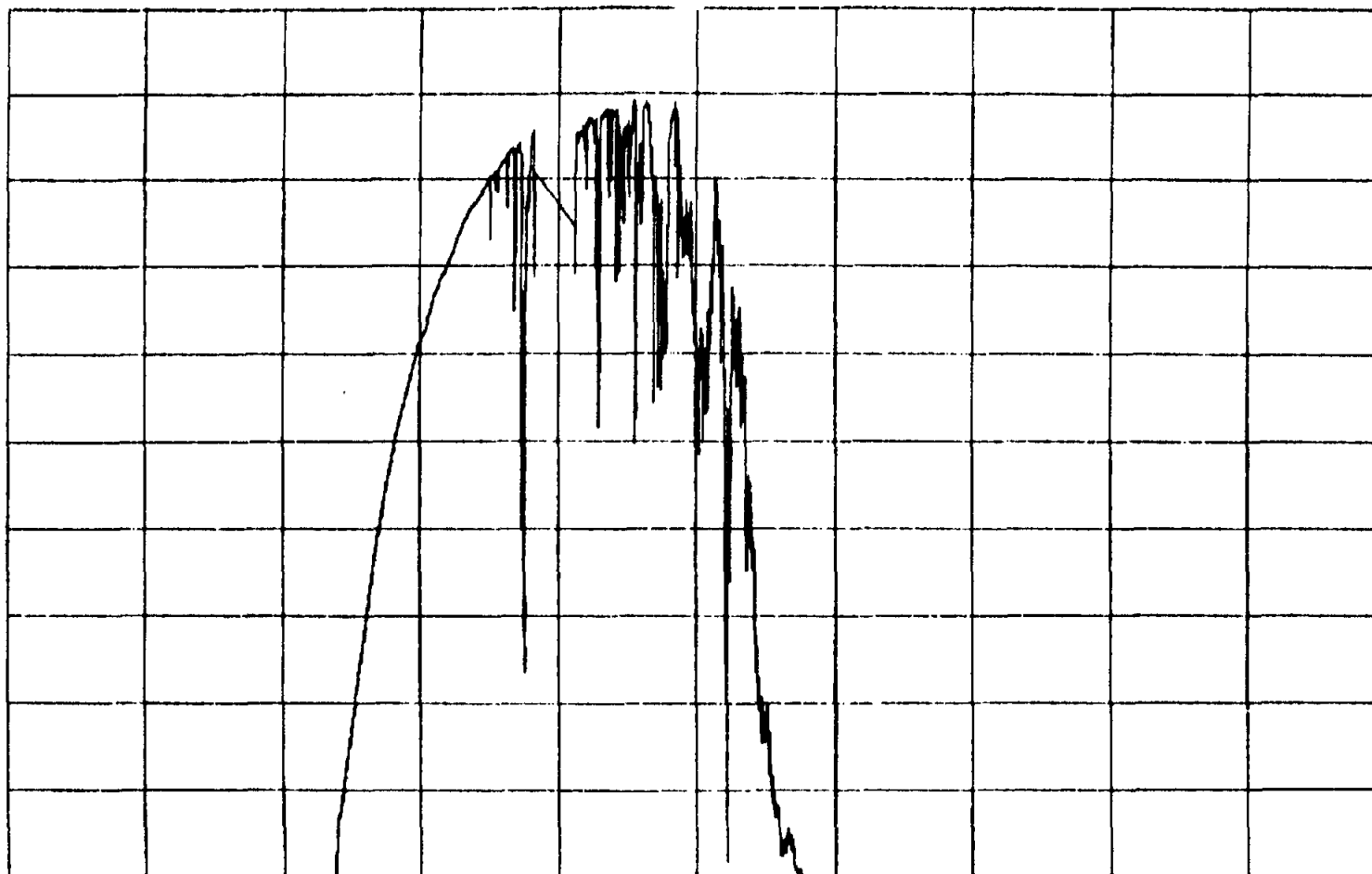
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 325 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 326 00 00 00.000

FOR NTH SAMPLE AVERAGE * 1
 1500.0000 MINUTE(S)



0.00

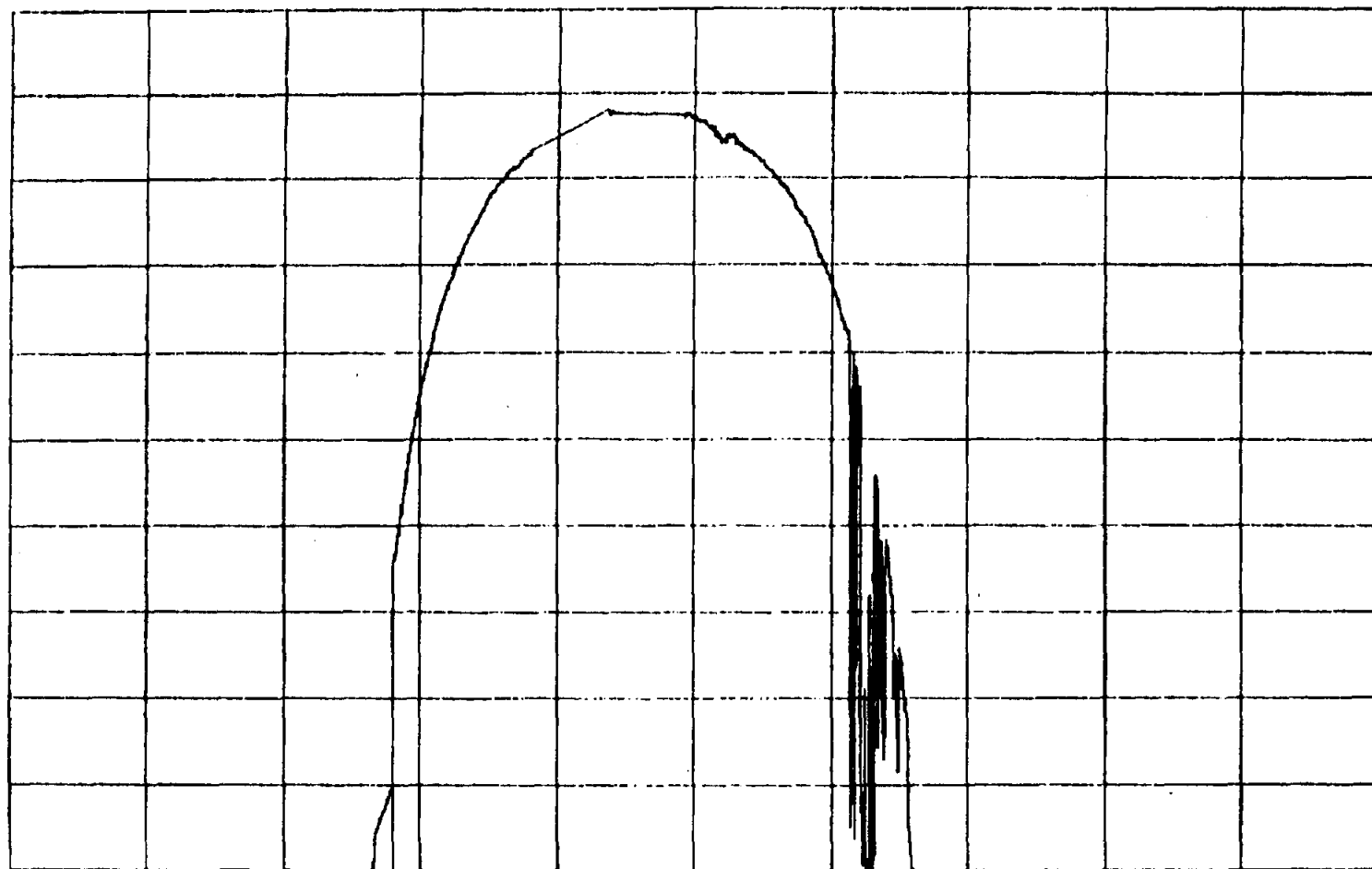
1500.00

**ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 327 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

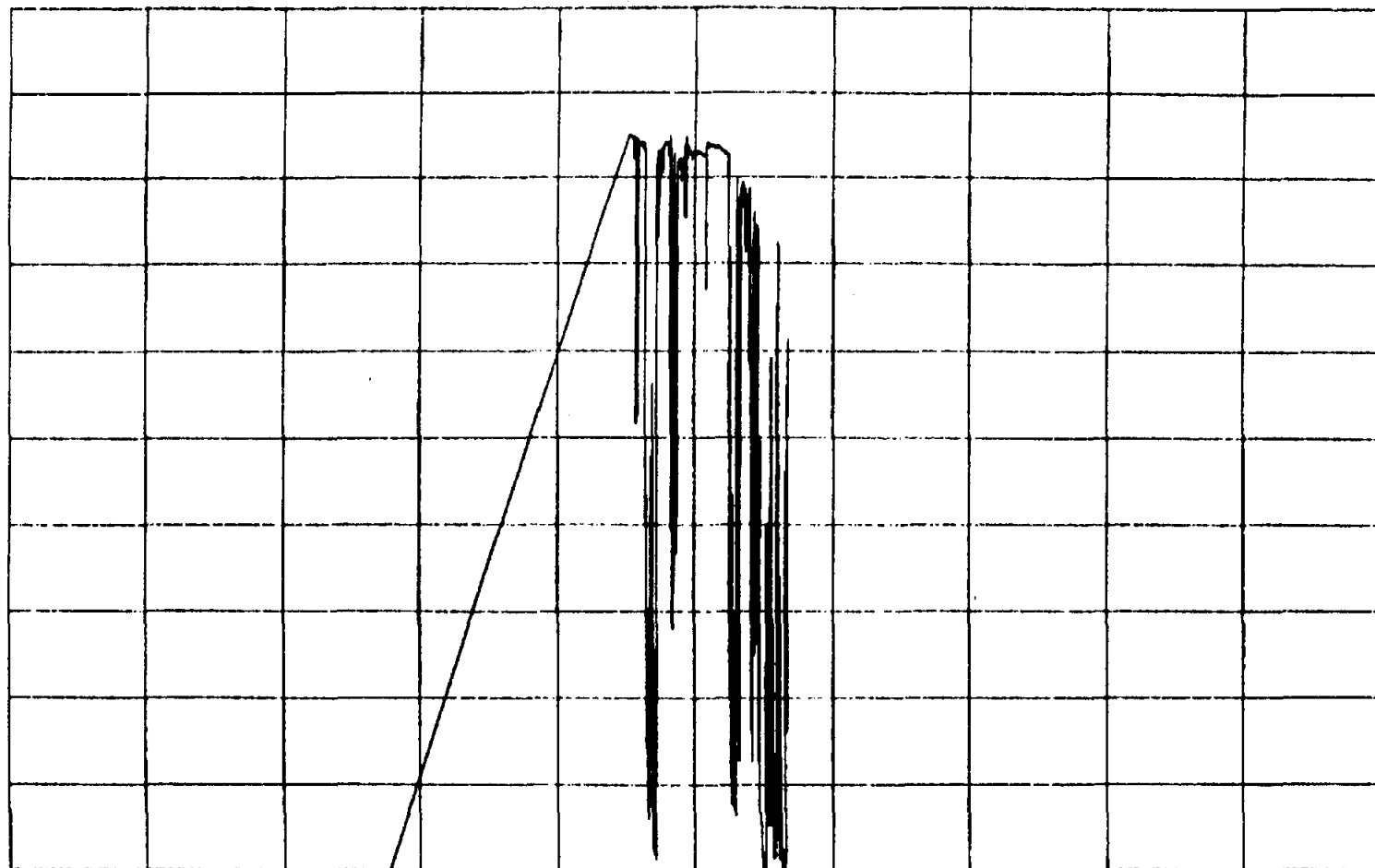
1500.00

**ATN1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 328 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

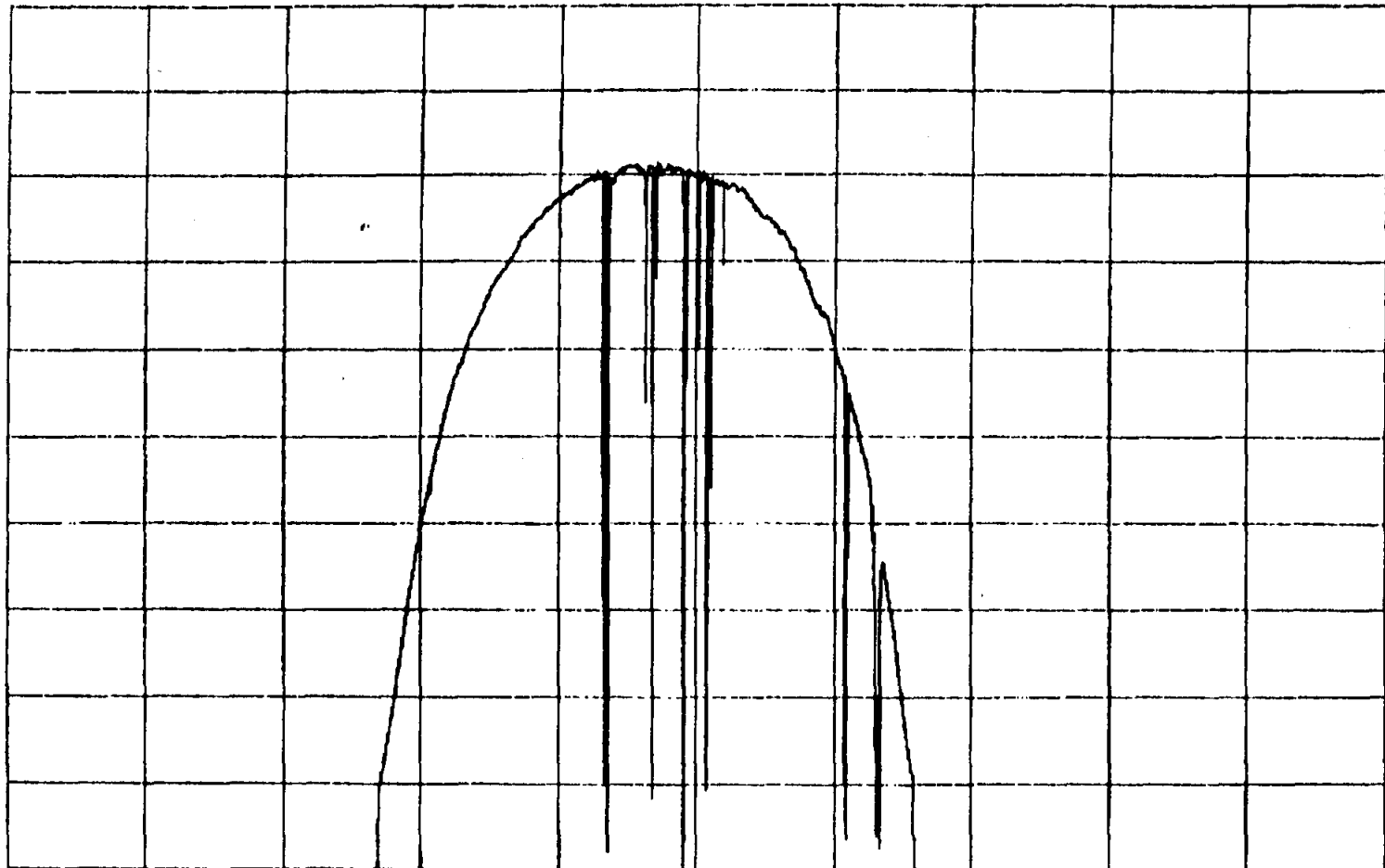
1500.00

**ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # 111SL3
REFERENCE TIME: 329 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

88ATX1817A

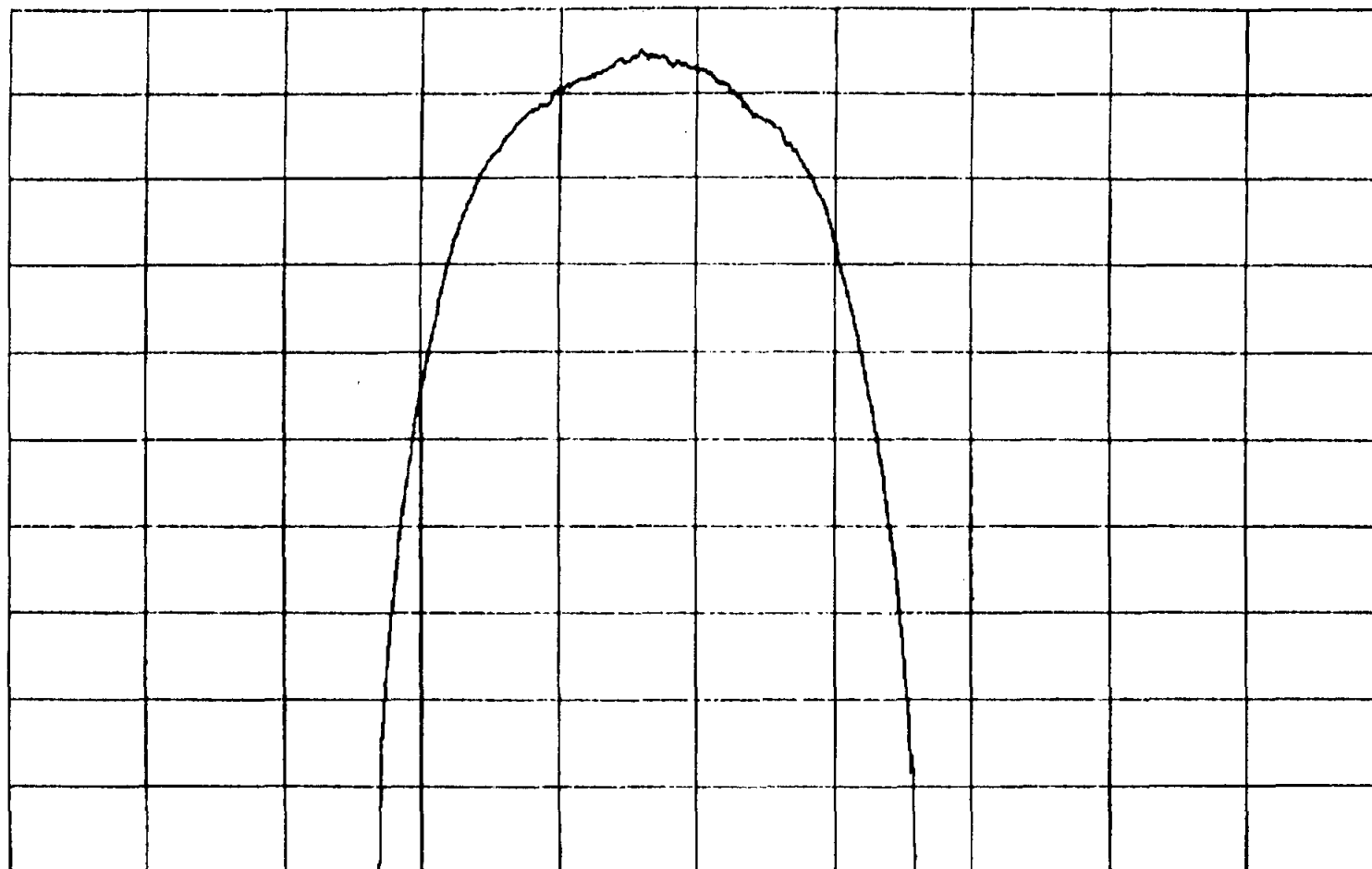
CHTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 330 00 00 00.000

NTN SAMPLE AVERAGE • 1
FOR 1500.0000 MINUTE(S)



0.00

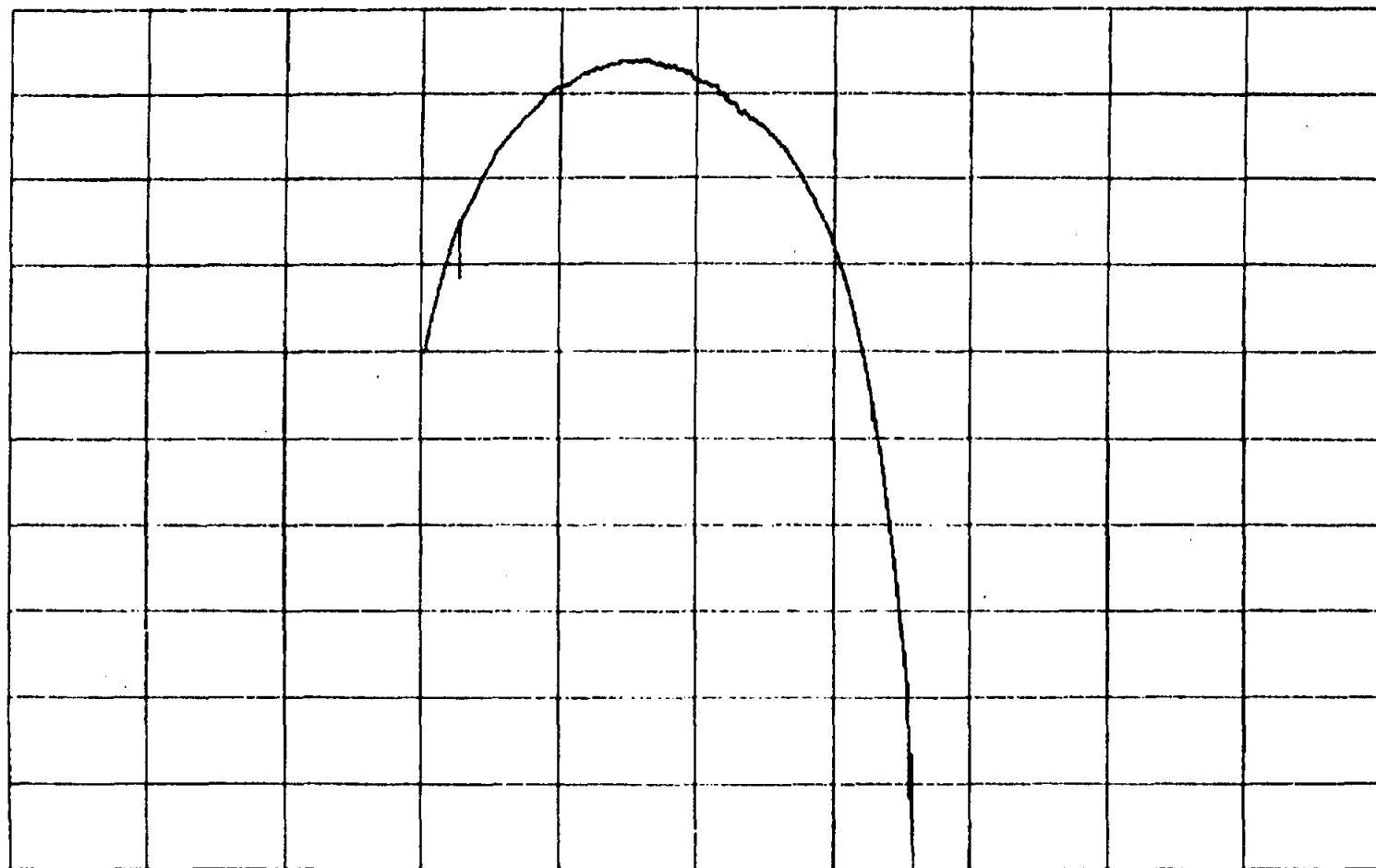
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 U/M2

SOLAR DATA PLOT PLOT # HISL3
REFERENCE TIME: 331 00 00 00.000

FOR NTH SAMPLE AVERAGE : 1
1500.0000 MINUTE(S)



0.00

##ATX1817A

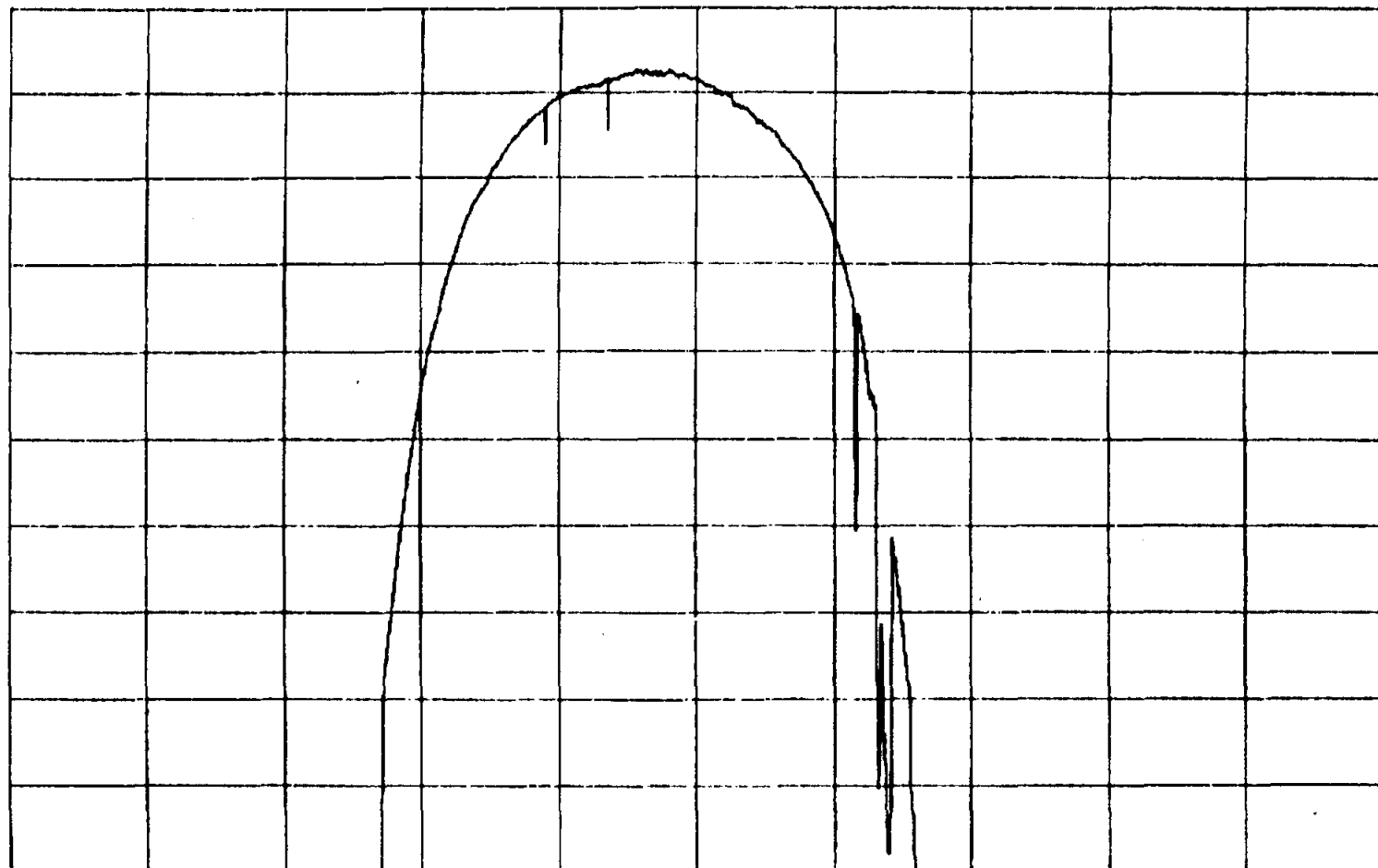
CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 332 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

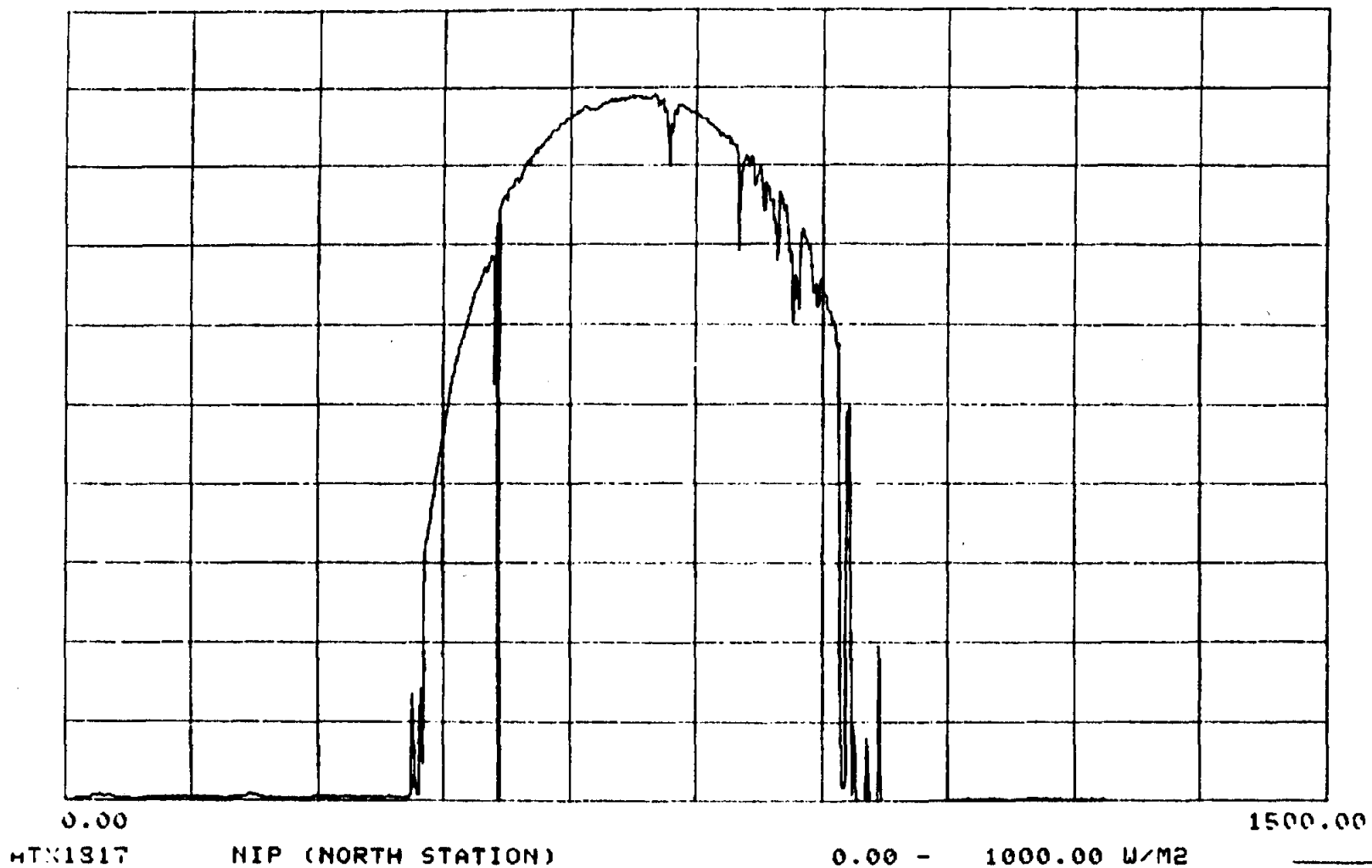
1500.00

##ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

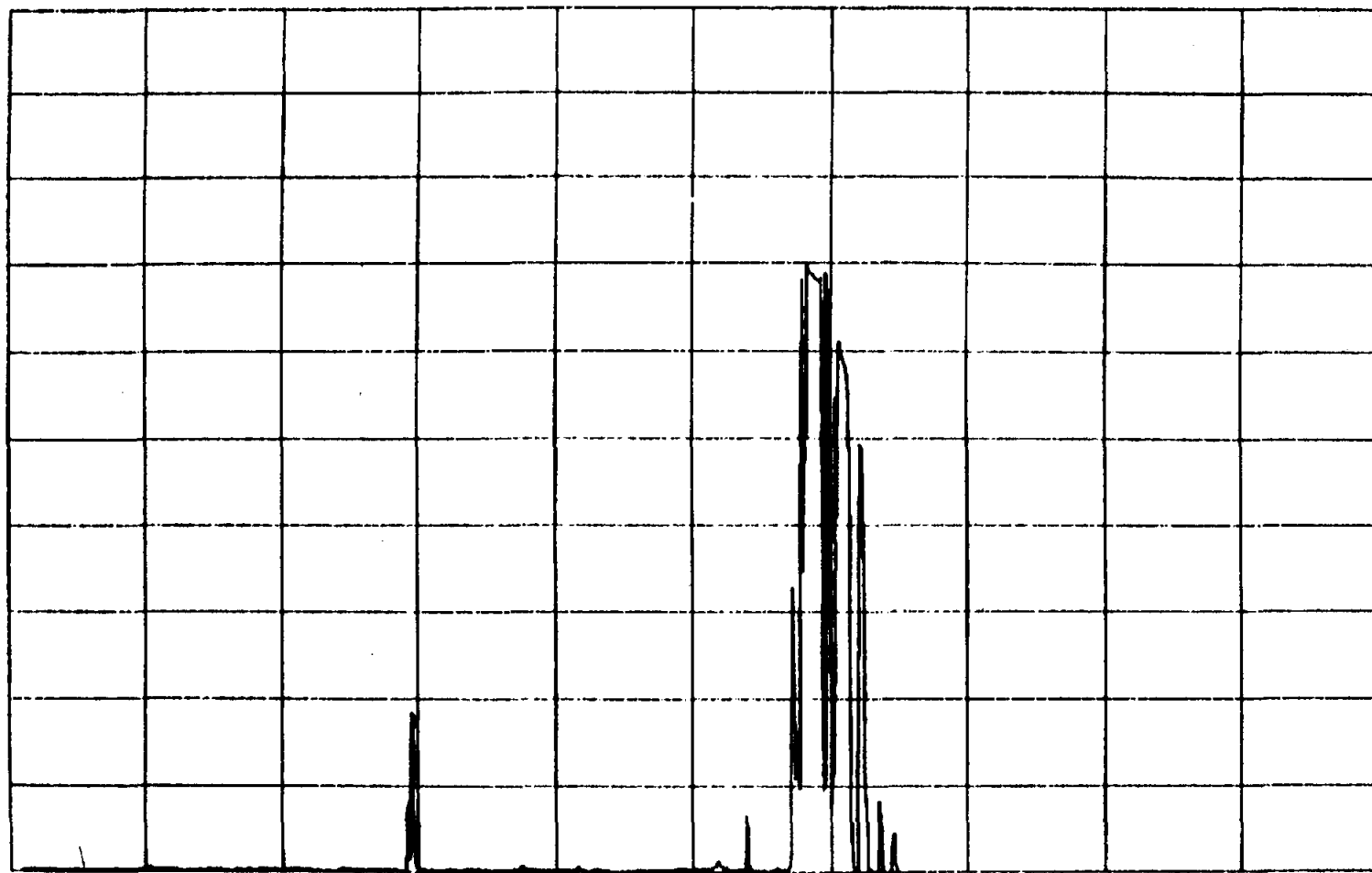
SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 333 00 00 00.000

NTM SAMPLE AVERAGE : 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISLI
REFERENCE TIME: 335 00 00 00.000

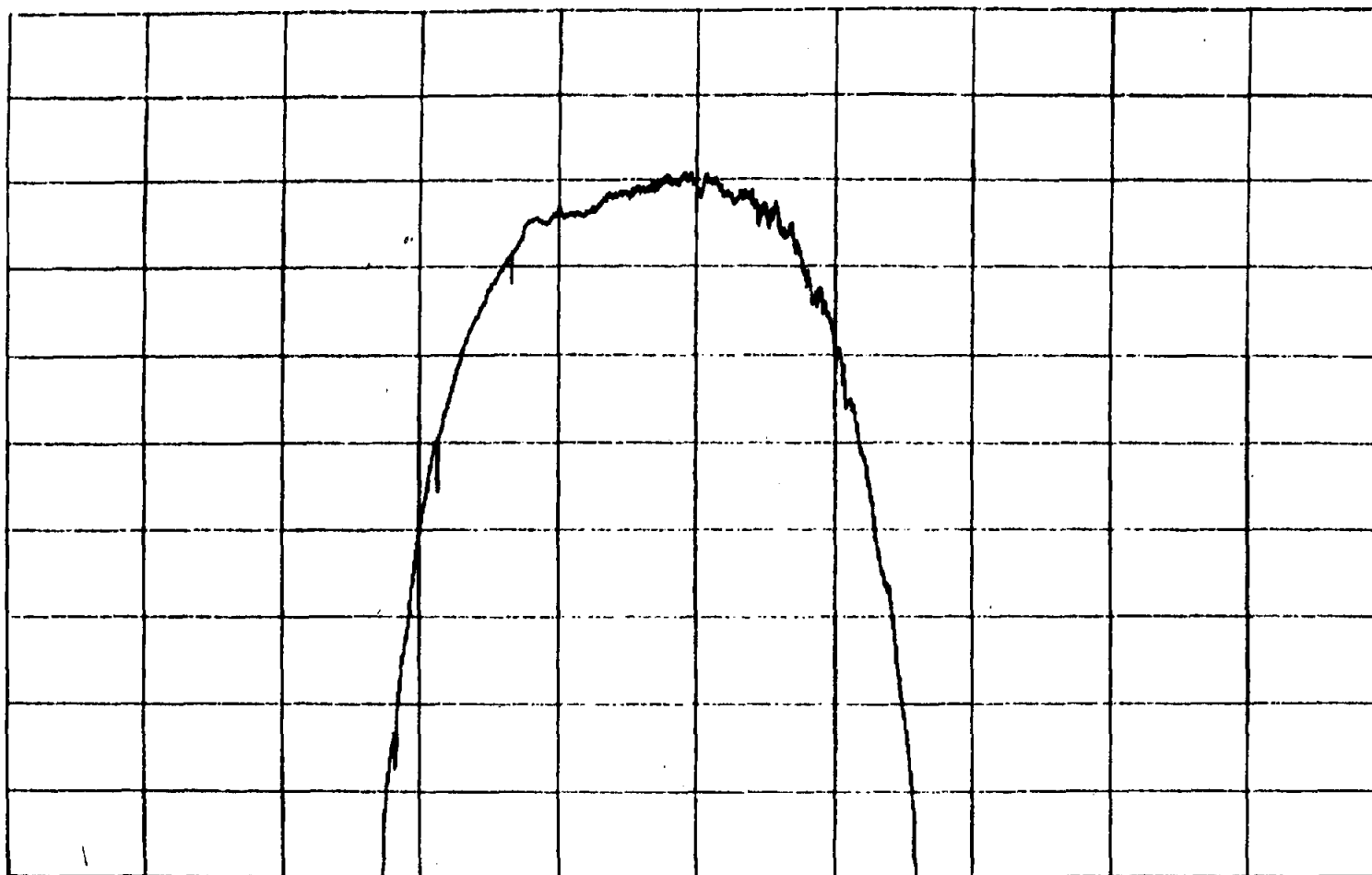
NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00 1500.00
ATX1917 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 336 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

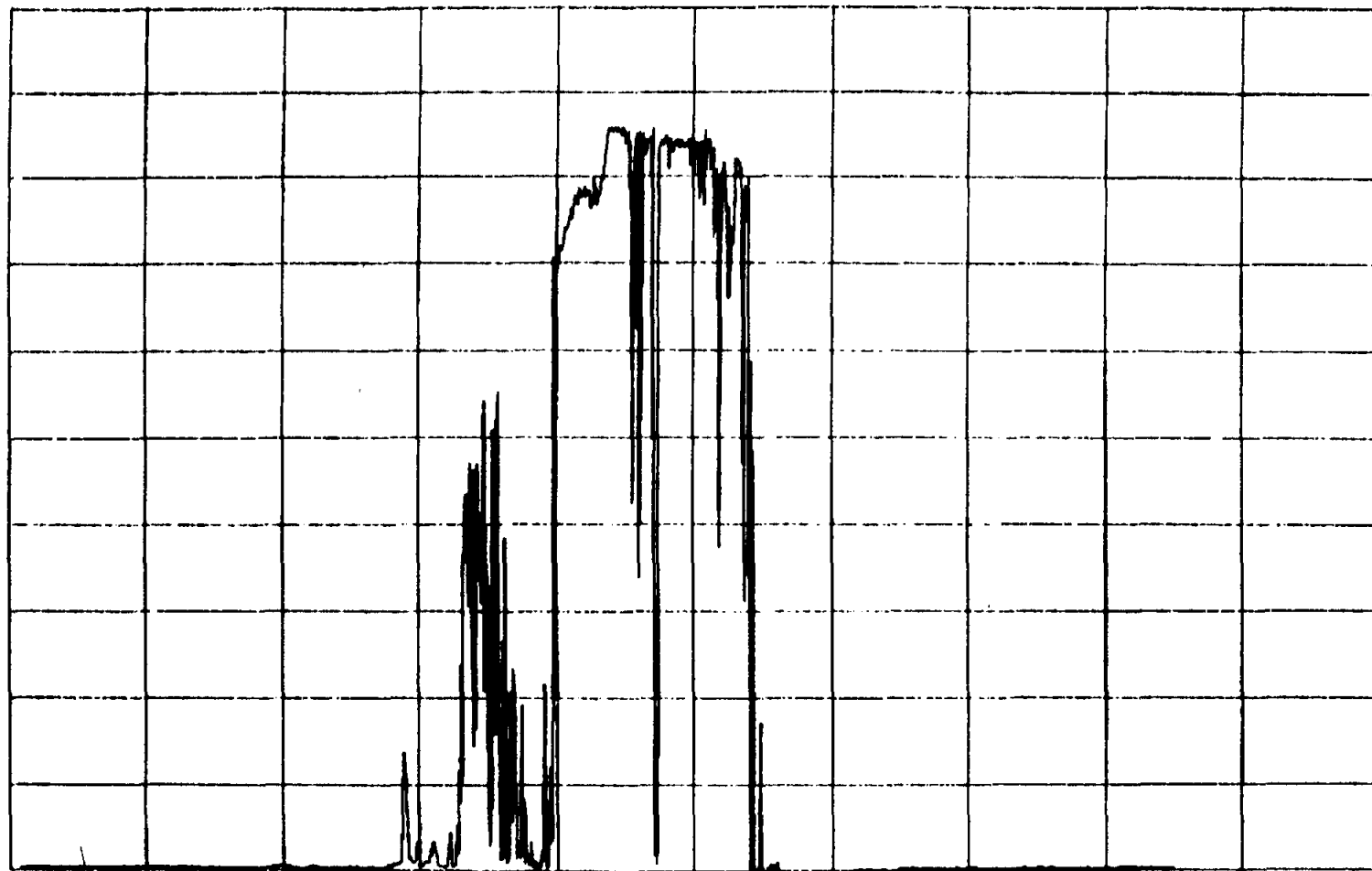
884TX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISLI
REFERENCE TIME: 337 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

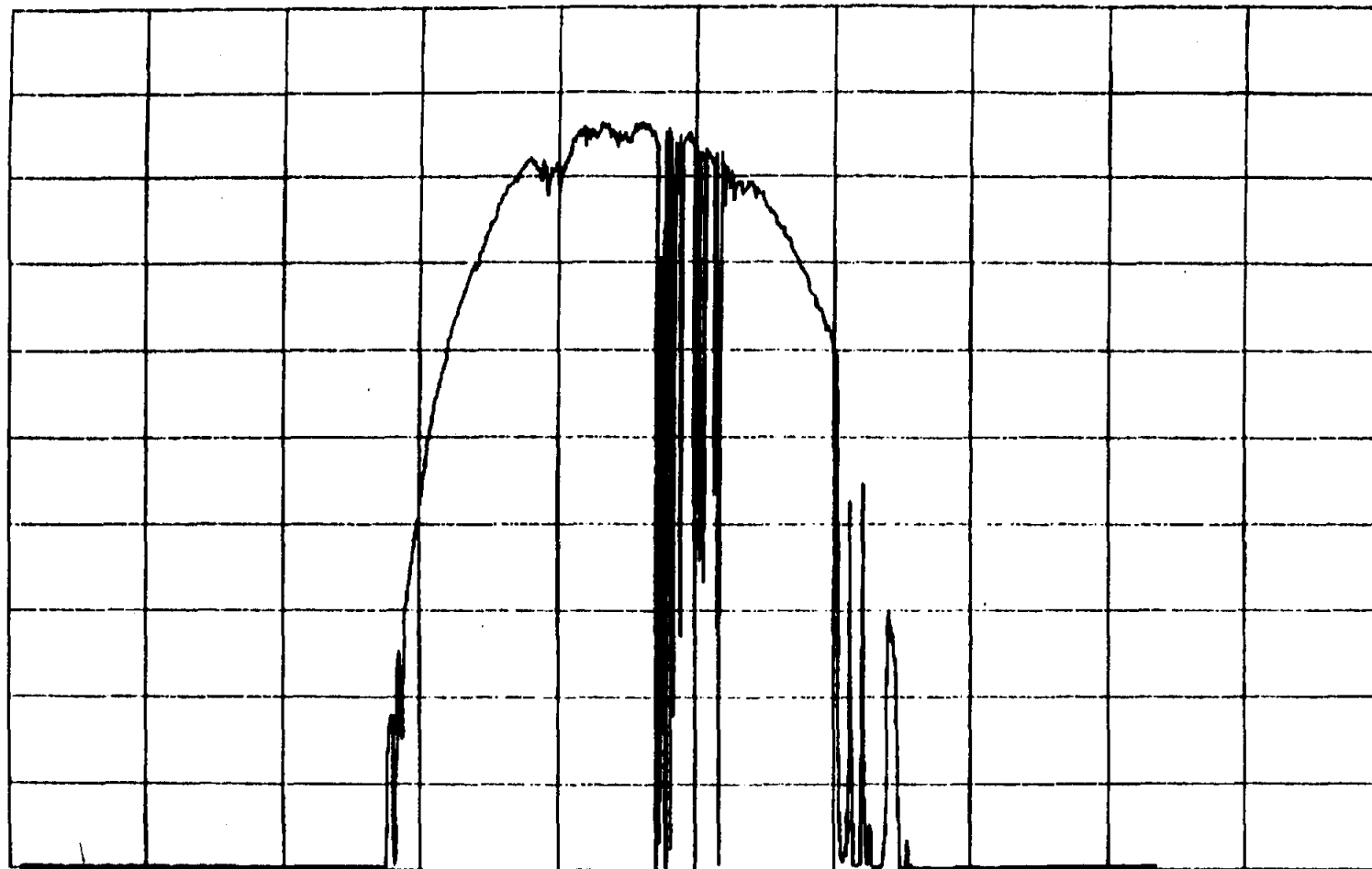
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 338 00 00 00.000

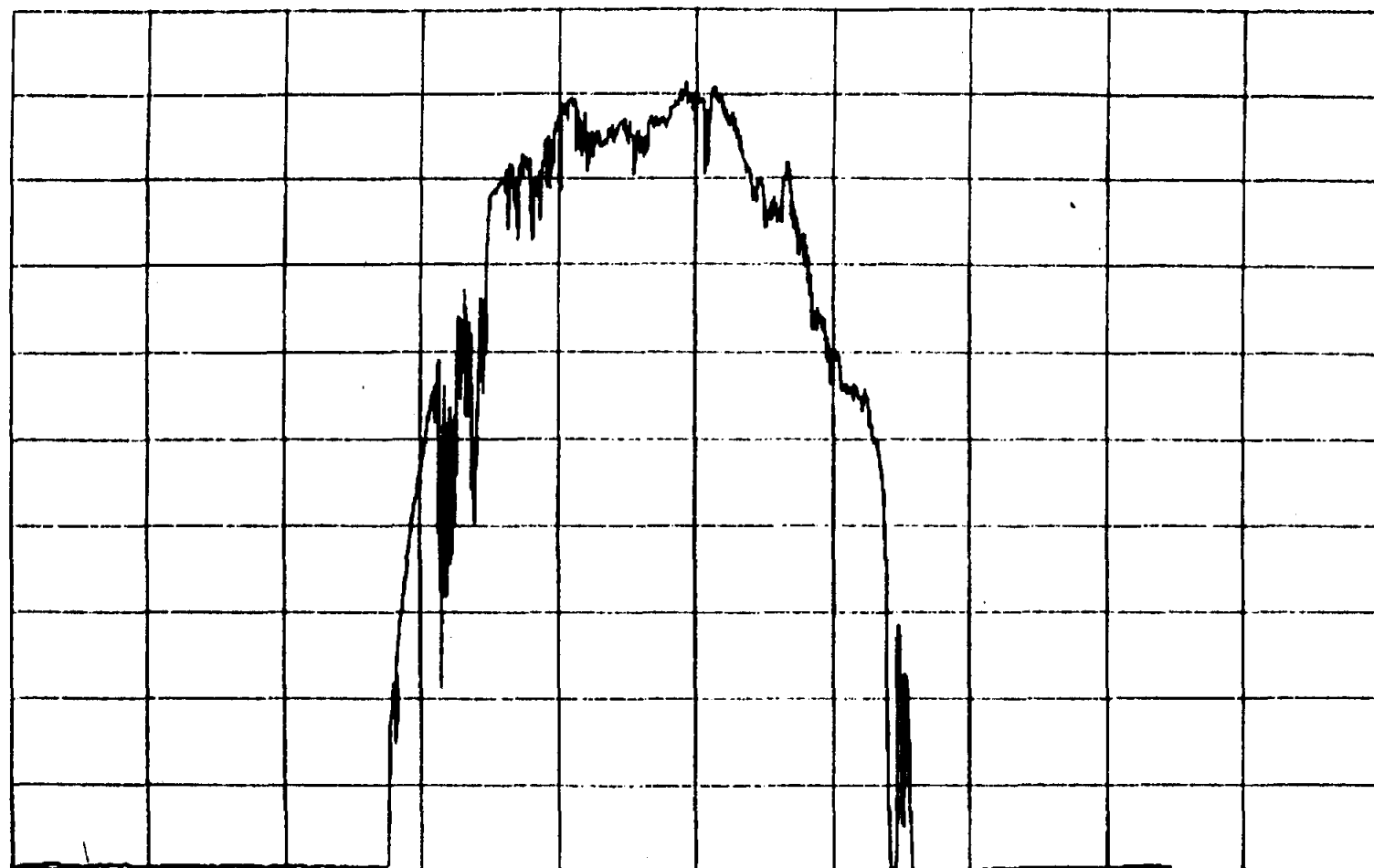
FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00 1500.00
ATX1917 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 339 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

HTN1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

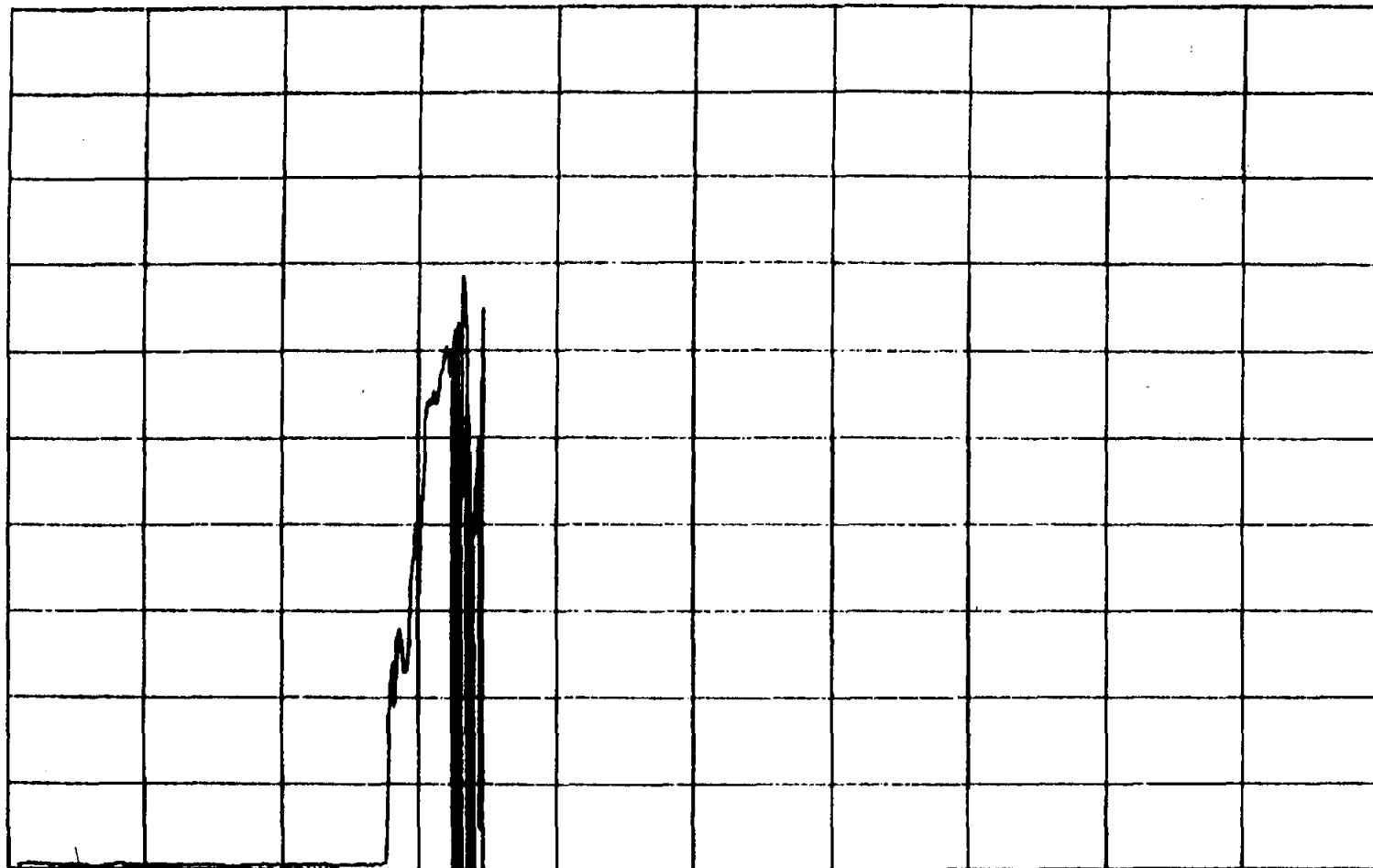
SOLAR DATA PLOT

PLOT # NISL1

NTH SAMPLE AVERAGE = 1

REFERENCE TIME: 340 00 00 00.000

FOR 1500.0000 MINUTE(S)



0.00

1500.00

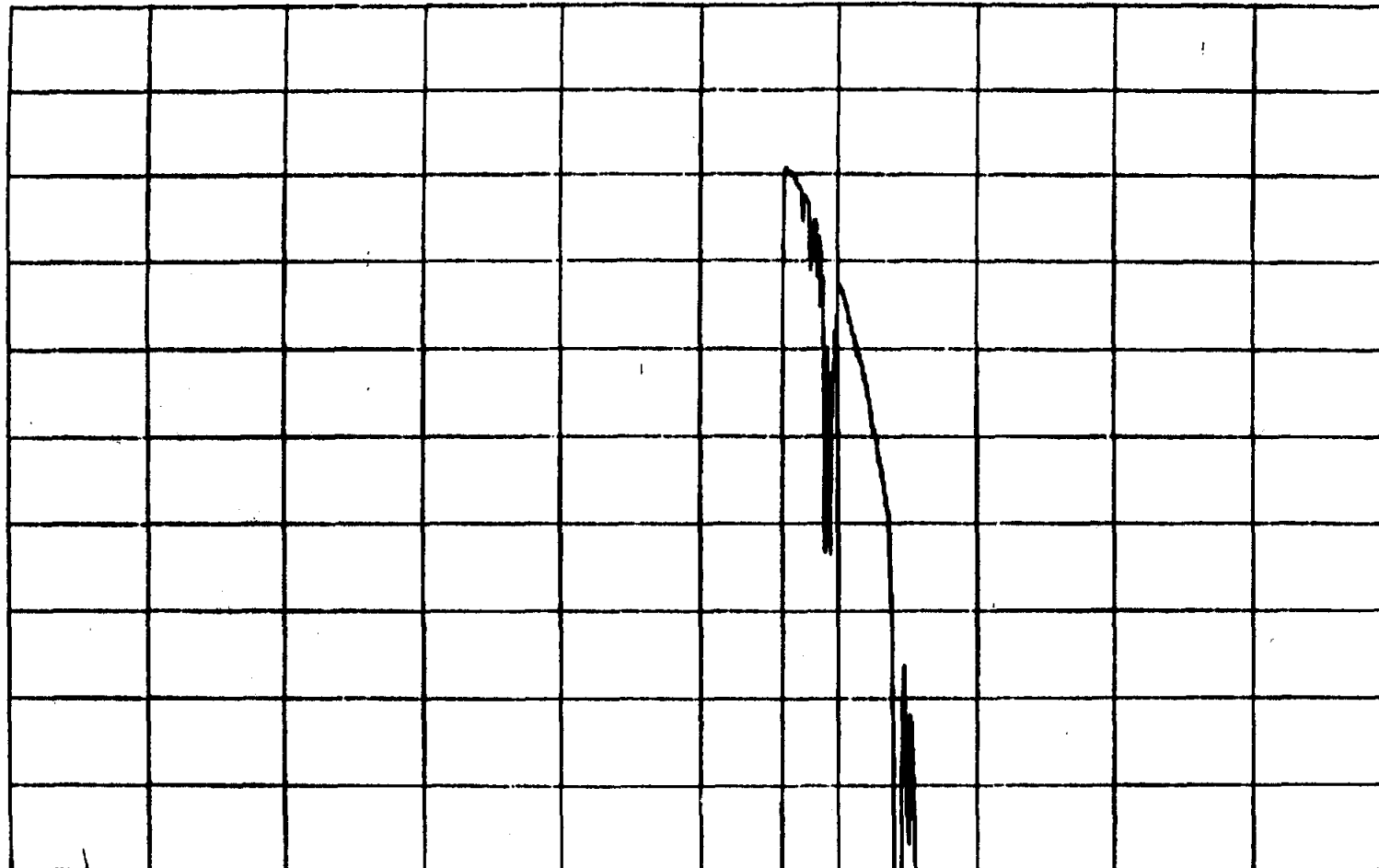
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 342 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1917

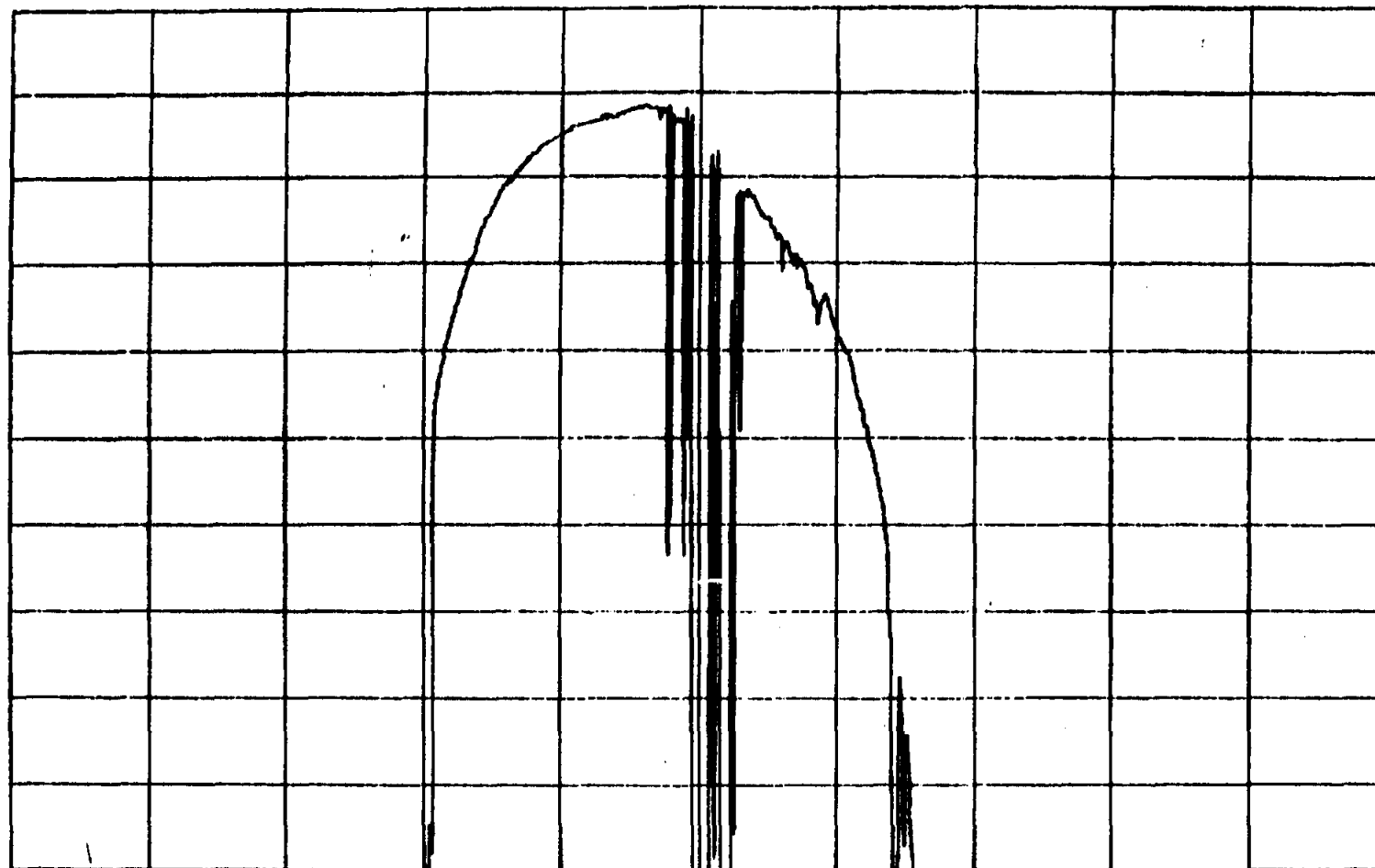
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 343 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

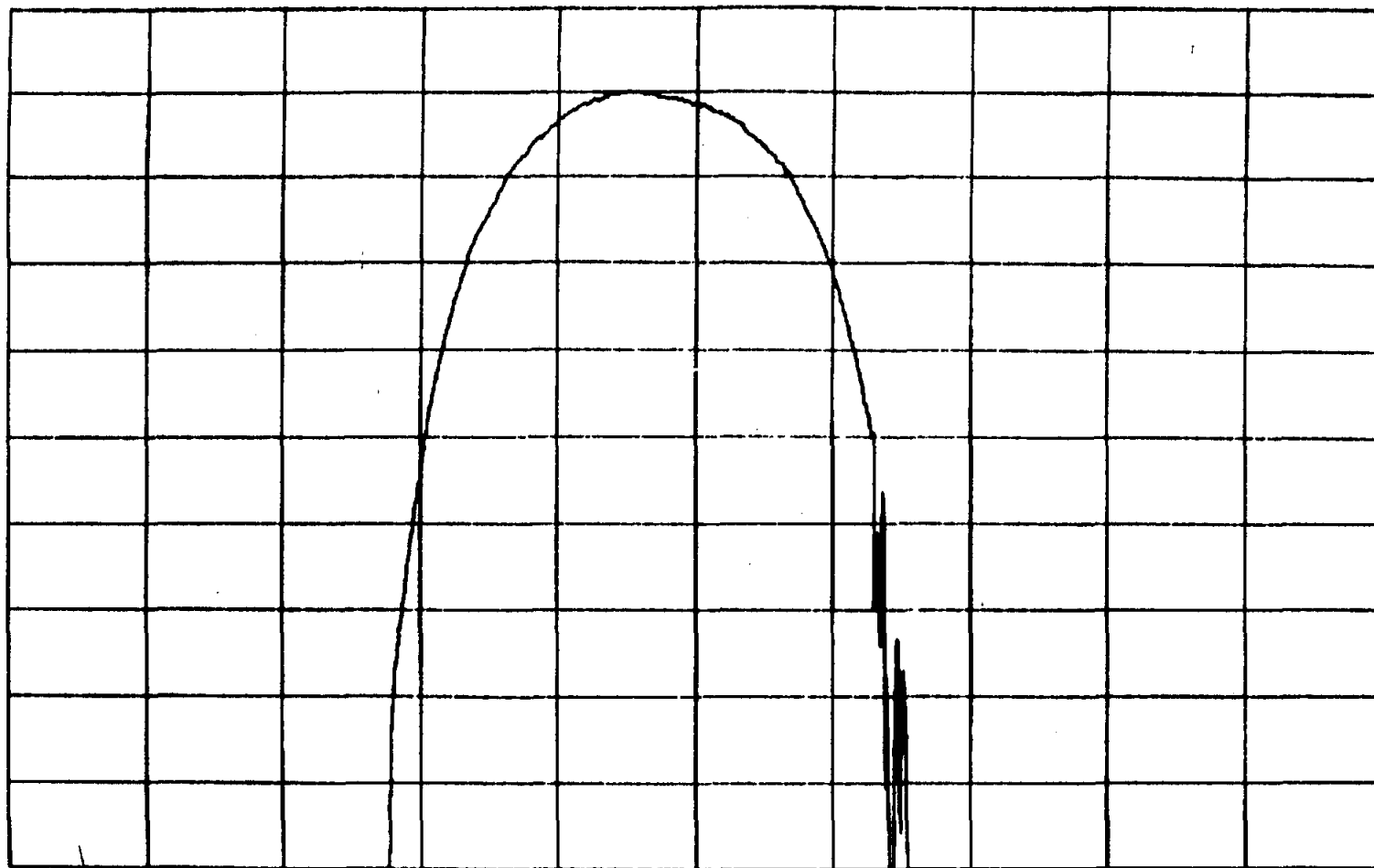
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 344 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

1500.00

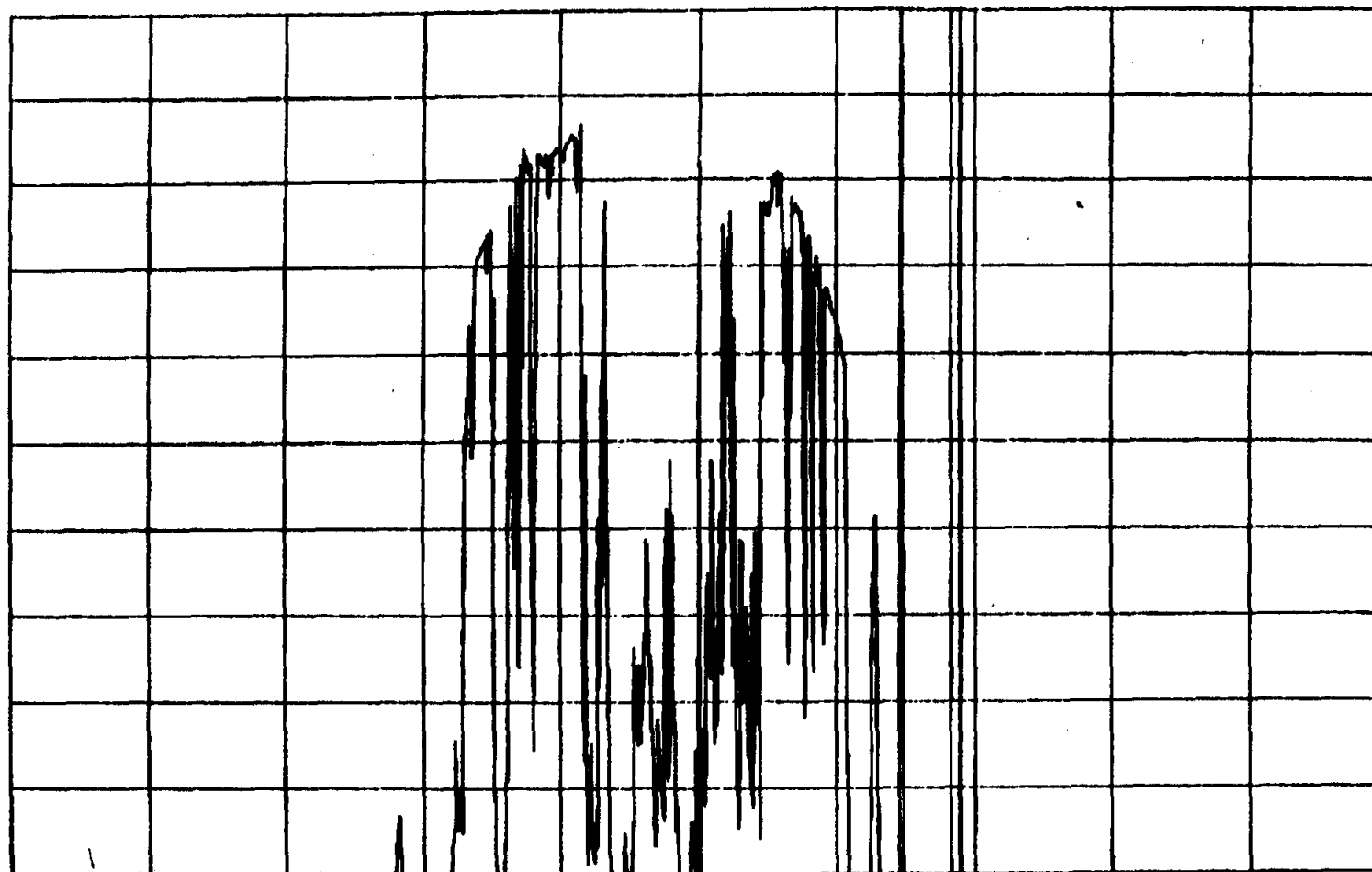
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 345 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

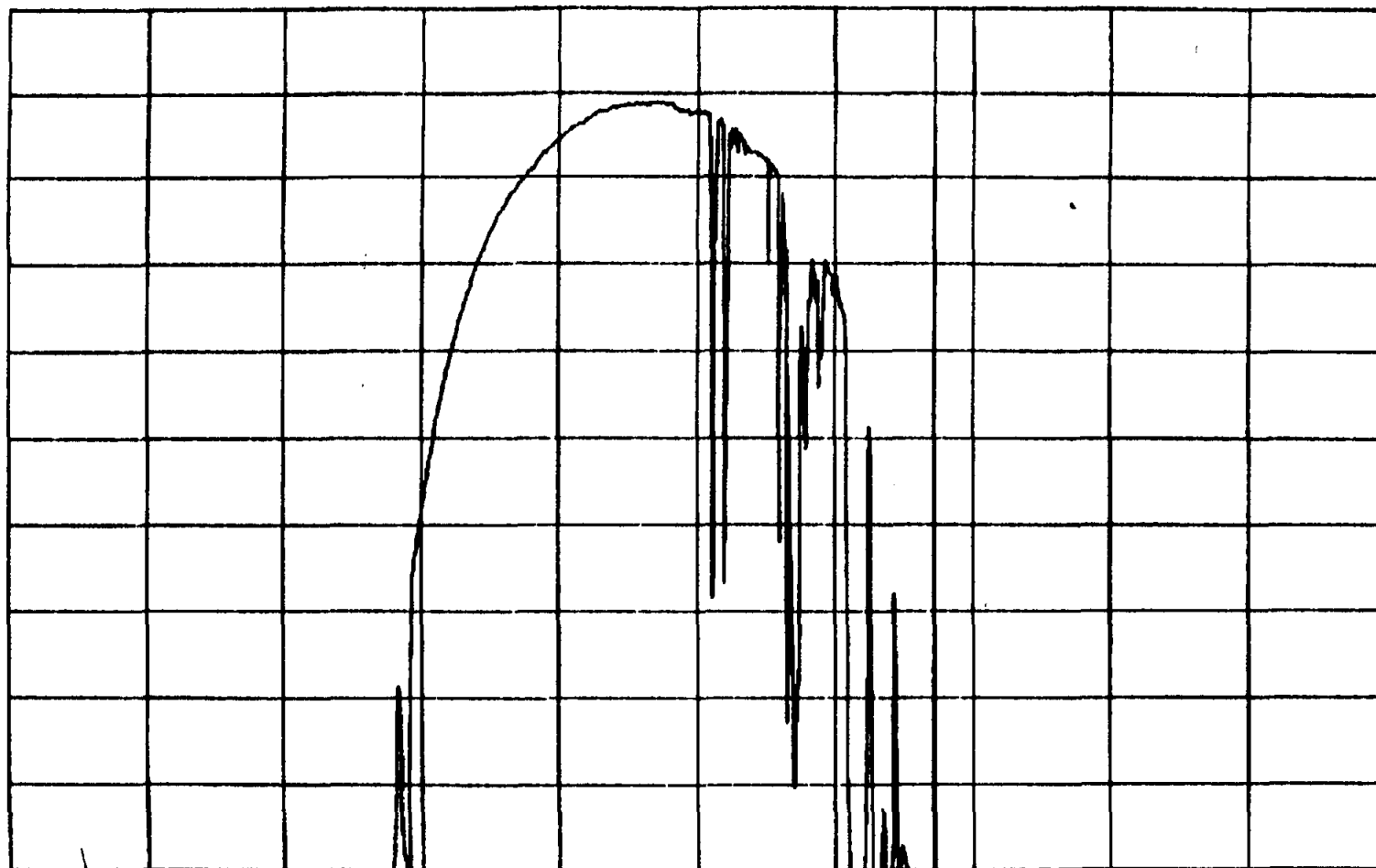
NIP (NORTH STATION)

0.00 - 1000.00 U/M2

1500.00

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 346 00 00 00.000

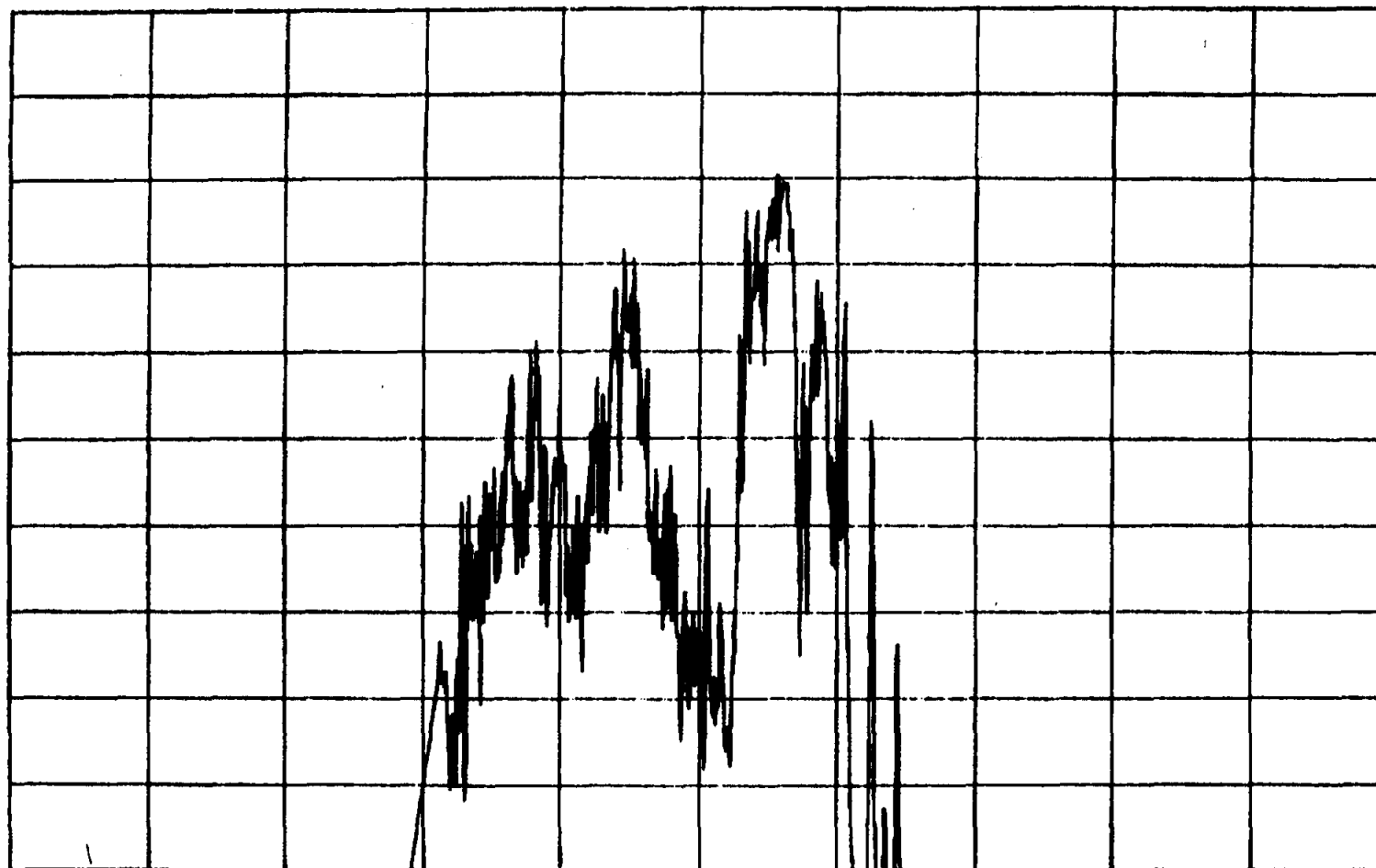
NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00 1500.00
ATX1817 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 347 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1817

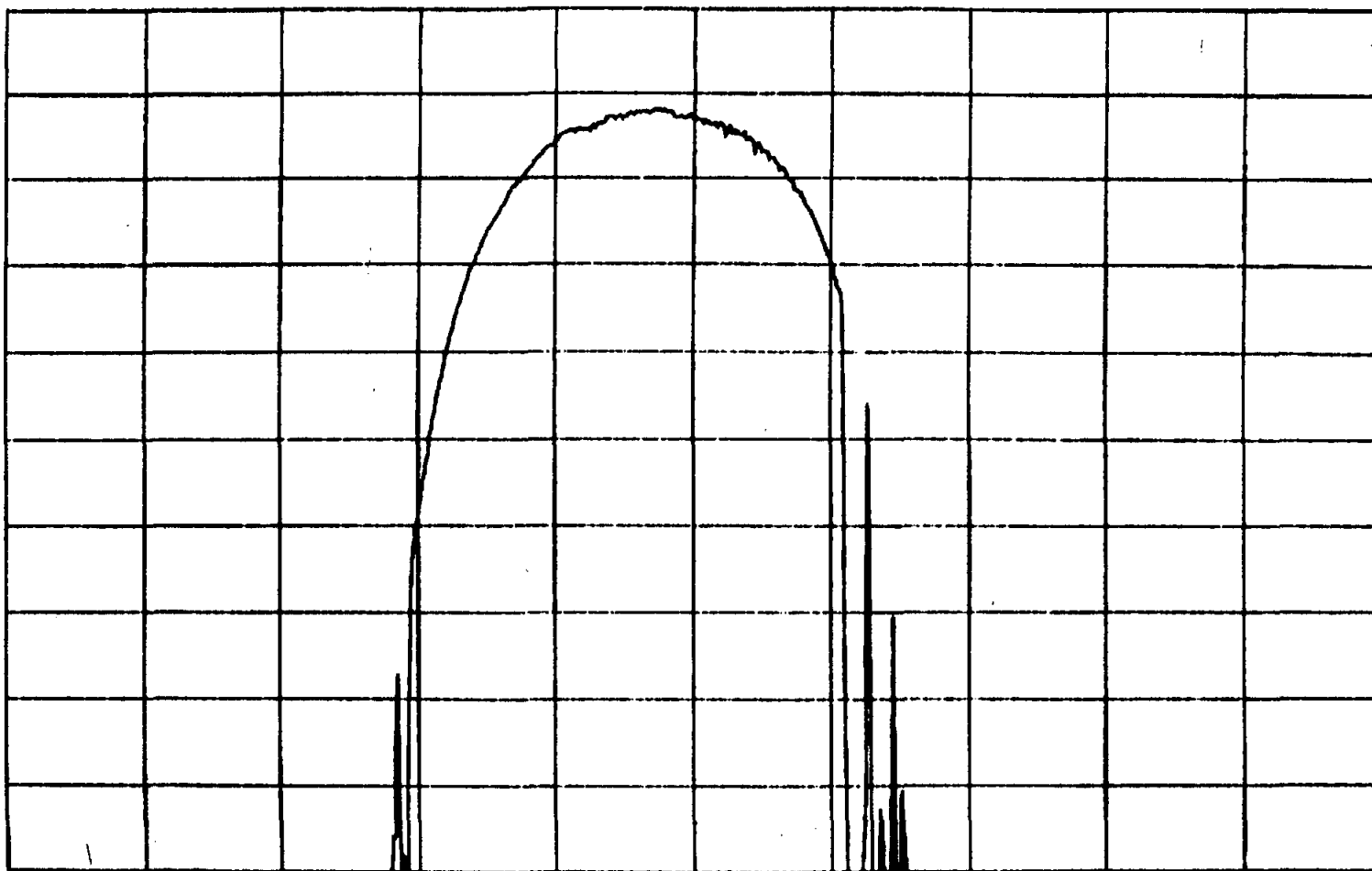
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 34S 00 00 00.000

NTM SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



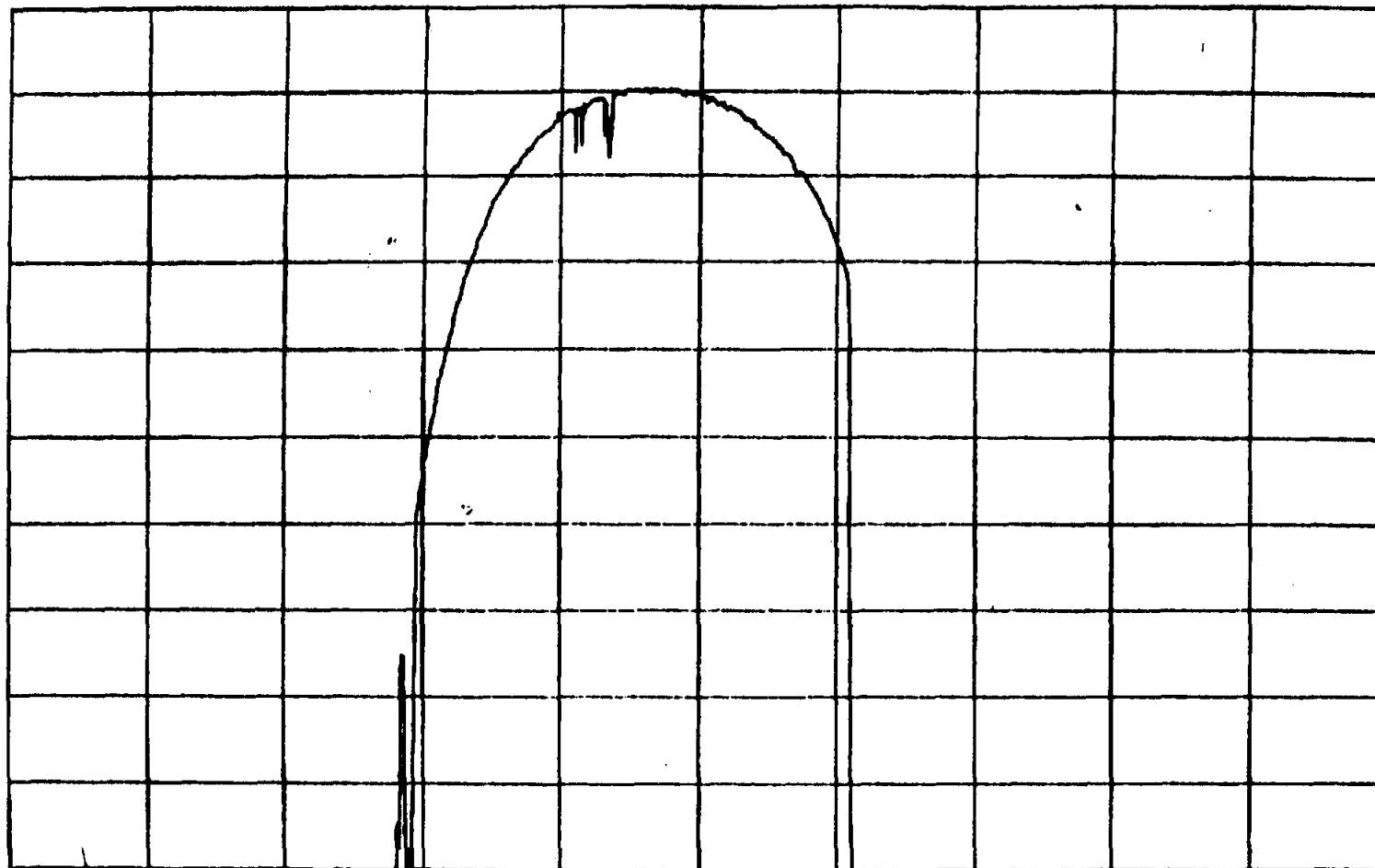
0.00
HTX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2
1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 349 00 00 00.000

NTN SAMPLE AVERAGE * 1
FOR 1500.0000 MINUTE(S)



0.00 1500.00
ATX1817 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 350 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



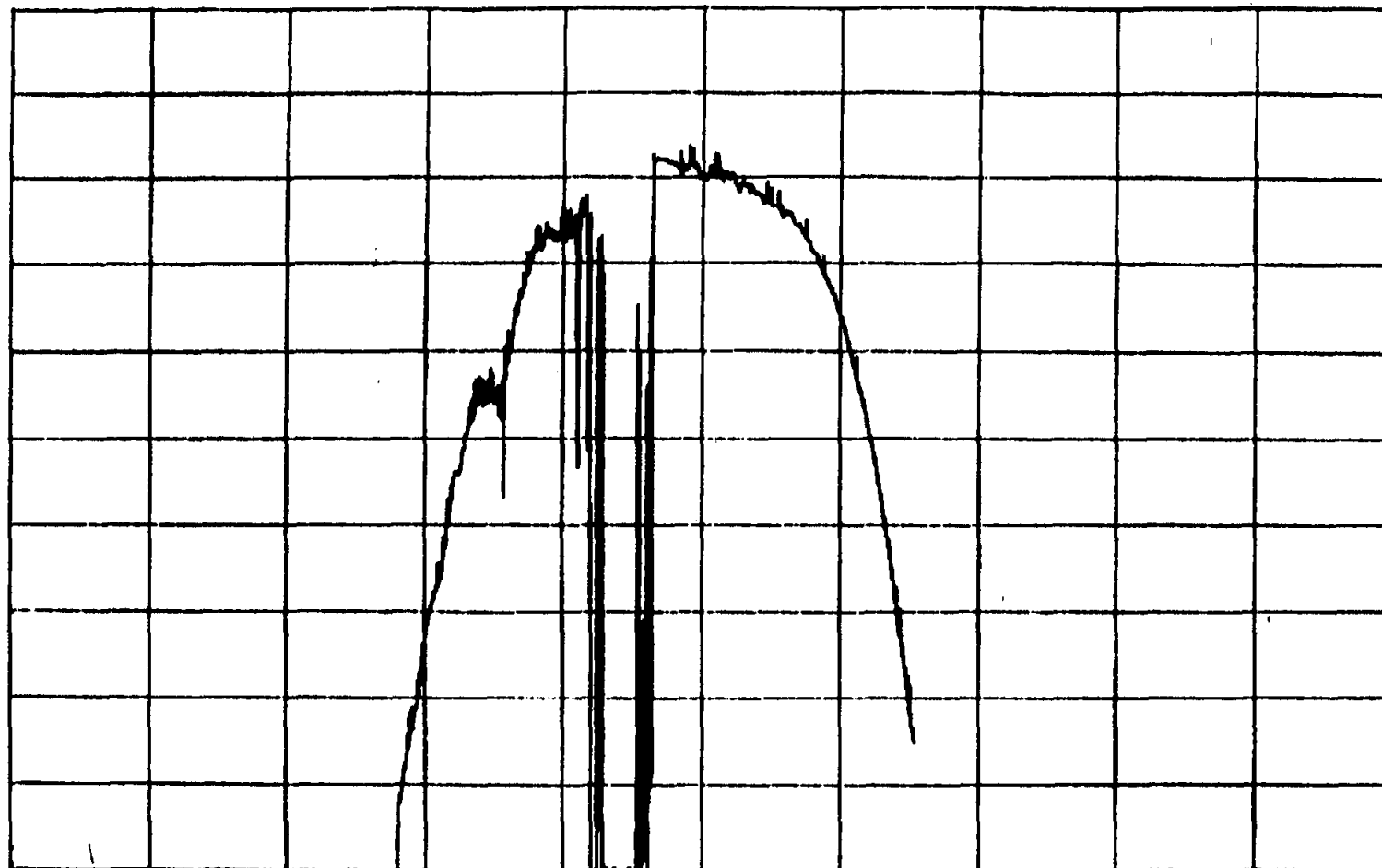
0.00
ATX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2
1500.00

SOLAR DATA PLOT PLOT # NISL3
REFERENCE TIME: 351 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

884TX1817A

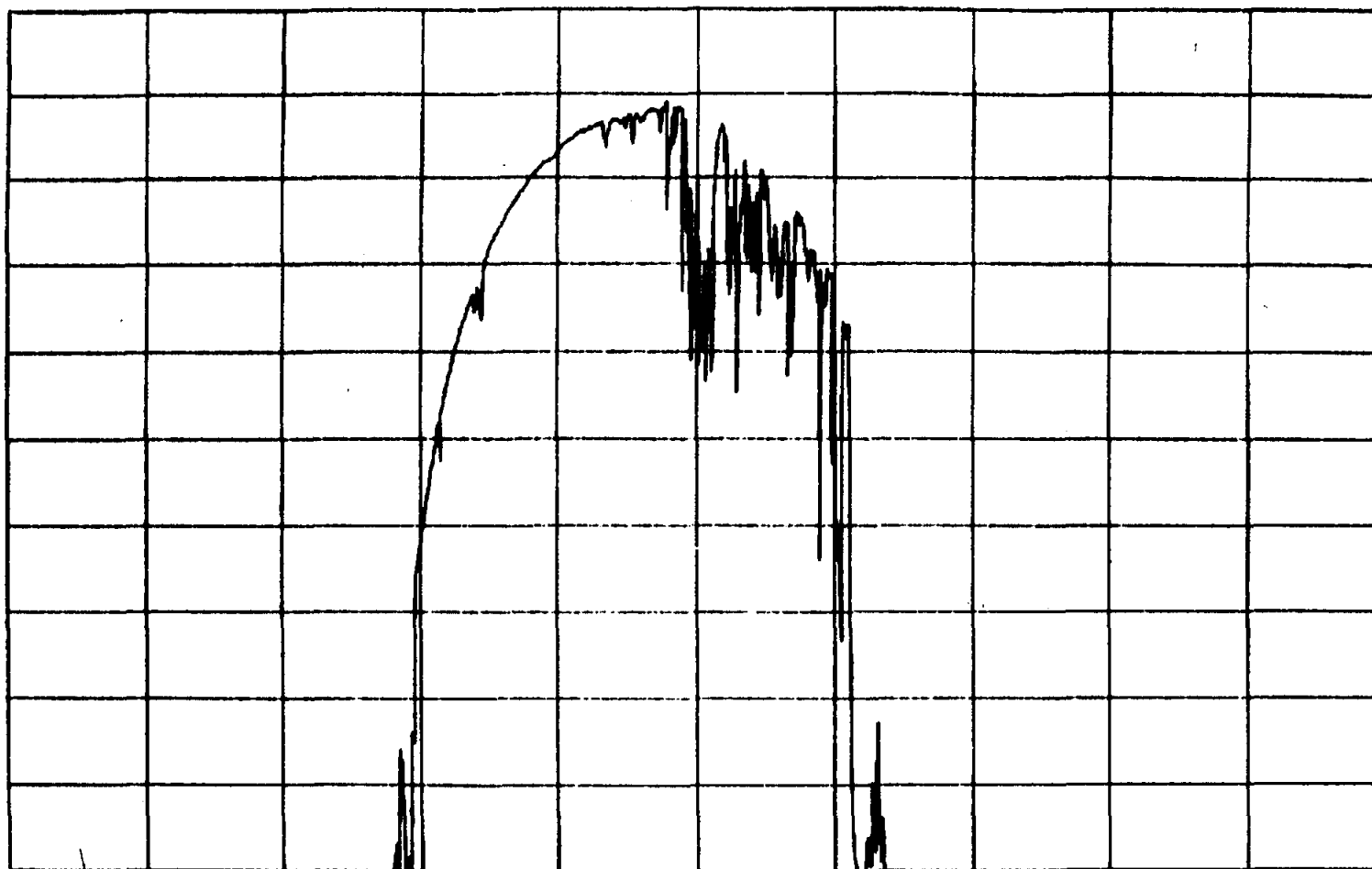
CHTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

1500.00

SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 352 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



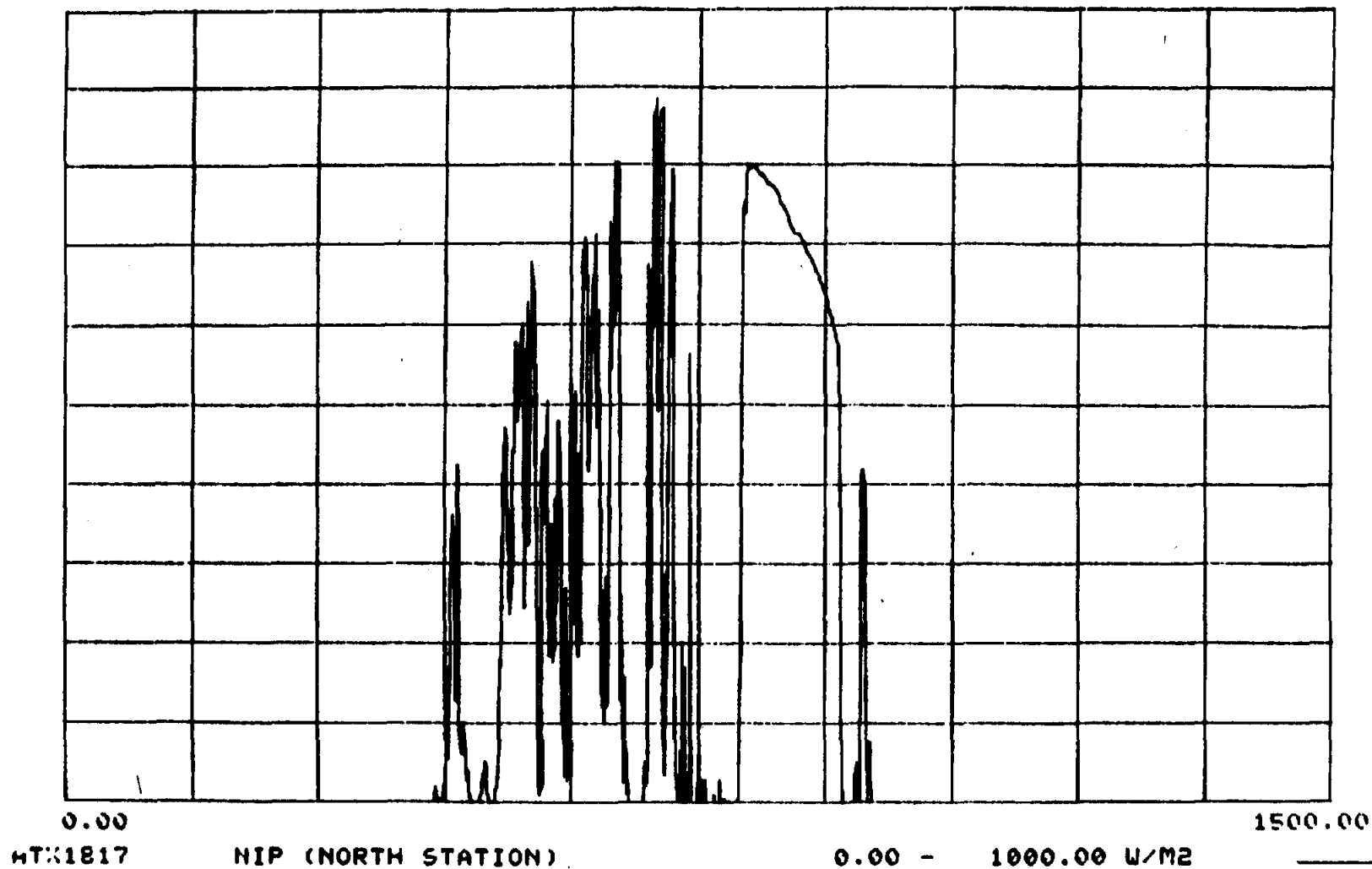
0.00
ATX1917

NIP (NORTH STATION)

0.00 - 1000.00 W/M2
1500.00

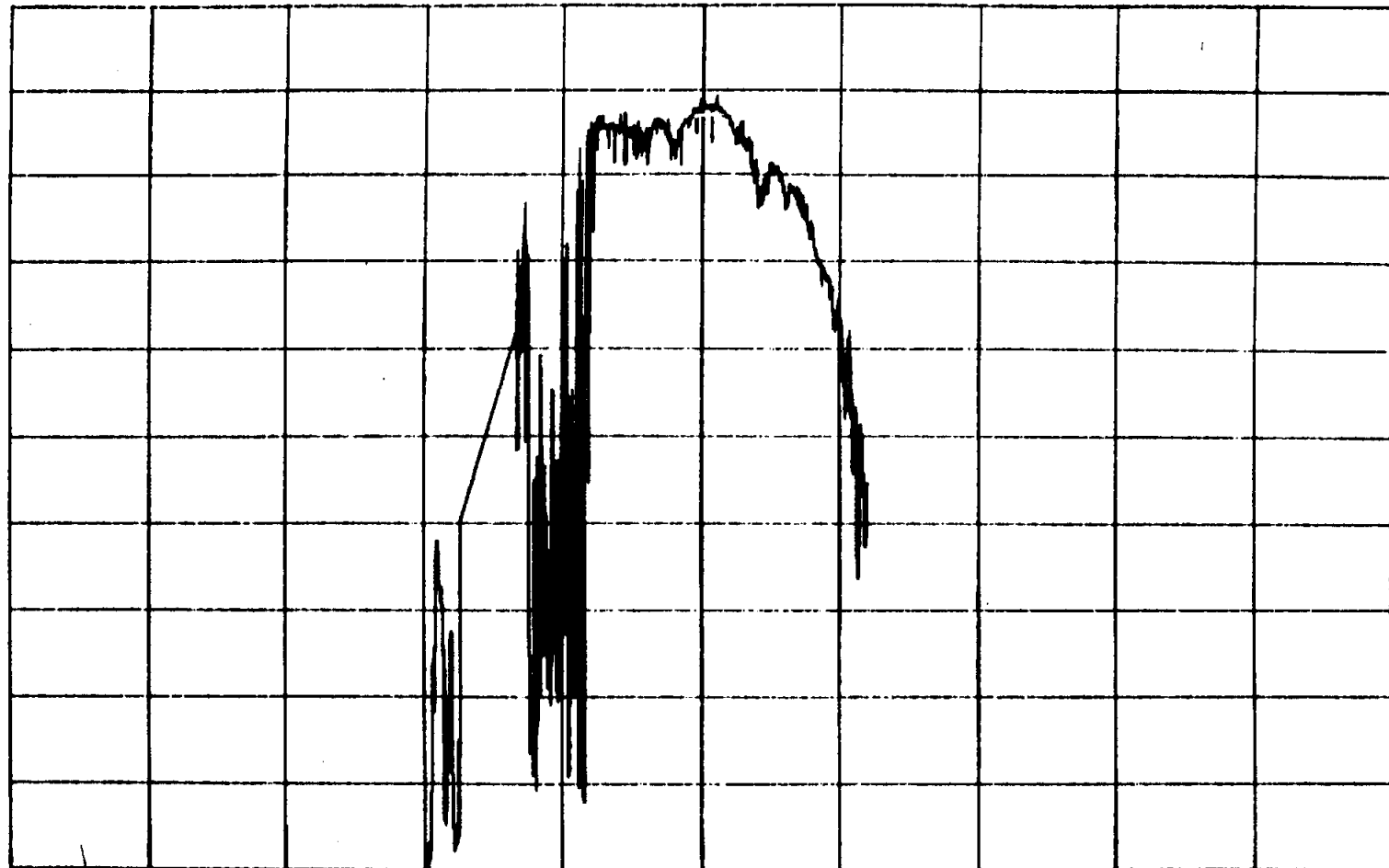
SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 353 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 354 00 00 00.000

NTW SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

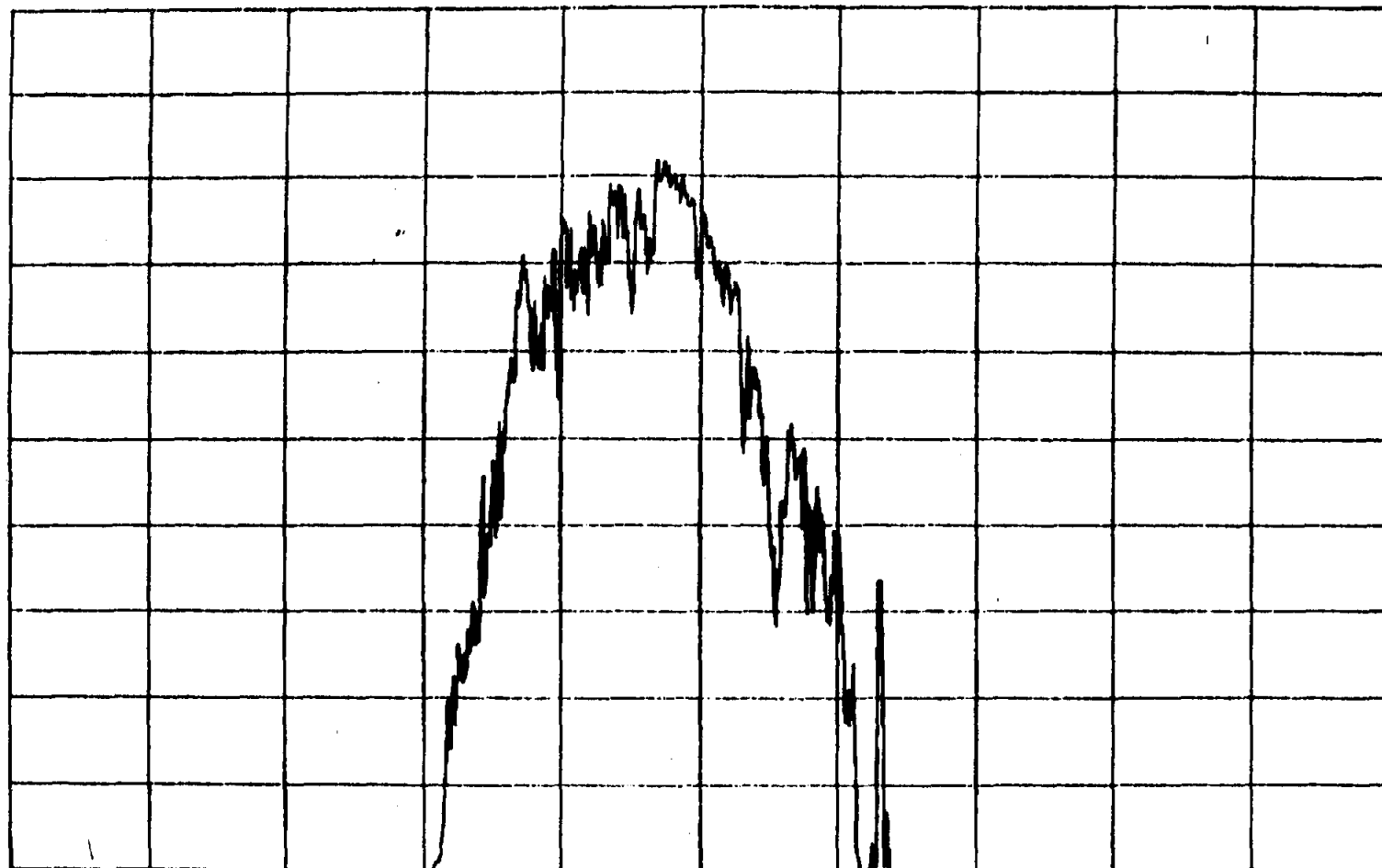
1500.00

88ATX1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 355 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00
HT:1217

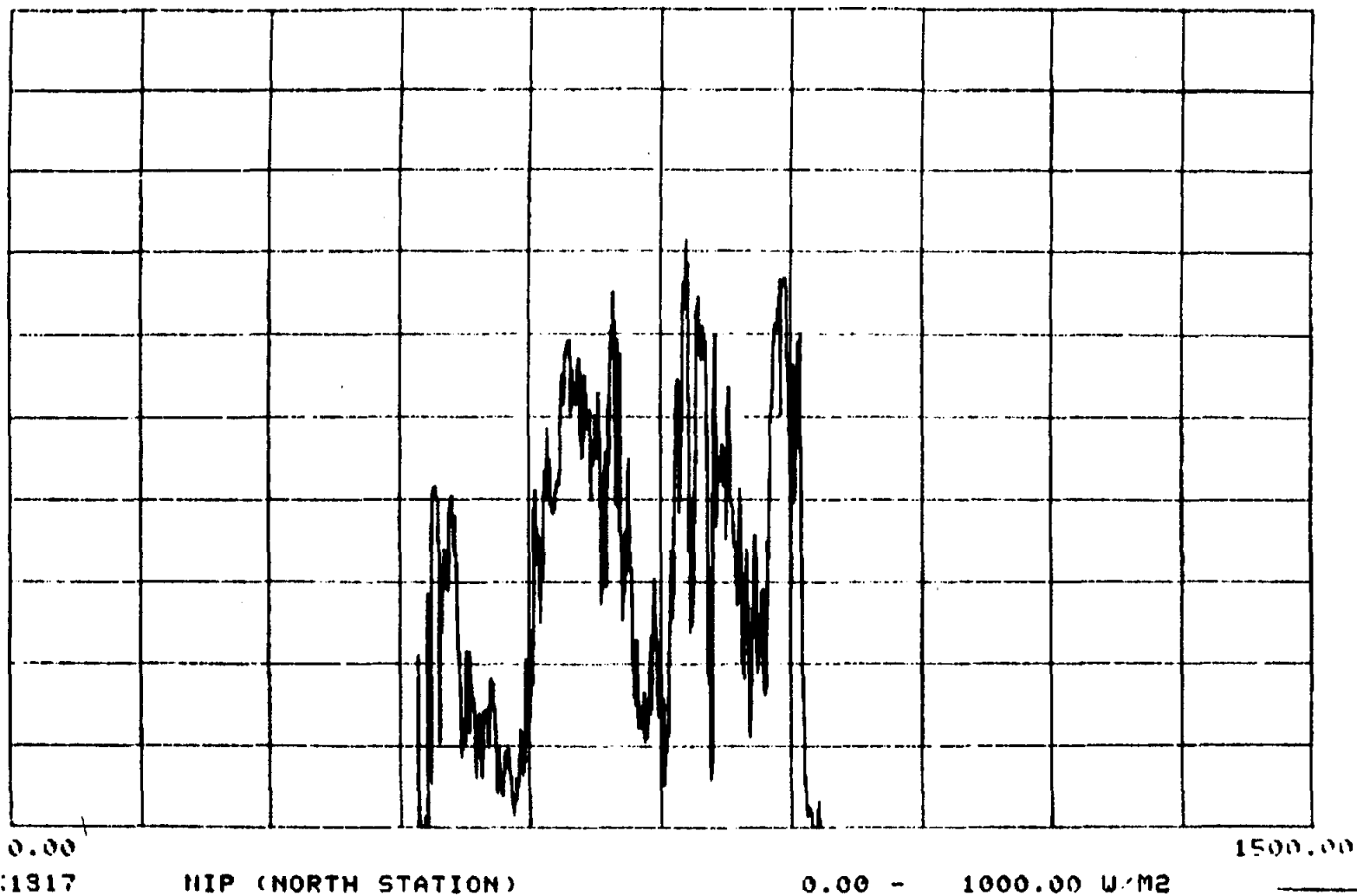
HIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

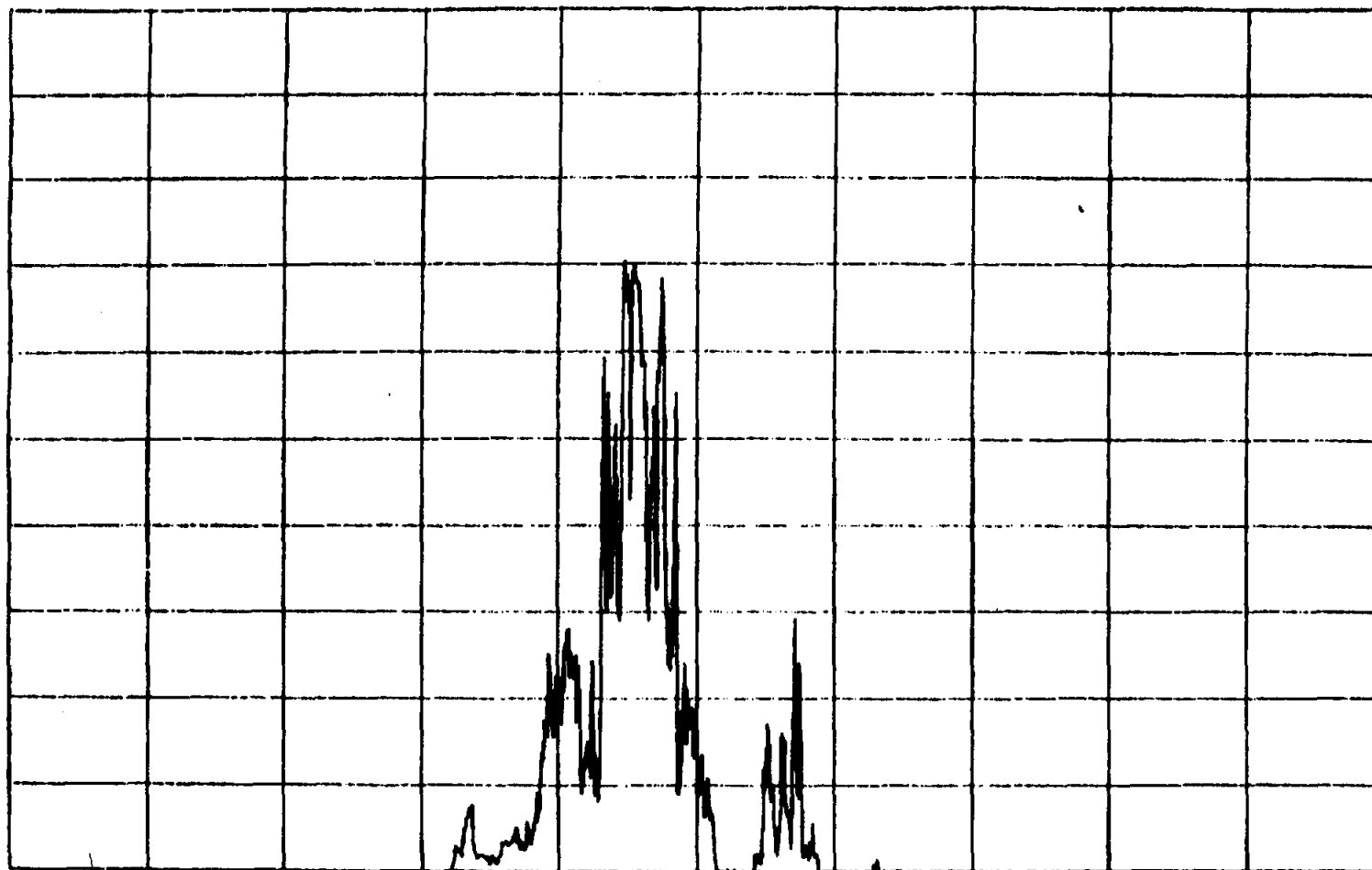
SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 356 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



SOLAR DATA PLOT PLOT # NISL1
REFERENCE TIME: 357 00 00 00.000

NTH SAMPLE AVERAGE * 1
FOR 1500.0000 MINUTE(S)



0.00

WTR1817

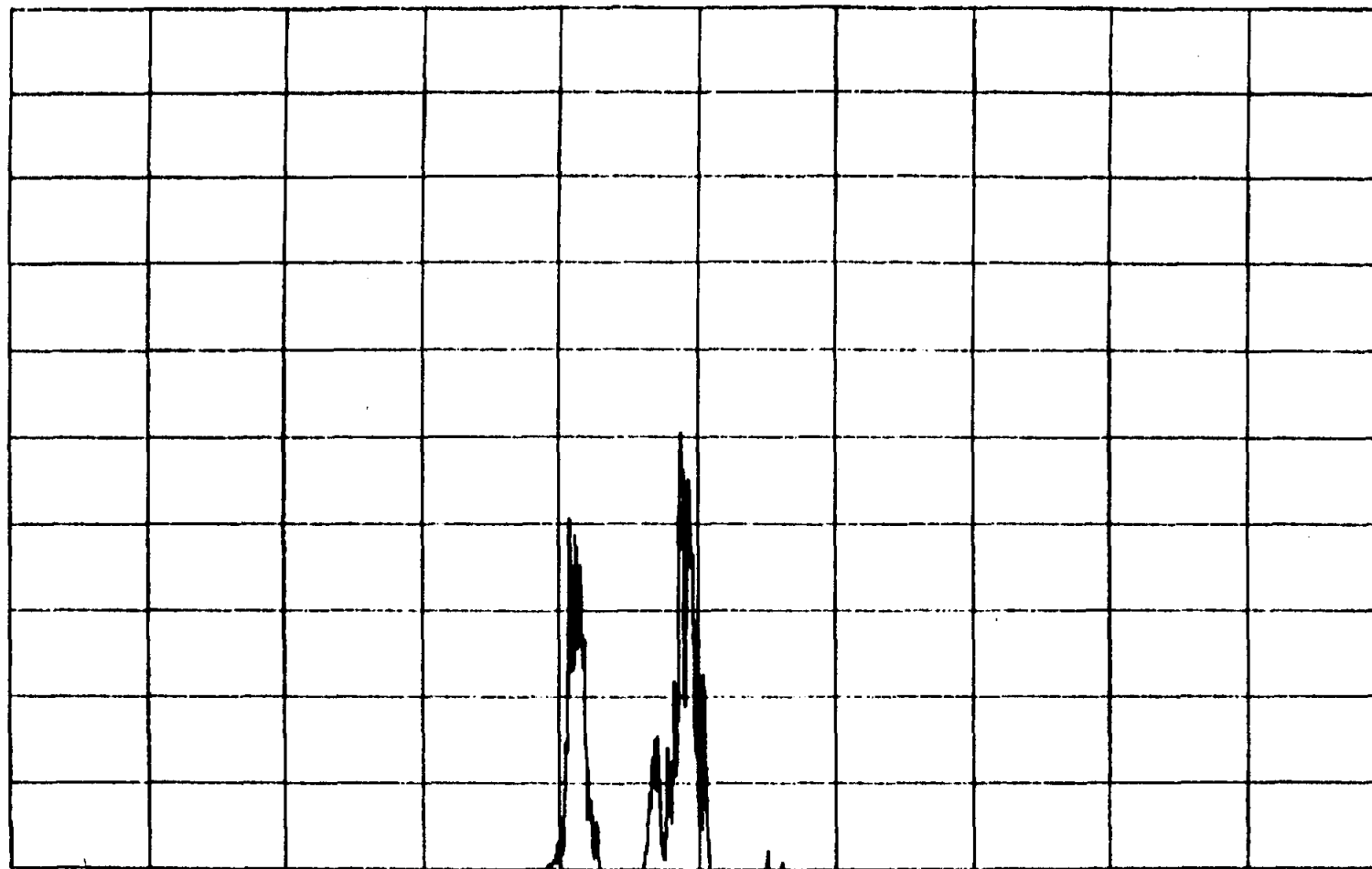
NIP (NORTH STATION)

0.00 - 1000.00 W. M2

1500.00

SOLAR DATA PLOT PLOT # NISLI
REFERENCE TIME: 35S 00 00 00.000

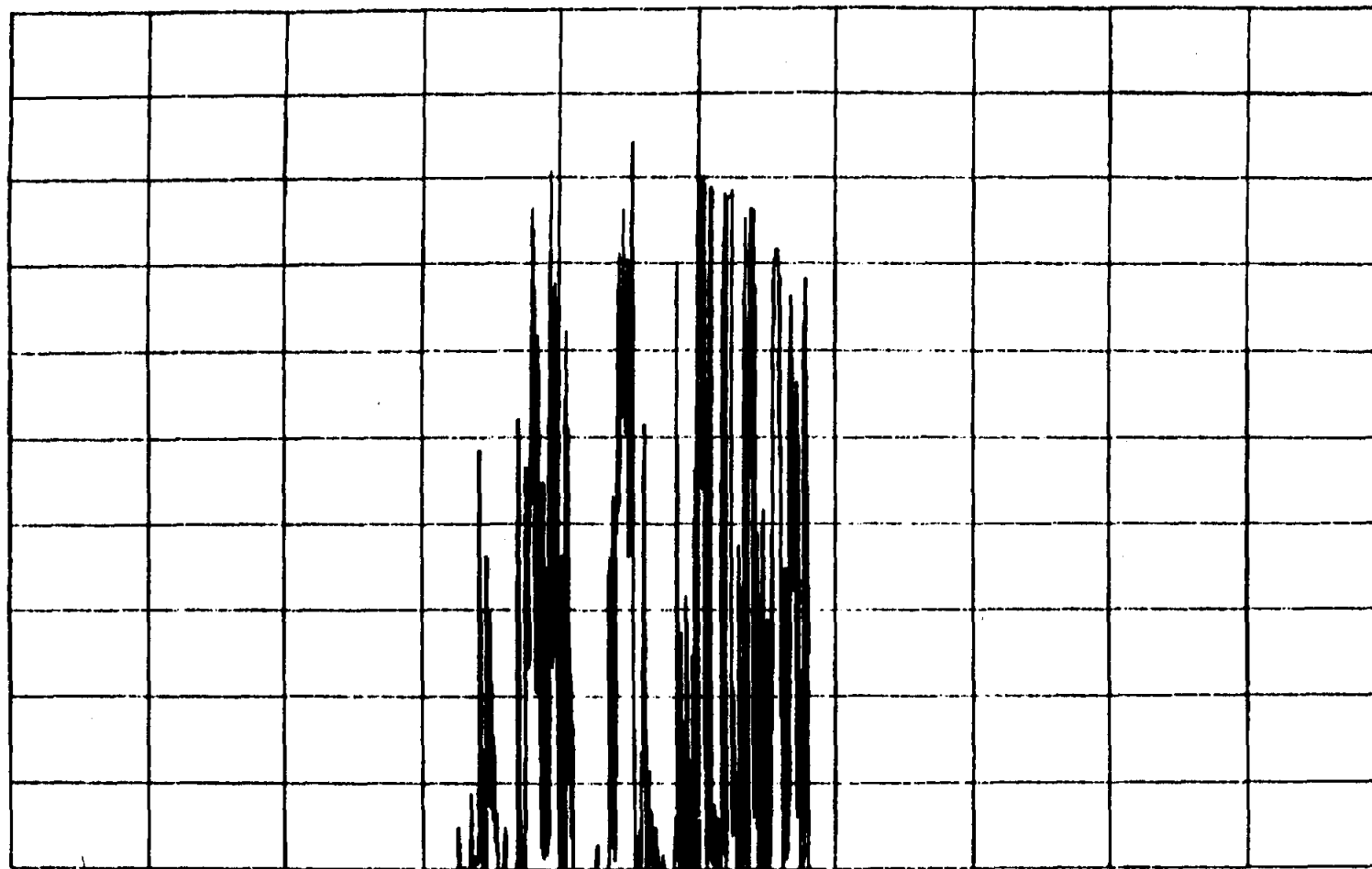
FOR NTH SAMPLE AVERAGE * 1
1500.0000 MINUTE(S)



0.00 1500.00
W/M2 NIP (NORTH STATION) 0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT : MISL1
REFERENCE TIME: 359 00 00 00.000

FOR NTH SAMPLE AVERAGE : 1
 1500.0000 MINUTE(S)



0.00

1500.00

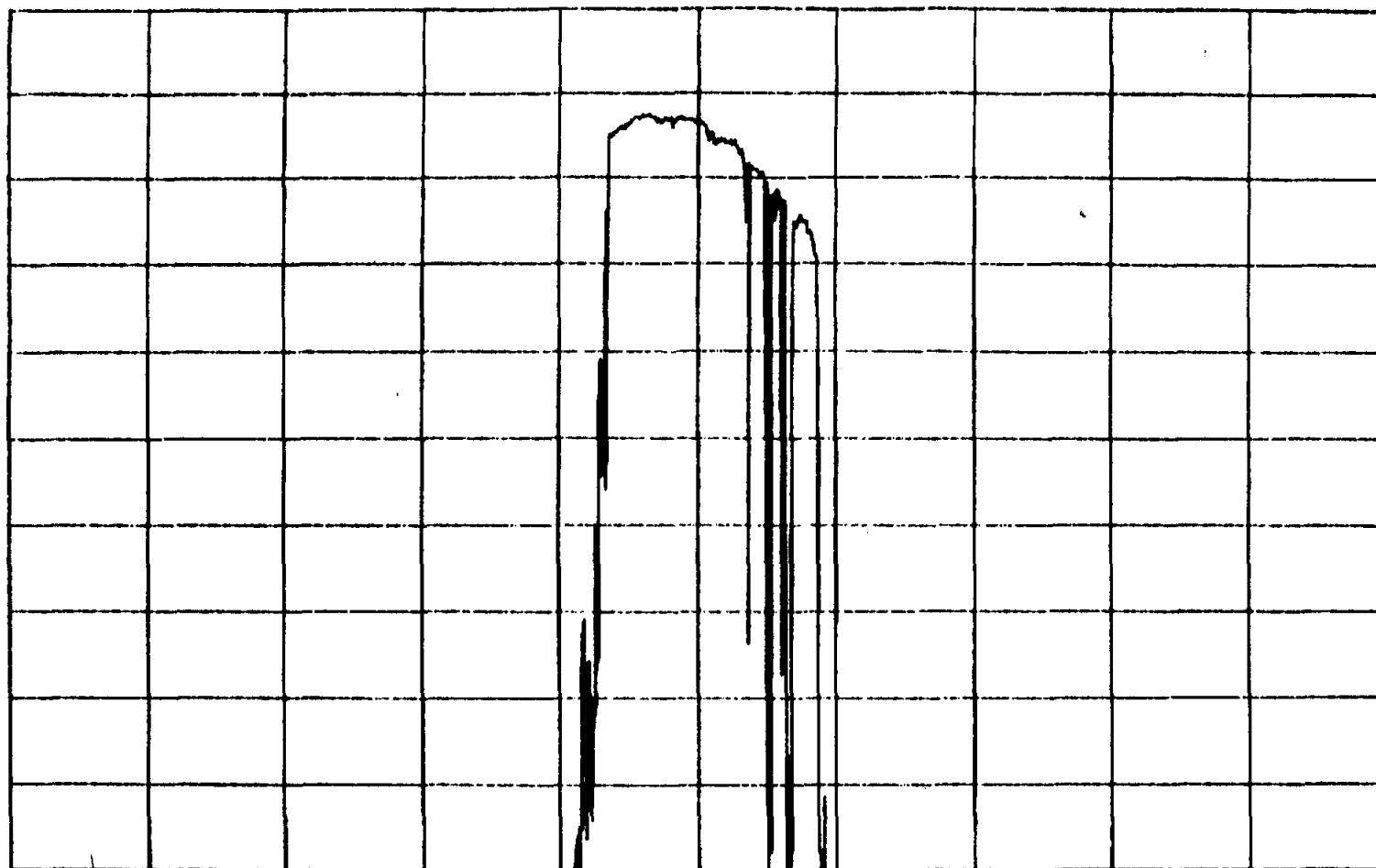
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NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 360 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

1500.00

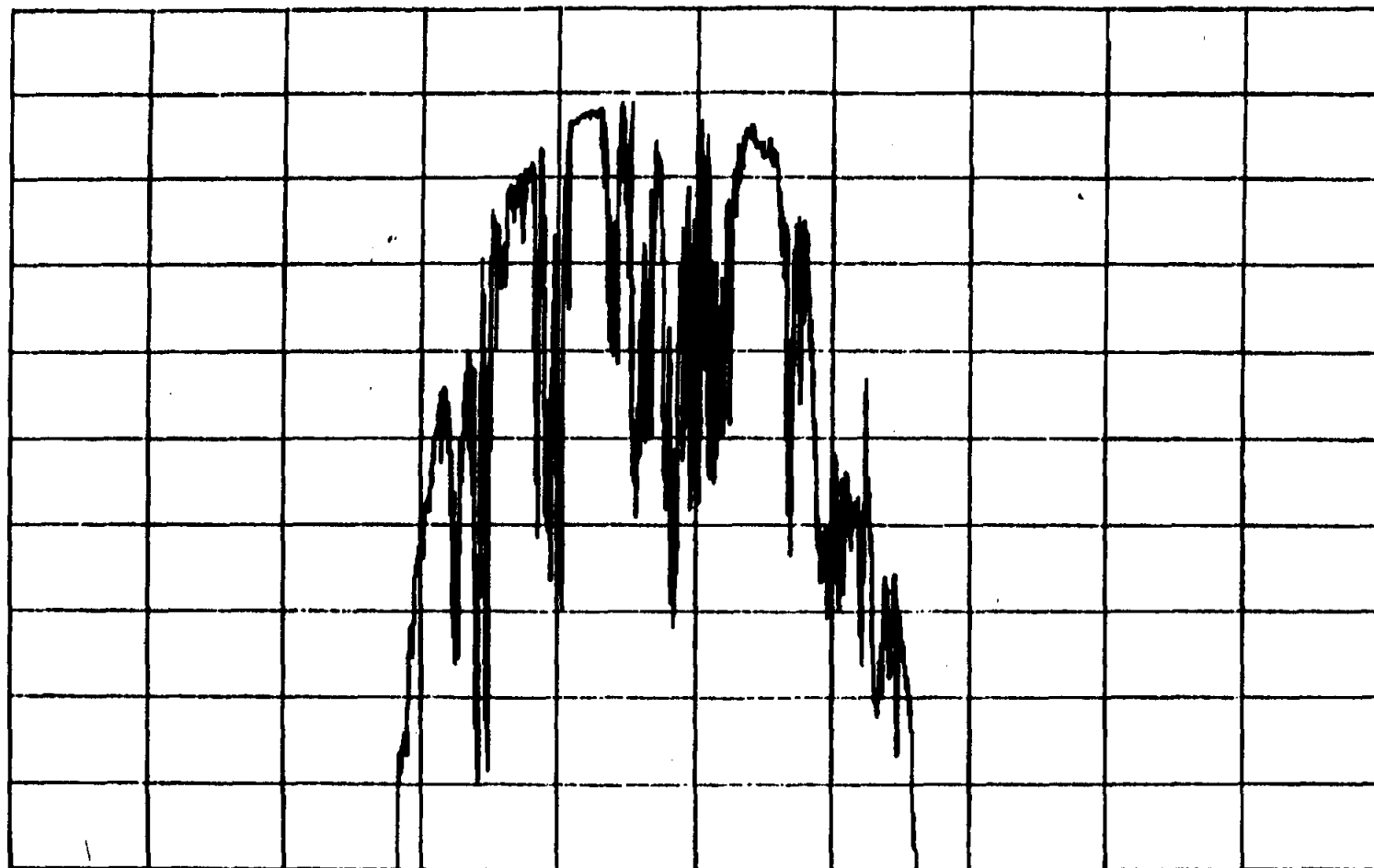
HTX1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATA PLOT PLOT # MISL3
REFERENCE TIME: 361 00 00 00.000

NTN SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)

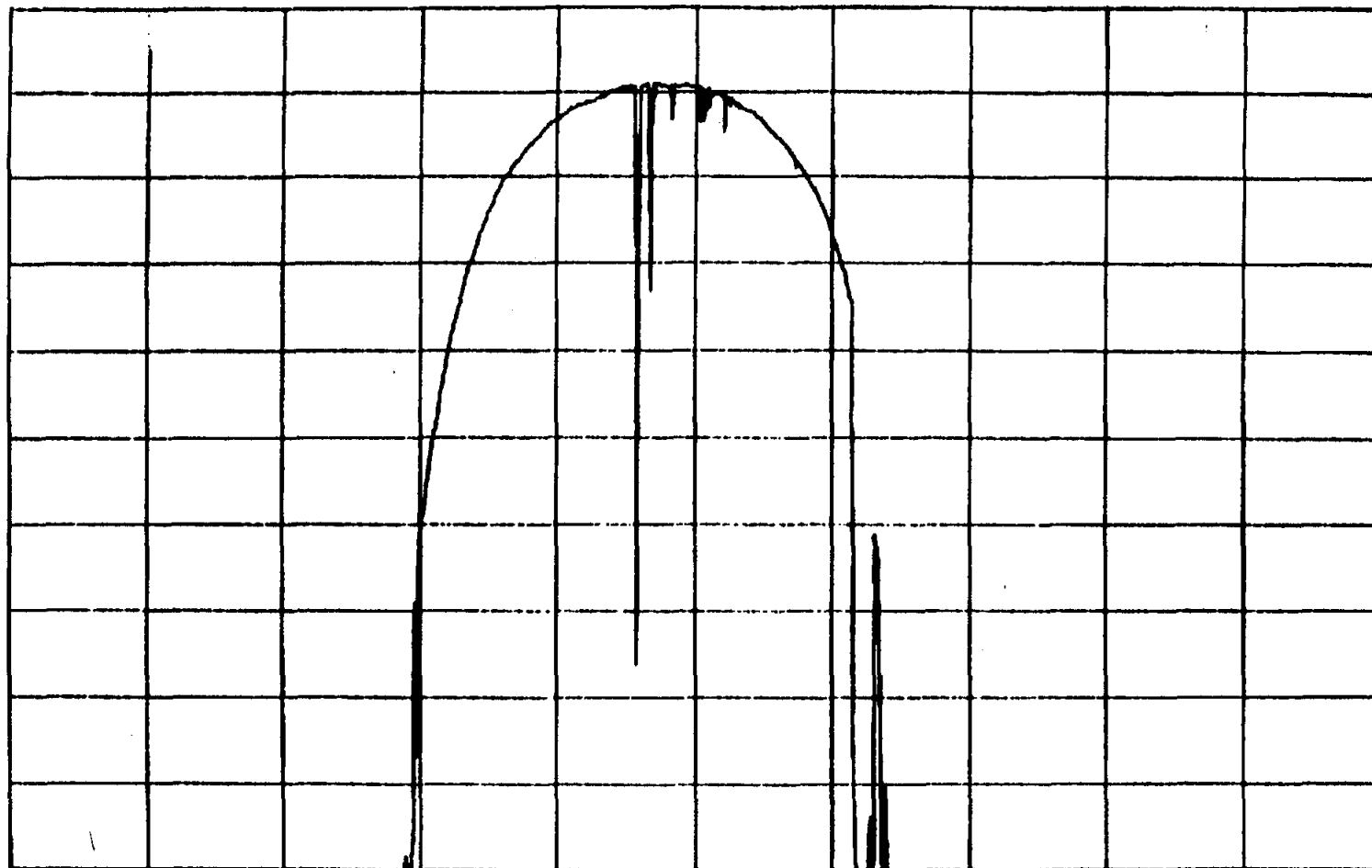


0.00
88AT1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2 1500.00

SOLAR DATA PLOT PLOT # MISL1
REFERENCE TIME: 362 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00

1500.00

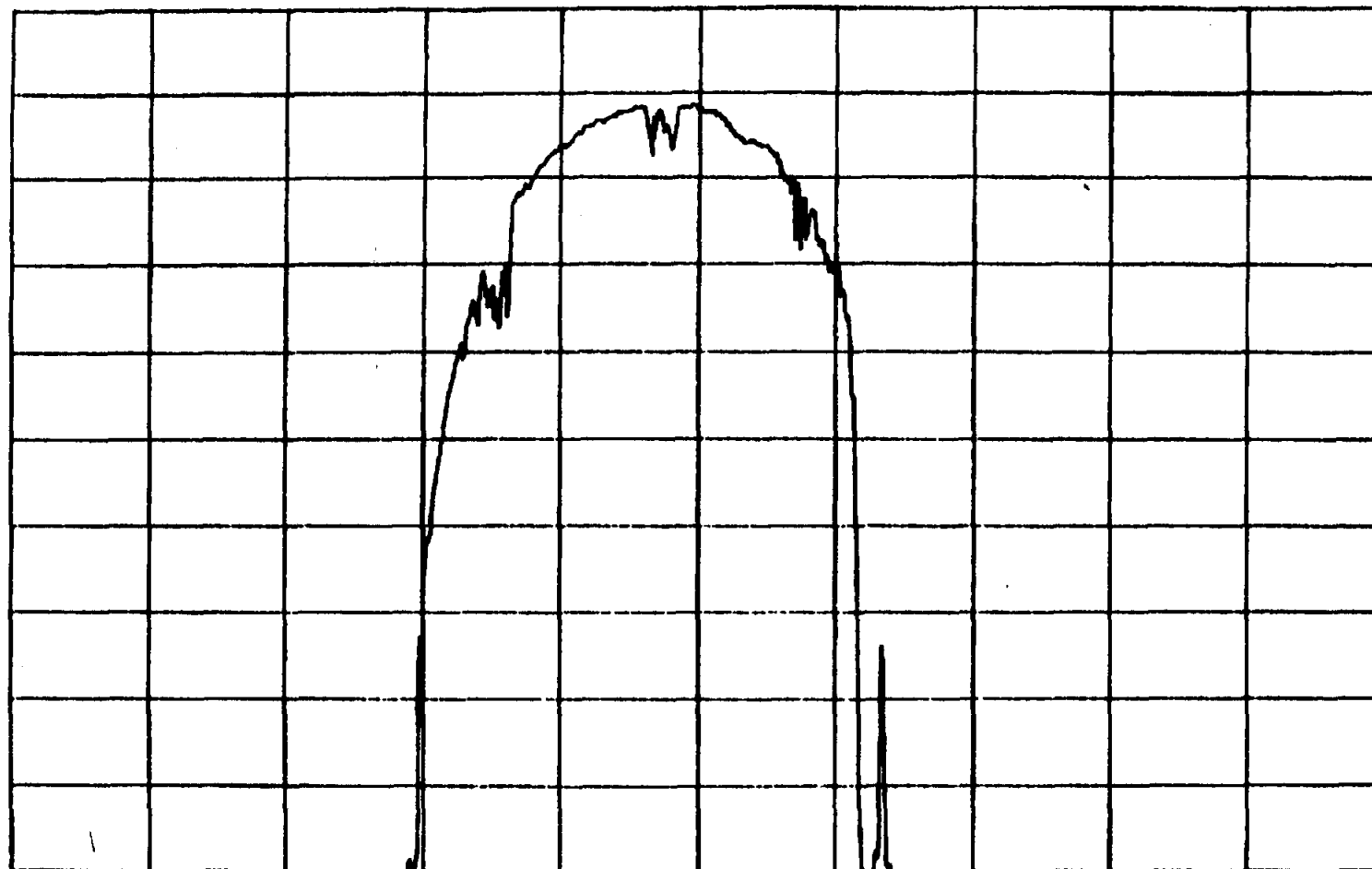
HT:1817

NIP (NORTH STATION)

0.00 - 1000.00 W/M2

SOLAR DATH PLOT PLOT # MISL1
REFERENCE TIME: 363 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00
HTX1817

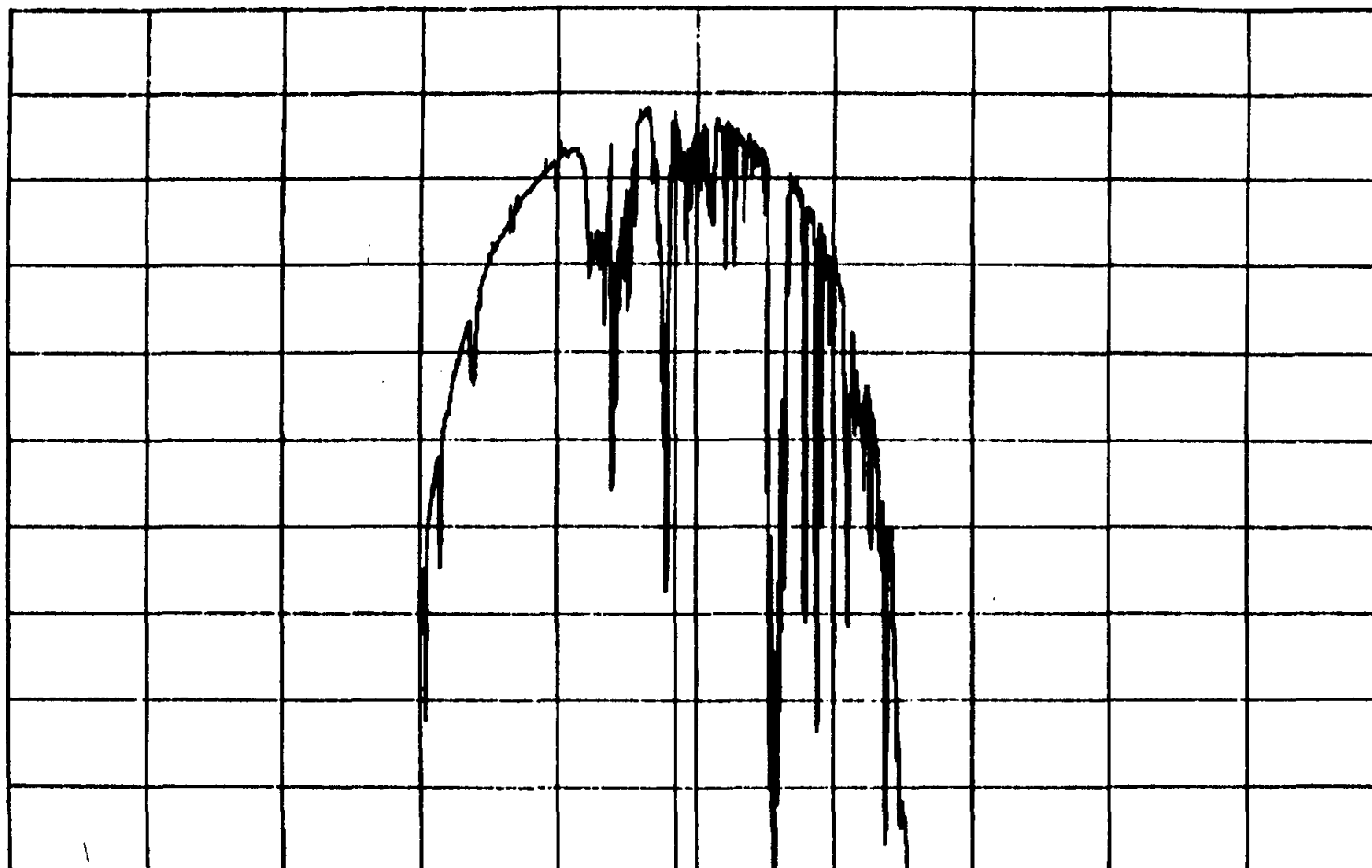
NIP (NORTH STATION)

0.00 - 1000.00 W/M2

1500.00

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REFERENCE TIME: 364 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



0.00

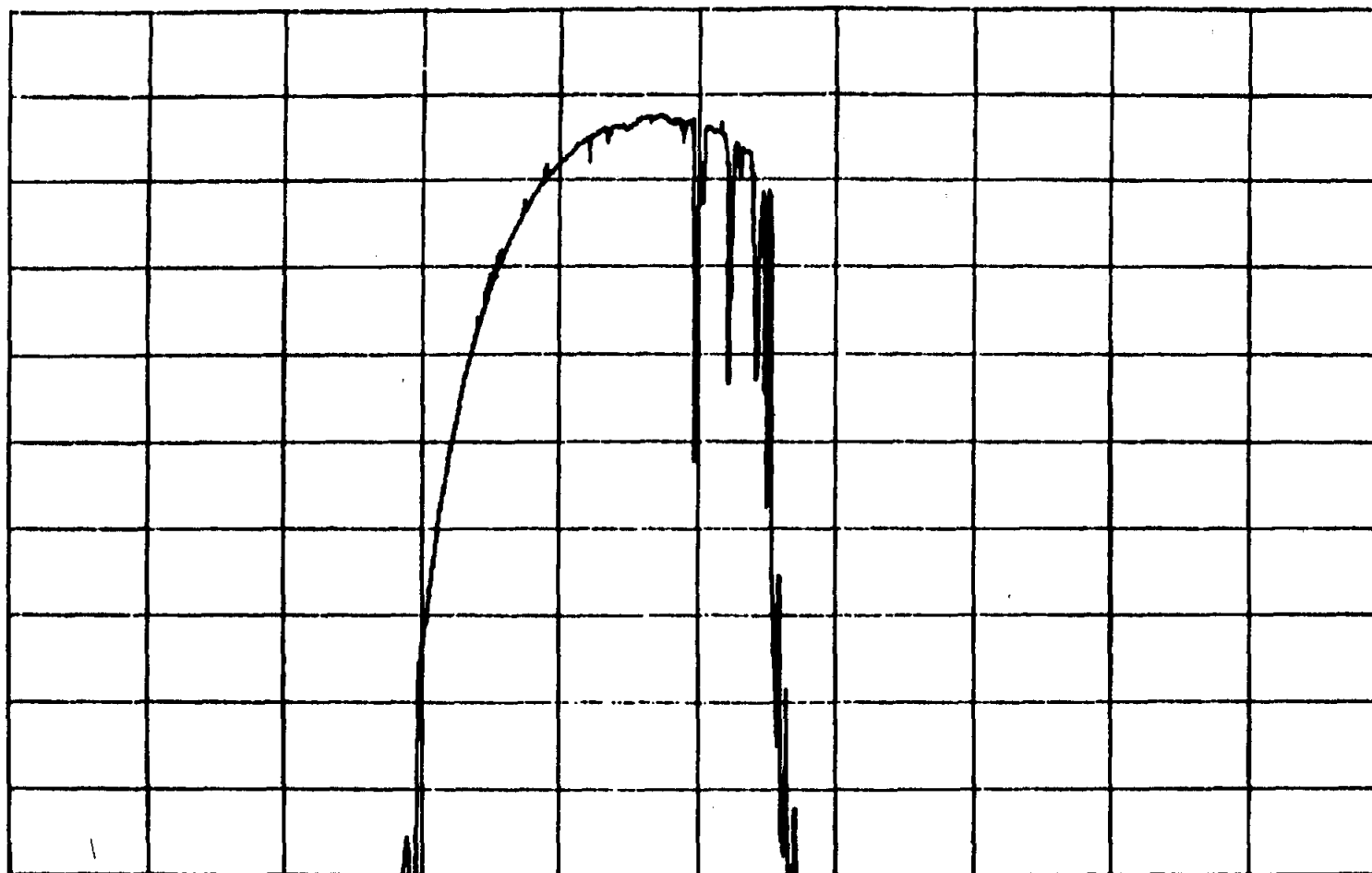
1500.00

884T:1817A CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

SOLAR DATH PLOT PLOT # MISL3
REFERENCE TIME: 365 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



0.00

884TX1817A

CNTRL ROOM ROOF NIP

0.00 - 1000.00 W/M2

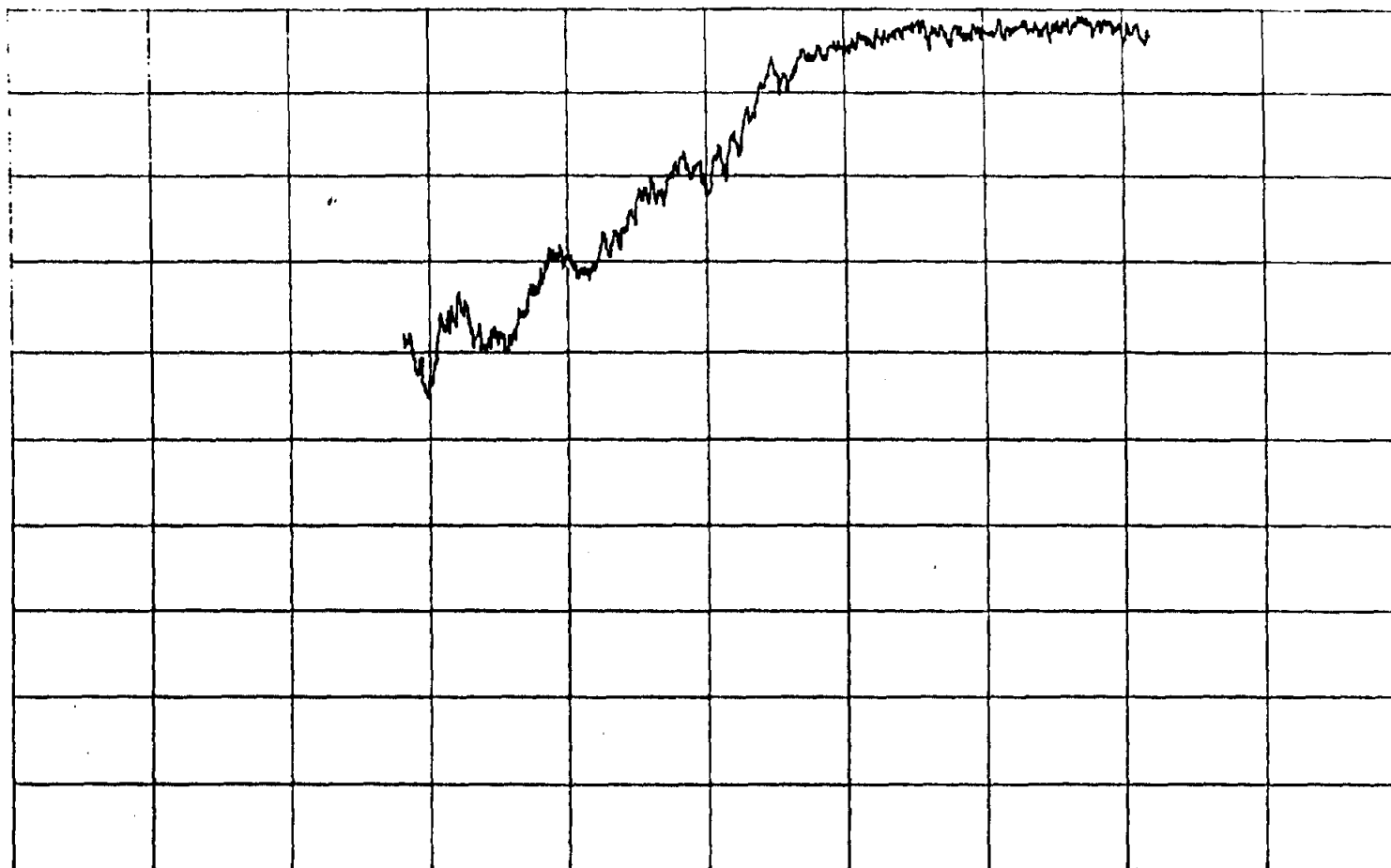
1500.00

5.8 NEPHALOMETER DATA

An integrating nephelometer (tag ID ATX 1833) is installed and operating at the Solar One site on the 7th level of the receiver tower. Data from this instrument can be used to detect air pollution and provide a measure of atmospheric particle contamination, as indicated by variations in visibility values. Plots of visibility for 9 days during 1983 are included in this report. the specific days are: 211, 337, 348, 353, 355, 359, 361, 362, and 364. The instrument was recalibrated early in the fourth quarter of 1983, so the data from days 337 through 364 are for the same calibration. An analysis of these data relative to other meteorological parameters is underway to identify any correlations. At present, there is no apparent correlation between nephelometer data and cloud activity. Examination of dewpoint, barometric pressure, and wind data in parallel with nephelometer data may yield more fruitful results.

SOLAR DATA PLOT PLOT # MISL2
REFERENCE TIME: 211 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1833

NEPHLMTR (RCUR TUR)-LVL 7

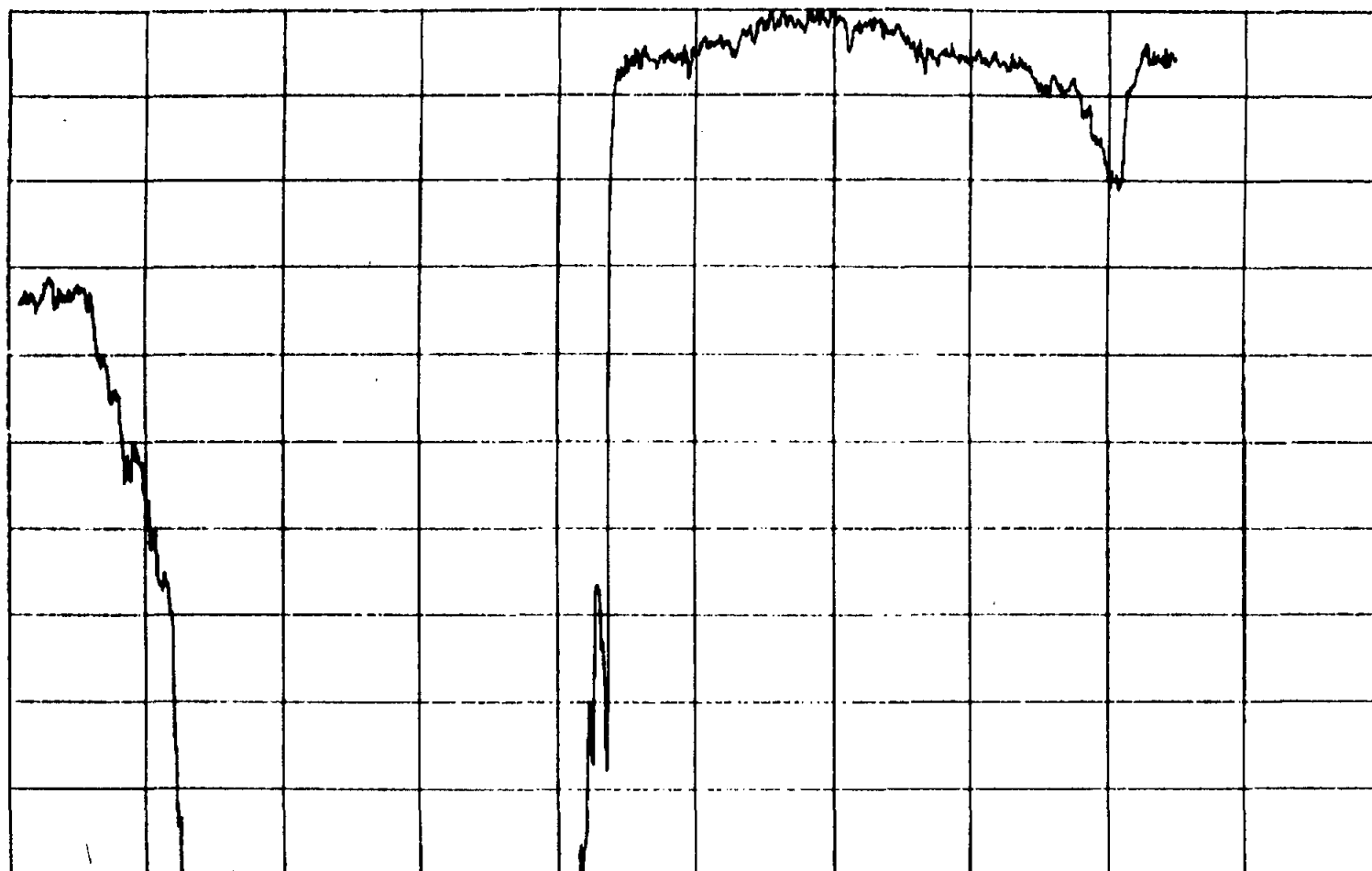
0.00 - 40.00 MILES

1500.00

*

SOLAR DATA PLOT PLOT # MISL2
REFERENCE TIME: 337 00 00 00.000

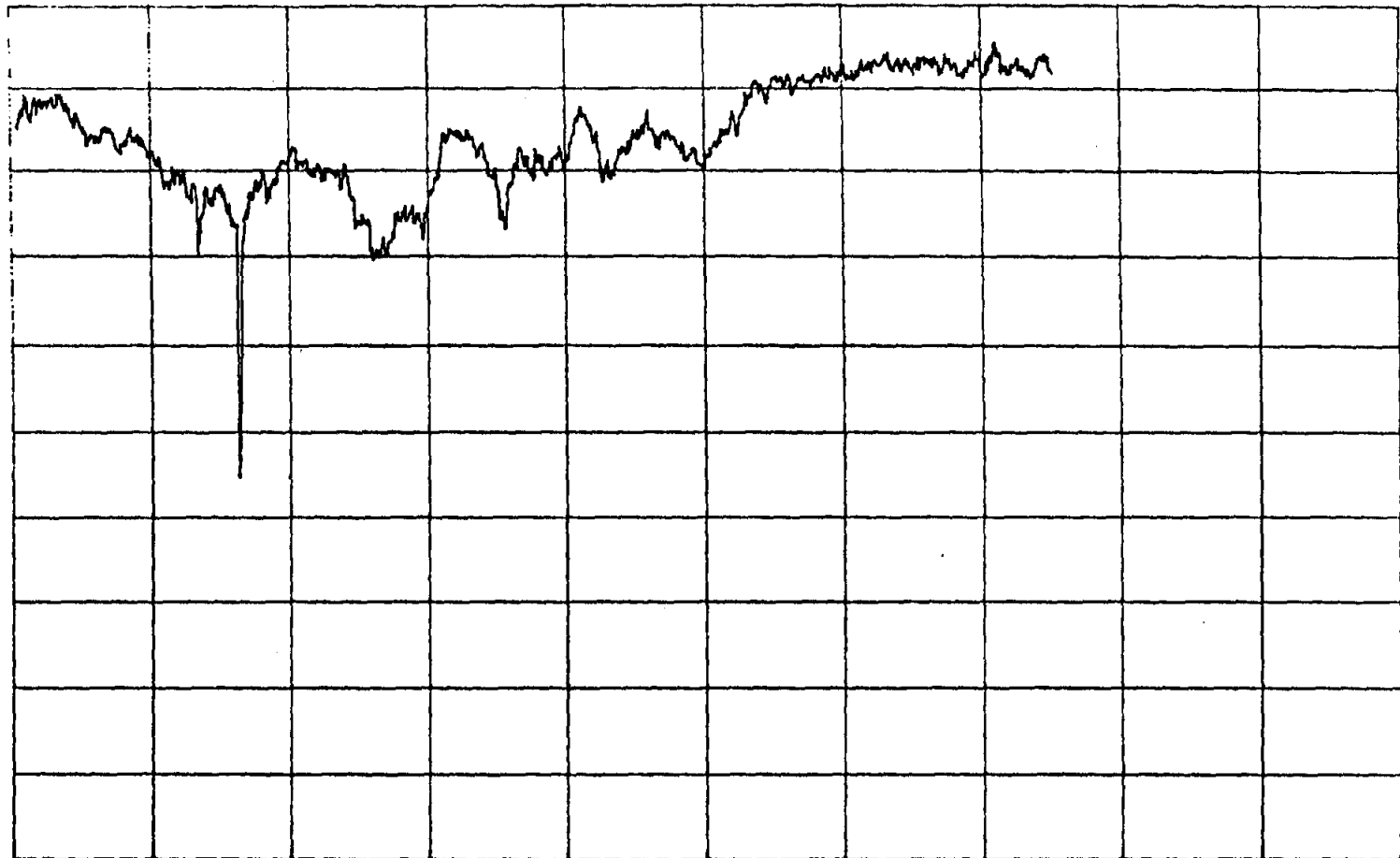
NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



HTX1833 NEPHLMTR (RCUR TUR)-LUL 7 0.00 - 40.00 MILES 1500.00

SOLAR DATA PLOT PLOT # MISL2
REFERENCE TIME: 348 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00 1500.00
ATX1833 NEPHLMTR (RCUR TUR)-LUL 7 0.00 - 40.00 MILES

*

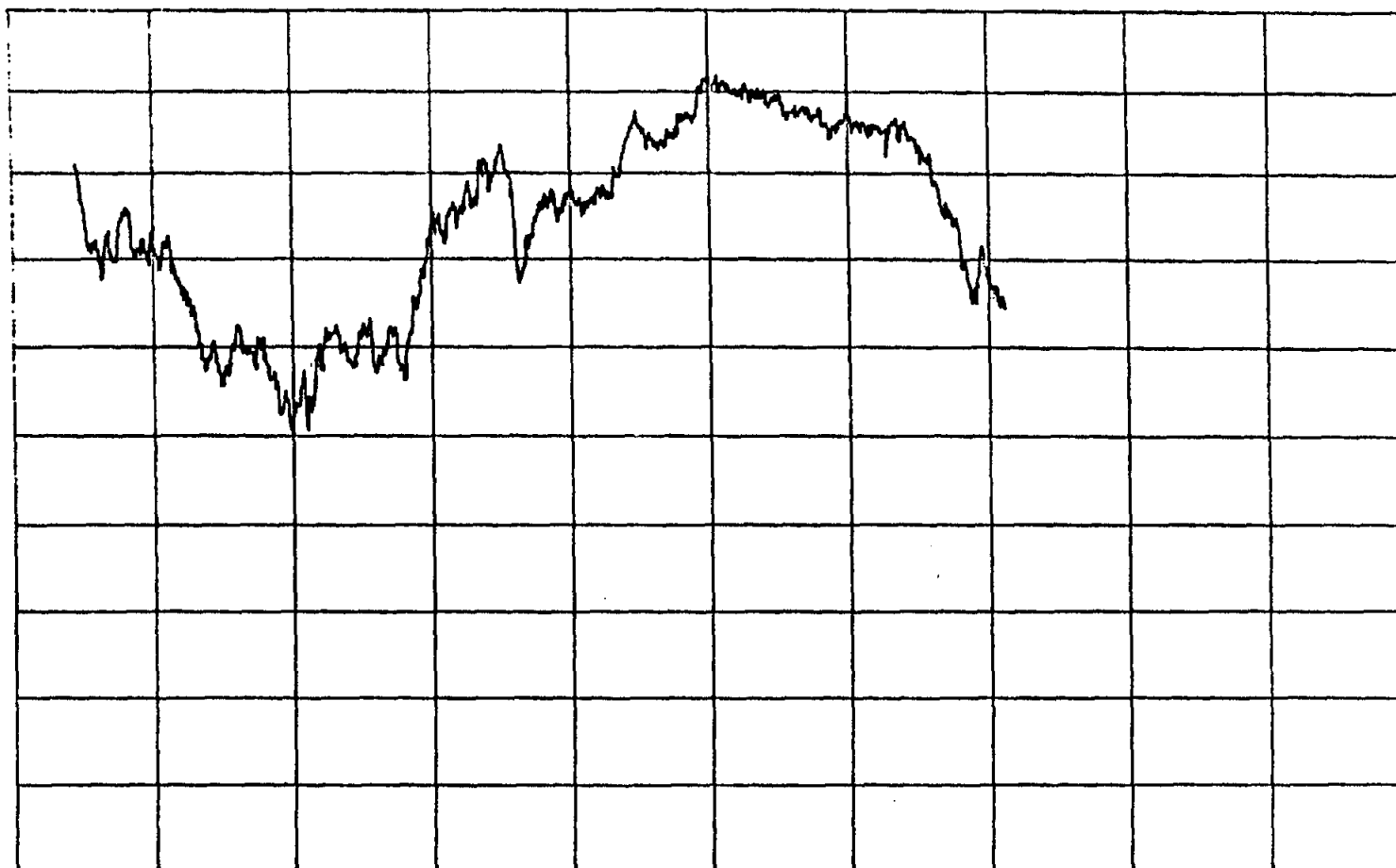
SOLAR DATA PLOT

PLOT # MISL2

NTH SAMPLE AVERAGE = 1

REFERENCE TIME: 353 00 00 00.000

FOR 1500.0000 MINUTE(S)



0.00

1500.00

ATX1833

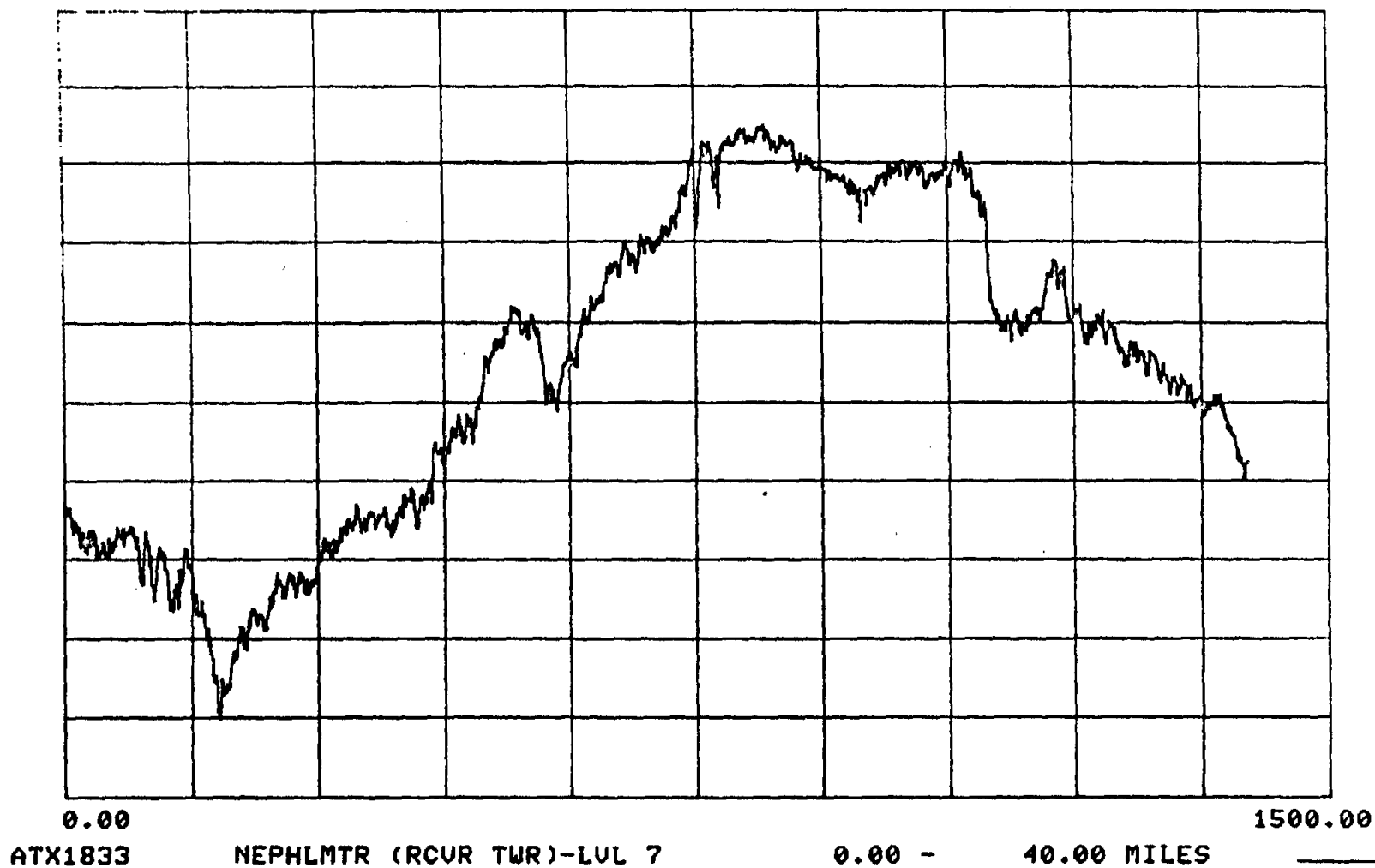
NEPHLMTR (RCUR TUR)-LUL 7

0.00 - 40.00 MILES

*

SOLAR DATA PLOT PLOT # MISL2
REFERENCE TIME: 355 00 00 00.000

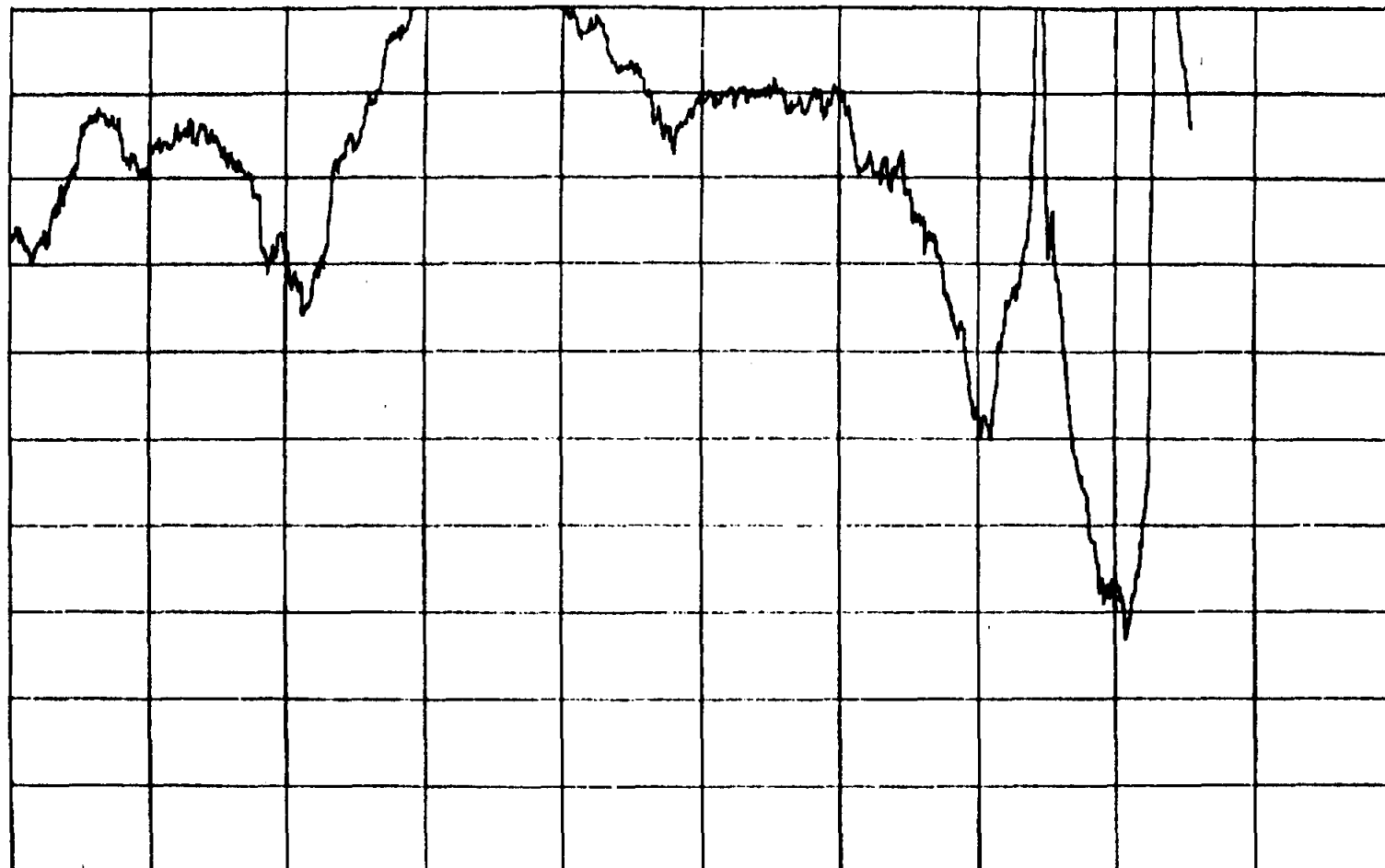
FOR NTH SAMPLE AVERAGE = 1
 1500.0000 MINUTE(S)



*

SOLAR DATA PLOT PLOT # MISL2
REFERENCE TIME: 359 00 00 00.000

FOR NTH SAMPLE AVERAGE * 1
 1500.0000 MINUTE(S)

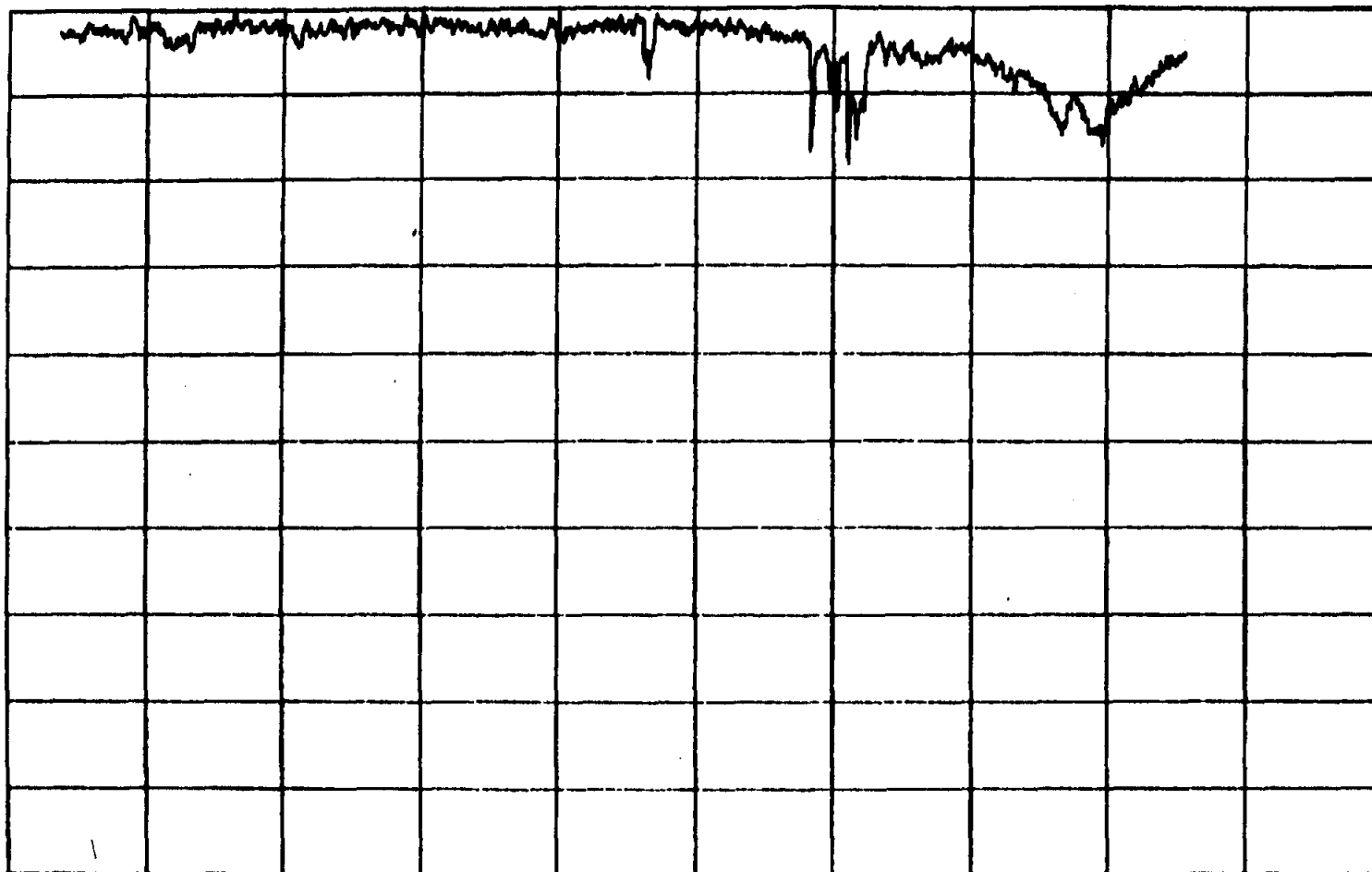


0.00 1500.00
ATX1833 NEPHLMTR (RCUR TWR)-LUL 7 0.00 - 40.00 MILES _____

446

SOLAR DATH PLOT PLOT # MISL2
REFERENCE TIME: 361 00 00 00.000

FOR NTH SAMPLE AVERAGE = 1
1500.0000 MINUTE(S)



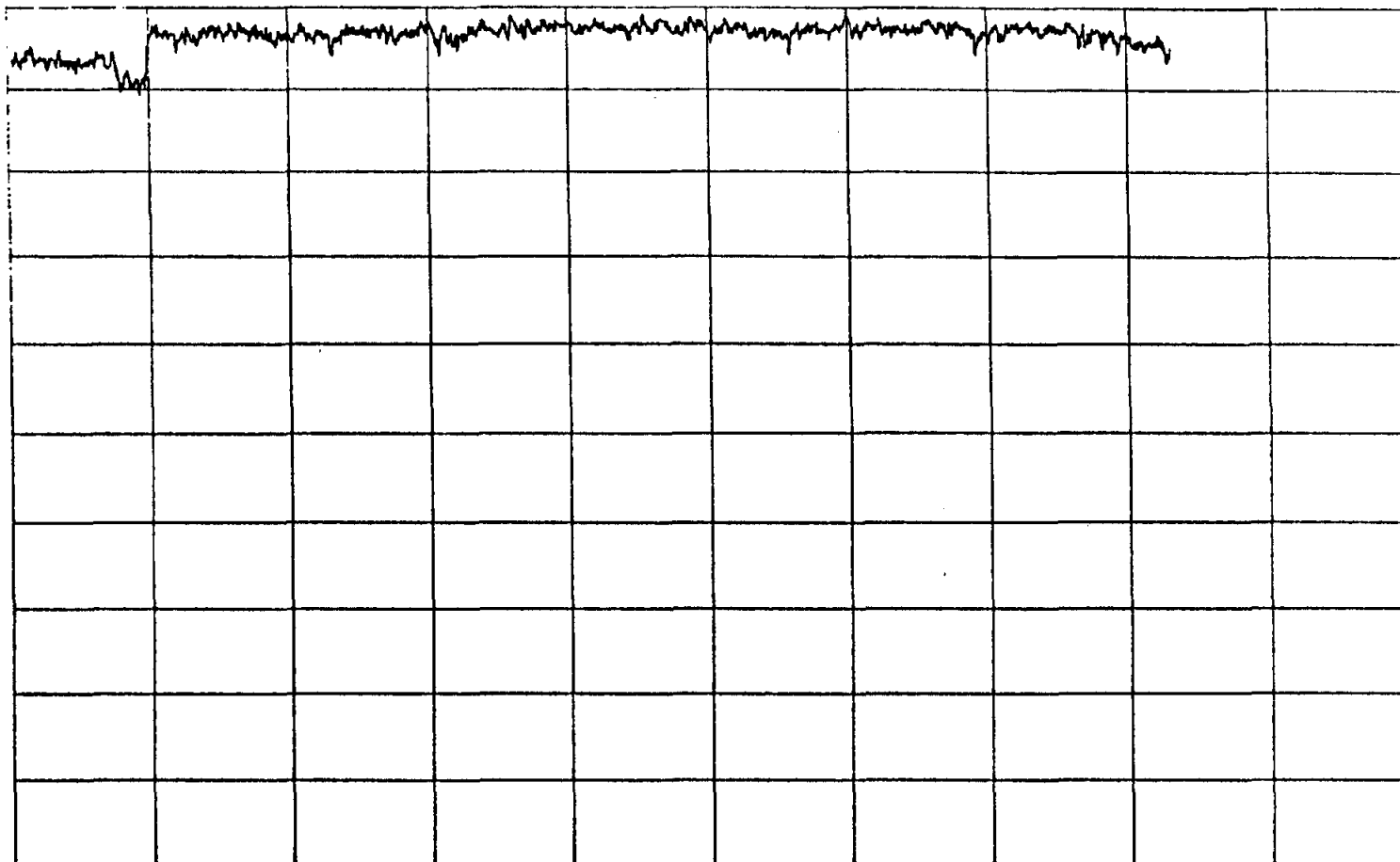
0.00
HTX1833

NEPHLMTR (RCUR TUR)-LUL 7

0.00 - 40.00 MILES

1500.00

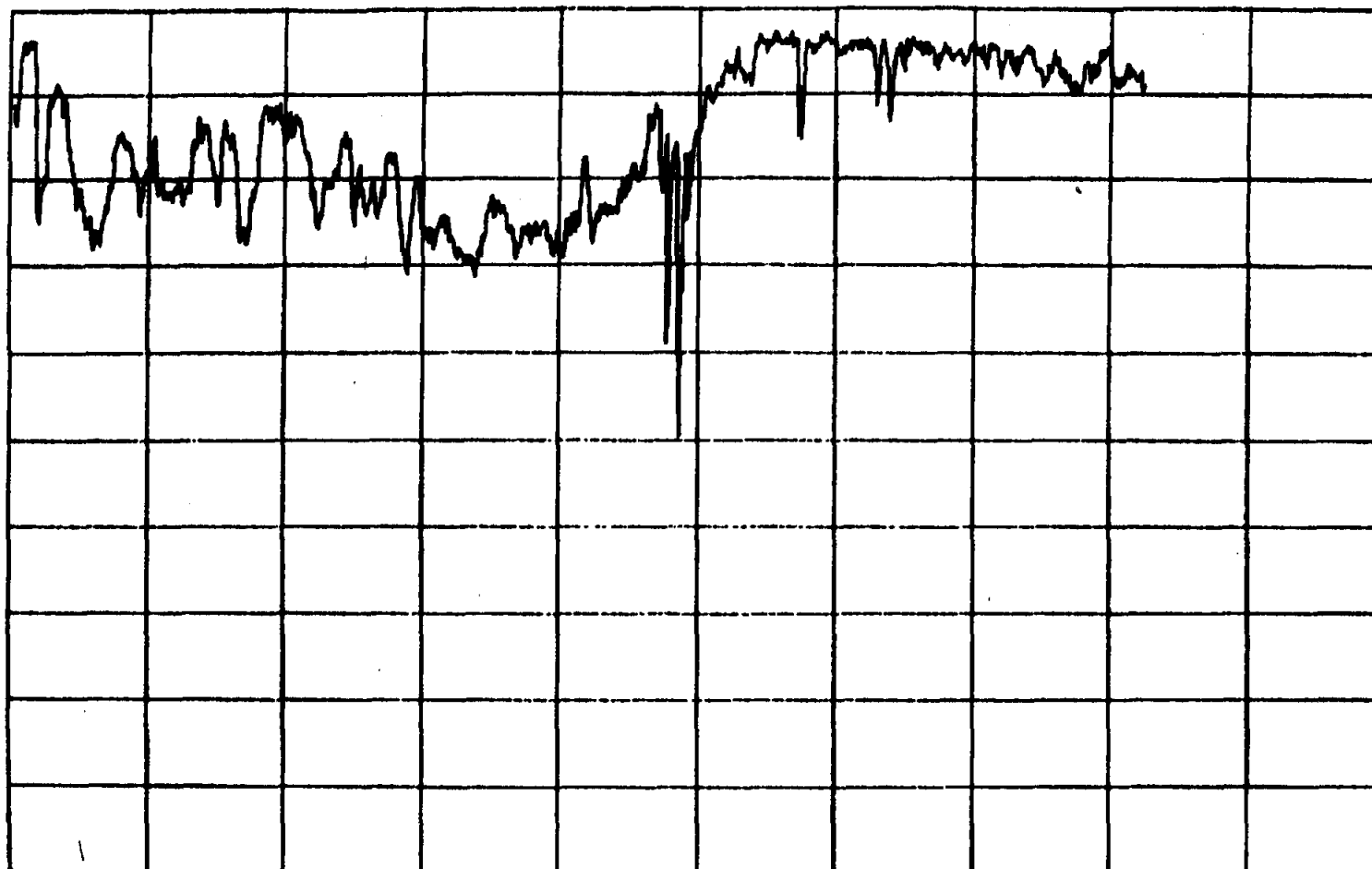
SOLAR DATA PLOT PLOT # MISL2 NTH SAMPLE AVERAGE - 1
REFERENCE TIME: 362 00 00 00.000 FOR 1500.0000 MINUTE(S)



0.00 1500.00
ATX1833 NEPHLMTR (RCUR TWR)-LVL 7 0.00 - 40.00 MILES

SOLAR DATA PLOT PLOT # MISL2
REFERENCE TIME: 364 00 00 00.000

NTH SAMPLE AVERAGE = 1
FOR 1500.0000 MINUTE(S)



0.00
ATX1333

NEPHLMTR (RCUR TUR)-LUL 7

0.00 - 40.00 MILES

1500.00

5.9 HAIL DATA

The Solar One Site experienced at least one incident of hail in 1983. It occurred sometime in August, with the specific date unknown, since the cubes were not monitored on a daily basis. This also means that it is possible that there was more than one incident, though it is not likely, based upon the hail cube analyses performed. The hail cube configuration and sand shield installation are shown in Figures 38, 39, and 40 on pages 52, 53, and 54 of this report. Six hail cubes are installed at the four meteorological stations and the two collector field locations as shown in Figure 8 on page 16 of this report.

The six hail cubes were removed and shipped to the State Water Survey Division of the Illinois Department of Energy and Natural Resources in Champaign, Illinois for analysis. Dr. Wayne M. Wendland, Head of the Climatology and Meteorology Section, was the principal point of contact for this contracted effort. The data contained in this section are the results of the hail cube analyses performed.

Table 11 shows the size distribution of hail stones which impacted the tops of the hail cubes analyzed. It should be noted that the hail cube at the east station had no indentations; therefore, the results presented here are for the five hail cubes as indicated. The class intervals are presented in centimeters, although they were measured in tenths of an inch; therefore, there appear to be ranges without measurements between each of the class intervals. The size distributions for the west station, northwest quadrant, and the north station, are rather similar, whereas those for the northeast quadrant and the south station appear to be from a different population. This is probably the result of a small sample size on some pads because of the small scale size of the hail storm that yielded no hail stone impressions on the east station cube and a different size distribution at the northeast quadrant and south station locations relative to the remaining three hail cube locations. This suggests that the hail storm center was located to the northwest of the collector field. Also note from Table 11 that three of the hail cubes suggested that the hail arrived from the west-northwest, whereas two suggested the northwest. (270° indicates west and 360° indicates north at Solar One.)

Table 12 shows the kinetic energy applied to the top surface of each of the five hail cubes, by class interval, and as a total number. It can be seen from the table that the total kinetic energy deposited ranged from 6.56×10^6 gm-cm²/sec to 1.96×10^8 gm-cm²/sec. If the south station and northeast quadrant are neglected, the range is much smaller, from 8.24×10^7 gm-cm²/sec to 1.96×10^8 gm-cm²/sec.

Table 13 shows the momentum transferred to the top surface of each of the five hail cubes. The total momentum ranges from 2.60×10^3 gm-cm/sec to 1.13×10^5 gm-cm/sec. However, if the south station and northeast quadrant are neglected, the values range from 4.70×10^4 gm-cm/sec to 1.13×10^5 gm-cm/sec.

Table 11. SOLAR ONE 1983 HAIL DATA - SIZE DISTRIBUTION OF HAILSTONES FROM TOPS OF FIVE HAIL CUBES*

<u>CLASS INTERVAL (CM)</u>	<u>WEST STATION</u>	<u>NORTHWEST QUADRANT</u>	<u>NORTH STATION</u>	<u>NORTHEAST QUADRANT</u>	<u>SOUTH STATION</u>
< 0.25	43	80	55	5	34
0.25-0.36	8	20	12	2	5
0.38-0.48	49	46	21	2	5
0.51-0.61	44	29	22	1	5
0.64-0.74	21	22	9	1	2
0.76-0.86	11	11	3	-	1
0.89-0.99	0	2	1	-	-
1.01-1.12	2	-	-	-	-
Total Indentations	178	210	123	11	52
Direction from 305° which hail hit the hail cube** NW		320° NW	295° WNW	320° NW	290° WNW

*No indentations were found on the east station hail cube.

**Determined by relative impact frequency on sides.

Table 12. SOLAR ONE 1983 HAIL DATA - KINETIC ENERGY APPLIED TO TOPS OF HAIL CUBES

MIDPOINT OF CLASS INTERVAL (CM)	(UNITS ARE GM-CM ² /SEC)				
	WEST STATION	NORTHWEST QUADRANT	NORTH STATION	NORTHEAST QUADRANT	SOUTH STATION
0.12	6.68×10^5	1.67×10^6	1.0×10^6	1.67×10^5	4.17×10^5
0.17	1.16×10^8	1.09×10^8	5.0×10^7	4.76×10^6	1.19×10^6
0.22	2.45×10^7	1.62×10^7	1.23×10^7	5.57×10^5	2.79×10^5
0.27	2.30×10^7	2.41×10^7	9.86×10^6	1.10×10^6	2.19×10^6
0.32	2.17×10^7	2.17×10^7	5.92×10^6	--	1.97×10^6
0.37	--	6.58×10^6	3.29×10^6	--	--
0.42	1.06×10^7	--	--	--	--
Total Kinetic Energy	1.96×10^8	1.79×10^8	8.14×10^7	6.58×10^6	1.93×10^6

Table 13. SOLAR ONE 1983 HAIL DATA - MOMENTUM TRANSFERRED TO TOPS OF HAIL CUBES

MIDPOINT OF CLASS INTERVAL (CM)	(UNITS ARE GM-CM /SEC)				
	WEST STATION	NORTHWEST QUADRANT	NORTH STATION	NORTHEAST QUADRANT	SOUTH STATION
0.12	1,320	3,300	1,980	330	825
0.17	20,237	18,998	8,673	826	2,065
0.22	38,280	25,230	19,140	870	4,350
0.27	12,096	12,672	5,184	576	1,152
0.32	28,952	28,952	7,896	--	2,632
0.37	--	8,220	4,110	--	--
0.42	12,436	--	--	--	--
Total Momentum	1.13×10^5	9.74×10^4	4.70×10^4	2.60×10^3	1.10×10^4

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