

00872

**EFFECTS OF CHRISTMAS 1989 FREEZE EVENT
ON GROUND WATER LEVELS**

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Compiled by:

**HYDROLOGIC DATA SECTION
RESOURCE DATA DEPARTMENT**

January 1990

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January 22, 1990

TO: District Governing Board Members
District Basin Board Members
Senior Staff
Water Shortage Committee Members

FROM: Hydrologic Data Section

The coldest temperatures of 1989 in Central Florida were experienced on Christmas Eve and Christmas Day, in response to the passing of a strong arctic cold front. Record monthly low temperatures were set throughout the Florida peninsula during this time period. In the northern part of the Southwest Florida Water Management District temperatures dropped to around 15°F in the early morning hours of the 24th and 25th. The central interior of the District experienced temperatures down to 18°F and 14°F on those days and the central and southern coastal regions recorded temperatures in the mid- and lower twenties.

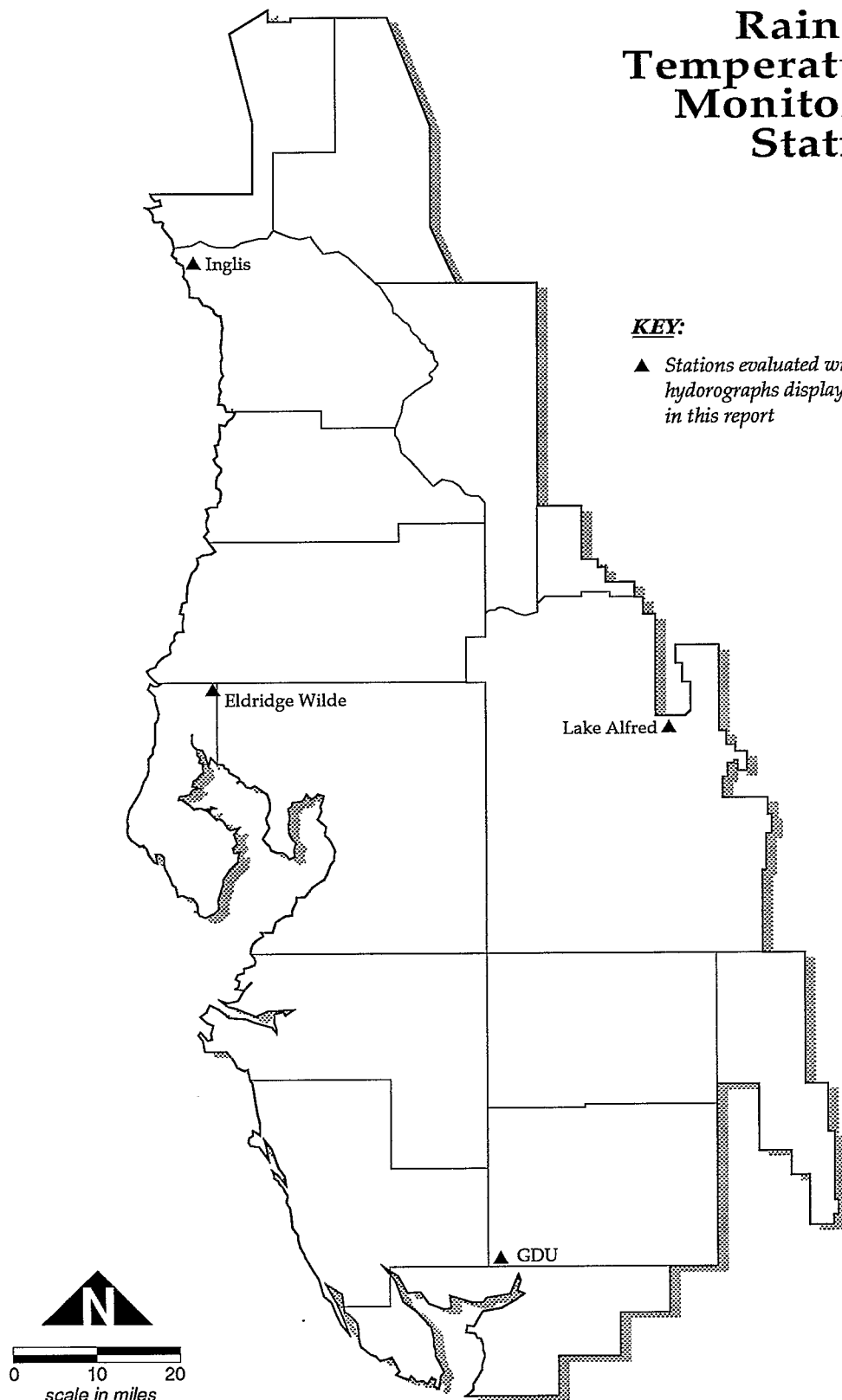
Prior to the passing of this frontal system, the entire District benefited from rainfall ranging from 1.5 to two inches in the southern and northern regions of the District to as much as four and five inches in the interior and coastal regions of the District. Saturated soils spared plant root structures from freezing in many areas. However, citrus, strawberry and other crops were sprayed with water by farmers for nearly two full days in an attempt to prevent permanent crop damage. As a result, deep ground water levels in areas of high agricultural use experienced major declines, while northern and coastal water levels either remained fairly constant or rose (as a result of recharge from the earlier rain). Deep water levels in the Dover area dropped approximately 17 feet in this two day period but recovered fairly quickly. Lower Hillsborough and Polk Counties generally experienced five to six foot declines with only very minor, slow recovery while Hardee, DeSoto and Highlands Counties experienced drops in deep water levels ranging from seven to 14 feet with variable rates of recovery ranging from fast to extremely slow. The water level in one Intermediate aquifer well in Desoto County (ROMP 26) dropped 26 feet before the water level recorder became inoperative.

The following temperature, rainfall and ground water data have been compiled to graphically depict the regional effects of a freeze event on our ground water resources. Should you have any questions or comments about these data, please let us know.

RAL:GHK:cca

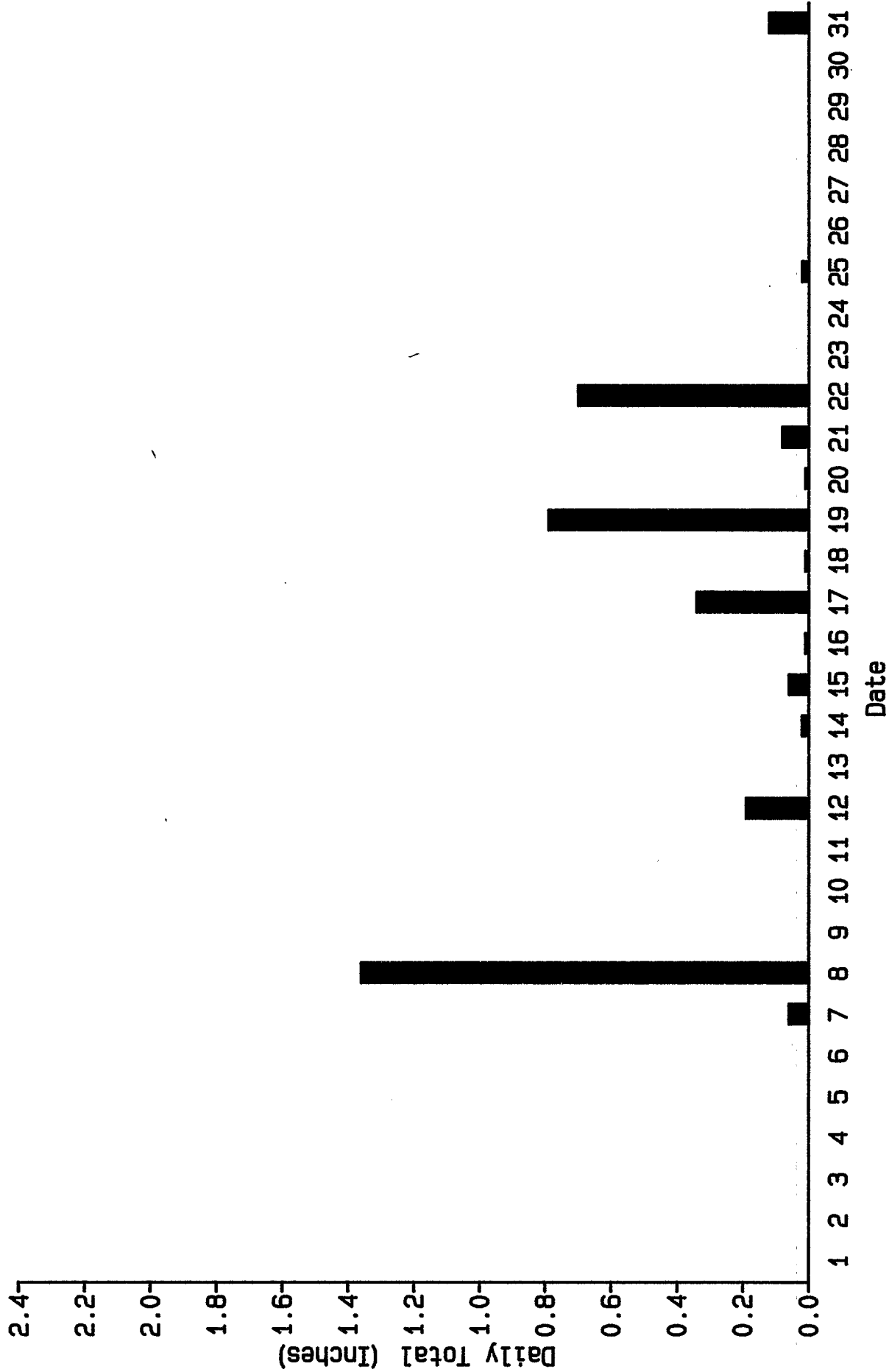
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Rainfall/ Temperatures Monitoring Stations



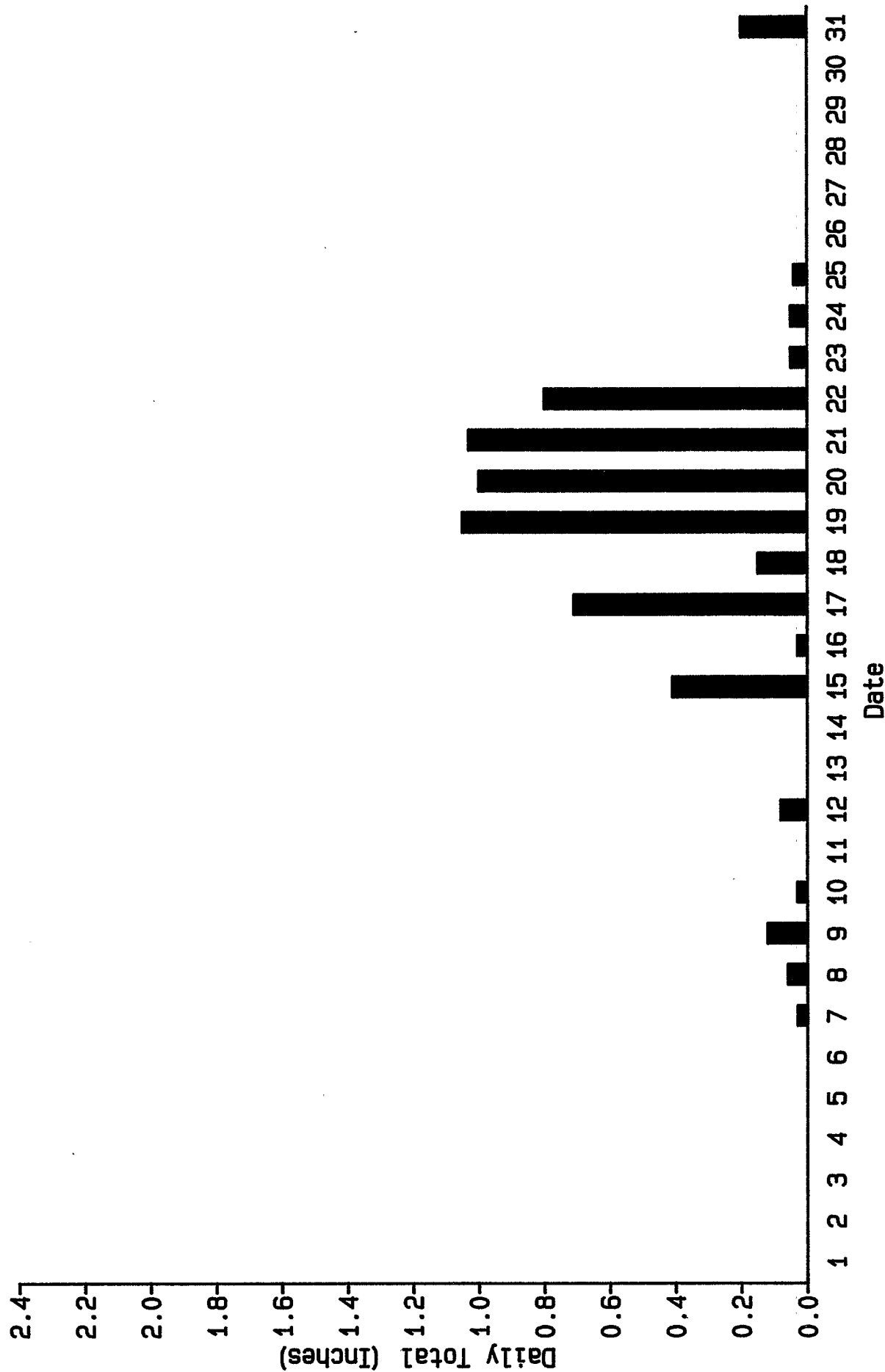
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INGLIS RAINFALL December 1989



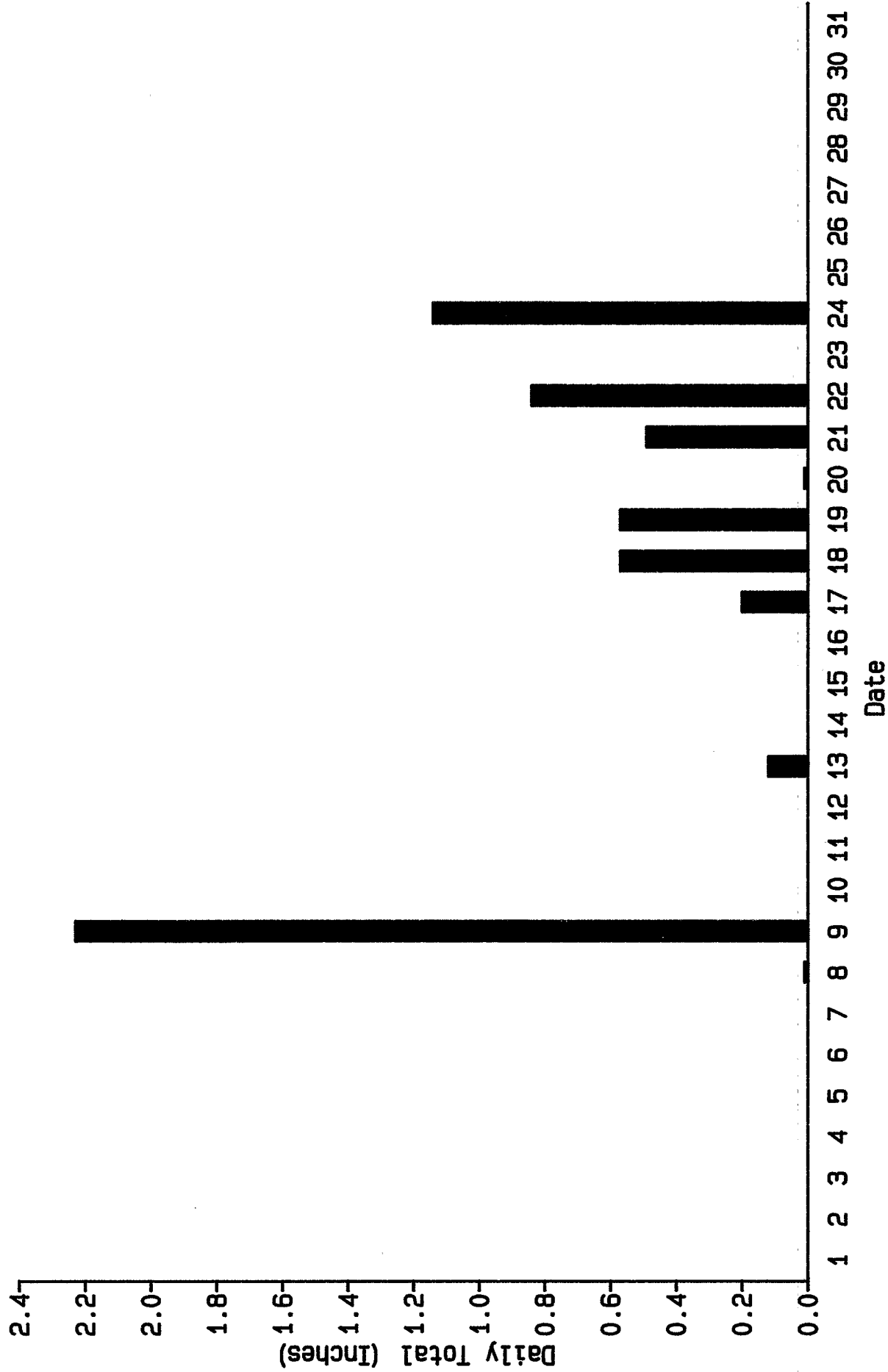
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ELDRIDGE-WILDE RAINFALL December 1989

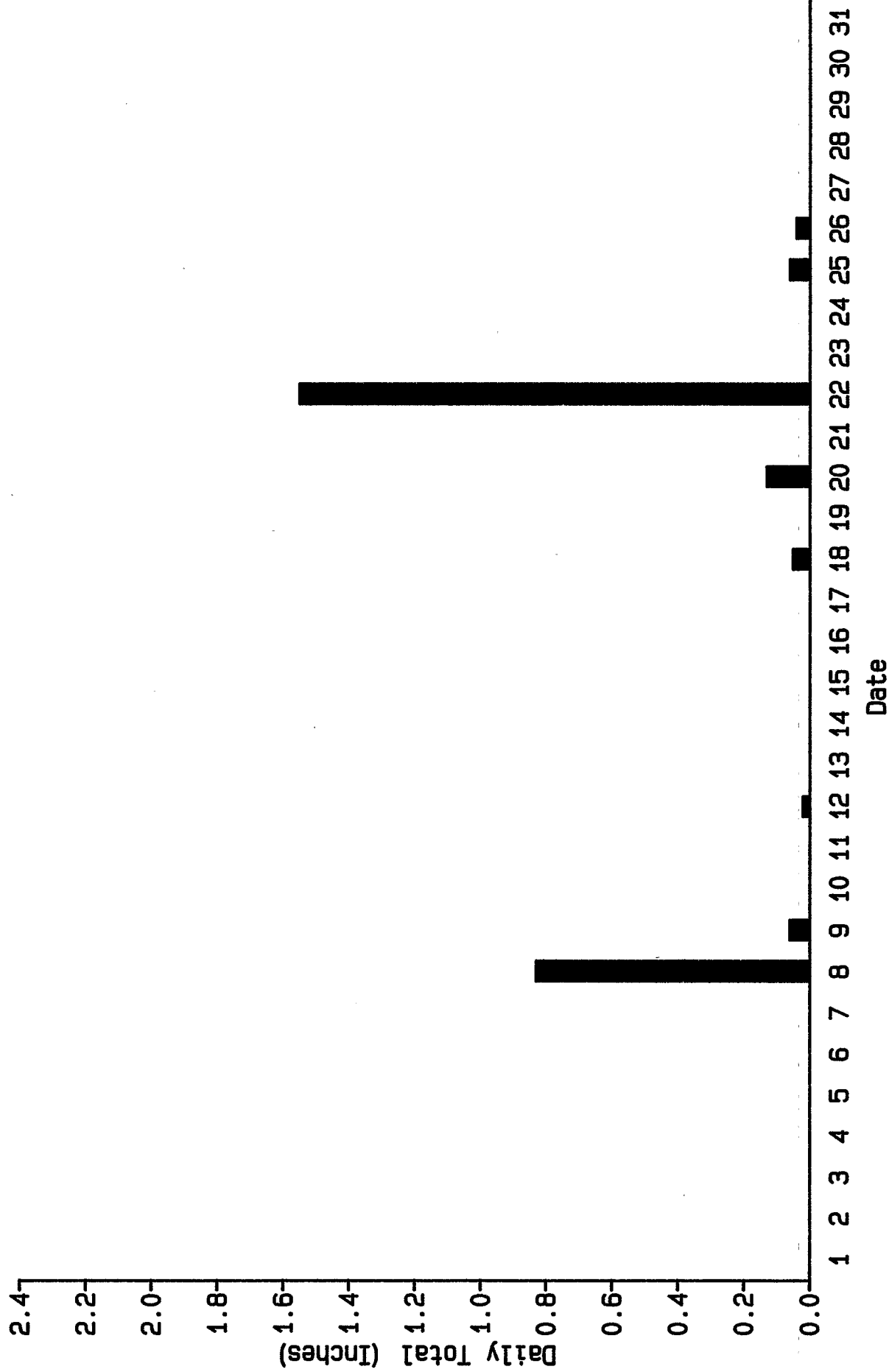


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LAKE ALFRED RAINFALL
December 1989

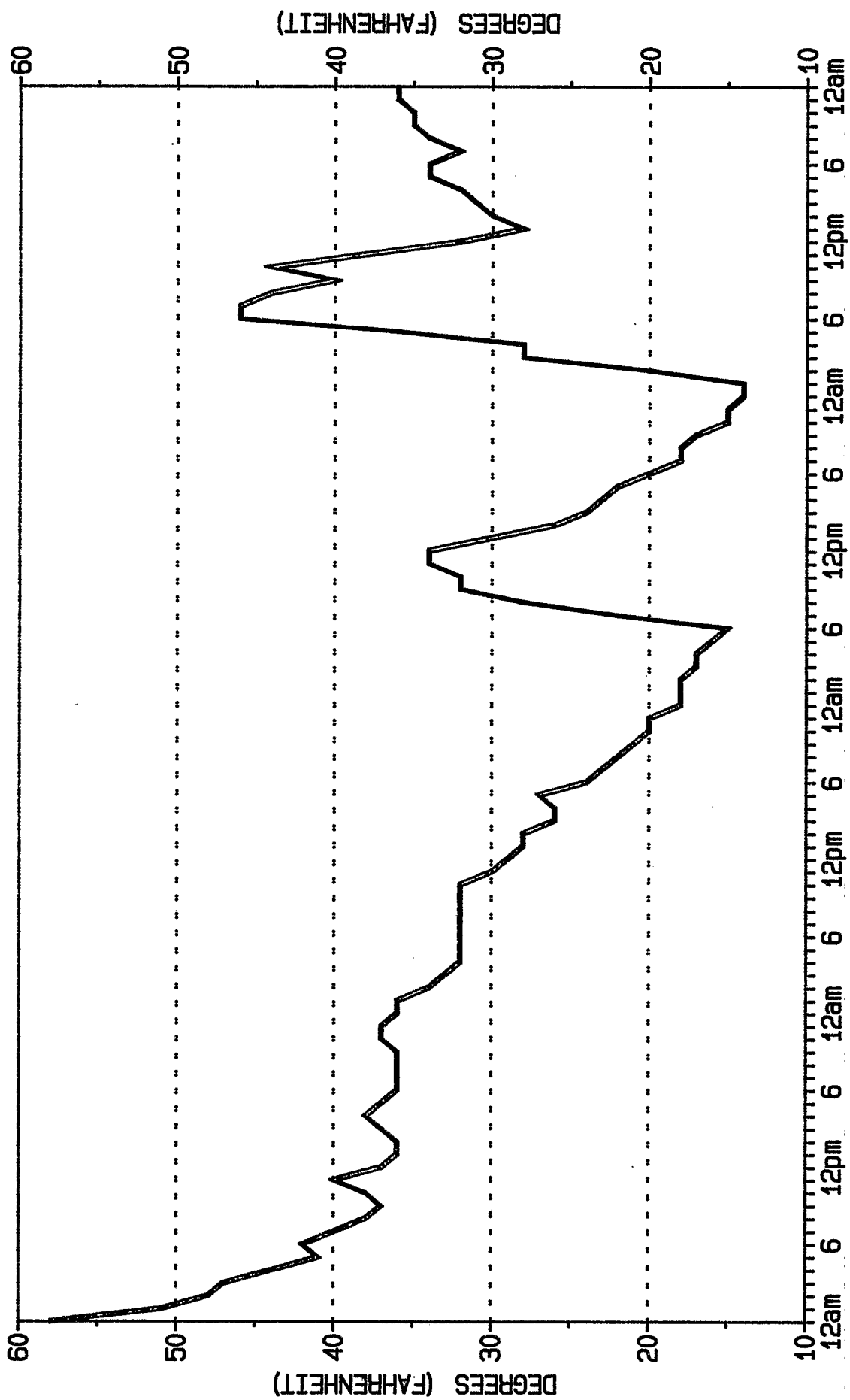


PEACE RIVER RAINFALL December 1989



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INGLIS HOURLY TEMPERATURES



DEC 25

DEC 24

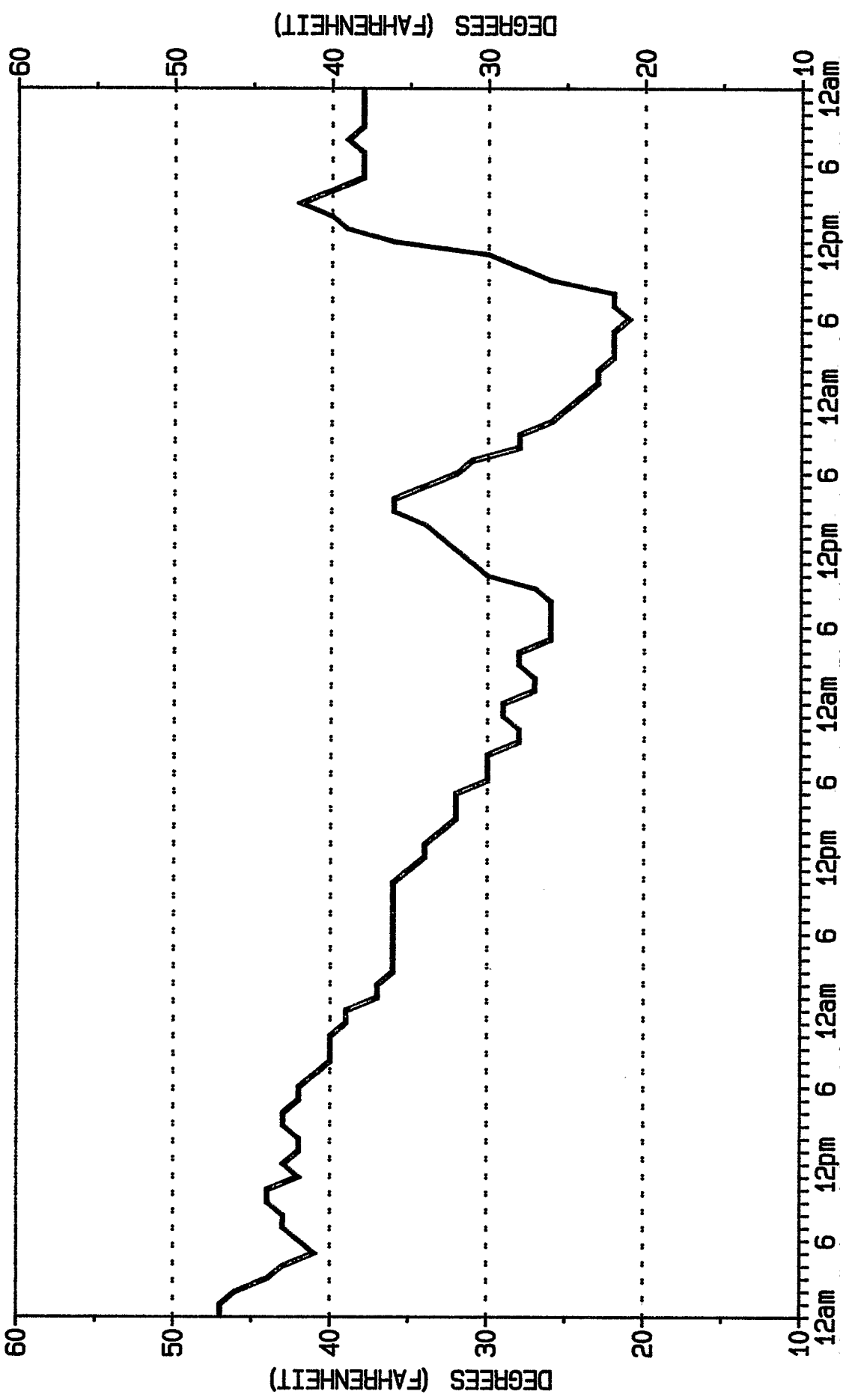
DEC 23

DEC 22

1989

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ELDRIDGE-WILDE
HOURLY TEMPERATURES



DEC 22 DEC 23 DEC 24 DEC 25

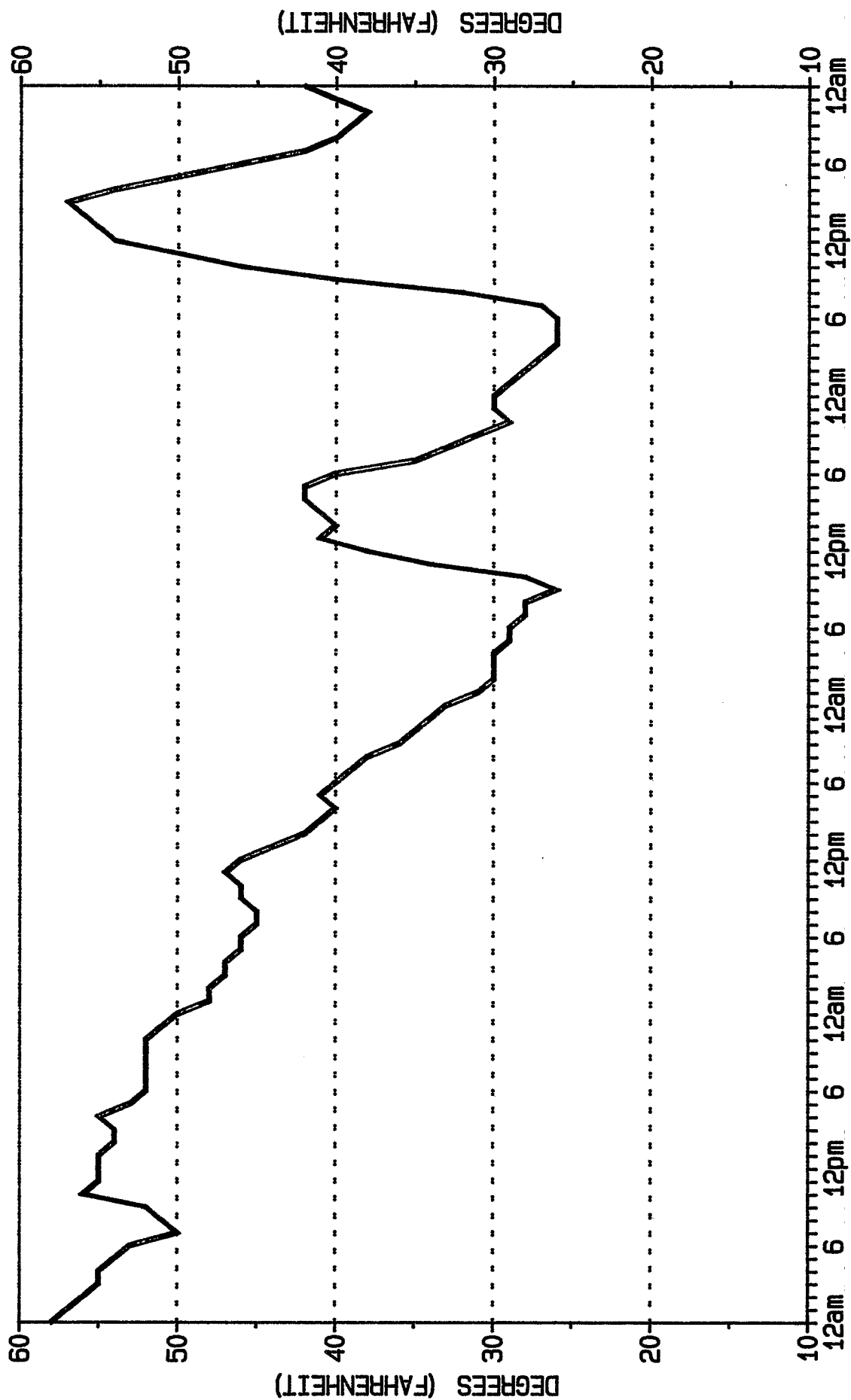
1989

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PEACE RIVER HOURLY TEMPERATURES



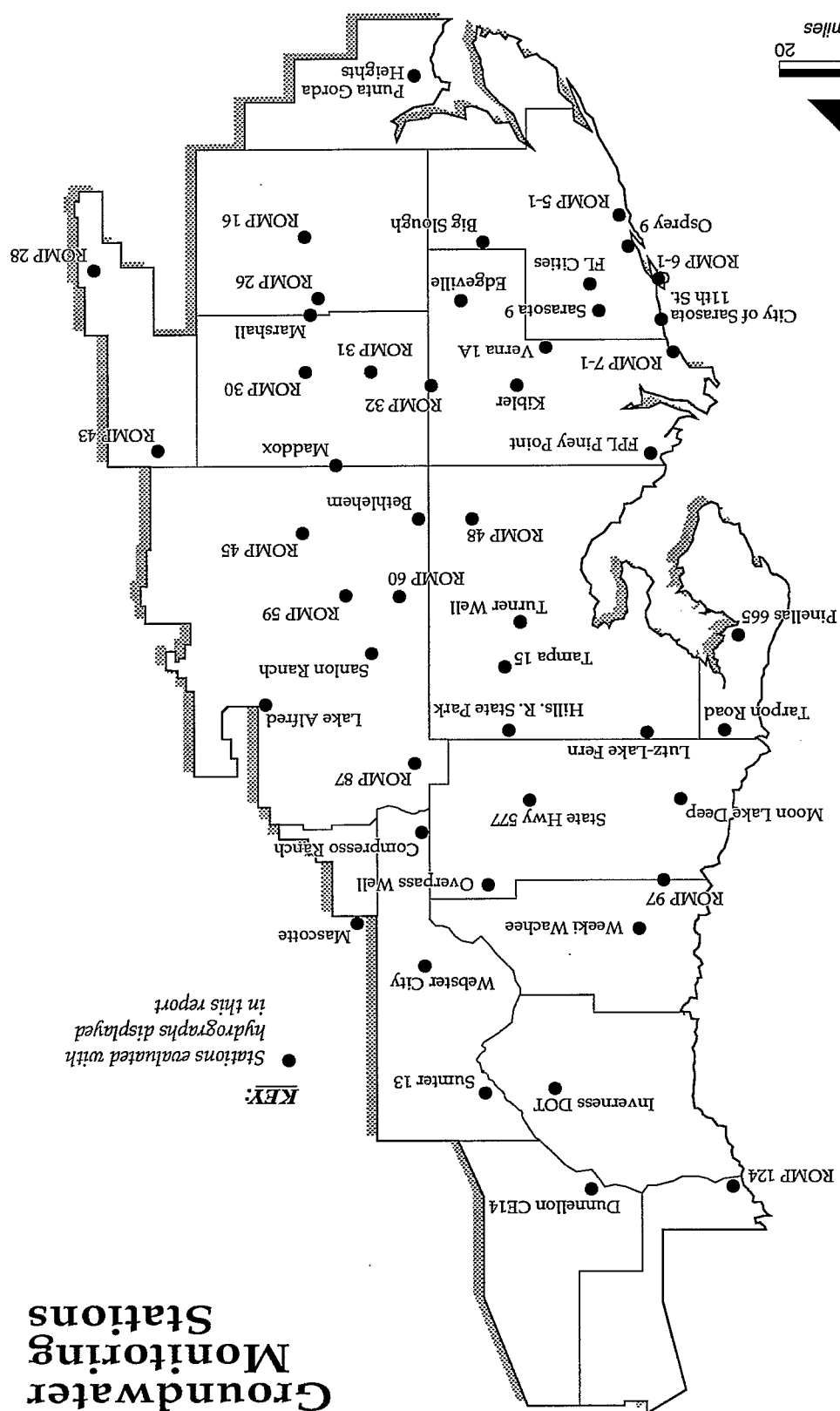
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DEC 24

DEC 23

DEC 22

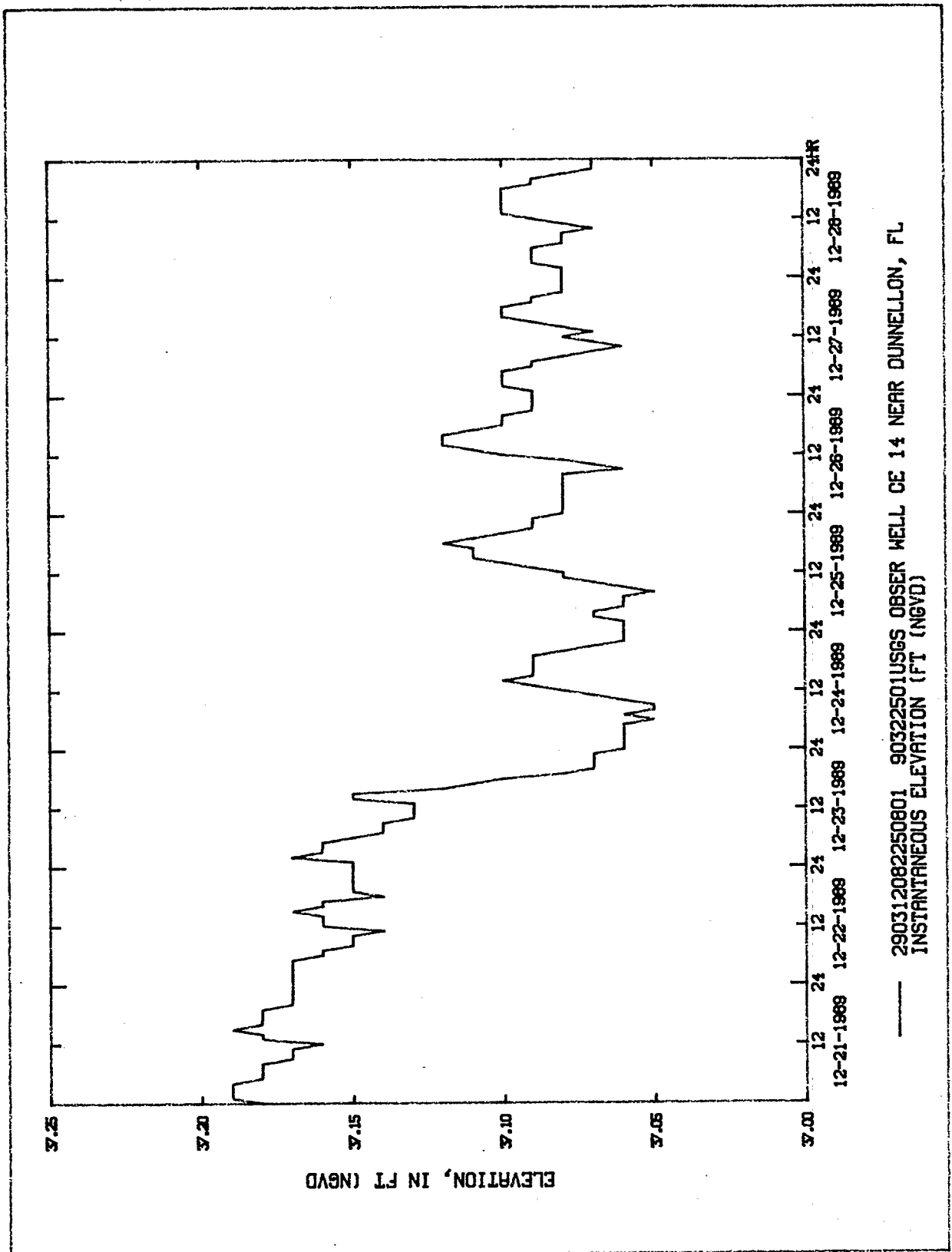
1989



— 290200082432301 RIMP DEEP WELL 124 NR YANKEETOWN, FL.
 INSTANTANEOUS ELEVATION (FT (NGVD))

290200082432301 ROMP DEEP WELL 124 NR YANKEETOWN, FL.
INSTANTANEOUS ELEVATION (FT (NGVD))

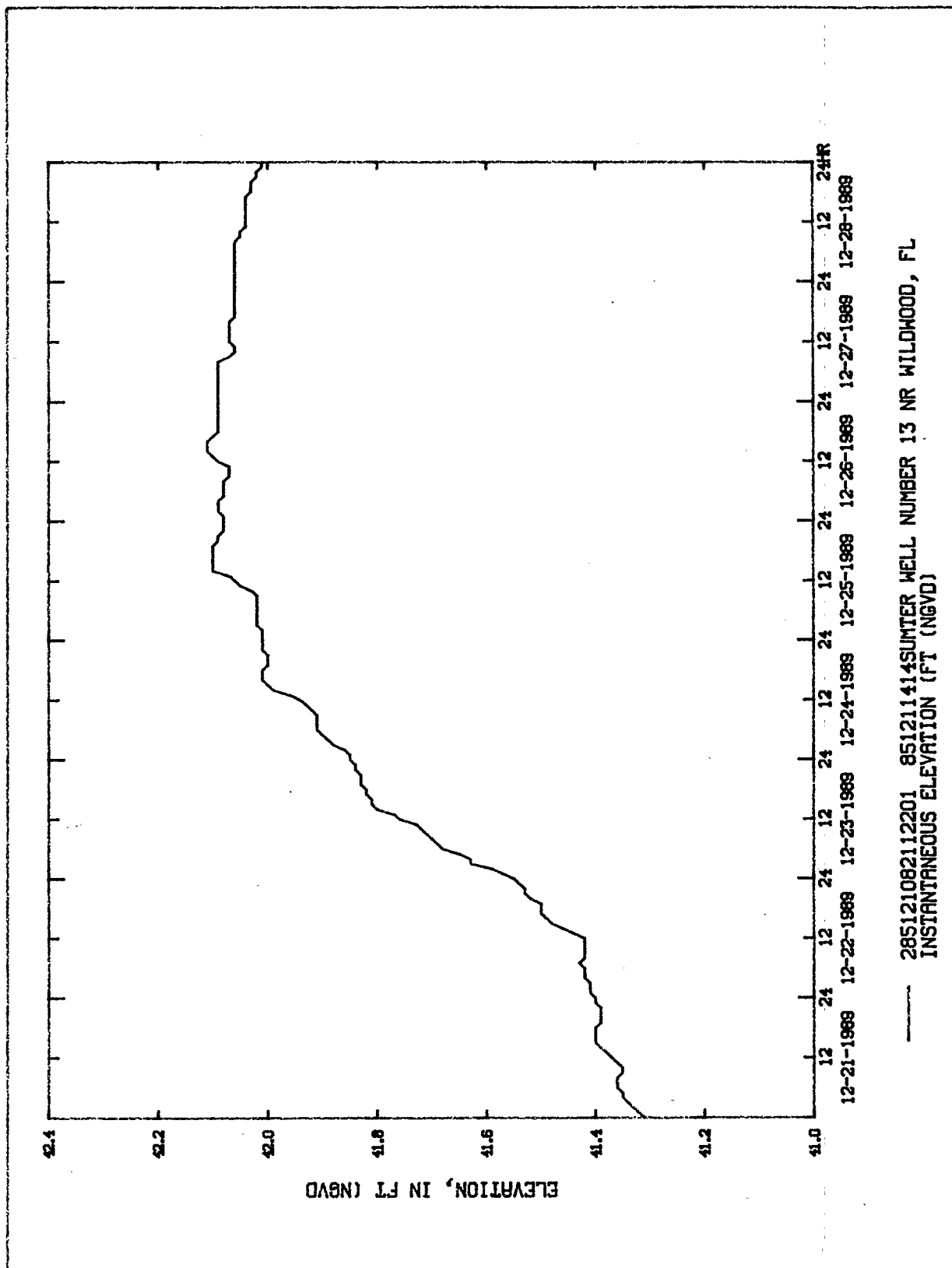
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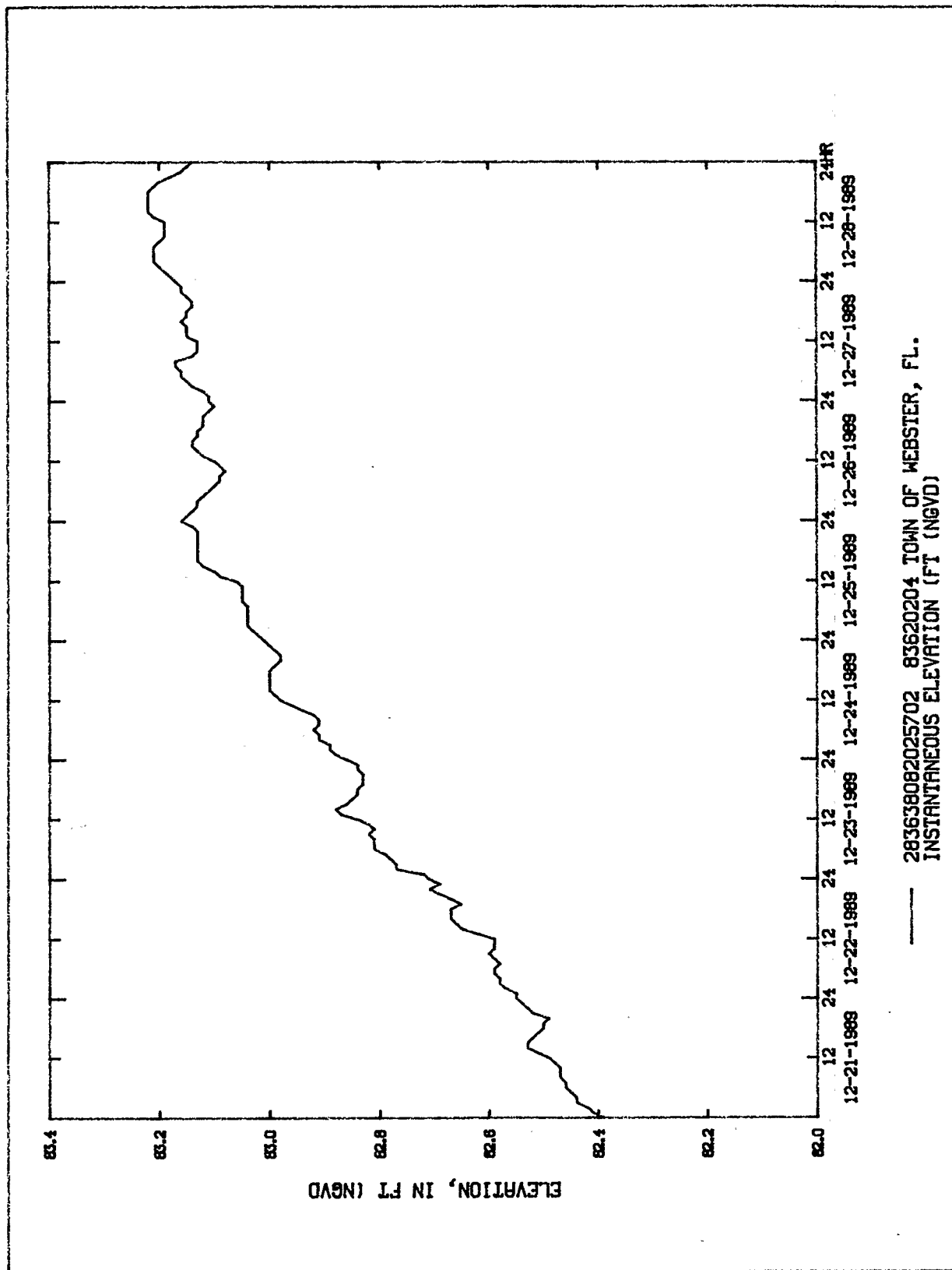
285102082204001 851220343 DOT HY41 OBSER WELL AT INVERNESS, FL.
INSTANTANEOUS ELEVATION (FT (NGVD))

285102082204001 851220343 DOT HY41 OBSER WELL AT INVERNESS, FL.
INSTANTANEOUS ELEVATION (FT (NGVD))

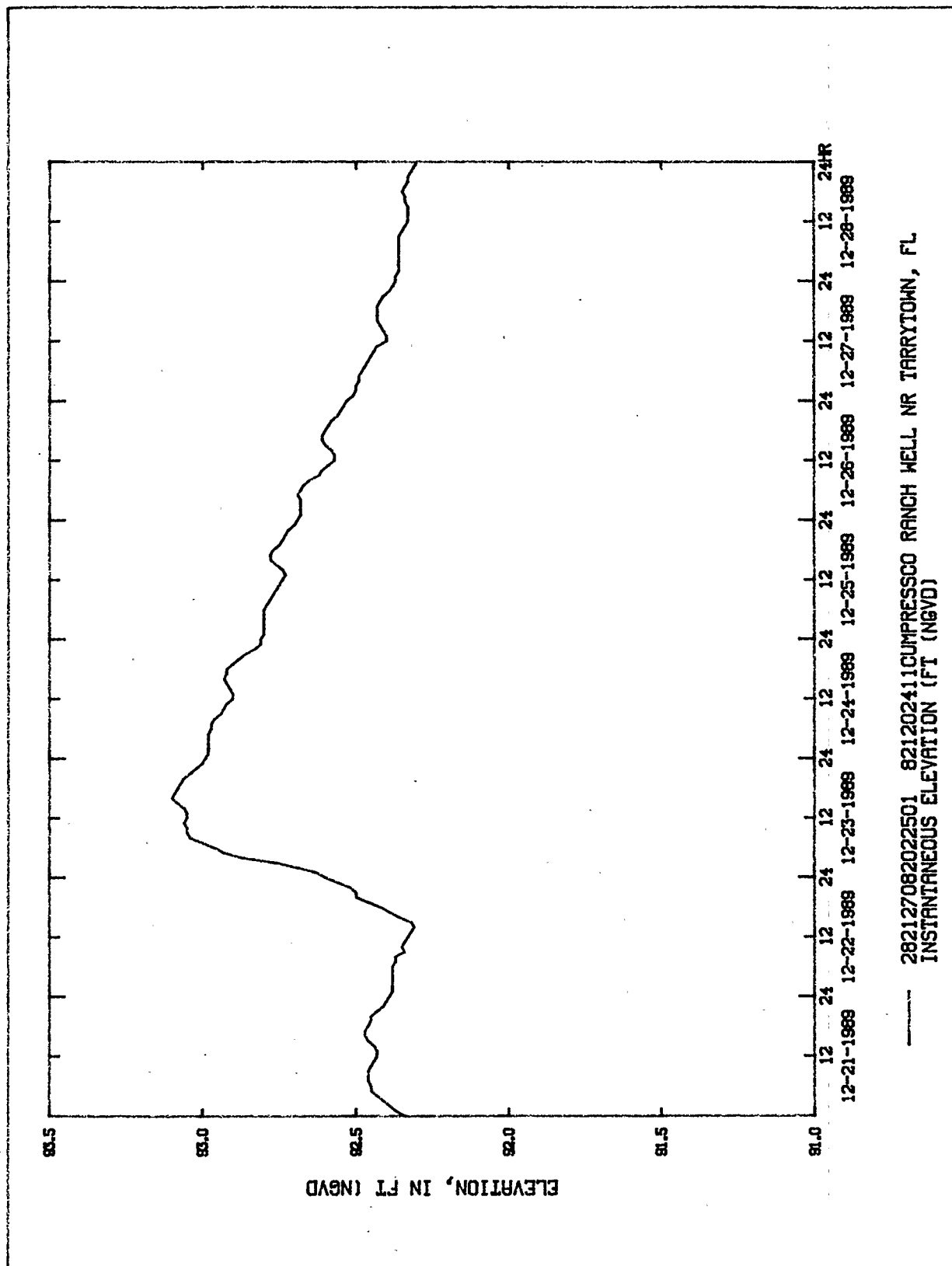
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The graph displays a single data series representing elevation in feet (NGVD) over time. The y-axis is labeled 'ELEVATION, IN FT (NGVD)' and ranges from 99.4 to 100.6 in increments of 0.2. The x-axis represents time, with labels for dates and times: 12-21-1969, 12-22-1969, 12-23-1969, 12-24-1969, 12-25-1969, 12-26-1969, 12-27-1969, 12-28-1969, and 24H. The data shows a sharp peak around December 22-23, 1969, reaching approximately 100.5 feet, followed by a sharp drop and then a gradual rise back towards 100.2 feet by the end of the period.

283204081544901 832154334 MASCOTTE DEEP WELL NR MASCOTTE, FL.
INSTANTANEOUS ELEVATION (FT (NGVD))

— 283201082315601 WEEKI WACHEE WELL
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED *.01

283201082315601 WEEKI WACHEE WELL
INSTANTANEOUS ELEVATION (FT (NGVD)), EPITER * .01

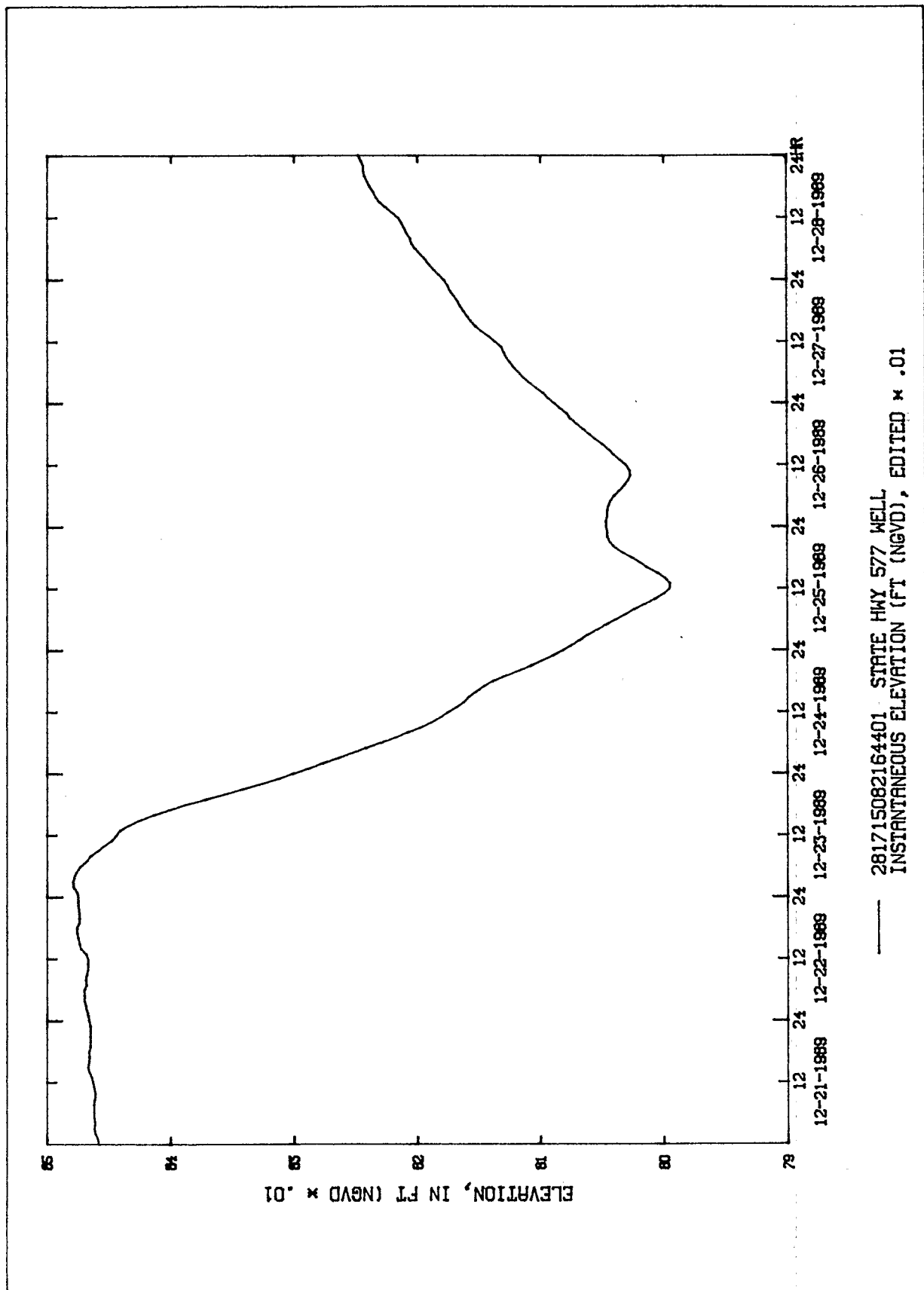
— 282605082345801 ROMP 97 DEEP WELL NEAR ARIPEKA, FL.
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

282605082345801 ROMP 97 DEEP WELL NEAR ARIPEKA, FL.
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01

— 282641082112001 8262112140VERPASP WELL NR. TRILACOCOCHEE, FL.
INSTANTANEOUS ELEVATION (FT (NGVD))

282641082112001 8262112140VERPASS WELL NR. TRILACOOCHEE, FL.
INSTANTANEOUS ELEVATION (FT (NGVD))

MICROFILMED



— 281636082372001 MOON LAKE DP
 INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01

281636082372001 MOON LAKE DP
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01

— 280907082424801 TARPON RD DP
 INSTANTANEOUS ELEVATION (FT (NGVD), EDITED *.01

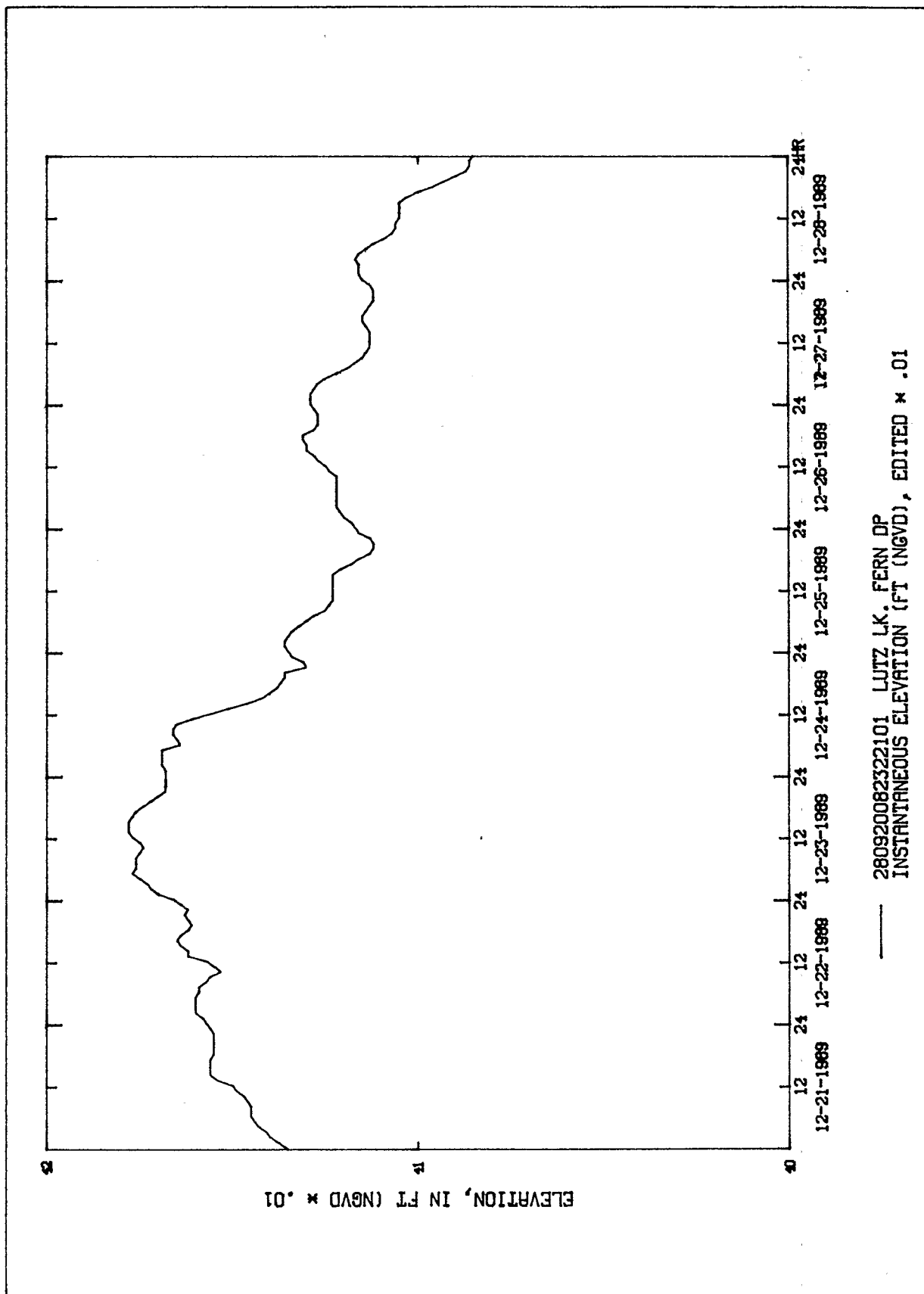
280907082424801 TARPON RD DP
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED *.01

The graph displays elevation data for station 12-28-1989. The y-axis represents elevation in feet (NGVD) multiplied by 0.01, ranging from 9.0 to 11.0. The x-axis represents time in 24-hour intervals, spanning from 12-21-1989 to 12-28-1989. The elevation fluctuates significantly, with a major peak reaching approximately 10.15 around 12-24-1989.

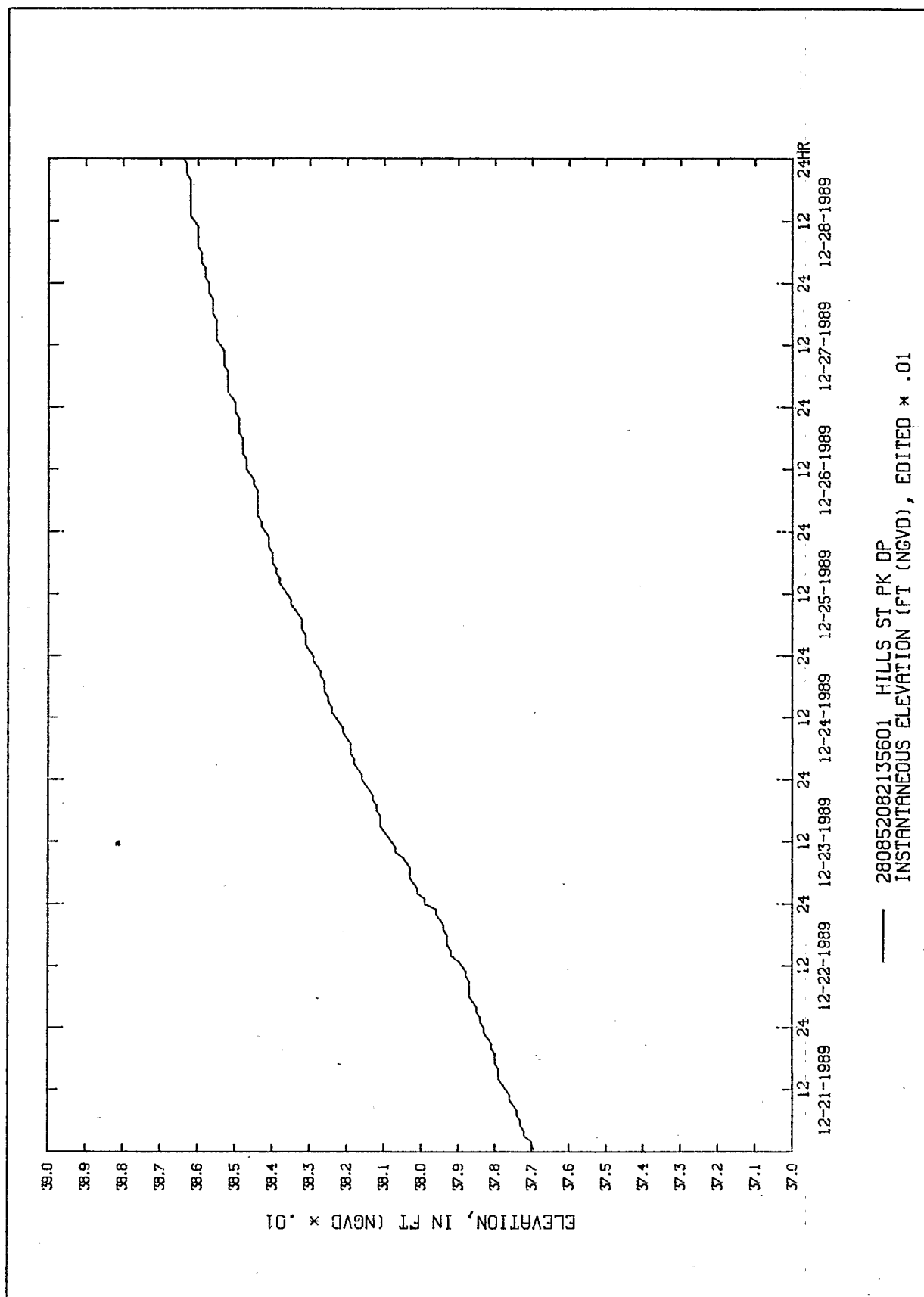
Date	Time (24HR)	Elevation (ft NGVD x .01)
12-21-1989	12	9.85
12-21-1989	24	9.90
12-22-1989	12	9.95
12-22-1989	24	10.00
12-23-1989	12	10.05
12-23-1989	24	10.10
12-24-1989	12	10.15
12-24-1989	24	10.10
12-25-1989	12	10.05
12-25-1989	24	10.00
12-26-1989	12	9.95
12-26-1989	24	9.90
12-27-1989	12	9.85
12-27-1989	24	9.80
12-28-1989	12	9.75
12-28-1989	24	9.70

275815082440401 PINELLAS 665
INSTANTANEOUS ELEVATION (FT (NGVD)). EDITED *.01

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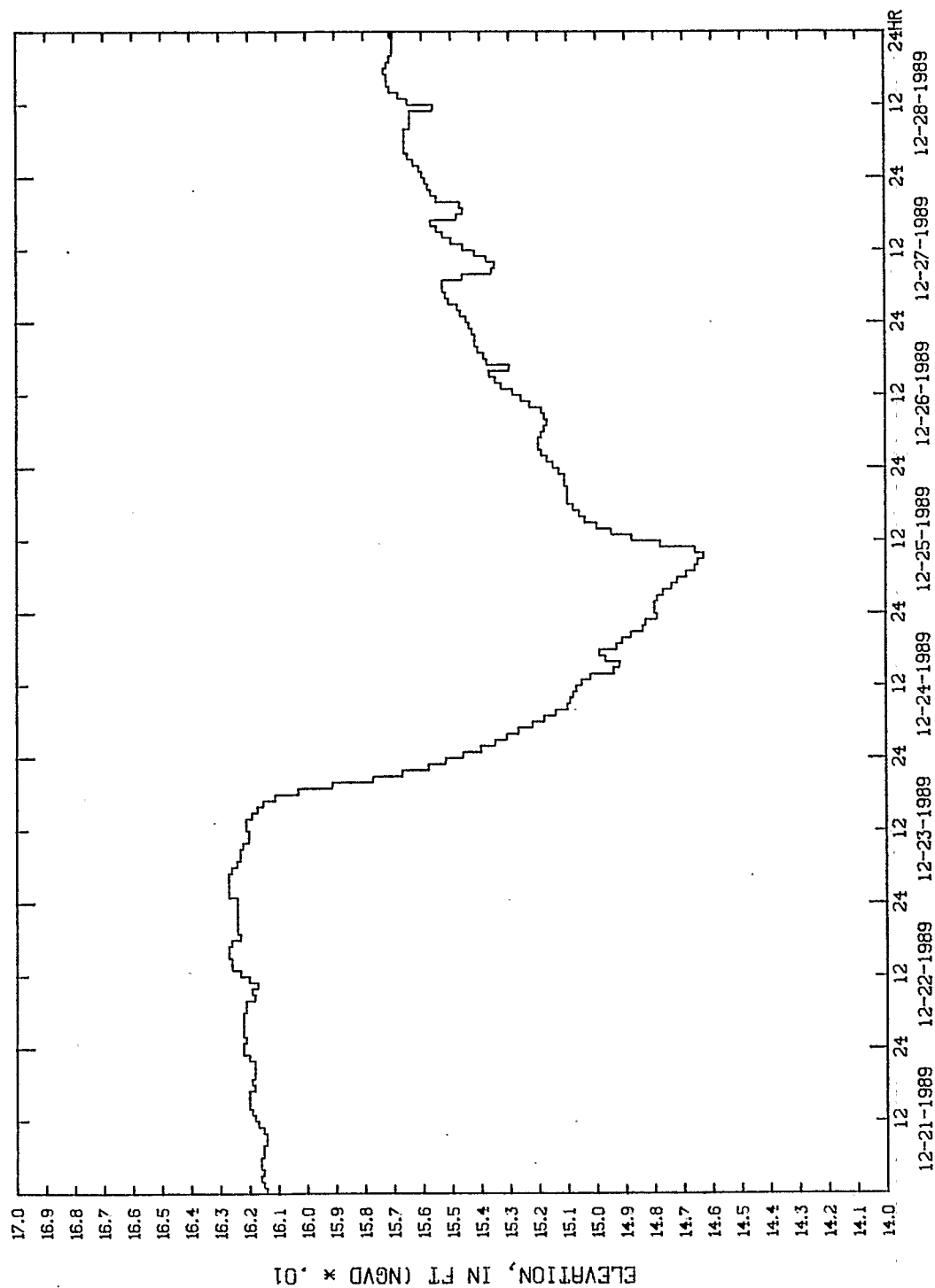


The graph displays the water surface elevation in feet (NGVD x .01) over a period of eight days in December 1989. The x-axis represents time in 24-hour increments, and the y-axis represents elevation in feet (NGVD x .01). The elevation starts at approximately 58.0 feet on 12-21-1989, remains relatively stable until 12-23-1989, then rises sharply to a peak of about 58.5 feet on 12-24-1989. It then drops to around 57.0 feet, rises again to a second peak of about 58.0 feet on 12-25-1989, and finally drops to a low of about 51.5 feet on 12-28-1989.

Date	Time (24HR)	Elevation (FT NGVD x .01)
12-21-1989	00	58.0
12-21-1989	12	58.0
12-21-1989	24	58.0
12-22-1989	00	58.0
12-22-1989	12	58.0
12-22-1989	24	58.0
12-23-1989	00	58.0
12-23-1989	12	58.0
12-23-1989	24	58.0
12-24-1989	00	58.0
12-24-1989	12	58.5
12-24-1989	24	57.0
12-25-1989	00	57.0
12-25-1989	12	58.0
12-25-1989	24	57.5
12-26-1989	00	57.5
12-26-1989	12	57.0
12-26-1989	24	56.5
12-27-1989	00	56.5
12-27-1989	12	56.0
12-27-1989	24	55.5
12-28-1989	00	55.5
12-28-1989	12	51.5
12-28-1989	24	51.5

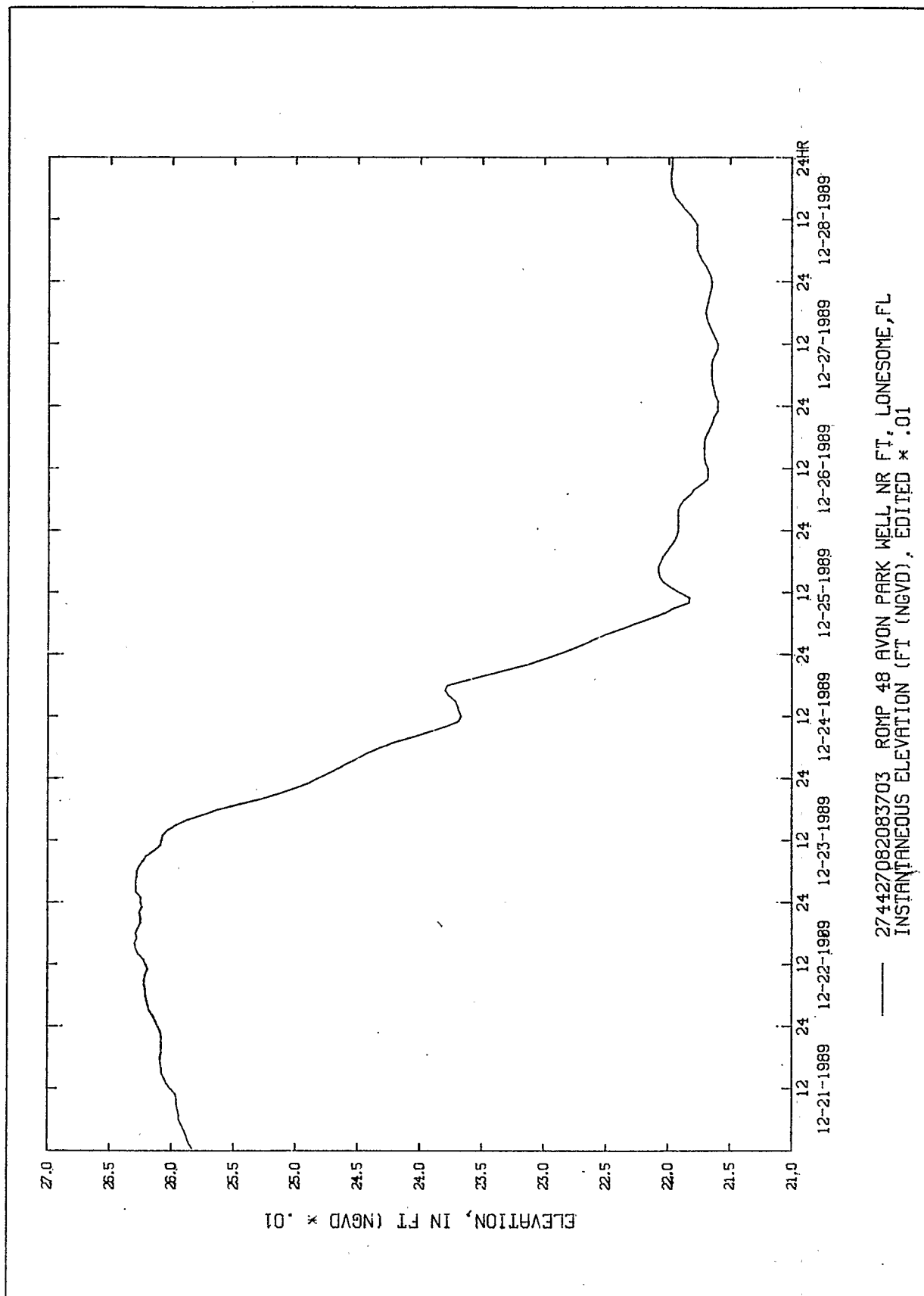
280145082132501 TAMPA DP 15
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

MICROFILMED

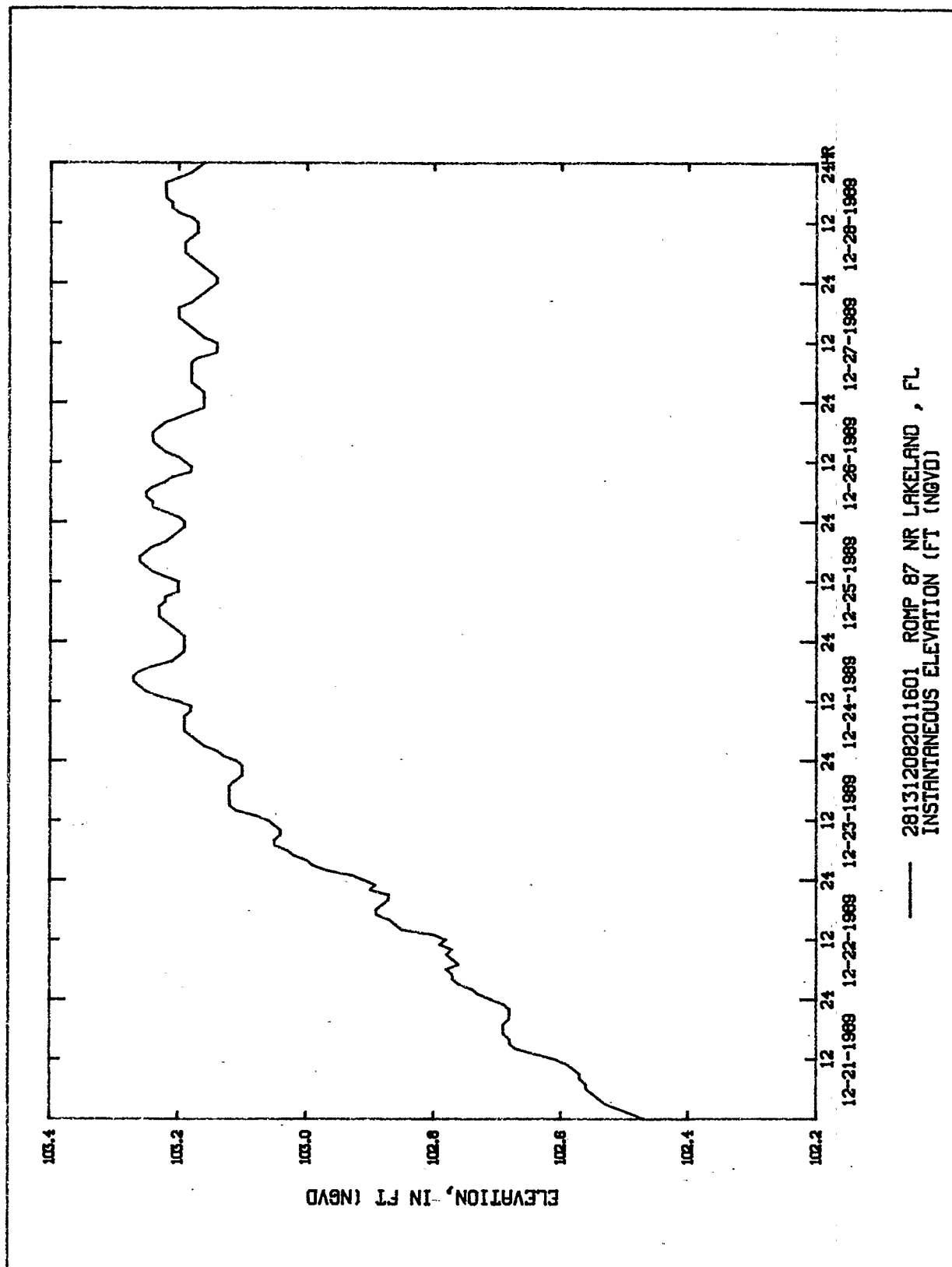


275627082150801 TURNER WELL E
MAXIMUM ELEVATION (FT (NGVD)), EDITED * .01

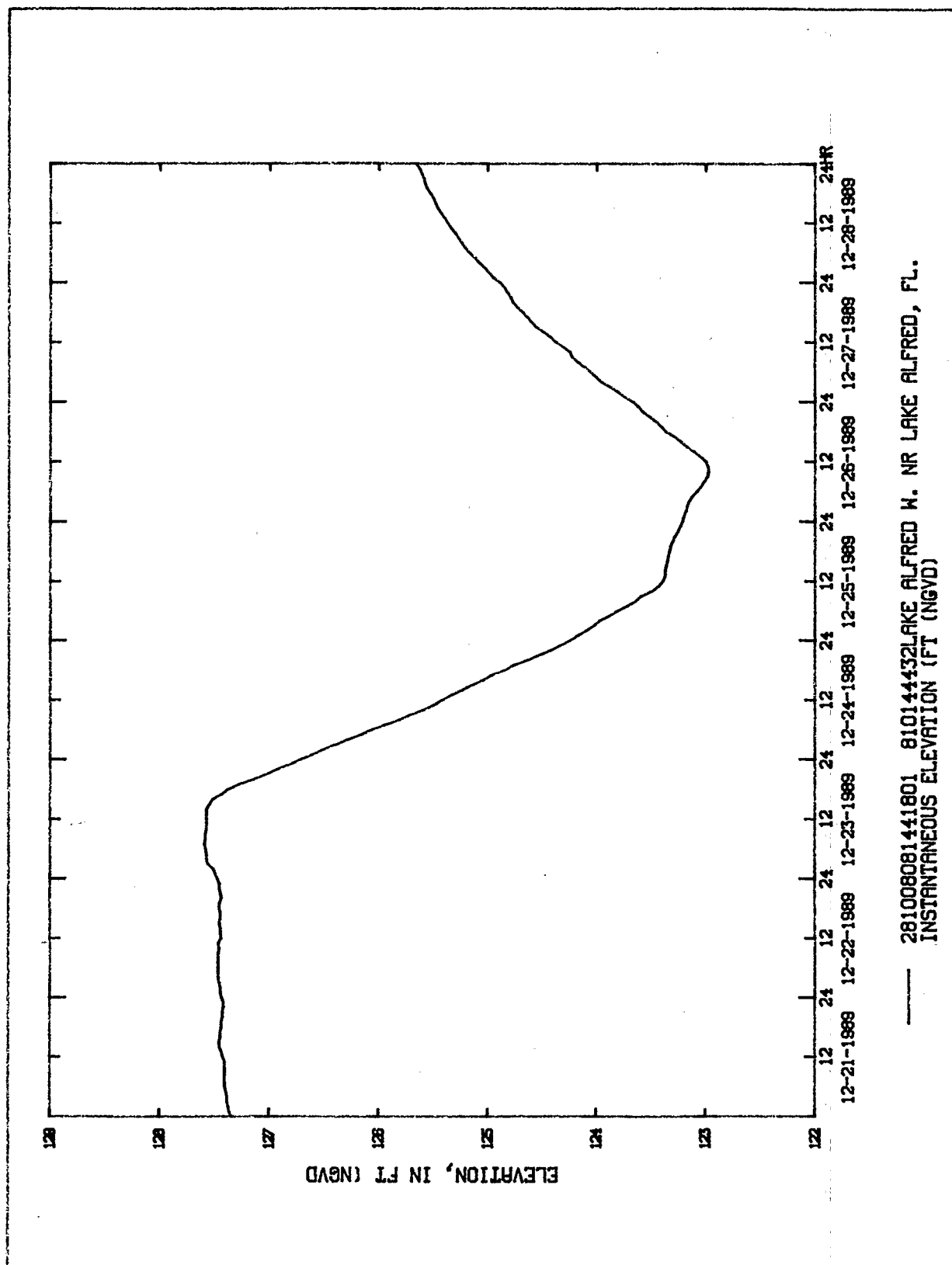
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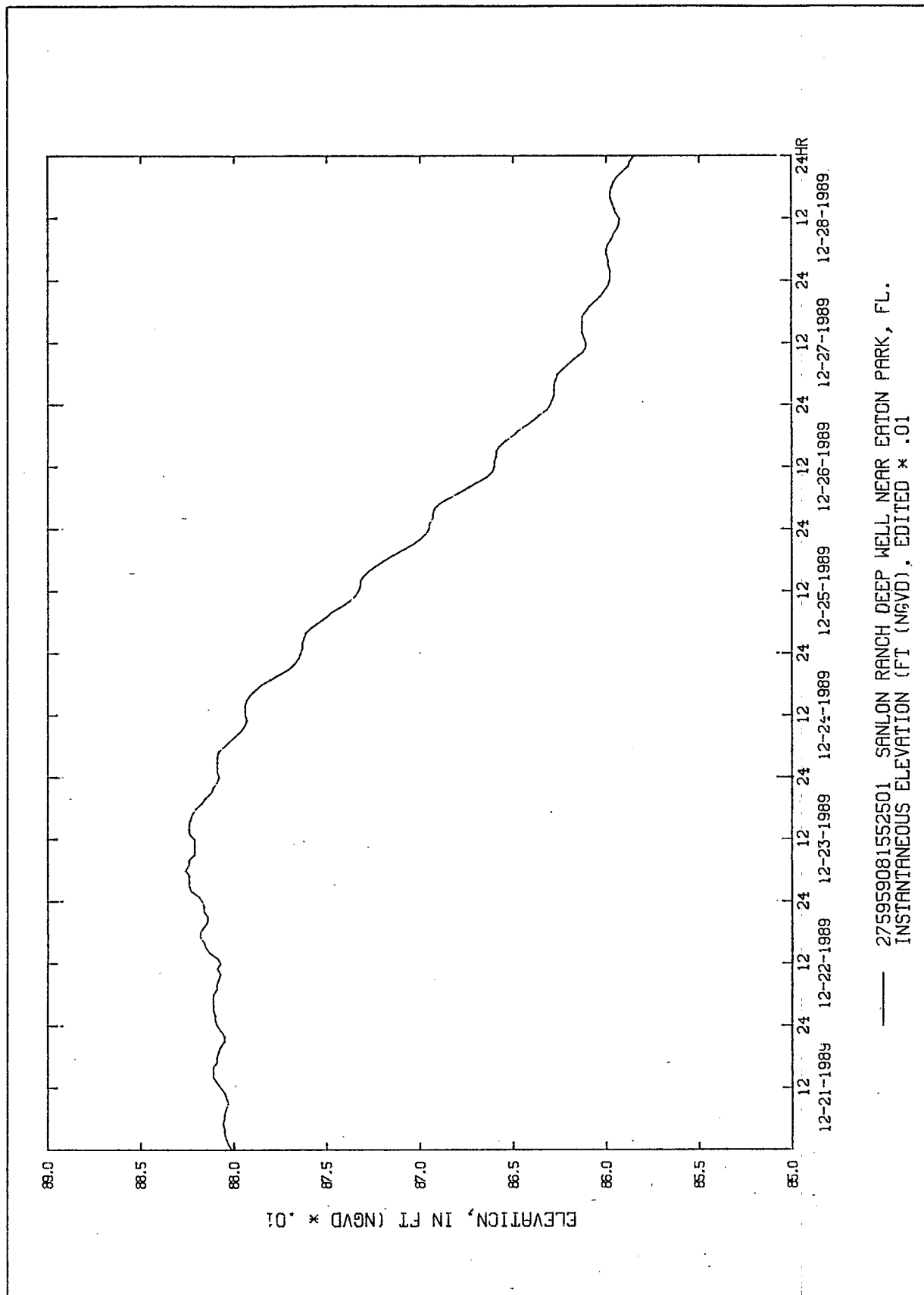
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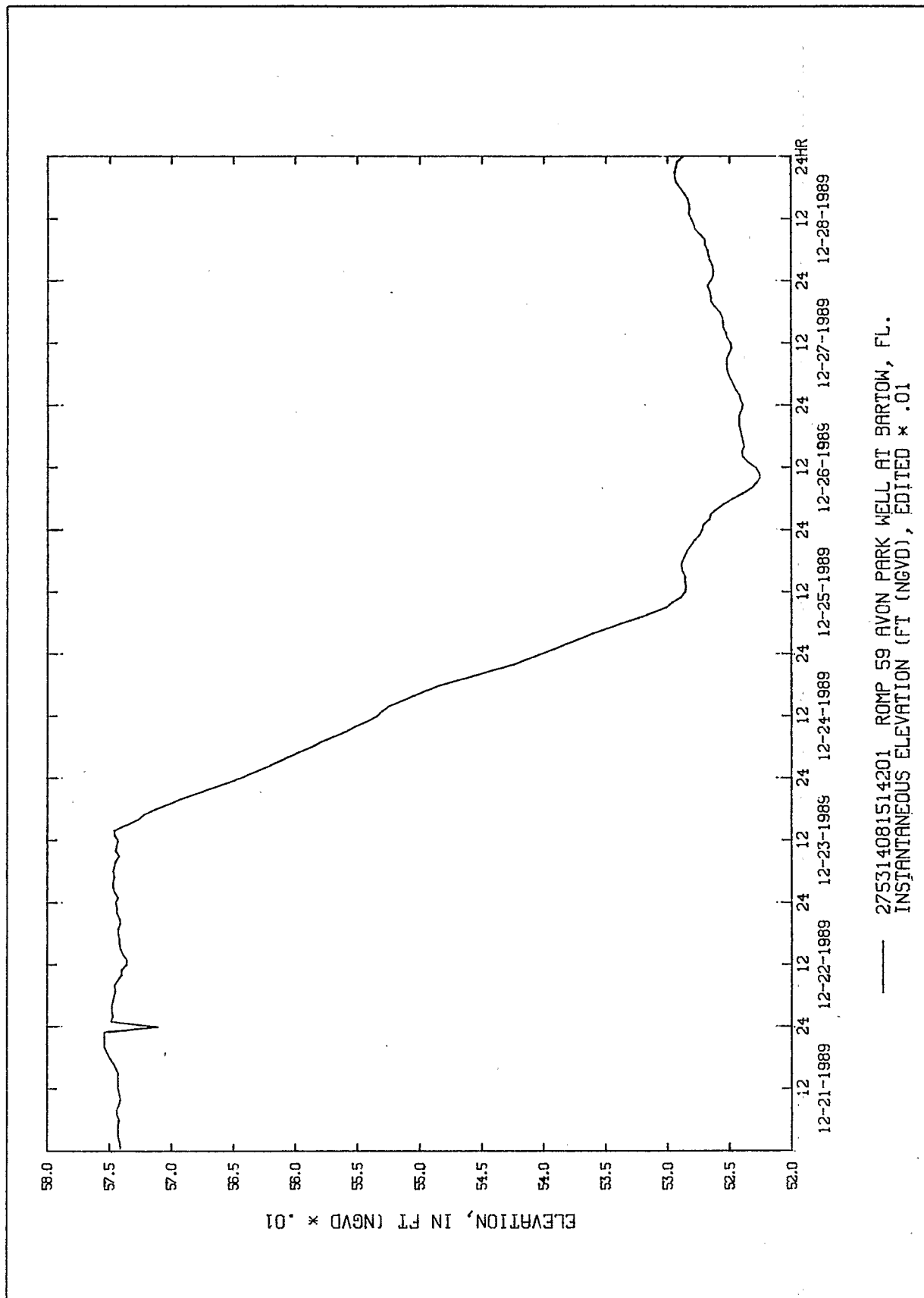
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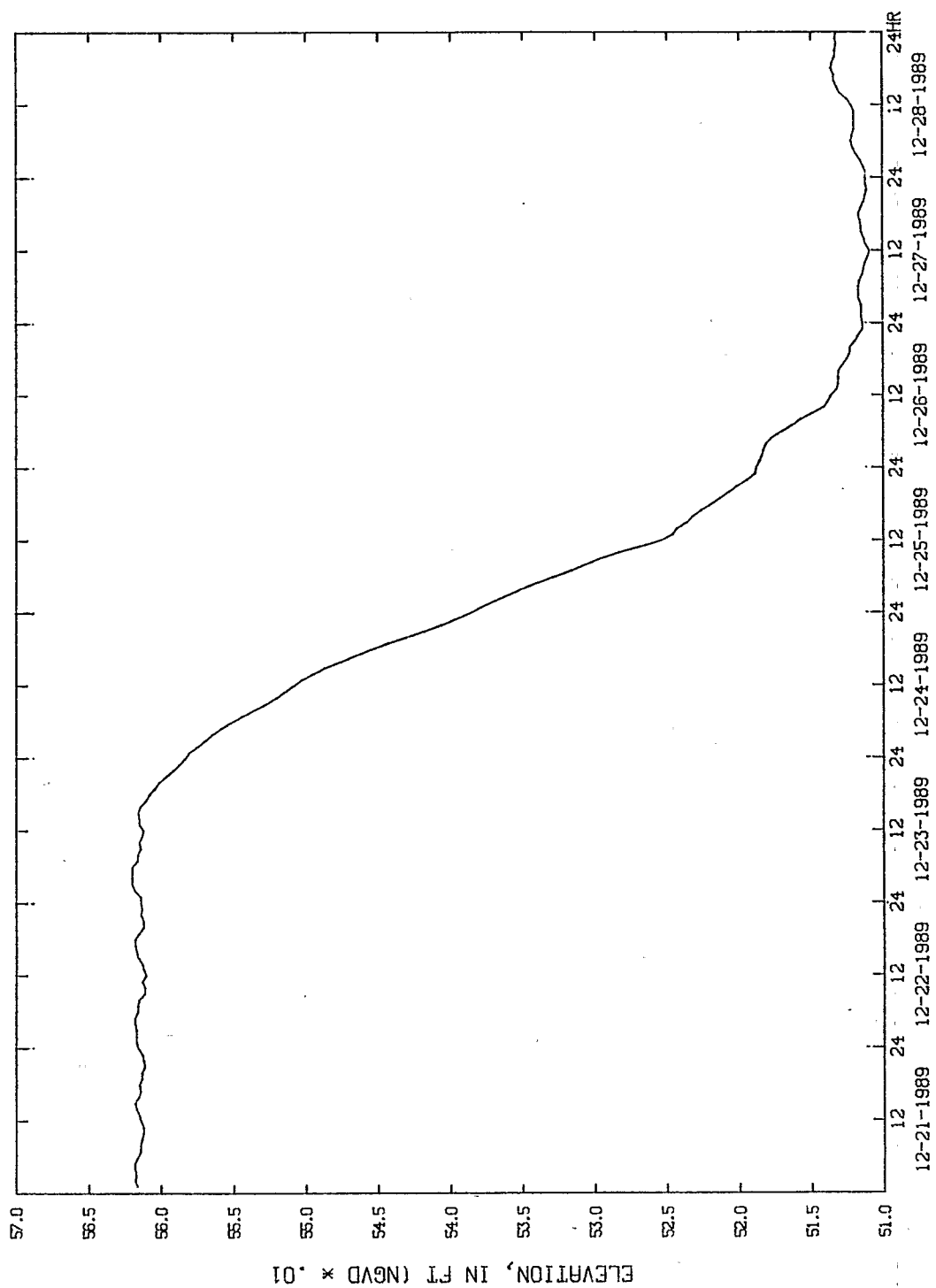
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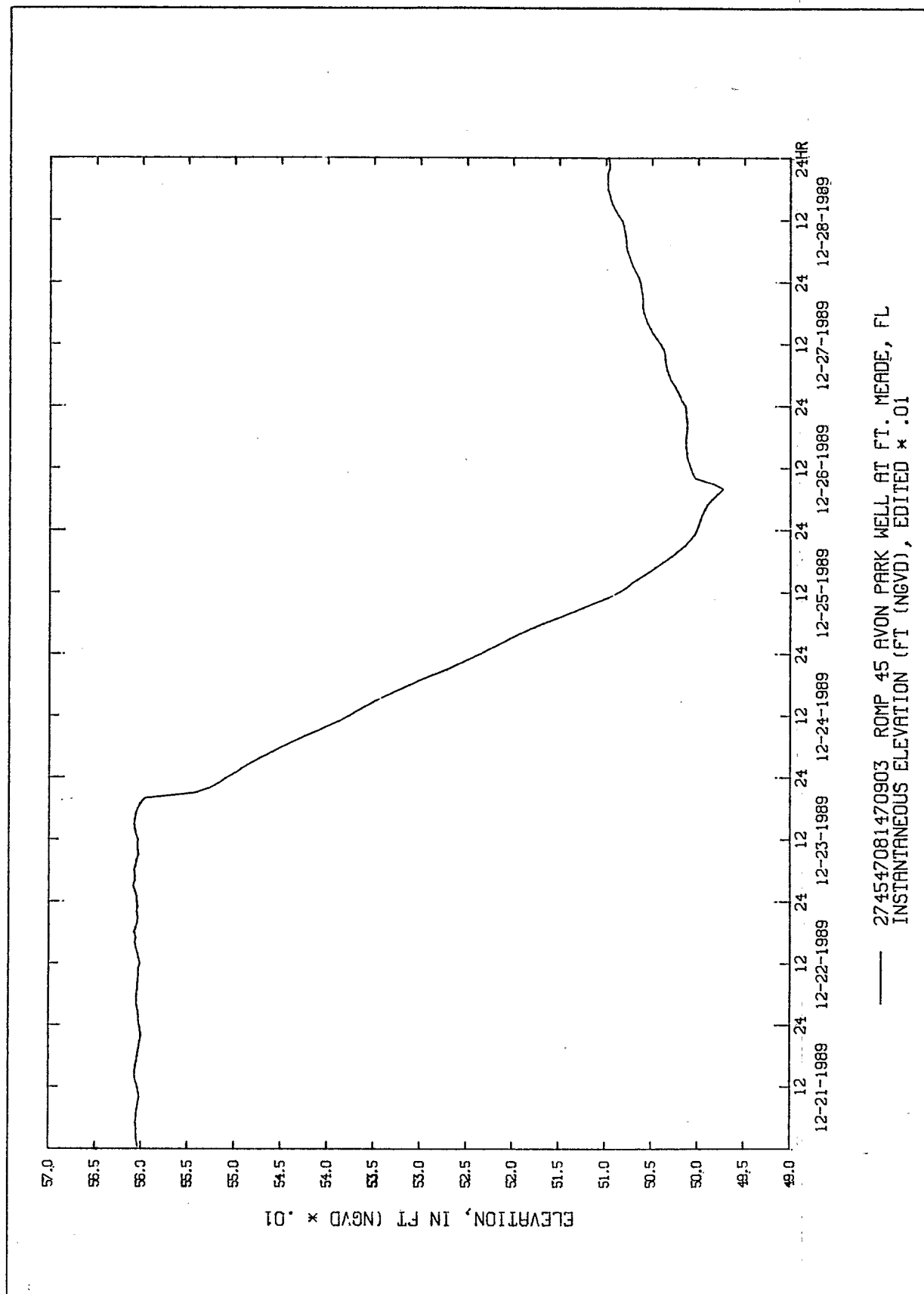


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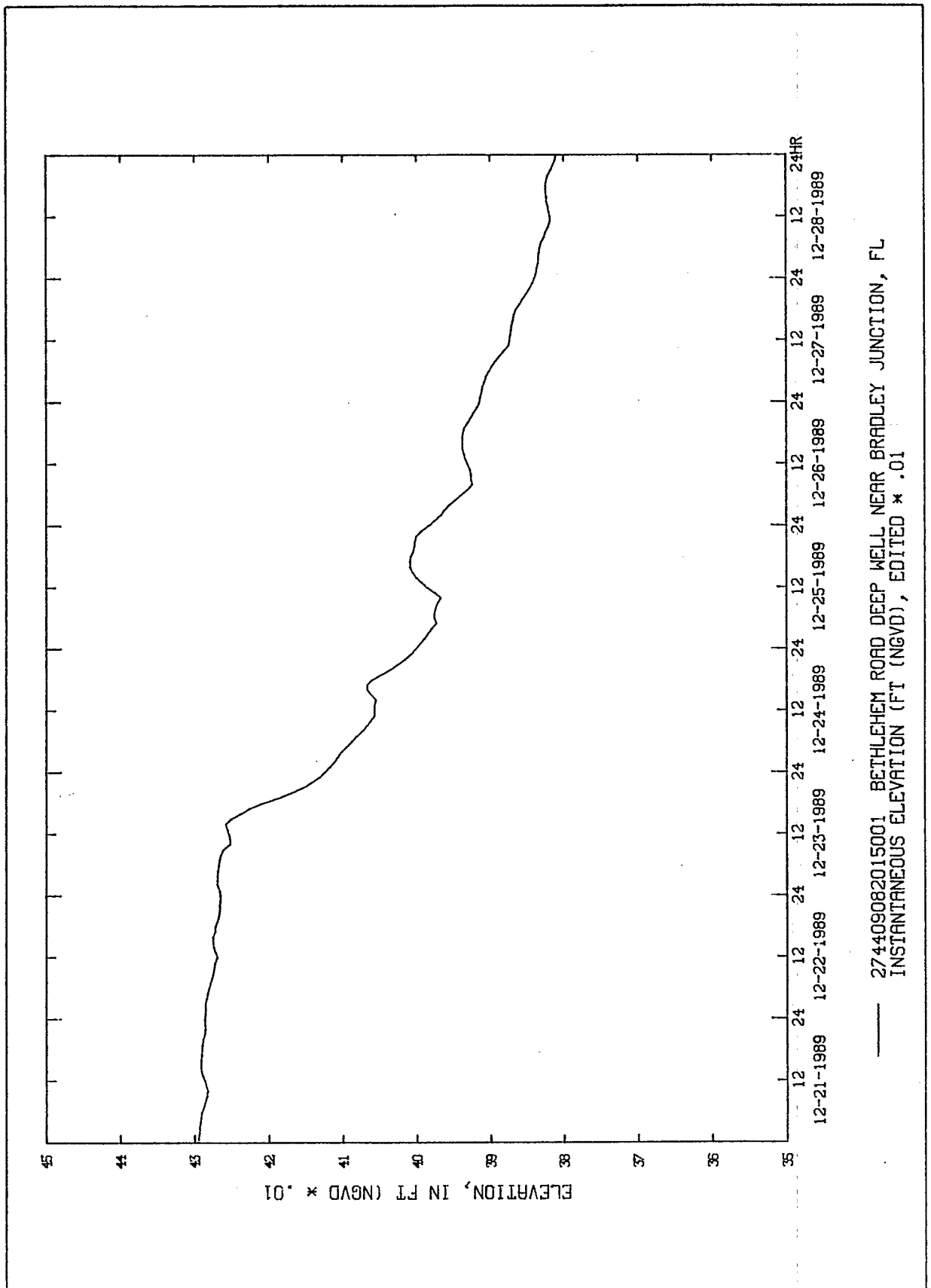


— 275326081585801 ROMP 60 DEEP WELL AT MULBERRY, FL.
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

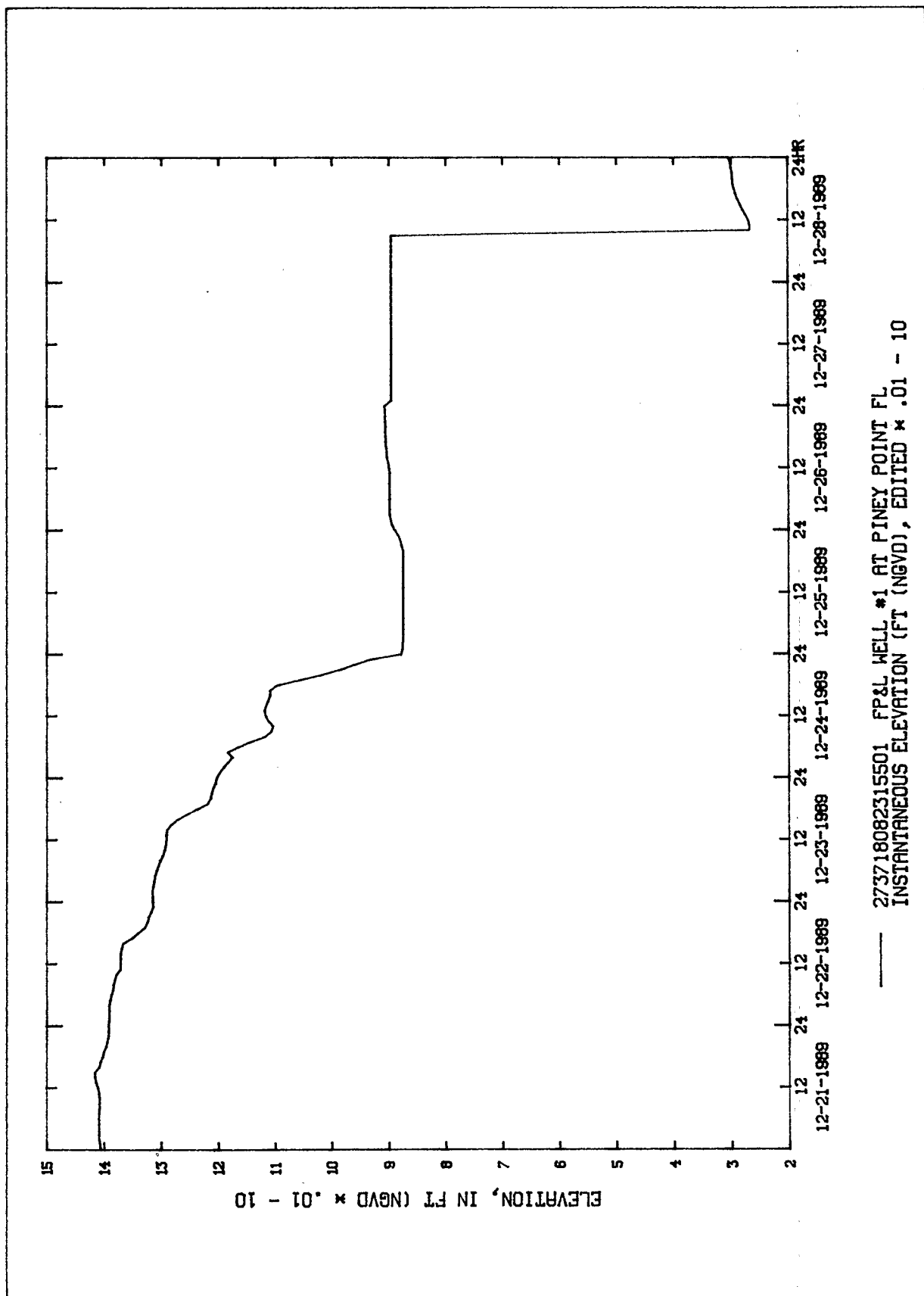
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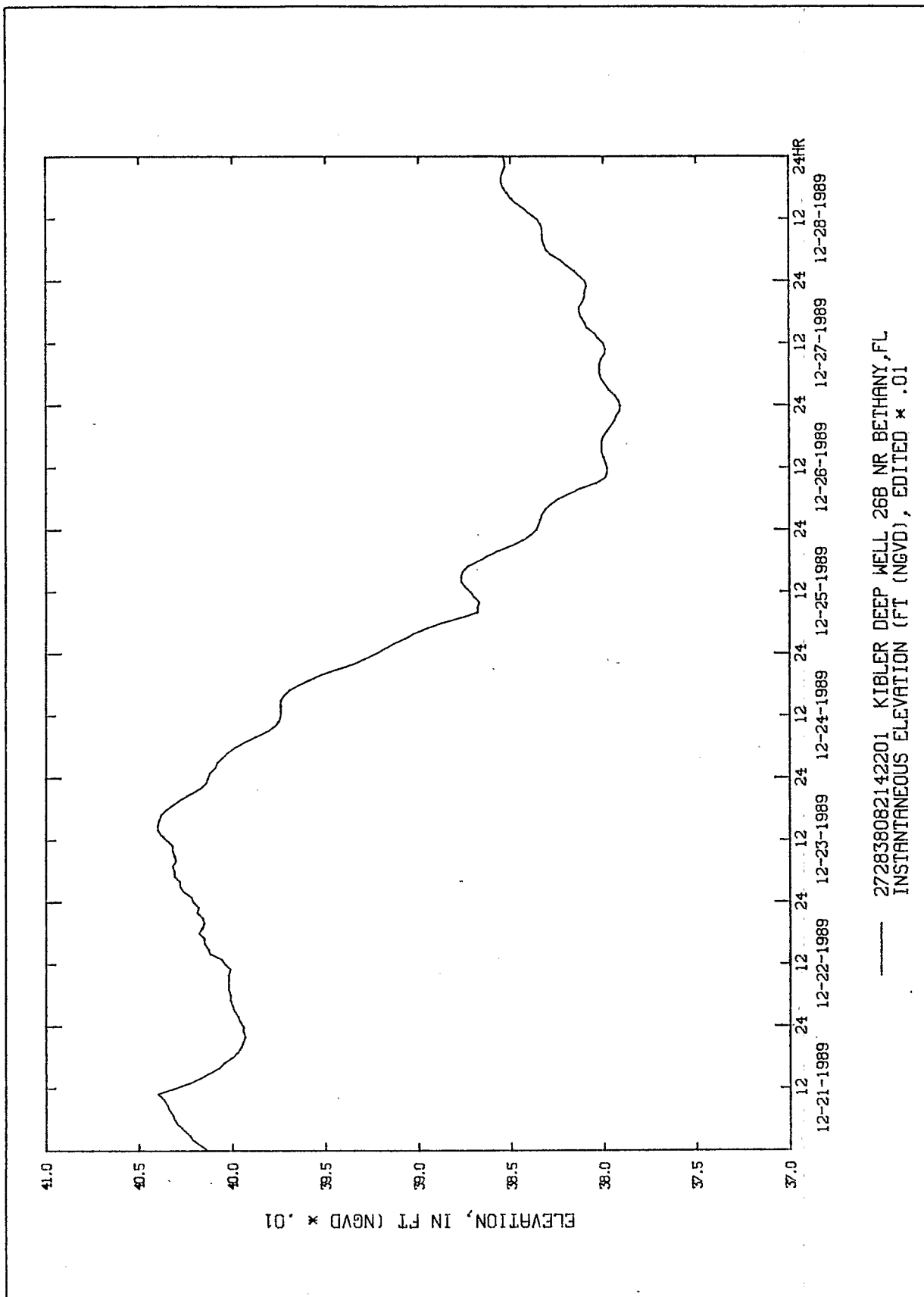
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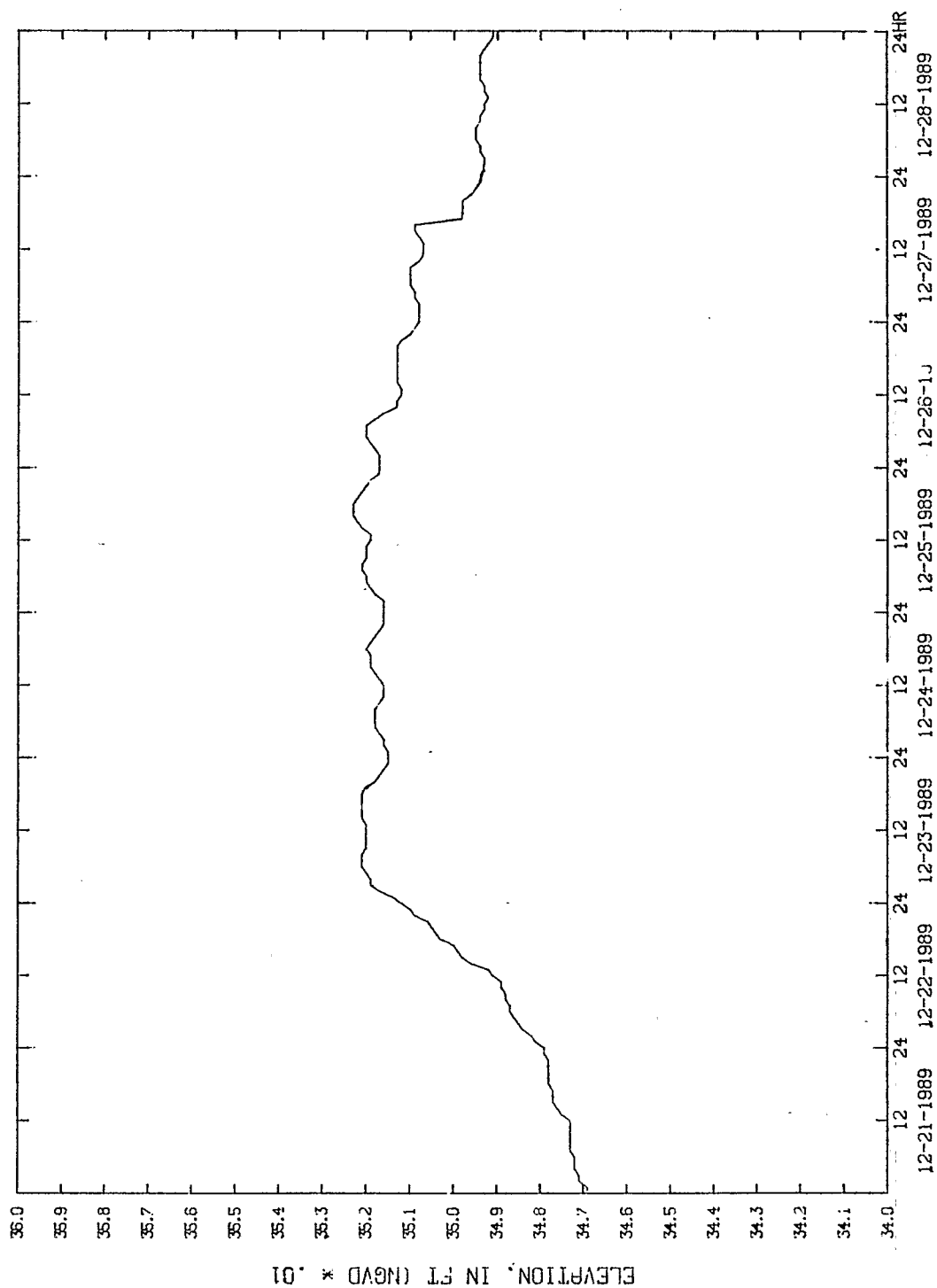


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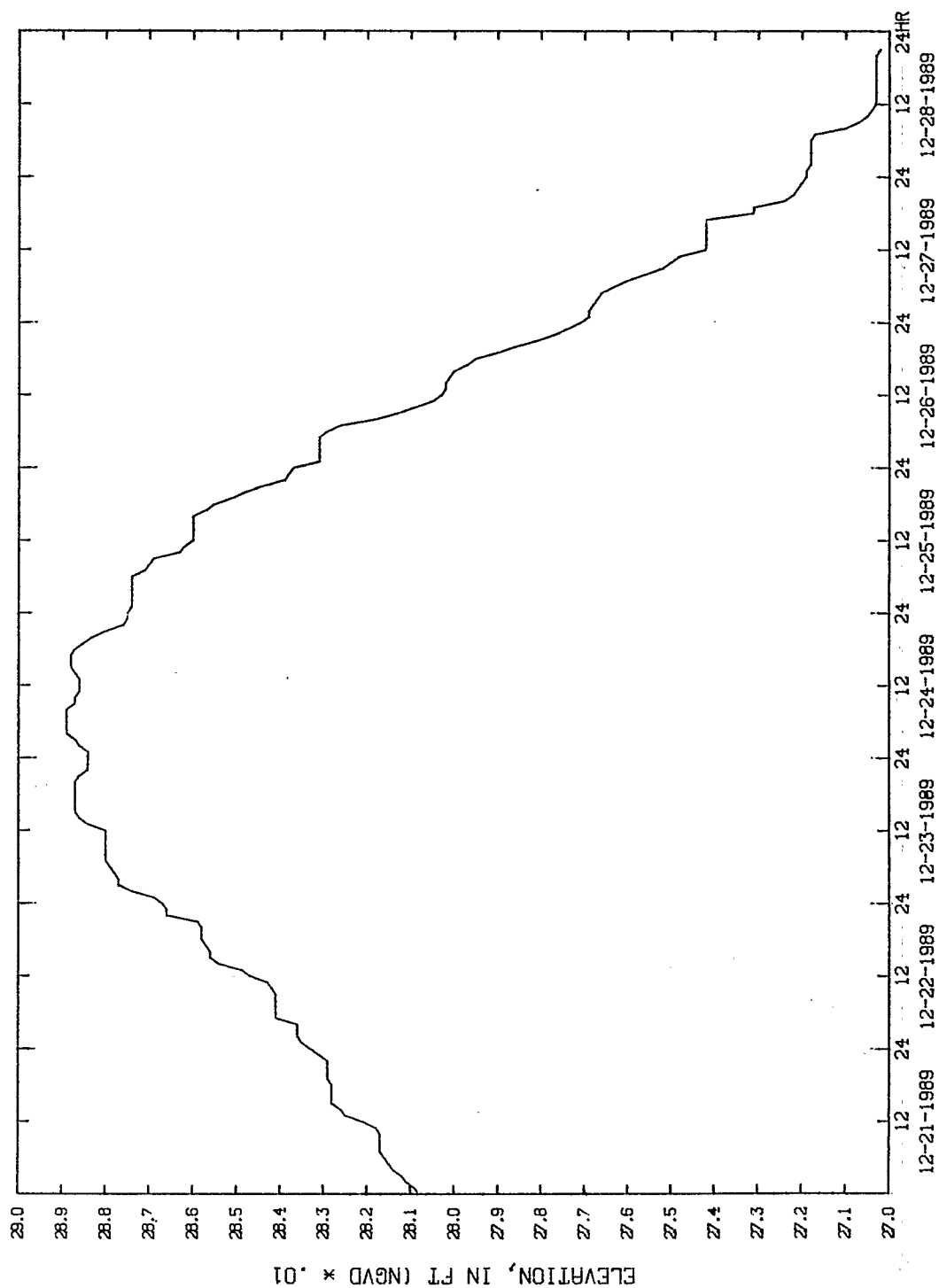
— 272510082345701 ROMP WELL TR7-1 NEAR BRADENTON FL
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

272510082345701 ROMP WELL TR7-1 NEAR BRADENTON FL
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01



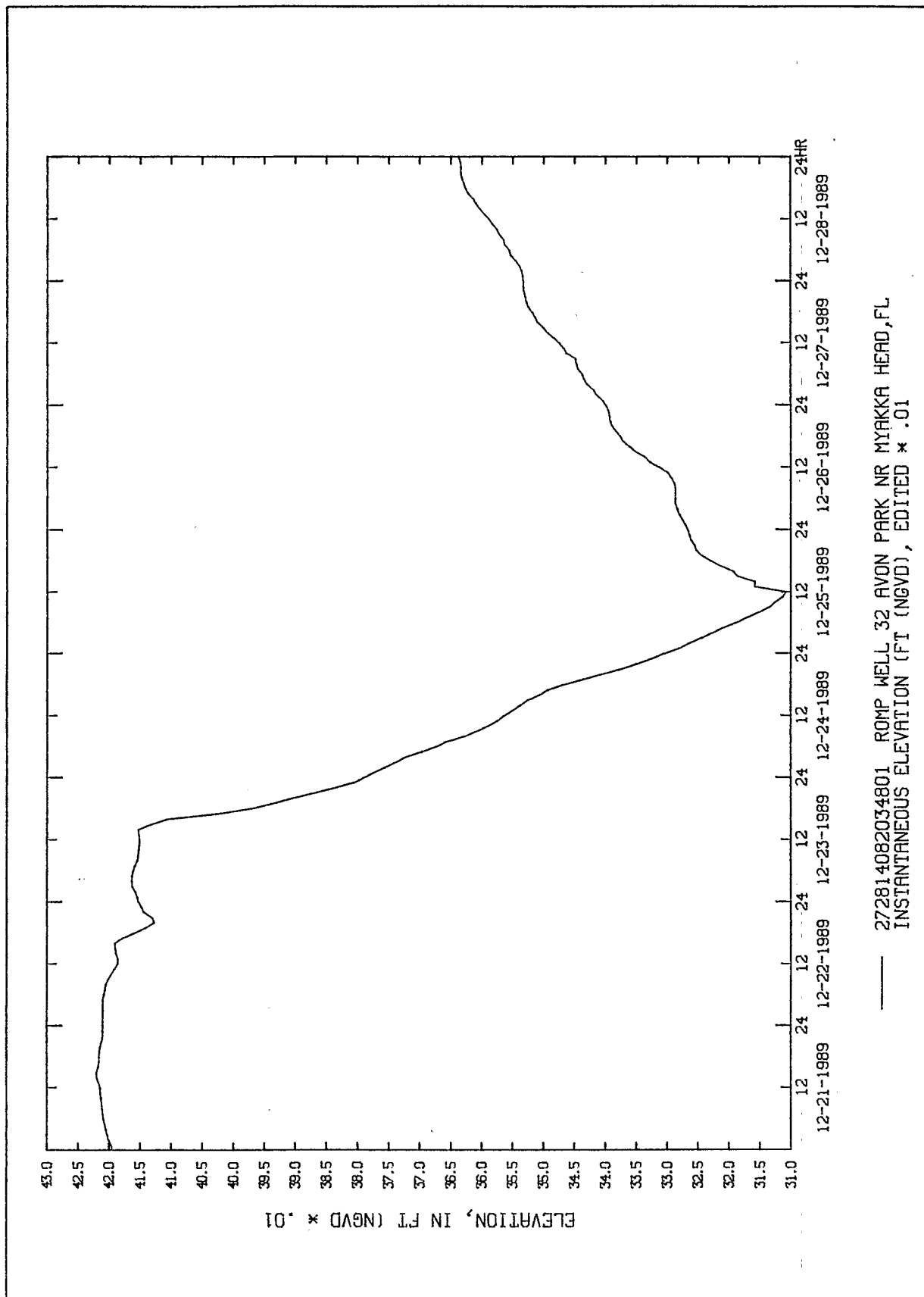
— 272356082181302 VERNIA DP WELL 1A
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01

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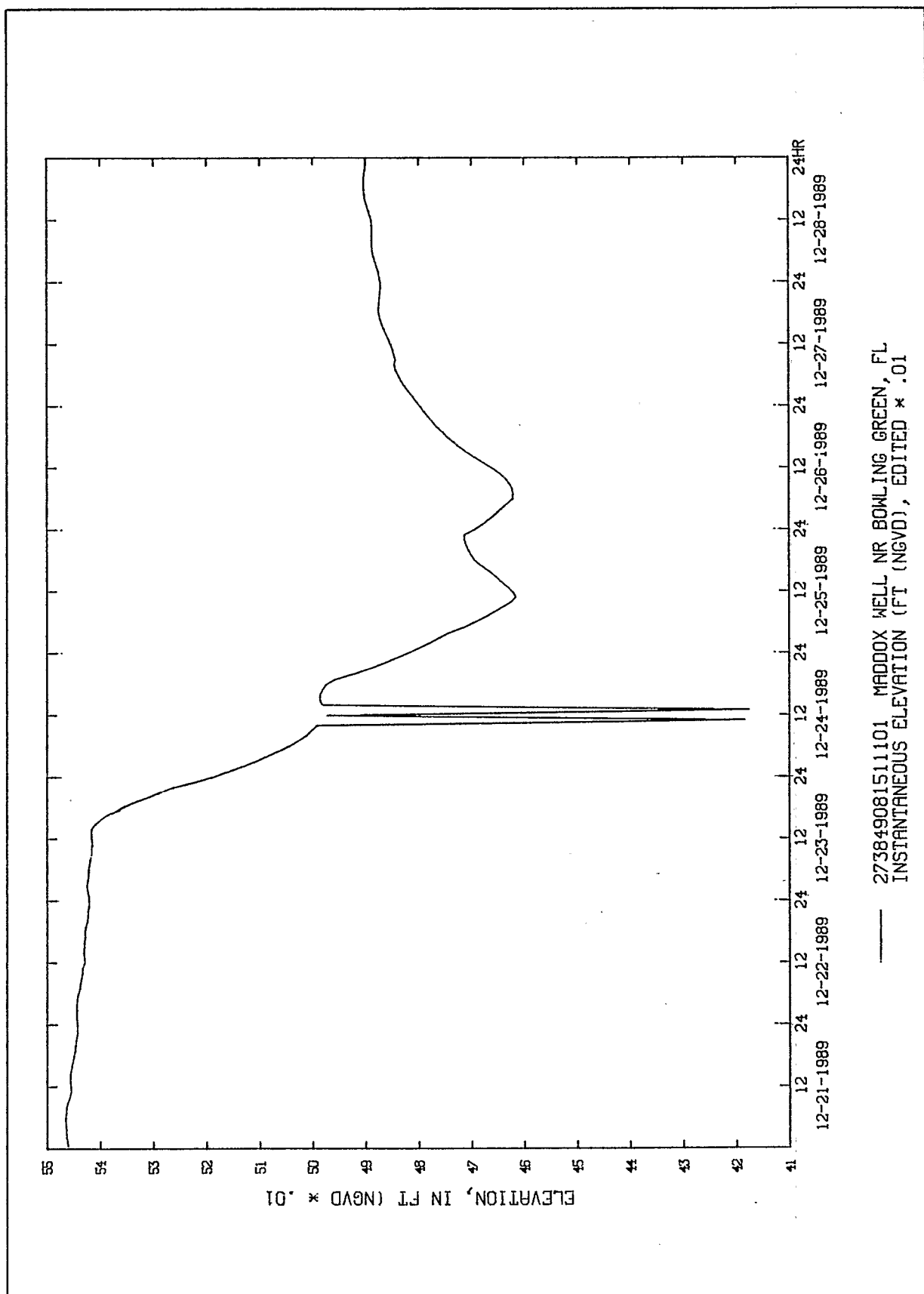


— 271832082064801 EDGEVILLE DP WL 3
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01

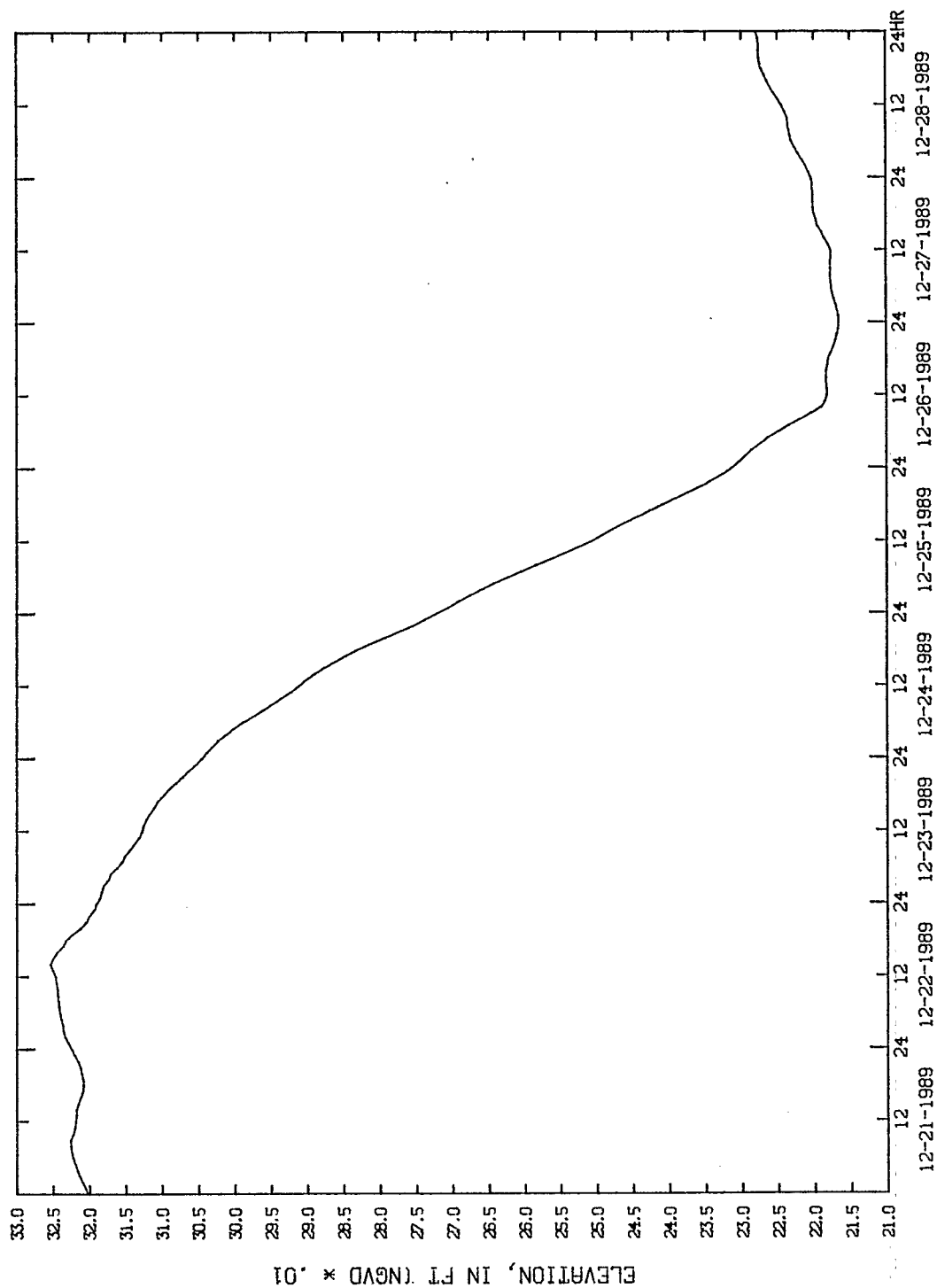
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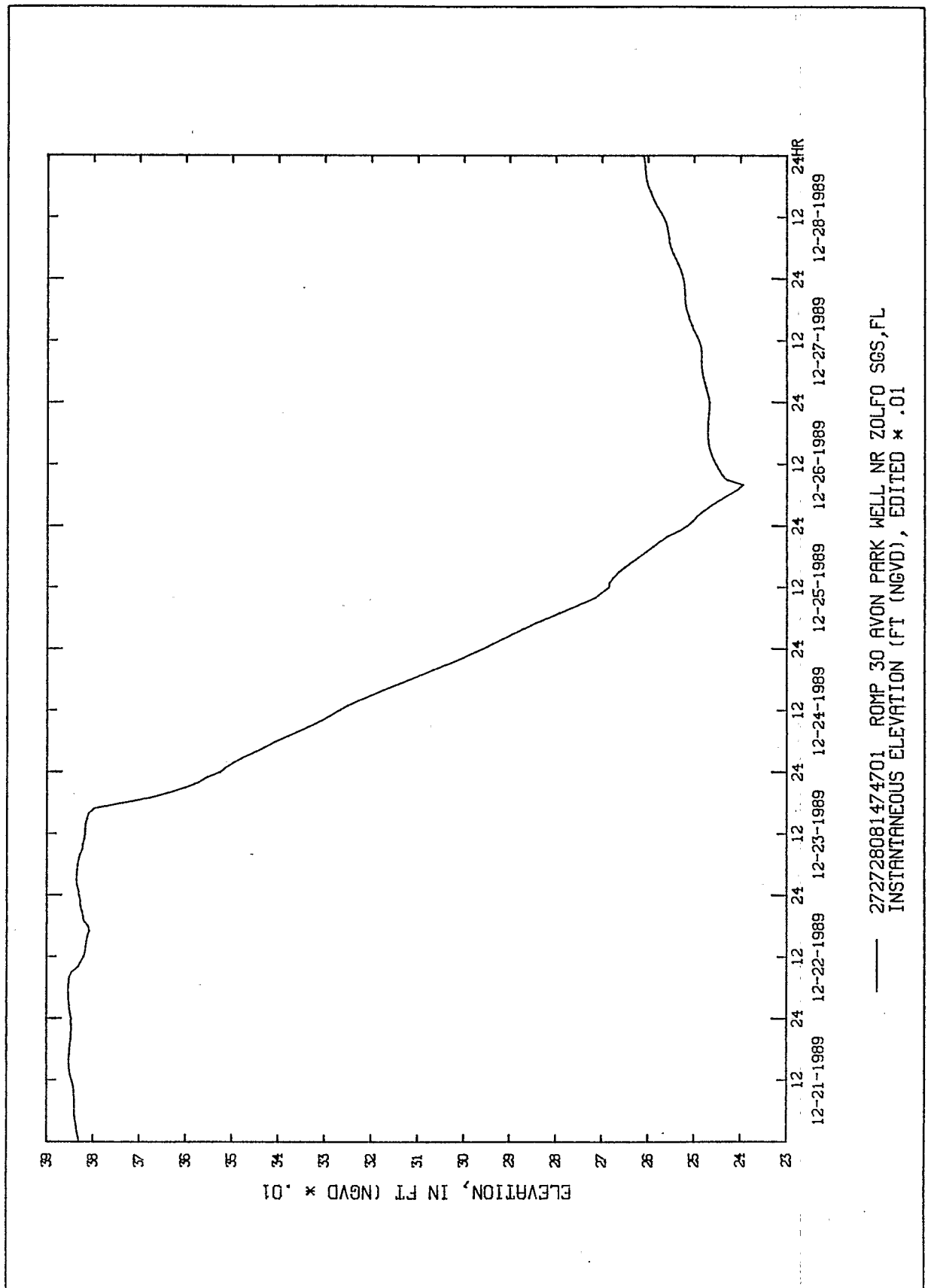


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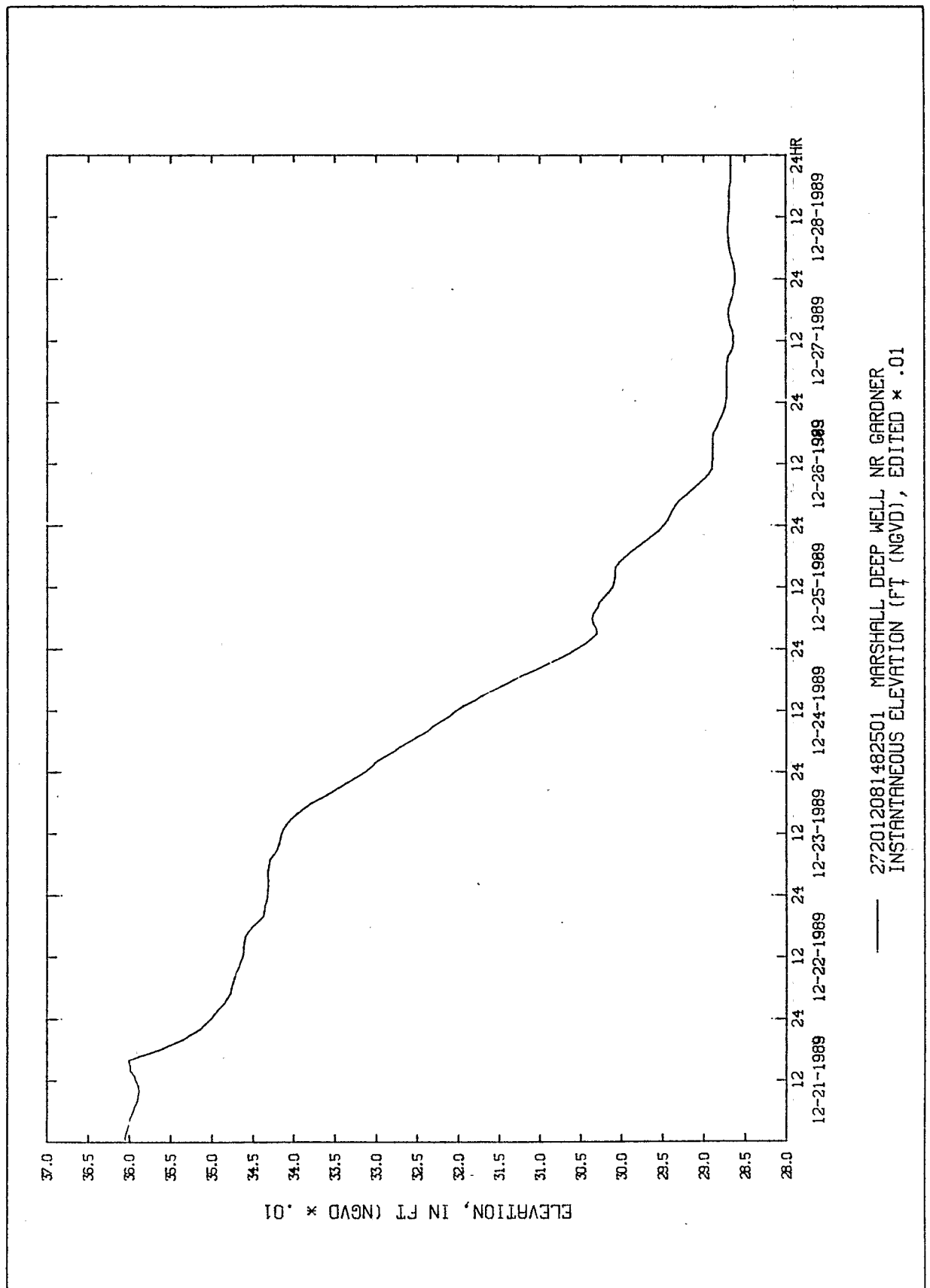


— 272714081545901 ROMP 31-1 AVON PARK WELL NR ONA, FLORIDA
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

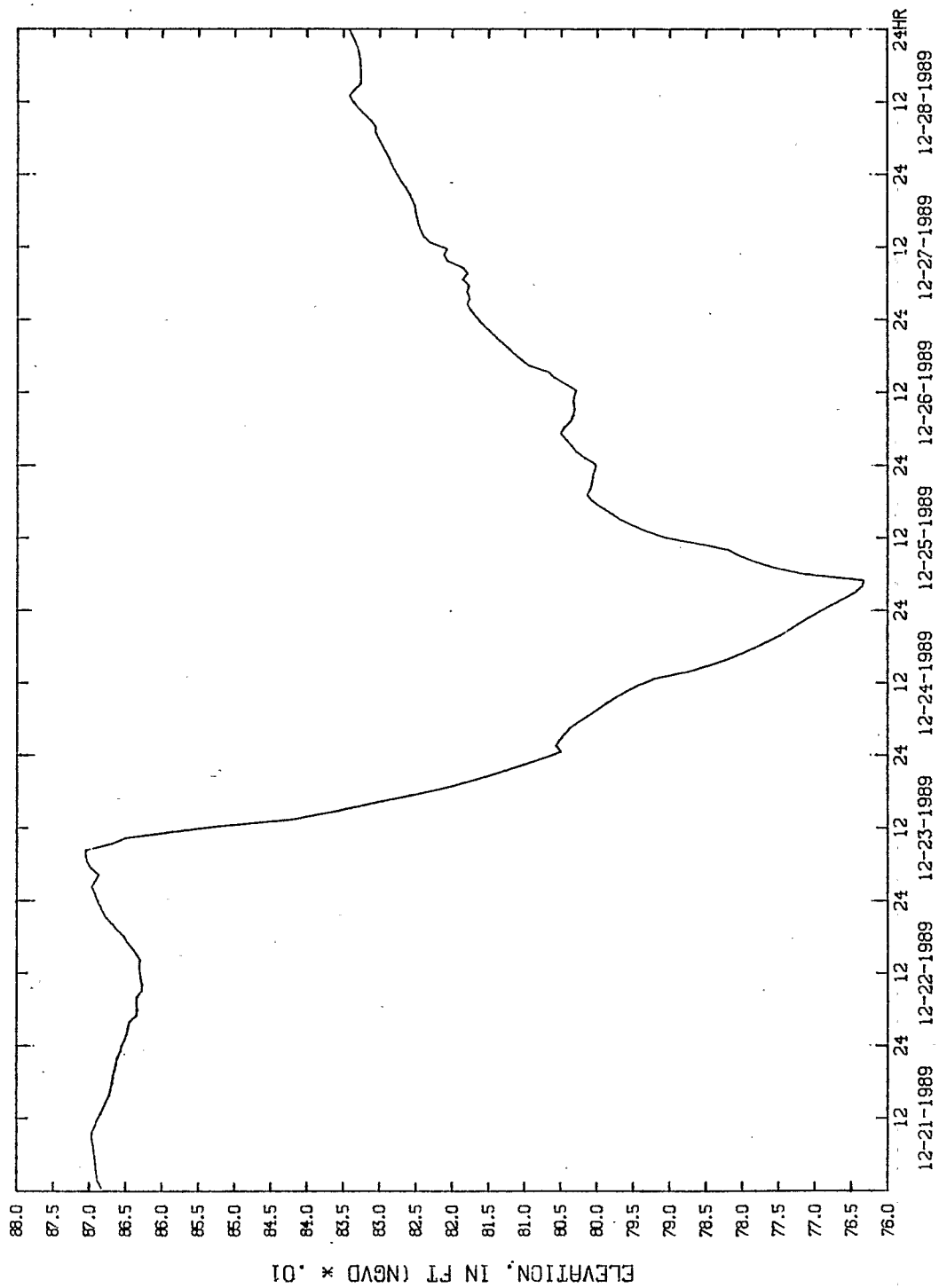
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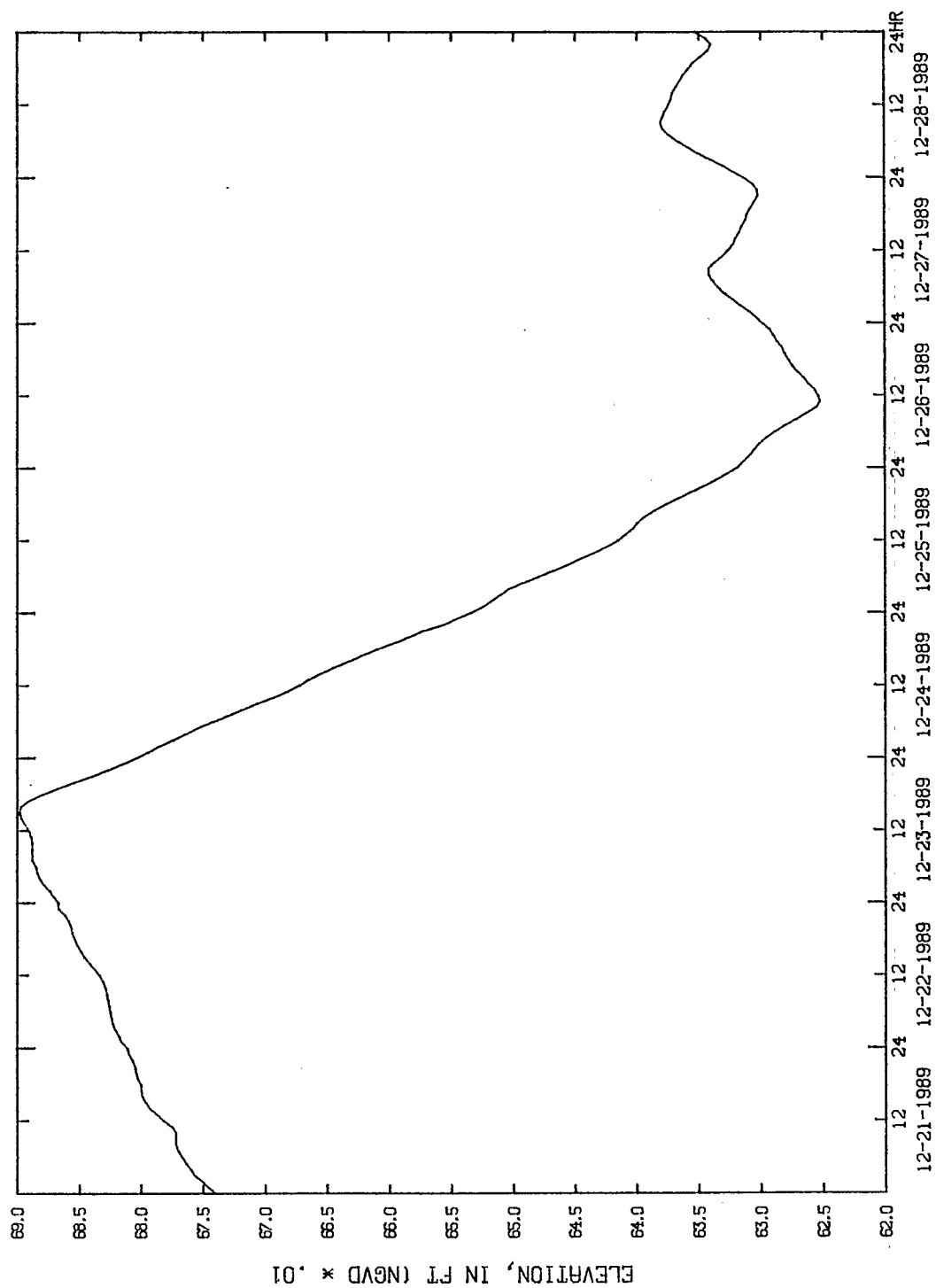


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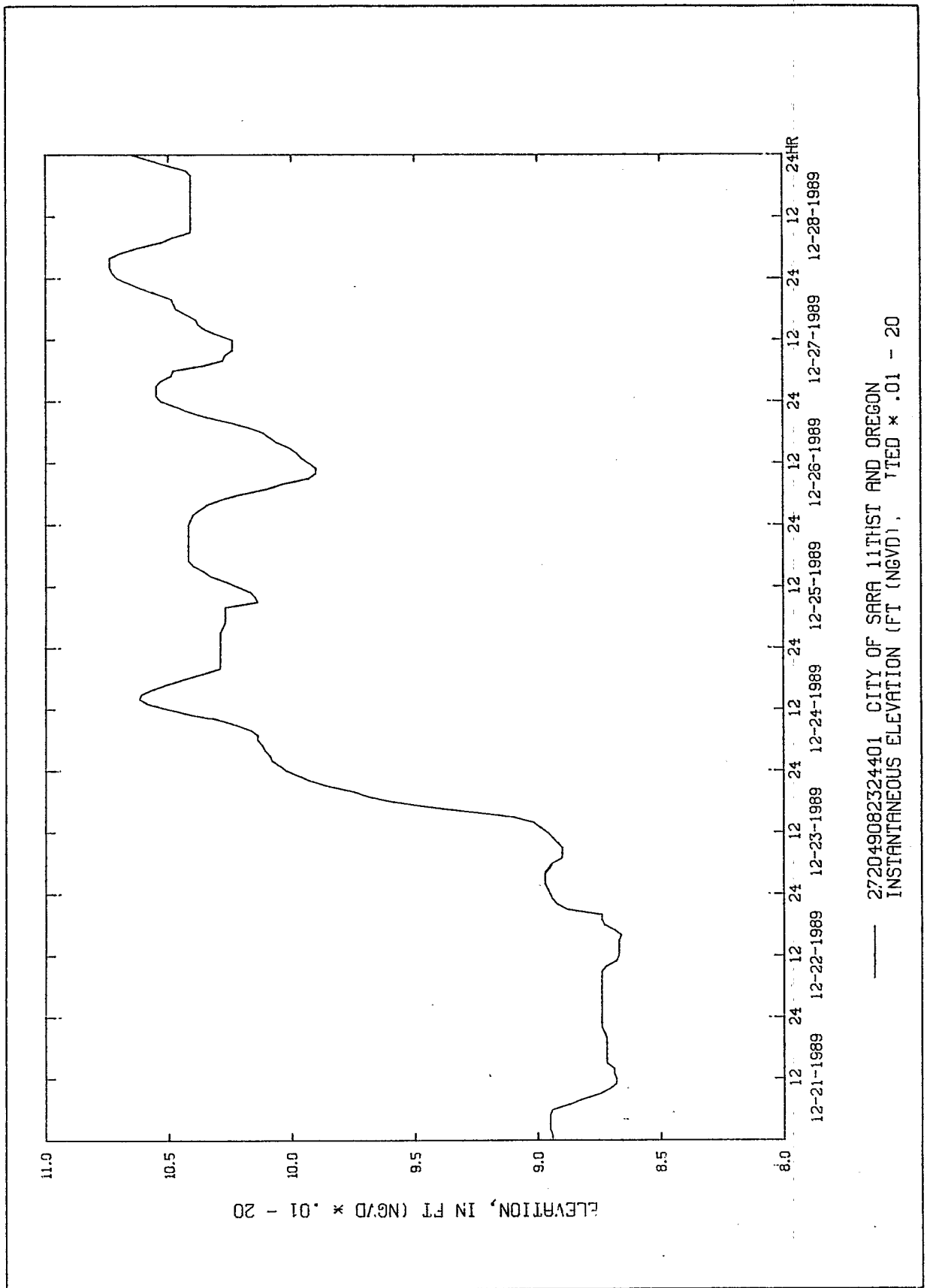
— 273615081284901 ROMP 43 FLORIDAN WELL NR AVON PARK, FL
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

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— 271559081202301 ROMP 28 FLORIDAN WELL NR LAKE PLACID, FL
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

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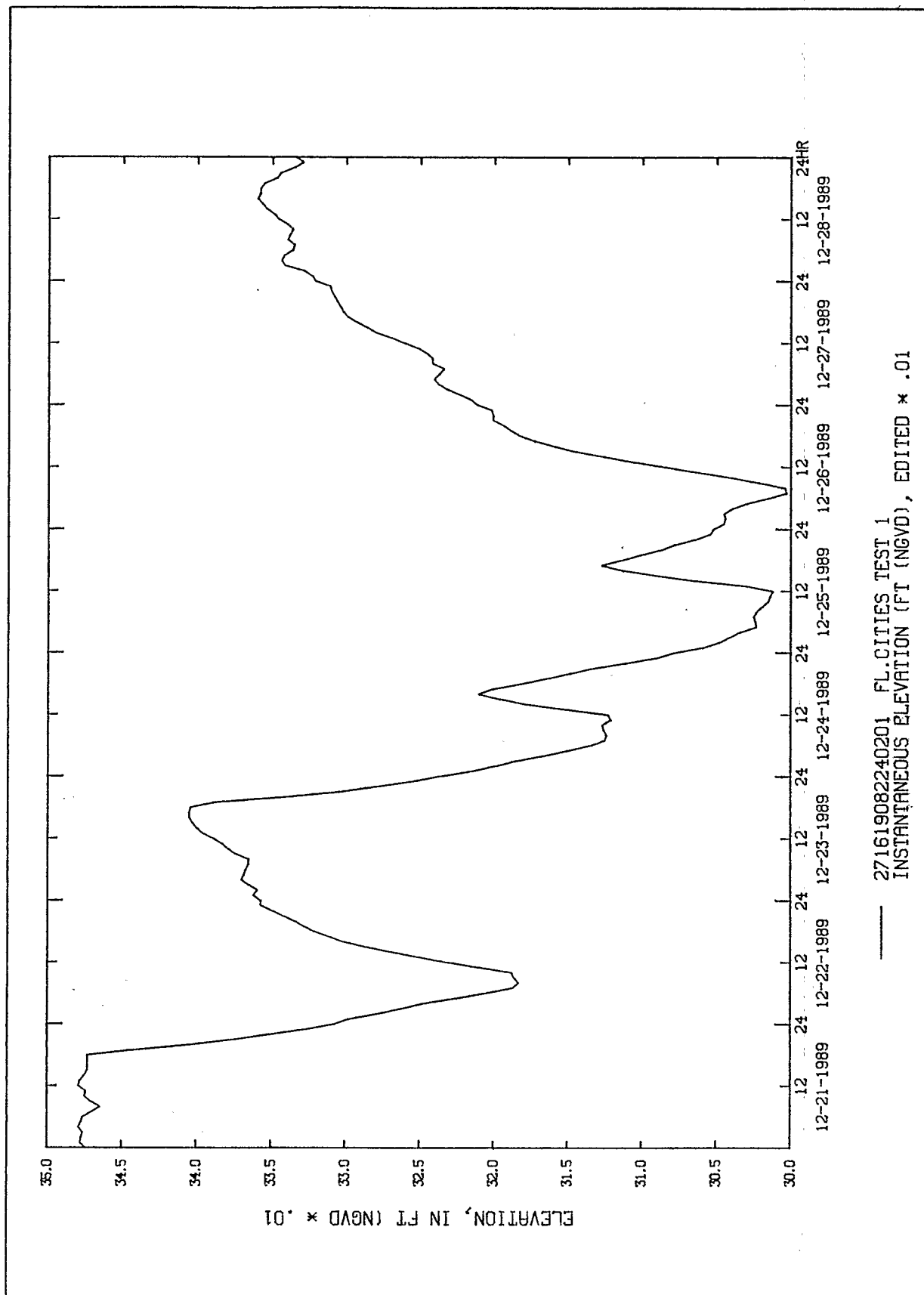
— 271938082251801 SARASOTA WELL 9
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01 - 20

271938082251801 SARASOTA WELL 9
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01 - 20

— 271601082330501 ROMP TR 6-1 HAWTHORN WELL NEAR SARASOTA FL
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

271601082330501 ROMP TR 6-1 HAWTHORN WELL NEAR SARASOTA FL
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01

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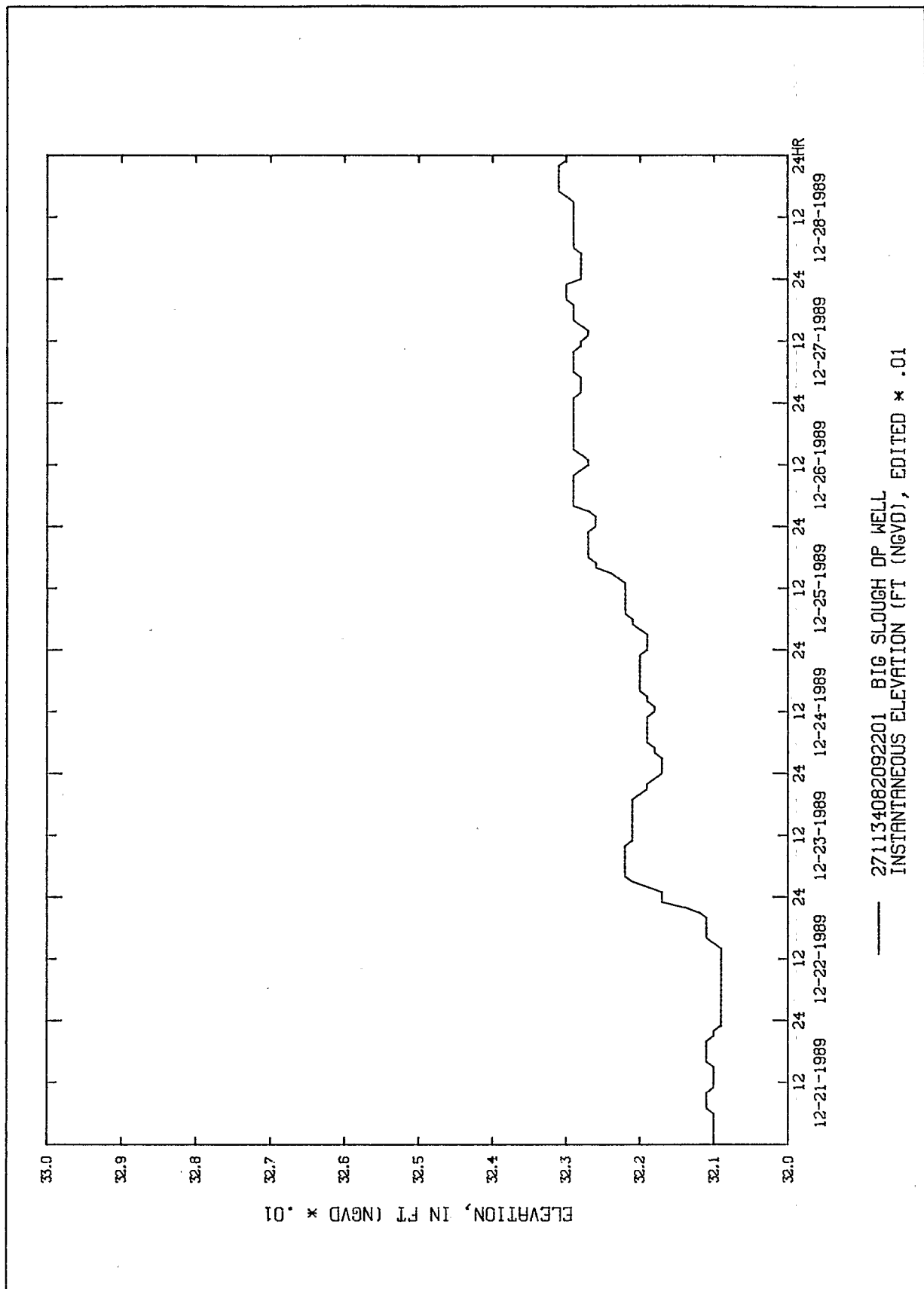
— 271118082285301 OSPREY WELL 9
 INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED *.01

271118082285301 OSPREY WELL 9
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED *.01

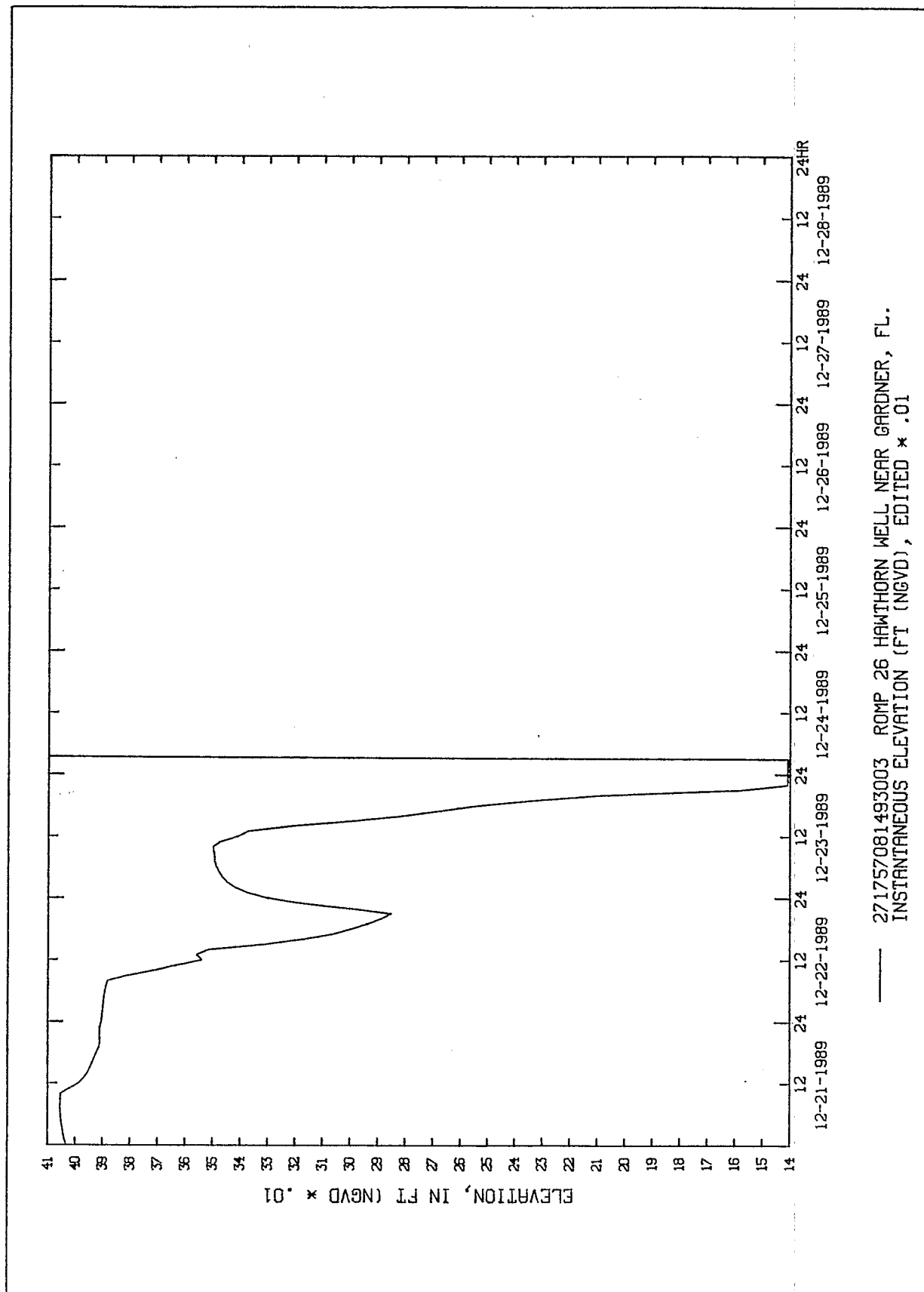
— 270808082270503 ROMP TR5-1 HAWTHORN WELL AT LAUREL, FL.
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

270808082270503 ROMP TR5-1 HAWTHORN WELL AT LAUREL, FL.
INSTANTANEOUS ELEVATION (FT (NGVD), EDITED * .01

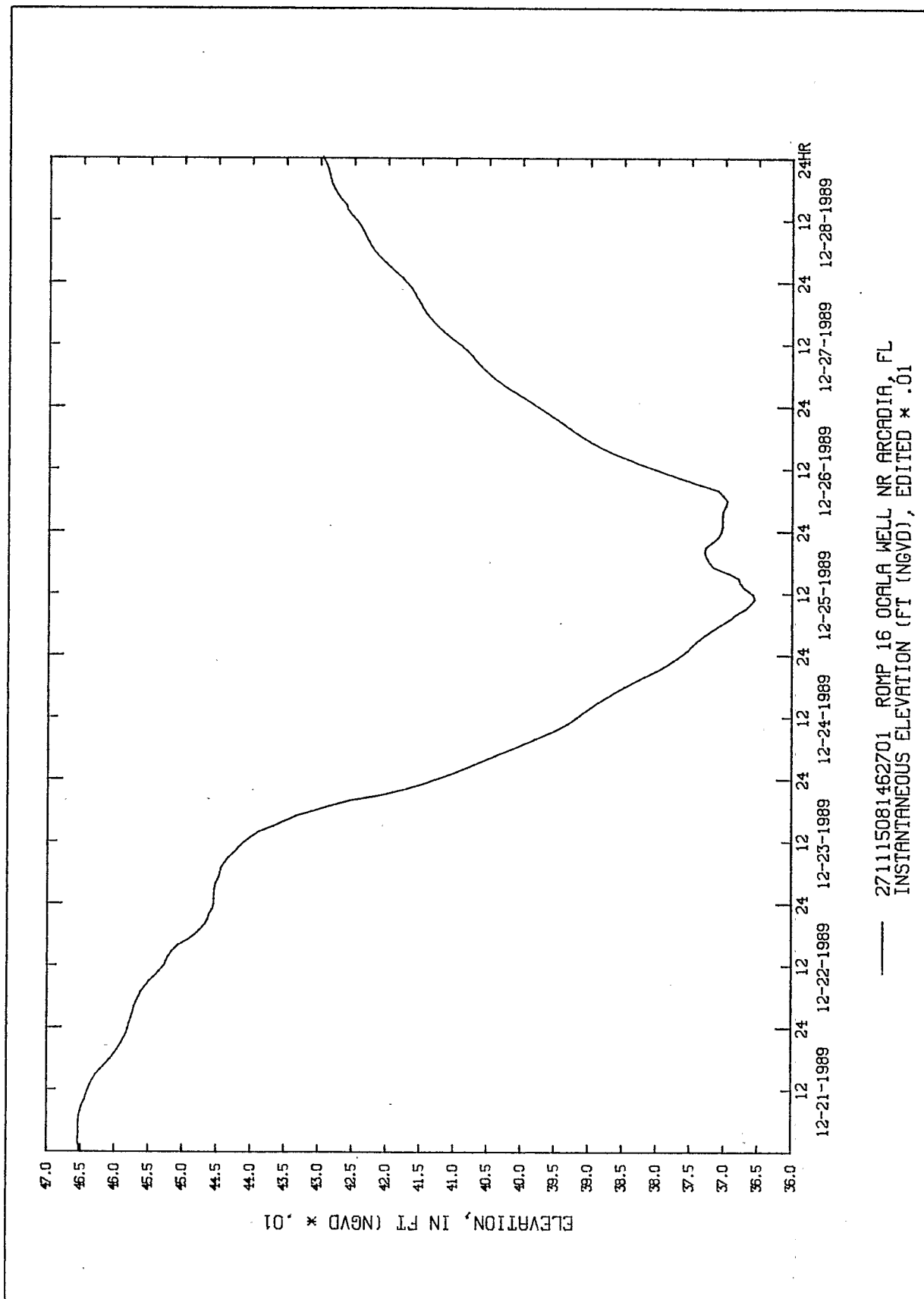
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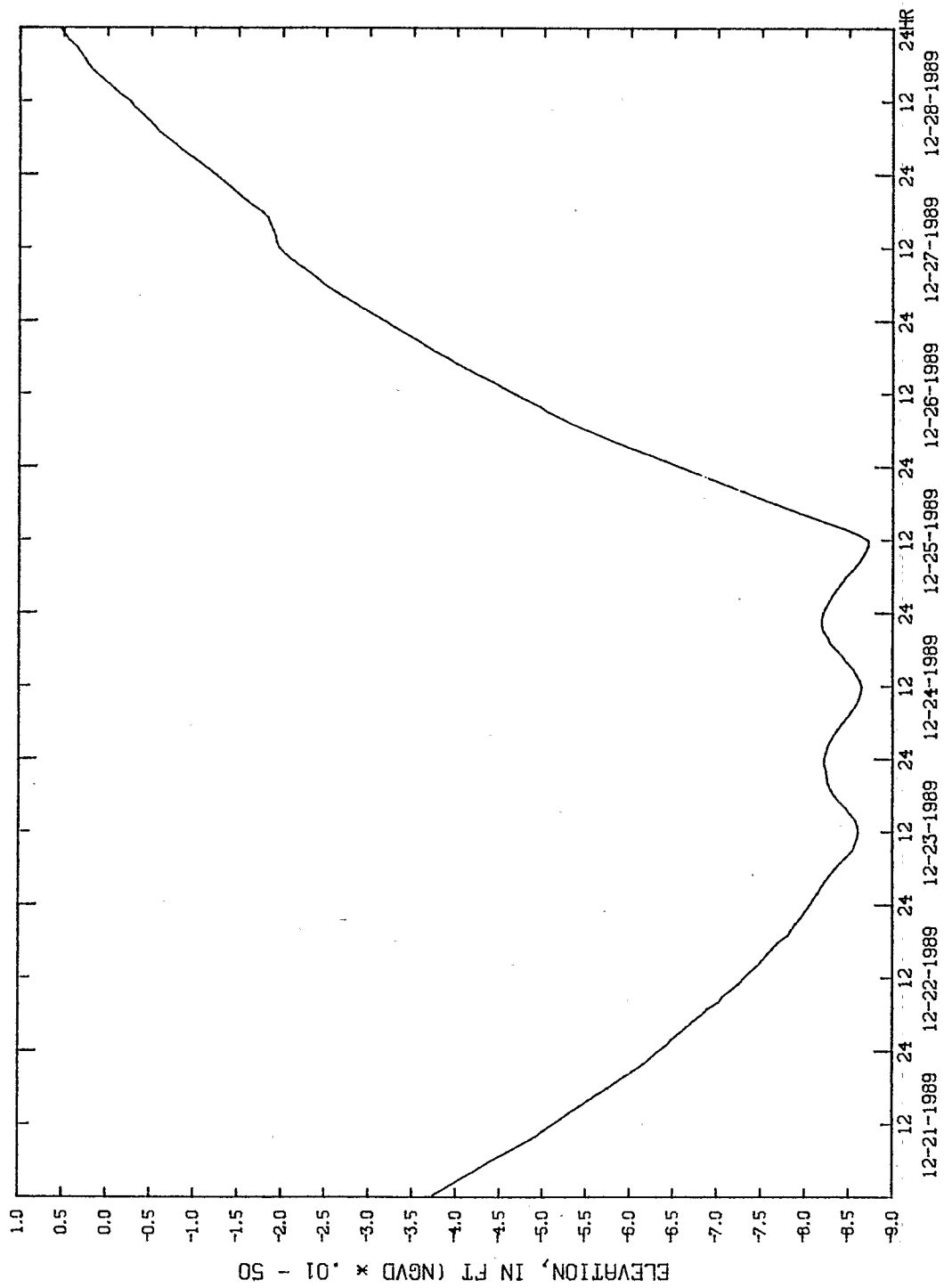
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— 265138082002201 PUNTA GORDA HTS.
INSTANTANEOUS ELEVATION (FT (NGVD)), EDITED * .01 - 50

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REPORT NAME
EFFECTS OF CHRISTMAS 89 FREEZE
AUTHOR
HYDROLOGIC DATA SECTION 1/90
KEY WORD
FREEZE
BASIN

60 pgs

2012 B6.02

Report belongs in
Storage Box
11831