

04006659390E

40-6659



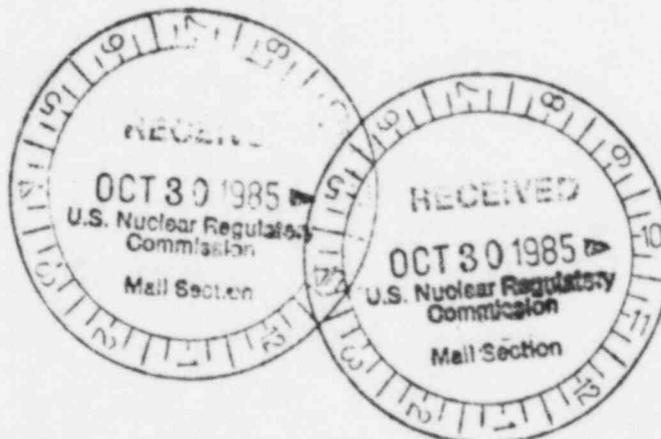
RETURN ORIGINAL TO PDR, HQ.

Petrotoomics Company

P.O. Box 8509, Shirley Basin, Wyoming 82615 • Telephone (307) 234-9341

October 24, 1985

Dr. Harry J. Pettengill, Chief
Licensing Branch 2
U. S. Nuclear Regulatory Commission
Uranium Recovery Field Office, RIV
P.O. Box 25325
Denver, CO 80225



Ref: Docket No. 40-6659, Source Materials License SUA-551

Dear Dr. Pettengill:

In accordance with License Condition No. 31, we are submitting the data on the tailings pond piezometers and inspections for the last year. Please find attached the graphs of the piezometers and tailings water elevation along with the inspection reports and technical evaluation. Should there be any questions, please contact me at (307) 356-4341.

Sincerely,

Stephen J. Pfaff
Radiation Coordinator

SJP:ps
Attachments
3-43

DESIGNATED ORIGINAL

Certified By Mary C. Hood

FEE EXEMPT

8511260379 851024
PDR ADOCK 04006659
C PDR

047

DATE: 24 SEPTEMBER 1985
TO: S. J. PFAFF
FROM: R. A. JUDAY
SUBJECT: INSPECTION OF TAILINGS DAM.

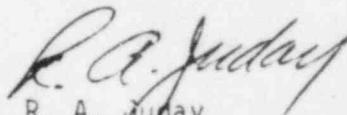
In accordance with your request, the tailings dam was visually inspected on 24 September 1985. No problems were observed.

The water level, tailings beach, and freeboard are satisfactory.

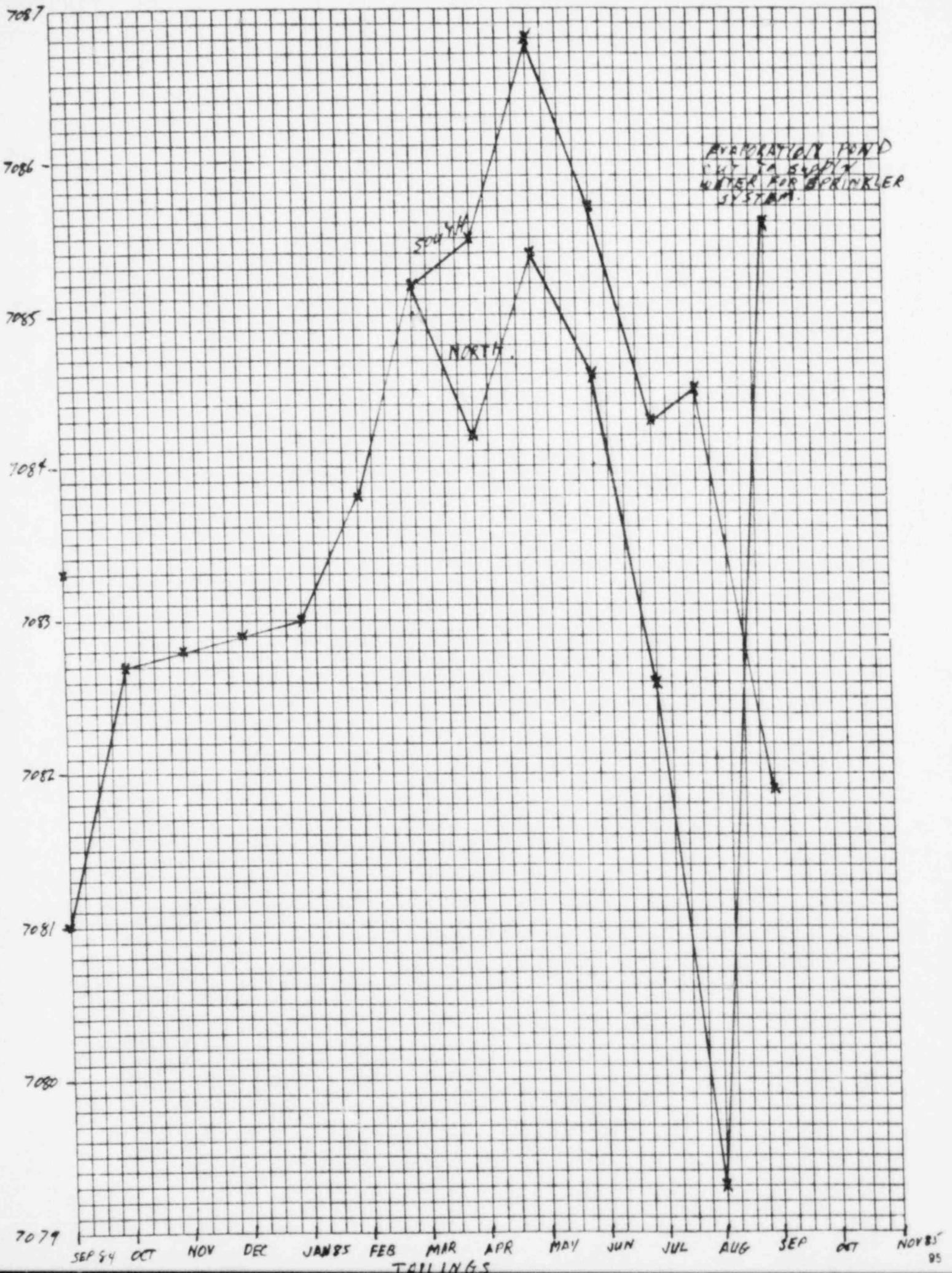
No cracking, settlement, or slumps were observed on the dam. Also, the monument survey of 26 August 1985 revealed no significant movement.

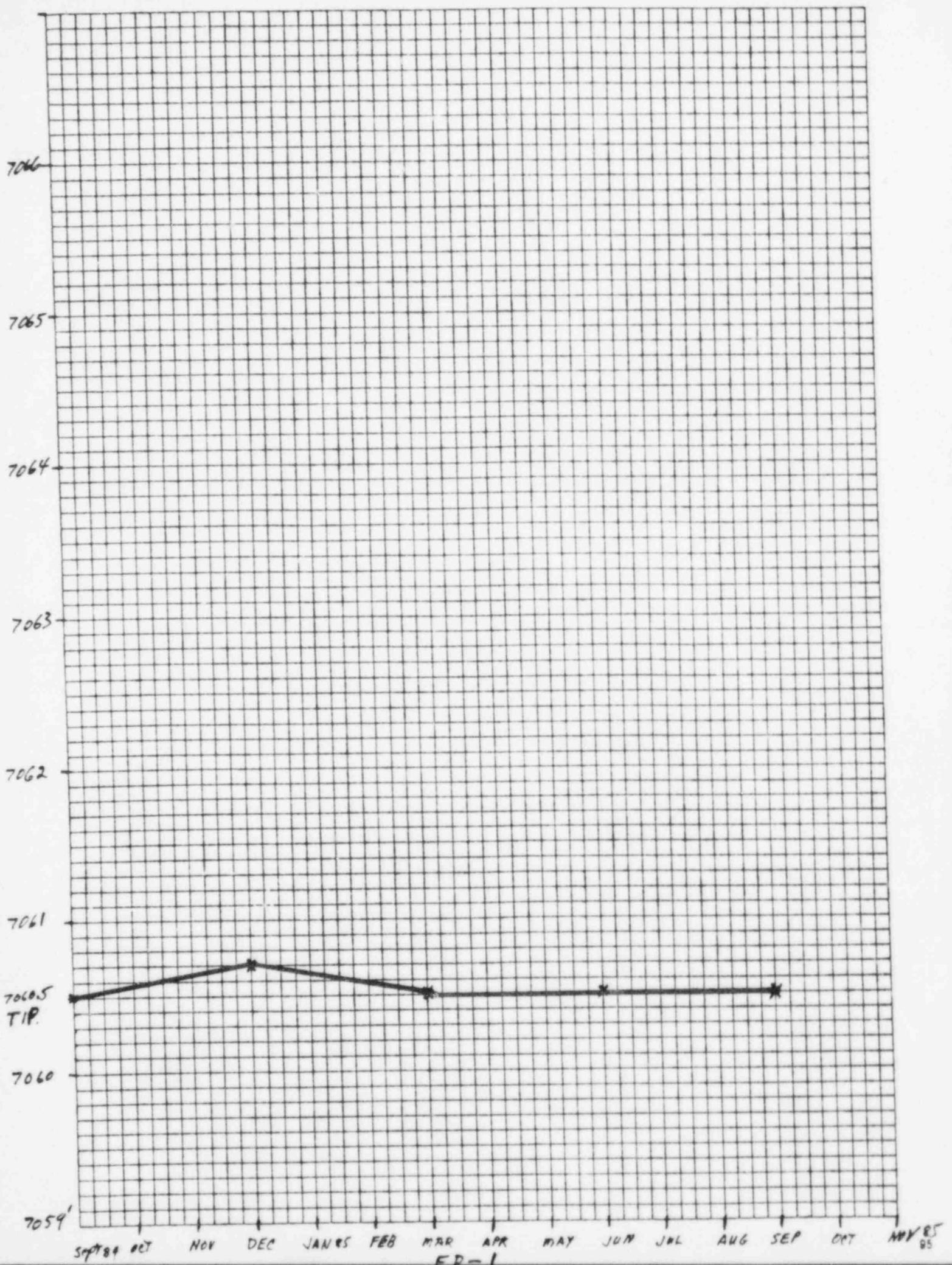
The vegetation is in good condition. No erosion problems were observed.

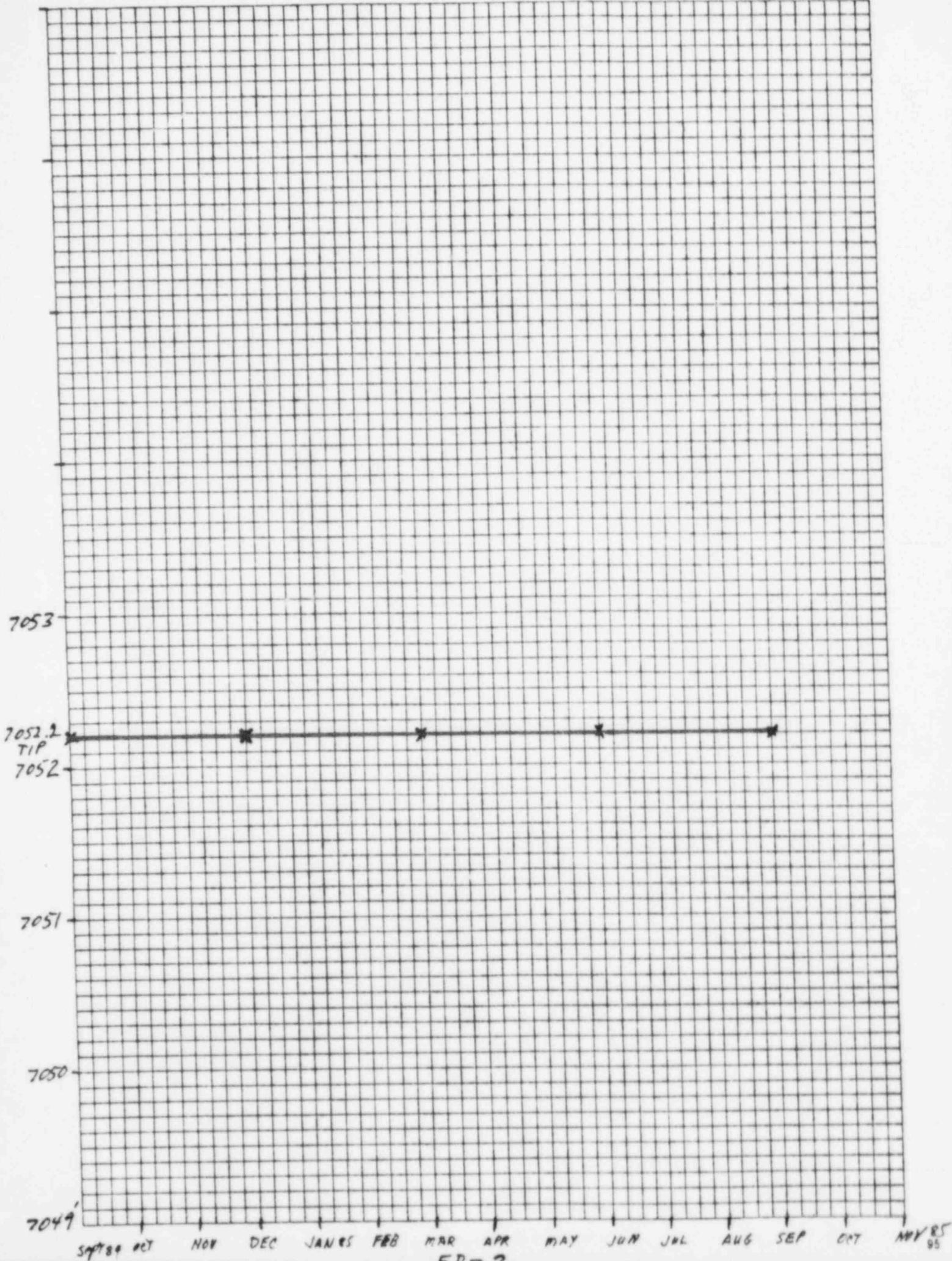
No seepage was detected on the face of the dam or in the area of the toe ditch.

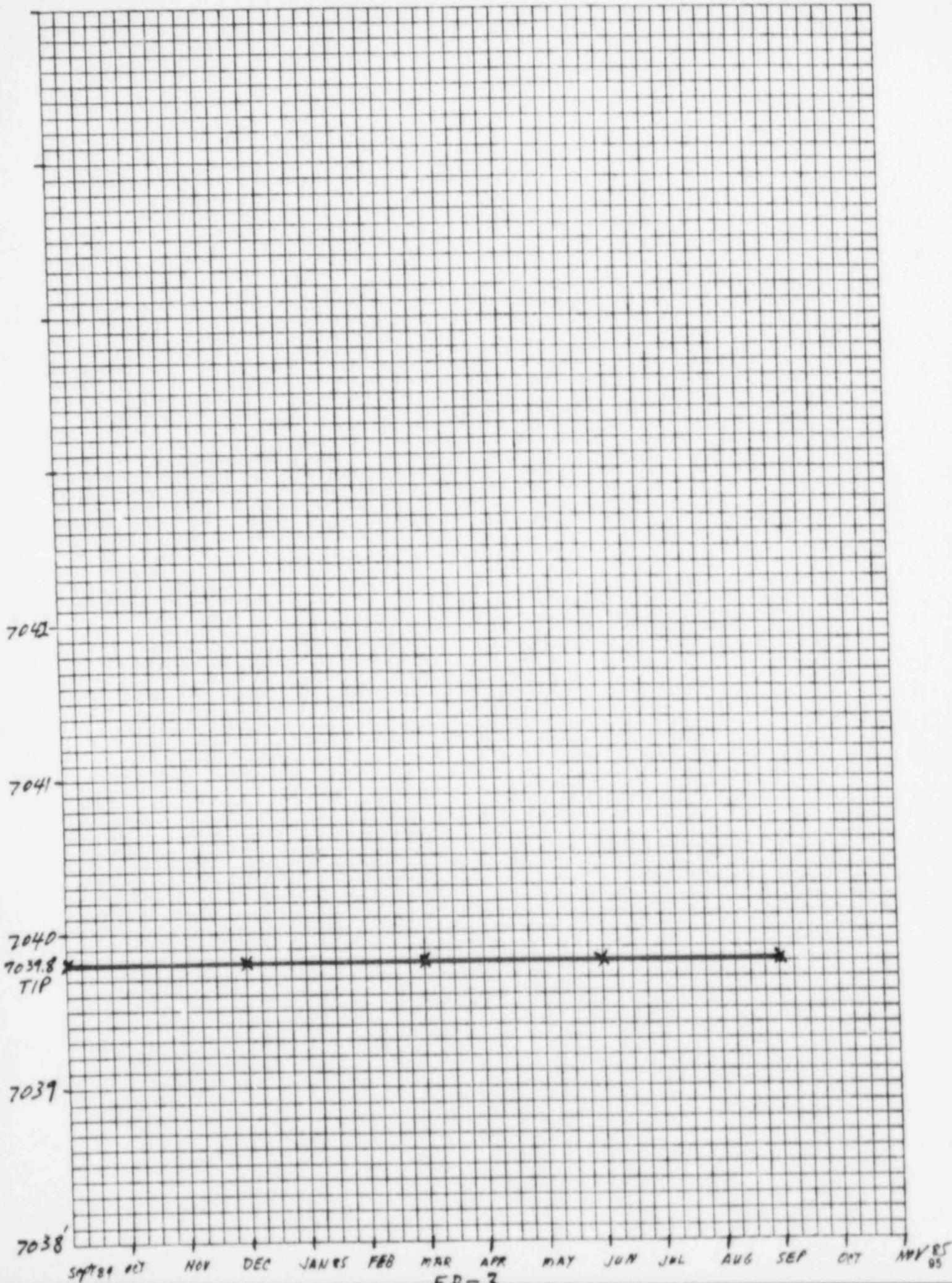

R. A. Juday
Mine Technical Supervisor

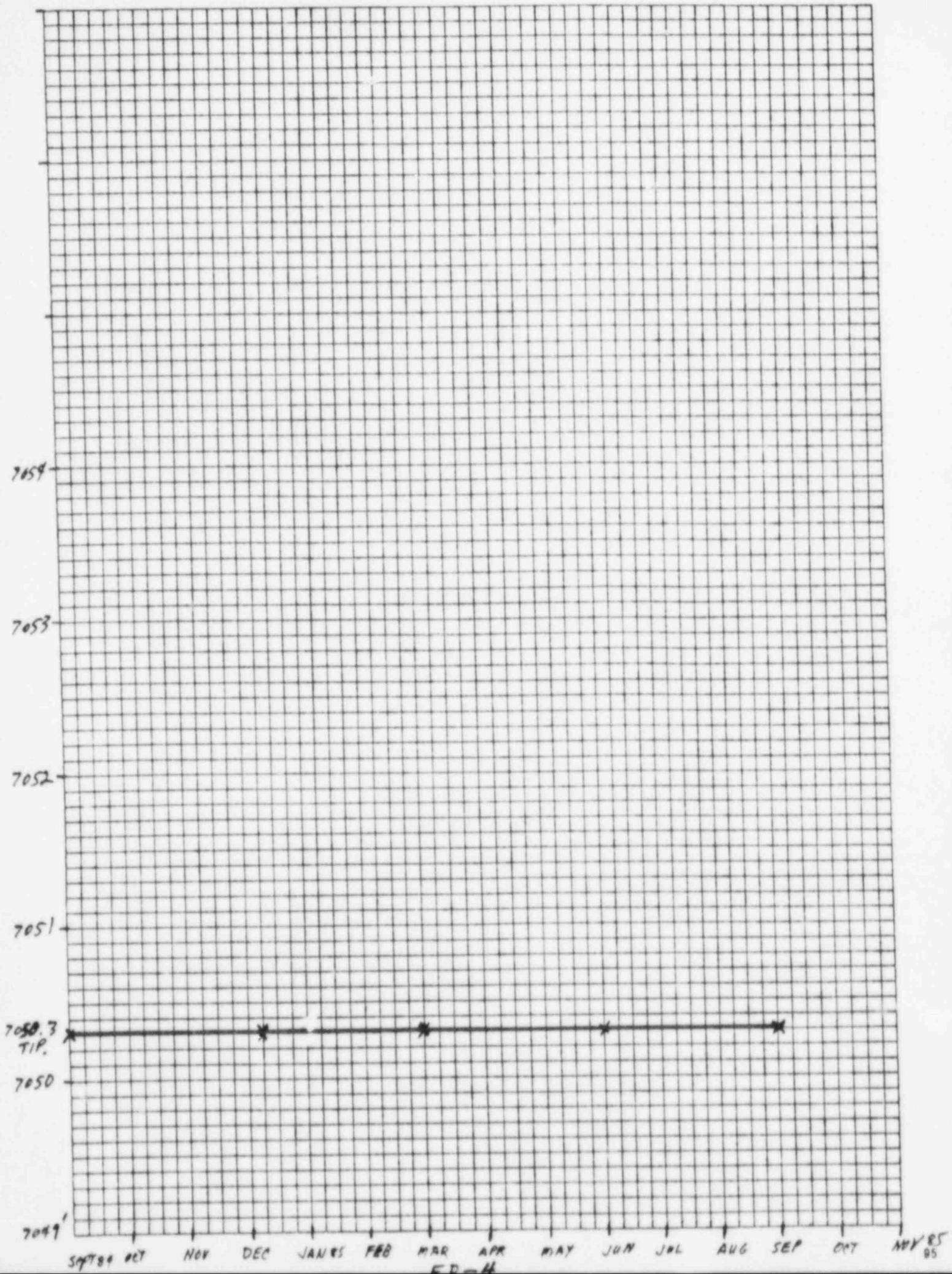
prd

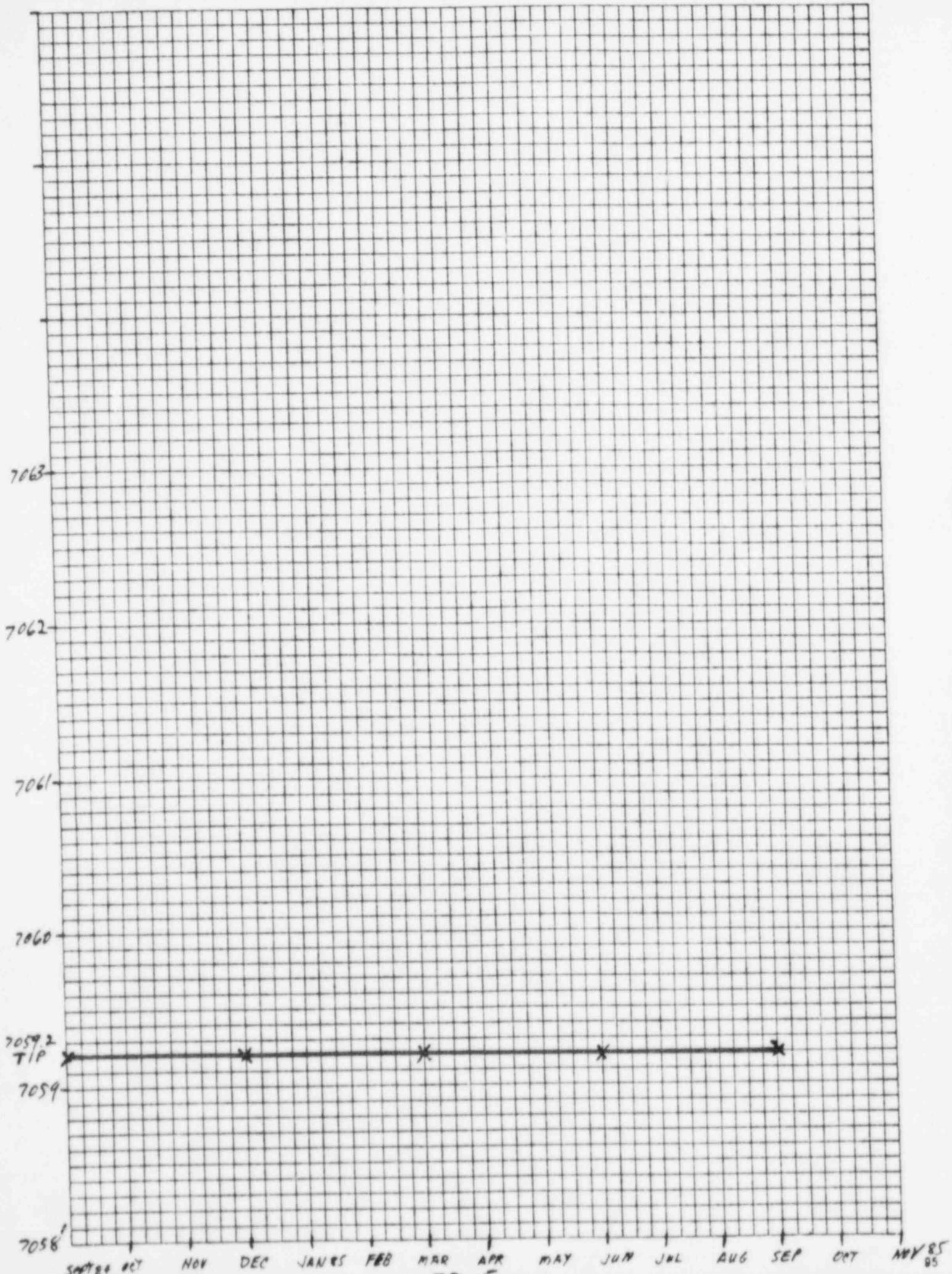


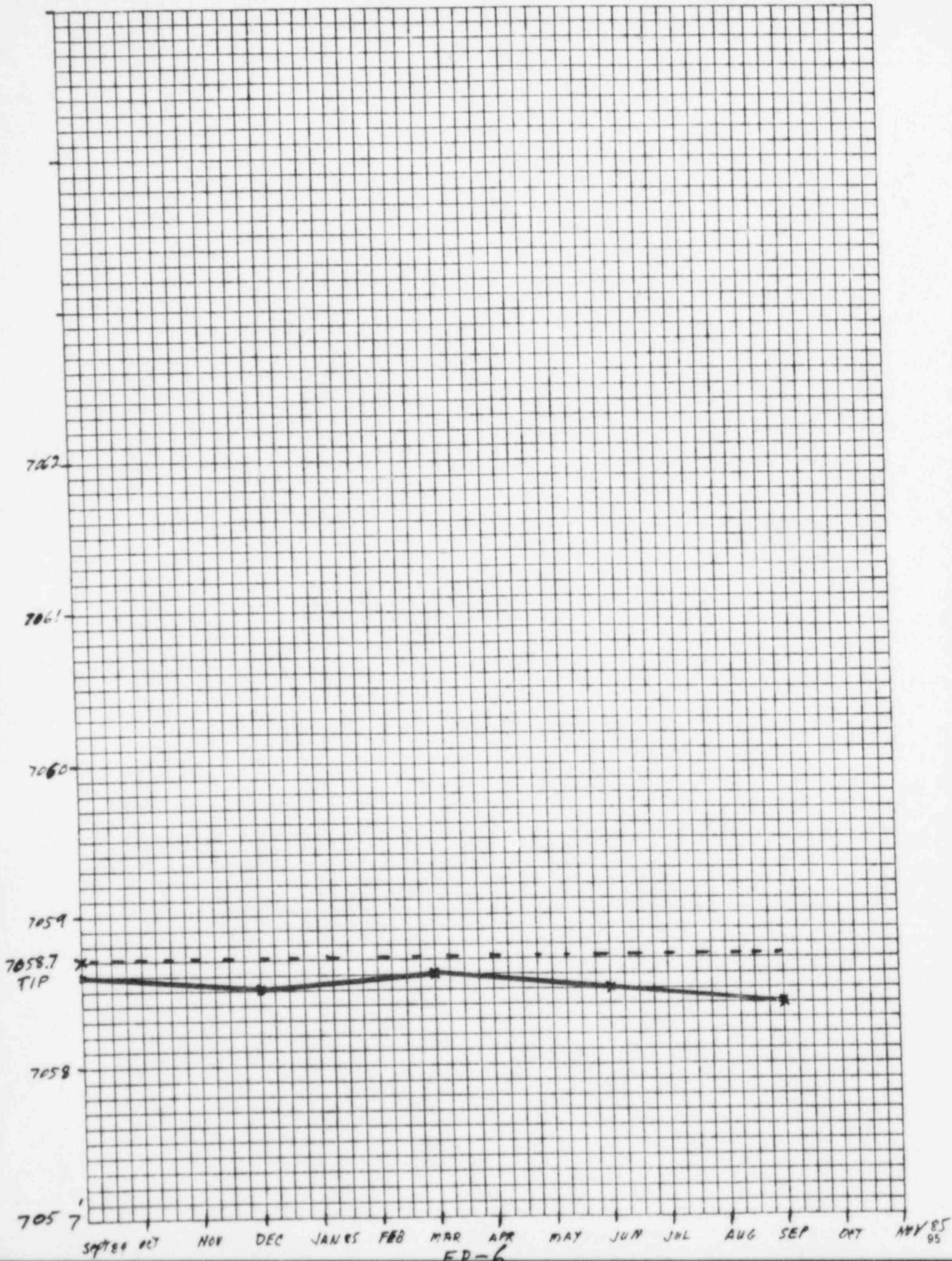


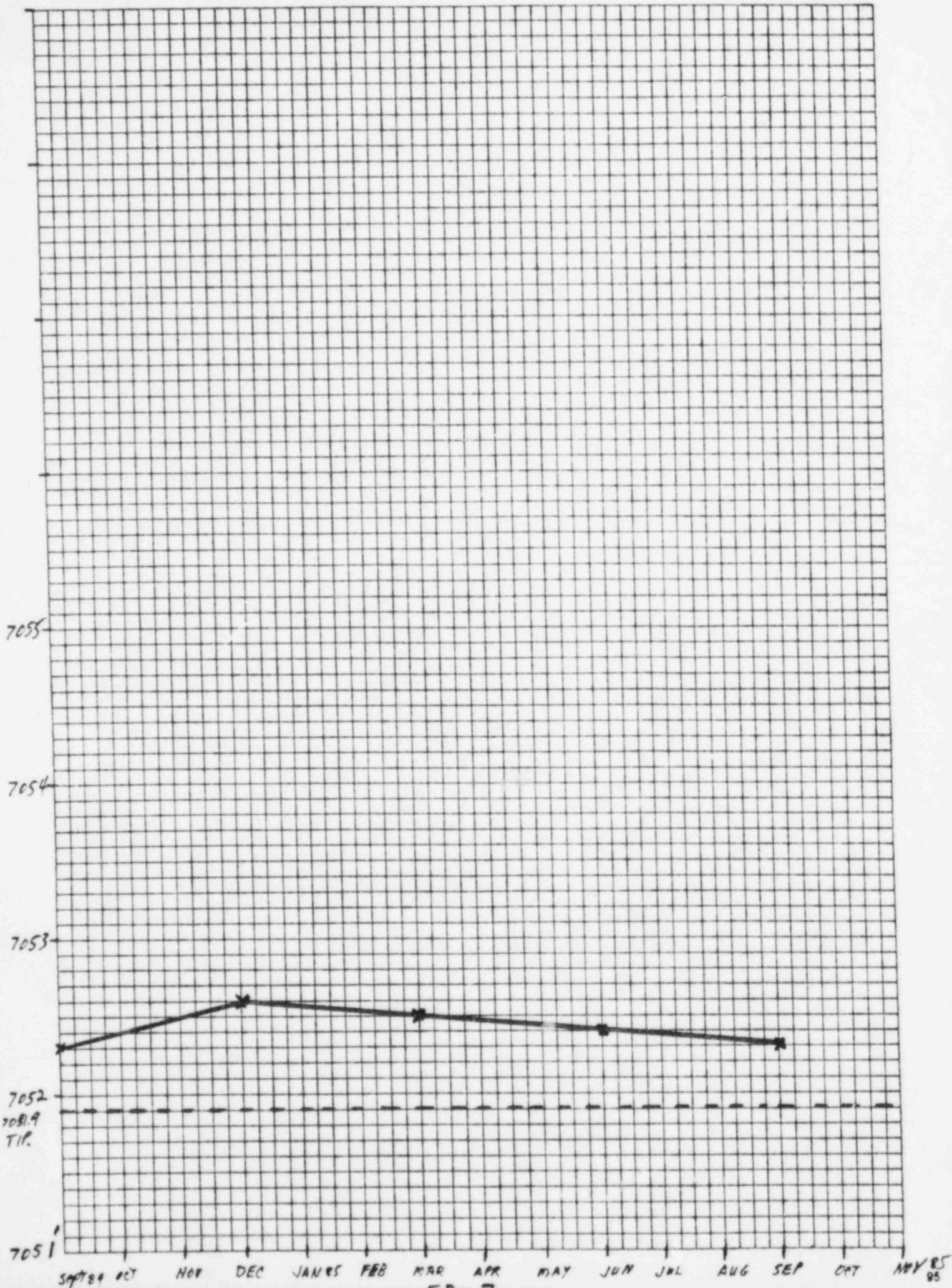


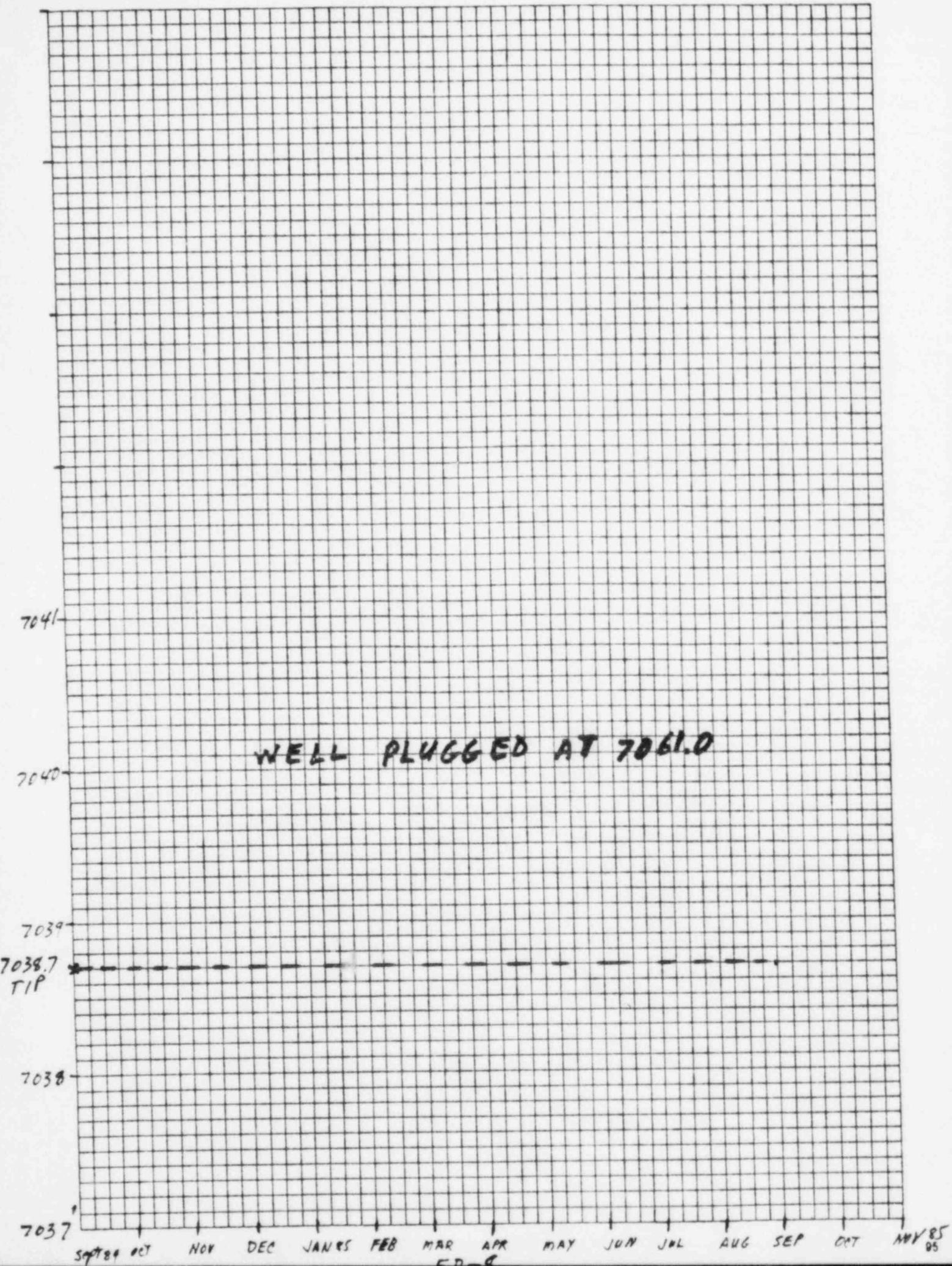


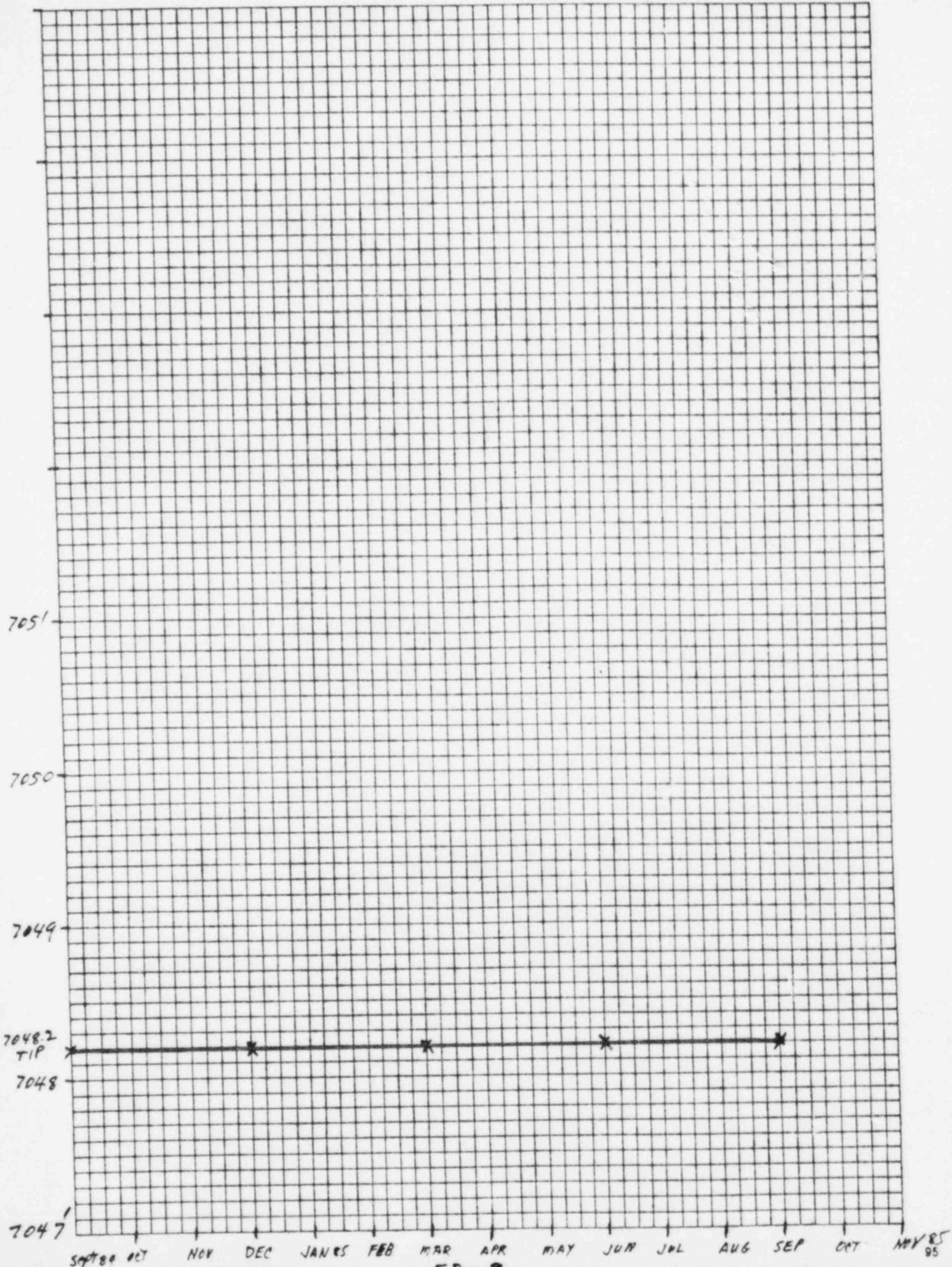


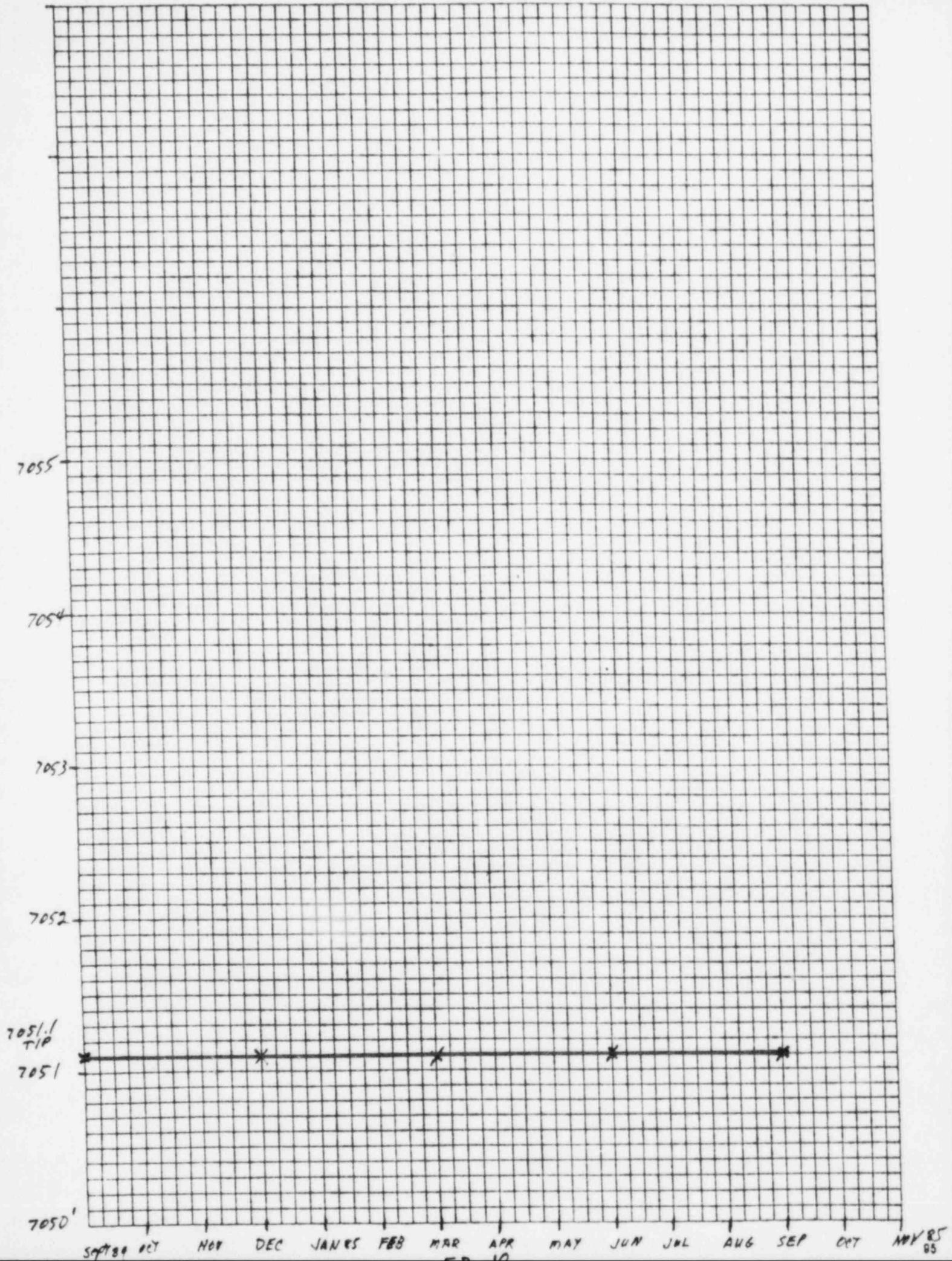


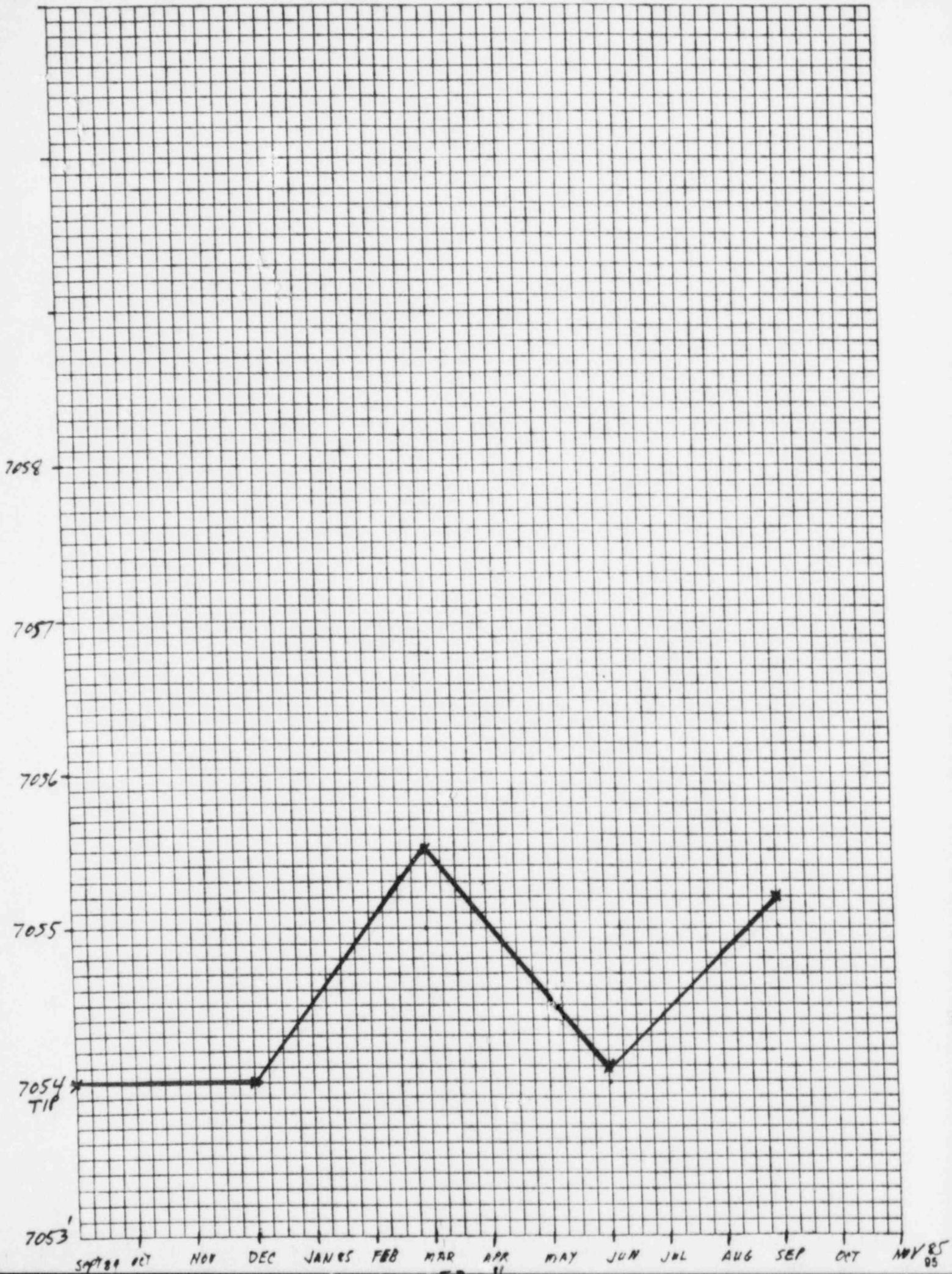


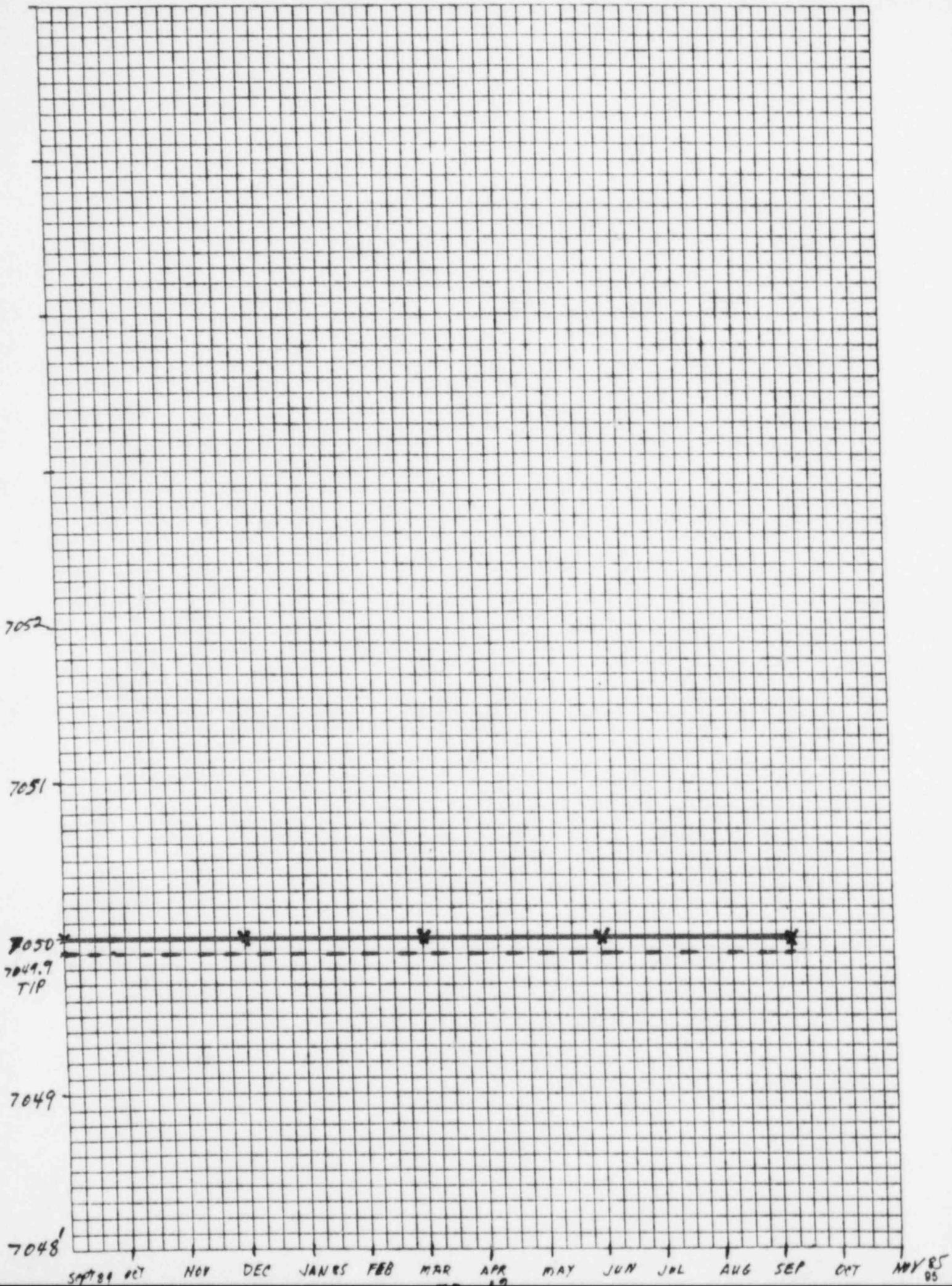


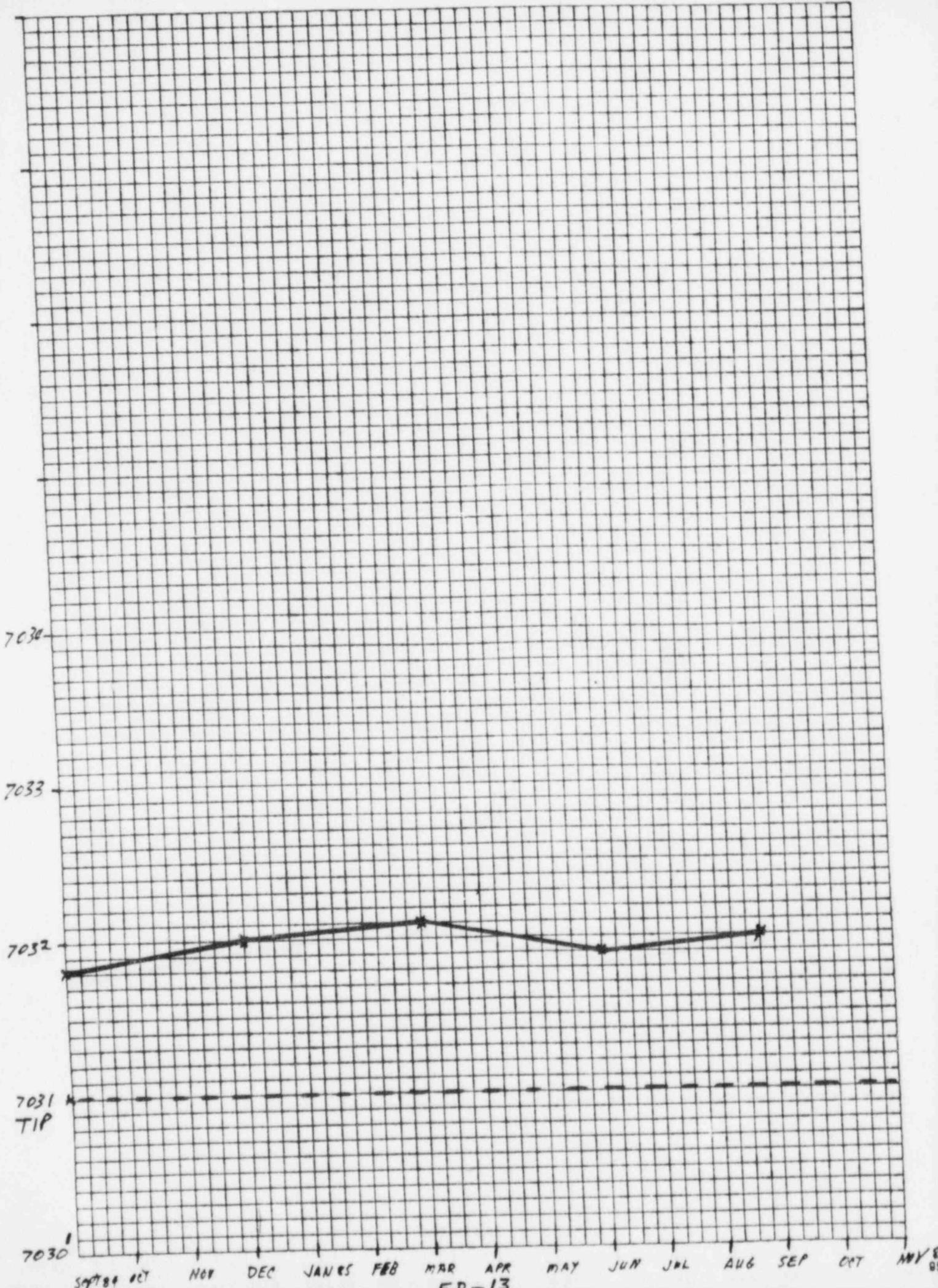












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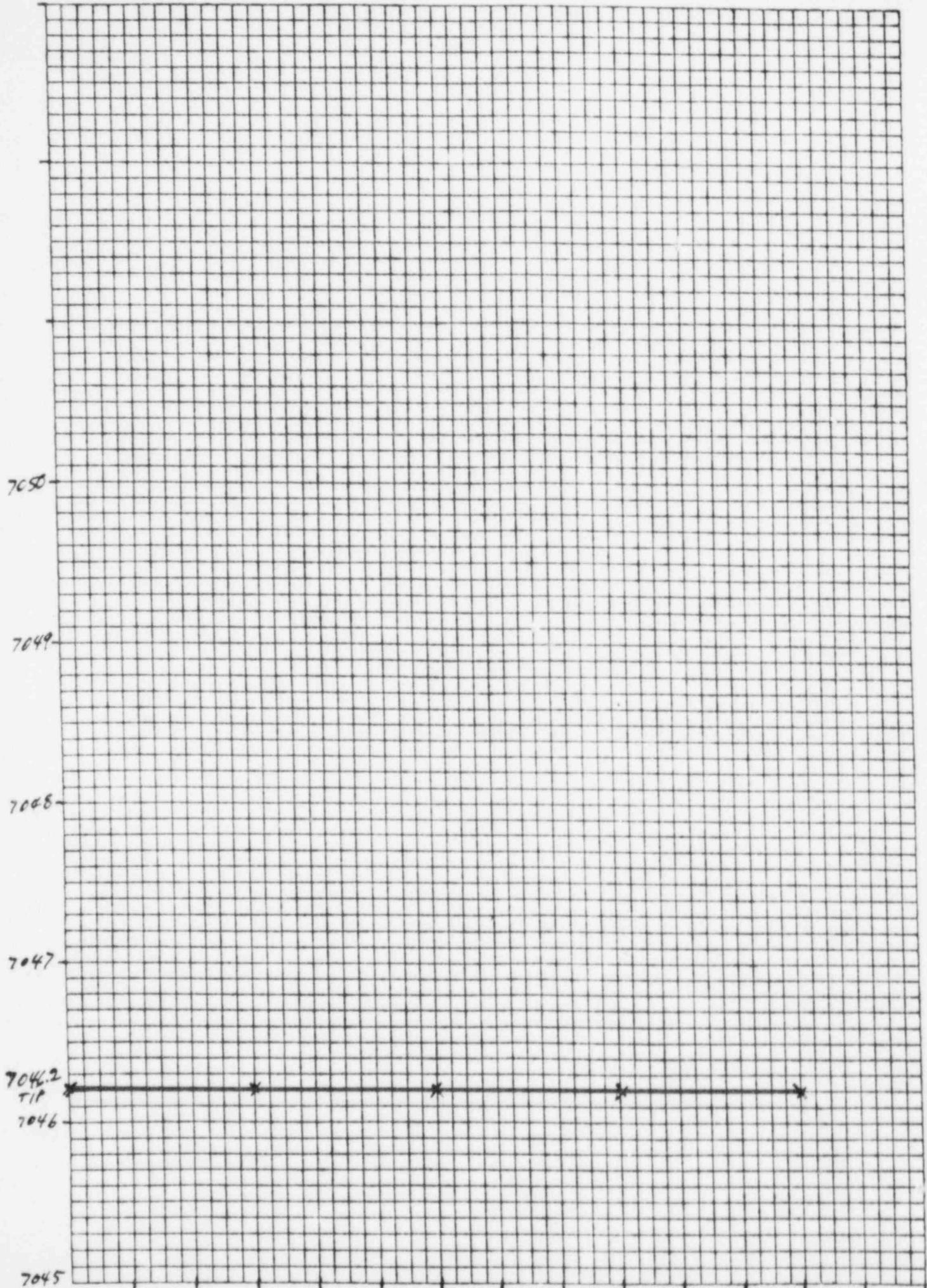
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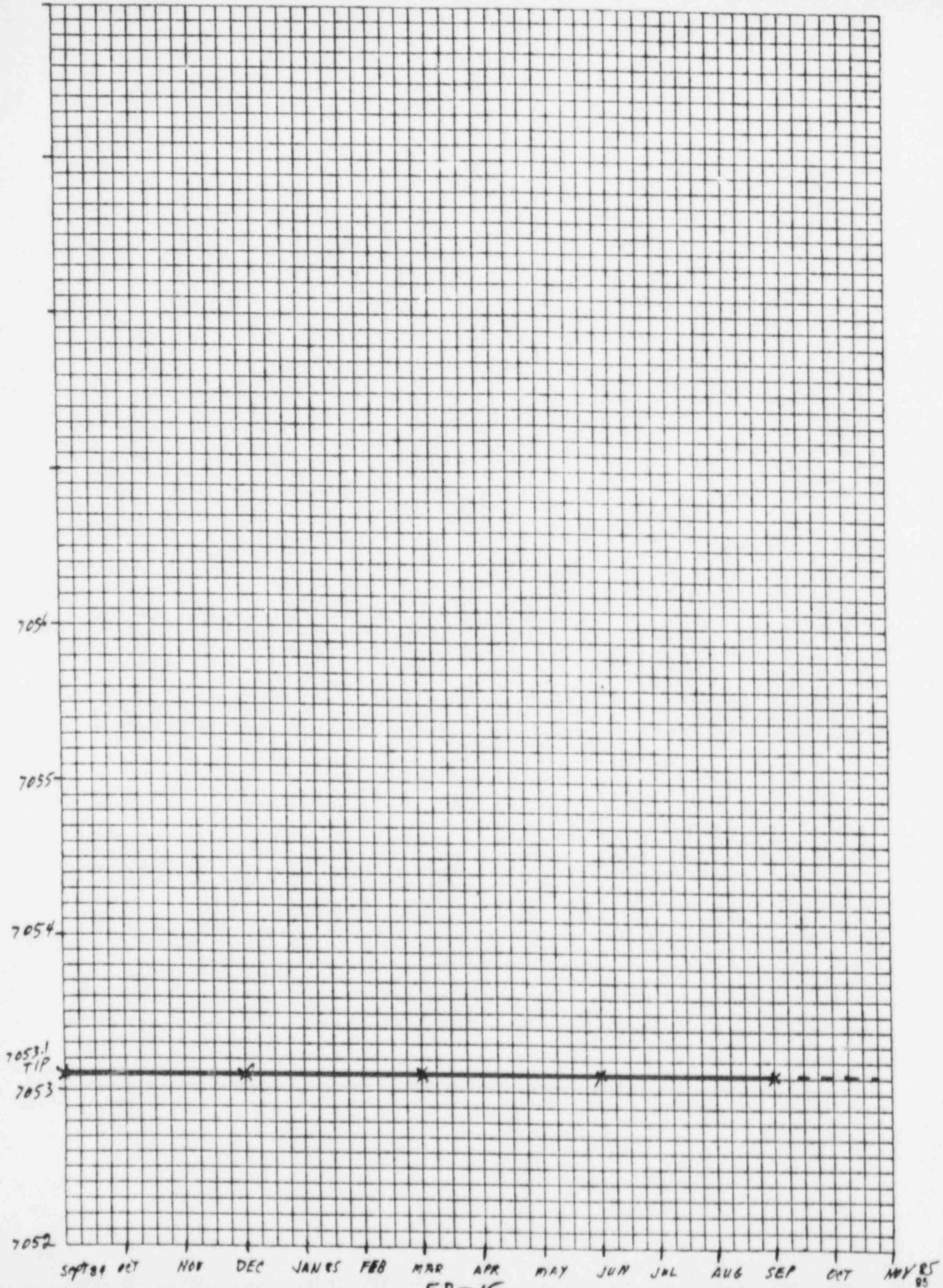
7046.2
TIP

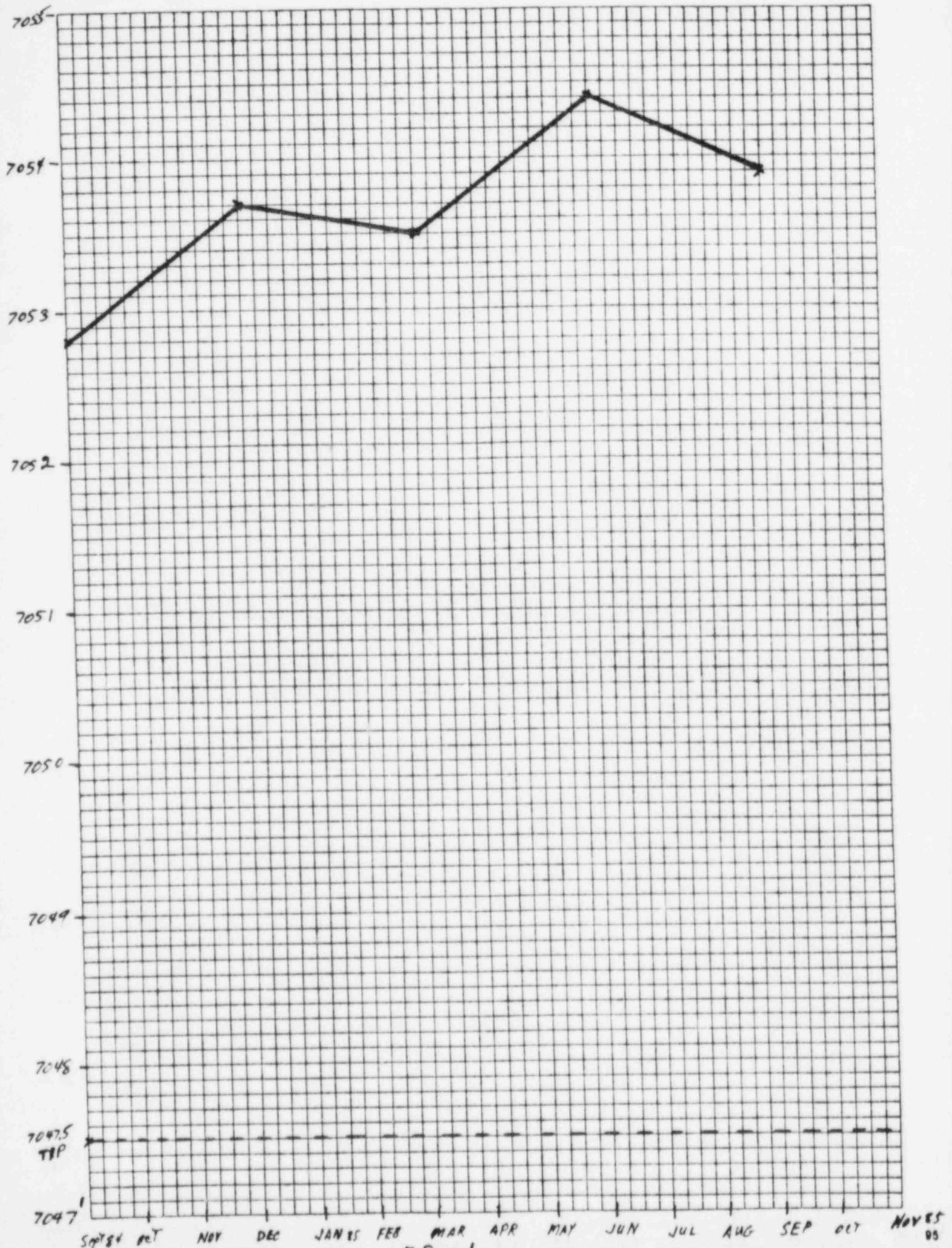
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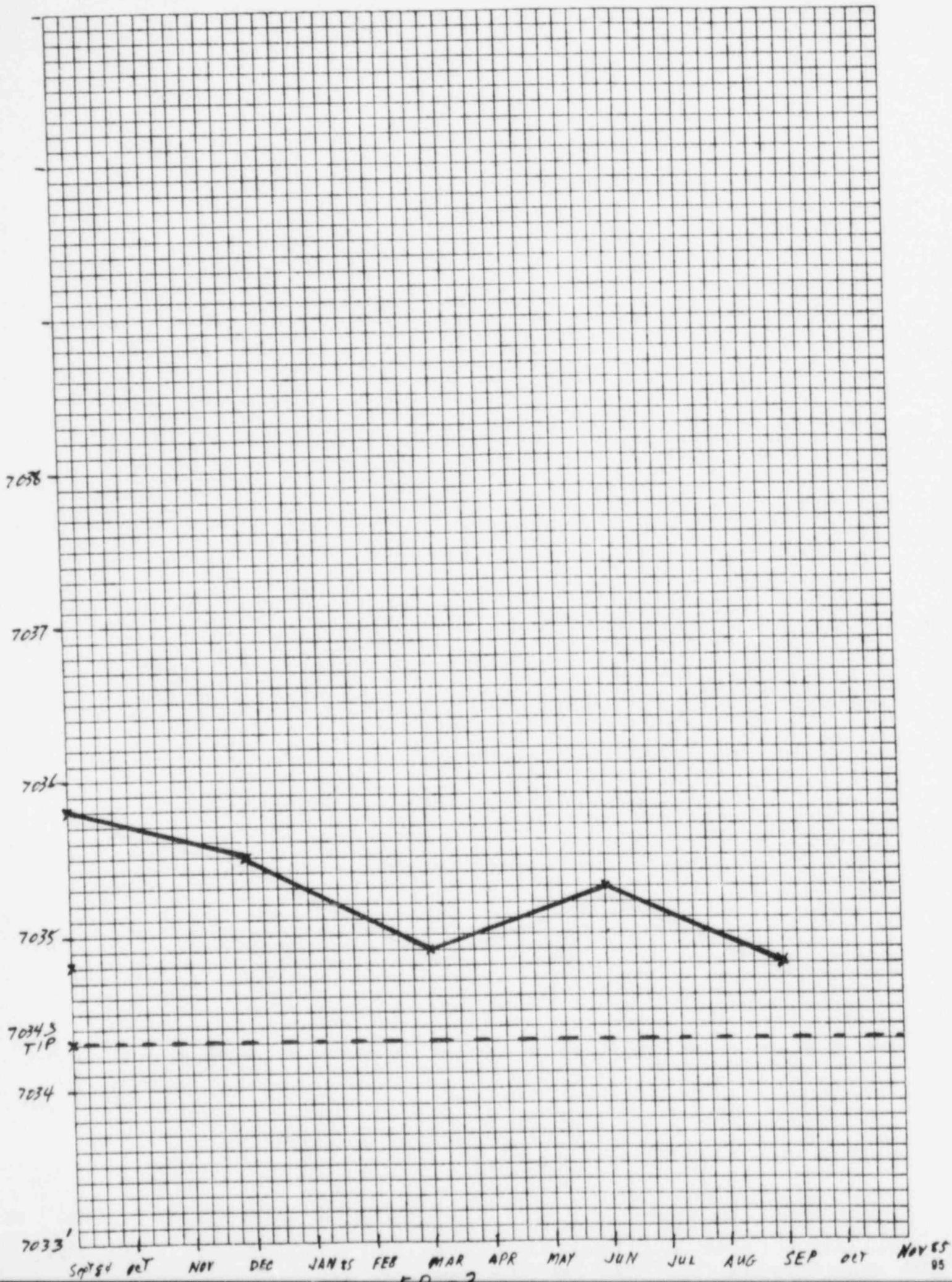
7045

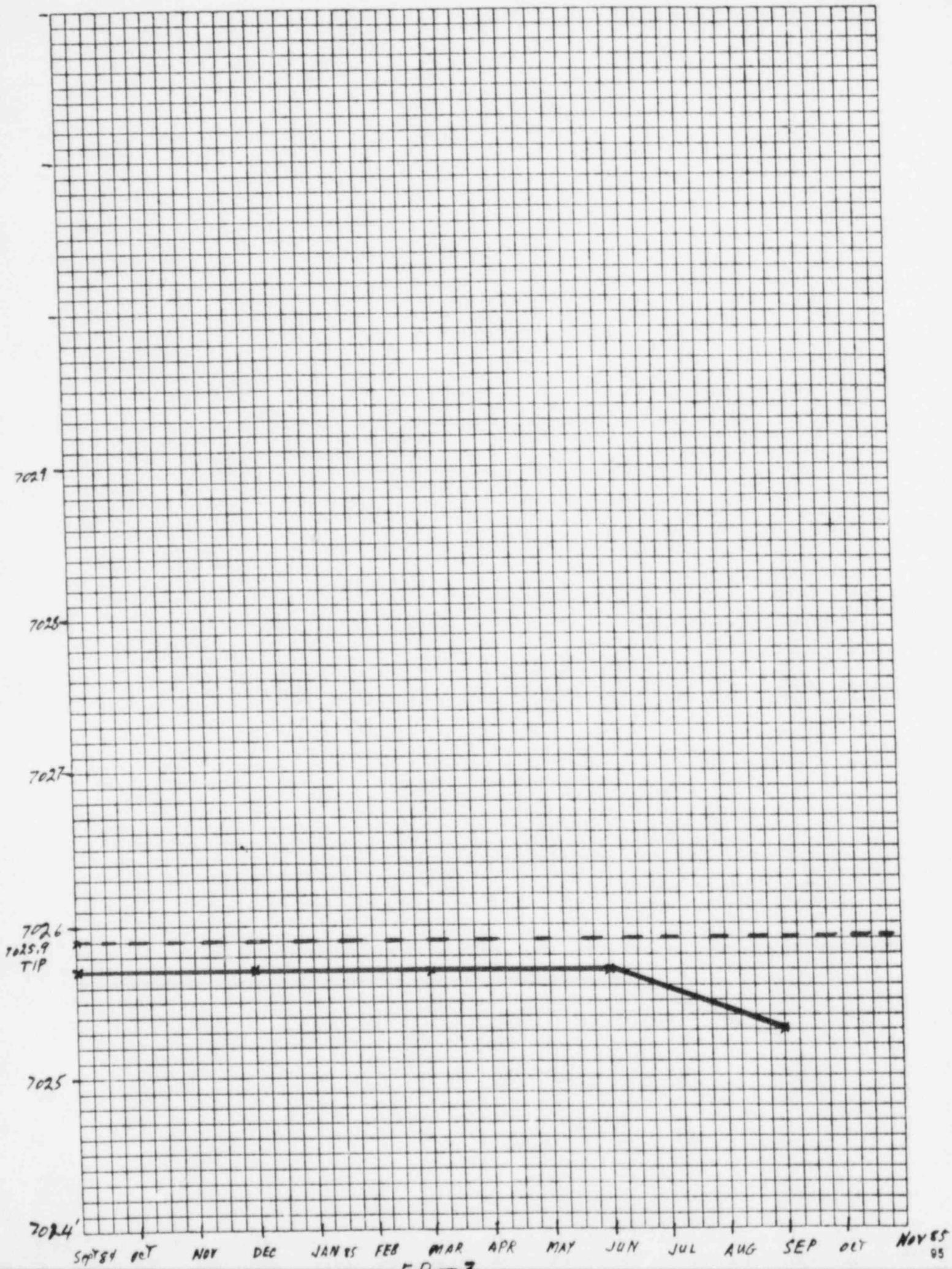
SPT 84 OCT NOV DEC JAN 85 FEB MAR APR MAY JUN JUL AUG SEP OCT NOV 85

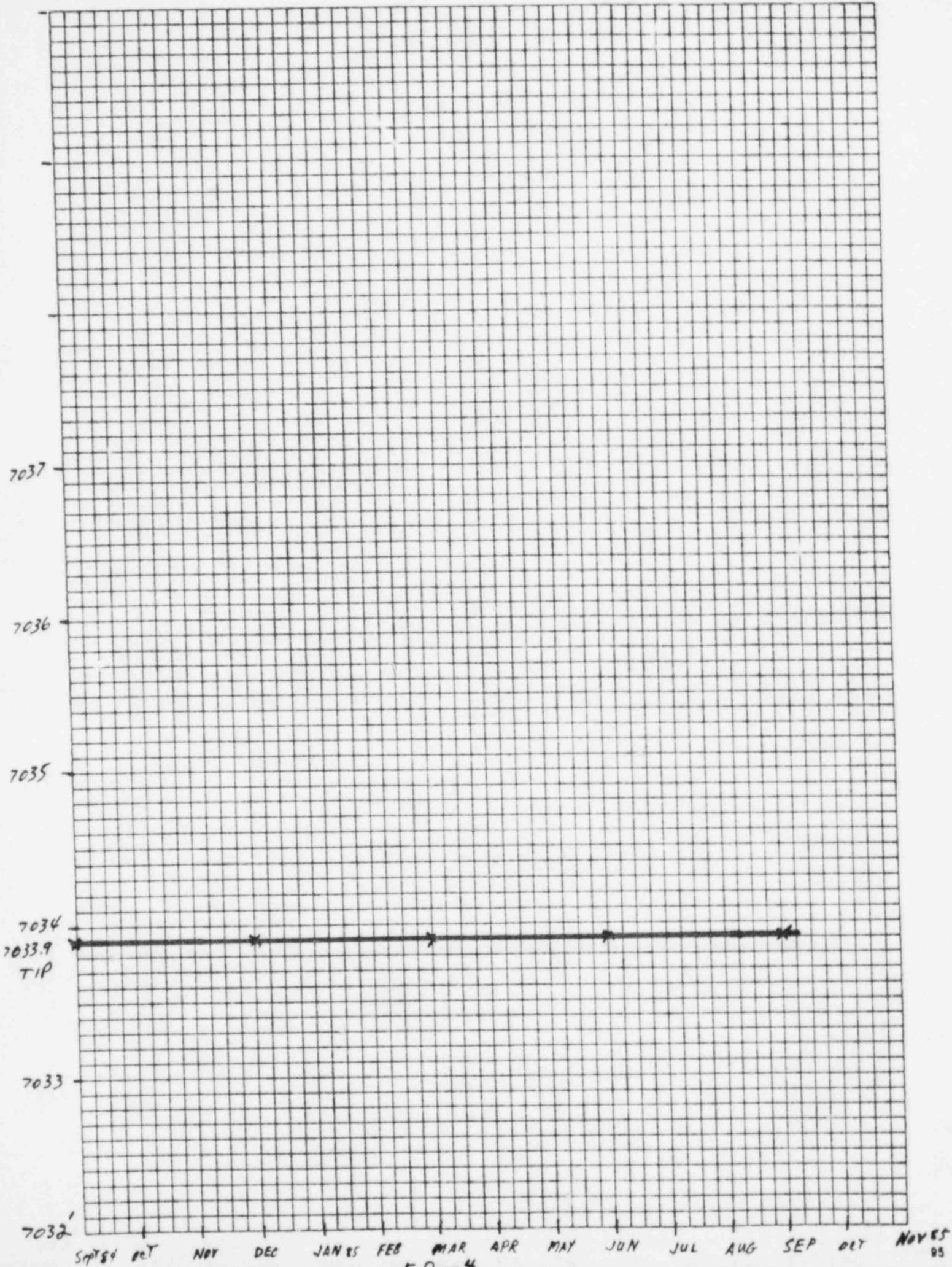


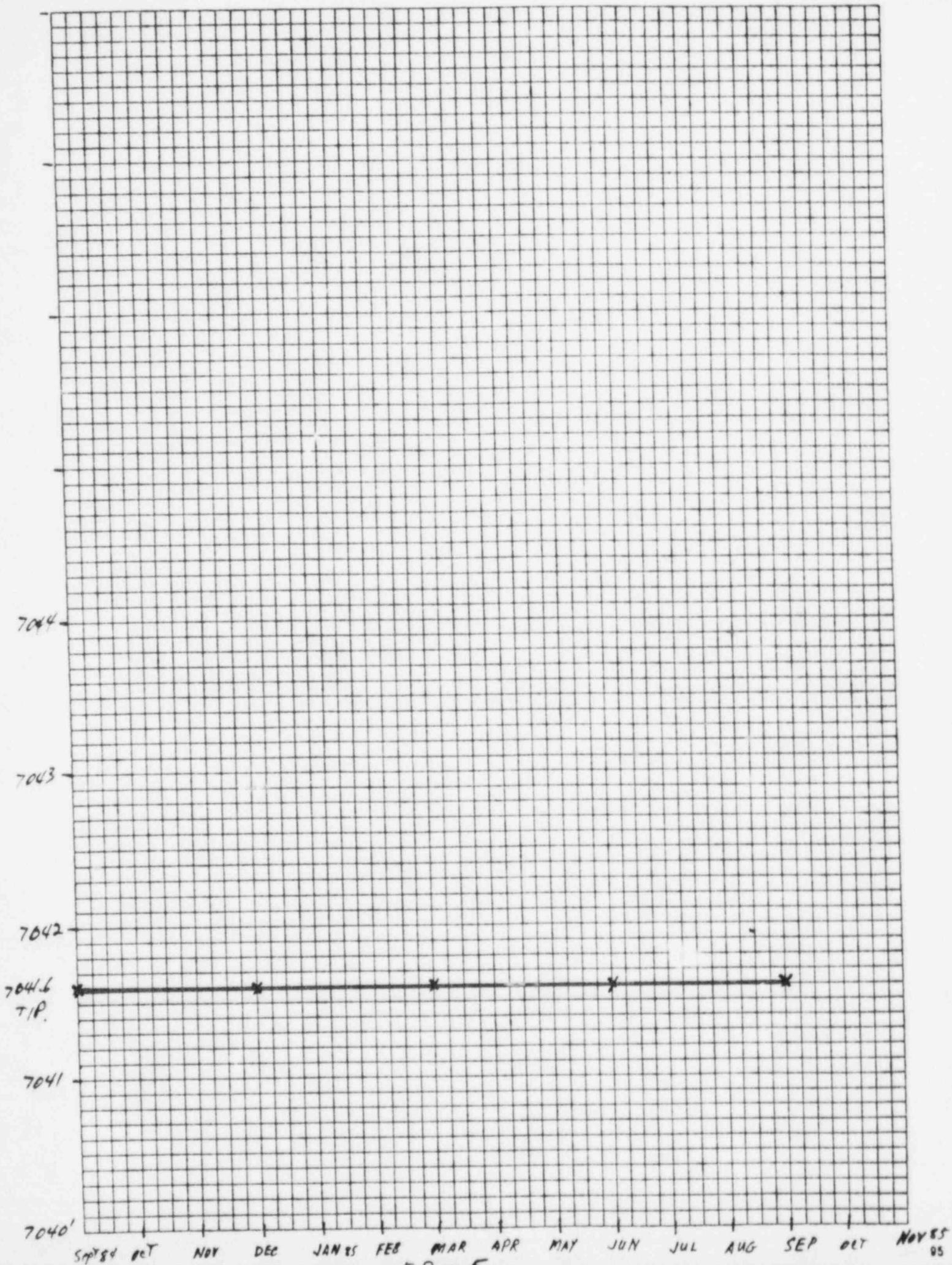


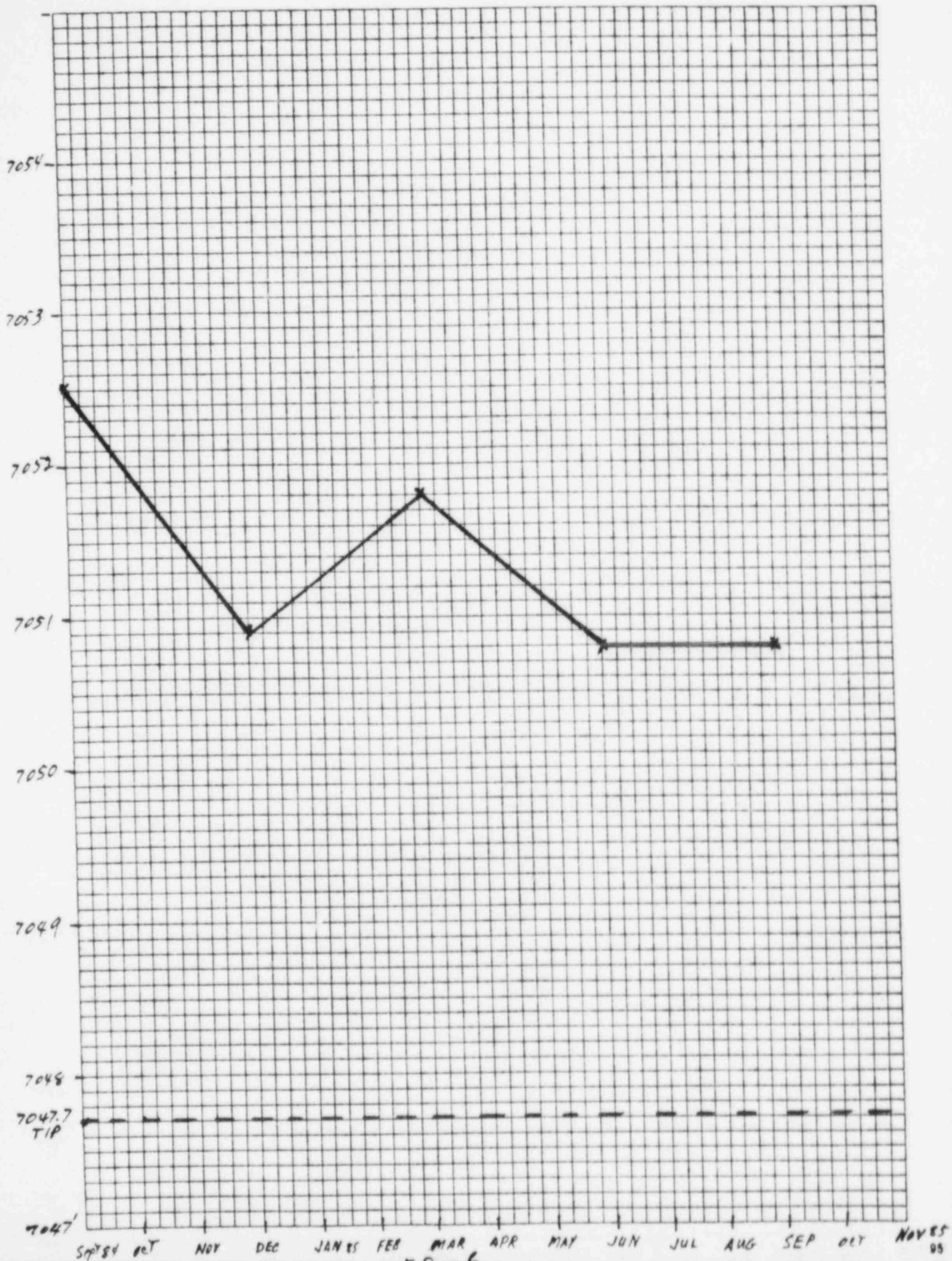


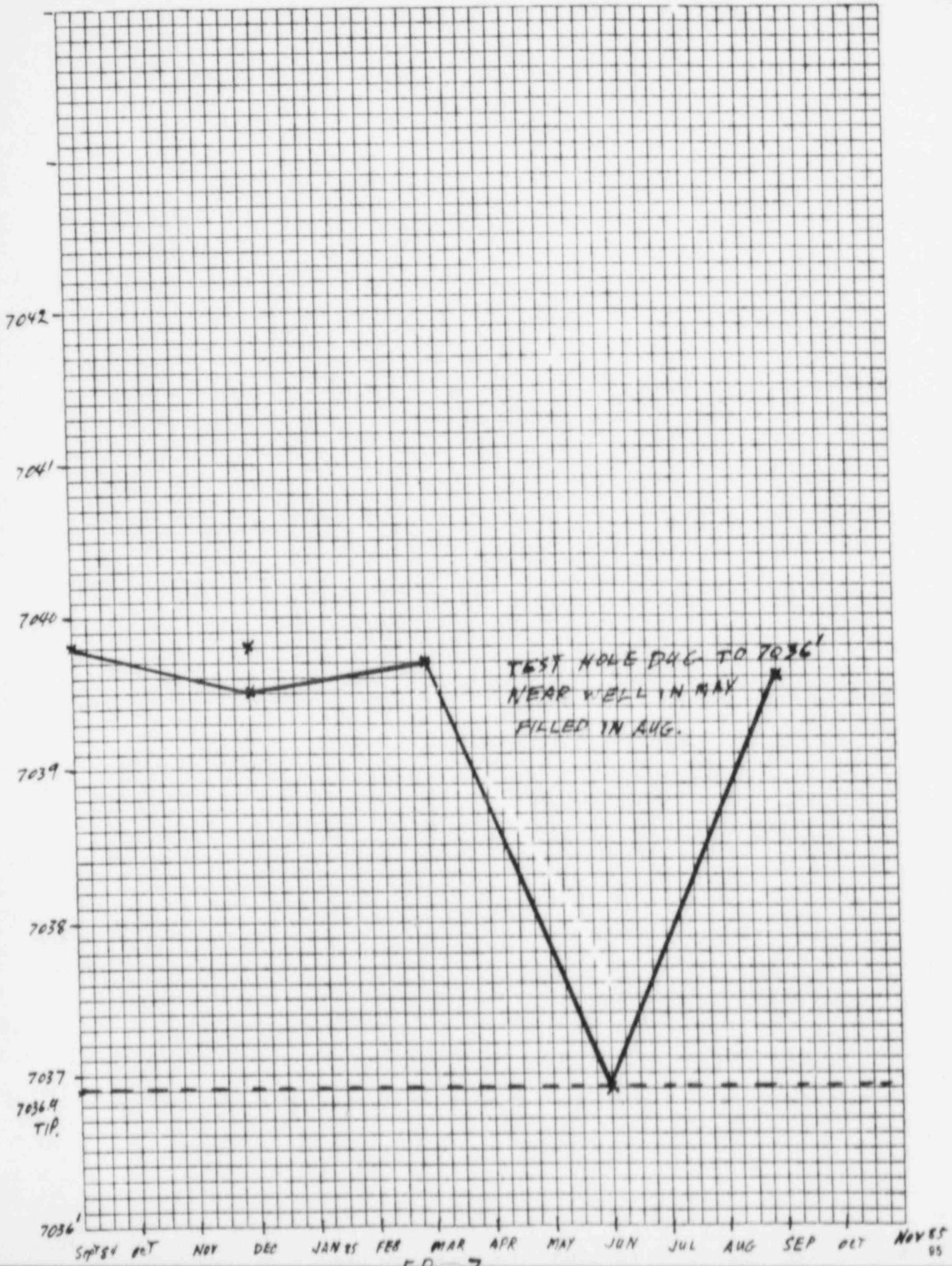


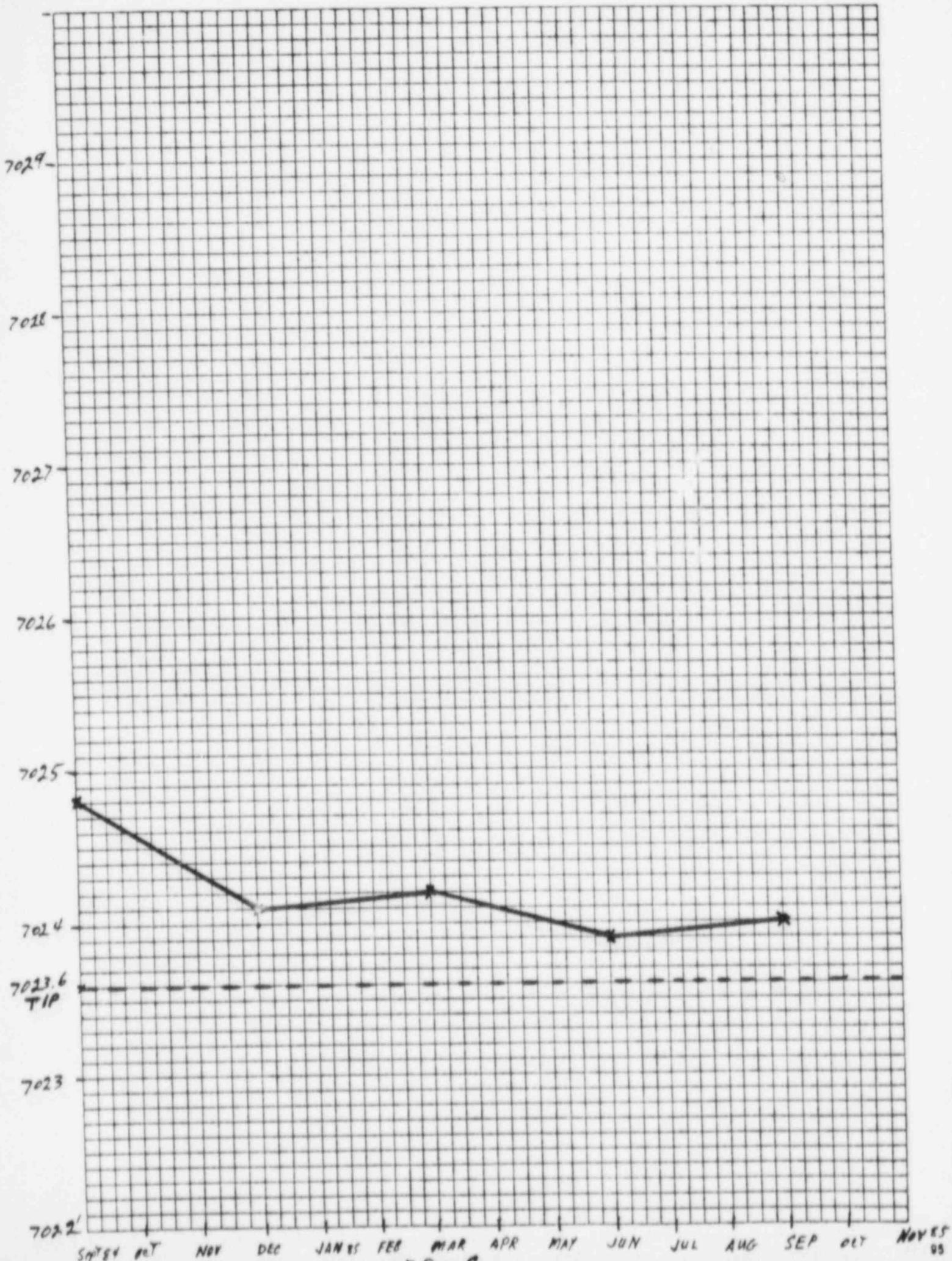


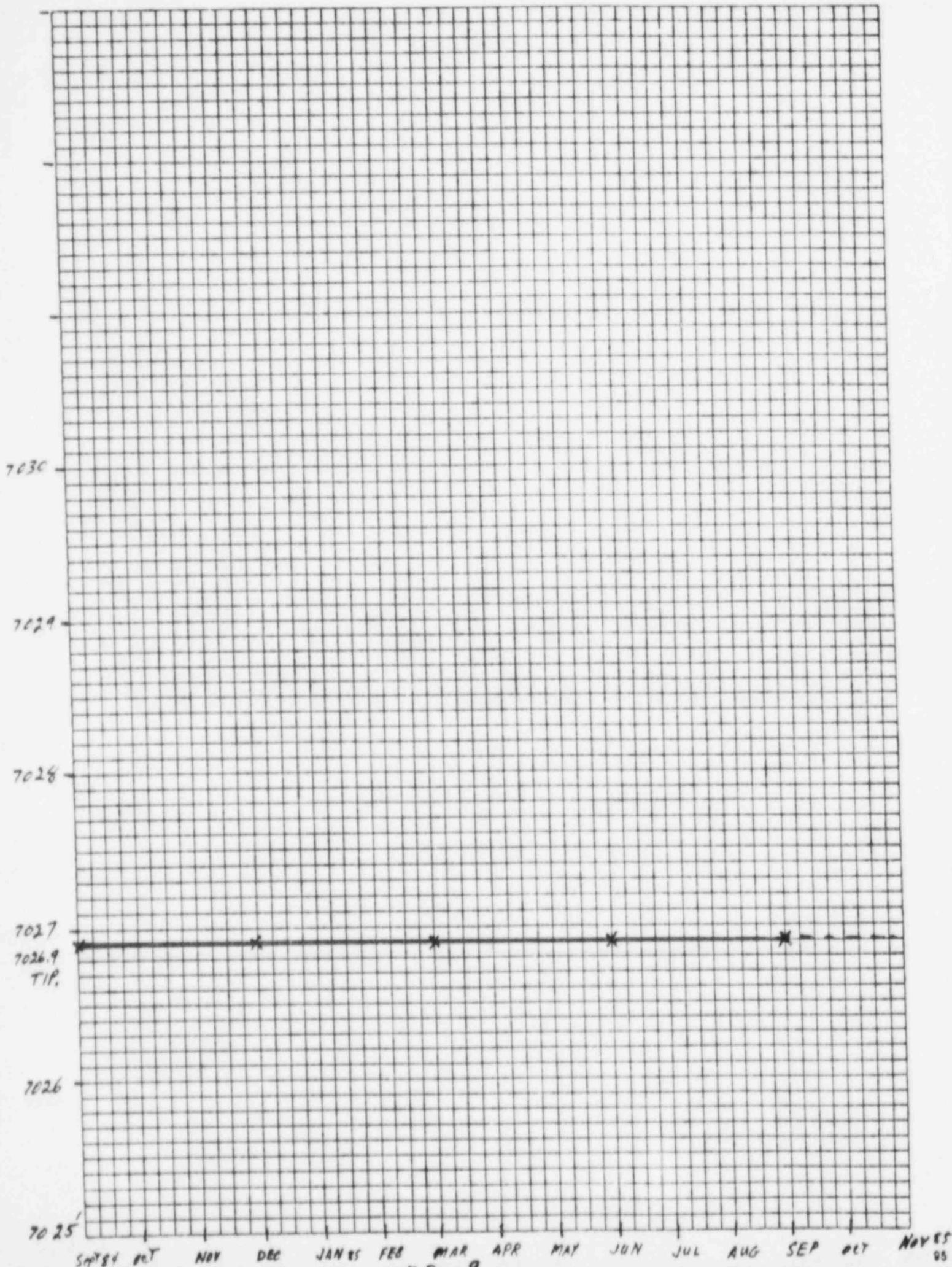


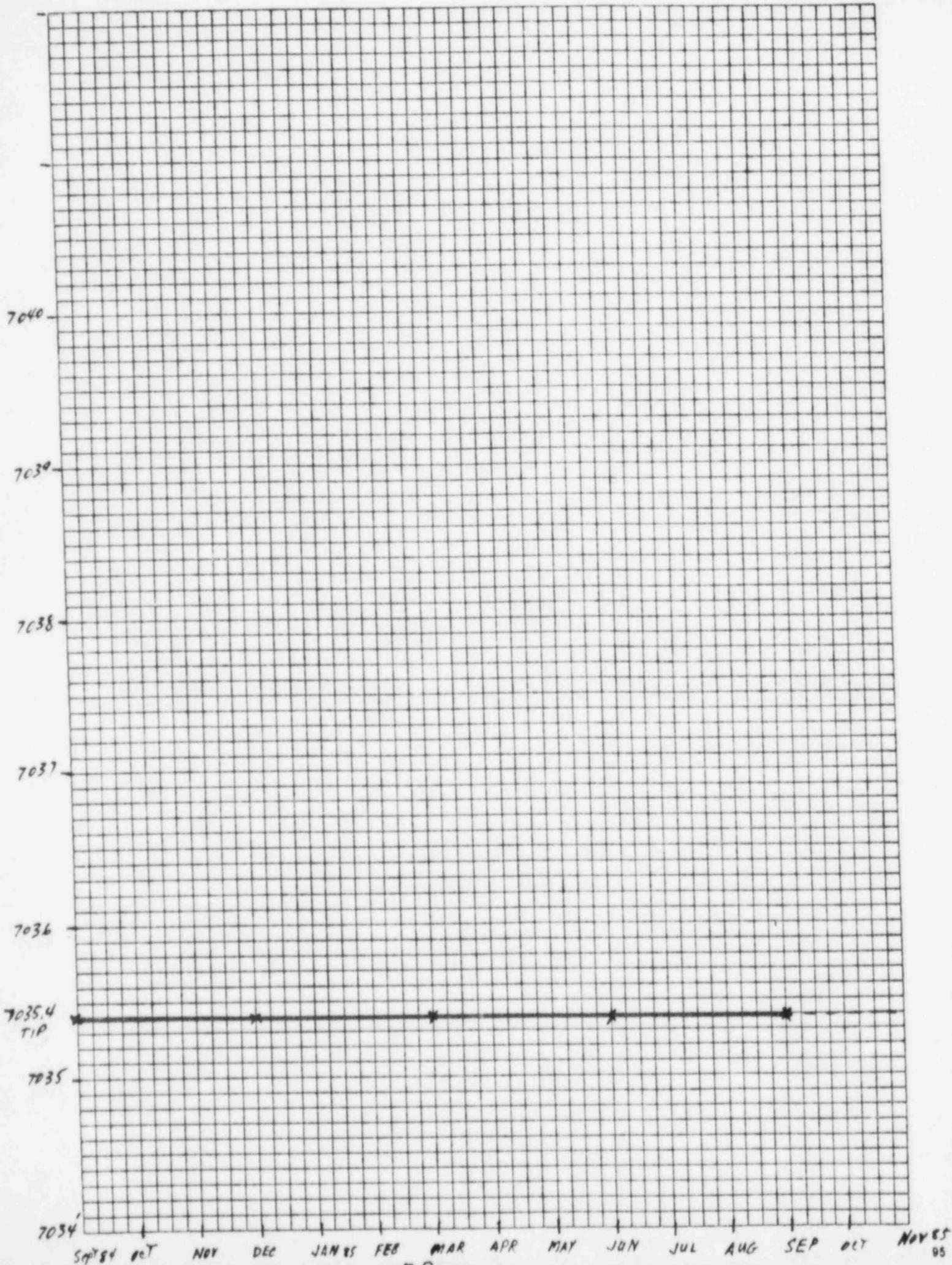












October 10, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: THIRD QUARTER 1985 INSPECTION OF TAILINGS DAM

The tailings dam was inspected on September 30, 1985, using the quarterly inspection guide.

EMBANKMENT SETTLEMENT

Inspection of the embankment shows no movement or disturbance from previous inspections.

EMBANKMENT SLOPE CONDITIONS

The slope shows no change from original crest alignment. No erosion is noted. Vegetative cover is good.

SEEPAGE

The downstream face of the dam is dry. No areas of surface seepage is evident. Some snow remains on the north facing slopes. The seepage catch pond is at approximately 7015 feet, down approximately 3.2 feet since the June inspection. The seepage collection system has pumped approximately 871,200 gallons in September and 2,162,000 gallons for the quarter. Approximately 6,231,000 gallons have been pumped back so far this year.

SLOPE PROTECTION

All exterior slopes have established vegetative cover. No additional seeding is necessary.

SURFACE WATER & GROUNDWATER

Results of water samples collected from surface water and wells indicate no significant change from previous samples. A revised water sampling program has been approved by the NRC and will be implemented beginning with the fourth quarter of 1985.

SAFETY & PERFORMANCE INSTRUMENTATION

- A. Surface displacement monuments were surveyed in August, 1985. Movement of the monuments was less than 0.10 feet in any direction. Monument survey is attached.
- B. Settlement sensor readings will be made in the fourth quarter.
- C. Piezometer readings show some minor changes in six of the piezometers. Piezometer FP-7 has returned to its previous reading in the first quarter.

OPERATION & MAINTENANCE

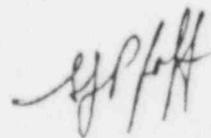
The operation and maintenance procedures are satisfactory to provide safe operation of the tailings impoundment.

POSTCONSTRUCTION CHANGES

There has been no postconstruction changes since the last inspection.

WATER LEVELS

The water level in the north tailings pond is at 7085.6, up 6.3 feet since the August inspection. The rise is due to cutting Jones Pond (#1 evaporation pond) and lowering the water in this pond by 6.7 feet. The south pond is at 7081.9, down 2.6 feet since the July inspection.



PETROTOMICS ENGINEERING DEPARTMENT

TAILINGS DAM INSTRUMENTATION

Annual Movement of Surface Movement Monuments
4 September 1984 to 26 August 1985

Survey Date: 26 August 1985
Field Work: RLM and LAW
Computations: RLM

MONUMENTS	COORDINATES		ELEV.	LAT. (+-)	DEP. (+-)	ELEV. (+-)
1-A	608592.77N	808302.09E	7100.11	-.05	.00	-.03
1-B	608585.21N	808311.51E	7098.66	+.03	+.03	-.03
2-A	608511.47N	808241.00E	7100.07	+.05	.00	-.02
2-B	608495.78N	808262.60E	7094.82	.00	-.01	-.10
3-A	608278.63N	808057.14E	7099.93	+.04	+.01	-.03
3-B	608253.06N	808089.35E	7086.06	+.03	+.03	-.11
4-A	608161.13N	807780.86E	7100.15	+.01	+.01	-.03
4-B	608110.39N	807767.90E	7084.10	-.02	+.03	-.11
5-A	608270.90N	807495.93E	7100.10	-.04	-.02	-.04
5-B	608223.21N	807462.30E	7081.32	-.04	-.03	-.08
6-A	608452.89N	807255.75E	7099.91	+.01	-.03	-.06
6-B	608404.53N	807212.51E	7079.32	-.04	-.02	-.09
7-A	608643.80N	807025.21E	7099.90	.00	.00	+.05
7-B	608562.66N	806952.64E	7065.40	-.05	-.04	-.06
8-A	608834.12N	806793.95E	7099.97	-.04	-.01	+.08
8-B	608755.81N	806724.90E	7065.33	-.01	-.05	-.06
9-A	609026.19N	806561.67E	7099.96	-.05	+.01	+.09
9-B	608951.11N	806490.70E	7065.46	-.03	-.03	-.05
10-A	609219.65N	806328.67E	7099.94	-.02	+.03	+.09
10-B	609149.99N	806265.16E	7065.49	+.01	-.02	-.05
11-A	609436.30N	806124.16E	7099.94	.00	+.01	+.07
11-B	609375.08N	806051.47E	7065.67	-.02	.00	-.05
12-A	609696.83N	805968.13E	7099.70	+.02	-.01	+.07
12-B	609651.13N	805885.88E	7065.15	-.02	+.01	-.06
13-A	609986.77N	805874.62E	7099.95	.00	-.09	+.06
13-B	609967.70N	805788.70E	7065.97	-.04	-.10	-.04
14-A	610296.84N	805926.39E	7099.80	-.01	-.05	+.07
14-B	610341.42N	805845.78E	7065.12	-.01	-.10	-.04

WELL TYPE PIEZOMETER READINGS

<u>POROUS TUBE NUMBER</u>	<u>ORIGINAL ELEVATION OF PIEZOMETER TIP</u>	<u>ELEVATION OF TOP OF RISER TUBE</u>	<u>DISTANCE TOP OF RISER TUBE TO WATER SURFACE</u>	<u>ELEVATION OF WATER</u>	<u>CHANGES SINCE JUNE, 1985</u> <u>COMMENTS</u>
EP-1	7060.5	7100.8	Dry		N.C.
EP-2	7052.2	7102.6	Dry		N.C.
EP-3	7039.8	7102.5	Dry		N.C.
EP-4	7050.3	7102.4	Dry		N.C.
EP-5	7059.2	7102.4	Dry		N.C.
EP-6	7058.7	7083.4	25.0	7058.4	Down 0.1 Feet
EP-7	7051.9	7079.7	27.4	7052.3	Down 0.1 Feet
EP-8	7038.7	7082.0			Well Plugged at 21'
EP-9	7048.2	7082.7	Dry		N.C.
EP-10	7051.1	7085.4	Dry		N.C.
EP-11	7054.0	7070.5	15.3	7055.2	Up 1.1 Feet
EP-12	7049.9	7070.0	20.0	7050.0	N.C.
EP-13	7031.0	7072.4	40.4	7032.0	Up 0.1 Feet
EP-14	7046.2	7069.9	Dry		N.C.
EP-15	7053.1	7074.8	Dry		N.C.
FP-1	7047.5	7084.7	30.8	7053.9	Down 0.5 Feet
FP-2	7034.3	7081.6	46.8	7034.8	Down 0.5 Feet
FP-3	7025.9	7082.7	57.4	7025.3	Down 0.4 Feet
FP-4	7033.9	7081.8	Dry		N.C.
FP-5	7041.6	7083.3	Dry		N.C.
FP-6	7047.7	7059.6	8.8	7050.8	Down 1.0 Feet
FP-7	7036.9	7049.7	11.3	7039.6	Up 2.7 Feet
FP-8	7023.6	7038.8	14.8	7024.0	Up 0.1 Feet
FP-9	7026.9	7041.7	Dry		N.C.
FP-10	7035.4	7049.6	Dry		N.C.

August 14, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND - JULY 1985

An inspection of the tailings pond was conducted on July 31, 1985.

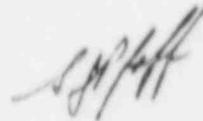
The slurry transport system is being converted to a sprinkler supply system. The sprinkler supply lines have been moved onto the beach areas of the tailings impoundment.

The diversion channels are clear.

The sprinkler system is operating on the north and west beaches of the impoundment.

The water level in the north tailings pond is 7082.6 feet, down 1.8 feet since the June inspection. The water level in the south pond is at 7084.3 feet, down 1.4 feet since the June inspection.

The seepage collection system has pumped approximately 390,240 gallons of solution back to the tailings impoundment. The low pump back rate is due to working on the power supply to the collection system resulting in lower pumping hours.



SJP:ps
3-33

September 26, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND - AUGUST 1985

An inspection of the tailings pond was conducted on August 29, 1985.

The slurry transport line no longer exists. All lines are converted over for sprinkler use. The sprinkler system for the south internal dike is completed and operational.

The diversion channels are clear.

The beaches are adequate in all areas.

The water level in the north tailings pond is at 7079.3 feet, down 3.3 feet since the July inspection. The south tailings pond is at 7084.5 feet, up 0.2 feet since the July inspection. The rise in the south pond is due to pumping water out of the #5 evaporation pond. This pond was lowered 1.8 feet during August.

The seepage collection system has pumped approximately 900,720 gallons of solution back to the tailings impoundment.



SJP:ps
3-34

July 29, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: SECOND QUARTER 1985 INSPECTION OF TAILINGS DAM

The tailings dam was inspected on June 27, 1985, using the quarterly inspection guide.

EMBANKMENT SETTLEMENT

Inspection of the embankment shows no movement or disturbance from previous inspections.

EMBANKMENT SLOPE CONDITIONS

The slope shows no change from original crest alignment. No erosion is noted. Vegetative cover is good.

SEEPAGE

The downstream face of the dam is dry. No areas of surface seepage is evident. The seepage catch pond is at 7018.2 feet, which is down 1.4 feet since the March inspection. The seepage collection system has pumped approximately 484,200 gallons in June and 2,592,000 gallons for the quarter.

SLOPE PROTECTION

All exterior slopes have established vegetative cover. No additional seeding is necessary at this time.

SURFACE WATER & GROUNDWATER

Results of water samples collected from surface water and wells indicate no significant change from previous samples. A revised water sampling program has been submitted to the NRC for their review.

Mr. J. H. Whitman
July 29, 1985
Page 2

SAFETY & PERFORMANCE INSTRUMENTATION

- A. Surface displacement monuments will be surveyed in the third quarter.
- B. Settlement sensor readings show no significant change.
- C. Piezometer readings show some minor changes in six of the piezometers. Piezometer EP-11 has returned to its normal reading. Piezometer FP-7 has dropped 2.8 feet. This is most likely caused by its proximity to the test hole which was dug nearby.

OPERATIONS & MAINTENANCE

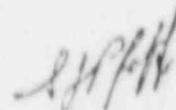
The operation and maintenance procedures are satisfactory to provide safe operation of the tailings impoundment.

POSTCONSTRUCTION CHANGES

A dike was placed across the main tailings pond from west to east by spigoting and dozing the beach down. The beach along the north and west sides were dozed to a flatter contour. A sprinkler system has been installed on the dozed areas.

WATER LEVELS

The water level in the tailings pond is at 7084.6 feet in the north pond, down 0.8 feet since the May inspection. The water level in the south pond is at 7085.7 feet, down 1.1 feet since the May inspection.



SETTLEMENT PLATE READINGS

JUNE 1985

<u>LOCATION</u>	<u>SLURRY TRENCH BULB (GR)</u>	<u>10' HORIZONTAL OFFSET BULB (BLK)</u>
25 + 00	105.7 (106.5)	101.3 (101.5)
46 + 00	50.1 (50.4)	(*)
55 + 00	76.8 (77.0)	64.2 (64.0)

() These figures are the readings for the 4th quarter 1985.

* Will not hold pressure in line.

SJP:ps
7/29/85
1-83

WELL TYPE PIEZOMETER READINGS

<u>POROUS TUBE NUMBER</u>	<u>ORIGINAL ELEVATION OF PIEZOMETER TIP</u>	<u>ELEVATION OF TOP OF RISER TUBE</u>	<u>DISTANCE TOP OF RISER TUBE TO WATER SURFACE</u>	<u>ELEVATION OF WATER</u>	<u>CHANGES SINCE MARCH, 1985 COMMENTS</u>
EP-1	7060.5	7100.8	Dry		N.C.
EP-2	7052.2	7102.6	Dry		N.C.
EP-3	7039.8	7102.5	Dry		N.C.
EP-4	7050.3	7102.4	Dry		N.C.
EP-5	7059.2	7102.4	Dry		N.C.
EP-6	7058.7	7083.4	24.9	7058.5	Down 0.1 Feet
EP-7	7051.9	7079.7	27.3	7052.4	Down 0.1 Feet
EP-8	7038.7	7082.0			Well Plugged at 21'
EP-9	7048.2	7082.7	Dry		N.C.
EP-10	7051.1	7085.4	Dry		N.C.
EP-11	7054.0	7070.5	16.4	7054.1	Down 1.4 Feet
EP-12	7049.9	7070.0	20.0	7050.0	N.C.
EP-13	7031.0	7072.4	40.5	7031.9	Down 0.2 Feet
EP-14	7046.2	7069.9	Dry		N.C.
EP-15	7053.1	7074.8	Dry		N.C.
FP-1	7047.5	7084.7	30.3	7054.4	Up 0.9 Feet
FP-2	7034.3	7081.6	46.3	7035.3	Up 0.4 Feet
FP-3	7025.9	7082.7	57.0	7025.7	N.C.
FP-4	7033.9	7081.8	Dry		N.C.
FP-5	7041.6	7083.3	Dry		N.C.
FP-6	7047.7	7059.6	8.8	7050.8	Down 1.0 Feet
FP-7	7036.9	7049.7	Dry		Down 2.8 Feet
FP-8	7023.6	7038.8	14.9	7023.9	Down 0.2 Feet
FP-9	7026.9	7041.7	Dry		N.C.
FP-10	7035.4	7049.6	Dry		N.C.

June 10, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND - MAY 1985

An inspection of the tailings pond was conducted on May 30, 1985.

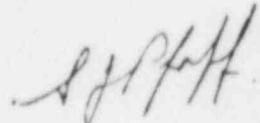
The slurry transport system was visually checked for leaks and wear. No problems were noted. Currently spigotting from #3 on the south line. The north line has been removed for use in the sprinkler system.

The diversion channels are clear.

The beach on the north and west sides of the tailings are being laid out for the sprinkler system.

The water level in the north tailings pond is at 7085.4 feet, up 1.2 feet since the April inspection. The south tailings pond is at 7086.8 feet, up 1.3 feet since the April inspection.

The seepage collection system has pumped approximately 1,002,000 gallons of solution back to the tailings impoundment.



SJP:ps
3-17

May 16, 1985

TO: MR. J. H. WHITMAN

FROM: S. J. PFAFF

SUBJECT: MONTHLY INSPECTION OF TAILINGS POND - APRIL 1985

An inspection of the tailings pond was conducted on April 30, 1985.

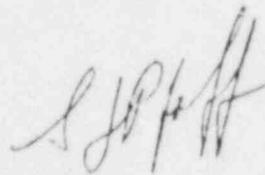
The slurry transport system was visually checked for leaks and wear. No problems were noted. Currently spigotting from #7 on the south line.

The diversion channels are clear.

The beach on the north and west sides of the tailings pond have been dozed to the waterline to level the sands. These areas have been windrowed to prevent blowing tailings. The dike across the main pond is complete.

The water level in the north tailings pond is at 7084.2', down one foot since the March inspection. The south tailings pond is at 7085.5', up 0.3 feet since the March inspection. The elevated level in the south pond is due to spigotting in this pond, which is approximately half the size it was before the dike across the pond was completed.

The seepage collection system has pumped approximately 1,106,250 gallons of solution back to the tailings impoundment. The return line was relocated to the southwest to allow dozing of the north and west beaches.



SJP:ps

April 4, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: FIRST QUARTER 1985 INSPECTION OF TAILINGS DAM

The tailings dam was inspected on March 28, 1985, using the quarterly inspection guide.

EMBANKMENT SETTLEMENT

Inspection of the embankment shows no movement or disturbance from previous inspections.

EMBANKMENT SLOPE CONDITIONS

The slope shows no change from original crest alignment. The snow has melted off the slopes slowly and no erosion is noted. The slopes are dry with a moderate amount of vegetation remaining from last years growth.

SEEPAGE

The downstream face of the dam does not indicate any seepage areas. The seepage catch pond is at 7,019.6 elevation, which is about the same as the December inspection noted. The seepage collection system has pumped approximately 693,000 gallons in March and 1,477,400 gallons for the quarter. The lower pumping rate is due to problems with the pump back system freezing up.

SLOPE PROTECTION

All exterior slopes have established vegetative cover. New growth has not started for the season, but a moderate amount of stubble remains from last years growth.

SURFACE WATER & GROUNDWATER

Results of water samples collected from surface water and wells indicate no significant change from previous samples. A revised water sampling program will be initiated in the second quarter to comply with changes requested by the NRC.

SAFETY & PERFORMANCE INSTRUMENTATION

- A. Surface displacement movements will be surveyed between June and September.
- B. Settlement sensor readings will not be taken until the June inspection.
- C. Piezometer readings show some minor changes in seven of the piezometers. Piezometer EP-11 shows a 1.5 foot increase in water which is significant, but most likely due to snow melting in the area of the piezometer well. This well will be checked next month to see if there are any changes.

OPERATIONS & MAINTENANCE

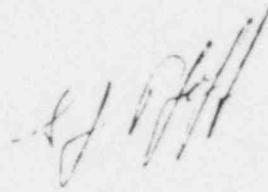
The operations and maintenance procedures are satisfactory to provide safe operation of the tailings impoundment. The rise in the tailings solution due to spiggoting on the dike and compounded by the snow melt has resulted in covering the beach at locations 8 through 12 and 19, 20, and 25. Pumping of solution to the reclaim and evaporation ponds should reestablish the required beach. In the meantime, I have requested operations to spigot in these areas to speed up the reestablishment of the beach.

POSTCONSTRUCTION CHANGES

The dike separating the main pond is continuing to be raised by spiggoting. This is being done on an intermittent basis. No other changes have taken place during this quarter.

WATER LEVELS

The water level in the tailings pond is at 7,085.2 up 2.4 feet since the February inspection. This is a 3.3 foot rise for the quarter. The rise is due to the snow melt and the current spiggoting in the north end of the main tailings area. We currently have 10.8 feet of freeboard in the tailings area.



WELL TYPE PIEZOMETER READINGS

<u>POROUS TUBE NUMBER</u>	<u>ORIGINAL ELEVATION OF PIEZOMETER TIP</u>	<u>ELEVATION OF TOP OF RISER TUBE</u>	<u>DISTANCE TOP OF RISER TUBE TO WATER SURFACE</u>	<u>ELEVATION OF WATER</u>	<u>COMMENTS</u>
EP-1	7060.5	7100.8	Dry		Down 0.2 Feet
EP-2	7052.2	7102.6	Dry		N.C.
EP-3	7039.8	7102.5	Dry		N.C.
EP-4	7050.3	7102.4	Dry		N.C.
EP-5	7059.2	7102.4	Dry		N.C.
EP-6	7058.7	7083.4	24.8	7058.6	Up 0.1 Feet
EP-7	7051.9	7079.7	27.2	7052.5	Down 0.1 Feet
EP-8	7038.7	7082.0			Well Plugged at 21'
EP-9	7048.2	7082.7	Dry		N.C.
EP-10	7051.1	7085.4	Dry		N.C.
EP-11	7054.0	7070.5	15.0	7055.5	Up 1.5 Feet
EP-12	7049.9	7070.0	20.0	7050.0	N.C.
EP-13	7031.0	7072.4	40.3	7032.1	Up 0.1 Feet
EP-14	7046.2	7069.9	Dry		N.C.
EP-15	7053.1	7074.8	Dry		N.C.
FP-1	7047.5	7084.7	31.2	7053.5	Down 0.2 Feet
FP-2	7034.3	7081.6	46.7	7034.9	Down 0.6 Feet
FP-3	7025.9	7082.7	57.0	7025.7	N.C.
FP-4	7033.9	7081.8	Dry		N.C.
FP-5	7041.6	7083.3	Dry		N.C.
FP-6	7047.7	7059.6	7.8	7051.8	Up 0.9 Feet
FP-7	7036.9	7049.7	10.0	7039.7	Down 0.2 Feet
FP-8	7023.6	7038.8	14.7	7024.2	Up 0.1 Feet
FP-9	7026.9	7041.7	Dry		N.C.
FP-10	7035.4	7049.6	Dry		N.C.

March 5, 1985

TO: MR. J. H. WHITMAN

FROM: S. J. PFAFF

SUBJECT: MONTHLY INSPECTION OF TAILINGS POND (FEBRUARY 1985)

An inspection of the tailings pond was conducted on February 28, 1985.

The slurry transport system was visually checked for leaks and wear. No problems were noted. Currently spigotting from the end of the north line.

The diversion channels remain filled with snow.

The beach has had no change since we are spigotting from the inside dikes. Most of the beach remains snow covered with no indication of blowing tailings.

The water level in the tailings is at 7082.8, up 0.8 feet since the January inspection. The seepage collection system has pumped approximately 736,800 gallons of solution back to the tailings impoundment.



SJP:ps

February 21, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND (JANUARY 1985)

An inspection of the tailings pond was conducted on January 31, 1985.

The slurry transport system was visually checked for leaks and wear. No problems were noted. Currently spigotting into the Jones Pond.

The diversion channels are filled with snow at this time.

The beach is well established in all areas. Most of the beach is snow covered with no indication of blowing tailings.

The water level in the tailings is at 7082.0, up 0.10 feet since the December inspection. The seepage collection system pumped 57,600 gallons of solution back to the tailings impoundment. Subzero weather and frozen lines resulted in the reduced pumping of the collection system.

SJP:ps



January 16, 1985

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: FOURTH QUARTER 1984 INSPECTION OF TAILINGS DAM

The tailings dam was inspected on January 3, 1985, by Mr. W. C. Gross and Mr. S. J. Pfaff. The inspection had been delayed one week due to the Christmas holidays.

EMBANKMENT SETTLEMENT

Inspection of the embankment showed no visible movement from previous inspections. Survey of surface displacement monuments was done in September and attached to the September inspection report.

EMBANKMENT SLOPE CONDITIONS

The slopes show no change from original crest alignment. The slopes are generally snow covered with six to eight inches on the north side and two to four inches on the south.

SEEPAGE

The downstream face of the dam does not indicate any seepage areas. The seepage catch pond is down approximately 1 foot since the September inspection. The seepage collection system has pumped approximately 1,008,000 gallons in December and 10,612,000 gallons for the year.

SLOPE PROTECTION

All exterior slopes have established good vegetative cover. Snow is covering most of the slopes at present.

SURFACE WATER & GROUNDWATER

Results of water samples from surface and wells indicate no significant change from previous samples. Pumped samples from RTH-1 well showed little change in the parameters from beginning to end of the pump test. This is most likely due to the low pump rate of one liter per minute, which the pump puts out.

SAFETY & PERFORMANCE INSTRUMENTATION

- A. The surface displacement monuments were surveyed in September and will not be resurveyed until next September.
- B. Settlement sensor readings show little change from the June 29, 1984, inspection. Results are attached.
- C. Piezometer readings show some minor changes in FP-1, 6, and 8. This is most likely due to the ground freezing and affecting the shallow readings.

OPERATIONS & MAINTENANCE

The operations and maintenance procedures are satisfactory to provide safe operation of the tailings impoundment. The mill is currently down for a rod mill reline and are not spigotting.

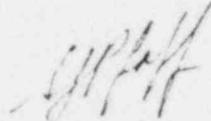
POSTCONSTRUCTION CHANGES

The dike within the tailings pond is complete except for a small area to allow drainage between the north and south sections.

The toe ditch previously disturbed has been returned to the original contour.

WATER LEVELS

The water level in the tailings pond is at 7081.9 up 0.9 feet since the September inspection, but down 0.9 feet since the November inspection. We currently have 14.1 feet of freeboard in the tailings dam.



WELL TYPE PIEZOMETER READINGS

December 1984

POROUS TUBE NUMBER	ORIGINAL ELEVATION OF PIEZOMETER TIP	ELEVATION OF TOP OF RISE? TUBE	DISTANCE TOP OF RISE? TUBE TO WATER SURFACE	ELEVATION OF WATER	COMMENTS
					Changes from last reading - June, 1984.
EP-1	7060.5	7100.8	40.1	7060.7	UP 0.2 FEET
EP-2	7052.2	7102.6	DRY		N.C.
EP-3	7039.8	7102.5	DRY		N.C.
EP-4	7050.3	7102.4	DRY		N.C.
EP-5	7059.2	7102.4	DRY		N.C.
EP-6	7058.7	7058.4	24.9	7058.5	DOWN 0.1 FEET
EP-7	7051.9	7079.7	27.1	7052.6	UP 0.3 FEET
EP-8	7038.7	7082.0			WELL PLUGGED AT 21'
EP-9	7048.2	7082.7	DRY		N.C.
EP-10	7051.1	7085.4	DRY		N.C.
EP-11	7054.0	7070.5	DRY		N.C.
EP-12	7049.9	7070.0	20.0	7050.0	N.C.
EP-13	7031.0	7072.4	40.4	7032.0	UP 0.2 FEET
EP-14	7046.2	7060.9	DRY		N.C.
EP-15	7053.1	7074.8	DRY		N.C.
FP-1	7047.5	7084.7	31.0	7053.7	UP 0.9 FEET
FP-2	7034.3	7081.6	46.1	7035.5	DOWN 0.3 FEET
FP-3	7025.9	7082.7	57.0	7025.7	N.C.
FP-4	7033.9	7081.8	DRY		N.C.
FP-5	7041.6	7083.3	DRY		N.C.
FP-6	7047.7	7059.6	8.7	7050.9	DOWN 1.4 FEET
FP-7	7036.9	7049.7	10.2	7039.5	DOWN 0.3 FEET
FP-8	7023.6	7038.8	14.8	7024.1	DOWN 0.7 FEET
FP-9	7026.9	7041.7	DRY		N.C.
FP-10	7035.4	7049.5	DRY		N.C.

SETTLEMENT PLATE READINGS

DECEMBER 1984

<u>LOCATION</u>	<u>SLURRY TRENCH BULB (GR)</u>	<u>10' HORIZONTAL OFFSET BULB (BLK)</u>
25 + 00	106.5 (102.0)	101.5 (101.1)
46 + 00	50.4 (50.0)	* (45.0)
55 + 00	77.0 (76.0)	64.0 (64.7)

() These figures are the readings for the 2nd quarter 1984.

* Will not hold pressure in line.

SJP:ps
1/16/85

December 5, 1984

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND (NOVEMBER 1984)

An inspection of the tailings pond was conducted on November 30, 1984.

The slurry transport system was visually checked for leaks and wear. No problems were noted. Currently spigotting into the Jones Pond on the south side.

The diversion channels are clear with a small amount of snow present.

The beach is well established in all areas. Spraying the beach with the glue mixture seems to be effective in holding the sand in place.

The water level in the tailings is at 7082.8, up 0.1 feet since the October inspection. The water level in the seepage collection pond has come up 0.4 feet since the September inspection. The seepage collection system has pumped 624,000 gallons back to the tailings pond in November, based on hours the pump ran. The flow meter accumulator is not functioning properly again and will be rescheduled for repair.



SJP:ps

November 5, 1984

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND (OCTOBER 1984)

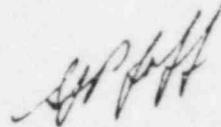
An inspection of the tailings pond was conducted on October 31, 1984.

The slurry transport system was visually checked and inspected for leaks and wear. No leaks or wear points were detected.

The diversion channel on the north side is still blocked by topsoil stripped from the injection test site. The south toe ditch remains clear.

The beach is well established in all areas. The new license requires a beach of 75 feet be maintained for dam protection.

The water level in the tailings pond is at 7082.7, up 1.7 feet since the September inspection. This level will be lowered by filling the evaporation ponds. The seepage collection system has pumped approximately 425,000 gallons back to the tailings pond in October, based on hours the pump ran. The flow meter accumulator is not functioning properly and is scheduled for repair.



SJP:ps

October 25, 1984

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: SPECIAL INSPECTION OF TAILINGS DAM

On October 18, 1984, at 9:30 a.m. an earthquake occurred with a reading of 5.5 on the Richter scale. An aftershock of 4.5 occurred at 10:05 a.m. The epicenter for this earthquake was located approximately 20 miles east of the Petrotomics mill.

Inspection of the tailings impoundment immediately after the earthquake showed no damage to the structure. No cracks, slips, heaves, or other deformations were apparent. A follow-up inspection a few days later still showed no evidence of damage to the dam. No seepage was noted on the face of the dam. The mill shift foreman will continue to check the dam on his daily rounds.



SJP:ps

October 25, 1984

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: THIRD QUARTER 1984 INSPECTION OF TAILINGS DAM

The tailings dam was inspected on September 28, 1984.

EMBANKMENT SETTLEMENT

Inspection of the embankment showed no visible movement from previous inspections. Survey of surface displacement monuments is attached.

EMBANKMENT SLOPE CONDITIONS

The slopes show no change from original crest alignment. The slopes are in good condition. There are a few erosional ditches which are very shallow and do not need repair at this time.

SEEPAGE

The downstream face of the dam does not indicate any seepage areas. The seepage catch pond is down approximately 1.5 feet since the June inspection. The water elevation is at 7018.1 feet. The seepage collection system has pumped approximately 867,500 gallons in September and 8,555,000 gallons for the year.

SLOPE PROTECTION

All exterior slopes have a good vegetative cover established. No reseeding is necessary at this time.

SURFACE WATER & GROUNDWATER

Results of water samples from surface and wells indicate no significant change from previous samples. Pumping samples were attempted, but the pump would not fit most of the wells.

SAFETY & PERFORMANCE INSTRUMENTATION

- A. The surface displacement monuments were surveyed on 4 September 1984. Survey results are attached. Three monuments had a lateral movement of more than 0.1 feet, all remaining monuments had movement in any direction of less than 0.1 feet.
- B. Settlement sensor readings will not be taken until the December inspection.
- C. Piezometer readings will be taken during the December inspection.

OPERATIONS & MAINTENANCE

The operations and maintenance procedures are adequate to provide safe operation of the tailings impoundment. We are currently spigotting on the short line opposite #34. A dike is currently being laid down from the short line to #34 by spigotting.

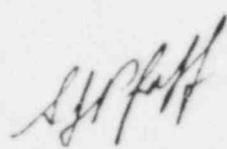
POSTCONSTRUCTION CHANGES

A dike composed of tailings slurry and scalp is being laid down from #34 to the short line on the inside dike. This will separate the main tails pond into a north and south section.

The toe ditch at N 611,000 and E 806,500 has been disturbed as the result of injection grout testing. Topsoil was stripped and is piled in the toe ditch. The topsoil will be replaced after injection tests are completed.

WATER LEVELS

The water level in the tailings pond is at 7081.0, down 2.3 feet since the June 29, 1984, inspection and down 0.6 feet from the August inspection. We currently have 15 feet of freeboard to work with.



PETROTOMICS ENGINEERING DEPARTMENT

TAILINGS DAM INSTRUMENTATION

Annual Movement of Surface Movement Monuments
12 September 1983 to 4 September 1984

Survey Date: 4 September 1984
Field Work: RLM and CML
Computations: RLM

MONUMENTS	COORDINATES		ELEV.	LAT. (+-)	DEP. (+-)	ELEV. (+-)
1-A	608592.82N	808302.09E	7100.14	+.01	.00	+.05
1-B	608585.18N	808311.48E	7098.69	+.03	+.03	+.05
2-A	608511.42N	808241.00E	7100.09	+.05	+.04	+.03
2-B	608495.78N	808262.61E	7094.92	+.01	+.04	+.01
3-A	608278.59N	808057.13E	7099.96	+.07	+.02	+.02
3-B	608253.03N	808089.32E	7086.17	.00	+.09	+.02
4-A	608161.12N	807780.85E	7100.18	+.06	.00	+.03
4-B	608110.41N	807767.87E	7084.21	+.02	-.02	.00
5-A	608270.94N	807495.95E	7100.14	-.02	+.02	+.01
5-B	608223.25N	807462.33E	7081.40	.00	-.05	.00
6-A	608452.88N	807255.78E	7099.85	-.14	+.01	-.05
6-B	608404.57N	807212.53E	7079.41	+.01	+.03	.00
7-A	608643.80N	807025.21E	7099.85	-.01	-.04	-.05
7-B	608562.71N	806952.68E	7065.46	-.09	-.06	-.04
8-A	608834.16N	806793.96E	7099.89	+.01	+.01	-.07
8-B	608755.82N	806724.95E	7065.39	+.01	-.08	-.02
9-A	609026.24N	806561.66E	7099.87	+.04	-.01	-.06
9-B	608951.14N	806490.73E	7065.51	-.06	-.03	-.05
10-A	609219.67N	806328.64E	7099.85	+.07	-.01	-.07
10-B	609149.98N	806265.18E	7065.54	+.01	+.02	-.05
11-A	609436.30N	806124.15E	7099.87	.00	+.01	-.07
11-B	609375.10N	806051.47E	7065.72	.00	-.06	-.04
12-A	609696.81N	805968.14E	7099.63	-.04	+.05	-.07
12-B	609651.15N	805885.87E	7065.21	-.05	-.01	-.03
13-A	609986.77N	805874.71E	7099.89	-.03	-.03	-.06
13-B	609967.74N	805788.80E	7066.01	+.04	+.08	-.06
14-A	610296.85N	805926.44E	7099.73	+.02	-.04	-.08

September 26, 1984

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND (AUGUST 1984)

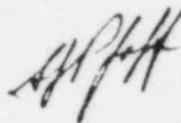
An inspection of the tailings pond was conducted on August 31, 1984.

The slurry transport system was visually checked and inspected for leaks and wear. No leakage was detected and no wear points were noted.

The diversion channels remain clear of obstructions.

The beach is well established in all areas of the tailings pond.

The water level in the tailings pond is at 7081.6, down 1.6 feet since the July inspection. The seepage collection system has pumped approximately 1,206,800 gallons back to the tailings pond in August.



SJP:ps

October 17, 1984

TO: ALL MILL SHIFT FOREMEN
FROM: W. C. GROSS
SUBJECT: TAILS

The Mine is hauling scalp to an area just off the inter dam and building a dike toward spigot #35. As soon as the hauling is complete, utilize the short dump off this area to continue building the dike across the open water.

We are trying to separate the tailings pond, building two ponds. The North pond water, after being separated, will be pumped out to the South of the newly formed dike.

Your cooperation in this endeavor will be appreciated.

W. C. Gross
W. C. Gross

WCG.ow

pc: Messrs. H. G. Cooley
G. A. Hamar
G. E. Latimer
G. L. Himes
S. J. Pfaff

September 26, 1984

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: MONTHLY INSPECTION OF TAILINGS POND (JULY 1984)

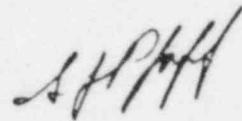
An inspection of the tailings pond was conducted on July 31, 1984.

The slurry transport system was visually inspected for leaks and wear. No leaks or wear points were detected.

The diversion channels are clear.

The beach is well established in all areas of the tailings pond.

The water level in the tailings pond is at 7083.2, down 0.1 feet since the June inspection. Heavy rainfall in late July contributed to a reduced evaporation rate for the month. The seepage collection system has pumped approximately 1,648,600 gallons back to the tailings pond in July.



SJP:ps

September 26, 1984

TO: MR. J. H. WHITMAN
FROM: S. J. PFAFF
SUBJECT: SECOND QUARTER 1984 INSPECTION OF TAILINGS DAM

The tailings impoundment was inspected on June 29, 1984.

EMBANKMENT SETTLEMENT

Inspection of the embankment shows no visible movement from previous inspections.

EMBANKMENT SLOPE CONDITIONS

The slopes show no change from original crest alignment. The slopes are in good condition.

SEEPAGE

The downstream face of the dam does not indicate any seepage areas. The seepage catch pond is down approximately 2 feet since the March 30, 1984, inspection. The seepage collection system was placed back in service April 10, 1984. The system was down 16 days because of a burned out motor. The seepage collection system has pumped approximately 1,075,000 gallons in June and 4,842,000 gallons for 1984.

SLOPE PROTECTION

All exterior slopes are covered with vegetation. Natural reseeding is taking place and no additional seeding is necessary at this time.

SURFACE WATER & GROUNDWATER

Results of water samples from surface and wells indicate no significant change from previous samples. Pumping samples will be obtained from some of the wells to see if there is a difference between bailed samples and pumped samples.

SAFETY & PERFORMANCE INSTRUMENTATION

- A. The surface displacement monuments will be surveyed in September and will be reported with the third quarter inspection.
- B. Settlement sensor readings were taken and show small downward changes since June, 1983.
- C. Piezometer readings show little or no change since the December, 1983, readings.

OPERATIONS & MAINTENANCE

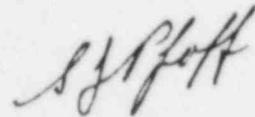
The operations and maintenance procedures are adequate to provide safe operation of the tailings impoundment. We are currently spigotting at #34.

POSTCONSTRUCTION CHANGES

No changes have been made during this quarter.

WATER LEVELS

The water level in the tailings pond is at 7083.3, down 1.2 feet since the March 30, 1984, inspection and at the same level as the May 31, 1984, inspection. An amendment to the source materials license on April 19, 1984, reduced the minimum freeboard from 15 feet to 4 feet. This will provide us with sufficient solution storage area for the future. The seepage collection pond level has dropped approximately one foot since the March inspection.



SJP:ps
cc: Mr. H. G. Cooley

WELL TYPE PIEZOMETER READING.

POROUS TUBE NUMBER	ORIGINAL ELEVATION OF PIEZOMETER TIP	ELEVATION OF TOP OF RISER TUBE	DISTANCE-TOP OF RISER TUBE TO WATER SURFACE	ELEVATION OF WATER	COMMENTS
					Changes from last reading - December, 1983
EP-1	7060.5	7100.8	40.3	7060.5	NC
EP-2	7052.2	7102.6	DRY		NC
EP-3	7039.8	7102.5	DRY		NC
EP-4	7050.3	7102.4	DRY		NC
EP-5	7059.2	7102.4	DRY		NC
EP-6	7058.7	7083.4	24.8	7058.6	NC
EP-7	7051.9	7079.7	27.4	7052.3	NC
EP-8	7038.7	7082.0			WELL PLUGGED AT 21'
EP-9	7048.2	7082.7	DRY		NC
EP-10	7051.1	7085.4	DRY		NC
EP-11	7054.0	7070.5	DRY		NC
EP-12	7049.9	7070.0	20.0	7050.0	NC
EP-13	7031.0	7072.4	40.6	7031.8	NC
EP-14	7046.2	7069.9	DRY		NC
EP-15	7053.1	7074.8	DRY		NC
FP-1	7047.5	7084.7	31.9	7052.8	NC
FP-2	7034.3	7081.6	45.8	7035.8	NC
FP-3	7025.9	7082.7	57.0	7025.7	NC
FP-4	7033.9	7081.8	DRY		NC
FP-5	7041.6	7083.3	DRY		NC
FP-6	7047.7	7059.6	7.1	7052.5	
FP-7	7036.9	7049.7	9.9	7039.8	
FP-8	7023.6	7038.8	14.0	7024.8	
FP-9	7026.9	7041.7	DRY		
FP-10	7035.4	7049.6	DRY		

SETTLEMENT PLATE READINGS

JUNE 1984

<u>LOCATION</u>	<u>SLURRY TRENCH BULB (GR)</u>	<u>10' HORIZONTAL OFFSET BULB (BLK)</u>
25 + 00	102.0 (119.2)	101.1 (105.0)
46 + 00	50.0 (52.5)	45.0 (46.0)
55 + 00	76.0 (77.0)	64.7 (65.7)

() These figures are the readings for the 2nd quarter 1983.

SJP:ps
9/26/84