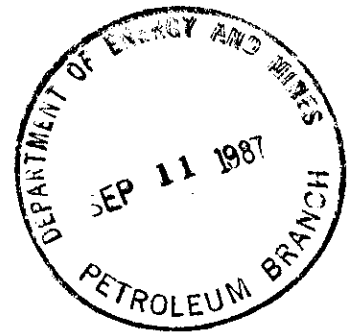




300 SUN LIFE PLAZA III  
1001 15 AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 1H1  
TELEPHONE (403) 261-0743



September 10, 1987

Manitoba Petroleum Branch  
Eaton Place  
555 - 330 Graham Avenue  
Winnipeg, Manitoba  
R3C 4E3

**Attention: Mr. Bob Dubrieul**

Dear Sir:

**RE: Waskada Unit #12**

Attached is a copy of page 21 of the Unit Agreement for the subject unit showing execution by Omega Hydrocarbons Ltd. It appears that we did not previously distribute a copy of same.

Yours truly,

**OMEGA HYDROCARBONS LTD.**

A handwritten signature in dark ink, appearing to read "R. A. Beamish".

R. A. Beamish,  
Joint Interest Co-ordinator

Att.  
RAB/pb



1200 SUN LIFE PLAZA III  
1100 4th AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 0H3  
TELEPHONE (403) 261-0741

April 14, 1986

Manitoba Oil and Natural Gas Conservation Board  
Room 309,  
Legislative Building  
Winnipeg, Manitoba  
R3C 0V8

**Attention: Mr. Charles S. Kang, Chairman**

Dear Sir:

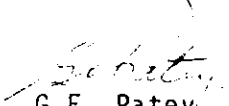
**Re: Waskada Unit No. 12**

Thank you for your letter of April 1, 1986 confirming the effective date of the captioned unit.

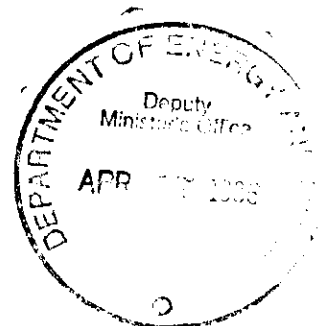
Please be assured that we will do everything reasonable to obtain the royalty owners consent to include the two tracts which did not qualify for inclusion by April 1, 1986. It appears from the circumstances, particularly surface rights arbitration, that the owners consent will not be obtained prior to July 1, 1986, which would result in the necessity to enlarge the unit to include these two tracts.

Yours truly,

OMEGA HYDROCARBONS LTD.

  
G.E. Patey,  
Vice President, Production

GEP:vb  
c.c. Waskada (Miss.) Applications  
& Waterflood Approvals File  
Waskada Unit No. 12





1300 SUN LIFE PLAZA III  
112 - 4th AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 0H3  
TELEPHONE (403) 261-0743

April 3, 1986

Manitoba Energy and Mines  
Petroleum Branch  
555 - 330 Graham Avenue  
Winnipeg, Manitoba  
R3C 4E3

Attention: Mr. L.R. Dubreuil  
Chief Petroleum Engineer

Manitoba Oil and Natural Gas  
Conservation Board  
Room 309, Legislative Building  
Winnipeg, Manitoba  
R3C 0V8

Attention: Mr. C.S. Kang  
Chairman

Dear Sirs:

Re: Waskada Unit 12

Enclosed are copies in duplicate of revised Exhibits A and B for the Waskada Unit 12 - Unit Agreement showing the exclusion of L.S.D.'s 1 and 2-25-1-26 WPM (original Tracts 15 and 16). Niwert Holdings Ltd's representative has not signed the Unit Agreement and shows no sign of doing so in the near future.

Yours truly,

OMEGA HYDROCARBONS LTD.

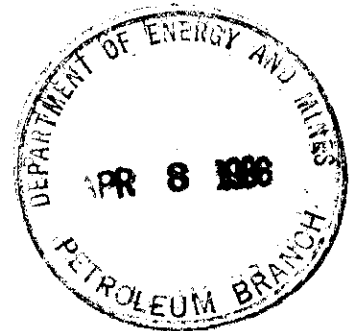
A handwritten signature in dark ink, appearing to read "D. Mark Mawdsley".

D. Mark Mawdsley  
Production Engineer

DMM:jr

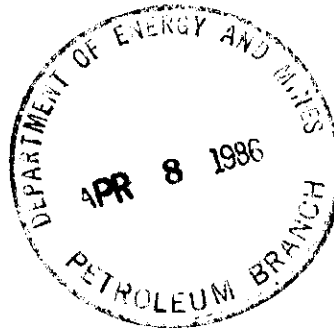
cc: Waskada Unit 12 File

Encl.



**OMEGA**  
HYDROCARBONS LTD

1300 SUN LIFE PLAZA III  
112 - 4th AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 0H3  
TELEPHONE (403) 261-0743



April 3, 1986

To: Royalty Interest Owners  
Waskada Unit 12  
(Addressee List Attached)

Dear Sirs:

Re: Waskada Unit 12 Effective Date

Please be advised that the Effective Date for the captioned Unit is April 1, 1986. Niwert Holdings Ltd. has elected not to participate in this Unit so the original Tracts 15 and 16 (L.S.D.'s 1 and 2-25-1-26 WPM) have been excluded. Revised Exhibits A and B showing this exclusion and the resultant change in tract participations are attached and should be inserted into your copy of the Unit Agreement. We have also received waterflood approval from the Manitoba Board. Water injection will commence in April as soon as the injection wells are properly equipped.

Yours truly,

OMEGA HYDROCARBONS LTD.

A handwritten signature in dark ink, appearing to read "D. Mark Mawdsley".

D. Mark Mawdsley  
Production Engineer

DMM:jr

cc: Waskada Unit 12 File

Encl.

**WASKADA UNIT 12**

**ROYALTY INTEREST OWNERS**

**ADDRESSEE LIST**

Bran Van Enterprises Ltd.  
240 1st Street  
Brandon, Manitoba  
R7A 5Z9

John Wilfred Hainsworth  
P.O. Box 433  
Deloraine, Manitoba  
ROM 0M0

64440 Manitoba Ltd.  
P.O. Box 433  
Deloraine, Manitoba  
ROM 0M0

70361 Manitoba Ltd.  
P.O. Box 433  
Deloraine, Manitoba  
ROM 0M0

Donald E. McGregor  
Waskada, Manitoba  
ROM 2E0

Missilinda of Canada  
c/o Doane Raymond Chartered Accountants  
100 5 Donald Street  
Winnipeg, Manitoba  
R3L 2T4

North American Royalties Inc.  
200 East 8 Street  
Chattanooga, Tennessee  
39402 USA

Mable Grace Pounder  
The Rudyard Kipling  
Suite 1001, 1420 Beach Drive  
Victoria, B.C.  
V8S 2N8

Manitoba Energy & Mines  
Mineral Resources Branch  
555 - 330 Graham Avenue  
Winnipeg, Manitoba  
R3C 4E3



1000 SUN LIFE PLAZA III  
152 APL AVENUE S.W.  
CALGARY ALBERTA CANADA T2P 0M3  
TELEPHONE (403) 261-0743

March 24, 1986

Manitoba Oil & Natural Gas Conservation Board  
Room 309  
Legislative Building  
Winnipeg, Manitoba  
R3C 0V8

Attention: Mr. C.S. Kang

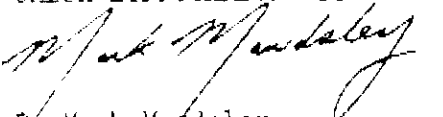
Dear Sir:

Re: Waskada Unit 12 Effective Date

Omega has tried with no success to get Niwert Holdings Ltd. to approve the Unit 12 Unit Agreement. In view of this, we request an Effective Date of April 1, 1986 for Unit 12 with the disqualification of Tracts 15 and 16. Should Niwert's representative sign the Unit Agreement within the 90 day period allowed in the Unit Agreement (clause 501 (b) ) we will include Tracts 15 and 16 in Unit 12. Otherwise, we will issue revised Exhibits A and B excluding Tracts 15 and 16 and showing the resulting tract factors. The Board should already be in possession of nine of the ten execution pages from the Unit 12 Unit Agreement which were included with my letter of March 3, 1986 addressed to yourself. Thank you for your attention to this matter.

Yours truly,

OMEGA HYDROCARBONS LTD.

  
D. Mark Mandsley  
Production Engineer

DMM/jfr

cc: Manitoba Department of Energy & Mines  
Attention: Mr. Bob Dubreuil (Phone-fax)

Waskada Unit 12 File

Encl.



The Oil and Natural Gas  
Conservation Board

Room 309  
Legislative Building  
Winnipeg, Manitoba, CANADA  
R3C 0V8

(204) 945-3130

Omega Hydrocarbons Ltd.  
1300 Sun Life Plaza III  
112 - 4th Avenue S.W.  
Calgary, Alberta  
T2P 0H3

Attention: D. Mark Mawdsley,  
Production Engineer



Dear Sirs:

Re: Waskada Unit No. 12

Receipt of your letter dated March 24, 1986 regarding the subject Unit is acknowledged.

The Waskada Unit No. 12 Unit Agreement is hereby approved with an effective date of April 1, 1986.

Further to your letter and to subclause 502(a) of the Unit Agreement, the Board concurs that tracts No. 15 and 16 do not currently qualify for inclusion in the Unit. If you are successful in obtaining royalty owner consent for these tracts within 90 days of the effective date (i.e. prior to July 1, 1986) they will be included in the Unit with an effective date of April 1, 1986 (per subclause 501(b) of the Unit Agreement). If the royalty consents have not been obtained and submitted to the Board within 90 days, the tracts will be excluded from the Unit and amendment of Exhibits A and B of the Unit Agreement will be required.

With respect to allocation of production for royalty and tax purposes during the 90 day period after the effective date, we ask that you confirm that it will be assumed that Tracts No. 15 and 16 will qualify, and further, if these tracts do not qualify, a retroactive adjustment to royalty payments will be made.

Yours sincerely,

THE OIL AND NATURAL GAS  
CONSERVATION BOARD

**ORIGINAL SIGNED BY  
CHARLES S. KANG**

Charles S. Kang  
Chairman

LRD/lk

b.c. Wm. McDonald  
J. F. Redgwell  
Petroleum Branch





The Oil and Natural Gas  
Conservation Board

Room 309  
Legislative Building  
Winnipeg, Manitoba, CANADA  
R3C 0V8

(204) 945-3130

MAR 9 1986

Omega Hydrocarbons Ltd.  
1300 Sun Life Plaza III  
112 - 4th Avenue S.W.  
Calgary, Alberta  
T2P 0H3

Attention: D. Mark Mawdsley,  
Production Engineer

Dear Sirs:

Re: Waskada Unit No. 12

Your letter dated March 3, 1986 regarding Board approval of the subject Unit is acknowledged.

With respect to a retroactive approval, it is the opinion of the Board that clause 1401 of the Unit Agreement precludes this. Further, the advertisement period for the pressure maintenance approval did not expire until March 5, 1986. Preparation and translation of the pressure maintenance Order has been initiated but it is anticipated the approval of the Order will not be completed prior to March 20, 1986. In light of this, the Board is not prepared to consider retroactive approval.

With respect to exclusion of those tracts for which royalty consents have not been received, the Board urges you to continue your efforts to obtain and submit these consents prior to April 1, 1986. However, if these consents cannot be obtained prior to this date, the Board will consider approval of the Unit Agreement with the non-qualifying tracts excluded.

Yours sincerely,

**ORIGINAL SIGNED BY  
CHARLES S. KANG**

Charles S. Kang,  
Chairman

LRD/lk

b.c. Wm. McDonald  
J. F. Redgwell  
Petroleum Branch



1300 SUN LIFE PLAZA #5  
112 4th AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 0M5  
TELEPHONE (403) 281-0740

March 3, 1986

Manitoba Oil & Gas Conservation Board  
309 Legislative Building  
450 Broadway Avenue  
Winnipeg, Manitoba  
R3C 0V8

Attention: Mr. G.S. Kang

Dear Sir:

Re: Waskada Unit 12 - Effective Date

Enclosed with this letter are copies of nine of the ten executed Unit Agreement execution pages from the Royalty Interest Owners of the captioned Unit. Niwert Holdings Ltd. (Tracts 15 and 16) has yet to sign the Unit Agreement but Omega would like to proceed with this Unit with a retroactive Effective Date of March 1, 1986. Clause 501 (b) of the Waskada Unit 12 - Unit Agreement allows a 90 day period from the Effective Date for all Tracts to qualify. We hope to have Niwert's executed Unit Agreement within this 90 day period. If not, we will bring in the two Tracts in an enlargement as soon as possible. Mr. Bob Dubreuil of your Department of Energy and Mines said in a phone conversation on March 3, 1986 that he would review the Manitoba Mines and Minerals Act in order to determine the feasibility of a retroactive Effective Date. We expect a waterflood approval early this month, and an Effective Date of March 1, 1986 could enable us to initiate waterflood immediately upon receipt of the approval. We would appreciate any efforts the Board may make in order to expedite the Effective Date of this Unit. Thank you for your attention to this matter.

Yours truly,

OMEGA HYDROCARBONS LTD.

A handwritten signature in dark ink, appearing to read "D. Mark Mawdsley".

D. Mark Mawdsley  
Production Engineer

DMM/jr

cc: Manitoba Department of Energy & Mines  
Attention: Mr. Bob Dubreuil (Phone-fax)

Waskada Unit 12 File

Encl.

February 18, 1986

Omega Hydrocarbons Ltd.  
1300 Sun Life Plaza III  
112 - 4th Avenue S. W.  
Calgary, Alberta  
T2P 0H3

Attention: T. J. Hall,  
President

Dear Jack:

RE: WASKADA UNIT NO. 12 - UNIT AGREEMENT

Enclosed is a copy of the Waskada Unit No. 12 Unit Agreement which has been executed by the Minister of Energy & Mines on behalf of the Crown as a royalty owner.

Yours sincerely,

L. R. Dubreuil  
Chief Petroleum Engineer  
Petroleum Branch

LED/dp

Enclosure



ON MATTERS OF STATE

No. 168

To The Honourable the Lieutenant Governor in Council

The undersigned, the Minister of Energy and Mines  
submits for approval of Council a report setting forth that:

WHEREAS Section 75 of "The Mines Act", being Chapter M160 of the Revised Statutes of Manitoba, provides as follows:

"75(1) Where the Crown is a working interest owner or royalty owner of a tract of land, the Lieutenant Governor in Council may authorize the minister, on behalf of the Crown, to enter into a unitization agreement for the unit operation of the pool or field, or part thereof, within which the tract is situated.

75(2) Notwithstanding any other provision of this Act or of an agreement or other disposition made under this Act, the Lieutenant Governor in Council may authorize the minister, on behalf of the Crown, to enter into an agreement for the calculation of the royalty payable to the Crown on the oil and gas produced from a unit area that includes a tract that is subject to the payment of a royalty to the Crown."

AND WHEREAS Omega Hydrocarbons Ltd. is the holder of Crown Oil and Natural Gas Lease No. L 801-087 covering the SE 1/4 of Section 24-1-26 WPM;

AND WHEREAS Omega Hydrocarbons Ltd. is proposing to develop Waskada Unit No. 12 in part of the Waskada Mississippian Mission Canyon 3a A Pool to include the tracts described as Legal Subdivisions 1 and 8 of Section 24, in Township 1, Range 26 WPM.

AND WHEREAS Omega Hydrocarbons Ltd. has requested agreement for the proposed unitization from the Crown as the royalty owner of the subject tract;

AND WHEREAS in order to accomplish the more efficient and economical development and production of the oil and gas resources of the Waskada Mississippian Mission Canyon 3a A Pool, it is deemed advisable for the Crown to enter into the said unitization agreement.

THEREFORE, he, the Minister, recommends:

THAT the Minister of Energy and Mines be authorized to enter into the Unit Agreement for Waskada Unit No. 12 in the form hereto annexed and marked as Schedule "A", or any form to the like effect.

Initiating Department/Agency	
Department/Agency	Authorized Officer
<i>HM</i>	
Approved By	
C.S.C.	Finance
Approved as to form by:	
Name	<i>Andrew C. Bellare</i>
Civil Litigation Branch: or Legislative Counsel:	Initials <i>JB</i>

Signature *Wilson D. Ranaul*

IN THE EXECUTIVE COUNCIL CHAMBER, WINNIPEG

Upon consideration of the foregoing report and recommendation Council advises that it be done as recommended.

12 February 1986  
Date

*Marcel Smith*  
President or Presiding Member

AT GOVERNMENT HOUSE IN THE CITY OF WINNIPEG

Approved and Ordered this 12th day of February A.D. 1986

*Gene M. Gough*  
Lieutenant Governor



## Memorandum

Date January 23, 1986

To Charles S. Kang  
Deputy Minister of Energy & Mines  
309 Legislative Building

From H. Clare Moster  
Director, Petroleum Branch

Telephone

Subject Waskada Unit No. 12

Omega Hydrocarbons Ltd. is proposing to develop a portion of the Waskada Mission Canyon 3a A Pool as the Waskada Unit No. 12, which will include twenty-one tracts. This proposed Unit involves two tracts (Lsd's) for which the Crown is the royalty interest owner (i.e. mineral rights owner). Section 74 of The Mines Act states that before a Unitization Agreement may be put into effect, it must be approved by The Oil and Natural Gas Conservation Board. It further states that the Board shall not approve an agreement unless the royalty owners have agreed to the Unit operation. Therefore, Omega has submitted two copies of the proposed revised Unit Agreement for the proposed Waskada Unit No. 12 for approval (execution) by the Minister as an affected royalty owner.

Section 75 of The Mines Act states that the Minister, with the authorization of the Lieutenant Governor in Council, may enter such agreements on behalf of the Crown as a royalty owner.

### Recommendation:

It is recommended that the Minister:

1. Request authorization from Cabinet to permit him to enter into the Waskada Unit No. 12 Unitization Agreement on behalf of the Crown (draft OIC attached) with respect to Lsd's 1 and 8 of Section 24-1-26 (WPM).
2. Execute the attached two copies of the Unit Agreement for the Waskada Unit No. 12 as a royalty owner.

### Discussion:

The tracts in the proposed Waskada Unit No. 12 which contain Crown owned mineral rights are Lsd's 1 and 8 of Section 24-1-26 (WPM). These tracts are held by Omega Hydrocarbons Ltd. under Crown Oil and Natural Gas Lease No. L 801-087 covering the southeast quarter of Section 24-1-26 (WPM). Omega has drilled two wells on the Lease (Lsd's 1 and 8). Both of these wells are completed in the Waskada Mission Canyon 3a A Pool. The well Omega S. Waskada Prov. 1-24-1-26 is currently producing at an oil rate of about 0.4 m<sup>3</sup>/day and a water-oil ratio of 0 m<sup>3</sup>/m<sup>3</sup>. The well Omega Waskada Prov. 8-24-1-26 is currently producing at an oil rate of about 1.1 m<sup>3</sup>/day and a water-oil ratio

of 0.39 m<sup>3</sup>/m<sup>3</sup>. Based on production trends, both wells will probably become uneconomic within two years. As part of a pressure maintenance project, it is likely that Unit production and therefore revenue to the Crown will increase.

The Branch has reviewed the Tract Participation Factors proposed for the Tracts and feels they are reasonable.

Clause 1301 of the proposed Unit Agreement specifically states that the execution of the agreement by the Minister is strictly as a Royalty Interest Owner (similar to any freehold mineral owner). Therefore, by such execution, the Minister is not approving the Unit Agreement. Such approval may only be given by the Board pursuant to Section 74 of The Mines Act.

~~Original signed by H. C. Moster~~

H. Clare Moster

MA/HCM/lk

January 13, 1986

Omega Hydrocarbons Ltd.  
1300 Sun Life Plaza III  
112 - 4th Avenue S. W.  
Calgary, Alberta  
T2P 0H3

Attention: Mr. T. J. Hall, President

Dear Jack;

Re: Waskada Unit No. 12

Attached per your request of January 6, 1986 are the two copies of the subject Unit agreement previously sent to us.

Yours sincerely,

L. R. Dubreuil  
Chief Petroleum Engineer  
Petroleum Branch

LRD/dp

Attachment

January 13, 1986

Aikens, MacAuley & Thorvaldson  
Barrister and Solicitors  
360 Main Street  
Winnipeg, Manitoba  
R3C 4G1

Attention: Mr. J. S. Lament

Dear Sir:

Waskada Unit No. 12  
Missilinda Royalty Interest

Further to your letter of December 16, 1985 you are advised that pursuant to discussions between Omega and myself, Omega has reviewed and revised interpreted reservoir parameters which are used in the tract factor determination. With a minor exception, the writer is now in basic agreement with Omega's tract factor calculation.

I am aware that you have been asked to return the Unit Agreement documents to allow a reanalysis of the tract factors, and I would presume that the subsequent copies of the Unit Agreement which you receive will reflect the reinterpretation noted above.

With respect to Missilinda's interest, which is confined to LSD's 9 and 16 of Section 24-1-26 (WPM), I believe Omega's revised proposal to be fair for two reasons:

1. Neither tract is currently productive in the Mission Canyon 3a Formation, and would not likely be economically viable if the wells were completed in this Formation.

2. The reservoir pore volume as interpreted by Omega is very comparable (though slightly greater) than the pore volume numbers I have calculated.

If you have any further questions or comments, please do not hesitate to call.

Yours sincerely,

L. R. Dubreuil  
Chief Petroleum Engineer  
Petroleum Branch

LRD/dp



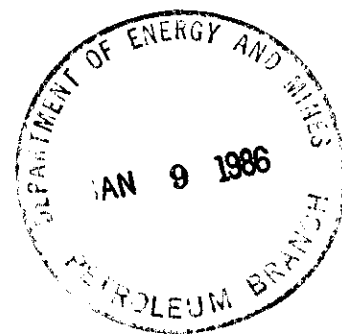
## Unit 12

1. Omega's revised  $\phi h$  numbers agree with my determinations quite well.
2. Determination of  $A\phi h$  factor is acceptable
3. Do not include varying water saturations. Why not
4. Do not deduct cumulative production from volume in place. Due to low  $\phi h$  values Brown tracts would have produced 57 and 21 % of OOIIP.
5. Due to lack of correlation between initial productivity and  $\phi h$ , agree for this unit that a separate productivity component is necessary.
- 6.



1300 SUN LIFE PLAZA III  
112 - 4th AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 0H3  
TELEPHONE (403) 261-0743

January 7, 1986



Manitoba Energy & Mines  
Mineral Resources Branch  
555 - 330 Graham Avenue  
Winnipeg, Manitoba  
R3C 4E3

Attention: Mr. Bob Dubreuil

Dear Sir:

Re: Waskada Unit 12 Tract Factor Calculations

1. Calculation of AØh

Omega's Geology Department has reviewed the porosity-meterage values for the wells within the proposed Unit 12. The revised numbers correlate well with your Department's numbers and our geologists can back up their calculations with good repeatability. The Øh revision required that we re-contour the Øh map and recalculate AØh. As before, AØh has been determined by dividing each tract into 16 grid squares (each representing 1 hectare) and using a linear interpolation between the two nearest reference points to find Øh for each of the 16 squares. The final AØh is simply the sum of each of the 16 Øh values. Copies of the Øh map and interim and final tract factor calculations are included for your reference.

2. Interim Tract Factor Calculations

In view of the erratic monthly production of the wells in the proposed Unit, we have decided to use an average of the latest 6 months of production to calculate the oil-rate-based interim tract factors. These average rates appear to represent the actual performance of each well.

3. Final Tract Factor Calculations

On investigating the feasibility of basing the final tract factors solely on reservoir characteristics (i.e. AØh) we have found that the reservoir is not uniform enough for this method to be accurate. Apparently thin pay zones have shown good production rates equaling or exceeding better pay areas (see Tract #9). The 50/50 split on reservoir and production factors should tend to equalize these discrepancies.

4. Unit Naming

Omega will rename all of the Mission Canyon Units to conform with the numerical standard that we started with the Lower Amaranth Units. Mission Canyon Units A to E will from now on be named "Waskada Unit 9-13".

We would appreciate a prompt reply to our aforementioned intentions so that we may distribute the revised Unit documents for Royalty Interest Owner approval.

Thank you for your attention to this matter.

Yours truly,

OMEGA HYDROCARBONS LTD.

A handwritten signature in dark ink, appearing to read "Mark Mawdsley", is written over the typed name and title.

D. Mark Mawdsley  
Production Engineer

DMM:vb

Encl.

c.c. T.J. Hall

R.A. Beamish

Waskada Unit 12 File

31

Twps.  
1

Range 26 WPM

06-Jan-86

WASKADA UNIT 12 TRACT FACTOR CALCULATIONS  
INTERIM

TRACT:	LAND	195-06 to 85-11 PROD. (m3)	OIL RATE	TRACT	TRACT	LAND	
:	DESCRIPTION	HRS	OIL	WATER	FACTOR 1	FACTOR 2	DESCRIPTION
1	1-23-1-26 WPM	0	0.0	0.0	0.0000	0.0000	1-23-1-26 WPM
2	2-23-1-26 WPM	0	0.0	0.0	0.0000	0.0000	2-23-1-26 WPM
3	7-23-1-26 WPM	0	0.0	0.0	0.0000	0.0000	7-23-1-26 WPM
4	8-23-1-26 WPM	4350	246.3	1186.3	0.9643	15.8318	8-23-1-26 WPM
5	9-23-1-26 WPM	0	0.0	0.0	0.0000	0.0000	9-23-1-26 WPM
6	10-23-1-26 WPM	0	0.0	0.0	0.0000	0.0000	10-23-1-26 WPM
7	15-23-1-26 WPM	0	0.0	0.0	0.0000	0.0000	15-23-1-26 WPM
8	16-23-1-26 WPM	0	0.0	0.0	0.0000	0.0000	16-23-1-26 WPM
9	1-24-1-26 WPM	4113	137.3	6.6	0.5685	9.3336	1-24-1-26 WPM
10	8-24-1-26 WPM	3811	170.6	31.3	0.7624	12.5170	8-24-1-26 WPM
11	9-24-1-26 WPM	0	0.0	0.0	0.0000	0.0000	9-24-1-26 WPM
12	12-24-1-26 WPM	0	0.0	0.0	0.0000	0.0000	12-24-1-26 WPM
13	13-24-1-26 WPM	4260	271.8	1109.3	1.0866	17.8397	13-24-1-26 WPM
14	16-24-1-26 WPM	0	0.0	0.0	0.0000	0.0000	16-24-1-26 WPM
15	1-25-1-26 WPM	3016	249.1	884.5	1.4066	23.0935	1-25-1-26 WPM
16	2-25-1-26 WPM	0	0.0	0.0	0.0000	0.0000	2-25-1-26 WPM
17	3-25-1-26 WPM	4103	313.8	76.3	1.3025	21.3844	3-25-1-26 WPM
18	4-25-1-26 WPM	0	0.0	0.0	0.0000	0.0000	4-25-1-26 WPM
19	1-26-1-26 WPM	0	0.0	0.0	0.0000	0.0000	1-26-1-26 WPM
20	2-26-1-26 WPM	0	0.0	0.0	0.0000	0.0000	2-26-1-26 WPM
21	8-26-1-26 WPM	0	0.0	0.0	0.0000	0.0000	8-26-1-26 WPM
TOTALS: 23653 1388.9 3294.3 6.0909 100.0000							

AVERAGE OIL RATE (m3/op. day) & AVERAGE OIL CUT  
AFTER 6 MONTHS OF PRODUCTION

RATE CUT  
\*\*\*\*\*  
1.4093 29.6571%

03-Jan-86

## WASKADA MISSION CANYON - B UNIT TRACT FACTOR CALCULATIONS

FINAL

TRACT	LAND DESCRIPTION	A*PHI*H (h*H)	4 MONTH CUM. PROD. (m <sup>3</sup> )	WATER	OIL	HRS	A*PHI*H (h*H)	4 MONTH CUM. PROD. (m <sup>3</sup> )	WATER	OIL	FACT	A*PHI*H (h*H)	OIL RATE (m <sup>3</sup> /op. day)	FACT	OIL RATE (m <sup>3</sup> /op. day)	TRACT FACTOR	TRACT	LAND DESCRIPTION
1	1-23-1-26 WPM	3.82	0	0.0	0.0	0	1.0187	0.0000	0.0000	0.0000	1.0187	0.0000	0.0000	0.0000	0.0000	1.0187	1	1-23-1-26 WPM
2	2-23-1-26 WPM	3.71	0	0.0	0.0	0	0.9894	0.0000	0.0000	0.0000	0.9894	0.0000	0.0000	0.0000	0.0000	0.9894	2	2-23-1-26 WPM
3	7-23-1-26 WPM	7.16	2429	167.6	167.6	2429	1.9094	0.5835	0.5835	2.0953	4.0047	2.0953	2.0953	2.0953	2.0953	4.0047	3	7-23-1-26 WPM
4	8-23-1-26 WPM	9.30	2546	481.8	481.8	2546	2.2135	1.6002	1.6002	5.7462	7.9597	5.7462	5.7462	5.7462	5.7462	7.9597	4	8-23-1-26 WPM
5	9-23-1-26 WPM	14.29	2839	105.7	105.7	2839	3.8109	0.3148	0.3148	1.1304	4.9413	1.1304	1.1304	1.1304	1.1304	4.9413	5	9-23-1-26 WPM
6	10-23-1-26 WPM	5.45	2458	338.7	338.7	2458	1.4534	1.1652	1.1652	4.1841	5.6375	4.1841	4.1841	4.1841	4.1841	5.6375	6	10-23-1-26 WPM
7	15-23-1-26 WPM	9.44	2700	224.3	224.3	2700	2.5175	0.7025	0.7025	2.5226	5.0401	2.5226	2.5226	2.5226	2.5226	5.0401	7	15-23-1-26 WPM
8	16-23-1-26 WPM	20.23	0	0.0	0.0	0	5.3949	0.0000	0.0000	0.0000	5.3949	0.0000	0.0000	0.0000	0.0000	5.3949	8	16-23-1-26 WPM
9	1-24-1-26 WPM	0.68	2904	541.4	541.4	2904	0.1813	1.5765	1.5765	5.6611	5.8424	1.5765	1.5765	1.5765	1.5765	5.8424	9	1-24-1-26 WPM
10	8-24-1-26 WPM	2.12	2088	163.4	163.4	2088	0.5654	0.6617	0.6617	2.3761	2.9415	0.6617	0.6617	0.6617	0.6617	2.9415	10	8-24-1-26 WPM
11	9-24-1-26 WPM	0.62	2448	199.6	199.6	2448	0.1653	0.6895	0.6895	2.4759	2.6412	0.6895	0.6895	0.6895	0.6895	2.6412	11	9-24-1-26 WPM
12	12-24-1-26 WPM	13.20	1896	182.5	182.5	1896	3.5202	0.8139	0.8139	2.9227	6.4429	0.8139	0.8139	0.8139	0.8139	6.4429	12	12-24-1-26 WPM
13	13-24-1-26 WPM	12.23	2880	215.2	215.2	2880	3.2615	0.6318	0.6318	2.2688	5.5303	0.6318	0.6318	0.6318	0.6318	5.5303	13	13-24-1-26 WPM
14	16-24-1-26 WPM	3.84	0	0.0	0.0	0	1.0241	0.0000	0.0000	0.0000	1.0241	0.0000	0.0000	0.0000	0.0000	1.0241	14	16-24-1-26 WPM
15	1-25-1-26 WPM	15.74	2496	441.8	441.8	2496	4.1976	1.4967	1.4967	5.3745	9.5721	1.4967	1.4967	1.4967	1.4967	9.5721	15	1-25-1-26 WPM
16	2-25-1-26 WPM	15.15	2280	242.8	242.8	2280	4.0402	0.9005	0.9005	3.2336	7.2738	0.9005	0.9005	0.9005	0.9005	7.2738	16	2-25-1-26 WPM
17	3-25-1-26 WPM	13.18	2568	534.5	534.5	2568	3.5148	1.7600	1.7600	6.3201	9.8349	1.7600	1.7600	1.7600	1.7600	9.8349	17	3-25-1-26 WPM
18	4-25-1-26 WPM	8.42	2472	300.3	300.3	2472	2.2455	1.0272	1.0272	3.6886	5.9341	1.0272	1.0272	1.0272	1.0272	5.9341	18	4-25-1-26 WPM
19	1-26-1-26 WPM	9.59	0	0.0	0.0	0	2.5575	0.0000	0.0000	0.0000	2.5575	0.0000	0.0000	0.0000	0.0000	2.5575	19	1-26-1-26 WPM
20	2-26-1-26 WPM	7.35	0	0.0	0.0	0	1.9601	0.0000	0.0000	0.0000	1.9601	0.0000	0.0000	0.0000	0.0000	1.9601	20	2-26-1-26 WPM
21	8-26-1-26 WPM	12.97	0	0.0	0.0	0	3.4588	0.0000	0.0000	0.0000	3.4588	0.0000	0.0000	0.0000	0.0000	3.4588	21	8-26-1-26 WPM
TOTALS:																		100.0000
AVERAGE OIL RATE (m <sup>3</sup> /op. day) & AVERAGE OIL CUT																		100.0000
AFTER 4 MONTHS OF PRODUCTION																		100.0000

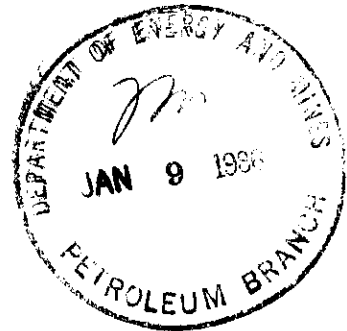
RATE CUT  
 \*\*\*\*\*  
 2.8383 NA



OMEGA  
HYDROCARBONS LTD.

1300 SUN LIFE PLAZA III  
112 - 4th AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 0H3  
TELEPHONE (403) 261-0743

January 6, 1986



To: Royalty Interest Owners  
Waskada Unit 12  
(Addressee List Attached)

Dear Sir/Madame:

Re: Formation of Waskada Unit 12 (formerly: "Waskada Mission Canyon  
Unit D")

Please be advised that Omega Hydrocarbons Ltd. has elected to recall all of the signed and unsigned copies of the Waskada Mission Canyon Unit D Agreement. The recall results from a re-analysis of the participation formula which we believe will be more representative of each tract's contribution to the Unit. In addition, the Unit has been renamed to conform with the government's preference.

The new Agreements will be submitted to you within a few days and will contain factors resulting from the new Unit formula.

Your early return of the Agreements now in your possession will be appreciated.

Yours very truly,

OMEGA HYDROCARBONS LTD.

T.J. Hall  
President

TJH/jr

Encl.

WASKADA UNIT 12

ROYALTY INTEREST OWNERS

ADDRESSEE LIST

John Wilfred Hainsworth  
P.O. Box 433  
Deloraine, Manitoba  
ROM 0M0

Missilinda of Canada Ltd.  
c/o Doane Raymond Chartered Accountants  
100 5 Donald Street  
Winnipeg, Manitoba  
R3L 2T4

64440 Manitoba Ltd.  
P.O. Box 433  
Deloraine, Manitoba  
ROM 0M0

North American Royalties Inc.  
200 East 8 Street  
Chatanooga, Tennessee  
39402 USA

70361 Manitoba Ltd.  
P.O. Box 433  
Deloraine, Manitoba  
ROM 0M0

Mable Grace Pounder  
The Rudyard Kipling  
Suite 1001, 1420 Beach Drive  
Victoria, B.C.  
V8S 2N8

George F. McArthur Estate  
240 1st Street  
Brandon, Manitoba  
R7A 2W5

Niwert Holdings Ltd.  
Waskada, Manitoba  
ROM 2E0

Donald E. McGregor  
Waskada, Manitoba  
ROM 2E0

Manitoba Energy & Mines  
Mineral Resources Branch  
555 - 330 Graham Avenue  
Winnipeg, Manitoba  
R3C 4E3



# Aikins, MacAulay & Thorvaldson

BARRISTERS AND SOLICITORS

A. LORNE CAMPBELL O.C. O.C. LL.D.  
MICHAEL J. MERCURY O.C.  
JAMES E. FORAN O.C.  
LEON N. MERCURY  
CYRIL G. LABMAN  
COLIN R. MACARTHUR  
JOEL A. WEINSTEIN  
S. JANE EVANS  
DOROTHY F. McDONALD  
G. BRUCE TAYLOR  
G. TODD CAMPBELL  
BETTY A. JOHNSTONE  
JONATHAN B. KRIEGER  
STEPHEN T. VINCENT

W. STEWARD MARTIN O.C.  
A. J. MERCURY O.C.  
KNOX R. FOSTER O.C.  
MARSHALL F. ROTHSTEIN O.C.  
LARRY R. CRANE  
ROD E. STEPHENSON  
FRANCES M. STATHAM O.C.  
JUDITH M. BLAIR  
SHAEL H. I. WILDER  
RICHARD L. YARFE  
J. MILTON CHRISTIANSEN  
I. WILLIAM BOWLES  
M. BRUCE BOWMAN

JOHN S. LAMONT O.C.  
MARTIN H. FREEDMAN O.C.  
ELLIOTT B. McDONALD  
RAYMOND H. G. FLETT  
ROLAND B. DIAS  
DAVID G. UMRUH  
DAVID L. VOLCHTING  
DARYL J. ROSIN  
ROBERT G. SIDDALL  
LORI T. SPIVAK  
MARTIN R. GLUTNIK  
JAKE F. HARMS

ROGER J. HANSELL O.C.  
ANDREW C. TOUGH  
ROBERT G. SMELLIE O.C.  
J. TIMOTHY SAMSON  
CHARLES L. CHAPPELL  
GERALD D. PARKINSON  
E. BRUCE PARKER  
MARC M. MONNIN  
MURRAY N. TRACHTENBERG  
FRANK LAVITT  
LISA M. COLLINS  
BARBARA R. HOCHMAN  
J. DOUGLAS SIGUROSON

THIRTIETH FLOOR  
COMMODITY EXCHANGE TOWER  
360 MAIN STREET  
WINNIPEG, MANITOBA  
CANADA R3C 4G1

TELEPHONE: (204) 957-0050

TELEX: 07-587612  
CABLE ADDRESS: "AIKINS"  
TELECOPIER (AUTOMATIC): (204) 957-0840

PLEASE REFER TO

John S. Lamont

FILE NO. 84569  
D-58

COUNSEL THE HONOURABLE SAMUEL FREEDMAN O.C. O.C. LL.D.

SIR JAMES AIKINS K.B. K.C. LL.D. (1873-1929)  
G. H. AIKINS LL.D. O.C. LL.D. (1910-1954)

JOHN A. MACAULAY O.C. O.C. LL.D. (1919-1978)  
HON. G. S. THORVALDSON O.C. (1925-1969)

December 16, 1985

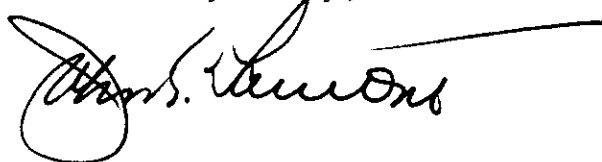
Petroleum Branch  
Mineral Resources Division  
Department of Energy and Mines  
Government of Manitoba  
975 Century Street  
WINNIPEG, Manitoba  
R3H 0W4

Attention: Mr. Bob Dubreuil

Dear Mr. Dubreuil:

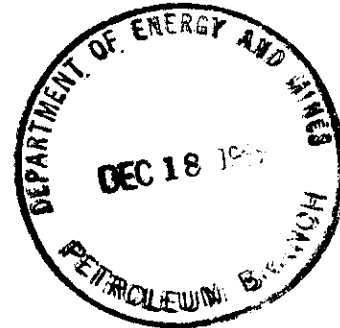
The writer is Secretary of Missilinda of Canada, Ltd., one of the royalty owners which would be affected by the proposed unit agreement relating to the Waskada Mission Canyon Unit D, being proposed by Omega Hydrocarbons Ltd. I understand that you are doing an evaluation of the unit agreement and the various participations proposed and I would appreciate it if you could let me have a copy of your conclusions when these are available.

Yours very truly,



John S. Lamont

JSL/bwl



# Unit D

<u>Well</u>	<u>INITIAL</u> <u><math>\phi h</math> BRANCH</u>	<u>REVISED</u> <u><math>\phi h</math> Branch</u>	<u><math>\phi h</math> Omega</u>	<u>Revised</u> <u>Omega</u>	<u>Unresolved</u> <u>Difference.</u>
1-23	0.37	0.43	0.63	0.34	X
2-23	0.37		0.35	0.31	
7-23	0.56	(1)	0.75	0.44	X
8-23	0.55		0.56	0.56	
9-23	0.89	0.76	0.54	0.93	X
10-23	0.32	0.52	0.81	0.30	X
15-23	0.64		0.63	0.65	
16-23	1.67	1.14 (2)	0.68	1.59	X
* 1-24	0.06	0.30	0.53	0.07	X
* 8-24	0.28	0.38	0.62	0.28	X
9-24	0.05		0.18	0.05	
12-24	1.07		1.05	0.43	
13-24	0.74		0.39	0.62	X
16-24	0.04		0.25	0.18	X
1-25	1.44		1.48	1.39	
2-25	1.23		1.32	1.20	
3-25	1.32		0.90	1.07	X
4-25	0.53		0.69	0.53	
1-26	0.31		0.31	0.30	
2-26	0.84	0.57	0.45	0.76	
8-26	1.21		1.31	1.19	

## \* Crown Tracts

0.38 adjustment by using  $\Delta t_{cutoff} = 180 \text{ msec/m}$

0.57 adjustment by eliminating zones with  $S_w > 70\%$

(1) could increase  $\phi h$  by including 939-43 - possible MZ

(2) has high water saturations

1-23. decrease  $\Delta t_{c.o.}$  to 180 msec  
 $h = 3.19 \text{ m}$        $\Delta t_{ave} = 207.24$   
 $\phi = 13.53$        $\phi h = 0.43$

9-23 eliminate 938.6 - 939.5 ( $R_T < 40$ )  
 $h = 5.1$        $\Delta t = 213$        $\phi = 14.82$        $\phi h = 0.76$

10-23 decrease  $\Delta t_{c.o.}$  to 180  
 $h = 4.79$        $\Delta t_{ave} = 194.78$        $\phi = 10.92$        $\phi h = 0.52$

16-23 eliminate 941.7 down - possible owc.  
 $h = 6.65$        $\Delta t = 225$        $\phi = 17.25$        $\phi h = 1.15$

1-24 decrease  $\Delta t_{c.o.}$  to 180  
 $h = 2.97$        $\Delta t = 190.24$        $\phi = 9.97$        $\phi h = 0.30$

8-24 decrease in  $\Delta t_{c.o.}$  to 180  
 $h = 3.50$        $\Delta t = 193.48$        $\phi = 10.75$        $\phi h = 0.38$

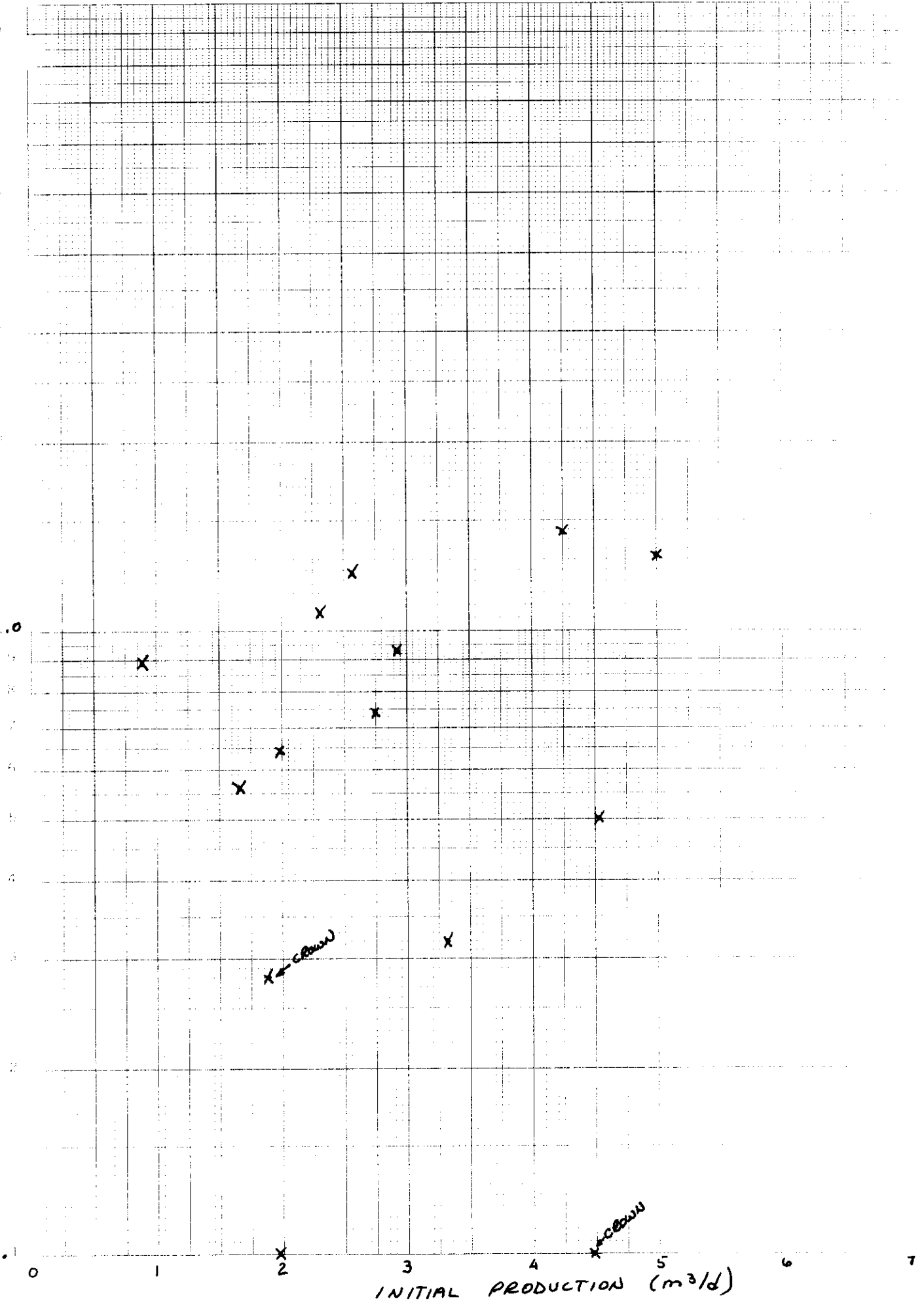
2-26 eliminate 931.3 - 932.7 ( $S_w > 70\%$ )  
 $h = 4.01$        $\Delta t = 210.46$        $\phi = 14.20$        $\phi h = 0.57$

Waskada Unit 12.

<u>Well</u>	<u><math>\phi h</math></u>	<u>Cum P</u>	<u>% of OIP</u>	<u>INITIAL RATE (m<sup>3</sup>/d)</u>
7-23	0.56			1.66
8-23	0.55	1345.5		4.54
9-23	0.89	115.4		0.89
10-23	0.32	744.2		3.31
15-23	0.64	264.2		1.99
1-24	0.06	3766.5		4.47
8-24	0.28	4214.1		1.88
9-24	0.05			1.96
12-24	1.07			2.31
13-24	0.74	1983.1		2.25
1-25	1.44	3299.4		4.25
2-25	1.23			2.56
3-25	1.32	1508.9		5.00
4-25	0.53			2.92

46 5130

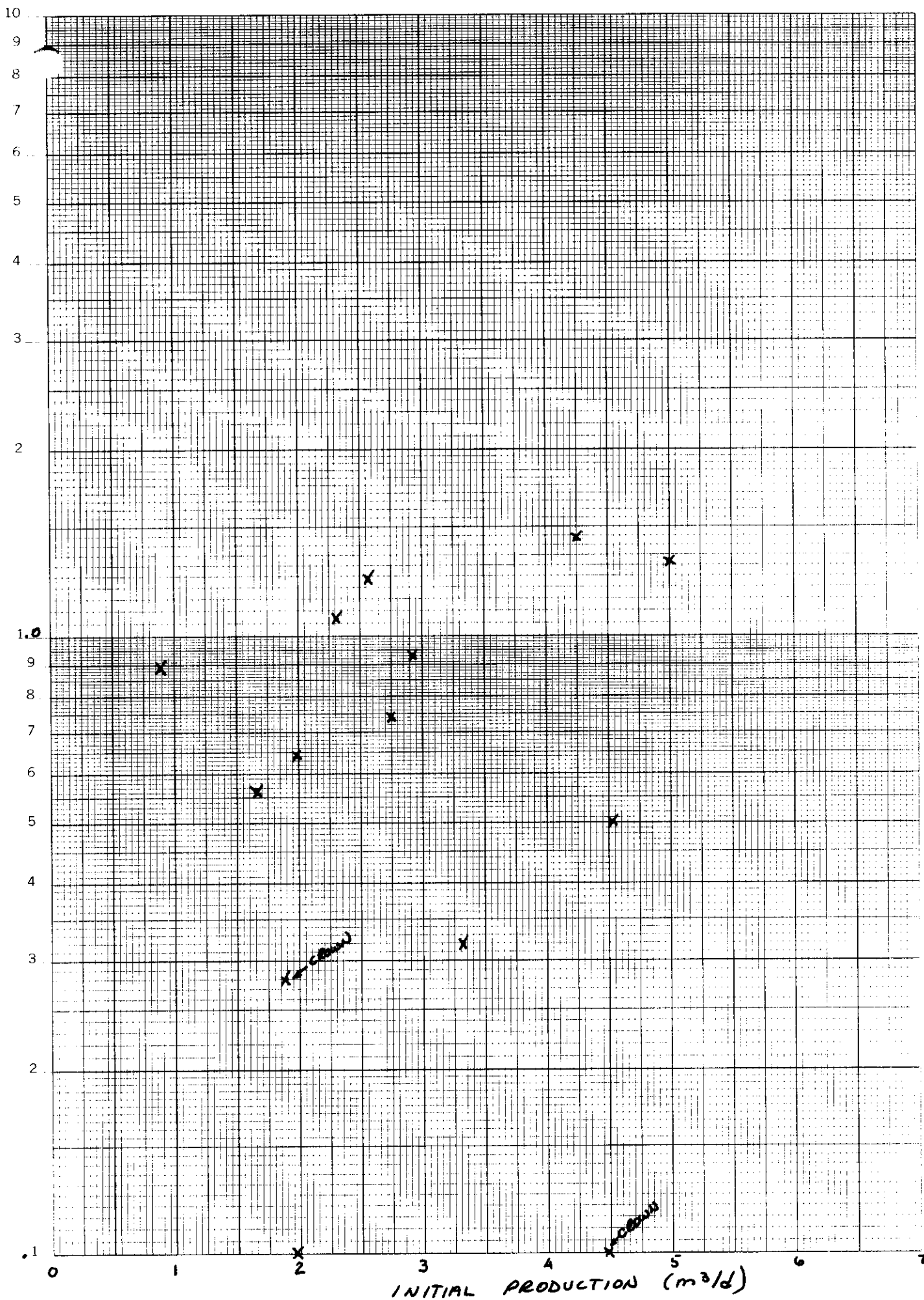
$\phi_h$



46 5130

0h

K-E SEMI-LOGARITHMIC 2 CYCLES x 140 DIVISIONS  
KEUFFEL & ESSER CO. MADE IN U.S.A.



WASKADA UNIT 12 - % of OOIIP Produced - current producers

<u>Well</u>	<u><math>\phi h</math> (ft)</u>	<u><math>1-S_w</math></u>	<u><math>N</math>(bbl)</u>	<u>Cum P(bbl)</u>	<u>% of <math>N</math></u>
8-23	1.80	.55	267144	8643	3.17
9-23	2.92	.37	291538	726	0.25
10-23	1.05	.67	189834	4681	2.47
15-23	2.10	.49	277634	1662	0.60
1-24	0.20	.77	41555	23691	57.01
8-24	0.92	.50	123943	26508	21.39
13-24	2.43	.54	353770	12473	3.52
1-25	4.72	.71	905143	20753	2.29
3-25	4.33	.53	619364	9490	1.53

3,069,925

$$N = 7758 \phi h (1-S_w) A / B_{oi}$$

$$B_{oi} = 1.15$$

$$A = 4060$$

$$N = 269843 \phi h (1-S_w)$$

# Unit 1)

$$1-23 \quad h_{net} = 2.56 \text{ m} \quad \Delta t_{ave} = 211$$

$$\phi = 14.32 \quad \phi h = 0.37 \quad \Omega \phi h = 0.63$$

$$2-23 \quad h_{net} = 2.50$$

$$\phi = 14.99\% \quad \phi h = 0.37 \quad \Omega \phi h = 0.35$$

$$7-23 \quad h_{net} = 4.15 \quad \Delta t_{ave} = 207.68$$

$$\phi = 13.62 \quad \phi h = 0.56 \quad \Omega \phi h = 0.75$$

$$8-23 \quad h_{net} = 4.51 \quad \Delta t_{ave} = 200.47$$

$$\phi = 12.11 \quad \phi h = 0.55 \quad \Omega \phi h = 0.56$$

$$9-23 \quad h_{net} = 6.00 \quad \Delta t_{ave} = 213.49$$

$$\phi = ~~6.00~~ 14.8 \quad \phi h = 0.89 \quad \Omega \phi h = 0.54 \quad *$$

$$10-23 \quad h_{net} = 2.66 \quad \Delta t_{ave} = 199.46$$

$$\phi = 11.90 \quad \phi h = 0.32 \quad \phi h \Omega = 0.81$$

$$15-23 \quad h_{net} = 4.63 \quad \Delta t_{ave} = 208.94$$

$$\phi = 13.89 \quad \phi h = 0.64 \quad \Omega \phi h = 0.63$$

$$16-23 \quad h_{net} = 10.22 \quad \Delta t_{ave} = 220.75$$

$$\phi = 16.36 \quad \phi h = 1.67 \quad \Omega \phi h = 0.68 \quad *$$

$$1-24 \quad h_{net} = 0.53 \quad \Delta t_{ave} = 193.97$$

$$\phi = 10.75 \quad \phi h = 0.06 \quad \Omega \phi h = 0.53$$

$$8-24 \quad h_{net} = 2.36 \quad \Delta t_{ave} = 198.32$$

$$\phi = 11.66 \quad \phi h = 0.28 \quad \phi h \Omega = 0.62$$

\* higher than normal Sw



$$9-24 \quad h = 0.44 \quad \Delta t_{ave} = 198$$

$$\phi = 11.60 \quad \phi h = 0.05 \quad \Omega \phi h = 0.18$$

$$12-24 \quad h_{net} = 7.87 \quad \Delta t_{ave} = 207.59$$

$$\phi = 13.60 \quad \phi h = 1.07 \quad \Omega \phi h = 1.05$$

$$13-24 \quad h_{net} = 5.25 \quad \Delta t_{ave} = 209.75$$

$$\phi = 14.06 \quad \phi h = 0.74 \quad \Omega \phi h = 0.39$$

$$A16-24 \quad h_{net} = 0.38 \quad \Delta t_{ave} = 193.5$$

$$\phi = 10.65 \quad \phi h = 0.04 \quad \Omega \phi h = 0.25$$

$$1-25 \quad h_{net} = 9.50 \quad \Delta t_{ave} = 214.95$$

$$\phi = 15.14 \quad \phi h = 1.44 \quad \Omega \phi h = 1.48$$

$$2-25 \quad h_{net} = 8.41 \quad \Delta t_{ave} = 212.44$$

$$\phi = 14.62 \quad \phi h = 1.23 \quad \Omega \phi h = 1.32$$

$$3-25MC3a \quad h_{net} = 9.16 \quad \Delta t_{ave} = 211.73$$

$$\phi = 14.47 \quad \phi h = 1.32 \quad \Omega \phi h = 0.90$$

$$4-25 \quad h_{net} = 3.90 \quad \Delta t_{ave} = 207.10$$

$$\phi = 13.50 \quad \phi h = 0.53 \quad \Omega \phi h = 0.69$$

$$1-26 \quad h_{net} = 2.26 \quad \Delta t_{ave} = 207.96$$

$$\phi = 13.68 \quad \phi h = 0.31 \quad \Omega \phi h = 0.31$$

$$2-26 \quad h_{net} = 5.39 \quad \Delta t_{ave} = 217.47 \quad \Omega \phi h = 0.45$$

$$\phi = 15.67 \quad \phi h = 0.84$$

$$\text{IF ONLY TOP}^2 \text{ ZONES(S)}$$

$$h = 2.63 \quad \Delta t = 213.57 \quad \phi h = 0.32$$

$$\text{IF ONLY ZONE 3 elim.}$$

$$h = 4.01 \quad \Delta t_{ave} = 211$$

$$\phi = 14.34 \quad \phi h = 0.57$$

8-26

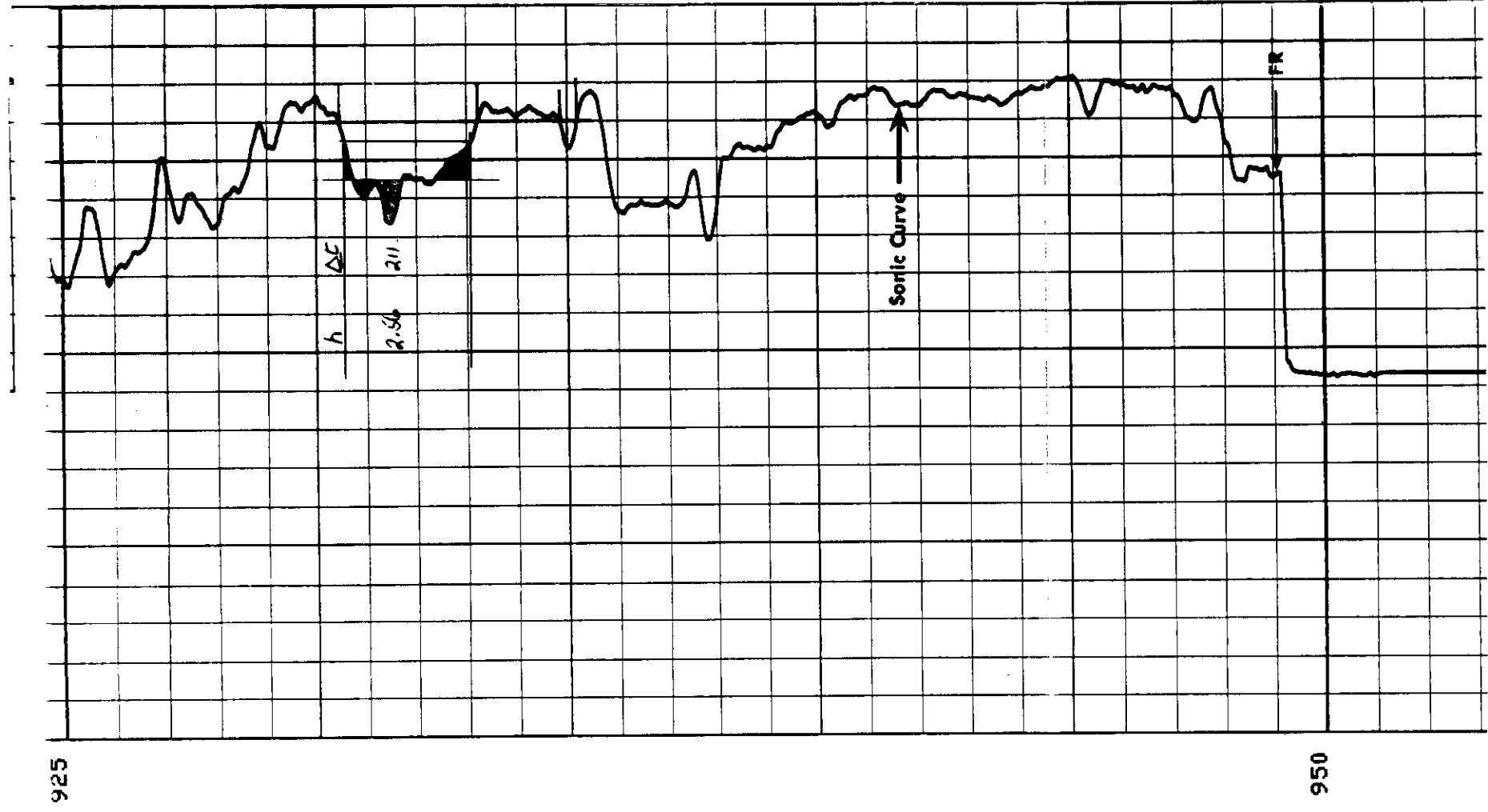
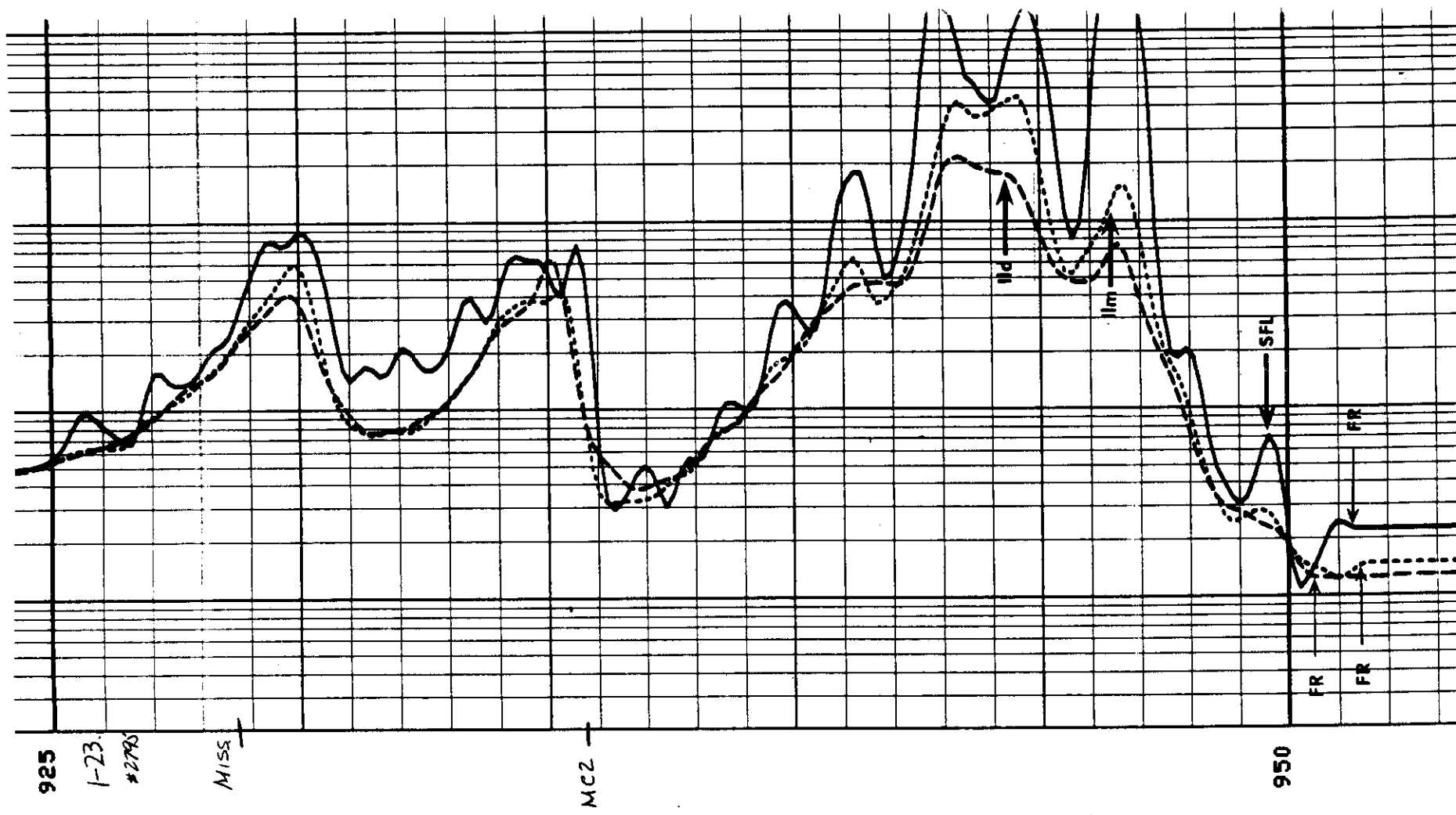
$h_{net} = 7.68$

$\Delta t_{one} = 217.81$

$\phi = 15.74$

$\phi h = 1.21$

$\Omega \phi h = 1.31$



925

$h$	$\Delta t$
1.94	218
0.56	201

950

FILE

925

2-23

MISS.

MCZ

950

925

950

$\Delta$   $\Delta t$

2.75 208

0.62 211.5

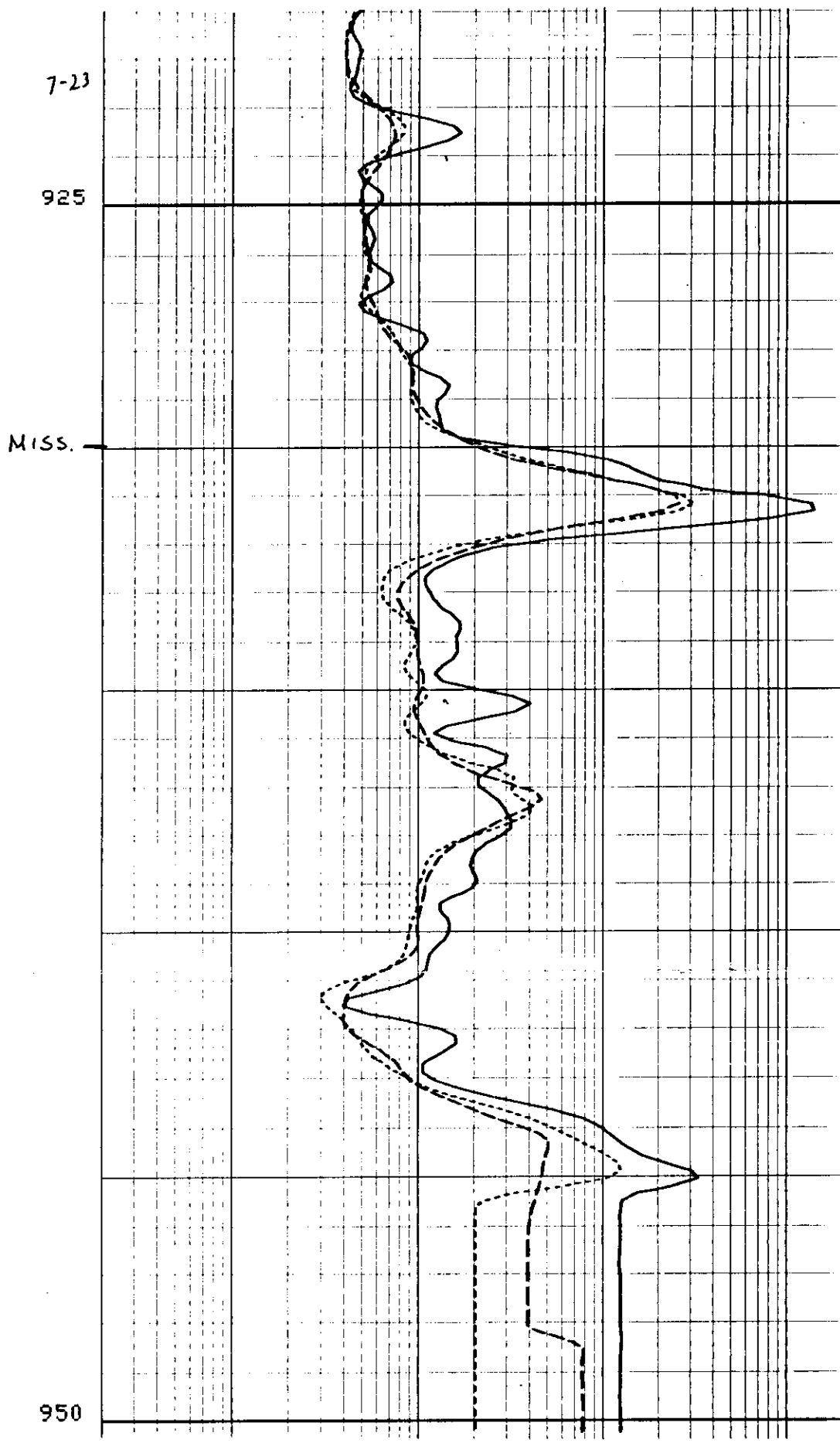
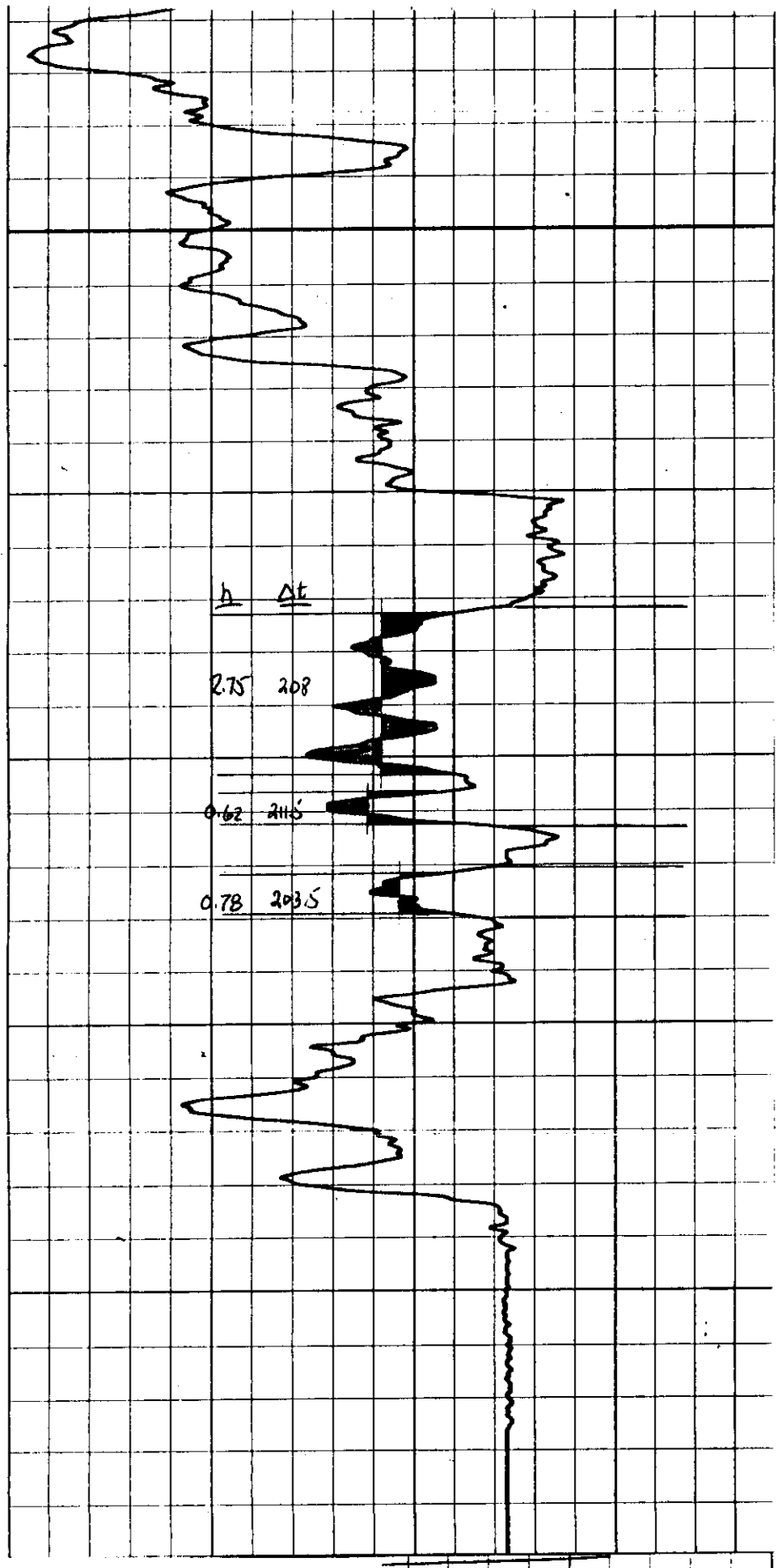
0.78 203.5

7-23

925

MISS.

950



925

950

$\lambda$	$\Delta E$
1.41	2015
1.19	200
1.91	200

8-23

925

MISS

42

44

48

one = 45

MCZ

950

925

950

h  $\Delta t$   
5.34 214  
0.44 208  
0.22 212  
 $\Delta t_{true}$

0.90

925

950

9-23MC3

eliminate MC3a  
zone where  
 $R_e < 4 \text{ ohms}$

64

59

50

area =  
63

Sw

74.8

59.3

48.6

925

$h \Delta E$

1.44 201

0.22 193

0.81 200

0.09 195

2.22 198

0.22 185

1.58 195

0.40 190

0.41 182

4.79 1942

SHALEY

Sonic Curve

FR

950

925

MISS.

10-23

38

38

30

31

33

MC2

950

SFL

11d

11m

FR

FR



925

$\lambda$	$\Delta t$
0.94	211

0.72	206
------	-----

2.97	209
------	-----

DEEPEST

925

15-23

39 MC3a

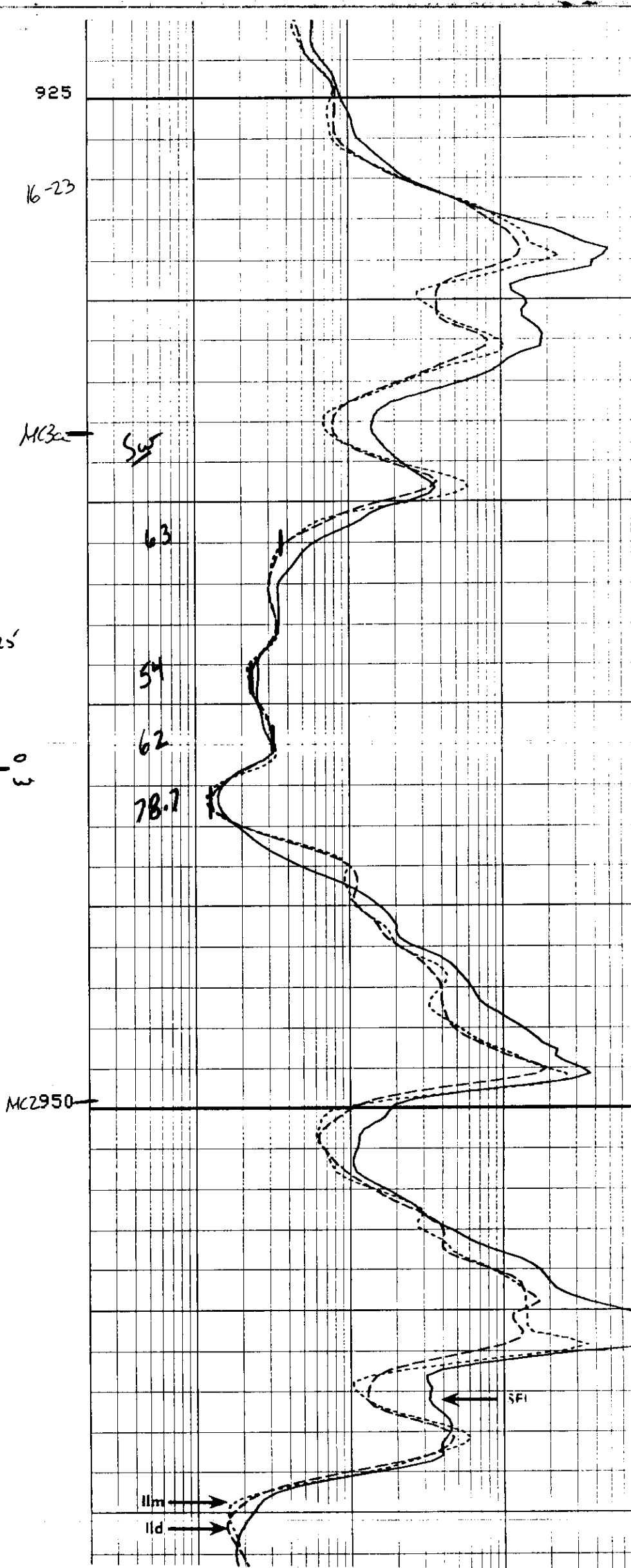
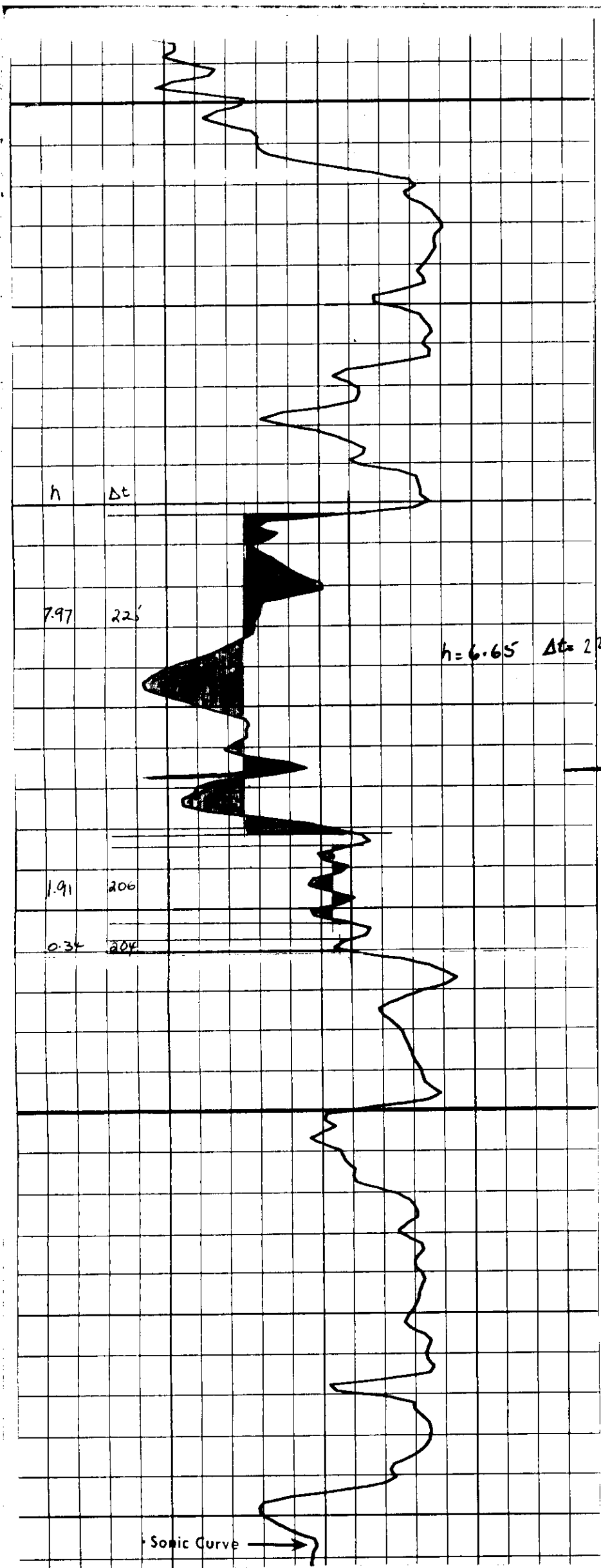
~~18 MC3a~~  
73

49

MC2

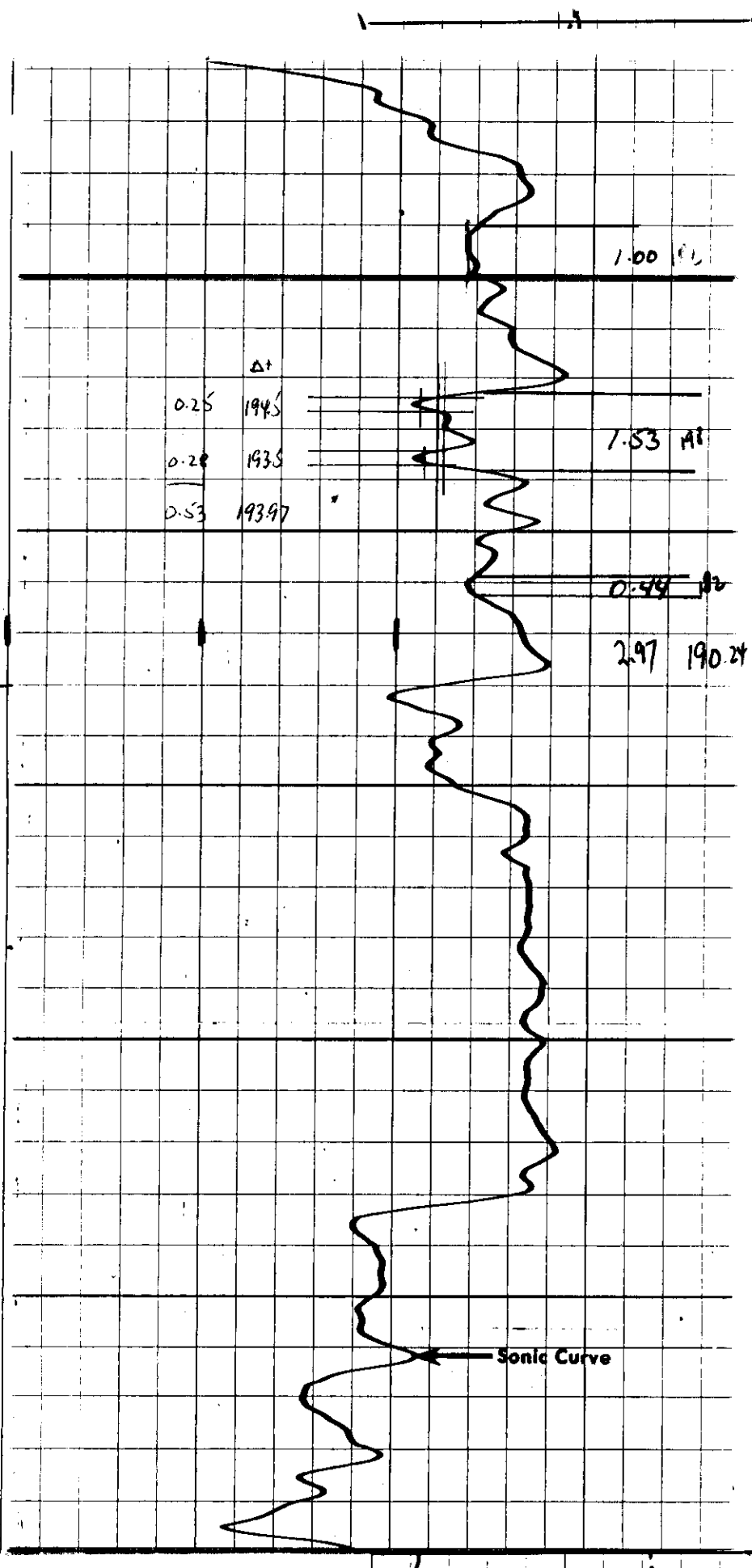
FR

- FR



MC2

60

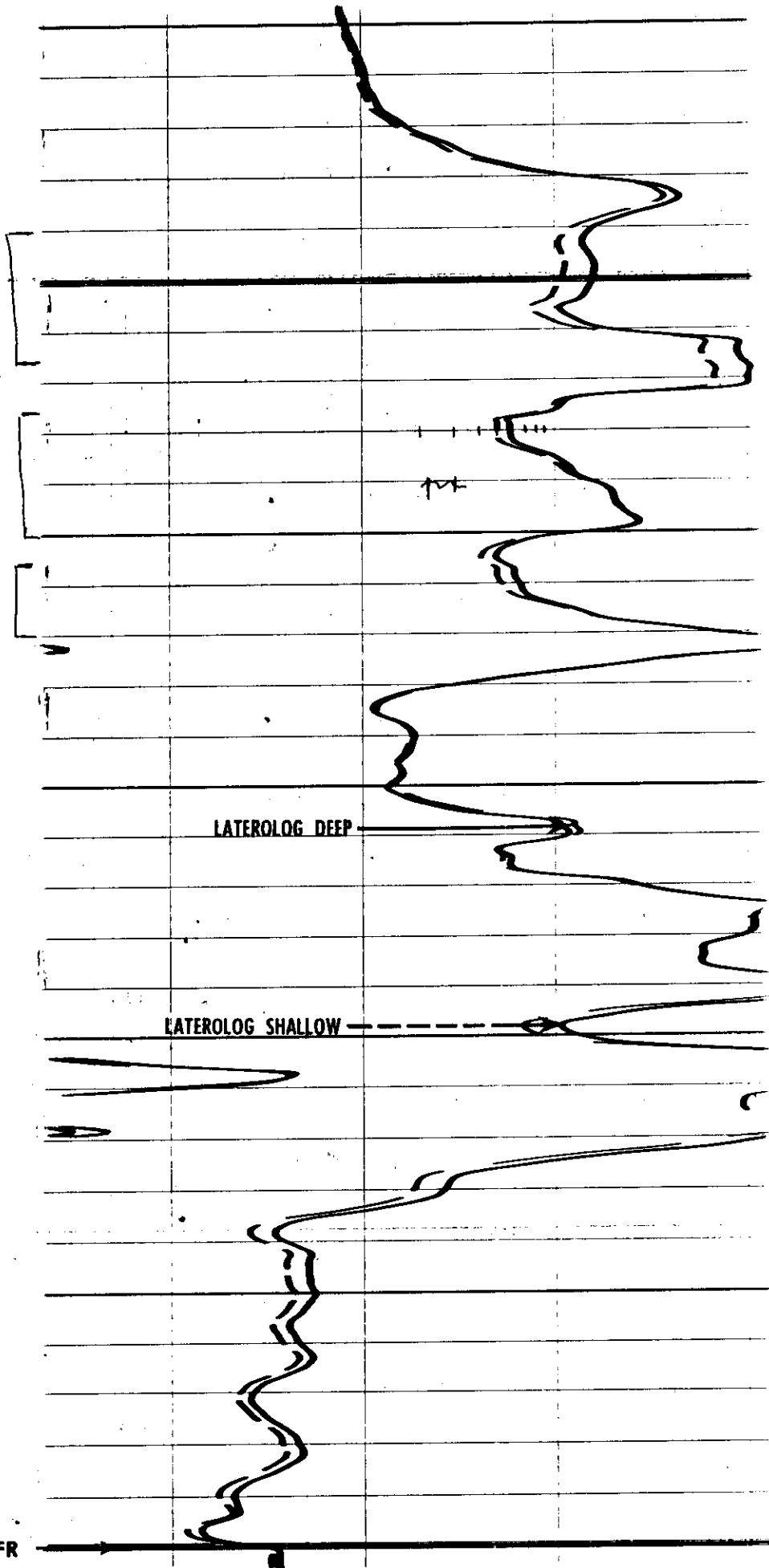


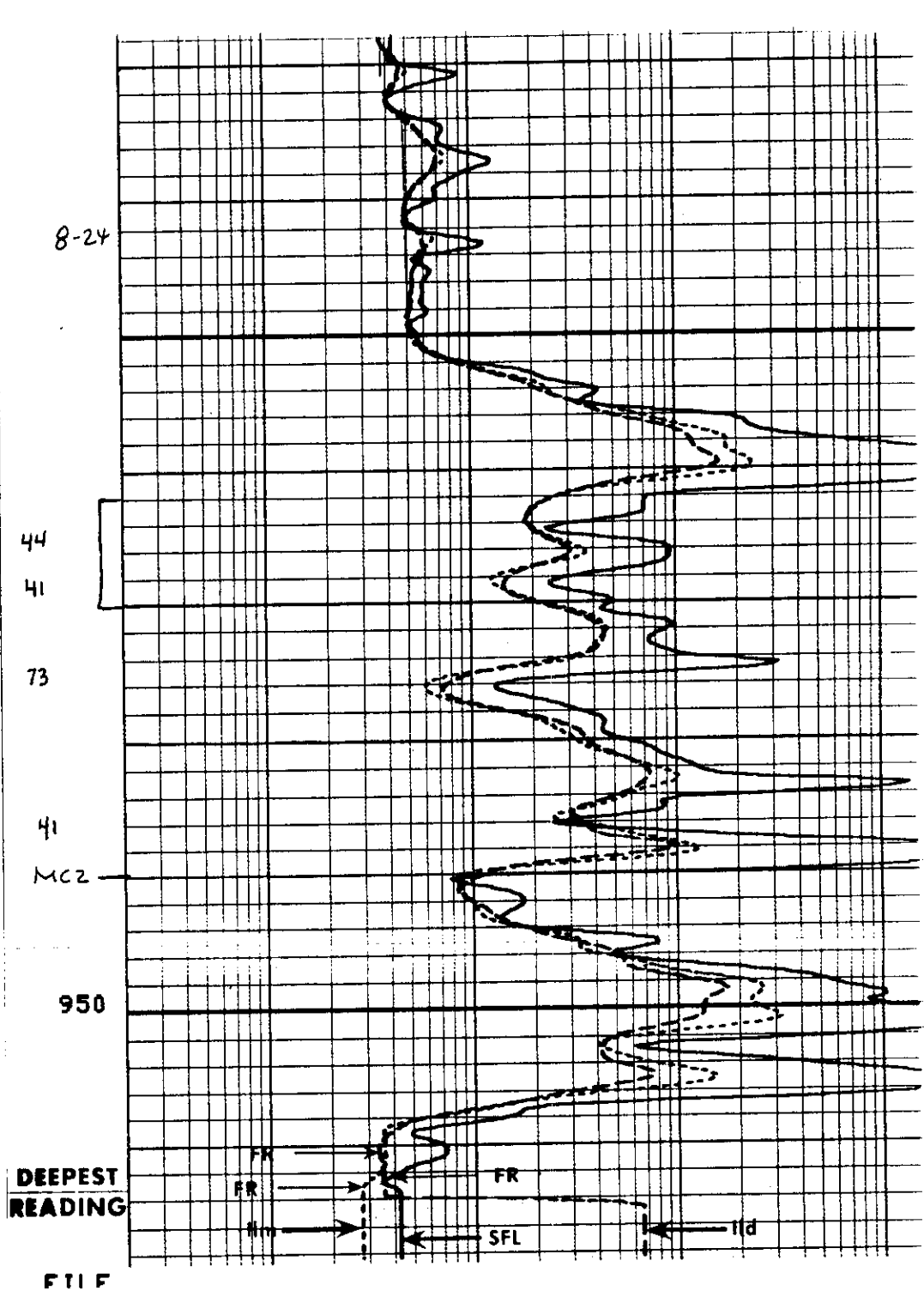
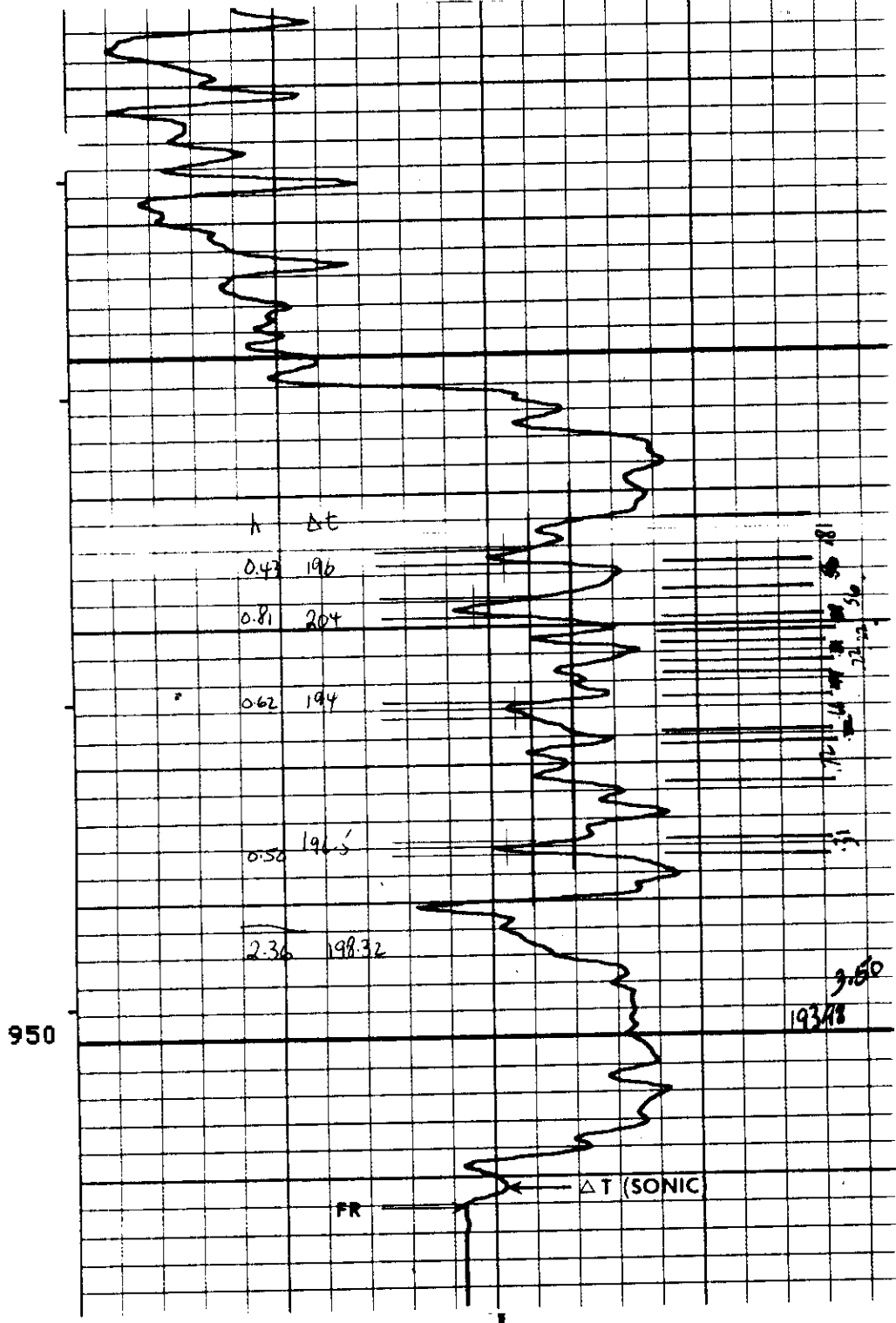
21-24

20

23

095C  
FR





900

MCC

SONIC SCALE CHANGE

500

300

300

200

100

100

$\frac{h}{0.44}$   $\frac{\Delta t}{198}$

Sonic Curve

FR

900

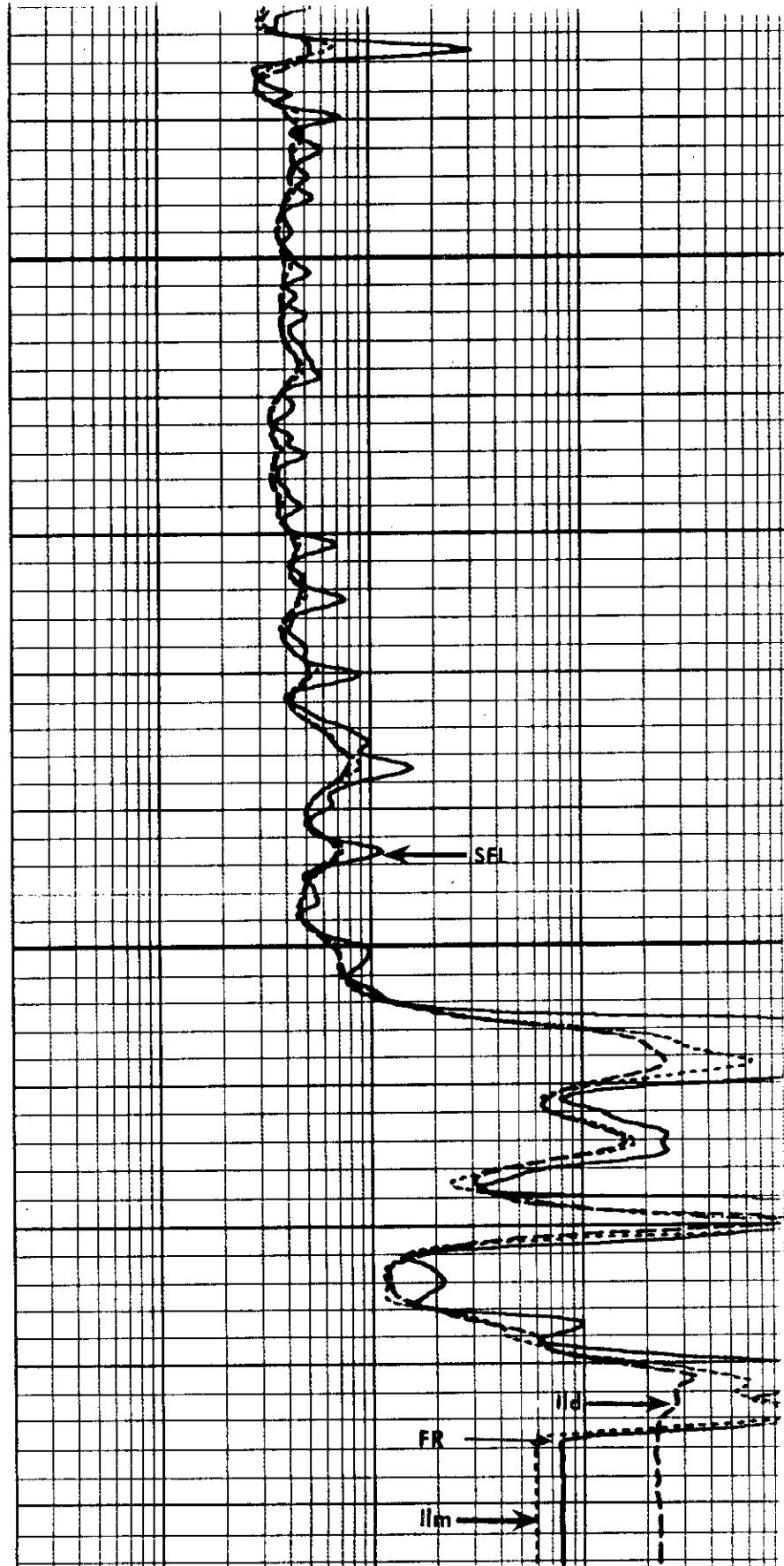
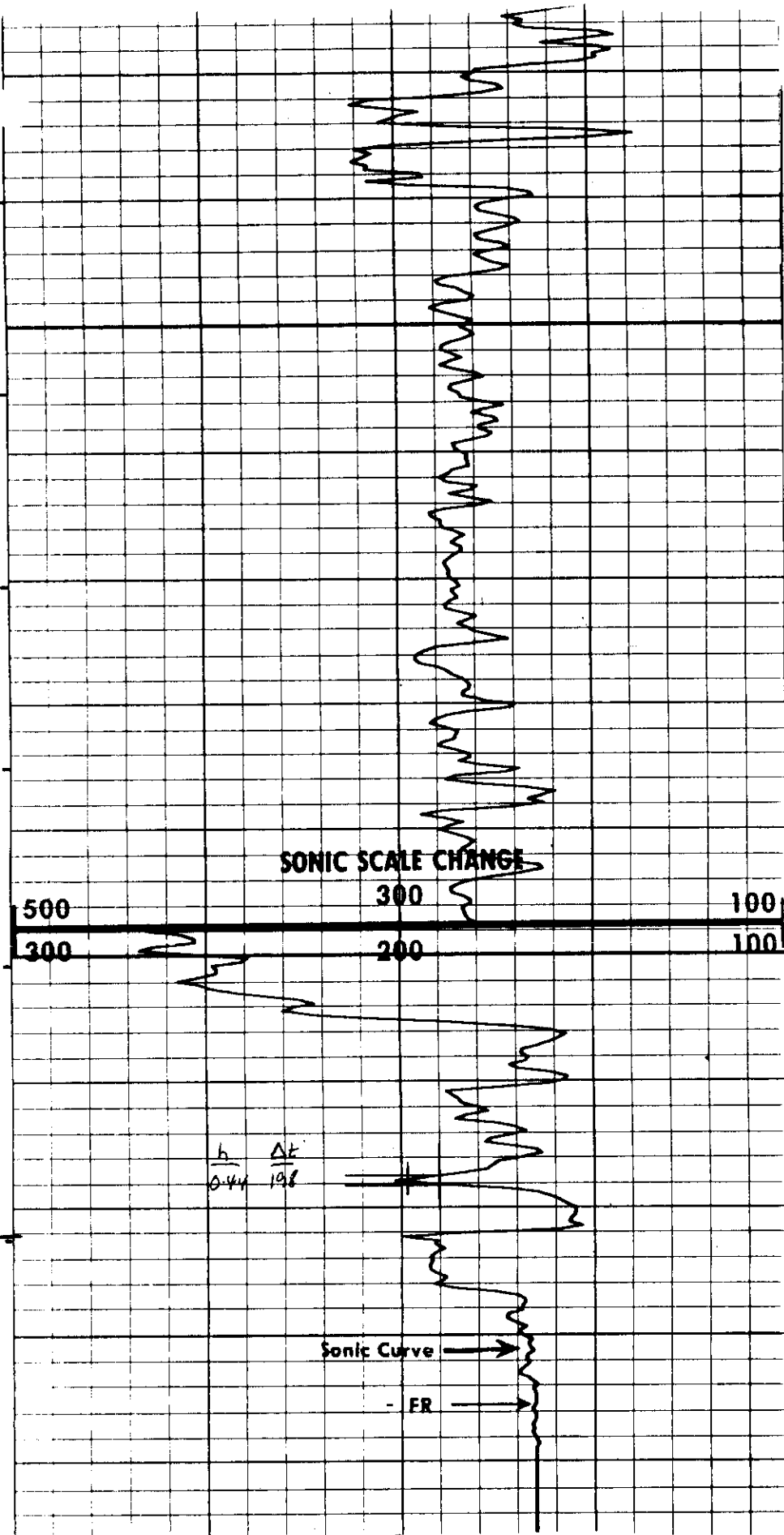
9-24

SEI

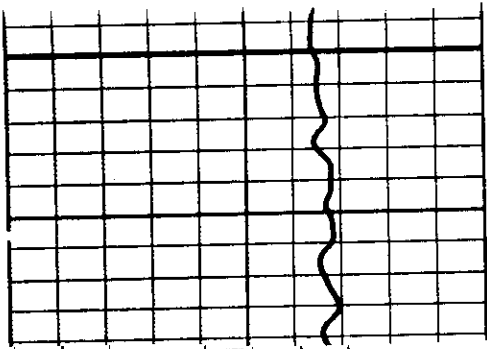
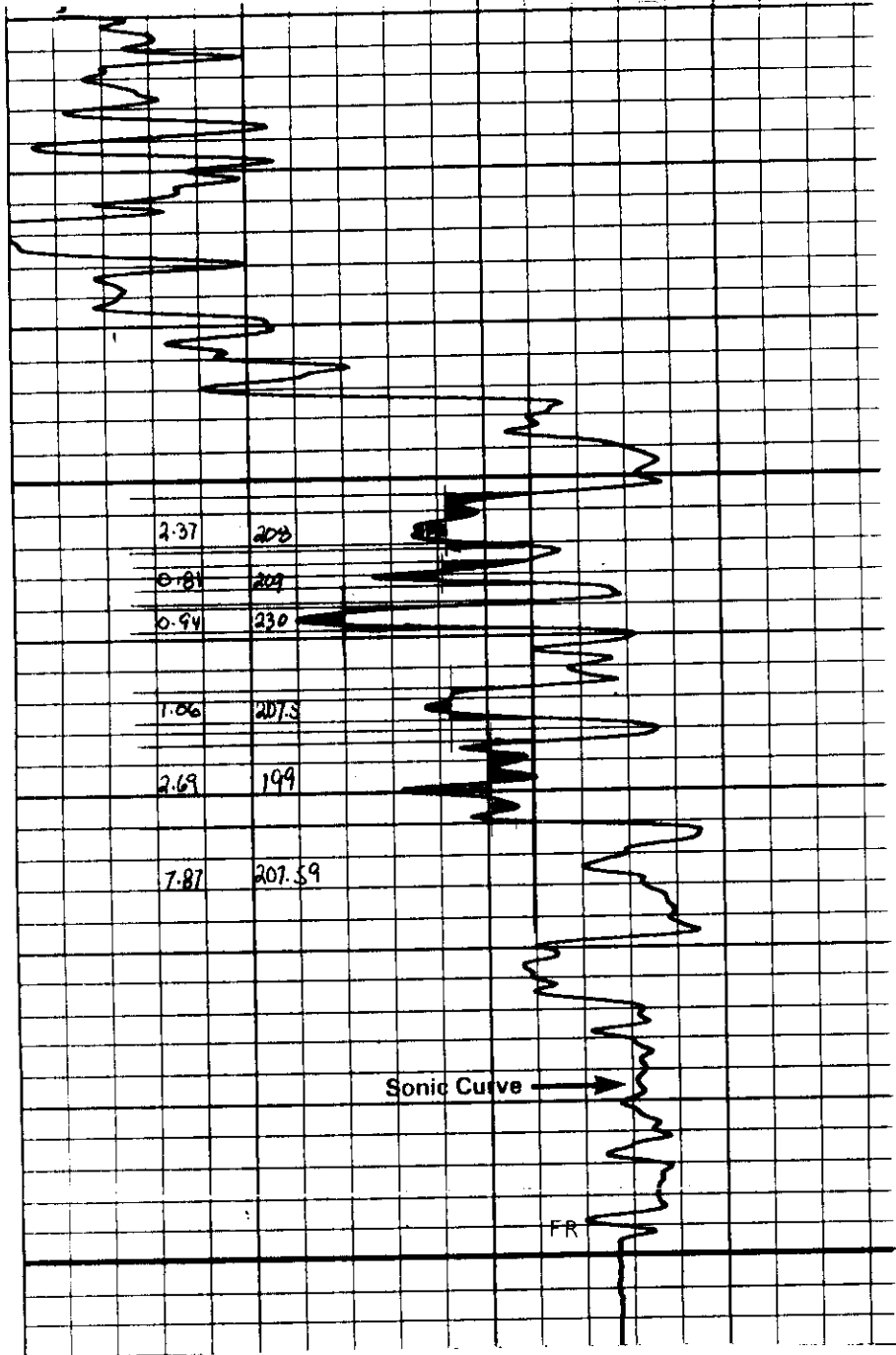
FR

11m

110



950



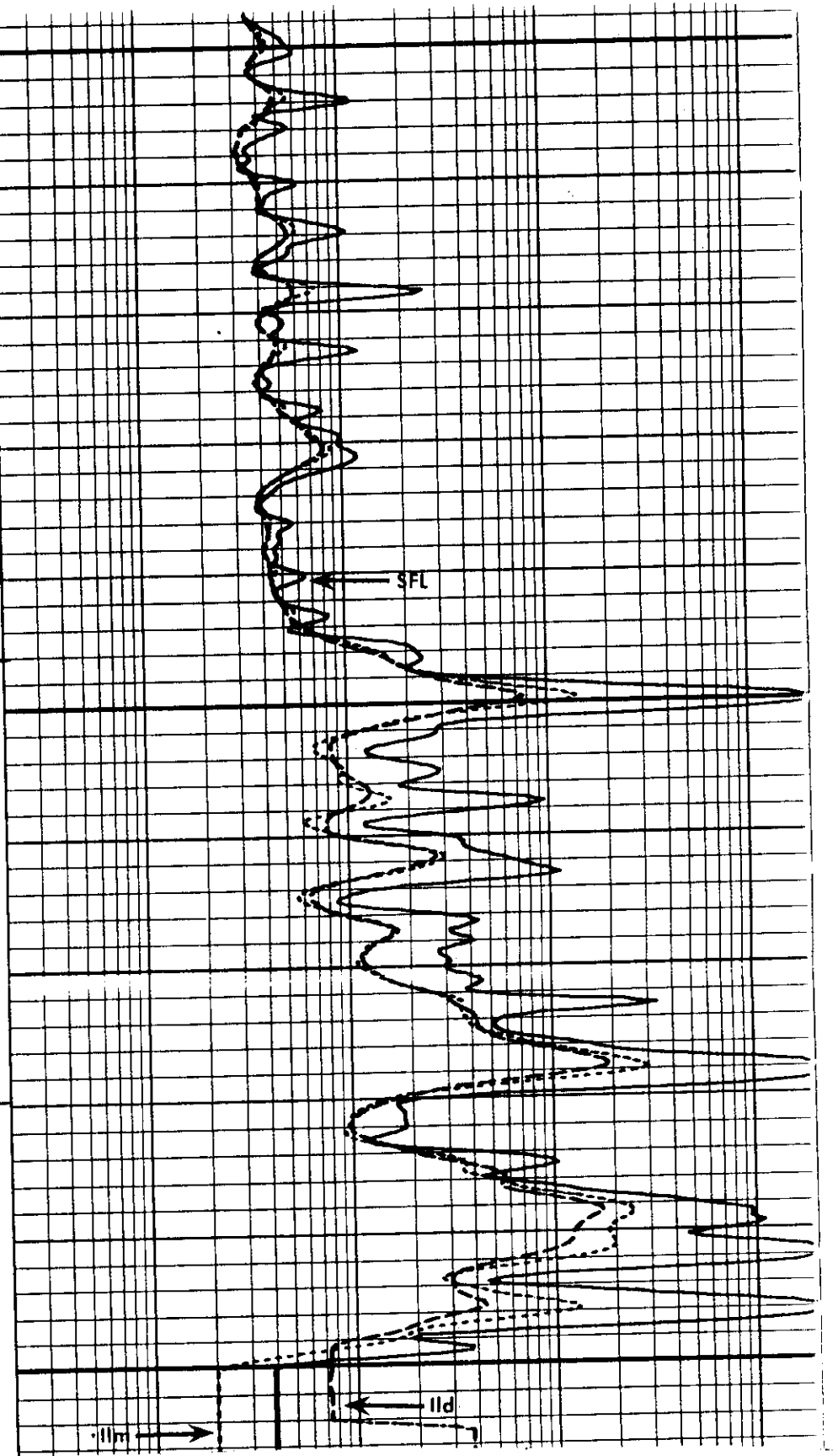
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900

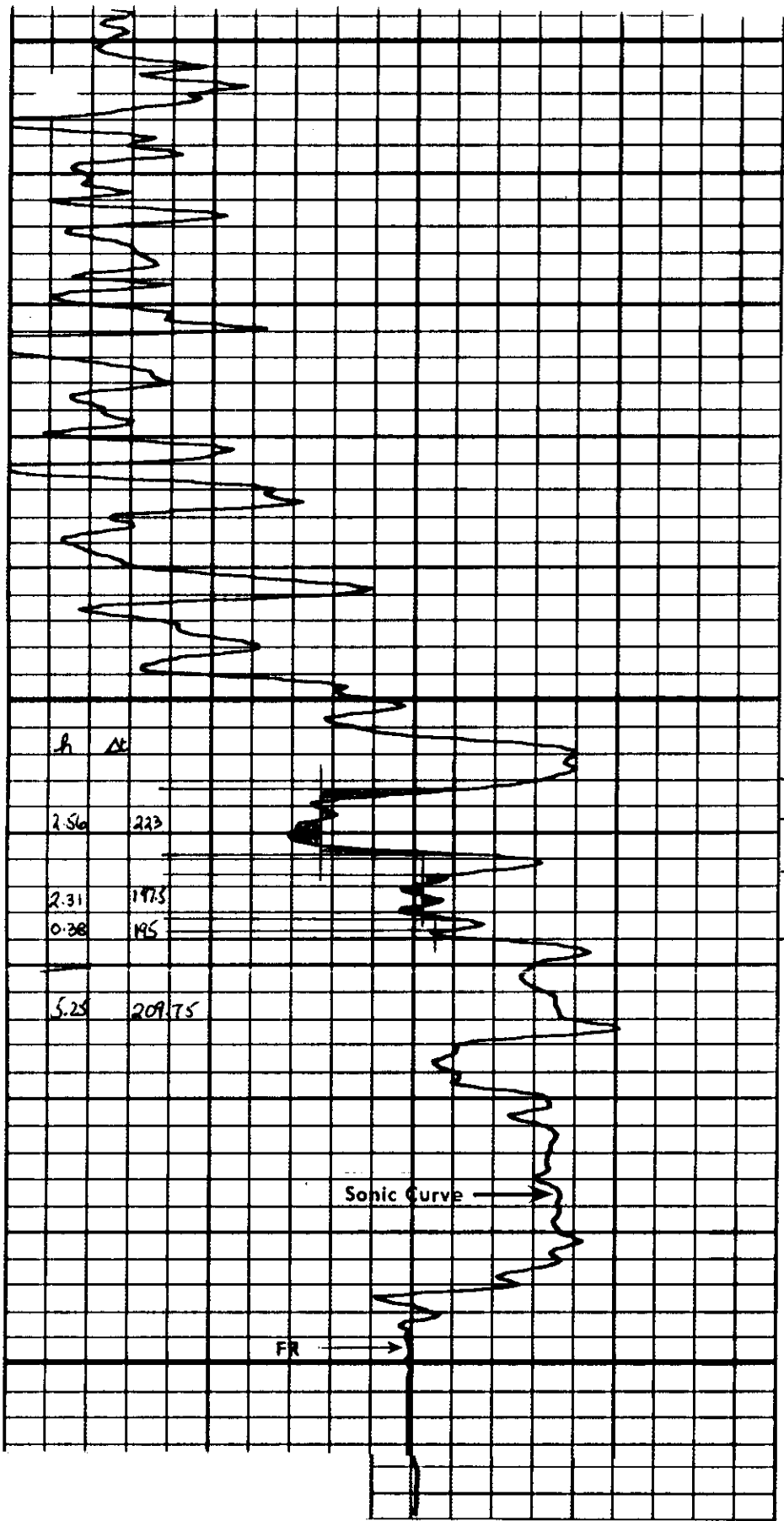
MISS

MC2

950



900

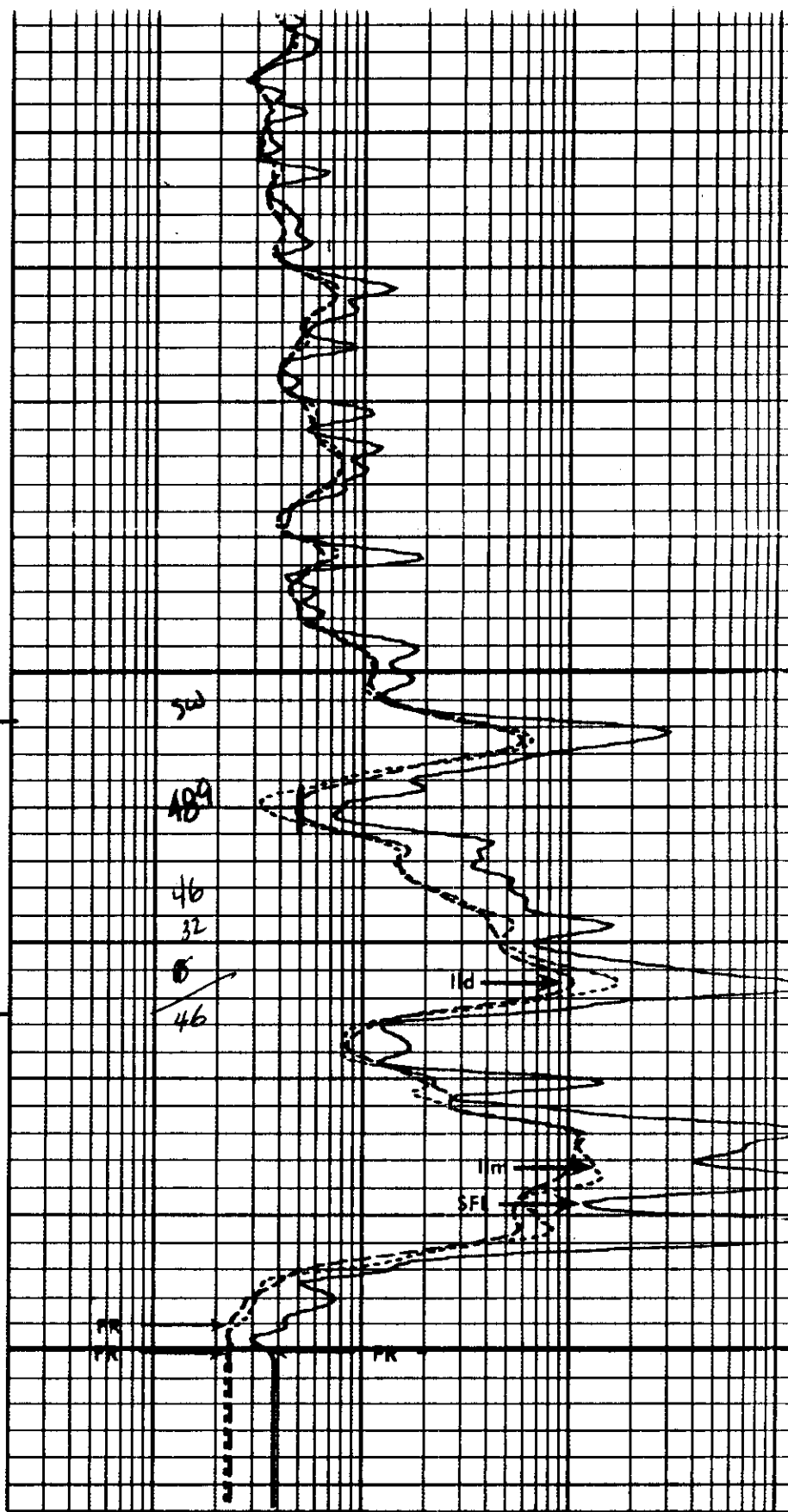


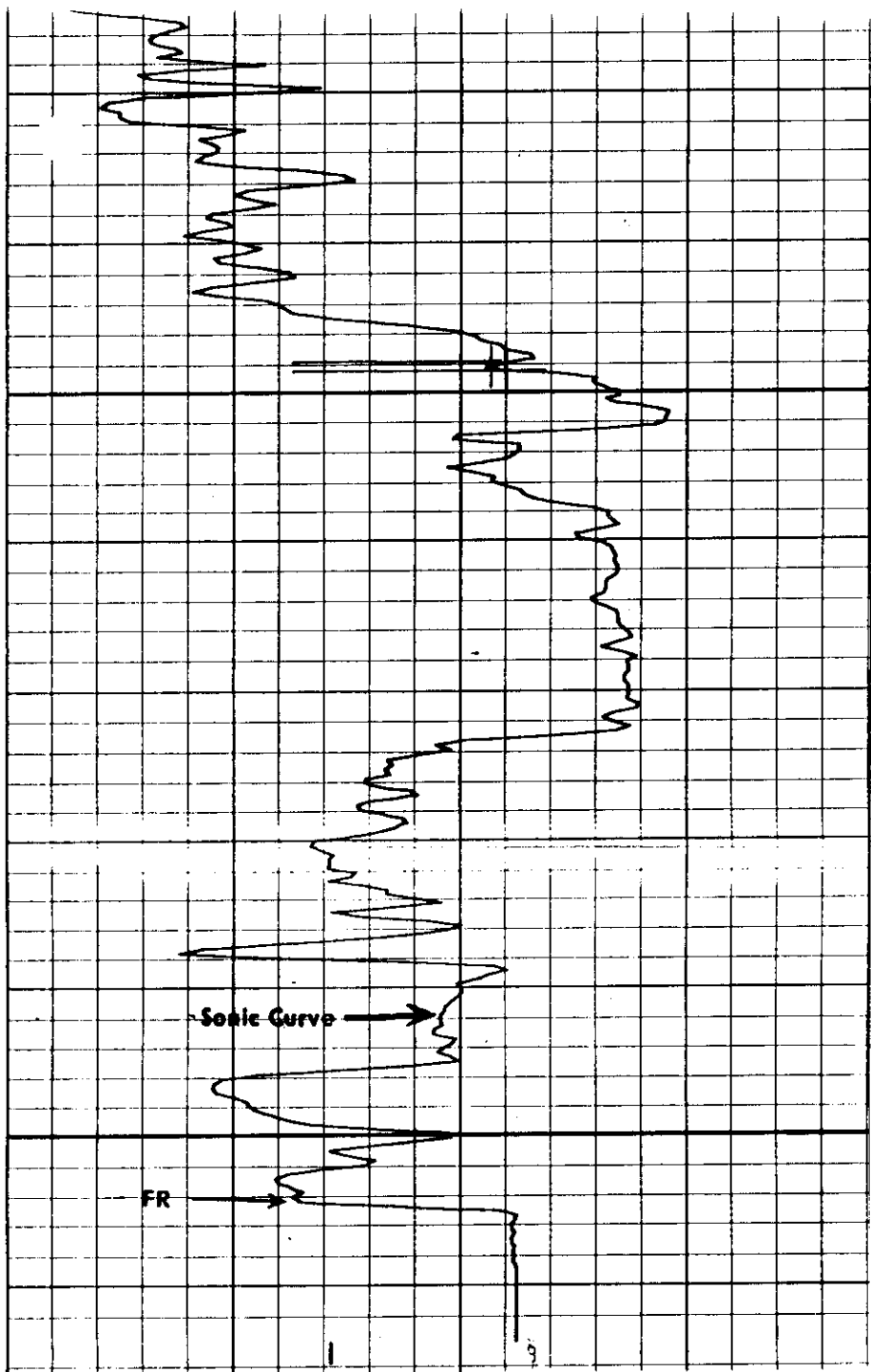
13-24

MISS

MC2

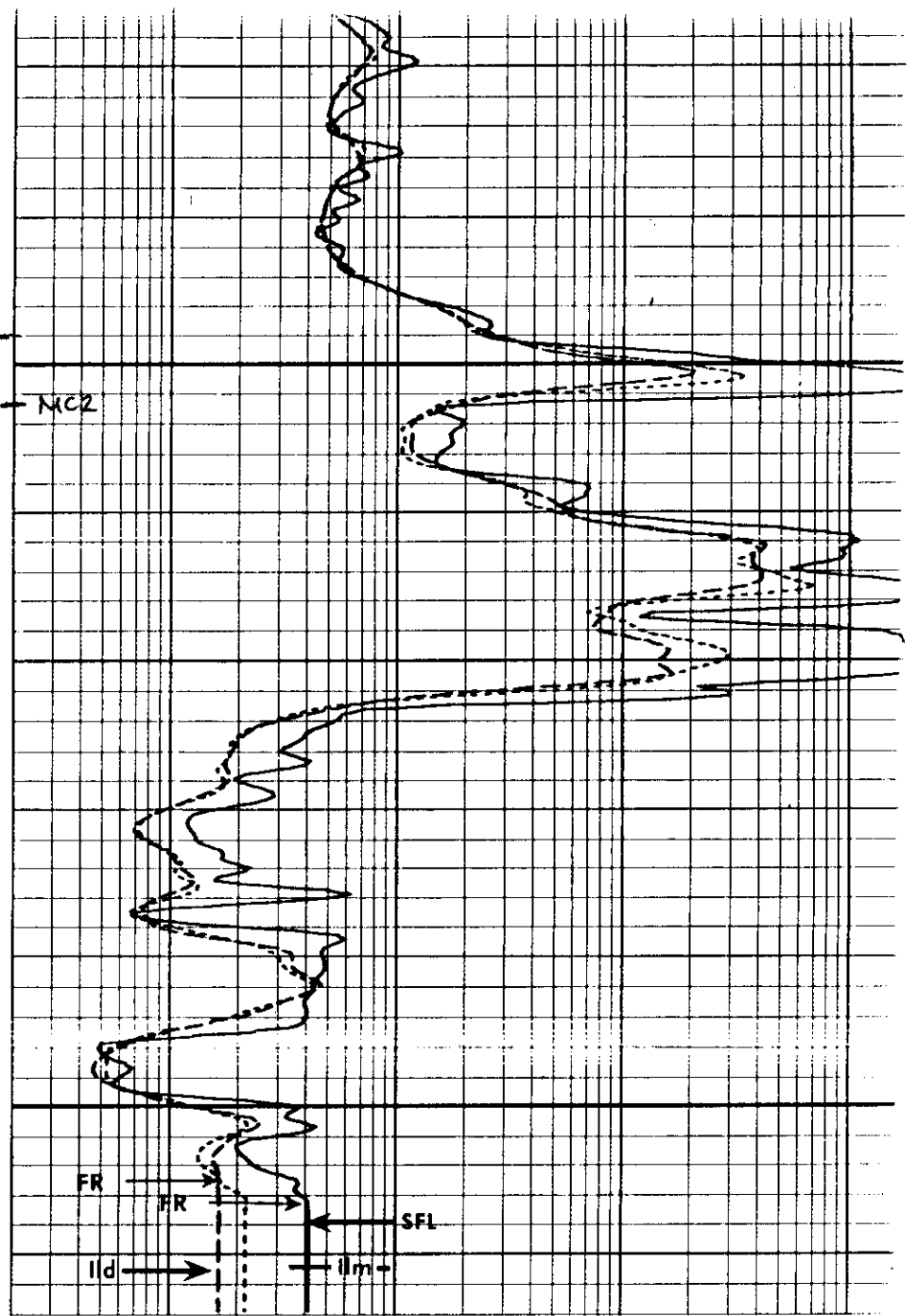
950





FILE

16-24



FILE



925

$\lambda$	$\Delta t$
0.50	198

8.50 217

0.50 197

9.50 214.95

Sonic Curve

FR

950

1-25

925

MC2

950

FILE

2

925

h Δt

0.22 19.5

8.19 213

950

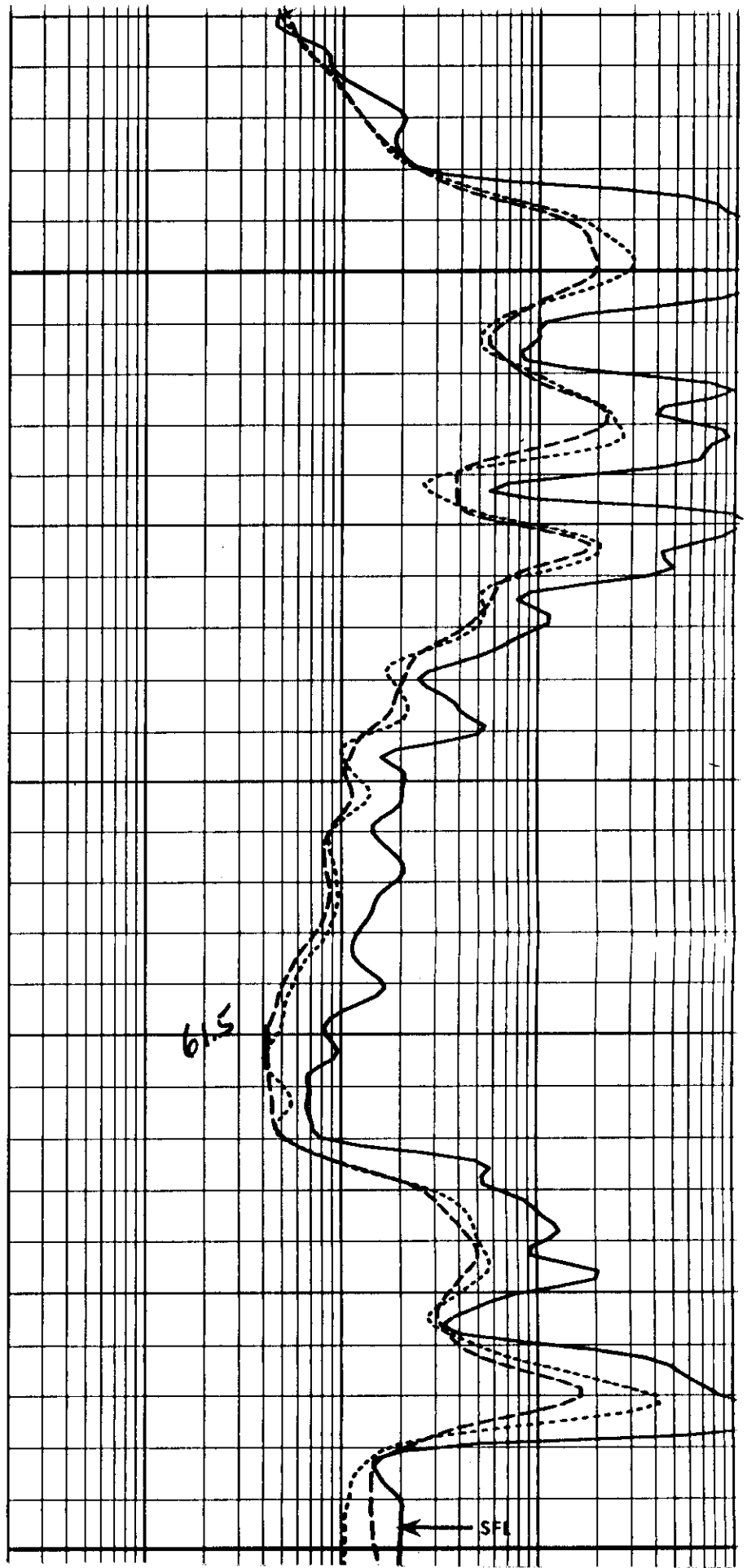
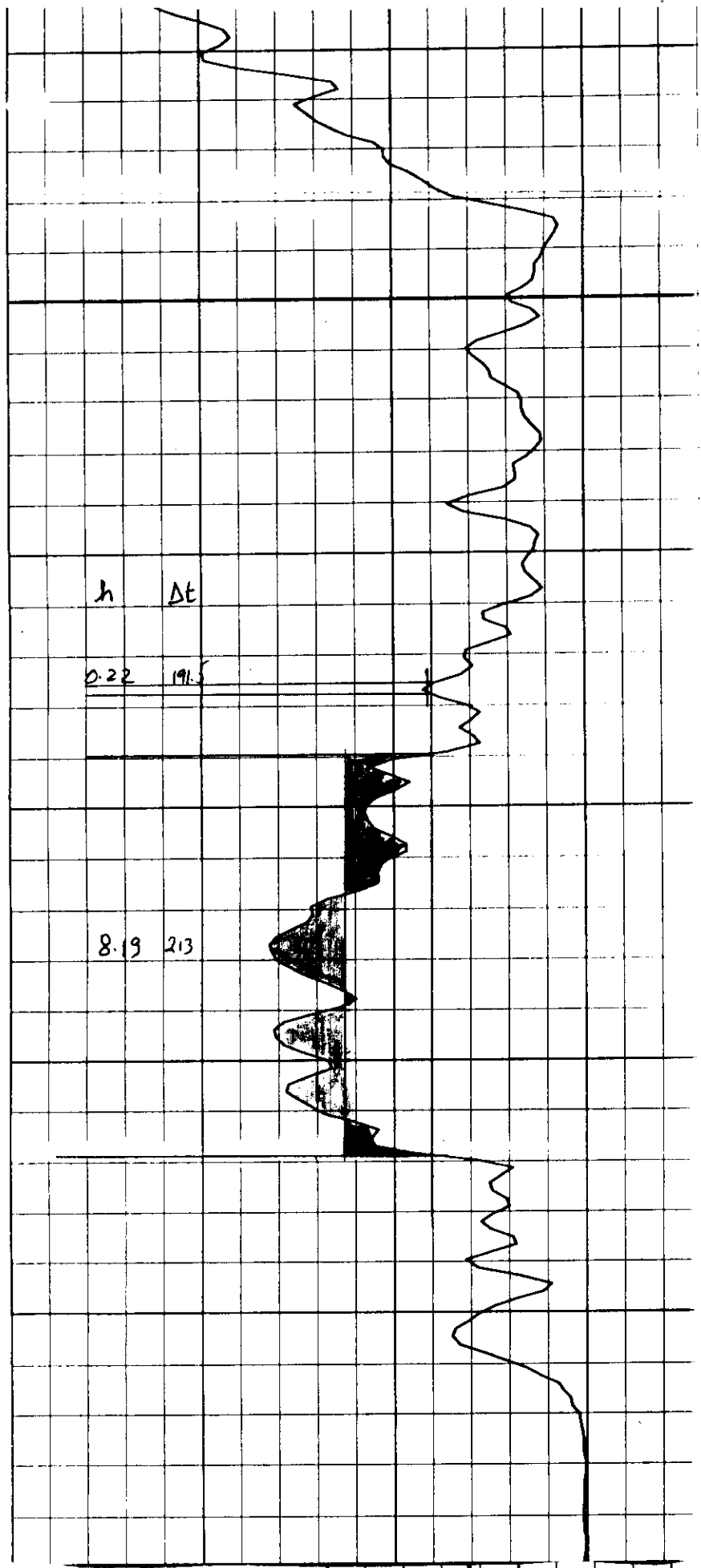
925

2-25

950

61.5

SFL



925

hnet AE

7.94 214

0.47 192

0.44 201

0.31 199

9.16 211-73

950

3-25

42

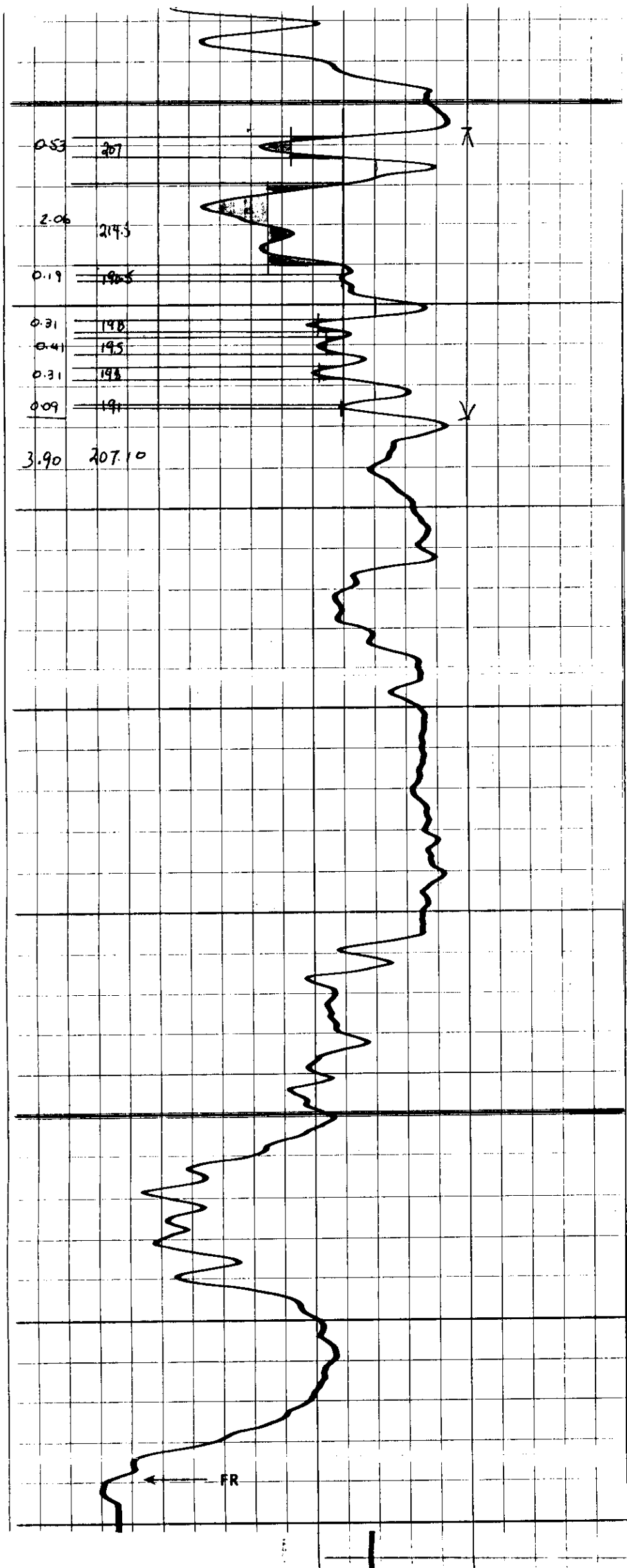
76

66

98

0950

0950

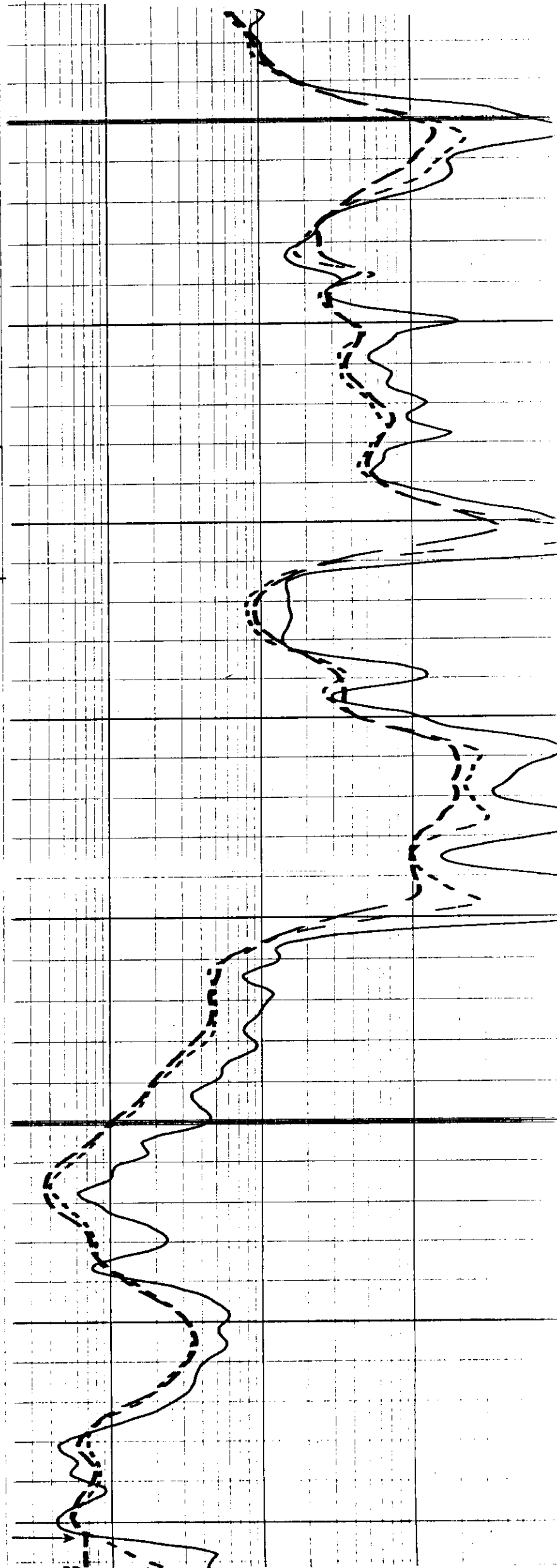


4-25

MC2

0950

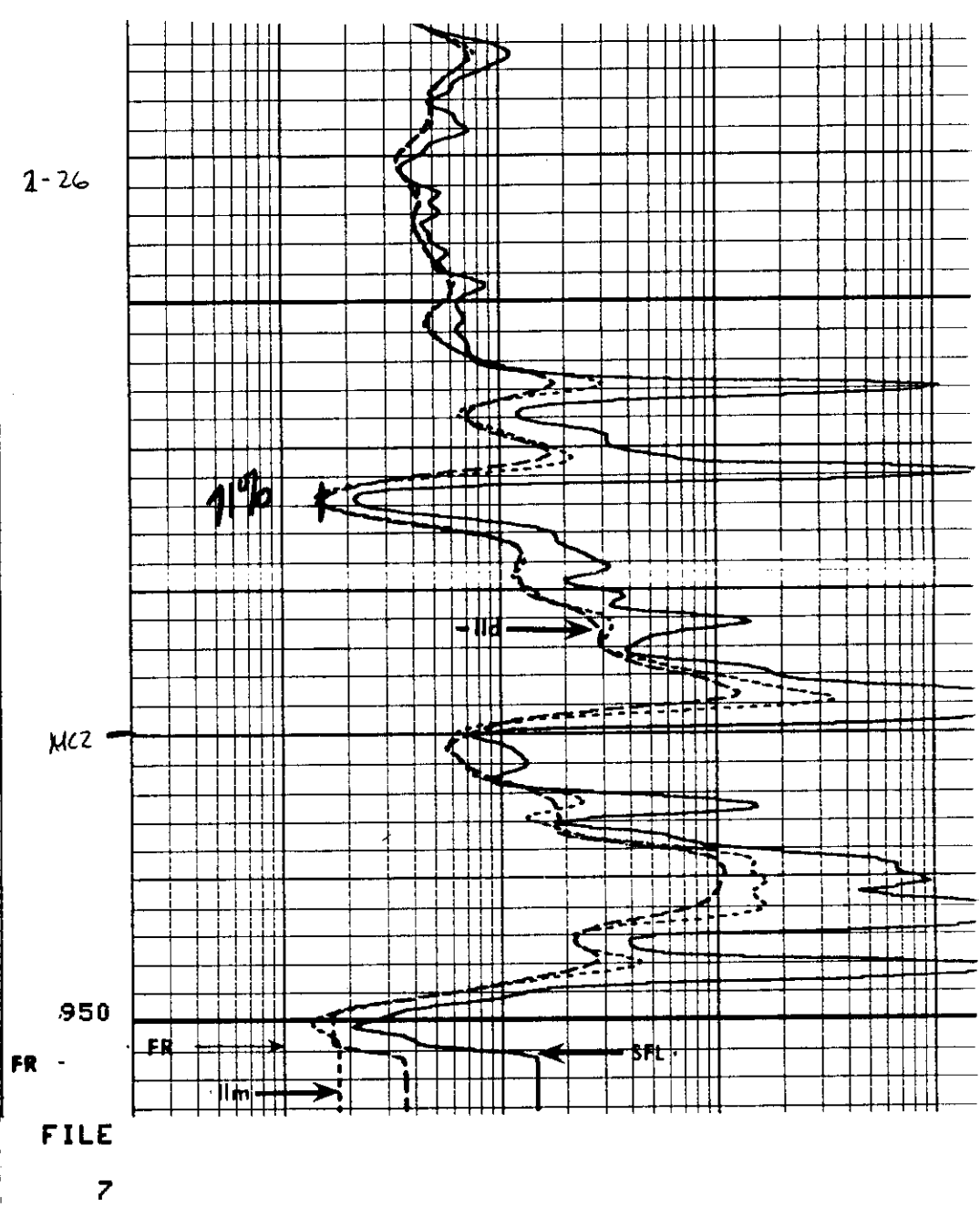
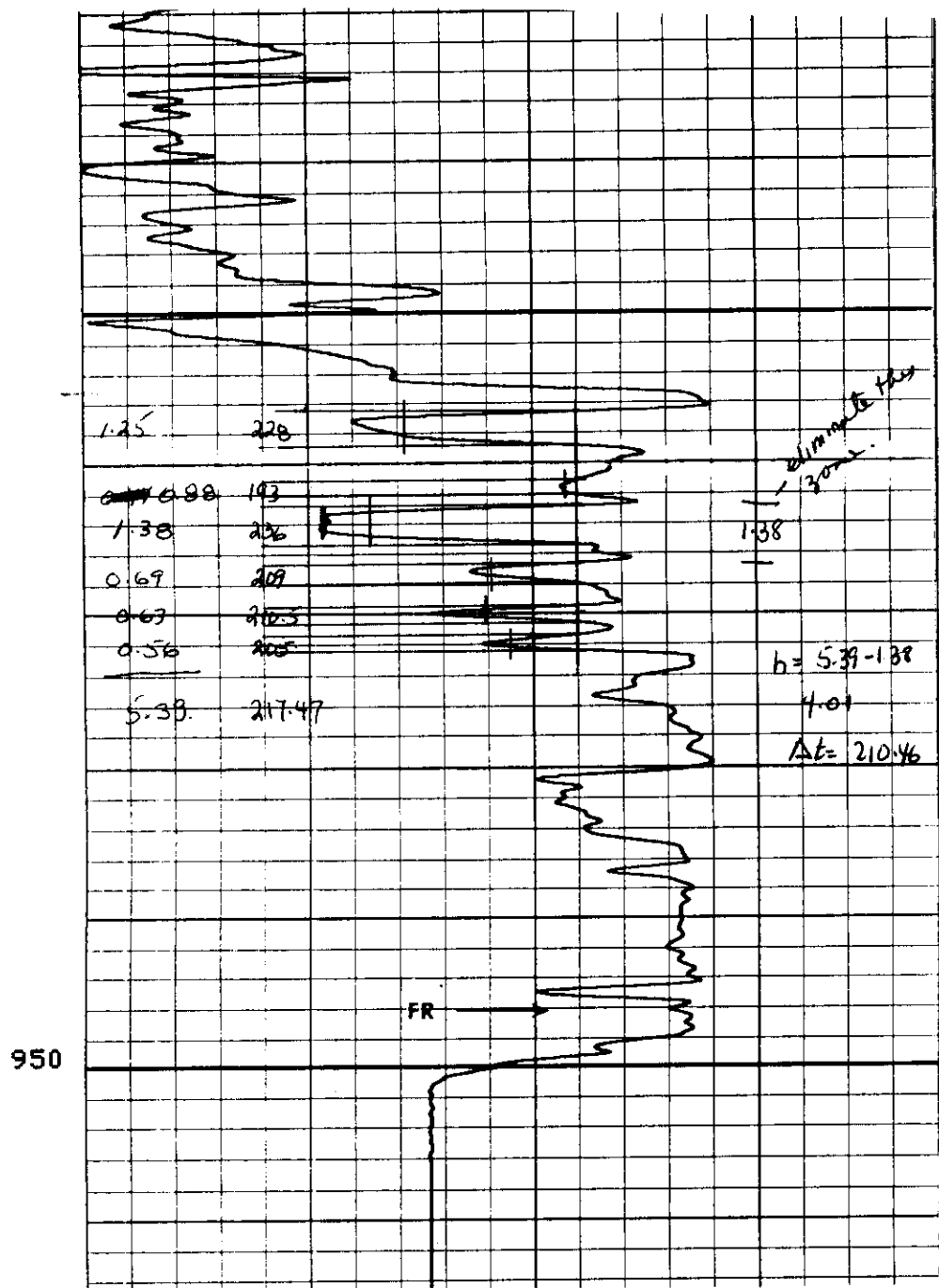
FR



hnet      Δt

0.45	212
1.47	211
0.37	197
2.26	207.96

- Sonic Curve →



925

0.62

210

7.06 218.5

7.68 217.8

Sonic Curve

FR

925

8-26

MC2

SFL



1300 SUN LIFE PLAZA III  
112 - 4th AVENUE S.W.  
CALGARY, ALBERTA, CANADA T2P 0H3  
TELEPHONE (403) 261-0743



Manitoba Petroleum Branch  
555 - 330 Graham Avenue  
Winnipeg, Manitoba  
R3C 4E3

Attention: Mr. Bob Dubreuil

Dear Sir:

Re: Proposed Waskada Mission Canyon Units (A,B and D)

It is proposed that various productive portions of the Mission Canyon Formation in the Waskada Field be unitized to facilitate the implementation of pressure maintenance by water injection. A total of five units are proposed, three of which involve Omega as the only Working Interest Owner (the A,B and D units). In two of these (the A and D units) the Manitoba Crown has a Royalty Interest.

Unit documents are being prepared for consideration and approval of the Royalty Owners. These documents follow the same form as that used for the Lower Amaranth units previously approved by all parties.

Vertical enlargement of the Lower Amaranth units is not appropriate due to the complications presented by a Mission Canyon unit overlapping two Lower Amaranth units, or the boundary of a Lower Amaranth unit, or there is no Lower Amaranth unit.

Tract factor calculations for each of the three units along with a Øh map showing the proposed unit outline are enclosed. For further assistance in assessing the total plan, I am enclosing a Øh map for the other two units (C and E) for which we are just commencing unit negotiations with the other Working Interest Owners.

Each of the three units will have a tract participation formula based on an initial and final participation as discussed below.

The principle consideration in determining unit participation is that a tract's value to the unit under waterflood is a combination of recoverable oil by flood and initial productivity. To this end a final participation formula based 50% on reserves and 50% on initial oil production is being used.

.../2




Oil reserves contributed by each tract to the unit has been calculated from a geological map of net hydrocarbon porosity meters. Other reserve parameters such as water saturation and formation volume, etc. are uniform throughout the area in question. The net pay and porosity were calculated by Omega's geological department and checked by independent consultants. Oil productivity is best represented by utilizing the operating daily oil rate for each well's first four months of representative production. To prevent the effects of flush production the first month was not used if the well produced for less than 15 days. Although some tracts do not have wells capable of producing at this time their reserve contribution to the unit will be recognized in the final participation.

The above formula used for equity is appropriate under waterflood, however until response occurs there can be a disruption in current conditions. To minimize this effect on owners an interim participation is being used. This interim factor is based on a well's daily oil rate for July and August, 1985 and will be in effect until March 1, 1987, which is the anticipated time for flood response to begin.

Waterflood applications are being prepared and will be submitted shortly. If you have any questions regarding this matter please call me.

Yours truly,

OMEGA HYDROCARBONS LTD.



R.A. Beamish, P. Eng.  
Manager - Engineering

RAB:vb

Encl.

c.c. Waskada Mission Canyon  
Unit Files

31-Oct-85

# WASKADA MISSION CANYON D UNIT TRACT FACTOR CALCULATIONS

## Final Participation

TRACT:	LAND	APPH:sh	4 MONTH CUM. PROD. (m <sup>3</sup> )	WATER	FACTOR	OIL RATE	FACTOR	TRACT	LAND
	DESCRIPTION	(m)	HRS	OIL	FACTOR	FACTOR	FACTOR		DESCRIPTION
1	1-23-1-26 WPM	23.5	0	0.0	NA	2.3103	0.0000	2.3103	1 1-23-1-26 WPM
2	2-23-1-26 WPM	13.1	0	0.0	NA	1.2878	0.0000	1.2878	2 2-23-1-26 WPM
3	7-23-1-26 WPM	24.0	2429	167.6	NA	2.3594	2.0953	4.4547	3 7-23-1-26 WPM
4	8-23-1-26 WPM	24.0	2546	481.8	NA	2.3594	1.6002	8.1056	4 8-23-1-26 WPM
5	9-23-1-26 WPM	27.0	2839	105.7	NA	2.6543	0.3148	1.1304	5 9-23-1-26 WPM
6	10-23-1-26 WPM	29.0	2458	338.7	NA	2.8510	1.1652	4.1841	6 10-23-1-26 WPM
7	15-23-1-26 WPM	24.0	2700	224.3	NA	2.3594	0.7025	2.5226	7 15-23-1-26 WPM
8	16-23-1-26 WPM	24.0	0	0.0	NA	2.3594	0.0000	2.3594	8 16-23-1-26 WPM
9	1-24-1-26 WPM	14.6	2904	541.4	NA	1.4353	1.5765	5.4611	9 1-24-1-26 WPM
10	8-24-1-26 WPM	17.5	2088	163.4	NA	1.7204	0.6617	2.3761	10 8-24-1-26 WPM
11	9-24-1-26 WPM	5.3	2448	195.6	NA	0.5210	0.6895	2.4759	11 9-24-1-26 WPM
12	12-24-1-26 WPM	31.3	1896	182.5	NA	3.0771	0.8139	2.9227	12 12-24-1-26 WPM
13	13-24-1-26 WPM	22.5	2880	215.2	NA	2.2120	0.5318	2.2688	13 13-24-1-26 WPM
14	16-24-1-26 WPM	15.3	0	0.0	NA	1.5041	0.0000	1.5041	14 16-24-1-26 WPM
15	1-25-1-26 WPM	41.0	2496	441.8	NA	4.0307	1.4967	5.3745	15 1-25-1-26 WPM
16	2-25-1-26 WPM	42.0	2280	242.8	NA	4.1290	0.9005	3.2336	16 2-25-1-26 WPM
17	3-25-1-26 WPM	30.5	2568	534.5	NA	2.9984	1.7600	6.3201	17 3-25-1-26 WPM
18	4-25-1-26 WPM	26.0	2472	300.3	NA	2.5561	1.0272	3.6886	18 4-25-1-26 WPM
19	1-26-1-26 WPM	20.0	0	0.0	NA	1.9662	0.0000	1.9662	19 1-26-1-26 WPM
20	2-26-1-26 WPM	13.5	0	0.0	NA	1.3272	0.0000	1.3272	20 2-26-1-26 WPM
21	8-26-1-26 WPM	40.5	0	0.0	NA	3.9815	0.0000	3.9815	21 8-26-1-26 WPM
TOTALS:		506.6	35004	4139.6	NA	50.0000	13.9240	50.0000	100.0000

AVERAGE OIL RATE (m<sup>3</sup>/mo. day) & AVERAGE OIL CUT  
AFTER 4 MONTHS OF PRODUCTION

RATE	CUT
*****	*****
2.6383	NA

31-Oct-85

MASKADA MISSION CANYON D UNIT TRACT FACTOR CALCULATIONS

Interim Participation

TRACT	LAND	DESCRIPTION	HRS	OIL	WATER	FACTOR 1	OIL RATE	FACTOR 1	OIL RATE	TRACT
1	1-23-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
2	2-23-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
3	7-23-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
4	8-23-1-26 WPM	1469	36.2	NA	0.5195	8.7034	8.7034	8.7034	8.7034	8.7034
5	9-23-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
6	10-23-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
7	15-23-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
8	16-23-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
9	1-24-1-26 WPM	1344	64.6	NA	1.0133	16.9763	16.9763	16.9763	16.9763	16.9763
10	8-24-1-26 WPM	1296	44.5	NA	0.7239	12.1279	12.1279	12.1279	12.1279	12.1279
11	9-24-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
12	12-24-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
13	13-24-1-26 WPM	1411	86.5	NA	1.2924	21.6522	21.6522	21.6522	21.6522	21.6522
14	16-24-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
15	1-25-1-26 WPM	1050	43.4	NA	0.8714	14.5990	14.5990	14.5990	14.5990	14.5990
16	2-25-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
17	3-25-1-26 WPM	1401	102.9	NA	1.5484	25.9412	25.9412	25.9412	25.9412	25.9412
18	4-25-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
19	1-26-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
20	2-26-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
21	8-26-1-26 WPM		0	0.0	NA	0.0000	0.0000	0.0000	0.0000	0.0000
TOTALS:			7971	378.1	NA	5.9689	100.0000	100.0000	100.0000	100.0000

AVERAGE OIL RATE (m<sup>3</sup>/op. day) & AVERAGE OIL CUT  
AFTER 4 MONTHS OF PRODUCTION

RATE	CUT
*****	*****
1.1364	NA

T. 1

- SPEAR FISH OIL WELL
- UPPER ALIDA ( MC 3b ) WELL
- LOWER ALIDA ( MC 3a ) WELL
- TILSTON ( MC 1 ) WELL
- ◆ SUSPENDED WELL
- PROPOSED DRILLING LOCATION
- ✱ WATER INJECTION WELL
- ✱ GAS INJECTION WELL
- ⊙ WATER SOURCE WELL
- ⊙ ABANDONED WELL

# WASKADA MISSISSIPPIAN WATER FLOOD

### PROPOSED UNIT "D"

## Øh MAP

**C.I.=.5 POROSITY METRES**

## PROPOSED UNIT OUTLINE

SCALE: 1:25 000

DATE: NOV. 1985