

December 23, 1982

Omega Hydrocarbons Ltd.
630 - 5th Avenue S.W.
Calgary, Alberta
T2P 0L4

Attention: Mr. George Patey
Vice-President, Production

Dear Sir:

Re: Waskada Lower Amaranth Unit No. 1

The Board hereby approves the Waskada Lower Amaranth Unit No. 1 Unit Agreement, pursuant to Section 74 of The Mines Act. According to Article XIV of the Agreement, the effective date of the Unit is January 1, 1983.

Appropriate Board orders for approval of your proposed pilot waterflood project and to provide for exemption of wells within the Unit from the provisions of subsection (1) of Section 11 of Manitoba Revised Regulation M160-R4P will be processed upon receipt by the Petroleum Branch of well test and pressure data as required by the Branch.

Yours sincerely,

Ian Haugh,
Deputy Chairman
The Oil and Natural Gas
Conservation Board

IH/sw

bc: M. Eliassen
J.F. Radgwell
Petroleum Branch.

MANIT^{BA}

Inter-Departmental Memo

Date December 9, 1982

To

The Oil and Natural Gas
Conservation Board

From

H. C. Moster
Director
Petroleum Branch

Marc Eliesen - Chairman
Dr. I. Haugh - Deputy Chairman
J. Redgwell - Member

Telephone

Subject

RE: WASKADA LOWER AMARANTH UNIT NO. 1

Omega Hydrocarbons Ltd. has applied to the Board, pursuant to Section 74 of The Mines Act, for approval of the Waskada Lower Amaranth Unit No. 1 Unit Agreement. (copy attached).

DISCUSSION:

A cursory review of the Agreement indicates the following:

Page. 4	205.	incorrect department name
6	306.	"Unitized" spelled wrong
10	703.	should read "allocated <u>to</u> ", not " <u>of</u> "
19	1310.	Manitoba official time would be preferable
21	1402.	incorrect department name

RECOMMENDATIONS:

Inasmuch as the working interest owner and all the royalty owners in the lands covered by the agreement (see Figure 1 and Table 1) have executed the Agreement, it is recommended that the Board approve the Agreement. A draft of the proposed letter of approval is attached.

Original Signed by H. C. Moster

H. Clare Moster

LRD/HCM/sb

Att:



HYDROCARBONS Ltd.

TELEPHONE: (403) 261-0743

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

November 26, 1982

The Oil and Natural Gas Conservation Board
156 Legislative Building
Winnipeg, Manitoba
R3C 0V8

Attention: Dr. Ian Haugh
Deputy Chairman

Dear Sirs:

Re: Proposed Waskada Lower Amaranth Unit No. 1

Omega Hydrocarbons Ltd., as operator and sole working interest owner, hereby solicits the approval of the Oil and Natural Gas Conservation Board for its Waskada Lower Amaranth Unit No. 1 Agreement under Section 74 of the Mines Act.

Attached is a copy of the Unit Agreement with copies of the executed signature pages for Omega Hydrocarbons Ltd. as 100% working interest owner and each of the six royalty interest owners; representing unanimous agreement. As Vice President of Production, I guarantee this copy of the Unit Agreement to be as presented and agreed to by all signing parties with the exception of Clause 1403, which was slightly modified on November 8, 1982, and subsequently initialled as approved by all parties.

Yours truly,

OMEGA HYDROCARBONS LTD.

G. E. Patey
Vice President of Production

EW:amr
Enclosure

TABLE 1

WASKADA LOWER AMARANTHUNIT NO. 1

<u>ROYALTY OWNER</u>	<u>TRACT</u>	<u>INTEREST</u>	<u>CONSENT</u>
M. G. Pounder	SW $\frac{1}{4}$ 25	100%	X
H. F. Trewin	SE $\frac{1}{4}$ 25	100%	X
N. A. Royalties	NW $\frac{1}{4}$ 24	25%	X
G. F. McArthur	N $\frac{1}{2}$ 24	50%	X
D. E. McGregor	N $\frac{1}{2}$ 24	25%	X
Missilinda	NE $\frac{1}{4}$ 24	25%	X

PROPOSED WASKADA TOWER AMARANTH UNIT No.1

MAP SHOWING LESSORS

Rge 26 WPM

Rge 25 WPM

26	R.C. Rowe 100%	M.G. Pounder 100%	H.F. Trewin 100%	Canada Trust 100%	30
	M.E. Hainsworth 100%	M.G. Pounder 100%	H.F. Trewin 100%	Dept. of Energy, Mines & Res. 100%	
	M.K. Hainsworth 100%	N.A. Royalties 25% G.F. McArthur 50% D.E. McGregor 25%	G.F. McArthur 50% D.E. McGregor 25% Missilinda 25%	R.D. Jack 16 2/3% J.S. Redden 33 1/3% Can. Perm. Trust 50%	
23	E.M. Hainsworth 100%	G.F. McArthur 25% E.A. & M.E. McGregor 25% J.H. Spelliscy 50%	Dept. of Ener., Mines & Res. 100%	R.D. Jack 16 2/3% J.S. Redden 33 1/3% Can. Perm. Trust 50%	19

August 16, 1982

REVISION NO. 1

TABLE 1

WASKADA LOWER AMARANTHUNIT NO. 1

<u>ROYALTY OWNER</u>	<u>TRACT</u>	<u>INTEREST</u>	<u>CONSENT</u>
M. G. Pounder	SW $\frac{1}{4}$ 25	100%	X
H. F. Trewin	SE $\frac{1}{4}$ 25	100%	X
N. A. Royalties	NW $\frac{1}{4}$ 24	25%	X
G. F. McArthur	N $\frac{1}{2}$ 24	50%	X
D. E. McGregor	N $\frac{1}{2}$ 24	25%	X
Missilinda	NE $\frac{1}{4}$ 24	25%	X

PROPOSED WASKADA TWEED AMARANTH UNIT No.1

MAP SHOWING LESSORS

Rge 26 WPM

Rge 25 WPM

R.C. Rowe 100%	M.G. Pounder 100%	H.F. Trewin 100%	Canada Trust 100%
26	25	30	
M.E. Hainsworth 100%	M.G. Pounder 100%	H.F. Trewin 100%	Dept. of Energy, Mines & Res. 100%
M.K. Hainsworth 100%	N.A. Royalties 25% G.F. McArthur 50% D.E. McGregor 25%	G.F. McArthur 50% D.E. McGregor 25% Missilinda 25%	R.D. Jack 16 2/3% J.S. Redden 33 1/3% Can. Perm. Trust 50%
23	24	19	
E.M. Hainsworth 100%	G.F. McArthur 25% E.A. & M.E. McGregor 25% J.H. Spelliscy 50%	Dept. of Ener., Mines & Res. 100%	R.D. Jack 16 2/3% J.S. Redden 33 1/3% Can. Perm. Trust 50%

Twp

August 16, 1982

REVISION NO. 1

September 23, 1982

Aikins, MacAuley and Thorvaldson
Third Floor
333 Broadway Ave.,
Winnipeg Man.
R3C 0T1

Attention: Mr. John S. Lamont

Dear Sir:

Re: Proposed Waskada Lower Amaranth Unit No. 1
Tract Participation Factors

Further to your enquiry of September 21, 1982, with regards to tract participation in the subject proposed unit, the following should clarify the method of determination of these factors. Also included are our comments with respect to the tract factors.

Tract participation factors in unit agreements normally reflect a determination of remaining recoverable reserves for each tract.

With regards to the subject proposed unit, as there is little production history available, determination of remaining reserves by extrapolation of production rate and water cut trends to abandonment conditions is not feasible. Consequently, Omega has used volumetric determinations of original oil in place (area, thickness and porosity of reservoir), and a constant estimated recovery factor to determine the ultimate recoverable reserves for each tract. Cumulative production prior to March 1, 1982 was then deducted to determine the remaining recoverable reserves for each tract.

The Petroleum Branch has reviewed the above calculation process as it applies to the subject proposed unit, (including data review and verification of calculation technique). Based on this review, we are of the opinion that the tract factors proposed by Omega are reasonable and equitable to all involved royalty owners.

Further we note that lower reservoir thickness and quality in the North-East quarter of Section 24-1-26 (WPM) (based on interpretation of available well data), results in lower calculated participation factors for these tracts when compared with other tracts in the proposed unit.

Yours sincerely,
Original Signed By
L. R. DUBREUIL
L. R. Dubreuil
Chief Petroleum Engineer
Petroleum Branch

LRD/sb bcc: Oil & Natural Gas Conservation Board

Aikins, MacAulay & Thorvaldson

BARRISTERS AND SOLICITORS

MR. JAMES AIKINS, K.B., K.C., LL.D. (1879-1928)
G. H. AIKINS, Q.C., LL.D. (1910-1954)

JOHN A. MACAULAY, Q.C., Q.C. LL.D. (1913-1978)
HON. G. S. THORVALDSON, Q.C. (1925-1968)

A. LORNE CAMPBELL, Q.C., Q.C., LL.D.
ROGER J. HANSELL, Q.C.
MARTIN H. FREEDMAN, Q.C.
KNOR S. FOSTER, Q.C.
LEON N. MERCURY
J. TIMOTHY SAMSON
ROLAND S. DIAS
ROD E. STEPHENSON
FRANCES M. STATHAM
S. JANE EVANS
MARC M. MONNIN
MURRAY N. TRACHTENBERG
ROBERT G. SODALL
G. TODD CAMPBELL

W. STEWARD MARTIN, Q.C.
MICHAEL J. MERCURY, Q.C.
ANDREW C. TOUGH
ELLIOTT B. McDONALD
MARSHALL E. ROTHSTEIN, Q.C.
CYRIL G. LABMAN
CHARLES L. CHAPPELL
GERALD D. PARKINSON
DAVID G. HILL
JUDITH M. BLAIR
DIANE E. JONES
G. BRUCE TAYLOR
FRANK LAVITT
J. MILTON CHRISTIANSEN

JOHN S. LAMONT, Q.C.
A. J. MERCURY
JAMES E. FORAN
ROBERT G. SMELLIE, Q.C.
RAYMOND H. G. FLETT
LARRY R. CRANE
COLIN R. MCCARTHUR
JOEL A. WEINSTEIN
E. BRUCE PARKER
DAVID L. VOECHTING
DARYL J. ROSH
RICHARD L. YAFFE
W. ALAN SHAW
LOUI T. SPIVAK

THIRD FLOOR
333 BROADWAY
WINNIPEG, MANITOBA
CANADA, R3C 0T1

TELEPHONE: (204) 957-0050

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

PLEASE REFER TO

John S. Lamont

FILE NO. 8287

D-58

September 21, 1982

Petroleum Branch
Department of Energy & Mines
975 Century Street
WINNIPEG, Manitoba
R3H 0W4

Attention: Mr. Bob Dubreuil

Dear Sirs:

Re: Omega Hydrocarbons Ltd.
Proposed Unitization Agreement re
Waskada Lower Amaranth Unit No. 1

We represent one of the royalty owners involved in the above proposed unitization unit and our clients have been asked by the Omega Hydrocarbons to execute a unitization agreement.

The tract participation is to be divided in accordance with a list of participants, in accordance with calculations set out in Exhibit "A" to the Exhibit, a copy of which is enclosed.

We understand that your engineers and geologists will have reviewed these proposed participations and we wonder if you could let us know whether their own calculations respecting the proposed participation are closely comparable to those made by Omega Hydrocarbons, at least insofar as the interests of Missilinda of Canada, Ltd. are concerned.

We would appreciate your early advice on this question.

Yours very truly,

AIKINS, MacAULAY & THORVALDSON

John S. Lamont

Per:

John S. Lamont

JSL/bwl
Encl.



EXHIBIT "A"

Attached to and made part of an agreement entitled
"Unit Agreement - Waskada Lower Amaranth Unit No. 1"

<u>Tract Number</u>	<u>Land Description</u>	<u>Royalty Interests</u>		<u>Tract Participation</u>
		<u>Owner</u>	<u>Tract Share (%)</u>	
1	Lsd 9-24-1-26 WPM	See Group A Below		4.4445
2	Lsd 10-24-1-26 WPM	See Group A Below		4.2368
3	Lsd 11-24-1-26 WPM	See Group B Below		5.0259
4	Lsd 12-24-1-26 WPM	See Group B Below		7.0612
5	Lsd 13-24-1-26 WPM	See Group B Below		6.8122
6	Lsd 14-24-1-26 WPM	See Group B Below		4.1850
7	Lsd 15-24-1-26 WPM	See Group A Below		3.8232
8	Lsd 16-24-1-26 WPM	See Group A Below		6.1060
9	Lsd 1-25-1-26 WPM	Trewin	100	7.1029
10	Lsd 2-25-1-26 WPM	Trewin	100	6.3551
11	Lsd 3-25-1-26 WPM	Pounder	100	6.8950
12	Lsd 4-25-1-26 WPM	Pounder	100	7.8921
13	Lsd 5-25-1-26 WPM	Pounder	100	7.9241
14	Lsd 6-25-1-26 WPM	Pounder	100	6.6860
15	Lsd 7-25-1-26 WPM	Trewin	100	7.3936
16	Lsd 8-25-1-26 WPM	Trewin	100	8.0564

- NOTES: (1) Tracts 1 through 16 inclusive have 100% Working Interest owned by Omega Hydrocarbons
- (2) Group A Royalty Owners: McArthur 50%, McGregor 25%, Missilinda 25%
- (3) Group B Royalty Owners: N.A.R. 25%, McArthur 50%, McGregor 25%

Revision No. 1
 September 8, 1982



August 19, 1983

Oil & Gas Conservation Board
156 Legislative Building
Winnipeg, Manitoba
R3C 0V8

Attention: Marc Eliesen

Dear Sir:

RE: Waskada Lower Amaranth Unit No. 1

Please find enclosed a copy of the Power of Attorney whereby Elizabeth Maude Hainsworth, also known as Maude Elizabeth Hainsworth, has appointed Jessie Kontzie as Power of Attorney.

We trust this helps in completing your files.

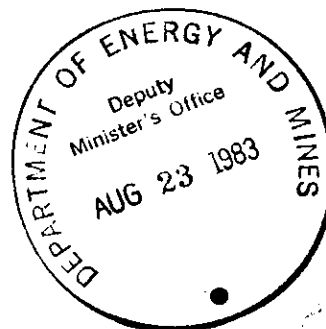
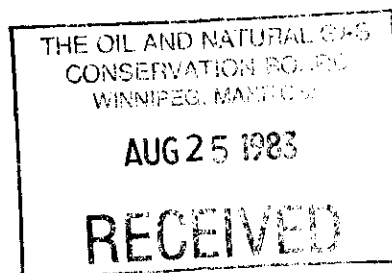
Yours very truly,
OMEGA HYDROCARBONS LTD.

S. Van Middlesworth
Sharon Van Middlesworth (Mrs.)
Land Administration

/svm
Encl.

xc: Dr. I. Haugh 83/8/23/ME

x.c. - H. Clare Moster
August 26, 1983 - ra



To all to whom these presents may come, be seen or known

I, SHELDON WAYNE LANCHBERY

A NOTARY PUBLIC IN AND FOR THE PROVINCE OF MANITOBA

BY ROYAL AUTHORITY DULY APPOINTED, residing at Deloraine, Manitoba

in the said Province DO CERTIFY AND ATTEST that the paper writing hereunto annexed is a TRUE

COPY of a document produced to me and purporting to be General Power of Attorney of Maude Elizabeth Hainsworth, also known as Elizabeth Maude Hainsworth, of the Village of Waskada, in Manitoba, Spinster, dated the 12th day of August, A.D. 1983.

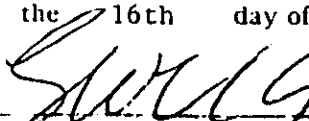
THE SAID COPY having been compared by me with the said original document, an act whereof being requested, I HAVE GRANTED the same under my notarial form and seal of office to serve and avail as occasion shall or may require.

IN TESTIMONY WHEREOF I have hereto subscribed my name and affixed my seal of office at

Deloraine, Manitoba

the 16th day of August

A.D. 19 83


A Notary Public in and for the Province of Manitoba

Know All Men by These Presents

THAT I,

MAUDE ELIZABETH HAINSWORTH, also known as Elizabeth Maude Hainsworth,
of the Village of Waskada, in Manitoba, Spinster

for divers good causes and considerations me thereto moving have nominated, constituted and appointed, and
by these presents do nominate, constitute and appoint

JESSIE IRENE KONTZIE, of the Village of Waskada, in Manitoba,
Widow

my true and lawful attorney for me, and in my name on my behalf and for my sole and exclusive use and
benefit to demand, draw for, sue for, recover and receive from all and every or any person or persons whomsoever,
all and every sum or sums of money, securities for money, debts, legacies, goods, chattels, effects and things
whosoever which now are or is, or which shall or may hereafter appear to be due, owing, payable or belonging
to me, whether for rent or arrears of rent or otherwise in respect of my real or personal estate, or for the principal
money and interest now or hereafter to become payable to, upon or in respect of any mortgage or other security,
or for the interest or dividends now payable or to accrue or become payable to me for or in respect of any shares,
stocks, or interest which I may now or hereafter hold in any joint stock or incorporated company or companies,
or for any money or securities for money which are now or hereafter may be due or owing or belonging to me
upon any bond, note, bill of exchange, balance of account current, consignment, contract, decree, judgment,
order or execution or upon any other account and to enter into any safe deposit box or vault and to take the
contents therefrom.

AND upon the recovery and receipt of all and every or any sum or sums of money, securities for money,
debts, legacies, goods, chattels, effects or things due, owing, payable or belonging to me, for me and in my name
and as my act and deed, to sign, execute and deliver such good and sufficient receipts, releases and acquittances,
certificates, conveyances, surrenders, assignments, satisfaction pieces, discharges of judgment, partial discharges
of judgment, discharges of lien, partial discharges of mortgage, partial discharges of mortgages,
assignments of mortgage without personal covenants, transfers of mortgage without personal covenants, memorials
or other good and effectual discharges as may be requisite.

ALSO to examine, state, settle, liquidate and adjust all or any account or accounts, depending between
myself and any person or persons whomsoever. And to sign, draw, make or endorse my name to any cheque or
cheques or order for payments of money, bill or bills of exchange or note or notes of hand in which I am
interested or concerned, as shall be requisite. And also in my name to draw upon any bank or banks, individual
or individuals for any sum or sums of money that is or are or may be to my credit or which I may be entitled to
receive, and the same to deposit in any bank or other place and again at pleasure to withdraw from time to time
as I could do.

ALSO in case of neglect, refusal or delay on the part of any person or persons to make and render just, true
and full accounts, payments, delivery and satisfaction in the premises, him, them or any of them thereunto to
compel, and for that purpose for me and in my name to make such claims and demands, arrests, seizures, attach-
ments, distrainments and sequestrations, or to commence, institute, sue and prosecute to judgment and execution
such actions, ejectments, and suits at law or in equity as my said attorney or attorneys shall think fit; also to
appear before any judges, magistrates or other officers of the Courts of Law, or Equity, and then and there to
sue, plead, answer, defend and reply in all matters and causes concerning the premises; and also to exercise and
execute all Powers of Sale or Foreclosure and all powers and authorities vested in me by any mortgage or mortgages
belonging to me as mortgagor; also to execute and deliver conveyances under power of sale and transfers under
power of sale, and to make and execute applications for foreclosure.

AND ALSO in case of any difference or dispute with any person or persons concerning any of the matters
aforesaid, to submit any such differences and disputes to arbitration or umpirage in such a manner as my said
attorney or attorneys may see fit; And to compound, compromise and accept part in satisfaction of the payment
of the whole of any debt or sums of money payable to me or to grant an extension of time for the payment of
the same, either with or without taking security or otherwise to act in respect of the same as to my said attorney
or attorneys shall appear most expedient, and to execute and deliver such agreements and to do all lawful acts
necessary to effect the premises.

AND HEREBY GRANT FULL POWER to my said attorney or attorneys to substitute and appoint one or more attorney or attorneys under him or them with the same or more limited powers, and such substitute or substitutes at pleasure to remove and others to appoint I, the said

Jessie Irene Kontzie

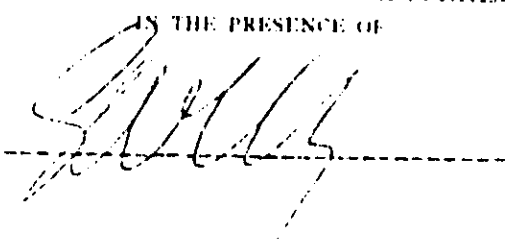
herby agreeing and covenanting for my heirs, executors and administrators to allow, ratify and confirm whatsoever my said attorney or attorneys or his or their substitute or substitutes shall do or cause to be done in the premises by virtue of these Presents, including in such confirmation whatsoever shall be done between the time of my decease or of the revocation of these Presents, and the time of such decease or revocation being known to said attorney or attorneys, or such substitutes.

"WHEREVER the term "person" or "persons" is used herein, the same shall be deemed to mean and include corporation, bank, trust company, credit union, co-operative association, insurance company, municipal corporation, incorporated society or association or any other body corporate or politic."

AND THAT this Power of Attorney shall survive any periods of mental incapacity of me, the said Maude Elizabeth Hainsworth.

IN WITNESS WHEREOF I have hereunto set my hand and seal this ^{82nd} ~~August~~ ^{June} in the year one thousand nine hundred and eighty-three day of

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF







June 27, 1983

Omega Hydrocarbons Ltd.
630 - 330 - 5th Avenue S.W.
Calgary, Alberta
T2P 0L4

Attention: Mr. G. E. Patey,
Vice-President, Production

Dear Sir:

Re: Waskada Lower Amaranth Unit No. 1 - First Enlargement

Your letter of June 21, 1983 specifying the effective date of the enlargement of the subject Unit as July 1, 1983 is hereby acknowledged.

It is noted that the expanded Unit now includes all immediate offsetting quarter sections to water injection except the NE $\frac{1}{4}$ of Section 26-1-26 (WPM). As this area is likely to be affected by the current pressure maintenance scheme, the Board is concerned that inclusion of this tract be given due consideration in any further planned expansion of the Unit or the water injection scheme.

Yours sincerely,

THE OIL AND NATURAL GAS
CONSERVATION BOARD

ORIGINAL SIGNED BY
MARC ELIESEN

Marc Eliesen
Chairman

LRD/lk

b.c. Dr. I. Haugh
J. F. Redgwell
Petroleum Branch

DATE: June 27, 1983

MANIT^{BA}

TO: Marc Eliesen

COMMENTS:

Re: Oil & Natural Gas Conservation Bd.

FROM: H. Clare Moster

Attached is a draft letter to
Omega Hydrocarbons to acknowledge
G. E. Patey's letter to the Board
dated June 21, 1983.

Dept.:

Branch:

Address:

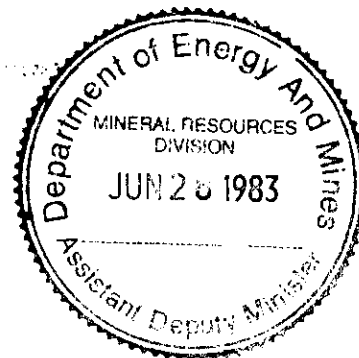
Telephone:

- | | |
|--|--|
| <input type="radio"/> Take action | <input type="radio"/> Circulate |
| <input type="radio"/> Per your request | <input type="radio"/> See me re attached |
| <input type="radio"/> Call me on this matter | <input type="radio"/> For your information |
| <input type="radio"/> Investigate and report | <input type="radio"/> Supply data for my reply |
| <input type="radio"/> For your revision
or approval | <input type="radio"/> Reply direct
with copy to me |
| <input type="radio"/> Return with comments
or recommendations | <input type="radio"/> Draft reply
for signature of: |

x.c. Ian Haugh

J. F. Redgwell

PS-f-182 (Transmittal/Route Slip)





MANITOBA
DEPARTMENT OF ENERGY AND MINES

THE OIL AND NATURAL GAS CONSERVATION BOARD
309 ~~350~~ LEGISLATIVE BUILDING
WINNIPEG, MANITOBA
R3C 0V8

June 27, 1983

Omega Hydrocarbons Ltd.
630 - 330 - 5th Avenue S.W.
Calgary, Alberta
T2P 0L4

Attention: Mr. G. E. Patey,
Vice-President, Production

Dear Sir:

Re: Waskada Lower Amaranth Unit No. 1 - First Enlargement

Your letter of June 22, 1983 specifying the effective date of the enlargement of the subject Unit as July 1, 1983 is hereby acknowledged.

It is noted that the expanded Unit now includes all immediate offsetting quarter sections to water injection except the NE $\frac{1}{4}$ of Section 26-1-26 (WPM). As this area is likely to be affected by the current pressure maintenance scheme, the Board is concerned that inclusion of this tract be given due consideration in any further planned expansion of the Unit or the water injection scheme.

Yours sincerely,

THE OIL AND NATURAL GAS
CONSERVATION BOARD

Marc Eliesen
Chairman

b.c. Dr. I. Haugh
J. F. Redgwell
Petroleum Branch

64 June 30



HYDROCARBONS Ltd.

TELEPHONE: (403) 261-0743

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

June 21, 1983

The Oil and Natural Gas Conservation Board
989 Century Street
Winnipeg, Manitoba
R3H 0W4

Attention: Dr. Ian Haugh
Deputy Chairman

Dear Sir:

RE: Waskada Lower Amaranth Unit No. 1 - Enlargement

The following is in response to your letter of June 9:

- 1) The effective date of the unit enlargement will be July 1, 1983.
- 2) The correct name of the joint Royalty Interest Owner in the SE/4 of Section 26-1-26 WPM is Elizabeth Maude Hainsworth. Ms. Jessie Kontzie apparently has Power of Attorney for Ms. E. M. Hainsworth. A copy of the Power of Attorney documents have been requested and will be forwarded to the Board immediately upon their receipt.
- 3) Insofar as there is presently only one well in the NE/4 of Section 26-1-26 WPM and the operator of those lands has not indicated a desire to join the Unit, no actions have been initiated by Omega to have this quarter included in the Unit.

I trust this added information will fulfill your requirements.

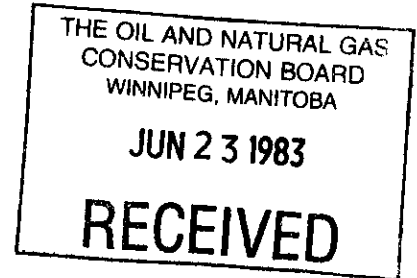
Yours truly,

G. E. Patey/
Vice President, Production

EW/sp

cc: Dick Emerson, Land
Lynn Ashley, Production Acctg.

x.c. - Marc Eliesen
J. F. Redgwell
Petroleum Branch



10000
June 9, 1983

Omega Hydrocarbons Ltd.
630 - 5th Avenue S.W.
Calgary, Alberta
T2P 0L4

Attention: Mr. George Patey,
Vice-President, Production

Dear Sir:

Re: Waskada Lower Amaranth Unit No. 1 - Enlargement

The Board hereby approves the enlargement of the Waskada Lower Amaranth Unit No. 1 as provided for in the Unit Agreement with revisions dated April 25, 1983.

Kindly provide the Board with the following information at your earliest convenience:

1. The effective date of the enlargement.
2. The correct name of the joint Royalty Interest Owner in the SE $\frac{1}{4}$ of Section 26-1-26 WPM (Maude E. Hainsworth or E. Maude Hainsworth) and her relationship with Jessie Kontzie.
3. What action has been taken to include the NE $\frac{1}{4}$ of Section 26-1-26 WPM in the Unit?

Although the method used to determine the Tract Participation Factors in the initial unit and this enlargement appear reasonable, the Board is of the opinion that the method may not be equitable for

....2

all future expansions. This should be taken into consideration when future expansions are being planned.

Yours sincerely,

THE OIL AND NATURAL GAS
CONSERVATION BOARD

Ian Haugh
Deputy Chairman

HCM/1k

c.c. Marc Eliesen
J. F. Radgwell
Petroleum Branch

24 June 14

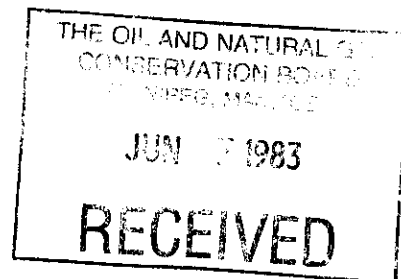


HYDROCARBONS Ltd.

TELEPHONE: (403) 261-0743

630-330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

May 31, 1983



The Oil and Natural Gas Conservation Board
156 Legislative Building
Winnipeg, Manitoba
R3C 0V8

Attention: Dr. Ian Haugh
Deputy Chairman

Dear Sir:

Re: Expansion of the Existing
Waskada Lower Amaranth Unit No. 1

Omega Hydrocarbons Ltd., as operator and sole working interest owner, hereby solicits the approval of the Oil and Natural Gas Conservation Board to expand the Waskada Lower Amaranth Unit No. 1 to include the N/2 of Section 25-1-26 WPM, the NE/4 of Section 23-1-26 WPM and the SE/4 of Section 26-1-26 WPM. Provisions for Unit expansion are provided for in Clauses 901 through 905 of the Unit Agreement.

Attached is a copy of the Unit Agreement with executed signature pages for Omega and each of the four royalty interest owners for the lands to be added; representing unanimous agreement. Exhibits "A" and "B", and the List of Abbreviations have been amended to provide for Tracts 17-32 that have been added. As Vice President of Production, I guarantee this copy of the Unit Agreement to be as presented and agreed to by all signing parties.

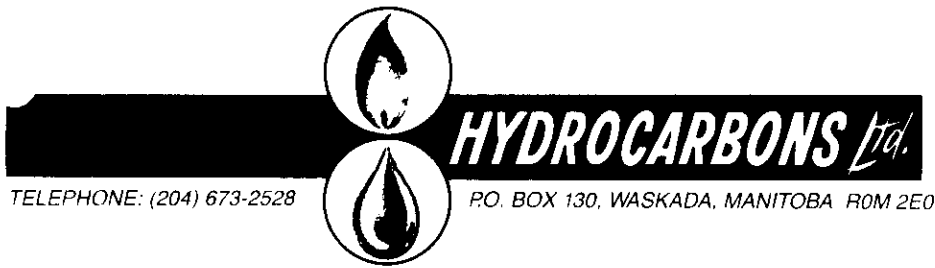
Yours very truly,

OMEGA HYDROCARBONS LTD.

G. E. Patey
Vice President of Production

EW:amr
cc: D. Taylor - Land Dept.
Attachment

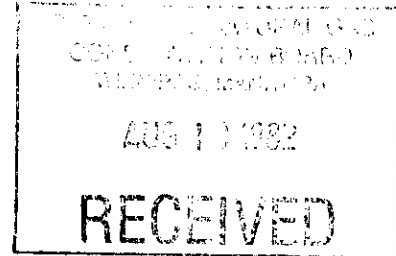
x.c. - H. Clare Moster (w/original attch.)
June 7, 1983 - IH/ra



August 16, 1982

The Oil and Natural Gas
Conservation Board
993 Century Street
Winnipeg, Manitoba

Attn: Dr. Ian Haugh
Deputy Chairman



Dear Sir:

Re: Revised Map Showing Lessors
Waskada Lower Amaranth Unit No. 1

Please accept our apologies with this revised map showing the Lessors in the vicinity of the proposed unit as a replacement for the attachment to our original May 19, 1982 application.

Yours truly,
OMEGA HYDROCARBONS LTD.

Ed Wyse
W. E. Wyse
Petroleum Engineer

WEW/ms

cc: Mr. H. Clare Moster, P. Eng.
Director, Petroleum Branch

PROPOSED WASKADA POWER AMARANTH UNIT No.1

MAP SHOWING LESSORS

Rge 26 WPM

Rge 25 WPM

R.C. Rowe 100%	M.G. Pounder 100%	H.F. Trewin 100%	Canada Trust 100%
26	25	30	
M.E. Hainsworth 100%	M.G. Pounder 100%	H.F. Trewin 100%	Dept. of Energy, Mines & Res. 100%
M.K. Hainsworth 100%	N.A. Royalties 25% G.F. McArthur 50% D.E. McGregor 25%	G.F. McArthur 50% D.E. McGregor 25% Missilinda 25%	R.D. Jack 16 2/3% J.S. Redden 33 1/3% Can. Perm. Trust 50%
23	24	19	
E.M. Hainsworth 100%	G.F. McArthur 25% E.A. & M.E. McGregor 25% J.H. Spelliscy 50%	Dept. of Ener., Mines & Res. 100%	R.D. Jack 16 2/3% J.S. Redden 33 1/3% Can. Perm. Trust 50%

Twp 1

August 16, 1982

REVISION NO. 1



HYDROCARBONS Ltd.

TELEPHONE: (403) 261-0743

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

August 10, 1982

The Oil and Gas Natural
Conservation Board
993 Century Street
Winnipeg, Manitoba

Attention: Dr. Ian Haugh
Deputy Chairman

Dear Sir:

RE: Proposed Waskada Lower Amaranth Unit No. 1

Further to our letter of August 9, 1982, please find attached.

- 1) Core-Log Relationships-Waskada Spearfish.
- 2) Individual well log analysis for all wells in the unit except 1-25 and 2-25 which had defective logs.

Note that the 7-25 well had minor defects in the sonic log and that slightly different pay values will be obtained depending on which runs of the log are used.

Additional coring since March had confirmed both the technique and core-log calibration especially in the 10-20% porosity range which comprises the great bulk of the reservoir.

Note that the log derived porosity equates to the net effective porosity. Our studies indicate that total porosity is 6% higher than the net effective porosity. This non-effective porosity is probably mainly in very fine silt and to a lesser extent in shale. The conductivity contributions of this non-effective porosity must be allowed for in water saturations calculations. Preliminary studies indicate water saturations averaging 45-50% with only minor variations. Much better saturations occur in high porosity clean sands but these comprise only a tiny fraction of the reservoir.

Yours truly,

John Henderson
Vice-President, Exploration

JH/sp

cc: C. Moster

THE OIL AND NATURAL GAS
CONSERVATION BOARD
WINNIPEG, MANITOBA

AUG 16 1982

RECEIVED

DATE: March 1, 1982
TO: Waskada Geological File
FROM: John Henderson
RE: CORE-LOG RELATIONSHIPS - WASKADA SPEARFISH

POROSITY DETERMINATION - SONIC LOG

Cross plots of core porosity vs sonic logs show the relationship to be:

<u>MICROSECONDS/METRE</u>	<u>POROSITY</u>
200	0
225	5%
250	10%
275	15%
300	20%
325	25%

Note that porosity is 4-8% lower than the Schlumberger clean sand formula.

Using this relationship, the porosity determined from logs is usually within 1% of porosity determined from cores.

PERMEABILITY - EFFECTIVE POROSITY DETERMINATION

Although net porosity determination is easy using the above relationship, the differentiation of effective sand from shale is difficult due to:

1. Poor S.P. development especially where heavily oil saturated.
2. Radioactivity of the sands is similar to or often higher than that of the red shale.

This problem has been overcome by overlaying the reversed gamma log on the 100-500 microsecond/metre sonic curve. Separation occurs where the formation is porous and permeable. By comparing core permeability with separation the following relationship has been derived.

<u>DIVISIONS</u>	<u>LOG SEPARATION</u>	<u>PERMEABILITY</u>
	0.5	1 md
	2.0	5 md
	2.5	10 md
	4.5	100 md
	6.5	1000 md

At the low permeability range, the gamma ray log is the dominant factor in permeability readings. At high permeability, the log separation is mainly caused by porosity increase. In other words, this technique is most useful in the low permeability range. High permeability is just as easily handled by the core permeability-permeability relationships.

CORE POROSITY PERMEABILITY

The crossplot of permeability and porosity from core, results in the following relationship.

<u>POROSITY %</u>	<u>PERMEABILITY md</u>	<u>POROSITY</u>	<u>PERMEABILITY</u>
9	.2	17	9.5
10	.35	18	14.0
11	.55	19	19.0
12	.9	20	26.0
13	1.5	21	37.0
14	2.5	22	52.0
15	4.0	23	75.0
16	6.5	24	100.0

WATER SATURATION

Oil saturated zones are easily identified by overlaying the 100-500 sonic log on the logarithmic induction curve. To date it has not been possible to calculate water saturation due to:

1. Poor thin bed response of the induction log.
2. Our porosity analysis measures only the effective porosity, whereas the induction curve is reacting to total porosity including shale.

In a few isolated instances high porosity zones have been thick enough to calculate Sw's as low as 25%. In this fine grained reservoir, water saturations are probably in excess of 40%.

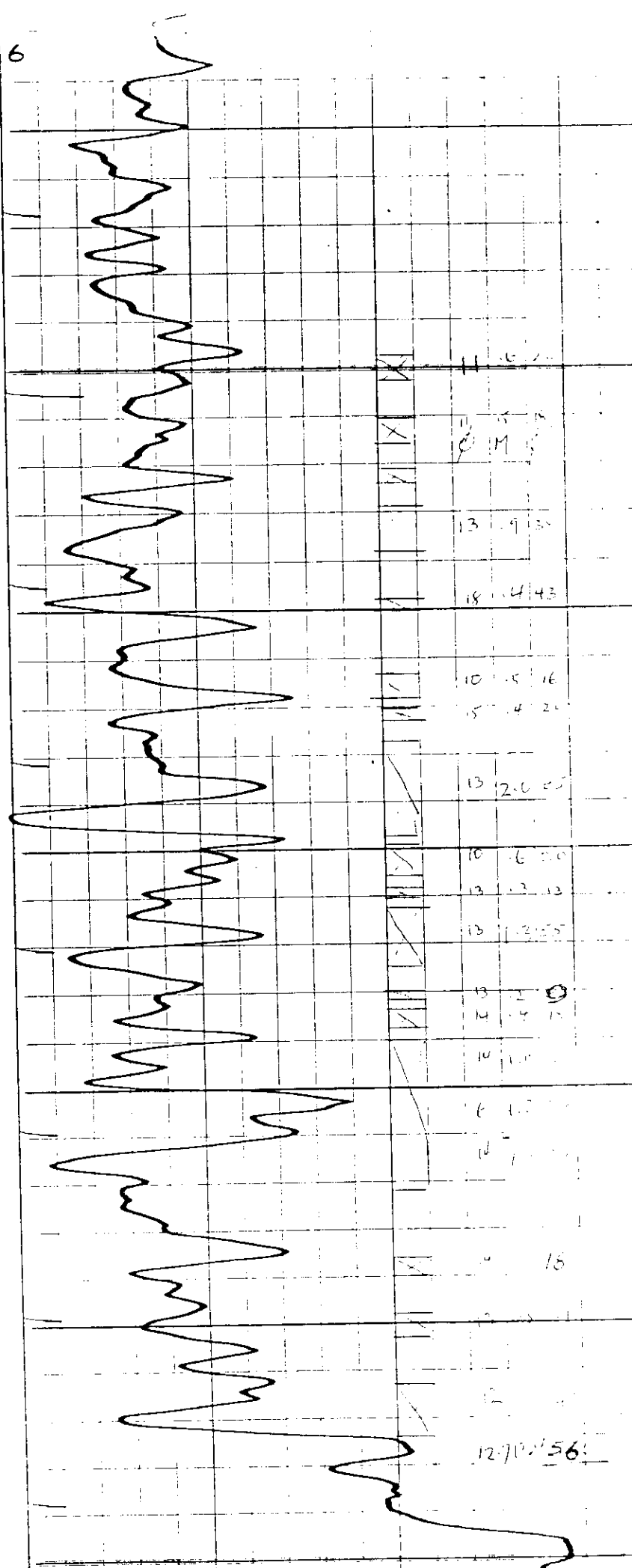
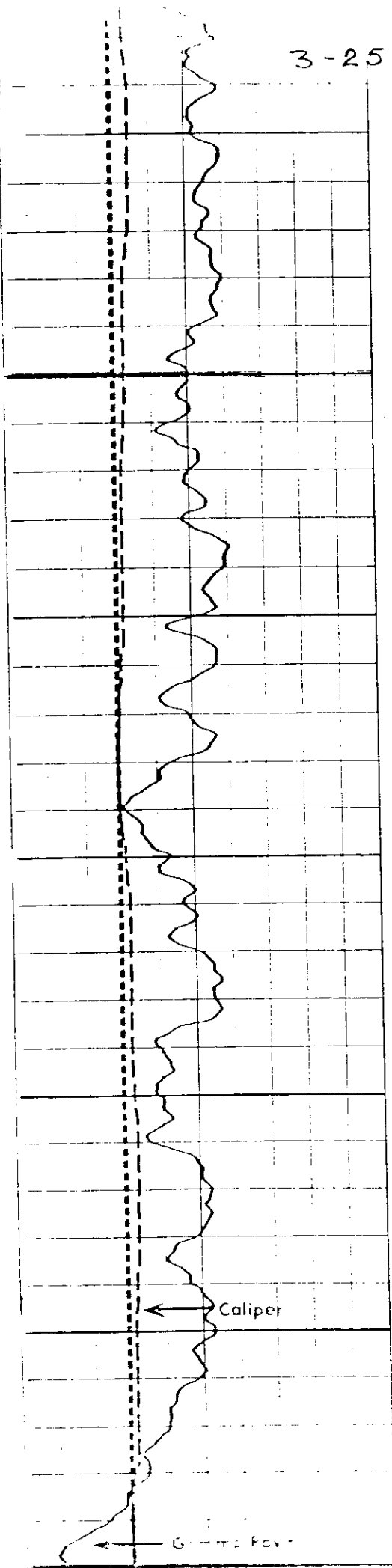
SUMMARY

The excellent correlation between log derived and core derived porosity and permeability allows us to discontinue our coring program except in isolated areas. At present, no method of calculating water saturations exists.

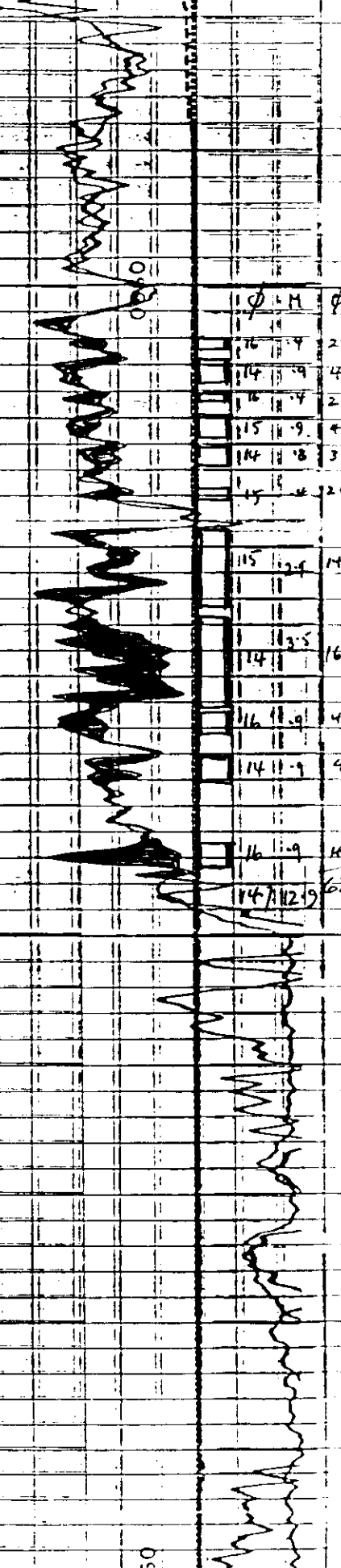
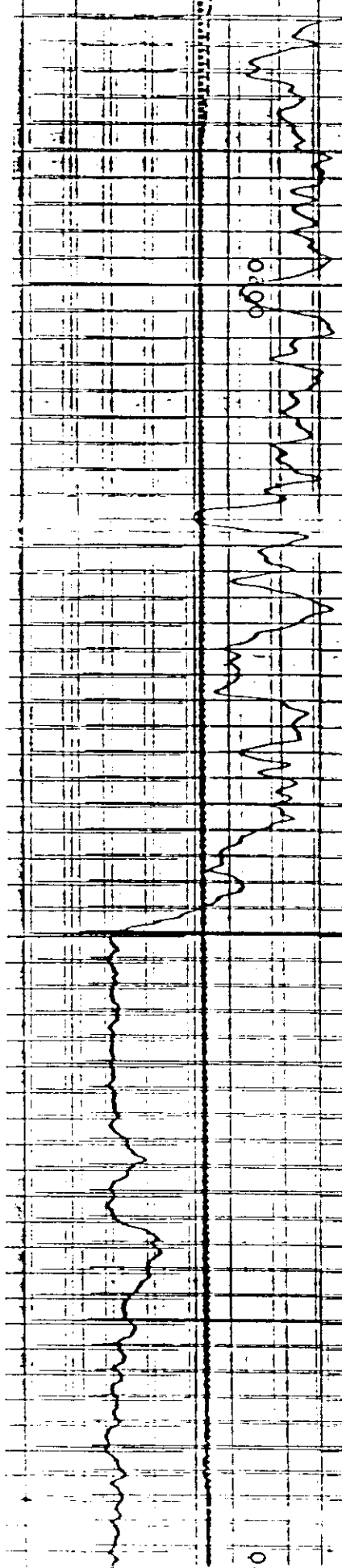
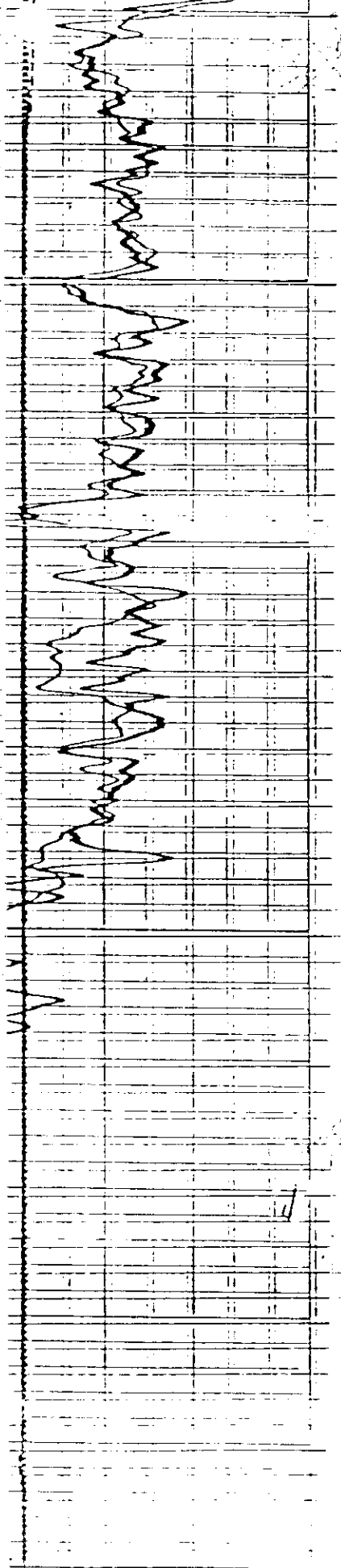
John Henderson

JH/dc

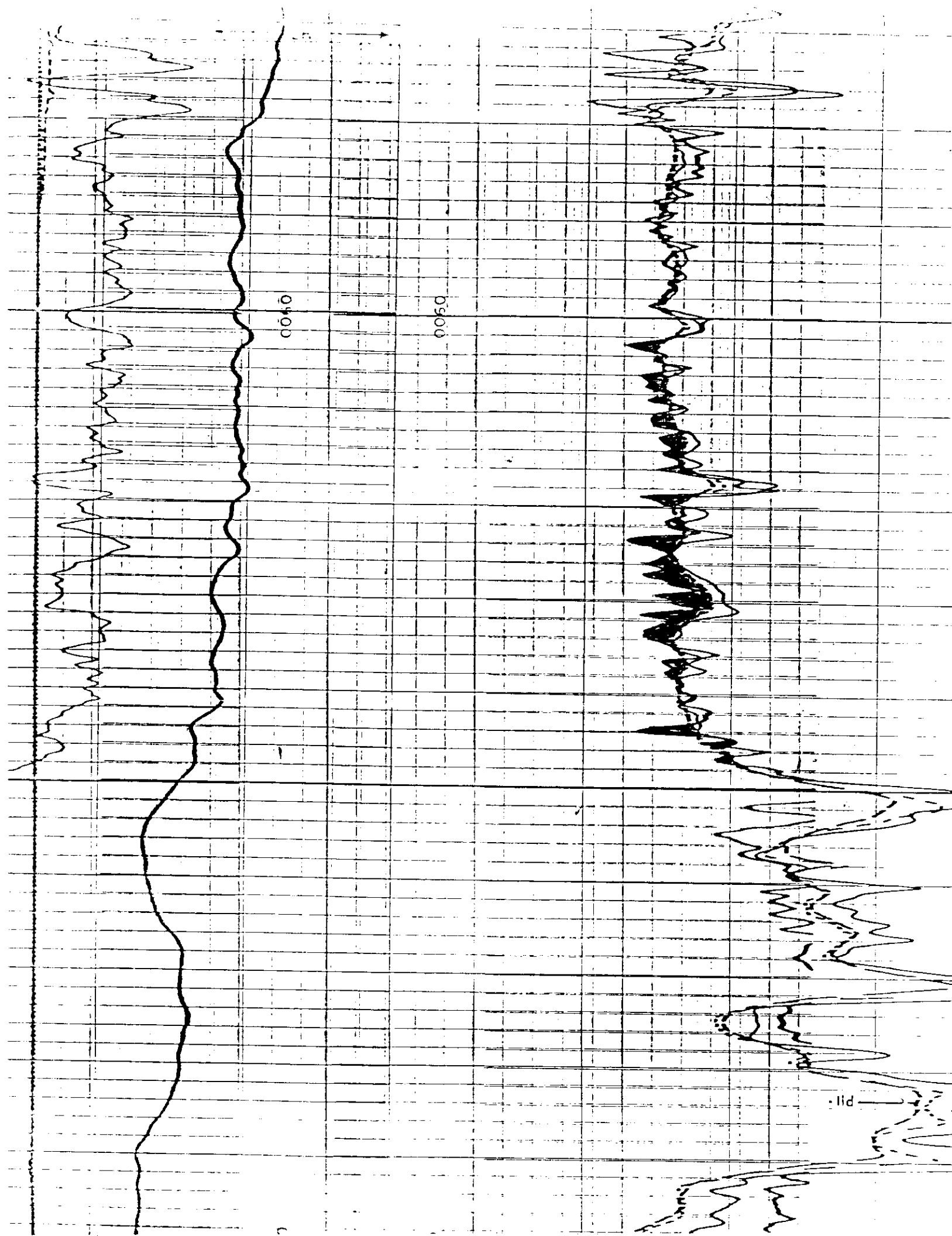
0900



4-25-1-26



ϕ	M	ϕ
16	1.4	21
14	1.9	41
16	1.4	21
15	1.9	44
14	1.8	37
15	1.4	20
15	1.4	143
14	1.5	161
16	1.9	47
14	1.9	41
16	1.9	147
14	1.2	623



375

X2000A

275.50

025.5

021

X3000V

3

3

3

LR

LR

LR

5-25

900

000

900

Ø M Ø'
17 1 56

14.3 14

17 1.6 29

18.6 35

12 1.1 43

20 2.0 131

7 1.3 30

12 -8 31

18 1.8 106

15 -8 39

13 -8 34

13 -8 34

12.9 642 Ø'

15.2 70

Bit Size

Bit Size 9 1/2 in

Caliper (ft)

Gamma Ray

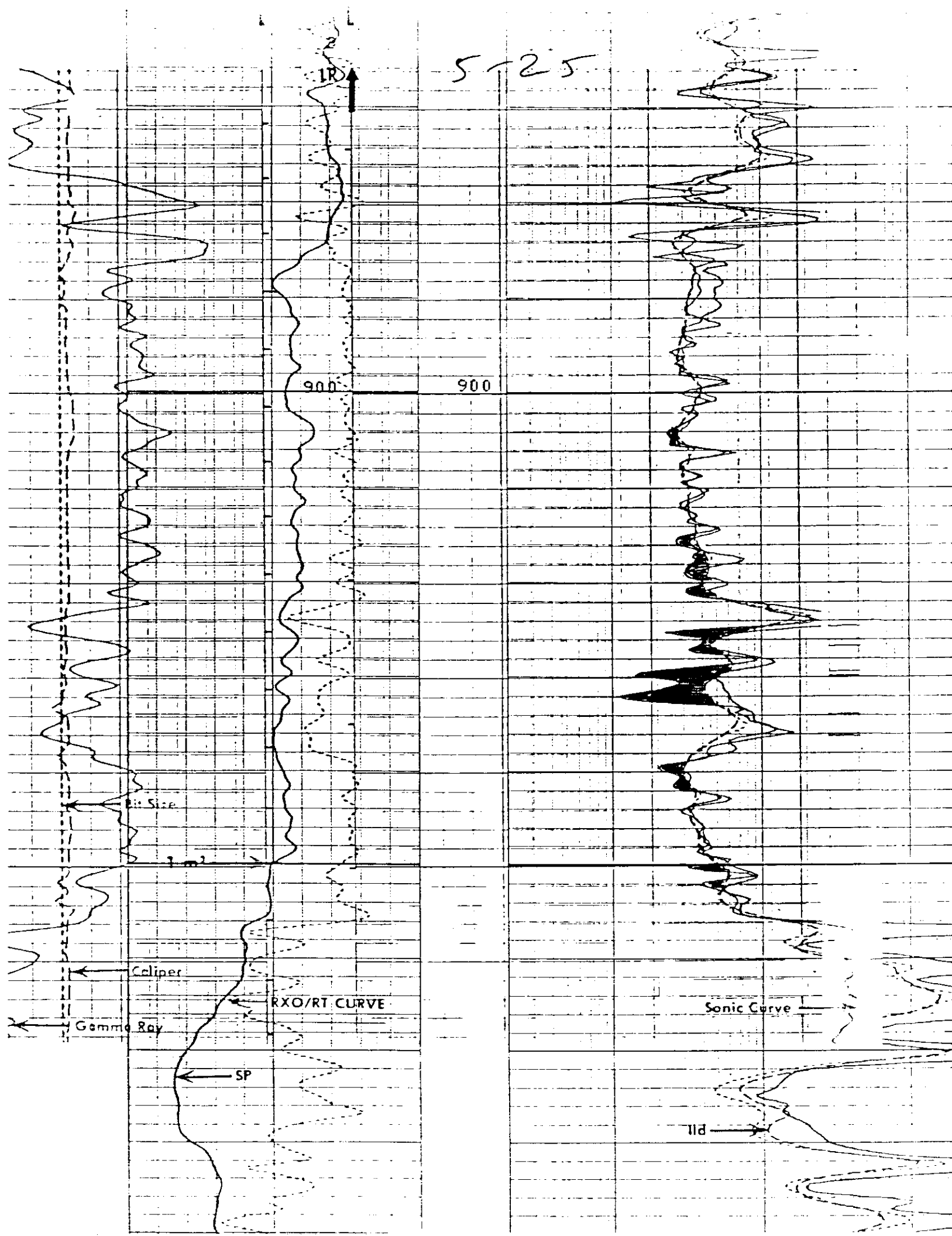
Sonic

Caliper

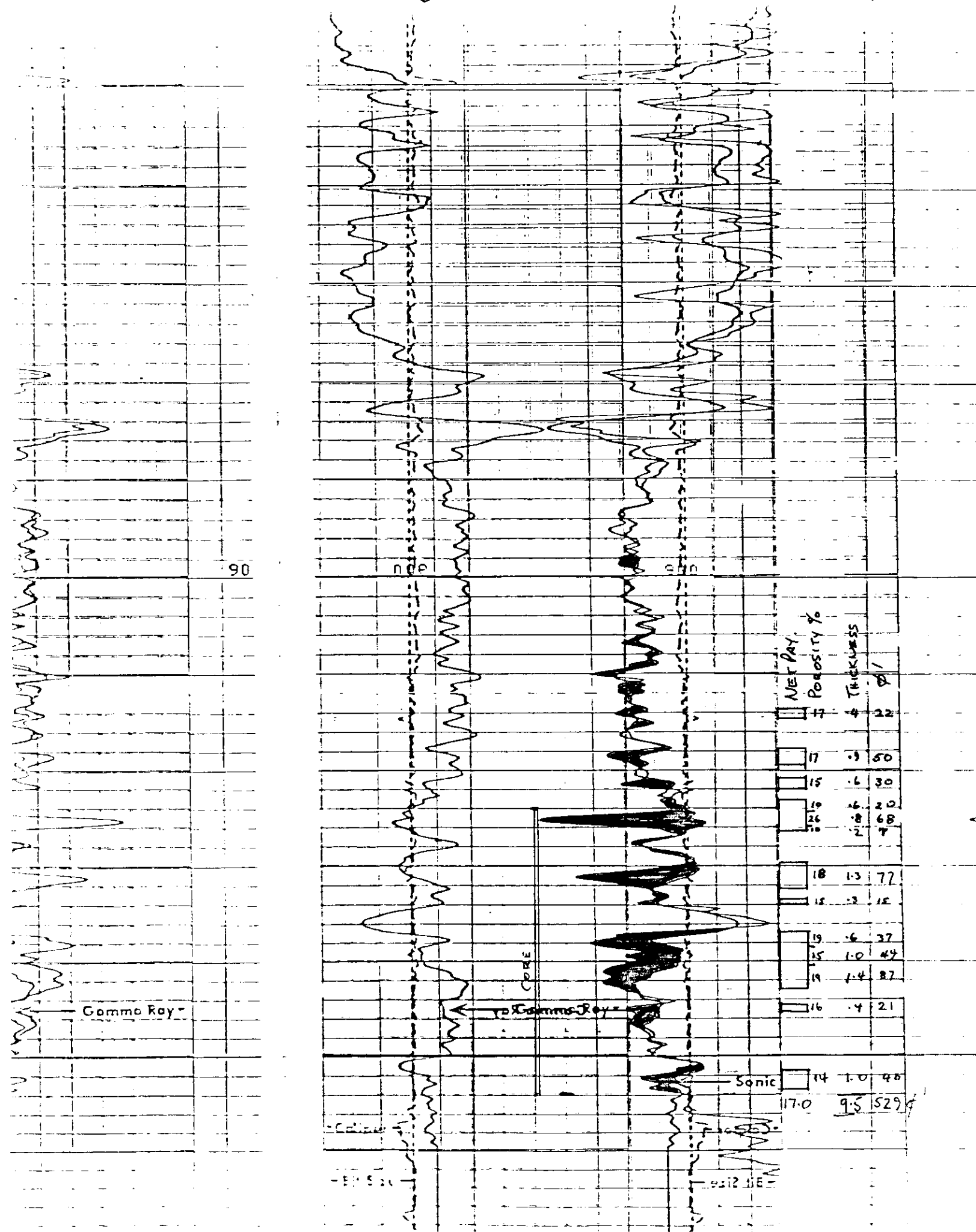
2

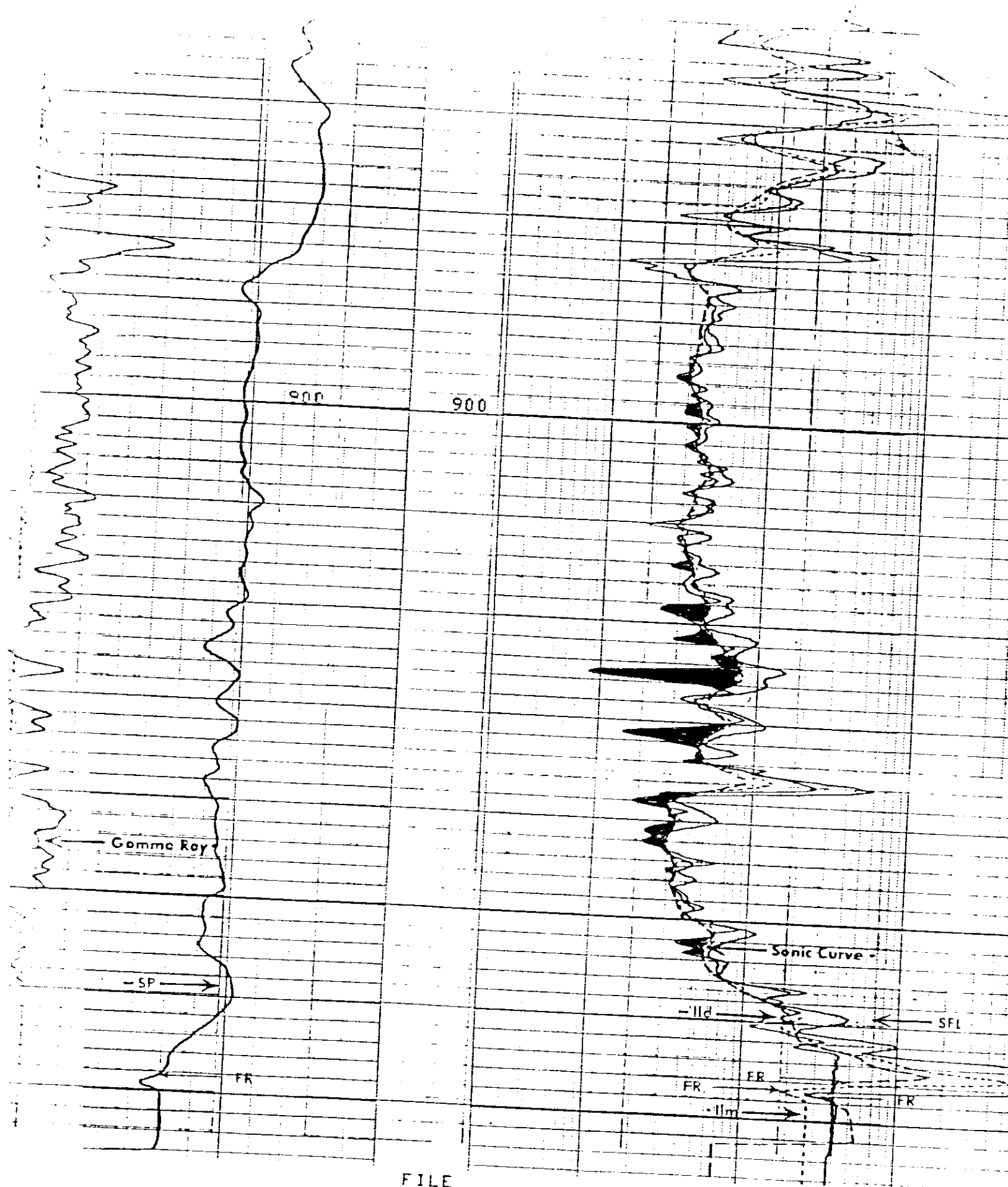
10 Rev

5-25



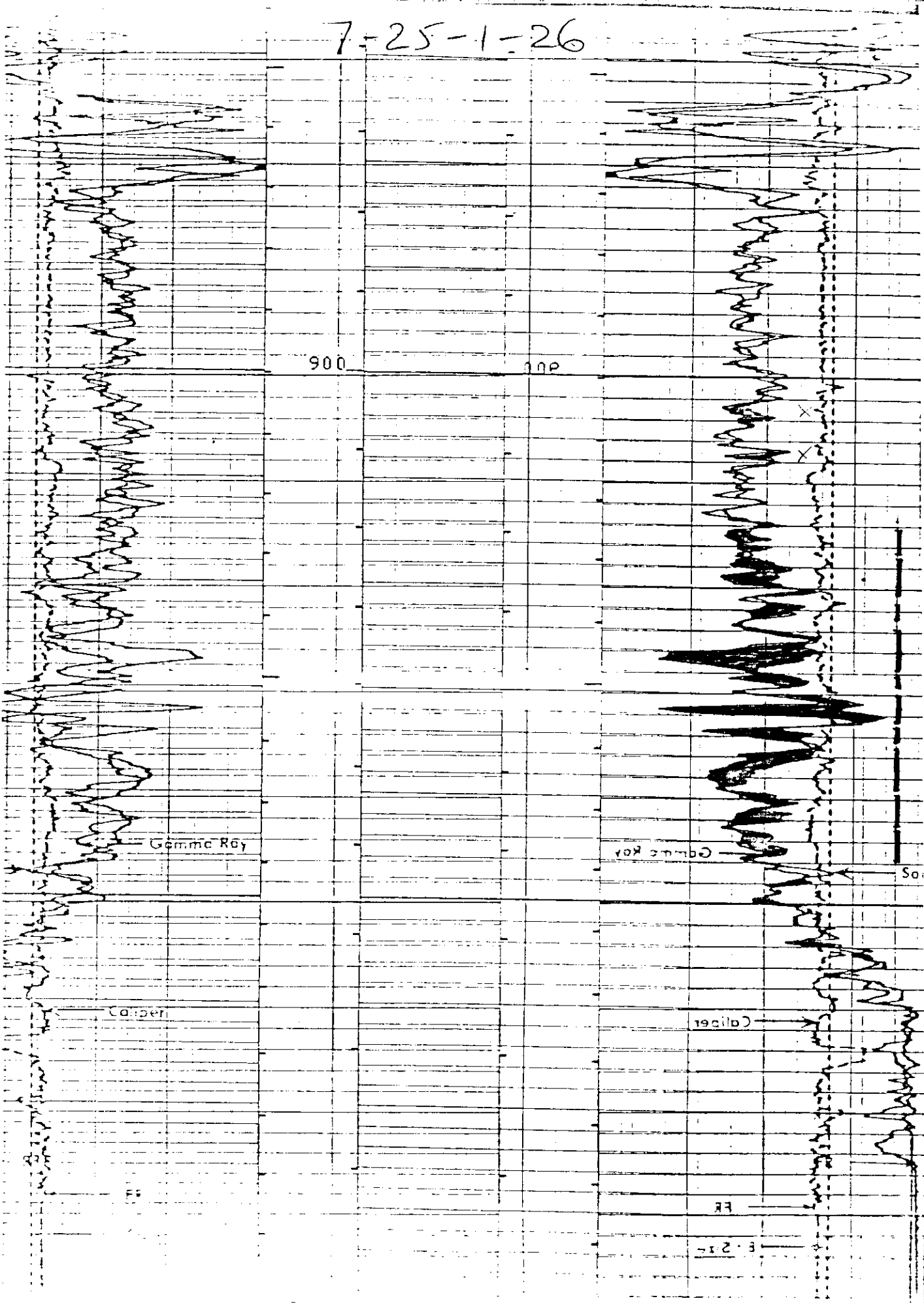
6-25-1-26





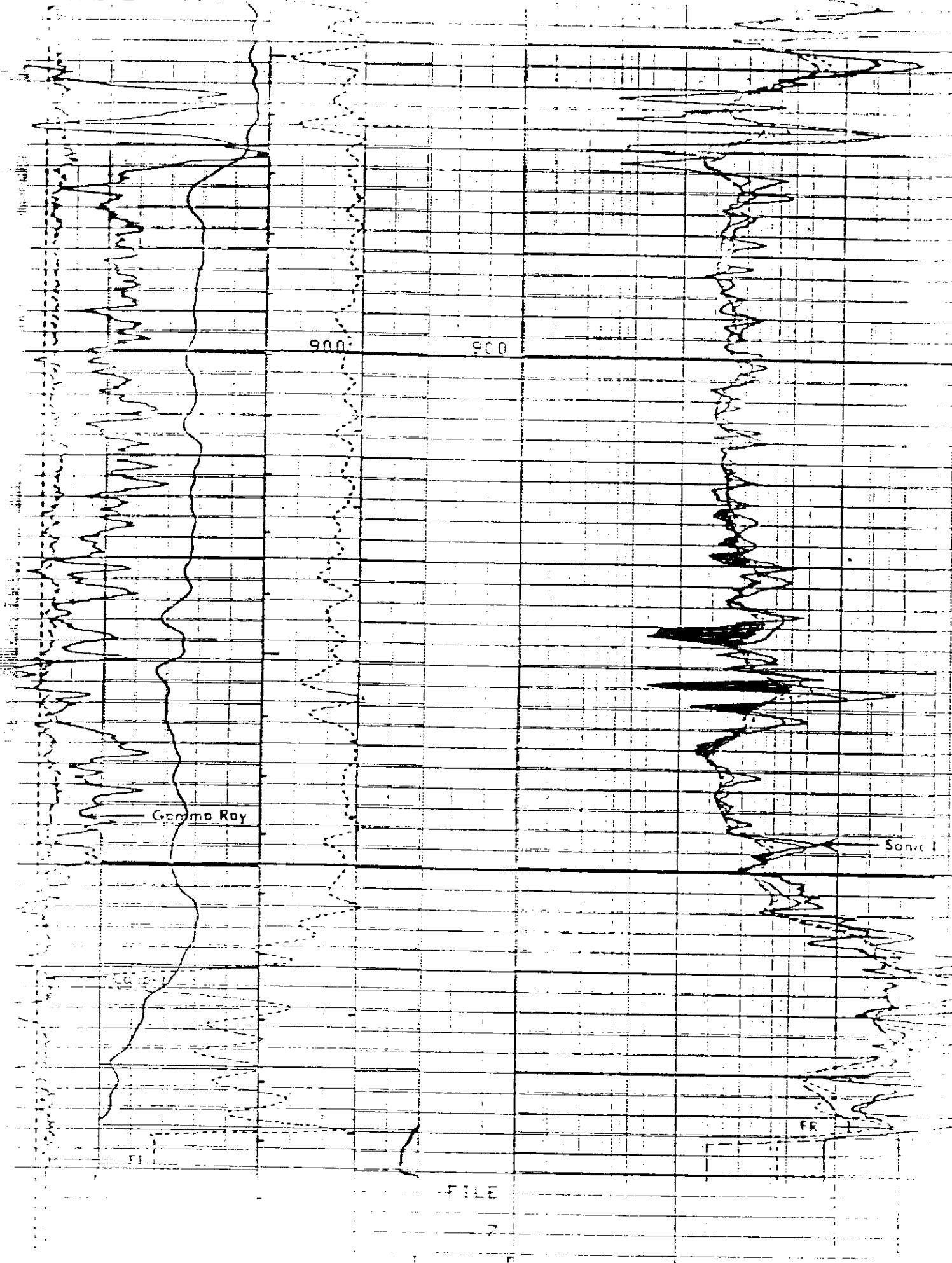
FILE

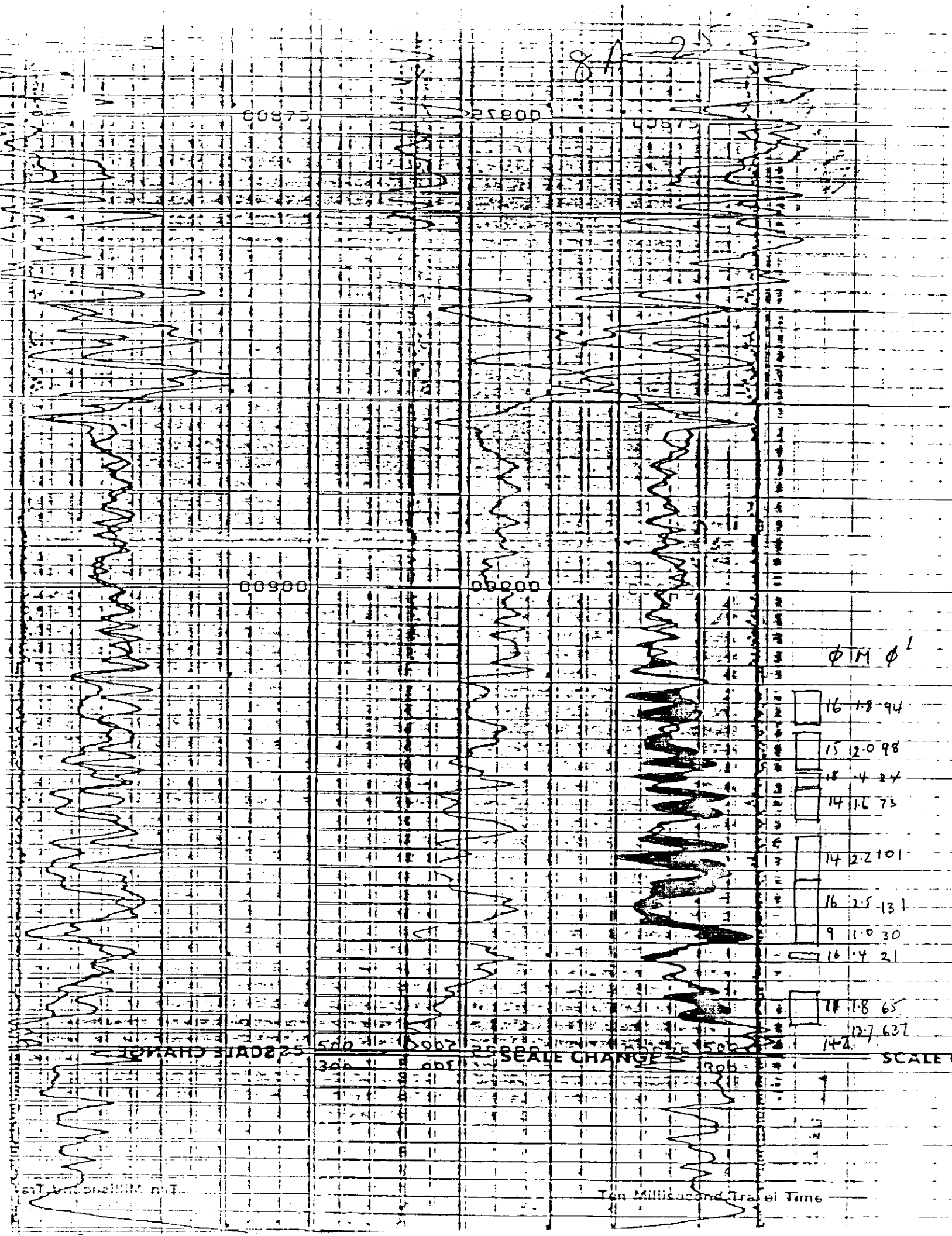
7-25-1-26



ϕ	M	ϕ
15	1.1	54
15	1.4	69
10	1.3	10
14	1.7	32
11	1.1	40
21	1.8	55
14	1.6	28
15	1.2	59
17	1.6	34
16	1.7	29
14	1.4	54
13	1.2	51
So. 14	1.2	585

1.78





81 21

00875

00875

00875

00900

00900

$\phi M \phi$

16	1.8 94
15	2.0 98
18	4 24
14	1.6 73
14	2.2 101
16	2.5 131
9	1.0 30
16	1.4 21
11	1.8 65
14	1.7 637

SCALE CHANGE

SCALE

Ten Millisecond Travel Time

-1101+

0.2

R(IED) 0-M

0.2

R(IIM) 0-M

0.2

R(LL) 0-M

00875

00855

00900

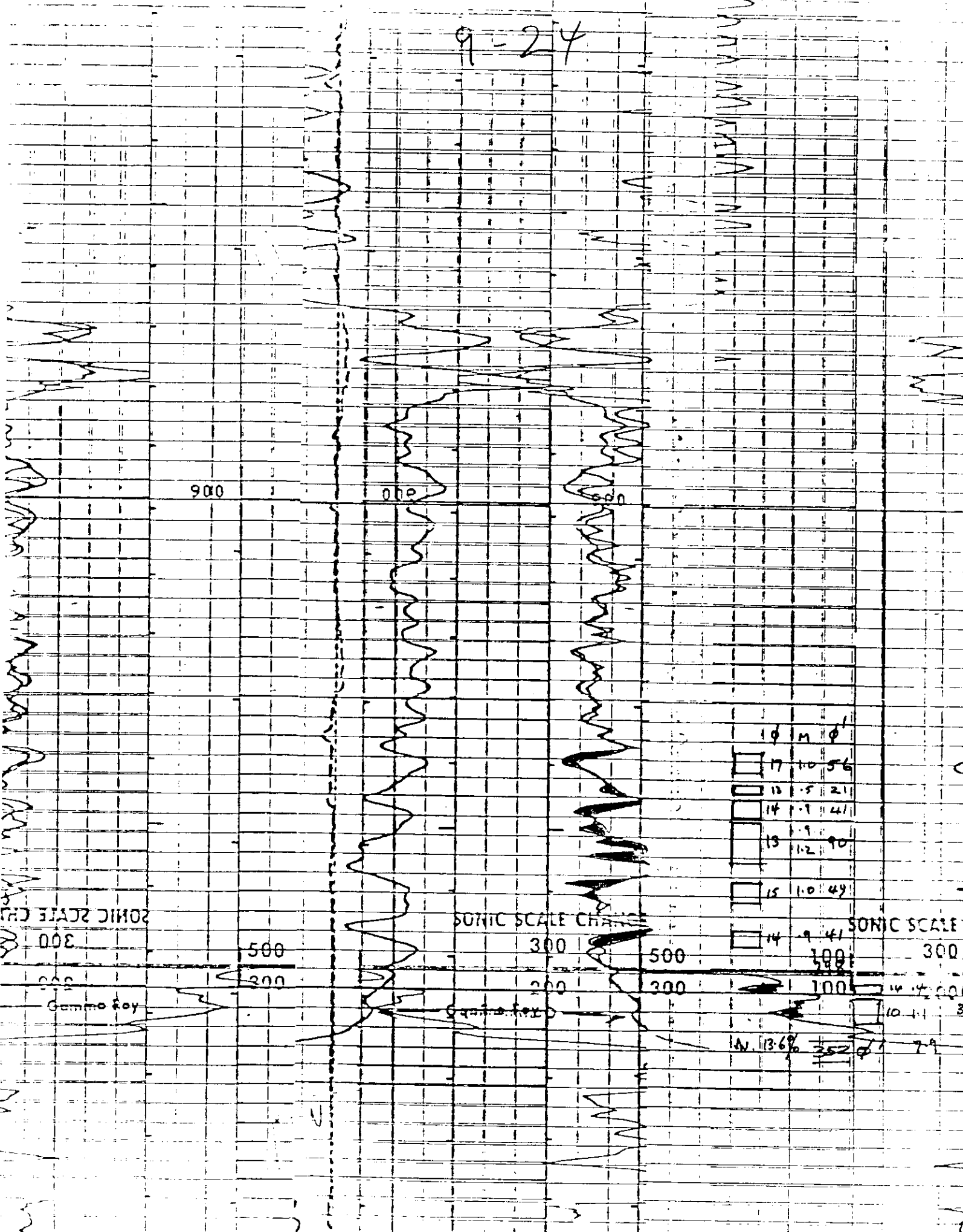
00925

00925

SCALE CHANGE

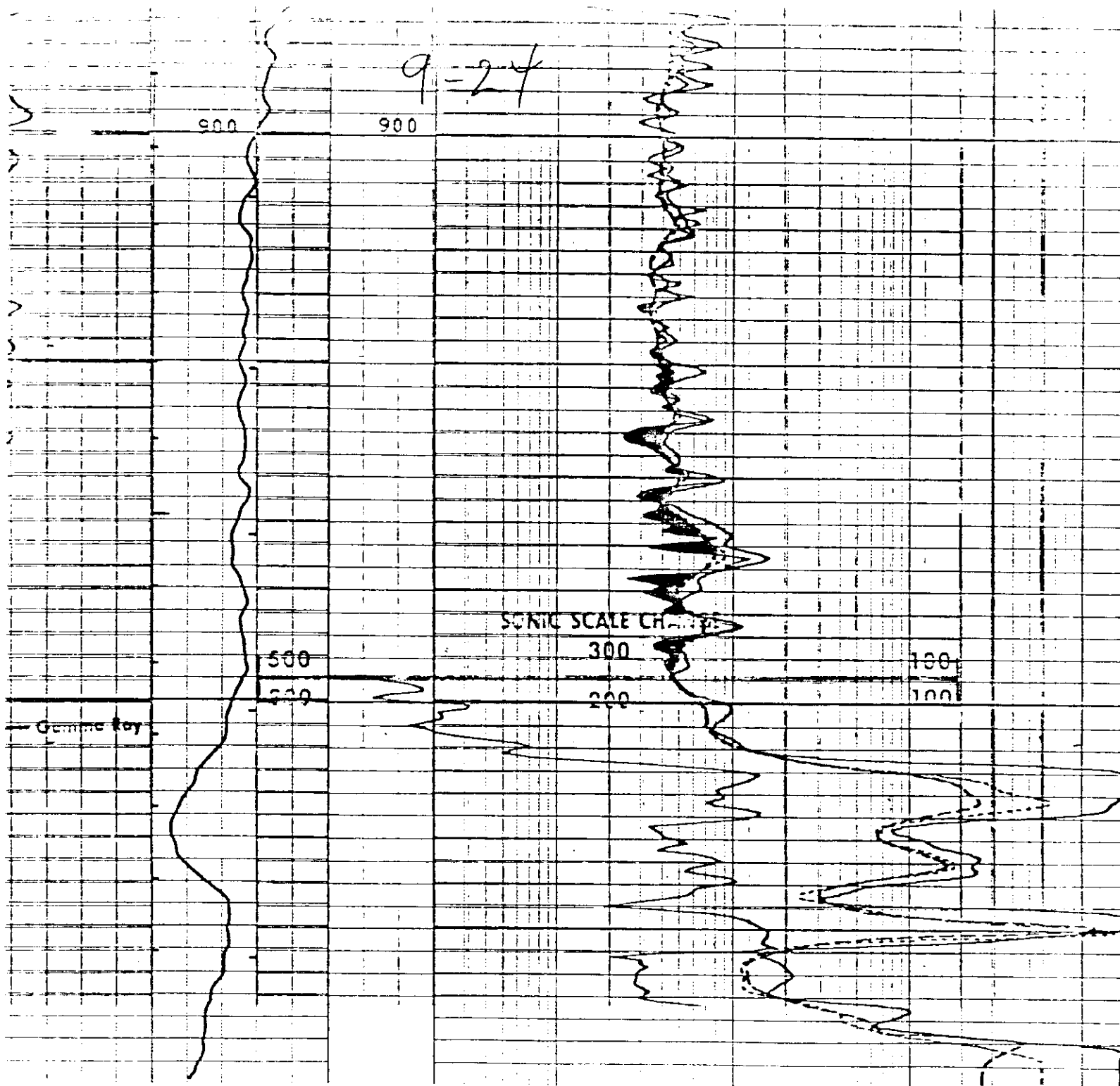
102

9-24



	ϕ	m	ϕ'
17	1.0	56	
13	1.5	21	
14	1.9	41	
13	1.9	90	
15	1.0	49	

SONIC SCALE CHART		SONIC SCALE CHART	
14	9.41	14	4.00
10	1.1	10	1.1
13.6%	352	7.9	



FILE

1

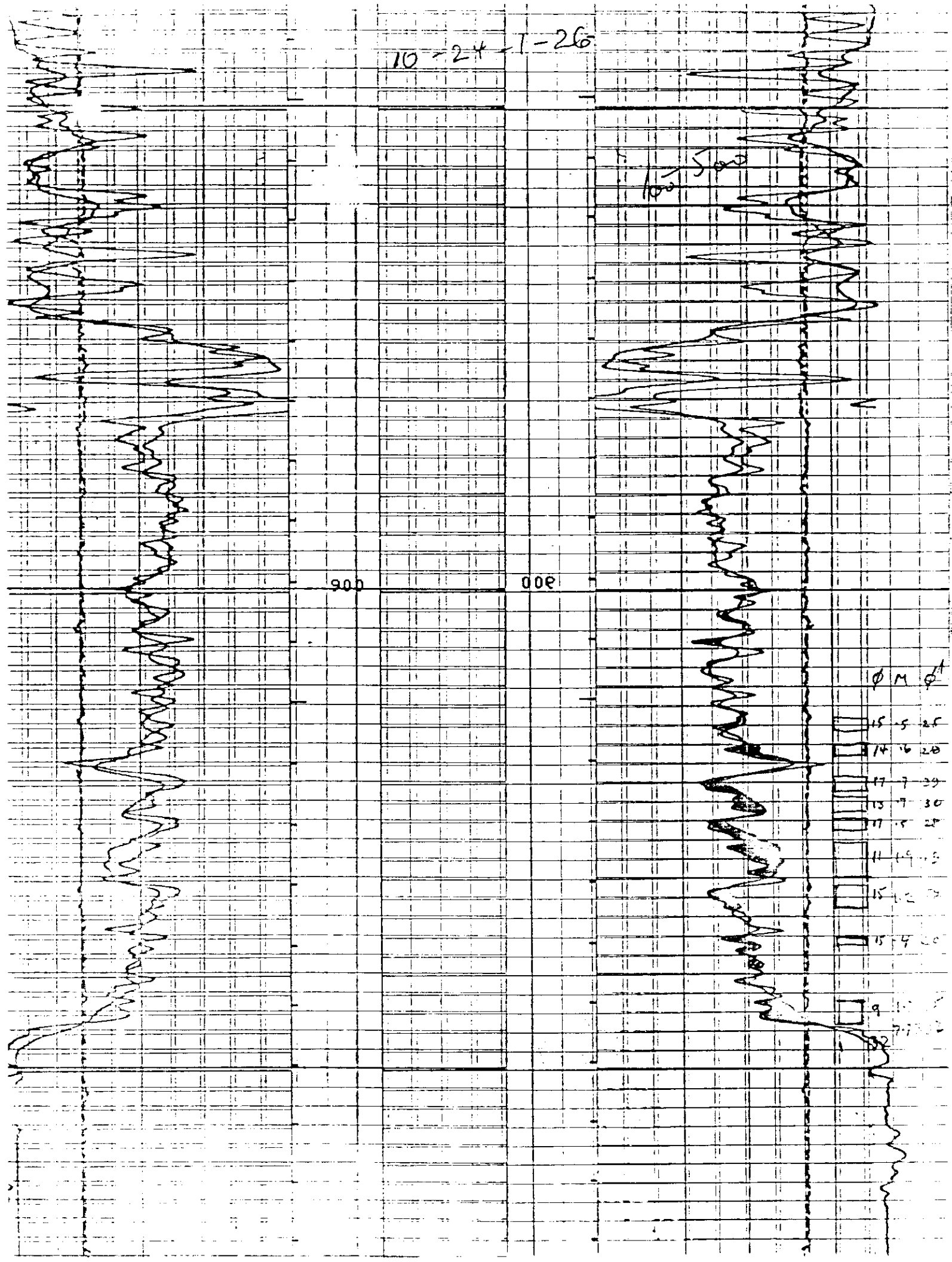
SP (MV)	ILD (DHMM)	
	0.2000	2000.
	ILM (DHMM)	
20.00	0.2000	2000.
	SFLU (DHMM)	
20.00	0.2000	2000.

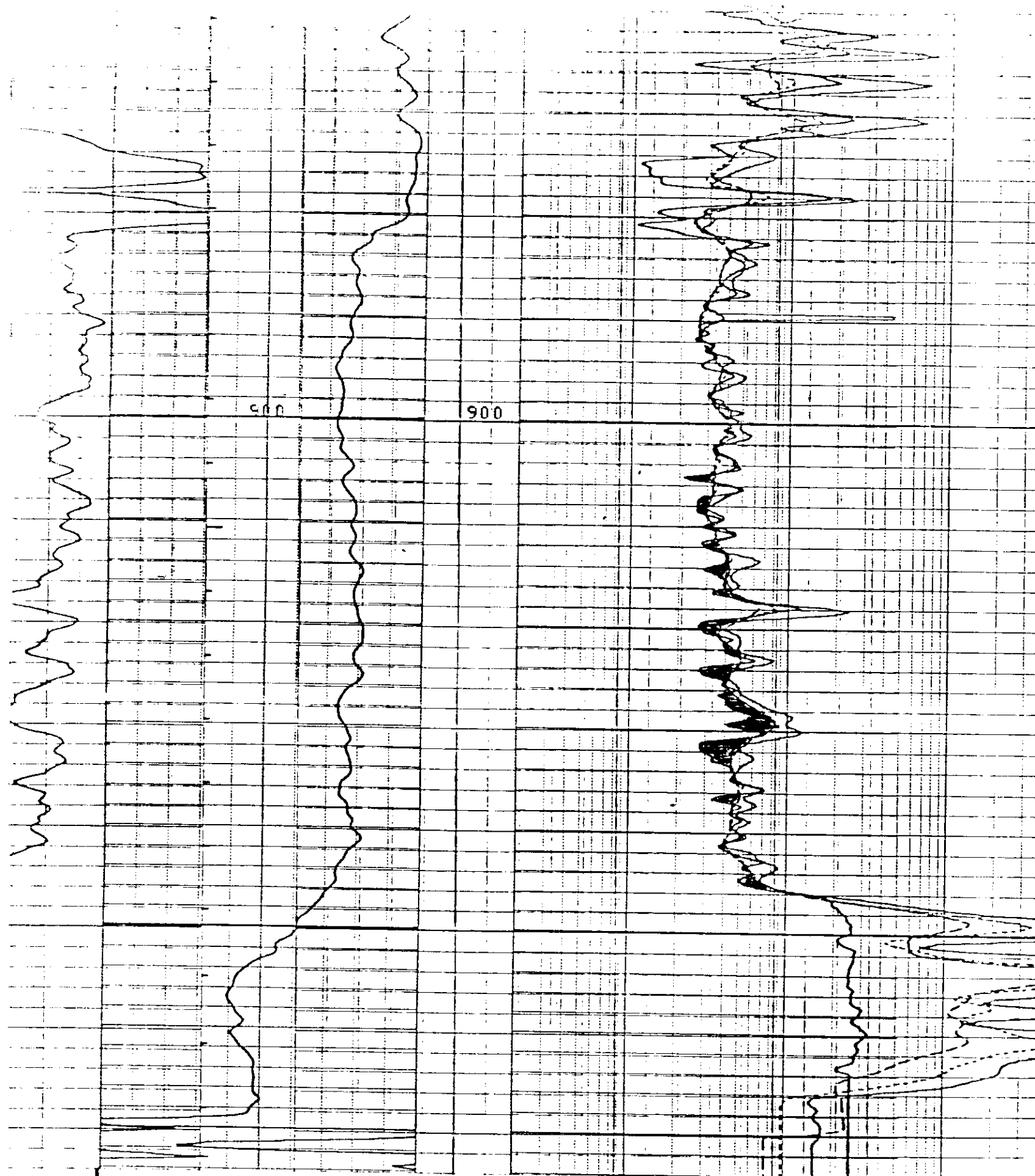
SENSOR MEASURE POINT TO TENSION REFERENCE POINT

CFL 1.2 METER
 SF .0 METER
 TENC .0 METER

ILD 2.1 METER
 ILM 1.0 METER
 SPAR .0 METER

10-24-1-26





FILE

4

FILE

7

-600

0.2000

ILD (DHMM)

ILM (DHMM)

11-24-26

900

800

700

1.8	15	139
1.3	15	116
1.3	16	116
1.0	12	39
1.5	15	25
1.1	13	47
1.4	16	21
1.2	15	59
1.4	14	18
1.7	15	34
1.7	14	32
1.9	16	52
1.8	14	398

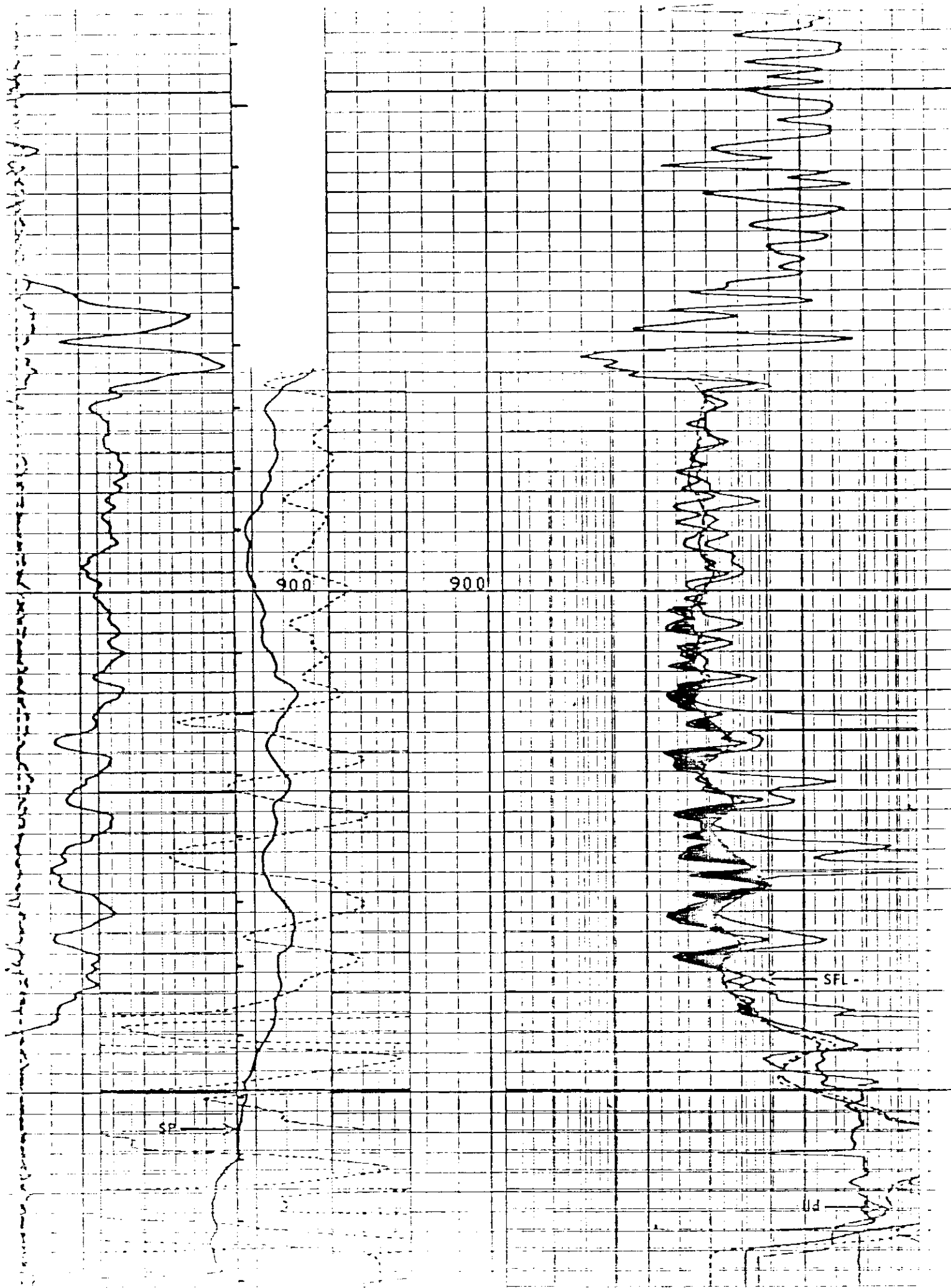


FIG. 5

12-24

SONIC SCALE CHANGE

500

300

300

200

No 500-100 Scale
thus no overlay.

900

ϕ M ϕ'

12 .3 12

16 .3 16

16 .7 37

12 .7 28

15 .7 34

13 .1 47

15 .8 39

15 1.2 59

17 .5 28

14 4.1 161

16 1.2 63

13 .4 17

12 .4 15

13.7 12.4 15

Bit Size

Caliper

FILE

3

13-24

No 100-500 SCALE SONG
thus no overlay.

FILE

2

REPEAT SECTION

900

20

10

0

ϕ M ϕ

14	.3	14
17	.4	22

16	1.4	73
12	1	39
21	1	69
13	1	43
17	.5	28

11	1	36
16	1	52
12	1	39
16	1	52
15	.5	25

12	.4	16
13	.7	30
		11.2 538

14.6

00000 00000 00000

Ten Millisecond

One Millisecond

18	13	77
15	3	19
15	3	15

Time 4 60

144.70 330

Sonic Caliper

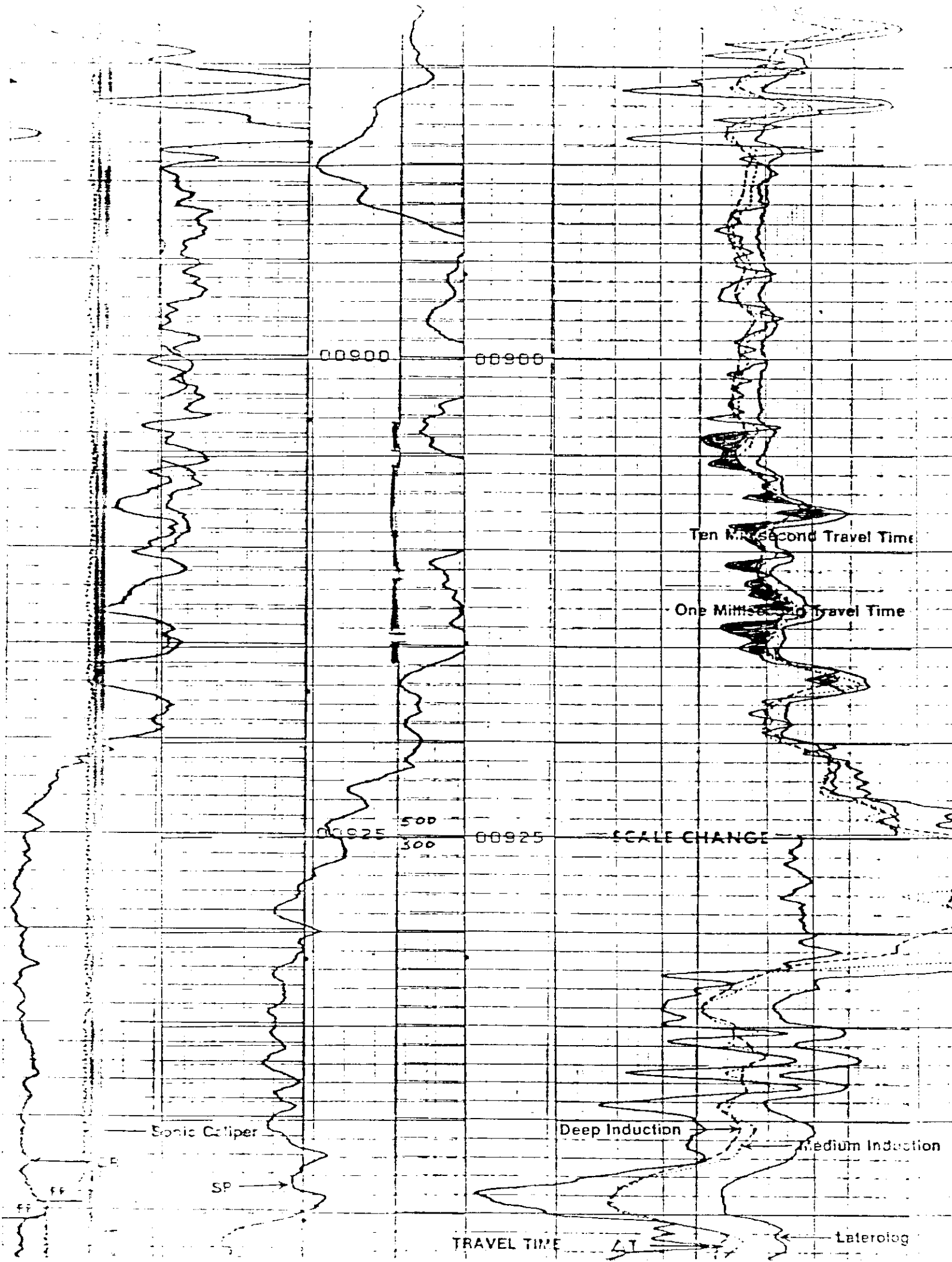
GR

FR

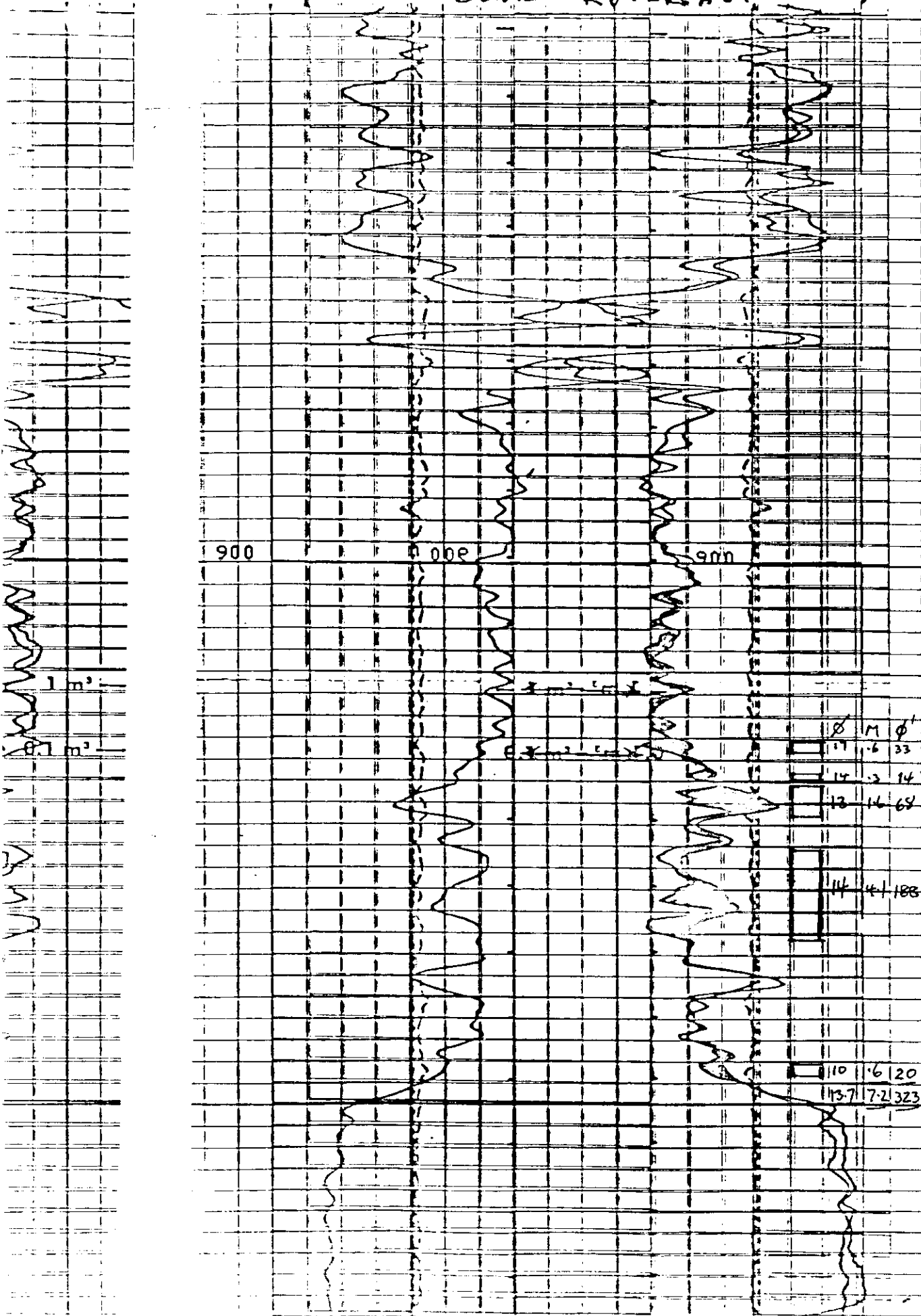
VEL TIME

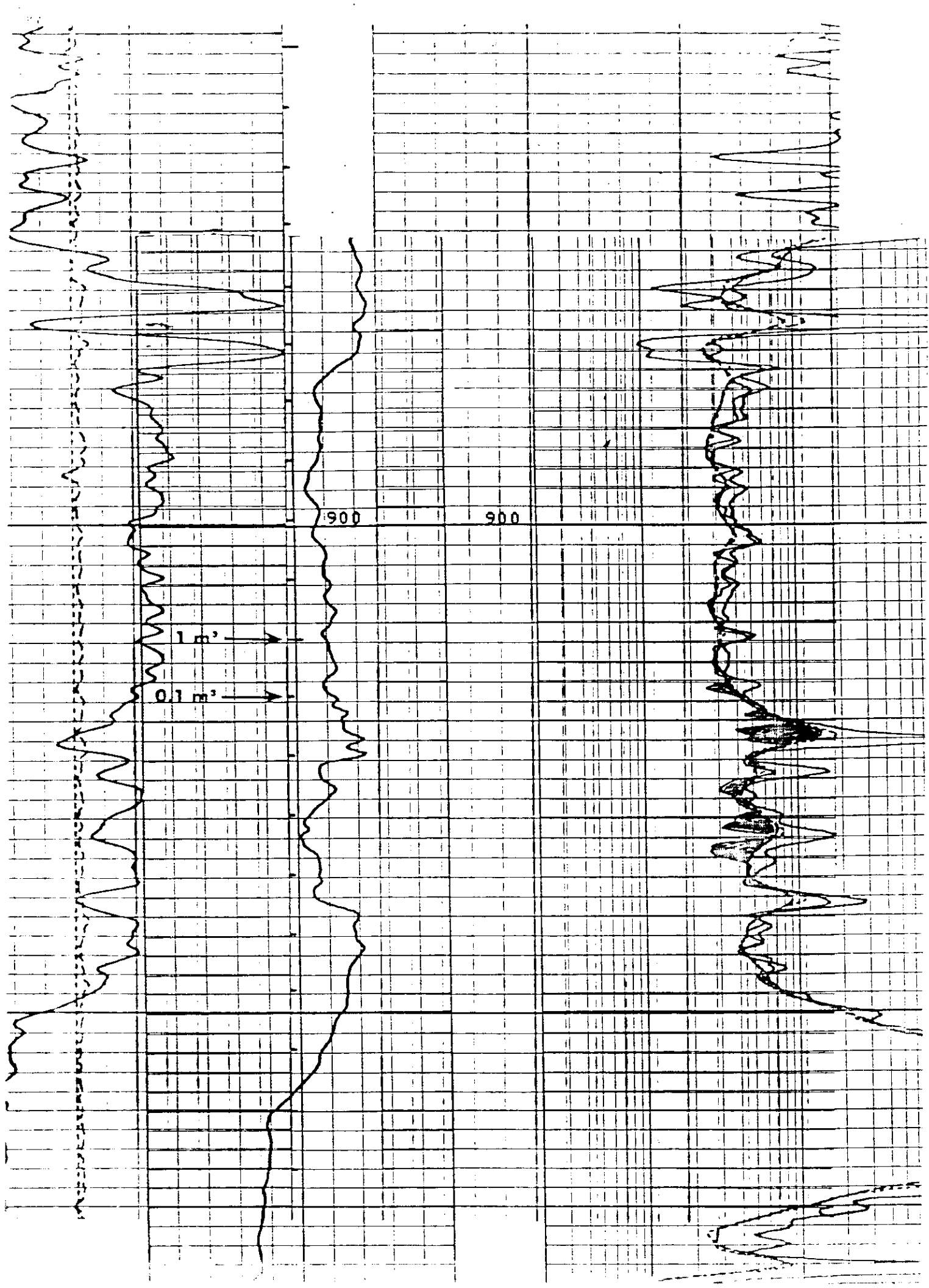
TRAVEL TIME

Bit Size



15-24 GAMMA SONIC REVERSAL





16A 25

900

900

1 m

0.1 m

