CHEVRON CANADA RESOURCES

Survey No. 28588

CHEVRON ET AL LIARD #K-29

LIARD, CANADA

Performed by: BONNETT'S

November 14, 2000

KINLEY SURVEY INTERPRETATION

COMMON ABBREVIATIONS

L.U.	=	Lower Upset	Corr.	=	Corrosion
U.U.	=	Upper Upset	Dep.	=	Deposits
u.B.	=	upper Body	Scatd.	=	Scattered
m.B.	=	middle Body	Shall.	=	Shallow
l.B.	=	lower Body			

TABULATION SHEET

JOINTS are numbered from the top down. Numbering starts with the first full length joint below the well head.

PUP JOINTS are designated by decimal numbers. For example, Joint #32.1 represents the first pup Joint below Joint #32.

SPECIAL TOOLS & NIPPLES are designated by letters. For example, "B" is the second special tool or nipple from the top of the well.

GAS LIFT MANDRELS are numbered down from the top. For example: GLM(1), GLM(2), etc.

TABULATION SYMBOLS

We use a circle as the basic tabulation symbol. The Kinley Caliper records the simultaneous action of all fifteen or thirty feelers. Our survey, therefore, has either 15 or 30 recordings. These lines provide a view around the circumference of the inner surface of the pipe. A complete circle on the tabulation sheet indicates that at least 14 of 15 feelers or 28 of 30 feelers found tubing wall reductions at the same depth on the well. This would be described as a ring.

The number of feelers that indicate tubing wall reductions at the same depth is also noted on the tabulation sheet.

For a 15 Feeler Caliper

 3 to 5  6 to 9  10 to 13  14 to 15

For a 30 Feeler Caliper

 6 to 11  12 to 19  20 to 27  28 to 30

MEASUREMENT SYMBOLS

 A PIT — A number alone represents the depth of penetration expressed in hundredths of an inch of the deepest pit. In this example 0.08".

 A RING — A groove around the pipe found by 14 of 15 feelers or 28 of 30 feelers. The number inside the circle represents the maximum depth of the ring expressed in hundredths of an inch.

 A PARTIAL RING — A groove around the pipe found by 3 to 13 of 15 feelers or 6 to 27 of 30 feelers. The number inside the partial circle represents the maximum depth of the ring expressed in hundredths of an inch.

 NO COMMENT — Indicates no damage was found in that joint.

Chevron Canada Resources
Liard, Canada

Chevron et al Liard #K-29
November 14, 2000
Survey No. 28588
Chart No. A0305N
Feeler Ratio: 2 : 1

This is the first survey of this well to be made with the Kinley Microscopic Caliper. The condition of the internal surface of the 88.9mm 19.27 kg/m (3 1/2" 12.95#) Hydril 533 tubing in the well, from 2454m to 2534m (WLM), is described in this report.

The deepest penetration recorded in this survey is a hole in a ring of reduction (chemical cut) located in the middle body of Joint #5. This penetration measures 9.52mm or 100% of the tubing wall thickness. A photocopy of the recordings for Joint #5, at the location of the hole (complete chemical cut), is included in this report.

With the exception of Joint #5, the condition of the tubing surveyed and analyzed appears good with respect to corrosive and mechanical damage. Indications of mechanical damage are recorded in Joint #5 in the forms of a hole in a ring of reduction (complete chemical cut) and a possible hole in a ring of reduction.

Many of the joints surveyed and analyzed appear to have an irregular or rough tubing inner diameter. The roughness that has been recorded in these joints appears to be an inherent characteristic of the pipe, a result of some type of light depositional buildup, or a combination of both. These joints will be monitored in future surveys for any changes.

CALIPER TECHNICIAN
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SURVEY ANALYST
Jon Chance

jc

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Chart received: 11-17-00
Report e-mailed: 11-17-00
Report mailed: 11-22-00

KINLEY CALIPER TALLY SHEET (Composite)

[illegible]ON ET AL LIARD #K-29		Run:	1	Section:	1/1
L[illegible] CANADA		Chart #:	A0305N	Pipe:	3 1/2" 12.95# HYDRIL 533
Survey # 28588		Feeler Ratio:	2:1	Body (mm):	9.525
November 14, 2000				Upset (mm):	17.348

	# of Jts
Penetrations Over 85% (Possible Hole)	1
JT.#'s 5	
Penetrations 41 - 85% (Poor)	0
Penetrations 21 - 40% (Fair)	0
Penetrations 11 - 20% (Good)	0
Penetrations 1 - 10% (Very Good)	0
No Penetrations Recorded	7

TOTAL JOINTS SURVEYED: 8

(Includes 1 Pup Joint)

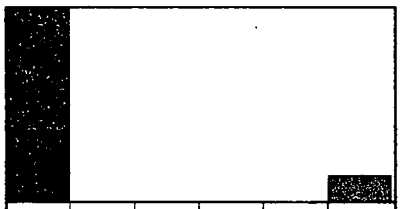
KINLEY CORROSION PROFILE

C	ON ET AL LIARD #K-29	Run:	1	Section:	1/1
L.	CANADA	Chart #:	A0305N	Pipe:	3 1/2" 12.95# HYDRIL 533
Survey # 28588		Feeler Ratio:	2:1	Body (mm):	9.525
November 14, 2000				Upset (mm):	17.348

BODY PENETRATIONS

CORROSIVE DAMAGE FREQUENCY DISTRIBUTIONS

MAXIMUM PENETRATION



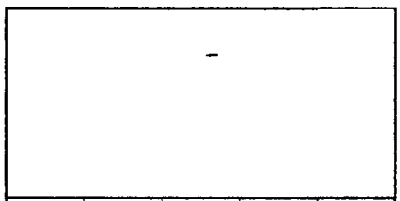
7	0	0	0	0	1

NUMBER OF JOINTS

NONE	1-10%	11-20%	21-40%	41-85%	> 85%

% WALL LOSS

CONFIGURATION

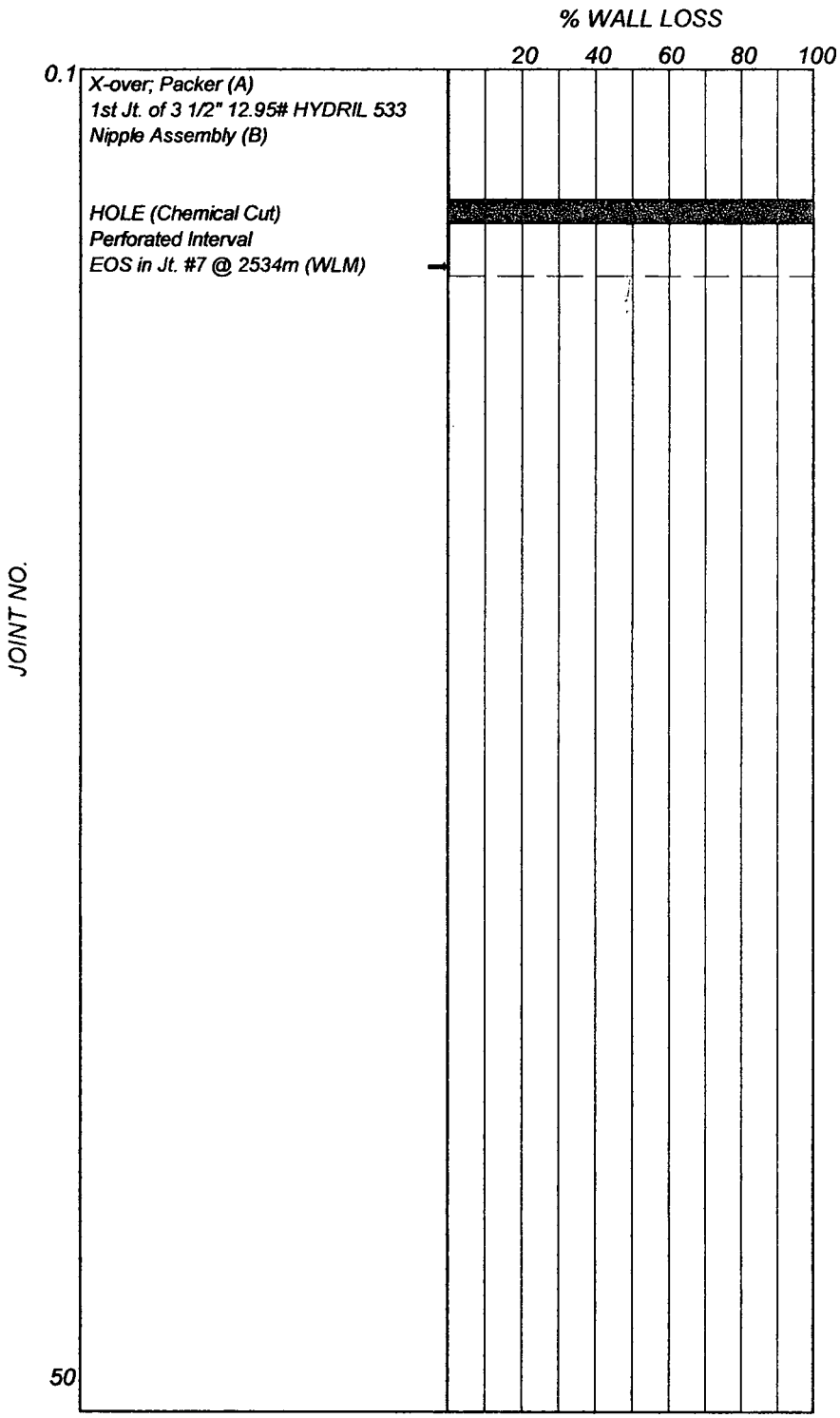


0	0	0	0	1

NUMBER OF JOINTS

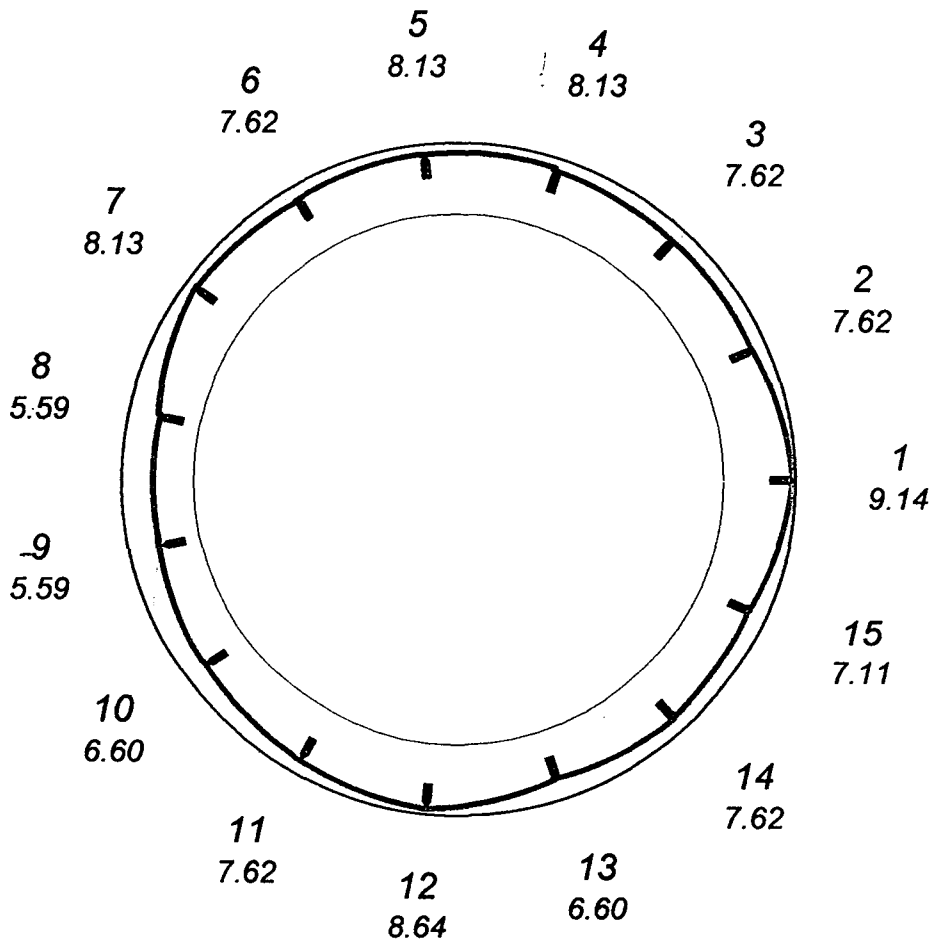
ISOLATED PITTING	GENERAL CORROSION	LINE CORROSION	RING CORROSION	HOLE/POSSIBLE HOLE

DESCRIPTION



KINLEY CROSS-SECTIONAL ANALYSIS

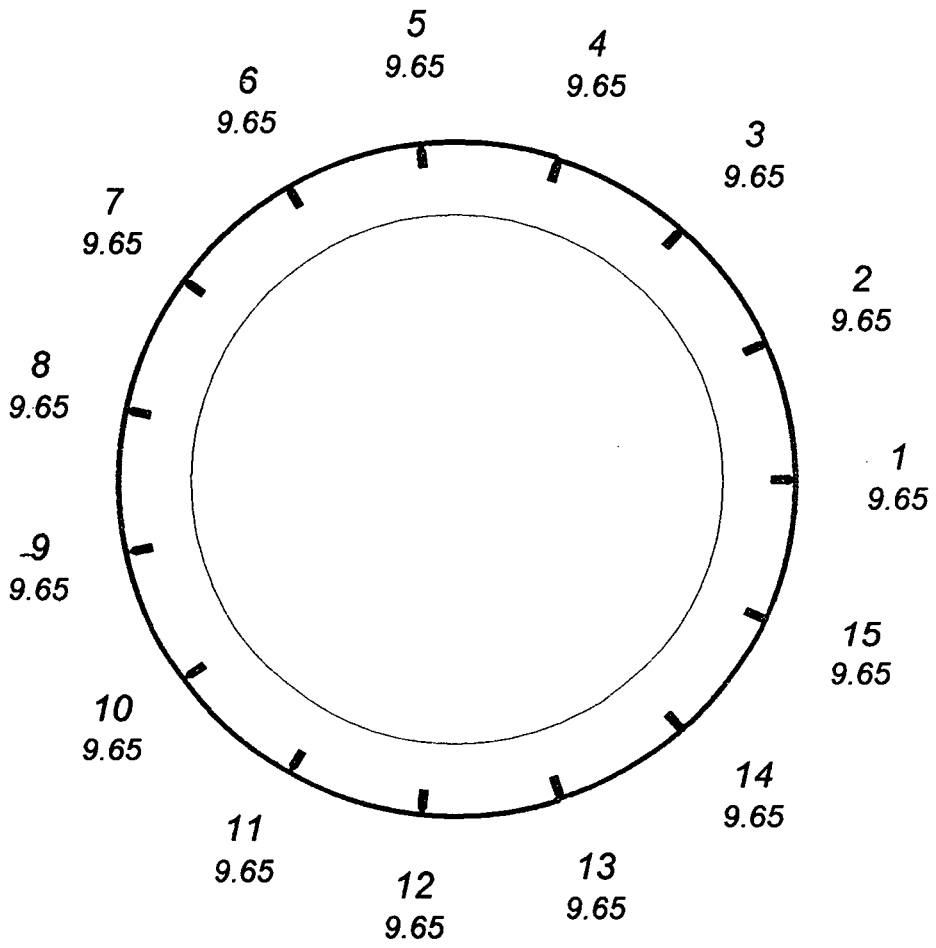
(RON ET AL LIARD #K-29	Run: 1	3 1/2" 12.95# HYDRIL 533
LIARD, CANADA	Joint #: 5	8.890(cm) O.D.
Survey # 28588	Position: 450	6.985(cm) I.D.
November 14, 2000		



JT. #5 POSSIBLE HOLE M.B. IN RING OF REDUCTION - 9.14mm = 96% (A)
Percent Area Reduction: = 76.27 % *Total Area Remaining = 5.64 Sq.cm.*

KINLEY CROSS-SECTIONAL ANALYSIS

C RON ET AL LIARD #K-29	Run: 1	3 1/2" 12.95# HYDRIL 533
LIARD, CANADA	Joint #: 5	8.890(cm) O.D.
Survey # 28588	Position: 500	6.985(cm) I.D.
November 14, 2000		



JT. #5 HOLE MIDDLE BODY IN RING OF REDUCTION - CHEMICAL CUT (B)

Percent Area Reduction: = 101.46 % *Total Area Remaining = -0.35 Sq.cm.*

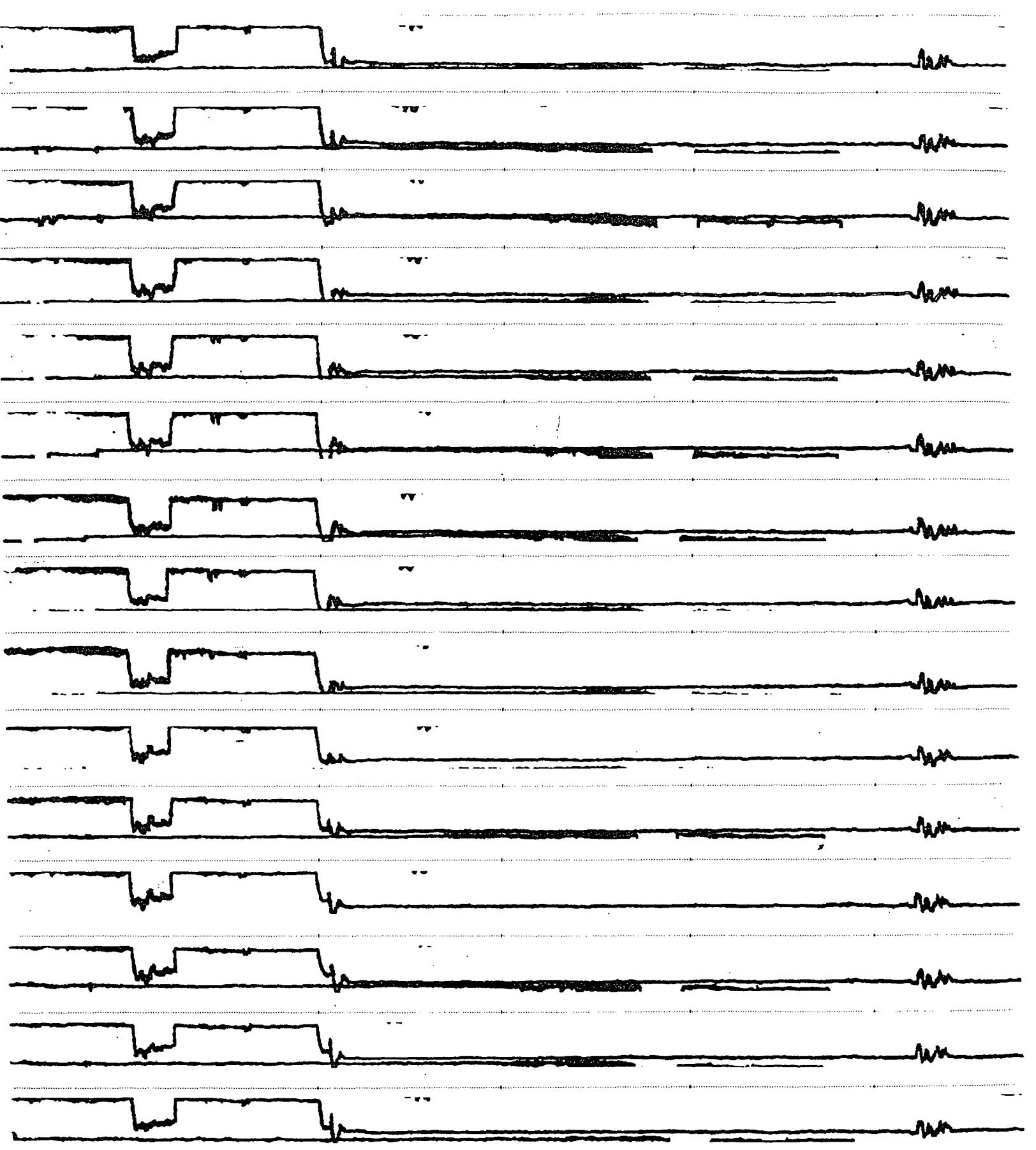
KINLEY CALIPER JOINT TABULATION SHEET

RON ET AL LIARD #K-29
, CANADA
Survey # 28588
November 14, 2000

Run: 1
Chart #: A0305N
Feeler Ratio: 2:1

Section: 1/1
Pipe: 3 1/2" 12.95# HYDRIL 533
Body (mm): 9.525
Upset (mm): 17.348

JOINT NO	MAXIMUM UPSET/MAKEUP PENETRATION %	mm	MAXIMUM BODY PENETRATION %	mm	COMMENTS	DAMAGE PROFILE (% WALL) 0 - BODY - UPSET 100
0.10					Pup Jt.; X-over; Packer Assembly (A)	
1					1st Jt. of 3 1/2" 12.95# Hydril 533 below X-over; Nipple Assembly (B)	
2						
3						
4						
5			100	9.52	HOLE m.B. in ring (15/15); Possible Hole m.B. in ring (9.14mm)	
6					Perforated Interval	
7					EOS in Jt. #7 @ 2534m (WLM)	

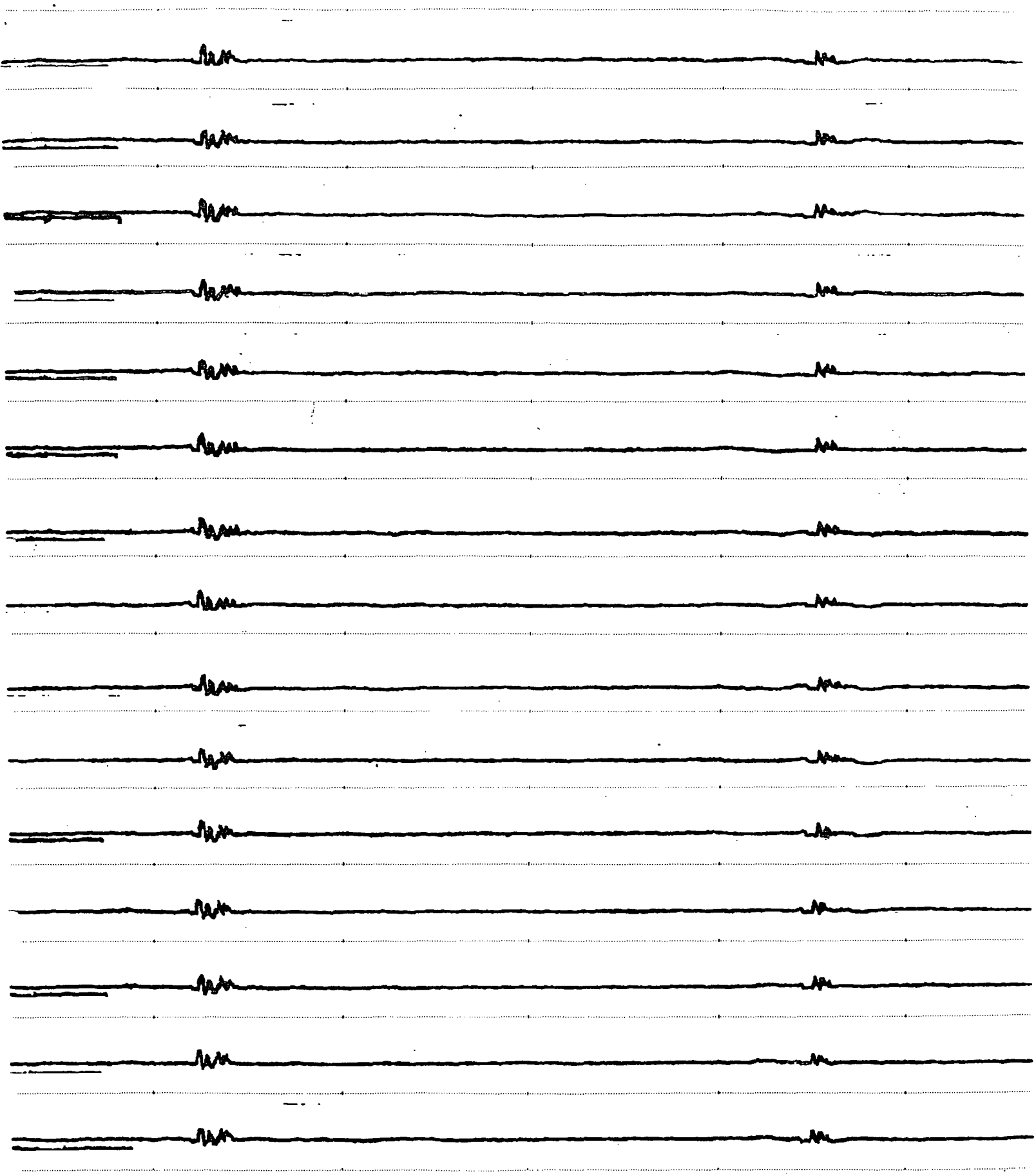


0.1 1

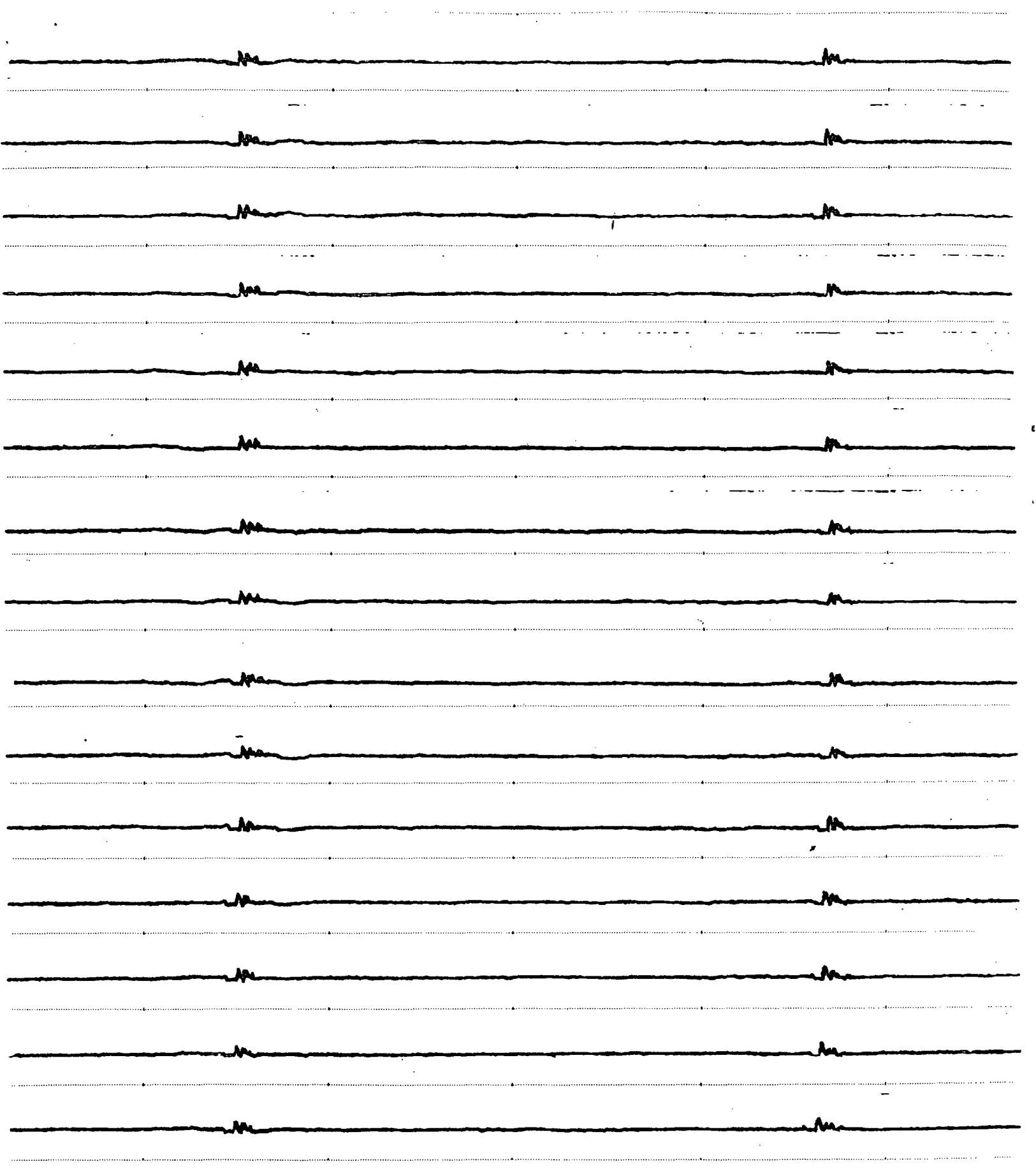
SURVEY NO. 28588

JOINT NO. 0.1 – 1

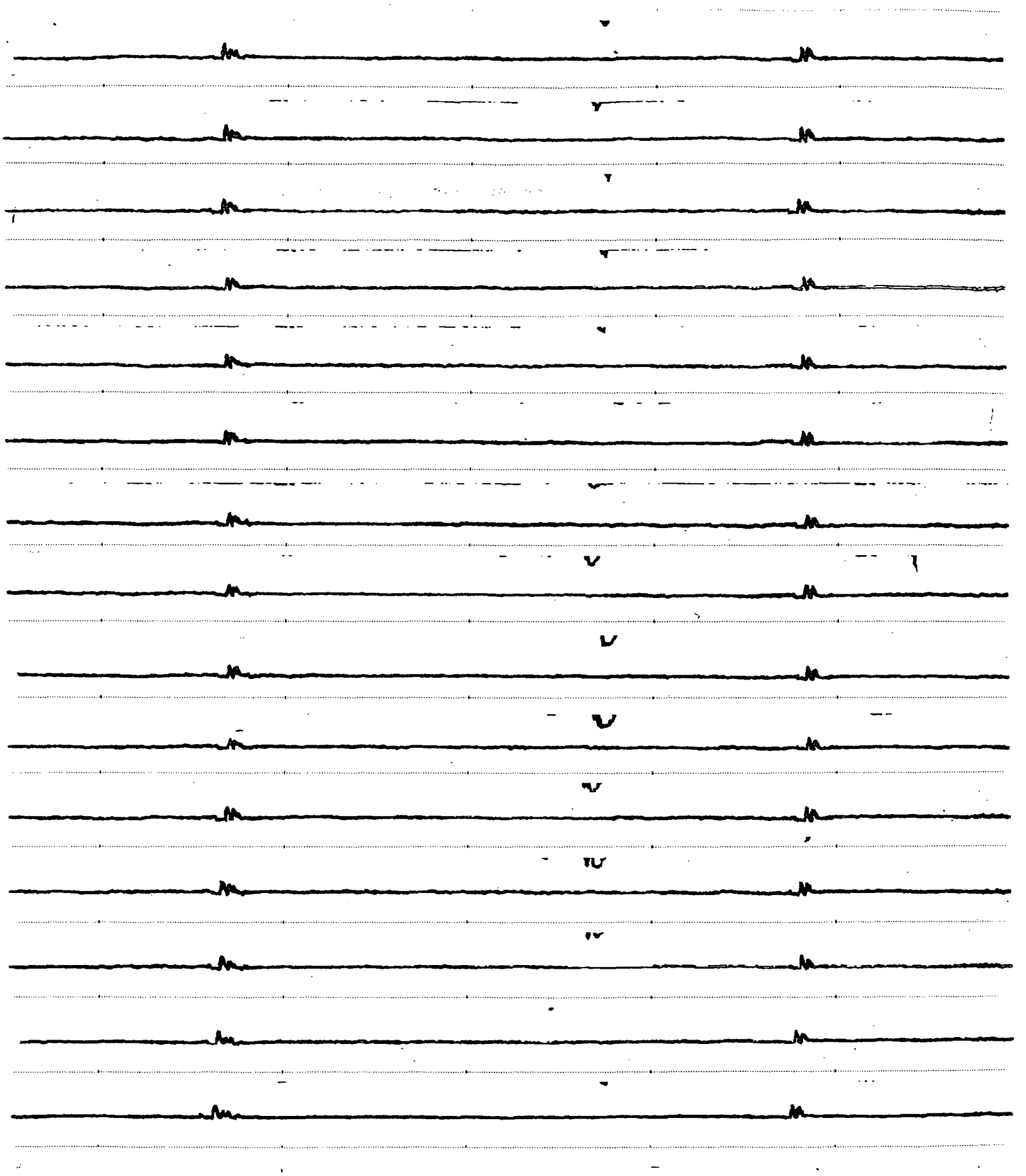
CROSS-OVER; PUP JOINT; PACKER ASSEMBLY (A);
1ST JOINT OF 3 1/2" 12.95# HYDRIL 533 BELOW CROSS-OVER



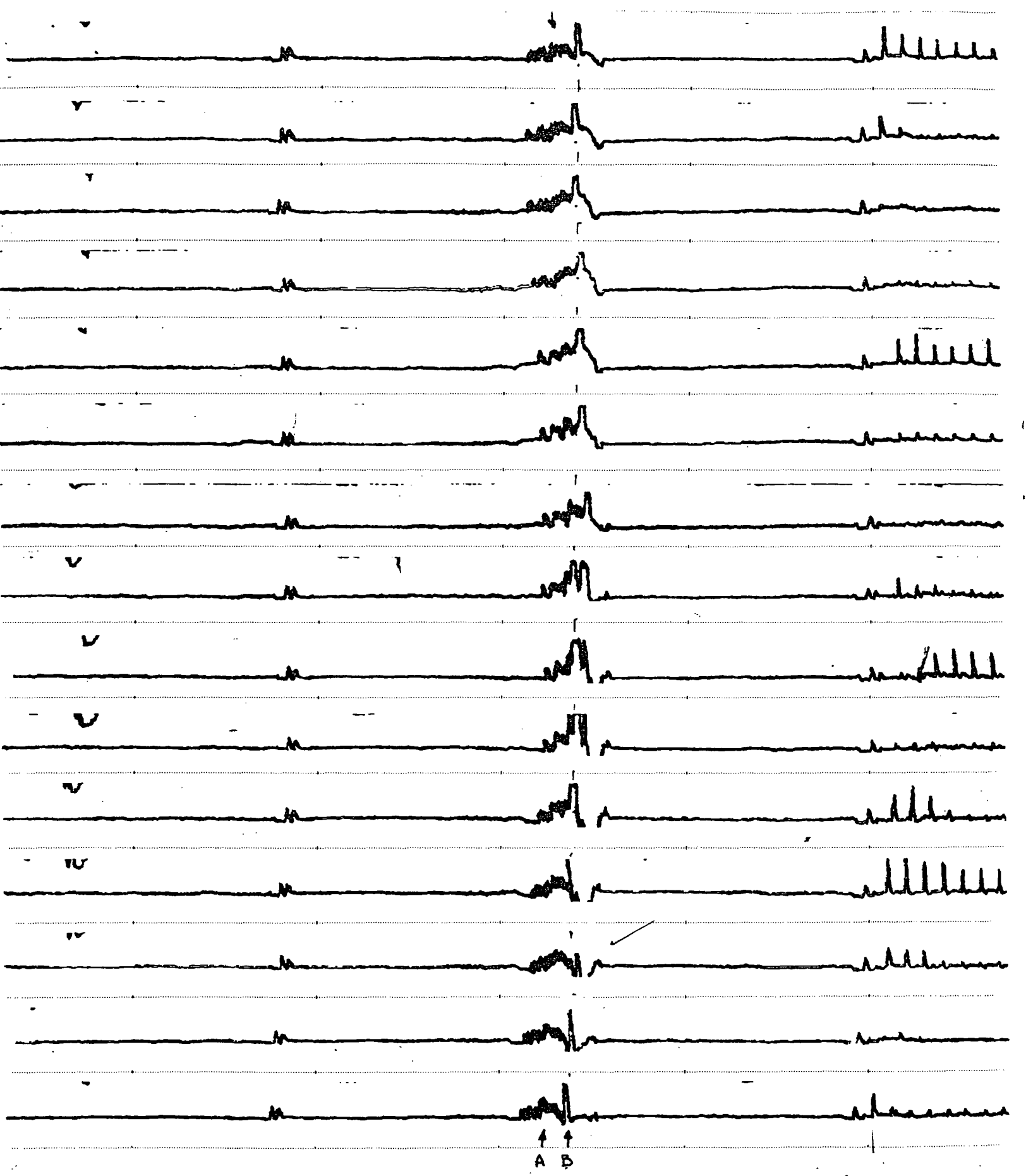
SURVEY NO. 28588
JOINT NO. 2



SURVEY NO. 28588
JOINT NO. 3



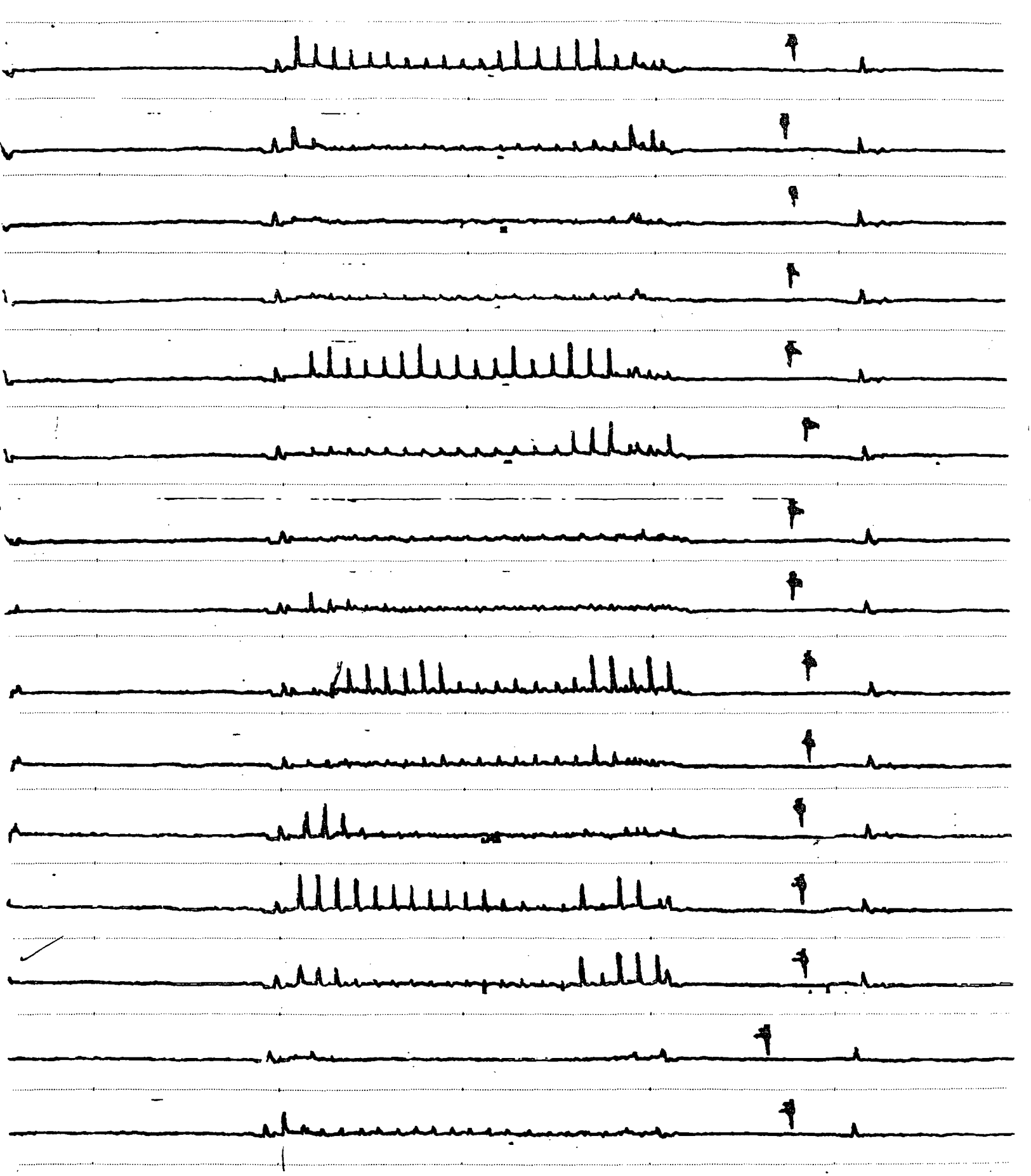
SURVEY NO. 28588
JOINT NO. 4



5

SURVEY NO. 28588
JOINT NO. 5

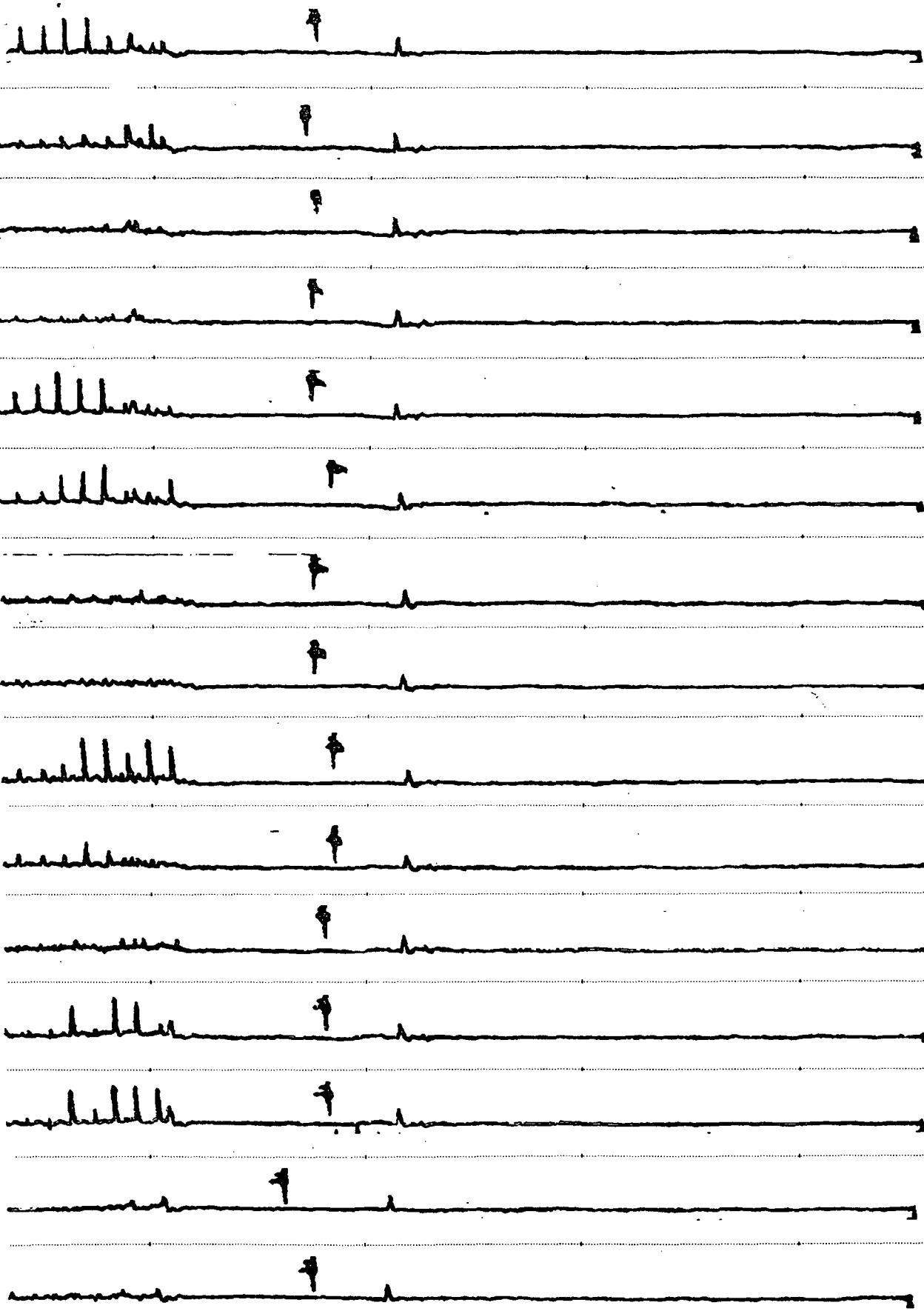
HOLE MIDDLE BODY IN RING OF REDUCTION (CHEMICAL CUT)
POSSIBLE HOLE MIDDLE BODY IN RING OF REDUCTION



6

SURVEY NO. 28588
JOINT NO. 6

PERFORATED INTERVAL



SURVEY NO. 28588
JOINT NO. 7

END OF SURVEY IN JOINT #7 @ 2534m