

January 3, 1983

TO: The Members D.C. Syndicate

Cominco Ltd.
700 - 409 Granville Street
Vancouver, B.C. V6C 1T8

Attention: Dr. W.J. Wolfe

Dome Exploration (Canada) Ltd.
P.O. Box 270
1 First Canadian Place
Toronto, Ontario. M5X 1H1

Attention: Mr. G.S.W. Bruce

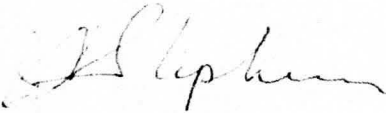
Dear Sirs:

Enclosed is the IP and Pulse EM data for ORK group as submitted to us by Glen White Geophysics. We had requested that they not prepare a formal report on this survey as the cost was estimated to be in the order of \$2500.00. They did, however, prepare this data and accompanying letter at no further cost.

The data is intended to support our earlier recommendation (report of September 30, 1983 and letter of December 29, 1983) that the anomalies on the ORK 37 - 44 claims be further investigated at some future date.

Respectfully submitted

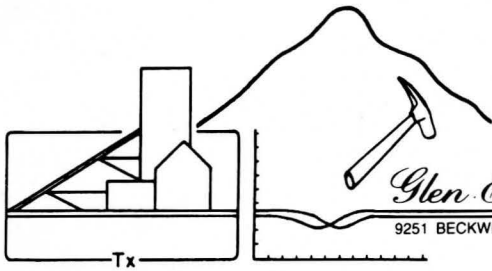
J.C. Stephen Explorations Ltd.



J.C. Stephen

JCS/ms

ENCL.



Glen E. White GEOPHYSICAL CONSULTING & SERVICES LTD.

9251 BECKWITH ROAD, RICHMOND, BRITISH COLUMBIA V6X 1V7

(604) 273-1636

November 25, 1983

Cam Stephen,
D.C. Syndicate,
1458 Rupert St.,
North Vancouver, B.C.

Dear Cam:

A pulse electromagnetometer and induced polarization survey was undertaken on the ORK claims on behalf of the D.C. Syndicate by Glen E. White Geophysical Consulting and Services Ltd. The resistivity and chargeability data is displayed on Figures 1 and 2 and the vector pulse electromagnetometer data is illustrated in plan on Figure 1 and on profile Figures 3-62.

The resistivity data shows a overall banded character of highs and lows trending northeasterly. This character is somewhat apparent in the chargeability data as well, with chargeability highs generally correlating to resistivity lows. An exception to this is a closed high at 1400N to 1500 N on lines 4500E and 4600E. This feature occurs within an area of moderately high chargeabilities. The local resistivity high of 7504 ohm-metres on line 4600E at 1700N correlates with a chert-breccia in outcrop in the waterfall area. (Map II, ORK Claim Group Report, J.C. Stephen)

The vector pulse electromagnetometer data shows a number of weak responses, generally of short strike length. The longest strike length feature is a zone to the north of loop A in the region of 2300N on lines 4300E to 4600E and again perhaps on 5000E.

The best defined of the responses is a shallow possibly quite flat dipping response on 4300E at 1400N. This zone has little strike continuity, however, and is only weakly manifested on line 4400E. This zone is most clearly displayed in profile Figures 15-18. This zone occurs fairly close to a strong magnetic dipole effect on the same line suggesting the presence of magnetic minerals as a component to the conductive source. (Map V, ORK Claim Group Report, J.C. Stephen)

Another feature of interest occurs in a overall trend of weak conductors that correlate poorly from line to line. The most westerly elements of this zone, at 1650N and 1750N on line 4300E may trend into chargeability highs on line 4460N, although no conductors are visible on this line. The strongest manifestation of the zone occurs on line 4700E and this feature, as with the strong shallow conductor described above, shows good magnetics correlation. This zone trends under overburden immediately south of the waterfall area. The nearest rock in outcrop to the zone is a purple hornfels. The quartz sericite rock which hosts sulphide mineralization does not appear to respond as a conductor.

A number of isolated weak conductors were observed in the data. Of these, the feature at 1200N on 4500E, correlates well with an isolated chargeability high.

In summary, the induced polarization and vector pulse electromagnetometer surveys on the ORK Claim Group did not indicate the presence of large scale or deep seated targets in the area tested, but rather indicated the presence of a number of smaller targets that warrant follow up work within the scope of an overall exploration program.

Thank you very much for the opportunity to be of service. Should you require any further information or should any questions arise please do not hesitate to call us.

Respectfully submitted,



Cliff Candy, B.Sc., Geophysicist

Encl/

STATION	Ip (ms)	Vp (mv)	M1	M2	M3	M4	n	a (m)	Const	App. Res. (Ohm-m)	Char (ms)
Line 4400N, Pole dipole array, Survey date 23/6/83											
1100N	500	369	4.5	4.2	3.8	3.2	1	100	1260	930	10.7
1150N	250	181	5.8	5.4	4.8	4.0	1	100	1260	912	13.6
1200N	500	422	6.8	6.5	6.0	5.0	1	100	1260	1063	16.8
1250N	300	247	7.2	6.7	6.0	5.1	1	100	1260	1037	17.1
1300N	250	136	7.4	6.9	6.2	5.2	1	100	1260	685	17.5
1350N	150	70	10.9	8.0	6.0	4.5	1	100	1260	588	17.4
1400N	500	324	7.3	6.8	6.0	5.0	1	100	1260	816	17.0
1450N	300	282	6.9	6.6	5.8	4.9	1	100	1260	1184	16.5
1500N	250	447	5.6	5.3	4.7	3.9	1	100	1260	2253	13.2
1550N	220	684	5.4	5.0	4.4	3.7	1	100	1260	3917	12.5
1600N	150	426	5.5	4.8	4.0	3.2	1	100	1260	3578	11.3
1650N	450	1495	12.0	8.0	5.1	3.7	1	100	1260	4186	15.6
1700N	200	582	11.7	8.4	6.2	6.0	1	100	1260	3667	20.3
1750N	200	90	9.7	6.9	4.8	3.5	1	100	1260	567	14.1
1800N	180	118	9.2	8.6	7.5	6.8	1	100	1260	826	22.2
1850N	100	87	7.1	6.5	5.8	4.9	1	100	1260	1096	16.5
1950N	100	122	6.2	6.0	5.3	4.4	1	100	1260	1537	14.9
2000N	450	780	6.2	6.1	5.4	4.6	1	100	1260	2184	15.4

Line 4500E, Pole dipole array, Survey date 24/6/83

1150N	470	330	5.7	5.4	5.0	4.4	1	100	1260	885	14.3
1200N	450	360	8.6	7.9	7.1	6.2	1	100	1260	1008	20.5
1250N	550	650	7.3	6.9	6.1	5.1	1	100	1260	1489	17.3
1300N	1500	1180	8.2	7.6	6.7	5.7	1	100	1260	991	19.2
1350N	650	592	7.6	7.2	6.3	5.3	1	100	1260	1148	17.9
1400N	220	295	6.8	6.4	5.7	4.9	1	100	1260	1690	16.3
1450N	180	429	6.1	5.8	4.8	4.1	1	100	1260	3003	13.9
1500N	170	171	5.0	4.7	4.1	3.4	1	100	1260	1267	11.6
1550N	150	349	7.0	6.6	5.7	4.8	1	100	1260	2932	16.3
1600N	320	715	8.3	7.8	6.9	5.8	1	100	1260	2815	19.6
1650N	290	450	7.0	6.7	5.9	4.9	1	100	1260	1955	16.6
1700N	180	249	5.9	5.6	4.9	4.1	1	100	1880	2601	13.9
1750N	320	410	6.1	5.9	5.4	4.5	1	100	1260	1614	15.1
1800N	130	110	5.8	5.6	5.1	4.4	1	100	1260	1066	14.5
1850N	130	55	7.1	7.0	6.5	5.5	1	100	1260	533	18.2
1900N	250	269	8.0	7.5	6.5	5.9	1	100	1260	1356	19.2
1950N	250	269	8.0	7.5	6.5	5.9	1	100	1260	1356	19.2
2000N	180	345	5.5	5.4	4.9	4.1	1	100	1260	2415	13.7

Line 4600E, Pole dipole array, Survey date 23/6/83

1150N	350	236	6.0	5.7	5.0	5.2	1	100	1260	850	15.8
1200N	350	159	7.0	6.6	5.8	4.9	1	100	1260	572	16.5
1250N	240	267	7.6	7.1	6.3	5.3	1	100	1260	1402	17.9
1300N	220	689	6.7	6.3	5.5	4.7	1	100	1260	3946	15.8
1350N	550	369	5.7	5.5	4.9	4.1	1	100	1260	845	13.8
1400N	300	514	6.6	6.0	5.3	4.4	1	100	1260	2159	15.0
1450N	400	878	6.4	6.0	5.3	4.4	1	100	1260	2766	15.0
1500N	520	875	5.8	5.4	4.7	4.0	1	100	1260	2120	13.5
1550N	550	150	5.3	5.0	4.4	3.7	1	100	1260	344	12.5
1600N	140	48	5.8	5.1	4.5	3.7	1	100	1260	432	12.7
1650N	90	113	6.9	6.2	5.4	4.5	1	100	1260	1582	15.4
1700N	90	536	6.4	5.9	5.2	4.4	1	100	1260	7504	14.8
1750N	280	251	5.6	5.5	4.9	4.2	1	100	1260	1130	14.0
1800N	180	125	6.9	6.2	5.4	4.9	1	100	1260	875	16.0

STATION	Ip (ms)	Vp (mv)	M1	M2	M3	M4	n	a (m)	Const	App. Res. (Ohm-m)	Char (ms)
1850N	50	112	5.7	5.3	4.8	3.8	1	100	1260	2822	13.2
1900N	300	629	6.1	5.7	5.2	4.4	1	100	1260	2642	14.7
1950N	50	60	4.5	4.2	3.8	3.1	1	100	1260	1512	10.6
2000N	130	148	4.9	4.7	4.2	3.6	1	100	1260	1434	12.0

Line 4700E, Pole dipole array, Survey date 24/6/83

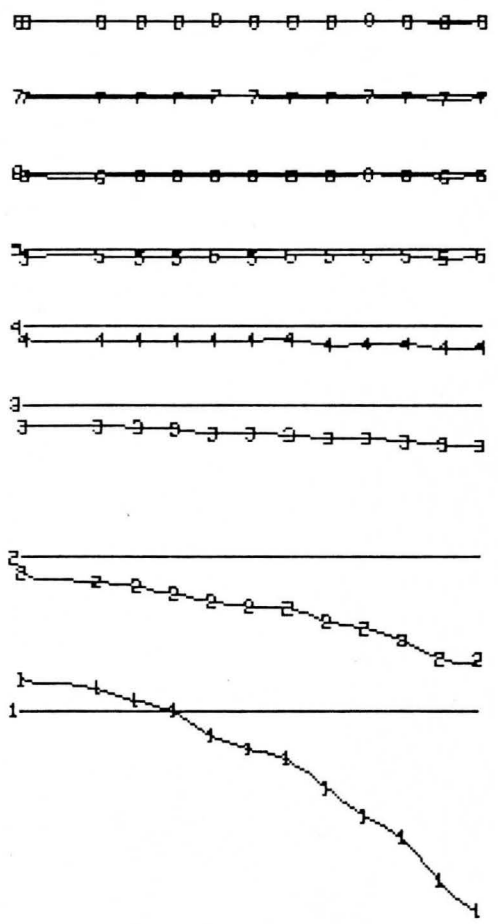
1200N	300	171	10.9	1.9	5.8	4.9	1	100	1260	718	15.4
1250N	80	34	5.4	5.3	4.6	4.0	1	100	1260	536	13.3
1300N	80	60	6.4	6.1	5.4	4.5	1	100	1260	945	15.2
1350N	180	245	6.1	5.8	5.2	4.5	1	100	1260	1715	14.9
1400N	80	86	5.2	5.0	4.4	3.7	1	100	1260	1355	12.5
1450N	120	113	7.3	5.5	3.9	3.0	1	100	1260	1187	11.6
1500N	150	189	5.1	4.9	4.2	3.5	1	100	1260	1588	11.9
1550N	130	135	12.3	8.3	6.1	4.5	1	100	1260	1308	17.9
1600N	130	126	6.0	5.6	4.9	4.1	1	100	1260	1221	13.9
1650N	130	169	7.9	7.4	6.5	5.4	1	100	1260	1638	18.4
1700N	120	257	6.9	6.5	5.9	5.0	1	100	1260	2699	16.7
1750N	310	635	5.2	5.0	4.4	3.7	1	100	1880	3851	12.5
1800N	110	73	5.9	5.6	4.9	4.1	1	100	1260	836	13.9
1850N	570	481	7.0	6.8	6.1	5.1	1	100	1260	1063	17.2
1900N	720	1304	5.8	5.5	4.8	4.1	1	100	1260	2282	13.8
1950N	280	473	5.4	5.2	4.5	3.9	1	100	1260	2129	13.0
2000N	480	301	5.9	5.7	5.0	4.2	1	100	1260	790	14.2

Line 4700E, Pole dipole array, Survey date 24/6/83

1250N	300	100	5.4	5.2	4.9	4.5	2	100	3780	1260	14.3
1300N	80	51	5.5	5.4	4.7	4.1	2	100	3780	2410	13.6
1350N	80	21	6.2	5.7	5.0	4.2	2	100	3780	992	14.2
1400N	180	75	18.0	14.3	7.1	5.2	2	100	3780	1575	23.3
1450N	80	26	7.2	6.5	5.8	4.7	2	100	3780	1229	16.2
1500N	120	36	8.7	7.5	5.9	4.7	2	100	3780	1134	17.0
1550N	150	41	8.0	7.5	6.5	5.5	2	100	3780	1033	18.6
1600N	130	36	8.6	8.1	7.1	6.0	2	100	3780	1047	20.2
1650N	130	132	6.5	5.7	5.0	4.9	2	100	3780	3838	15.4
1700N	130	175	5.0	4.7	4.1	3.4	2	100	3780	5088	11.6
1750N	120	60	5.3	5.1	4.5	3.7	2	100	3780	1890	12.6
1800N	310	150	5.2	4.9	4.4	3.7	2	100	3780	1829	12.4
1850N	110	37	5.7	5.2	4.6	3.8	2	100	3780	1271	13.0
1900N	570	195	6.4	6.2	5.7	4.8	2	100	3780	1293	16.0
1950N	720	300	6.8	6.4	5.6	4.7	2	100	3780	1575	15.9
2000N	280	82	8.2	7.7	6.8	5.8	2	100	3780	1107	19.4
2050N	480	87	7.7	7.3	6.6	5.6	2	100	3780	685	18.7

2500N
2450N
2400N
2350N
2300N
2250N
2200N

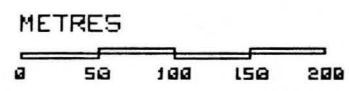
LOOP A



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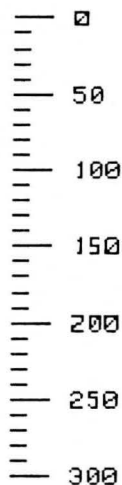
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D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4200E LOOP A

DATE: JUNE/83 FIG.: 3

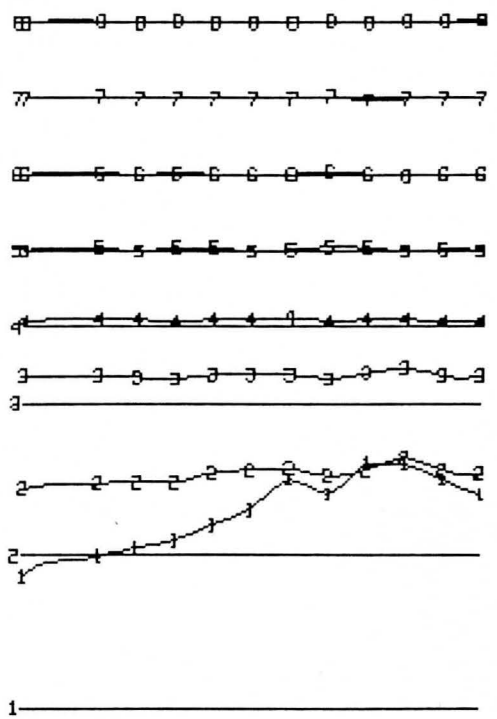
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.



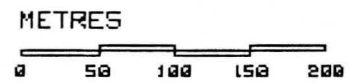
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2400N
2350N
2300N
2250N
2200N

LOOP A



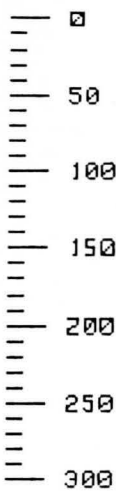
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INSTRUMENT: CRONE P.E.M.



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ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4200E LOOP A

DATE: JUNE/83 FIG.: 4

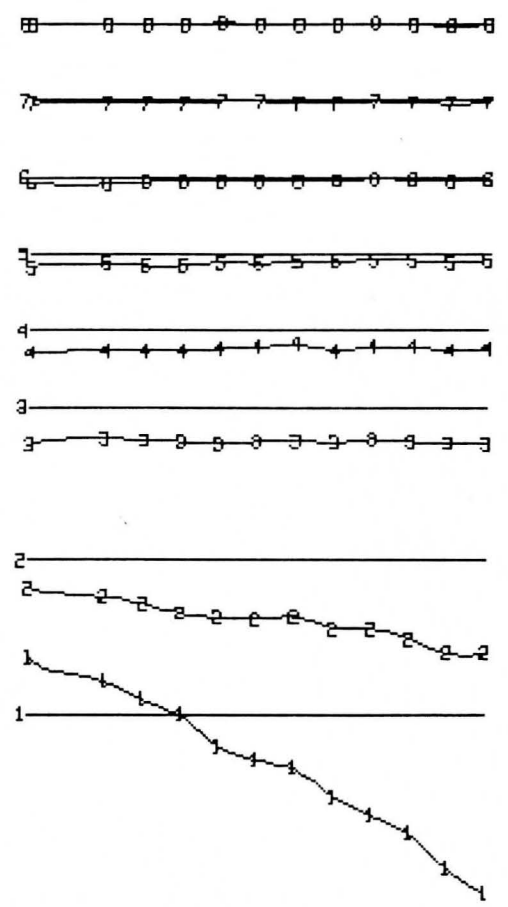
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GEOPHYSICAL CONSULTING
& SERVICES LTD.



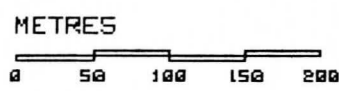
SCALE
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+ OR -

2500N
2450N
2400N
2350N
2300N
2250N
2200N

LOOP A



PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

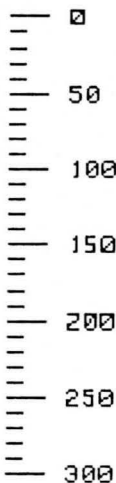


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VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4200E LOOP A

DATE: JUNE/83

FIG.: 5

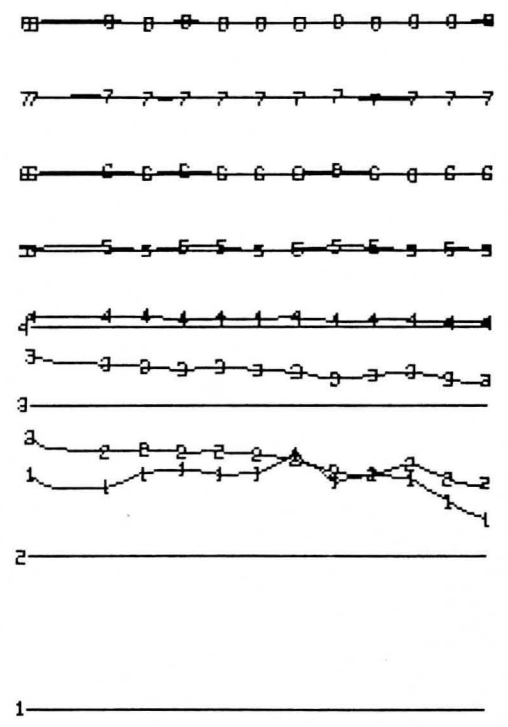
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GEOPHYSICAL CONSULTING
& SERVICES LTD.



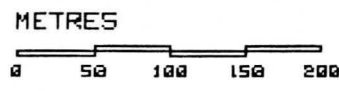
SCALE
P.P.K.
+ OR -

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2450N
2400N
2350N
2300N
2250N
2200N

LOOP A



PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



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VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4200E LOOP A

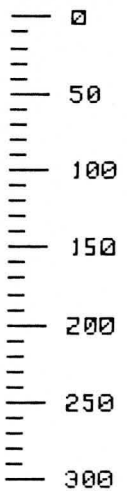
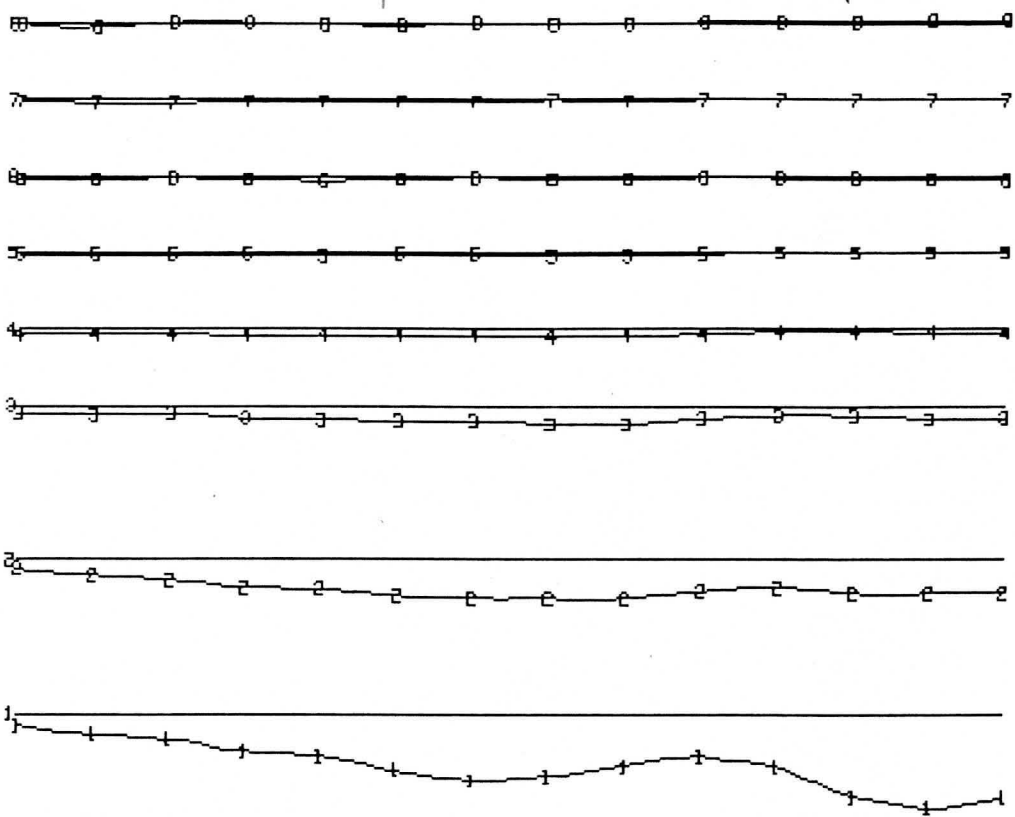
DATE: JUNE/83

FIG.: 6

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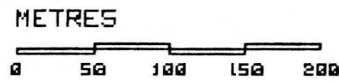
1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N 1100N

LOOP B



SCALE
P.P.K.
+ OR -

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



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VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4200E LOOP B

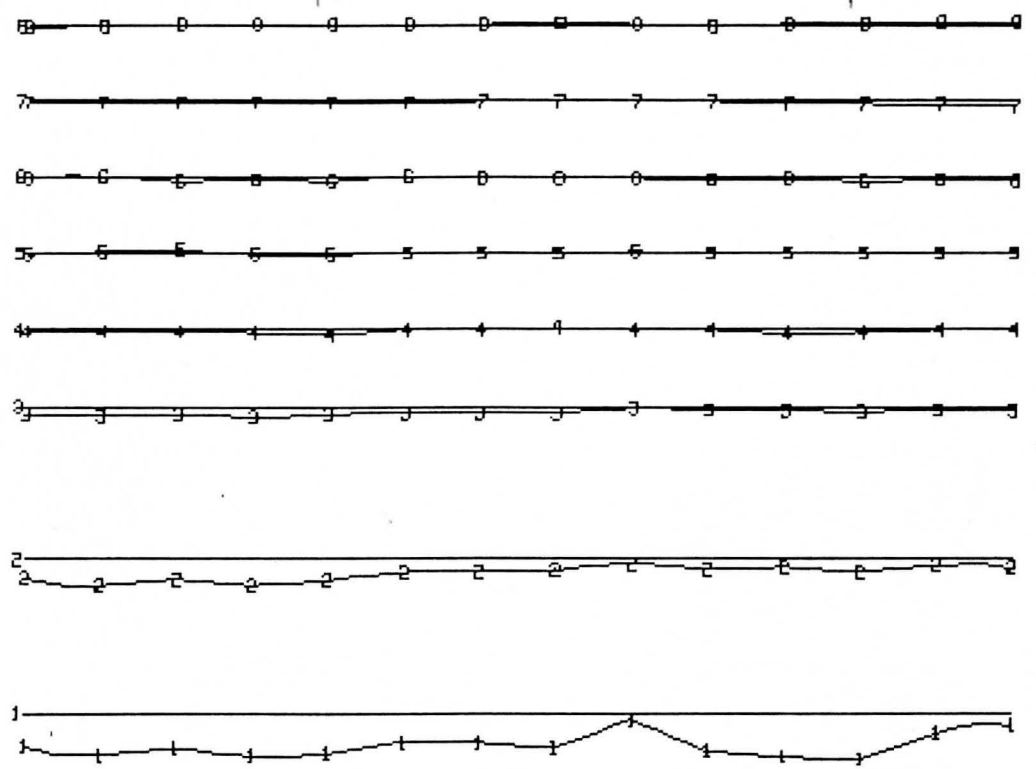
DATE: JUNE/83

FIG.: 7

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& SERVICES LTD.

1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N 1100N

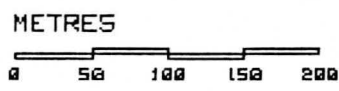
LOOP B



0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

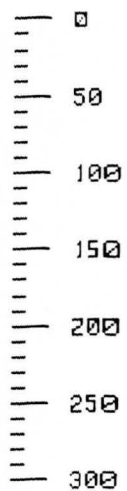


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4200E LOOP B

DATE: JUNE/83

FIG.: 8

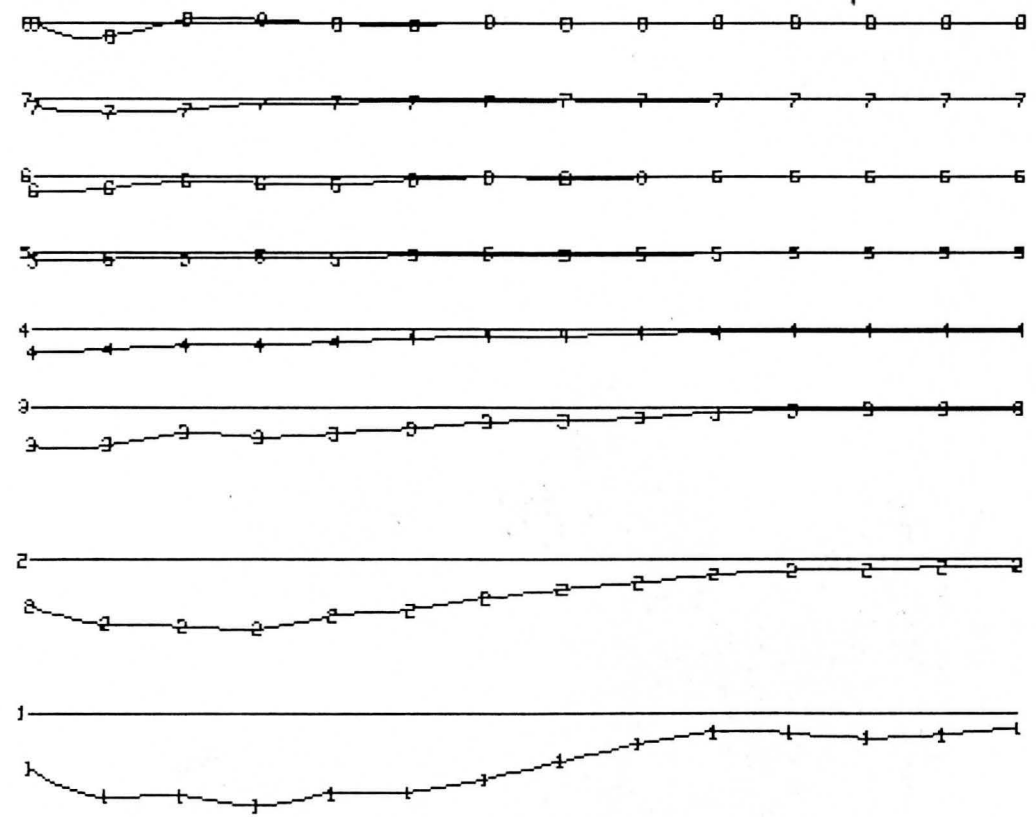
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.



SCALE
P.P.K.
+ OR -

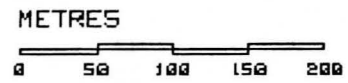
1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N 1100N

LOOP B



GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

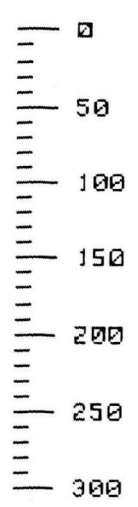
PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



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ORK CLAIM GROUP
VECTOR PULSE ELECTROMETER
VERTICAL COMPONENT
LINE 4200E LOOP B

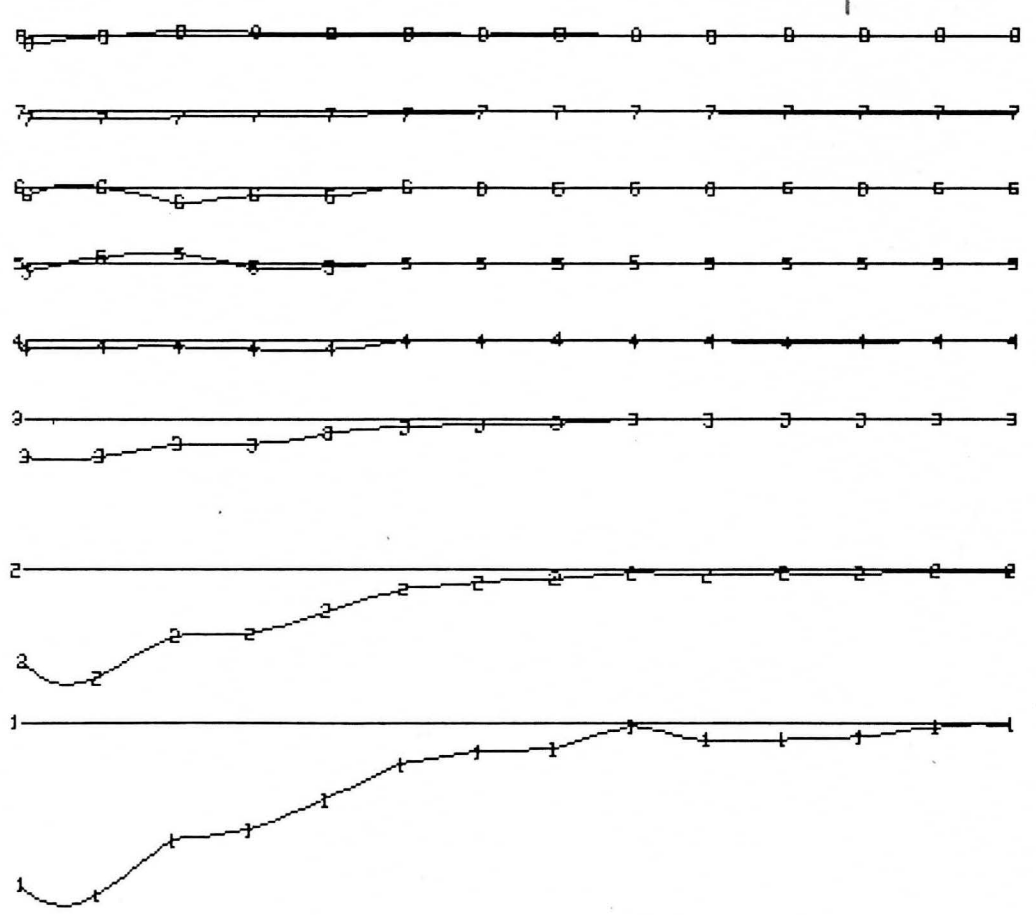
DATE: JUNE/83 FIG.: 9

SCALE
P.P.K.
+ OR -



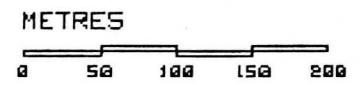
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LOOP B



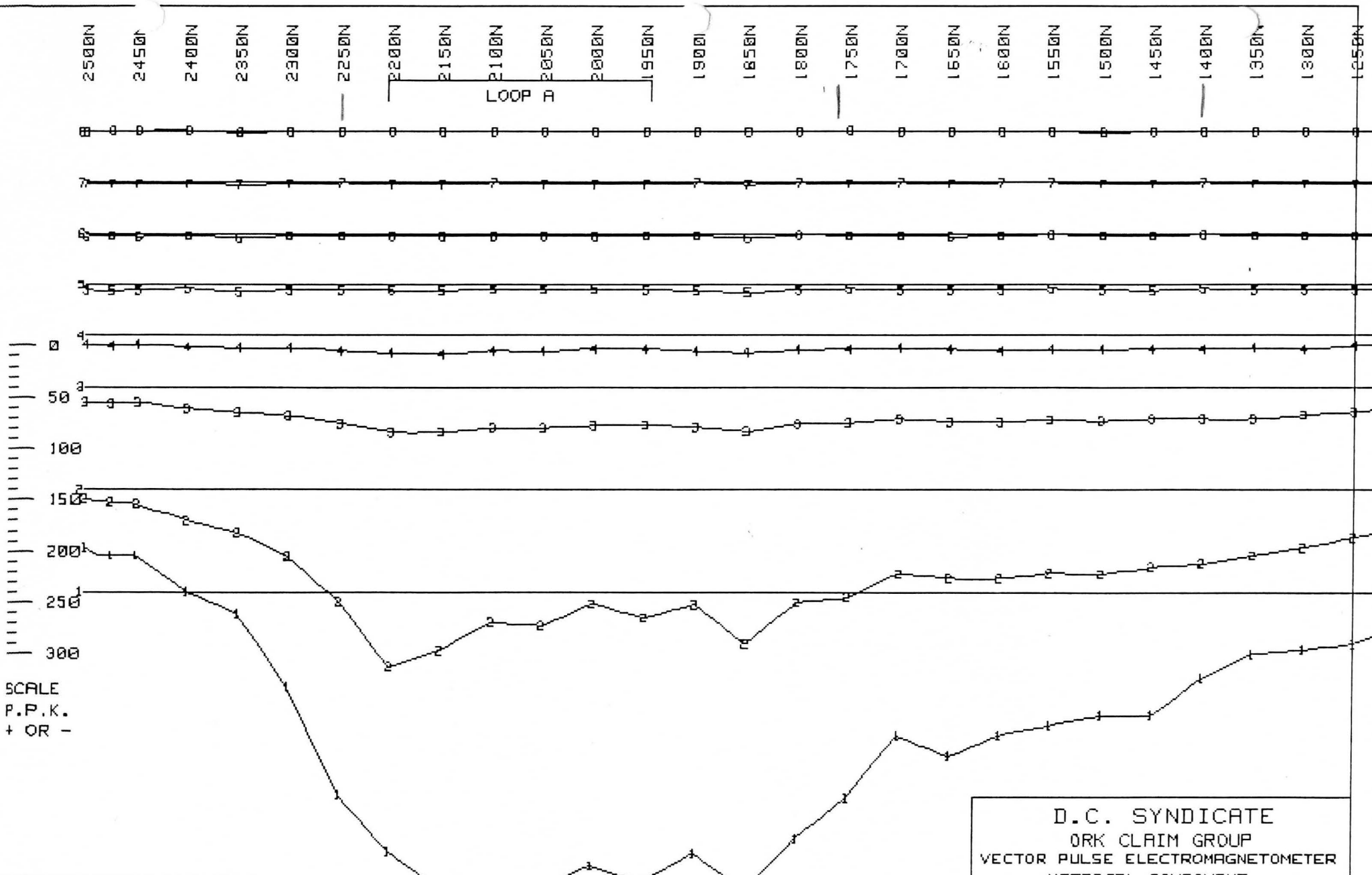
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GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 1200E LOOP B

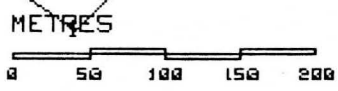
DATE: JUNE/83 FIG.: 10



SCALE
P.P.K.
+ OR -

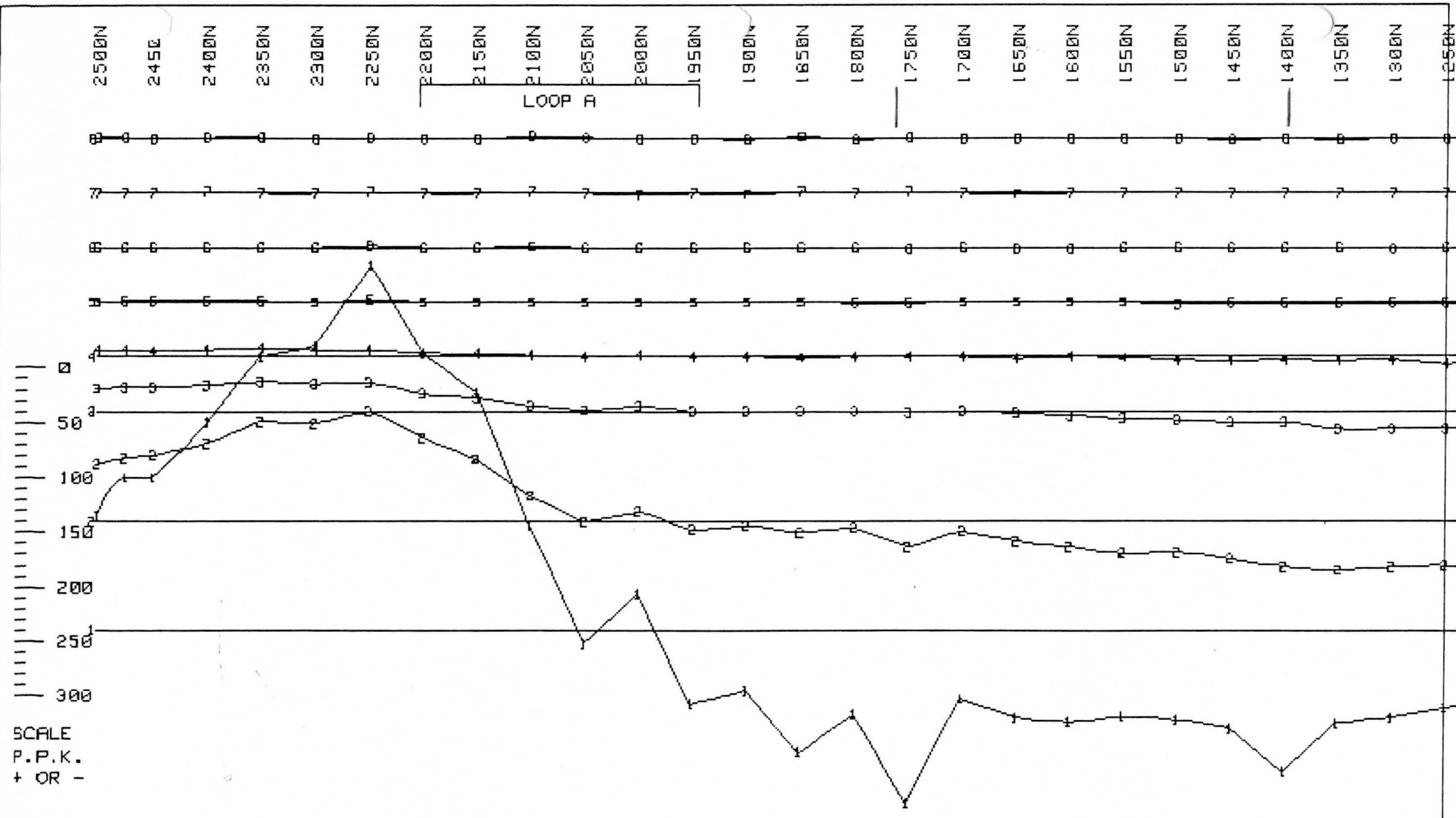
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G (100%)
NUMBER IN LINE CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4388E LOOP A

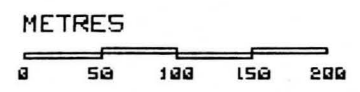
DATE: JUNE/83 FIG.: 11



SCALE
P.P.K.
+ OR -

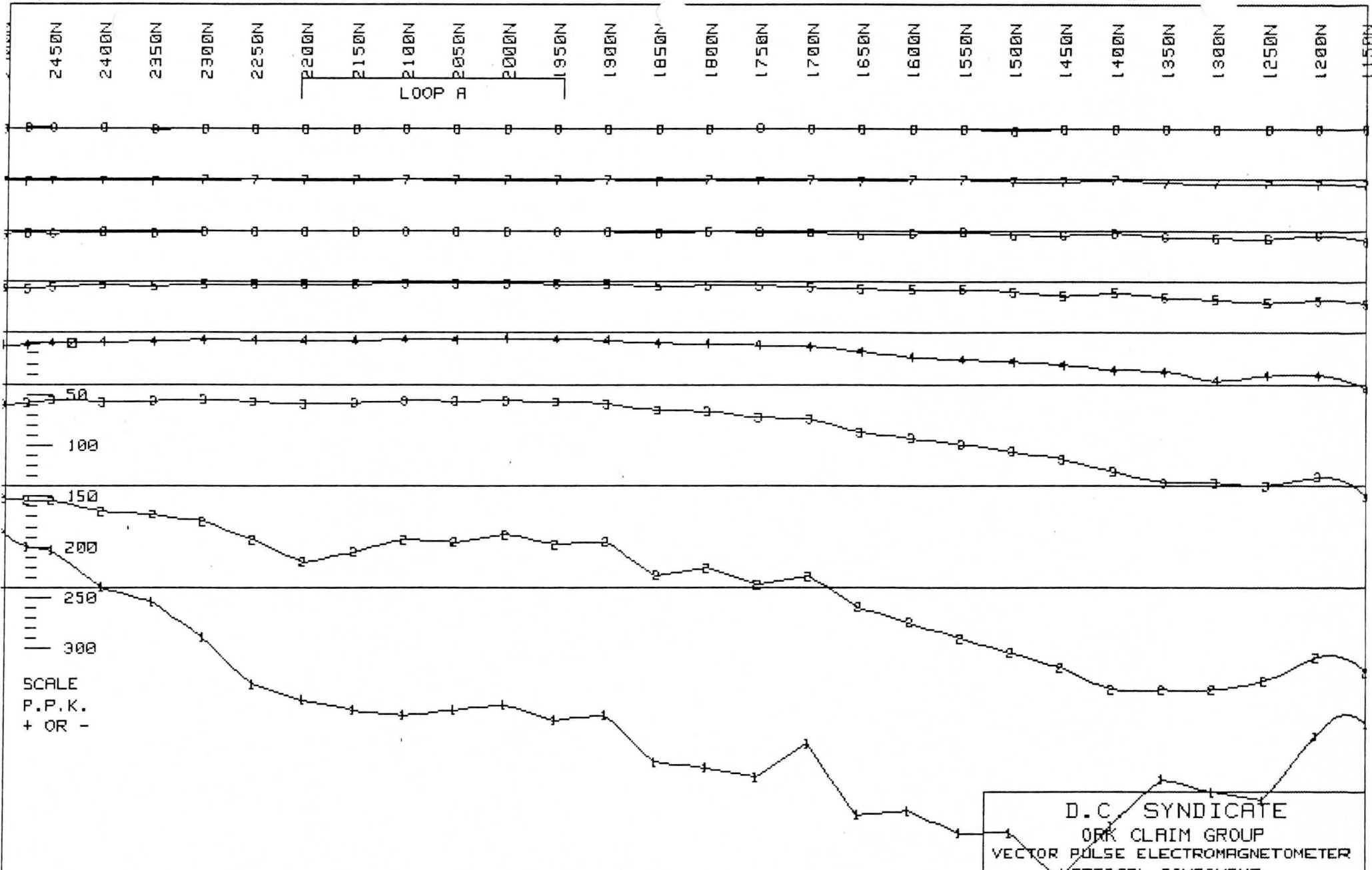
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4300E LOOP A

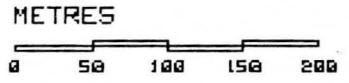
DATE: JUNE/83 FIG.: 12



SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

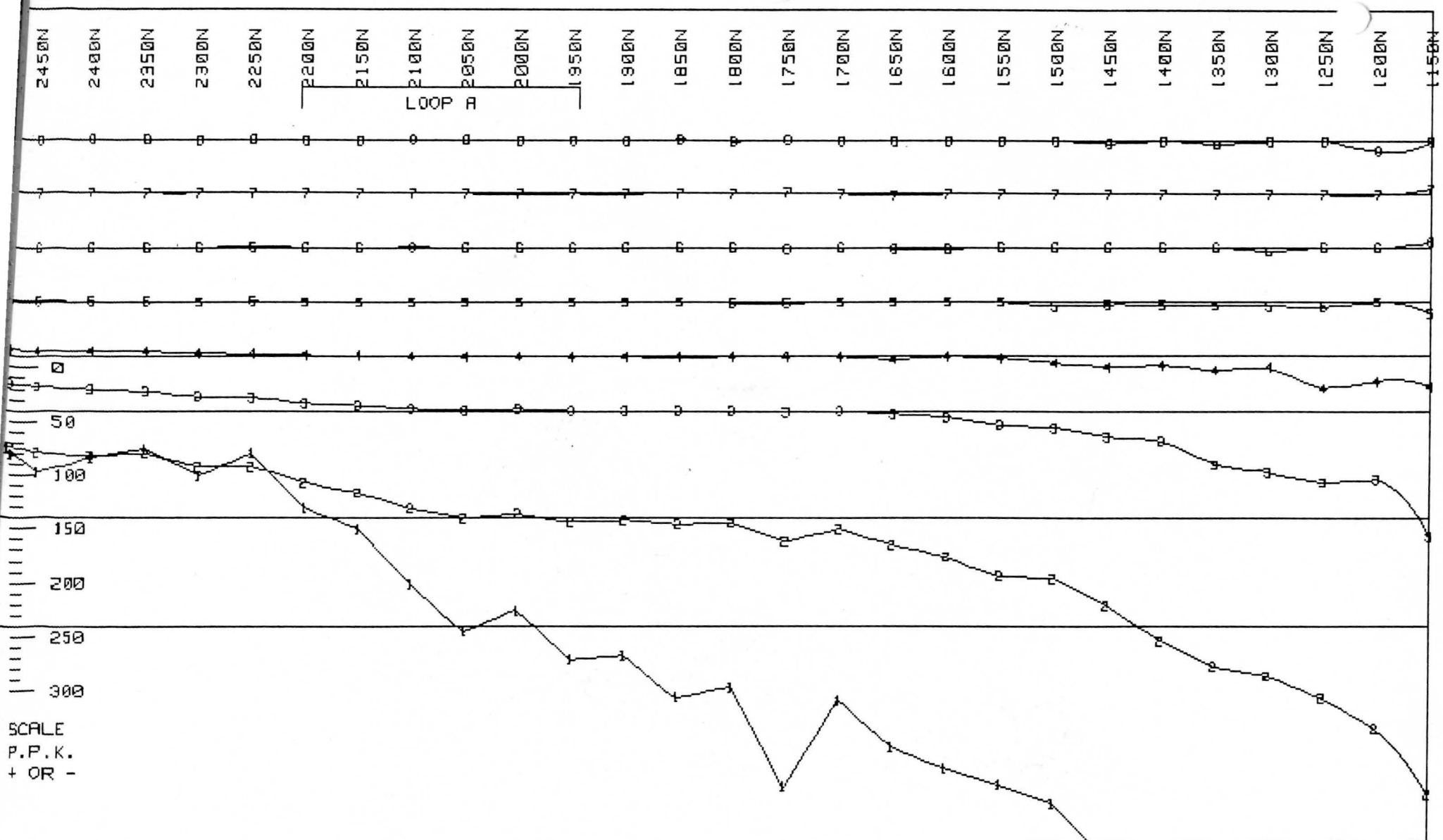
PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORR CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4300E LOOP A

DATE: JUNE/83

FIG.: 13



2450N
2400N
2350N
2300N
2250N

2200N
2150N
2100N
2050N
2000N
1950N
1900N
1850N
1800N
1750N
1700N
1650N
1600N
1550N
1500N
1450N
1400N
1350N
1300N
1250N
1200N
1150N

LOOP A

50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

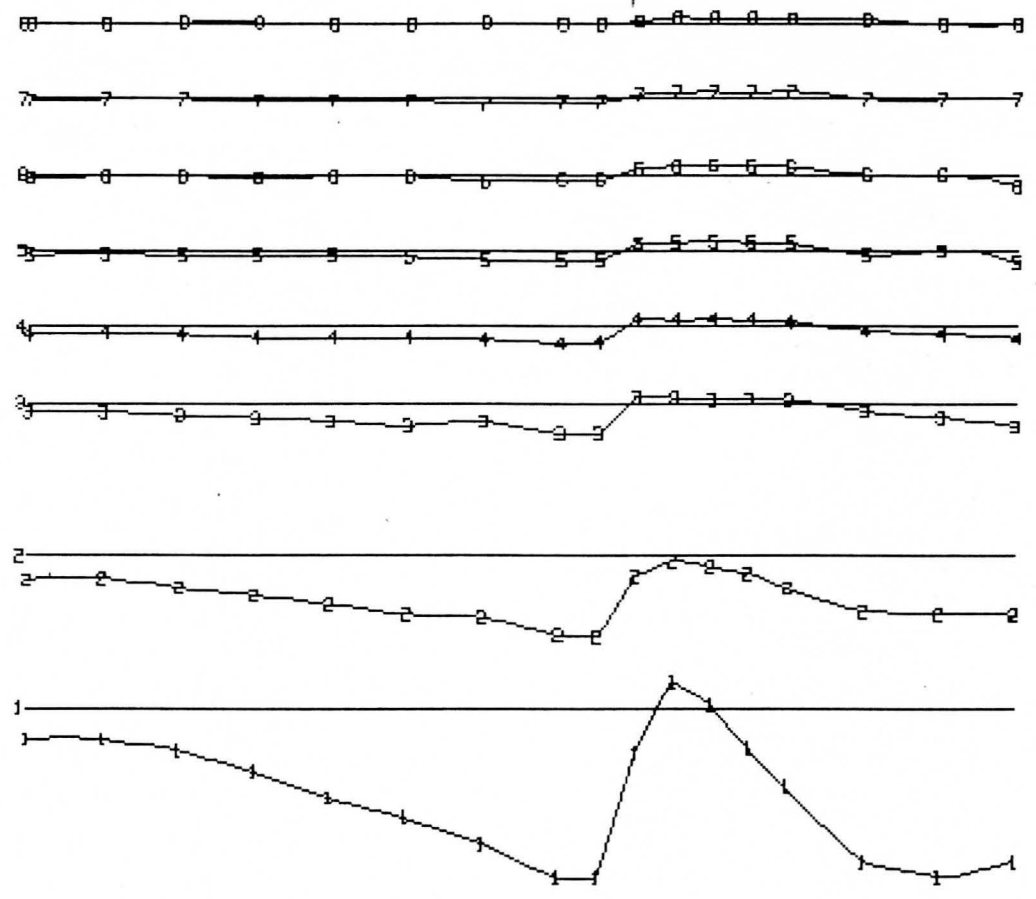
PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

METRES
0 50 100 150 200

D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4300E LOOP A1
DATE: JUNE 93 FIG.: 14

1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B

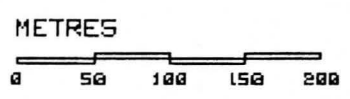


0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

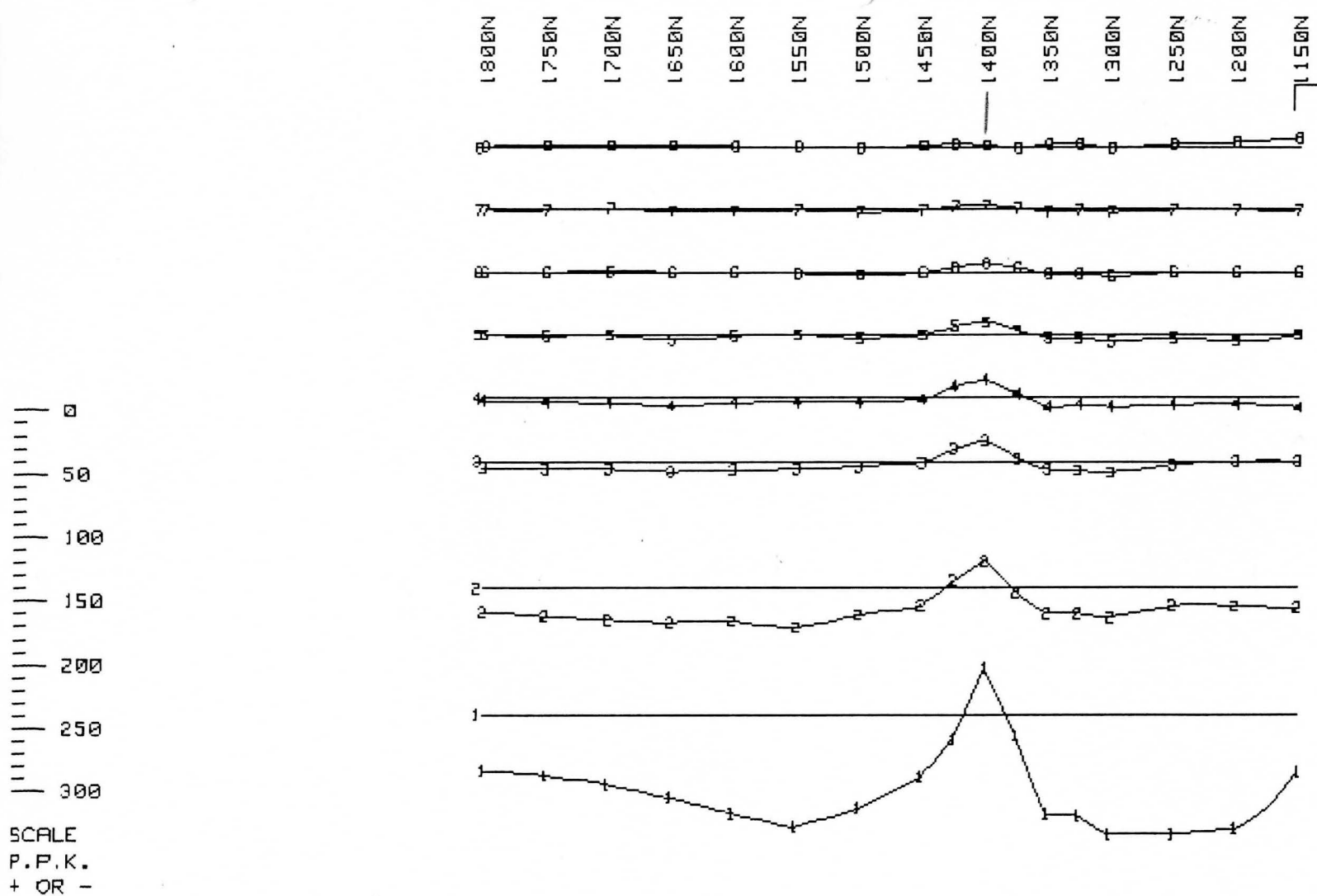
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



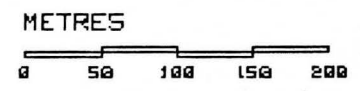
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4300E LOOP B

DATE: JUNE/83 FIG.: 15



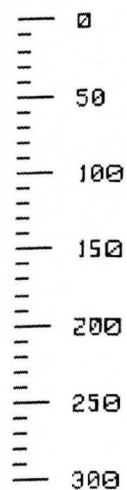
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4300E LOOP B

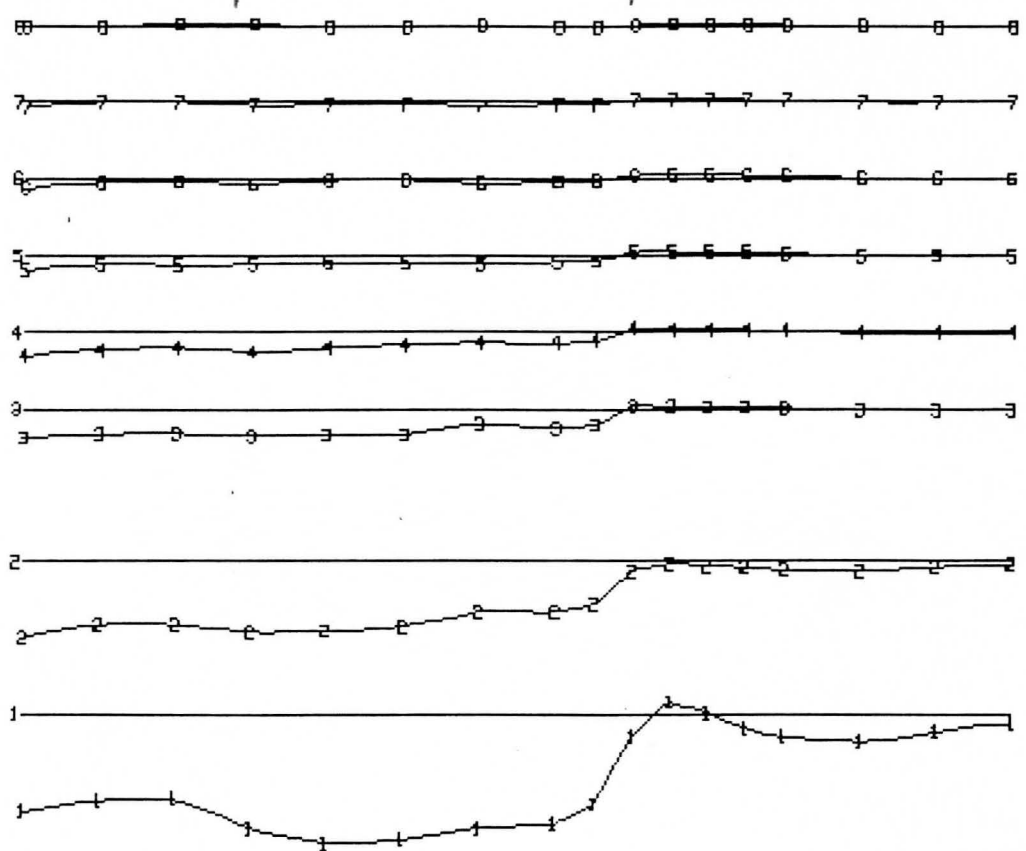
DATE: JUNE/83 FIG.: 16



SCALE
P.P.K.
+ OR -

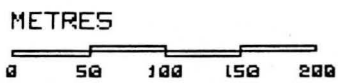
1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B



GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

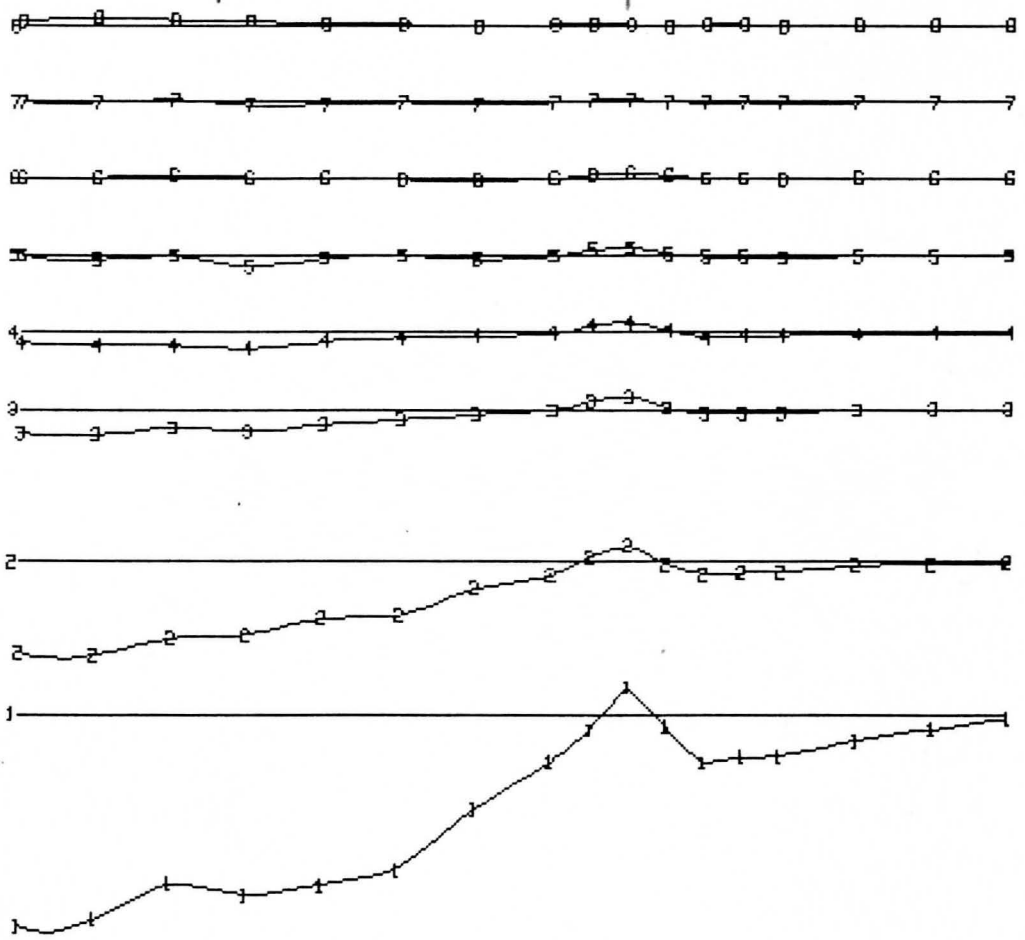


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4300E LOOP B

DATE: JUNE/83 FIG.: 17

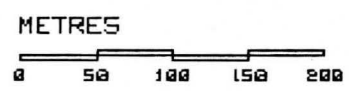
1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300E 1250N 1200N 1150N

LOOP B



SCALE
P.P.K.
+ OR -

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



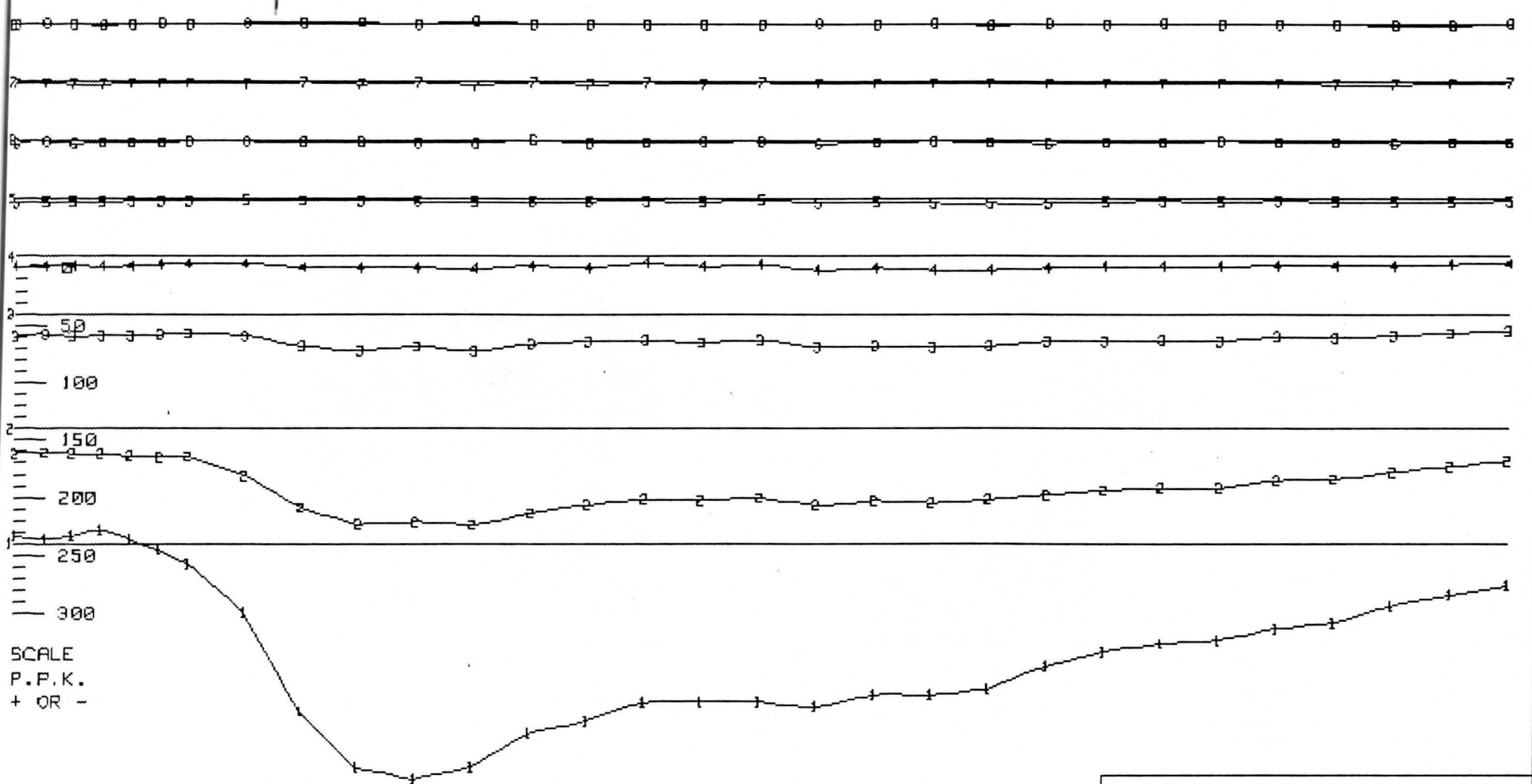
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4300E LOOP B

DATE: JUNE/83 FIG.: 18

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N

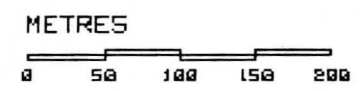
LOOP A



SCALE
P.P.K.
+ OR -

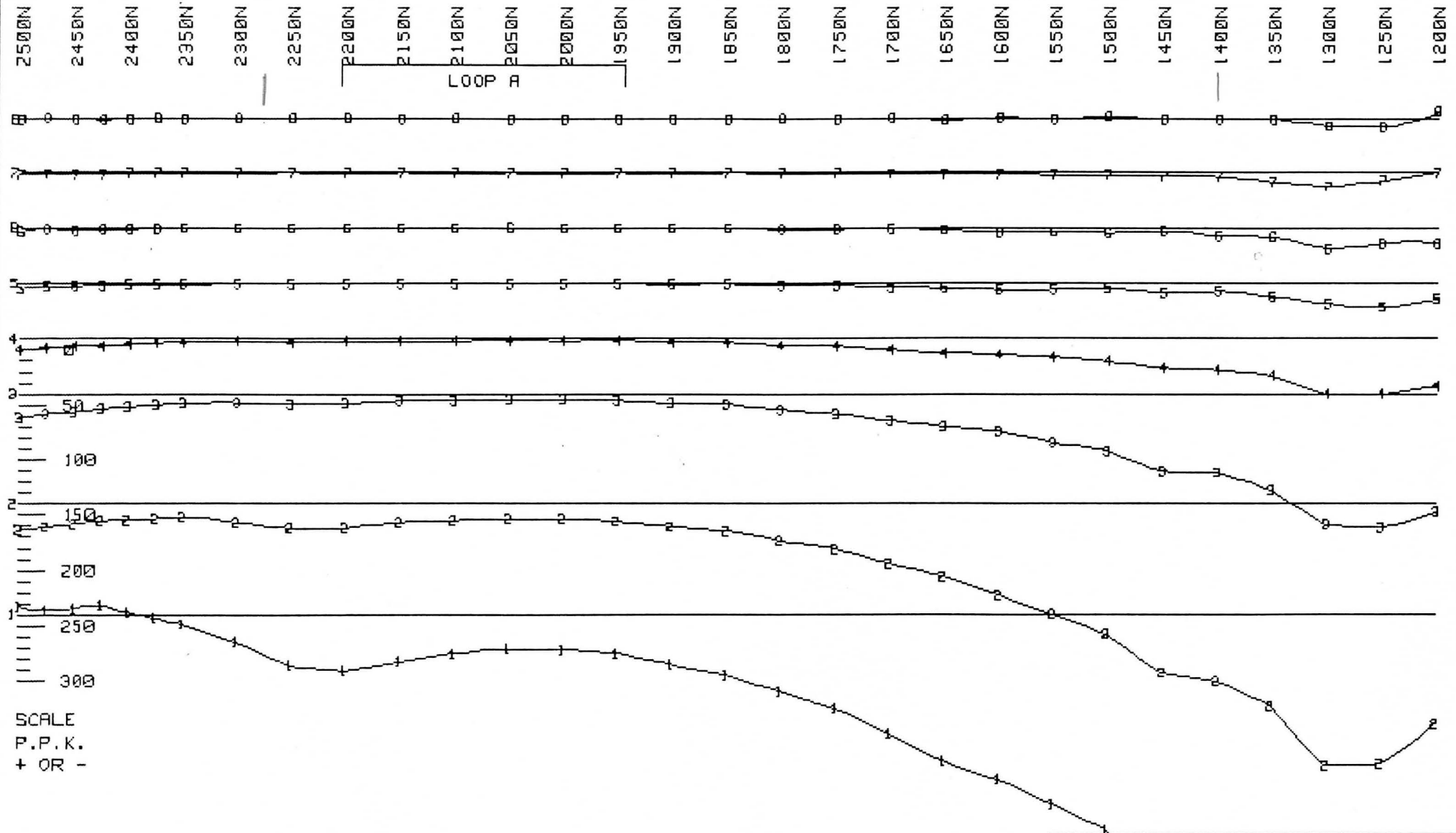
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4400E LOOP A

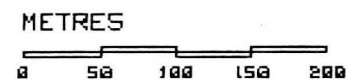
DATE: JUNE/83 FIG.: 19



SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

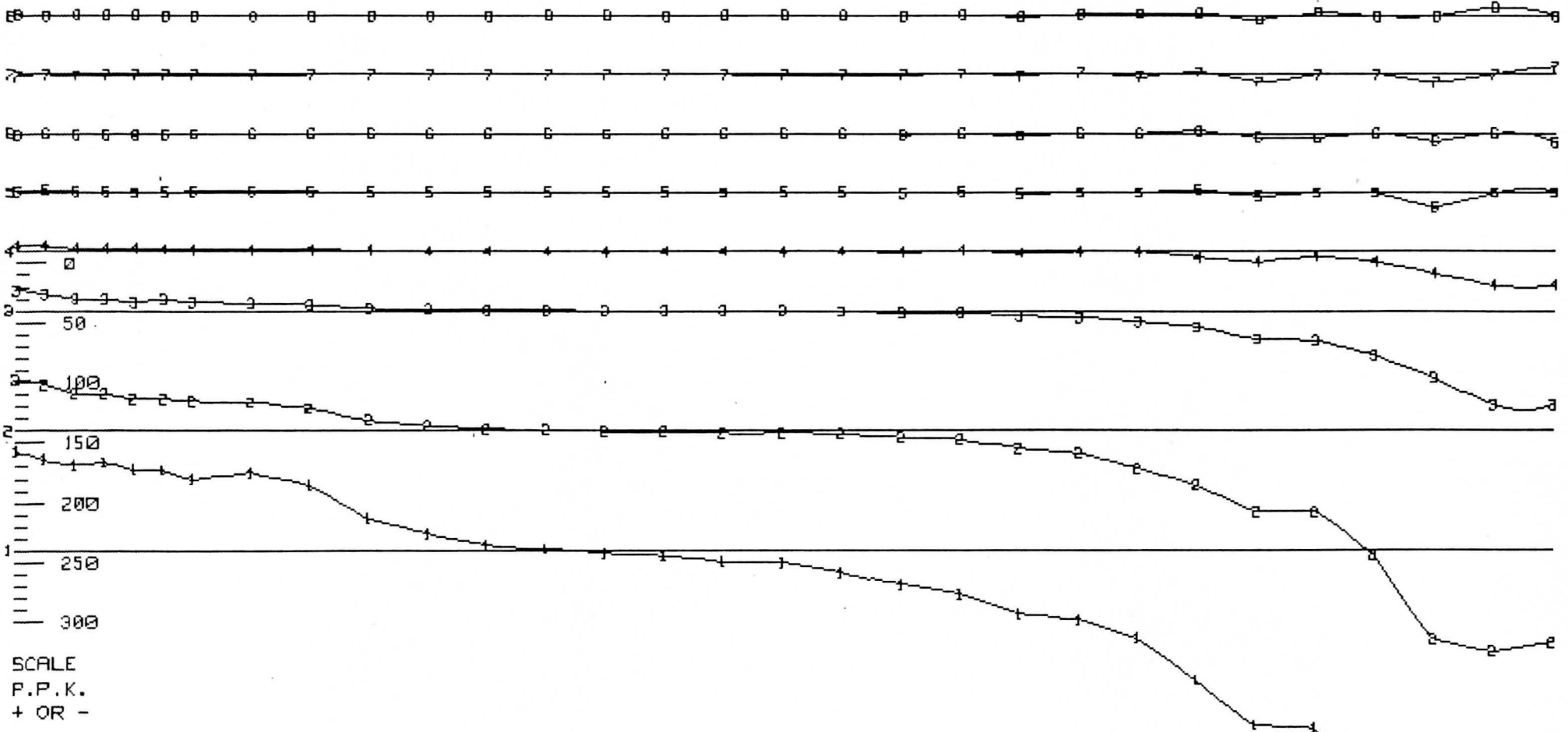


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4400E LOOP A

DATE: JUNE/83 FIG. 21

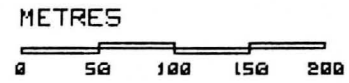
2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300E1 1250E1 1200E1

LOOP A



GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



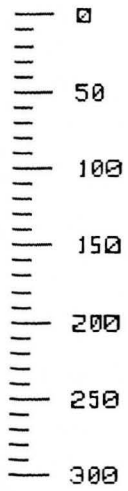
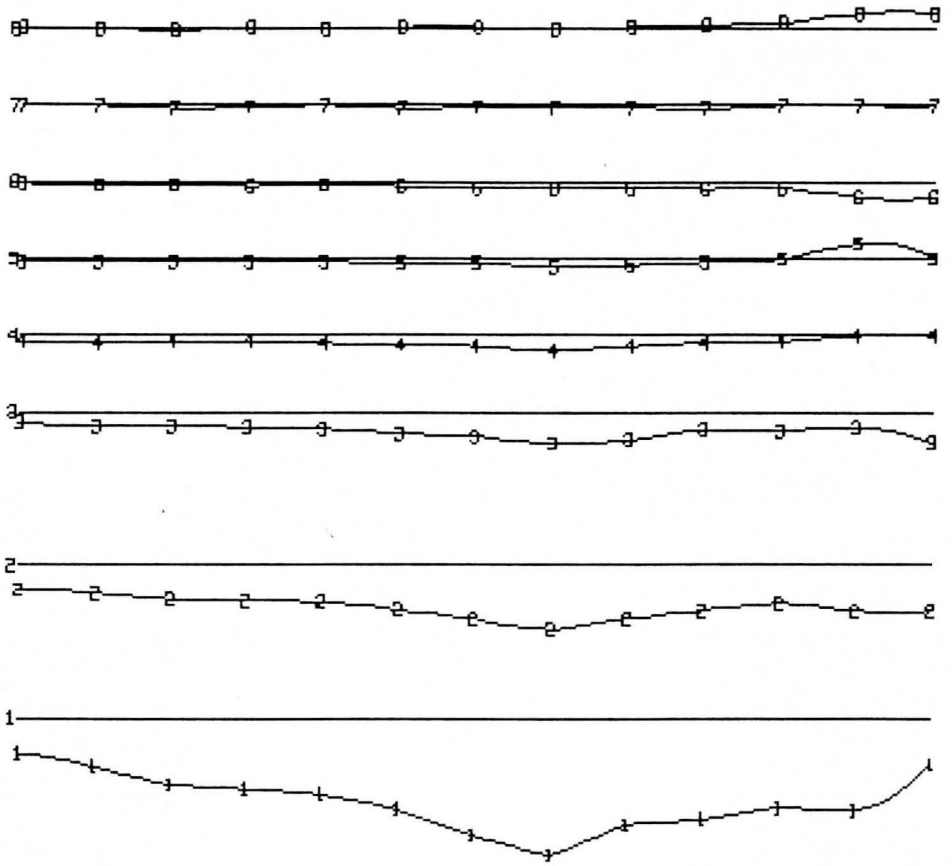
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4400E LOOP A

DATE: JUNE/83

FIG.: 22

1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

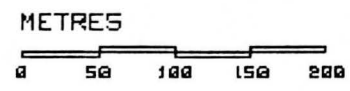
LOOP B



SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



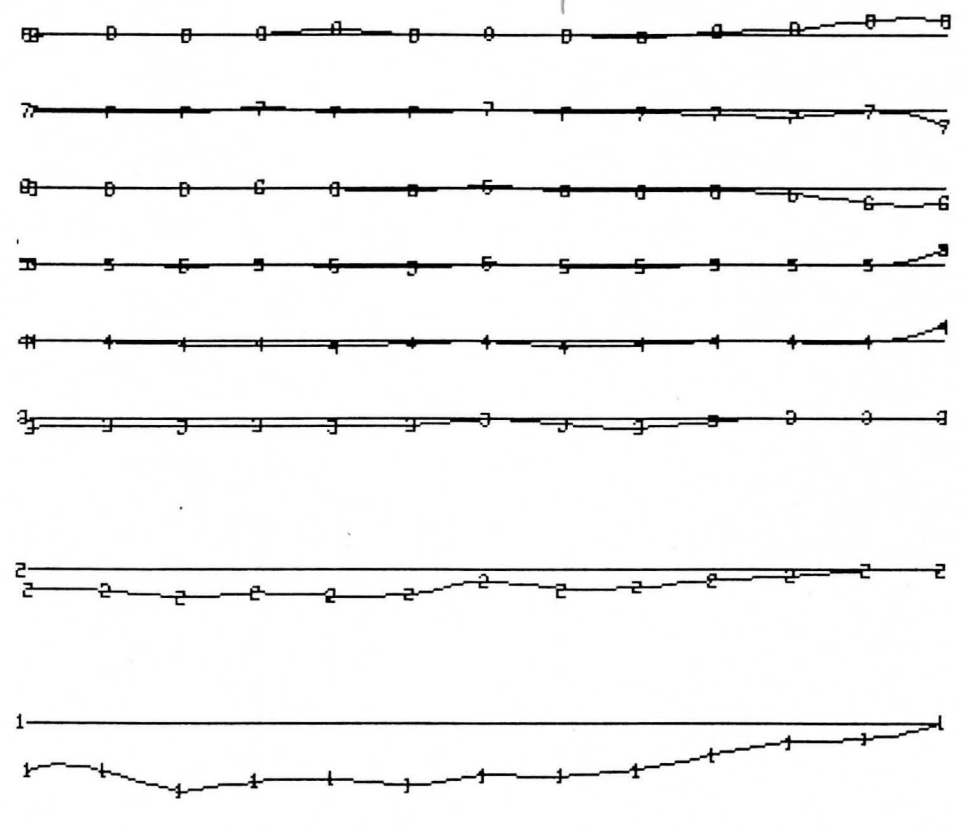
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4400E LOOP B

DATE: JUNE/83

FIG.: 23

1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B

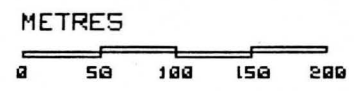


0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



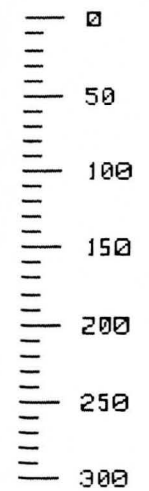
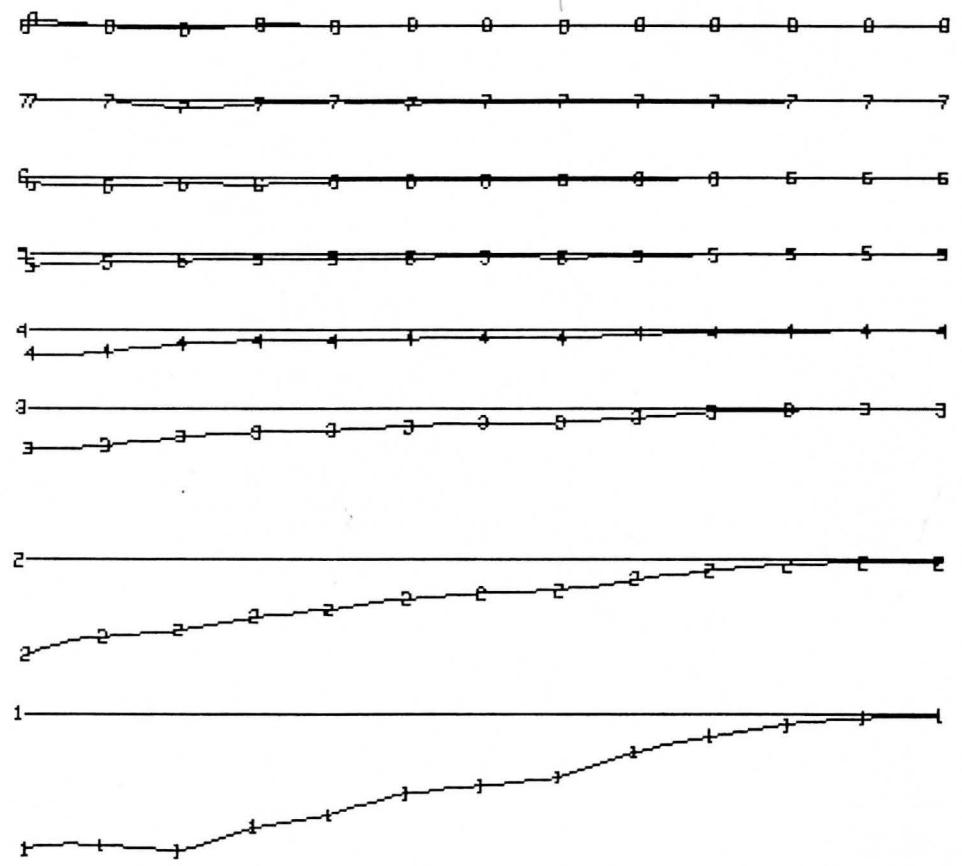
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 1400E LOOP B

DATE: JUNE/83

FIG.: 24

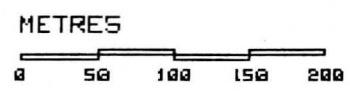
1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B



SCALE
P.P.K.
+ OR -

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

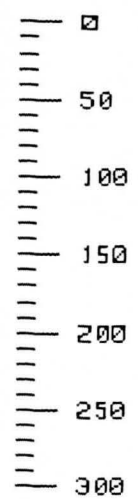


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 1400E LOOP B

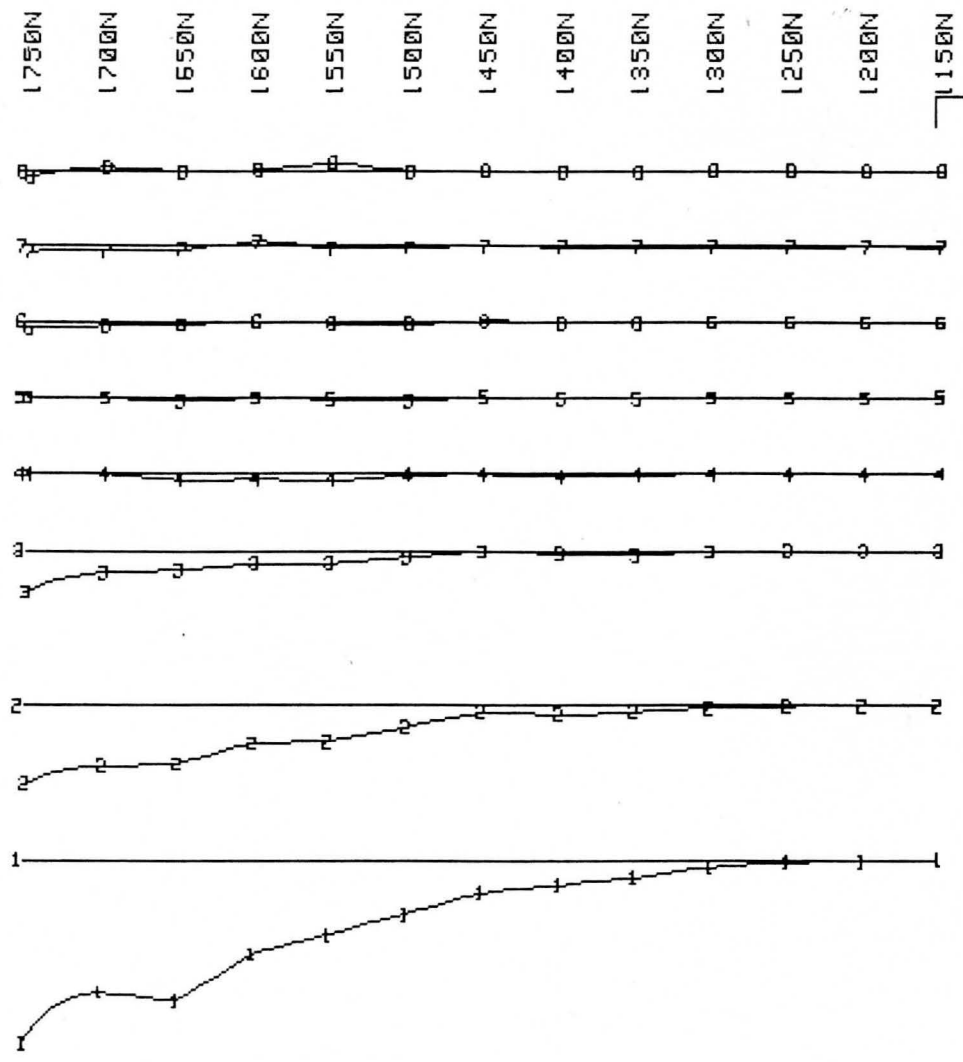
DATE: JUNE/83

FIG.: 25

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.



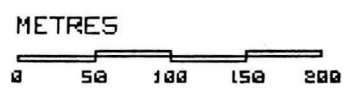
SCALE
P.P.K.
+ OR -



LOOP B

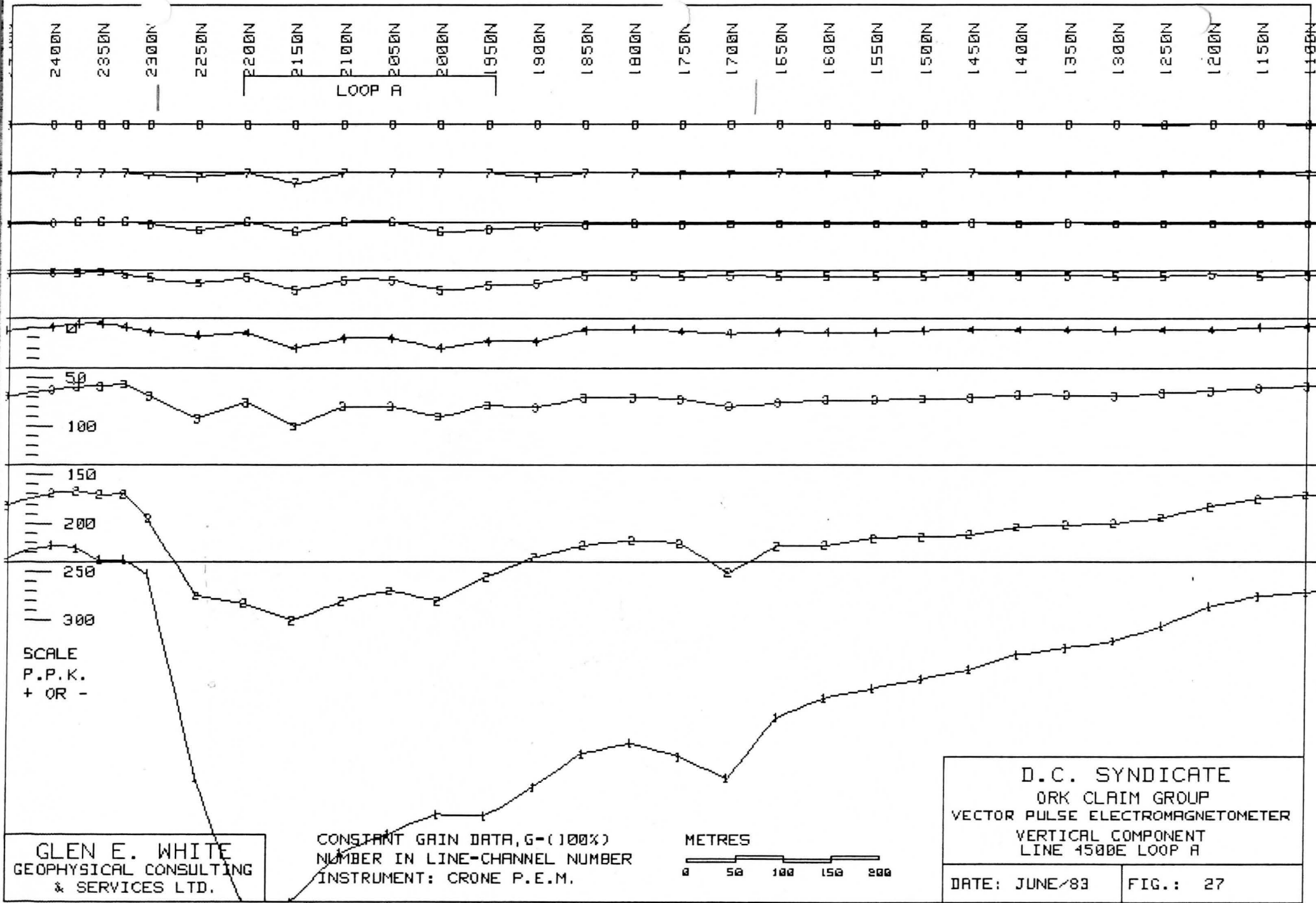
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

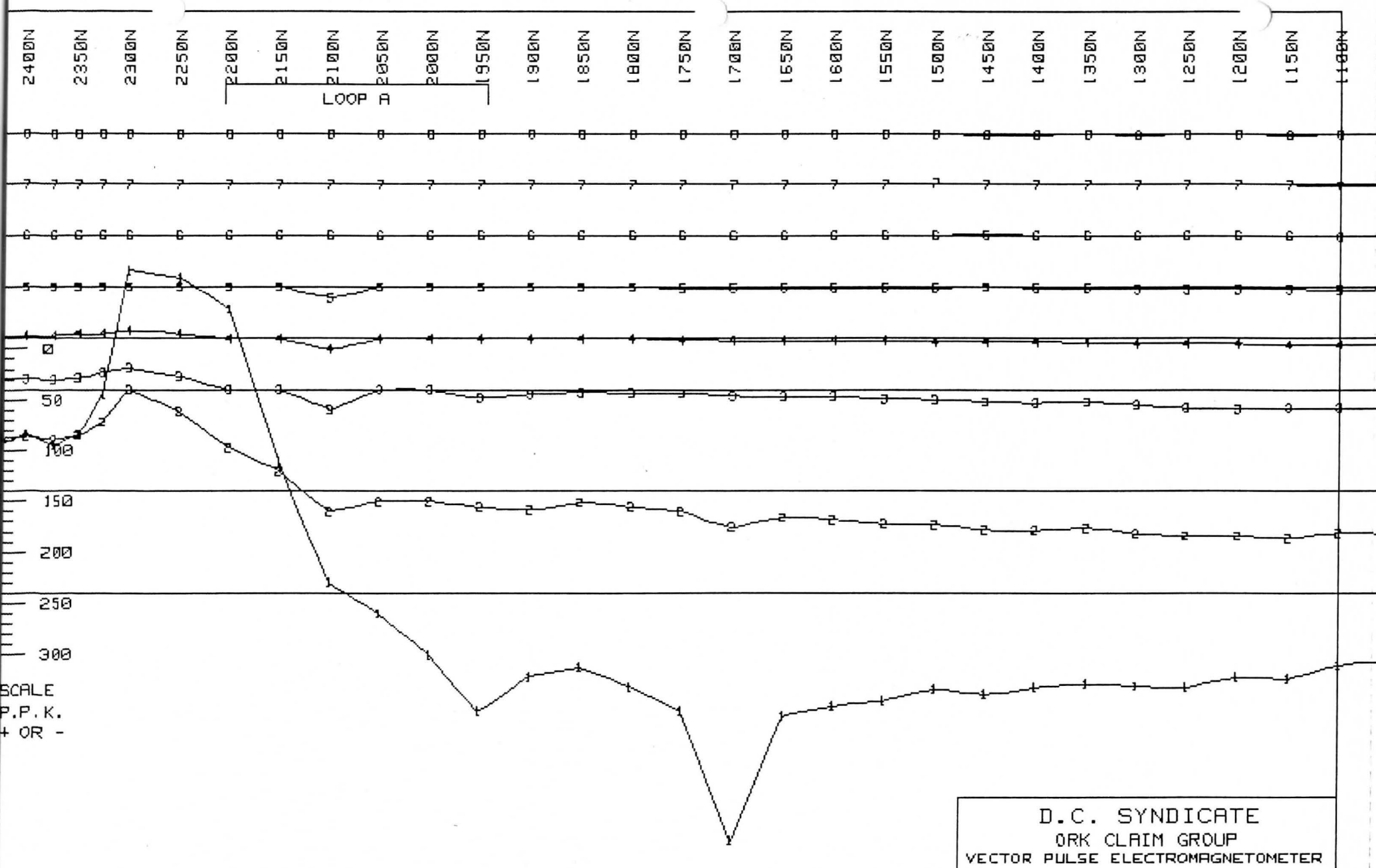
PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 400E LOOP B

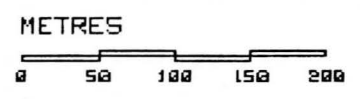
DATE: JUNE/83 FIG.: 26





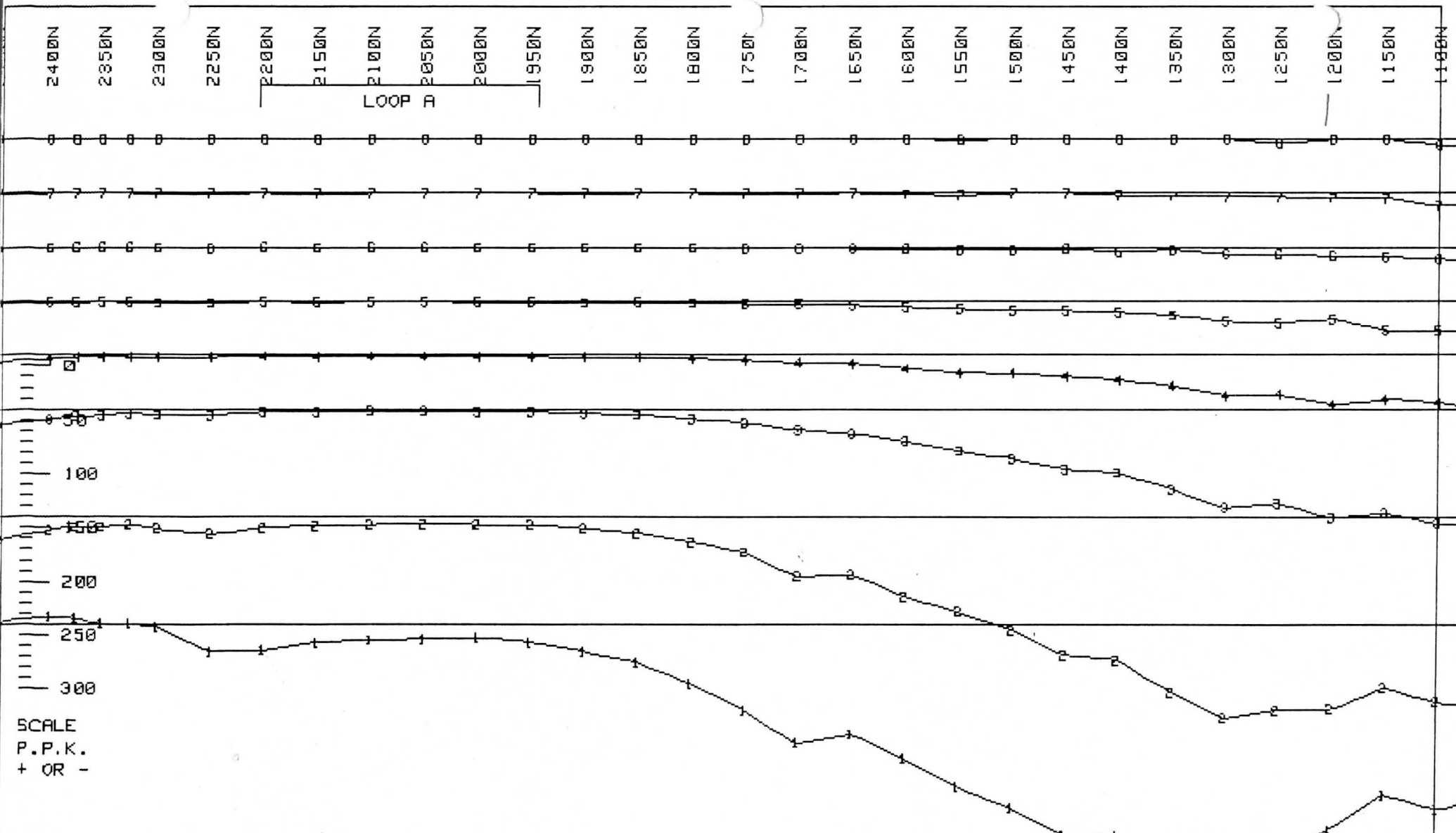
GLEN E. WHITE
 GEOPHYSICAL CONSULTING
 & SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
 NUMBER IN LINE-CHANNEL NUMBER
 INSTRUMENT: CRONE P.E.M.



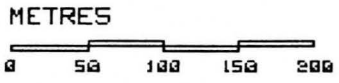
D.C. SYNDICATE
 ORK CLAIM GROUP
 VECTOR PULSE ELECTROMAGNETOMETER
 HORIZONTAL COMPONENT
 LINE 4500E LOOP A

DATE: JUNE/83 FIG.: 28



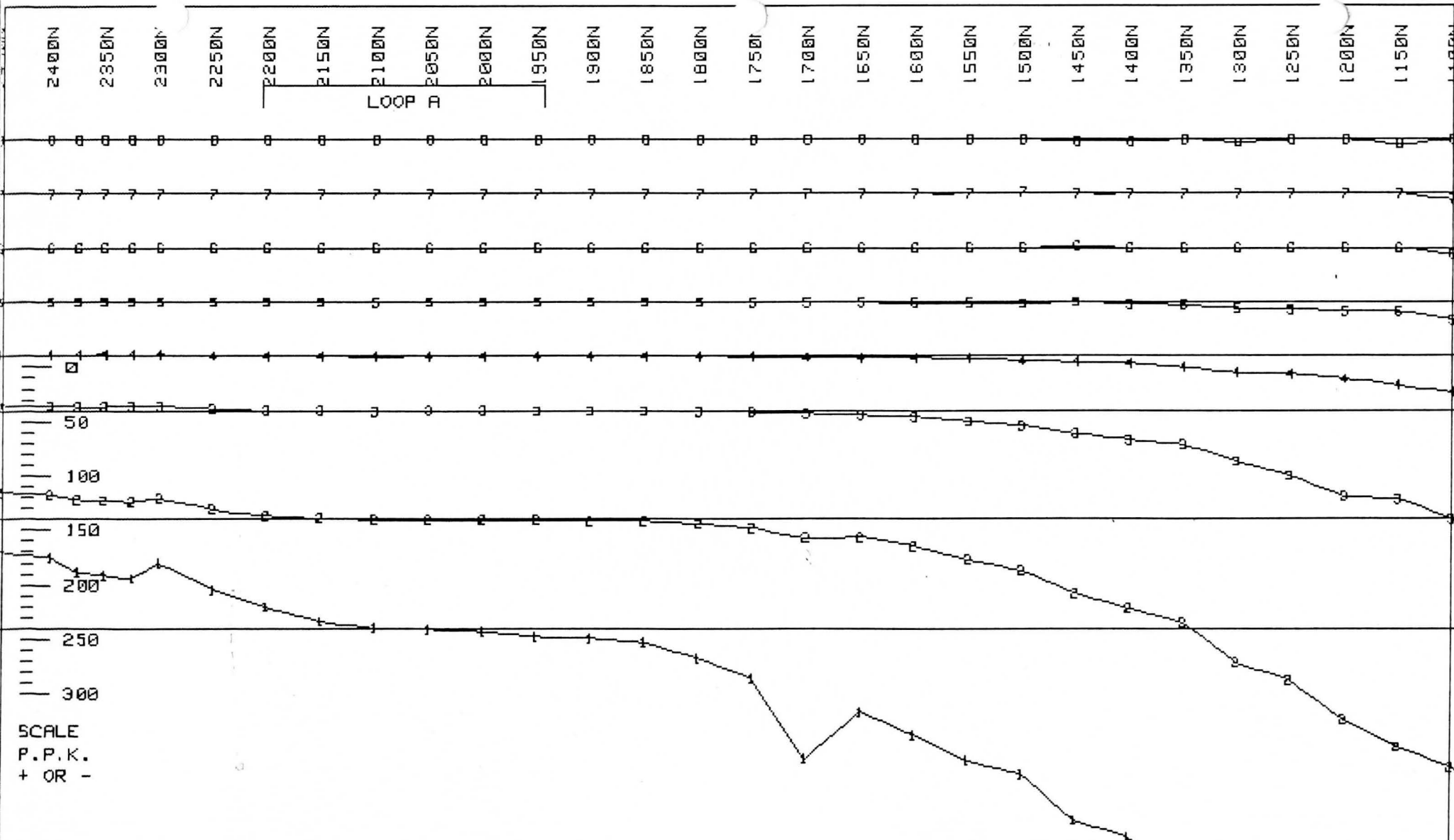
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4500E LOOP A

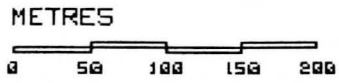
DATE: JUNE/83 FIG.: 29



SCALE
P.P.K.
+ OR -

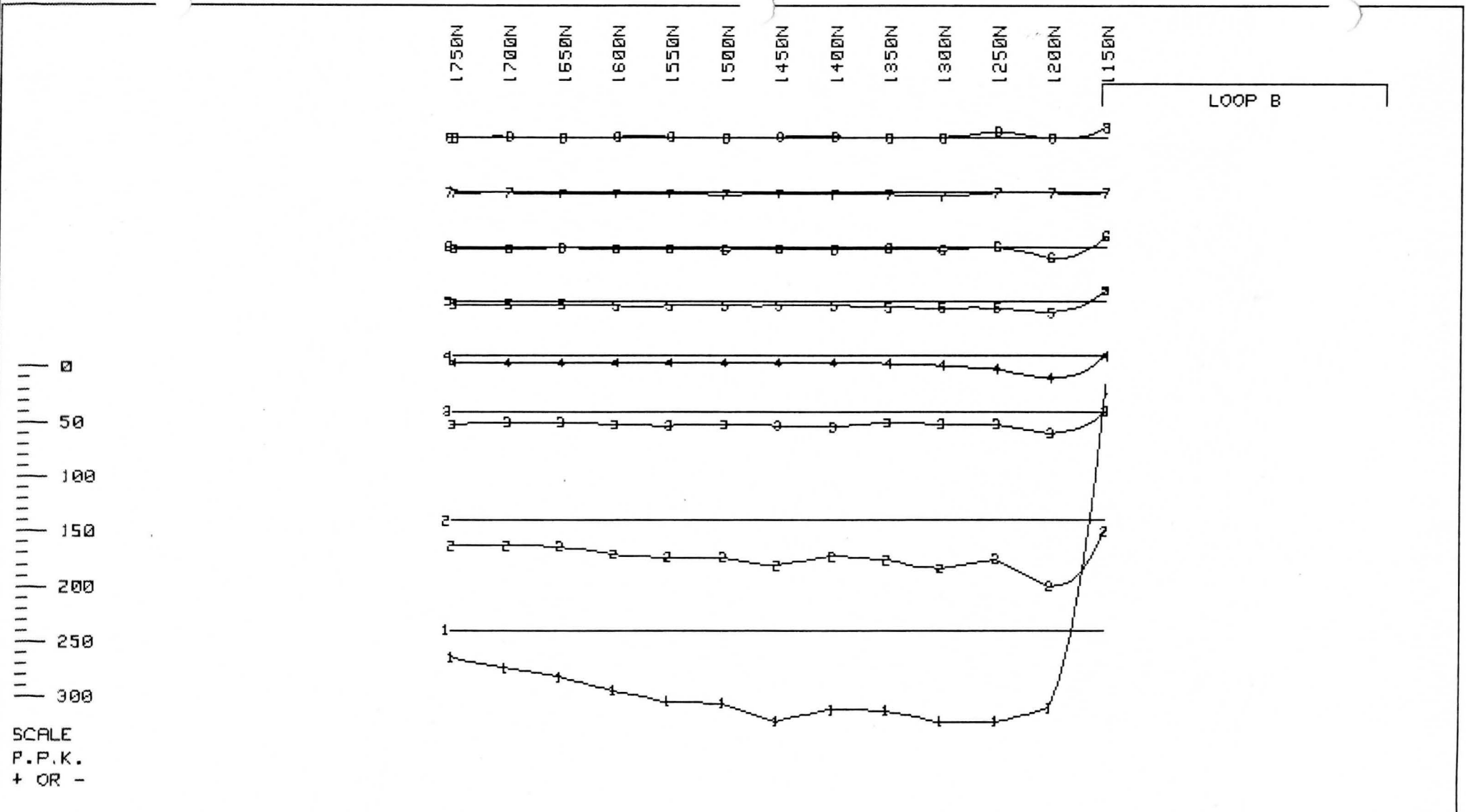
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



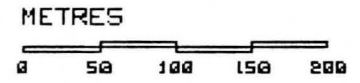
D.C. SYNDICATE
ORR CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4500E LOOP A

DATE: JUNE/83 FIG.: 30



GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

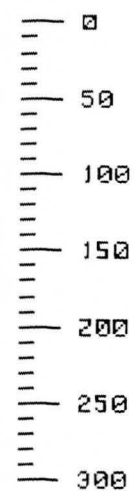
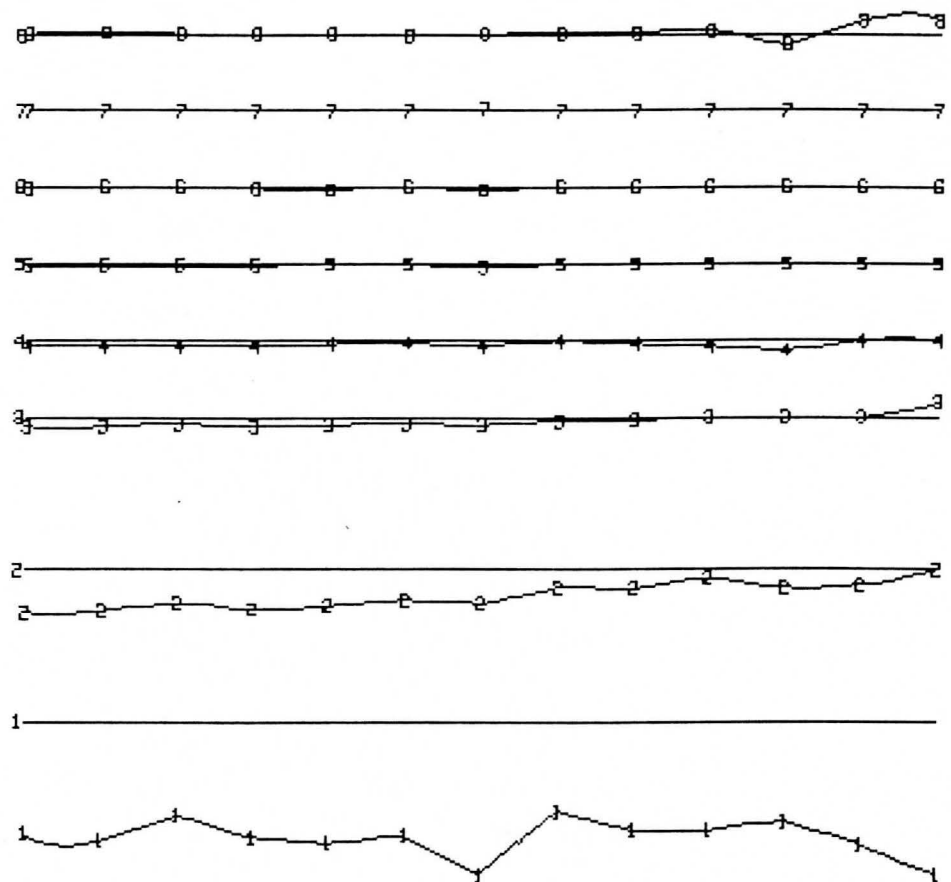


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4500E LOOP B

DATE: JUNE/83 FIG.: 31

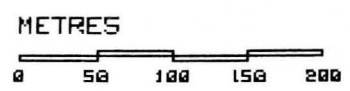
1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B



SCALE
P.P.K.
+ OR -

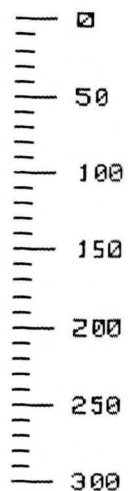
CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4500E LOOP B

DATE: JUNE/83 FIG.: 32

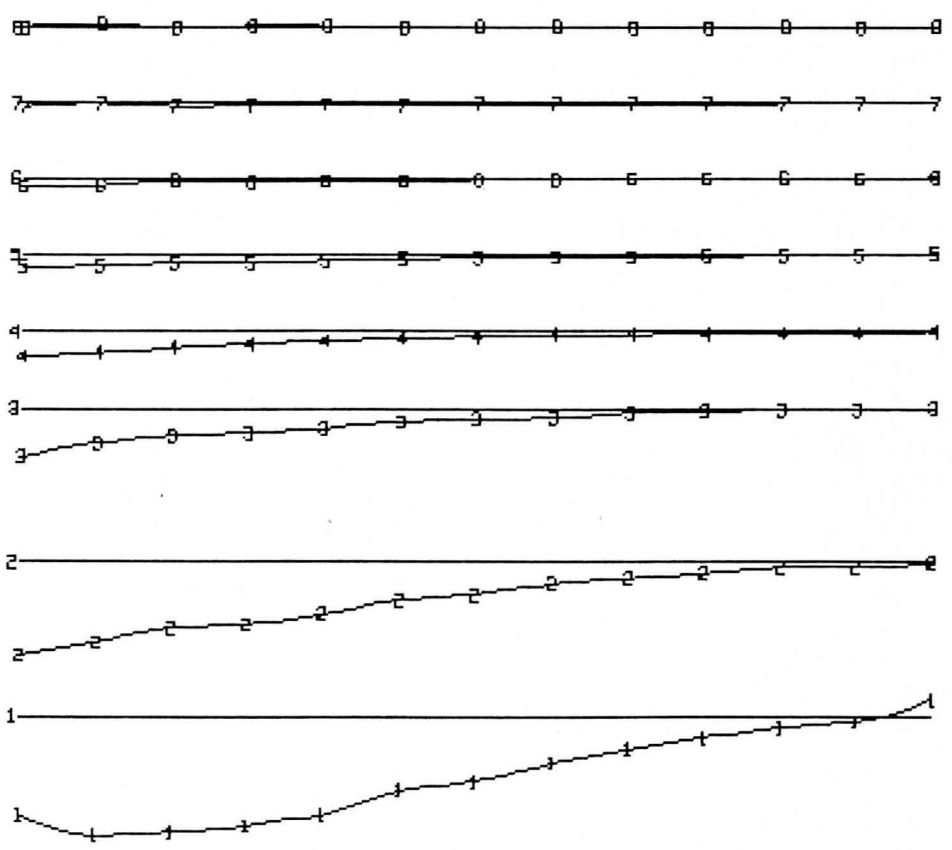
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.



SCALE
P.P.K.
+ OR -

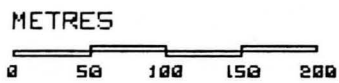
1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B



GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

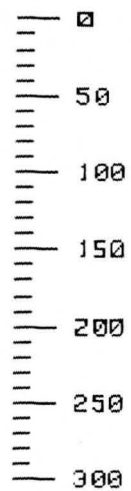
PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4500E LOOP B

DATE: JUNE/83

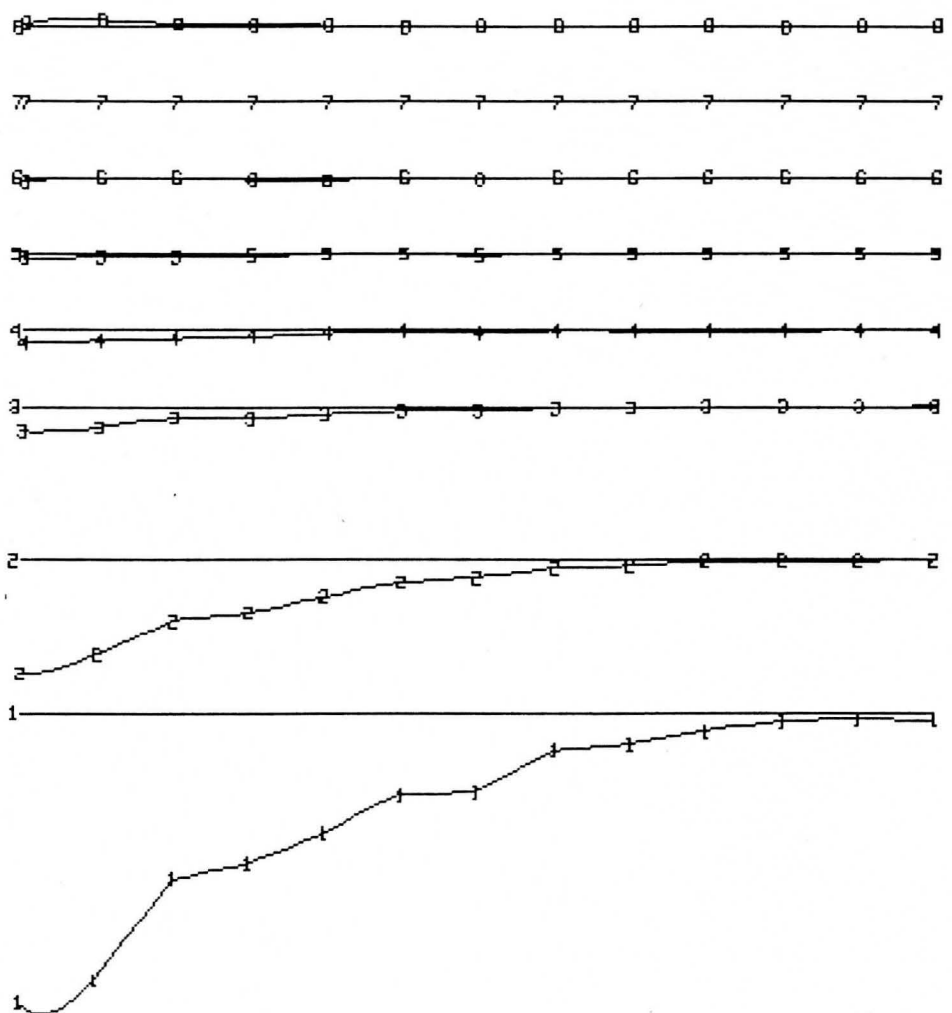
FIG.: 33



SCALE
P.P.K.
+ OR -

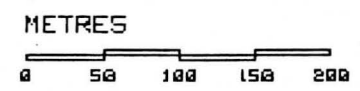
1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B



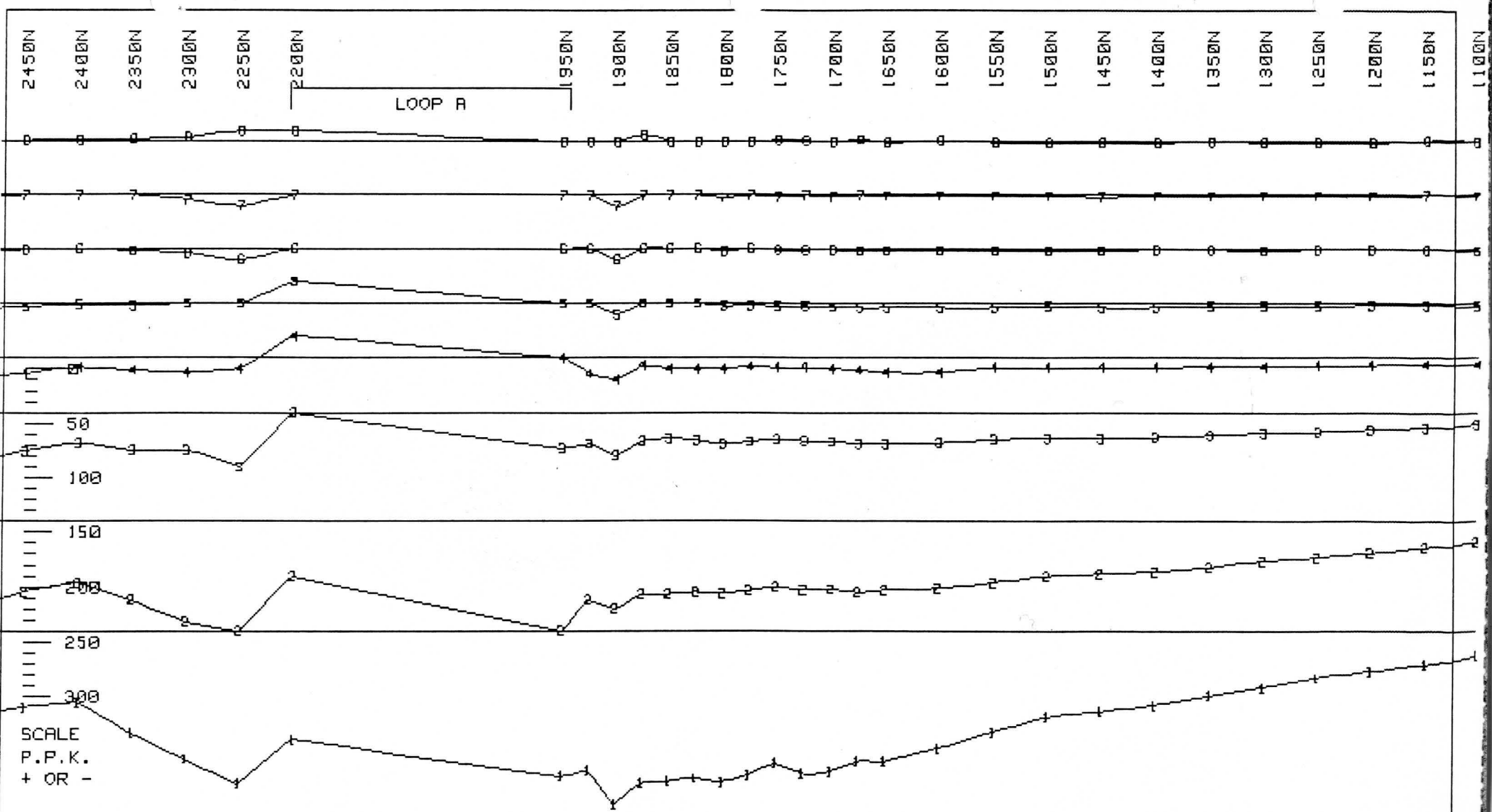
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4500E LOOP B

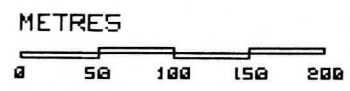
DATE: JUNE/83 FIG.: 34



SCALE
P.P.K.
+ OR -

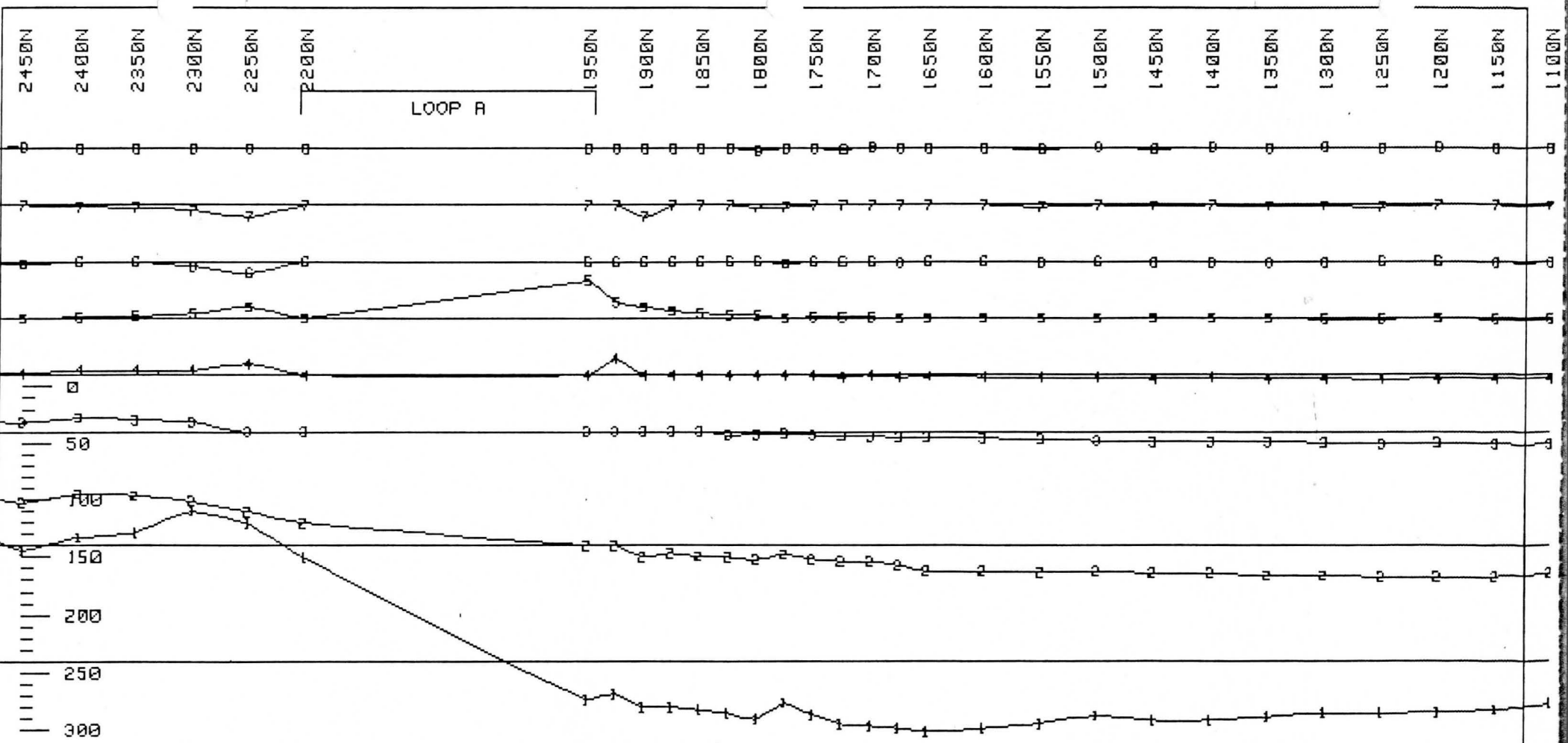
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4600E LOOP R

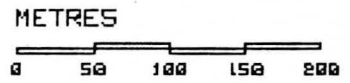
DATE: JUNE/83 FIG.: 35



SCALE
P.P.K.
+ OR -

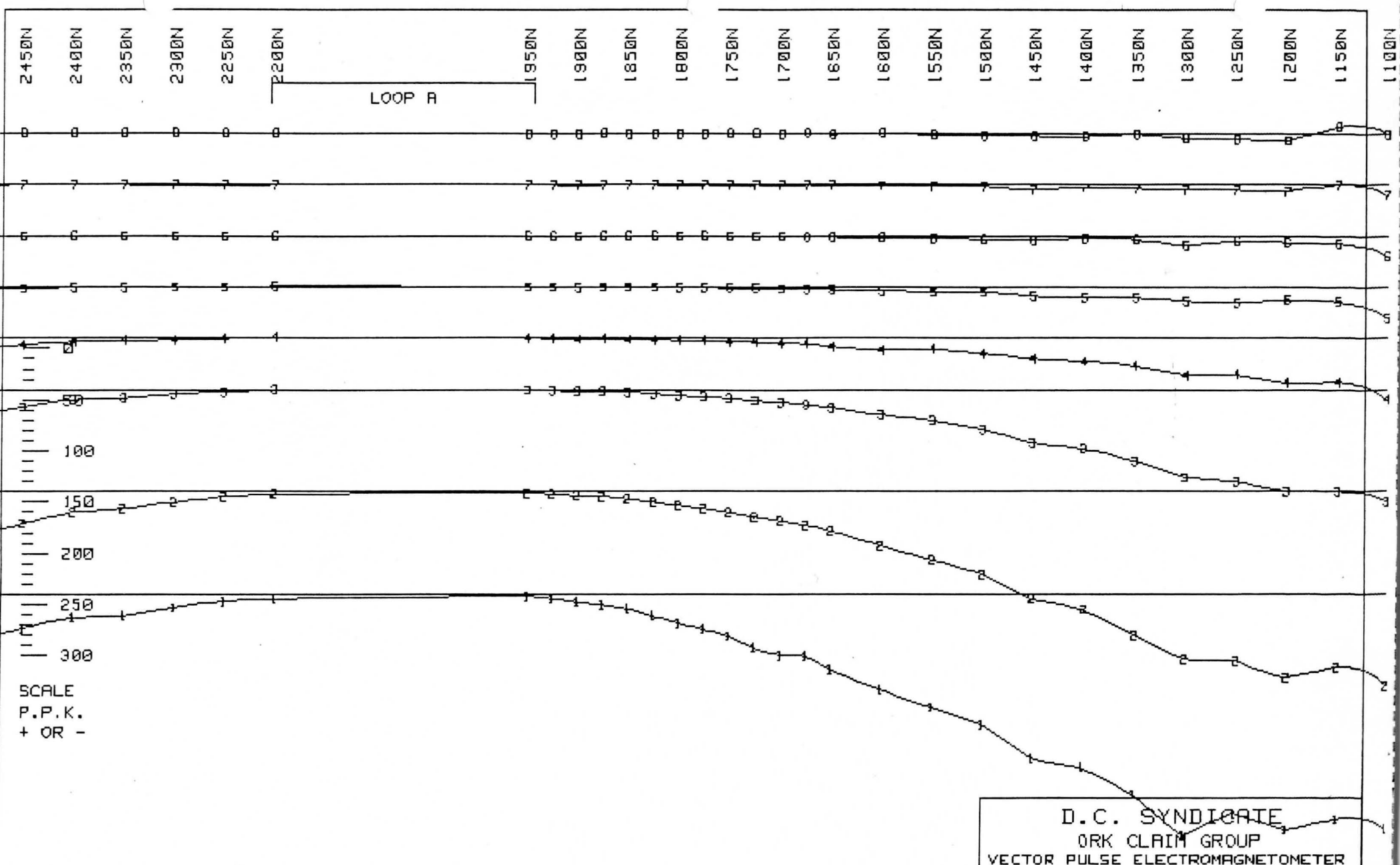
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



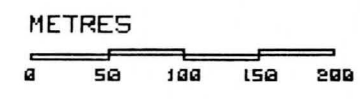
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4600E LOOP A

DATE: JUNE/83 FIG.: 36

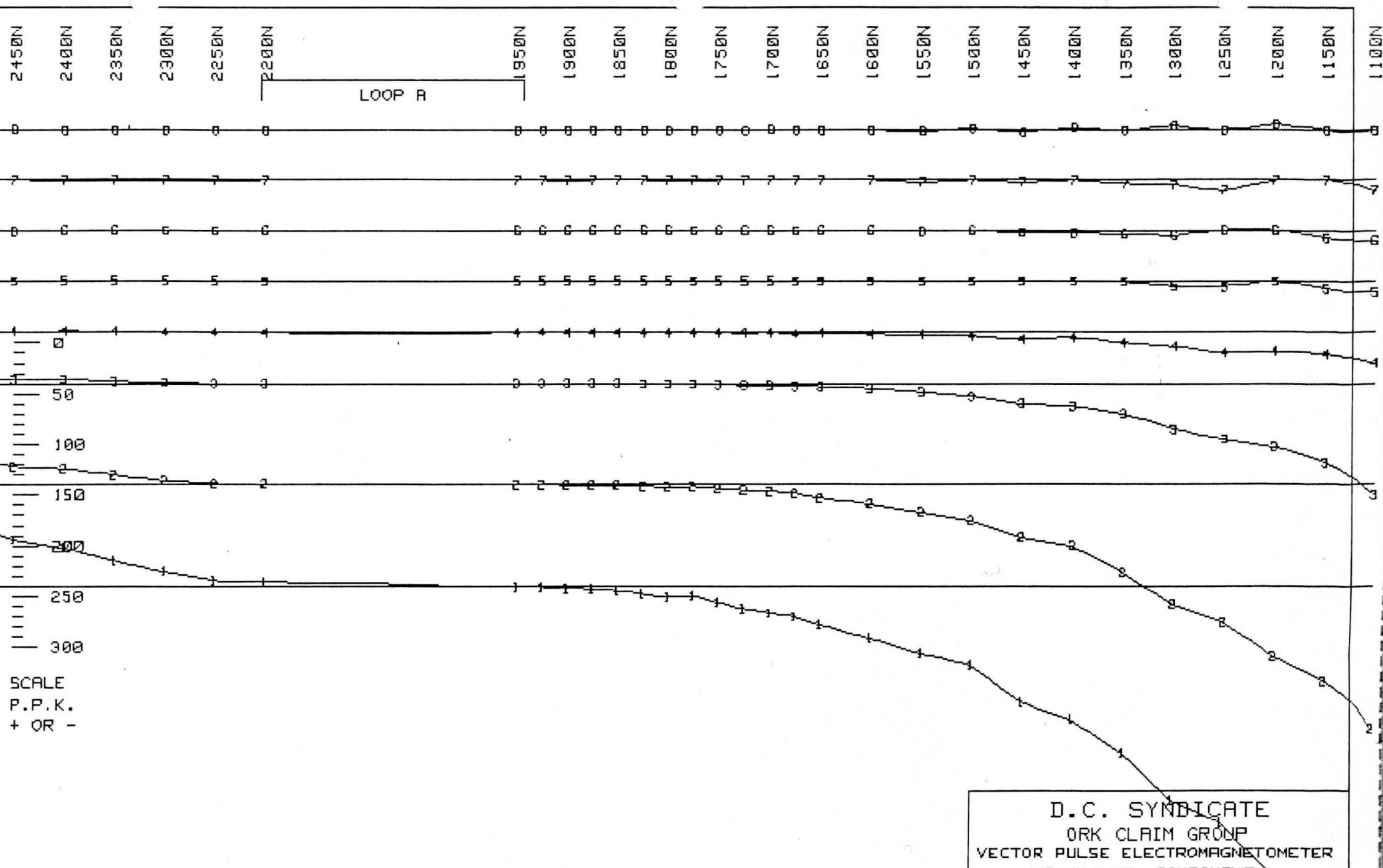


GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

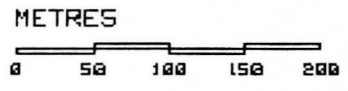


DATE: JUNE/83 FIG.: 37



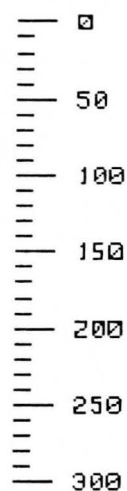
GLEN E. WHITE
 GEOPHYSICAL CONSULTING
 & SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
 NUMBER IN LINE-CHANNEL NUMBER
 INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
 ORK CLAIM GROUP
 VECTOR PULSE ELECTROMAGNETOMETER
 HORIZONTAL COMPONENT
 LINE 4600E LOOP A

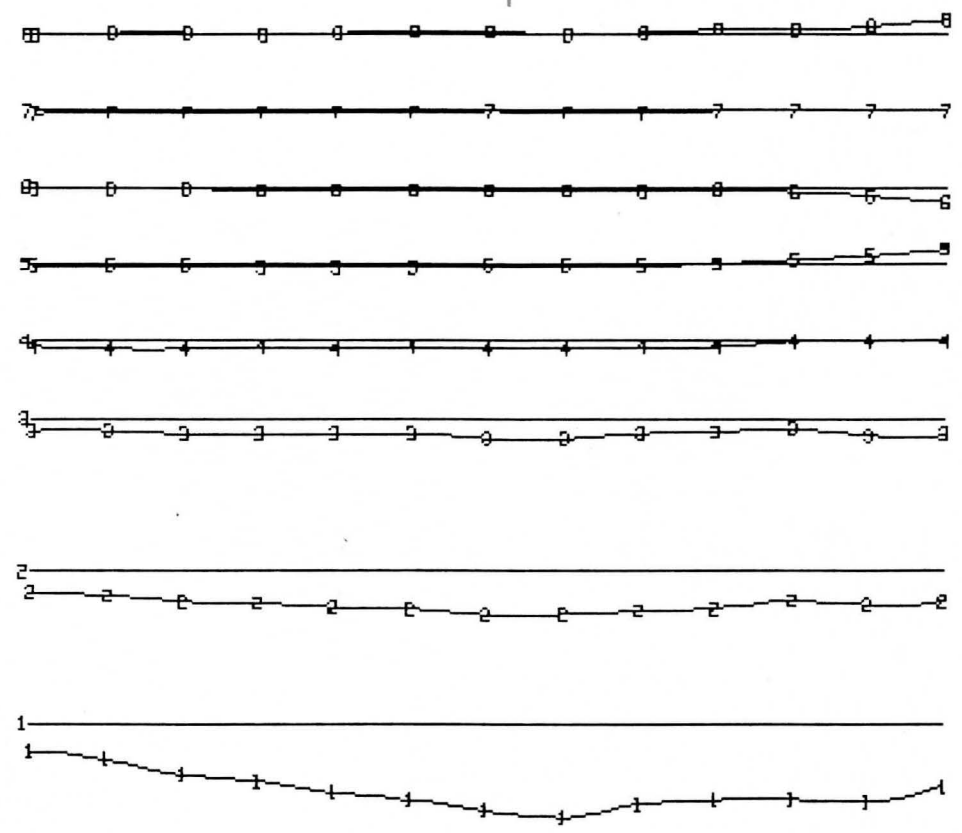
DATE: JUNE/83 FIG.: 38



SCALE
P.P.K.
+ OR -

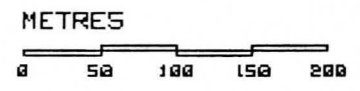
1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B



GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

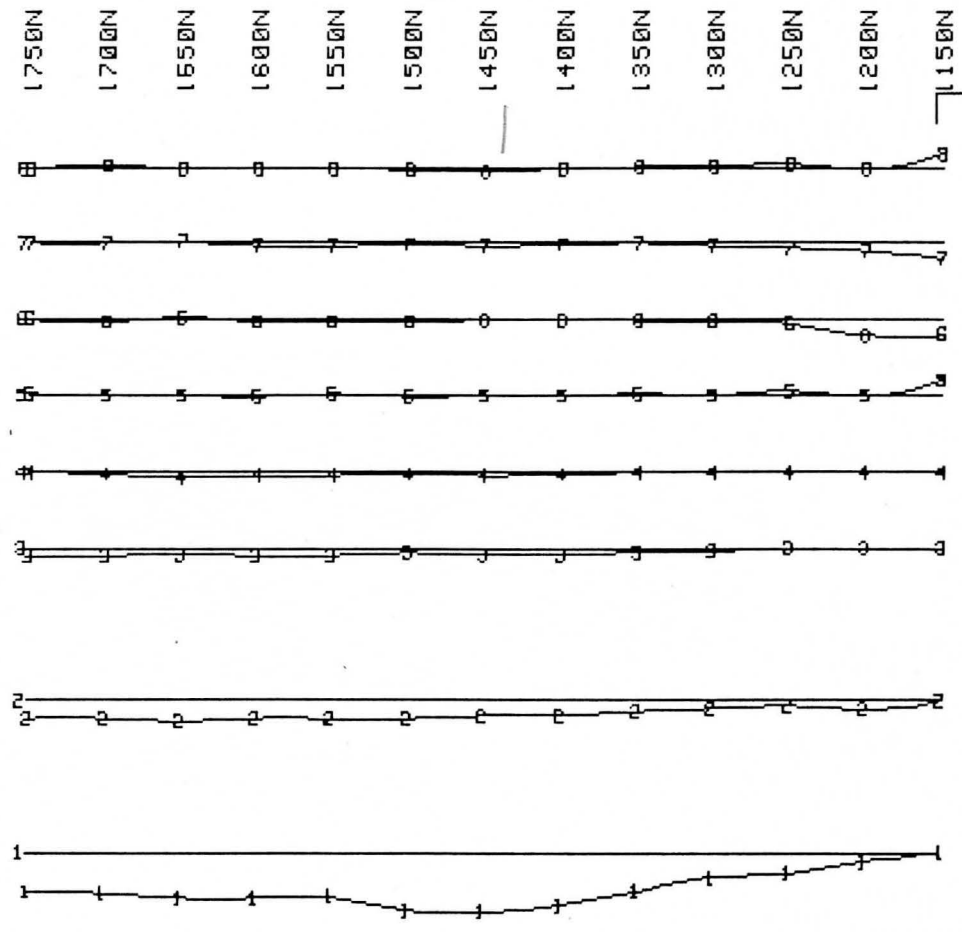


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 1600E LOOP B

DATE: JUNE/83 FIG.: 39



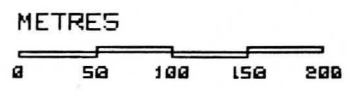
SCALE
P.P.K.
+ OR -



LOOP B

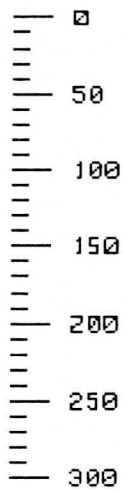
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

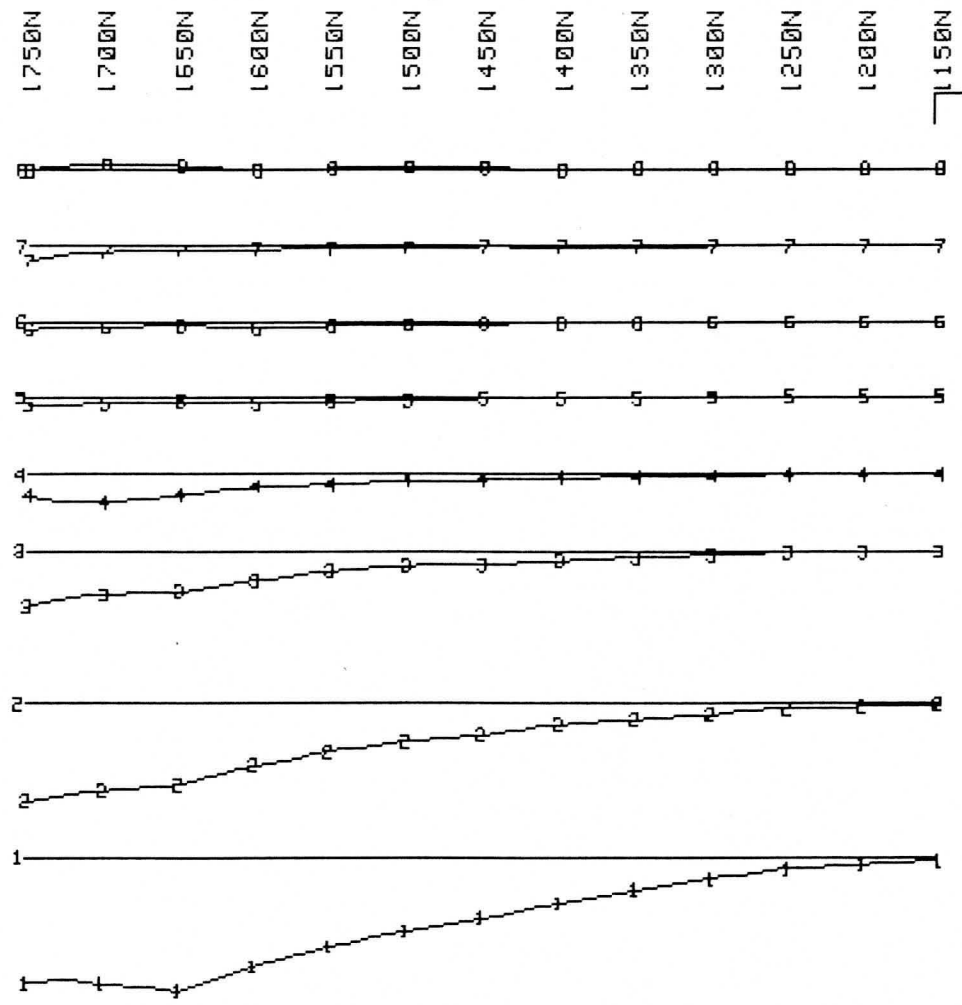


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMETER
HORIZONTAL COMPONENT
LINE 4600E LOOP B

DATE: JUNE/83 FIG.: 40



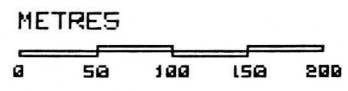
SCALE
P.P.K.
+ OR -



LOOP B

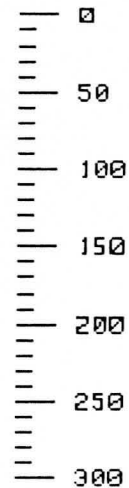
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

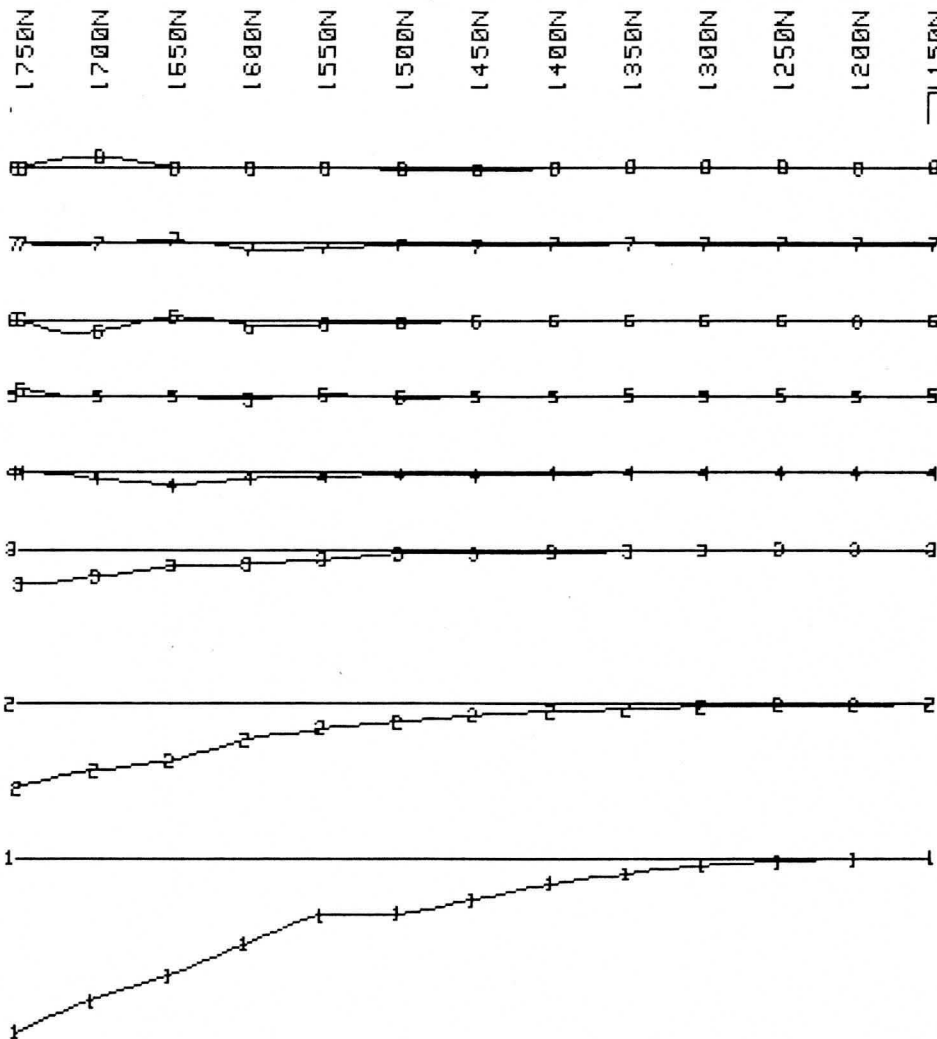


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4600E LOOP B

DATE: JUNE/83 FIG.: 41



SCALE
P.P.K.
+ OR -

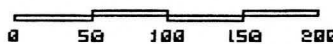


LOOP B

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

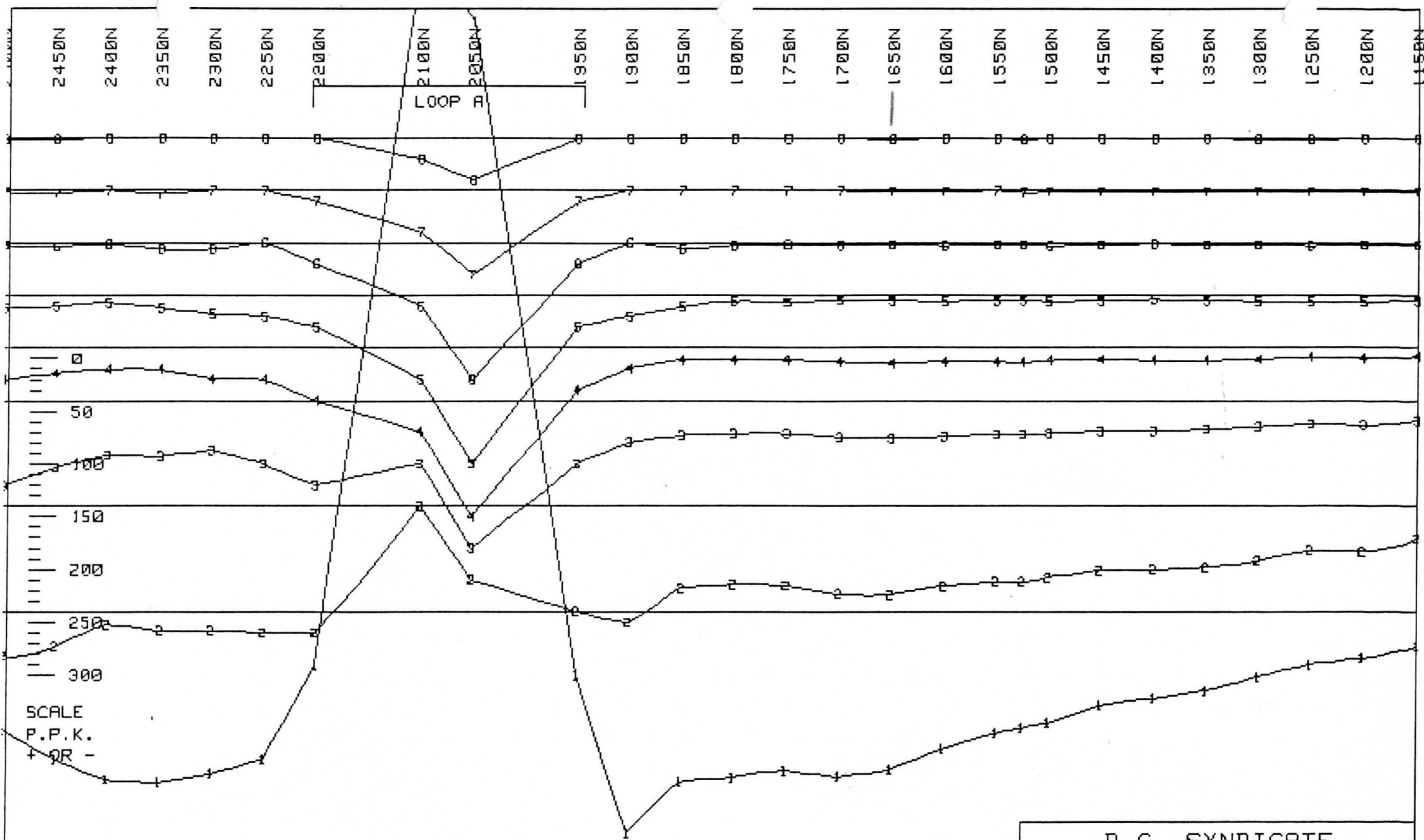
METRES



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4600E LOOP B

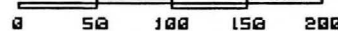
DATE: JUNE/83

FIG.: 42



CONSTANT GAIN DATA, G=(100%)
 NUMBER IN LINE-CHANNEL NUMBER
 INSTRUMENT: CRONE P.E.M.

METRES

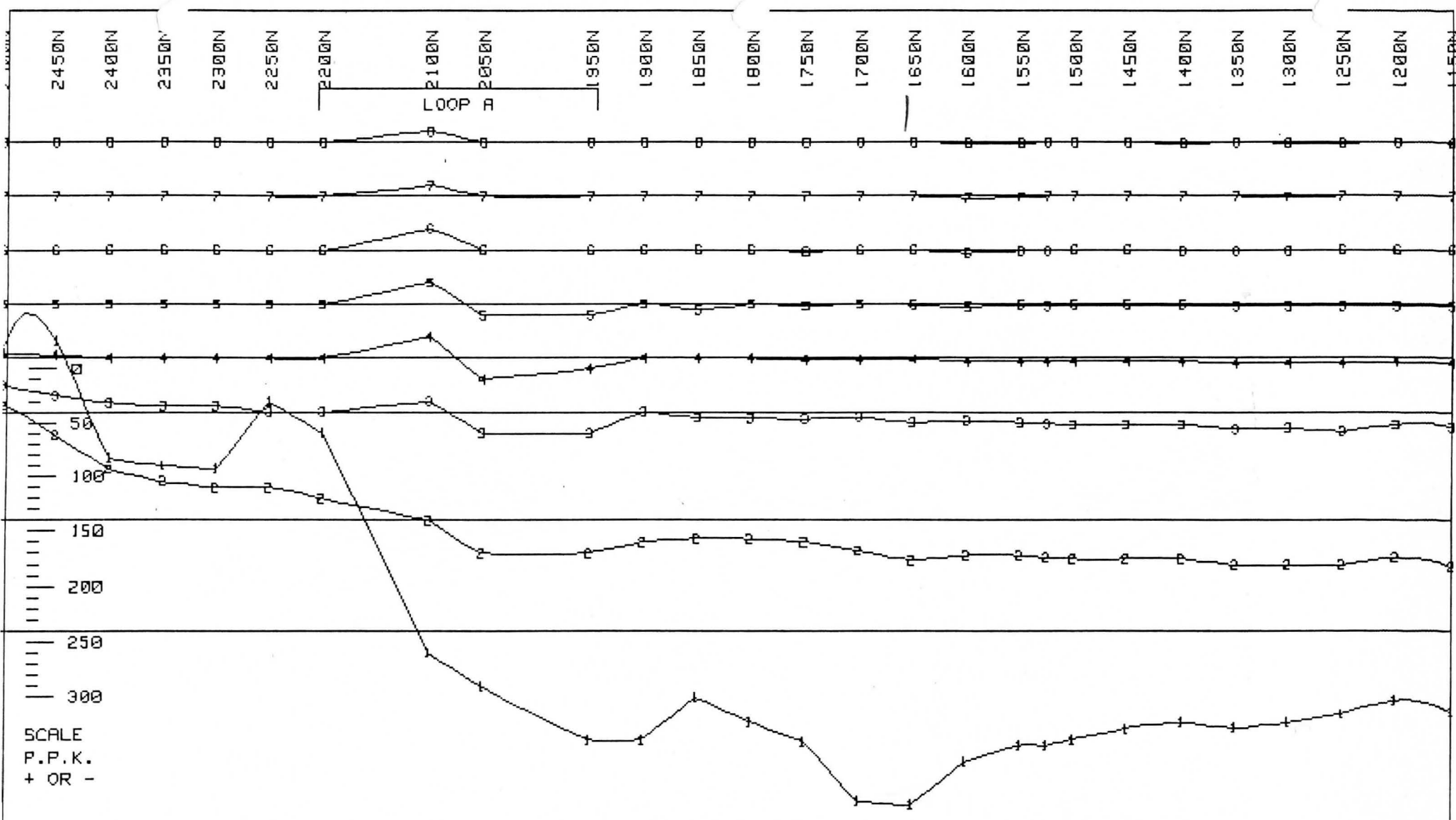


D.C. SYNDICATE
 ORK CLAIM GROUP
 VECTOR PULSE ELECTROMAGNETOMETER
 VERTICAL COMPONENT
 LINE 4700E LOOP A

DATE: JUNE/83

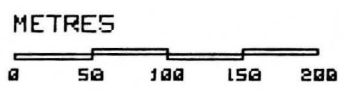
FIG.: 43

GLEN E. WHITE
 GEOPHYSICAL CONSULTING
 & SERVICES LTD.



SCALE
P.P.K.
+ OR -

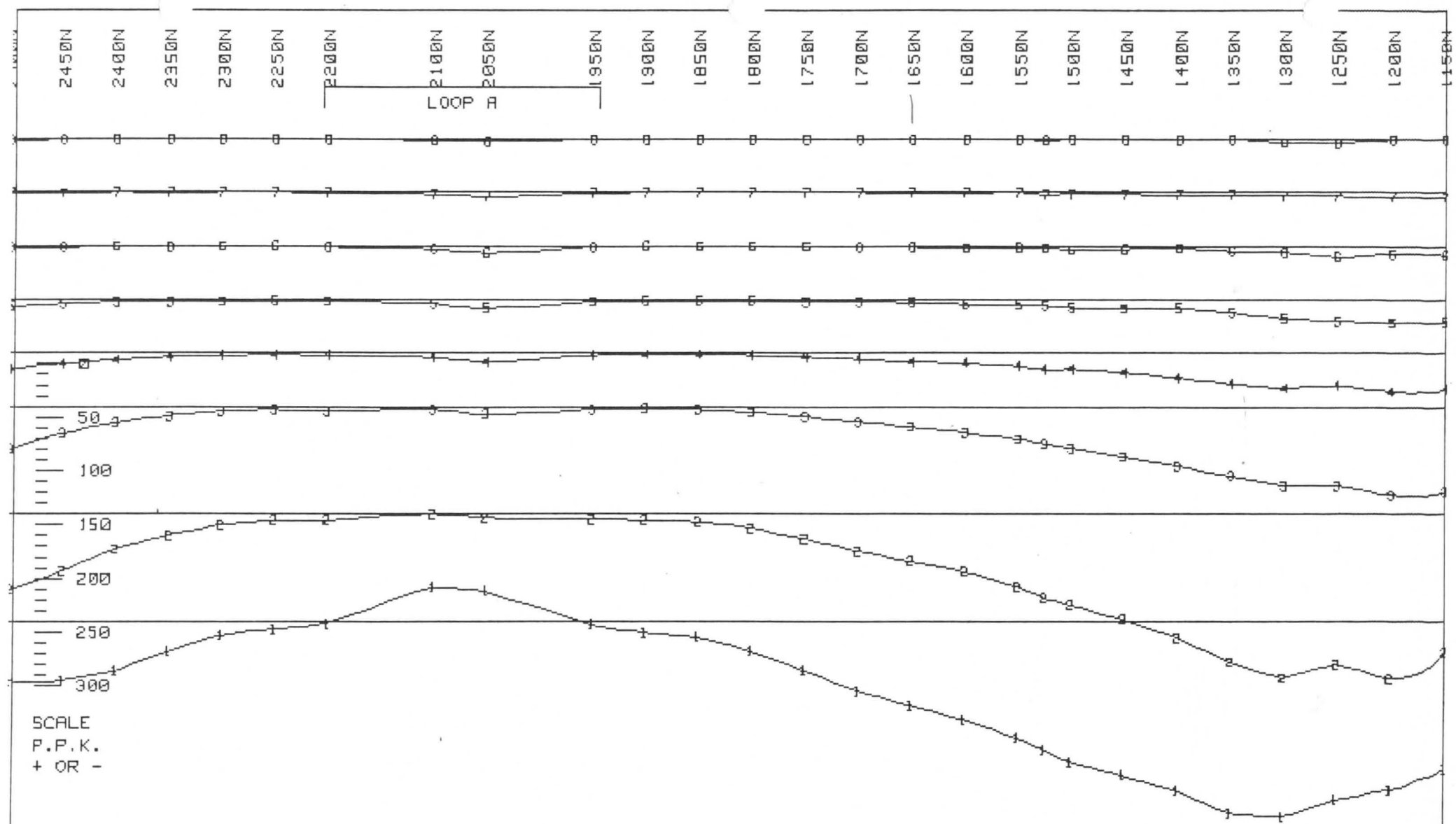
CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 470BE LOOP A

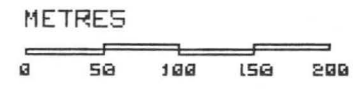
DATE: JUNE/83 FIG.: 44

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.



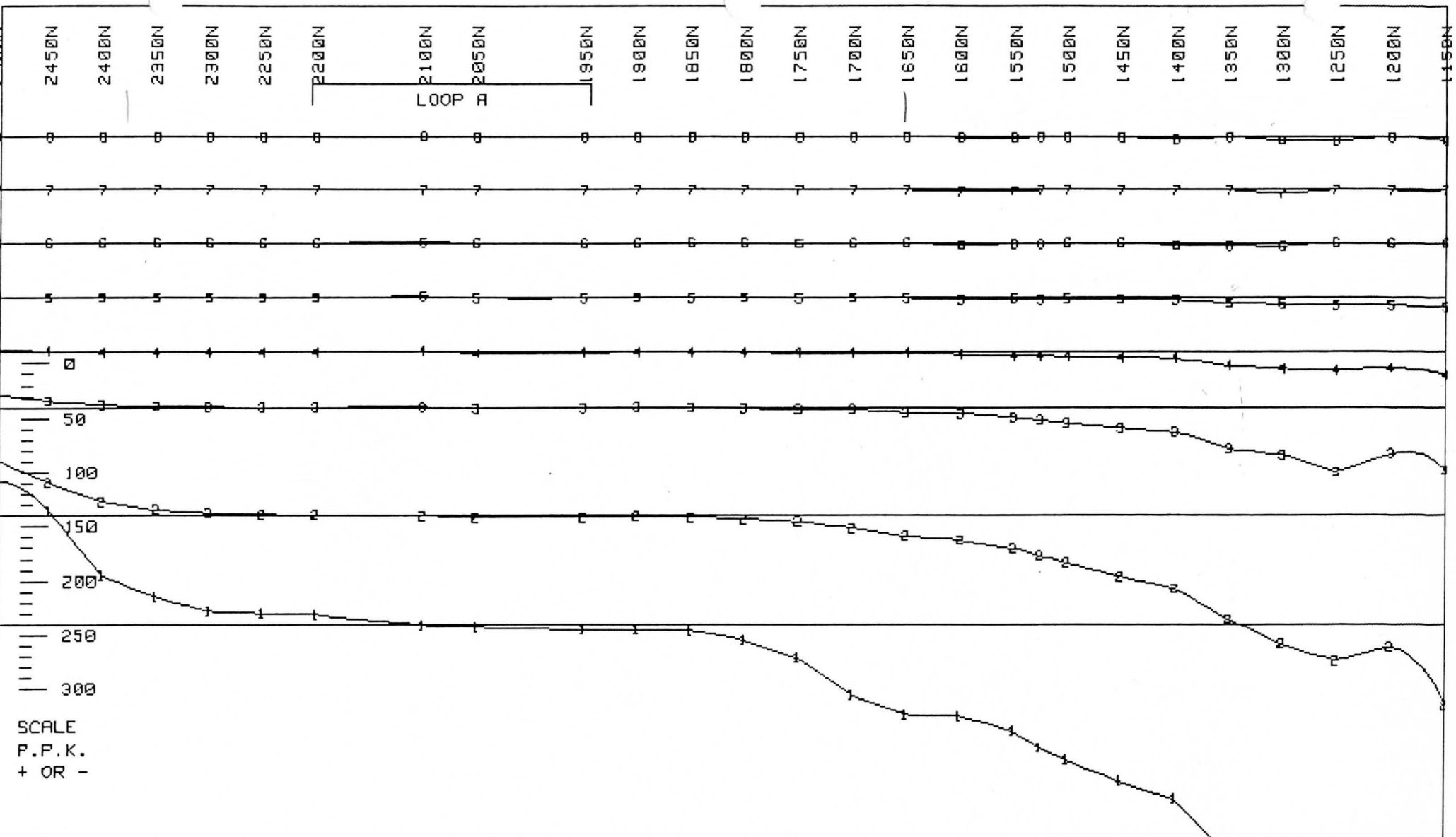
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



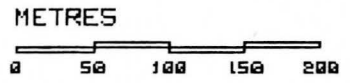
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4700E LOOP A

DATE: JUNE/83 FIG.: 45



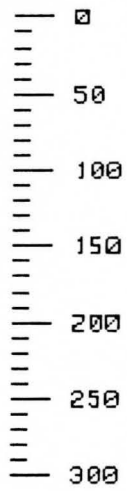
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4700E LOOP A

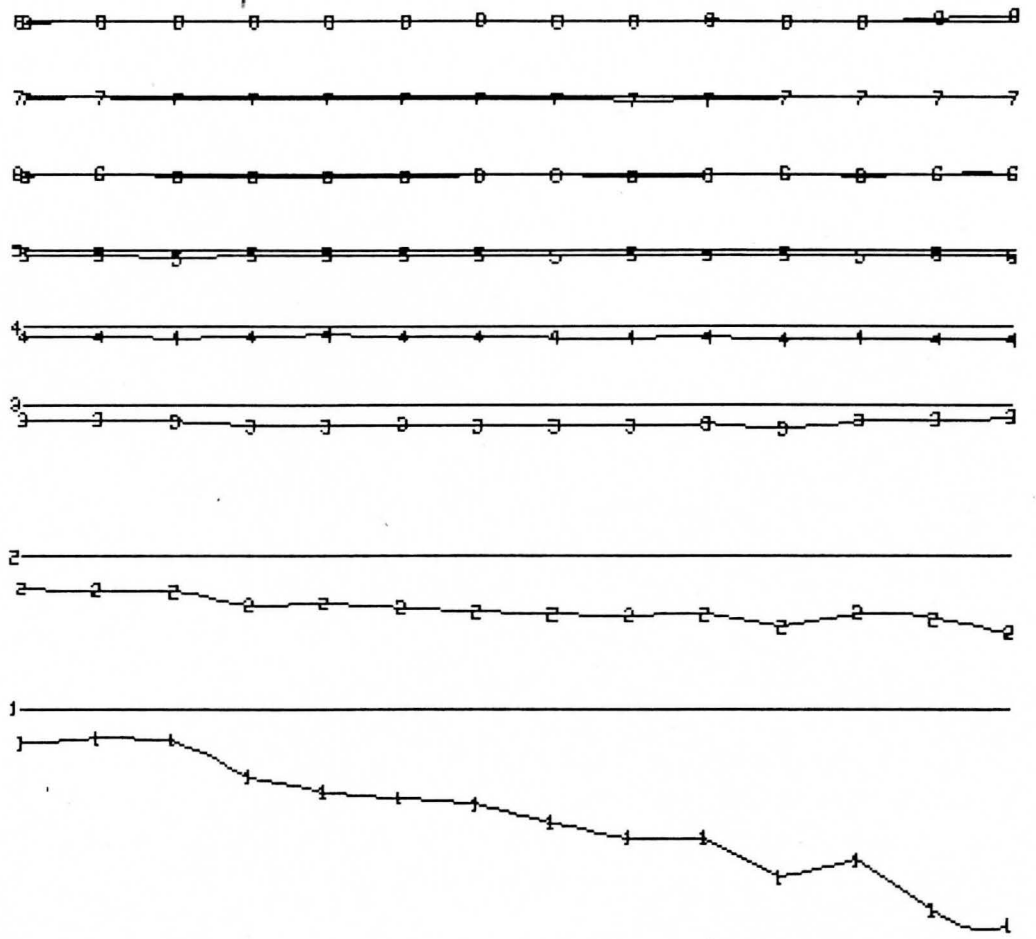
DATE: JUNE/83 FIG.: 46



SCALE
P.P.K.
+ OR -

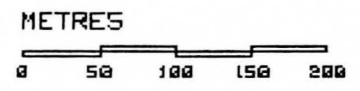
1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B



GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

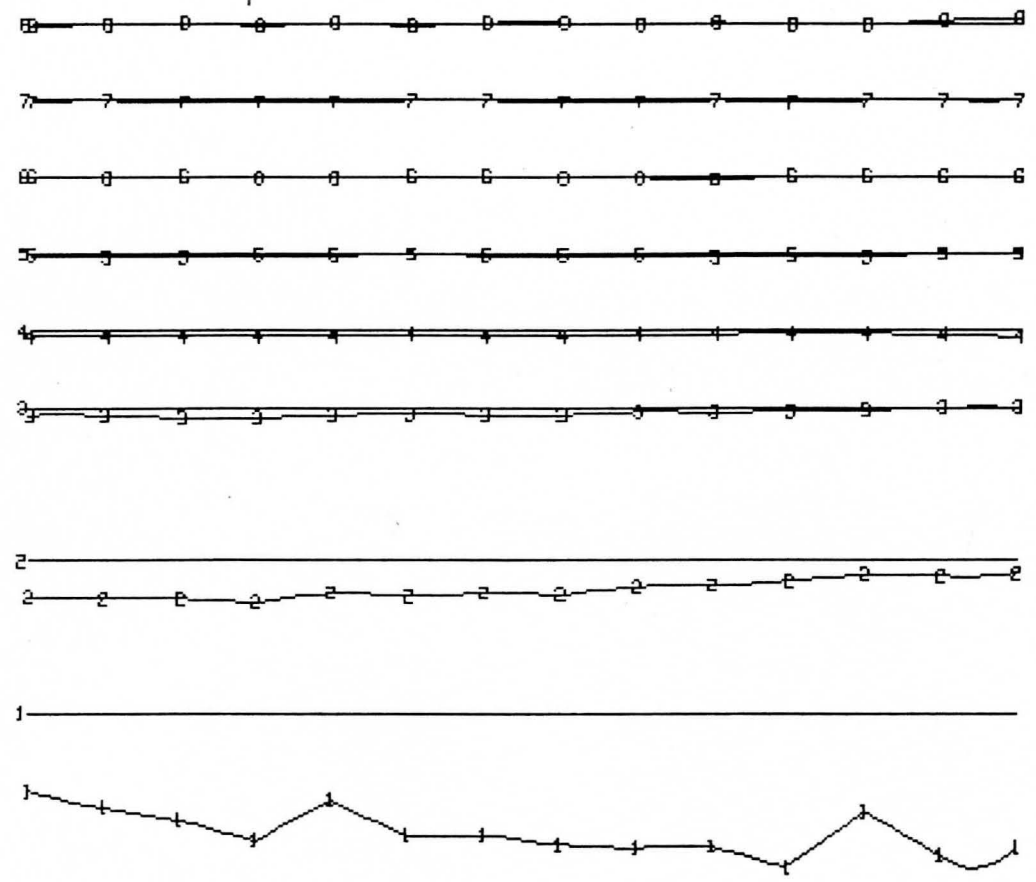


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4700E LOOP B

DATE: JUNE/83 FIG.: 47

1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B

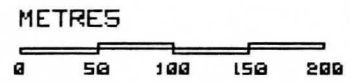


0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

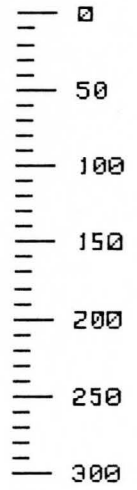
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G-(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

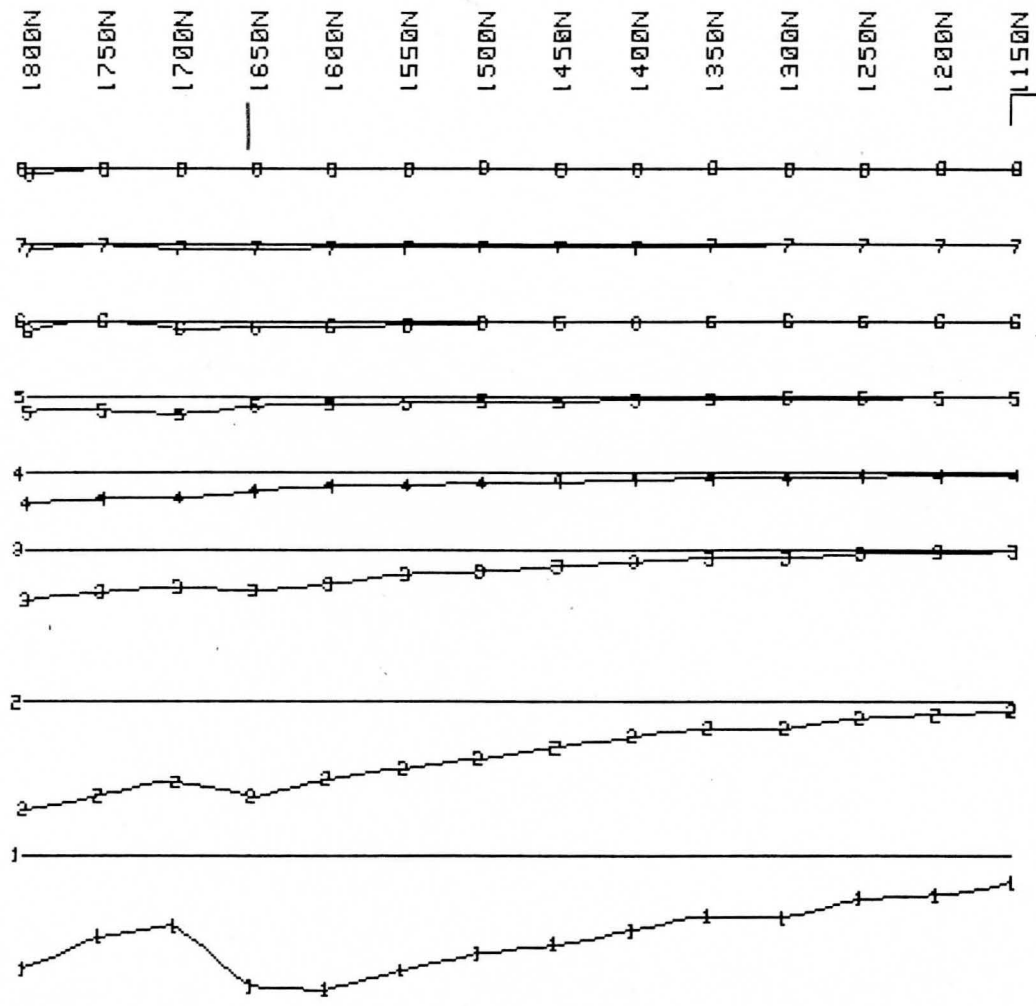


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 1700E LOOP B

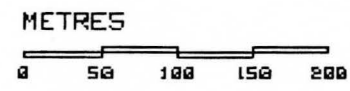
DATE: JUNE/83 FIG.: 48



SCALE
P.P.K.
+ OR -



PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



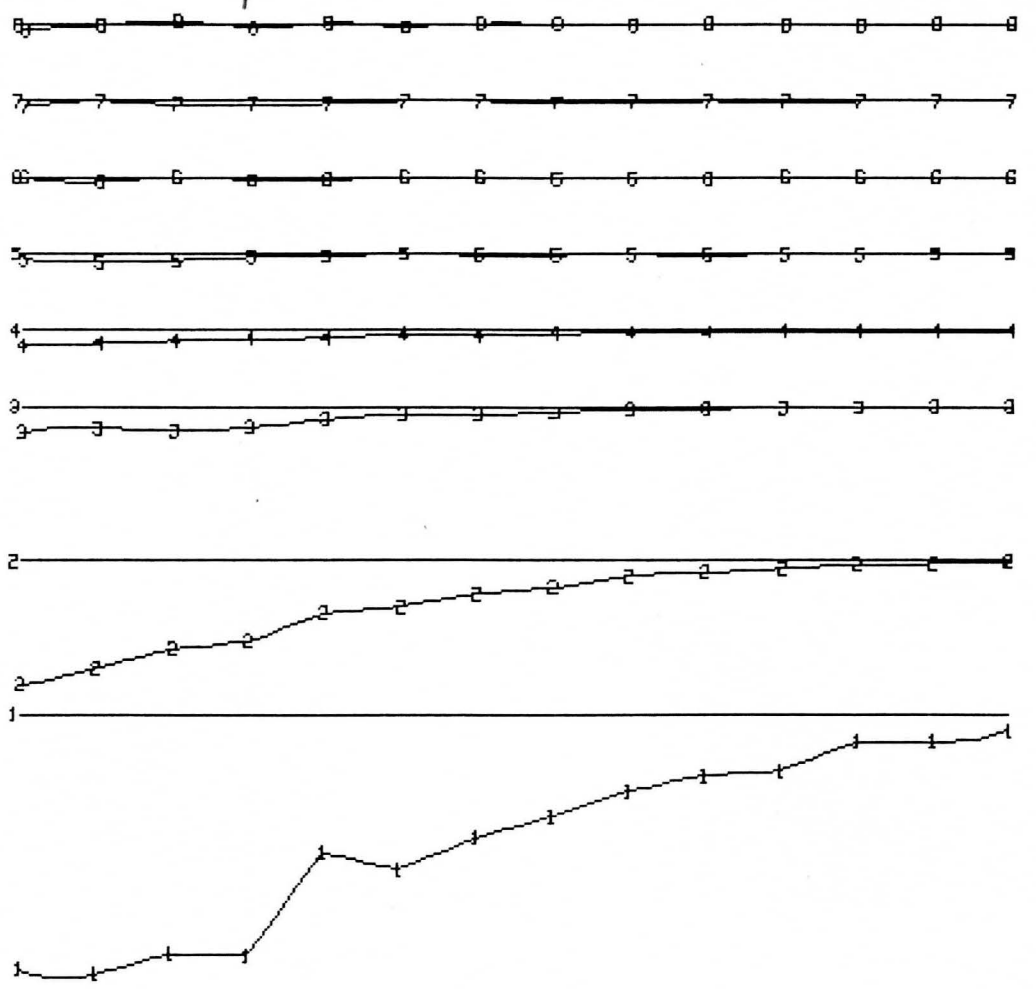
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4700E LOOP B

DATE: JUNE/83 FIG.: 49

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N 1200N 1150N

LOOP B

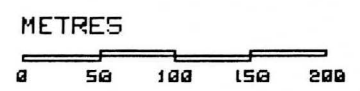


0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

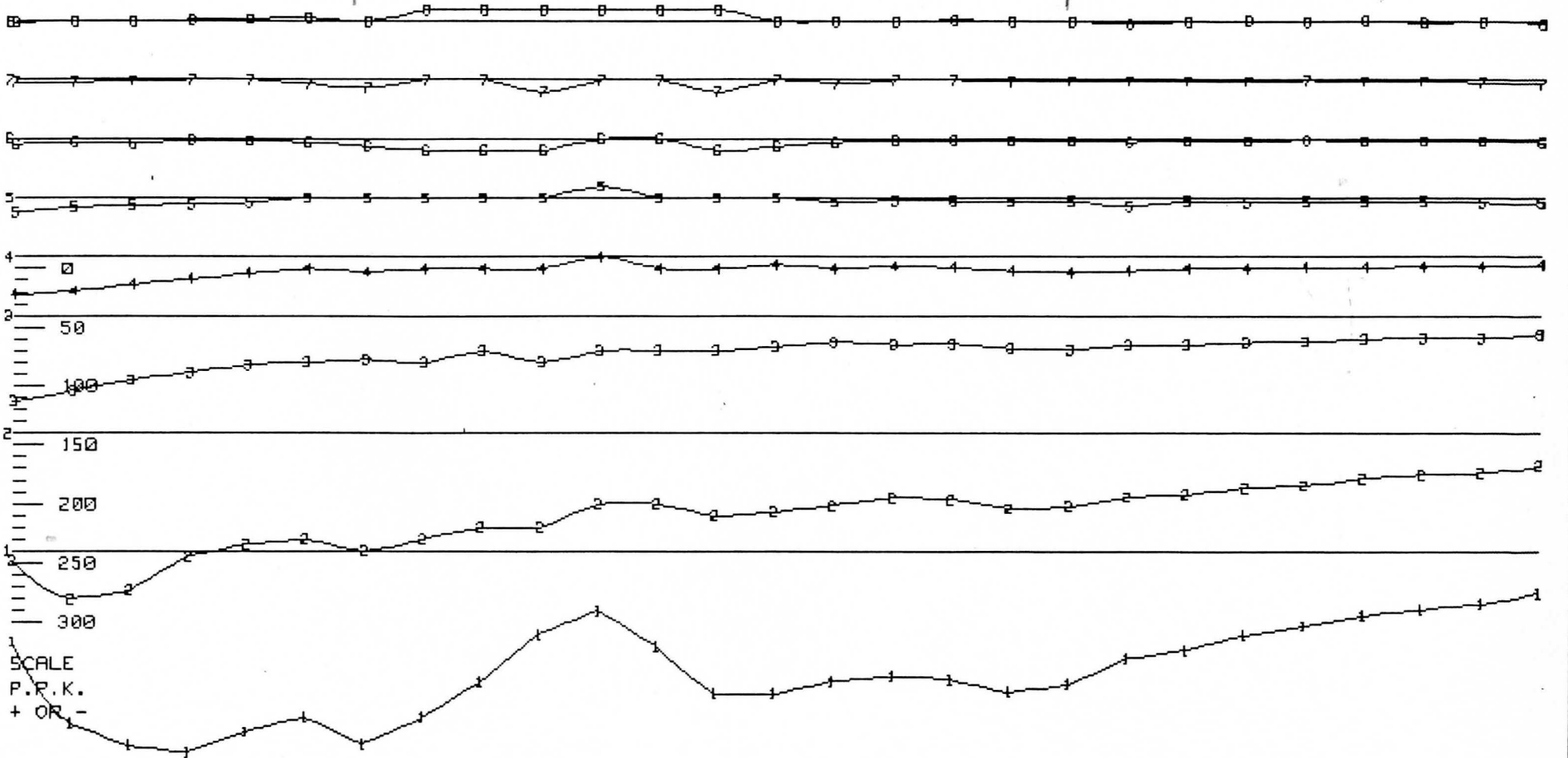


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4700E LOOP B

DATE: JUNE/83 FIG.: 50

2550N 2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N 1400N 1350N 1300N 1250N

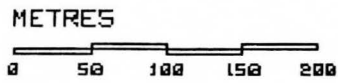
LOOP A



SCALE
P.P.K.
+ OR -

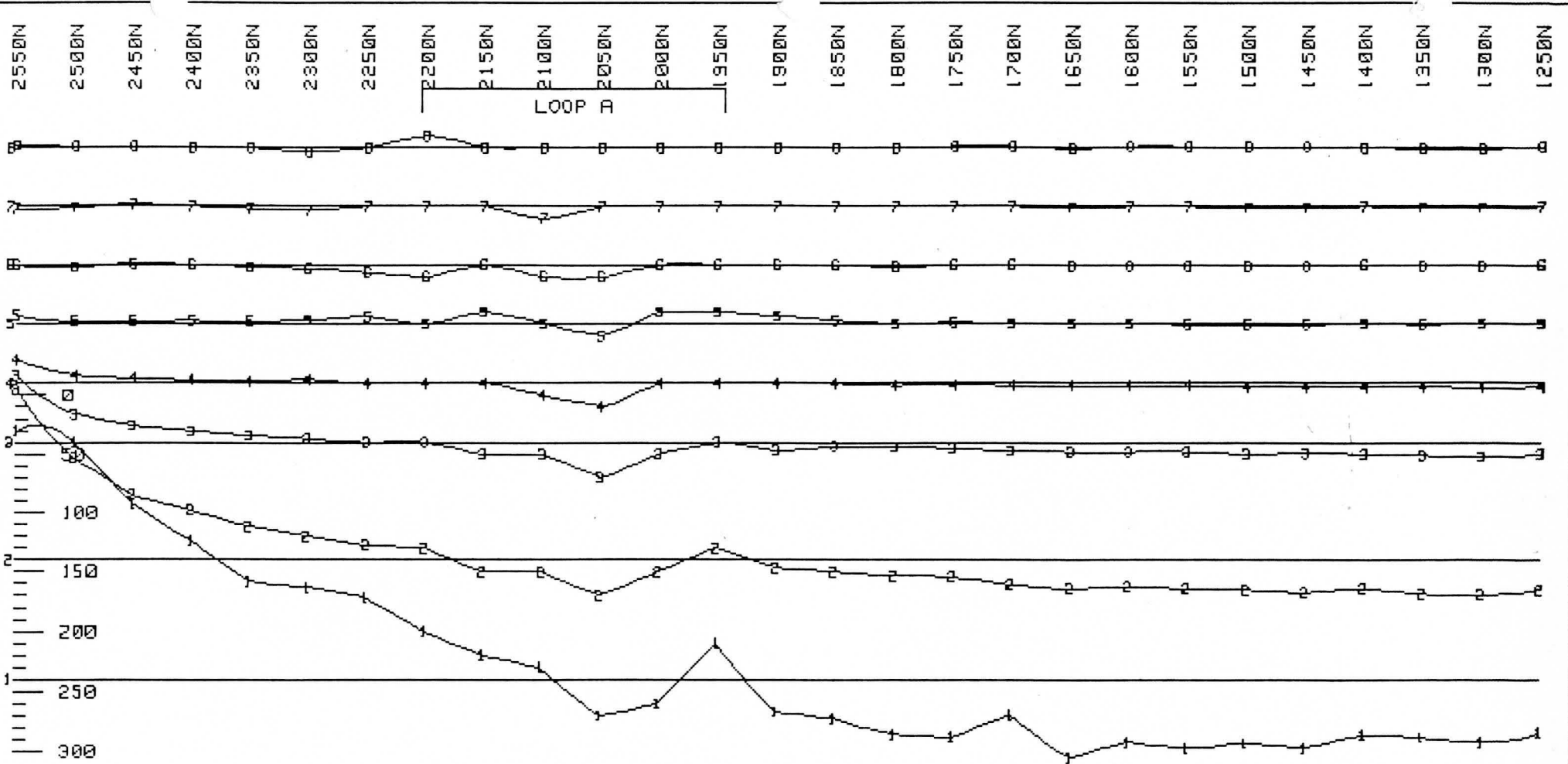
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 1900E LOOP A

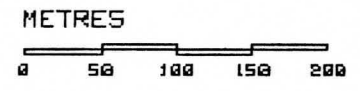
DATE: JUNE/83 FIG.: 51



SCALE
P.P.K.
+ OR -

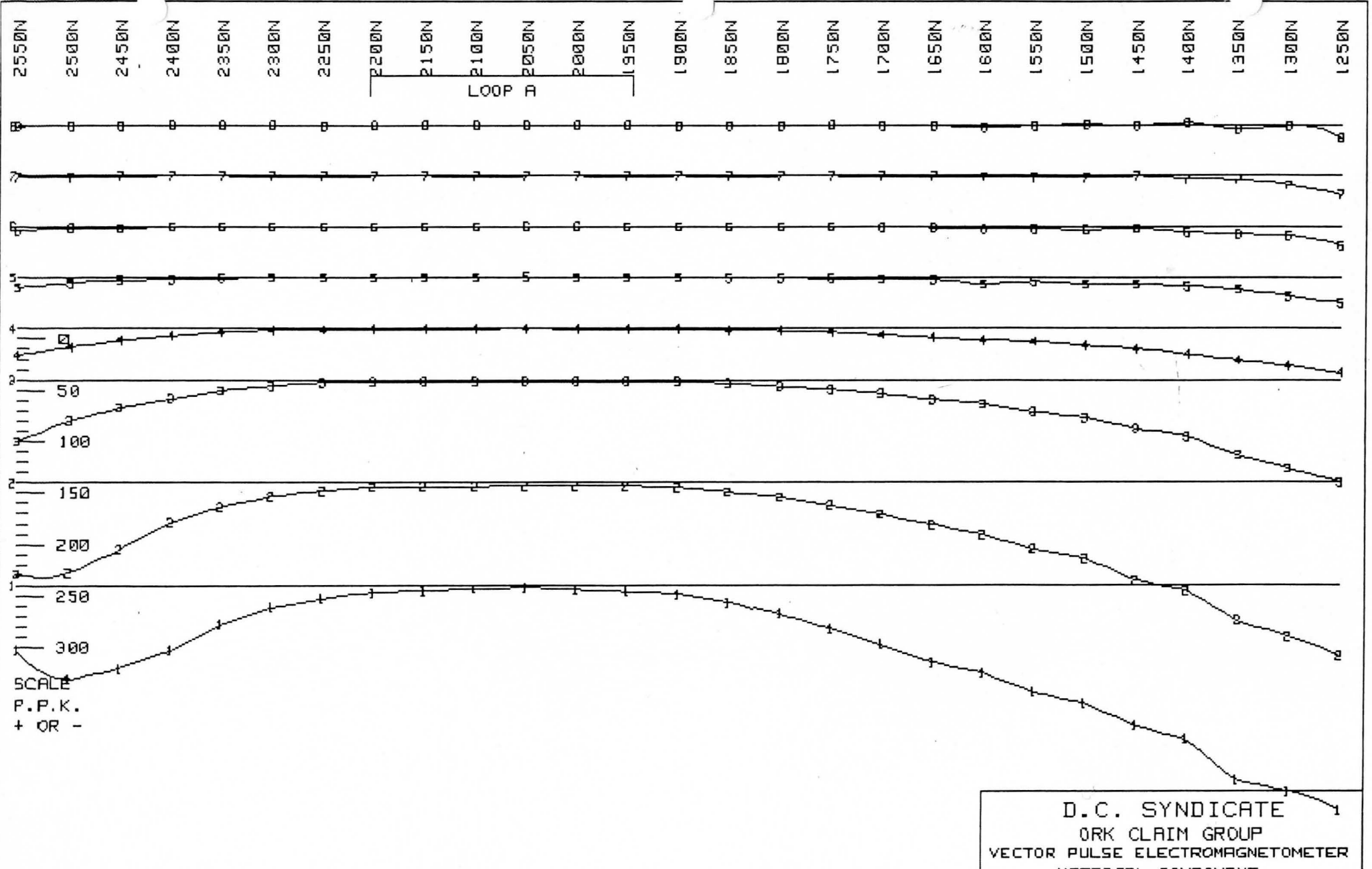
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



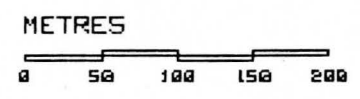
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 1800E LOOP A

DATE: JUNE/83 FIG.: 52



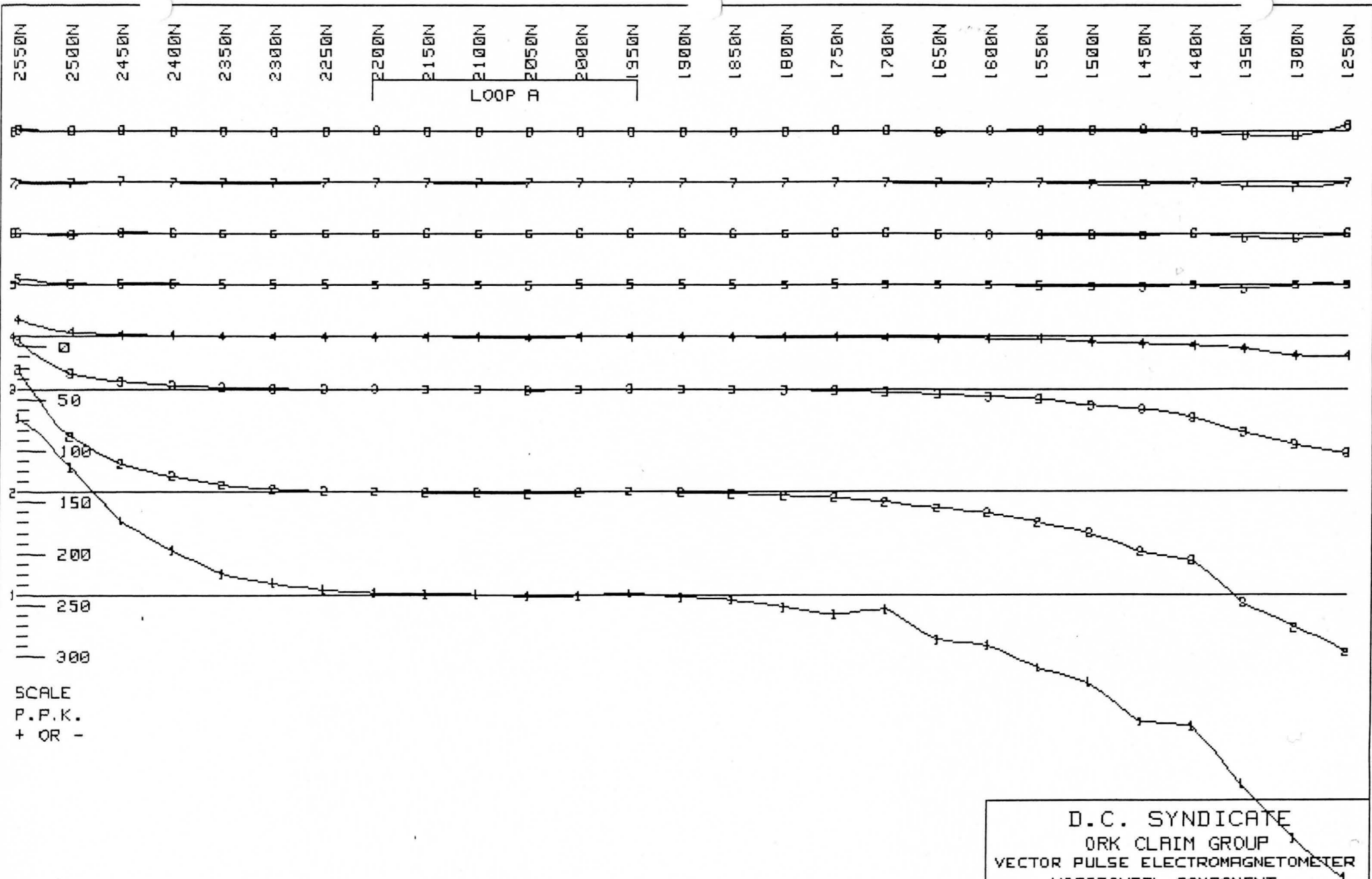
GLEN E. WHITE
 GEOPHYSICAL CONSULTING
 & SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
 NUMBER IN LINE-CHANNEL NUMBER
 INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
 ORK CLAIM GROUP
 VECTOR PULSE ELECTROMAGNETOMETER
 VERTICAL COMPONENT
 LINE 400BE LOOP A

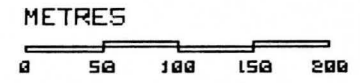
DATE: JUNE/83 FIG.: 53



SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

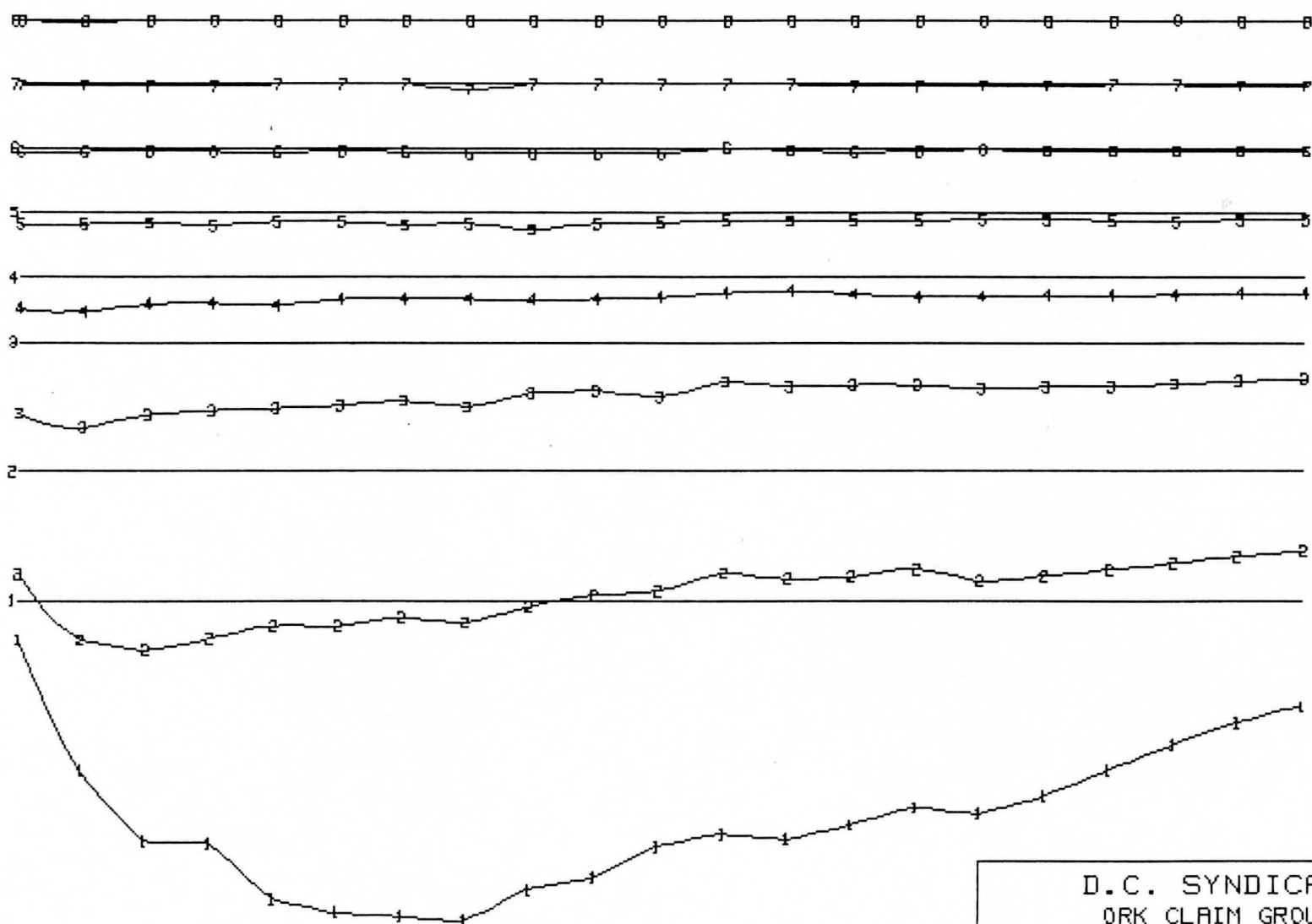


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4000E LOOP A

DATE: JUNE/83 FIG.: 54

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N

LOOP A



0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

METRES
0 50 100 150 200

D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4900E LOOP A

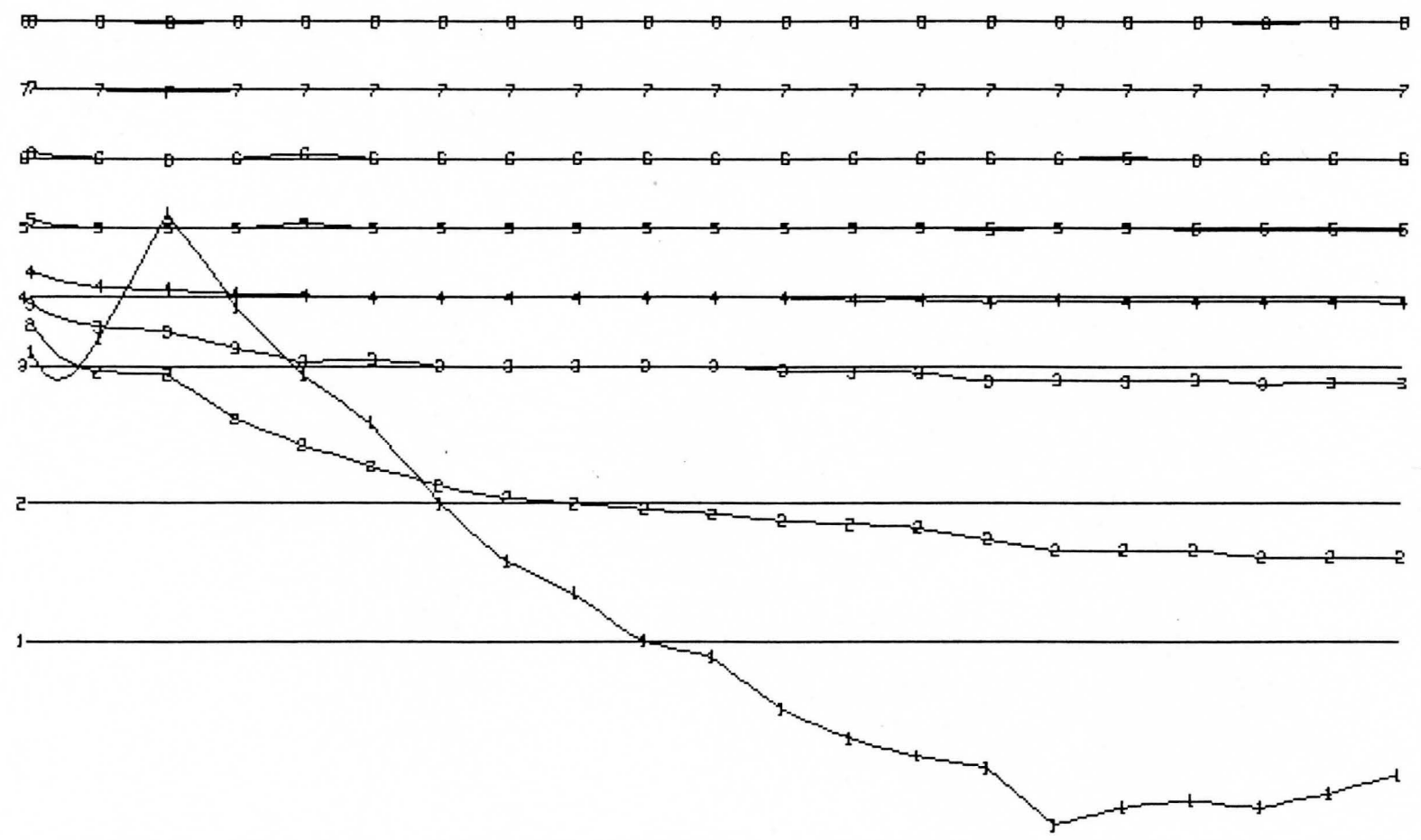
DATE: JUNE/83 FIG.: 55

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N

LOOP A

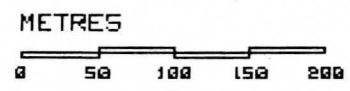
0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -



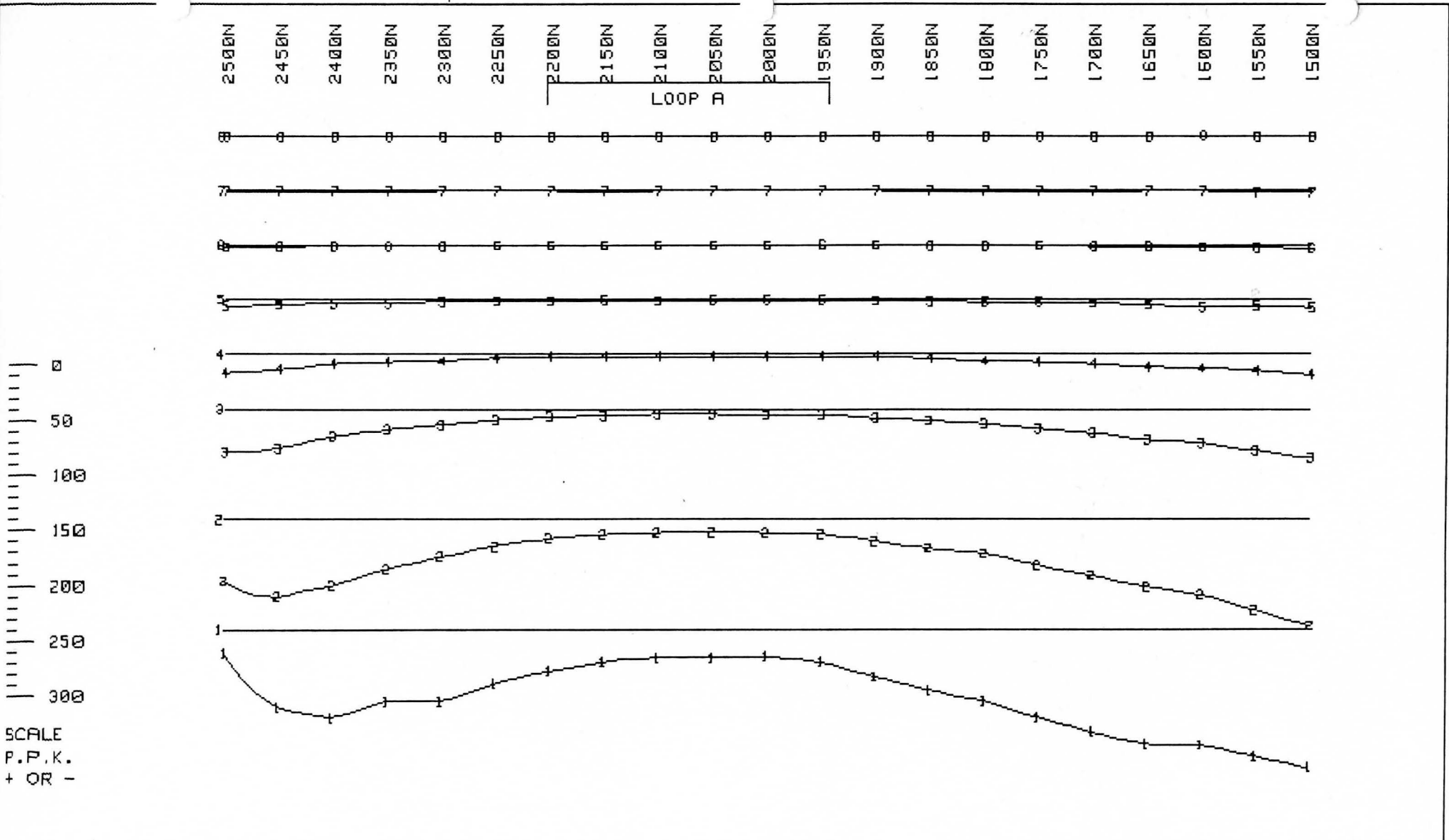
GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

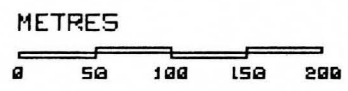


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4900E LOOP A

DATE: JUNE/83 FIG.: 56



SCALE
P.P.K.
+ OR -



PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

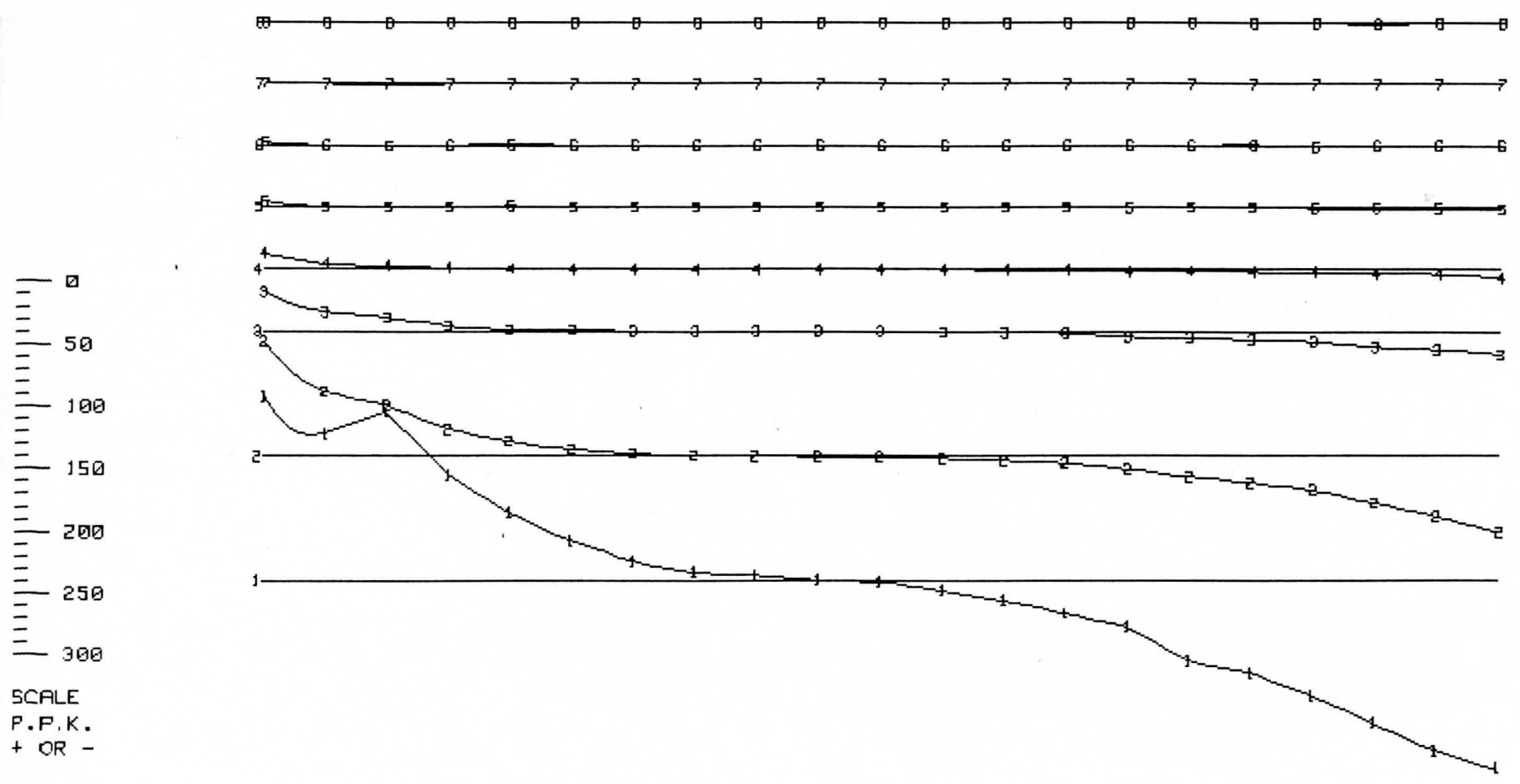
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 4900E LOOP A

DATE: JUNE/83 FIG.: 57

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N

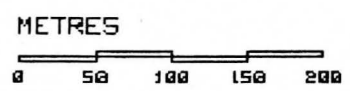
LOOP A



SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

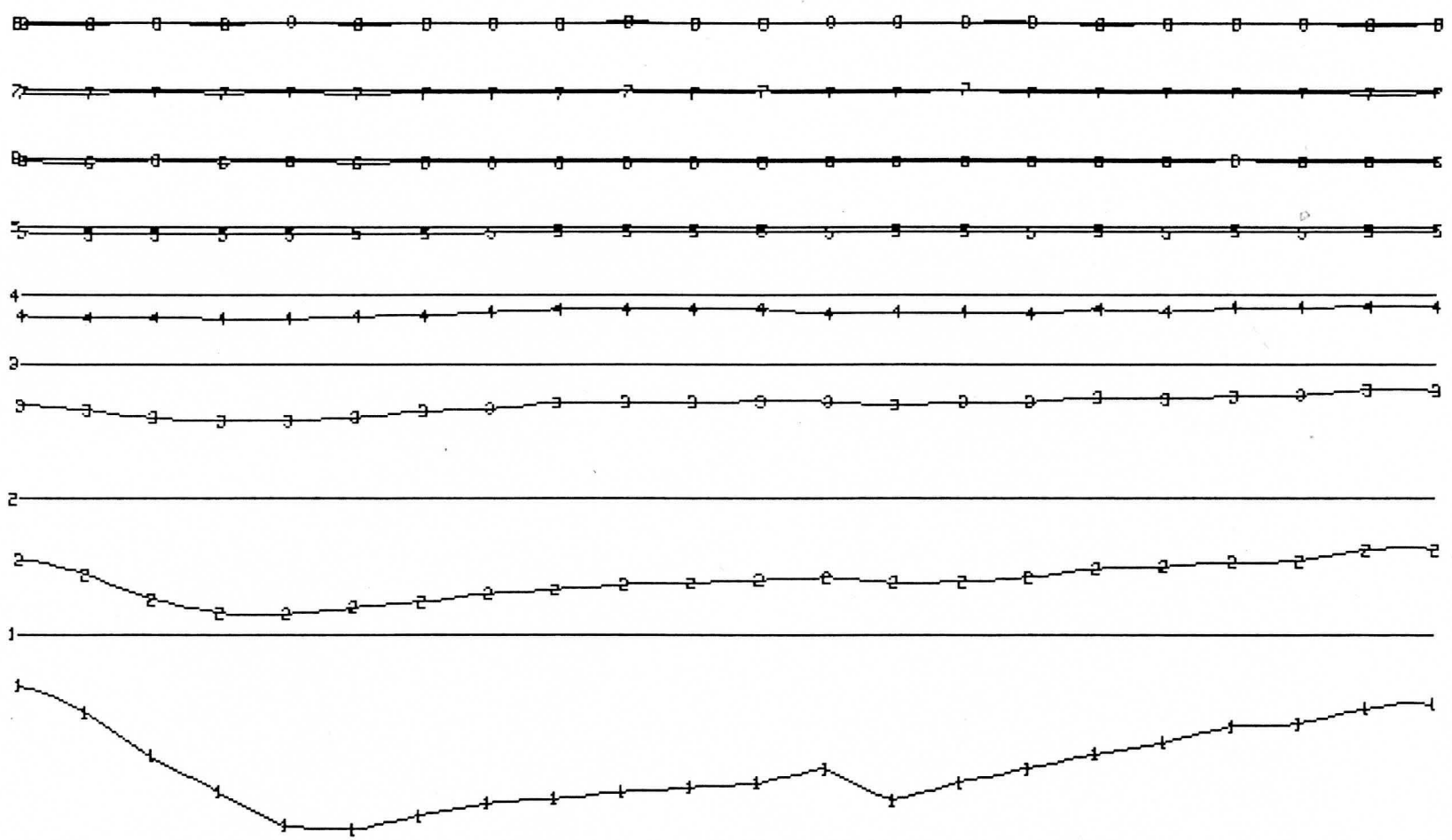


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 4900E LOOP A

DATE: JUNE/83 FIG.: 58

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N

LOOP A

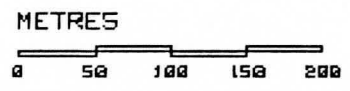


0
50
100
150
200
250
300

SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

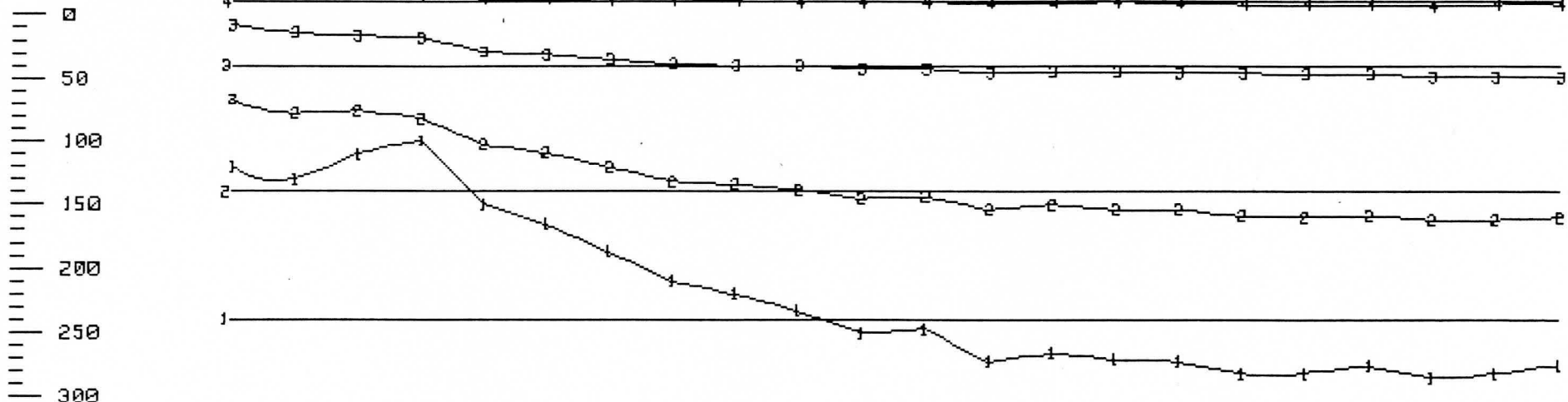


D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 5000E LOOP A

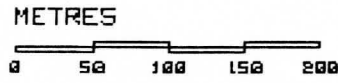
DATE: JUNE/83 FIG.: 59

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N

LOOP A



SCALE
P.P.K.
+ OR -



CONSTANT GAIN DATA, G=(100%)
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.

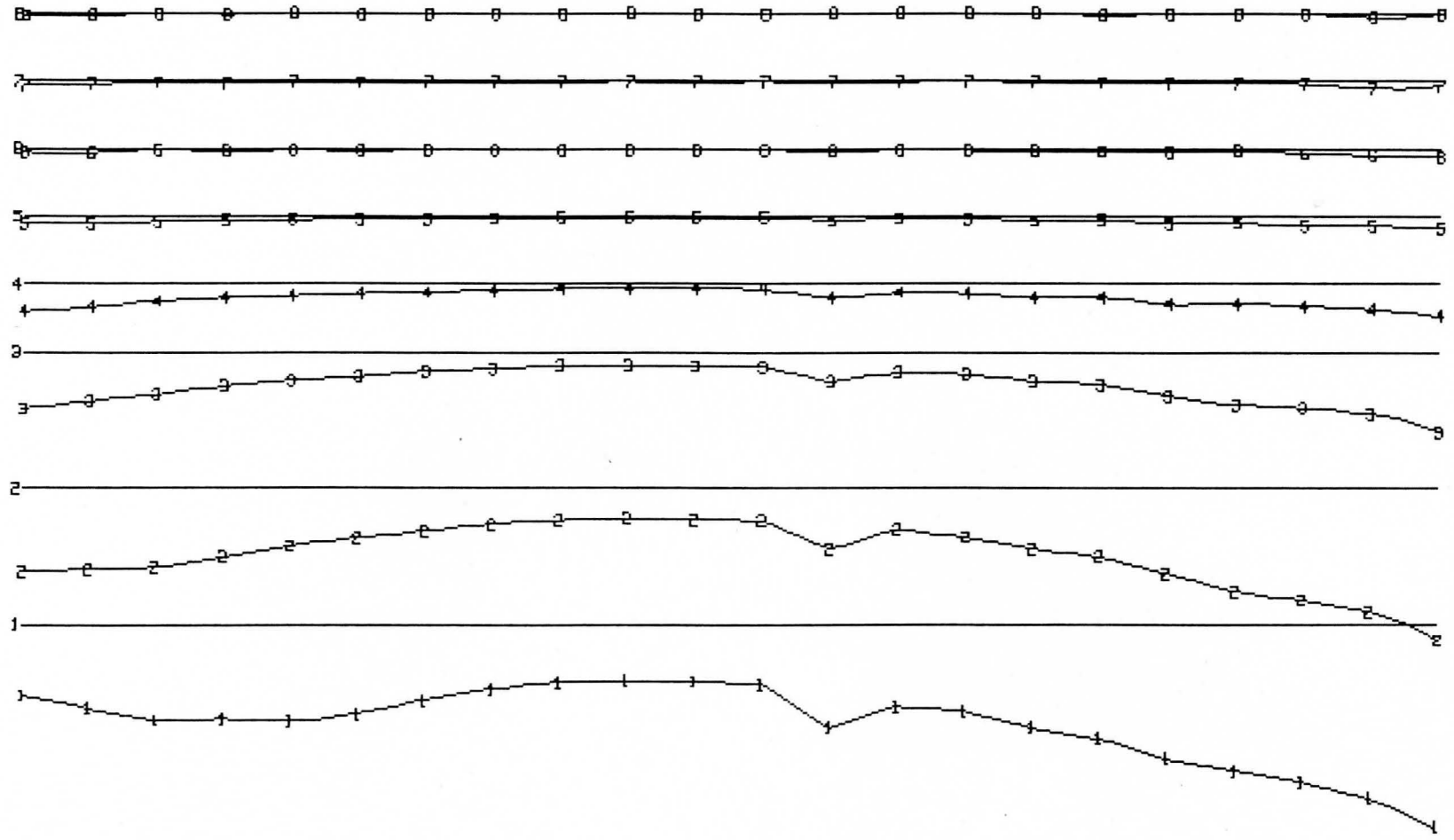
GLEN E. WHITE
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& SERVICES LTD.

D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 500BE LOOP A

DATE: JUNE/83 FIG.: 60

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N

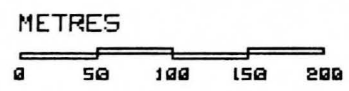
LOOP A



SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



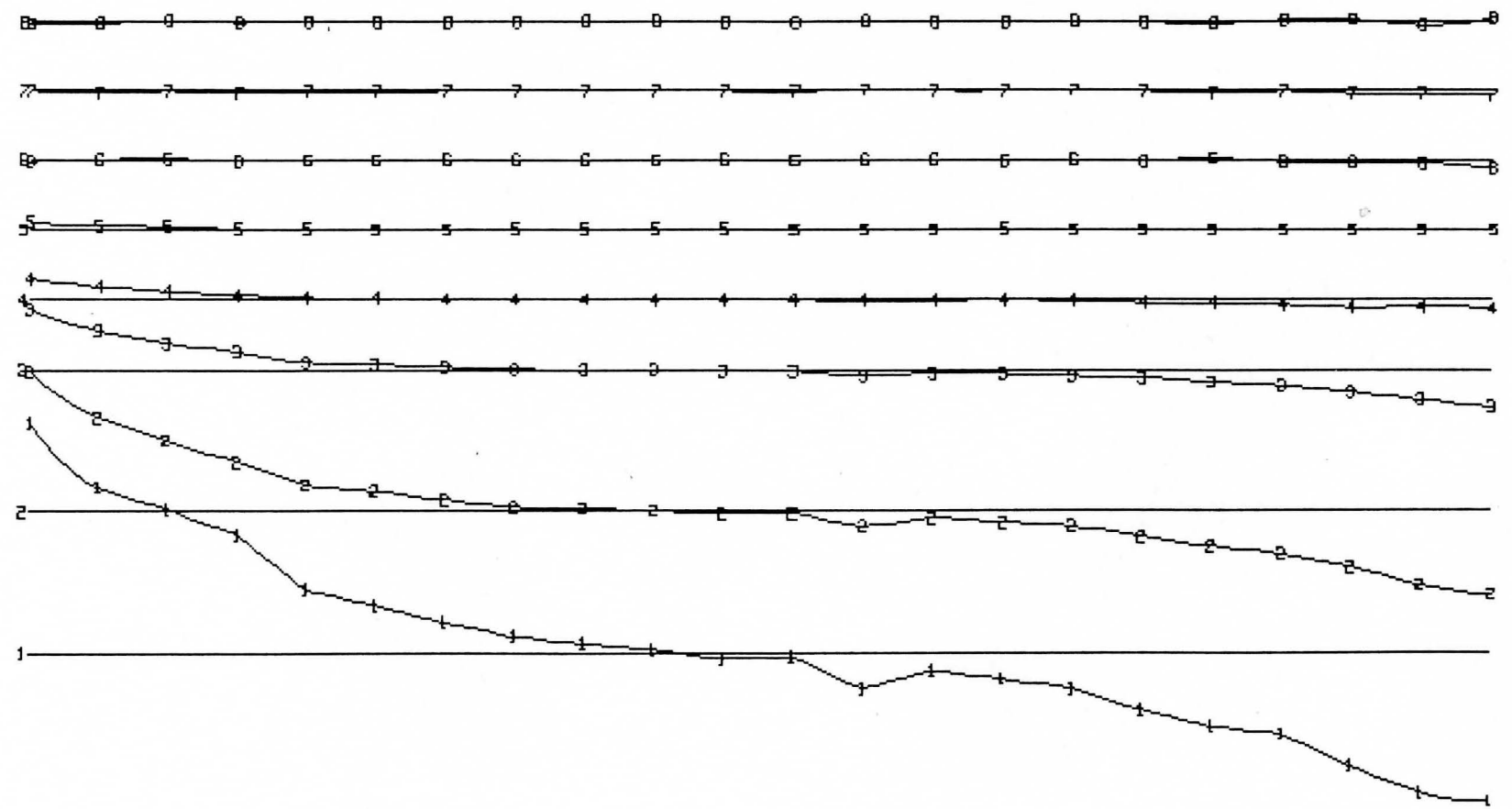
D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
VERTICAL COMPONENT
LINE 5000E LOOP A

DATE: JUNE/83 FIG.: 61

2500N 2450N 2400N 2350N 2300N 2250N 2200N 2150N 2100N 2050N 2000N 1950N 1900N 1850N 1800N 1750N 1700N 1650N 1600N 1550N 1500N 1450N

LOOP A

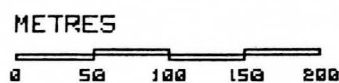
0
50
100
150
200
250
300



SCALE
P.P.K.
+ OR -

GLEN E. WHITE
GEOPHYSICAL CONSULTING
& SERVICES LTD.

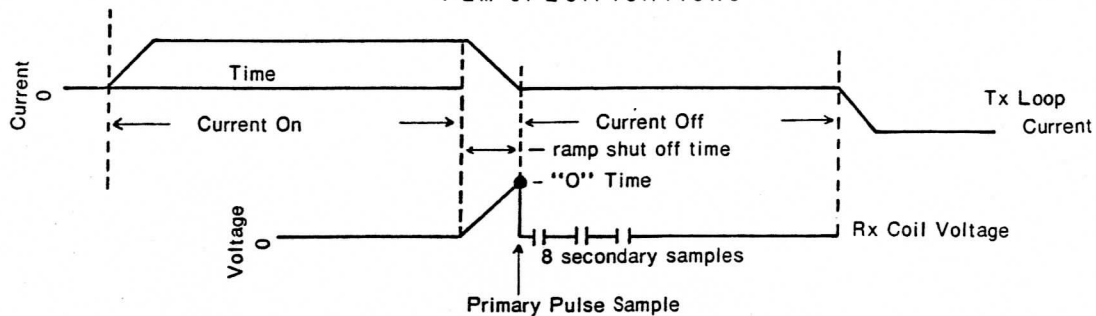
PRIMARY FIELD NORMALIZED DATA
NUMBER IN LINE-CHANNEL NUMBER
INSTRUMENT: CRONE P.E.M.



D.C. SYNDICATE
ORK CLAIM GROUP
VECTOR PULSE ELECTROMAGNETOMETER
HORIZONTAL COMPONENT
LINE 500BE LOOP A

DATE: JUNE/83 FIG.: 62

PEM SPECIFICATIONS



Current Off time: 9.4 ms
 Current on time: 10.8 ms
 Current shut off (ramp) time: 1.4 ms
 Sample times (zero to centre of sample): .15ms, .45ms, .85ms, 1.45ms, 2.45ms, 3.75ms, 5.85ms, 8.85ms.

Sample width: 100 μ s
 Zero time set at drop off point of primary pulse

TRANSMITTER – Transmitter power and loop size may be increased to obtain increased penetration. Weight, portability and power capabilities of the control instrument are the limiting factors. The standard transmitter is designed to be carried by two men.

Loop diameter	– minimum 4 meters (13 feet)
Loop current	– 15 to 20 amps
Loop applied voltage	– 24 volts
Loop output	– minimum 4500 amps x meter ²
Loop weight	– 11.8 kilos (26 lb)
Control unit weight	– 10 kilos (22 lb)
Control unit dimensions	– 20.5cm x 25.5cm x 36.5cm (8" x 10" x 14.5")
Battery supply weight	– 18.1 kilos (40 lb)
Battery supply	– 2 of 12 volt, 14 to 20 ampere hour
Timing control by radio synchronization	

RECEIVER

- Receive coil dimensions: 55cm x 15cm (22" x 6")
- Receive coil weight: 4.5 kilos (10 lb)
- Preamplifier in coil
- Preamplifier batteries: 2 of 9 volt
- Receive coil tripod mounted
- Receiver measuring instrument dimensions: 28cm x 18cm x 21.5cm (11" x 7" x 9")
- Receiver measuring instrument weight: 6.3 kilos (14 lb)
- Timing control by radio synchronization
- Primary sample width: 100 μ s
- Primary sample can be swept through primary pulse by means of a time calibrated pot
- Zero time set at primary pulse drop-off
- Secondary samples (eight of them) width: 100 μ s
- Secondary samples time (zero to middle of sample): (1) .15ms (2) .45ms (3) .85ms (4) 1.45ms (5) 2.45ms (6) 3.75ms (7) 5.85ms (8) 8.85ms
- Automatic sampling for 5 seconds then all samples automatically stored
- Sample read out by means of meter
- Continuous sampling possible by switching function switch to "Continuous"
- Noise can be monitored by switching function switch to "Noise"
- Battery supply: 24 volt rechargeable, 2 of 12 volt Gel GC 12-15

VECTOR PULSE ELECTROMAGNETOMETER SURVEY

The Crone pulse electromagnetometer system is a time domain E.M. system which can be used in the standard horizontal loop mode, fixed source mode or in a downhole mode.

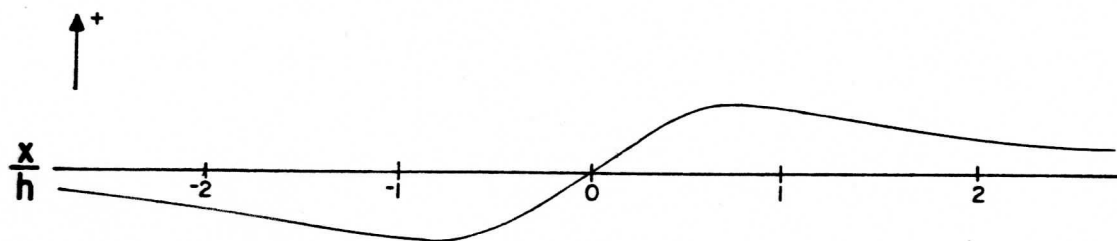
The primary field for the standard horizontal loop method is produced by a portable transmitter loop of 6, 10, or 50 metres diameter. A depth of search of approximately 75% of separation is obtainable due to the high sensitivity of the receiver system. As measurements of the time derivative of the secondary field occur during primary field off time the method is relatively free from geometrical restrictions. Interpretation is accomplished with the aid of Slingram horizontal loop curves.

The primary field for the 2000 watt fixed source system is provided by a 500 by 1000 metre transmitter loop. A 150 by 150 metre loop is utilized with the 500 watt system. The time derivative of the secondary field resulting from the presence of a conductor is sampled at eight windows on the decay curve, during primary field off time. These eight channels of secondary field information are equivalent to a wide spectrum of frequencies from approximately 2 KHz to 16 Hz thus allowing conductor character and strength determination. The vertical and horizontal components are obtained at each station on the traverse, using the convention of vertical component positive upwards and horizontal component positive away from the transmitter loop. In areas of high surficial conductivity the primary field on time of 10.8 ms, and the receiver delay times may be doubled in order to obtain late time information. Time synchronization between transmitter and receiver is by radio or cable link.

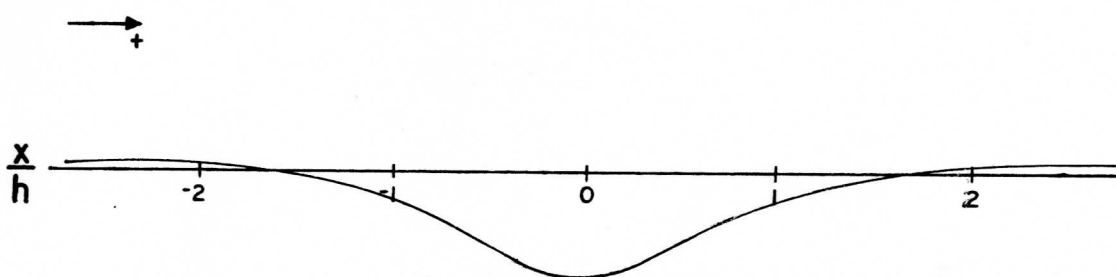
The apparent primary field information is recorded at each occupied station. Normalization of the data with respect to instrument gain produces a constant gain plot. In this format a vertical plate-like conductor anomaly would be symmetric. Normalization with respect to the apparent primary field at each station provides a constant primary field plot that is useful in recognizing conductors present in the far primary field and in correlating anomaly amplitudes from line to line. The anomalies lose symmetry in this format but the condition of anomaly amplitude dependence on distance from the loop is relaxed. In the case of stacked profiles on plan maps it is practical to use the advantages of both of these methods and plot a constant gain profile normalized to the apparent primary field at a station near the conductor axis. This facilitates the correlation of conductors from line to line at varying distance in coverage from several transmitter loops.

The vector focus method of data display is useful in some line source conductor conditions. A resultant vector can be obtained by the vector addition of the vertical and horizontal components of the primary field. A perpendicular to this resultant indicates the apparent eddy current position.

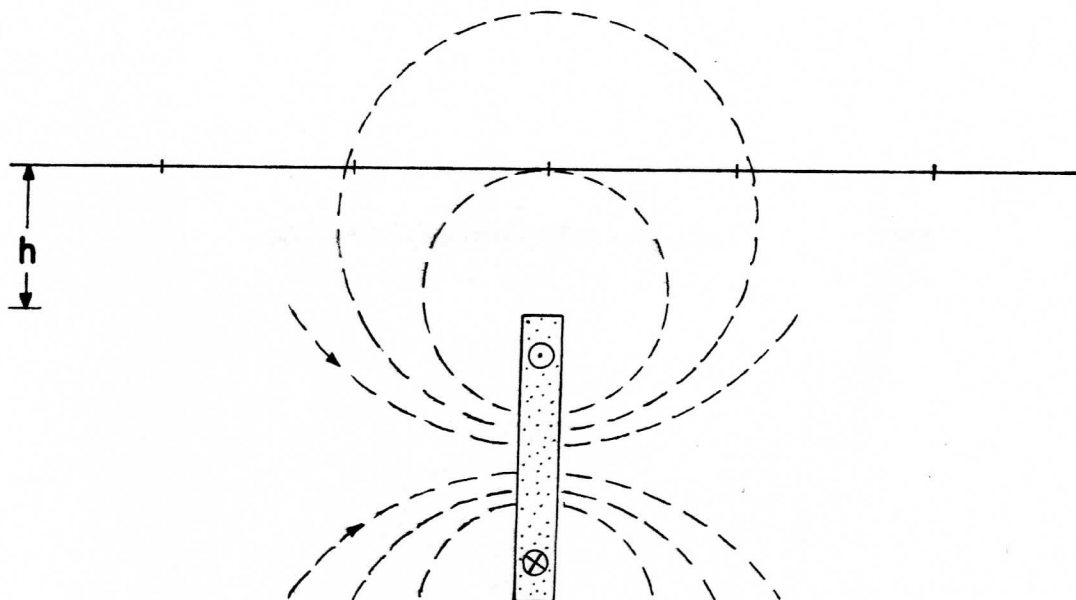
VERTICAL COMPONENT



HORIZONTAL COMPONENT

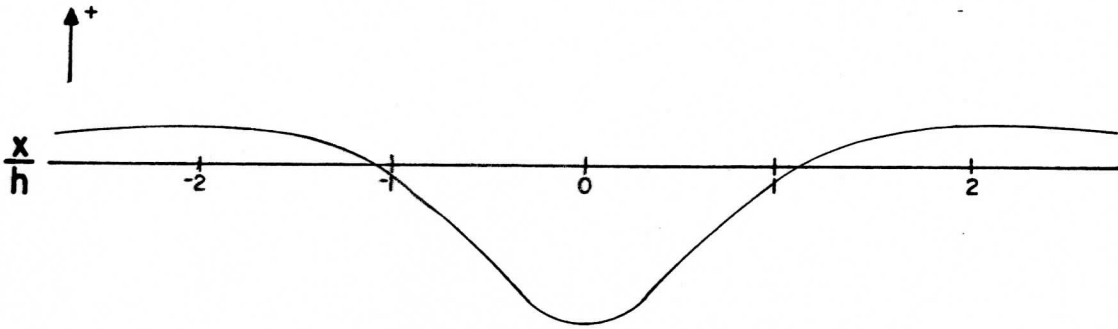


VPEM ANOMALY SHAPE

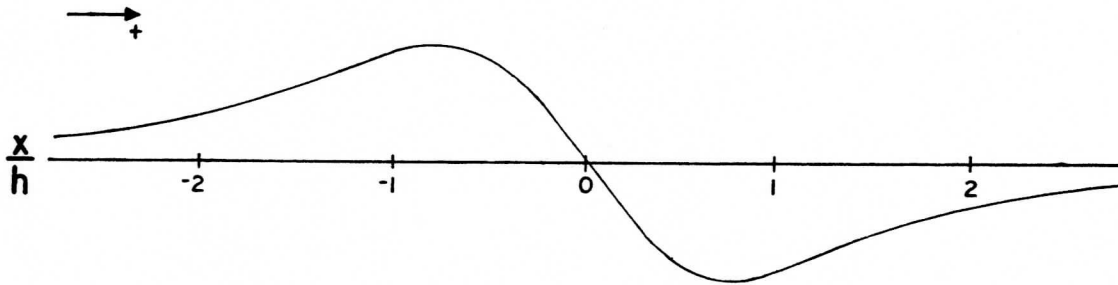


STEEPLY DIPPING TABULAR BODY

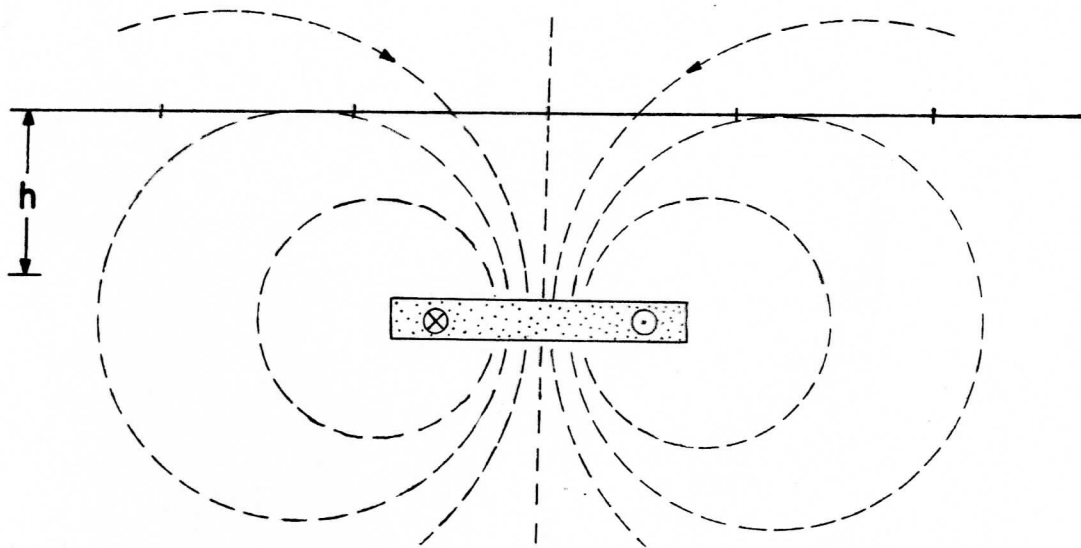
VERTICAL COMPONENT



HORIZONTAL COMPONENT

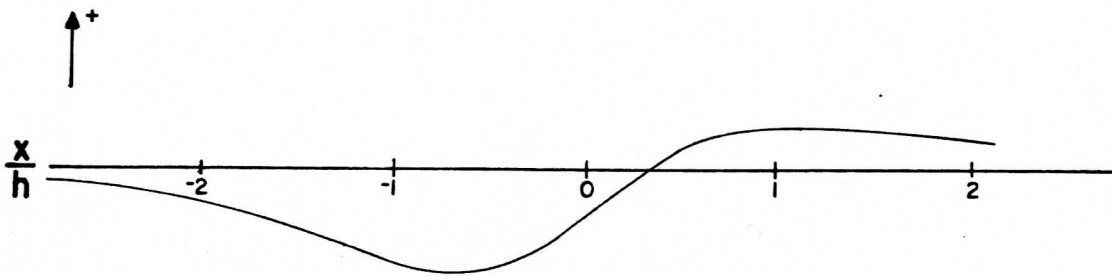


VPEM ANOMALY SHAPE

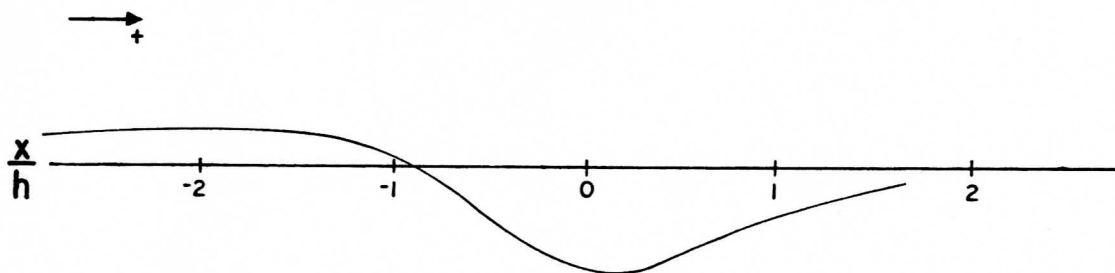


FLAT LYING TABULAR BODY

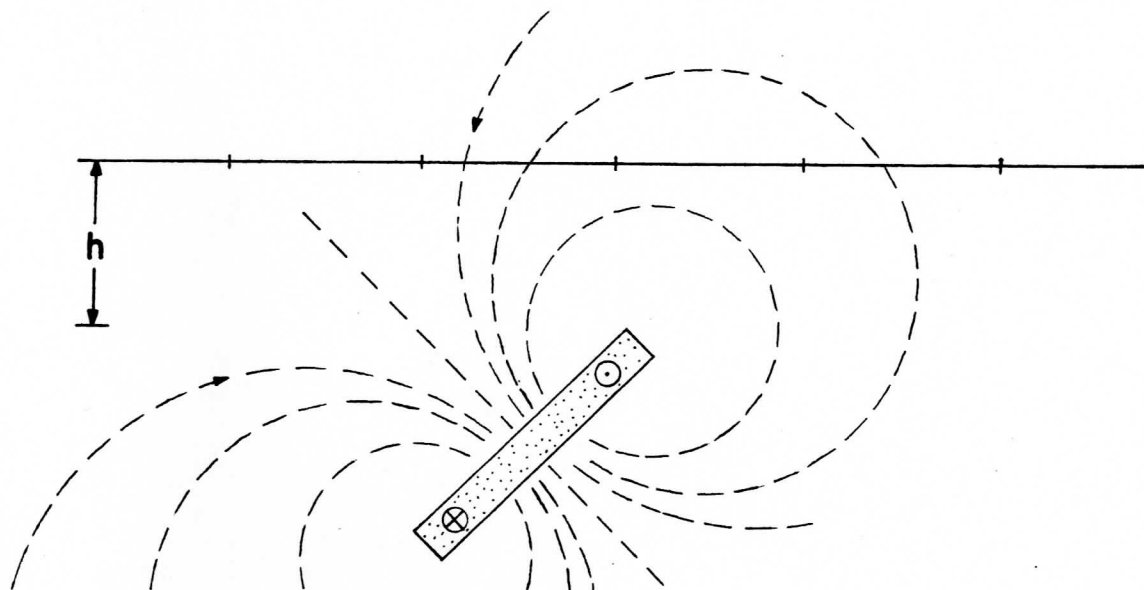
VERTICAL COMPONENT



HORIZONTAL COMPONENT



VPEM ANOMALY SHAPE



INCLINED TABULAR BODY

INSTRUMENT SPECIFICATIONS

INDUCED POLARIZATION SYSTEM

A. Instruments

- (a) Type - pulse
- (b) Make - Hunttec
- (c) Serial No. - transmitter #107 - receiver #3016

B. Specifications

- (a) Size and Power - 2.5 KW
- (b) Sensitivity - 300 x 10.5 volts
- (c) Power Sources - 2.5 KW 400 cycle - three-phase generator
- (d) Power - 8 H.P. Briggs and Stratton @ 3000 R.P.M.
- (e) Timing - electronic, remote and direct.
- (f) Readings - (i) amps (ii) volts primary and secondary
- (g) Calculate (i) Resistivity - ohm-meters (ohm-feet)
(ii) Chargeability - milliseconds

C. Survey Procedures

- (a) Method - power supplied to mobile probe along TW 18 stranded wire from stationary set-up
- (b) Configuration - Pole-dipole (three electrode array)
Plot point midway between C_1 and P_1

D. Presentation

- Contour Maps (i) Chargeability - milliseconds
(ii) Resistivity - ohm-meters (ohm-feet)

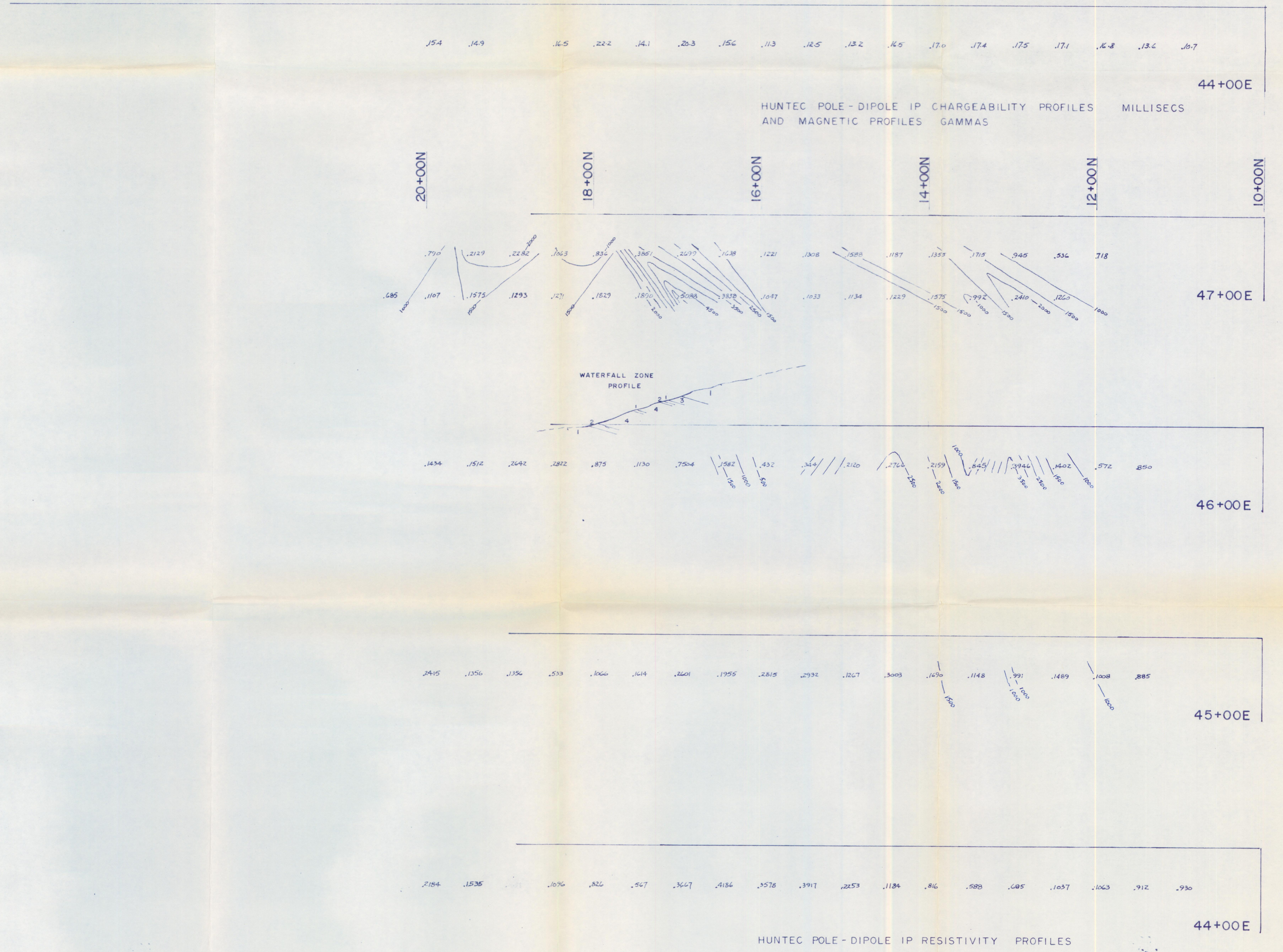
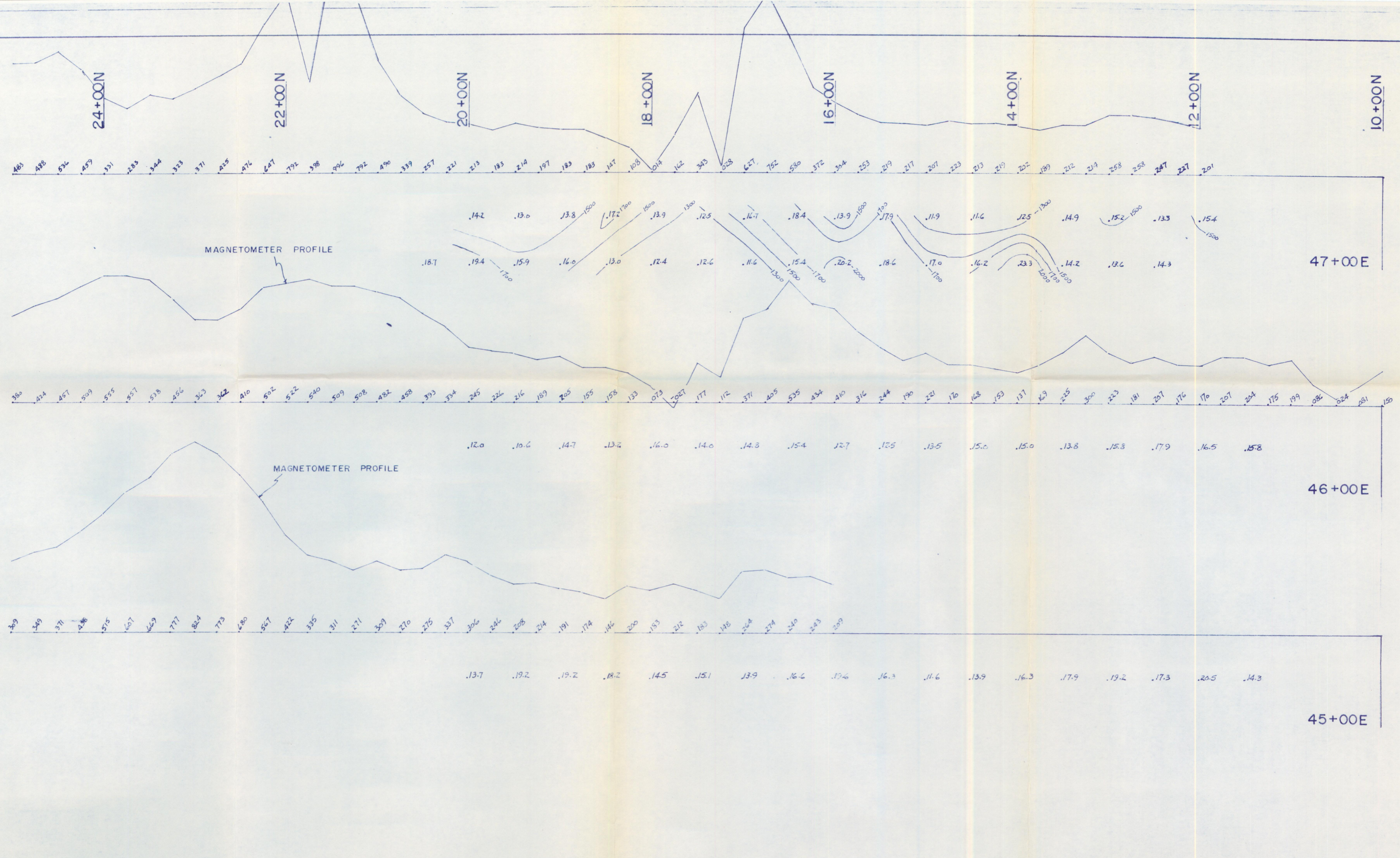
INDUCED POLARIZATION

The equipment used on this survey was the Hunttec pulse-type unit and Mark III receiver. Power was obtained from a Briggs and Stratton motor coupled to a 2.5 KW 400 cycle, three phase generator, providing a maximum of 2.5 KW D.C. to the ground. The cycling rate is 1.5 seconds "current on" and 0.5 seconds "current off", the pulse reversing continuously in polarity. Power was transmitted to the ground through two potential electrodes, P_1 and P_2 , which were deployed in the three electrode array with an "a" spacing of 50 m and separations of $n = 1$ and 2.

The data recorded in the field consists of careful measurements of the current (I) in amperes flowing through electrodes C_1 and C_2 , the primary voltage (V_p) appearing between electrodes P_1 and P_2 during the "current on" part of the cycle. A cycle time of 4 seconds was used with a duty ratio of 2.2 - 1, T_p .20 ms and T_d 60 ms.

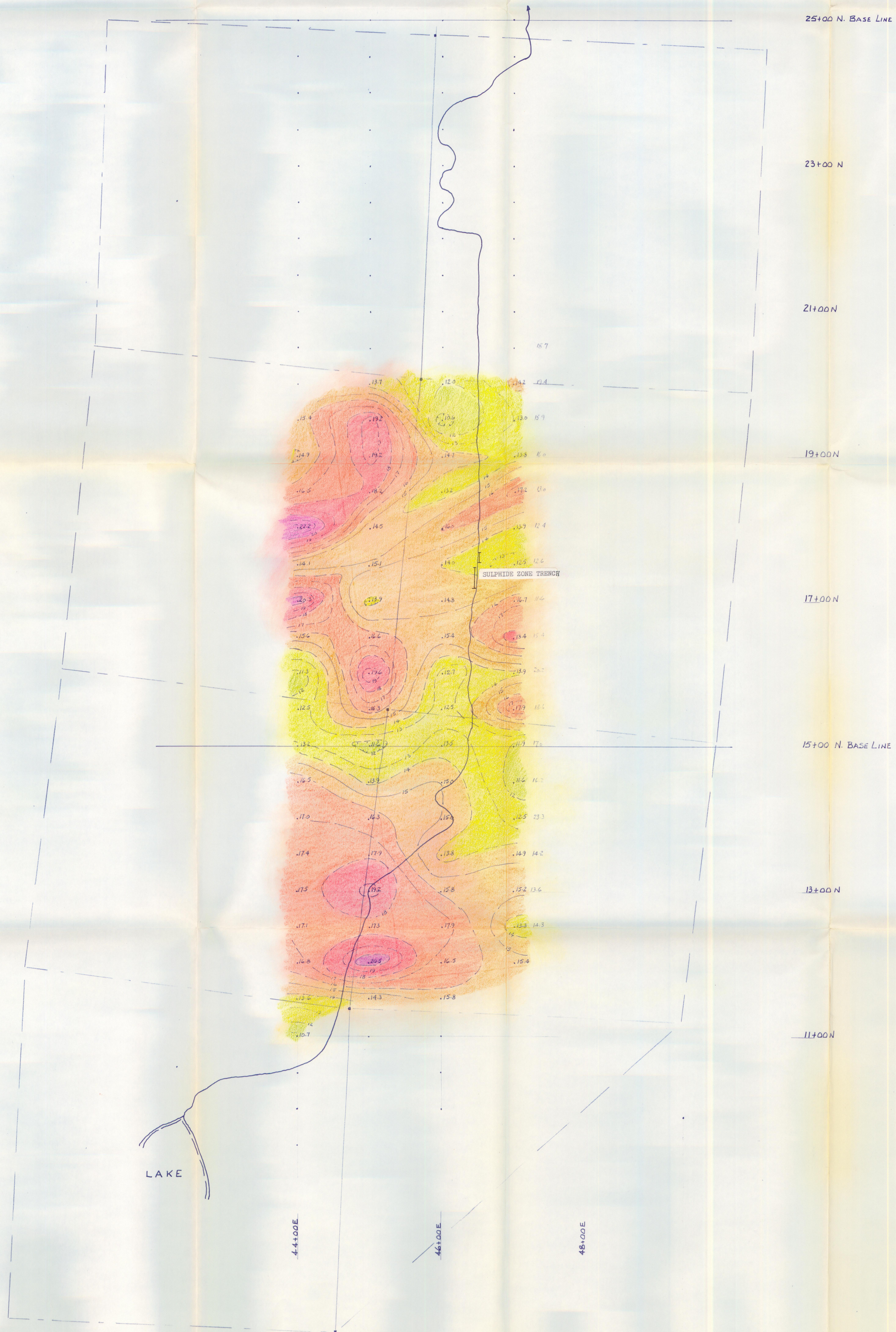
The apparent chargeability (M') in milliseconds, is calculated by $T_p (M_1 + 2M_2 + 4M_3 + 8M_4) = M'$, where T_p is the basic integrating time in tenths of seconds. M_1 , M_2 , M_3 and M_4 are the chargeability effects at various times on the voltage decay curve following switch off of the transmitter, measured as a percentage of the primary voltage, V_p recorded during the "current on" time. By the use of these factors, one can gain an estimate of the decay curve in terms of chargeability for the given time T_p . This gives a quantitative value to the data measured.

The apparent resistivity, in ohm-metres, is proportional to the ratio of the primary voltage to the measured current, the proportionality factor depending on the geometry of the electrode array used. The chargeability and resistivity obtained are called "apparent" as they are values which that portion of the earth sampled by the array would have if it were homogeneous. As the earth sample is usually inhomogeneous, the calculated apparent chargeability and apparent resistivity are functions of the actual chargeabilities and resistivities of the rocks sampled and of the geometry of the rocks.

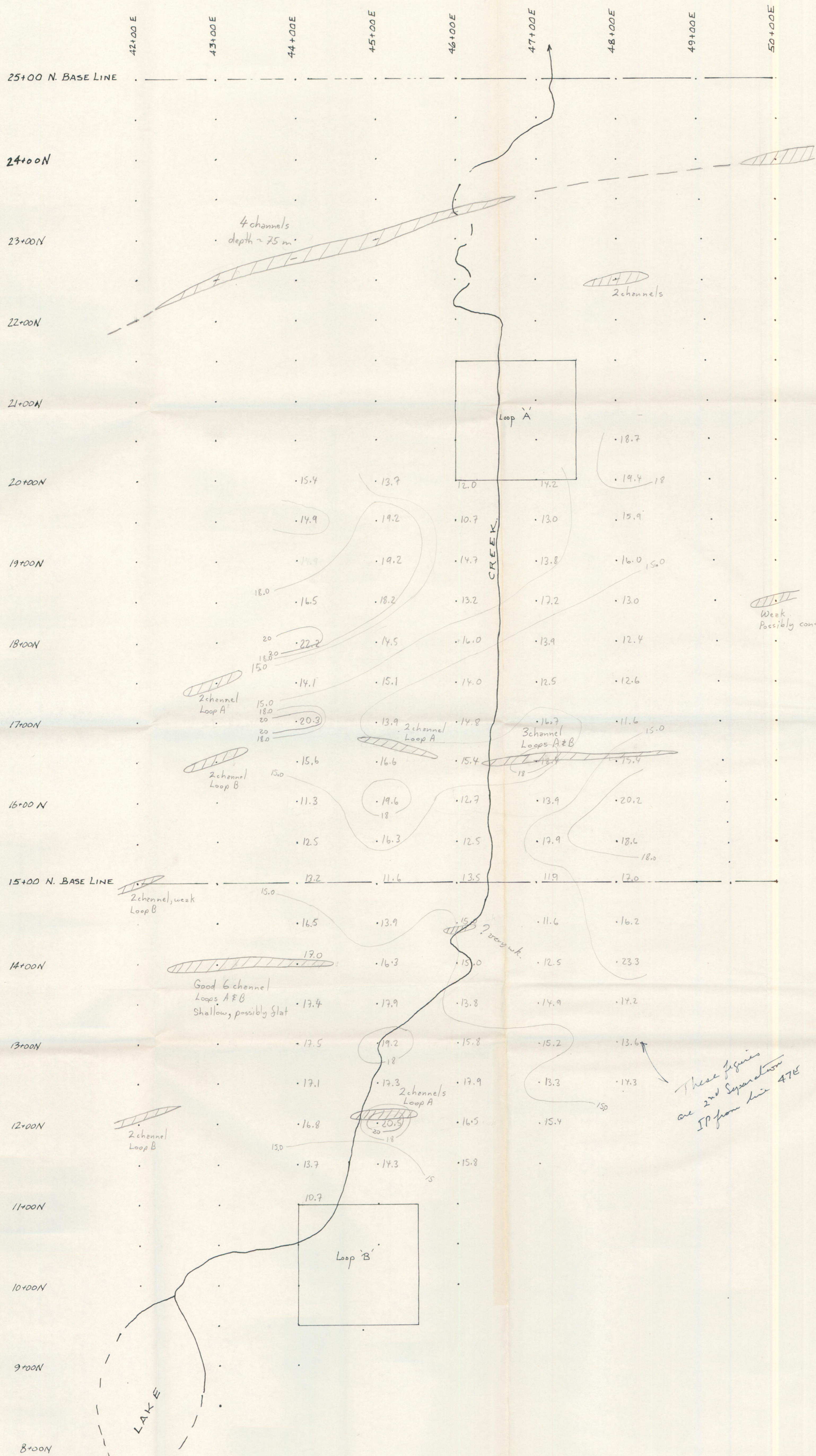


HUNTEC POLE-DIPOLE IP RESISTIVITY PROFILES

J.C. STEPHEN EXPLORATIONS LTD.
 D.C. SYNDICATE
 ORK CLAIM GROUP
 GEOPHYSICAL PROFILES
 HOR. SCALE 1:2500



J.C. STEPHEN EXPLORATIONS LTD.
 D.C. SYNDICATE
 ORK CLAIM GROUP
 I.P. SURVEY
 CHARGEABILITY
 SCALE 1:2500 SEPT. 1983



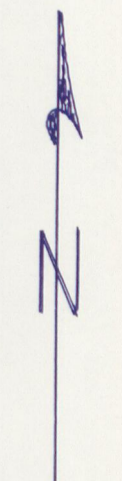
Pulse Electromagnetometer Survey
 Induced Polarization Survey
 Chargeability (ms)
 D.C. SYNDICATE
 ORK CLAIM GROUP
 Preliminary Map

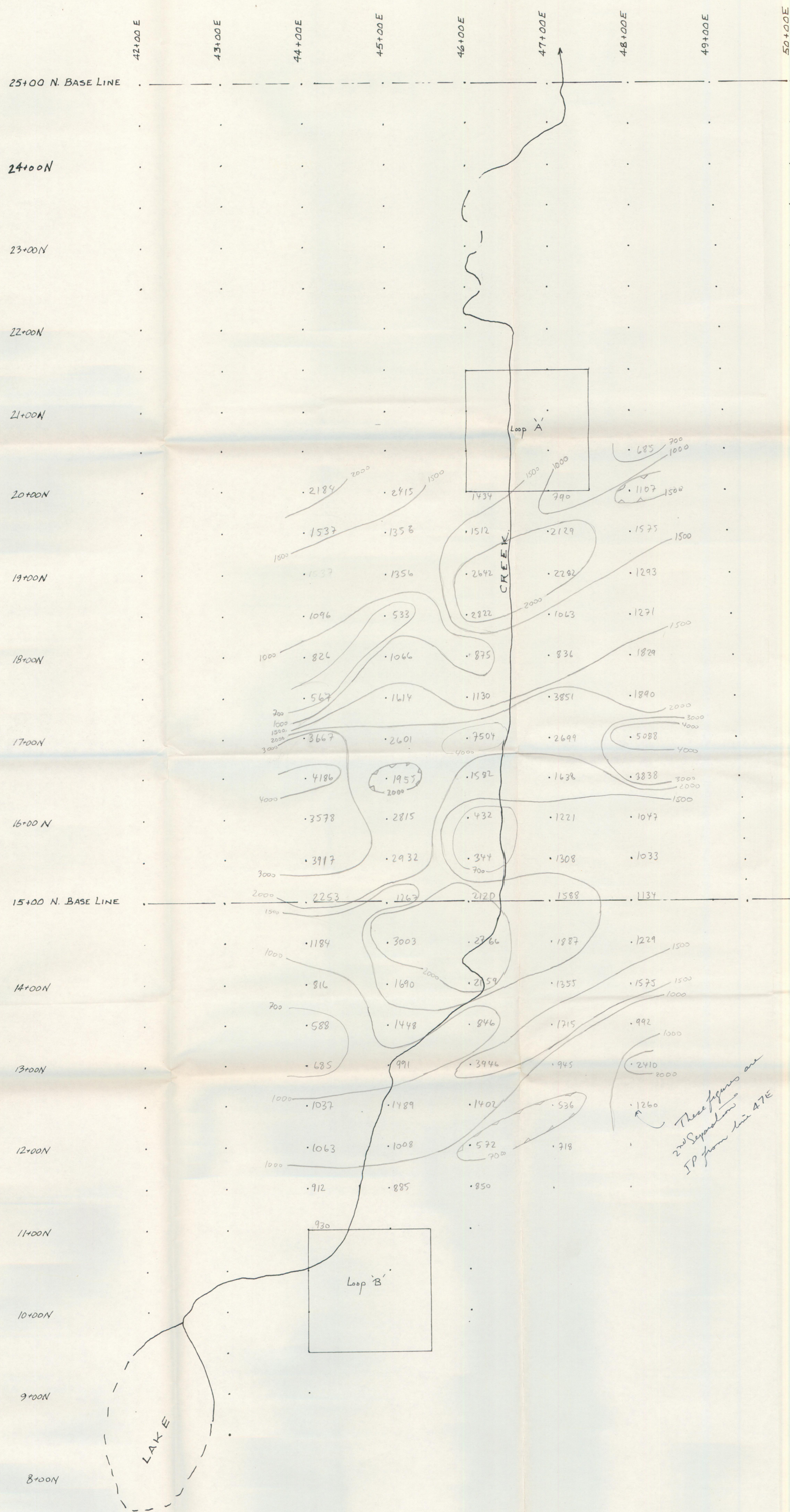
SCALE 1:2500 JUNE 1983

Figure 1



J.C. STEPHEN EXPLORATIONS LTD.
 D.C. SYNDICATE
 ORK CLAIM GROUP
 I.P. SURVEY
 RESISTIVITY
 SCALE 1:2500
 SEPT 1983





Induced Polarization Survey
 Resistivity (ohm metres)
 D.C. SYNDICATE
 ORK CLAIM GROUP
 Preliminary Map
 SCALE 1:2500 JUNE 1983