

435

REPORT OF GEOPHYSICAL SURVEY

CC #50 AND J.L. #100

CLAIM GROUPS

LIARD MINING DIVISION

By G.W.H. Norman, P. Eng.

July and August, 1962

1049/3W

C O N T E N T S

INTRODUCTION ..... 1  
LOCATION ..... 1  
DESCRIPTION OF INSTRUMENT ..... 1  
WORK PERFORMED ..... 3  
WORK PROCEDURES ..... 4  
RESULTS ..... 5

- 1-8 PROFILES 1-4, 6-9 inclusive ..... In Folder  
7 ISOGAM CONTOUR MAP 1,000 feet to the inch ..... In Folder

*Profiles*

2 W	1 E
4 W	3 E
6 W	7 E
8 W	9 E

Department of	
Mines and Petroleum Resources	
ASSESSMENT REPORT	
NO. <u>435</u>	MAP .....

REPORT OF GEOPHYSICAL SURVEY

CC #50 AND J.L. #100

CLAIM GROUPS

LIARD MINING DIVISION

By G.W.H. Norman, P. Eng.,

July 1st to August 21st, 1962.

INTRODUCTION

This report presents the results of an Airborne Magnetometer Survey carried out on the CC #50 and J.L. #100 claim groups during July and August, 1962. The magnetometer used for the airborne work was a Varian type developed at Palo Alto, California. Poor flying weather during execution of the work added considerably to the cost.

LOCATION

The CC #50 and J.L. #100 claim groups are located at the headwaters of Galore Creek, a tributary of the Scud River. The Scud River flows northwest into Stikine River about 50 miles north of the B. C. Alaska boundary. The claim groups are 24 miles southeast of the Scud-Stikine river junction.

DESCRIPTION OF INSTRUMENT

The instrumentation of the Varian magnetometer is based on the effect of the earth's magnetic field on atomic nuclei.

The atomic nuclei are protons or combinations of protons of which the simplest are the protons of hydrogen atoms. Kerosene provides an adequate source of hydrogen atoms with advantages for Varian type magnetometers over other materials containing hydrogen. The kerosene is placed in a cylindrical container and towed 50 to 100 feet below the aircraft. It is thus removed from local disturbing forces in the aircraft. The container is surrounded by a coil through which at one second intervals a current is forced to flow. When the current in the coil is cut off the hydrogen protons are oriented in space by the controlling forces of the earth's magnetic field. When the current flows through the coil a strong local magnetic field is set up to act on the hydrogen nuclei. This local field is sufficient to completely counteract the earth's magnetic field. The effect on the protons when the current is cut off and they reconform to the earth's magnetic field provides a means, with appropriate electronic instrumentation of measuring the strength of the earth's magnetic field.

The instrument is coupled with a continuous recording device provided with a metric chart about 6 inches wide travelling either one or four feet per second as required. Readings are taken by the instrument at intervals one second apart when the current in the coil is cut off. In an aircraft travelling 60 miles per hour, successive readings would be 88 feet apart. With a helicopter travelling 45 miles per hour the readings would be 66 feet apart.

The scale of the metric chart is 50 gammas per centimeter which allows for changes of 600 gammas across the width of the chart. When the differences in reading exceed 600 gammas the recorder automatically steps up or down to change the datum or centre line of the chart by 250 gammas.

The instrument measures the total intensity of the earth's field in gammas. The average total field is approximately 57,000 gammas. The settings of the instrument provide a course setting with 5,000 gamma intervals starting at 45,000 gammas, and self switching setting from 0 to 5,000 gammas. The instrument has, therefore, an automatic range of 5,000 gammas before manual changes to other settings are required.

#### WORK PERFORMED

The airborne survey was carried out by a Varian type proton precession magnetometer mounted in a Bell G2 Helicopter. The helicopter was under charter from Pacific Helicopters Ltd. of Vancouver. The work was supervised by G. W. H. Norman for Newmont Mining Corporation acting under an agreement with Southwest Potash Corporation, owner of the claims.

Installation of the magnetometer in the helicopter was carried out by George McLaughlin, formerly electronic specialist and engineer for McPhar Geophysics Limited of Ontario and now on the staff of Newmont Exploration Limited.

Mr. McLaughlin spent the period June 29th to July 7th, 1962, on the magnetometer survey. Charles Elliot, geophysicist on the staff of Newmont Exploration Limited, worked on the project during the period August 7th to August 11th, 1962. G. W. H. Norman supervised and planned the survey and processed the charts for the preparation of a isogam contoured map to illustrate the results of the work, which totalled 18 days from July 1st to 7th, August 7th to 12 and August 17th to 21st, 1962.

#### WORK PROCEDURES

The claims cover a strip of glacier, at the headwaters of Galore Creek, and the adjoining valley sides from the ice at 2500 feet to 6000 feet above sea level. Due to the steepness of the valley sides and irregularities of the surface due to the minor valleys and canyons cut by side streams, straight flight lines could not be flown.

The first nine lines on July 3rd were flown at definite contour intervals with the pilot of the helicopter flying at a constant elevation. These lines were flown with George McLaughlin as operator of the magnetometer and navigator. For navigational purposes a contoured map of the claims on about 2000 feet to the inch was used. In order to plot the flight lines on the contoured map, all streams and stream junctions were marked on the chart by a manually operated fiducial marker. A small bellows, held in the hand of the operator, makes small ticks when pressed on an otherwise straight red ink line on the right side of the chart.

One or more ticks can be made with the marker to identify any special point along the line. The start and finish of each line were indicated by ticks of certain lengths.

The instrument was flown approximately 200 feet above the ground. The cable of the instrument bird had a length of 50 feet which positioned the helicopter 250 feet above ground. A check of the altimeter in the helicopter on the ground provided a means of plotting the line on the contoured map. This method proved adequate for the internal part of the lines but difficulties were encountered in determining the exact start and ends of the lines.

On August 12th, the lines were reflown using aerial photographs on a scale of about 4000 feet to the inch. Due to the almost identical appearance and shape of snow banks on the photos and on the ground, navigation and location of the lines on the photographs proved to be simple and quite accurate. Six lines were flown on August 12th by G. W. H. Norman.

The lines flown ranged from 500 to 1500 feet apart which would give an average of 1000 feet apart.

#### RESULTS

The first nine lines by McLaughlin as indicated in attached profiles 1-4, 6-9 inclusive (end pocket), show a definite magnetic high peaking (maximum 1250 gammas) in the general vicinity of Copper Canyon Creek. Profile 2 is a line down the centre of the glacier and the high is clearly indicated even on this line.



The general feature of this high is a gradual increase westward in the magnetic readings to the high point of the profile and a more abrupt decrease on the west side of the high. This type of curve suggests a steeply east dipping zone and is in agreement with the general east dip of the rocks at the north side of the glacier.

The ends of six lines by Norman could be located more precisely than those by McLaughlin and an isogam contour map was constructed from these lines (see map end pocket). The contour map agrees with the profiles in showing a magnetic high extending east of south from the upper part of Doghouse Creek across the central part of Copper Canyon Creek. The contoured high has a more gradual build up on the east side indicative of a steep east dip.

The high on the contour map is approximately 1000 gammas. The difference between this peak and the highest peak 1250 gammas on the profiles may be due to a difference in altitude of the magnetometer or the lines for the contour map did not cut across the highest part of the anomaly.

The magnetic high lies over a syenite mineralized with magnetite, pyrite and chalcopyrite. The syenite ends against an east dipping fault. The magnetic high is produced by the syenite mass and the east dipping fault apparently explains the shape of the magnetic profiles.

Further work will be required to find out any relationship  
of the high to the intensity of mineralization.

*G. W. H. Norman*  
.....  
G. W. H. Norman, P. Eng.

August 22nd, 1962.

DOMINION OF CANADA:  
PROVINCE OF BRITISH COLUMBIA.

To Wit:

In the Matter of costs and charges incurred in the airborne magnetometer coverage of the CC #50 and JL 100 claim groups at the headwaters of Galore Creek, Liard Mining Division

SUB-MINING RECORDER  
RECEIVED  
AUG 23 1962  
M.R. # \_\_\_\_\_ \$ \_\_\_\_\_  
VANCOUVER, B.C.

I, G. W. H. Norman, P. Eng.,  
of 604 - 744 West Hastings Street, Vancouver 1,

in the Province of British Columbia, do solemnly declare that the costs, charges and related expenses of the magnetometer survey were as follows:

Newmont Exploration Limited, Charges:

Services of geophysical engineers (electronic experts)	
George McLaughlin 9 days and Charles Elliot 5 days	\$1,000.00
Varian type magnetometer 2 weeks @ \$4.00 per month	200.00

Pacific Helicopters Limited, Charges:

8 1/2 hours @ \$108.00 per hour	945.00
---------------------------------	--------

Newmont Mining Corporation of Canada Limited, Charges:

G.W.H. Norman, project engineer, 18 days	1,000.00
Food and camping facilities	<u>300.00</u>
	<u>\$3,445.00</u>

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City  
of Vancouver, in the  
Province of British Columbia, this 22nd  
day of August, 1962, A.D.

*G.W.H. Norman*

*Shirley Jeanotte*

~~A Commissioner, etc.~~  
A Commissioner for taking Affidavits within British Columbia or  
A Notary Public in and for the Province of British Columbia.

★ 0

Sub-mining Recorder

58250

58000

57750

57500

8

8

8

8

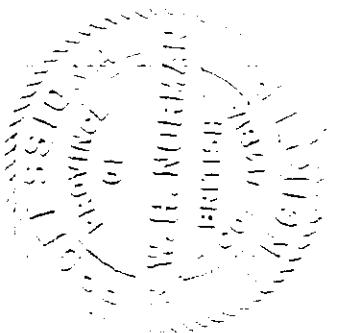
West

East

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 435 MAP 1

3

435



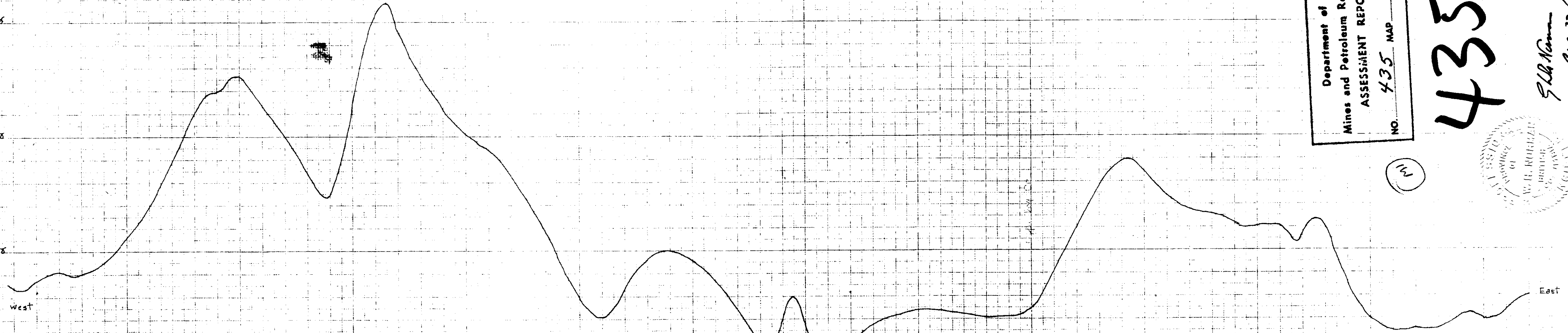
S. H. Mann  
Aug 22/62

LINE 1 E

435

Opposite Deerpark Creek

Map 104 C



58250 - 8

58000 - 7

57750 - 6

57500 - 5

57250 - 4

57000 - 3

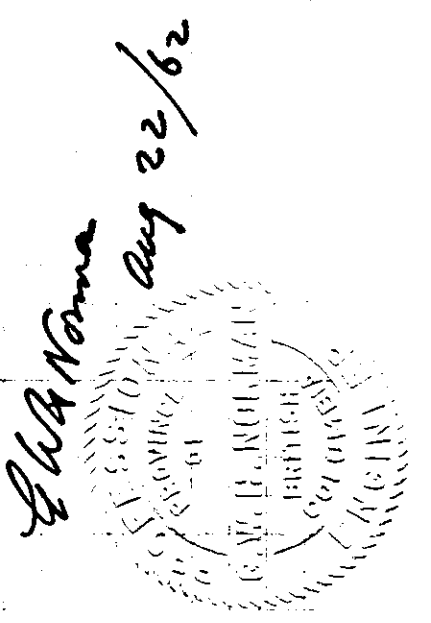
West

East

Opposite Doghouse Creek, Opposite Doghouse Creek

435

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 435 MAP 2



(M2)

LINE 2 W

435

58500

58250

58000

57750

57500

57250

57000

West

Doghouse Creek

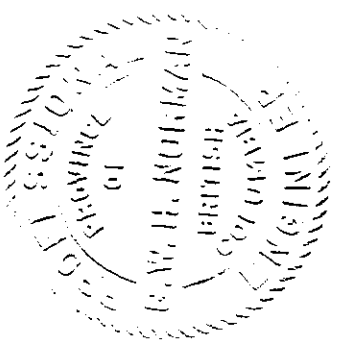
Canyon Creek

435

113

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 435 MAP 3

John Namm  
Aug 22/62

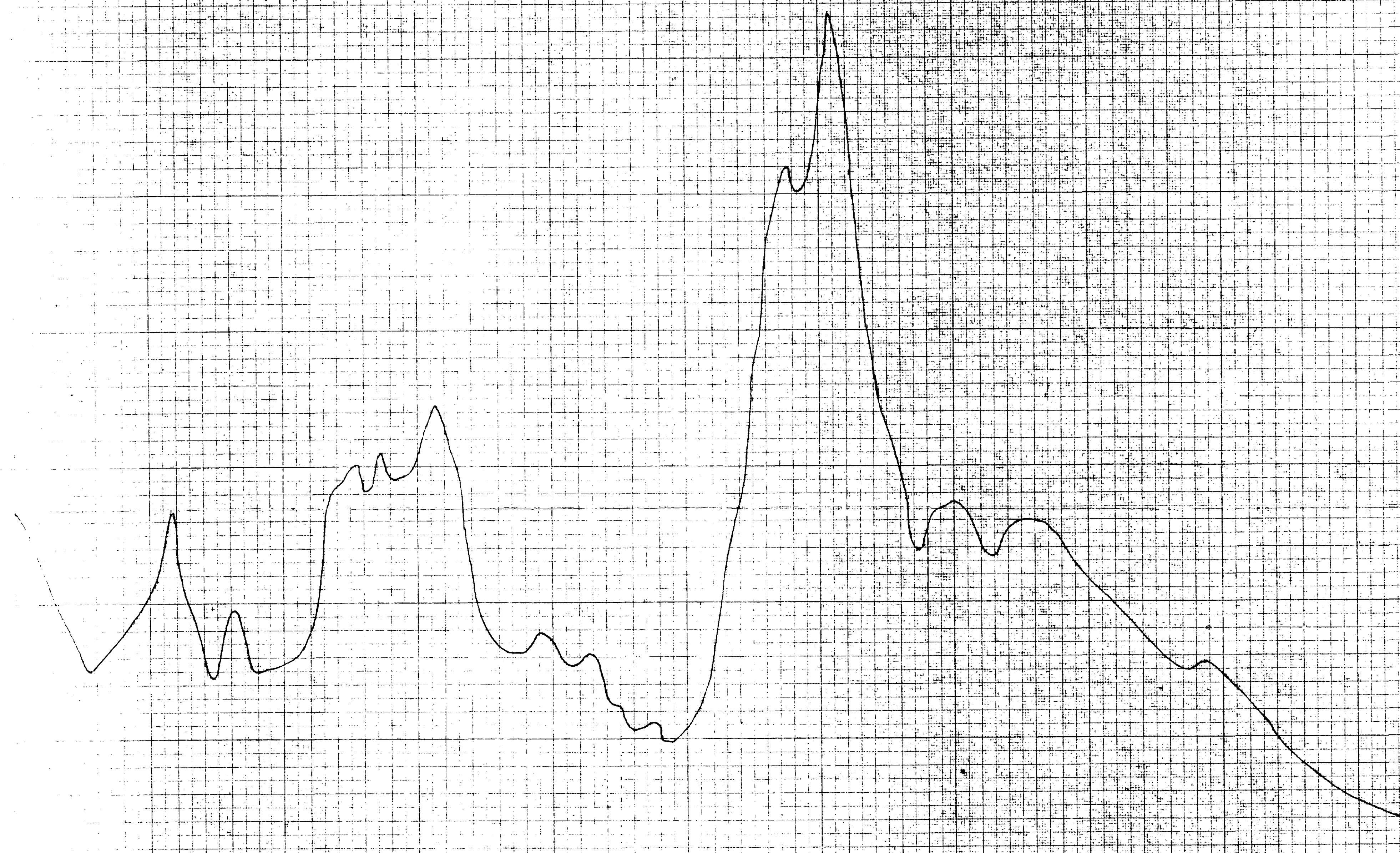


LINE 3E

435



1  
5200.5 8  
5210  
5220.5 6  
5230 8  
5240  
5250  
5260  
5270  
5280  
5290  
5300  
5310  
5320  
5330  
5340  
5350  
5360  
5370  
5380  
5390  
5400  
5410  
5420  
5430  
5440  
5450  
5460  
5470  
5480  
5490  
5500  
5510  
5520  
5530  
5540  
5550  
5560  
5570  
5580  
5590  
5600  
5610  
5620  
5630  
5640  
5650  
5660  
5670  
5680  
5690  
5700  
5710  
5720  
5730  
5740  
5750  
5760  
5770  
5780  
5790  
5800  
5810  
5820  
5830  
5840  
5850  
5860  
5870  
5880  
5890  
5900  
5910  
5920  
5930  
5940  
5950  
5960  
5970  
5980  
5990  
6000  
6010  
6020  
6030  
6040  
6050  
6060  
6070  
6080  
6090  
6100  
6110  
6120  
6130  
6140  
6150  
6160  
6170  
6180  
6190  
6200  
6210  
6220  
6230  
6240  
6250  
6260  
6270  
6280  
6290  
6300  
6310  
6320  
6330  
6340  
6350  
6360  
6370  
6380  
6390  
6400  
6410  
6420  
6430  
6440  
6450  
6460  
6470  
6480  
6490  
6500  
6510  
6520  
6530  
6540  
6550  
6560  
6570  
6580  
6590  
6600  
6610  
6620  
6630  
6640  
6650  
6660  
6670  
6680  
6690  
6700  
6710  
6720  
6730  
6740  
6750  
6760  
6770  
6780  
6790  
6800  
6810  
6820  
6830  
6840  
6850  
6860  
6870  
6880  
6890  
6900  
6910  
6920  
6930  
6940  
6950  
6960  
6970  
6980  
6990  
7000  
7010  
7020  
7030  
7040  
7050  
7060  
7070  
7080  
7090  
7100  
7110  
7120  
7130  
7140  
7150  
7160  
7170  
7180  
7190  
7200  
7210  
7220  
7230  
7240  
7250  
7260  
7270  
7280  
7290  
7300  
7310  
7320  
7330  
7340  
7350  
7360  
7370  
7380  
7390  
7400  
7410  
7420  
7430  
7440  
7450  
7460  
7470  
7480  
7490  
7500  
7510  
7520  
7530  
7540  
7550  
7560  
7570  
7580  
7590  
7600  
7610  
7620  
7630  
7640  
7650  
7660  
7670  
7680  
7690  
7700  
7710  
7720  
7730  
7740  
7750  
7760  
7770  
7780  
7790  
7800  
7810  
7820  
7830  
7840  
7850  
7860  
7870  
7880  
7890  
7900  
7910  
7920  
7930  
7940  
7950  
7960  
7970  
7980  
7990  
8000  
8010  
8020  
8030  
8040  
8050  
8060  
8070  
8080  
8090  
8100  
8110  
8120  
8130  
8140  
8150  
8160  
8170  
8180  
8190  
8200  
8210  
8220  
8230  
8240  
8250  
8260  
8270  
8280  
8290  
8300  
8310  
8320  
8330  
8340  
8350  
8360  
8370  
8380  
8390  
8400  
8410  
8420  
8430  
8440  
8450  
8460  
8470  
8480  
8490  
8500  
8510  
8520  
8530  
8540  
8550  
8560  
8570  
8580  
8590  
8600  
8610  
8620  
8630  
8640  
8650  
8660  
8670  
8680  
8690  
8700  
8710  
8720  
8730  
8740  
8750  
8760  
8770  
8780  
8790  
8800  
8810  
8820  
8830  
8840  
8850  
8860  
8870  
8880  
8890  
8900  
8910  
8920  
8930  
8940  
8950  
8960  
8970  
8980  
8990  
9000  
9010  
9020  
9030  
9040  
9050  
9060  
9070  
9080  
9090  
9100  
9110  
9120  
9130  
9140  
9150  
9160  
9170  
9180  
9190  
9200  
9210  
9220  
9230  
9240  
9250  
9260  
9270  
9280  
9290  
9300  
9310  
9320  
9330  
9340  
9350  
9360  
9370  
9380  
9390  
9400  
9410  
9420  
9430  
9440  
9450  
9460  
9470  
9480  
9490  
9500  
9510  
9520  
9530  
9540  
9550  
9560  
9570  
9580  
9590  
9600  
9610  
9620  
9630  
9640  
9650  
9660  
9670  
9680  
9690  
9700  
9710  
9720  
9730  
9740  
9750  
9760  
9770  
9780  
9790  
9800  
9810  
9820  
9830  
9840  
9850  
9860  
9870  
9880  
9890  
9900  
9910  
9920  
9930  
9940  
9950  
9960  
9970  
9980  
9990  
10000



west

East

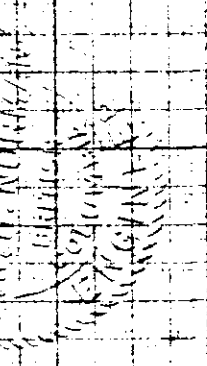
Dephous of Creek

Catheter Canyon Creek

435

SSA Name  
Aug 22/62

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 435 MAP 4



LINE 4W

PM

435

58250 8

58000

57750

57500

57250

West

East

Doghouse creek

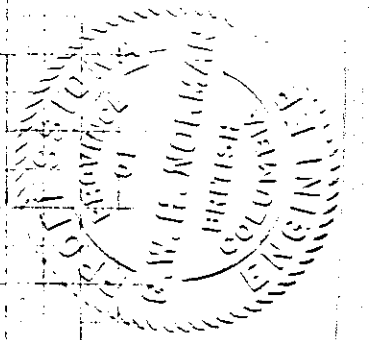
Copper Canyon Creek

435

16

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 435 MAP 5

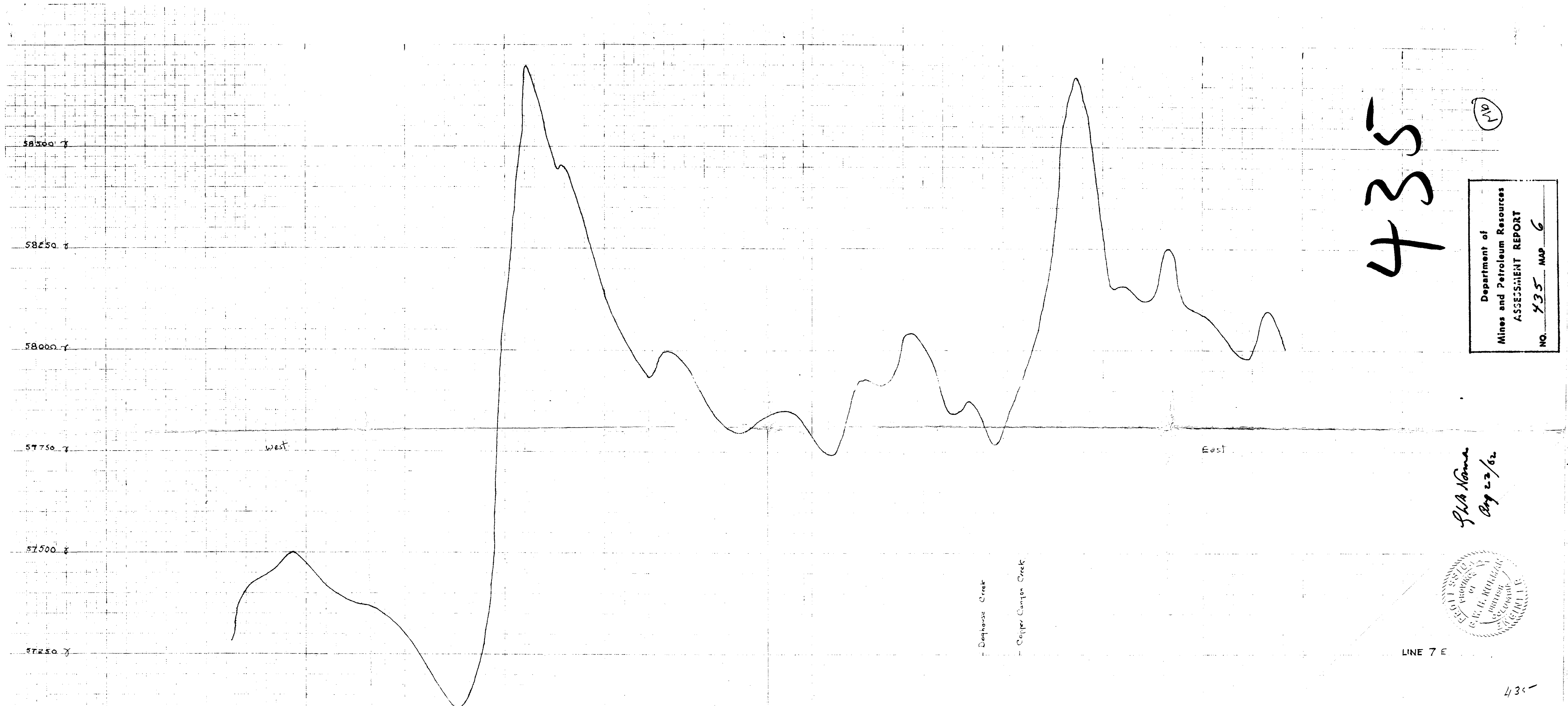
W. H. Norman  
Aug 22/62



LINE 6 W

435





435

(435)

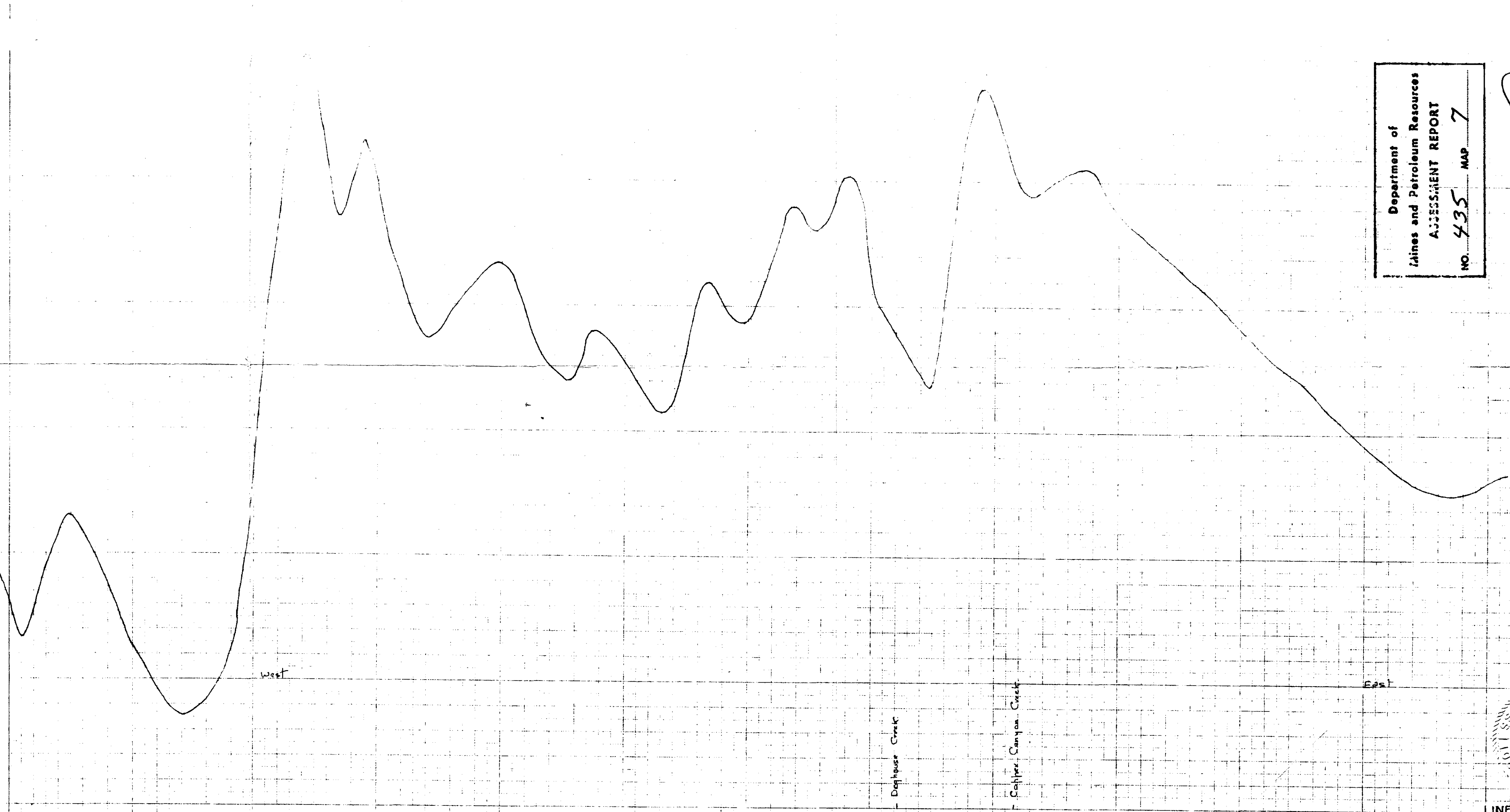
Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 435 MAP 6

J.A. Noma  
Aug 22/62



LINE 7 E

58250  
58000  
57750  
57500  
57250  
57000



Department of  
Mineral and Petroleum Resources  
ASSESSMENT REPORT  
NO. 435 MAP 7

(XW)

J. H. Naman  
Aug 22 / 62



LINE 8 W



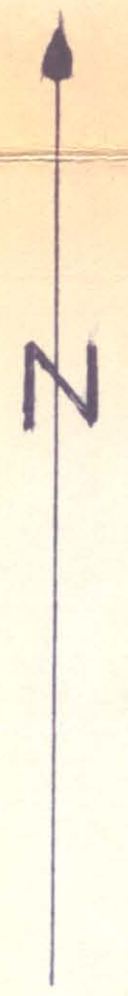
Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 435 MAP 8

435

MB

W. J. Williams  
 Aug 22/62





6W

435



Spahn  
Apr 2/62