ENCL

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

GOBLES OIL AND GAS LIMITED
CALGARY - ALBERTA

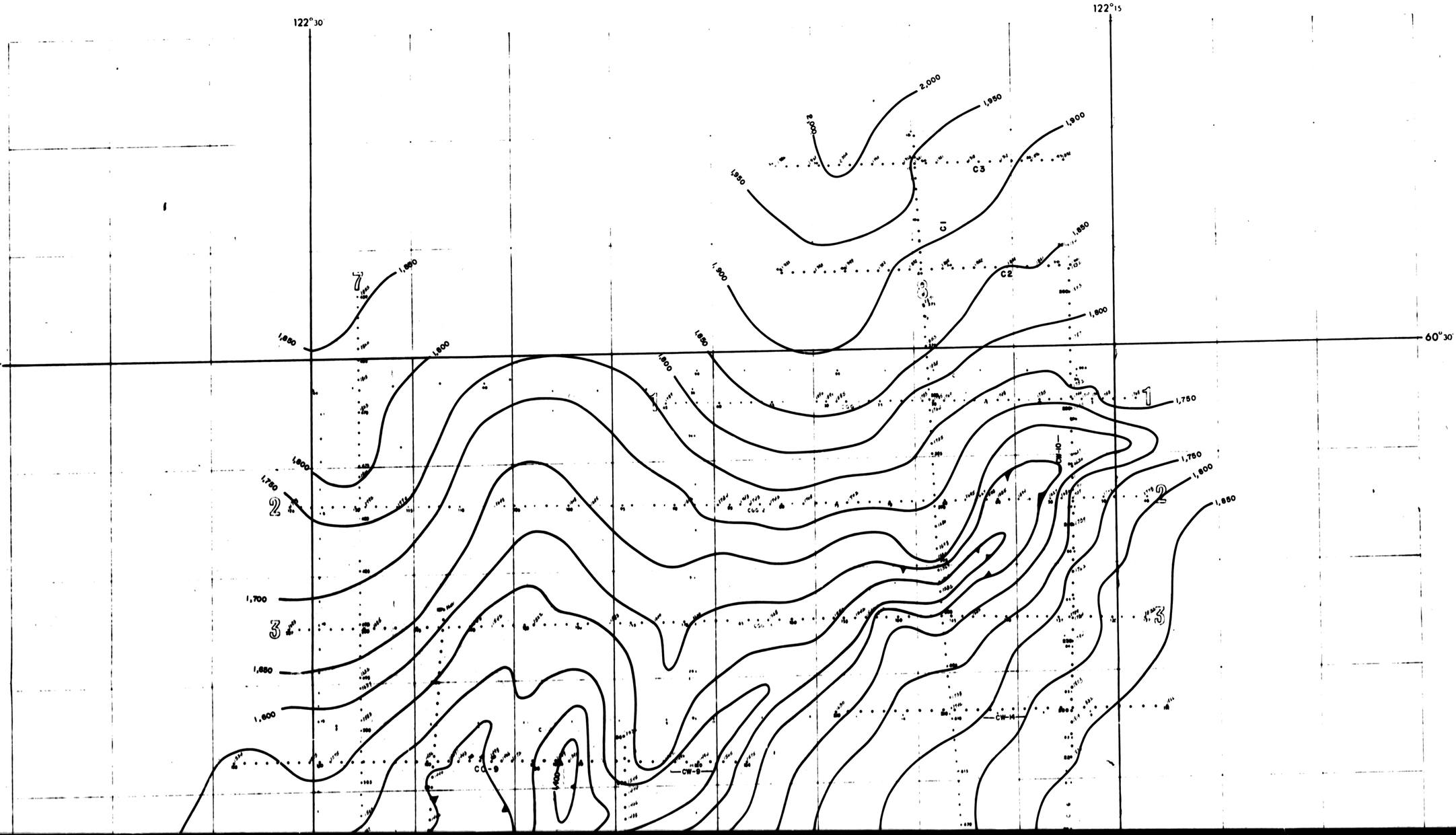
GENERALIZED TOPOGRAPHIC
MAP

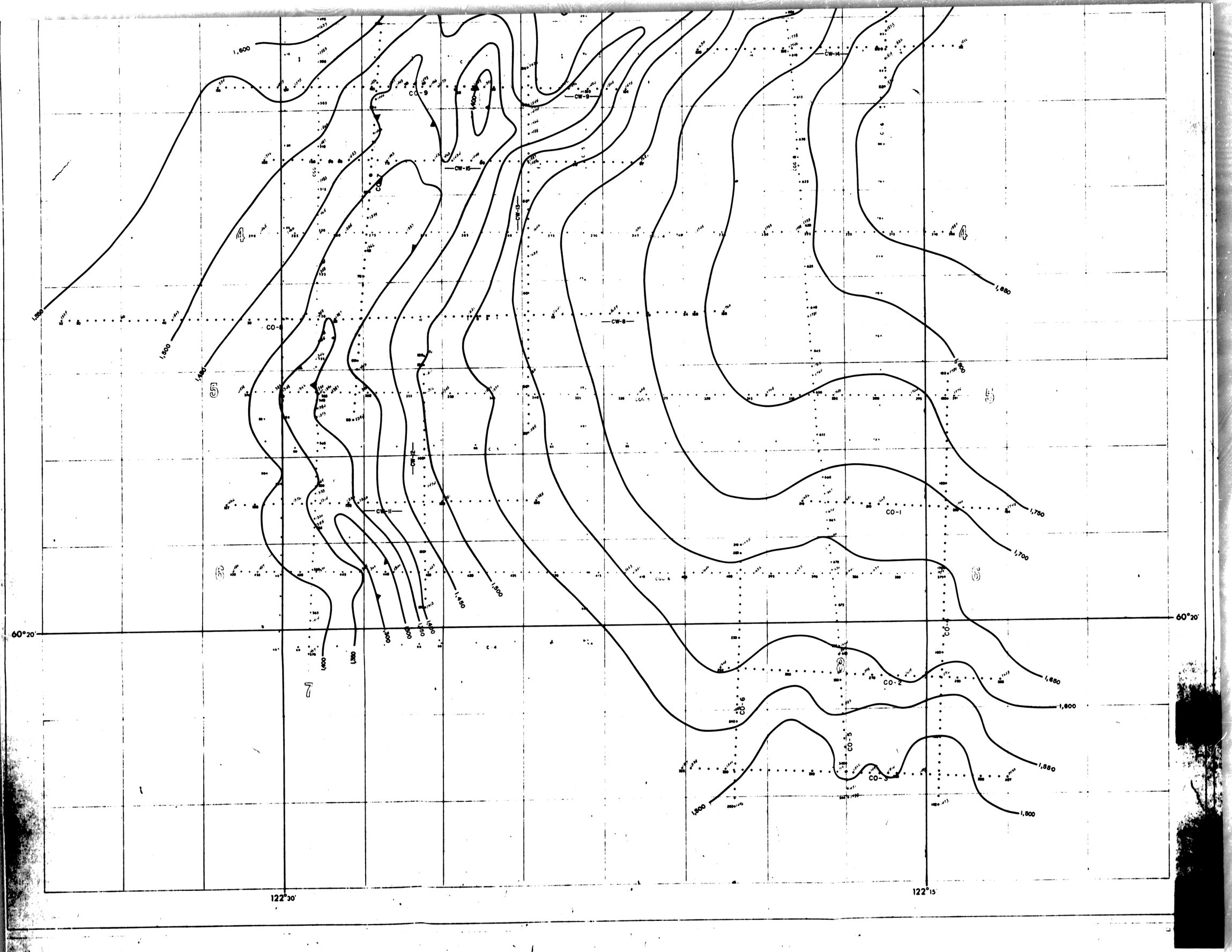
BOWMAN & SCHULTE LTD.

Datum plane	SEA LEVEL	Date	MARCH 1970
Contour int	50 ft	Scale	

SCALE 2 INCHES to 1 MILE

NOTE: INFLECTION POINT ELEVATIONS TABULATED. 

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1,700
1,750
1,800
1,850
CW-14
CW-9
CW-15
CW-13
CW-8
CW-12
CW-11
CO-9
CO-8
CO-7
CO-6
CO-5
CO-4
CO-3
CO-2
CO-1
60°20'
122°30'
122°15'

2 of 2

SEISMIC REPORT ON THE CELIBETA AREA
NORTHWEST TERRITORIES 105 F-11
PROJECT 2695, APRIL 1970
SUBMITTED TO GOBLES OIL AND GAS
BY BOWMAN AND SCHULTE LTD.

250-6-4-1

SEISMIC REPORT

on the

CELIBETA AREA

Northwest Territories

NWT 105 6-11

Project 2695

Submitted to

Gobles Oil and Gas Limited

by

BOWMAN AND SCHULTE LTD.

CALGARY

(Incorporate field report by
Canwest Geophysical Ltd.)

April, 1970

CONTENTS

ABSTRACT

This report presents the interpretation of approximately 155 miles of seismic control obtained during 1968, 1969 and 1970 for Cabico Oil and Gas Limited in the Colibeta region of the Northwest Territories.

The most recent shooting, 1969 and 1970 projects, was shot by Canwest Geophysical Limited; details of the field work and processing for the 1970 work is discussed in a supplement to the report.

The interpretation of all of the data was performed by Bowman and Schulte Limited of Calgary.

The objects of the survey were to provide reconnaissance control on the attitudes of the subsurface and later to detail areas of economic interest. The geological objective was to define the presence of a Slave Point reef front which was postulated to pass through the area.

The bulk of the data was acquired by 300% shooting techniques but the last stage was taken with 600% coverage to improve the data resolution and to assist in the definition of weathering inspired low areas.

The quality of data varied from very poor to good and was usually a function of near surface conditions. Good data was obtained in unweathered areas whereas the data deteriorated markedly around surface or near surface drainage patterns.

The results of the interpretation are condensed on a suite of selected structural and isochronal maps. More detailed observations can be made from structural and isochronal record sections produced from the field data.

Salient interpretive notes are:

1. A dominant structural fold passes north-south through the east side of the area with axial depression noted in the east central sector of the area.

2. To the west of the fold, dips at all levels are to the west into a region characterized by numerous small local anomalies, the genesis has not been identified.

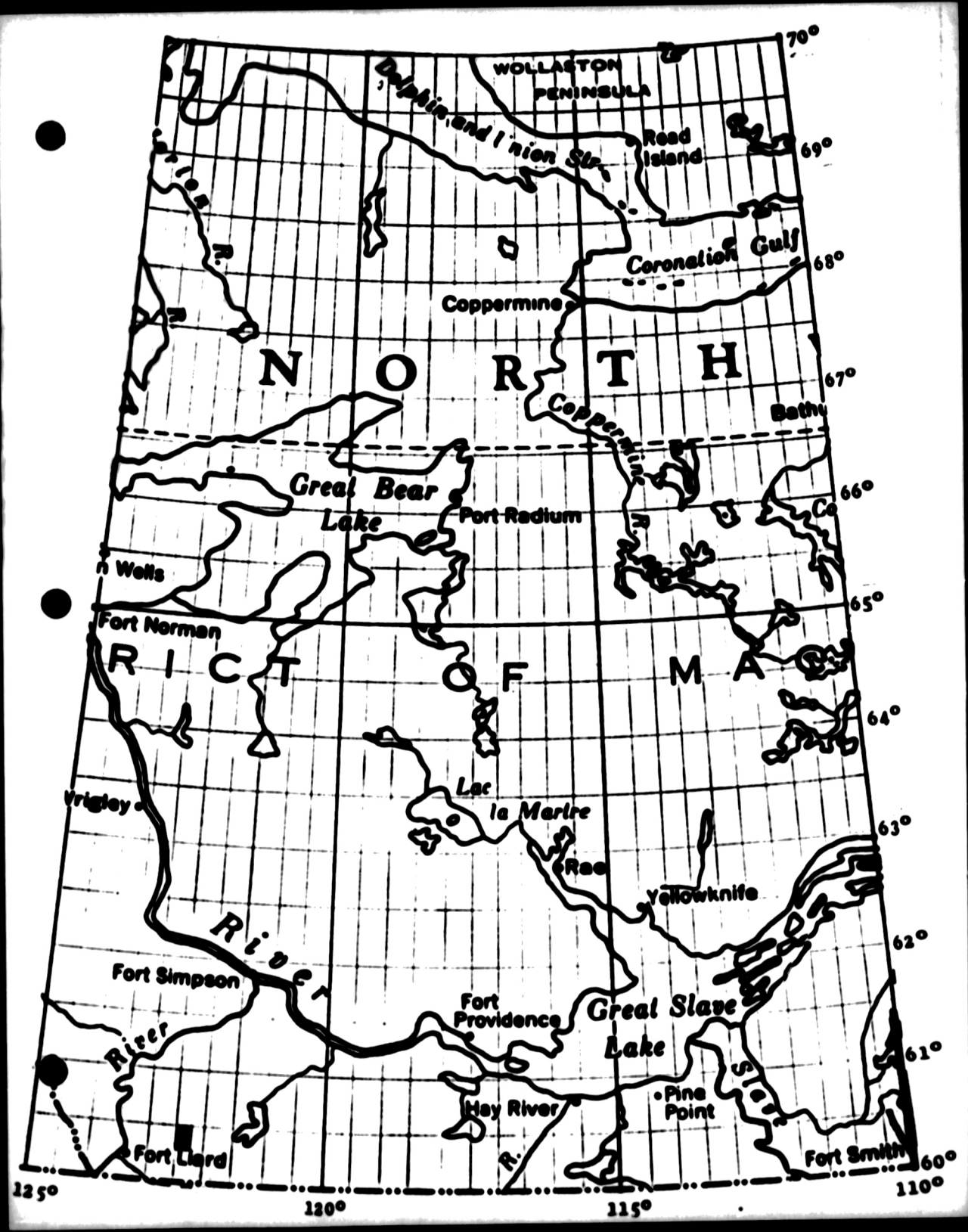
3. A number of deep seated anomalies are found at Slave Point level throughout the map area. Some may be associated with Middle Devonian reefing, however, the lack of strong pre-Slave Point information prohibits the selection of those related to reefing from those resulting from early structural deformation.

4. The Jean Marie zone contains a number of strong positive anomalies along the line of the fold system mentioned above. Overlap caused by thrusting or perhaps reefing are the interpreted explanations.

5. The Mississippian section thins to the northeast with several

marked edges positioned. One may be related to the edge of the Debolt (central map area) while another can be traced along the northeast corner of the map and may have origin at Pekisko level.

The recommendations include testing of the Pekisko edge structures and the consideration of a deep test in the southern part of the map area.


WOLLASTON PENINSULA
Dolphin and Union Str.
Read Island
Coronation Gulf
Coppermine
NORTH
Great Bear Lake
Port Radium
Fort Norman
Lac la Marte
Yellowknife
Fort Simpson
Fort Providence
Great Slave Lake
Hay River
Pine Point
Fort Liard
Fort Smith
70°
69°
68°
67°
66°
65°
64°
63°
62°
61°
60°
125°
120°
115°
110°

1. INTRODUCTION

Seismic reflection surveys were conducted during 1968, 1969, and 1970 for Cabico Oil and Gas Limited of Calgary, Alberta in the Colibota area of the Northwest Territories.

The data was interpreted by Bowman and Schulte Limited.

The 1970 shooting was performed by Canwest Geophysical Limited and the details of the field operations and processing are included as a supplement to this report.

The prospect is situated in the southern Northwest Territories some forty miles north of the British Columbia-Northwest Territories border and on a projection of the Pettitot-Colibota trend. Access to the area was gained by travelling north of the border along the Simpson Trail, then west via winter trails into the project centre.

Geologically, the area is situated on the west flank of the Tathlina High and on strike with the northern projection of the Kotcho-Pettitot Reef Complex. The Colibota gas wells to the south represent the closest production.

Surface topography in the area consists of a high land form in the north and east drained by a major surface drainage pattern which dents the land form and runs southeast then south through the area. See Generalized topography, Enclosure 1; there is some positive conformity of the surface with underlying structural conditions.

2. OBJECTIVE

The objective of the seismic surveying was to provide detail and reconnaissance control on the attitudes of the subsurface with emphasis on the habits of the Slave Point and/or Middle Devonian dolomites. In chronological order the objectives were:

1. 1968 - To provide reconnaissance control to define the presence of a postulated extension of the Colibeth (proper) anomaly.

2. 1969 - The short survey was to detail an interesting Jean Marie structure in the northeastern part of the area.

3. 1970 - First phase - To detail two areas where previous reconnaissance control had revealed interesting anomalies at at depth with the intent of selecting a drill site to test one of them during the 1969 - 1970 winter season.

4. 1970 - Second phase - To detail several other leads in various parts of the area and to gather sufficient information for an early 1970 - 1971 winter drilling program.

In the beginning, the primary geological objective was the Middle Devonian carbonates. Later, structural features associated with the Jean Marie drew interest as well. Finally, the presence of a Pekisko equivalent penetrated by the Gobles et al well on the west side of the area suggested that this zone should be considered in addition to the others.

The object of this interpretation was to collate the data and present a geological interpretation of all results.

3. RESULTS

The results are presented in three-dimensional form on a suite of four structural control maps, four isochronal or time-interval maps, and a synoptic interpretive map.

The basic data from which these maps were derived are structural mode record sections of all shooting performed. The sections can be used as a more detailed study of the seismic evidence and therefore form an integral part of this report.

QUALITY OF DATA

The quality of data can be directly related to the portion of the area considered. Profiles in the higher surface elevations not dissected by drainage patterns offer excellent recordings; profiles taken in the higher surface areas near drainage patterns show deterioration of reflection quality; profiles taken in the surface low areas are generally inferior and are structurally distorted by uncompensated weathering areas.

The second phase of the 1970 shooting incorporated longer spreads with 400% coverage and the improvement was considered significant. Not only were better drift control values afforded by the longer spreads, but the enhancement of the deeper events by increased stack allowed better resolution of the pre-Slave Point zones. It is recommended that these techniques be incorporated into any future program and that the percentage stack be increased wherever deep resolution is essential to the objective.

IDENTIFICATIONS

The original indentifications tagged to the events were based on the extrapolation of Sonigram correlations from the McDermott Trout Lake well to the southeast. Following the drilling of the Cobico et al Colibots well on the west side of the area, and the release of the velocity survey, the original indentifications were generally confirmed. The exception was in the indentification of the shallow events where it was found that the postulated Sikhani horizon was more readily associated with the Pekisko equivalent in the Mississippian and that the first energy noted on the band was probably related to the top of the Mississippian.

The position of the basement from the integrated sonic log can be placed at a time of approximately 0.1 second below the Slave Point pick. Note that seismic check shooting was suspended at the 8,000 foot level just above the Elk Point dolomite.

The presence of multiple energy cannot be readily detected on the record sections. The strong reflection coefficients offered by the Mississippian unconformity provide a serious threat since the transmission losses suffered by such a reverberatory system are much less than the attenuation of primary reflection energy as it travels down through the section. The periods of the multiple with surface as upper element and the unconformity as the lower approximate 0.3 seconds depending on elevation of either element. Fortunately, the velocity discrimination is great between primary and multiple and the

300% stacking has been generally successful in attenuating the multiple energy as witnessed by the lack of velocity dips associated with severe changes in surface elevations.

At times the strength of events below the measured basement (?) is disturbing but since similar attitudes are not identifiable within the reflection section zones of interest, these events are discounted.

MAPS

Comparison of the Slave Point Structure, the Tetcho to Slave Point Interval and the Pekisko to Slave Point Interval suggests that the basic structure native to the Slave Point has been essentially unaltered through time with the exception of gentle west tilting. A prominent anticlinal trend enters the area in the southeastern part of the map, is interrupted by the presence of minor anial depression in the east central sector, and regains strength in the north east. To the west of this prominent trend, west flank dips prevail until a series of unusual, isolated, high and low anomalies are intercepted. The genesis of these anomalies are unknown but the small isolated lows seldom have much interval support and can be downgraded as weathering lows. The high spots, however, are associated with erratic dips which sometimes imply uplift and perhaps thrust faulting. The Cobles et al Caribou test site was selected on one of these anomalies and failed to find economic production.

The configuration of the Jean Marie horizon, where it can be mapped as a continuous reflection, is similar in form to that of the Slave Point except that the amplitude of the eastern high trend has increased at this

level. A few minor axial closures have been suggested, but for the most part, the anticline can be described as a north plunging anticline entering from the southeast corner of the block, weakening into an axial depression in the east central part of the area, growing in amplitude to the north again and having exit to the Cobles land as a south plunging anticline.

Along the east side of the anticlinal trend, reflection character and continuity suggests the interruption of the Jean Marie event, while along the culmination the character and continuity indicates an increase in the thickness of the Jean Marie. The increase in amplitude of the structure and the reflection discontinuity may either be attributed to minor thrust faulting (preferred) or the addition of material, perhaps by reefing. A remarkably straight line can be drawn connecting the points of discontinuity and readily defines the direction and position of the trend.

The Tetche horizon was mapped initially to serve as a check on the structural corrections computed. The presence of gross amounts of uncompensated weathering in the first shooting emphasized the need for isochronal study to verify deeper structures and in particular to measure critical east dip. The structural form of the Tetche is similar but with reduced relief to that of the Jean Marie and is trendless and disorganized in the western part of the area. The Pekisko to Tetche interval was made to identify the degree of draping of the Tetche

over the underlying Jean Marie or Slave Point structures. It can be seen that Tetcho drape structures are significant and that there is some migration of this type structure to the east.

The Pekisko map was prepared after the identification of the Pekisko equivalent in the Gobles et al Calibeta well. The event can be traced continuously throughout the southern part of the project but in the extreme northeast the erosion of the Mississippian cuts into the Pekisko. The strength of the erosion is profound in places and escarpments are interpreted. The north end of Line 8 and the north end of CW 10 give excellent examples of this type structure. The definition of small structural closures at other areas in the extreme north, where the Pekisko has probably been almost completely preserved, could serve as relatively inexpensive optimum drill sites to test the potential of the zone.

The synoptic interpretive map has been prepared to show the locations of the more interesting structural and isochronal forms. In the case of the Mississippian section loss areas, the lines have been drawn between points where severe dips have been noted. The remaining notes identify numerous situations where anomalies cannot be adequately defined by mapping or where faulting in the upper zones have not been identified by other display.

4. CONCLUSIONS AND RECOMMENDATIONS

The results of the interpretation are considered reliable and these observations can be made:

1. The identifications of the various events have been verified by direct tie to a stratigraphic test.

2. The amount of economic section preserved under the Slave Point event is in the order of 0.1 seconds in the vicinity of the Gobles et al Colibets well. Study does not indicate much additional section preserved elsewhere.

3. A prominent anticlinal anomaly plunges from the south into the east central part of the area from where the axial dips revert to the north; the anticline leaves the Gobles block as a north plunging anticline.

4. The strength of the anticlinal anomaly reaches a climax at the Jean Marie level where reflection divergencies indicate either overlap by thrusting or section buildup due to reefing.

5. The western part of the area is characterized by numerous isolated and trendless high and low areas. Some faulting is suspected at Slave Point level on the anomaly drilled by the Gobles et al Colibets well but this was not verified by the well.

6. Numerous other Slave Point anomalies have been suggested throughout the area, some of which are co-incident in place with shallower features.

7. The Mississippian section thins to the north with several pronounced section loss areas indicated. The southernmost is

probably related to loss of the Debolt section while the northeasternmost may define the Pekisko equivalent escarpment edge.

RECOMMENDATIONS

The recommendations for the acquisition of additional data are restricted to profiles which may further define the Pekisko equivalent edge. This may not be necessary in view of the shallow depth to the zone and the economics of drilling.

If any other shooting is contemplated then it is recommended that the spread lengths be as long as possible for better weathering definition but consistent with the mapping objectives of the survey, e.g. at least half mile for deep structure and the maximum tolerable for Mississippian exploration.

The recommendations for other exploration include the consideration of a shallow test on one of the Pekisko equivalent anomalies and follow up with a deep hole to test the Jean Marie and/or Slave Point.

BOWMAN AND SCHULTE LTD.,

H. E. Bowman.

May 15, 1970.

FINAL REPORT
on the
CELIBETA LAKE AREA

for

CANKEE GAS COMPANY

by

CANWEST GEOPHYSICAL LIMITED

INTRODUCTION

The following seismic reflection survey was conducted by Canwest Geophysical Limited for Cankee Gas Company.

The project, Calibeta Lake, was situated approximately One Hundred and Sixty (160) miles north and west of Fort Nelson, British Columbia in the Northwest Territories. Party headquarters was located in Fort Nelson and the field camp was located on the project.

A total of seventy and one-half (70.5) miles, consisting of Lines 1 through 15, was shot by two recording crews. Party #32, an analog crew, shot Lines 1 through 9 from January 6, to January 15, 1970. Party # 23, a digital crew, shot the remainder plus portions of Lines 8 and 9, from March 3 to March 5, 1970.

OPERATIONS

A. Accessibility:

Access to the project was gained via the Winter Tractor Road which extends north-east from Fort Nelson, British Columbia. The project lies approximately twenty (20) miles west from the road at a point approximately 140 miles from Fort Nelson.

B. Topography:

The terrain of the project comprised mainly bush-covered gently rolling hills. The maximum relief was 550 feet.

C. Surveying:

Survey control was obtained from work shot during the winter of 1968 - 69 and a wellsite located at 60° 25' 07.5" N. Latitude and 122° 27' 55.0" W. Longitude.

Vertical and horizontal ties were maintained at ± 2.0 ft. and ± 100 ft. respectively, utilizing a Wilde T1-A Theodolite.

Maximum elevation encountered was 1866 ft. ASL at SP 191 Line 14 and a minimum elevation of 1314 ft. ASL at SP 167 Line 11.

D. Drilling:

Fourteen drills including 3 conventionals, 4 Sewells and 7 top drives, were utilized to drill the shot holes. Drilling was generally poor with gravel in the northwest portion and rock in the southeast portion of the project. Four water trucks supplied water to the drill units.

E. Recording:

The instruments utilized by Party # 32, an analog crew, consisted of 24 GeoSpace 111 amplifiers and an FM 100-1 tape transport. The filter was 20 - 98 HZ.

The digital crew, Party # 23, was equipped with 24 DFS 111 Binary Gain amplifiers and a TI-508 tape transport. The filter was 12 - 124 HZ.

The geophones, utilized by both parties, were Mark Model L2 - 20 cps.

The recording parameters set up by Party # 32 were determined from previous work in the area. These were found to be unsatisfactory so the parameters utilized by Party # 23 were modified to include a longer spread and larger gap at the shot point (See Recommendations).

The field recording parameters for both parties are as follows:

	PARTY # 32	PARTY # 23
Type recording	300% split spread	400% split spread
Geophone group center interval	150 ft.	220 ft.
Shot point interval	600 ft.	660 ft.
Geophones per trace	9	9
Geophone spacing	15 ft.	25 ft.
Geophone pattern length	120 ft.	200 ft.
Spread length	1725 ft. bi-lateral	2640 ft. bi-lateral
Two hole pattern spacing	60 ft.	60 ft.
Hole depth	40 ft.	45 ft.
Dynamite charge	2.5 lbs. per hole	5.0 lbs. per hole

The record quality for the project was rated as fair to very good.

F. Computations:

Datum corrections were computed utilizing a horizontal

reference plane of 1,700 ft. ASL and a datum velocity of 9,000 ft./sec.

In addition, a delay-time correction was computed with the following formulae:

$$DT = -Tuh + Ds/Vr - f(T_1 - Tuh) \text{ and } f = \frac{Vr - Vo}{\text{CosSin}^{-1}\frac{Vo}{V_1}\ Vr}$$

where:

DT = total delay time
f = LVL time factor
Vr = replacement velocity, 9,000 ft./sec.
Vo = LVL velocity - approximately 6,000 ft./sec.
V_1 = 9,000 feet/sec.
T_1 = V_1 intercept
Ds = depth of shot
Tuh = uphole time

G. Processing:

The facilities of Canadian Magnetic Reduction were utilized for the processing of the data.

The normal moveout curve was derived from the monitor records and it proved to be satisfactory.

Paper variable-density galvonometer sections, filtered and NMO-corrected, were prepared for each line in common depth point trace gather form. The polarity of the data shot by Party # 23 was reversed to make it conform to that of Party # 32.

Structure values for each shot point were derived from the weathering corrections (See Computations) and the monitor records. These values were applied to the trace gathers. For the majority of lines, it was necessary to interpolate between several shot points, where the 9,000 ft./sec. layer was not penetrated by the charge, to obtain structure values. (See Recommendations).

Due to the two parties using different instruments and filter settings, a bulk correction of 8 ms. was added to the data recorded by Party # 23 enabling the final sections of each party to be timed-tied.

The trace gathers were edited and stacked, yielding final 300% and 400% sections of a structural nature.

The following processing parameters were used:

1. N.M.O. corrected
2. Filter 0.0 - 4.0 12-18/60-66 HZ
3. Trace gahters
4. Stack

RECOMMENDATIONS

Due to the depth of the low-velocity layer in many parts

of the project, the 9,000 ft./sec. refractor was not penetrated by the charge on several lines.

To overcome the resulting lack of weathering control, it would be advisable to shoot future work in the area with a larger gap at the shot point and/or a longer spread length. Also, a closer field check of the data should be maintained to ensure that penetration of the charge to the approporiate refractor is accomplished.

Respectfully submitted by
CANWEST GEOPHYSICAL LIMITED

REL:MH:mk

Marvin Hayduk

APPENDIX I

STATISTICS

1.	Total number of profiles	594
2.	Total number of shots	598
3.	Total number of miles	70.5 miles
4.	Total dynamite used	4,435 lbs.
5.	Dynamite used per shot	7.45 lbs.
6.	Dynamite used per profile	7.48 lbs.
7.	Total caps used	1,307
8.	Caps used per shot	2.18
9.	Caps used per profile	2.20
10.	Total recording hours, field	105.5 hrs.
11.	Total recording hours, driving	41.0 hrs.
12.	Total recording hours	146.5 hrs.
13.	Total number of holes drilled	1,232
14.	Total footage drilled	51,459 feet
15.	Number of ft. drilled per hr, field	59.5 feet
16.	Number of holes drilled per 10 hr. day	14.3
17.	Drill hours, field	863.5 hrs.
18.	Drill hours, driving	367.0 hrs.
19.	Total drill hours	1,230.5 hours
20.	Rock bits used	19
21.	Insert bits used	353
22.	Number of feet drilled per bit	138.0
23.	Total bran used	2,800 lbs.
24.	Total mud used	5,300 lbs.
25.	Water truck hours	526.5 hours
26.	Dozing hours	76.5 hours
27.	Survey crew	174.0 hours

ENCL.

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

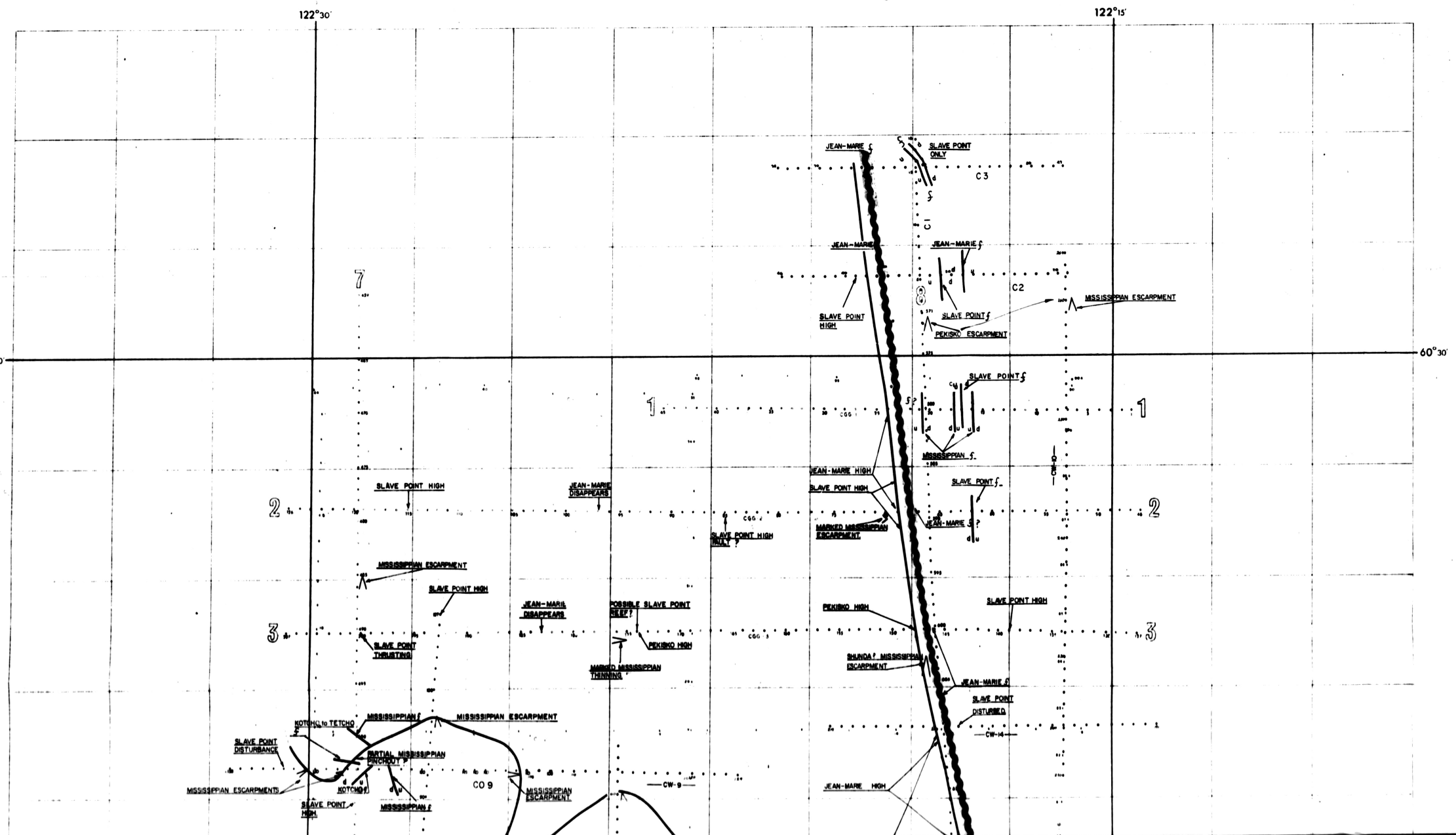
GOBLES OIL AND GAS LIMITED
CALGARY, ALBERTA

SYNOPTIC INTERPRETIVE MAP

BOWMAN & SCHULTE LTD.

Compiled By | Date MARCH 1970 | FILE No. C-29
Drawn By | Scale

SCALE 2 INCHES to 1 MILE



1 OF 2

MISSISSIPPIAN ESCARPMENT
SLAVE POINT HIGH
SLAVE POINT THRUSTING
JEAN-MARIE DISAPPEARS
POSSIBLE SLAVE POINT REEF?
PEKISKO HIGH
MARKED MISSISSIPPIAN THINNING
SLAVE POINT HIGH FAULT ?
MARKED MISSISSIPPIAN ESCARPMENT
PEKISKO HIGH
SLAVE POINT HIGH
SHUNDA? MISSISSIPPIAN ESCARPMENT
JEAN-MARIE ?
SLAVE POINT DISTURBED
CW-14
KOTCHO to TETCHO
MISSISSIPPIAN ?
MISSISSIPPIAN ESCARPMENT
SLAVE POINT DISTURBANCE
PARTIAL MISSISSIPPIAN PINCHOUT ?
MISSISSIPPIAN ESCARPMENTS
KOTCHO ?
MISSISSIPPIAN ?
SLAVE POINT HIGH
CO 9
CW-9
MISSISSIPPIAN ESCARPMENT
JEAN-MARIE HIGH
SLAVE POINT HIGH
CO 7
CW-15
SLAVE POINT HIGH
SLAVE POINT DISTURBED
SLAVE POINT THRUST ?
CW-13
SLAVE POINT HIGH
PARTIAL MISSISSIPPIAN PINCHOUT ?
JEAN-MARIE STRUCTURE THRUSTING ?
TETCHO TO SLAVE POINT FOLD
POST DEBOLT MISSISSIPPIAN ESCARPMENT
MISSISSIPPIAN THICK
MARKED MISSISSIPPIAN ESCARPMENT
MISSISSIPPIAN THICK REMNANT
MISSISSIPPIAN THIN
JEAN-MARIE DISAPPEARS
SLAVE POINT ?
PEKISKO CHARACTER CHANGE
CO 8
CW-8
JEAN-MARIE DISAPPEARS
POSSIBLE PARTIAL MISSISSIPPIAN PINCHOUT
JEAN-MARIE HIGH THRUST ?
SLAVE POINT ?
SIKANNI PINCHOUT ?
KOTCHO FAULTING
SLAVE POINT THRUST
???
HIGHLY INTERPRETIVE
CW-12
CW-11
SLAVE POINT HIGH
JEAN-MARIE STRUCTURE THRUST ?
SLAVE POINT STRUCTURE REEF ?
JEAN-MARIE DISAPPEARS
SLAVE POINT STRUCTURE REEF ?
SLAVE POINT REEFING ?
SLAVE POINT ?
SLAVE POINT HIGH
SIKANNI PINCHOUT ?
JEAN-MARIE THRUSTING
JEAN-MARIE STRUCTURE PROBABLY THRUST
CO 1
POSSIBLE SLAVE POINT FAULTING
CO 4
JEAN-MARIE THRUSTING
PARTIAL MISSISSIPPIAN PINCHOUT ?
CO 2
SLAVE POINT HIGH
SITE OF DISTURBANCE AT BANFF LEVEL
CO 6
CO 5
SLAVE POINT HIGH
SLAVE POINT HIGH
CO 3
JEAN-MARIE THRUSTING
60°20'
122°30'
122°15'

2 of 2

ENCL.

NORTHWEST TERRITORIES – CANADA

CELIBETA AREA

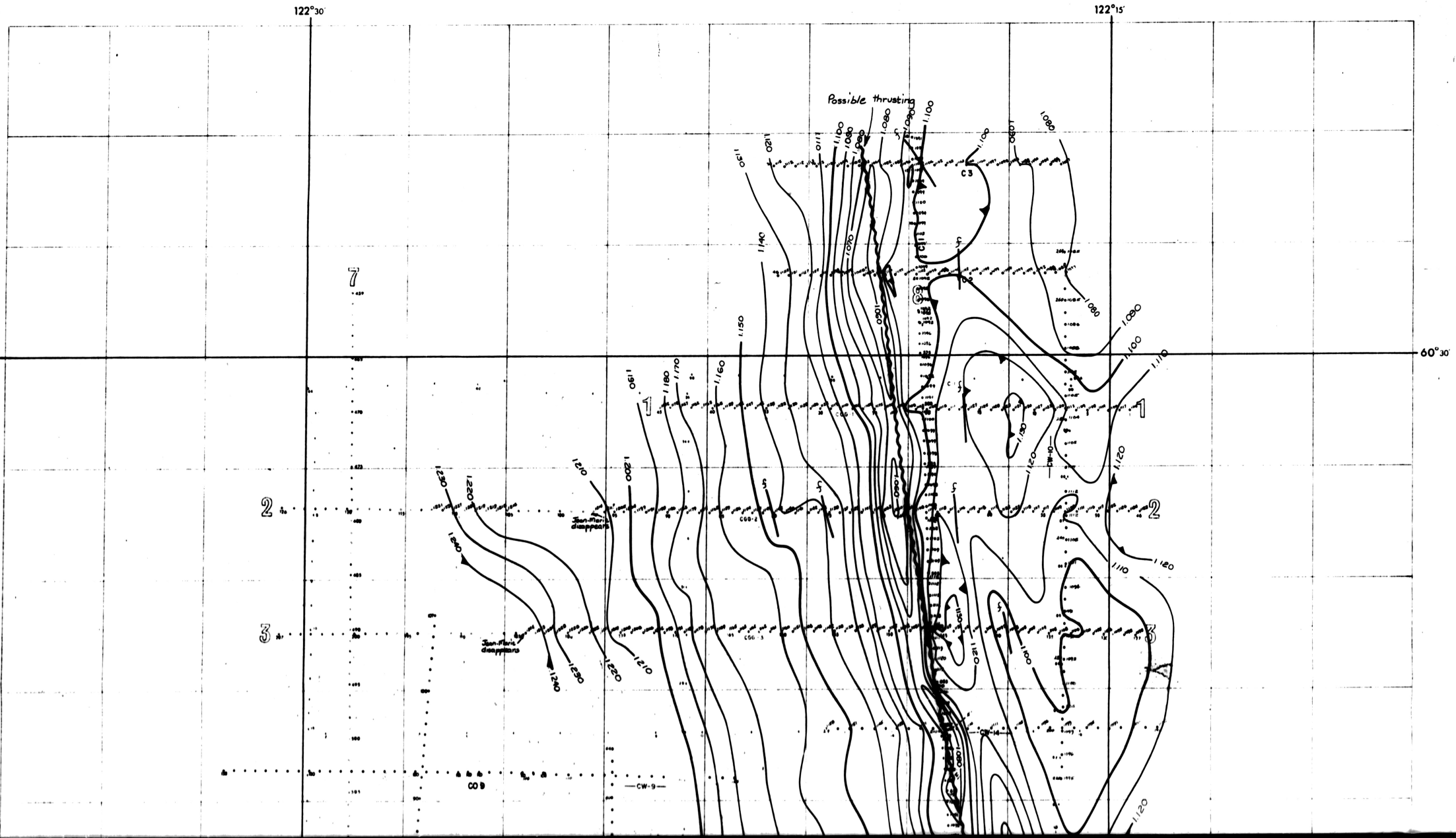
GOBLES OIL AND GAS LIMITED
CALGARY - ALBERTA

Structural Control
on the
JEAN-MARIE HORIZON

BOWMAN & SCHULTE LTD.

Datum plane 1,700' a.s.l.	Date MARCH 1970	FILE No.
Corr. velocity 9,000'/sec.	Contour Int. ·010 sec.	K-29

SCALE 2 INCHES to 1 MILE




Jean-Marie disappears
CG6-3
CG6-4
CG6-5
CG6-6
CG6-8
CG6-9
CG6-10
CG6-11
CG6-12
CG6-13
CG6-14
CG6-15
CO7
CO8
CO9
CW-9
CW-11
CW-12
CW-13
CW-15
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960
950
940
930
920
910
900
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880
870
860
850
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820
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260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
60°20'
122°30'
122°15'

ENCL.

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

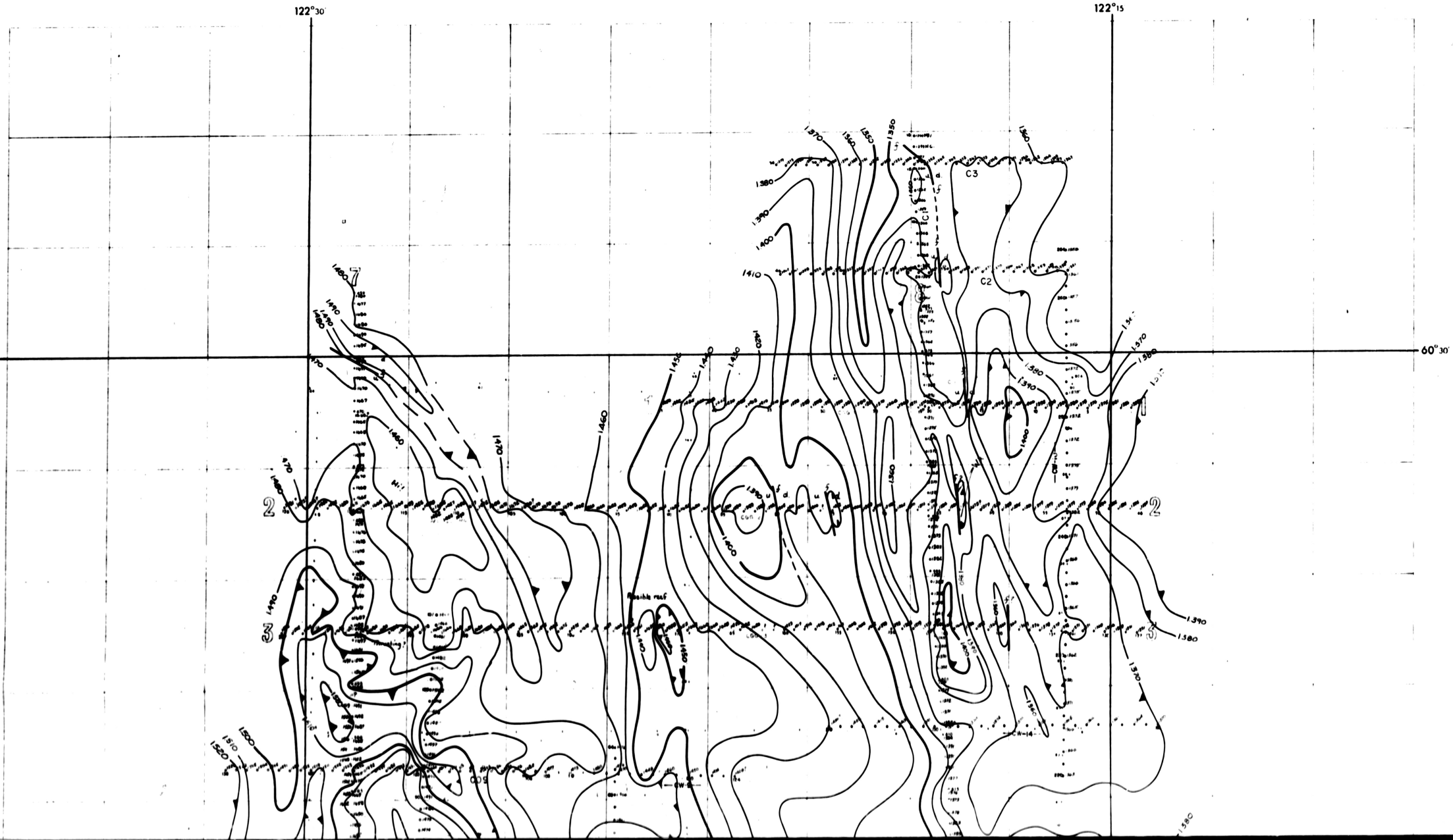
GOBLES OIL AND GAS LIMITED
CALGARY - ALBERTA

Structural Control
on the
SLAVE POINT HORIZON

BOWMAN & SCHULTE LTD.

Datum plane 1,700' s.s.l. Date MARCH 1970 Fig. # no. 24
Corr. velocity 9,000'/s. Contour Int. 010 sec

SCALE 2 INCHES to 1 MILE



HIGHLY INTERPRETIVE

60°20'

122°30'

122°15'

2 of 2

ENCL.

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

GOBLES OIL AND GAS LIMITED
CALGARY, ALBERTA

Isochronal Control
on the
TETCHO - JEAN-MARIE INTERVAL

BOWMAN & SCHULTE LTD.

Compiled by	Date MARCH 1970	FILE No
Drawn By	Contour Int. 010sec.	R-29

SCALE 2 INCHES to 1 MILE

122°30'

122°15'

60°30'

60°30'

1/2 Cycle higher

1/2 Cycle higher ?

1/2 to 1 Cycle higher

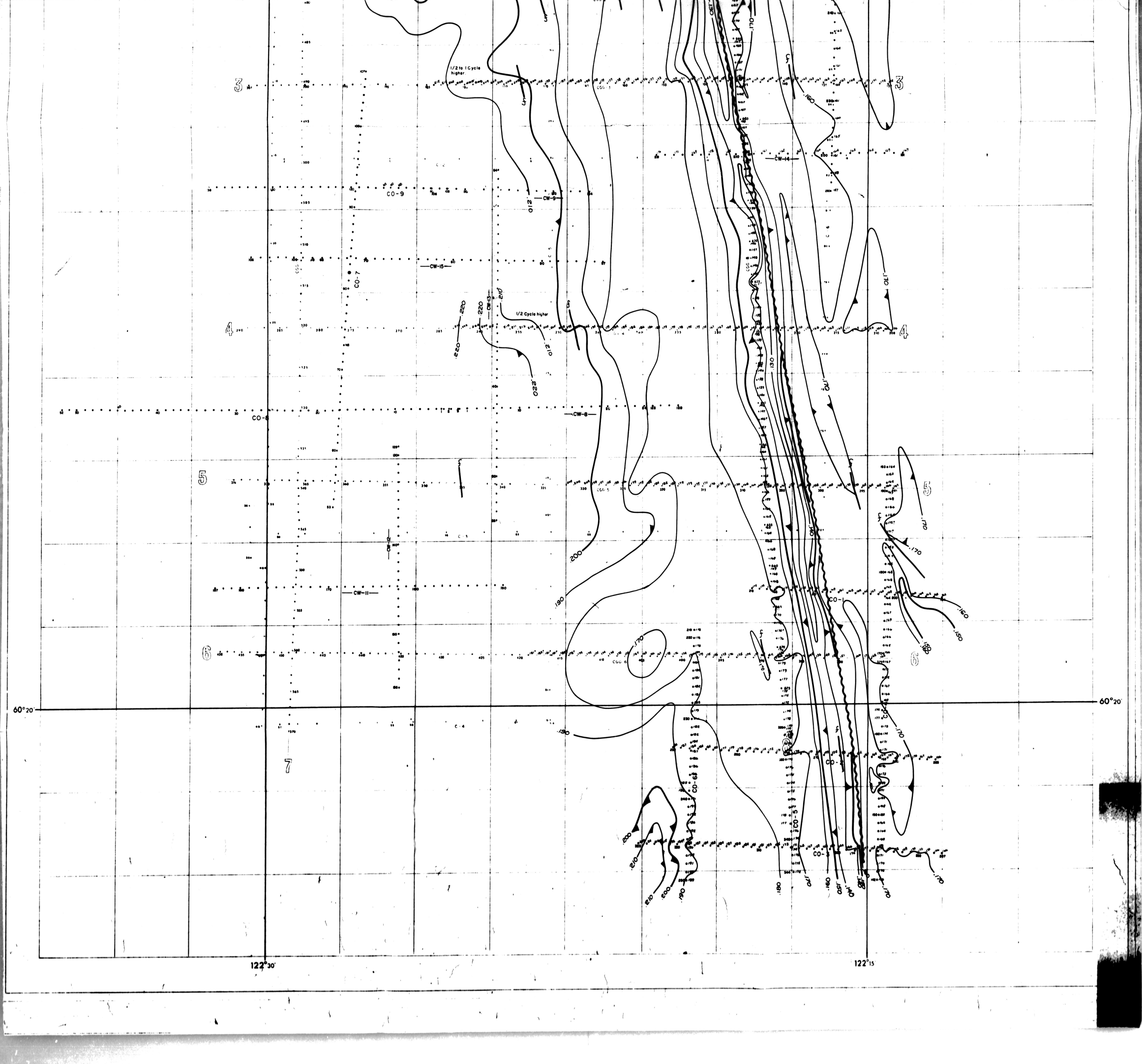
CO-9

CW-9

CW-14

CW-10

CG3


1/2 to 1 Cycle higher
1/2 Cycle higher
CW-9
CW-15
CW-13
CW-8
CW-12
CW-11
CW-14
CO-9
CO-7
CO-6
CO-1
CO-5
CO-4
CO-3
60°20'
122°30'
122°15'

ENCL.

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

GOBLES OIL AND GAS LIMITED
CALGARY - ALBERTA

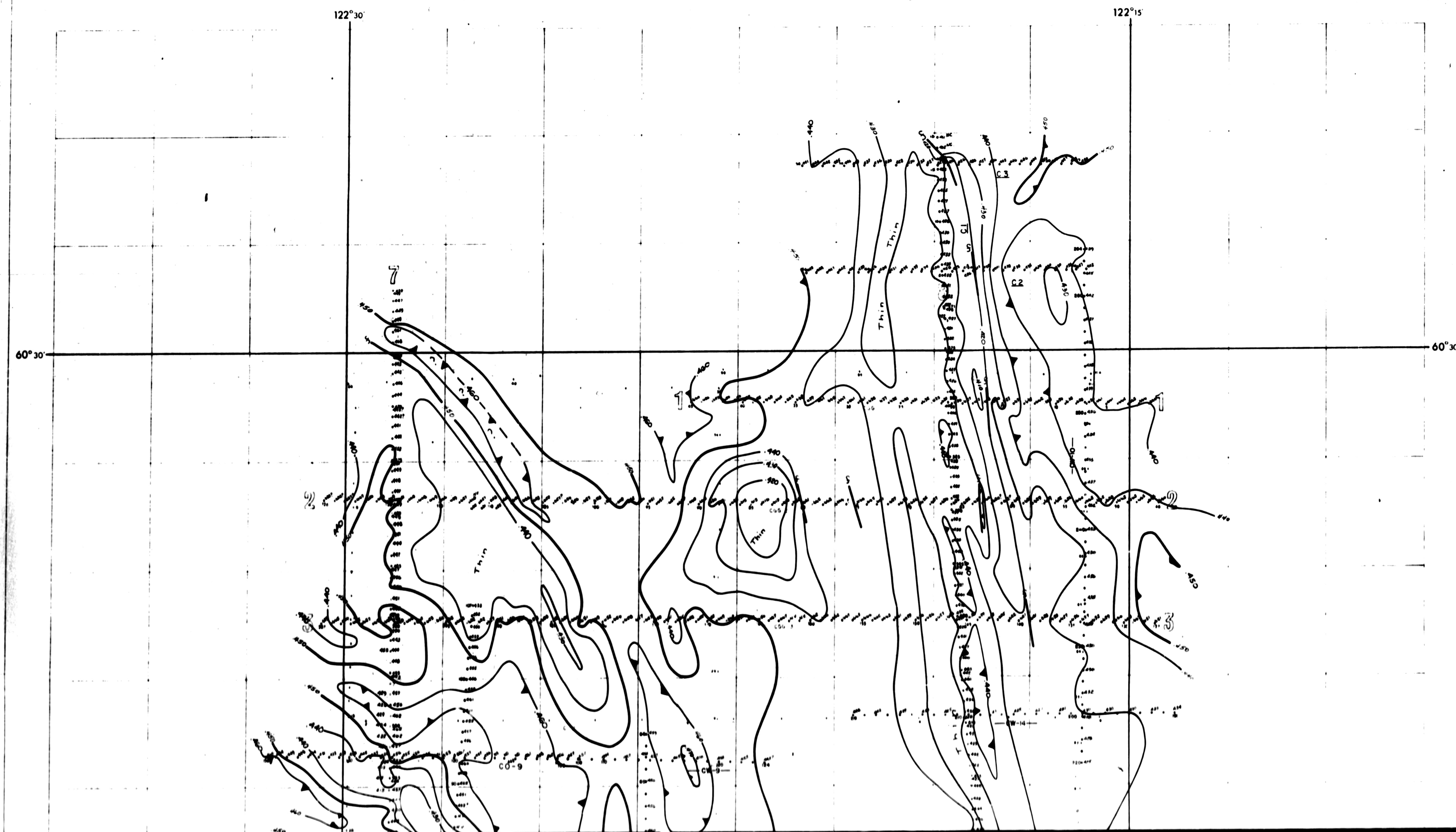
Isochronal Control
on the

TETCHO - SLAVE POINT INTERVAL

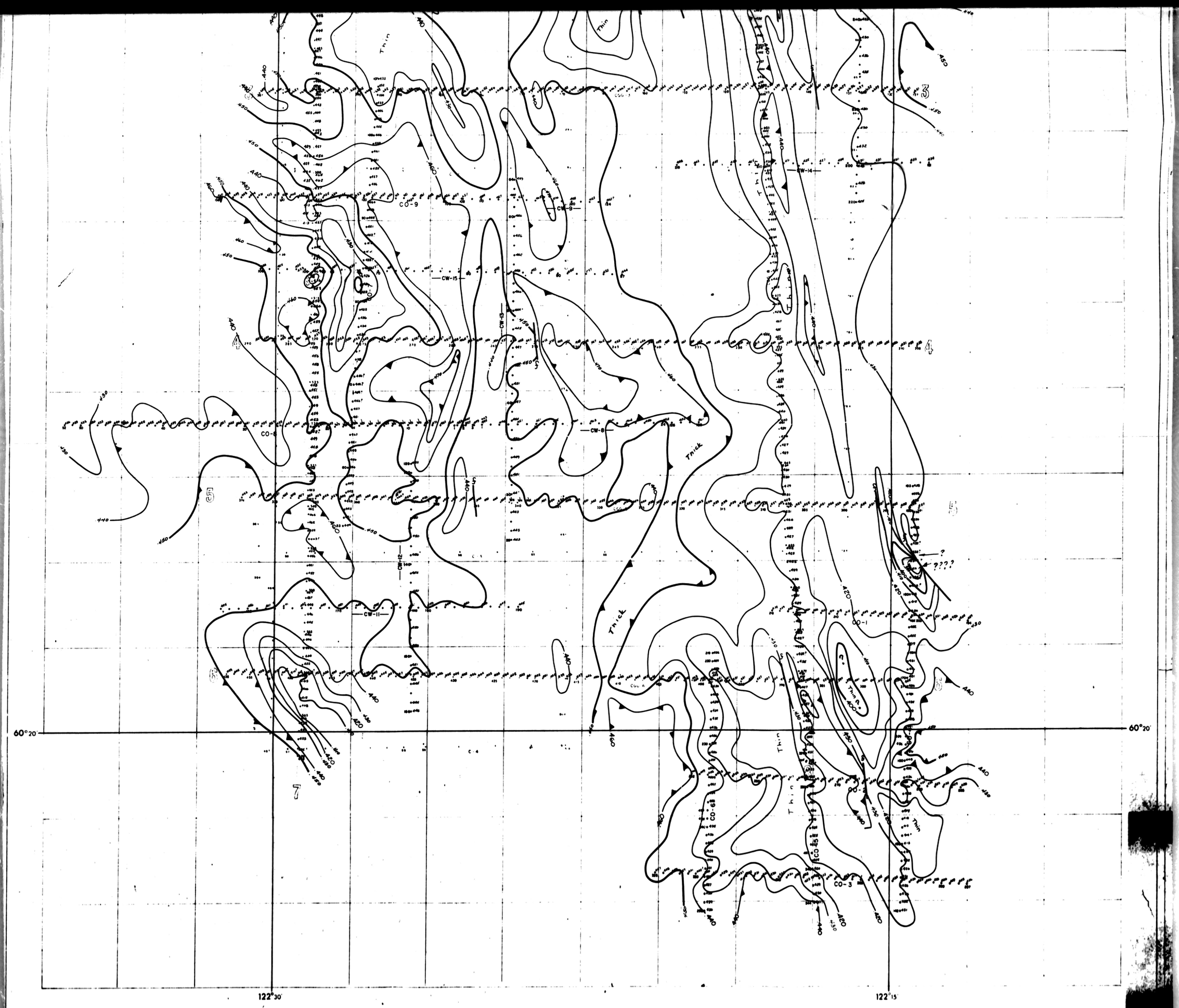
BOWMAN & SCHULTE LTD.

Compiled by	Date MARCH 1970	FILE No. R-29
Drawn by	Contour Int. .010sec.	

SCALE 2 INCHES to 1 MILE



1 OF 2


60°20'
122°30'
122°15'
CW-15
CW-13
CW-14
CW-8
CW-12
CW-11
CO-9
CO-6
CO-1
CO-3
Thick
Thin
A40
A50
A20
????

ENCL

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

GOBLES OIL AND GAS LIMITED
CALGARY - ALBERTA

STRUCTURAL CONTROL on the
PEKISKO HORIZON

BOWMAN & SCHULTE LTD.

Datum plane 1,700' a.s.l. Date MARCH 1970 Plate No. 29
Corr. velocity 9,000 '/s Contour int. 010 sec

SCALE 2 INCHES to 1 MILE

122°30'

122°15'

60°30'

60°30'

NOTE: MAPPING RESTRICTED TO AREA OF PEKISKO EDGE

ESCARPMENTS

PEKISKO EDGE ?

C3

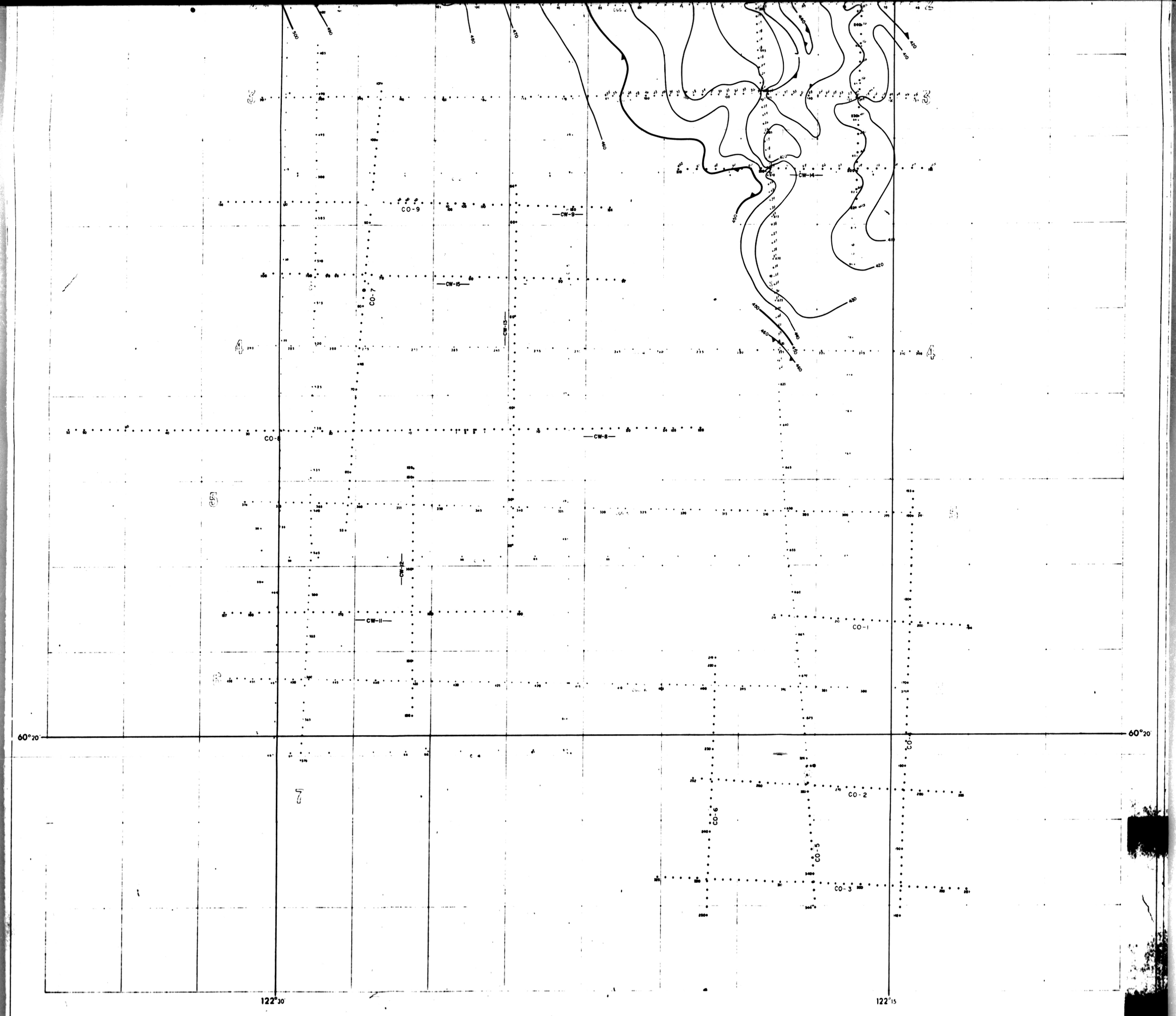
C2

CO-9

CW-9

CW-14

1 OF 2


CW-14
CW-9
CW-15
CW-13
CW-8
CW-12
CW-11
CO-9
CO-7
CO-8
CO-1
CO-2
CO-6
CO-15
CO-3
CO-4
60°20'
122°30'
122°15'

ENCL.

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

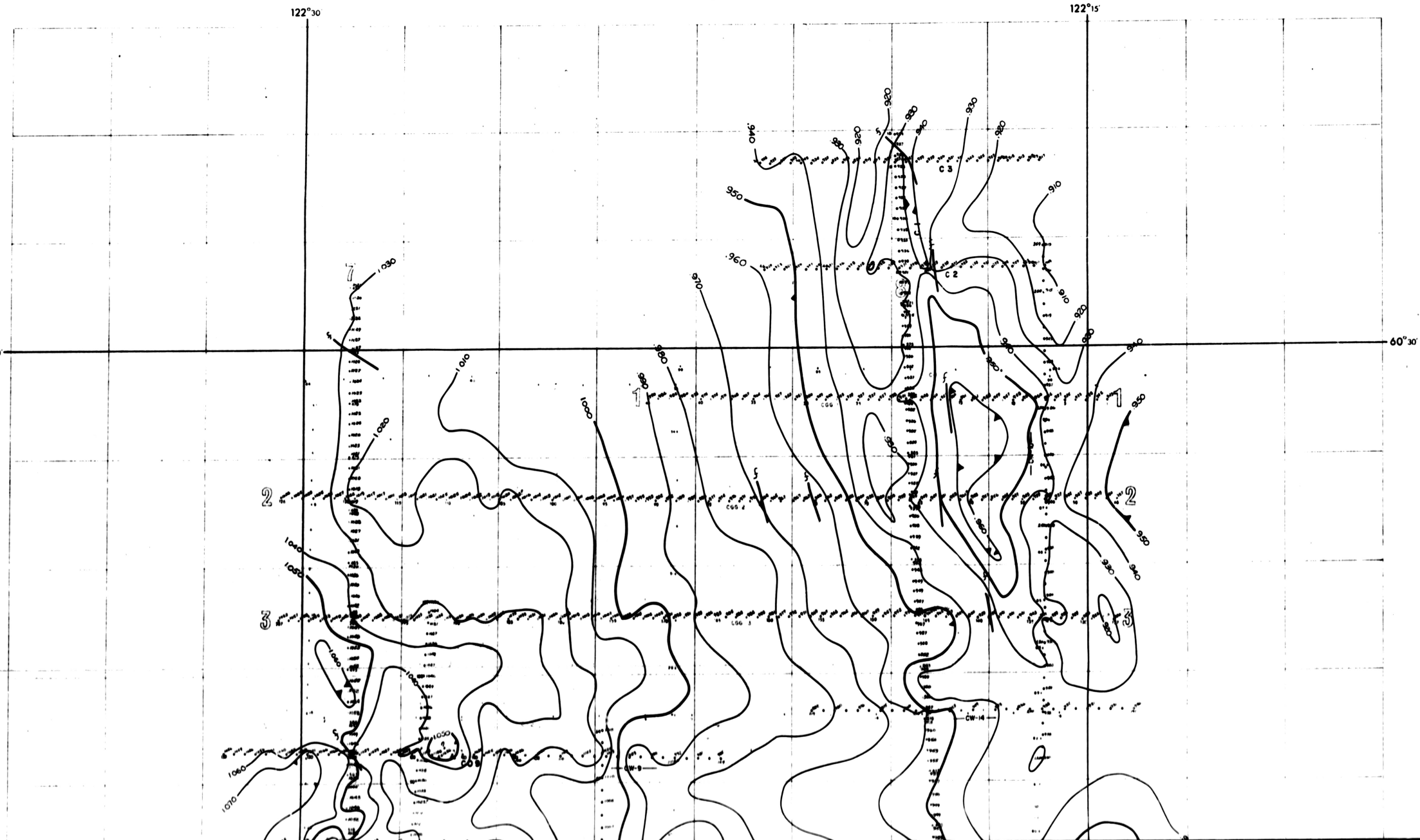
GOBLES OIL AND GAS LIMITED
CALGARY, ALBERTA

Structural Control
on the
TETCHO HORIZON

BOWMAN & SCHULTE LTD.

Datum plane 1,700' a.s.l. Date MARCH 1970
Corr velocity 9,000'/sec. Contour int. 010 sec.

SCALE 2 INCHES to 1 MILE



60°20'

122°30'

122°15'

2 of 2

ENCL

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

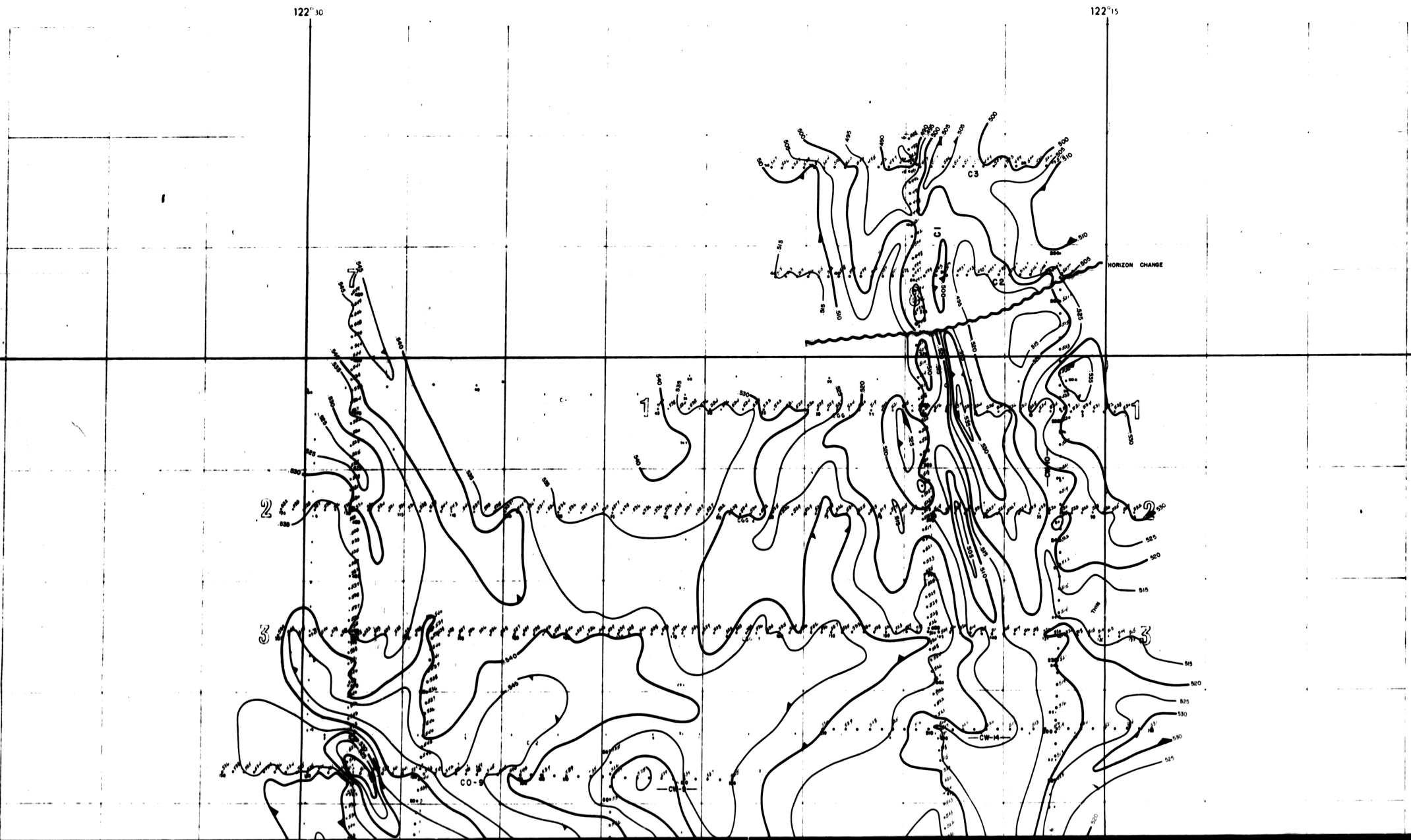
GOBLES OIL AND GAS LIMITED
CALGARY - ALBERTA

ISOCHRONAL CONTROL on the
PEKISKO to TETCHO INTERVAL

BOWMAN & SCHULTE LTD.

Compiled by — Date MARCH 1970 — P.C.F. No —
Drawn by — Cont. int. 005 secs

SCALE 2 INCHES to 1 MILE



60°20'

122°30'

122°15'

ENCL

NORTHWEST TERRITORIES - CANADA

CELIBETA AREA

GOBLES OIL AND GAS LIMITED
CALGARY - ALBERTA

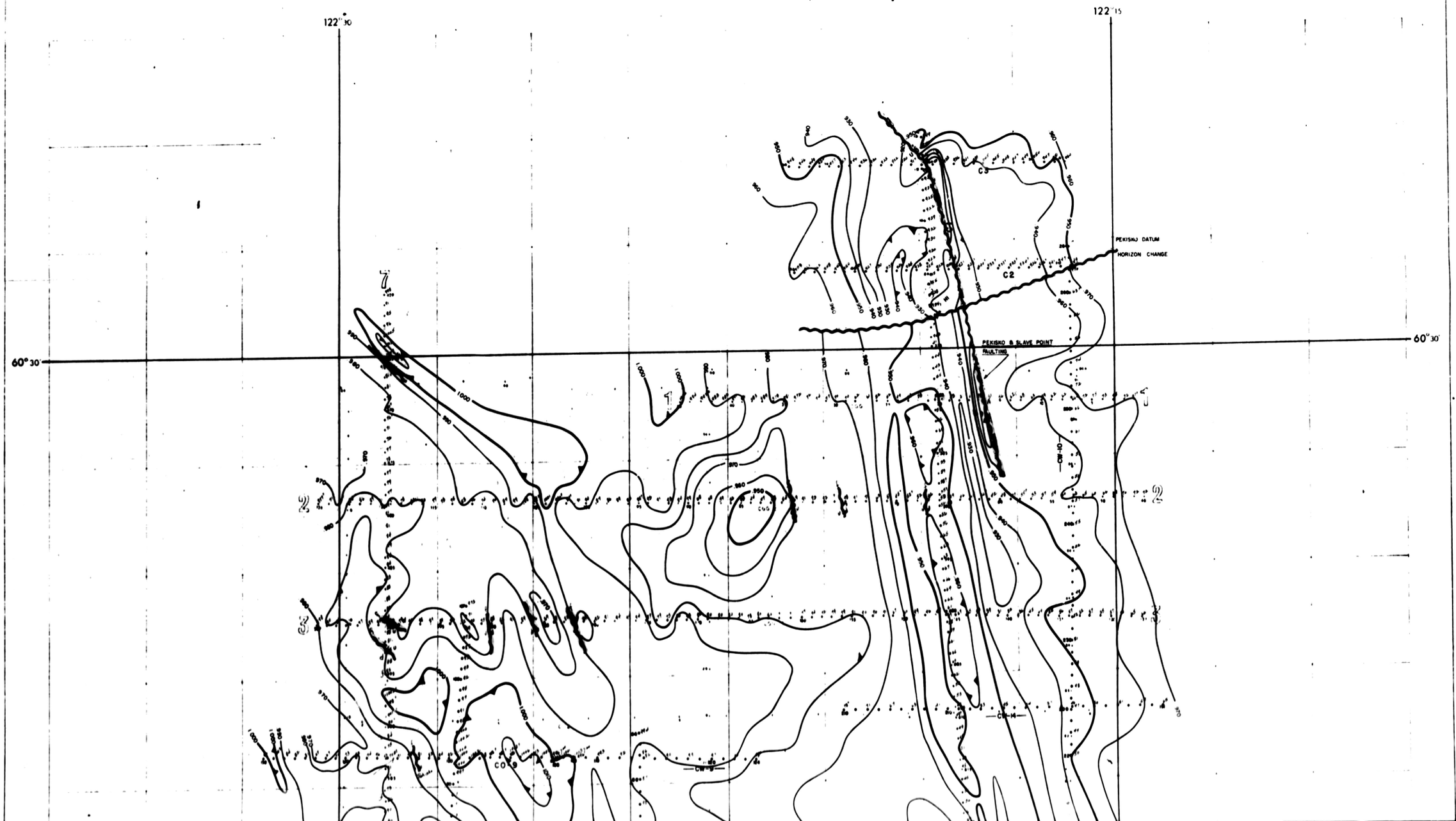
ISOCHRONAL CONTROL on the
PEKISKO ? to SLAVE POINT
INTERVAL

BOWMAN & SCHULTE LTD.

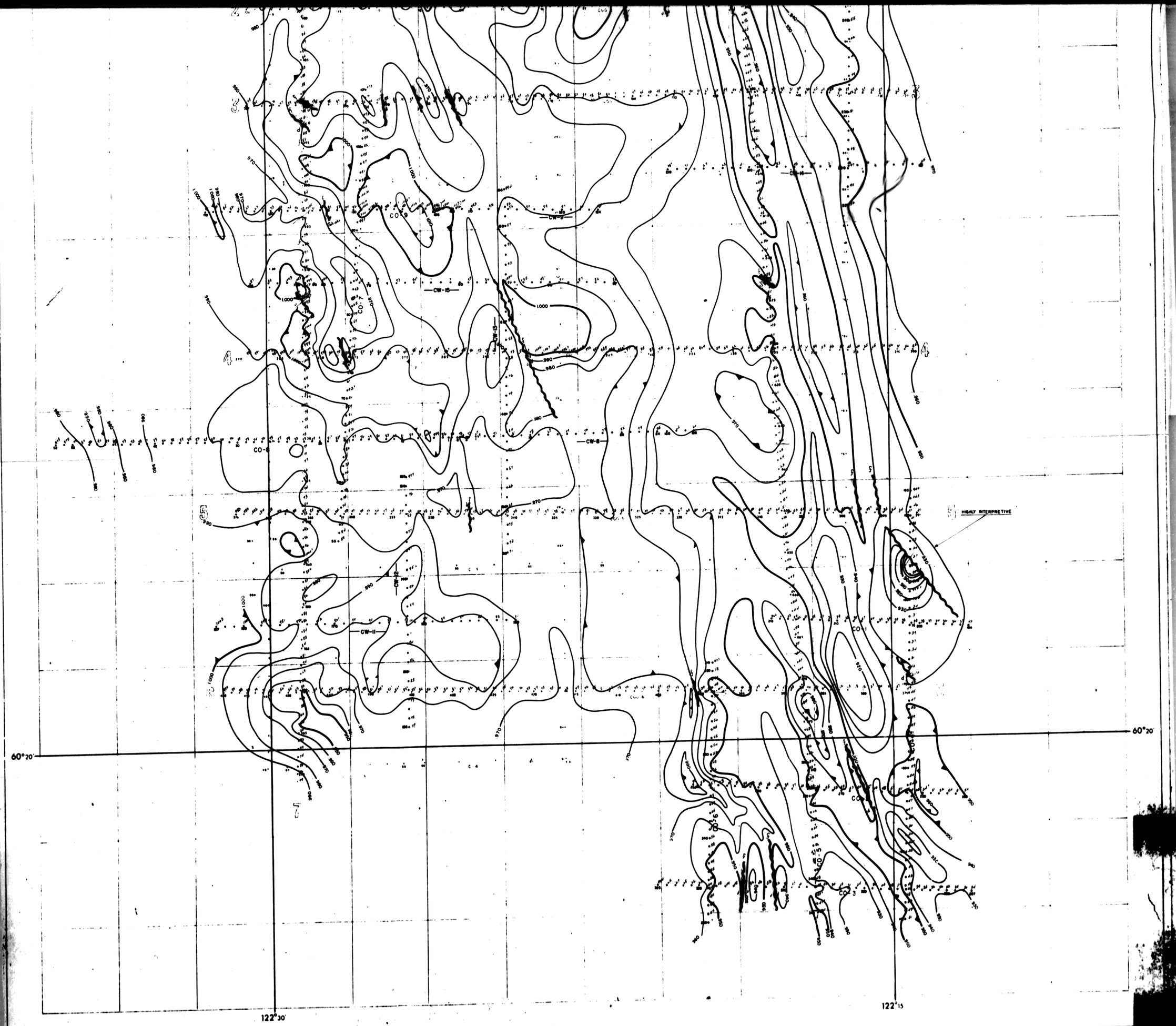
Compiled by — Date MARCH 1970 — Plate No.
Drawn by — Contour int. 010 sec

SCALE 2 INCHES to 1 MILE

NOTE: ALL VALUES 900 SERIES
UNLESS SPECIFIED.



1 OF 2


HIGHLY INTERPRETIVE
60°20'
122°30'
122°15'
CW-15
CW-11
CW-8
CO-9
CO-7
CO-6
CO-1
CO-3
CO-5