REPORT OF GEOPHYSICAL AND GRAVITY SURVEY

Conducted by Airborne Gravity and Seismic Services for Amoco Canada Pet. Co. Ltd.

During the Period of March 8, 1971 to April 1, 1971 on Bulmer Lake, N.W.T.
Permit Numbers 4500 to 4505.

60-8-4-111

Prepared by: C.W. Allison

OIL & GAS OPERATIONS UNIT
Oil and Mineral Division
JAN 4 1972
OTTAWA, CANADA
Dept. of Indian Affairs & N

REPORT OF GEOPHYSICAL SURVEY

REPORT OF GRAVITY SURVEY

Abstracted for
Geo-Science Data Index
Date

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District Geophysicist

Submitted in support of application for credit, see affidavit made by _____ of _____ and in accordance with work obligations under Section 54 (f) of the Territorial Lands Act.

TABLE OF CONTENTS


122° 00'
121° 00'
120° 00'
63° 00'
BULMER LAKE
Willow River
Pine Creek
Willow Lake
62° 00'
MACKENZIE
River

INTRODUCTION

A helicopter lifted gravity survey was conducted during March 1971 on Bulmer Lake, N.W.T. Permit Numbers 4500 to 4505. The survey was conducted by Airborne Gravity and Seismic Services for Amoco Canada Petroleum Company Ltd.

STATISTICAL DATA

Dates

During February 1971 Range Aerial Survey Ltd. flew an aerial photo survey over the block (alt. 10,900 ASL barometric). At the same time Amoco cleaned out an access road into the area.

The Airborne surveying and metering crews arrived during the first week of March 1971. Field operations commenced on March 8, 1971 and were completed on March 31, 1971. The helocopters were mobilized in the first week of March and released on March 31, 1971.

Production

The survey resulted in 1,822 metered stations with an average grid spacing of about 2,640 feet. The metering took 23 field days for an average production of 79 stations per day. Two mornings were lost due to inclement weather. A maximum production of 124 stations per day was obtained.

Equipment

The gravity metering was accomplished using a modified LaCoste and Romberg remote controlled meter installed in and to a helicopter; the meter being attached by a 100 foot cable. The meter was photographed on the ground at the station using a Hasselblad 35 mm camera.

The air photo survey was flown with a Cessna 320 aircraft; using a six inch focal length Wild RC8 camera.

The surveying crew built three 100 foot towers on the block in which they housed a theodolite, tellurometer and radio communication equipment. The survey helicopter was equipped with a "hoversight", a returning antenna for tellurometer, a plumbob on a winch and a strong flashing beacon. Ground equipment consisted of two polydome units, one sleeping trailer and one Wolverine all-terraine vehicle.

Personnel

1 Metering Supervisor
1 Meter Operator
4 Pilots
2 Engineers
1 Survey Supervisor
3 Surveyors

TOTAL 12 MEN

Navigation

Station locations were spotted on the aerial photographs prior to

the commencement of field work. The actual locations were fixed by photographing the meter on the ground at the station for later matching with the air photos.

The elevation control was established by measuring 101 elevation points over the prospect with the surveying helicopter. These points were referenced to the control towers previously mentioned. The elevation control points and stations are plotted on autopositives of the air photos. The actual station elevation is established with a stereo plotter in the office.

Conditions

The area has sparse vegetation with clusters of trees 50-100' apart, generally of less than 100 feet in height. The muskeg between the clusters was frozen with generally less than 2 feet of snow cover.

The temperatures during the survey varied from $-31^{\circ}F$ to $+30^{\circ}F$ with an average working temperature of about $+15^{\circ}F$. On two mornings of the survey period inclement weather prevented helicopter flying.

Field Procedures

The gravity meter was set on the ground at each station and photographed from the hovering helicopter during the reading operation. Elevation control was established by lowering the plumbob to the ground

from a hovering helicopter, while the distance and angle of the helicopter was measured from the control tower.

Data Processing

The measured gravity at each station was corrected for instrument drift and latitude location. The final Bouguer values were produced using a correction factor 0.065 mgal/ft.

The residual map was produced by manually producing a regional from the Bouguer gravity map.

Results and Interpretation

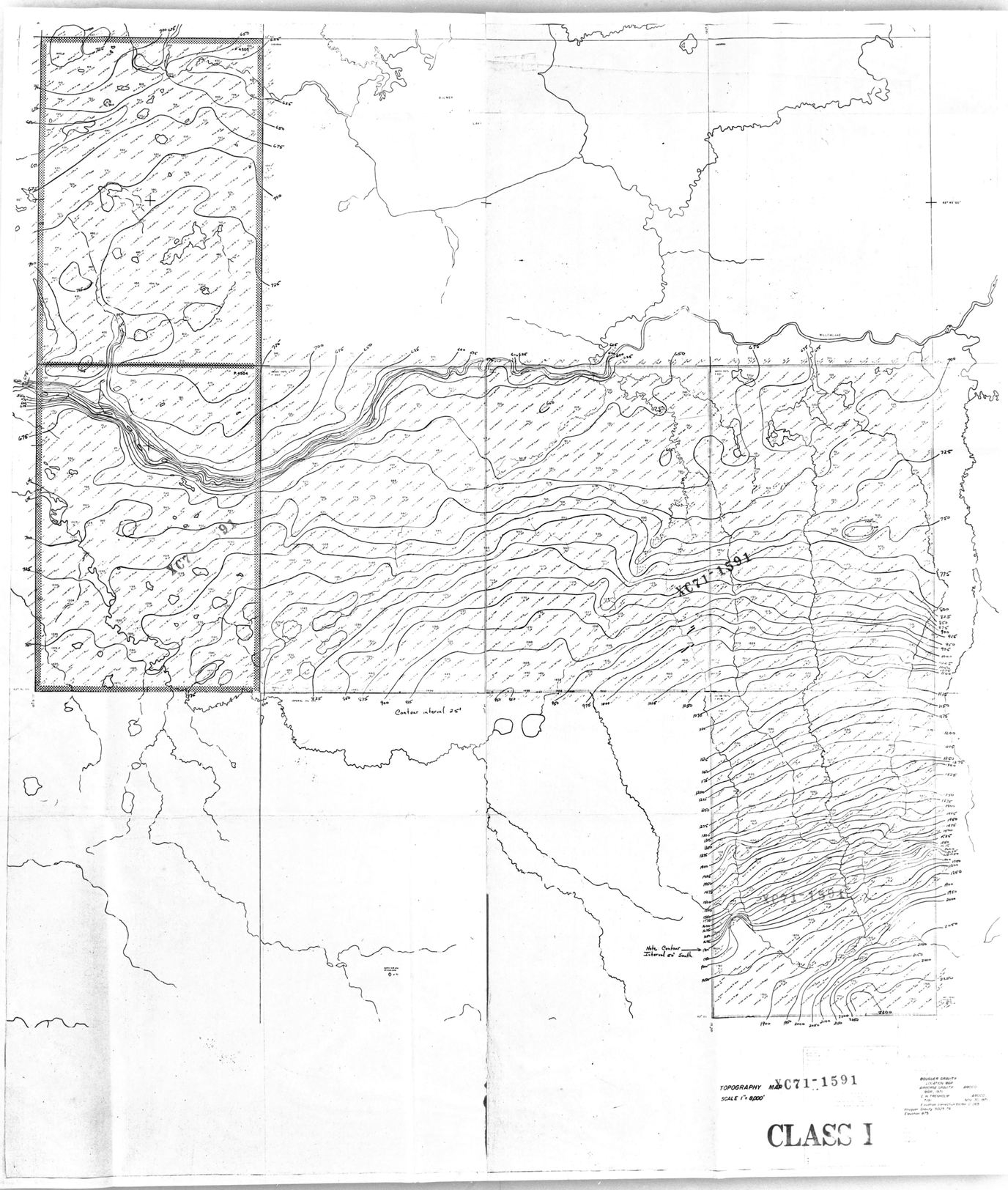
The deep east-west negatives and various smaller features on the residual gravity map are considered due to near surface material. The large positive anomalies are interpreted as possibly due to reefs in the Horn River shale and Cold Lake salt. However, it is also possible that the broad anomalies may be due to anhydrite replacement in the Cold Lake salt.

Respectfully submitted by

AMOCO CANADA PETROLEUM COMPANY LTD.

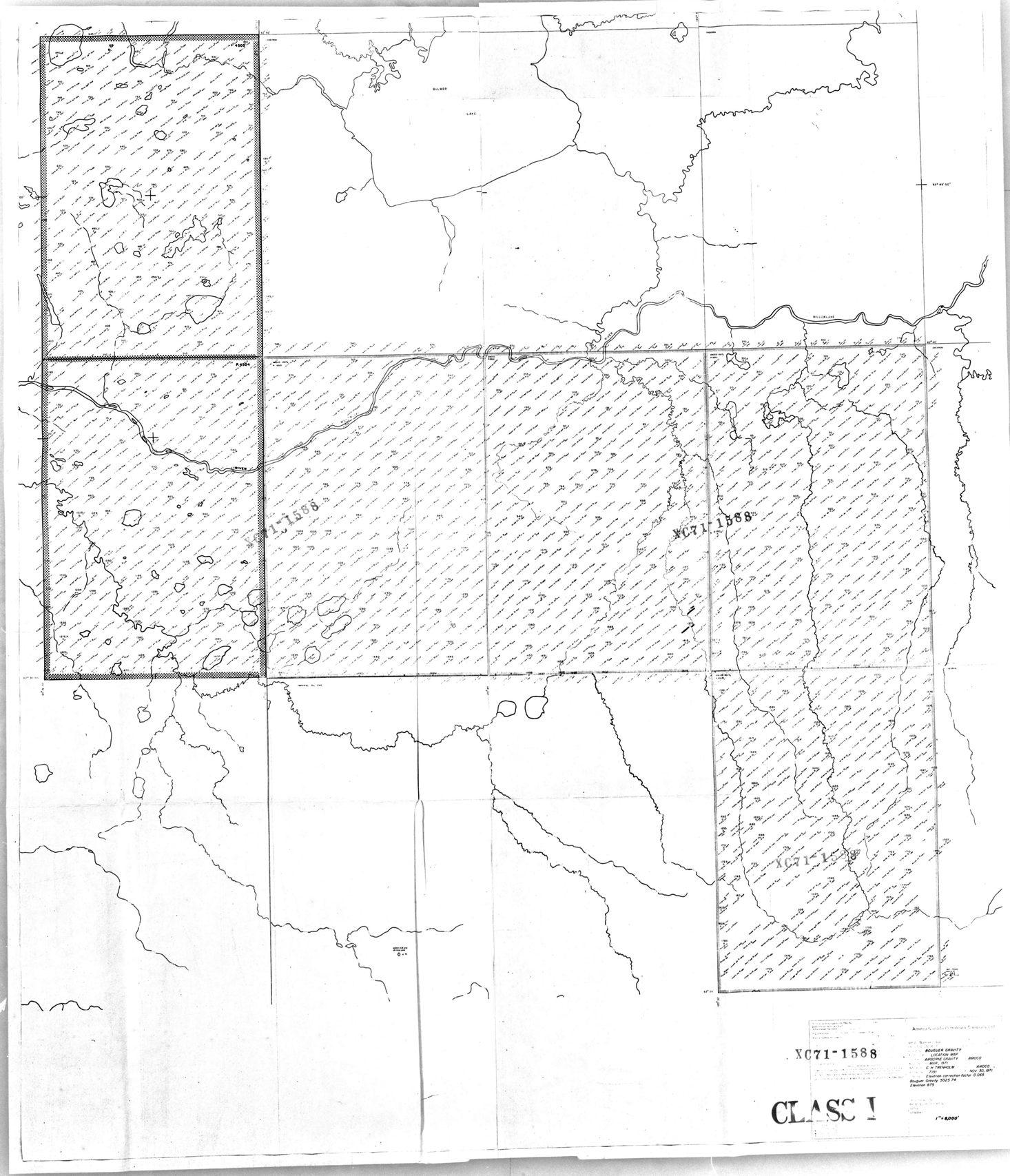
C W Allison/mk

C.W. Allison
District Geophysicist

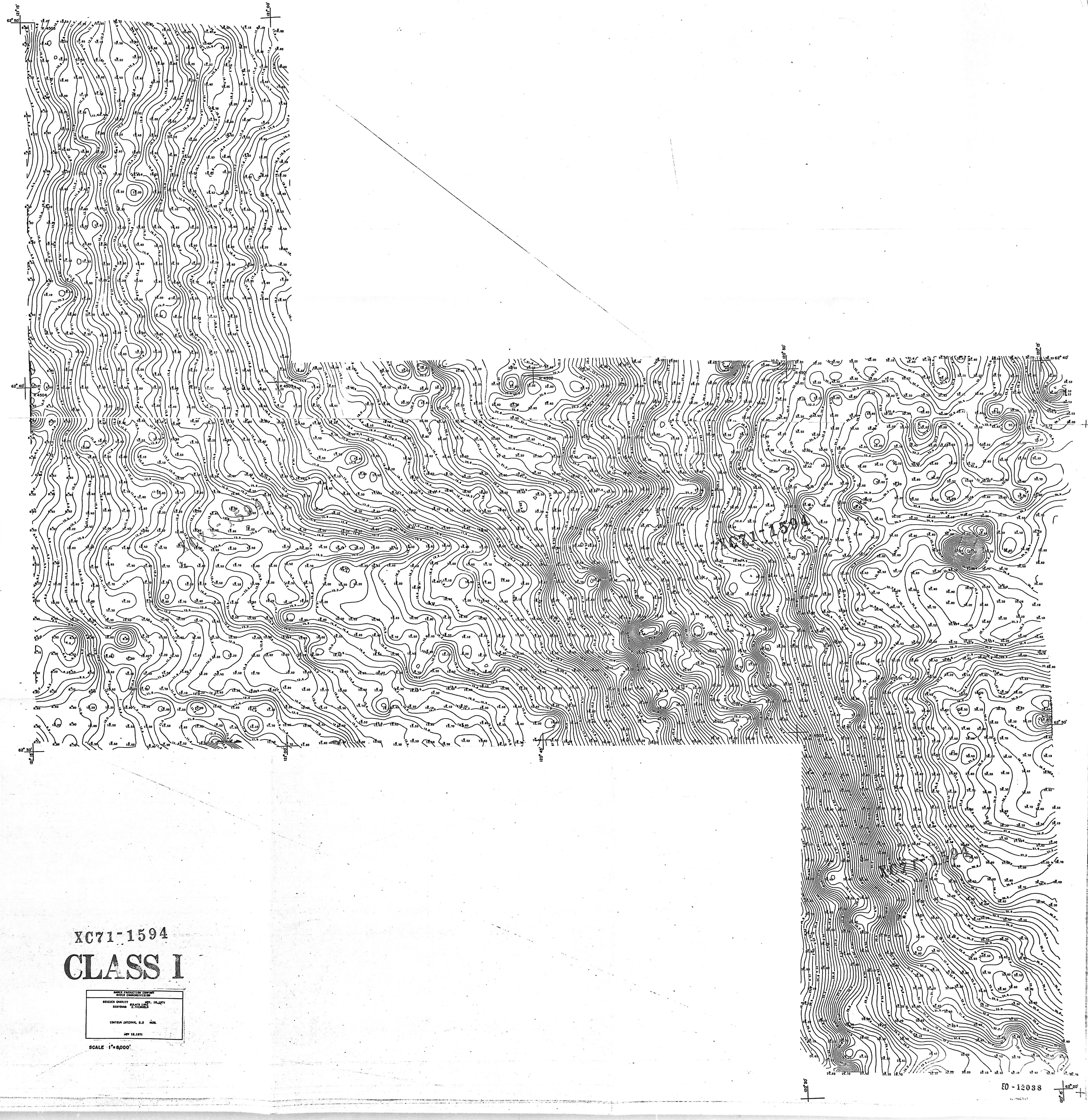


TOPOGRAPHY MAP XC71-1591
SCALE 1" = 8000'

CLASS I


BULMER
LAKE
WILLOWLAKE
XC71-1588
XC71-1588
XC71-1588
XC71-1588
ROUGUER GRAVITY
LOCATION MAP
AIRBORNE GRAVITY
MAP, 1971
C. H. TREWOLM
7791
Elevation correction factor 0.065
Rouguer Gravity 5025.74
Elevation 875
AMOCO
NOV. 30, 1971
AMOCO
1"=8000'
CLASS I


BULMER
LAKE
WILLOW
LAKE
WILLOWLAKE
RIVER
XC7-1597
XC7-1597
XC7-1597
XC7-1597
Amoco Canada Petroleum Company Ltd.
CLASS I



XC71-1594

CLASS I

AMOCO PRODUCTION COMPANY
AMOCO CANADA DIVISION

BOUGUER GRAVITY   NOV. 10,1971
BULMER LAKE
OXBYDMAN   C.TAERNOLA

CONTOUR INTERVAL 0.2 MGAL

NOV 10,1971

SCALE 1"=8,000'

EO-12038