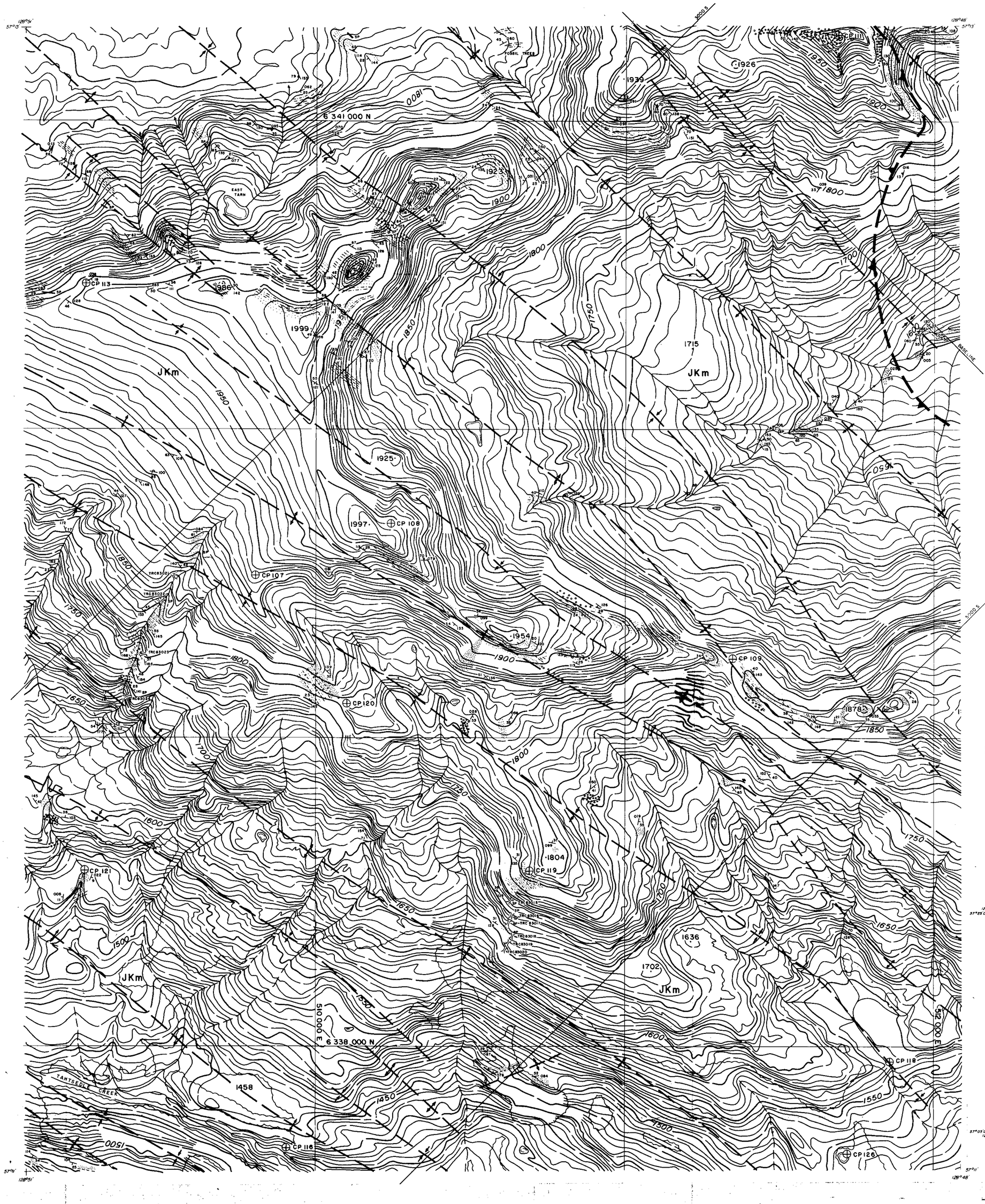
00740

APPENDIX II



LEGEND

- BUILDING
- ROAD, HARD SURFACE
- LOOSE SURFACE
- CART TRACK
- TRAIL
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
- APPROXIMATE
- SPLIT
- LAKE
- WATER LEVEL — EL 5051
- SWAMP
- BEAVER DAM
- TREE LINE
- CUT LINE
- CONTOURS, INDEX — 1750
- INTERMEDIATE
- DEPRESSION
- APPROXIMATE
- SPOT ELEVATION — 7654
- FORM LINES
- CUT/FILL
- FIELD CONTROL POINT — CP 121
- COAL LICENCE

NOTES

MAPPING PRODUCED FROM PHOTOGRAPHIC ENLARGEMENTS OF 1:10,000 NEGATIVES

CONTOUR INTERVAL = 10 M, WITH FORM LINES INTERVAL = 5 M.

ACCURACY OF 5M FORM LINES IS EQUAL TO THE ACCURACY OF THE 10M CONTOURS ±5.0 METERS FOR GROUND NOT OBSCURRED BY TREES OR VEGETATION.

SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY
WILSTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD.
FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67 AT A SCALE OF 1:60000 (APPROXIMATE)

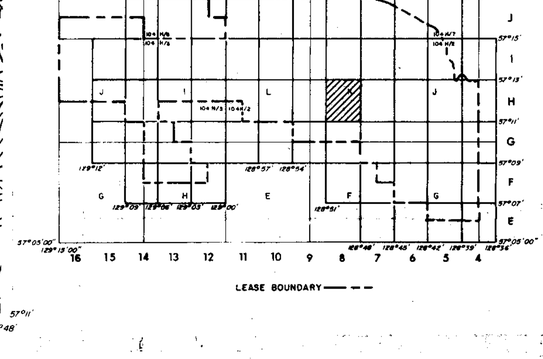
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



RHONDDA SEQUENCE

Kr Sequence of thick chert pebble conglomerates and minor gritty sandstones interbedded with an increasing number of siltstones and mudstones towards the basal contact. Large scale trough and tabular cross beds are common. Six species of plant fossils are found at the base of the sequence.

MALLOCH SEQUENCE

Km Thick interbeds of mudstones, argillaceous siltstones, fine grained sandstones and thin interbeds of orange weathering nodular siltstones. Many conglomerate beds display large scale cross bedding and tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Twenty-three species of plant fossils occur within the sequence.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Fine to coarse grained sandstones interbedded with mudstones, siltstones, occasional thin bands of orange weathering calcareous siltstones, conglomerates and abundant coal seams. Conglomerate beds grade laterally into sandstone. Sandstones often display tabular or trough cross bedding. Rhythmites occur in the middle of the sequence. Twenty-three species of bivalves and up to twenty-five species of plants occur throughout. Petrified wood and rare coquina may be present towards the upper contact.

SPATSIZI SEQUENCE

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LEGEND

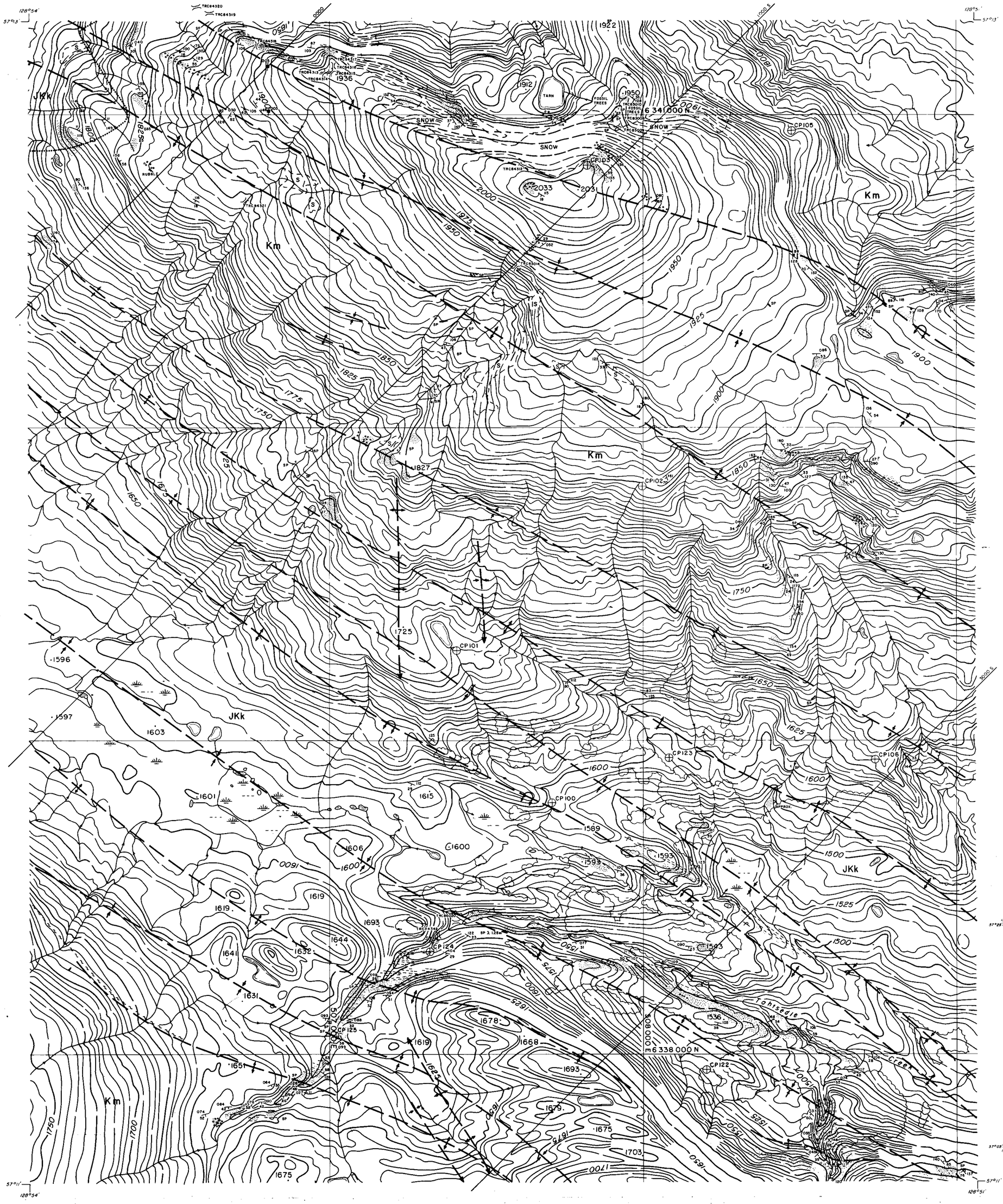
- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
- OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
- MONOCLINE (DEFINED, APPROXIMATE)
- BEDDING (HORIZONTAL, INCLINED, OVERTURNED, VERTICAL, UPRIGHT, ESTIMATED)
- FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
- JOINTS (INCLINED, VERTICAL, HORIZONTAL)
- THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UPTHRUST SIDE
- FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
- MEASURED SECTION
- SURVEY CAIRN
- CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD. — Coal Division — CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP H-8

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S.	DATE: APRIL, 1988 — DRAWING No. KPN87LF-81



LEGEND

- BUILDING
- ROAD, HARD SURFACE
- LOOSE SURFACE
- CART TRACK
- TRAIL
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
- APPROXIMATE
- SPLIT
- LAKE
- WATER LEVEL — EL 505'
- SWAMP
- BEAVER DAM
- TREE LINE
- CUT LINE
- CONTOURS, INDEX — 1750
- INTERMEDIATE
- DEPRESSION
- APPROXIMATE
- SPOT ELEVATION — 7654
- FORM LINES
- CUT / FILL
- FIELD CONTROL POINT — CP121
- COAL LICENCE

NOTES

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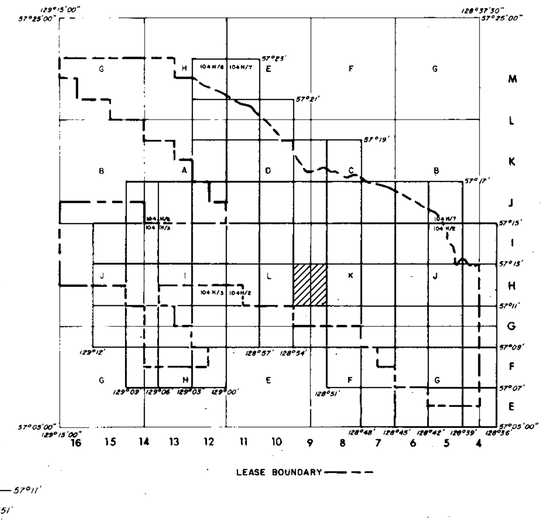
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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LEGEND

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- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
- OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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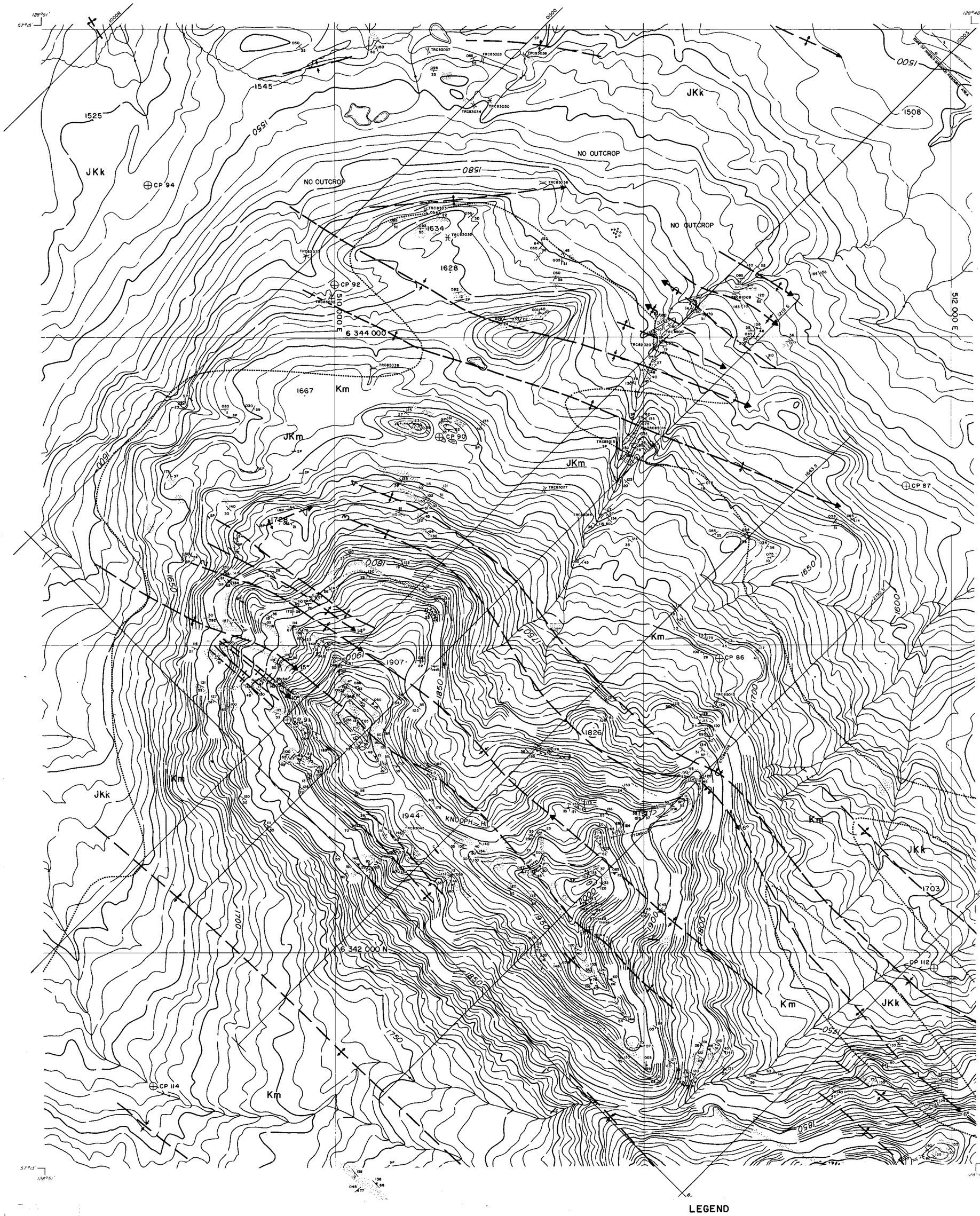
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
- MEASURED SECTION
- SURVEY CAIRN
- CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD. — Coal Division — CALGARY, ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP H-9

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: APRIL 1988	DRAWING No. KPN87LF-62



LEGEND

- BUILDING
- ROAD, HARD SURFACE
- LOOSE SURFACE
- CART TRACK
- TRAIL
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
- APPROXIMATE
- SPLIT
- LAKE
- WATER LEVEL — EL 505.1
- SWAMP
- BEAVER DAM — 8.0 8.0
- TREE LINE
- CUT LINE
- CONTOURS, INDEX — 1750
- INTERMEDIATE
- DEPRESSION
- APPROXIMATE
- SPOT ELEVATION — 7654
- FORM LINES
- CUT/FILL
- FIELD CONTROL POINT — CP 121
- COAL LICENCE

NOTES

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COMPILED BY
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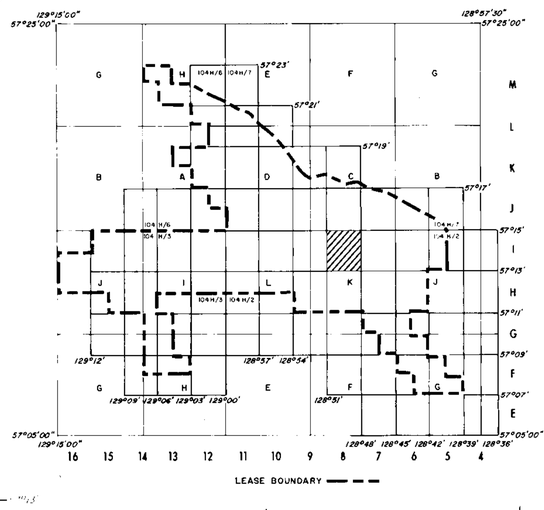
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
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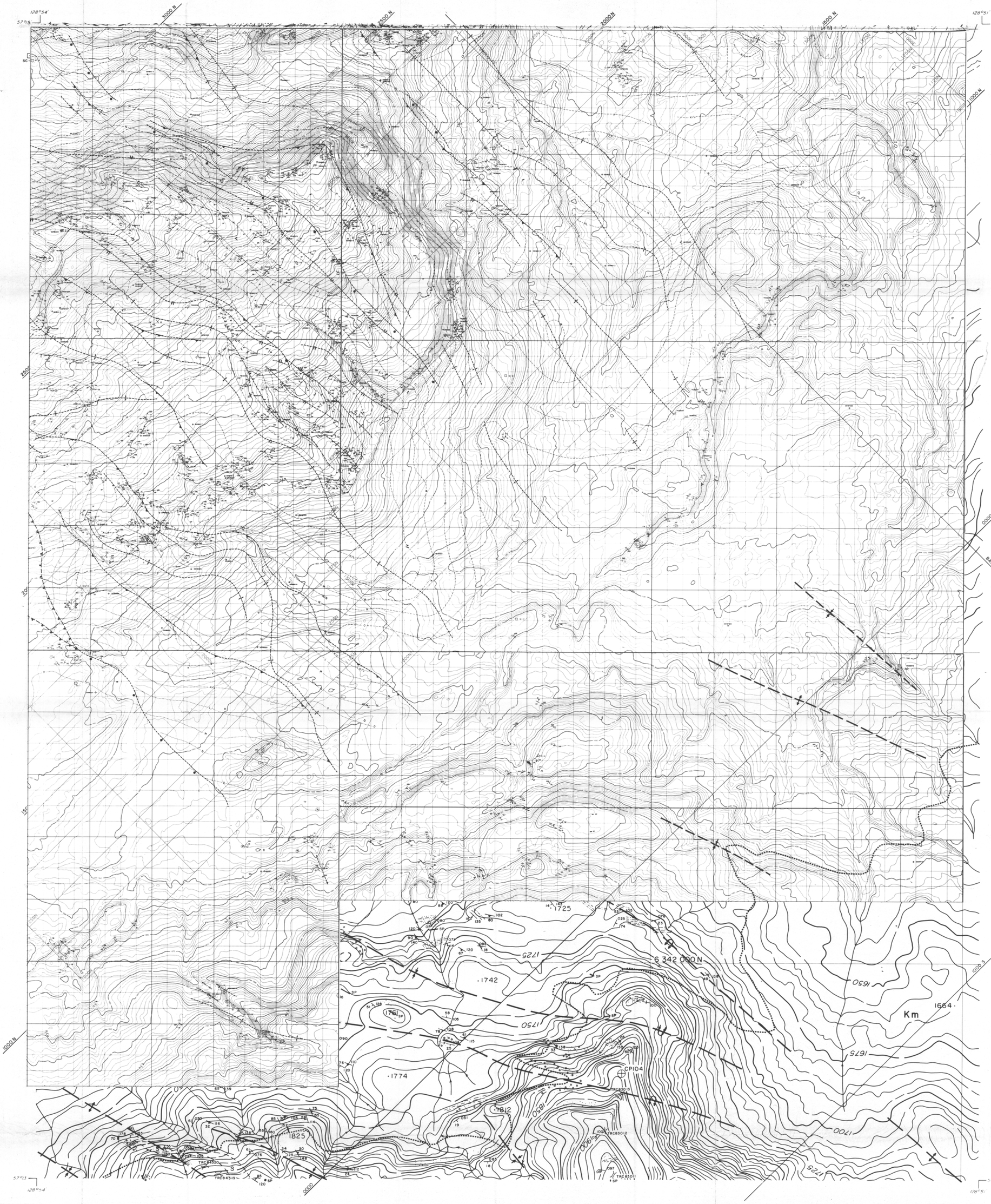
- MEASURED SECTION
- SURVEY CAIRN
- CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP I-8

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: APRIL 1988	DRAWING No. KPN87LF-63



LEGEND

- BUILDING
- ROAD, HARD SURFACE
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- RIVER
- STREAM, DEFINITE
- APPROXIMATE
- SPLIT
- LAKE
- WATER LEVEL — EL 505 f
- SWAMP
- BEAVER DAM — B.D. B.D.
- TREE LINE
- CUT LINE
- CONTOURS, INDEX — 1750
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SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP

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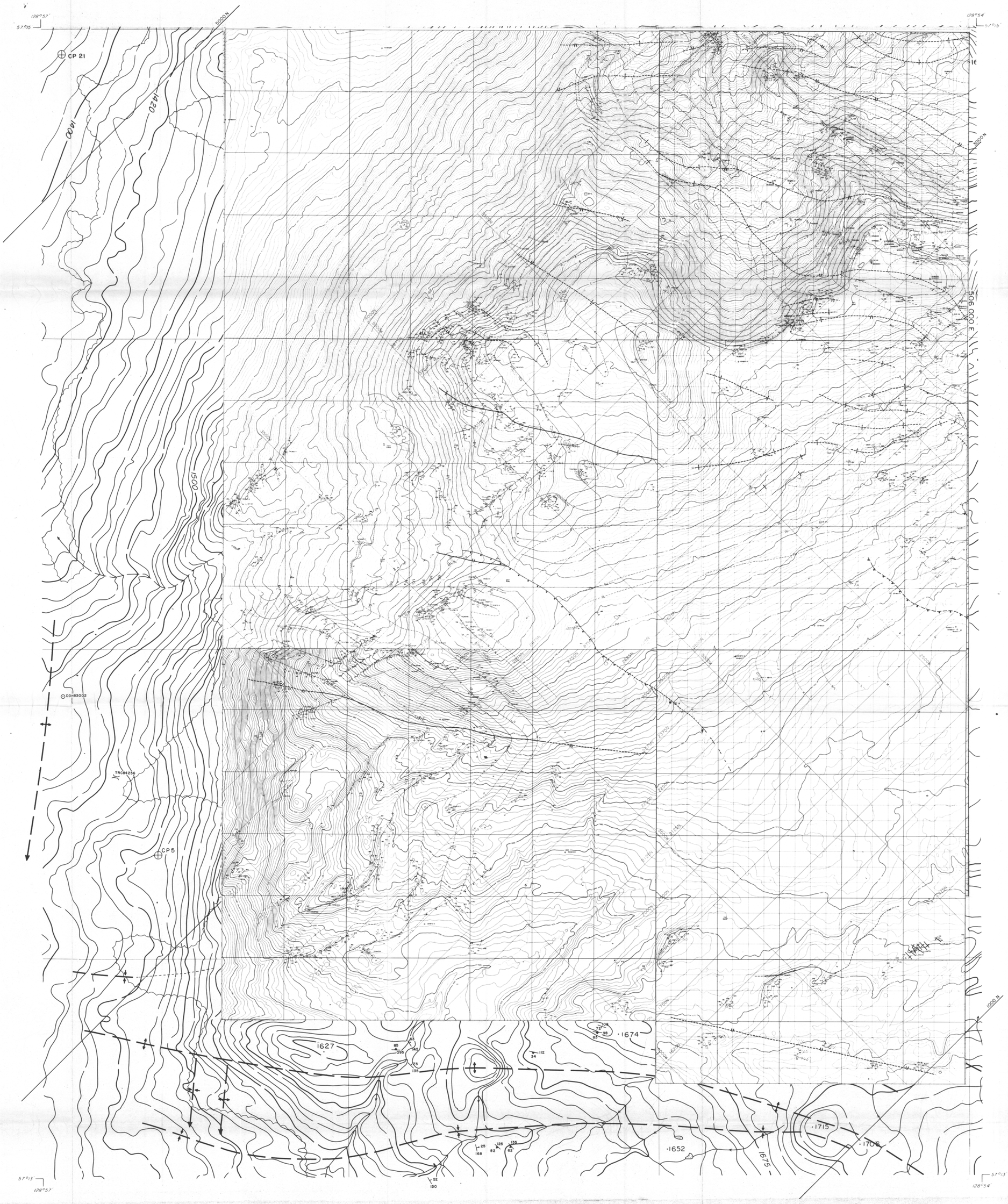
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL — TRC84001
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION) — DDH RDH WKD
- MEASURED SECTION — OTC 84001
- SURVEY CAIRN — SC-17
- CROSS SECTION LINE — 3000 N

740

GULF CANADA RESOURCES LTD. Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP I-9

PREPARED BY: E.S./A.L.	SCALE 1:5000
APPROVED BY: E.S. DATE: APRIL 1988	DRAWING No. KPN87LF-64



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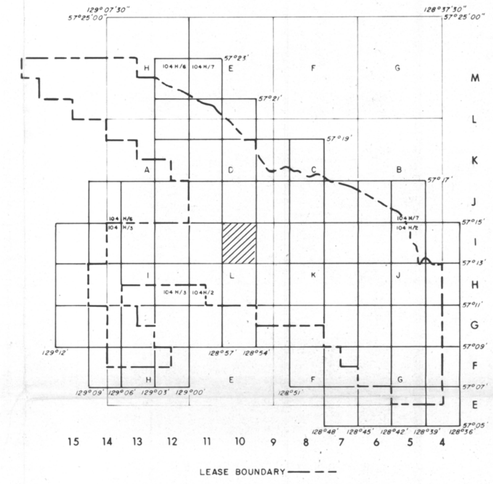
MT. KLAPPAN AREA

INDEX MAP



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- BEDDING (HORIZONTAL, INCLINED, OVERTURNED, VERTICAL, UPRIGHT, ESTIMATED)
- FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
- JOINTS (INCLINED, VERTICAL, HORIZONTAL)
- THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UPTHRUST SIDE
- FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
- MEASURED SECTION
- SURVEY CAIRN
- CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD. Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP I-10

PREPARED BY: E.S. / A.L.	SCALE 1:5000
APPROVED BY: E.S. DATE: APRIL 1988	DRAWING No. KPN87LF-65

LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — EL 505 f
SWAMP
BEAVER DAM — B.D. B.D.
TREE LINE
CUT LINE
CONTOURS, INDEX — 1750
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION — 7654
FORM LINES
CUT/FILL
FIELD CONTROL POINT — CP 121
COAL LICENCE

NOTES

MAPPING PRODUCED FROM PHOTOGRAPHIC ENLARGEMENTS OF 1:10,000 NEGATIVES

CONTOUR INTERVAL = 10 M, WITH FORM LINES INTERVAL = 5 M.

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RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY
WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD.,
FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67
AT A SCALE OF 1:60 000 (APPROXIMATE)

N

SCALE 1:5000

0 0.25 0.5 MILES
50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP

LEASE BOUNDARY

RHONDDA SEQUENCE

Kr Sequence of thick chert pebble conglomerates and minor gritty sandstones interbedded with an increasing number of siltstones and mudstones towards the basal contact. Large scale trough and tabular cross beds are common. Six species of plant fossils are found at the base of the sequence.

MALLOCH SEQUENCE

Km Thick interbeds of mudstones, argillaceous siltstones, fine grained sandstones and thin interbeds of orange weathering nodular siltstones. Many conglomerate beds display large scale cross bedding and tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Twenty-three species of plant fossils occur within the sequence.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Fine to coarse grained sandstones interbedded with mudstones, siltstones, occasional thin bands of orange weathering calcareous siltstones, conglomerates and abundant coal seams. Conglomerate beds grade laterally into sandstone. Sandstones often display tabular or trough cross bedding. Rhythmites occur in the middle of the sequence. Twenty-three species of bivalves and up to twenty-five species of plants occur throughout. Petrified wood and rare coquina may be present towards the upper contact.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence of interbedded mudstones, siltstones, sandstones and conglomerates. Carbonaceous mudstones, coarsening upward sequences and chert pebble conglomerates are more abundant in the upper part of the sequence. Nineteen species of bivalves are present. Belemnites are rare. Plant debris may occur near the upper gradational contact.

LEGEND

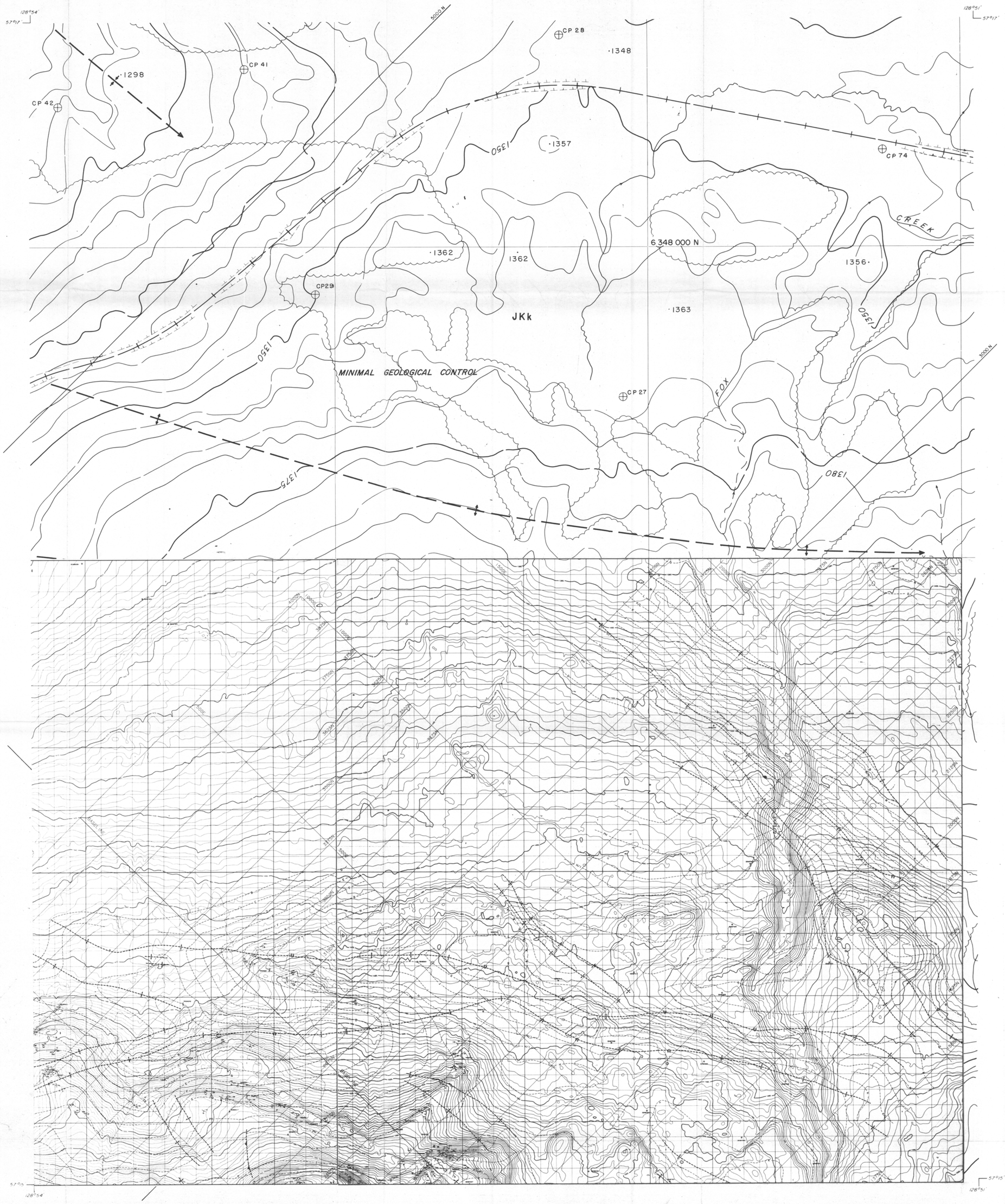
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
MONOCLINE (DEFINED, APPROXIMATE)
BEDDING (HORIZONTAL, INCLINED, OVERTURNED, VERTICAL, UPRIGHT, ESTIMATED)
FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
JOINTS (INCLINED, VERTICAL, HORIZONTAL)
THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UPTHRUST SIDE
FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
ADIT TRENCH COAL SPOIL
DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
MEASURED SECTION
SURVEY CAIRN
CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD. Coal Division — CALGARY — ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP J-8

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: APRIL 1988	DRAWING No. KPN87LF-66



LEGEND

- BUILDING
- ROAD, HARD SURFACE
- LOOSE SURFACE
- CART TRACK
- TRAIL
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
- APPROXIMATE
- SPLIT
- LAKE
- WATER LEVEL — EL 5051
- SWAMP
- BEAVER DAM — B.D. B.D.
- TREE LINE
- CUT LINE
- CONTOURS, INDEX — 1750
- INTERMEDIATE
- DEPRESSION
- APPROXIMATE
- SPOT ELEVATION — 7654
- FORM LINES
- CUT/FILL
- FIELD CONTROL POINT — CP 121
- COAL LICENCE

NOTES

MAPPING PRODUCED FROM PHOTOGRAPHIC ENLARGEMENTS OF 1:10,000 NEGATIVES

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N

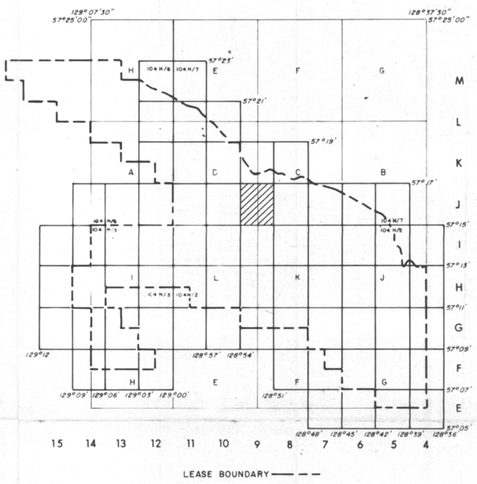
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

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LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
- OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
- MONOCLINE (DEFINED, APPROXIMATE)
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- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
- MEASURED SECTION
- SURVEY CAIRN
- CROSS SECTION LINE

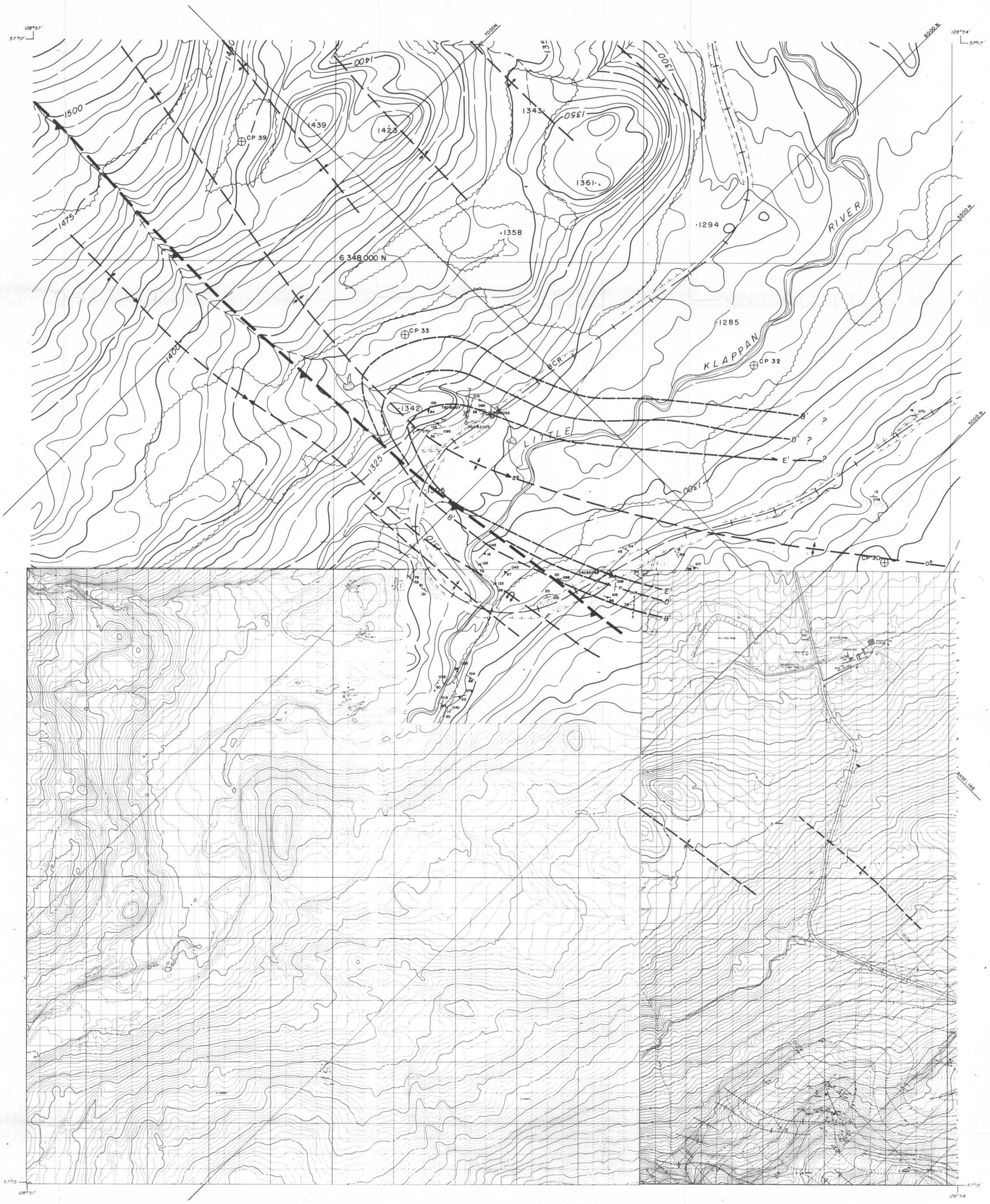
TRC84001 SP
DDH RDH WKD
OTC 84001
SC-17
3000 N

740

GULF CANADA RESOURCES LTD.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP J-9

PREPARED BY: E. S. / A.L.	SCALE 1:5000
APPROVED BY: E. S. DATE: APRIL 1988	DRAWING No. KPN87LF-67



LEGEND

- BUILDING
- ROAD, HARD SURFACE
- LOOSE SURFACE
- CART TRACK
- TRAIL
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
- APPROXIMATE
- SPLIT
- LAKE
- WATER LEVEL — EL 505 f
- SWAMP
- BEAVER DAM — B.D. B.D.
- TREE LINE
- CUT LINE
- CONTOURS, INDEX — 1750
- INTERMEDIATE
- DEPRESSION
- APPROXIMATE
- SPOT ELEVATION — 7654
- FORM LINES
- CUT / FILL
- FIELD CONTROL POINT — CP 121
- COAL LICENCE

NOTES

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COMPILED BY
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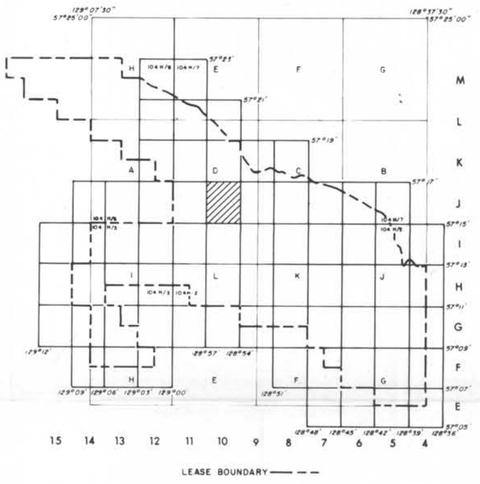
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
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- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
- MEASURED SECTION
- SURVEY CAIRN
- CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD.
CALGARY — Coal Division — ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP J-10

PREPARED BY: E.S./A.L.	SCALE 1:5000
APPROVED BY: E.S. DATE: APRIL 1988	DRAWING No. KPN 87 LF-68

128°51'
57°19'

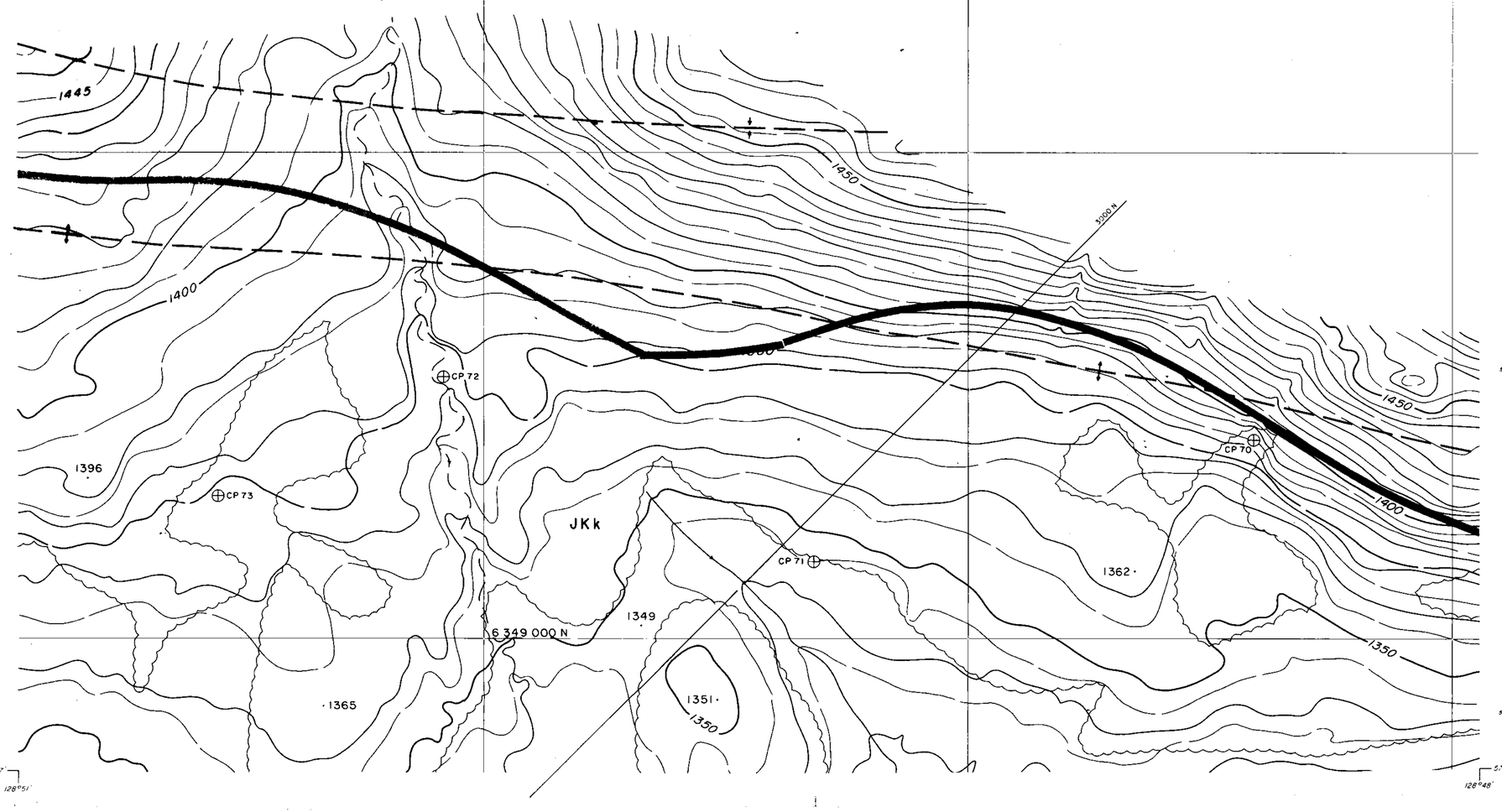
128°48'
57°19'

510 000 E

512 000 E

6 352 000 N

6 349 000 N



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — EL 5051
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX — 1750
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION — 7654
FORM LINES
CUT / FILL
FIELD CONTROL POINT — CP 121
COAL LICENCE

NOTES

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COMPILED BY
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N

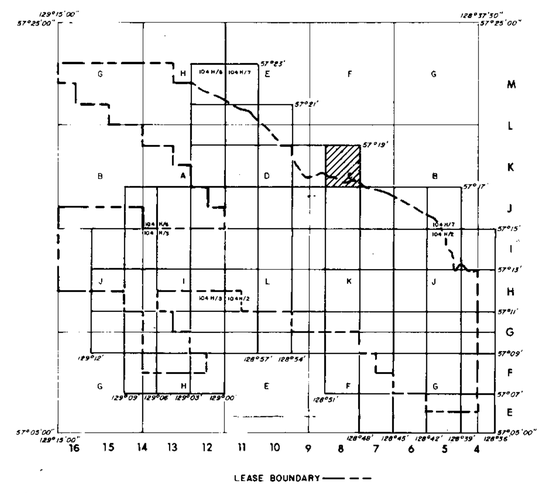
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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LEGEND.

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COAL SEAM (DEFINED, INFERRED)
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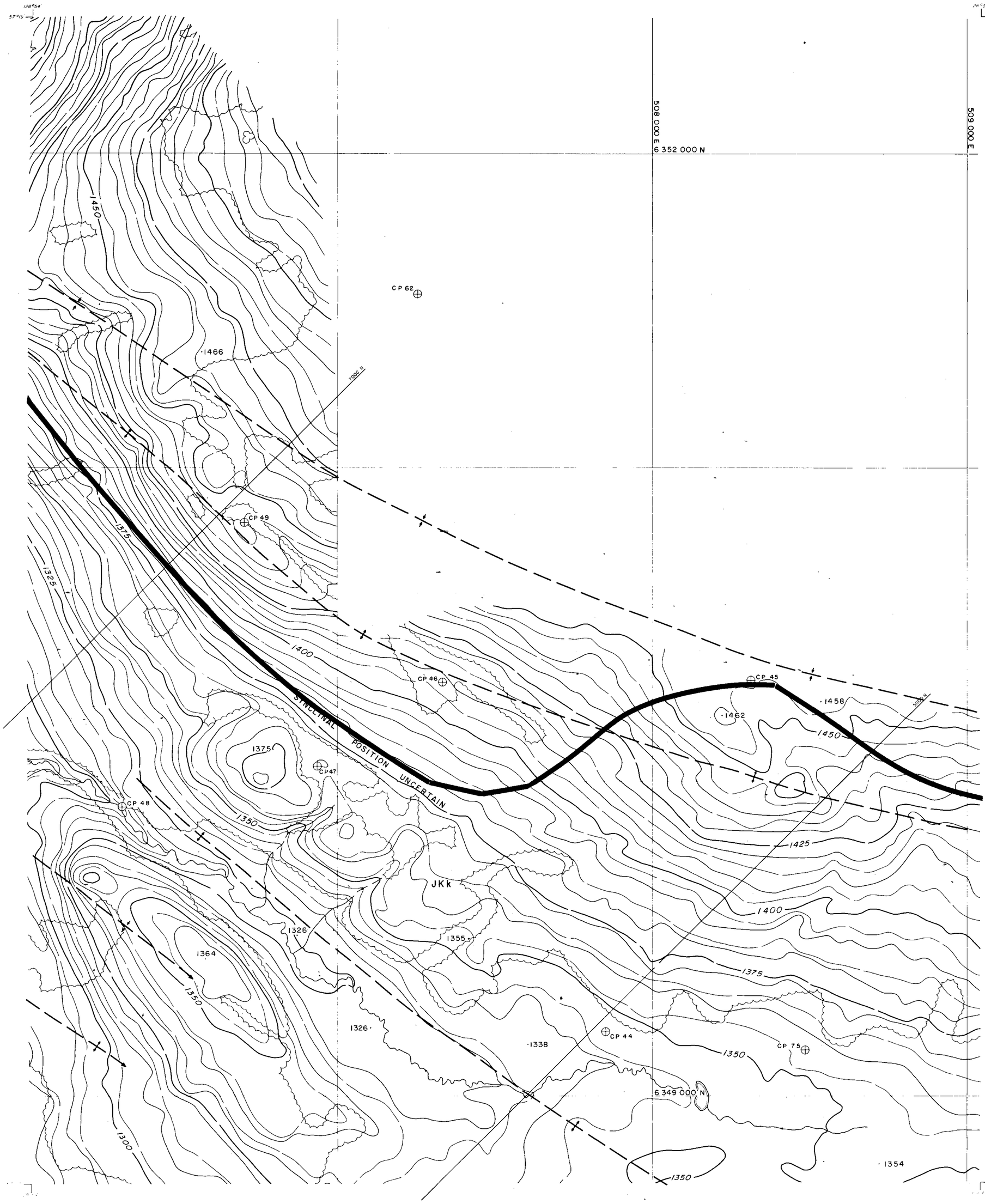
MEASURED SECTION
SURVEY CAIRN
CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD. Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP K-8

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S.	DATE: APRIL 1988 DRAWING No. KPN87LF-69



LEGEND

- BUILDING
- ROAD, HARD SURFACE
  - LOOSE SURFACE
  - CART TRACK
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- RAILROAD BED
- RIVER
- STREAM, DEFINITE
  - APPROXIMATE
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- LAKE
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- SWAMP
- BEAVER DAM — B.D. B.D.
- TREE LINE
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  - INTERMEDIATE
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- SPOT ELEVATION — 7654
- FORM LINES
- CUT/FILL
- FIELD CONTROL POINT — CP 40
- BOUNDARY

NOTES

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AT A SCALE OF 1:60000 (APPROXIMATE)

N

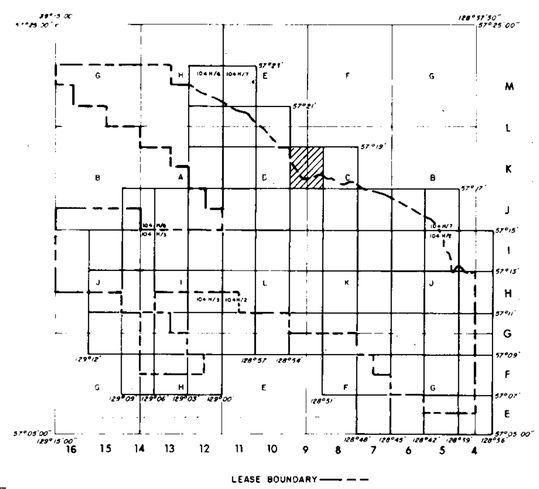
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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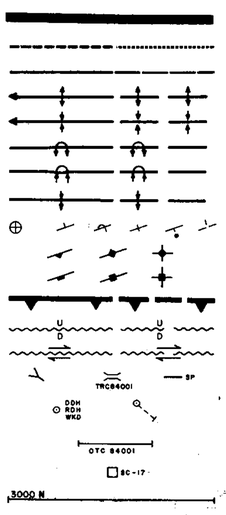
Js Predominantly a marine sequence of interbedded mudstones, siltstones, sandstones and conglomerates. Carbonaceous mudstones, coarsening upward sequences and chert pebble conglomerates are more abundant in the upper part of the sequence. Nineteen species of bivalves are present. Belemnites are rare. Plant debris may occur near the upper gradational contact.

LEGEND



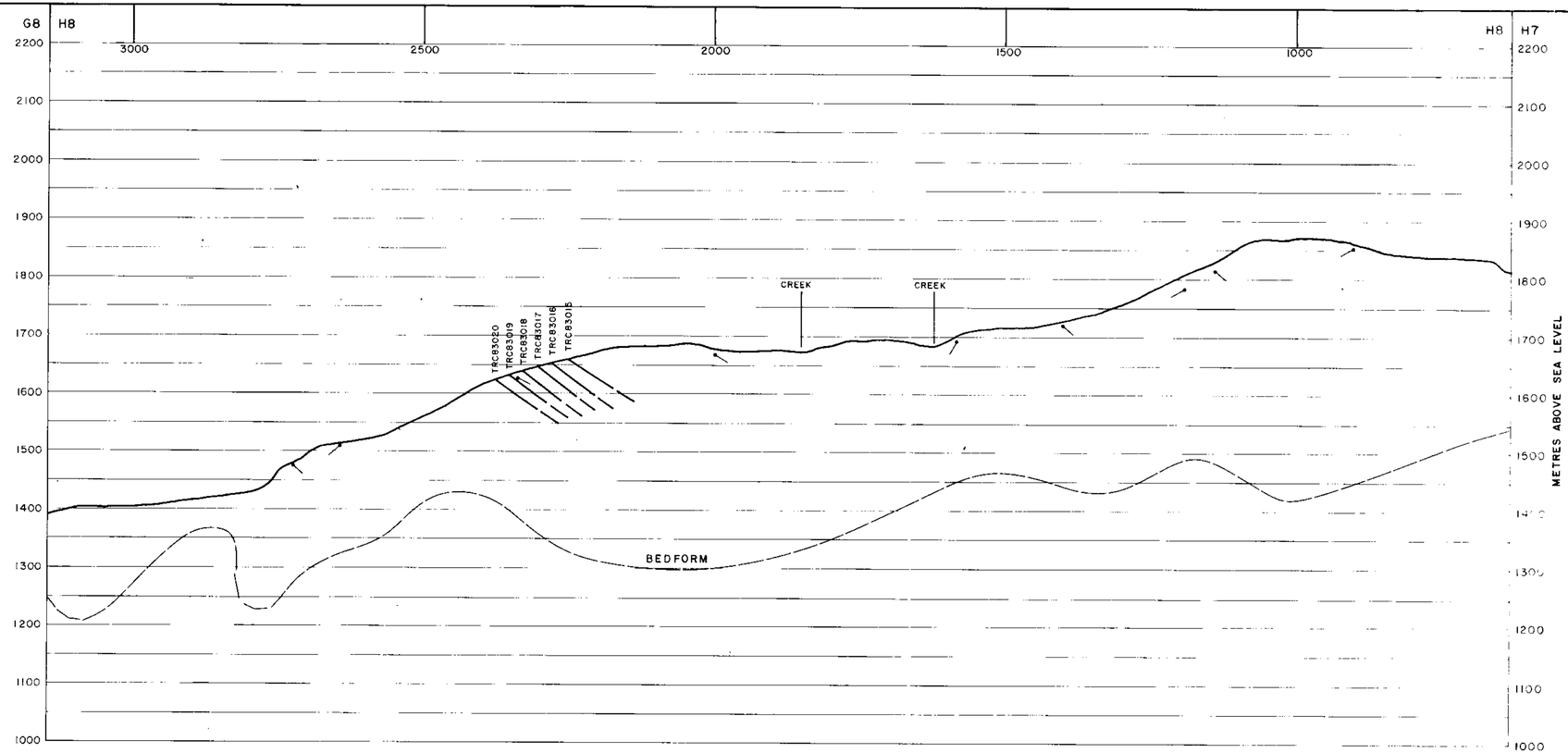
- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
- OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
- MONOCLINE (DEFINED, APPROXIMATE)
- BEDDING (HORIZONTAL, INCLINED, OVERTURNED, VERTICAL, UPRIGHT, ESTIMATED)
- FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
- JOINTS (INCLINED, VERTICAL, HORIZONTAL)
- THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UPTHRUST SIDE
- FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
- MEASURED SECTION
- SURVEY CAIRN
- CROSS SECTION LINE

740

GULF CANADA RESOURCES LTD. Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1987
GEOLOGY MAP
LOST-FOX AREA
MAP K-9

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: APRIL 1988	DRAWING No. KPM87LF-70



RHONDDA SEQUENCE

Xr — Sequence of thick chert pebble conglomerates and minor gritty sandstones interbedded with an increasing number of siltstones and mudstones towards the basal contact. Large scale trough and tabular cross beds are common. Six species of plant fossils are found at the base of the sequence.

MALLOCH SEQUENCE

Km — Thick interbeds of mudstones, argillaceous siltstones, fine grained sandstones and thin interbeds of orange weathering nodular siltstones. Many conglomerate beds display large scale cross bedding and tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Twenty three species of plant fossils occur within the sequence.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Fine to coarse grained sandstones interbedded with mudstones, siltstones, occasional thin bands of orange weathering calcareous siltstones, conglomerates and abundant coal seams. Conglomerate beds grade laterally into sandstone. Sandstones often display tabular or trough cross bedding. Rhythmites occur in the middle of the sequence. Twenty three species of bivalves and up to twenty-five species of plants occur throughout. Petrified wood and rare coquina may be present towards the upper contact.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence of interbedded mudstones, siltstones, sandstones and conglomerates. Carbonaceous mudstones, coarsening upward sequences and chert pebble conglomerates are more abundant in the upper part of the sequence. Nineteen species of bivalves are present. Belemnites are rare. Plant debris may occur near the upper gradational contact.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX, INFERRED)

FAULT TRACE (DEFINED, APPROX.)

BEDFORM

BEDDING ATTITUDE

DDH 85001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

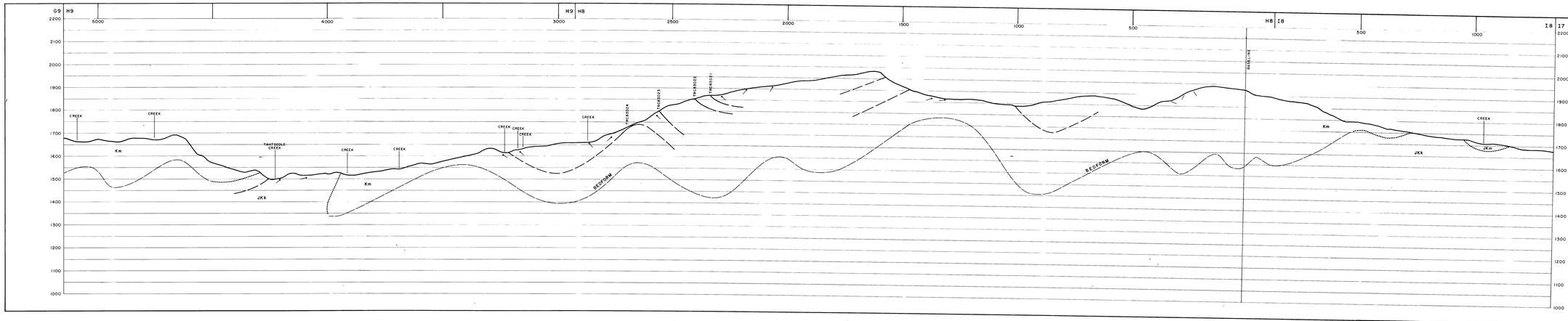
740

METRES
0 50 100 150 200 250

GULF CANADA RESOURCES LTD.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1987
GEOLOGICAL CROSS SECTION
LOST - FOX AREA
5000 S

PREPARED BY: J.I. / M.B.	SCALE 1:5000
APPROVED BY: E.S. DATE MAY, 1988	DRAWING No. KPN87LF-81



RHONDDA SEQUENCE

Kr — Sequence of thick chert pebble conglomerates and minor gritty sandstones interbedded with an increasing number of thin, dark grey, carbonaceous siltstone and mudstone units. Rough and tabular cross beds are common. No specific coal seams are known at the base of the sequence.

MALLOCH SEQUENCE

Km — Thick interbeds of mudstone, argillaceous siltstone, fine grained sandstones and thin interbeds of orange weathering siltstones. Many conglomeratic beds, mostly in the lower part of the sequence, contain chert pebbles. Coal seams are common throughout the sequence. Sandstones often display tabular or trough cross bedding. The contact with the underlying Kootenay Formation is placed at the base of the lowest grey coal seam.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Fine to coarse grained sandstones interbedded with mudstones, siltstones, occasional thin bands of orange weathering tuffaceous siltstone and numerous coal seams. Sandstones are commonly lenticular, being grey to brown in colour. Sandstones often display tabular or trough cross bedding. The contact with the underlying Spatsizi Formation is placed at the base of the lowest coal seam. Fossil wood and rare coquina may be present in the upper portion.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence of interbedded mudstones, siltstones, sandstones and conglomerates. Certain sandstones and conglomerates are thick chert pebble conglomerates are more abundant in the upper part of the formation species of bivalves are present. Belemnites are rare. Poor debris may occur near the upper portion.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX, INFERRED)

FAULT TRACE (DEFINED, APPROX.)

BEDFORM

BEDDING ATTITUDE

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

DDH 83002

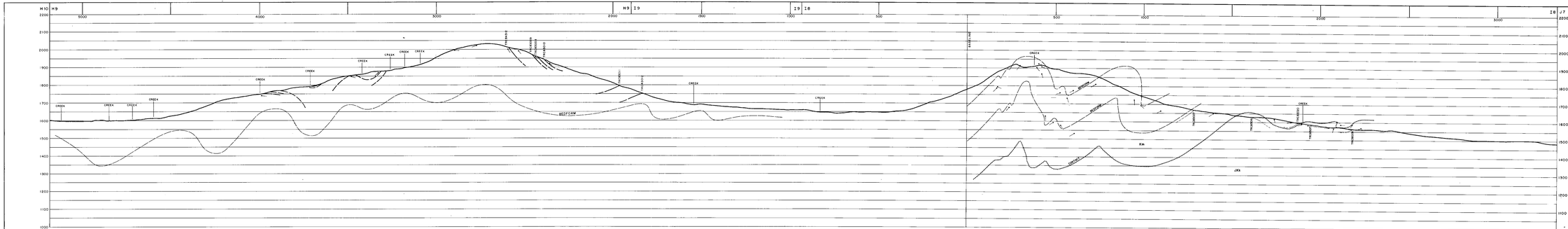
740

METRES
0 50 100 150 200 250

GULF CANADA RESOURCES LTD.
Coal Division
CALGARY ALBERTA

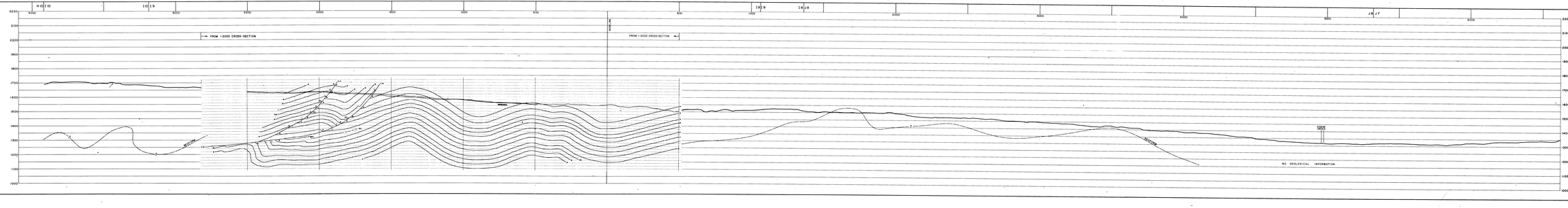
MOUNT KLAPPAN COAL PROPERTY
1987
GEOLOGICAL CROSS SECTION
LOST-FOX AREA
3000 S

PREPARED BY: J.I./M.S. SCALE 1:5000
APPROVED BY: E.S. DATE MAY, 1988 DRAWING No. KPN87LF-I



RHONDDA SEQUENCE

Kr Thickness of coal seam sometimes exceeds 10 m. Roof and floor rock usually competent. Coal seam is split into numerous benches by clean bands of rock. Lower bench is thickest and usually contains 3 to 4 clean bands of rock. Coal seam is split into numerous benches by clean bands of rock. Lower bench is thickest and usually contains 3 to 4 clean bands of rock. Roof rock usually competent. Floor rock usually competent. Thickness of coal seam varies from 1 to 3 m



BEDROCK SEQUENCE

Kc — SEQUENCE OF FINE AND MEDIUM GRAINED SANDSTONE AND SILTSTONE, INTERBEDDED WITH AN INCREASING NUMBER OF CARBONACEOUS SHALE BEDS AND COAL SEAMS TOWARDS THE TOP OF UNIT. THICKNESS UP TO 1000m (3300').

WALLACE SEQUENCE

Kw — THICK SEQUENCE OF MASSIVELY BEDDED, SANDSTONE DOMINATED, WITH SOME INTERBEDDED SILTSTONE AND SHALE. SANDSTONE IS MEDIUM TO COARSE GRAINED, LIGHT GREY, AND CONTAINS ABUNDANT CHERT GRAINS. SILTSTONE AND SHALE ARE DARK GREY TO BLACK AND CONTAIN ABUNDANT PLANT FOSSILS. THICKNESS VARIES BETWEEN 0 AND 1000m (3300'). THICKNESS IS GREATEST TOWARDS THE NORTH AND DECREASES TOWARDS THE SOUTH.

KLAPPAN SEQUENCE (lower coal bearing unit)

JKk — THE LOWER COAL BEARING SEQUENCE OF THE MOUNTAIN, CONSISTS OF A SERIES OF COARSE SEDIMENTARY CYCLES, EACH CYCLE BEGINNING WITH A CONGLOMERATE AND GRADING UPWARDS THROUGH SANDSTONE, SILTSTONE AND SHALE TO COAL. THE CONGLOMERATE IS MEDIUM TO COARSE GRAINED, LIGHT GREY, AND CONTAINS ABUNDANT CHERT GRAINS. THE SANDSTONE IS MEDIUM TO COARSE GRAINED, LIGHT GREY, AND CONTAINS ABUNDANT CHERT GRAINS. THE SILTSTONE AND SHALE ARE DARK GREY TO BLACK AND CONTAIN ABUNDANT PLANT FOSSILS. THE COAL IS BLACK AND BRITTLE. THICKNESS VARIES BETWEEN 0 AND 1000m (3300').

UNITED SEQUENCE

Ku — PREDOMINANTLY A COARSE SEQUENCE OF INTERBEDDED CONGLOMERATE, SANDSTONE, SILTSTONE, MUDSTONE AND COAL SEAMS. CONGLOMERATE IS MEDIUM TO COARSE GRAINED, LIGHT GREY, AND CONTAINS ABUNDANT CHERT GRAINS. THE SANDSTONE IS MEDIUM TO COARSE GRAINED, LIGHT GREY, AND CONTAINS ABUNDANT CHERT GRAINS. THE SILTSTONE AND SHALE ARE DARK GREY TO BLACK AND CONTAIN ABUNDANT PLANT FOSSILS. THE COAL IS BLACK AND BRITTLE. THICKNESS VARIES BETWEEN 0 AND 1000m (3300'). THICKNESS IS GREATEST TOWARDS THE NORTH AND DECREASES TOWARDS THE SOUTH.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.)

ANTICLINE

SYNCLINE

DRILL HOLE WITH ATTITUDE CONTROL

DDH-89026-1

DRAWING SHALL HOLD WITH ATTITUDE CONTROL

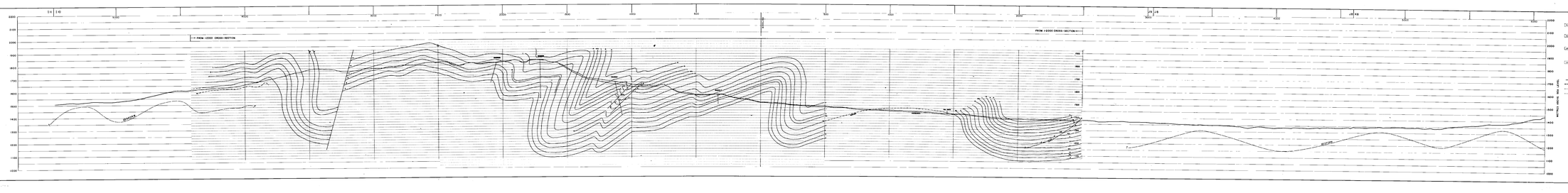
740

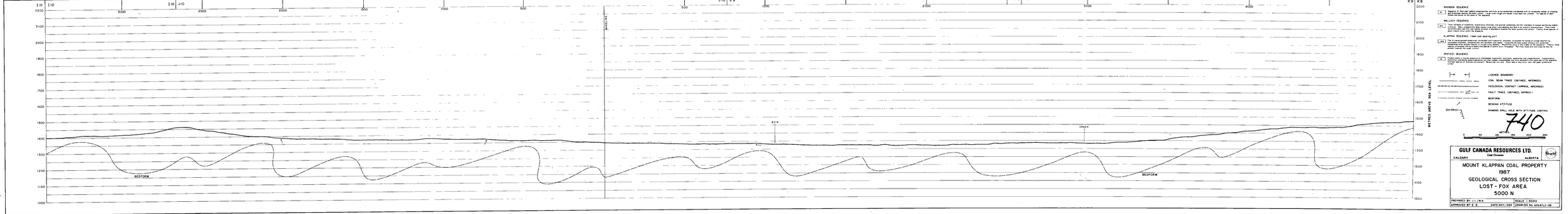
METRES 0 50 100 200 300

GULF CANADA RESOURCES LTD.
THE Oil Sands
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1987
GEOLOGICAL CROSS SECTION
LOST - FOX AREA
1000N

PREPARED BY: J.I./R.F./L.I. SCALE - 1:2000
APPROVED BY: E. S. DATE MAY/1988 DRAWING NO. KYM/87-09


L 10
L 9
L 8
FROM 10000 CROSS-SECTION
FROM 9000 CROSS-SECTION
METRES ABOVE SEA LEVEL
GENERAL REMARKS
(1) Geological boundaries are interpreted from surface and underground mapping, drillhole data and geophysical surveys. Contacts are approximate where indicated.
DRILLING REMARKS
(1) Drillholes are projected onto the section plane. The projection is to the nearest section line unless otherwise noted. Drillhole deviation is not shown.
(2) Drillhole data is from surface drilling only.
PLOTTING ACCURACY: Vertical and horizontal accuracy is ± 1 metre.
SURFACE REMARKS
(1) Topography is from aerial photographs and ground surveys. Contour interval is 10 metres. Topography above the 1600 metre elevation is interpolated between 100 metre elevation intervals.
LEGEND
COAL SEAM TRACE (ATTACHED, INTERPOLATED)
STRATIGRAPHIC CONTACT (ATTACHED, INTERPOLATED)
FAULT TRACE (ATTACHED, INTERPOLATED)
BOTTOM
MINERAL LEASE LINE
DIAMOND DRILL HOLE WITH HOLE NUMBER
740
METRES
GULF
GULF CANADA RESOURCES LTD.
COAL DIVISION
CALGARY
ELKVILLE
MOUNT KLAPPAN COAL PROPERTY
1987
GEOLOGICAL CROSS SECTION
LOST-FOX AREA
3000 N
PREPARED BY: J. T. P. S. '87
SCALE: 1:2000
APPROVED BY: E. B.
DATE: NOVEMBER 1987
DRAWING NO. 74-KMCP-L-3N



RHONDA SEQUENCE

Kr — Sequence of fine and coarse clastics interbedded and minor gritty carbonates interbedded with an increasing number of coaljoints. Thickness of sequence is 1000 metres. Base of sequence is defined by the last gritty carbonate bed overlain by coal seams. Top of sequence is defined by the base of the Wallock Sequence.

WALLOCK SEQUENCE

Kw — Thick sequences of mudstone, siltstone and siltstone, fine grained carbonates and thin stringers of coal overlying massive sandstone. Thickness of sequence is 1000 metres. Base of sequence is defined by the last massive sandstone below the last coal seams and top of sequence is defined by the base of gritty carbonate bed overlain by coal seams. Thickness of sequence is 1000 metres.

KLAPPAN SEQUENCE (Mist Mountain Unit)

Jkh — Thin to thick bedded sandstones, mudstones, siltstones, carbonaceous mudstones and coal seams. Thickness of sequence is 1000 metres. Base of sequence is defined by the last massive sandstone below the last coal seams and top of sequence is defined by the base of the Rhonda Sequence. Three massive sandstones are present in the Klappan Sequence. They are known as the Lower, Middle and Upper Klappan Sandstones. The Lower sandstone is the thickest and most widely developed. The Middle sandstone is the thinnest and least widely developed. The Upper sandstone is intermediate in thickness and development.

SPATSIZI SEQUENCE

Js — Thick sequences of conglomerate, sandstone, siltstone, mudstone and carbonaceous mudstone. Conglomerate and sandstone are the dominant lithologies. Thickness of sequence is 1000 metres. Base of sequence is defined by the last coal seam below the last massive sandstone and top of sequence is defined by the base of the Klappan Sequence.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.)

ANTICLINE

BEDDING ATTITUDE

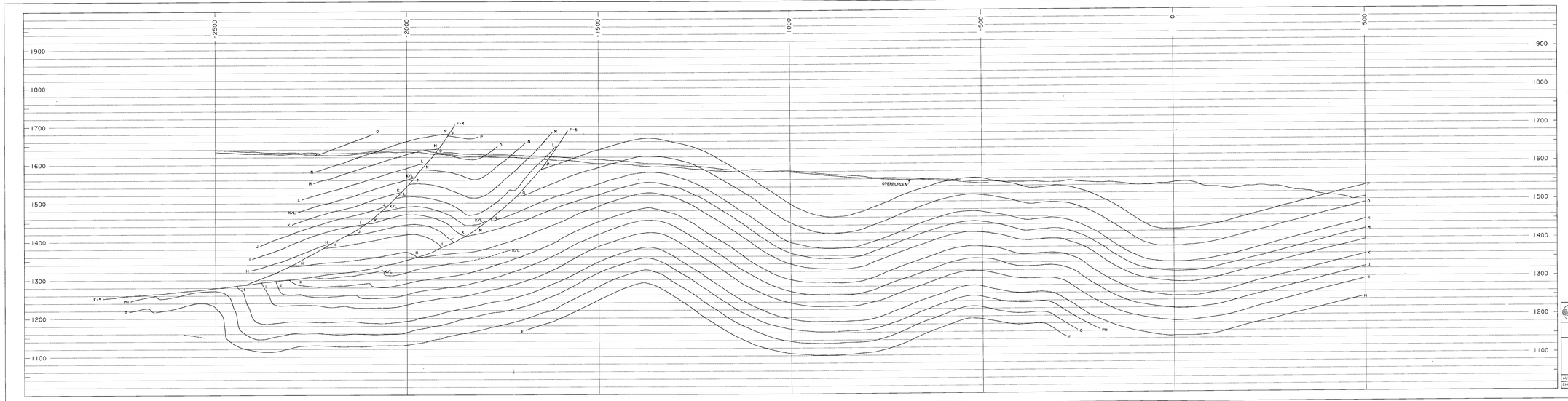
DDH 85-00-0 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 50 100 150 200
METRES

GULF CANADA RESOURCES LTD.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1987
GEOLOGICAL CROSS SECTION
LOST - FOX AREA
5000 N

PREPARED BY: J.I./M.B. SCALE 1:5000
APPROVED BY: E.S. DATE MAY, 1988 DRAWING No. 105-87J-88



740

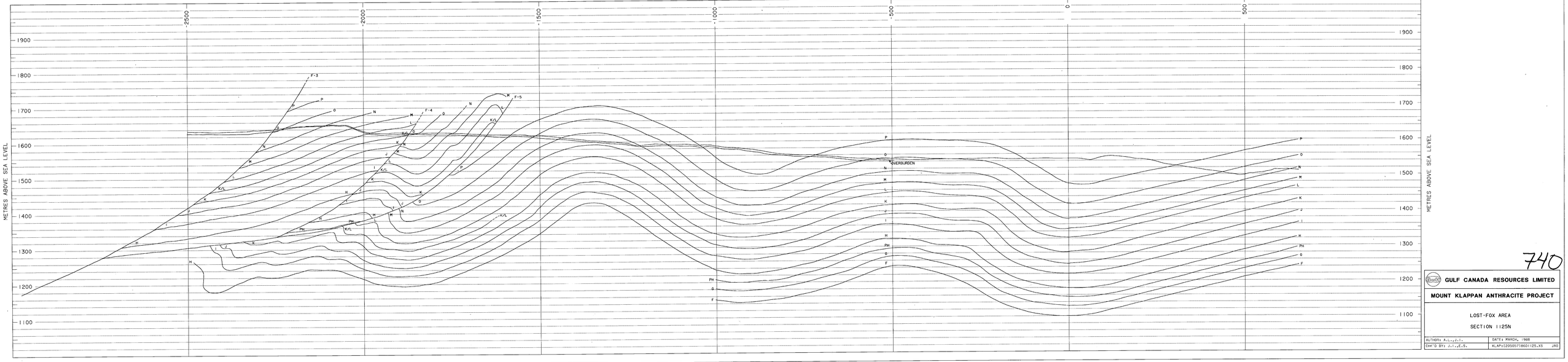
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 1000N

AUTHORs A.....r...	DATE: MARCH, 1988
CHK'D BY: J.....E.S.	KLAP\12DSGT\MSI\1000.KS JAG



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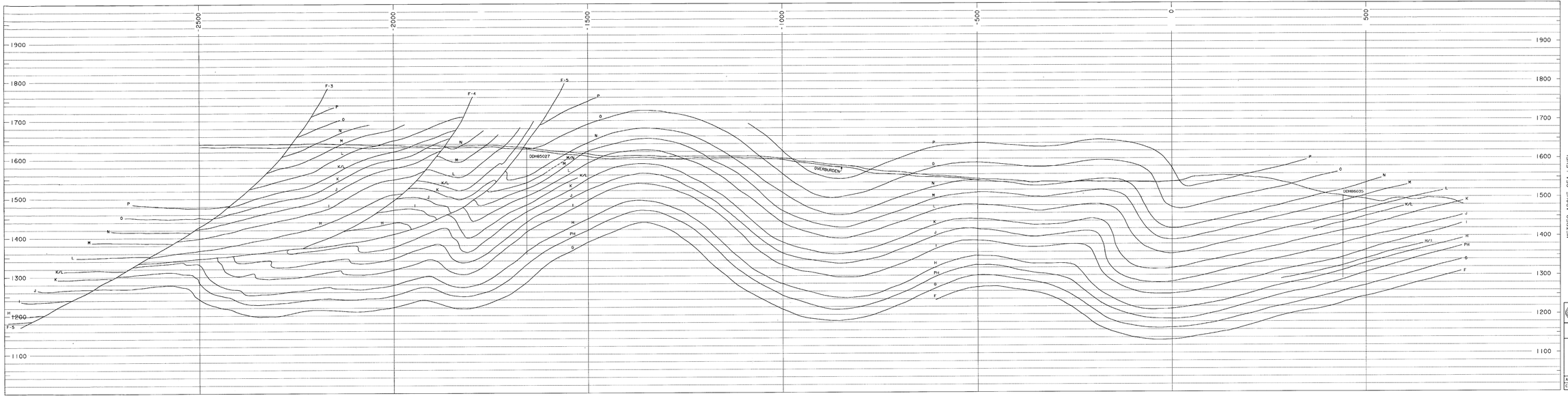
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 1125N

AUTHOR: R.L., J.I.	DATE: MARCH, 1988
CHK'D BY: J.I., E.S.	KLAP\120505718601125.XS JAG



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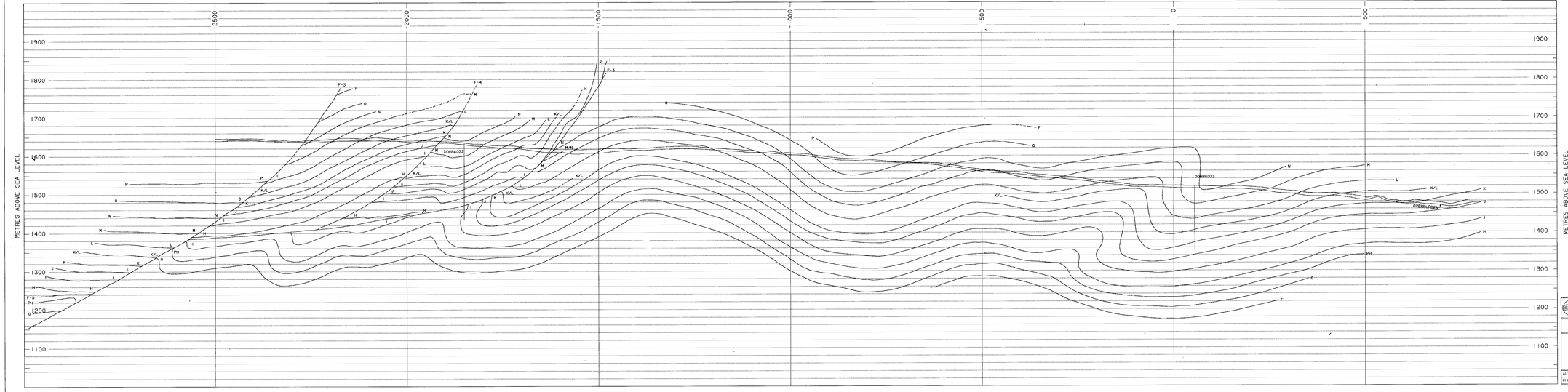
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 1250N

AUTHOR: A.L.,J.I.	DATE: MARCH, 1988
CHK'D BY: J.I.,E.B.	KLAP={205057}8601250.XS JTH



740

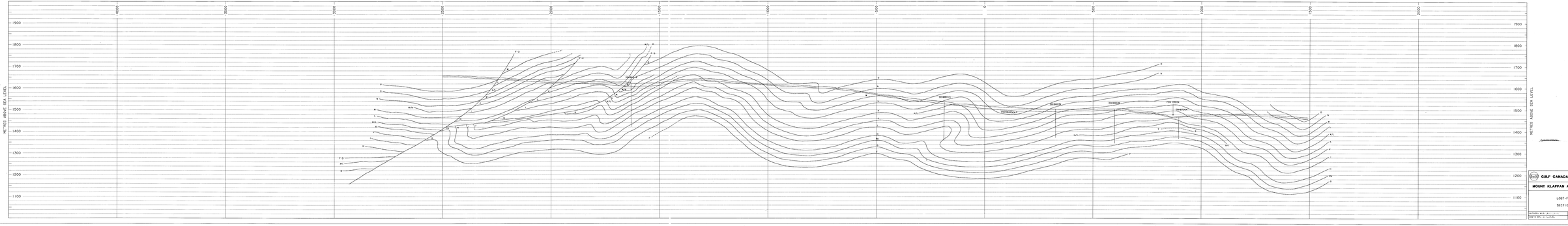
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 1375N

AUTHORI Authority	DATE: MARCH, 1988
DWG'D BY: Drawn By	KLAP1120500718601375.XS JAS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1300
1200
1100
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-500
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500
1000
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SEAM 1
SEAM 2
SEAM 3
SEAM 4
SEAM 5
SEAM 6
SEAM 7
SEAM 8
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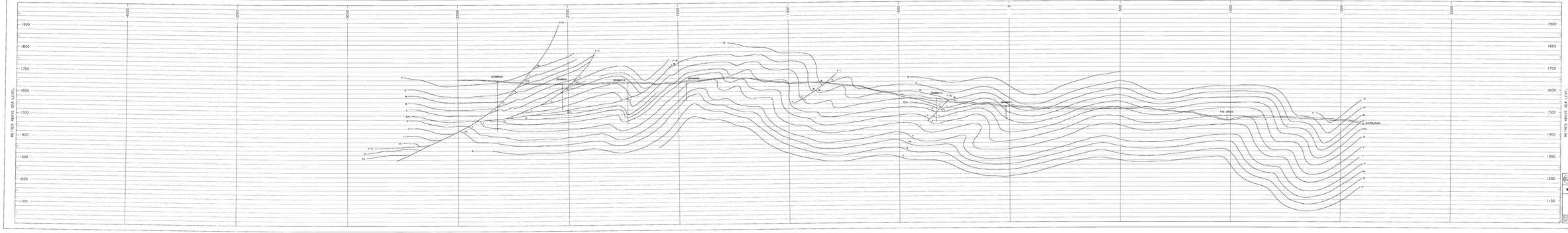

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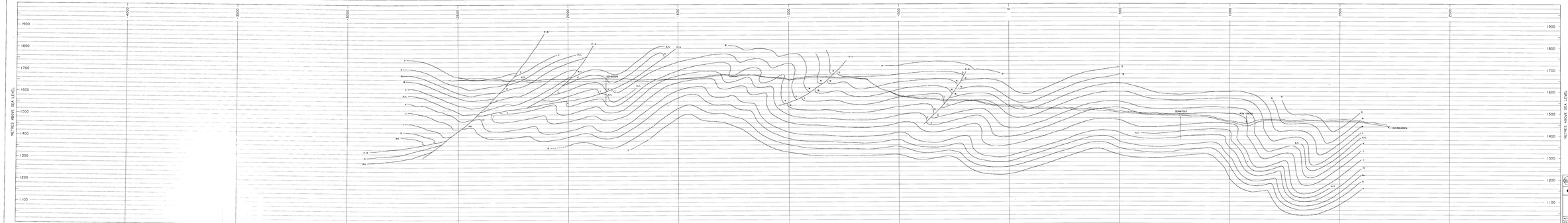
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST FOX AREA

SECTION 16700N

ENGINEERING RECORD NO.	DATED MARCH, 1988
DRAWING NO.	KLAP\DWG\001\1800-620.48 SHT



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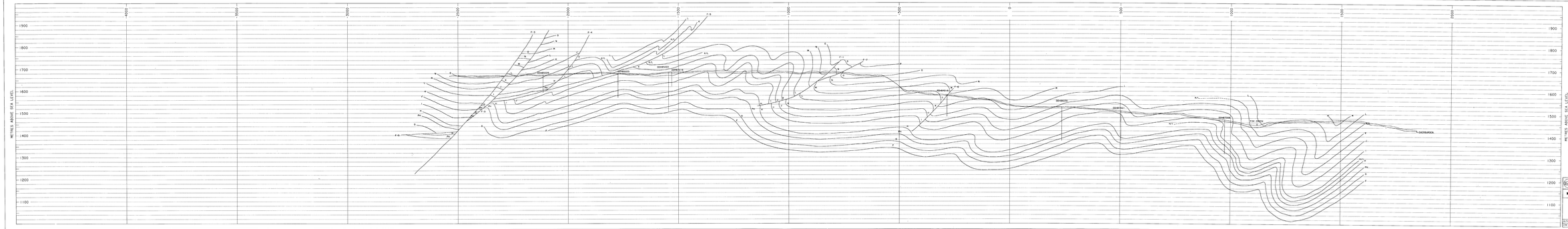
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST FOX AREA

SECTION 1750N

AUTHORIZED BY:	DATE: MARCH, 1988
DWG. NO. 8914-2-2000-07-3861-750-LFS	



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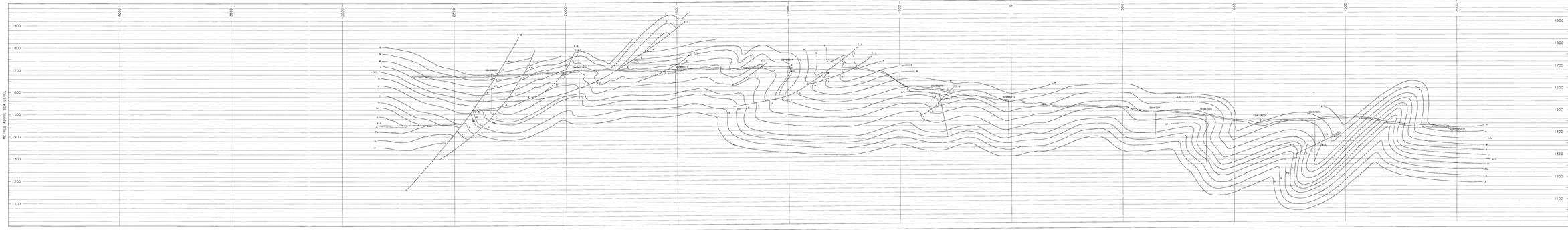
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 18750N



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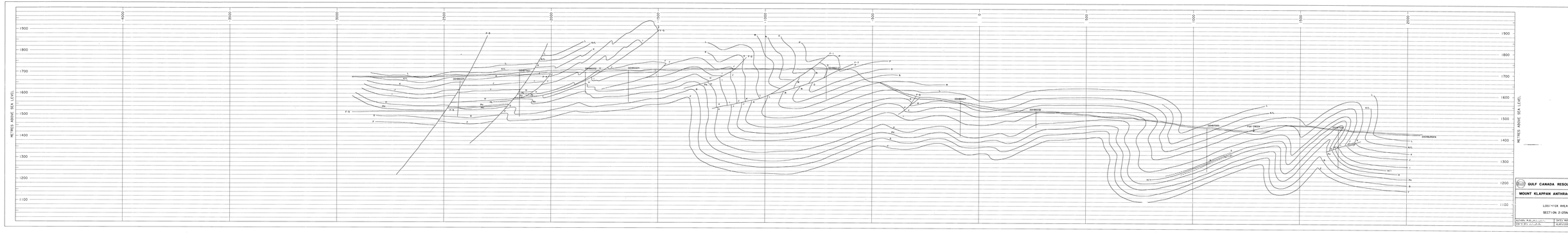
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 20000N

ACCEPTED PLAN APPROVAL	CENTRAL MINERAL TRUST
DATE OF ISSUE	PLANNING ENGINEERING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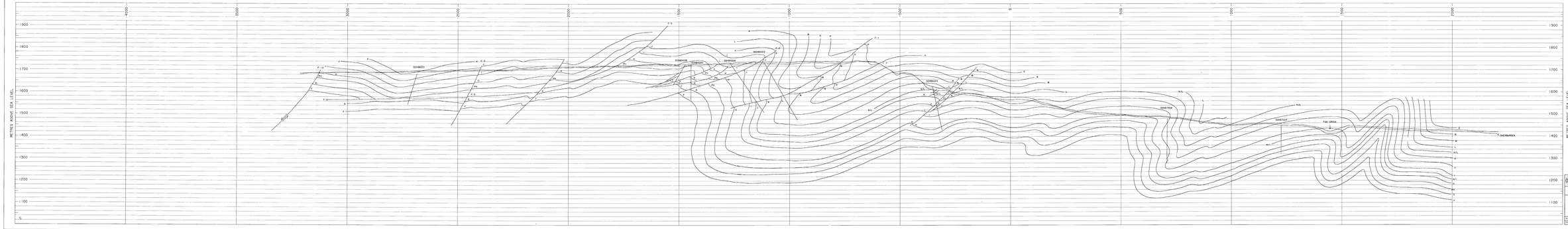
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1100
METRES ABOVE SEA LEVEL
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DDH 80-23
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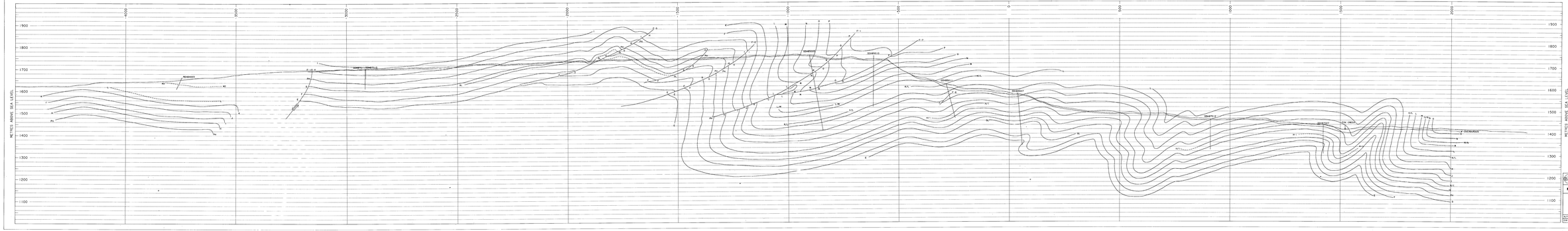
METRES ABOVE SEA LEVEL
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1100
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SECTION 23758
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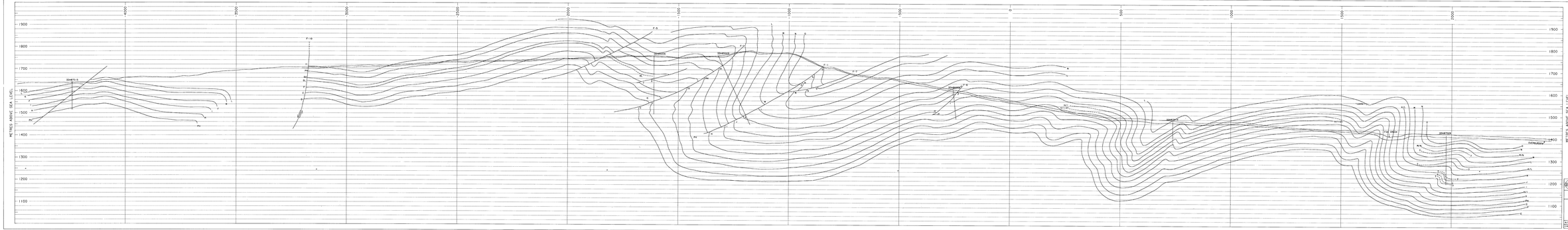
SECTION



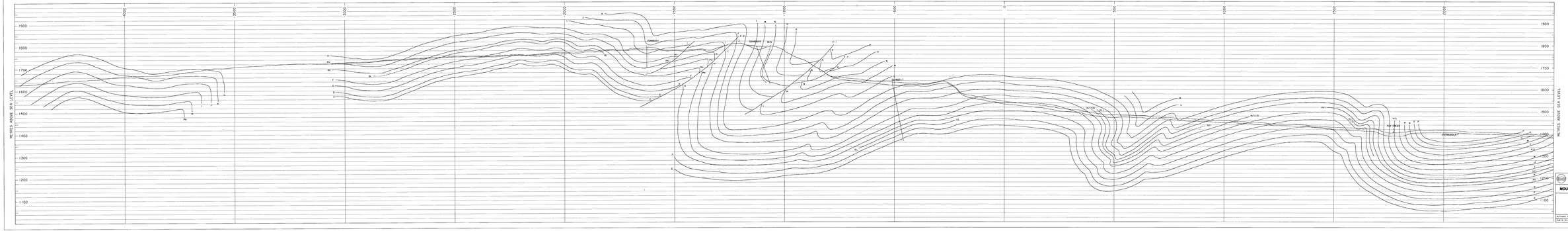
740

GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST FOX AREA

SECTION 2500N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3500
3000
2500
2000
1500
1000
500
0
500
1000
1500
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
COMBOOO
COMBO01
COMBO02
N/A
COMBO03
COMBO04
COMBO05
COMBO06
COMBO07
COMBO08
COMBO09
COMBO10
COMBO11
COMBO12
COMBO13
COMBO14
COMBO15
COMBO16
COMBO17
COMBO18
COMBO19
COMBO20
COMBO21
COMBO22
COMBO23
COMBO24
COMBO25
COMBO26
COMBO27
COMBO28
COMBO29
COMBO30
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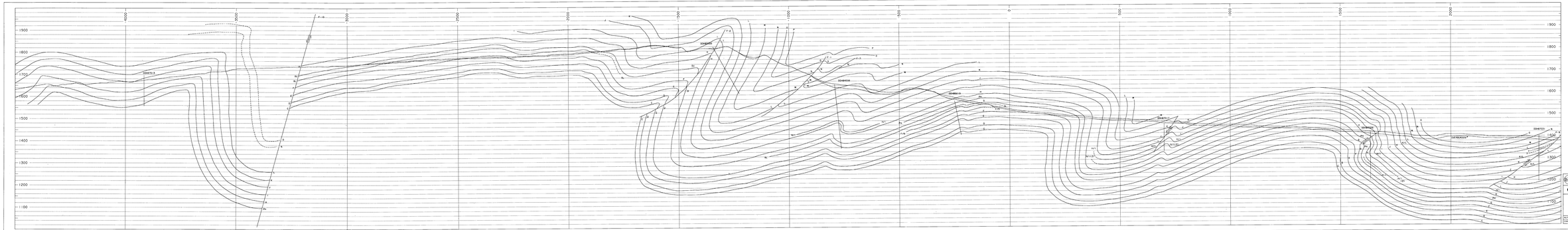
COMBO40
COMBO41
COMBO42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-1500
-1000
-500
0
500
1000
1500
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
F-16
F-2
F-1
DDH87013
DDH87015
DDH87016
DDH87017
DDH87021
DDH87020
DDH87019
DDH87018
DDH87014
DDH87012
DDH87011
DDH87010
DDH87009
DDH87008
DDH87007
DDH87006
DDH87005
DDH87004
DDH87003
DDH87002
DDH87001
DDH87000
DDH86999
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DDH86982
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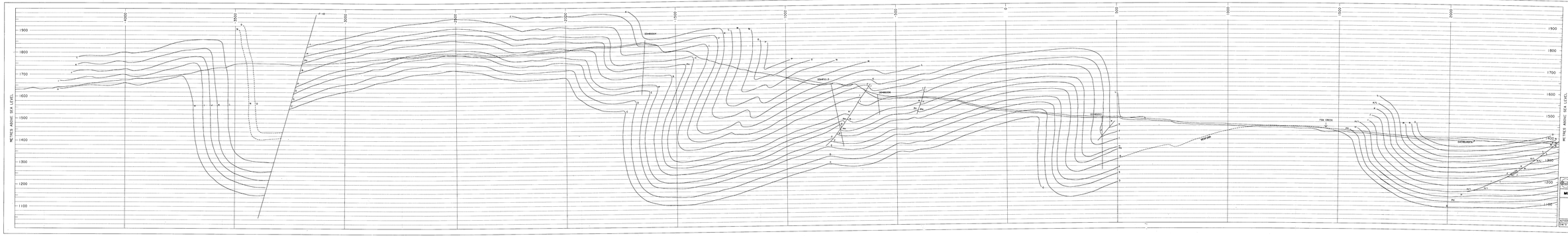
DDH86973



740

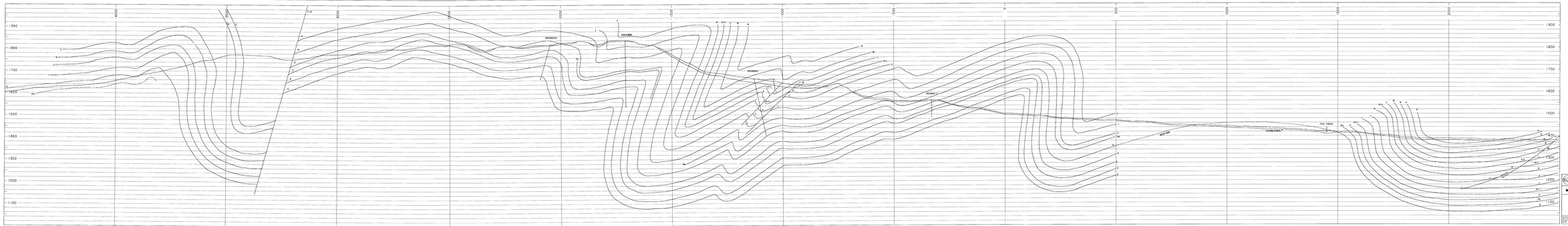
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 2970N

SCALE: 1:500	DATE: APRIL, 1986
DRAWN BY: [illegible]	FILE: [illegible]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3500
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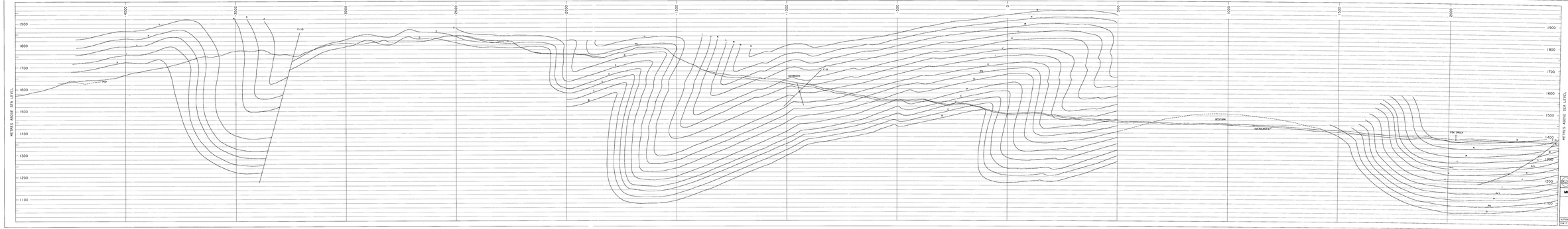
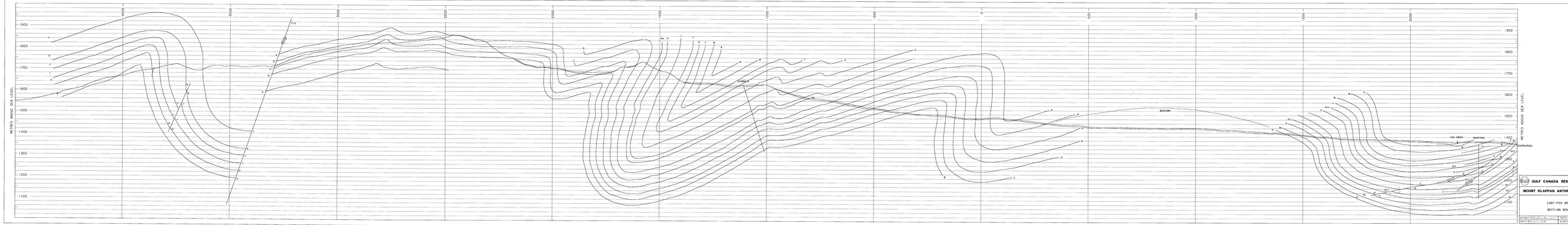
2500
2000
1500
1000
500
0
500
1000
1500
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
TCA
DEVONIAN
DEVONIAN
DEVONIAN
DEVONIAN
FOX CREEK
HEMLOCK
BELLY RIVER
BELLY RIVER
Pc
Pc
Pc


-4000
-3500
-3000
-2500
-2000
-1500
-1000
-500
0
500
1000
1500
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
METRES ABOVE SEA LEVEL
FOX CREEK
BCGP-2A
DUNSMUIR
BCGP-2B
FOX CREEK
BCGP-2A
BCGP-2B
Pm
Pm
Pm



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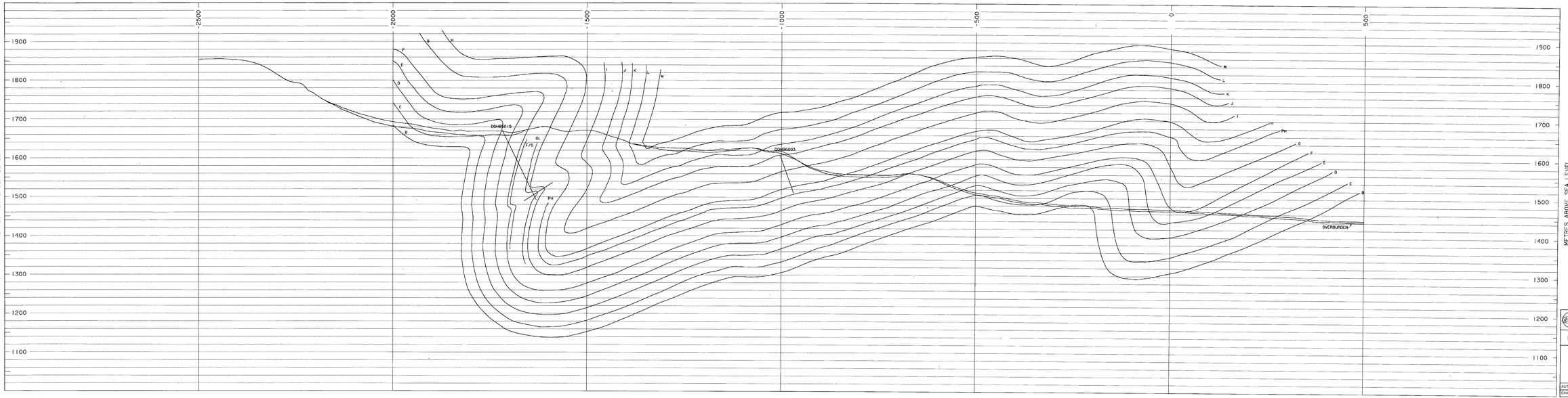
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST FOX AREA

SECTION 3250N

Author	DATE: MARCH, 1988
Checked	KLAP12350S77-3802250-XS
Unit of Measure	DRF



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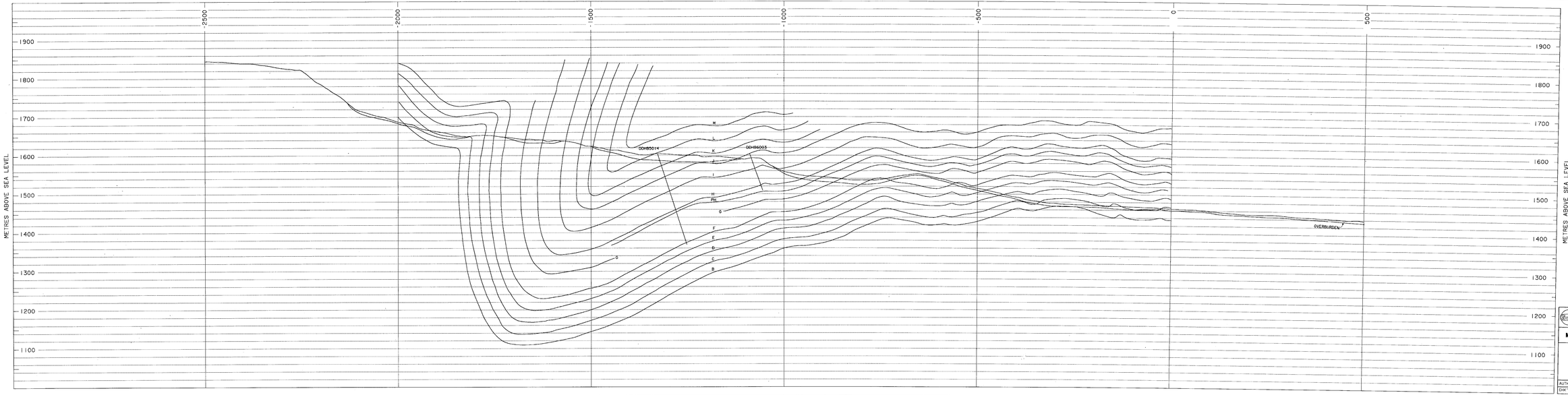
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 3375N

AUTHOR: J.I., E.S.	DATE: MARCH, 1988
CHK'D BY: J.I., E.B.	KLAP1(20505)7860.S375.XS SAM



740

GULF CANADA RESOURCES LIMITED

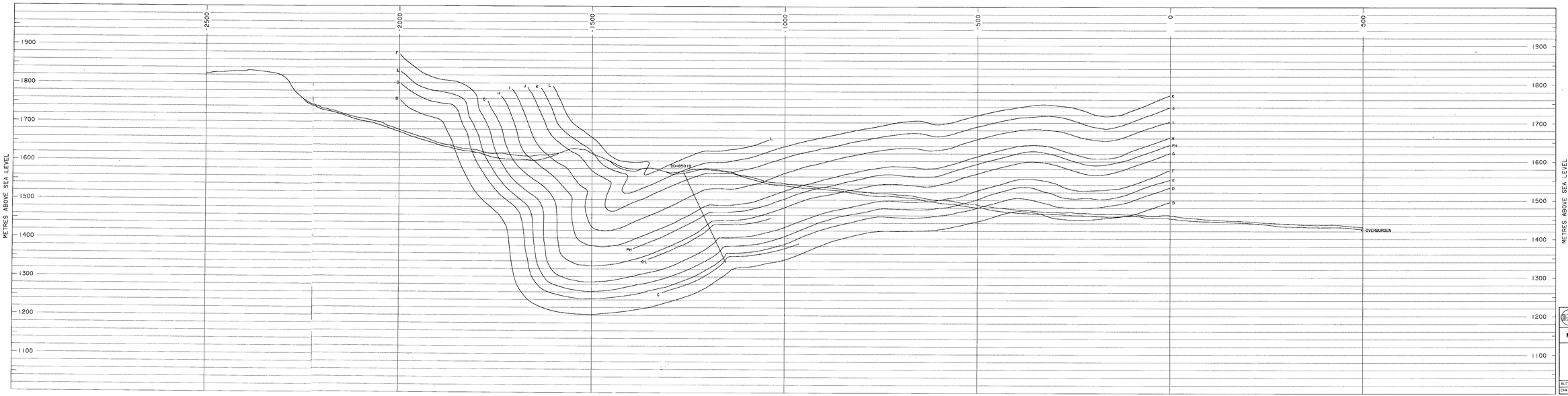
MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 3500N

AUTHOR: J.T., E.S. | DATE: MARCH, 1988

CHK'D BY: J.T., E.S. | KLAP\12050571\B03500.XS JTH



740

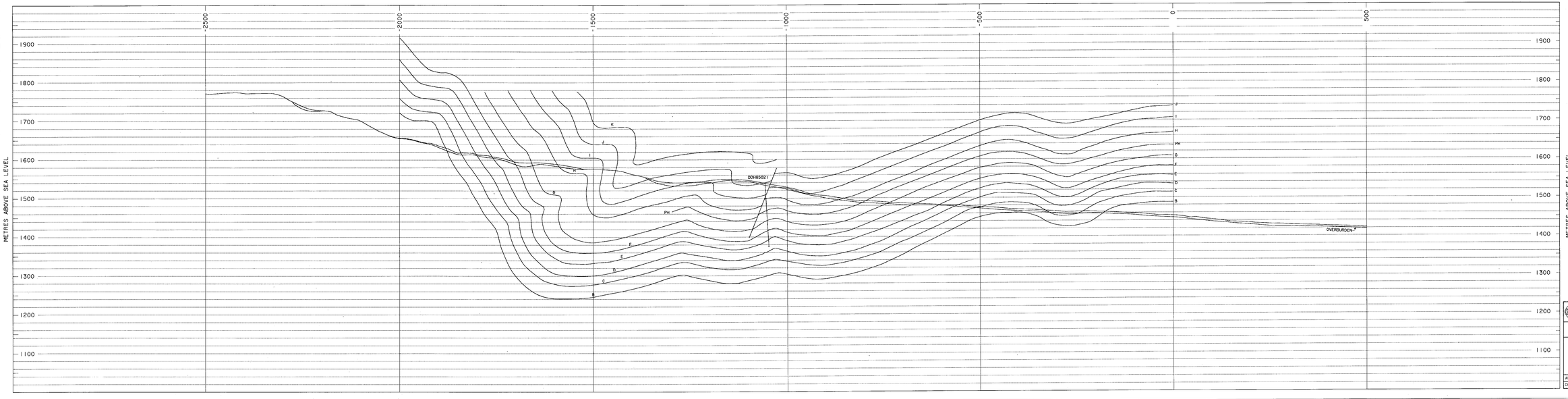
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 3625N

AUTHOR: J.I., E.S.	DATE: MARCH, 1988
CHK'D BY: J.I., E.S.	KLAP\120505\18803625.XS JAG



740

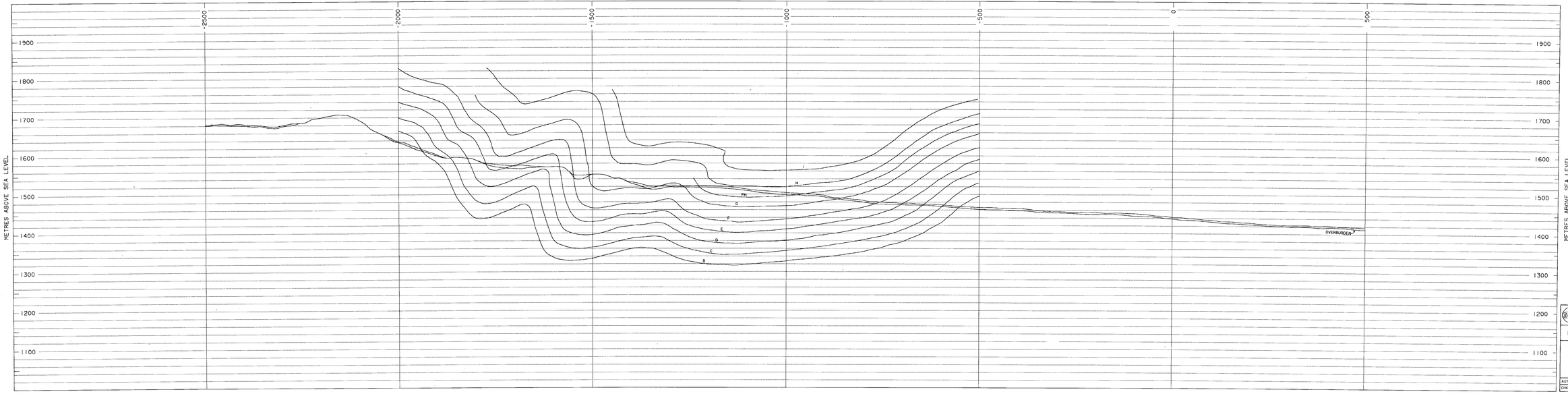
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 3750N

AUTHOR: J.T., E.S.	DATE: MARCH, 1988
CHK'D BY: J.T., E.S.	KLAP12050571860375O.XS JTH



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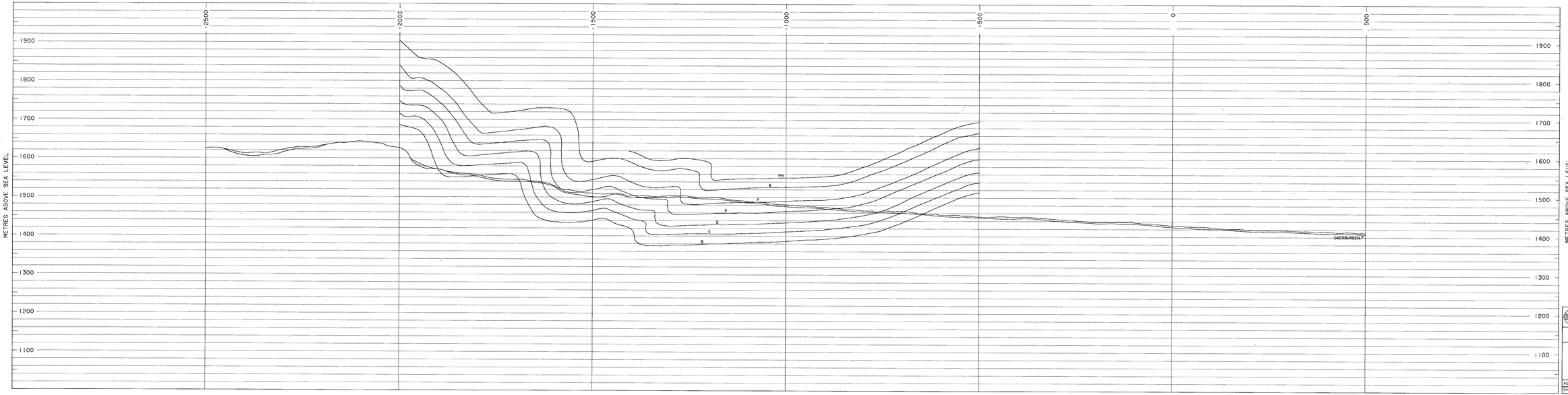
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 3875N

AUTHOR: J.T., E.S.	DATE: MARCH, 1988
CHK'D BY: J.T., E.S.	KLAP\120505718603875.XS JTH



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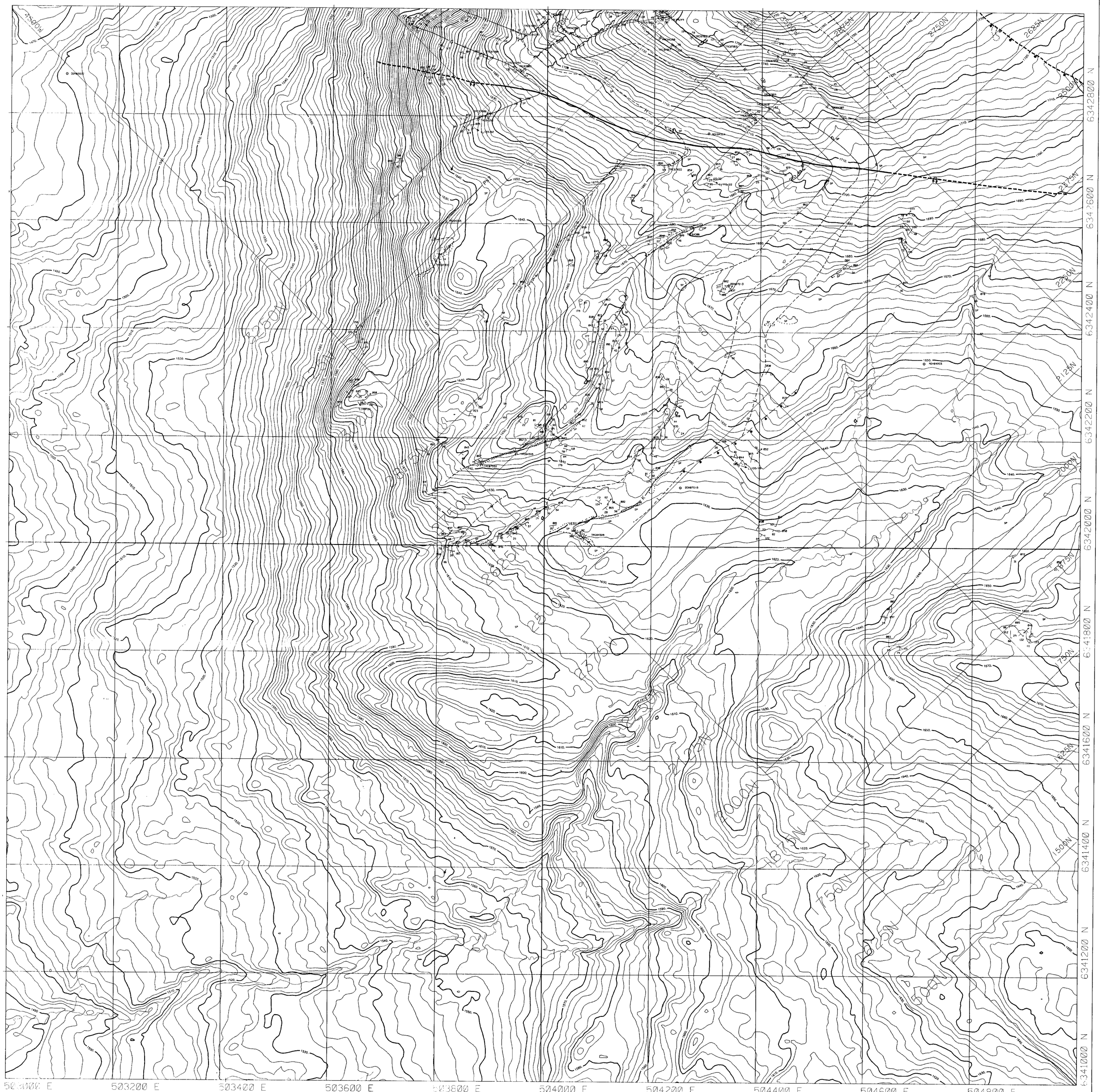
GULF CANADA RESOURCES LIMITED

MOUNT KLAPPAN ANTHRACITE PROJECT

LOST-FOX AREA

SECTION 4000N

AUTHOR: J.I.,E.S.	DATE: MARCH, 1988
DWG'D BY: J.I., E.S.	KLAP\120505788604000.K8 JTH



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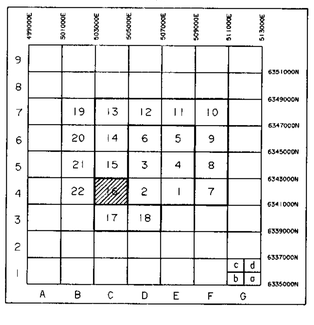


SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L; LINEATION, DIRECTION AND PLUNGE
- MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)

- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRENCH (SHOWING COAL-CENTRED BAR WHERE KNOWN)
- COAL SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- MEASURED SECTION
- CROSS SECTION LINE (MINING GRID)
- FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- SURVEY STATION, SURVEY CAIRN
- SWAMP
- MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

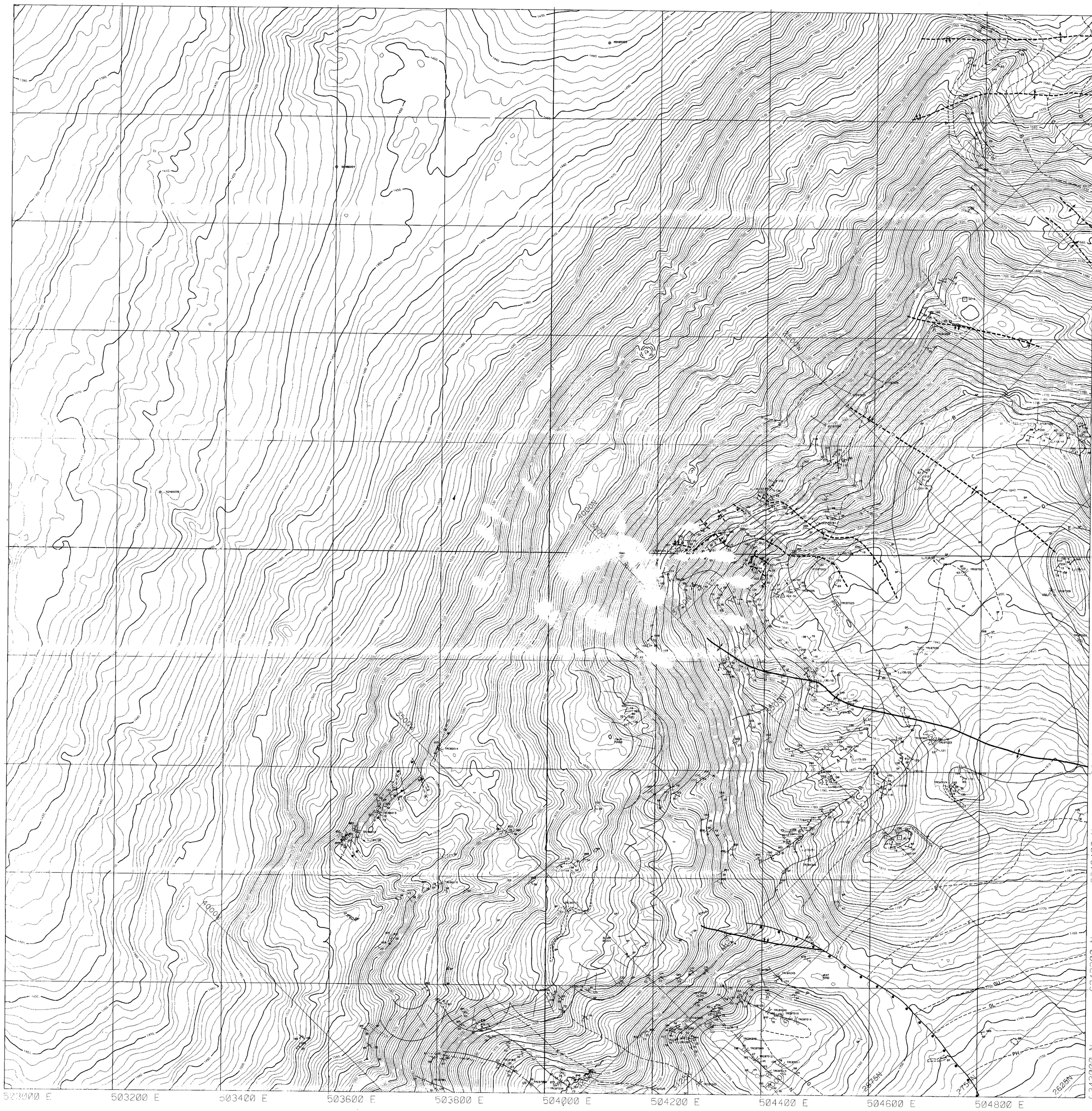
740

GULF CANADA RESOURCES LTD. KLAP1:[20505]85108316.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA C-4

SCALE: 1:2000 C.I. = 2m DATE: APRIL, 1988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6344600 N
6344400 N
6344200 N
6344000 N
6343800 N
6343600 N
6343400 N
6343200 N
6343000 N
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503200 E
503400 E
503600 E
503800 E
504000 E
504200 E
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2875N
2625N
2750N
RDH85005
RDH85006
RDH87024
IRC85014
IRC85013
IRC85016
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IRC87060
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IRC87062
IRC87063
IRC87064
IRC87065

6346800 N
6346600 N
6346400 N
6346200 N
6346000 N
6345800 N
6345600 N
6345400 N
6345200 N
6345000 N

503000 E
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503400 E
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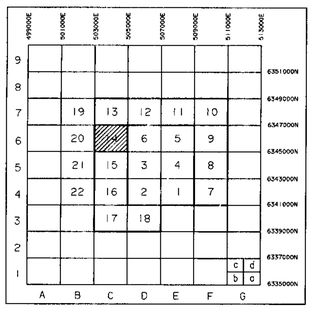
504000 E
504200 E
504400 E
504600 E
504800 E

INDEX



SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L: LINEATION, DIRECTION AND PLUNGE
- MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)
- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRENCH (SHOWING COAL-CENTRED BAR WHERE KNOWN)
- SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- MEASURED SECTION
- CROSS SECTION LINE (MINING GRID)
- FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- SURVEY STATION, SURVEY CAIRN
- SWAMP
- MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

740

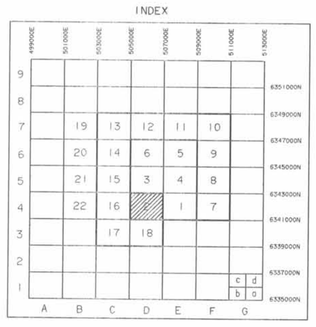
GULF CANADA RESOURCES LTD. KLAP:[205057185108301 4.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA C-6

SCALE: 1:2000 C.I. = 2m DATE: APRIL, 1988

INDEX



SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L_1 045/30 — L_1 LINEATION, DIRECTION AND PLUNGE
- MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)
- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRC 86001 — TRENCH (SHOWING COAL-CENTRED BAM WHERE KNOWN)
- SP/K — COAL SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- 045 — GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- 970 86001 — MEASURED SECTION
- 3300 N — CROSS SECTION LINE (MINING GRID)
- Y 86001 — FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- A.B-1 — SURVEY STATION, SURVEY CAIRN
- SWAMP
- MV — MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

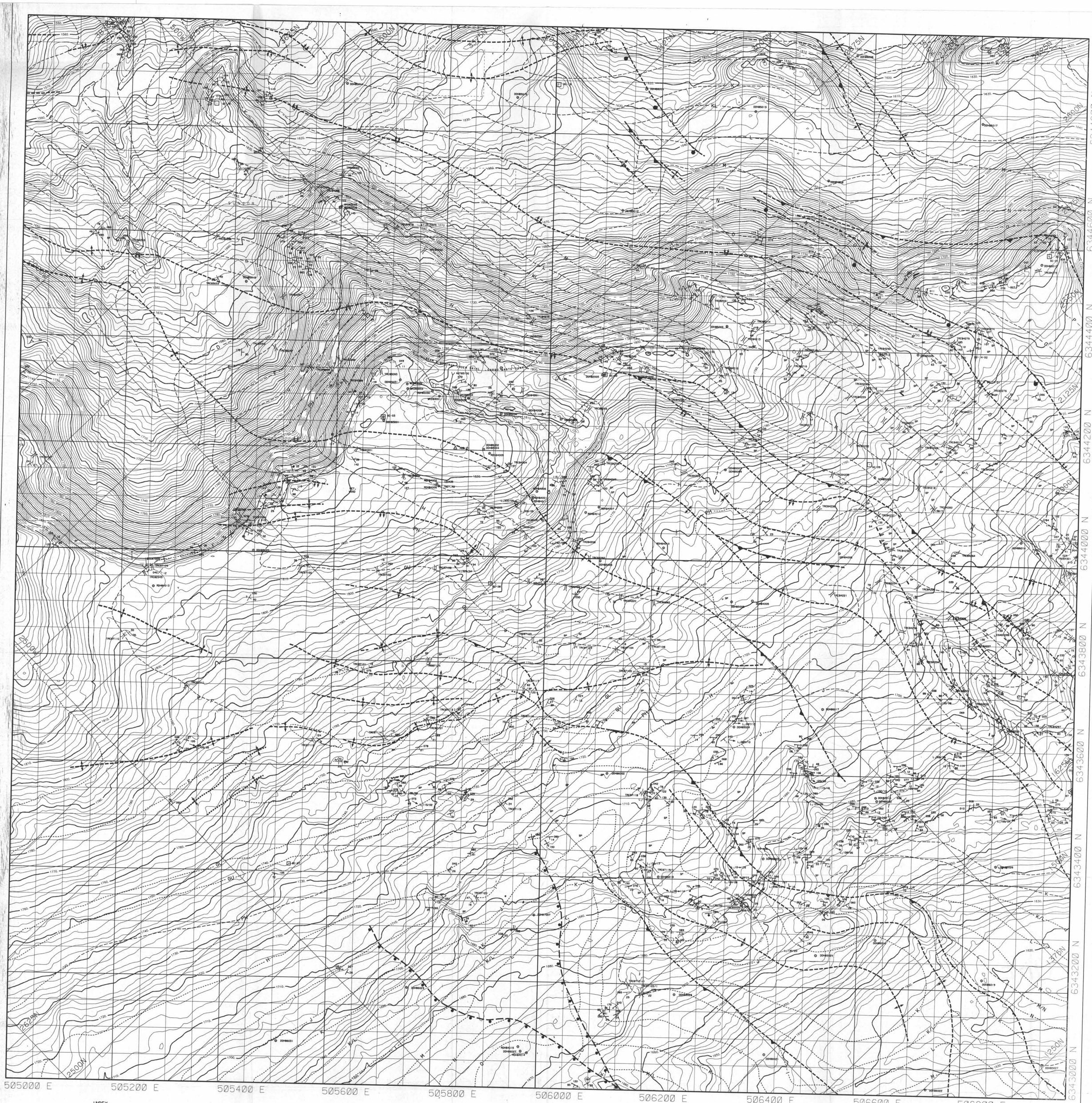
740

GULF CANADA RESOURCES LTD. KLAP:[205057]851083002.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA D-4

SCALE: 1:2000 C.I. = 2m DATE: APRIL, 1988



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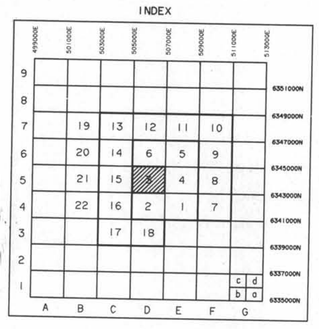

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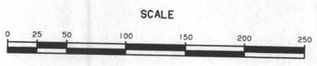
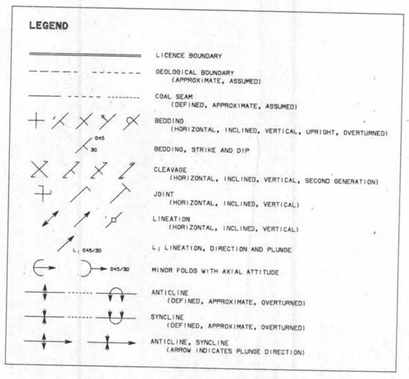
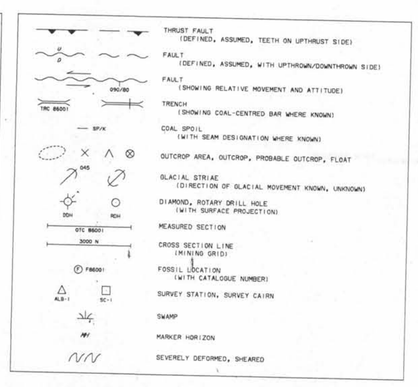


LEGEND





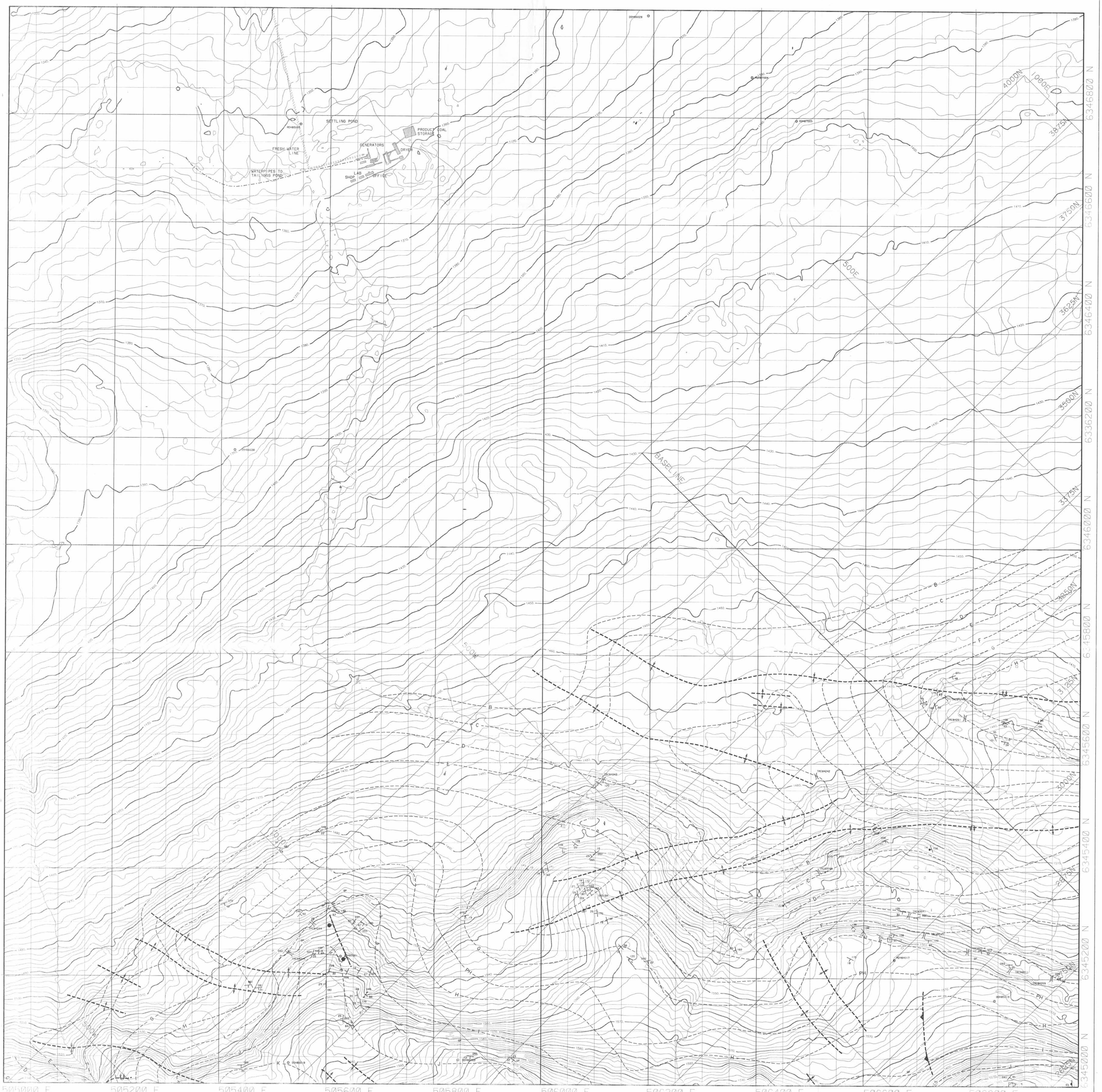
740

GULF CANADA RESOURCES LTD. KLAP:[205,57]851083003.MAP

MT. KLAPPAN COAL PROPERTY

MAP AREA D-5

SCALE: 1:2000 C.I. = 2m DATE: APRIL 1988



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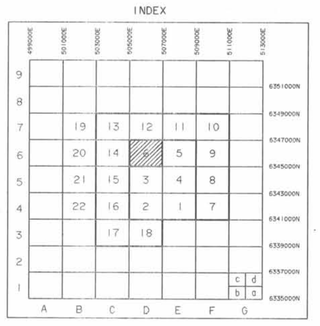


SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L_1 LINEATION, DIRECTION AND PLUNGE
- MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)

- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRENCH (SHOWING COAL-CENTRED BAR WHERE KNOWN)
- COAL SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- MEASURED SECTION
- CROSS SECTION LINE (MINING GRID)
- FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- SURVEY STATION, SURVEY CAIRN
- SWAMP
- MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

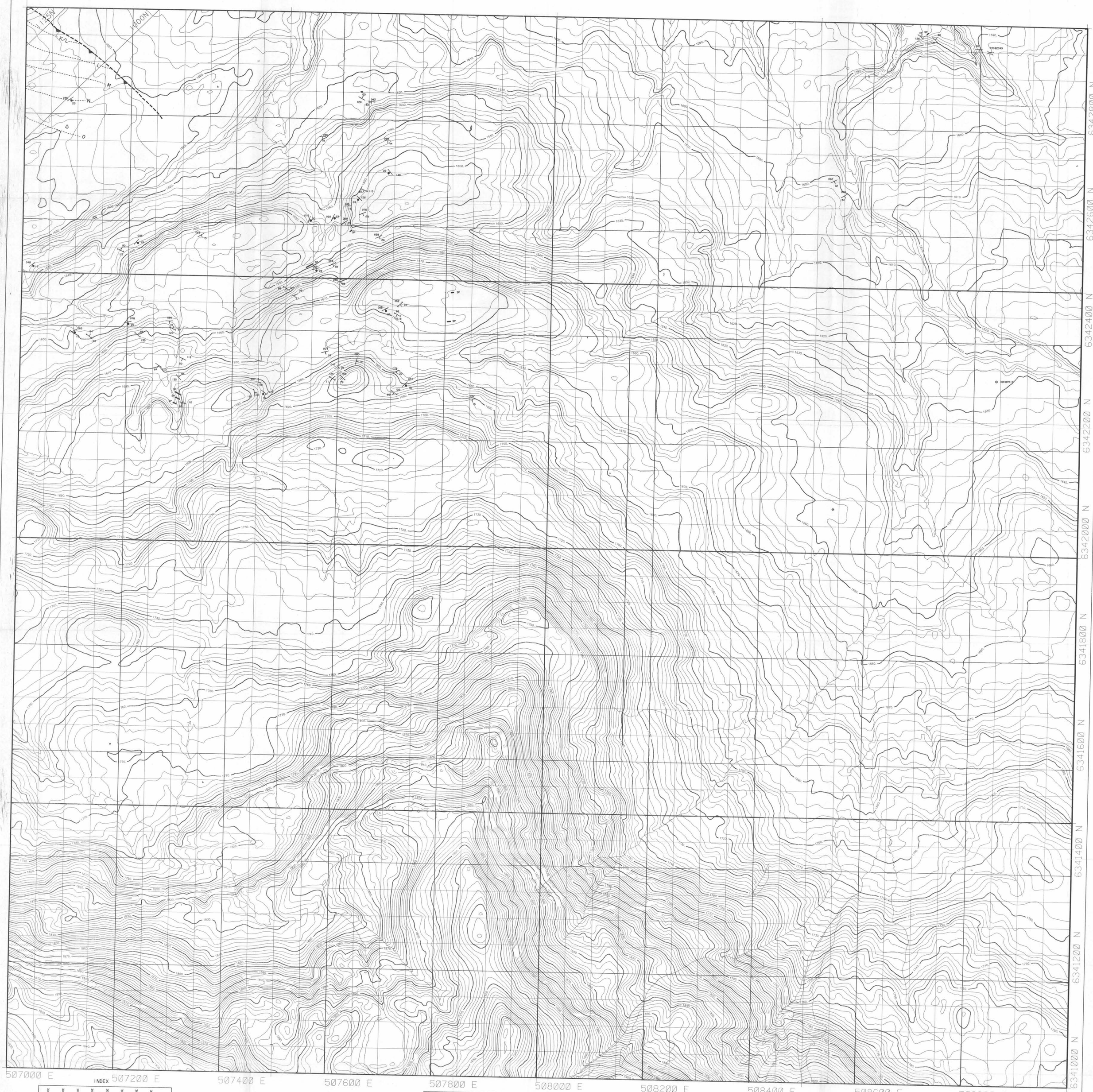
740

GULF CANADA RESOURCES LTD. KLAP:[205057]851083006.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA D-6

SCALE: 1:2000 C.I. = 2m DATE: APRIL, 1988



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8									6349000N
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6		20	14	6	5	9			6345000N
5		21	15	3	4	8			6343000N
4		22	16	2		7			6341000N
3			17	18					6339000N
2									6337000N
1							c	d	6335000N
							b	a	
	A	B	C	D	E	F	G		

SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L: LINEATION, DIRECTION AND PLUNGE
- MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)

- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRENCH (SHOWING COAL-CENTRED BAR WHERE KNOWN)
- COAL SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- MEASURED SECTION
- CROSS SECTION LINE (MINING GRID)
- FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- SURVEY STATION, SURVEY CAIRN
- SWAMP
- MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

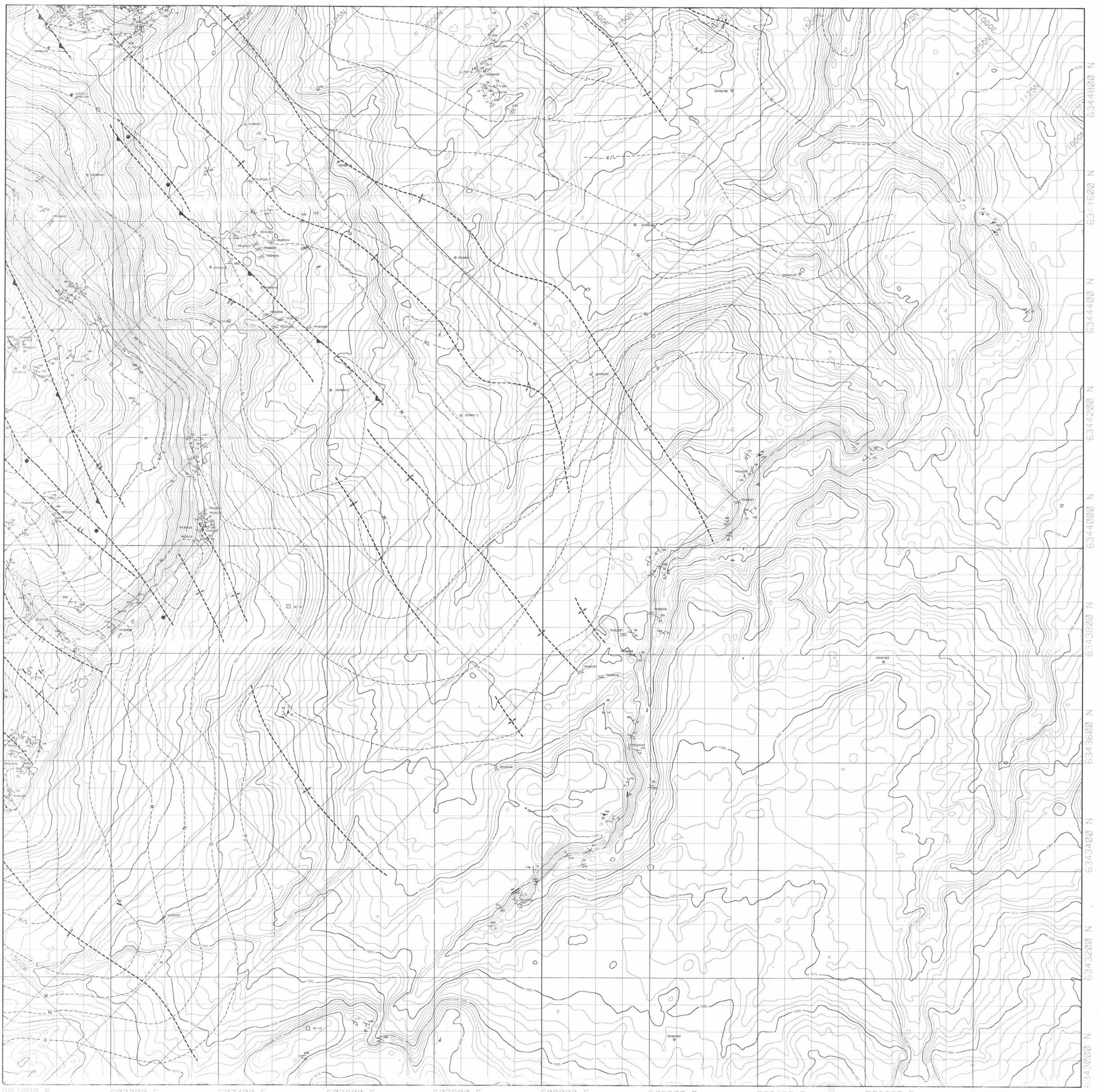
740

GULF CANADA RESOURCES LTD. KLAP:[205057]85108300I.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA E-4

SCALE: 1:2000 C.I. = 2m DATE: APRIL, 1988



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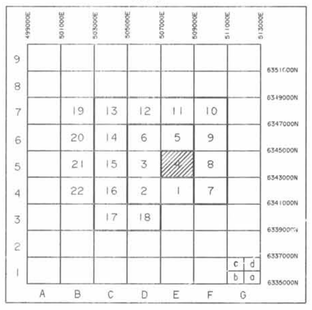

SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L; 045/30 — L; LINEATION, DIRECTION AND PLUNGE
- 045/30 — MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)

- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- 050/80 — FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRC 86007 — TRENCH (SHOWING COAL-CENTRED BAR WHERE KNOWN)
- EP-x — COAL SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- 045 — GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- DDH 86001 — MEASURED SECTION
- 3000 N — CROSS SECTION LINE (MINING GRID)
- F86001 — FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- A.B.1 / BC-1 — SURVEY STATION, SURVEY CAIRN
- SWAMP
- MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

740

GULF CANADA RESOURCES LTD. KLAP:[205057]851083004.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA E-5

SCALE: 1:2000 C.I. = 2m DATE: APRIL. 1988

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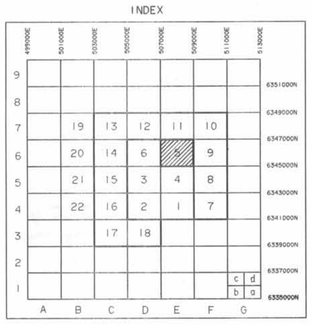

SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L; 045/20 — L; LINEATION, DIRECTION AND PLUNGE
- 045/30 — MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)

- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRENCH (SHOWING COAL-CENTRED BAR WHERE KNOWN)
- COAL SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- MEASURED SECTION
- CROSS SECTION LINE (MINING GRID)
- FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- SURVEY STATION, SURVEY CAIRN
- SWAMP
- MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

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GULF CANADA RESOURCES LTD. KLAP:[205057]851083005.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA E-6

SCALE: 1:2000 C.I. = 2m DATE: APRIL, 1988

507000 E
507200 E
507400 E
507600 E
507800 E
508000 E
508200 E
508400 E
508600 E
508800 E

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6347400 N
6347200 N
6347000 N

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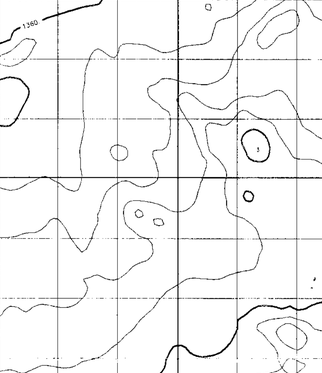

SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- 045 / 30 BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L; 045/30 L; LINEATION, DIRECTION AND PLUNGE
- 045/30 MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
- SYNCLINE (DEFINED, APPROXIMATE, OVERTURNED)
- ANTICLINE, SYNCLINE (ARROW INDICATES PLUNGE DIRECTION)
- THRUST FAULT (DEFINED, ASSUMED, TEETH ON UPTHRUST SIDE)
- NORMAL FAULT (DEFINED, ASSUMED, WITH DOT ON DOWNTHROWN SIDE)
- 090/80 FAULT (SHOWING RELATIVE MOVEMENT AND ATTITUDE)
- TRC 8600 TRENCH (SHOWING COAL-CENTRED BAR WHERE KNOWN)
- SP/K COAL SPOIL (WITH SEAM DESIGNATION WHERE KNOWN)
- OUTCROP AREA, OUTCROP, PROBABLE OUTCROP, FLOAT
- 045 GLACIAL STRIAE (DIRECTION OF GLACIAL MOVEMENT KNOWN, UNKNOWN)
- DIAMOND OR ROTARY DRILL HOLE
- TRC 8600 MEASURED SECTION
- 5000 N CROSS SECTION LINE (MINING GRID)
- F86001 FOSSIL LOCATION (WITH CATALOGUE NUMBER)
- ALB-1 SURVEY STATION, SURVEY CAIRN
- SC-
- SWAMP
- MARKER HORIZON
- SEVERELY DEFORMED, SHEARED

740

GULF CANADA CORPORATION

KLAP:1205057385103011.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA E-7

SCALE: 1:2000 C.I. = 2m DATE: APRIL. 1988

DDH87024

509000 E | 509200 E | 509400 E | 509600 E | 509800 E | 510000 E | 510200 E | 510400 E | 510600 E | 510800 E

6344800 N | 6344600 N | 6344400 N | 6344200 N | 6344000 N | 6343800 N | 6343600 N | 6343400 N | 6343200 N | 6343000 N

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8										6349000N
7		19	13	12	11	10				6347000N
6		20	14	6	5	9				6345000N
5		21	15	3	4					6343000N
4		22	16	2	1	7				6341000N
3			17	18						6339000N
2										6337000N
1							c	d		6335000N
							b	a		
	A	B	C	D	E	F	G			

SCALE

0 25 50 100 150 200 250 METRES

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL BOUNDARY (APPROXIMATE, ASSUMED)
- COAL SEAM (DEFINED, APPROXIMATE, ASSUMED)
- BEDDING (HORIZONTAL, INCLINED, VERTICAL, UPRIGHT, OVERTURNED)
- BEDDING, STRIKE AND DIP
- CLEAVAGE (HORIZONTAL, INCLINED, VERTICAL, SECOND GENERATION)
- JOINT (HORIZONTAL, INCLINED, VERTICAL)
- LINEATION (HORIZONTAL, INCLINED, VERTICAL)
- L; LINEATION, DIRECTION AND PLUNGE
- MINOR FOLDS WITH AXIAL ATTITUDE
- ANTICLINE (DEFINED, APPROXIMATE, OVERTURNED)
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- CROSS SECTION LINE (MINING GRID)
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- SWAMP
- MARKER HORIZON
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GULF CANADA CORPORATION — KLAP.(20505730510083008.MAP

MT. KLAPPAN ANTHRACITE PROPERTY

MAP AREA F-5

SCALE: 1:2000 | C.I. = 2m | DATE: APRIL, 1988

JANICE

1:2000