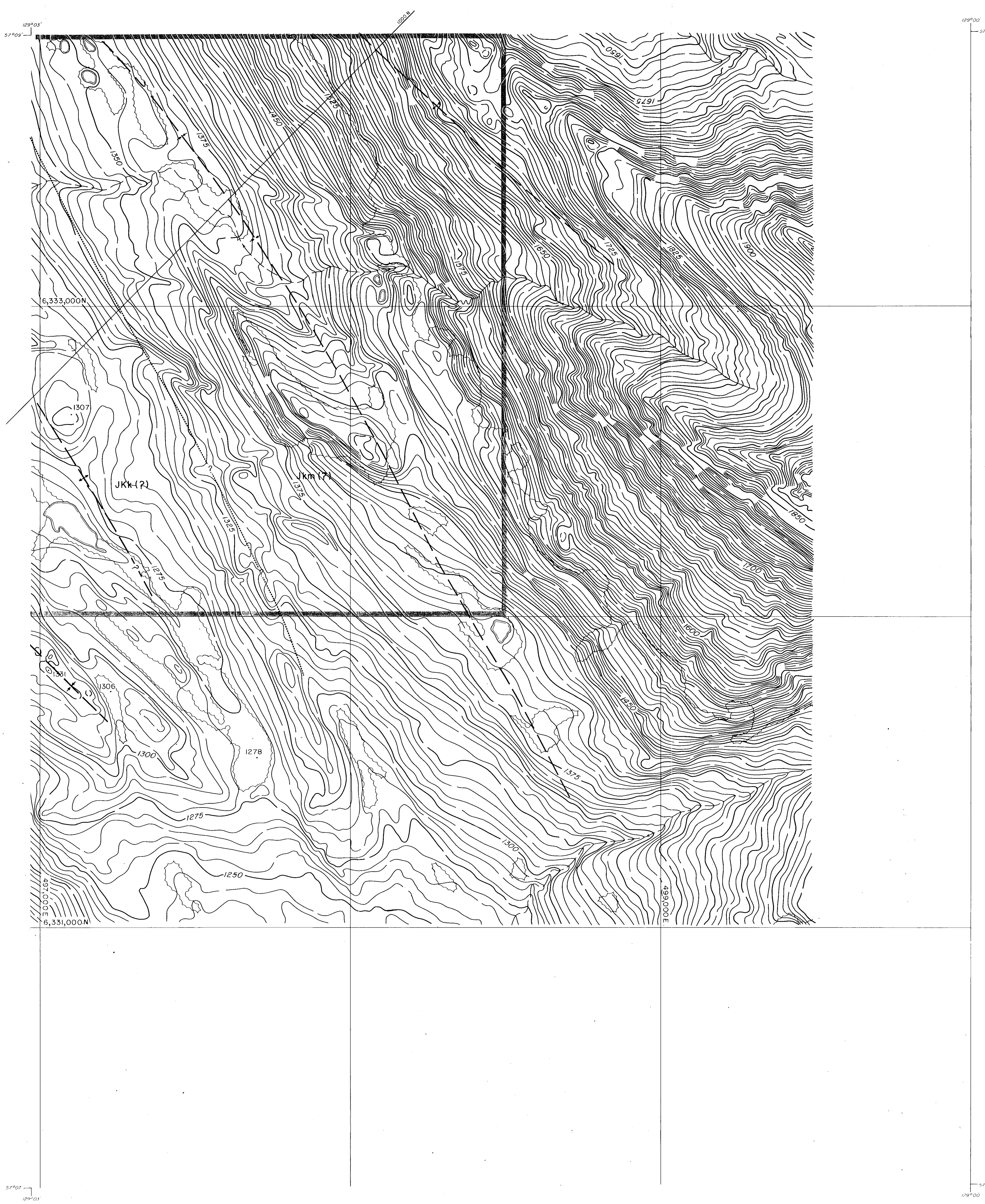
00710

APPENDIX II



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 — 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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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 60000 (APPROXIMATE).

N

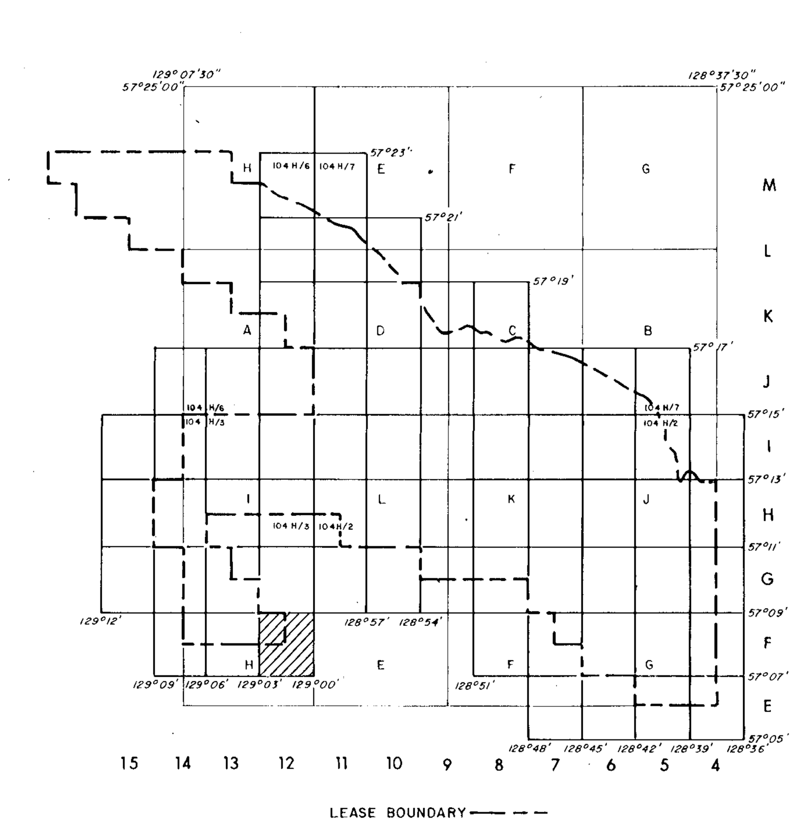
SCALE 1:5000

0 — 0.25 — 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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

710
~~685~~

GR.- Mt. Klappan 84 (2) A

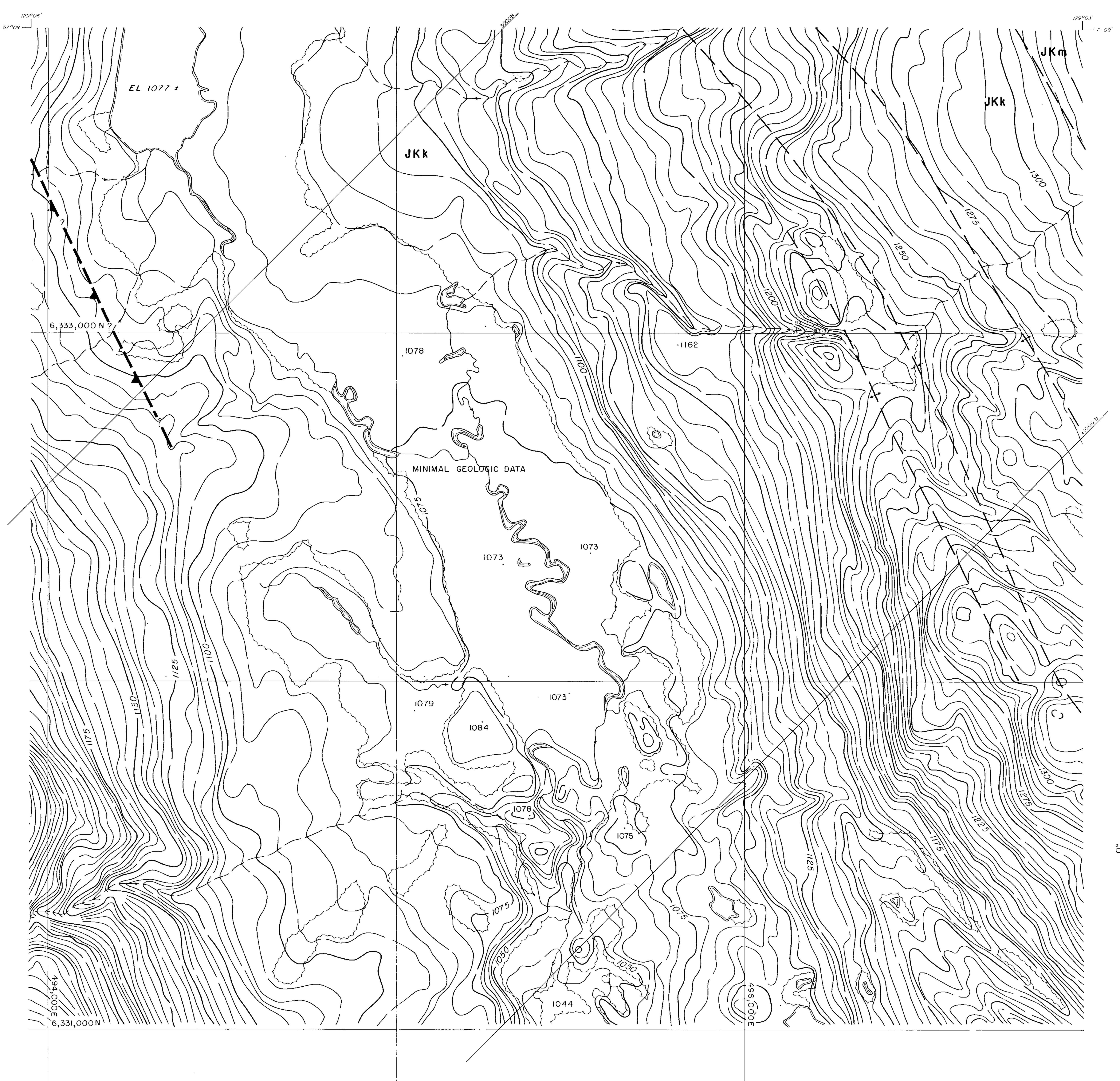
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP F-12

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E. S. DATE: JAN. 1985	DWG. No. KPN84NA-21

(17)



LEGEND

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

NOTES

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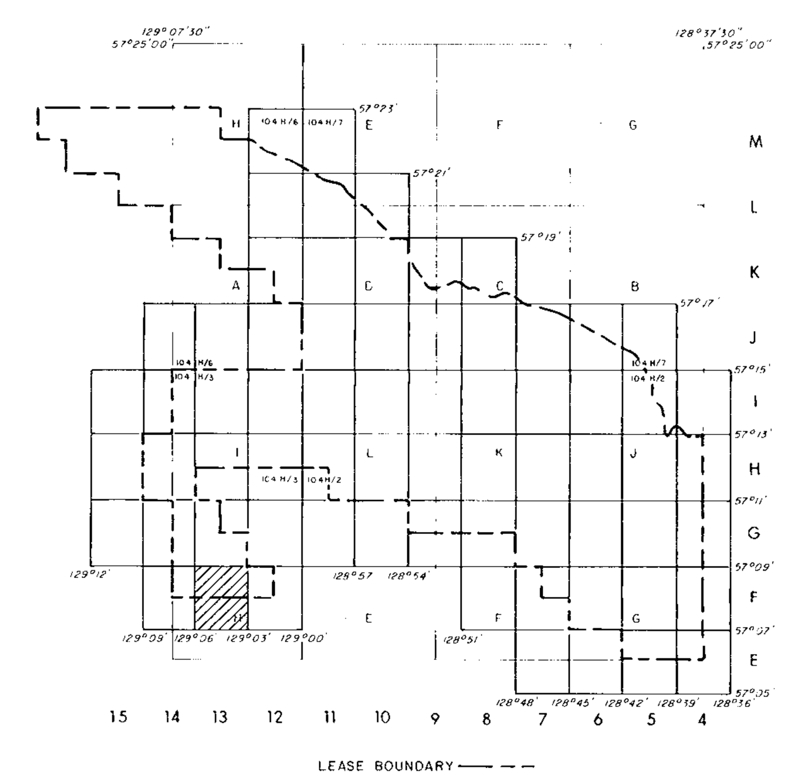
COMPILED BY
WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD., FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67 AT A SCALE OF 1:60 000 (APPROXIMATE)

SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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MALLOCH SEQUENCE

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LEGEND

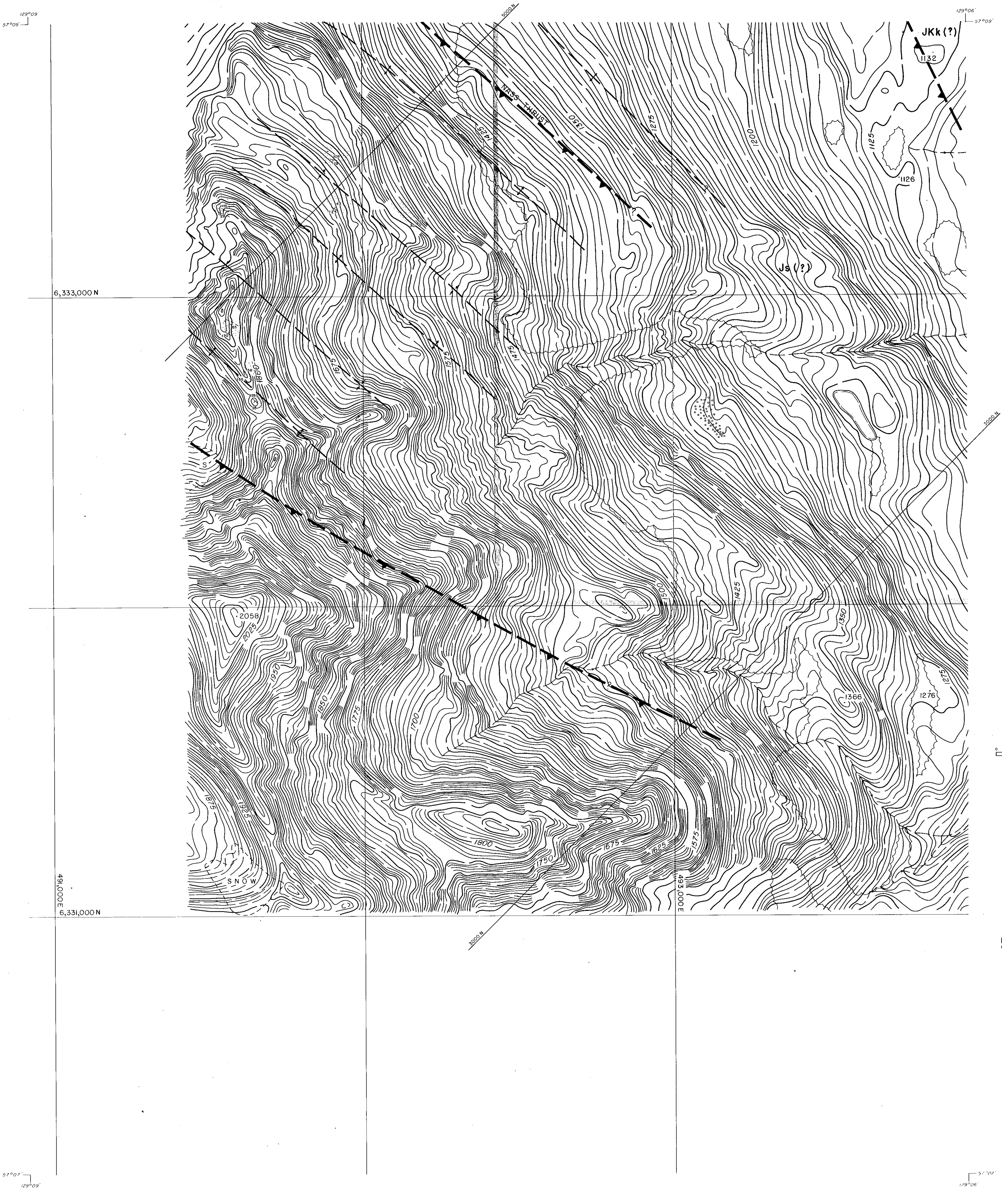
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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
U D — FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
TRC84001 SP — ADIT TRENCH COAL SPOIL
DDH RDH WKD — DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

710
~~695~~

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA	Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP NASS AREA MAP F-13	
PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-22

(18)



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
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FIELD CONTROL POINT
COAL LICENCE

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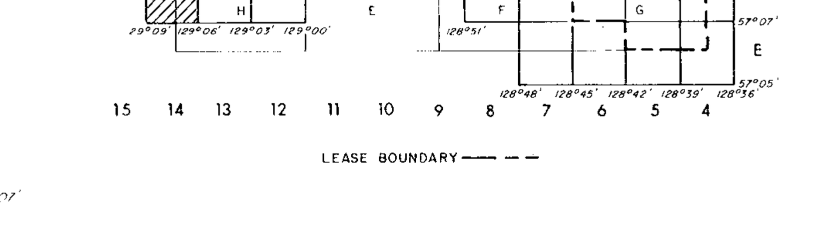
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

LEGEND

LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
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FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
ADIT TRENCH COAL SPOIL (TRC84001, SP)
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)

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~~[illegible]~~

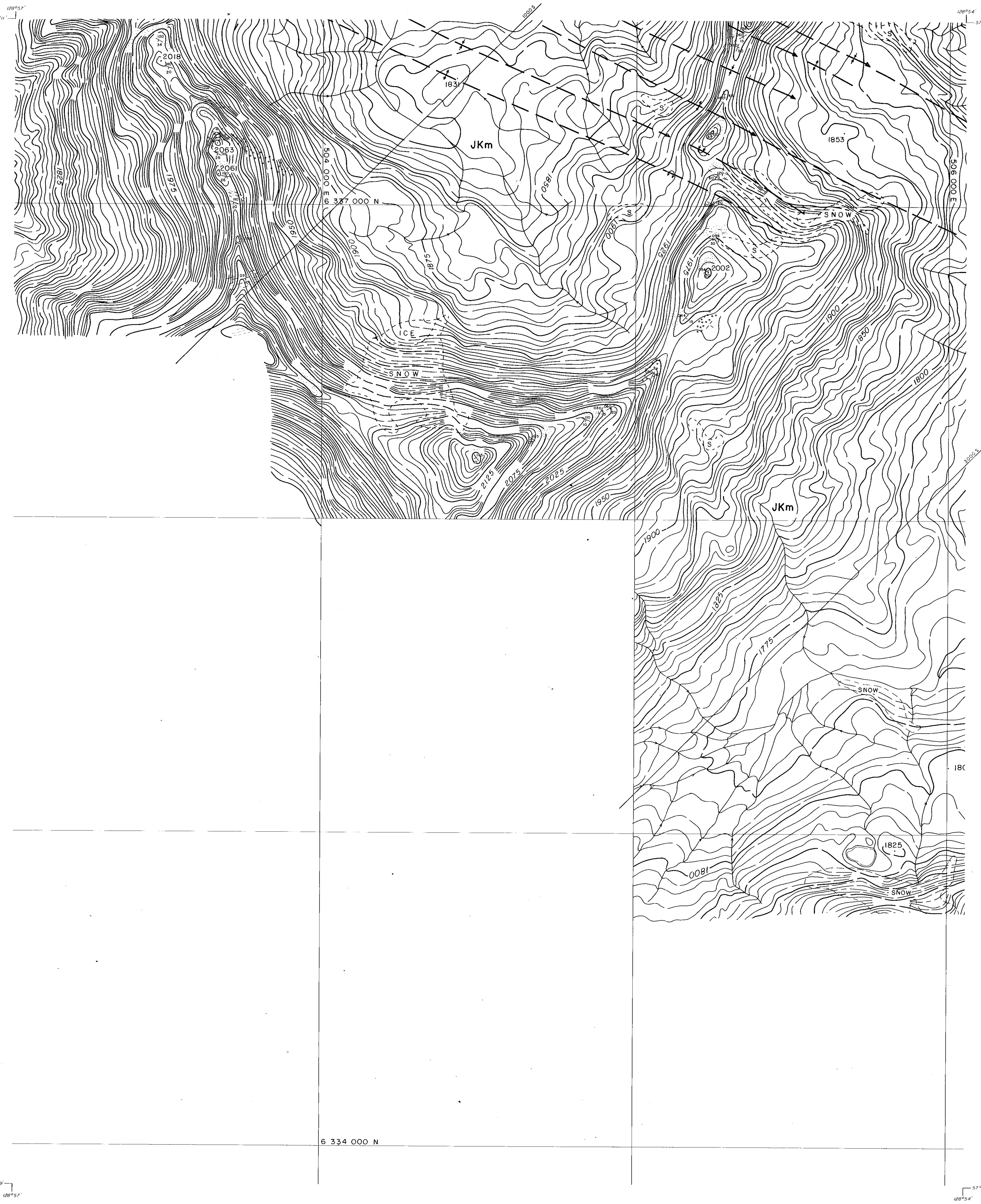
GR.- Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP F-14

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-23

(19)



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
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WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION — 7654
FORM LINES
CUT/FILL
FIELD CONTROL POINT — CP (2)
COAL LICENCE

NOTES

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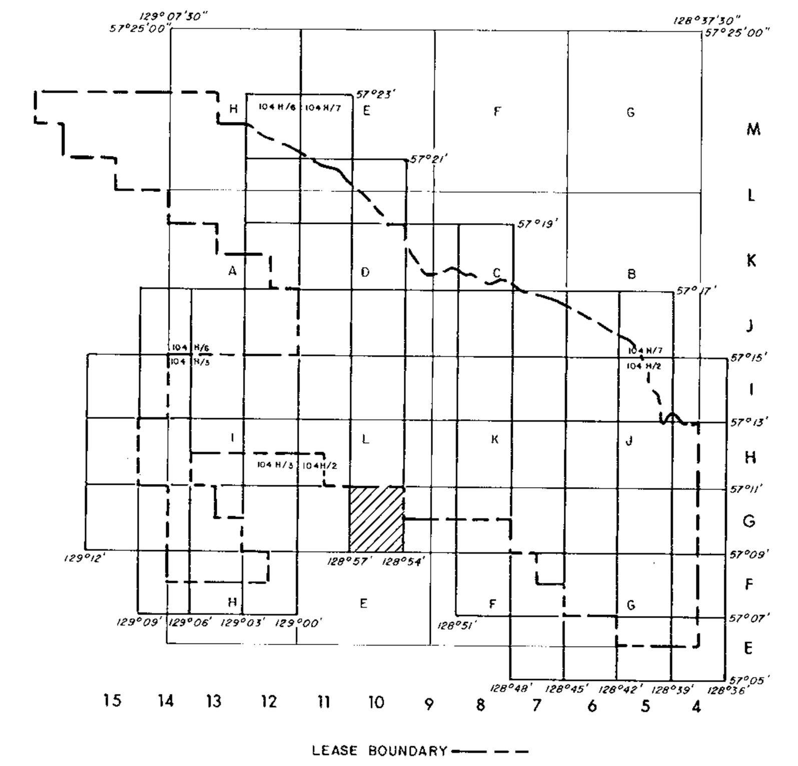
SCALE 1:5000

0 — 0.25 — 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY - - - -

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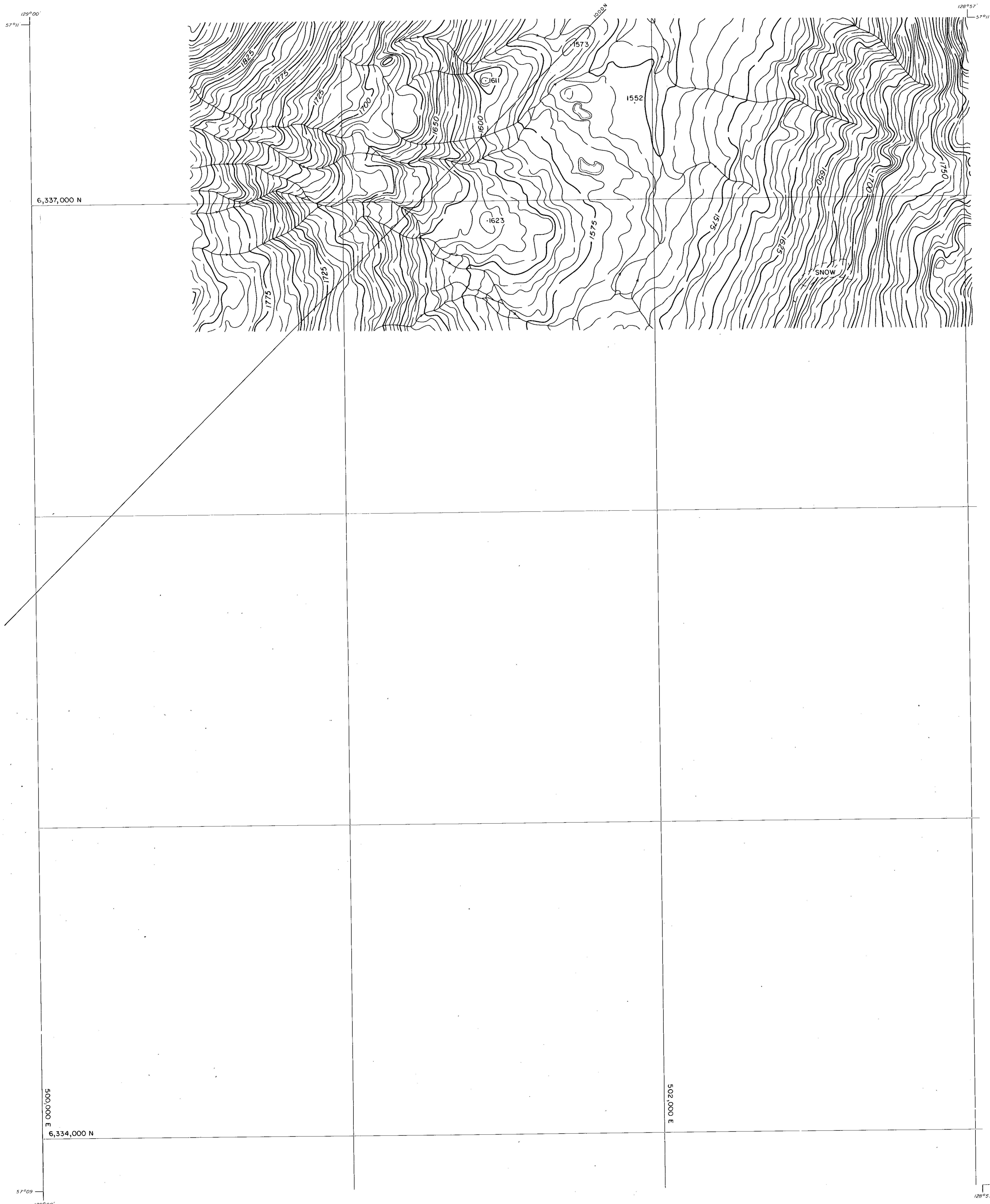
TRC84001 — SP — ADIT TRENCH COAL SPOIL
DDH RDH WKD — DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

710
~~695~~

GR.- Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA	Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP NASS AREA MAP G-10	
PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-24



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
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SCALE 1:5000

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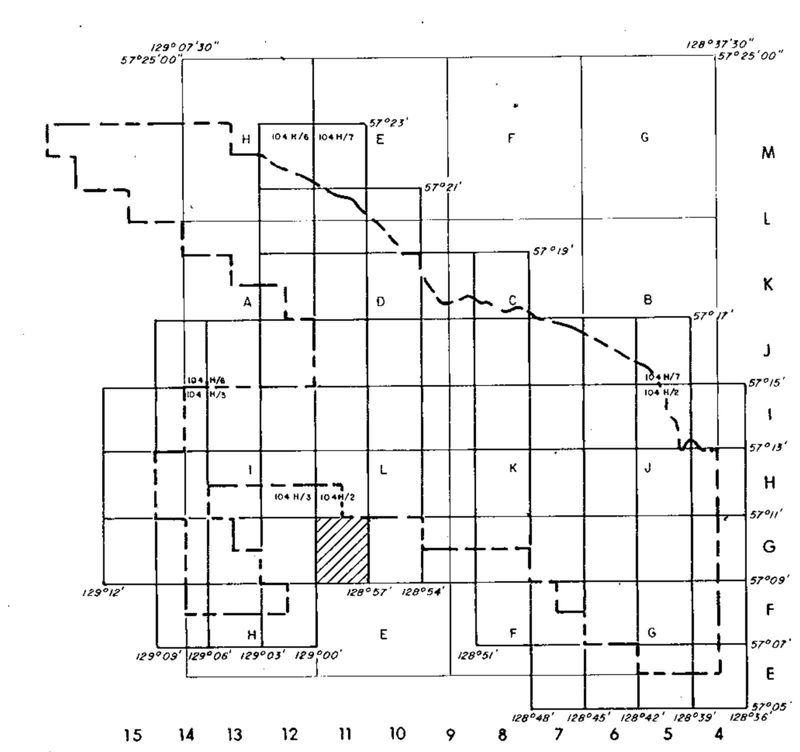
50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

LEGEND

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GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
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OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
MONOCLINE (DEFINED, APPROXIMATE)
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FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
JOINTS (INCLINED, VERTICAL, HORIZONTAL)
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OTC 84001 — MEASURED SECTION
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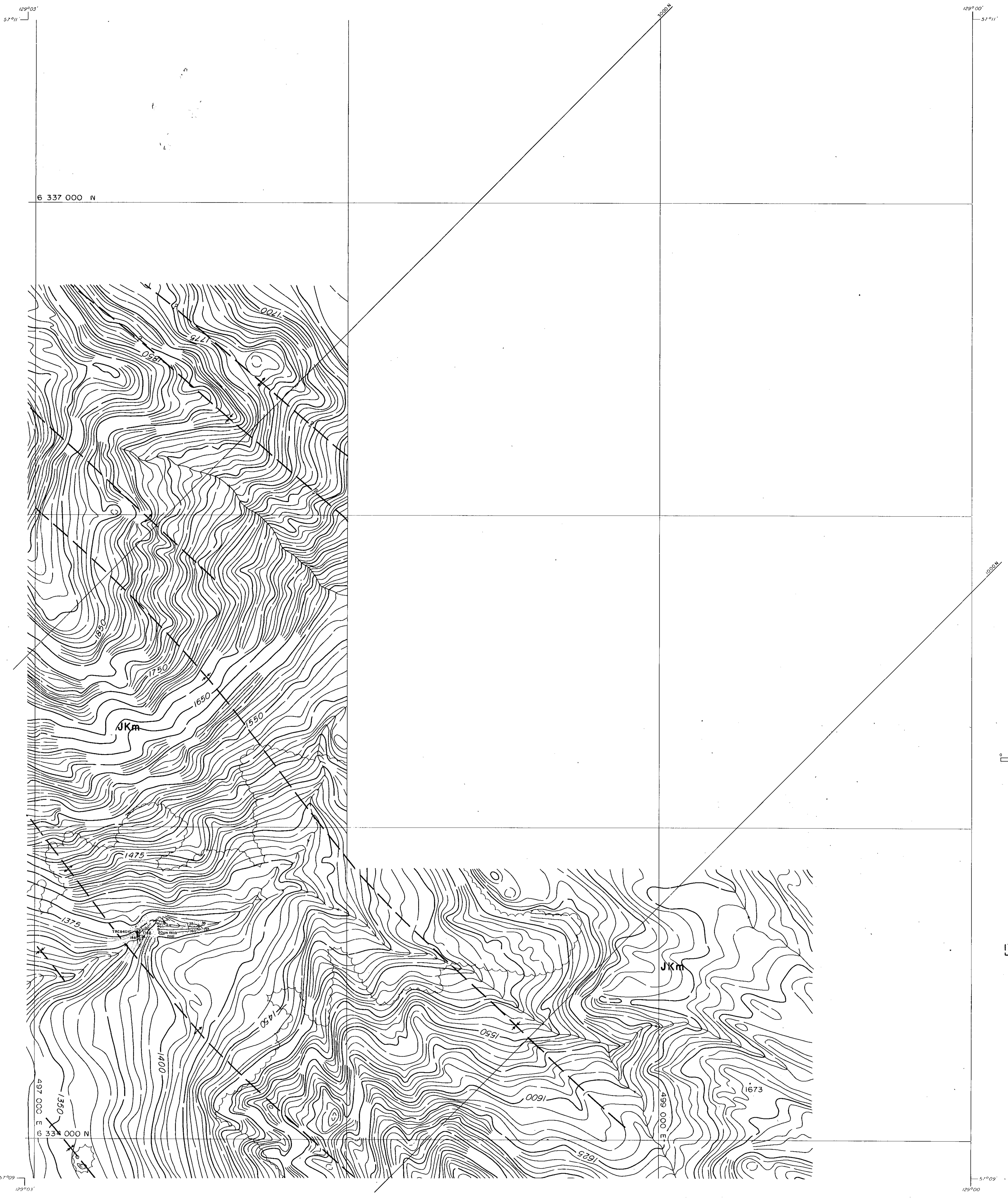
710
~~695~~

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP G-11

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-25



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
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WATER LEVEL
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FIELD CONTROL POINT
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.

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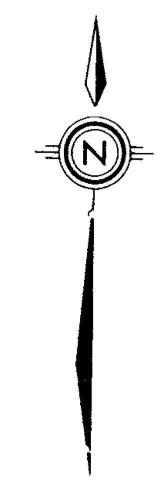
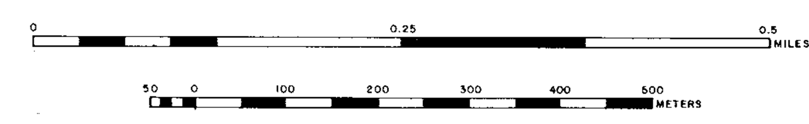
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

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).

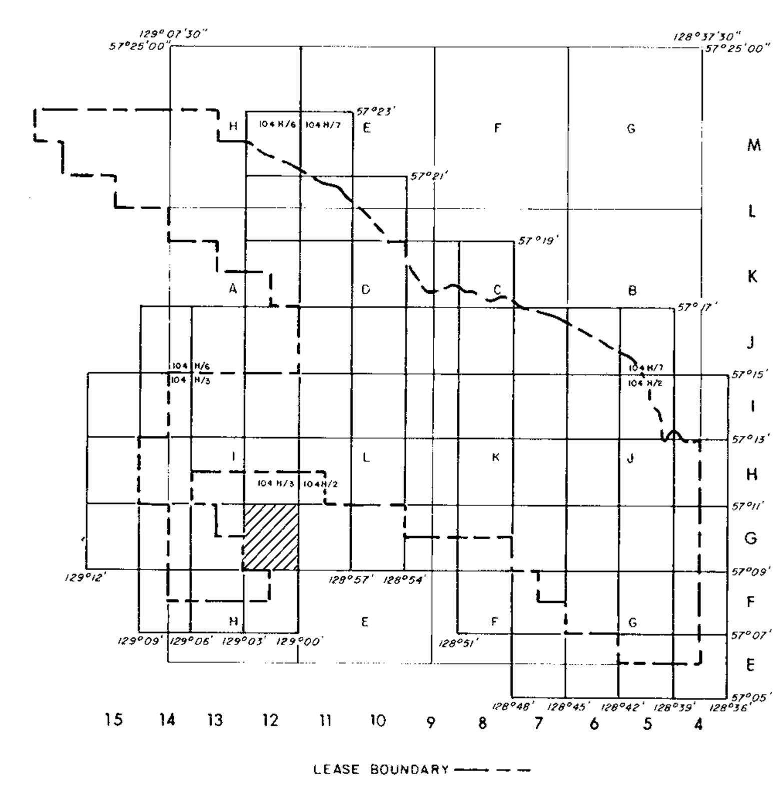


SCALE 1:5000



MT. KLAPPAN AREA

INDEX MAP



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

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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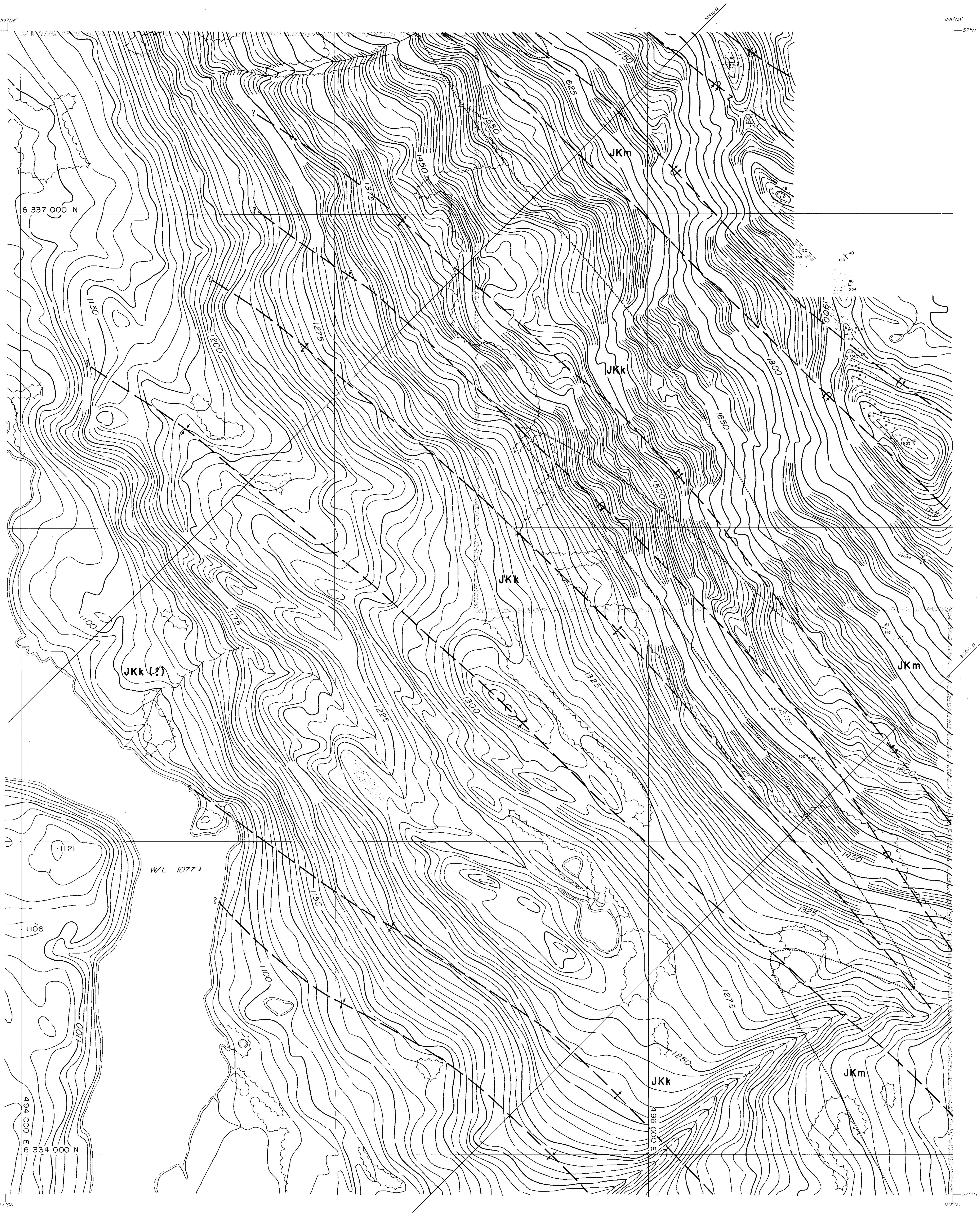
~~695~~

GR. - Mt. Klappan 84 (2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP G-12

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-26



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 — 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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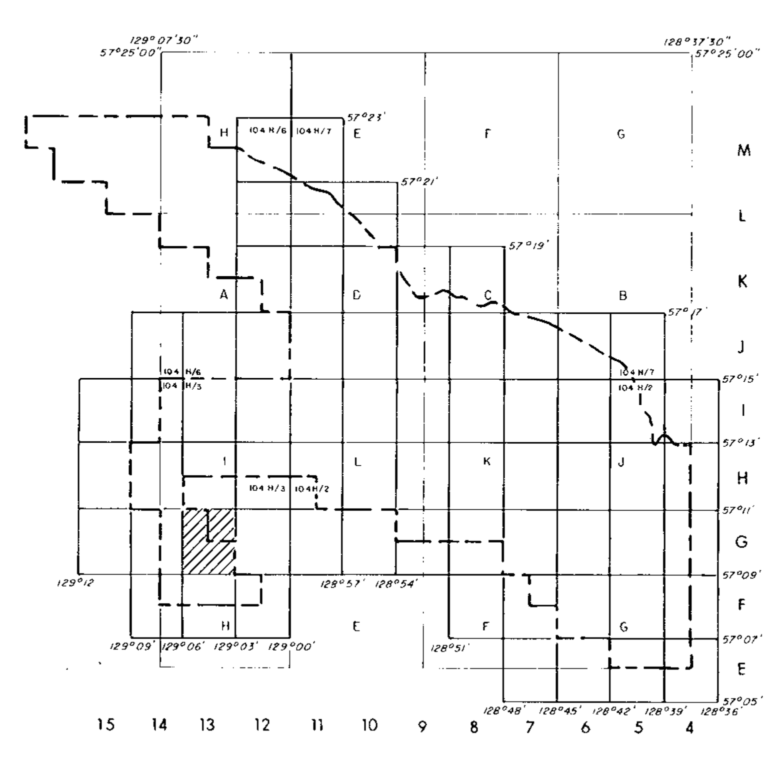
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEGEND

LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
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OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
MONOCLINE (DEFINED, APPROXIMATE)
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FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
JOINTS (INCLINED, VERTICAL, HORIZONTAL)
THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UPTHRUST SIDE
FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE — U D
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
ADIT TRENCH COAL SPOIL — TRC84001 — SP
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

RHONDDA SEQUENCE

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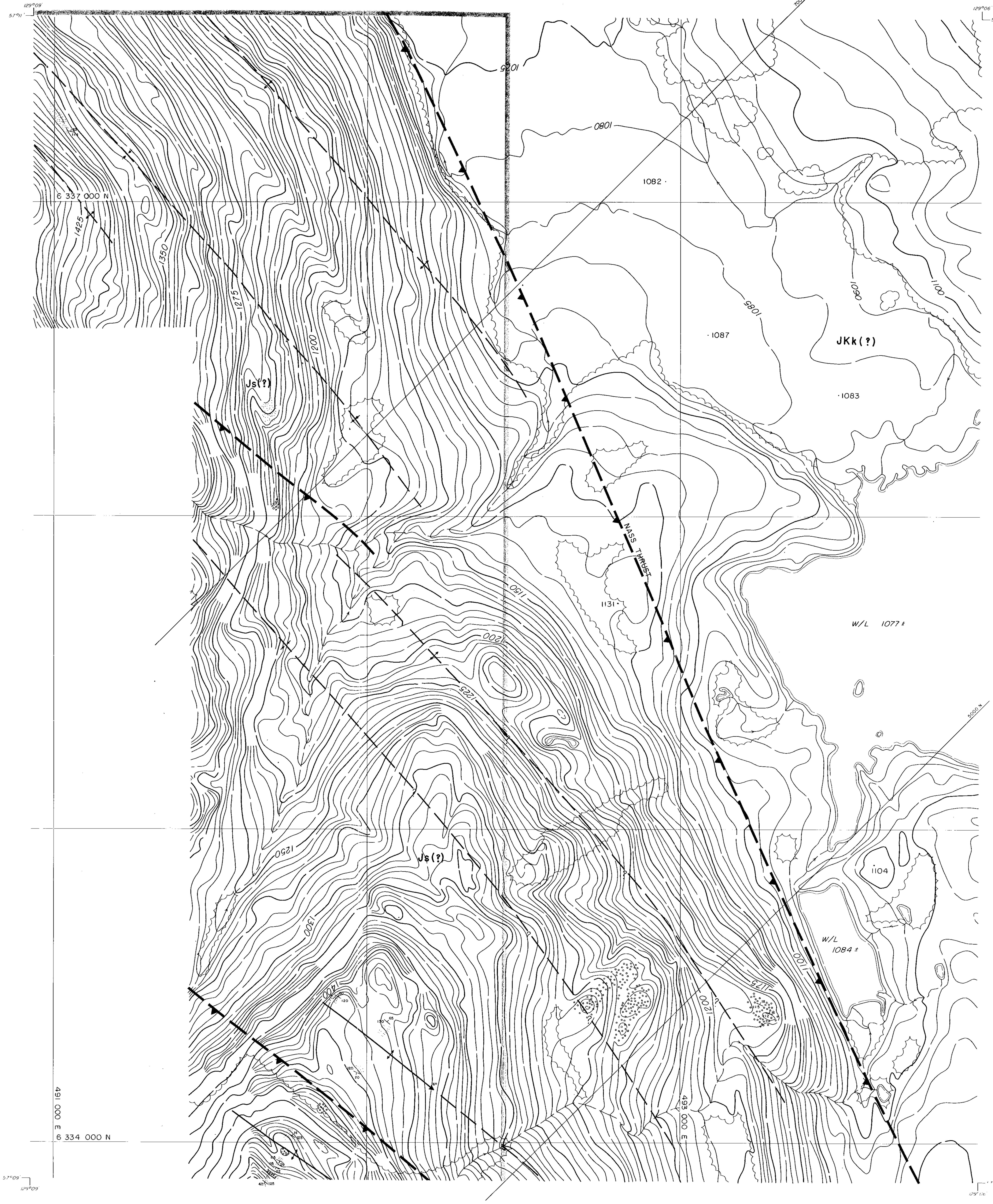
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP G-13

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-27



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL
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TREE LINE
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CONTOURS, INDEX
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SPOT ELEVATION
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FIELD CONTROL POINT
COAL LICENCE

NOTES

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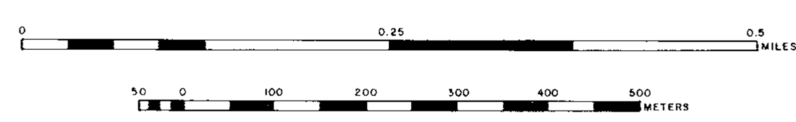
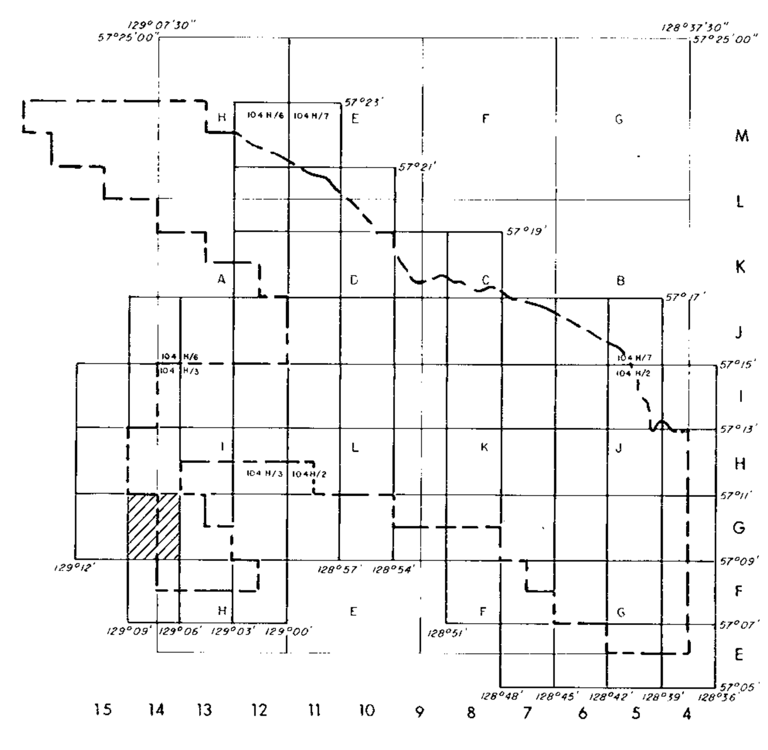
SCALE 1:5000



MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

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LEGEND

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DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
MEASURED SECTION
SURVEY CAIRN
3000 N — CROSS SECTION LINE

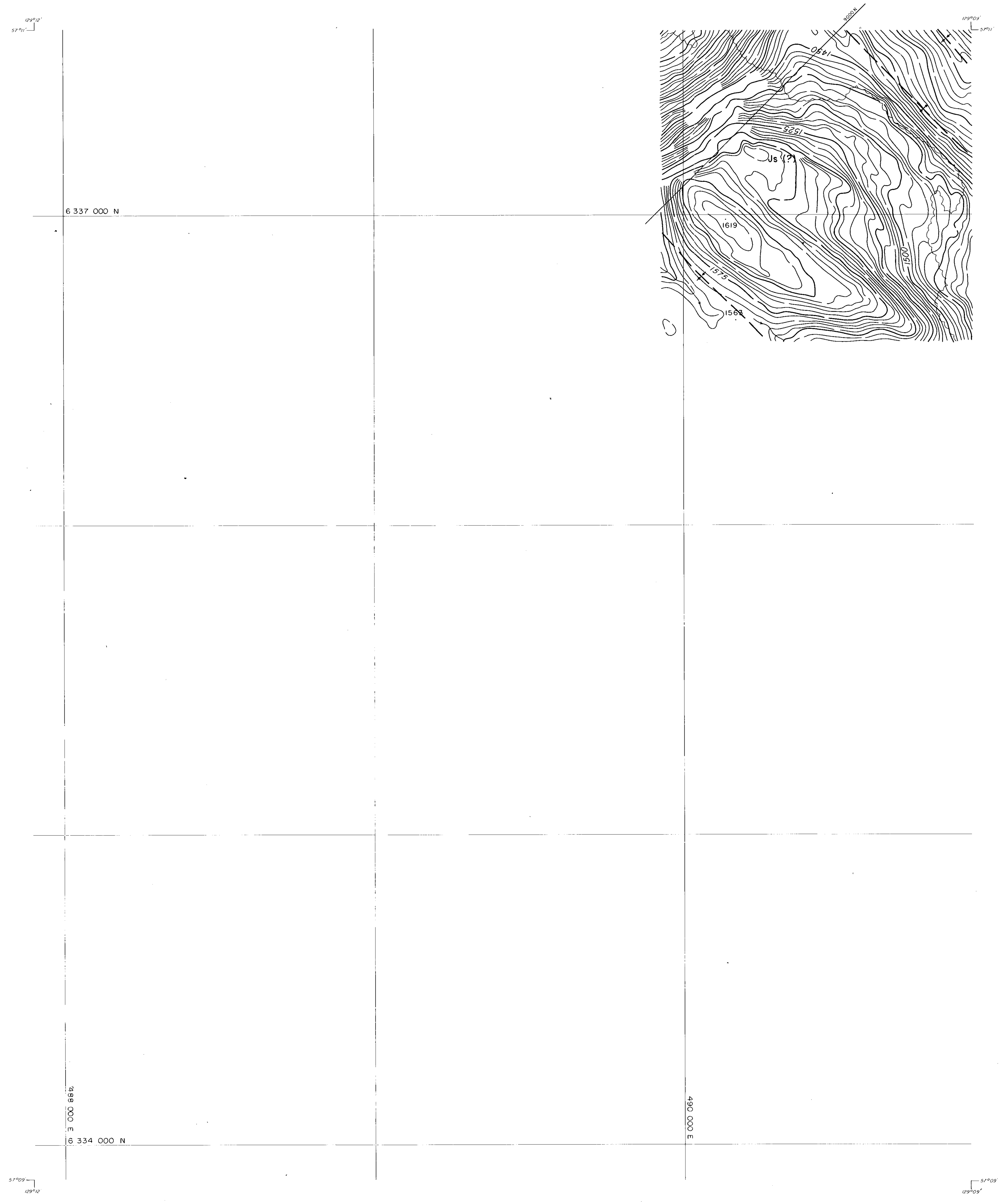
710
~~695~~

GR. - Mt. Klappan 84(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP G-14

PREPARED BY: E.S.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84NA-28



LEGEND

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

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N

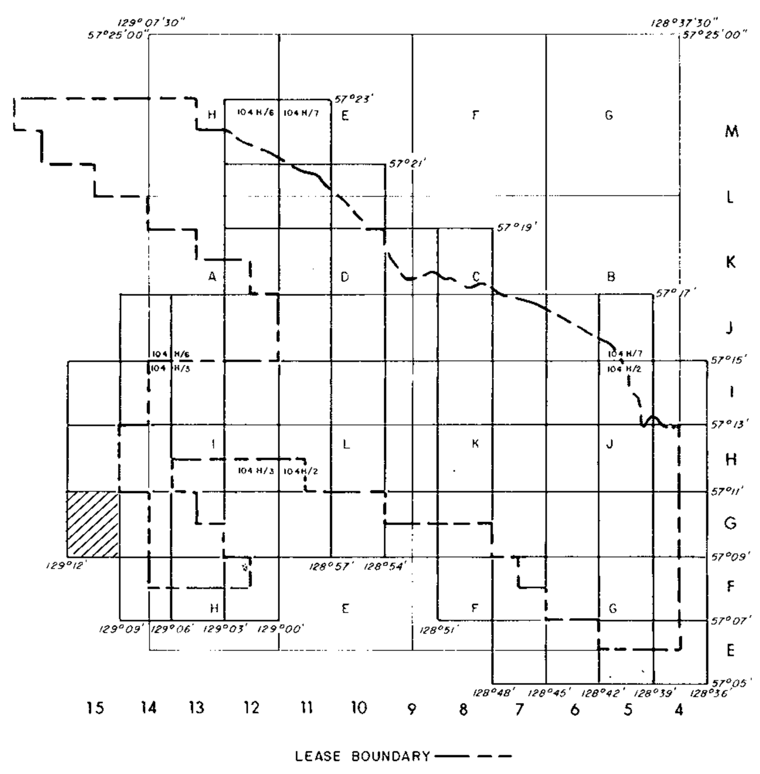
SCALE 1:5000

0 — 0.25 — 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

LEGEND

LICENCE BOUNDARY
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TRC84001 — SP — ADIT TRENCH COAL SPOIL
DDH RDH WKD — DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
DTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

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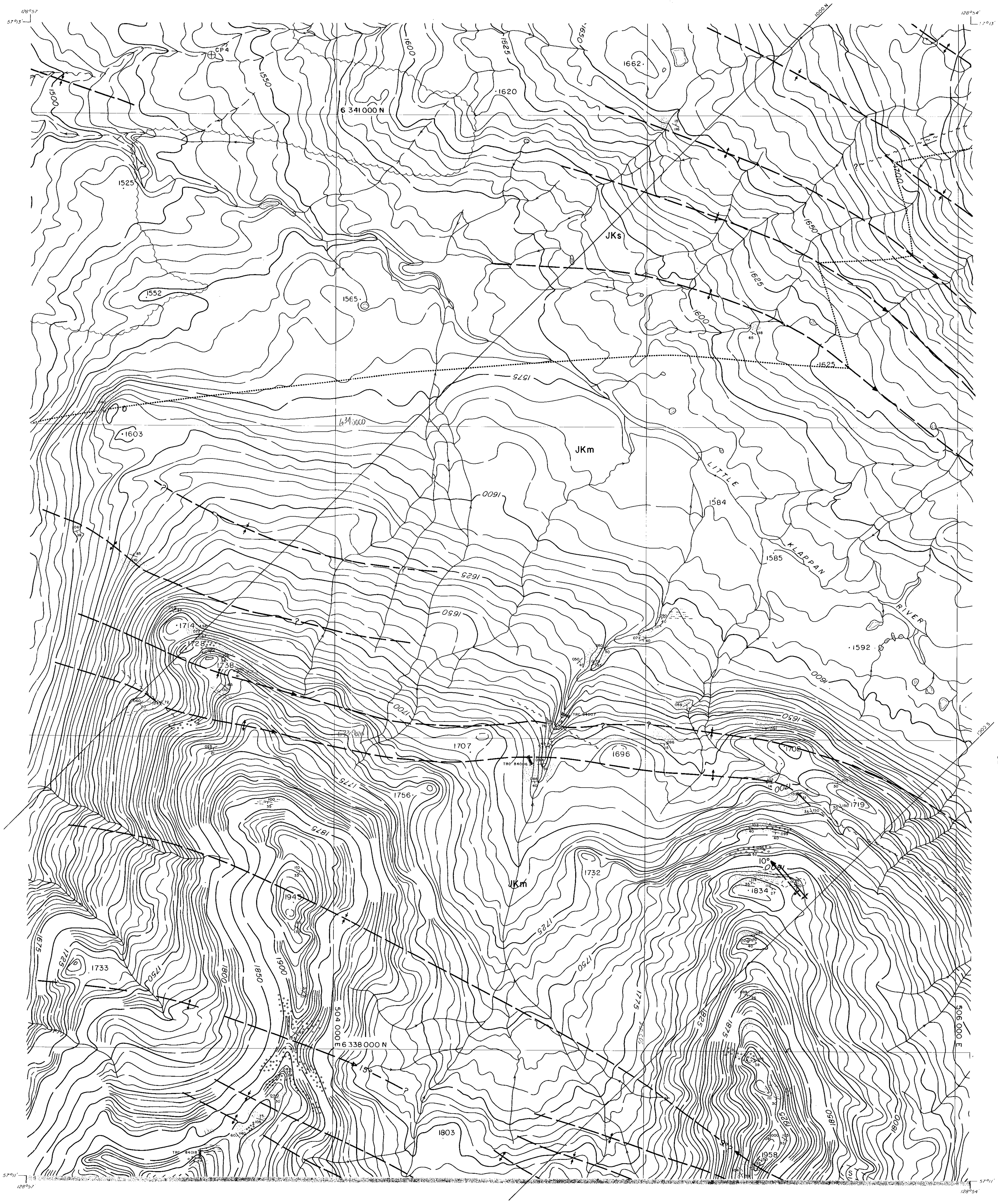
~~695~~

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA		
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP NASS AREA MAP G-15		
PREPARED BY: E.S.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84NA-29



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — EL 505.1
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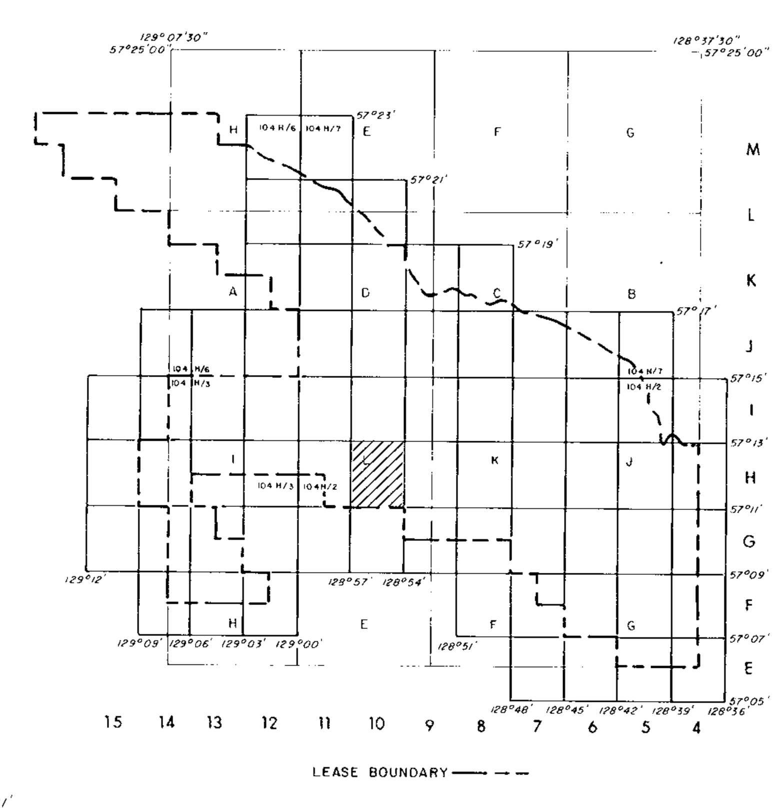
0 — 0.25 — 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

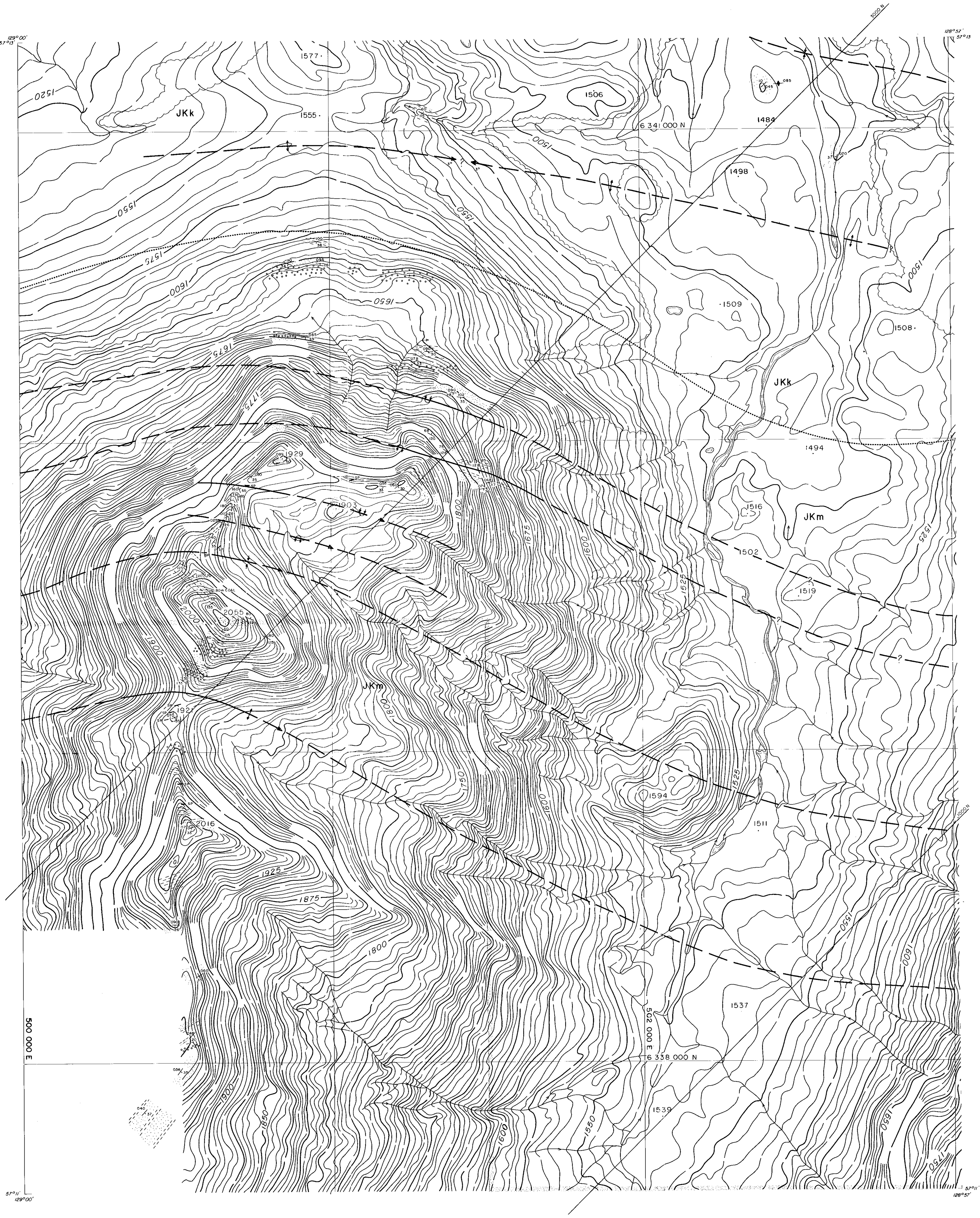
710
~~685~~

GR.- Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP H-10

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-30



LEGEND

BUILDING
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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.

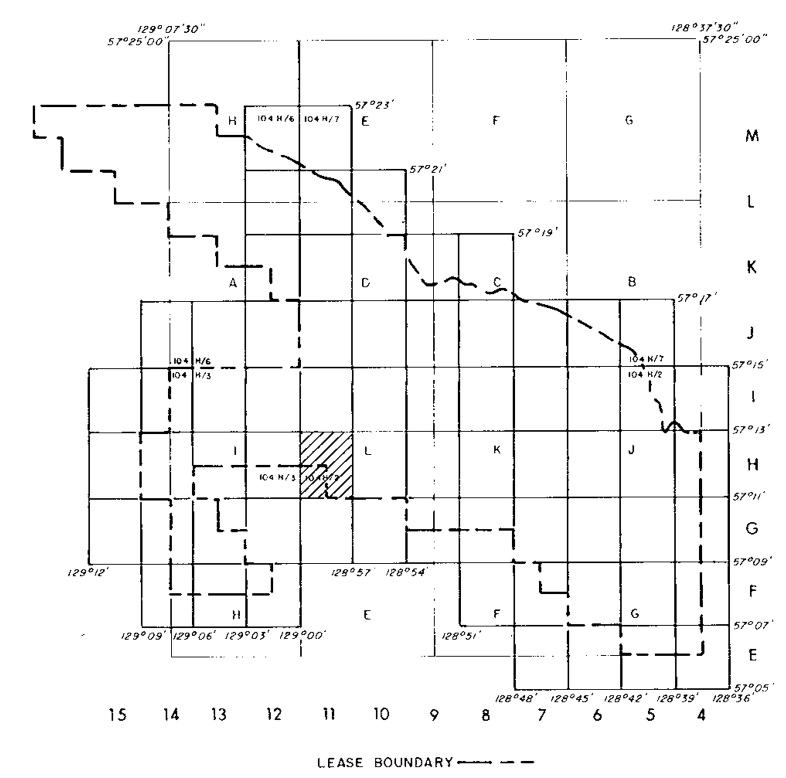
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY:
WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD., FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUG. 1967 AT A SCALE OF 1:60 000 (APPROXIMATE)

SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



RHONDDA SEQUENCE

JKr	Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk	Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammcnites are rare.

SPATSIZI SEQUENCE

Js	Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LEGEND

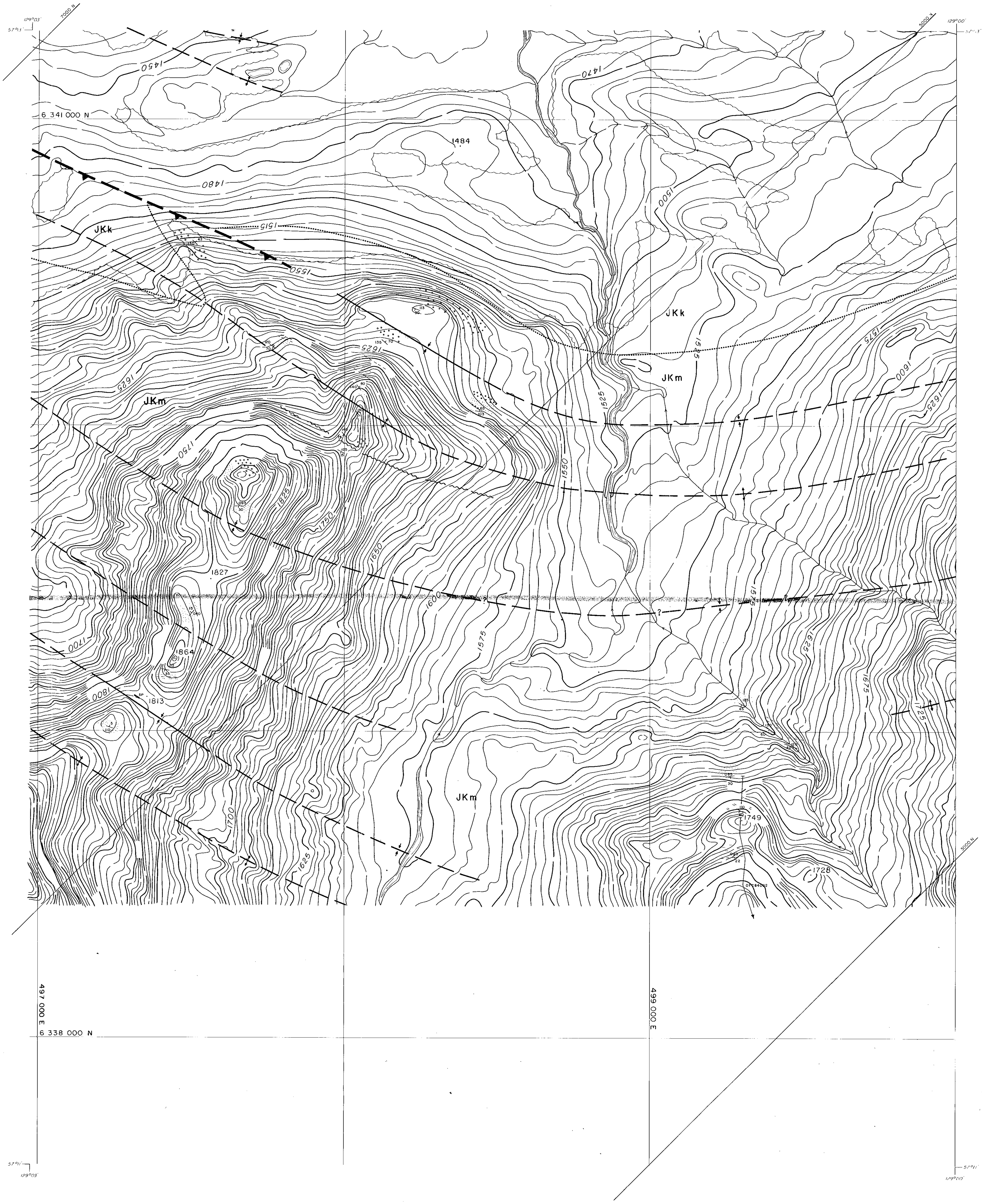
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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
U D — FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
TRC84001 — SP — ADIT TRENCH COAL SPOIL
DDH ROH WKD — DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

710
~~695~~

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA	Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP NASS AREA MAP H-11	
PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-31

(27)



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — FL 505 1
SWAMP
BEAVER DAM — 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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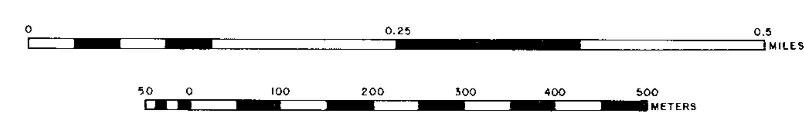
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

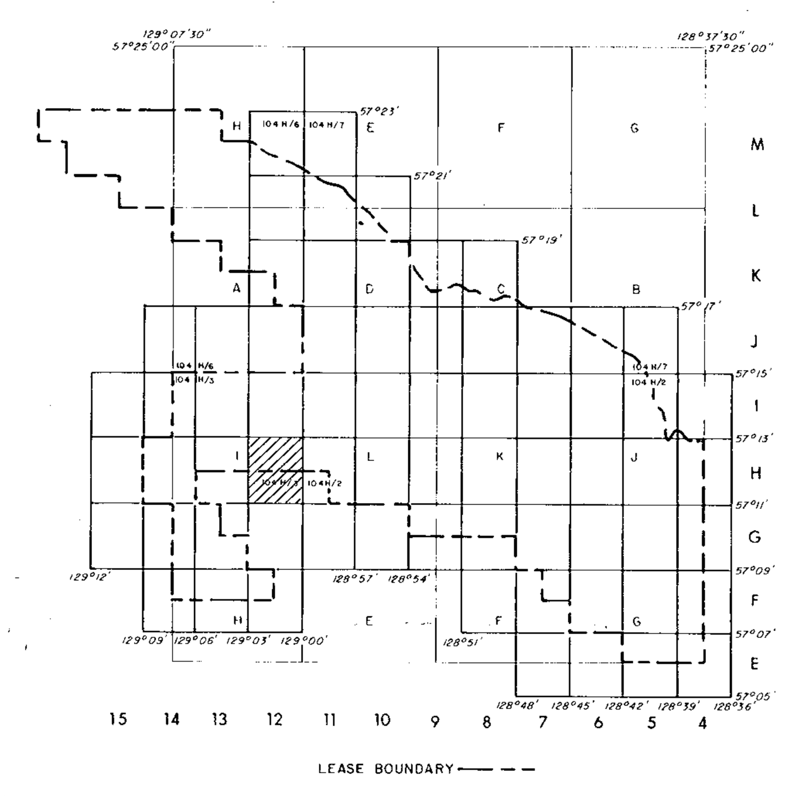
COMPILED BY
WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD., FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67 AT A SCALE OF 1:60 000 (APPROXIMATE)

SCALE 1:5000



MT. KLAPPAN AREA

INDEX MAP



LEGEND

LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
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OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
MONOCLINE (DEFINED, APPROXIMATE)
BEDDING (HORIZONTAL, INCLINED, OVERTURNED, VERTICAL, UPRIGHT, ESTIMATED)
FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
JOINTS (INCLINED, VERTICAL, HORIZONTAL)
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FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE — U D
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
ADIT — TRENCH (TRC84001) — COAL SPOIL (SP)
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

RHONDDA SEQUENCE

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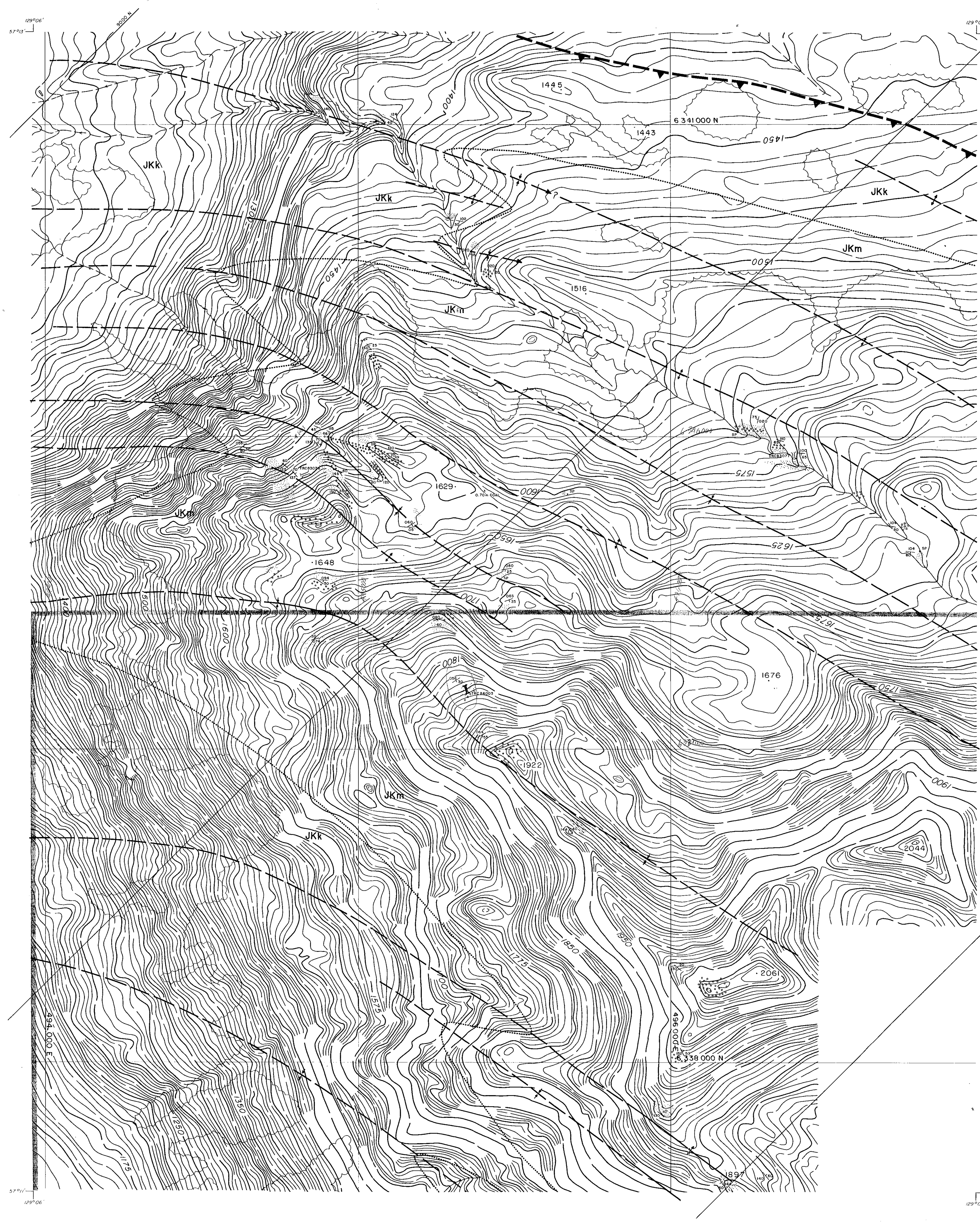
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP H-12

PREPARED BY: E.S.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84NA-32



LEGEND

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

NOTES

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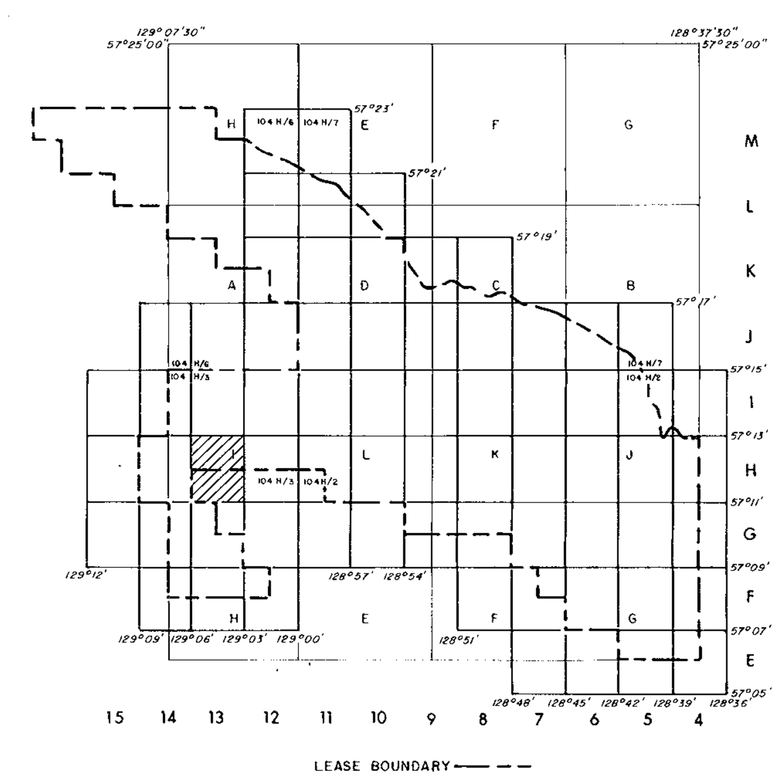
SCALE 1:5000

0 — 0.25 — 0.5 MILES

50 — 0 — 100 — 200 — 300 — 400 — 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

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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FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
JOINTS (INCLINED, VERTICAL, HORIZONTAL)
THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UPTHRUST SIDE
U D — FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
TRC84001 — SP — ADIT TRENCH COAL SPOIL
DDH RDH WKD — DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

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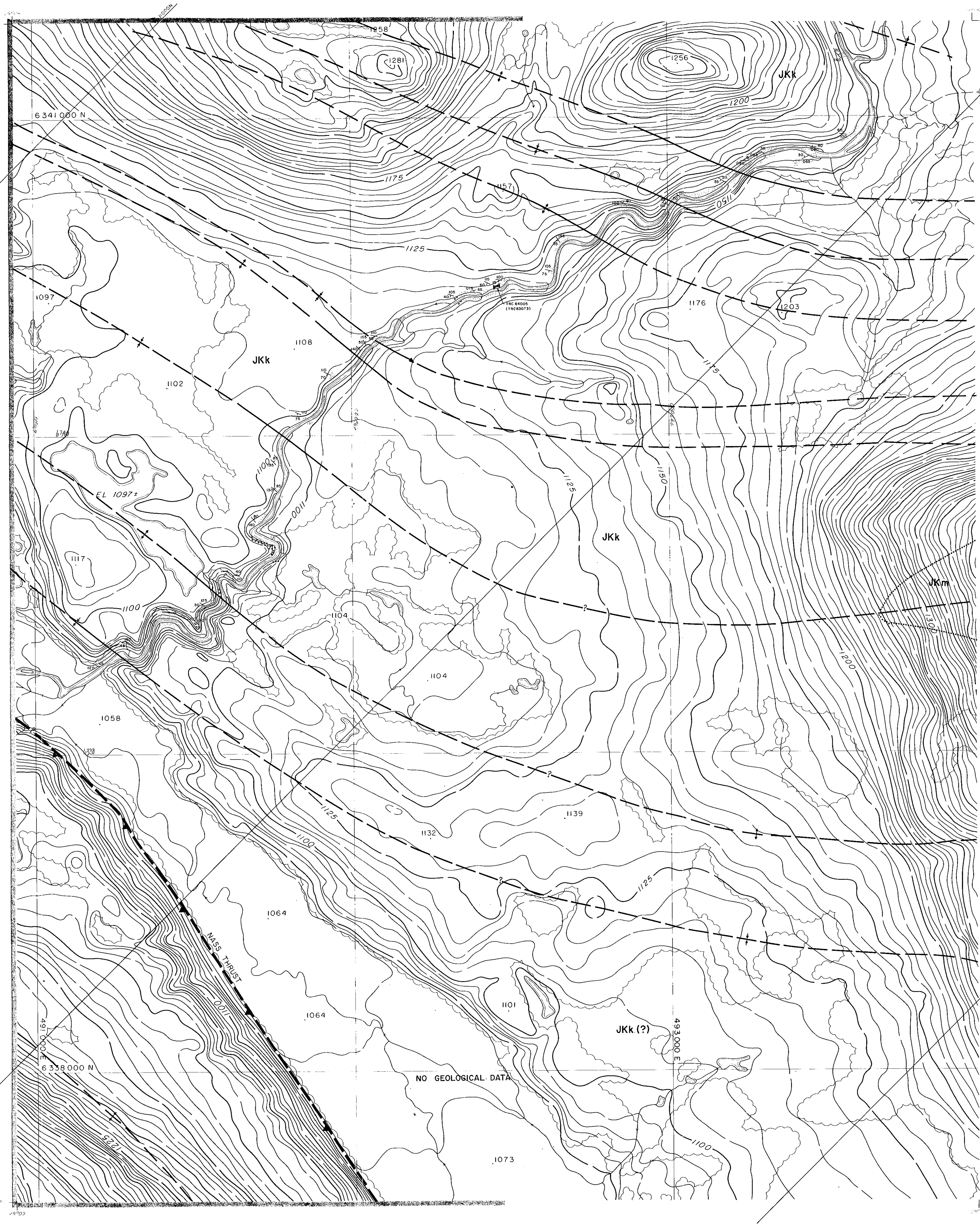
GR. – Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP H-13

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-33



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
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FIELD CONTROL POINT
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NOTES

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N

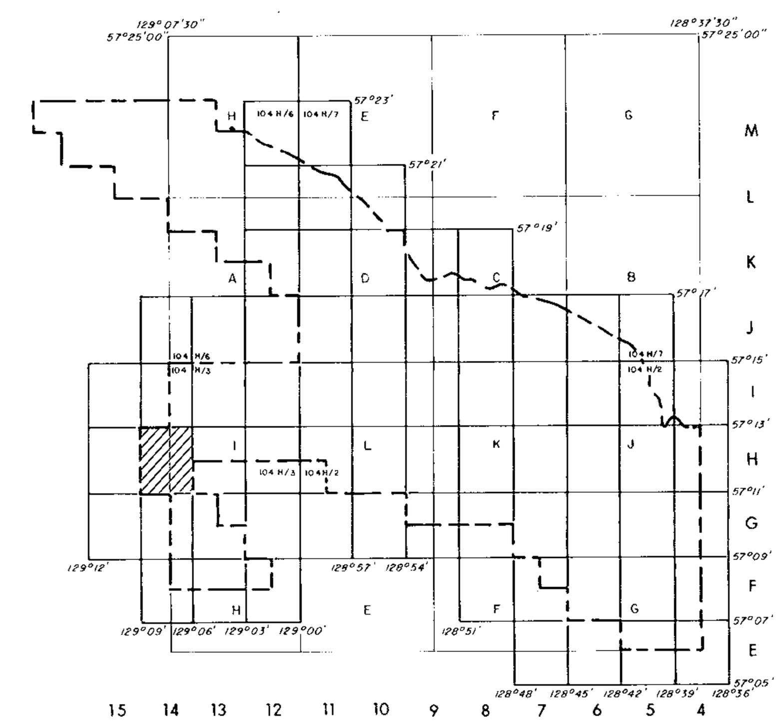
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

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 (TRC84001, SP)
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION) (DDH, RDH, WKD)
- MEASURED SECTION (GTC 84001)
- SURVEY CAIRN (SC-17)
- CROSS SECTION LINE (3000 N)

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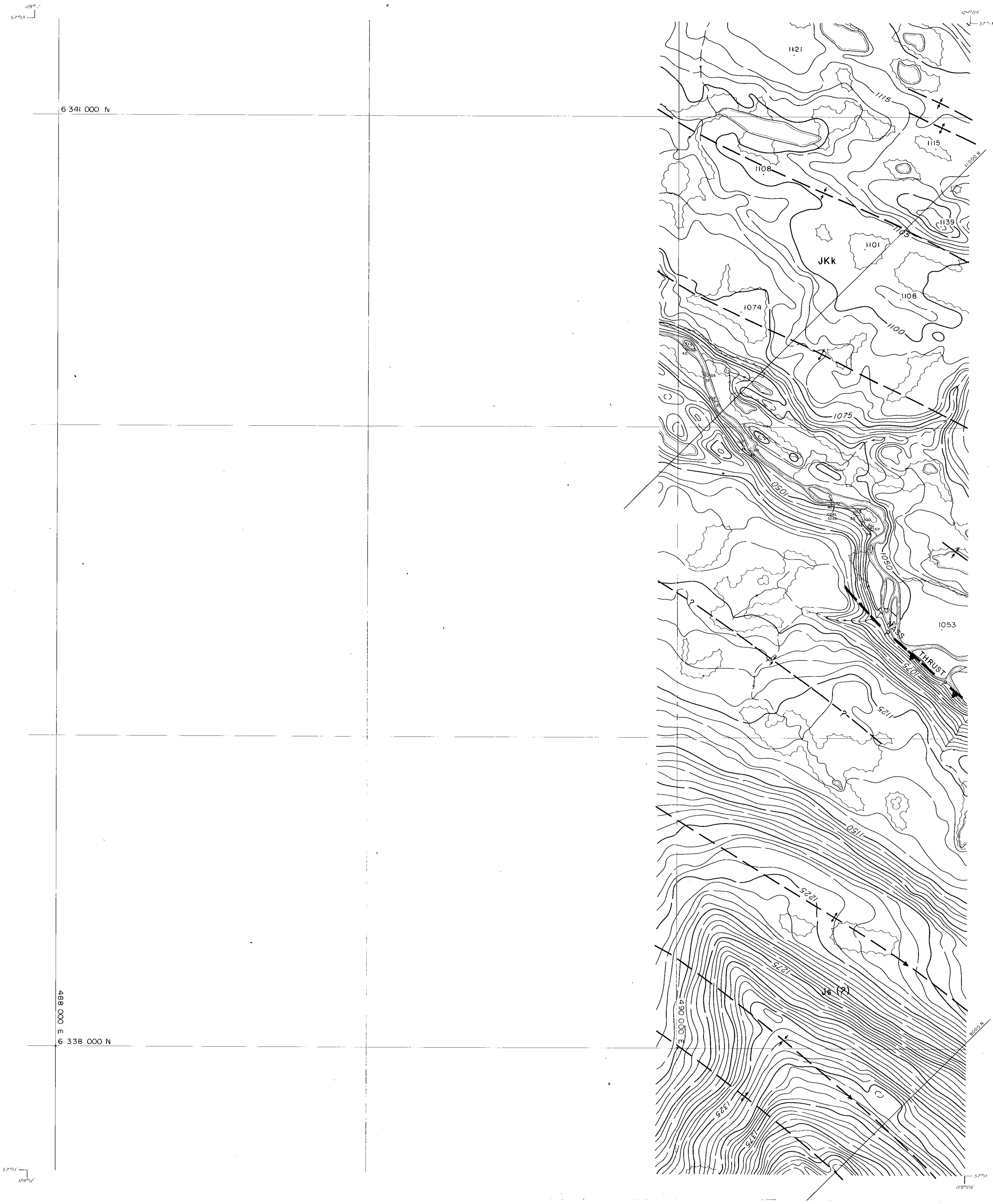
GR. - Mt. Klappan 84 (2) A

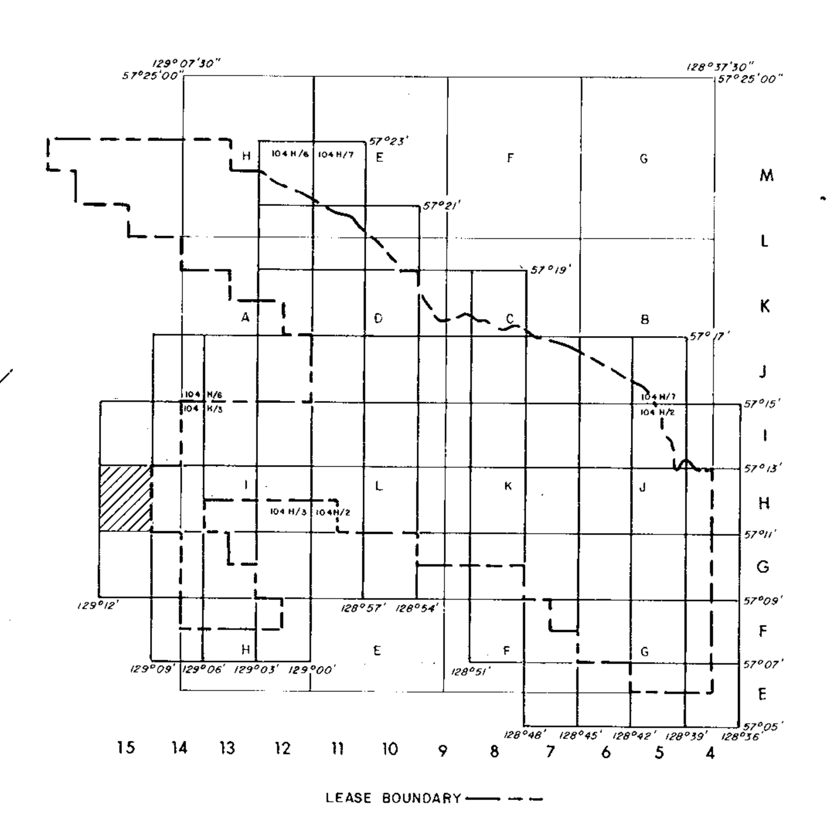
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP H-14

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-34



SCALE 1:5000



LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (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)
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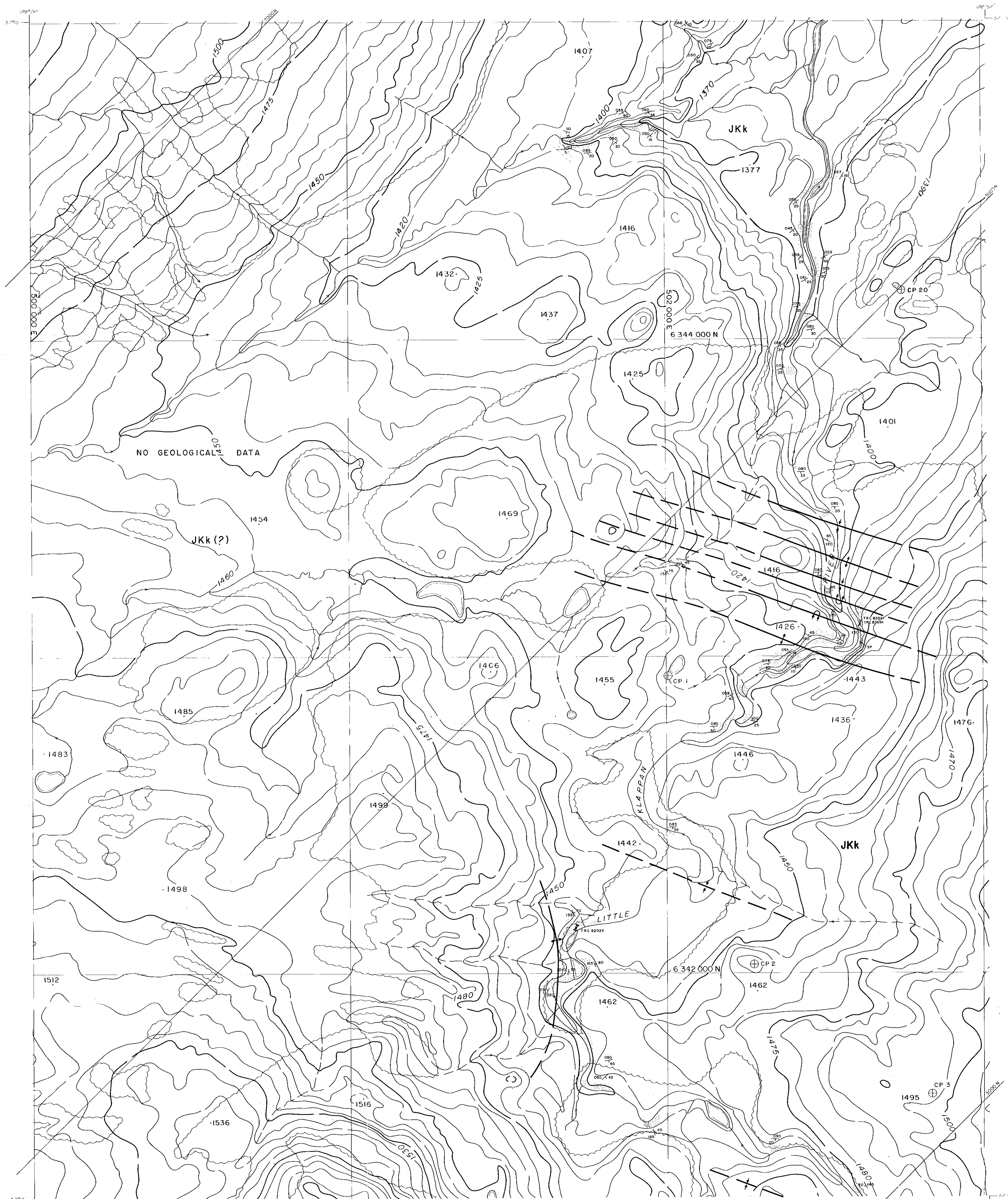
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP H-15

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-35

(31)



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
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APPROXIMATE
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RAILROAD BED LOCATION BASED ON SEPT/82 AERIAL PHOTOGRAPHY

COMPILED BY
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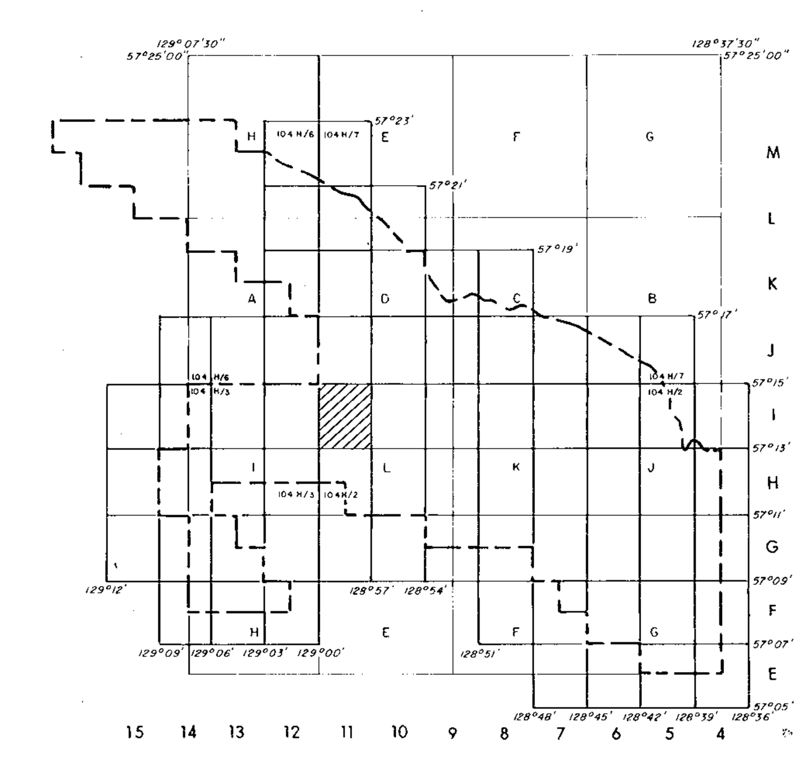
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

LEGEND

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

RHONDDA SEQUENCE

JKr	Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk	Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js	Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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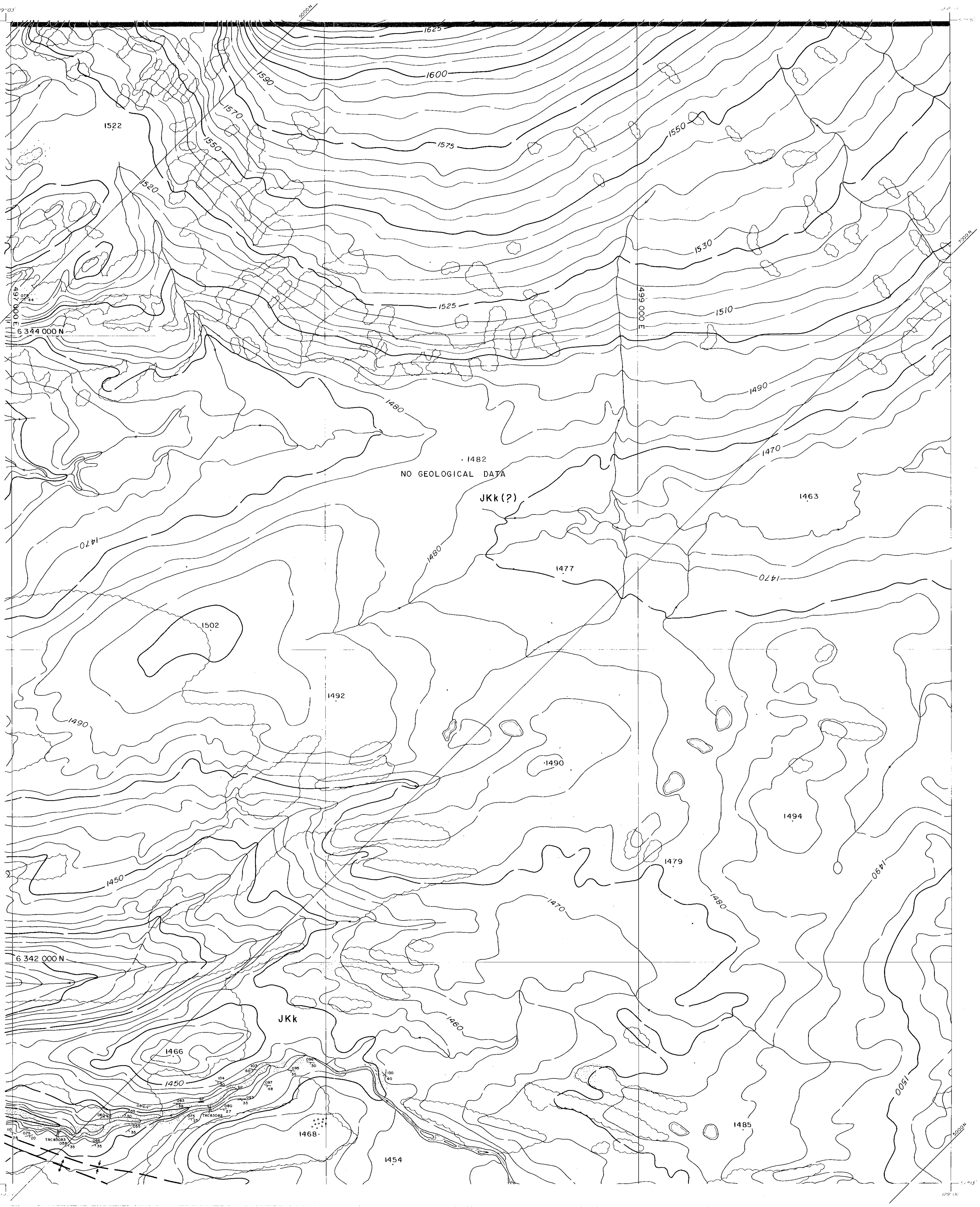
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP I-11

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-36



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
FORM LINES
CUT/FILL
FIELD CONTROL POINT
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.

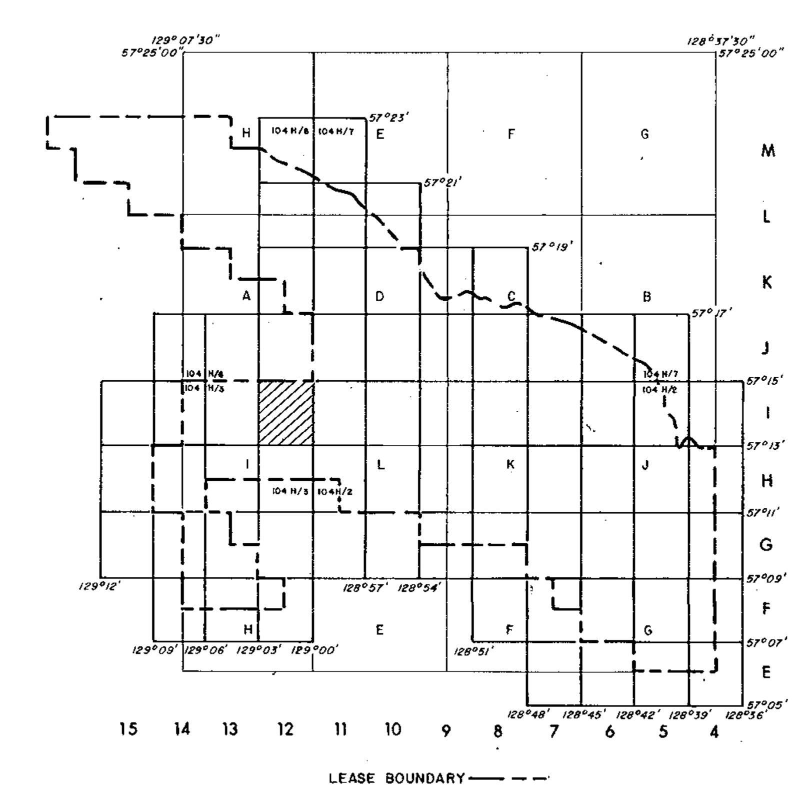
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY
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)

SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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
TRC84001 SP
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

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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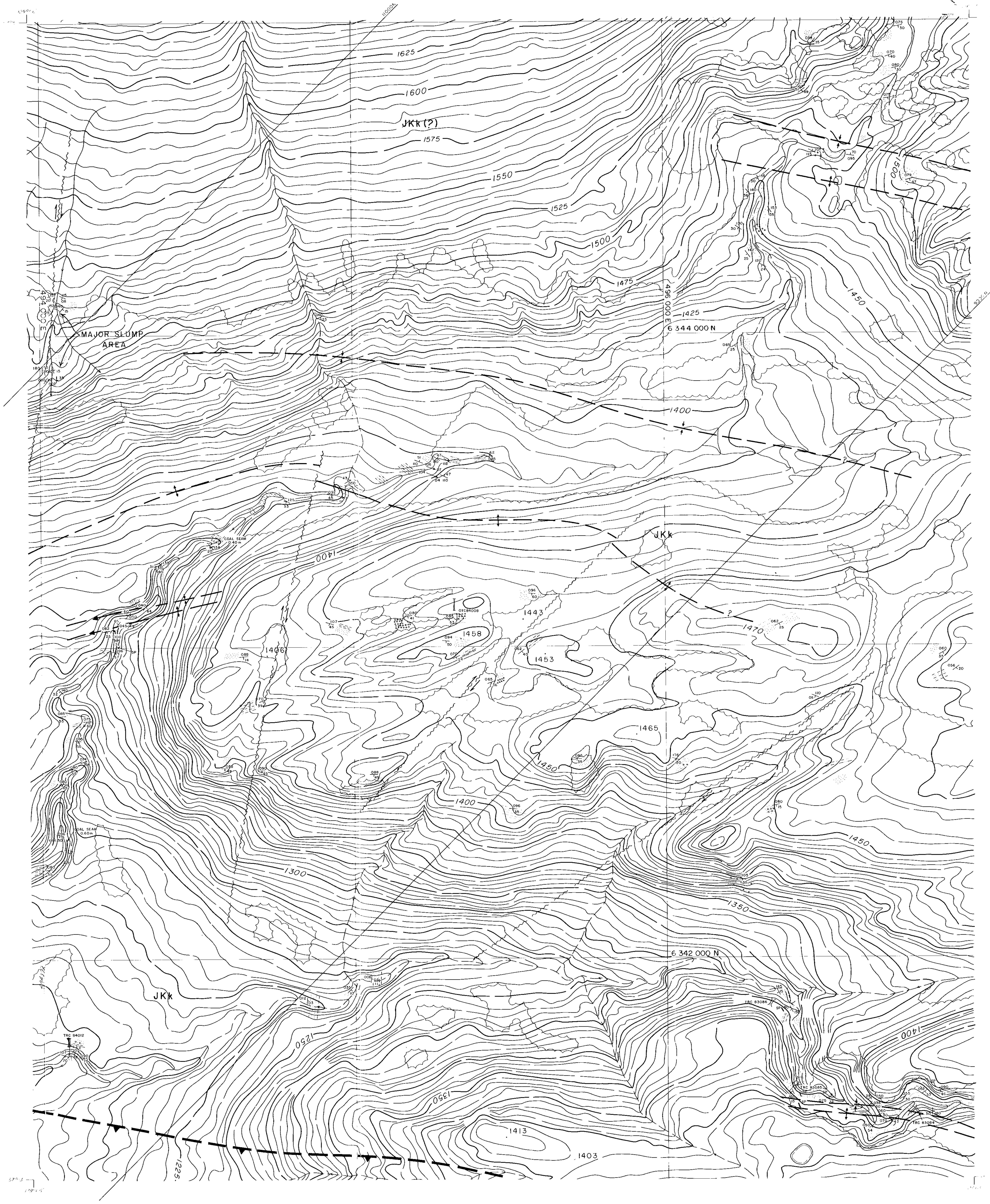
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP I-12

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-37



LEGEND

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

NOTES

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

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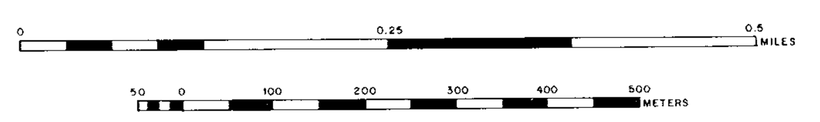
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

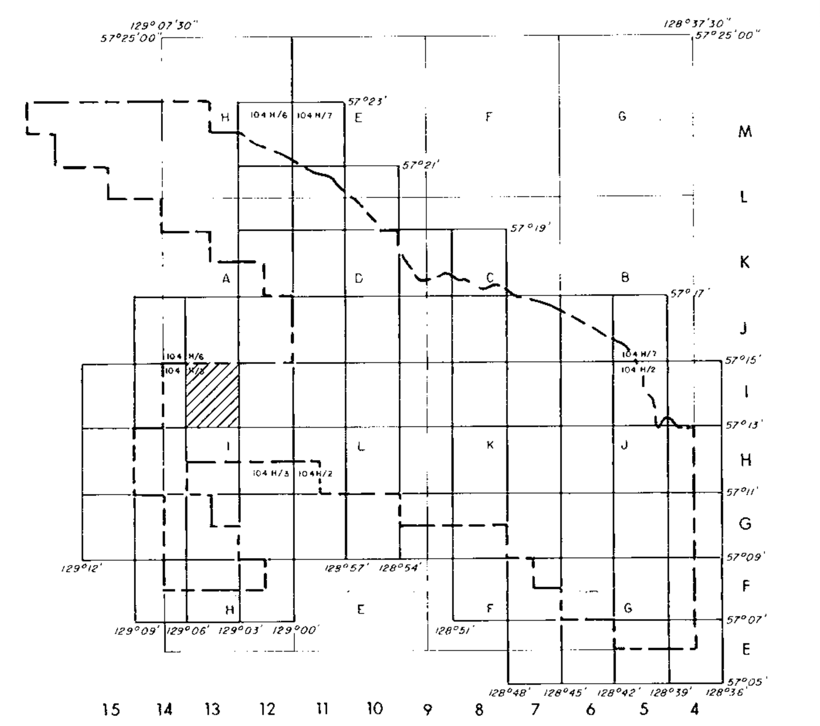
COMPILED BY
WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD., FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67 AT A SCALE OF 1:60 000 (APPROXIMATE)

SCALE 1:5000



MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

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 (TRC84001, SP)
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)

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

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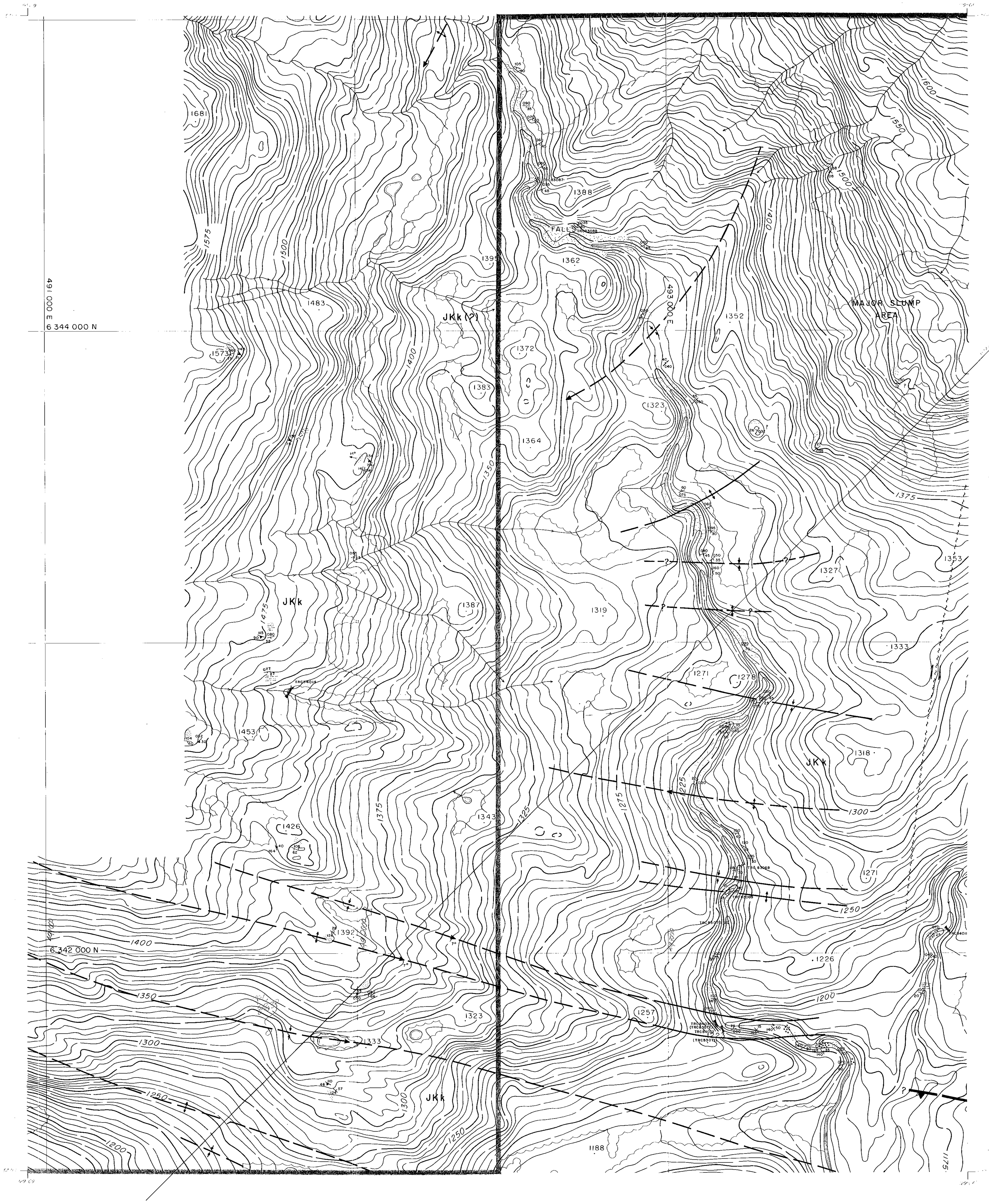
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP I-13

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-38

34



LEGEND

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

NOTES

MAPPING PRODUCED FROM PHOTOGRAPHIC ENLARGEMENTS OF [illegible] NEGATIVES

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

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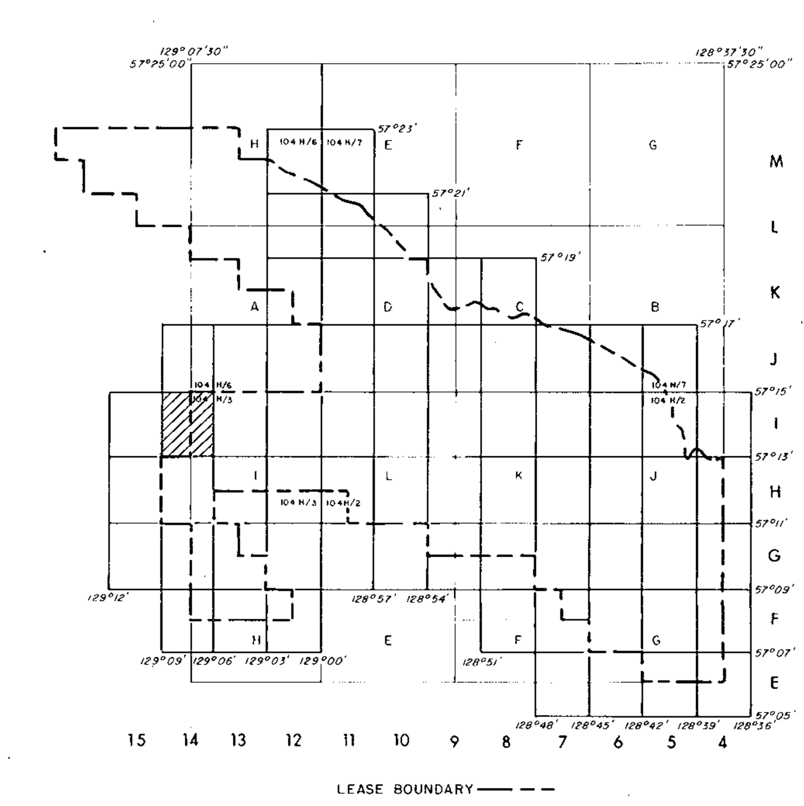
RAILROAD BED LOCATION BASED ON SEPT/62 AERIAL PHOTOGRAPHY

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)

SCALE 1:5000

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

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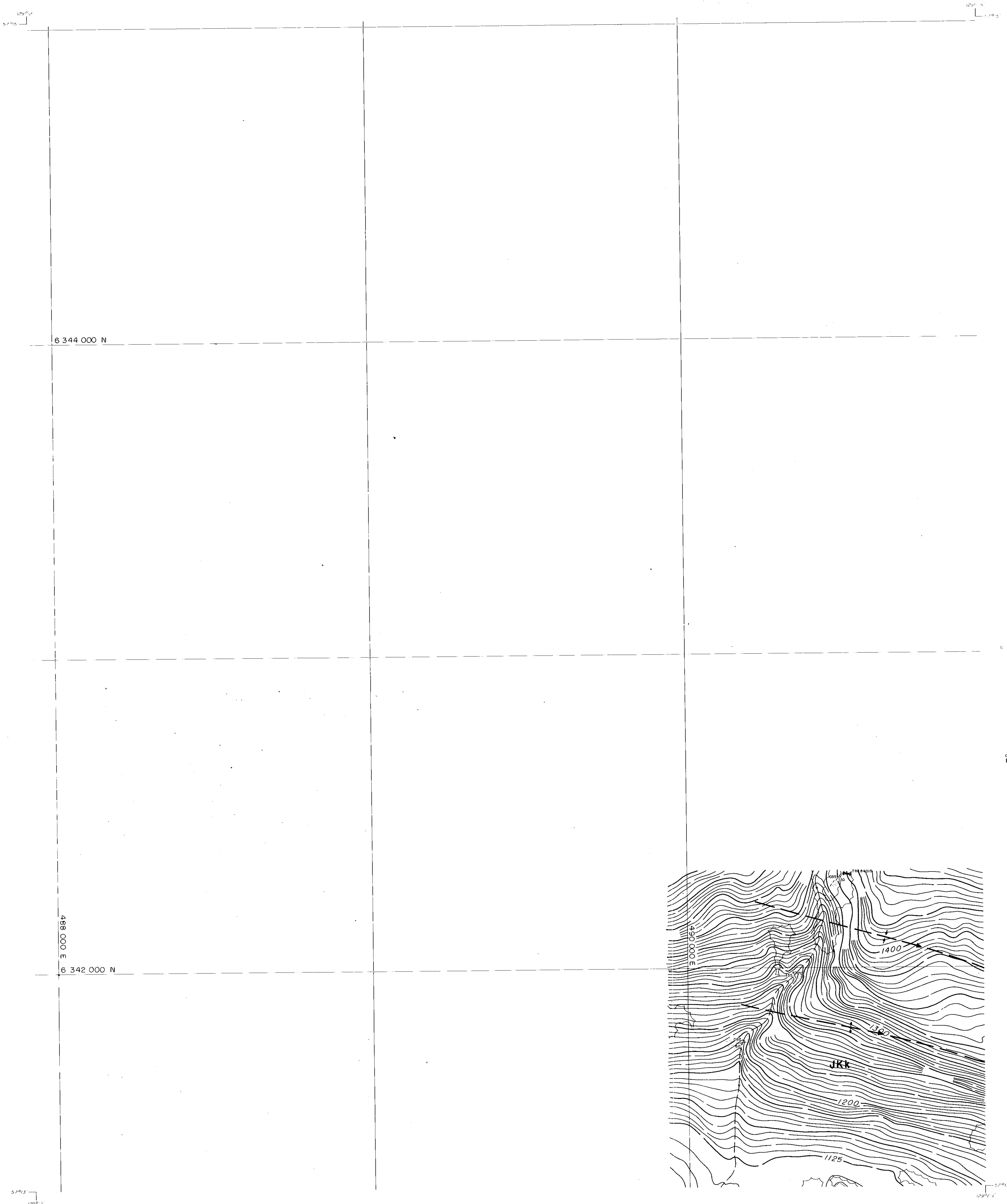
GR.- Mt. Klappan 84(2)A

GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA	Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP NASS AREA MAP 1-14	
PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-39



LEGEND

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

NOTES

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

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RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY
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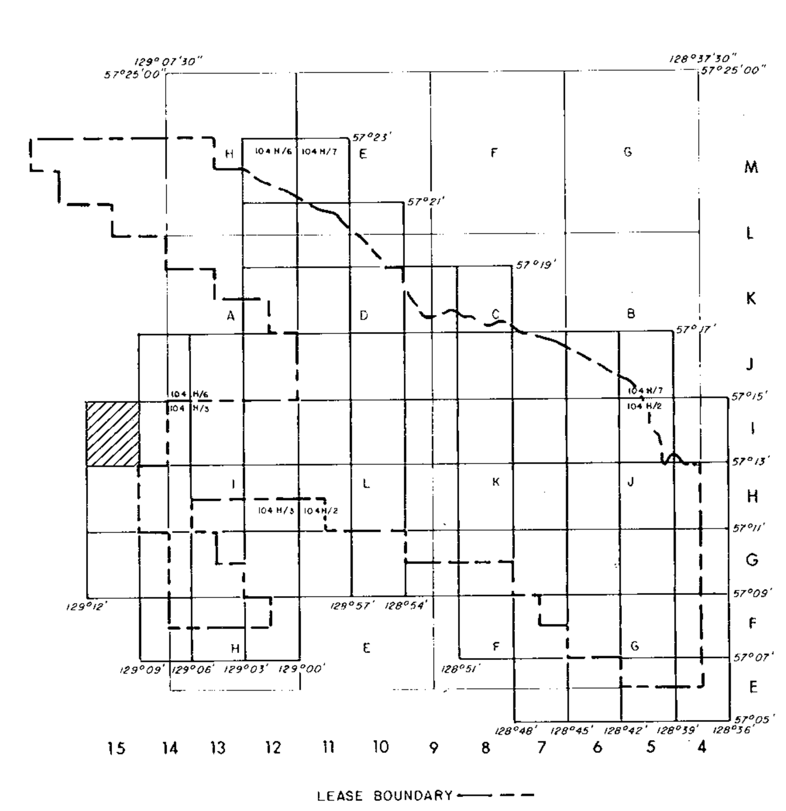
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEGEND

LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
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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

RHONDDA SEQUENCE

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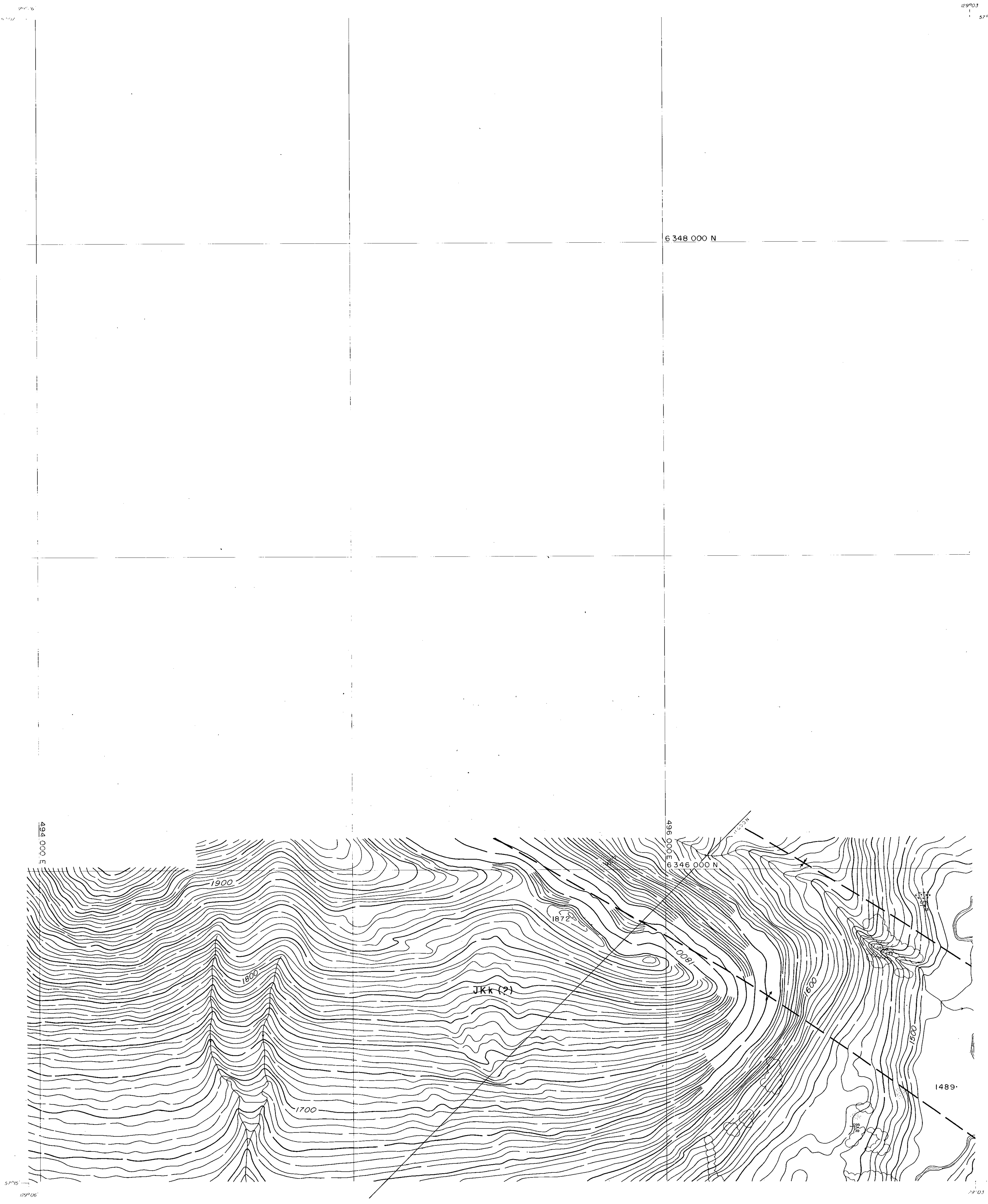
GR.- Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP I-15

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-40



LEGEND

BUILDING
ROAD, HARD S[illegible]
LOOSE
CART T[illegible]
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINED
APPROX[illegible]
SPLIT
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
FORM LINES
CUT/FILL
FIELD CONTROL POINT
COAL LICENCE

NOTES

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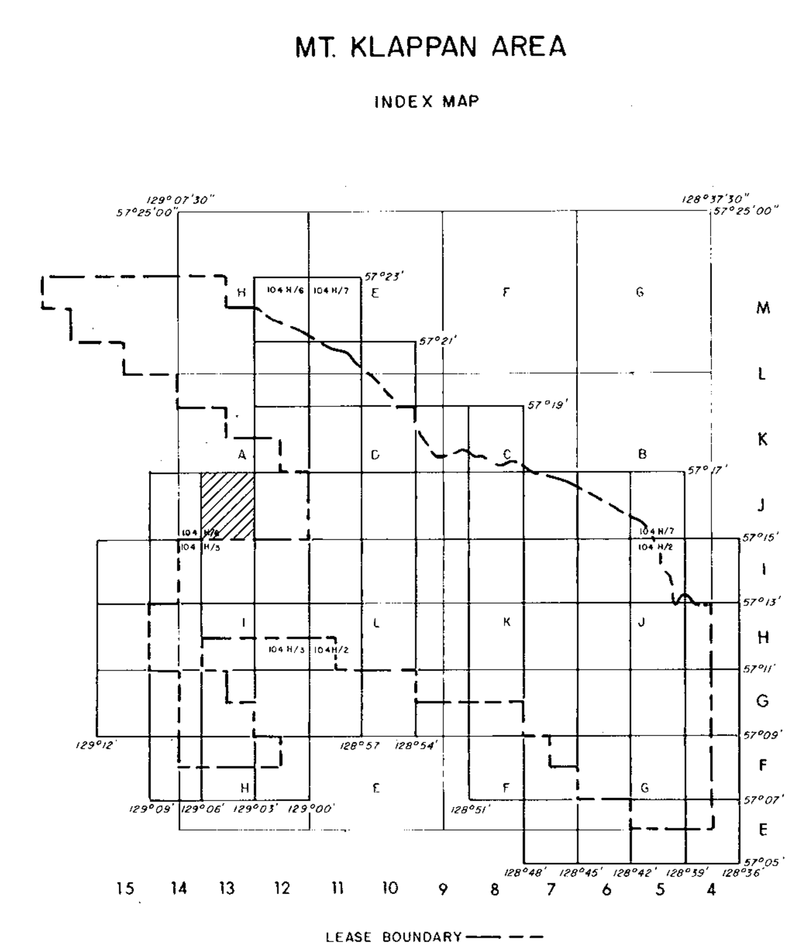
RAILROAD BED LOC[illegible] BASE[illegible] /82 AERIAL PHOTOGRAPHY

COMPILED BY
WESTERN PHOTOGRAMMETRY, A [illegible] N OF UNDERWOOD McLELLAN LTD., FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67 AT A SCALE OF 1:6[illegible] APPROX[illegible]

SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS



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

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

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JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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~~695~~

G.R. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP J-13

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E. S. DATE: JAN. 1985	DWG. No. KPN84NA-41

37

6 348 000 N

LEGEND

BUILDING

ROAD, HARD SURFACE

LOOSE SURFACE

CART TRACK

TRAIL

RAILROAD BED

RIVER

STREAM, DEFINITE

APPROXIMATE

SPLIT

LAKE

WATER LEVEL

SWAMP

BEAVER DAM

TREE LINE

CUT LINE

CONTOURS, INDEX

INTERMEDIATE

DEPRESSION

APPROXIMATE

SPOT ELEVATION

FORM LINES

CUT/FILL

FIELD CONTROL POINT

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
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)

SCALE 1:5000

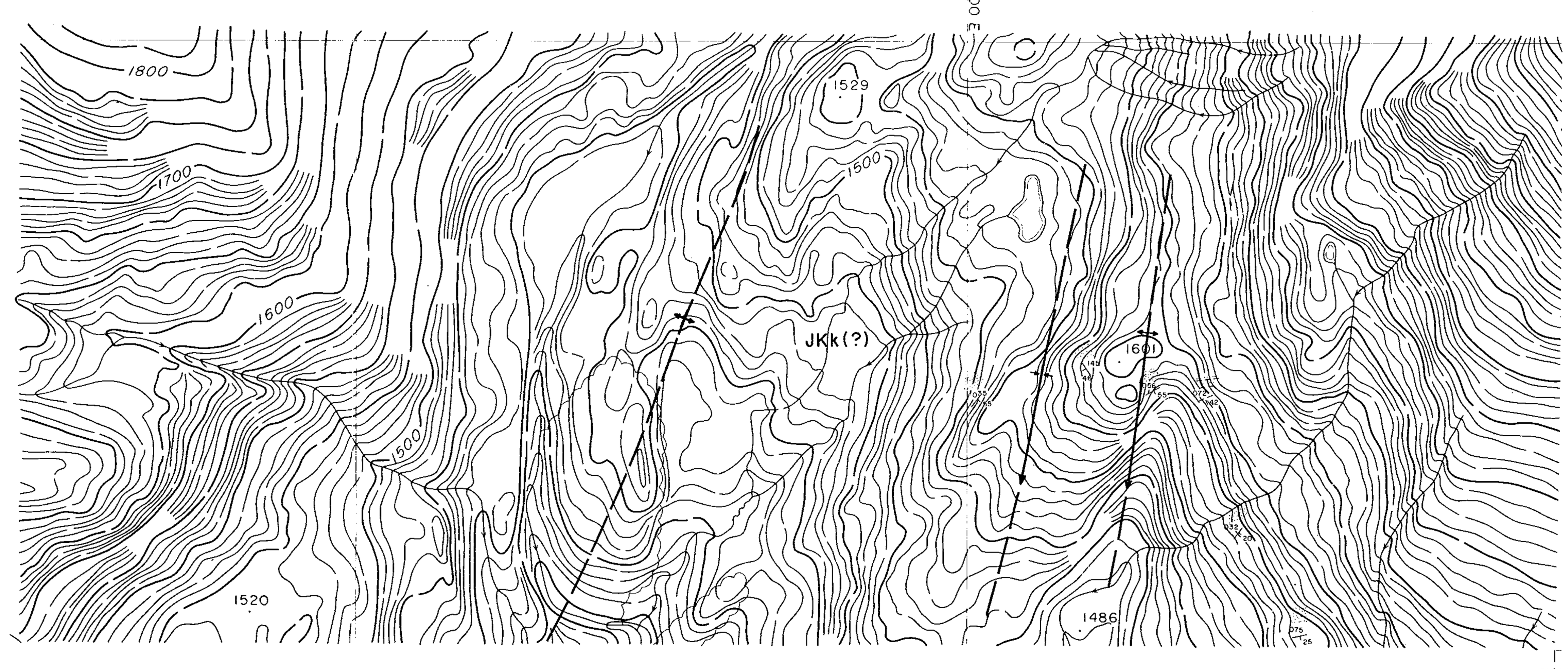
0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

491 000 E

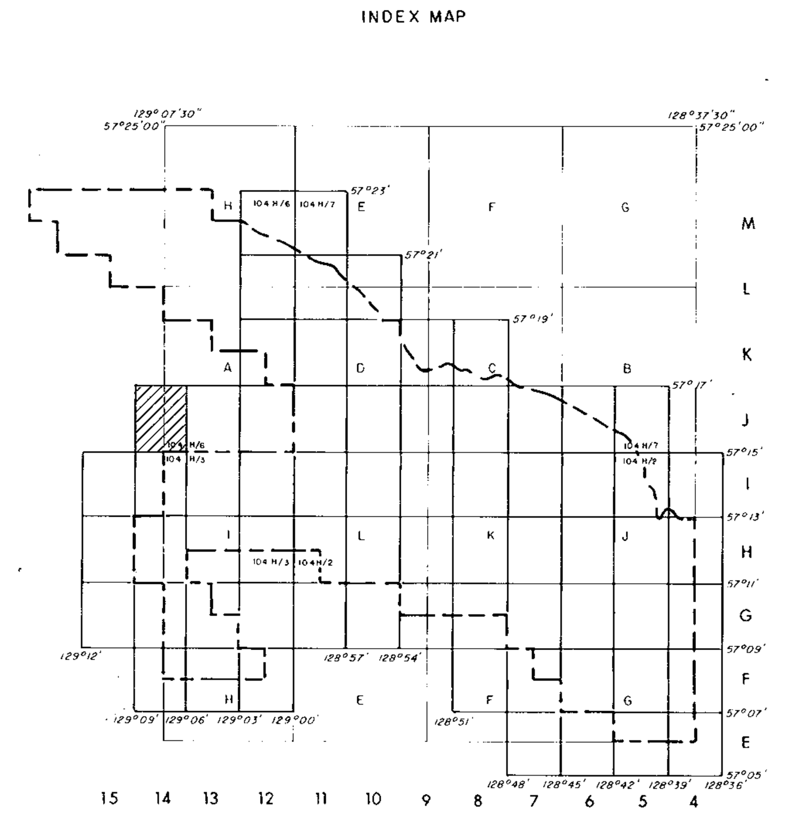
493 000 E

6 346 000 N



MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

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

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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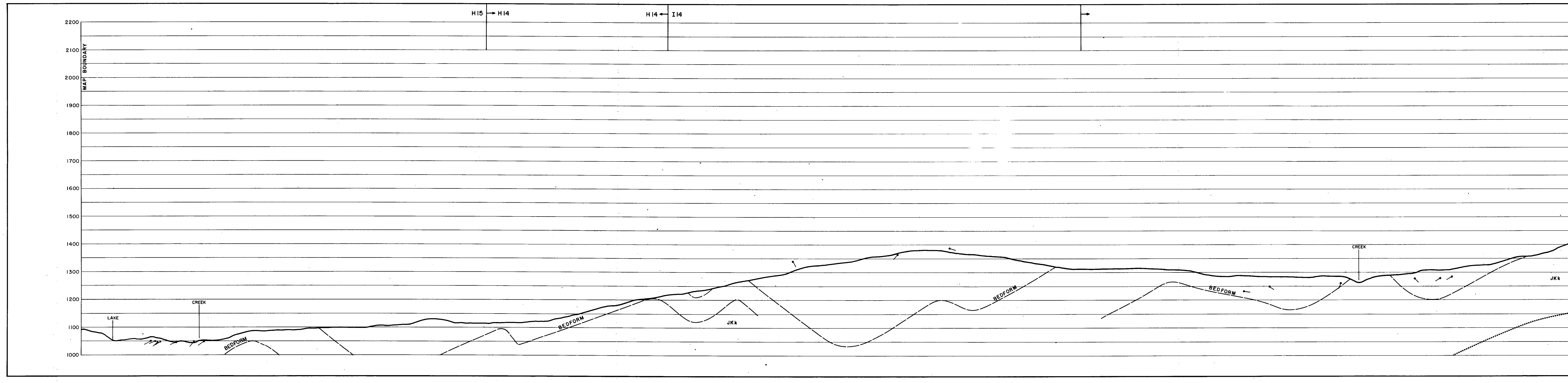
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
NASS AREA
MAP J-14

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84NA-42



RHONDDA SEQUENCE

JKr	Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

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SPATSIZI SEQUENCE

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LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.)
BEDDING ATTITUDE
DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE
0 100 200 300 400 500 METERS

GR. - Mt. Klappan 84(2) A

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GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
NASS AREA
11 000 N (WEST)

PREPARED BY: E.S.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No.

RHONDDA SEQUENCE

Kr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

Km Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

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LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE
0 100 200 300 400 500 METERS.

GR.- Mt. Klappan 84(2) A

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710

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
NASS AREA
9 000 N (WEST)

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84NA-52

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001
DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE
0 100 200 300 400 500 METERS

G.R. - Mt. Klappan 84(2) A

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710

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
NASS AREA
7000 N (WEST)

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84NA-53

BORDER WITH LOST FOX AREA
NO GEOLOGICAL DATA
RHONDDA SEQUENCE
JKr
Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact
MALLOCH SEQUENCE
JKm
Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.
KLAPPAN SEQUENCE (main coal-bearing unit)
JKk
Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.
SPATSIZI SEQUENCE
Js
Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.
LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001
DIAMOND DRILL HOLE WITH ATTITUDE CONTROL
0 1/8 1/4 MILE
0 100 200 300 400 500 METERS
G.R. - Mt. Klappan 84(2) A
710
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf
MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
NASS AREA
5000 N (WEST)
PREPARED BY: E.S.
APPROVED BY: E.S.
DATE: JAN. 1985
SCALE 1:5000
DRAWING No. KPN84NA-54

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

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LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/8 — 1/4 MILE
0 — 100 — 200 — 300 — 400 — 500 METERS

GR. - Mt. Klappan 84(2) A

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GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA
Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
NASS AREA
3000 N (WEST)

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84NA-55

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

GR. - Mt. Klappan 84(2) A

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GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
NASS AREA
1 000 N (WEST)

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84NA-56

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX , INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

GR. - Mt. Klappan 84 (2) A

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710

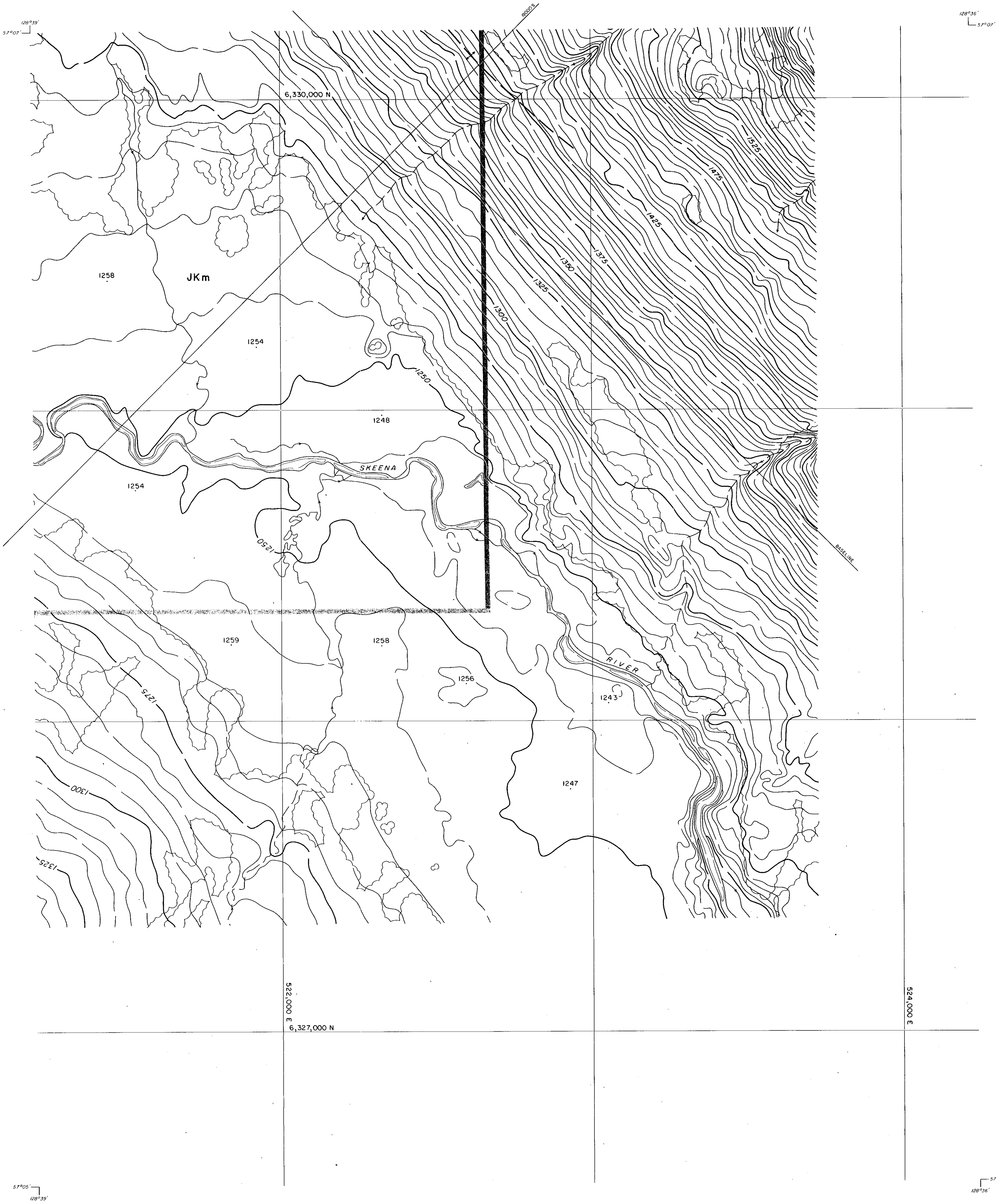
GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
NASS AREA
1 000 S (WEST)

PREPARED BY: E.S.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84NA-57



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 — 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.

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.

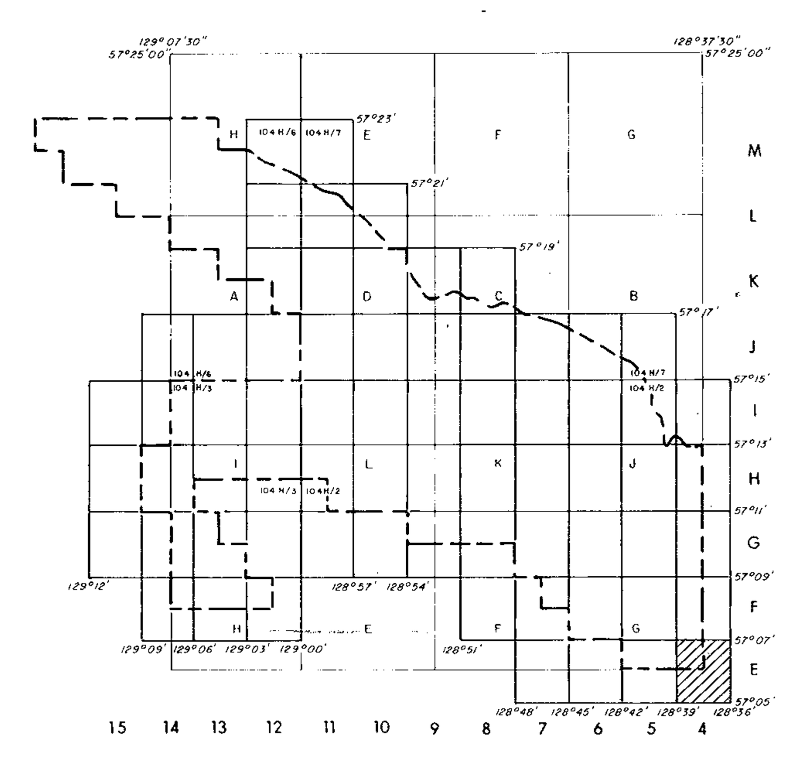
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY:
WESTERN 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

MT. KLAPPAN AREA

INDEX MAP



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

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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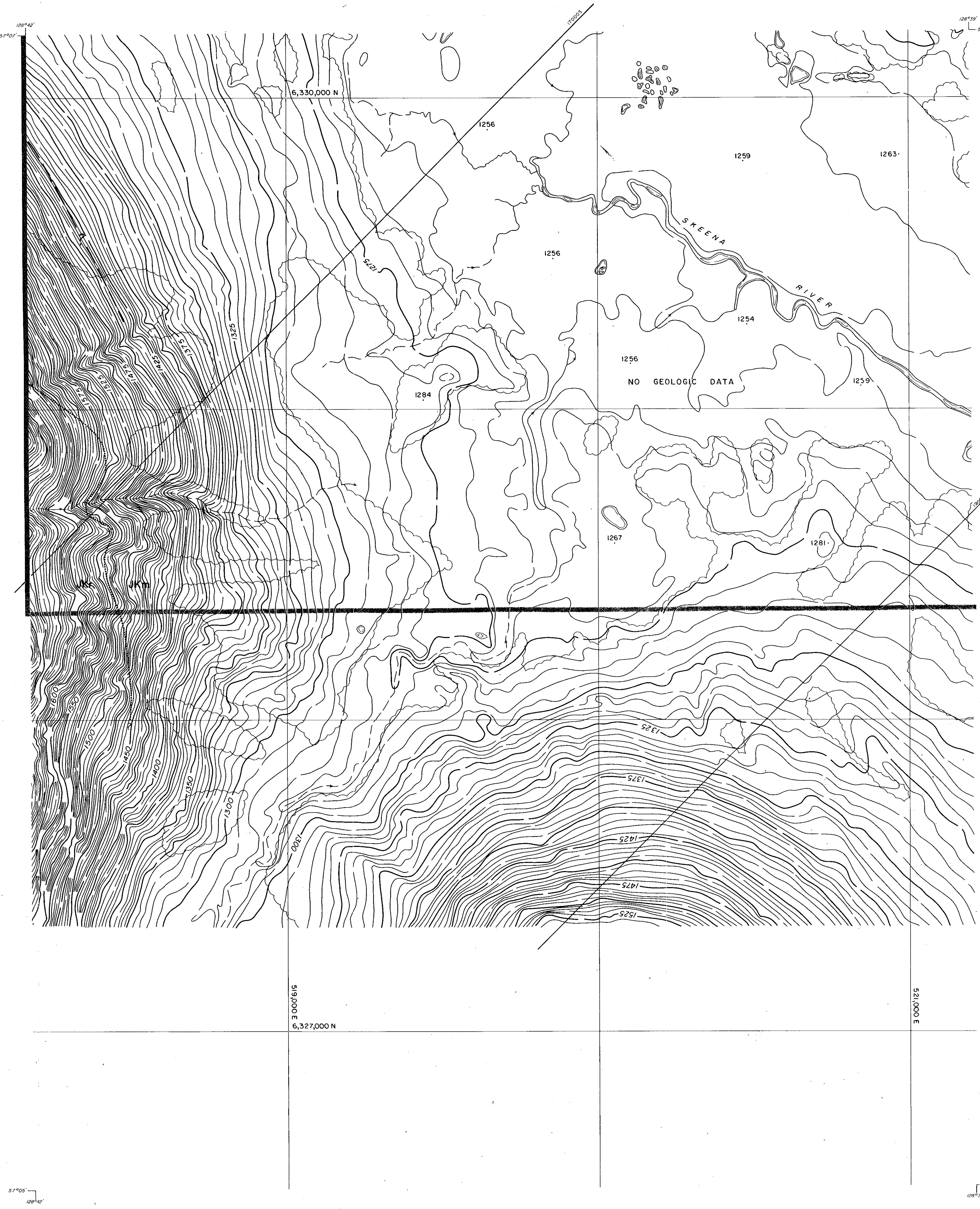
~~695~~ GR-Mt. Klappan 84(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP E-4

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-21



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 — 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.

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.

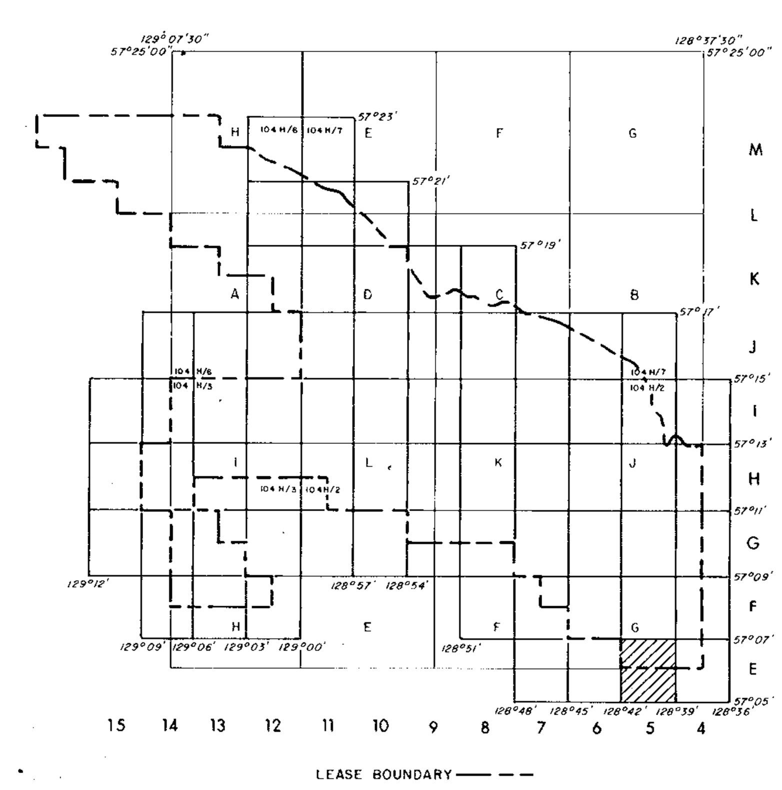
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY
WESTERN 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

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

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 — TRC84001 — SP
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

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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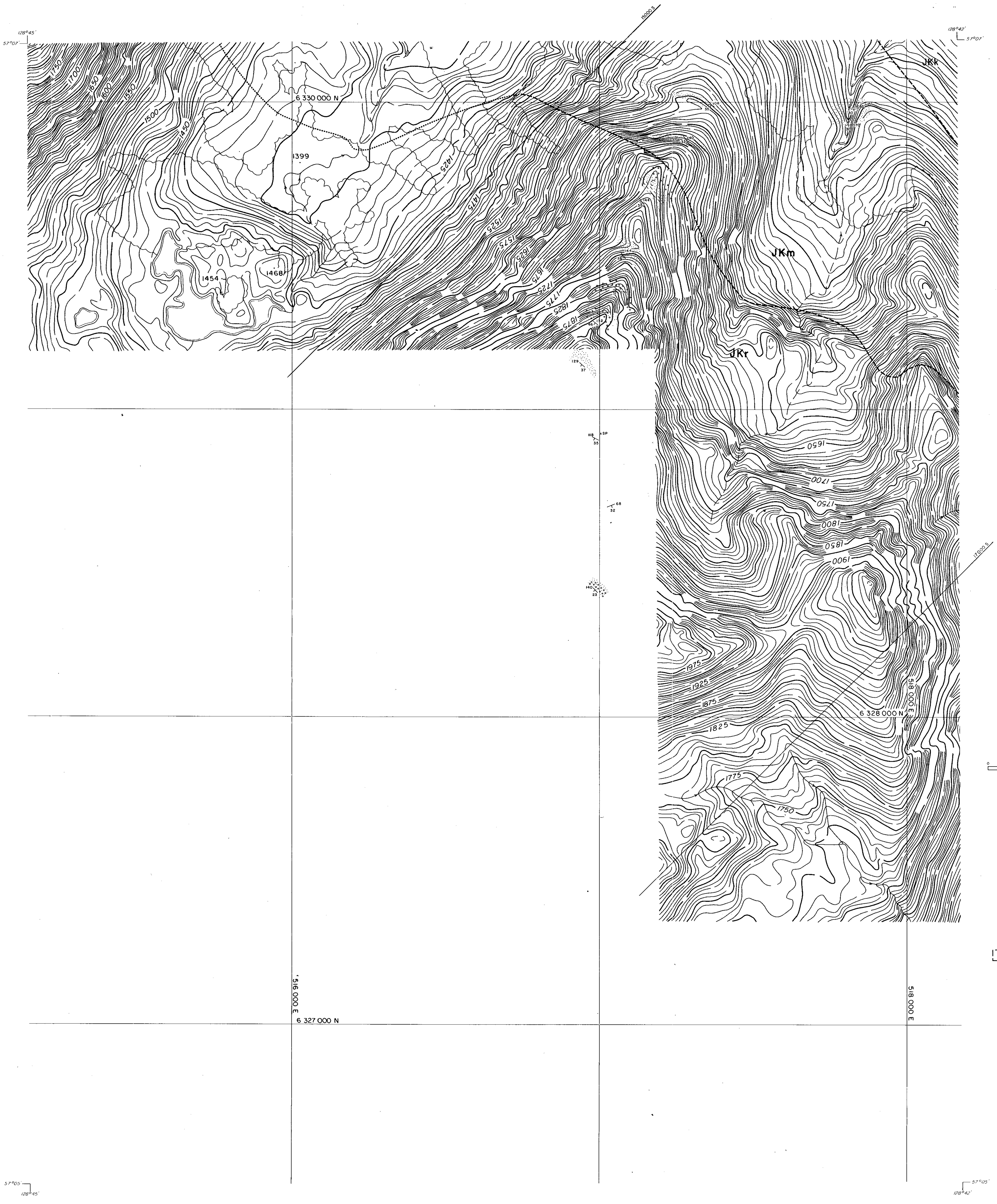
GR - Mt. Klappan 84(2)A ~~695~~

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
710 SKEENA AREA
MAP E-5

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-22

(40)



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 — 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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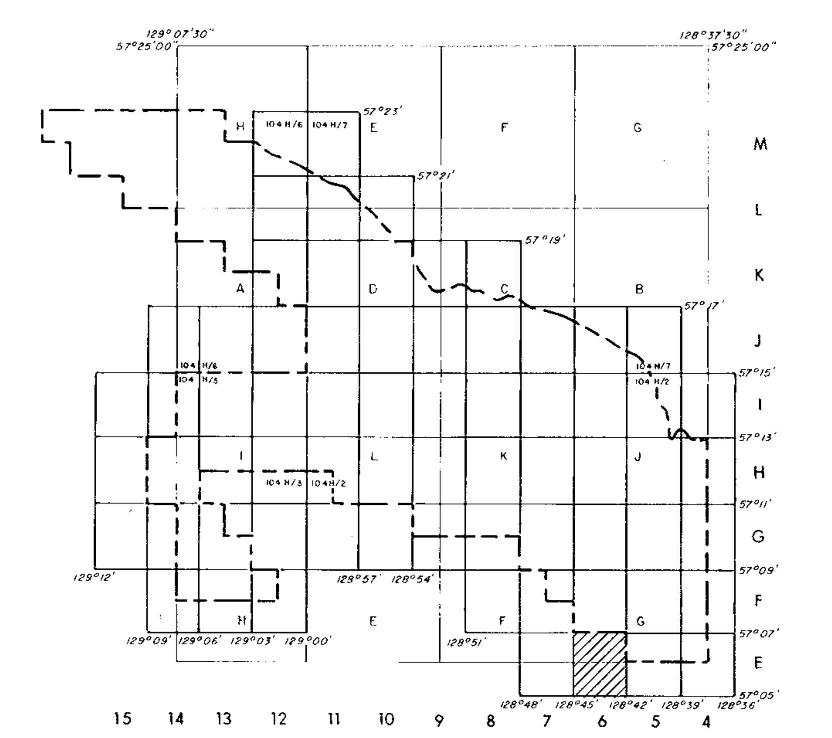
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

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LEGEND

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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

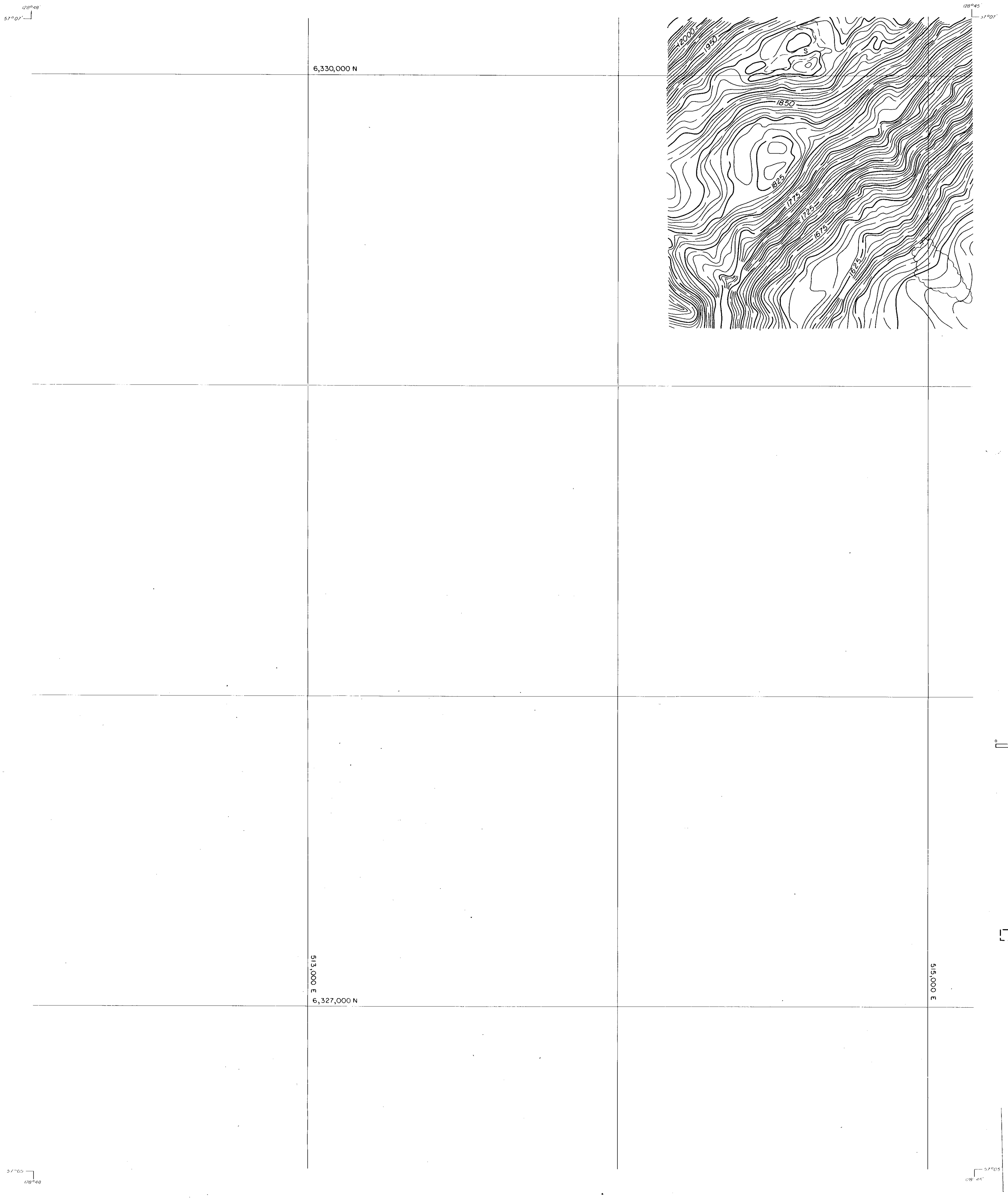
GR-Mt. Klappan 84(2) A ~~695~~

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP E-6

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-23



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 — 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

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N

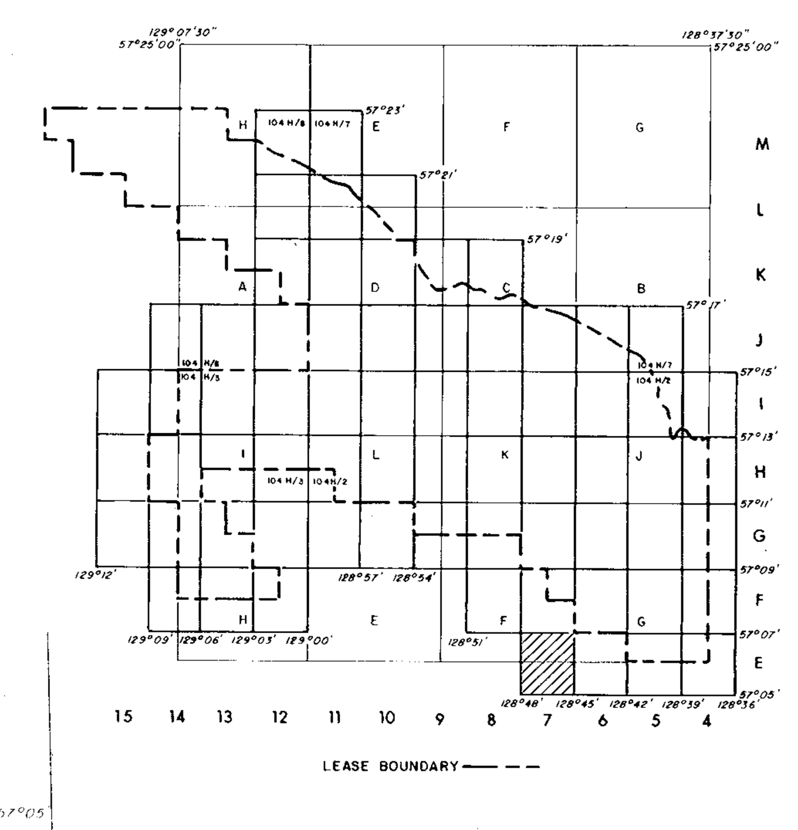
SCALE 1:5000

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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MEASURED SECTION — DTC 84001
SURVEY CAIRN — SC117
CROSS SECTION LINE — 3000 N

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GR. - Mt. Klappan 84 (2) A
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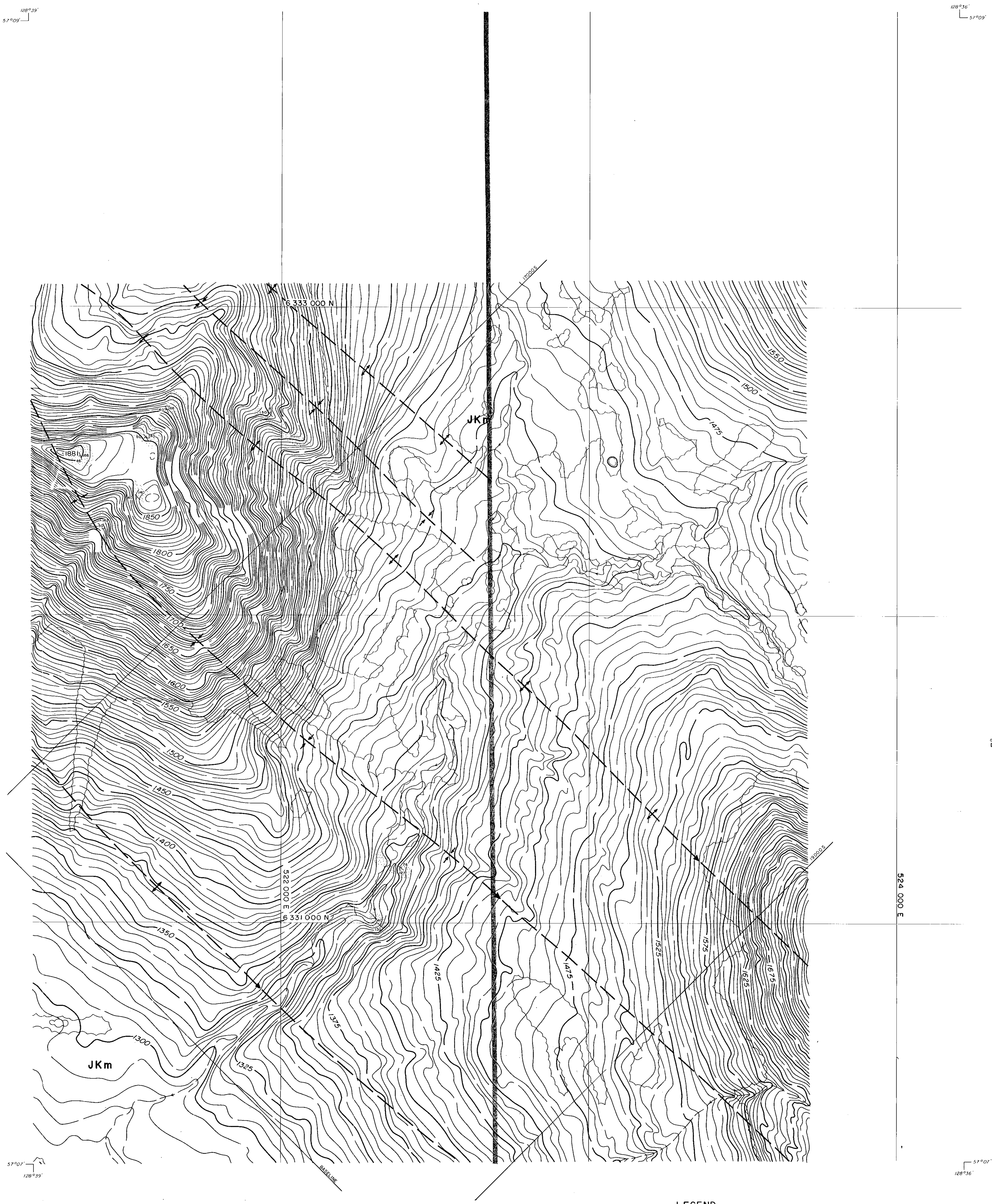
GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA	Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP SKEENA AREA MAP E-7	
PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-24

710

(12) 19?



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
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CUT LINE
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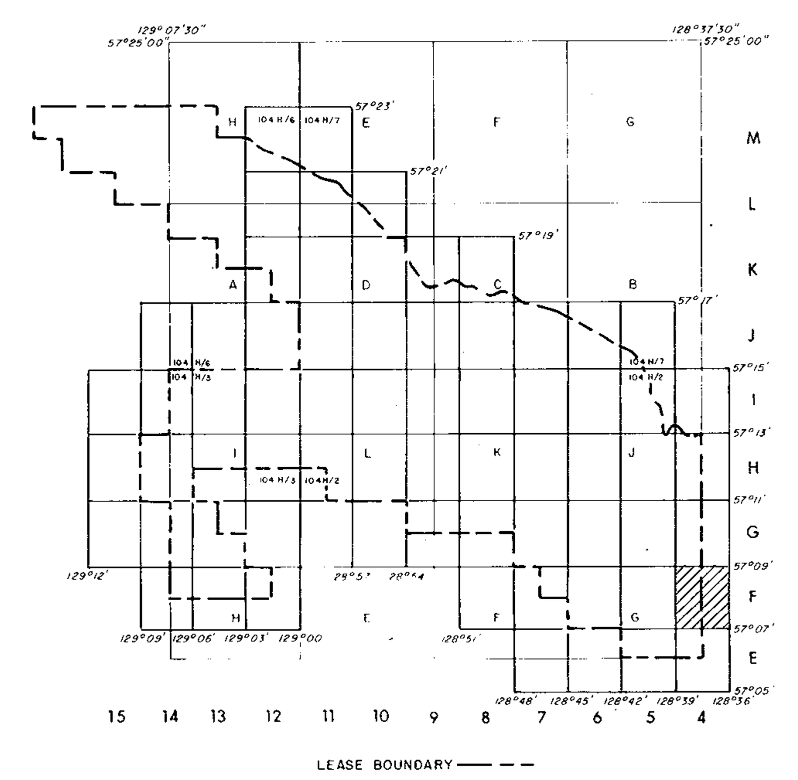
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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DDH RDH WKD — DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

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GR. - Mt. Klappan 84(2) A

~~695~~

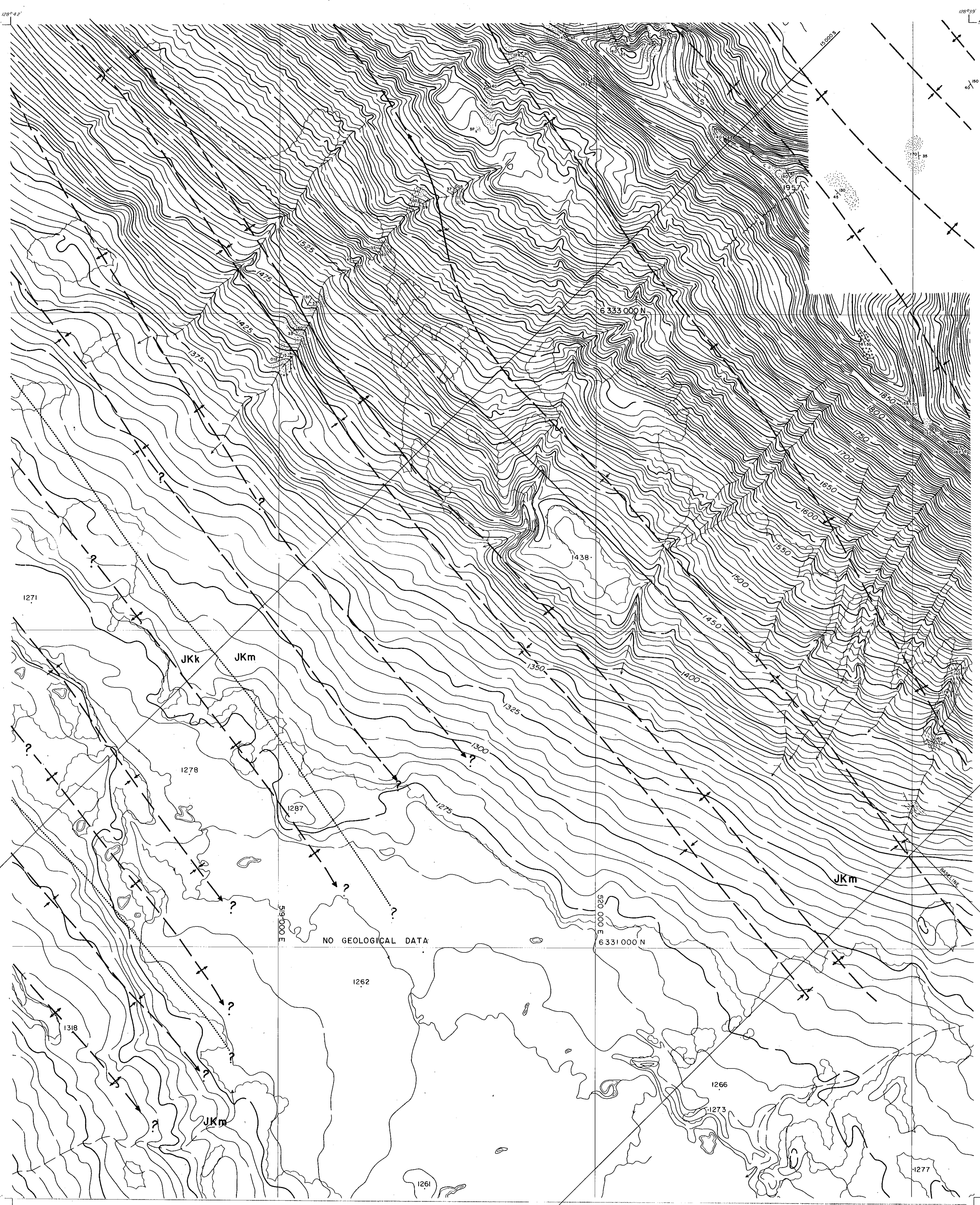
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP F-4

710

PREPARED BY: R.K.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84SK-25

(13)



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
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NOTES

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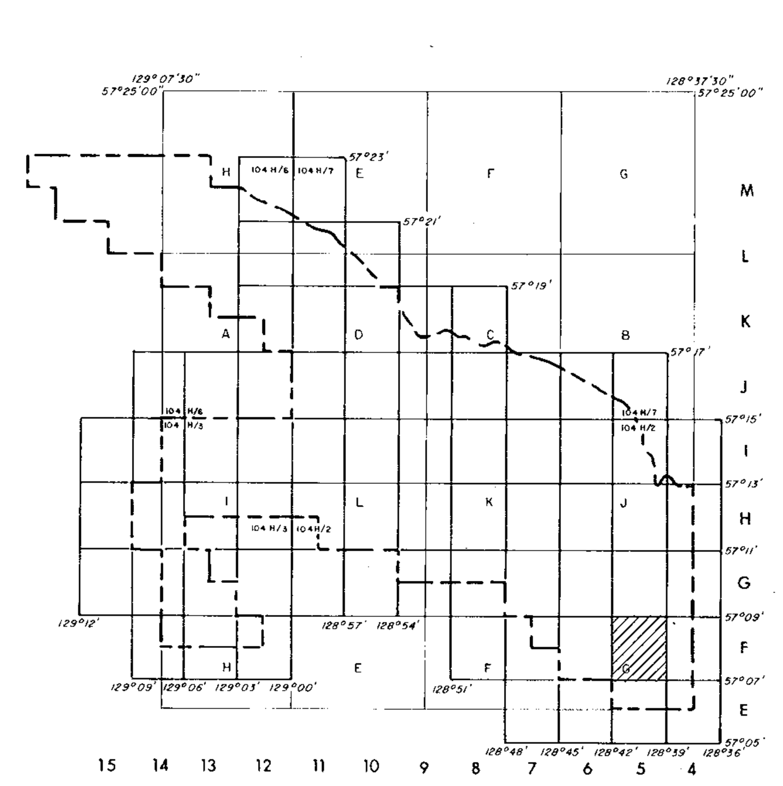
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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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

GR- Mt. Klappan 84 (2) A

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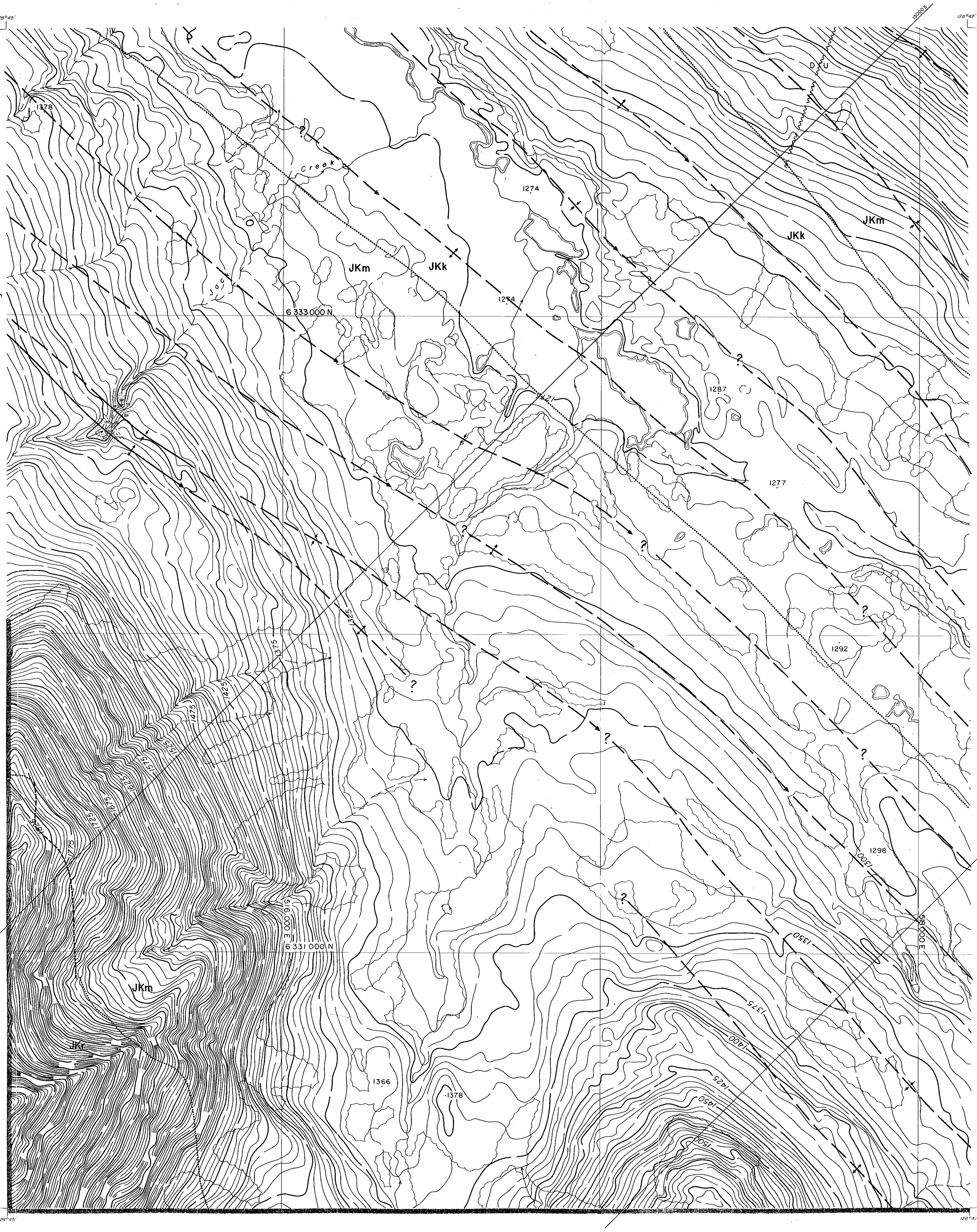
GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA		Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP SKEENA AREA MAP F-5		
PREPARED BY: R.K.	SCALE 1:5000	
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-26	

710

(44) BP



LEGEND

- BUILDING
- ROAD, HARD SURFACE
  - LOOSE SURFACE
  - CART TRACK
  - TRAIL
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
  - APPROXIMATE
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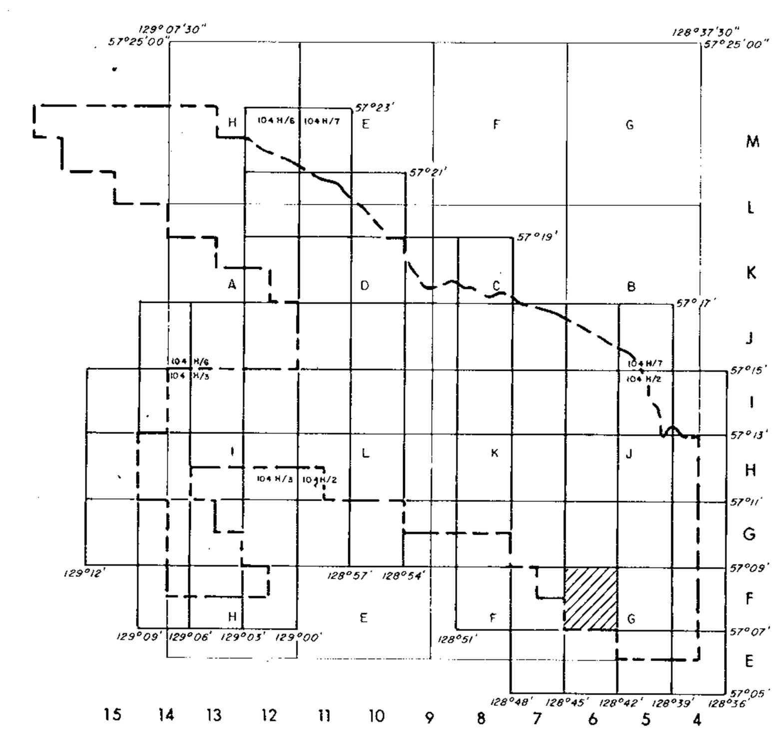
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

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JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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

GR. - Mt. Klappan 84(2) A

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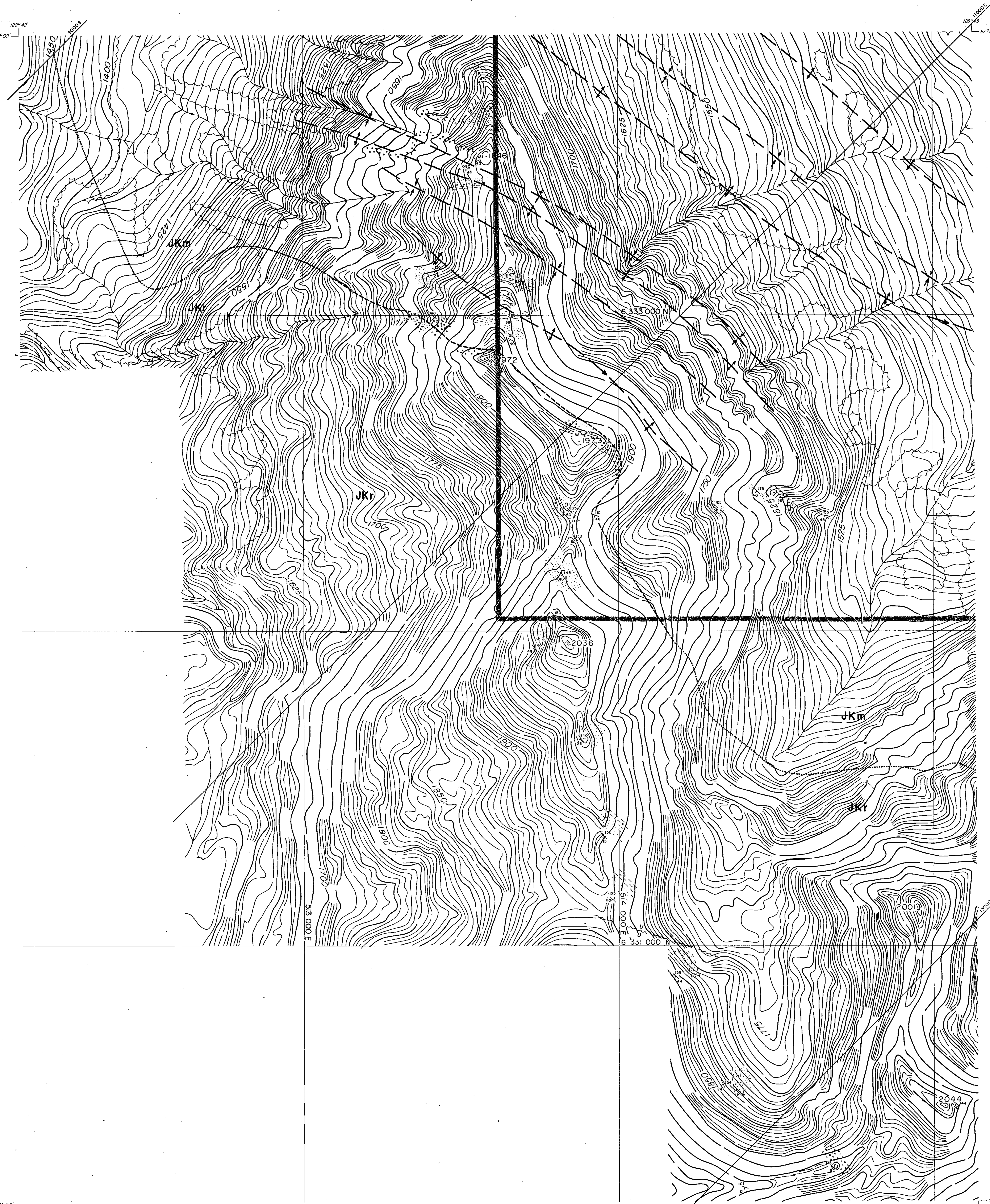
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP F-6

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-27

(43)



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 — 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.

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.

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RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY:
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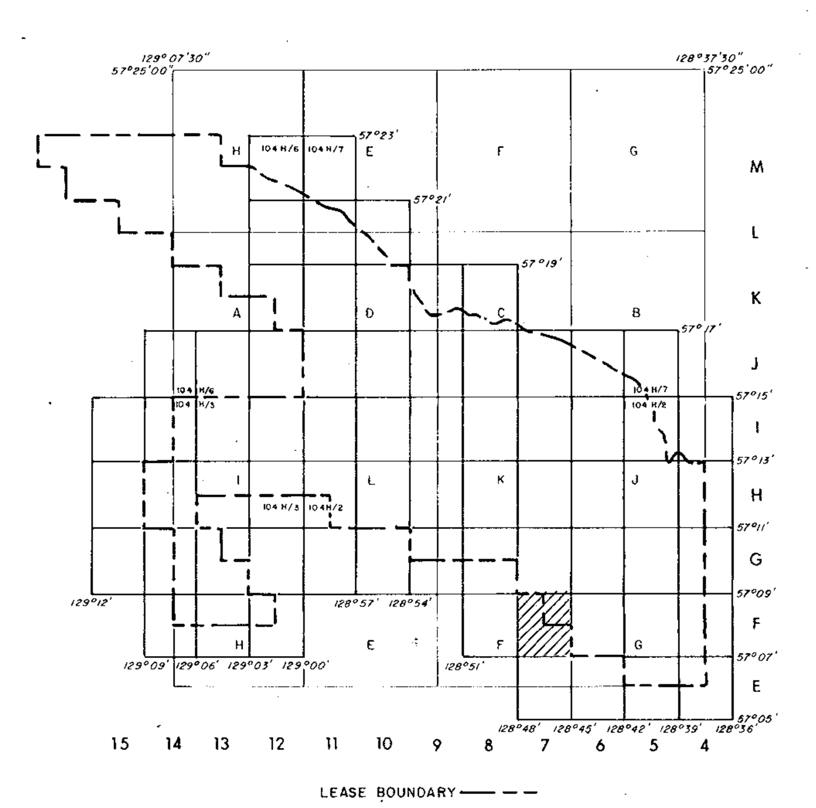
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

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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

GR. - Mt. Klappan 84 (2) A

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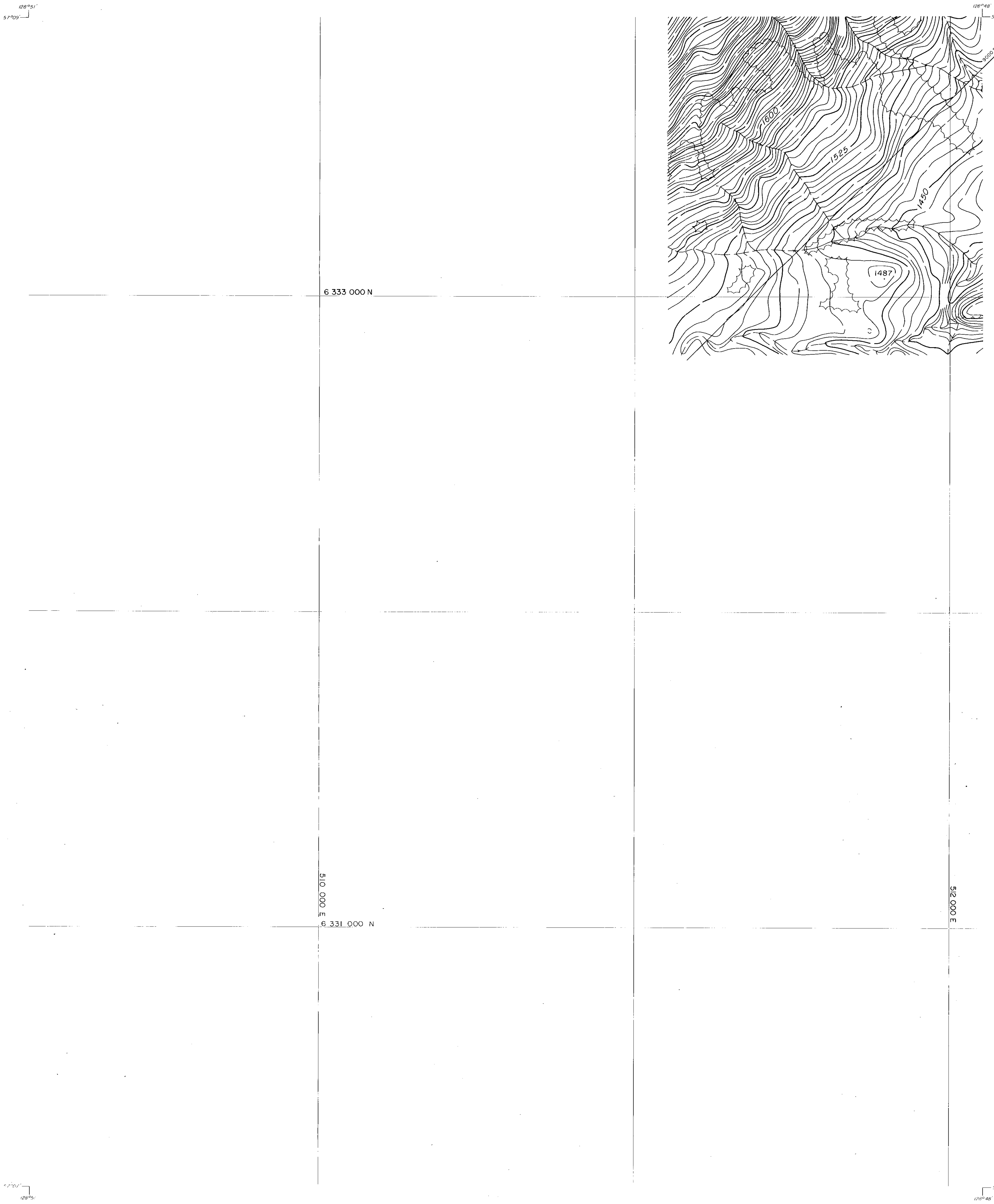
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP F-7

710

PREPARED BY: R.K.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84SK-28

46



LEGEND

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

NOTES

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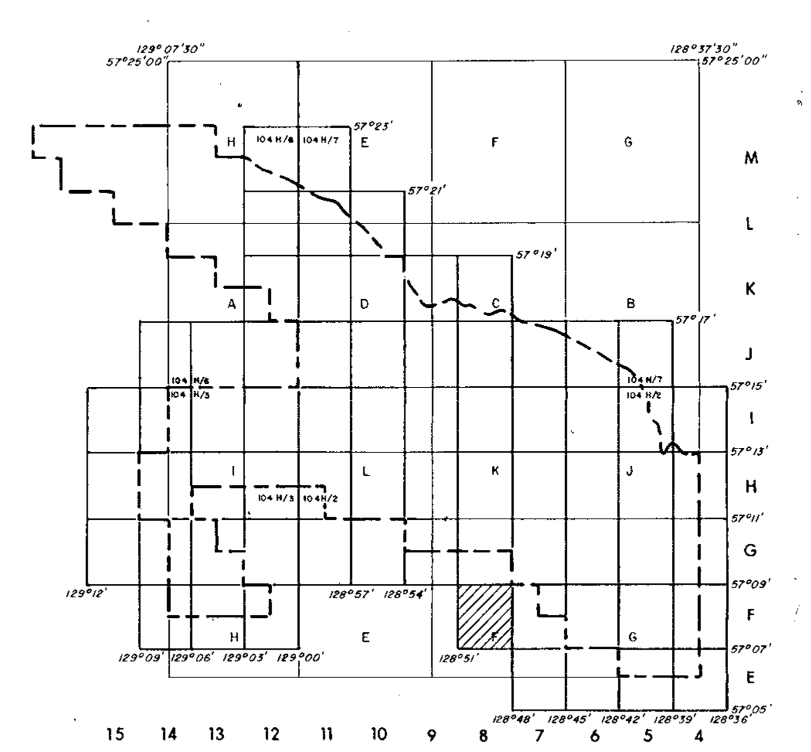
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

LEGEND

LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
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FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
TRC84001 SP — ADIT TRENCH COAL SPOIL
DDH RDH WKD — DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

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GR. - Mt. Klappan 84(2) A

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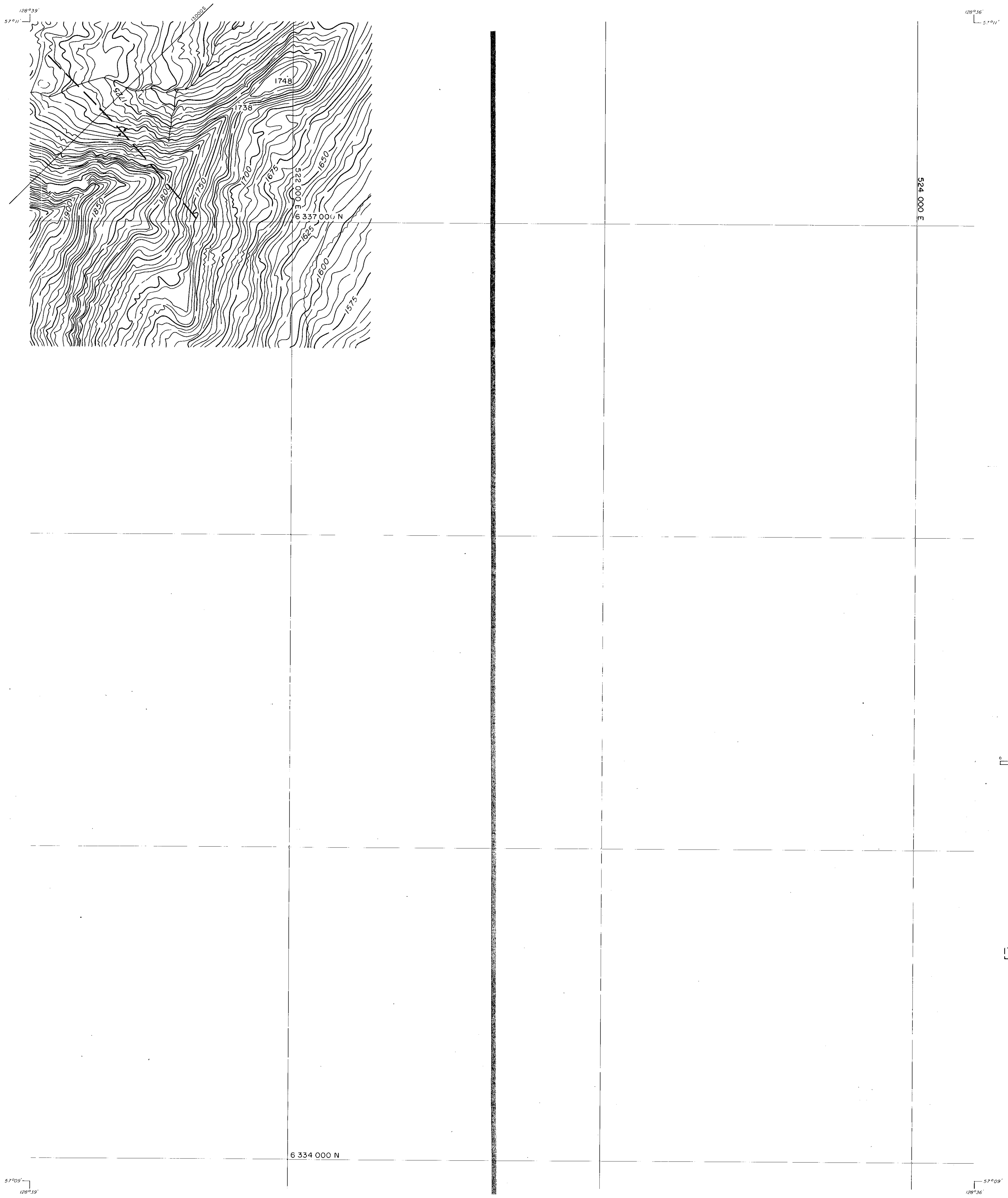
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP F-8

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-29

(47) BP



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
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FIELD CONTROL POINT
COAL LICENCE

NOTES

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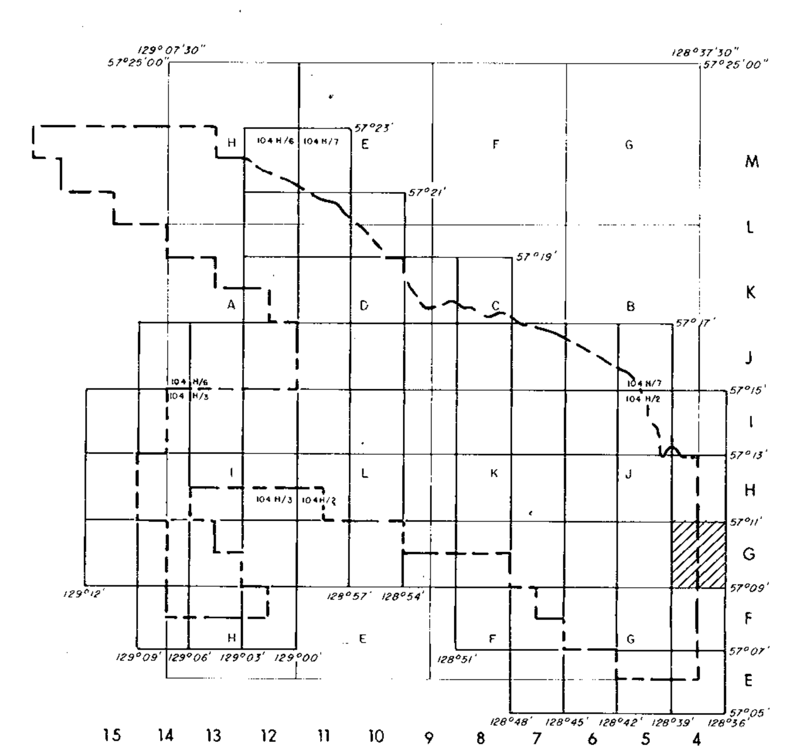
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

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LEGEND

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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

GR. - Mt. Klappan 84(2) A

615

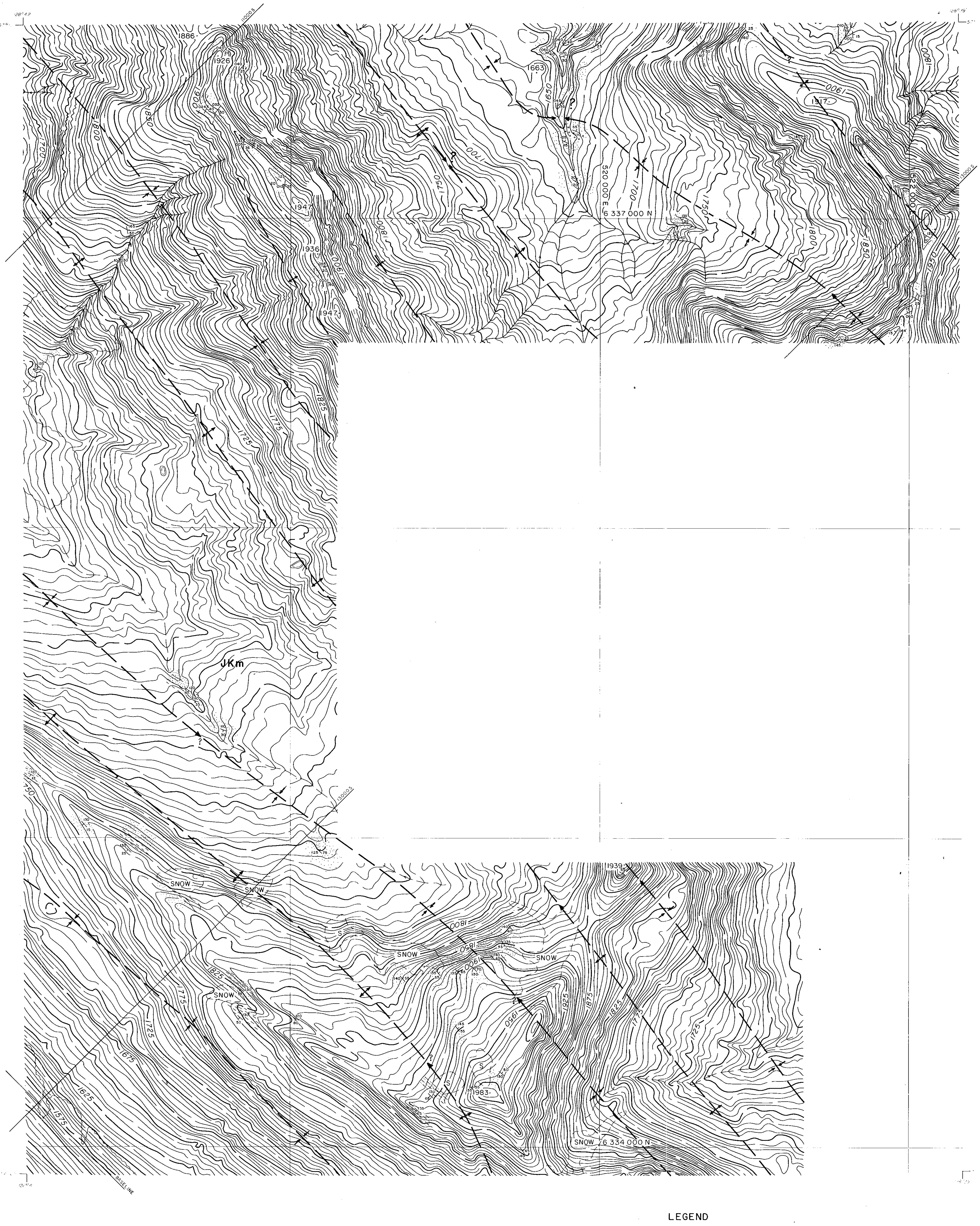
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP G-4

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-30



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 — 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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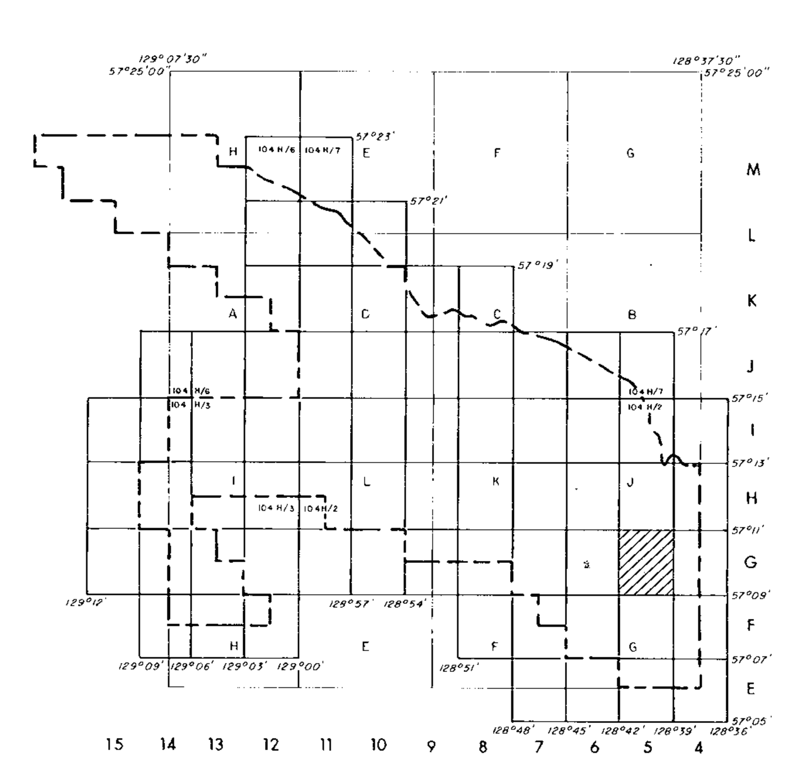
SCALE 1:5000

0 — 0.25 — 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
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- FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
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- THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UPTHRUST SIDE
- FAULT (DEFINED, APPROXIMATE) UPTHROWN, DOWNTHROWN SIDE — U / D
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT — TRENCH (TRC84001) — COAL SPOIL (SP)
- 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

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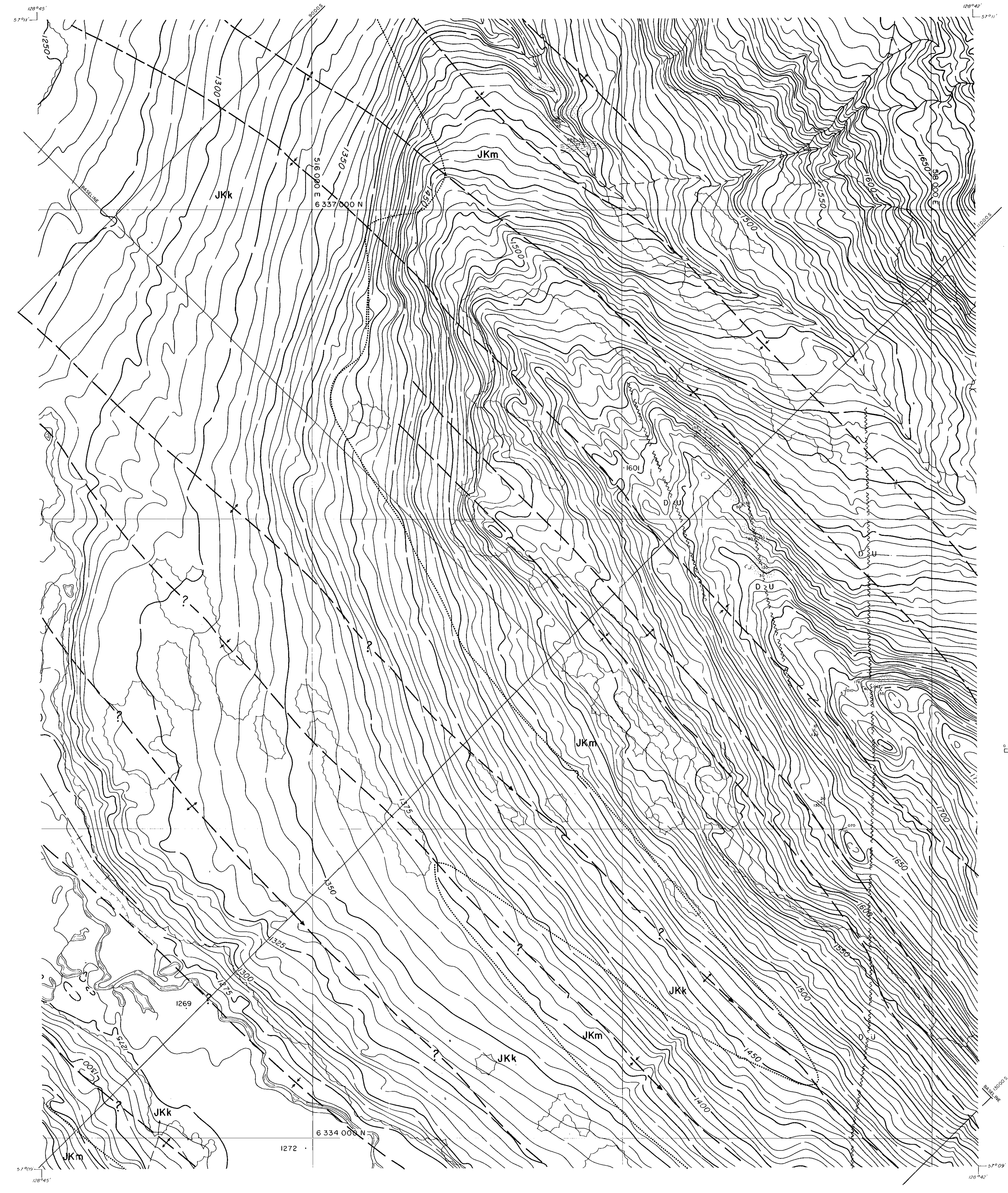
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP G-5

710

PREPARED BY: R.K.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84SK-31



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — EL 505'
SWAMP
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TREE LINE
CUT LINE
CONTOURS, INDEX — 1750
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SCALE 1:5000

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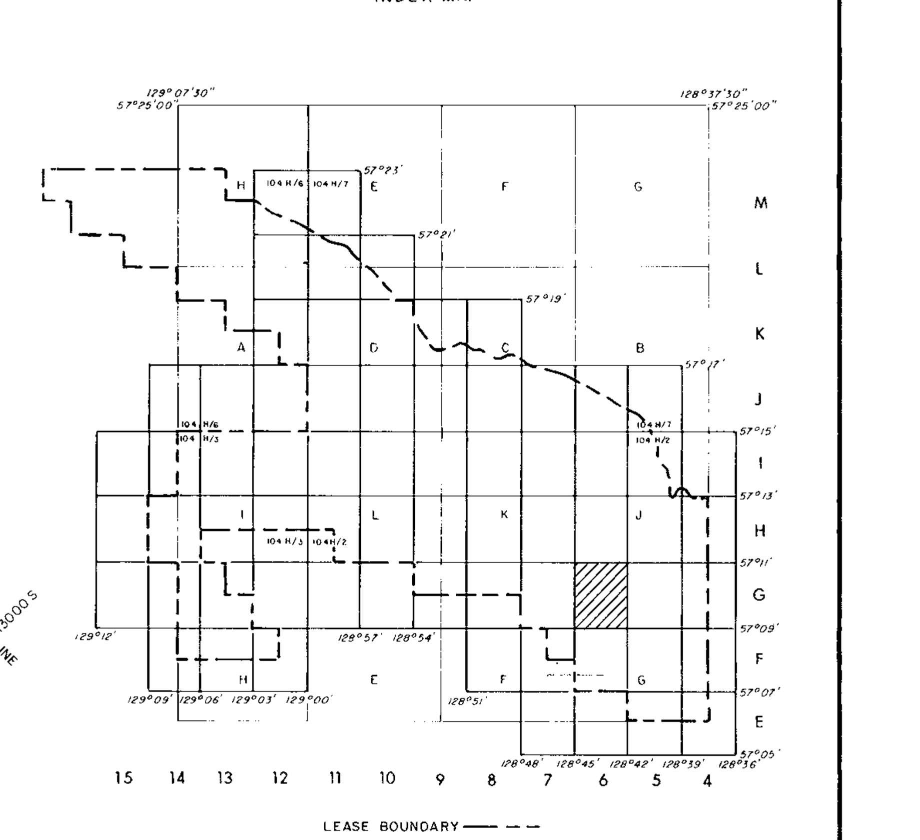
MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY — — —

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SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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 — SP
DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION) — DDH RDH WKD
MEASURED SECTION — DTC 84001
SURVEY CAIRN — SC-17
CROSS SECTION LINE — 3000 N

GR. - Mt. Klappan 84(2) A ~~695~~

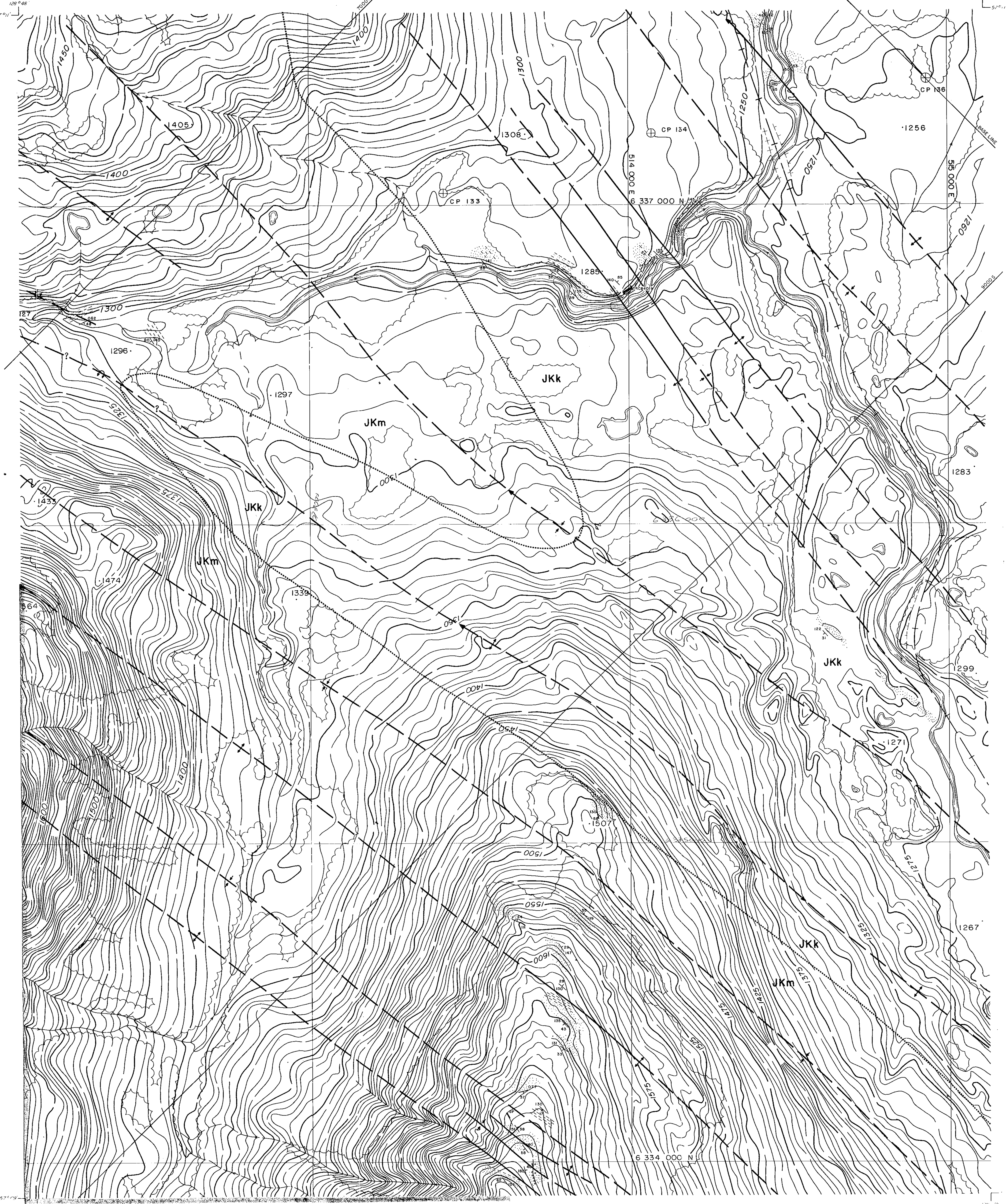
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP G-6

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-32

50



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 — 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.

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
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).

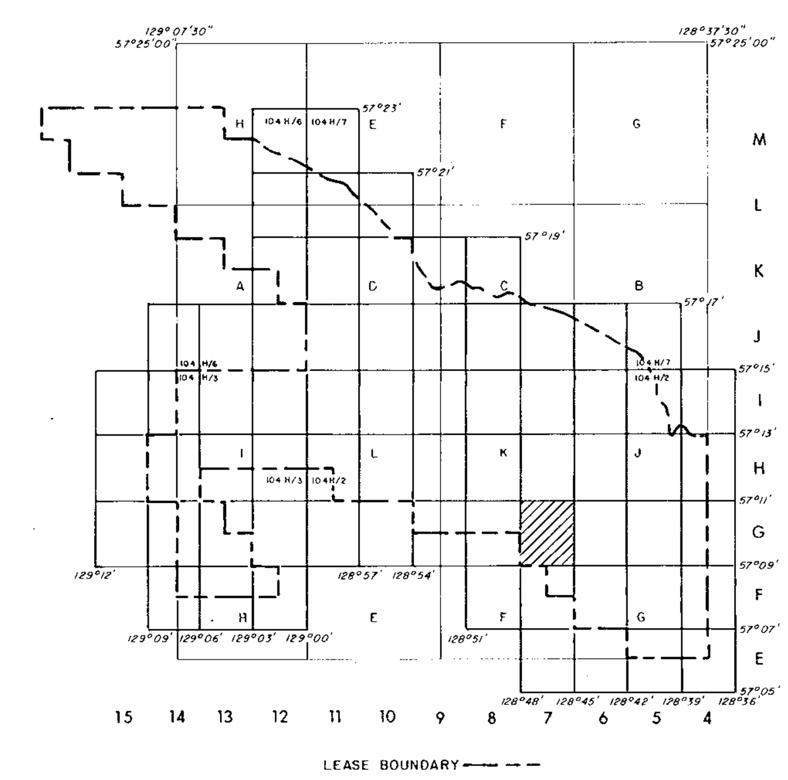
SCALE 1:5000

0 — 0.25 — 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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 — U / D
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL — TRC84001 — SP
- 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

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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GR. - Mt. Klappan 84 (2) A

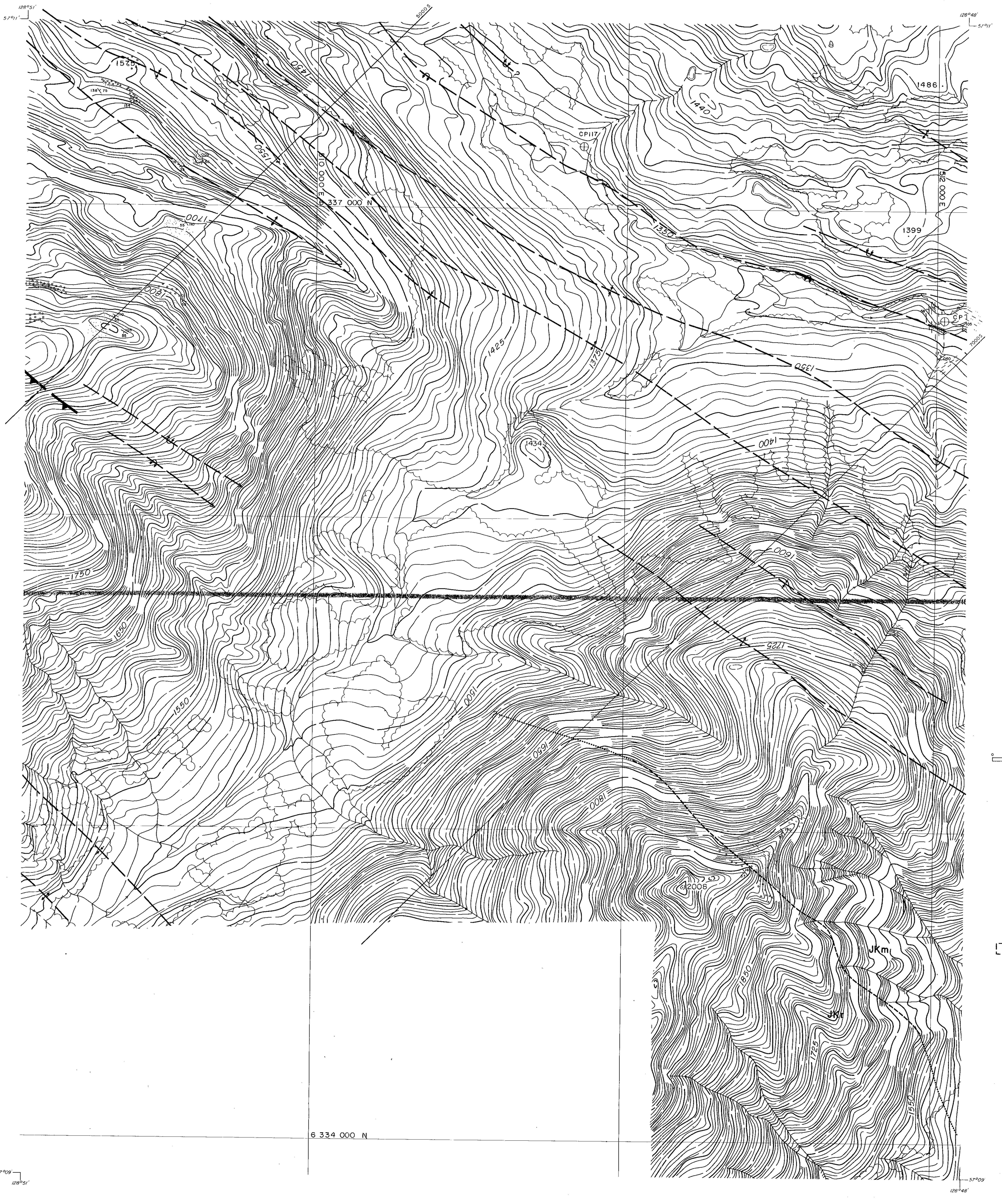
~~695~~

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP G-7

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-33



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 — B.D. B.D.
- TREE LINE
- CUT LINE
- CONTOURS, INDEX — 1750
  - INTERMEDIATE
  - DEPRESSION
  - APPROXIMATE
- SPOT ELEVATION — ·7654
- FORM LINES
- CUT/FILL
- FIELD CONTROL POINT — CP121
- COAL LICENCE

NOTES

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

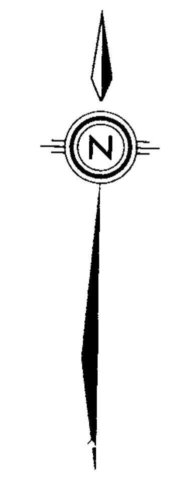
CONTOUR INTERVAL = 10 M, WITH FORM LINES INTERVAL = 5 M.

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

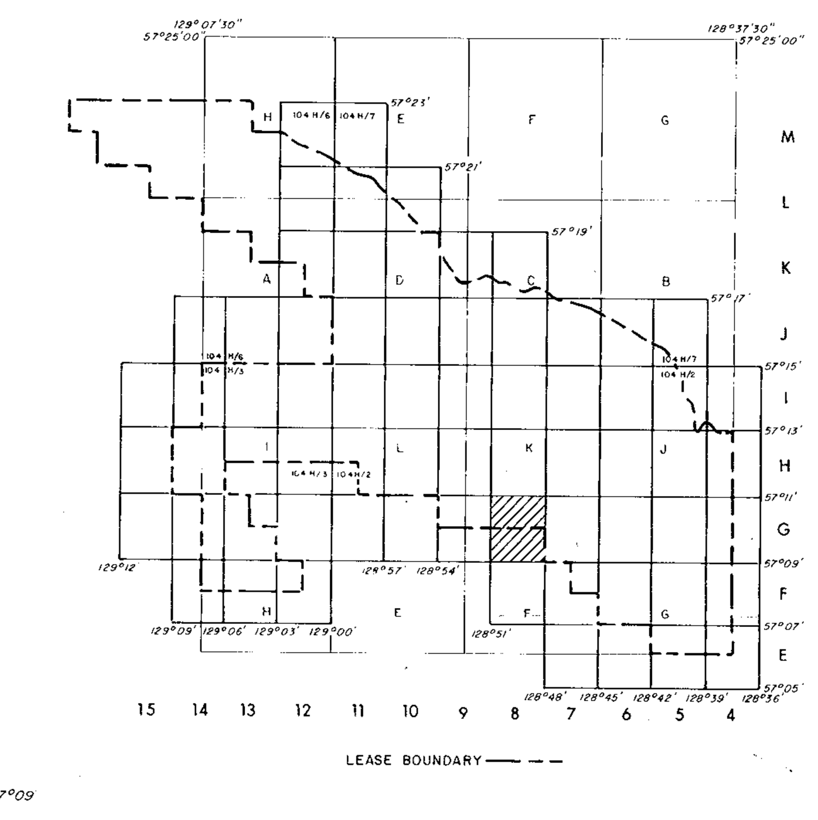
COMPILED BY
WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD., FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67 AT A SCALE OF 1 60 000 (APPROXIMATE)



SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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 — U / D
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- ADIT TRENCH COAL SPOIL — TRC84001, SP
- 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

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

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GR. - Mt. Klappan 84(2) A

~~695~~

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

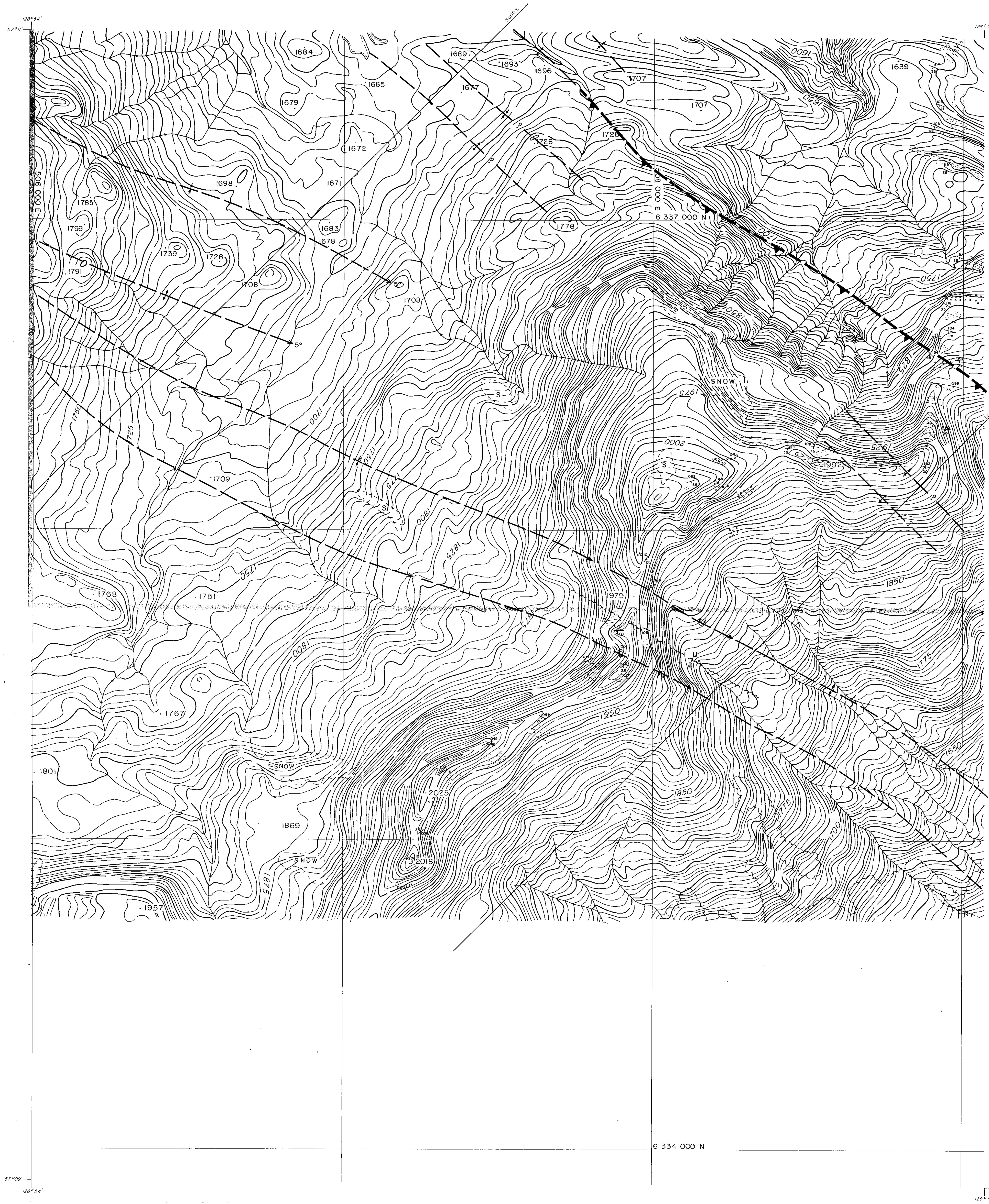
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP G-8

710

PREPARED BY: R.K.		SCALE 1:5000
APPROVED BY: E. S.	DATE: JAN. 1985	DWG. No. KPN84SK-34

(52)



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
CONTOURS, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
FORM LINES
CUT/FILL
FIELD CONTROL POINT
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.

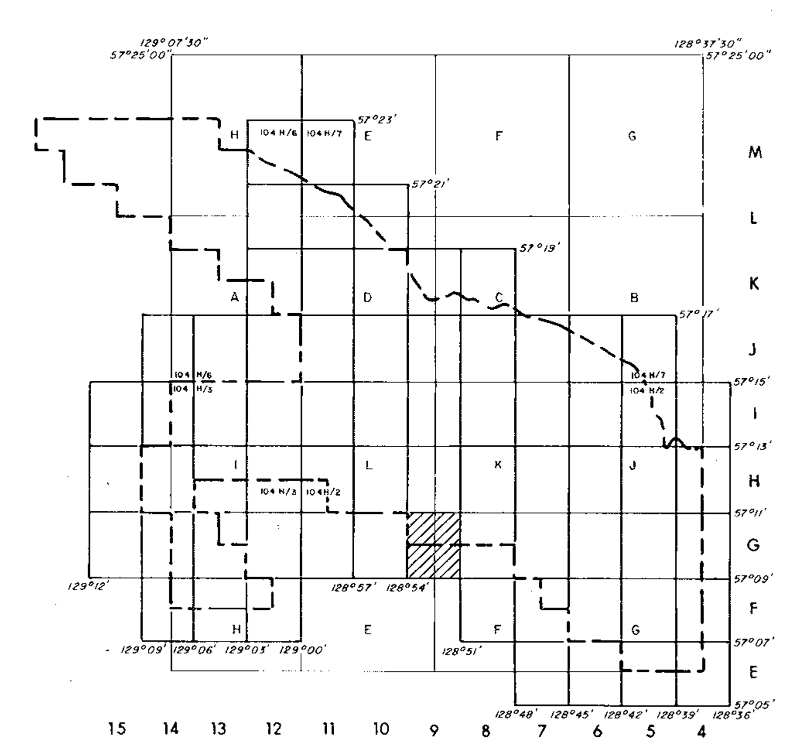
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY
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)

SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

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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

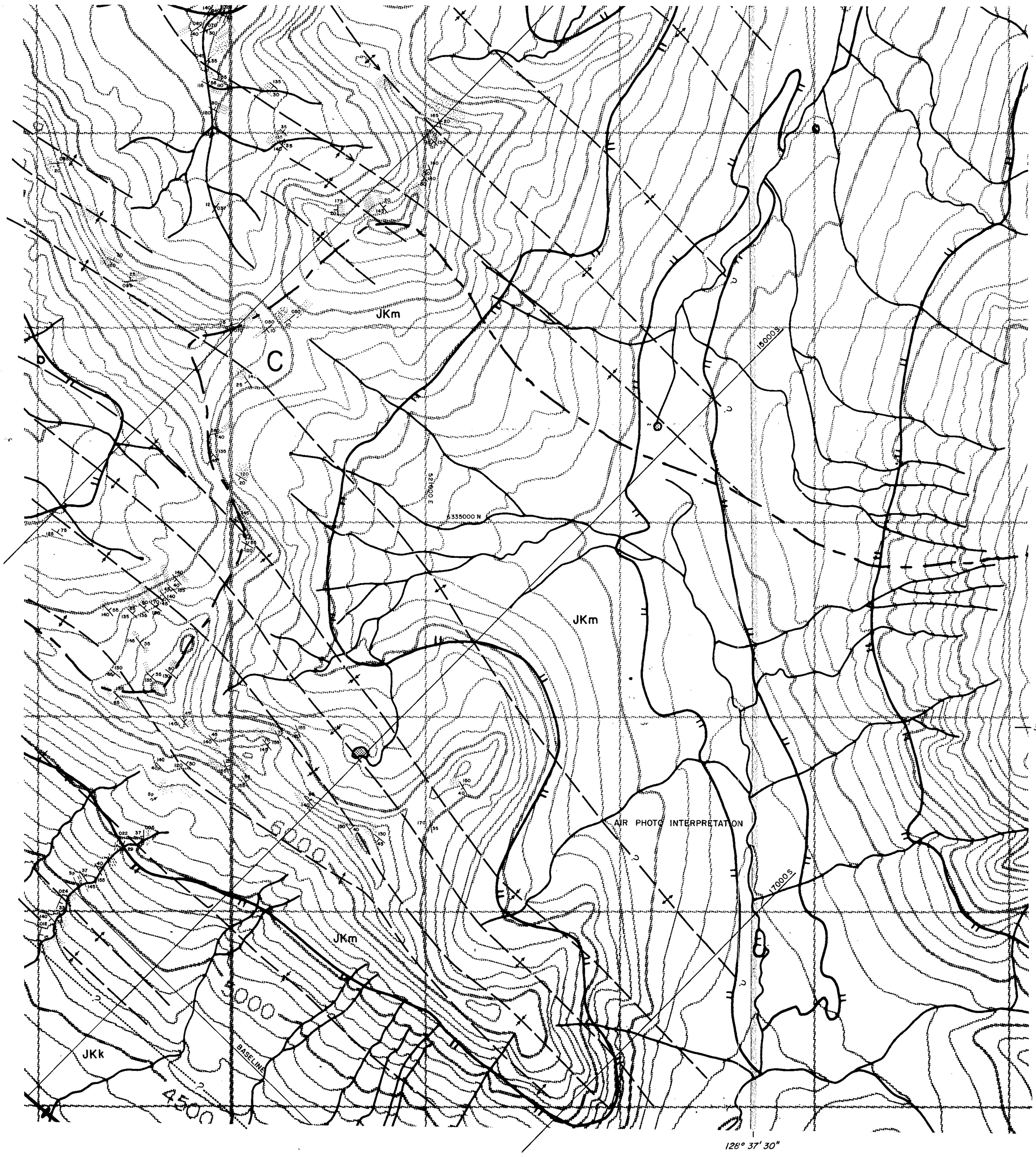
GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SKEENA AREA
MAP G-9

710

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-35



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 — B.D. B.D.
TREE LINE
CUT LINE
CONTOURS, INDEX — 1750
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION — 7654
FIELD CONTROL POINT — CP 121
COAL LICENCE

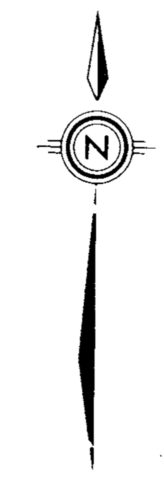
NOTES

CONTOUR INTERVAL 10 METERS

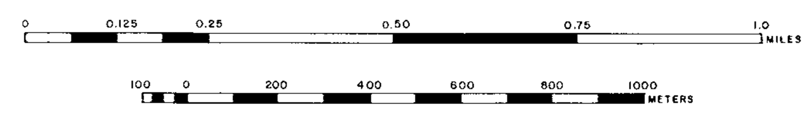
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

RAILROAD BED LOCATION BASED ON DATA SUPPLIED BY B.C. RAIL

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

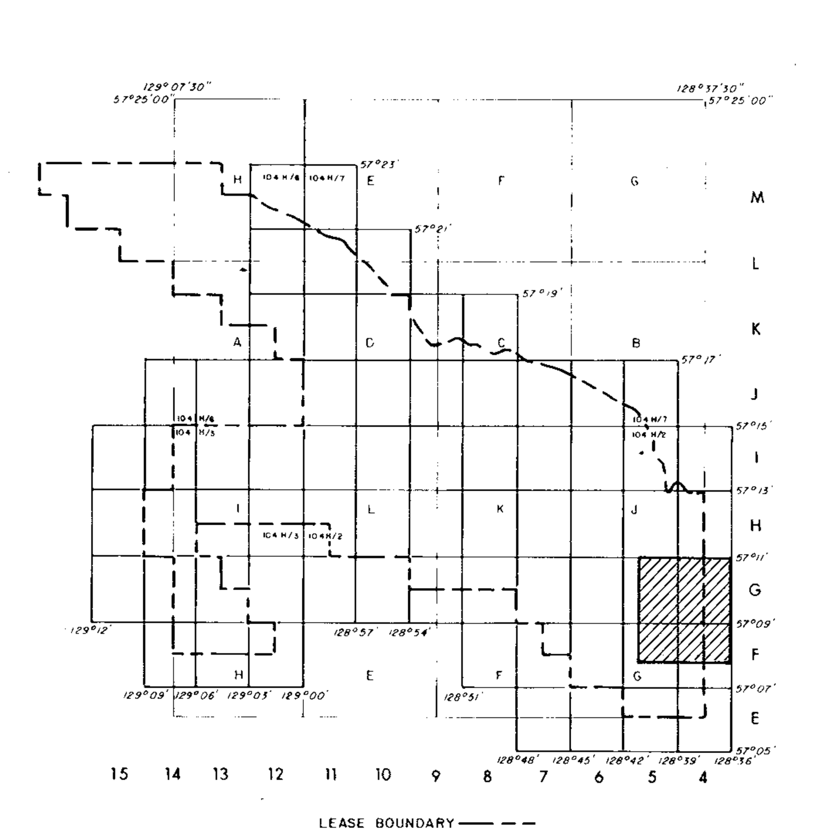


SCALE 1:10,000



MT. KLAPPAN AREA

INDEX MAP



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

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

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA	Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP SKEENA AREA 710 MAP 104 H/2 G,J	
PREPARED BY: R.K.	SCALE 1:10,000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SK-41

(54) BP

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

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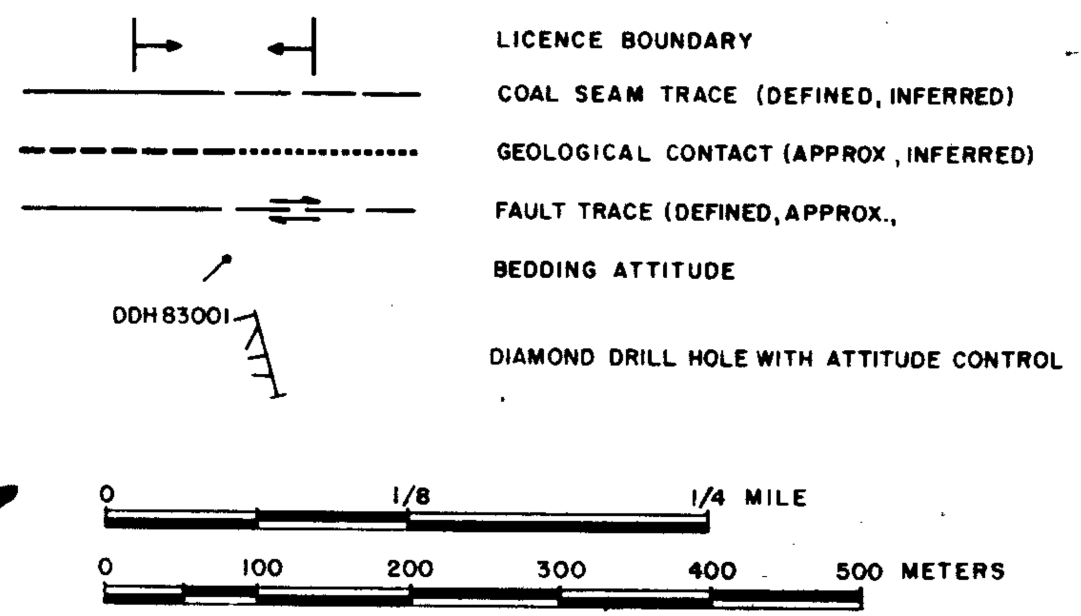

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710

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
3000 S (WEST)

PREPARED BY: R.K.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SK-51

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

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Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX , INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

GR-Mt. Klappan 84(2) A

~~695~~
710

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
5 000 S (WEST)

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SK-52

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/8 — 1/4 MILE

0 — 100 — 200 — 300 — 400 — 500 METERS

~~695~~
710

GR. - Mt. Klappan 84 (2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY — ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
7000 S (WEST)

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SK-53

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

~~595~~
710

GR. - Mt. Klappan 84 (2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
9 000 S (WEST)

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SK-54

RHONDDA SEQUENCE

JKr	Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk	Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js	Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

710

~~645~~

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
11 000 S (EAST & WEST)

PREPARED BY: R.K.		SCALE. 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SK-55

RHONDDA SEQUENCE

JKr	Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk	Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js	Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

~~695~~
710

GR. - Mt. Klappan 84 (2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
13000 S (EAST & WEST)

PREPARED BY:- R.K.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SK - 56

RHONDDA SEQUENCE

JKr	Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk	Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js	Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

~~645~~
710

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
15 000 S (EAST & WEST)

PREPARED BY: R.K.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SK-57

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001
DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE
0 100 200 300 400 500 METERS

710
~~695~~

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
17 000 S (EAST & WEST)

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY E.S. DATE: JAN. 1985	DRAWING No. KPN84SK-58

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX , INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001
DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/8 — 1/4 MILE
0 — 100 — 200 — 300 — 400 — 500 METERS

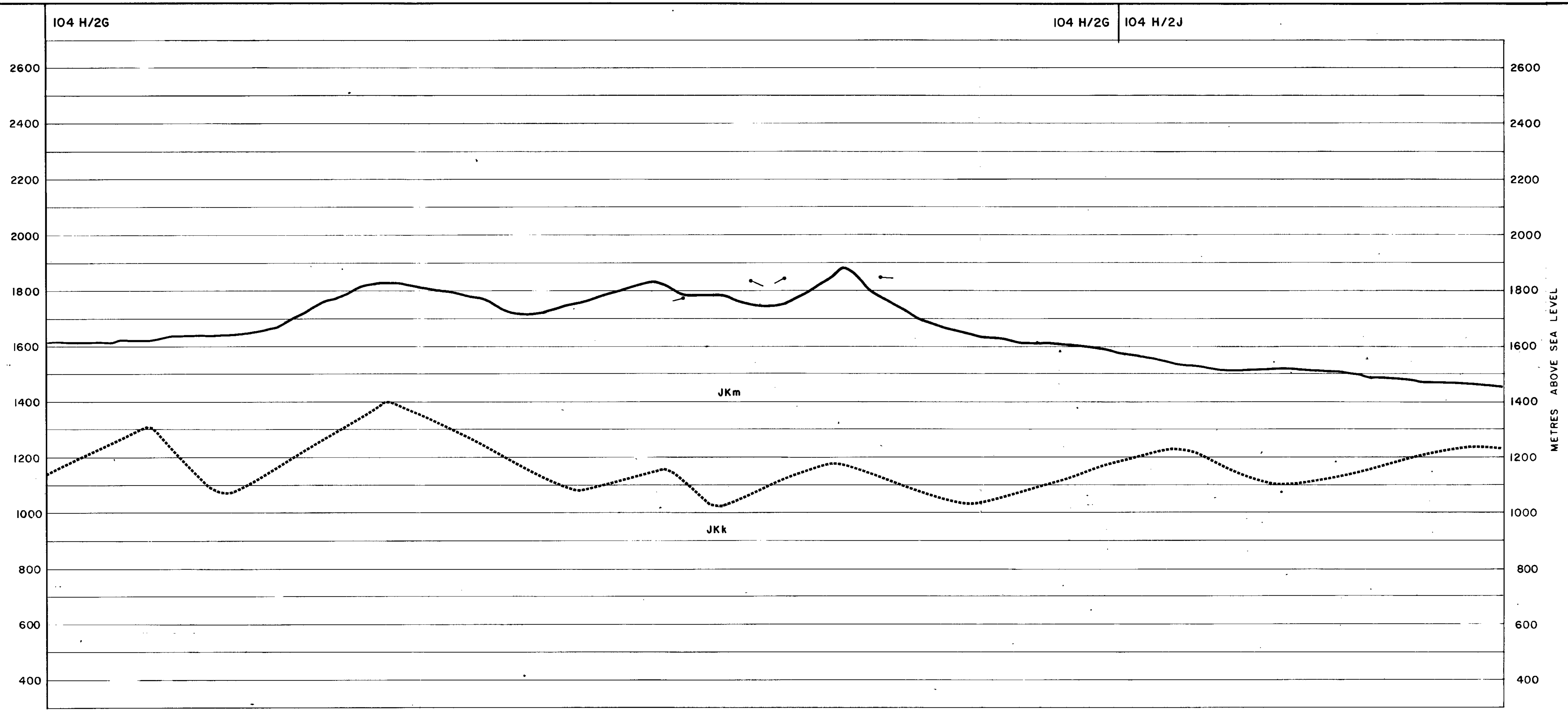
710

GR. – Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
19 000 S (EAST & WEST)

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SK-59



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pe ecypods and plants are common Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 63001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

710

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

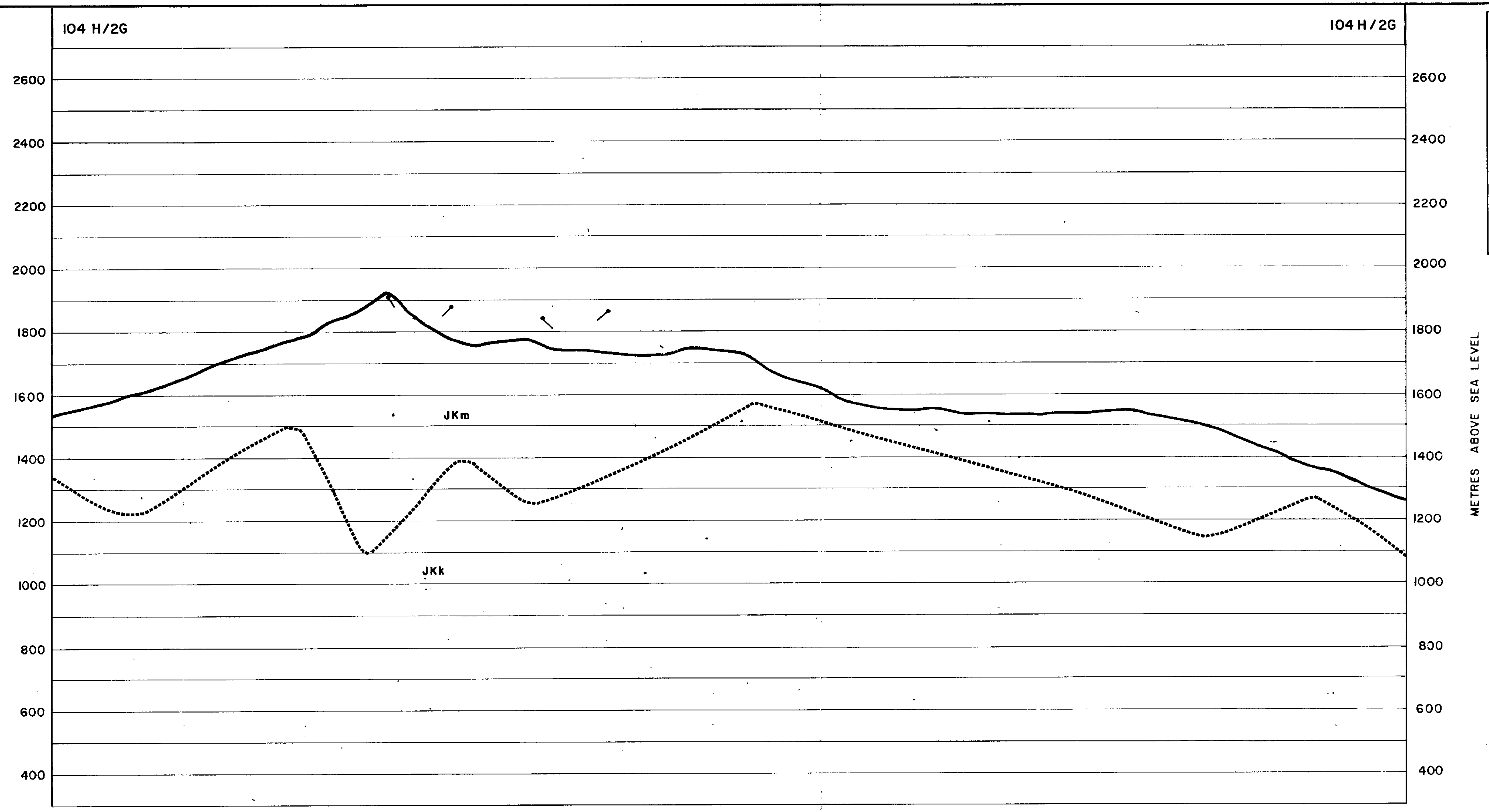
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
13 000 S (EAST)

PREPARED BY: E.S.	SCALE 1:10000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SK-60



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

~~695~~

710

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

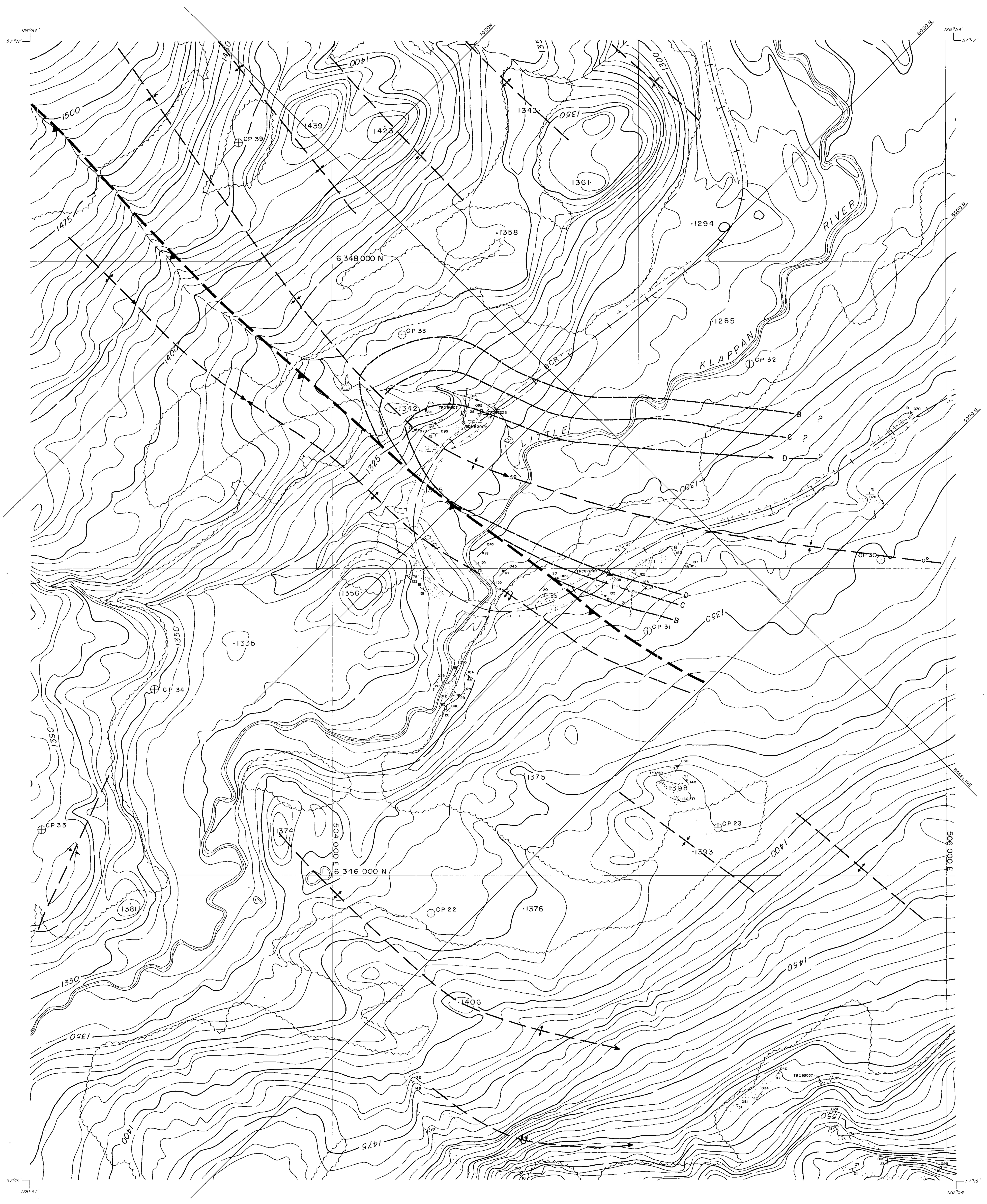
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SKEENA AREA
15 000 S (EAST)

PREPARED BY: E.S.		SCALE 1:10000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SK-61



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 — 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.

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
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).

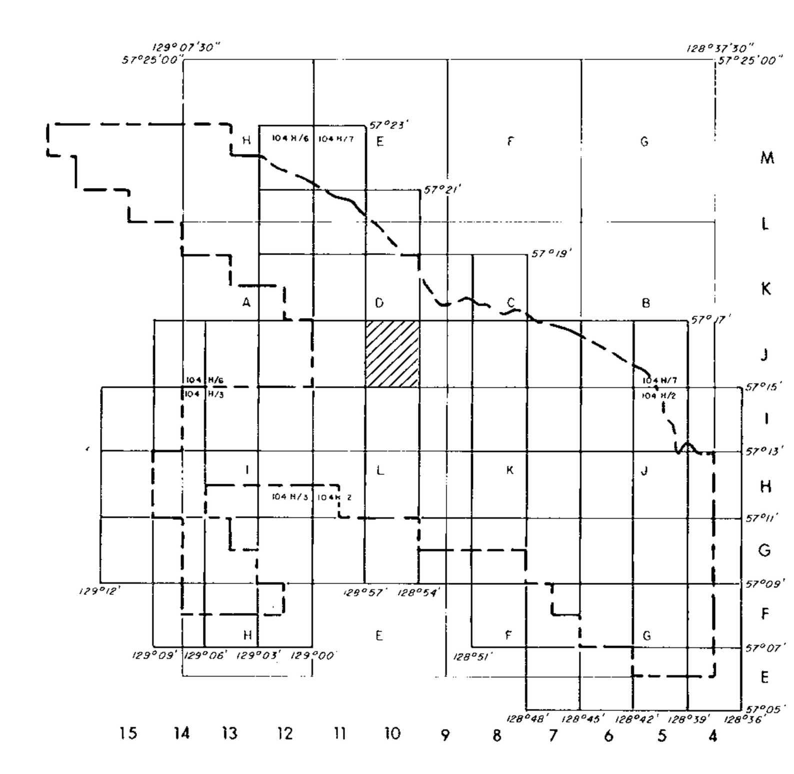
SCALE 1:5000

0 0.25 0.5 MILES

100 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

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

GR. - Mt. Klappan 84(2) A

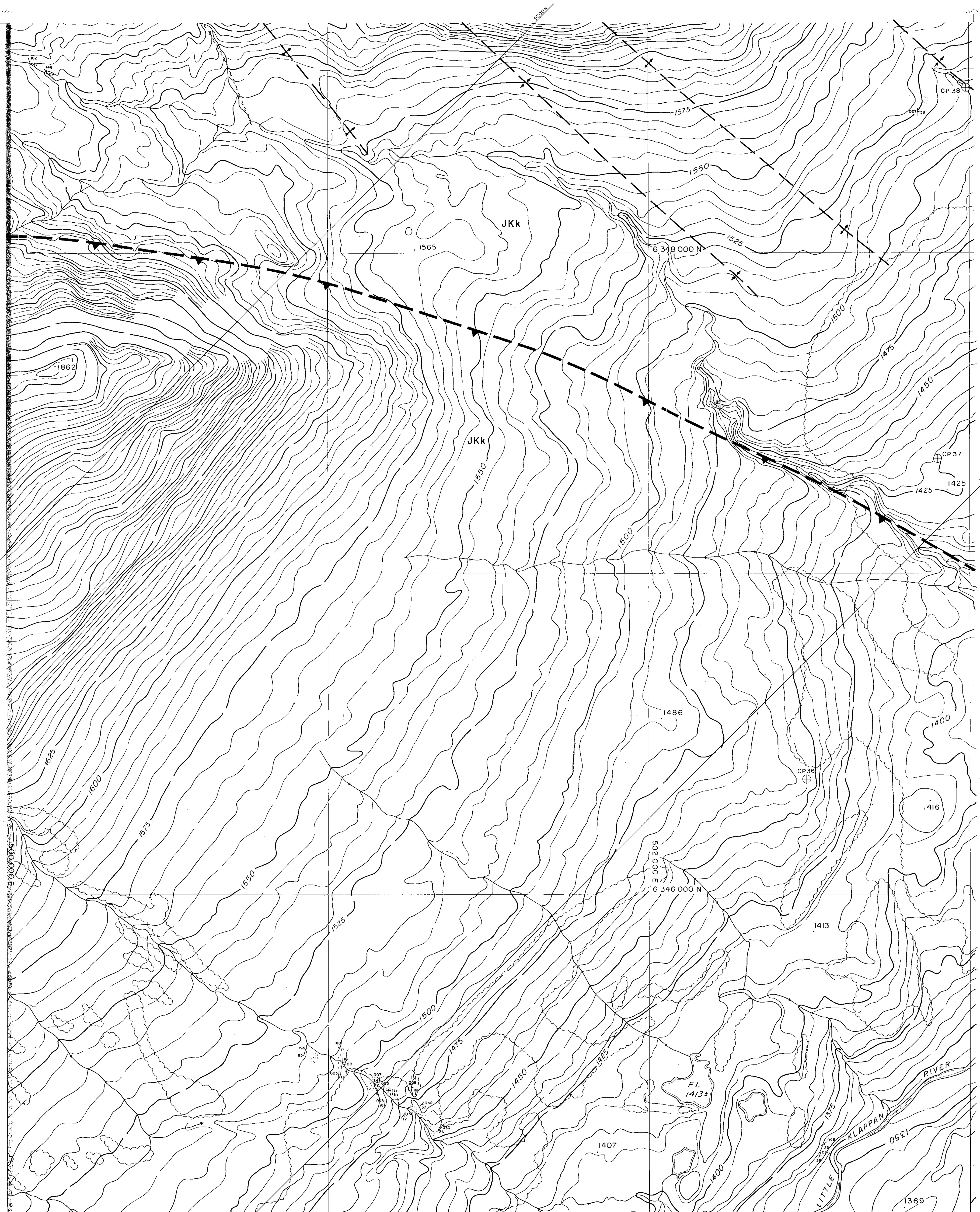
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP J-10

710

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-21



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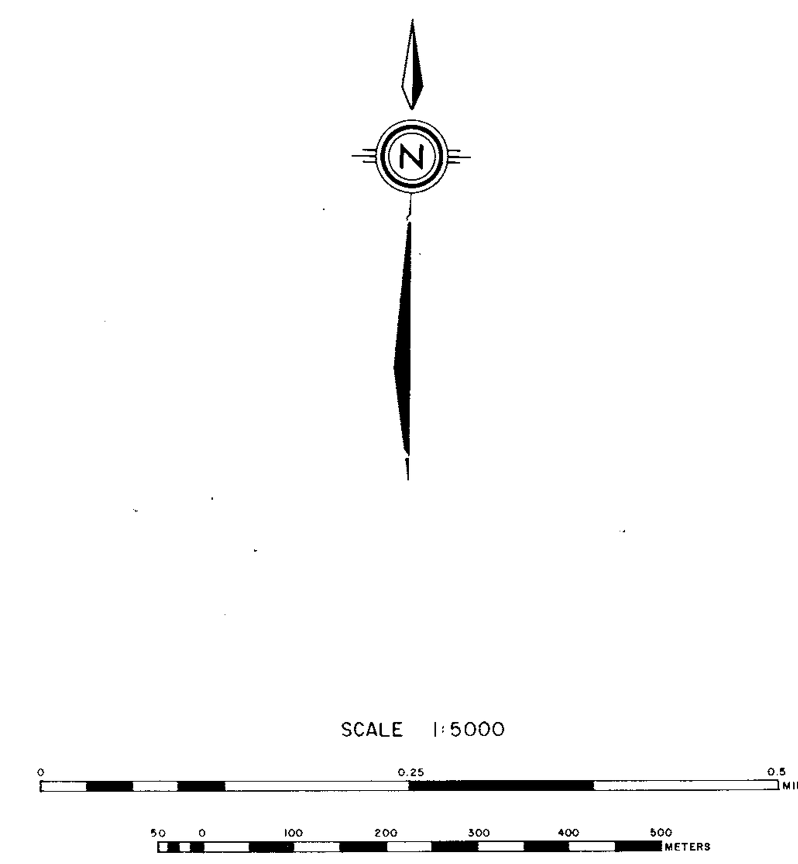
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

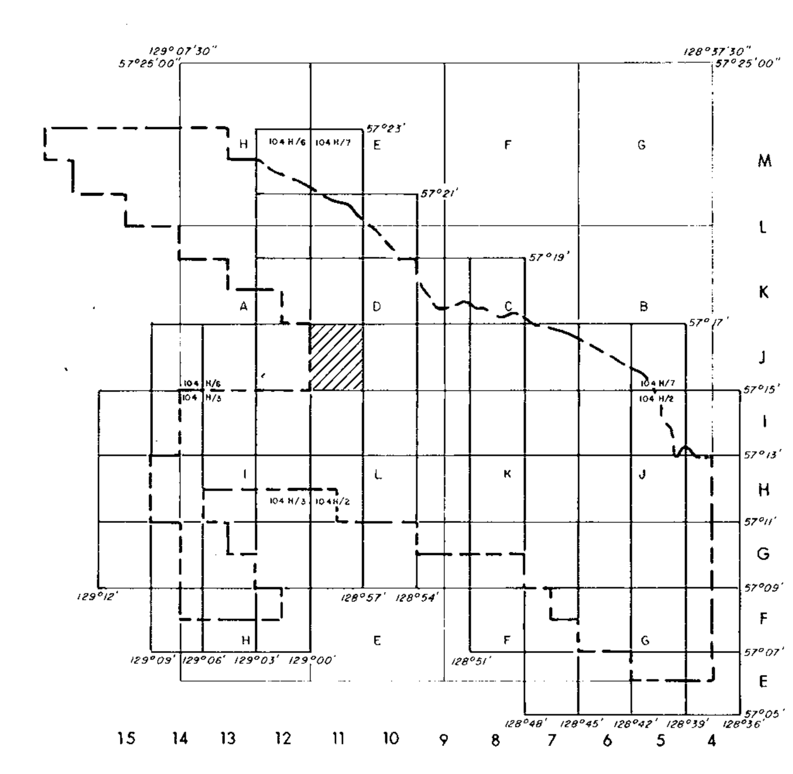
RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY
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)



MT. KLAPPAN AREA

INDEX MAP



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

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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GR. - Mt. Klappan 84(2) A

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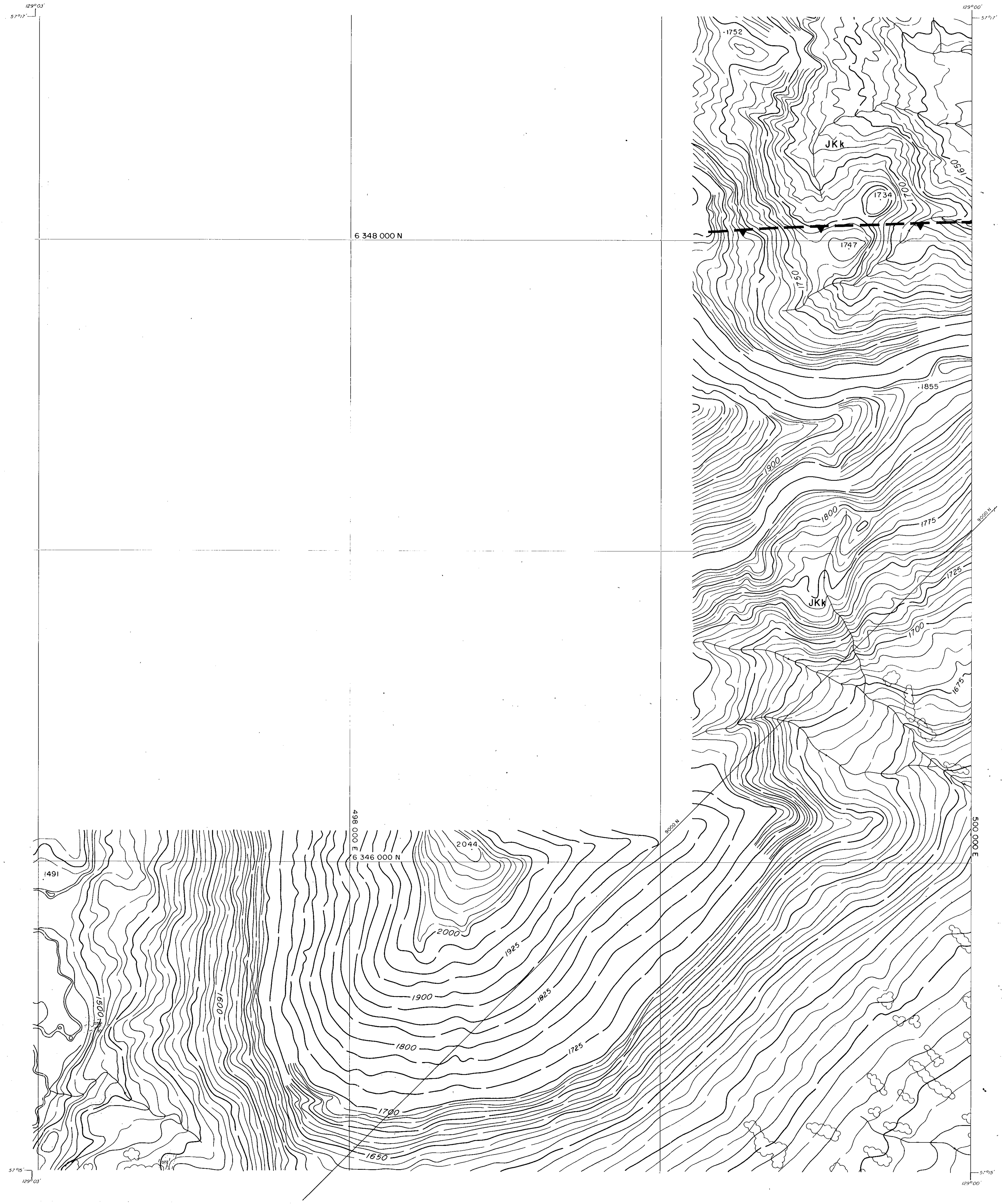
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP J-11

710

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-22



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 — 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)

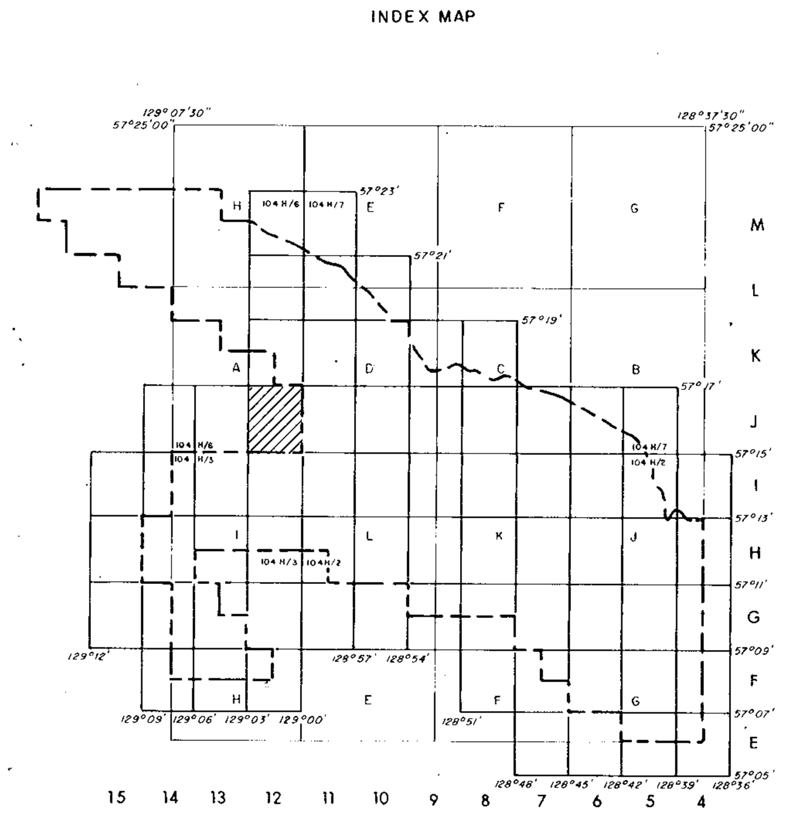
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

GR.- Mt. Klappan 84(2) A

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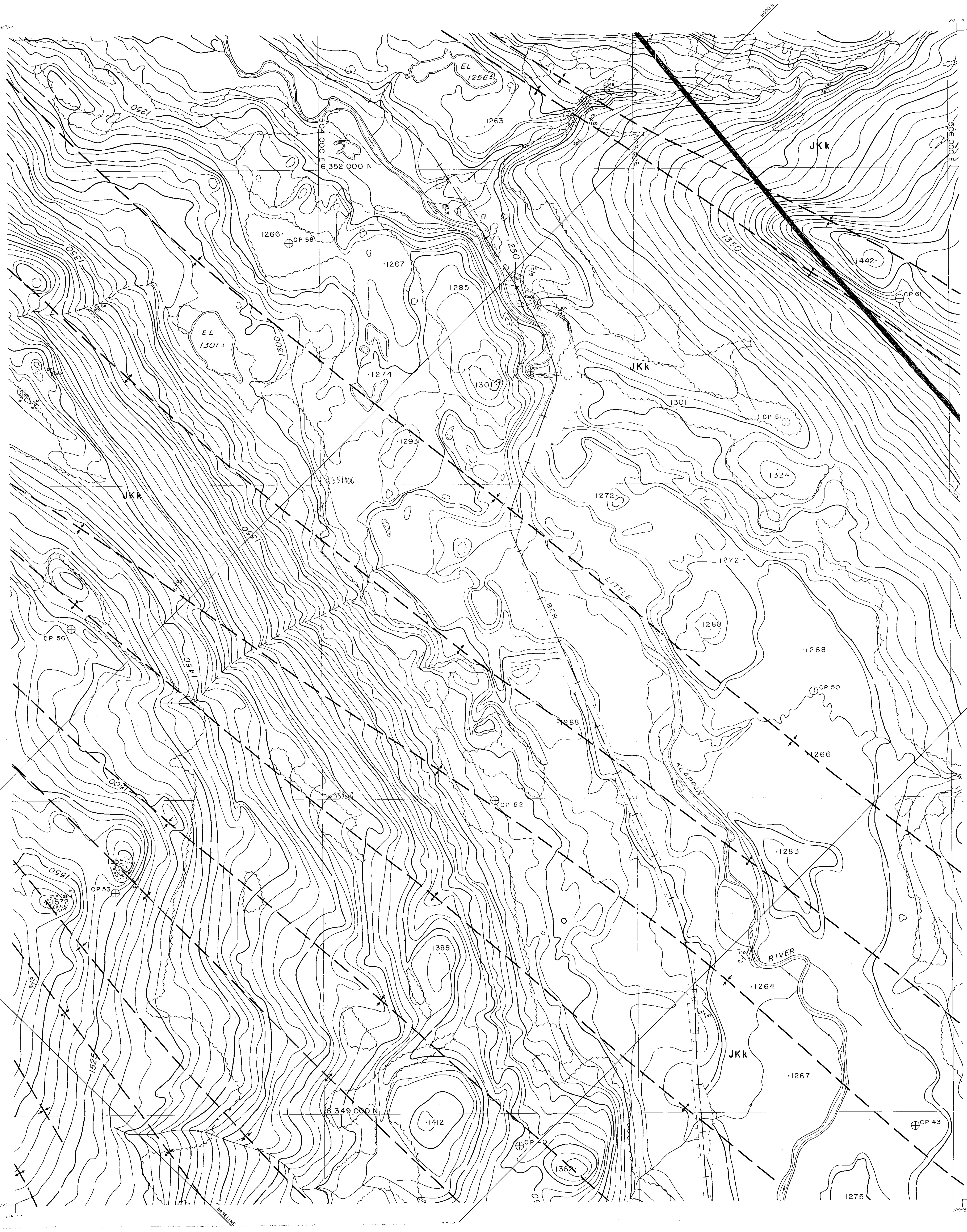
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP J-12

710

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-23



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
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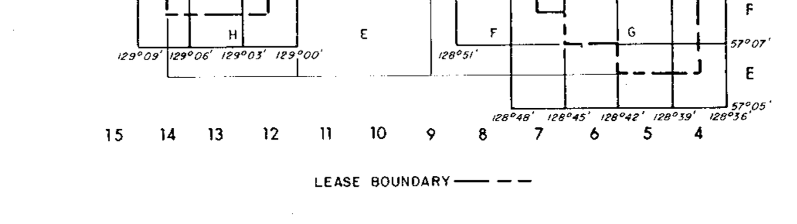
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

GR.- Mt. Klappan 84(2) A

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GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

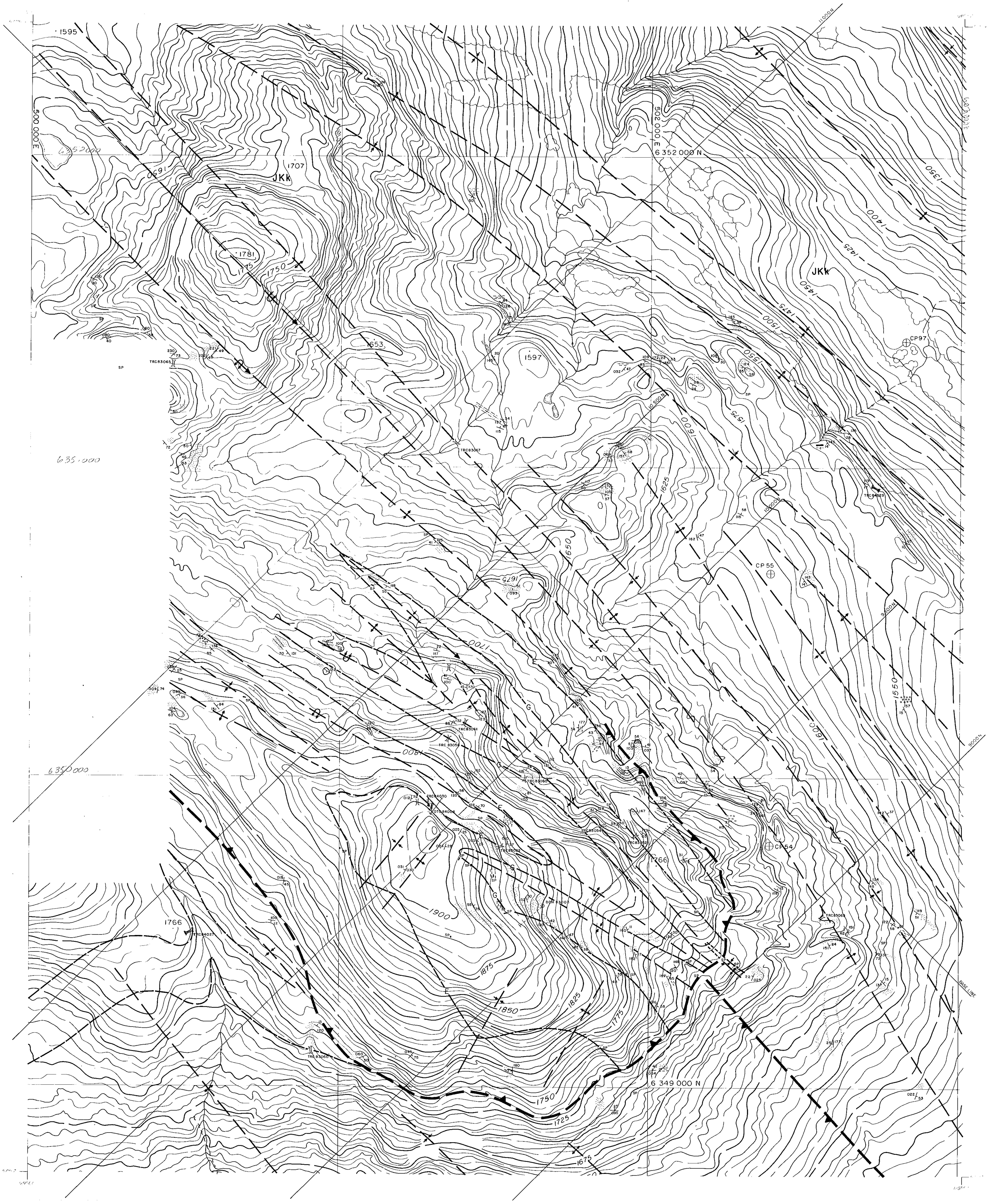
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP K-10

710

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-24

(5) BP



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
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N

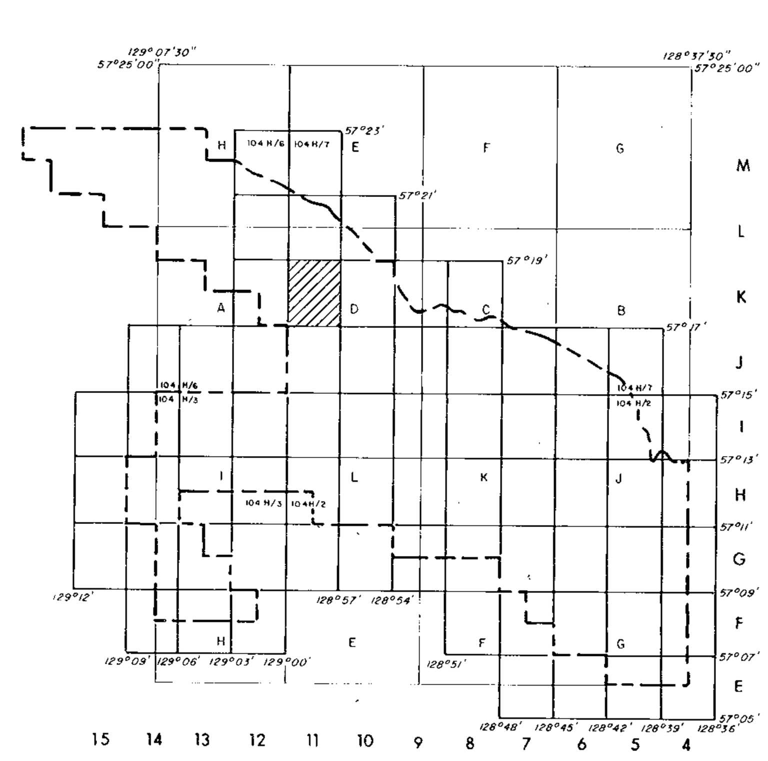
SCALE 1:5000

0 — 0.25 — 0.5 MILES

50 — 0 — 100 — 200 — 300 — 400 — 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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OTC 84001 — MEASURED SECTION
SC-17 — SURVEY CAIRN
3000 N — CROSS SECTION LINE

GR. - Mt. Klappan 84(2) A

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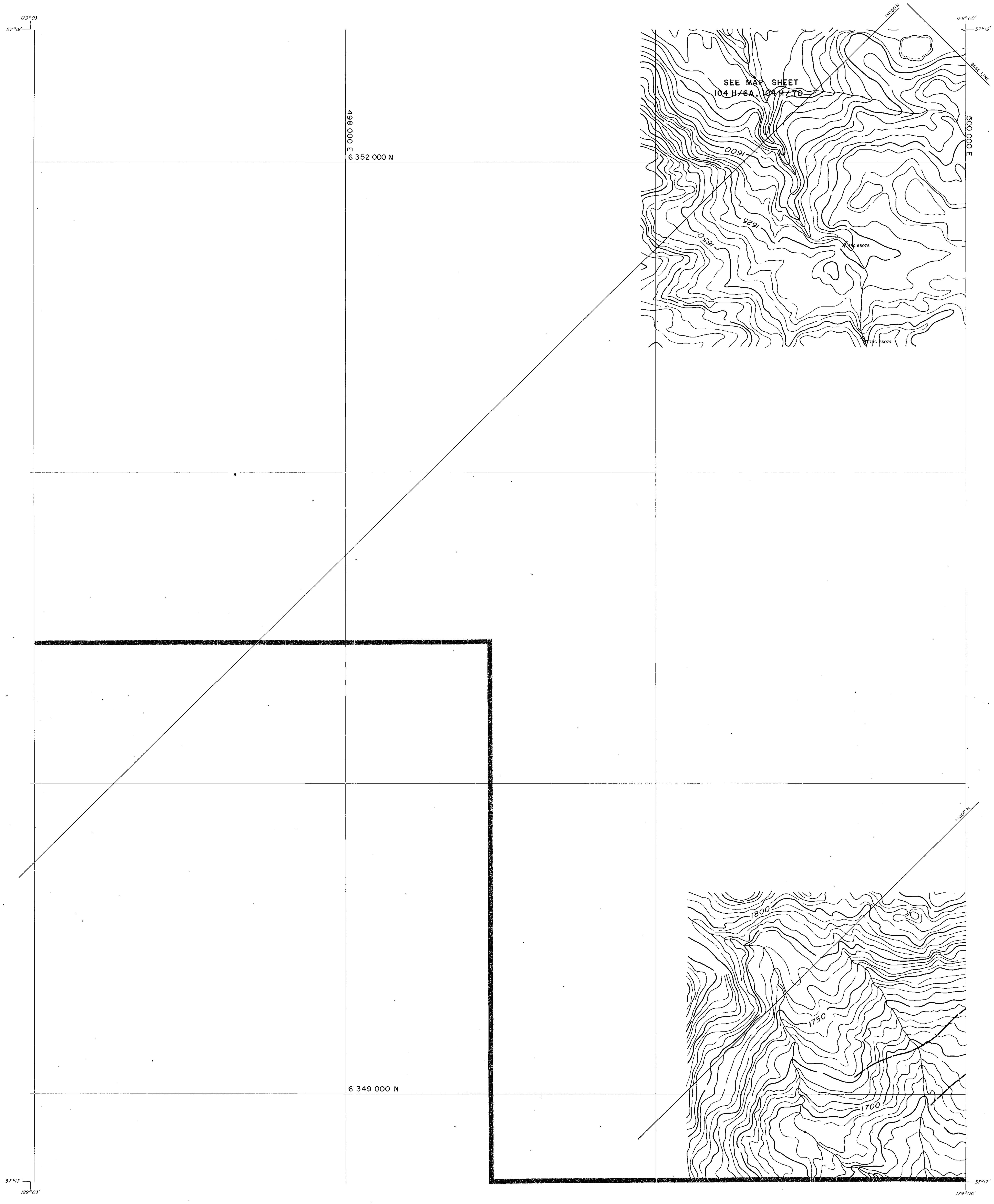
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP K-11

710

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-25

(6) BP



LEGEND

- BUILDING
- ROAD, HARD SURFACE
  - LOOSE SURFACE
  - CART TRACK
  - TRAIL
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
  - APPROXIMATE
  - SPLIT
- LAKE
- WATER LEVEL
- SWAMP
- BEAVER DAM
- TREE LINE
- CUT LINE
- CONTOURS, INDEX
  - INTERMEDIATE
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NOTES

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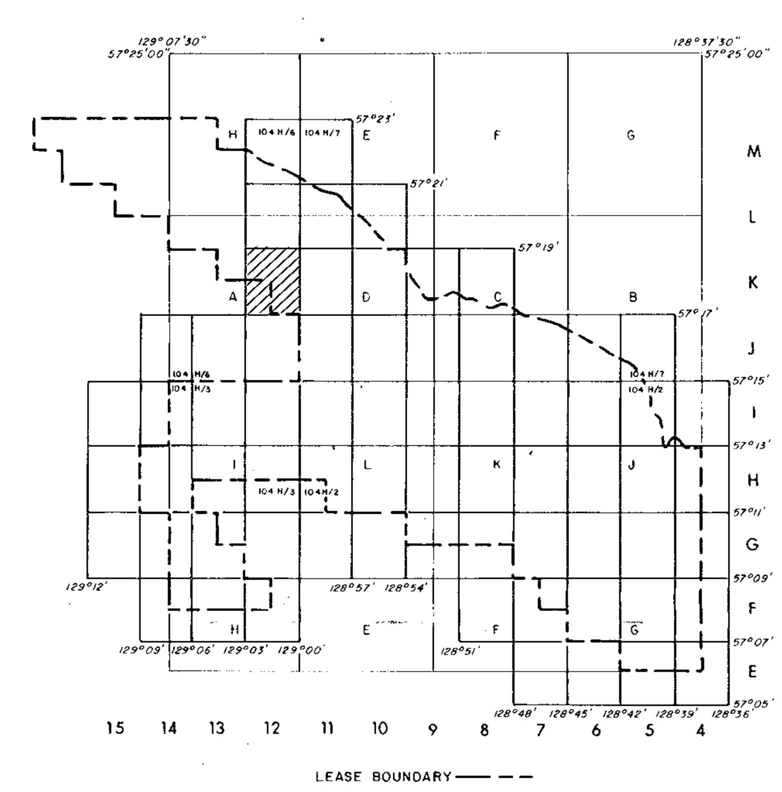
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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- SC-17 — SURVEY CAIRN
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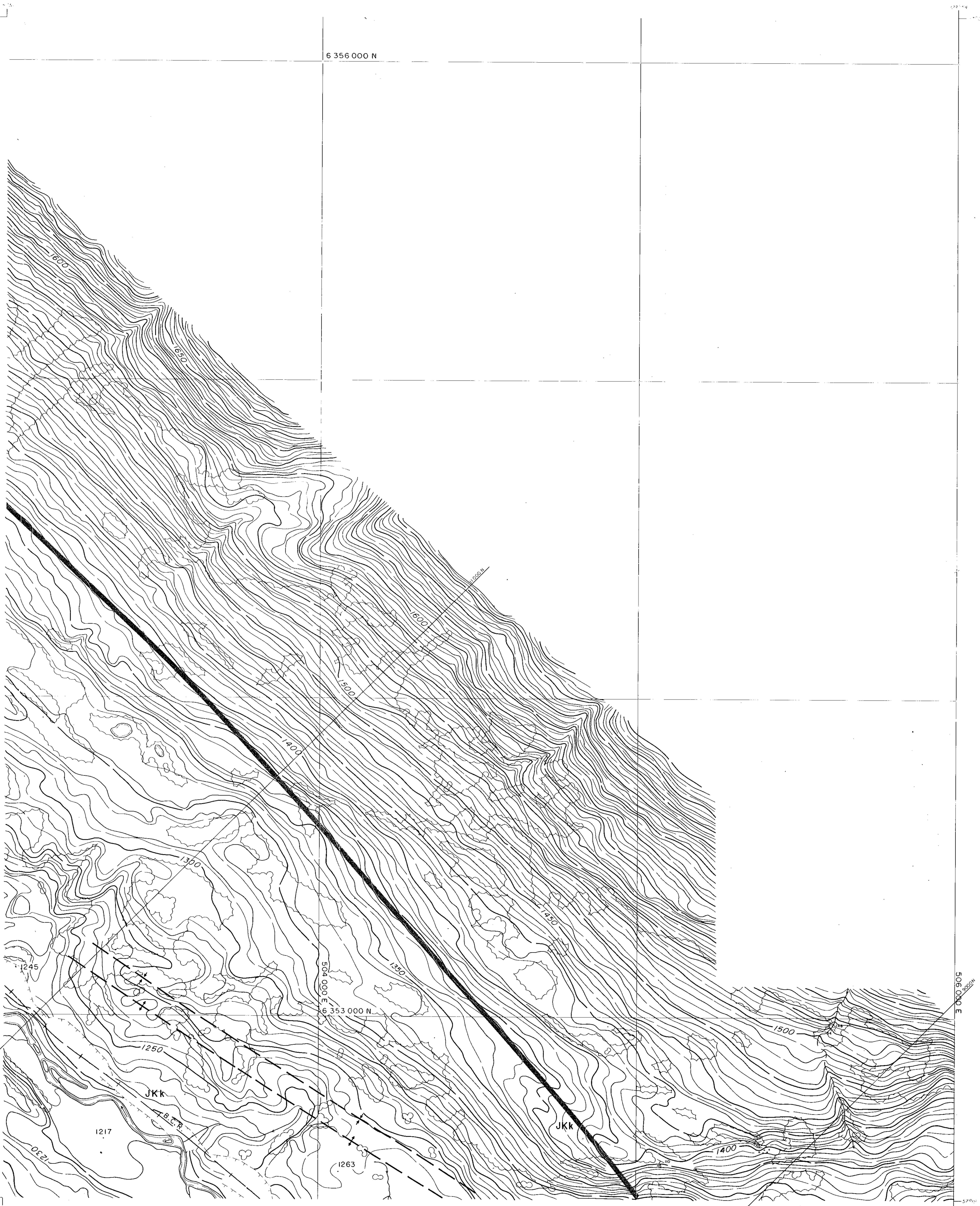
GR. - Mt. Klappan 84(2) A

~~695~~

GULF CANADA RESOURCES INC. Coal Division — CALGARY, ALBERTA		Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP SUMMIT AREA MAP K-12		
PREPARED BY: S.M.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84SU-26

710

(7) BP



LEGEND

BUILDING	
ROAD, HARD SURFACE	
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CART TRACK	
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RAILROAD BED	
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MT. KLAPPAN AREA

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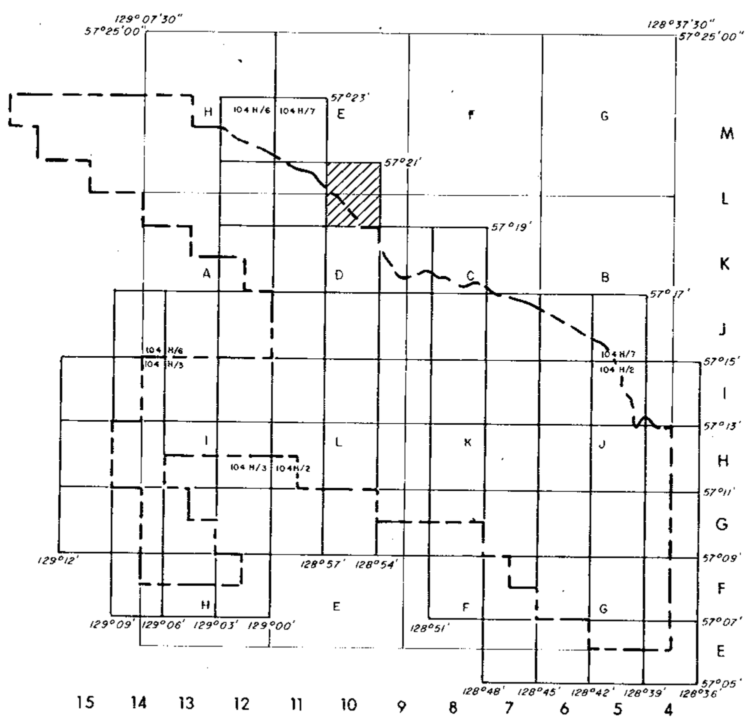

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LEGEND

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

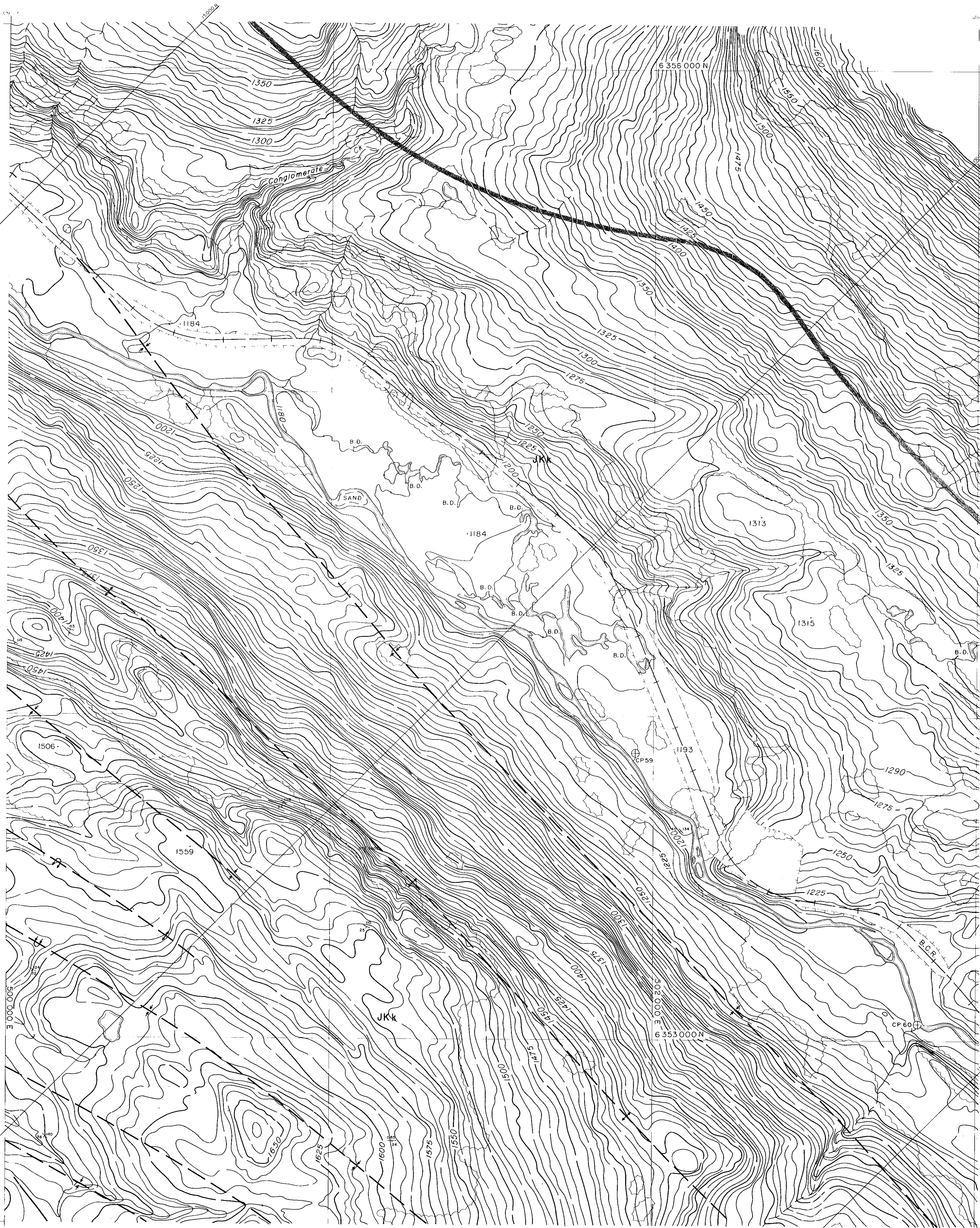
GR - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP L-10

710

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-27



LEGEND

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

NOTES

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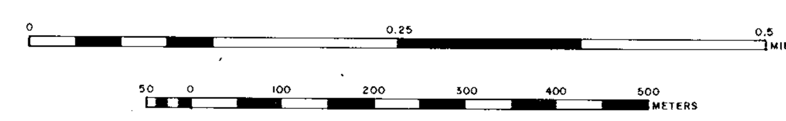
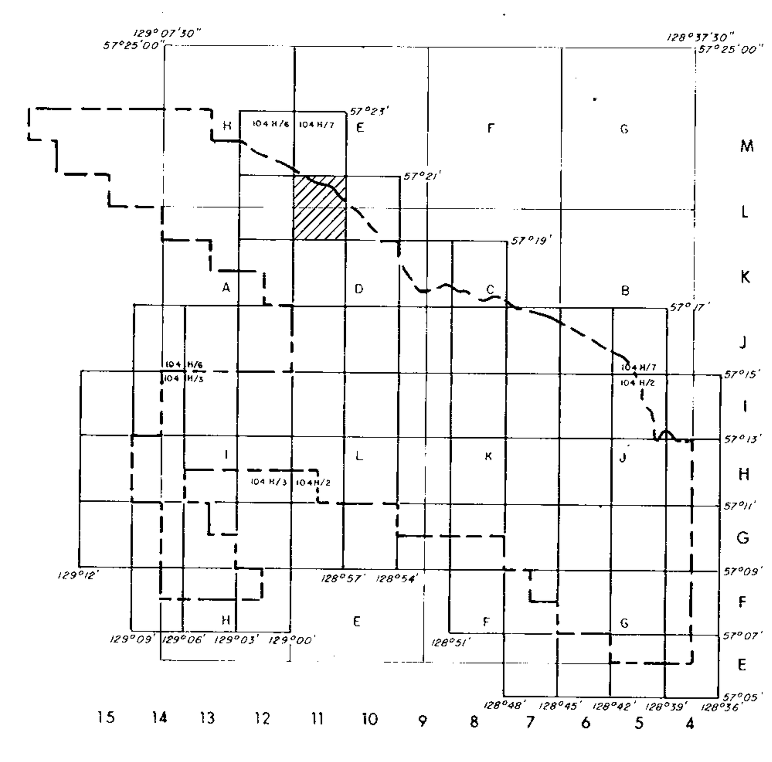
COMPILED BY
WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD McLELLAN LTD., FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/67 AT A SCALE OF 1:60 000 (APPROXIMATE)

SCALE 1:5000



MT. KLAPPAN AREA

INDEX MAP



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

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DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
MEASURED SECTION
SURVEY CAIRN
CROSS SECTION LINE

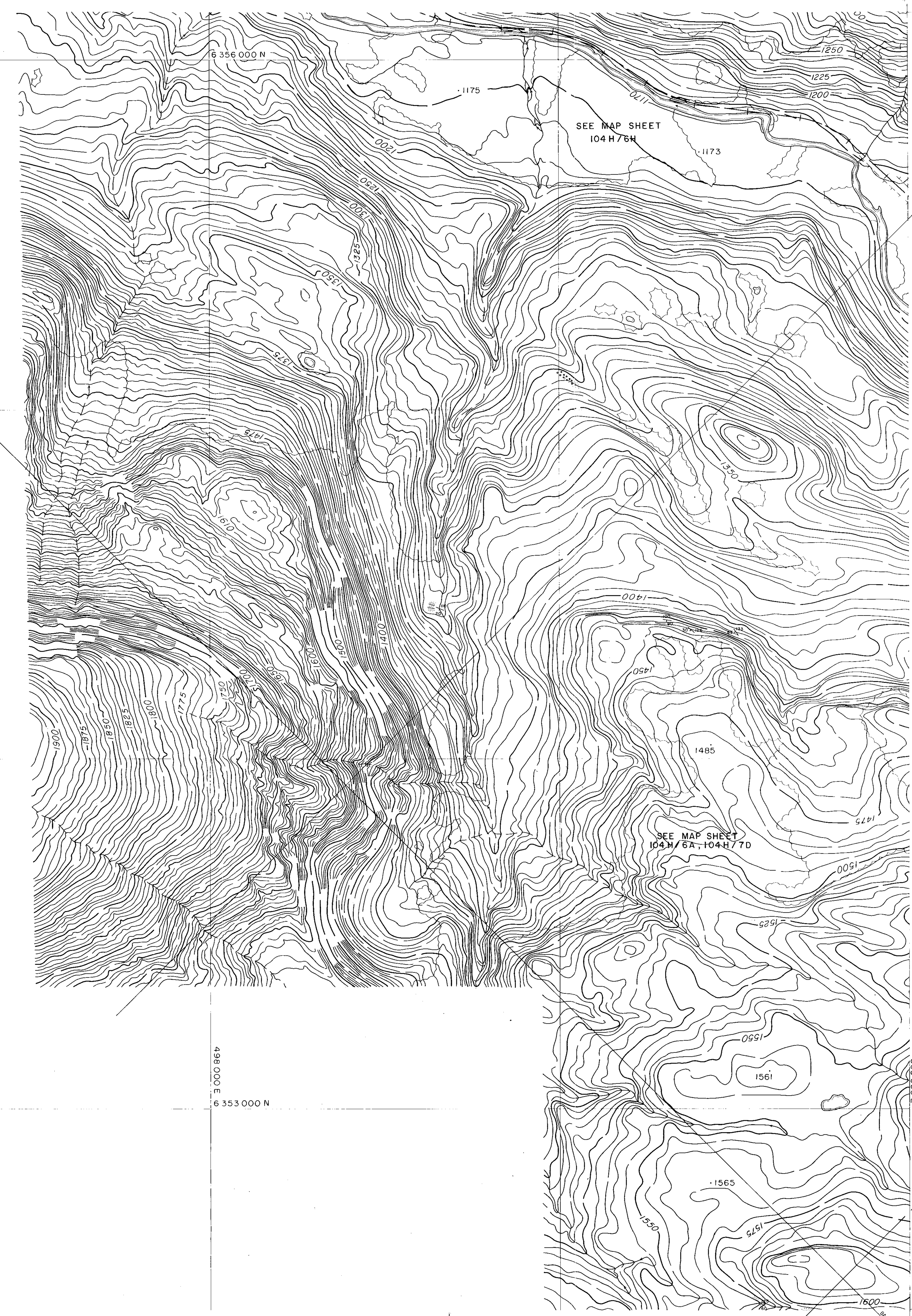
G.R. - Mt. Klappan 84 (2) A ~~675~~

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP L-11

710

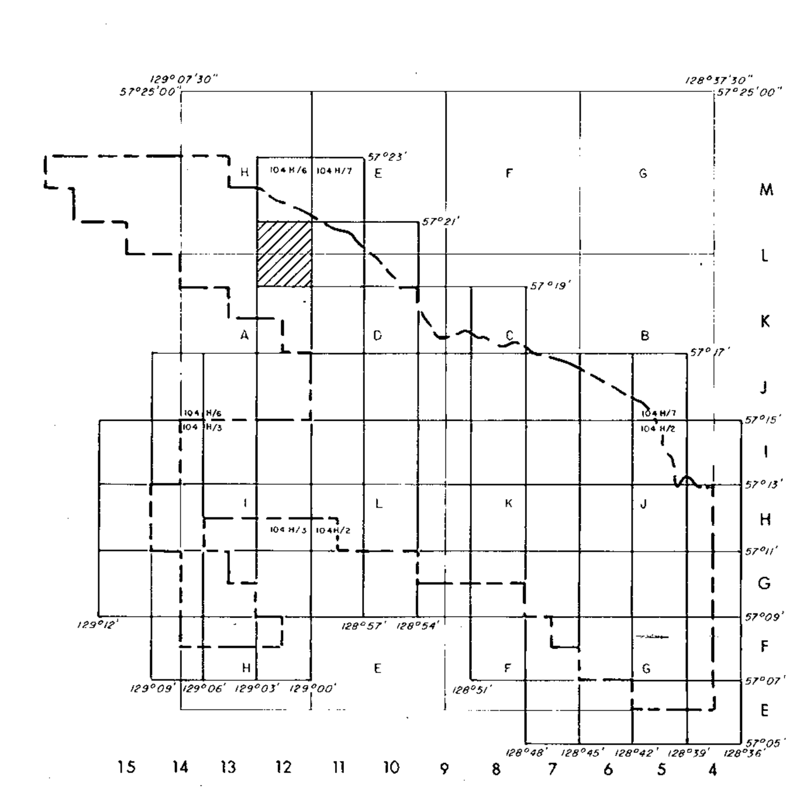
PREPARED BY: S.M.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84SU-28



SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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GR. - Mt. Klappan 84 (2) A

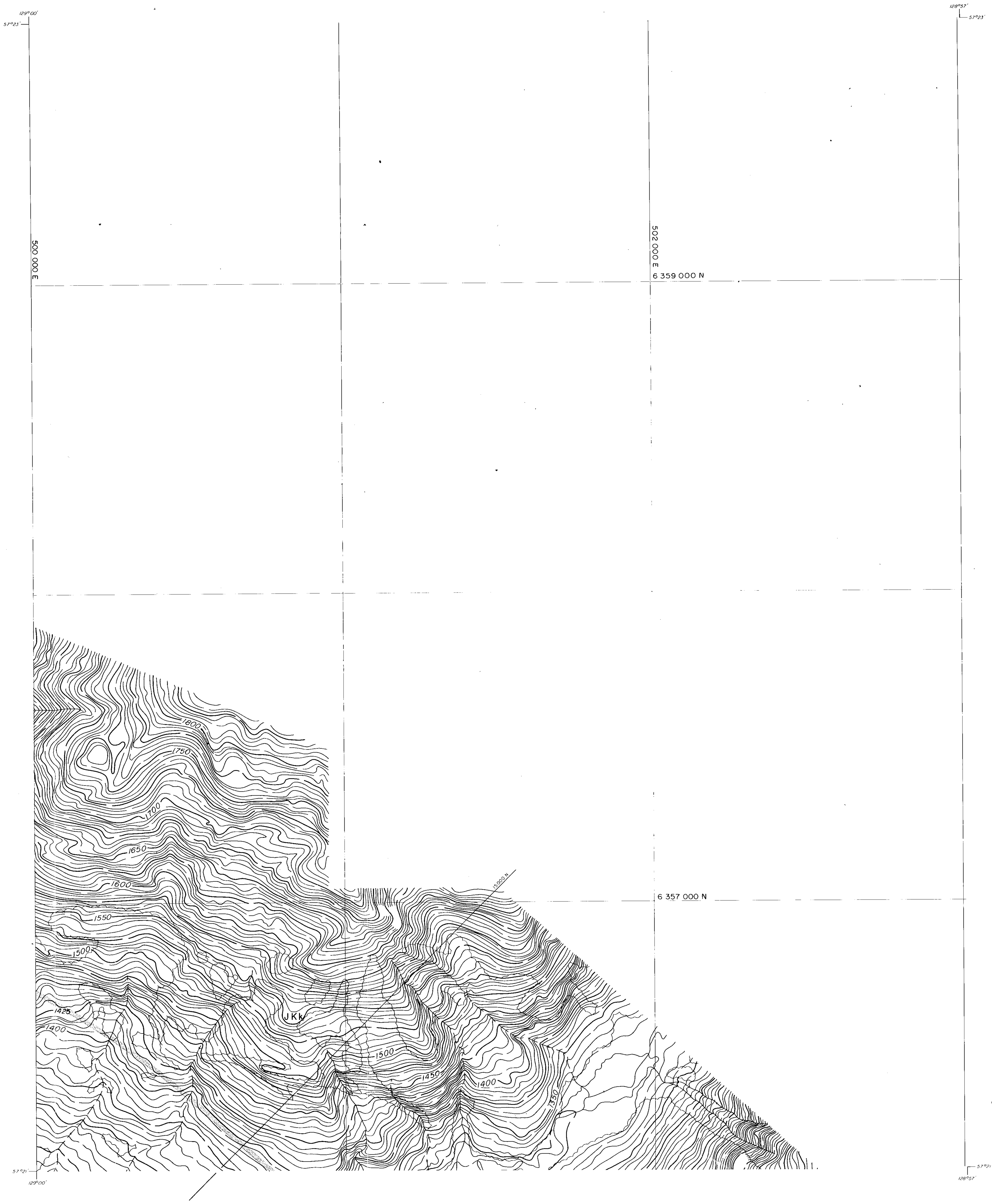
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP L-12

710

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-29

(10)



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
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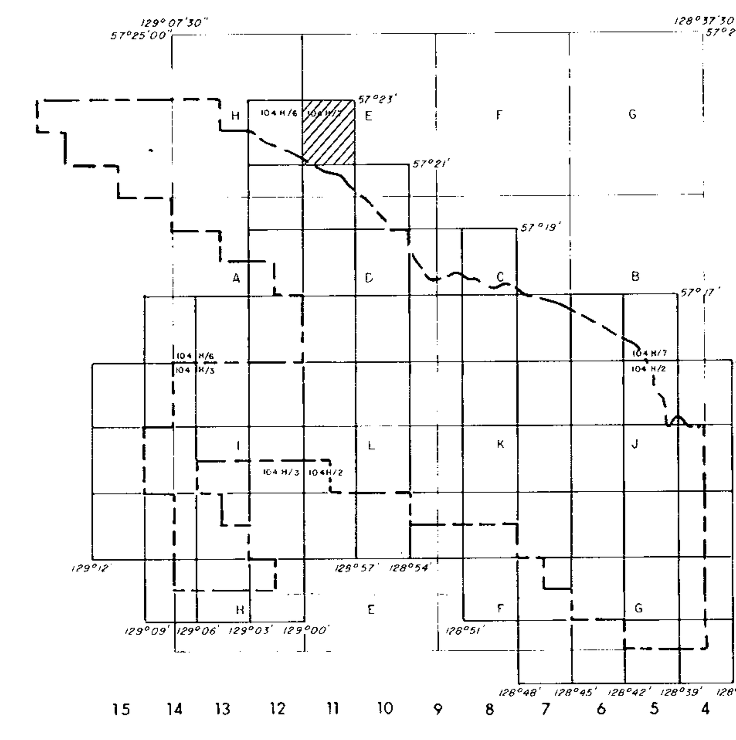
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



LEASE BOUNDARY

LEGEND

LICENCE BOUNDARY
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FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
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MEASURED SECTION
SURVEY CAIRN
CROSS SECTION LINE

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GR.- Mt. Klappan 84(2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

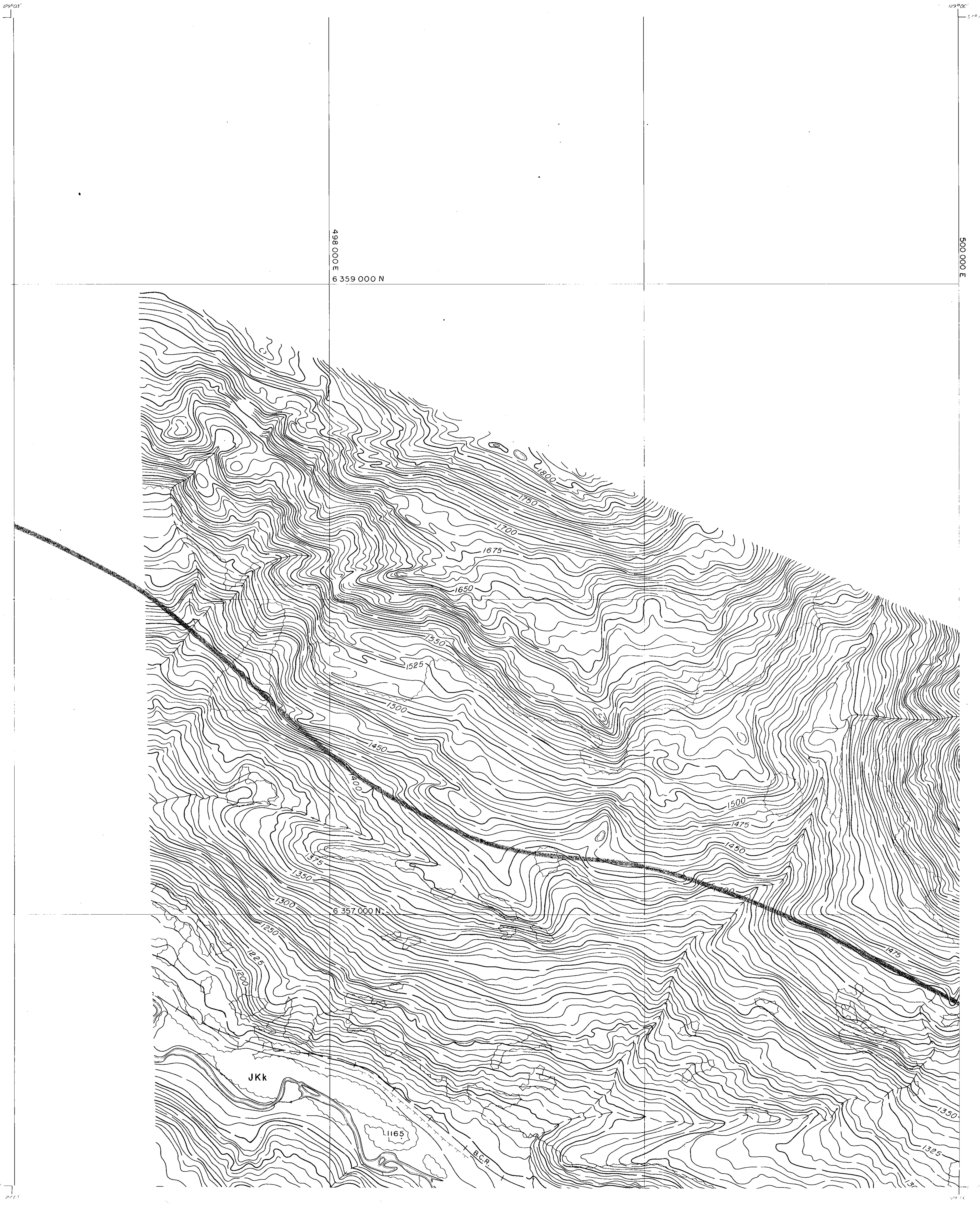
Gulf

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
SUMMIT AREA
MAP M-11

710

PREPARED BY: S.M.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DWG. No. KPN84SU-30

(11) BP



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL
SWAMP
BEAVER DAM
TREE LINE
CUT LINE
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INTERMEDIATE
DEPRESSION
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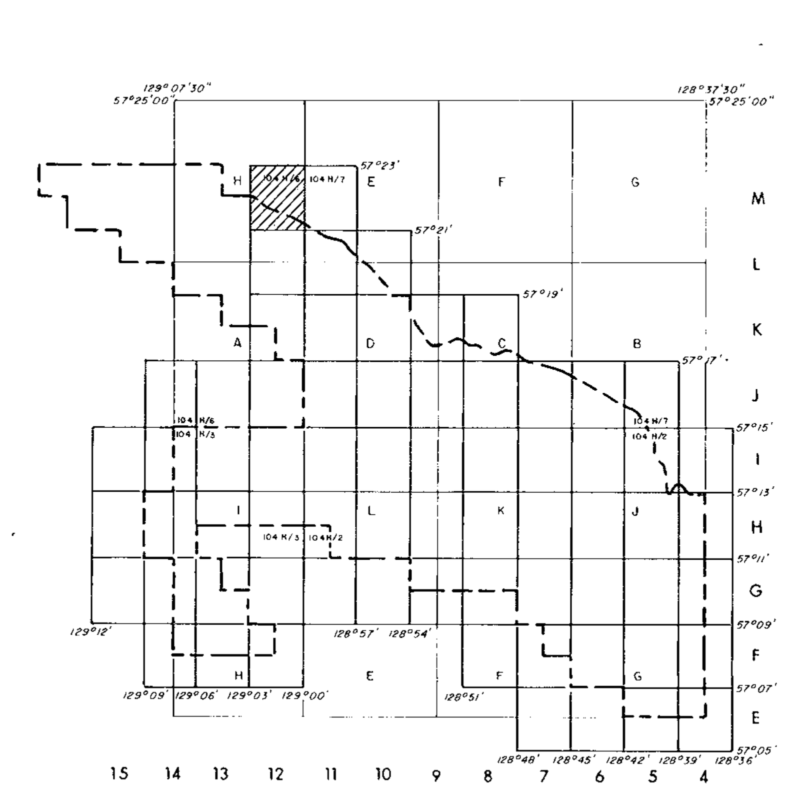
SCALE 1:5000

MT. KLAPPAN AREA

INDEX MAP



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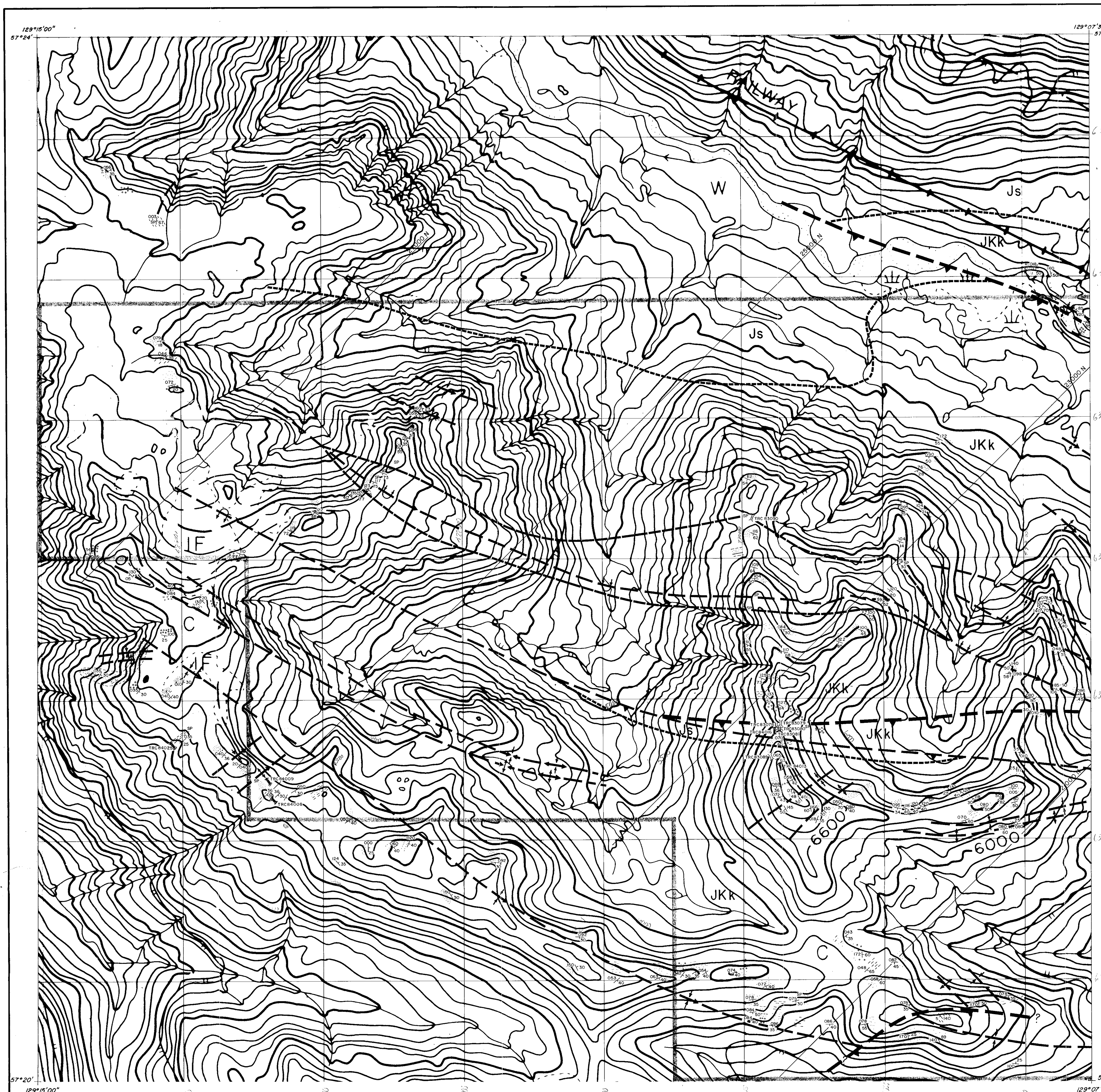
TRC84001 SP ADIT TRENCH COAL SPOIL
DDH RDH WKD DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION)
OTC 84001 MEASURED SECTION
SC-17 SURVEY CAIRN
3000 N CROSS SECTION LINE

GR. - Mt. Klappan 84(2) A
695

GULF CANADA RESOURCES INC. Coal Division CALGARY ALBERTA	Gulf
MT. KLAPPAN COAL PROPERTY 1984 GEOLOGY MAP SUMMIT AREA MAP M-12	
PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DWG. No. KPN84SU-31

710



LEGEND

ROADS AND RELATED FEATURES

HARD SURFACE, ALL WEATHER
LOOSE SURFACE
CART TRACK, WINTER ROAD, UNDER CONSTRUCTION
TRAIL, CUTLINE, PORTAGE
BUILT UP AREA
RAILWAY, SIDING, STATION, STOP
BRIDGE
SEAPLANE BASE, ANCHORAGE

LANDMARK FEATURES

HOUSE, BARN
CHURCH, SCHOOL
POST OFFICE
HISTORICAL SITE
TOWERS, FIRE, RADIO
WELL, OIL, GAS
TANK, OIL, GASOLINE, WATER
TELEPHONE LINE
POWER TRANSMISSION LINE
MINE
CUTTING, EMBANKMENT
GRAVEL PIT

BOUNDARIES AND CONTROL

INTERNATIONAL, PROVINCIAL, BOUNDARY MONUMENT
COUNTY, DISTRICT
TOWNSHIP, PARISH – SURVEYED – UNSURVEYED
TOWNSHIP, DLS – SURVEYED – UNSURVEYED – SECTION CORNERS
MUNICIPALITY
INDIAN RESERVE, PARK, ETC
HORIZONTAL CONTROL POINT
BENCH MARK
SPOT ELEVATION, ELEVATION APPROXIMATE

DRAINAGE AND RELATED FEATURES

STREAM, SHORELINE, INDEFINITE
DIRECTION OF FLOW
LAKE, INTERMITTENT
INUNDATED, FLOODED LAND
MARSH OR SWAMP (WOODED)
DRY RIVER BED WITH CHANNELS
SAND, ABOVE, IN WATER
STRING BOG
TUNDRA PONDS, POLYGONS
RAPIDS
FORESHORE FLATS
ROCK
DAM
WHARF
DITCH

RELIEF FEATURES

CONTOURS
APPROXIMATE CONTOUR
DEPRESSION
ESKER
PINGO
SAND, SAND DUNES
PALSA BOG
WOODED AREA

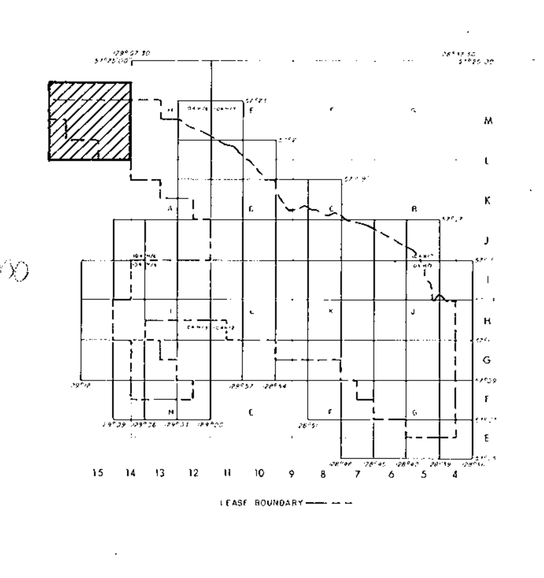
0 1/8 1/4 1/2 3/4 MILE

0 100 200 400 600 800 1000 METERS

SCALE : 1:10,000

MT. KLAPPAN AREA

INDEX MAP



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MEASURED SECTION
SURVEY CAIRN
CROSS SECTION LINE

GR. – Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY

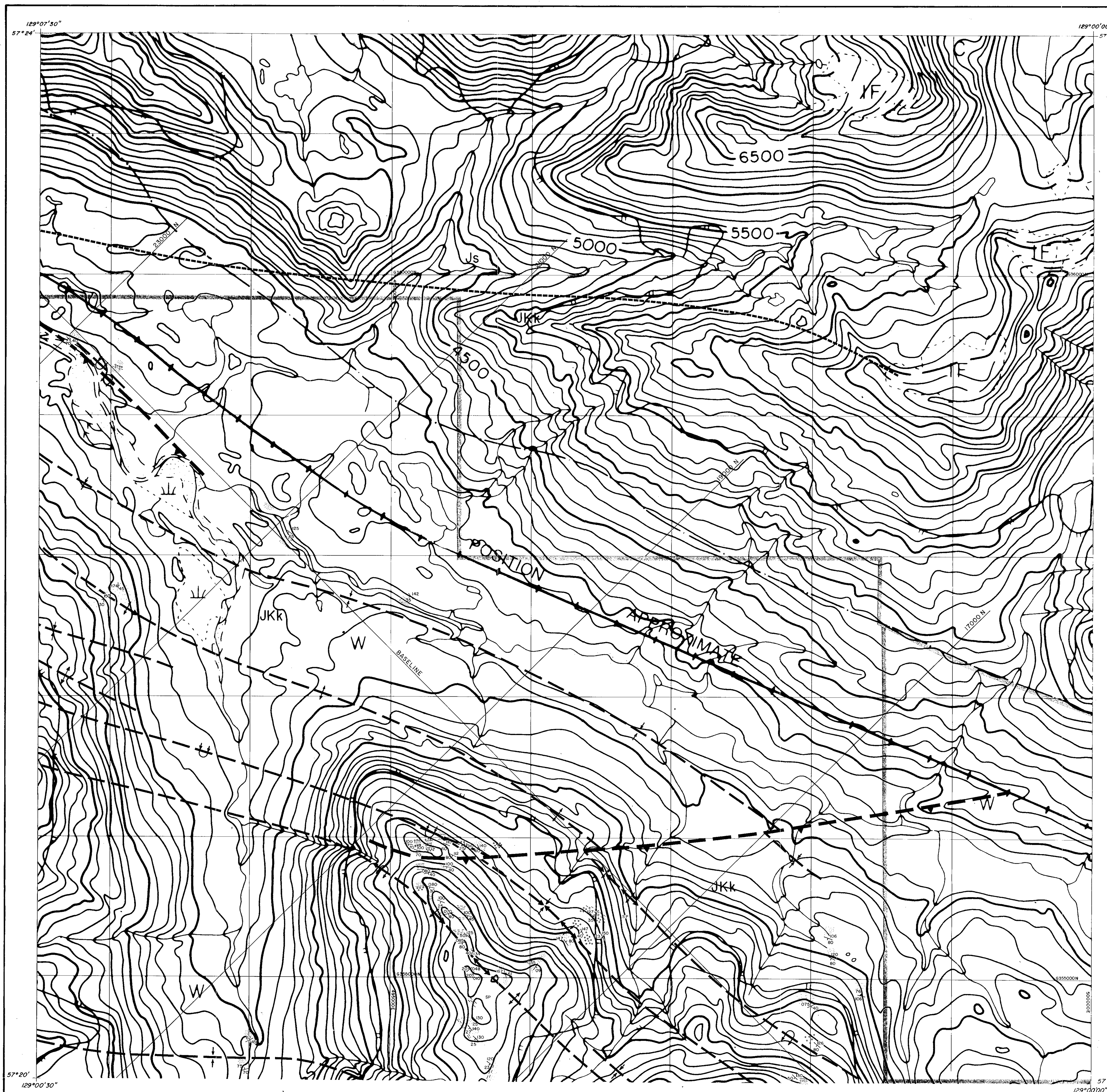
MAP SHEET 104 H/6 G

SUMMIT NORTH

GEOLOGY

710

PREPARED BY: S.M.	DRAWING No.
APPROVED BY: F.S. DATE: JAN., 1985	KPN84SU-41



LEGEND

ROADS AND RELATED FEATURES
- HARD SURFACE ALL WEATHER
- LOOSE SURFACE
- CART TRACK WINTER ROAD UNDER CONSTRUCTION
- TRAIL CUTLINE PORTAGE
- BUILT UP AREA
- RAILWAY SIDING STATION STOP
- BRIDGE
- SEAPLANE BASE ANCHORAGE

LANDMARK FEATURES
- HOUSE BARN
- CHURCH SCHOOL
- POST OFFICE
- HISTORICAL SITE
- TOWERS FIRE RADIO
- WELL OIL GAS
- TANK OIL GASOLINE WATER
- TELEPHONE LINE
- POWER TRANSMISSION LINE
- MINE
- CUTTING EMBANKMENT
- GRAVEL PIT

BOUNDARIES AND CONTROL
- INTERNATIONAL PROVINCIAL BOUNDARY MONUMENT
- COUNTY DISTRICT
- TOWNSHIP PARISH – SURVEYED – UNSURVEYED
- TOWNSHIP DLS – SURVEYED – UNSURVEYED – SECTION CORNERS
- MUNICIPALITY
- INDIAN RESERVE PARK ETC
- HORIZONTAL CONTROL POINT
- BENCH MARK
- SPOT ELEVATION ELEVATION APPROXIMATE

DRAINAGE AND RELATED FEATURES
- STREAM SHORELINE INDEFINITE
- DIRECTION OF FLOW
- LAKE INTERMITTENT
- INUNDATED FLOODED LAND
- MARSH OR SWAMP (WOODED)
- DRY RIVER BED WITH CHANNELS
- SAND ABOVE IN WATER
- STRING BOG
- TUNDRA PONDS POLYGONS
- RAPIDS
- FORESHORE FLATS
- ROCK
- DAM
- WHARF
- DITCH

RELIEF FEATURES
- CONTOURS
- APPROXIMATE CONTOUR
- DEPRESSION
- ESKER
- PINGO
- SAND SAND DUNES
- PALSA BOG
- WOODED AREA

0 1/8 1/4 1/2 3/4 MILE

0 100 200 400 600 800 1000 METERS

SCALE 1:10,000

MT. KLAPPAN AREA

INDEX MAP

LEASE BOUNDARY

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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 (TRC84001, SP)
- DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION) (DDH, RDH, WXD)
- MEASURED SECTION (OTC 84001)
- SURVEY CAIRN
- CROSS SECTION LINE (3000 N)

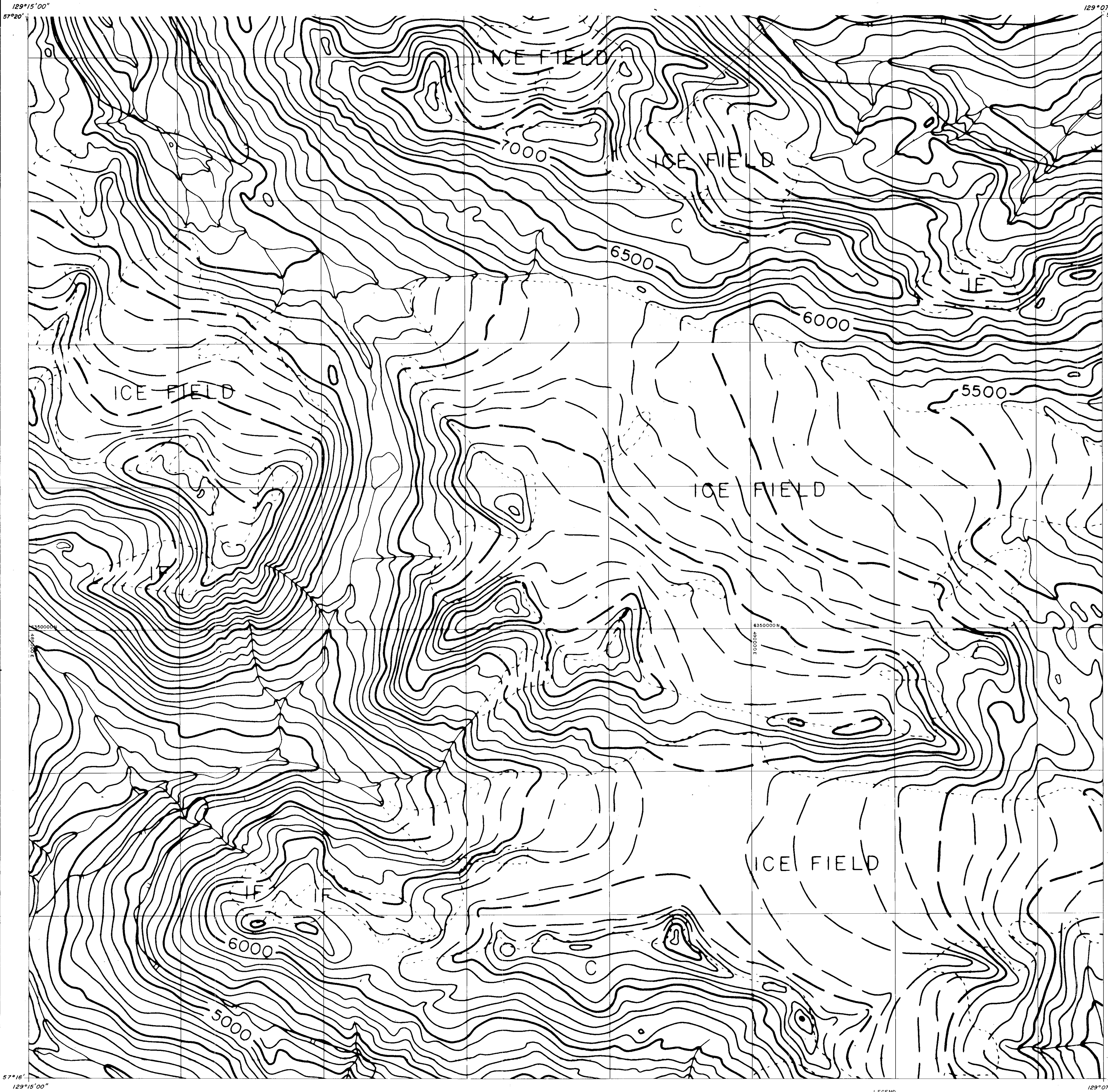
GR. – Mt. Klappan 84(2) A [redacted]

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MOUNT KLAPPAN COAL PROPERTY
MAP SHEET 104H/6H
SUMMIT NORTH
710
GEOLOGY

PREPARED BY: S.M.	DRAWING No.
APPROVED BY: F.S. DATE: JAN., 1985	KPN84SU-42

(14) BP



LEGEND

ROADS AND RELATED FEATURES

HARD SURFACE, ALL WEATHER
LOOSE SURFACE
CART TRACK, WINTER ROAD, UNDER CONSTRUCTION
TRAIL, CUTLINE, PORTAGE
BUILT UP AREA
RAILWAY, SIDING, STATION, STOP
BRIDGE
SEAPLANE BASE, ANCHORAGE

LANDMARK FEATURES

HOUSE, BARN
CHURCH, SCHOOL
POST OFFICE
HISTORICAL SITE
TOWERS, FIRE, RADIO
WELL, OIL, GAS
TANK, OIL, GASOLINE, WATER
TELEPHONE LINE
POWER TRANSMISSION LINE
MINE
CUTTING, EMBANKMENT
GRAVEL PIT — GP

BOUNDARIES AND CONTROL

INTERNATIONAL, PROVINCIAL, BOUNDARY MONUMENT
COUNTY, DISTRICT
TOWNSHIP, PARISH – SURVEYED – UNSURVEYED — UNSURVEYED
TOWNSHIP, DLS – SURVEYED – UNSURVEYED – SECTION CORNERS
MUNICIPALITY
INDIAN RESERVE, PARK, ETC
HORIZONTAL CONTROL POINT
BENCH MARK — BM 965
SPOT ELEVATION, ELEVATION APPROXIMATE — ·390 ·721

DRAINAGE AND RELATED FEATURES

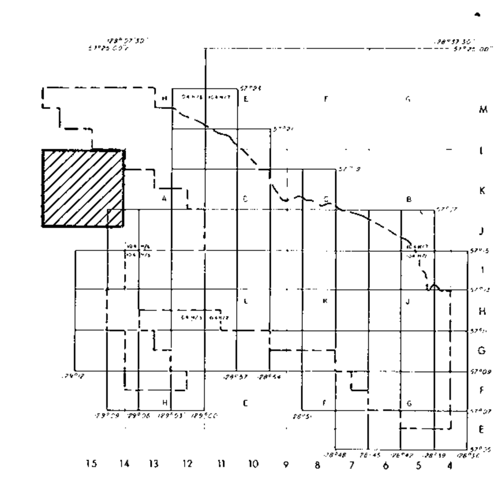
STREAM, SHORELINE, INDEFINITE
DIRECTION OF FLOW
LAKE, INTERMITTENT
INUNDATED, FLOODED LAND
MARSH OR SWAMP (WOODED)
DRY RIVER BED WITH CHANNELS
SAND, ABOVE, IN WATER
STRING BOG — SB
TUNDRA PONDS, POLYGONS — TP PG
RAPIDS
FORESHORE FLATS — FF
ROCK
DAM
WHARF
DITCH

RELIEF FEATURES

CONTOURS — 500 350
APPROXIMATE CONTOUR — 125 100
DEPRESSION — 25
ESKER
PINGO — 125
SAND, SAND DUNES — SAND
PALSA BOG — PB
WOODED AREA — W C

0 1/8 1/4 1/2 3/4 MILE
0 100 200 400 600 800 1000 METERS
SCALE : 1:10,000

MT. KLAPPAN AREA
INDEX MAP



RHONDDA SEQUENCE

JKr	Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk	Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js	Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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 — U D
FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
ADIT — TRENCH (TRC84001) — COAL SPOIL (SP)
DIAMOND, ROTARY, WINKIE DRILL HOLE (VERTICAL, INCLINED WITH SURFACE PROJECTION) — DDH RDH WKD
MEASURED SECTION — OTC 84001
SURVEY CAIRN — SC-7
CROSS SECTION LINE — 3000 N

GR. - Mt. Klappan 84(2) A

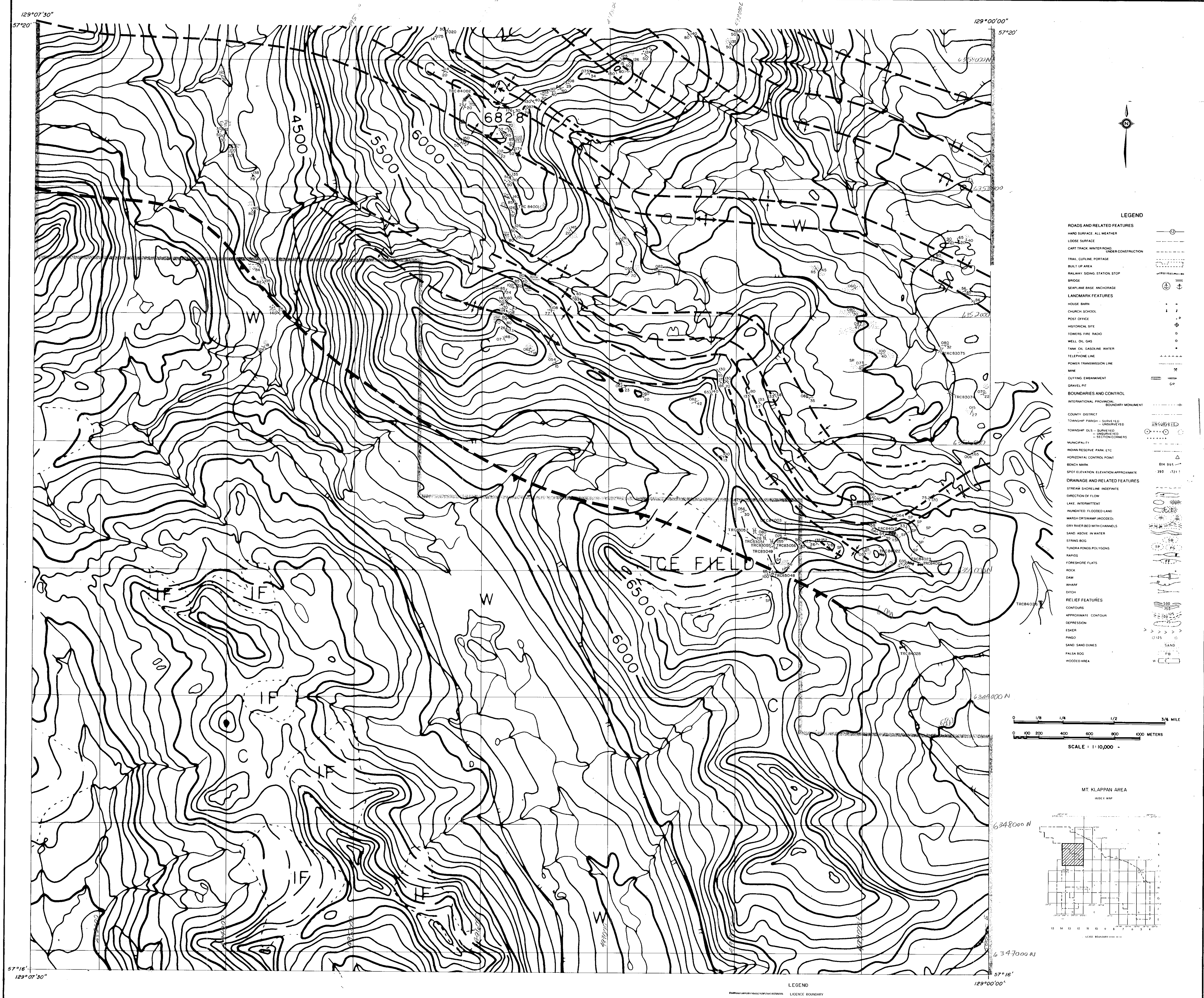
~~675~~

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA
Gulf

MOUNT KLAPPAN COAL PROPERTY
MAP SHEET 104 H/6 B
SUMMIT NORTH
GEOLOGY

710

PREPARED BY: S. M.	DRAWING No.
APPROVED BY: F. S. DATE: JAN., 1985	KPN84SU-43



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

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JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

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SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

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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OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
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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

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
MAP SHEET 104 H/6 A 104 H/7D
SUMMIT NORTH
GEOLOGY

710

PREPARED BY: S.M.	DRAWING No.
APPROVED BY: F.S. DATE: JAN., 1985	KPN84SU-44

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX , INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

GR.- Mt. Klappan 84(2) A

~~675~~

710

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
15 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-51

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

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LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/8 — 1/4 MILE
0 — 100 — 200 — 300 — 400 — 500 METERS

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
13 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-52

~~695~~ 710

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

GR- Mt. Klappan 84(2) A

710

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
11 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-53

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.)

BEDDING ATTITUDE

DDH83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

~~695~~
710

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
10 500 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU - 64

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.)

BEDDING ATTITUDE

DDH83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

GR. - Mt. Klappan 84(2) A

~~695~~

710

GULF CANADA RESOURCES INC.

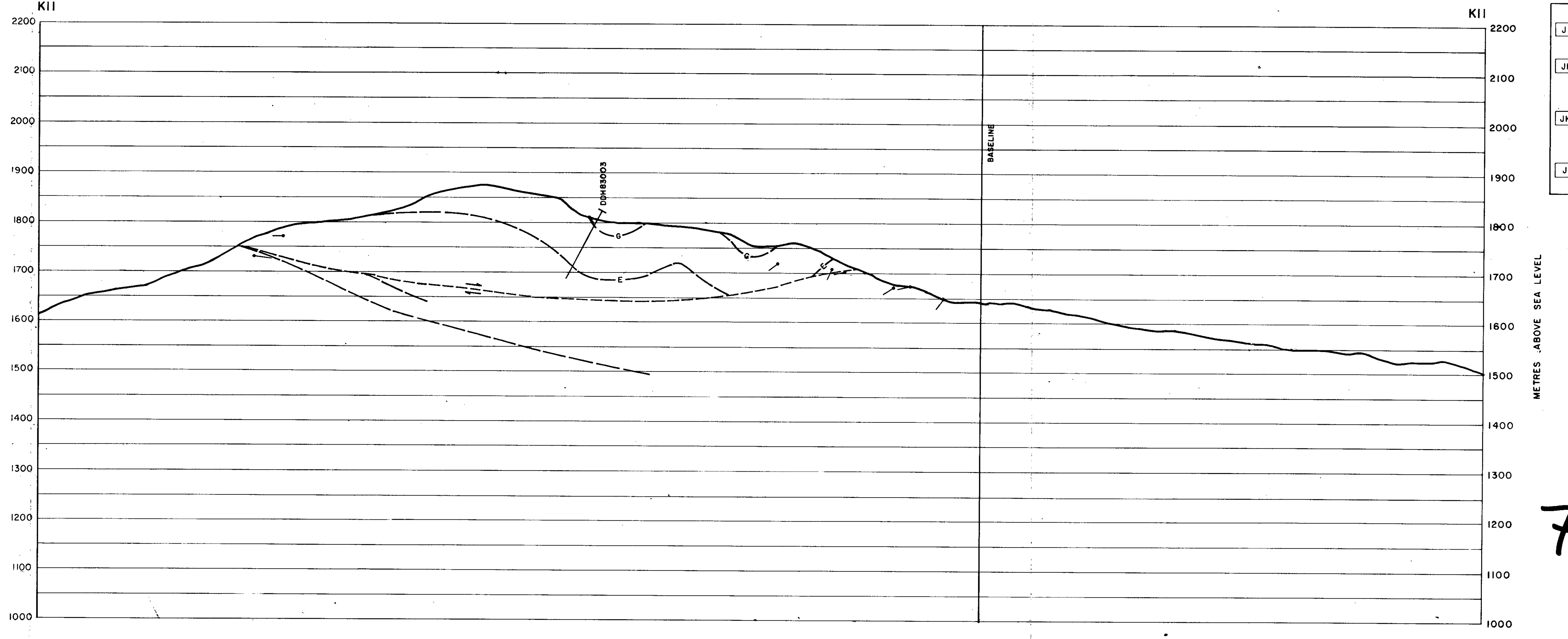
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
10 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-55



RHONDDA SEQUENCE

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MALLOCH SEQUENCE

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.)

BEDDING ATTITUDE

DDH83001 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

710

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
9 500 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-56

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX , INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

~~695~~
710

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

Coal Division

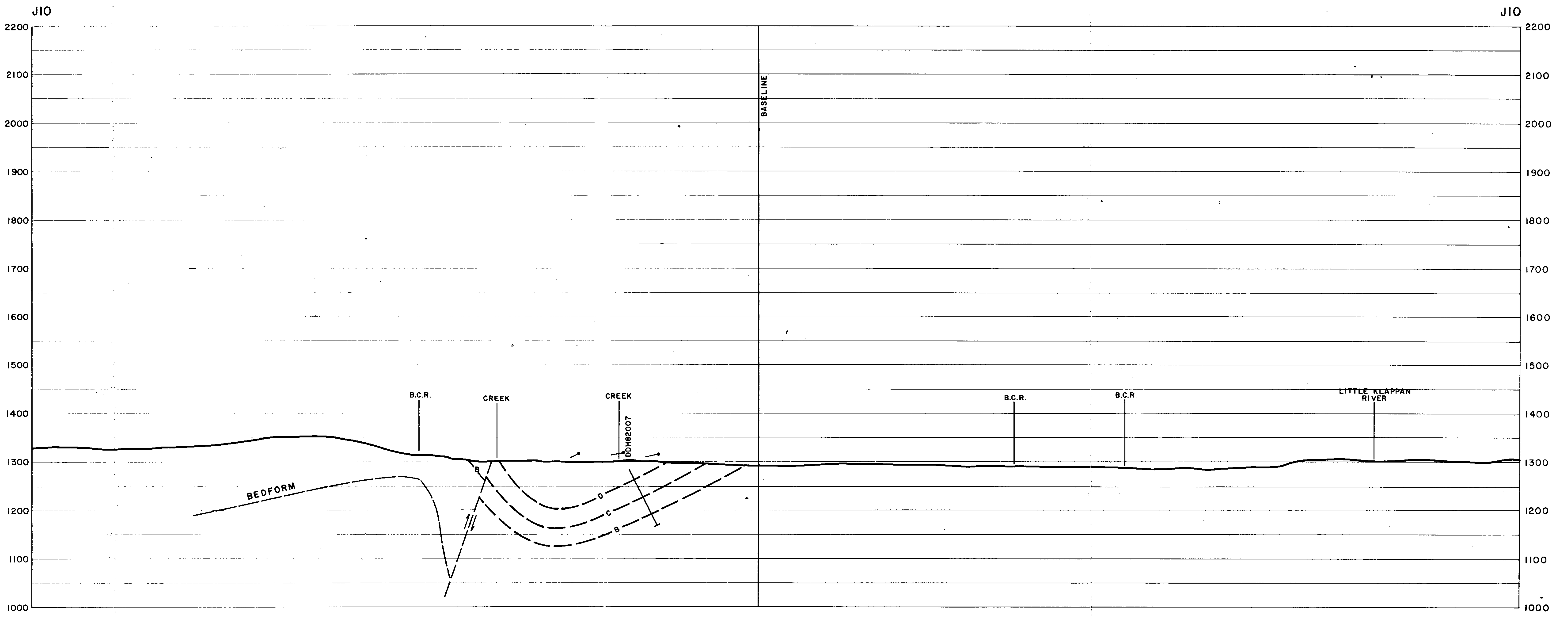
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
9 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-57


J11
J11 J10
J10 K10
K10 K9
CREEK
MINIMAL GEOLOGICAL DATA
LITTLE KLAPPAN RIVER
MAP BOUNDARY
METRES ABOVE SEA LEVEL
RHONDDA SEQUENCE
JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact
MALLOCH SEQUENCE
JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.
KLAPPAN SEQUENCE (main coal-bearing unit)
JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.
SPATSIZI SEQUENCE
Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.
LICENCE BOUNDARY
COAL SEAM TRACE (DEFINED, INFERRED)
GEOLOGICAL CONTACT (APPROX., INFERRED)
FAULT TRACE (DEFINED, APPROX.,
BEDDING ATTITUDE
DDH 83001
DIAMOND DRILL HOLE WITH ATTITUDE CONTROL
0 1/8 1/4 MILE
0 100 200 300 400 500 METERS
GR. - Mt. Klappan 84(2) A
GULF CANADA RESOURCES INC.
Coal Division
CALGARY
ALBERTA
Gulf
~~695~~
710
MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
7000 N (EAST & WEST)
PREPARED BY: S.M.
APPROVED BY: E.S.
DATE: JAN. 1985
SCALE 1:5000
DRAWING No. KPN 84SU-58



RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX , INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/8 — 1/4 MILE

0 — 100 — 200 — 300 — 400 — 500 METERS

GR. - Mt. Klappan 84(2) A

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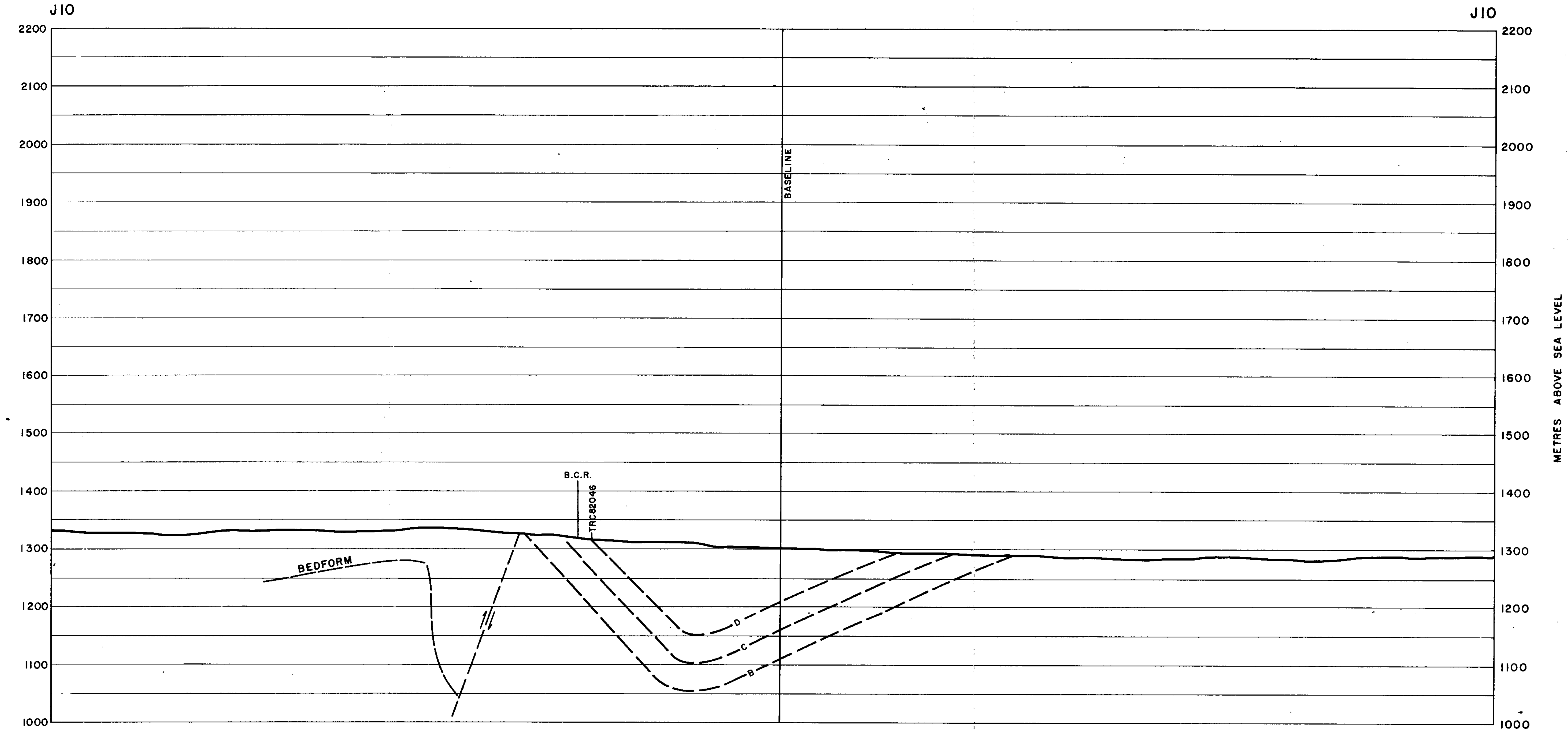
GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
6 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-59



RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

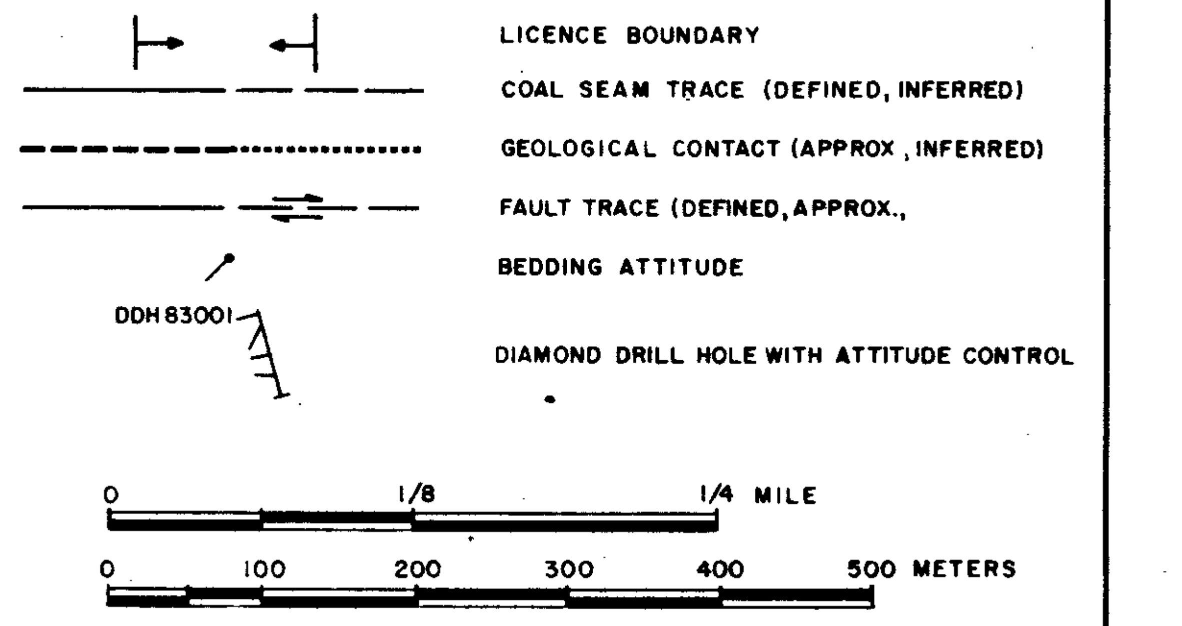
JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.



GR. - Mt. Klappan 84 (2) A

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GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
5 500 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-60

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

GR. - Mt. Klappan 84(2) A

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710

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
27 000 N (WEST)

PREPARED BY: S.M.		SCALE 1:10000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SU-61

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

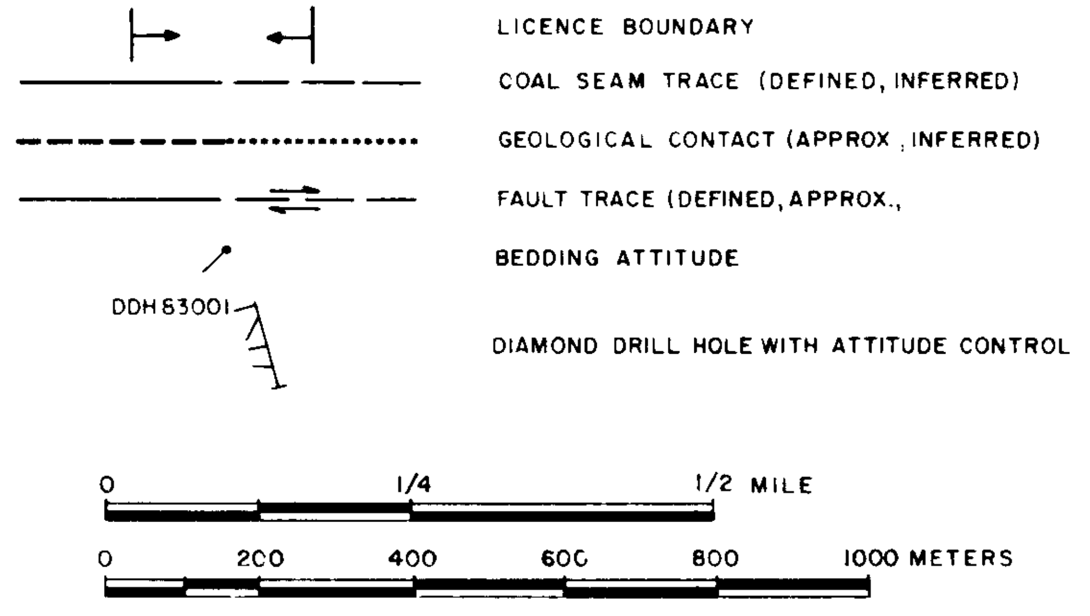
JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones Conglomerate beds tend to be laterally discontinuous Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact Sequence can contain petrified wood and plant fossils Bivalves are rare

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates The upper contact is defined as the first occurrence of a non-marine bed Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare



GR. - Mt. Klappan 84 (2) A

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GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY 1984 GEOLOGICAL CROSS SECTION SUMMIT AREA 25 000 N (WEST)

PREPARED BY: S.M.	SCALE 1:10000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-62

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact Sequence can contain petrified wood and plant fossils Bivalves are rare

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX , INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

GR. - Mt. Klappan 84(2) A

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GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
23 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:10000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-63

RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones Conglomerate beds tend to be laterally discontinuous Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact Sequence can contain petrified wood and plant fossils Bivalves are rare

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk Sequence of 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. Several species of pelecypods and plants are common Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates The upper contact is defined as the first occurrence of a non-marine bed Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

GR. - Mt. Klappan 84(2) A

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GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
21000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:10000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-64

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/4 — 1/2 MILE

0 — 200 — 400 — 600 — 800 — 1000 METERS

GR. - Mt. Klappan 84(2) A

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710

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
19 000 N (EAST & WEST)

PREPARED BY: S.M.		SCALE 1:10000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SU-65

RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

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LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

GR. - Mt. Klappan 84(2) A

710

GULF CANADA RESOURCES INC.

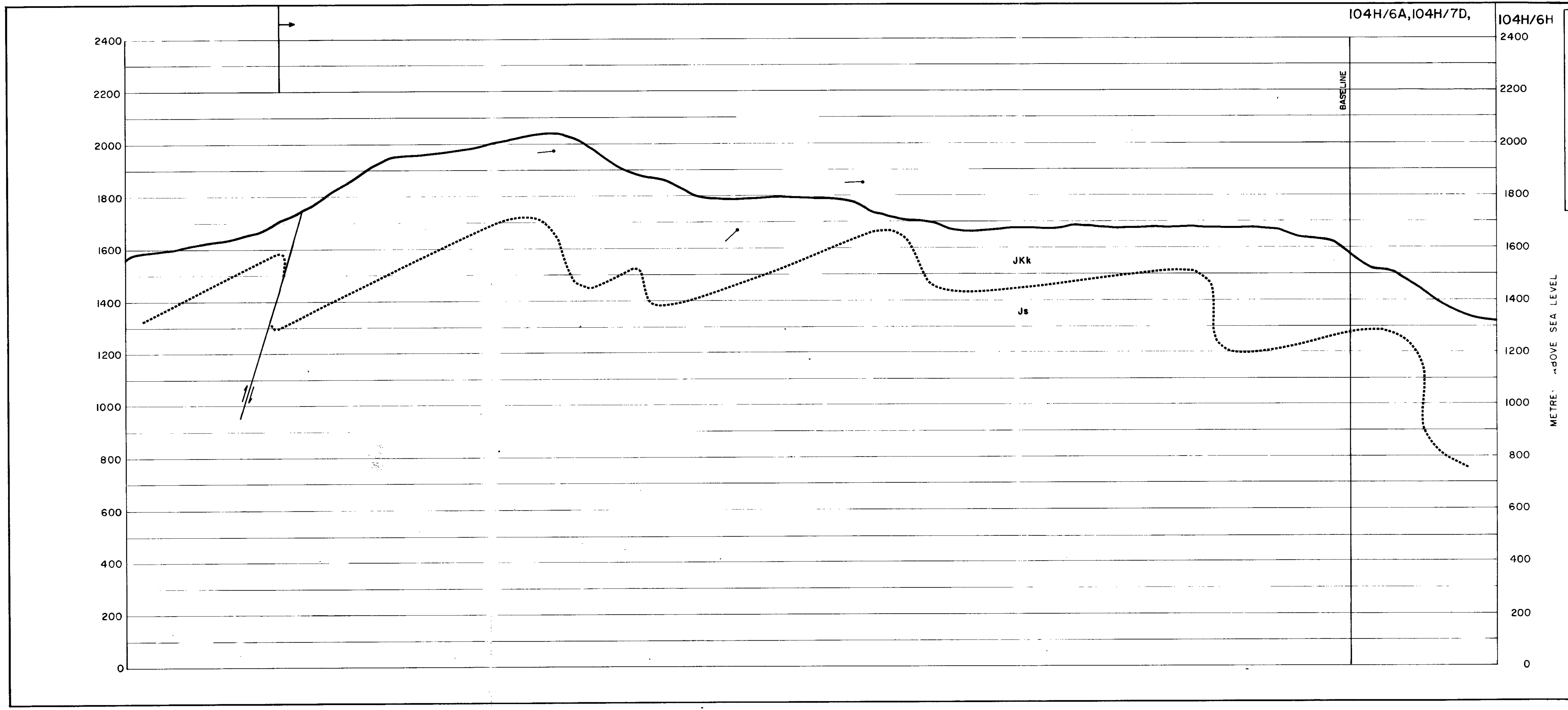
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
17 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:10000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-66



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

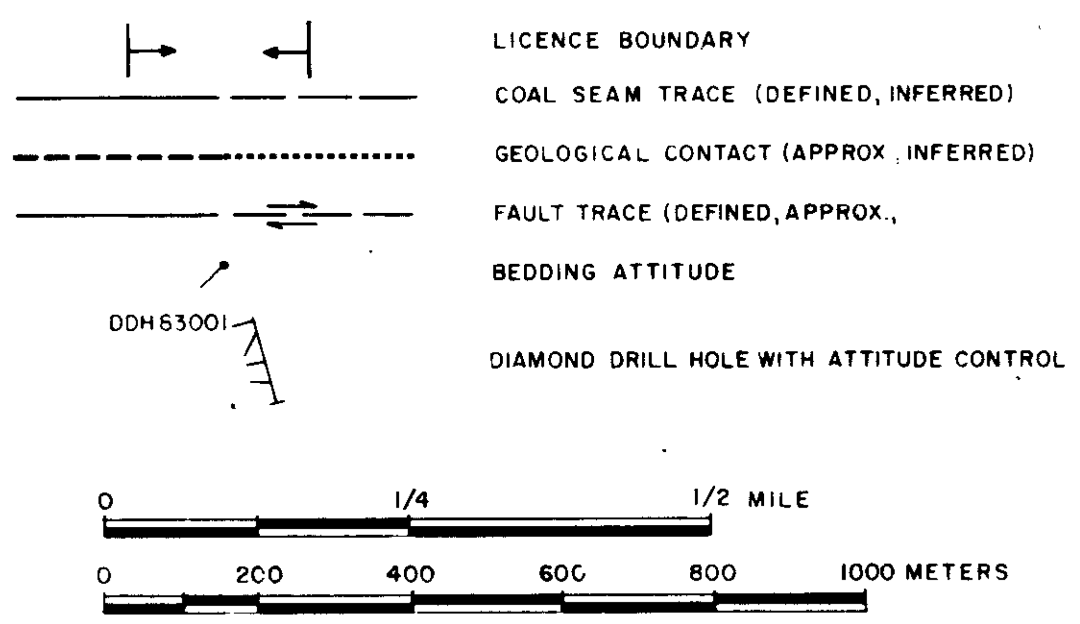
JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact Sequence can contain petrified wood and plant fossils Bivalves are rare

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare



GR - Mt. Klappan 84(2) A

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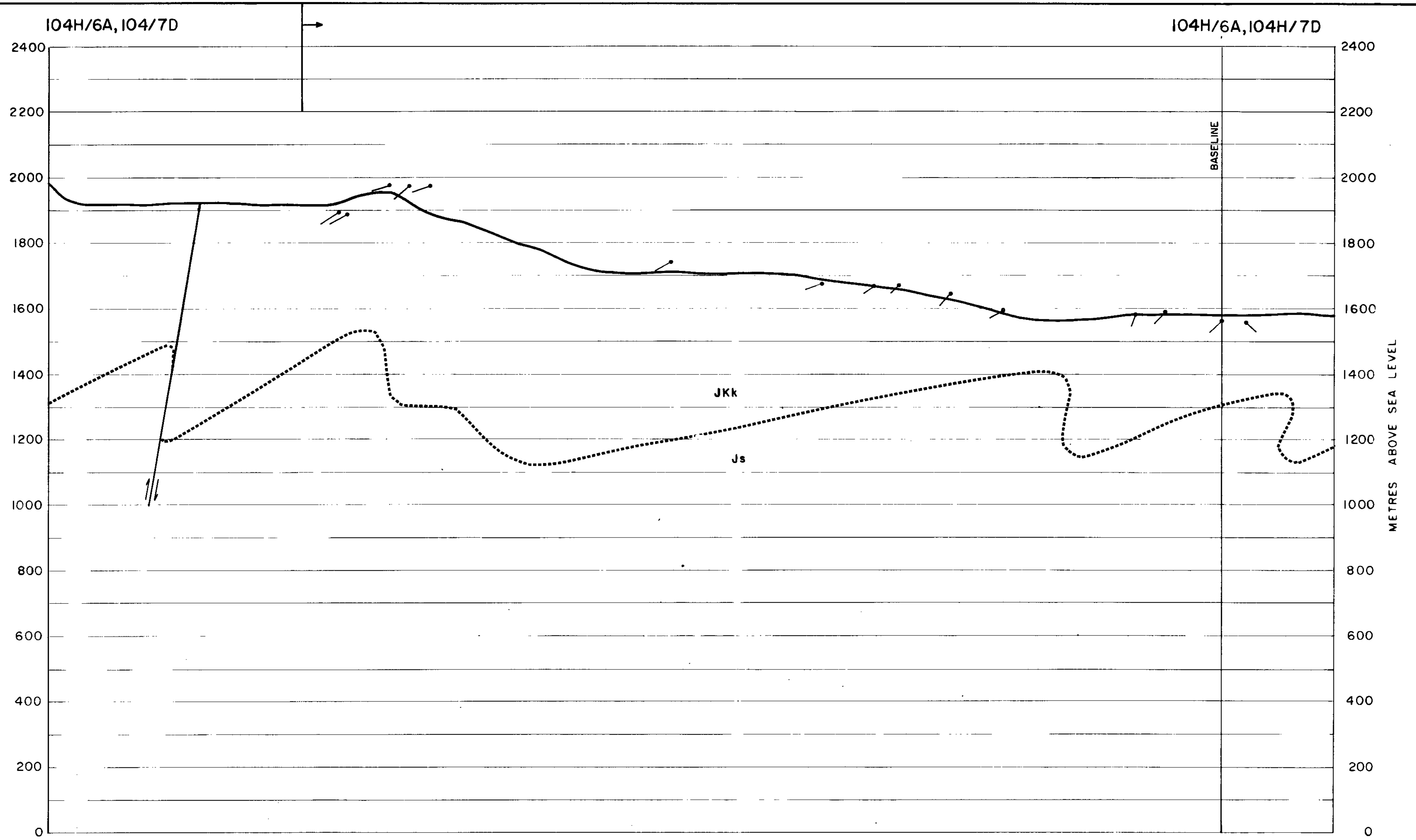
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
15 000 N (EAST & WEST)

PREPARED BY: S.M.		SCALE 1:10000	
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84SU-67	



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare

KLAPPAN SEQUENCE (main coal-bearing unit)

JKk — Sequence of 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. Several species of pelecypods and plants are common. Belemnites and ammonites are rare

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX. INFERRED)

FAULT TRACE (DEFINED, APPROX.,

BEDDING ATTITUDE

DDH 83001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

This seems to belong with [illegible] area

GR. – Mt. Klappan 84(2)A

~~[illegible]~~

710

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
SUMMIT AREA
13 000 N (EAST & WEST)

PREPARED BY: S.M.	SCALE 1:10000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84SU-68