

128°48' 57" W

128°48' 57" W

510 000 E
6 352 000 N

510 000 E

LEGEND

BUILDING	---
ROAD, HARD SURFACE	---
LOOSE SURFACE	---
CART TRACK	---
TRAIL	---
RAILROAD BED	---
RIVER	---
STREAM, DEFINITE	---
APPROXIMATE	---
SPRITLY	---
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 + 15.0 METERS FOR GROUND NOT OCCURRED BY TREES OR VEGETATION.

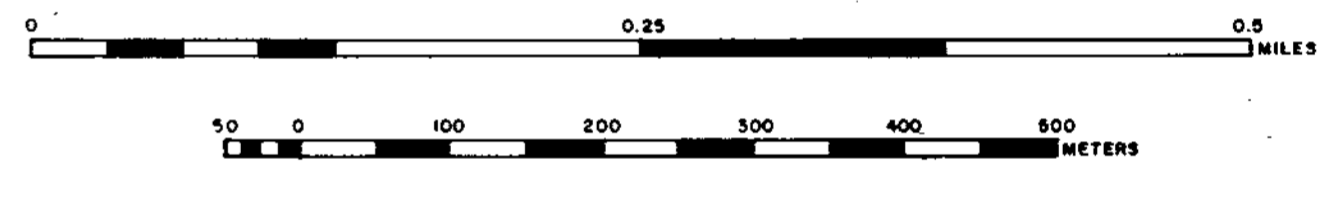
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

COMPILED BY WESTERN PHOTOGRAMMETRY, A DIVISION OF UNDERWOOD MCELLELLAN LTD. FROM FEDERAL GOVERNMENT AERIAL PHOTOGRAPHY FLOWN IN AUGUST/87 AT A SCALE OF 1:60,000 (APPROXIMATE)

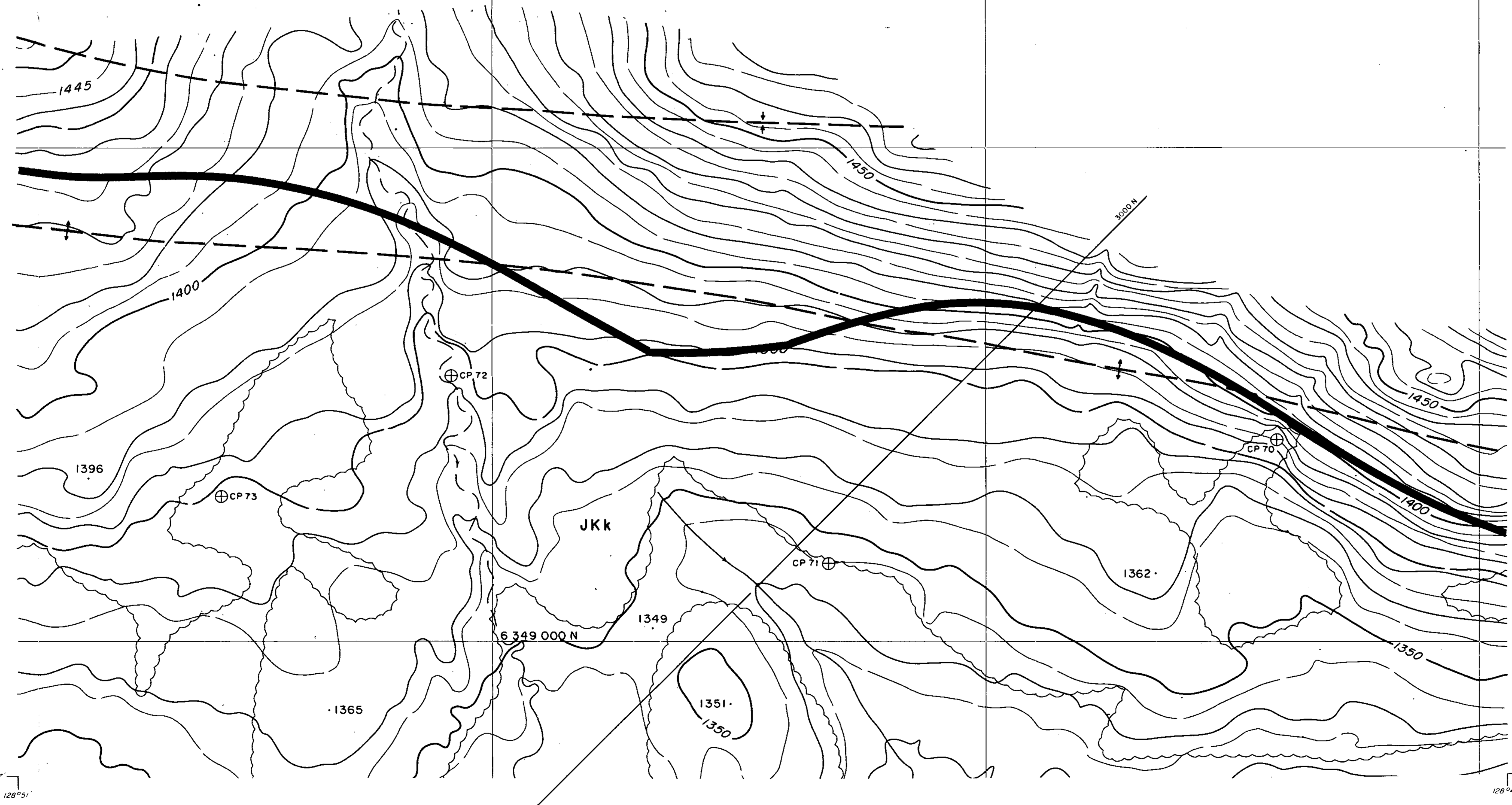
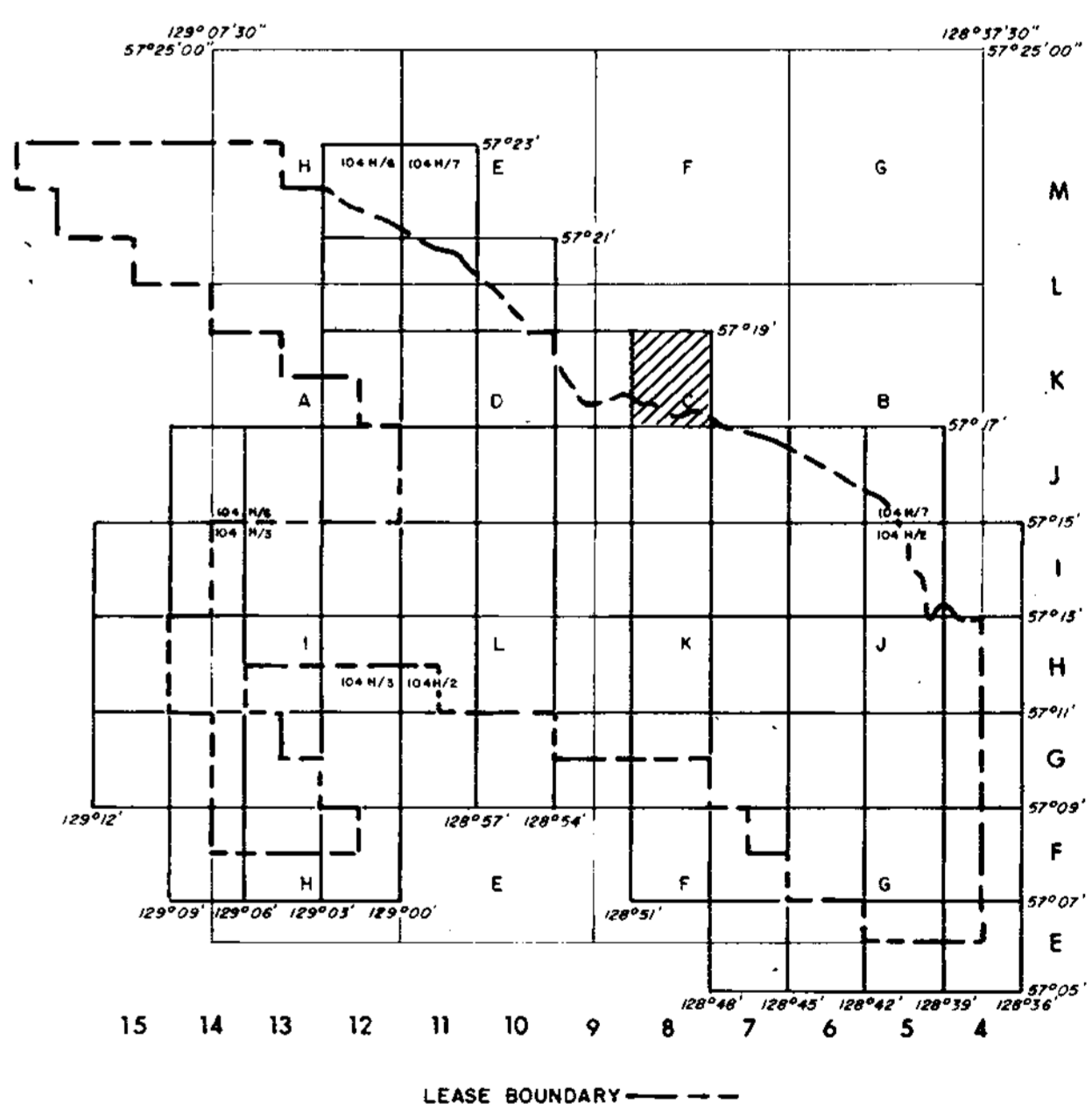


SCALE 1:5000



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 UP THRUST SIDE
---	FAULT (DEFINED, APPROXIMATE) UP THROWN, DOWN THROWN 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.

709

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY

1984

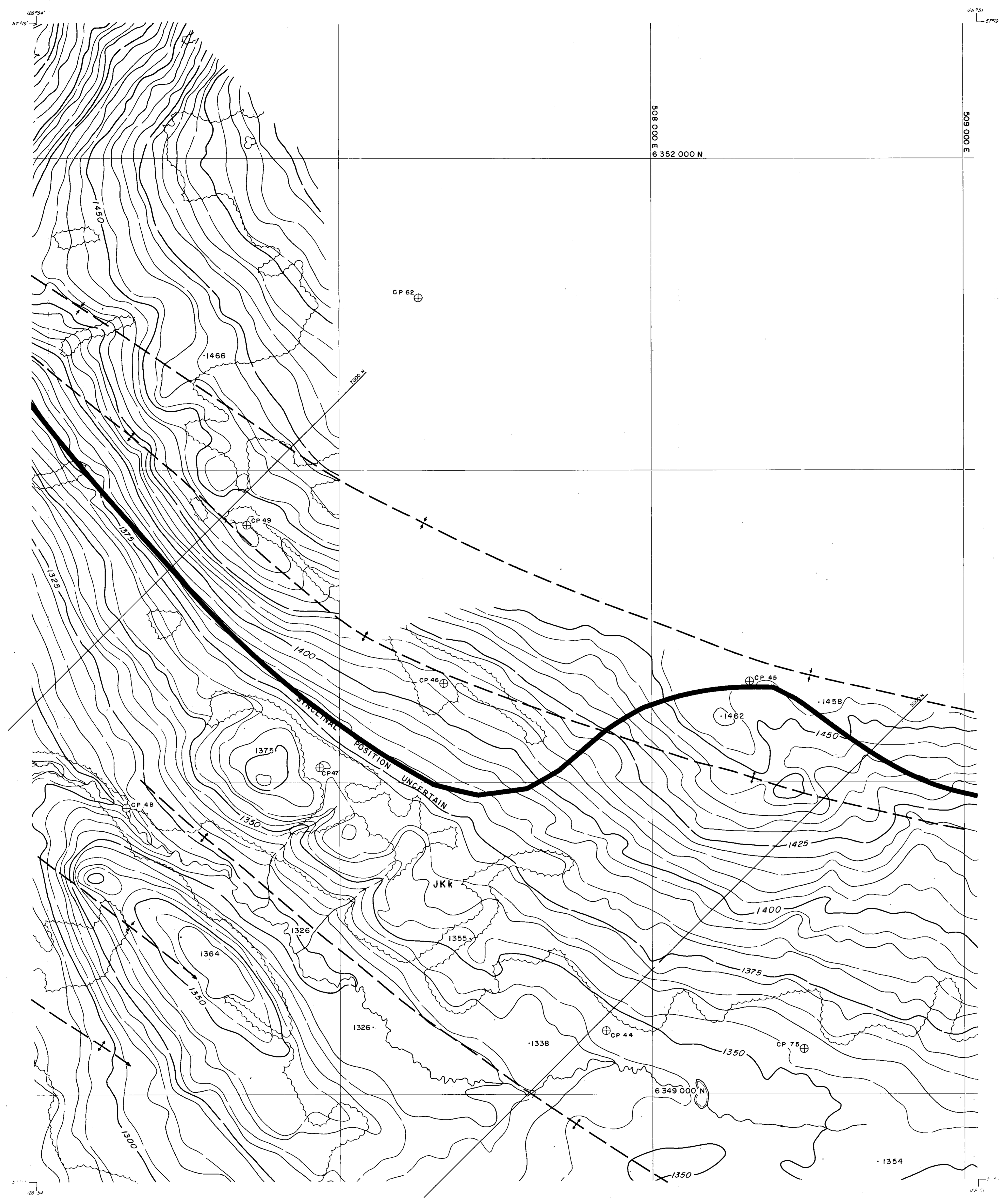
GEOLOGY MAP

LOST-FOX AREA

MAP K-8

PREPARED BY: J.T. SCALE 1:5000

APPROVED BY: V.L.D. DATE: JAN, 1985 DWG. No. KPN84LF-69



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

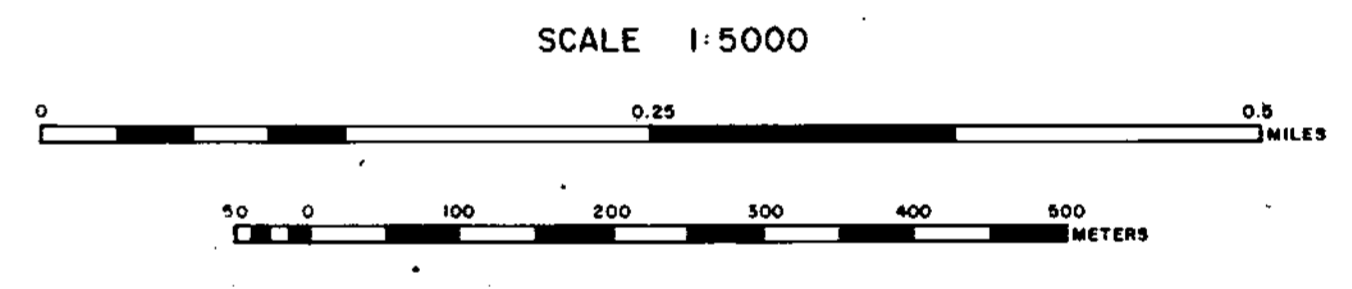
CONTOUR INTERVAL - 10 M, WITH FORM LINES INTERVAL 5 M

ACCURACY OF 5M FORM LINES IS EQUAL TO THE ACCURACY OF THE 10M CONTOURS - 15.0 METERS FOR GROUND NOT OCCURRED BY TREES OR VEGETATION

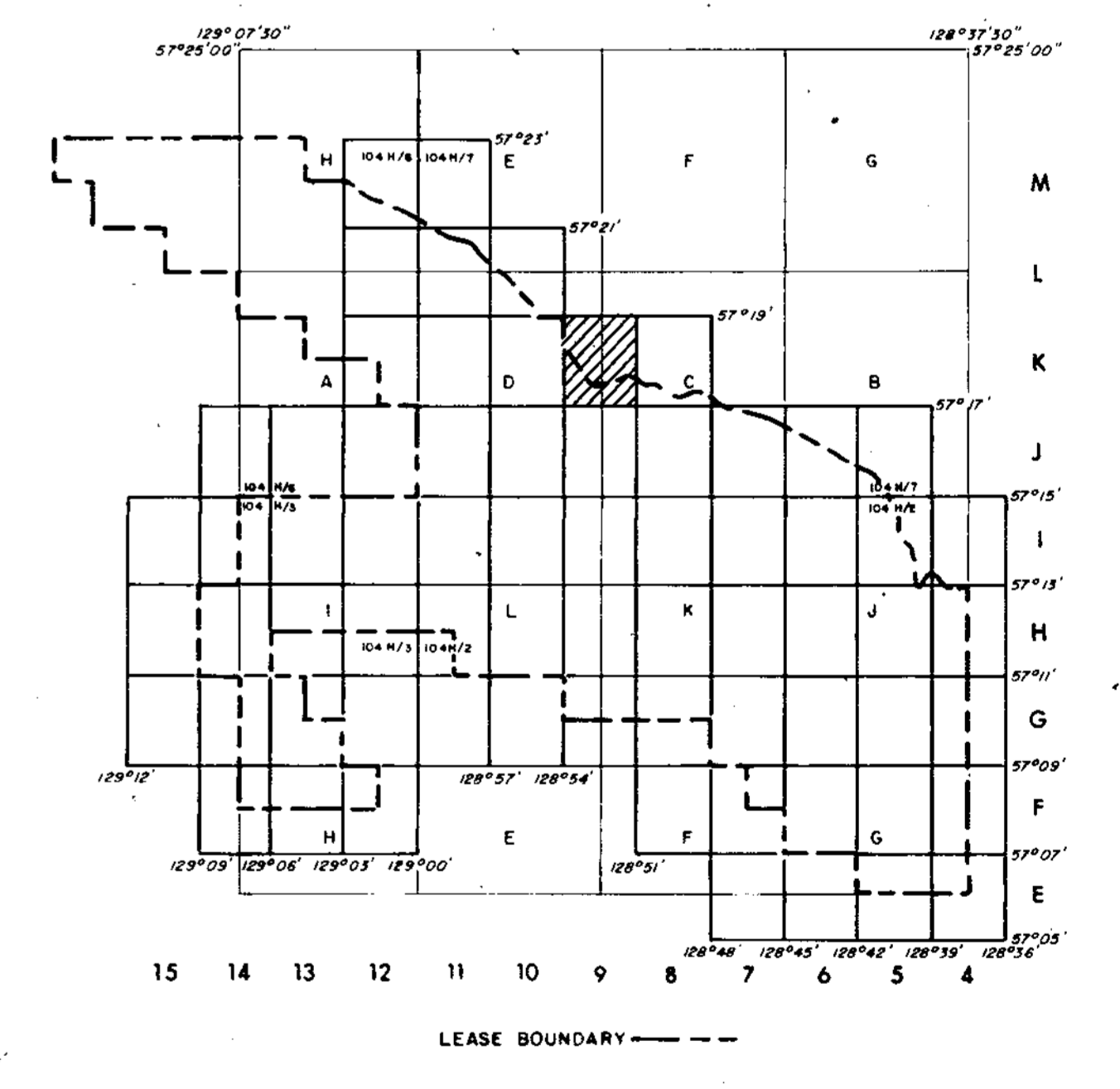
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND R.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

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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)



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 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)
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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

709

GULF CANADA RESOURCES INC.
Coal Division

CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
LOST-FOX AREA
MAP K-9

PREPARED BY: J.T. SCALE 1:5000
APPROVED BY: V.L.D. DATE: JAN. 1985 DWG. No. KPN84LF-70

G8 H8

H8 H7

2200

2200

2100

2100

2000

2000

1900

1900

1800

1800

1700

1700

1600

1600

1500

1500

1400

1400

1300

1300

1200

1200

1100

1100

1000

1000

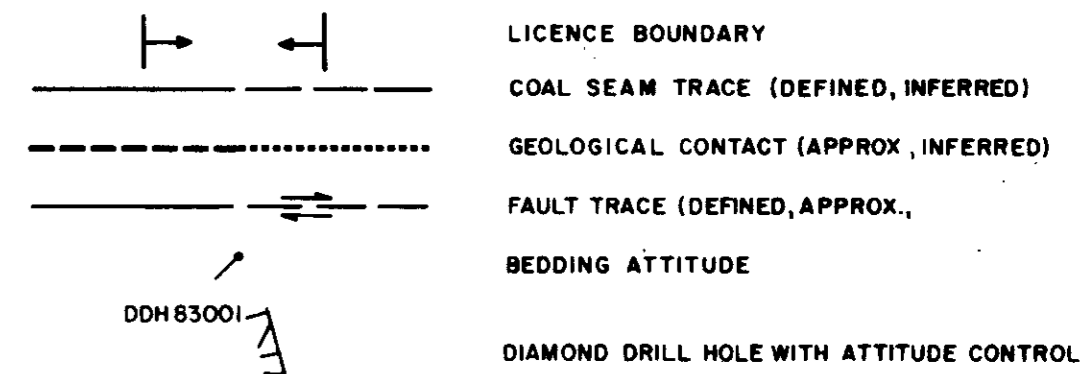
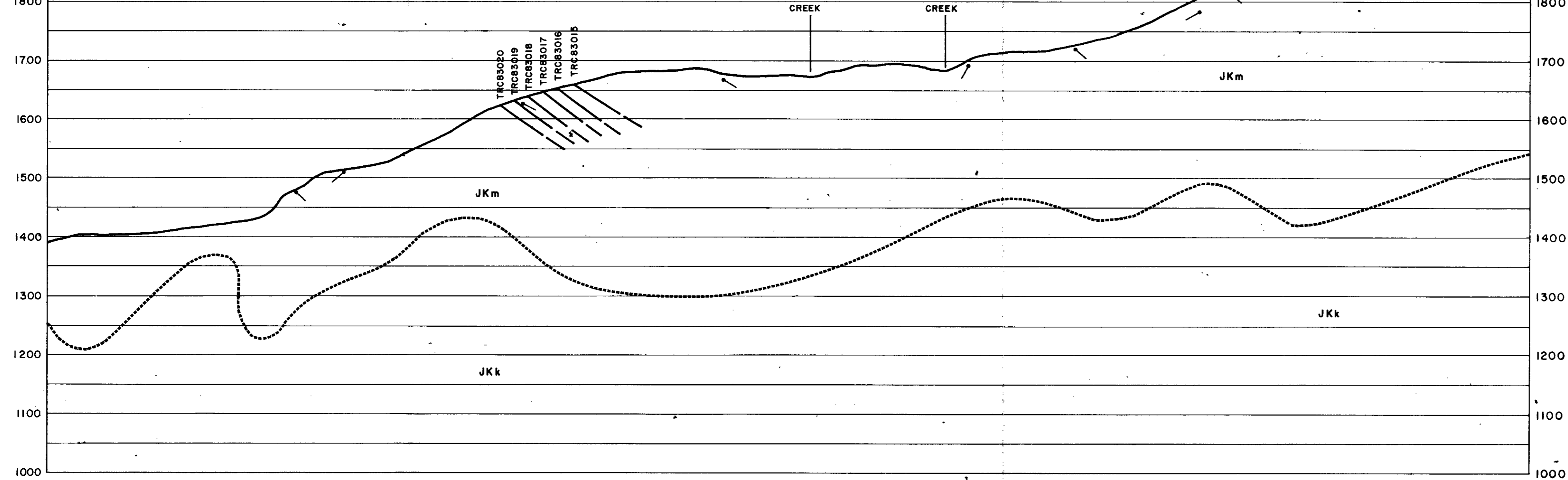
RHONDDA SEQUENCE
 [JKr] Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE
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KLAPPAN SEQUENCE (main coal-bearing unit)
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METRES ABOVE SEA LEVEL

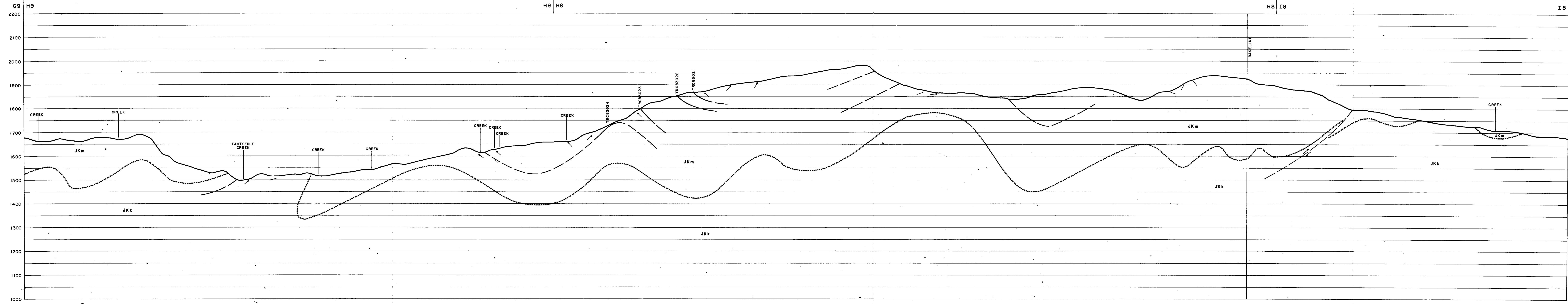


66 Mount Klappan S1/2A **709**

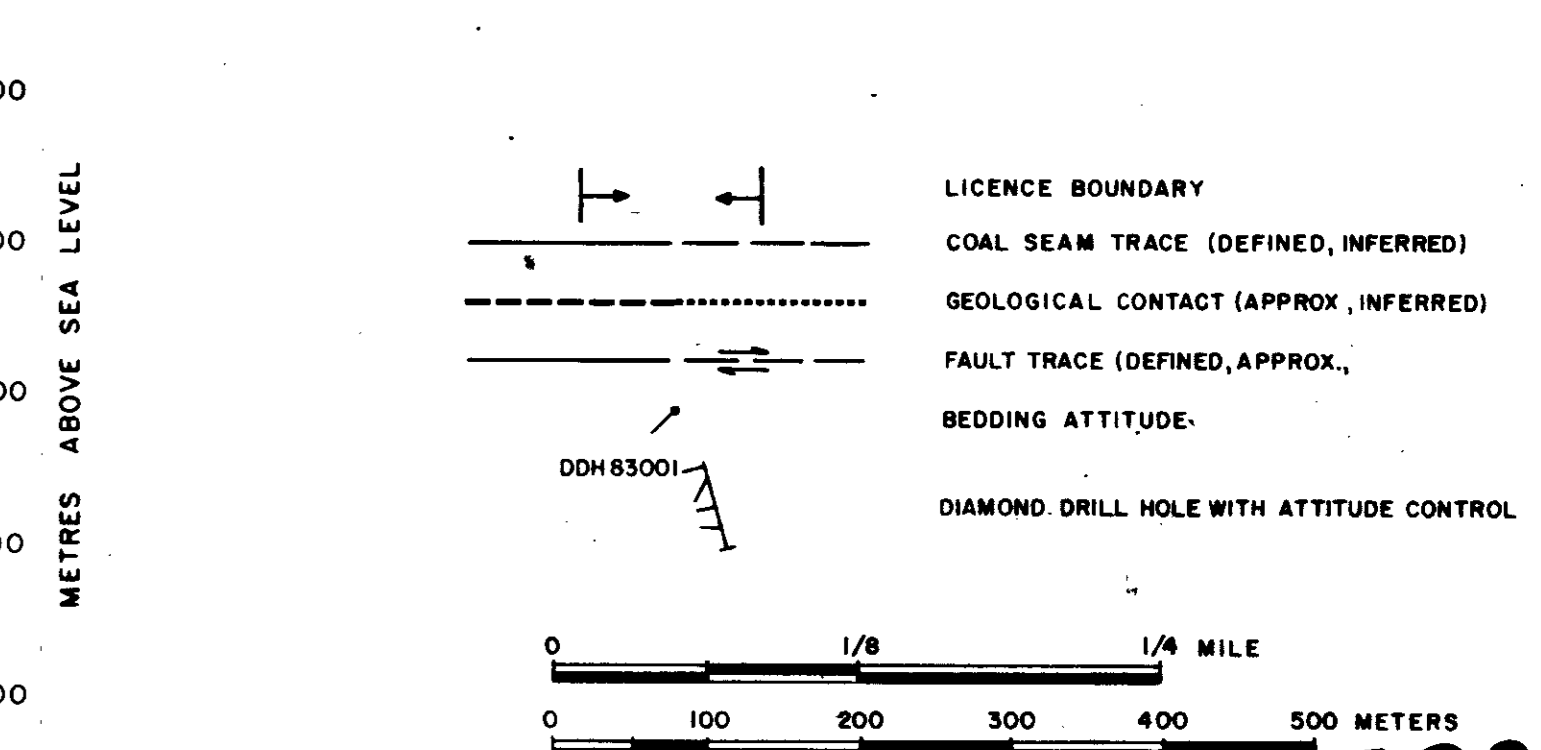
GULF CANADA RESOURCES INC.
 Coal Division
 CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
 1984
GEOLOGICAL CROSS SECTION
LOST-FOX AREA
5000 S

PREPARED BY: J.T., K.J., B.G. SCALE 1:5000
 APPROVED BY: V.L.D. DATE: JAN. 1985 DRAWING No. KPN84LF-81



- 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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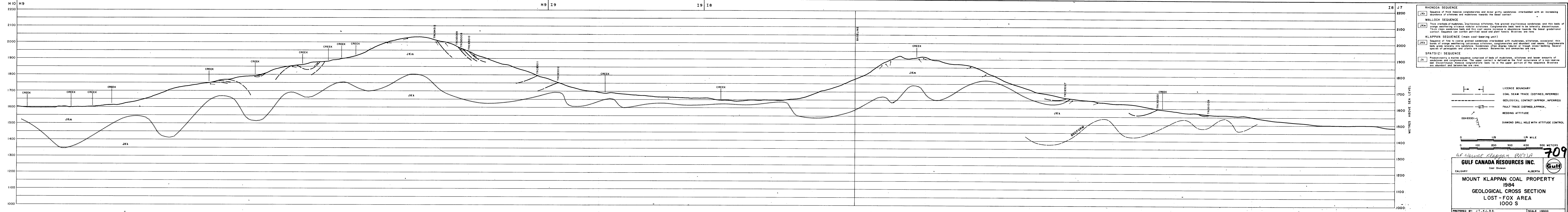
709

GR Mount Klappan 3000 S

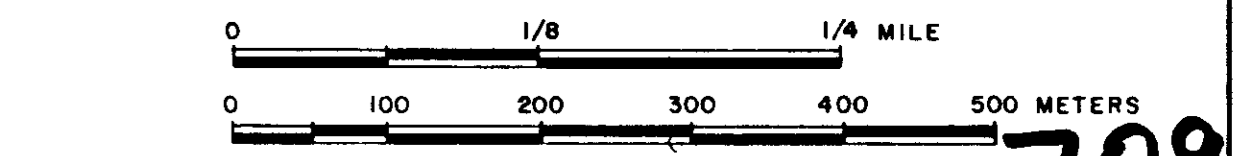
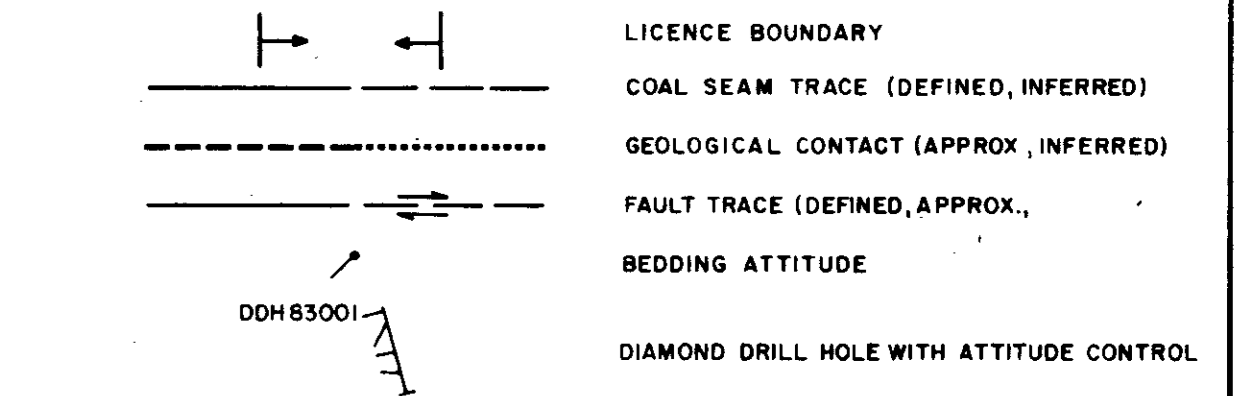
GULF CANADA RESOURCES INC.
Coal Division

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
LOST-FOX AREA
3000 S

PREPARED BY: J.T., K.J., B.G. SCALE 1:8000
APPROVED BY: V.L.D. DATE: JAN. 1985 DRAWING No. KPN84LF-82



- 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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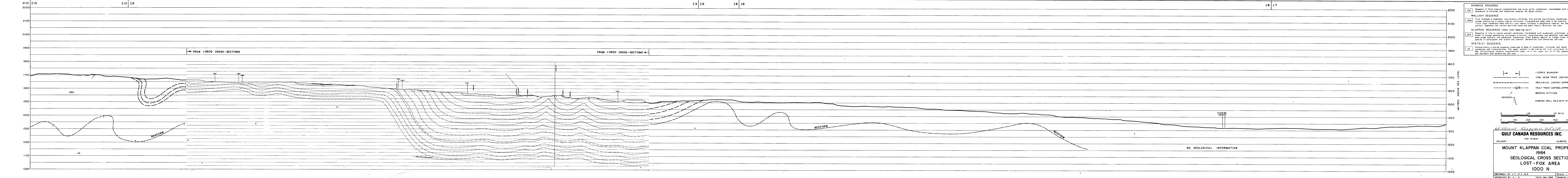


6F Mount Klappan 84(2)A **709**

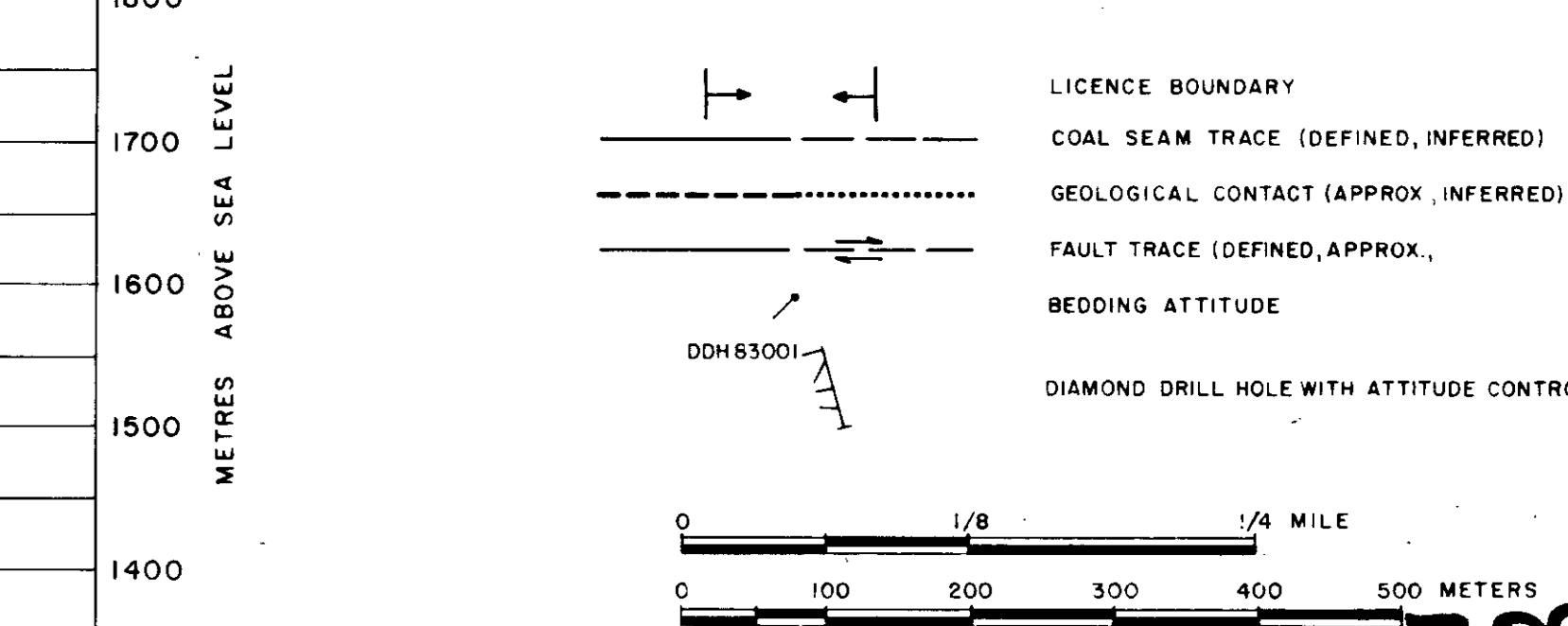
GULF CANADA RESOURCES INC.
 Coal Division
 CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
 1984
GEOLOGICAL CROSS SECTION
 LOST-FOX AREA
 1000 S

PREPARED BY: J. T., K. J., B. G. SCALE 1:5000
 APPROVED BY: V. L. D. DATE: JAN. 1985 DRAWING No. KPN84LF-83



- RHONDDA SEQUENCE**
 JKf 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 beds 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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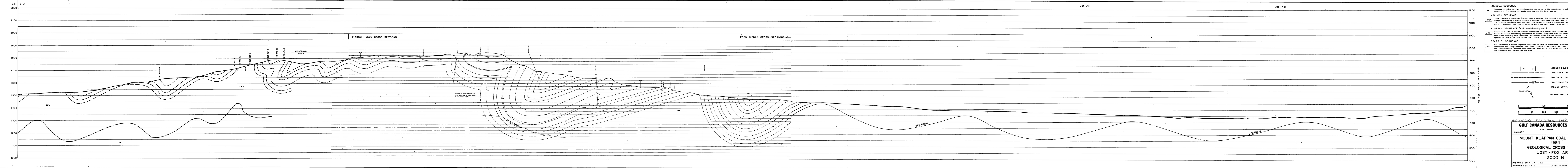
66 Mount Klappan 84(2)A 709

GULF CANADA RESOURCES INC.
 Coal Division

CALGARY ALBERTA

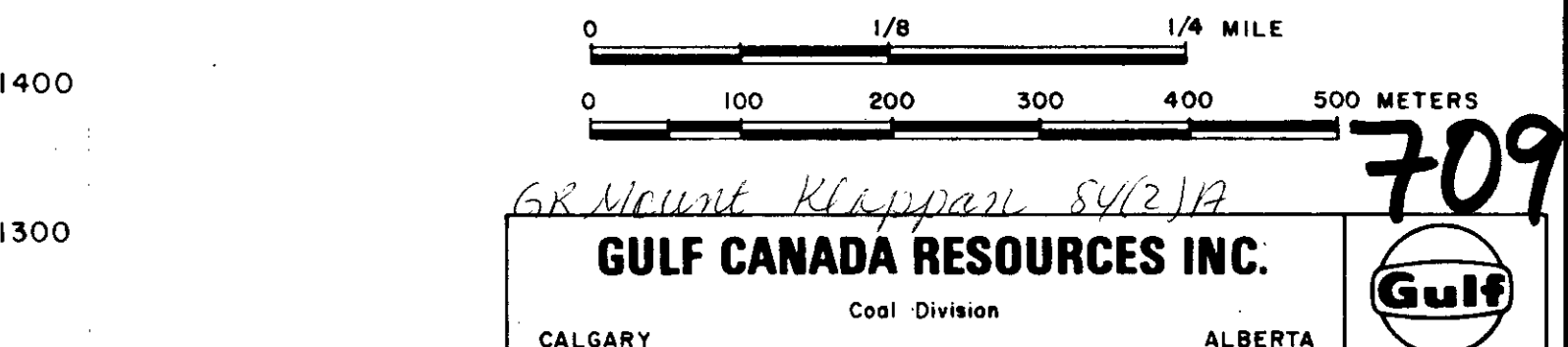
MOUNT KLAPPAN COAL PROPERTY
 1984
GEOLOGICAL CROSS SECTION
 LOST-FOX AREA
 1000 N

PREPARED BY: J.T., K.J., B.G. SCALE 1:5000
 APPROVED BY: V.L.D. DATE: JAN 1985 DRAWING No. KPM84LF



- RHONDA 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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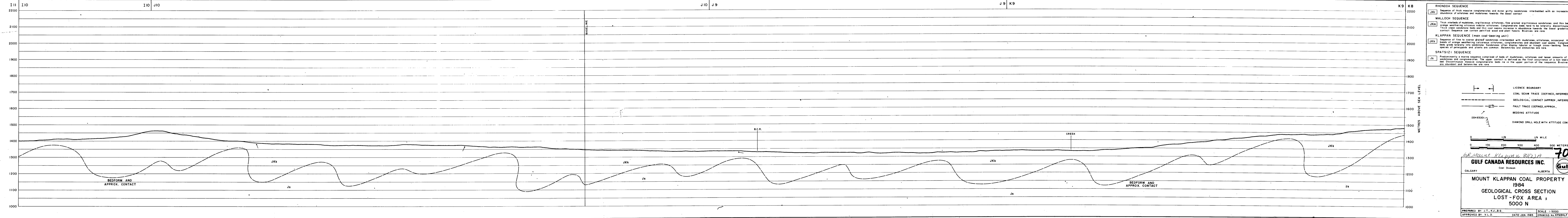
- ← LICENCE BOUNDARY
 --- COAL SEAM TRACE (DEFINED, INFERRED)
 - - - - - GEOLOGICAL CONTACT (APPROX., INFERRED)
 - - - - - FAULT TRACE (DEFINED, APPROX.)
 - - - - - BEDDING ATTITUDE
 DMS3001 DIAMOND DRILL HOLE WITH ATTITUDE CONTACT



FOR Mount Klappan SV(2)IA
GULF CANADA RESOURCES INC.
 Coal Division
 CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
 1984
GEOLOGICAL CROSS SECTION
LOST-FOX AREA
3000 N

PREPARED BY: J.T., K.J., B.G. SCALE 1:5000
 APPROVED BY: V.L.D. DATE: JAN. 1985 DRAWING NO. KPNB4LF-85

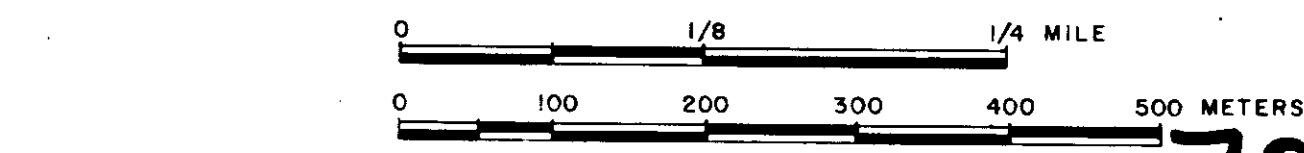
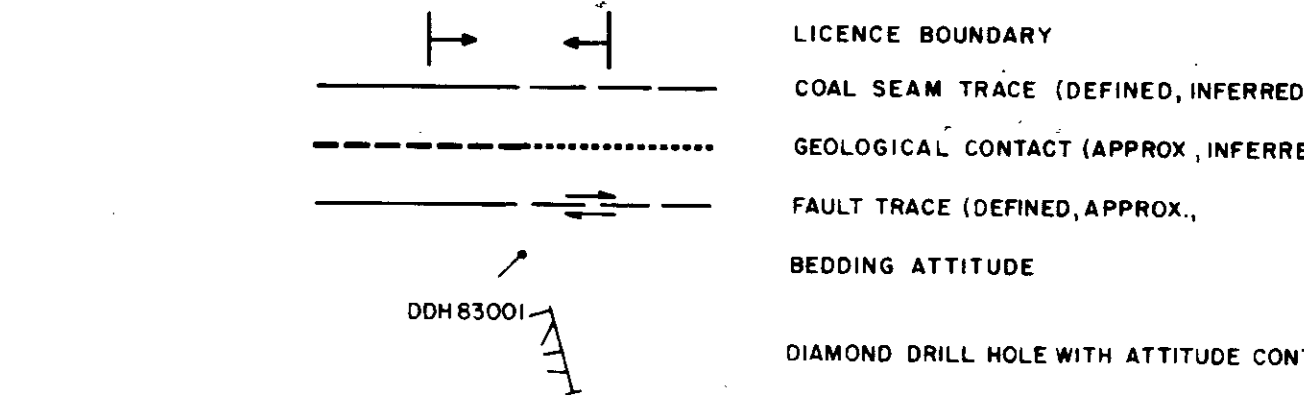


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GR Mount Klappan 84(2)A 709

GULF CANADA RESOURCES INC.
 Coal Division ALBERTA

MOUNT KLAPPAN COAL PROPERTY
 1984
GEOLOGICAL CROSS SECTION
 LOST-FOX AREA
 5000 N

PREPARED BY: J.T., K.J., B.G. SCALE 1:5000
 APPROVED BY: V.L.D. DATE: JAN. 1985 DRAWING No. KPN84LF-86