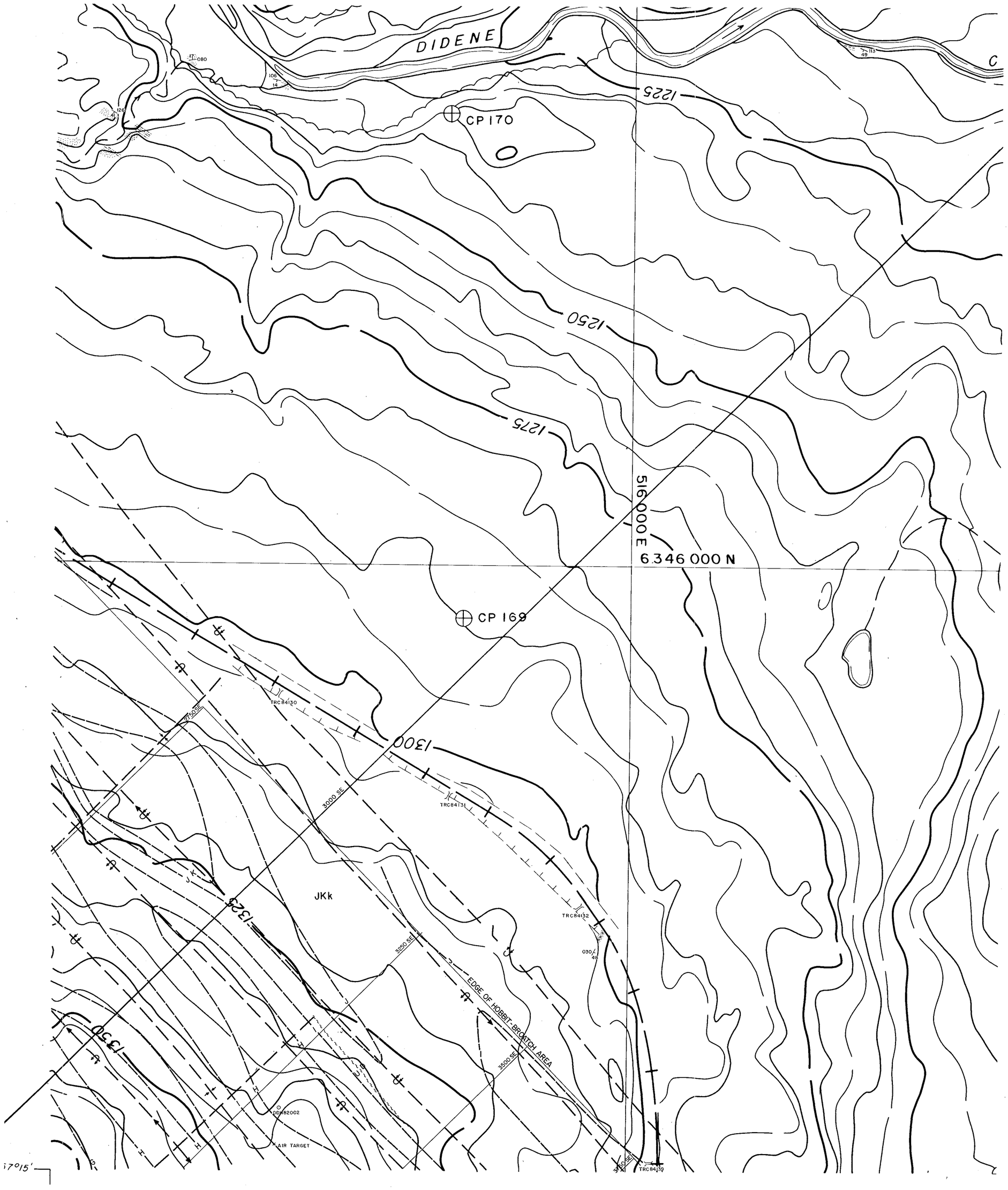
00695

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
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)

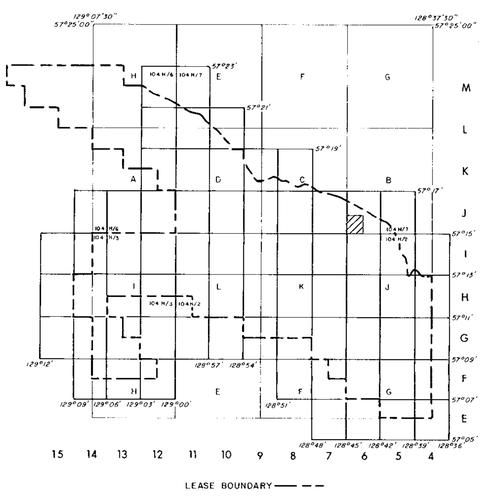
SCALE 1:2500

0 — 0.125 — 0.25 MILES

25 — 0 — 50 — 100 — 150 — 200 — 250 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.

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

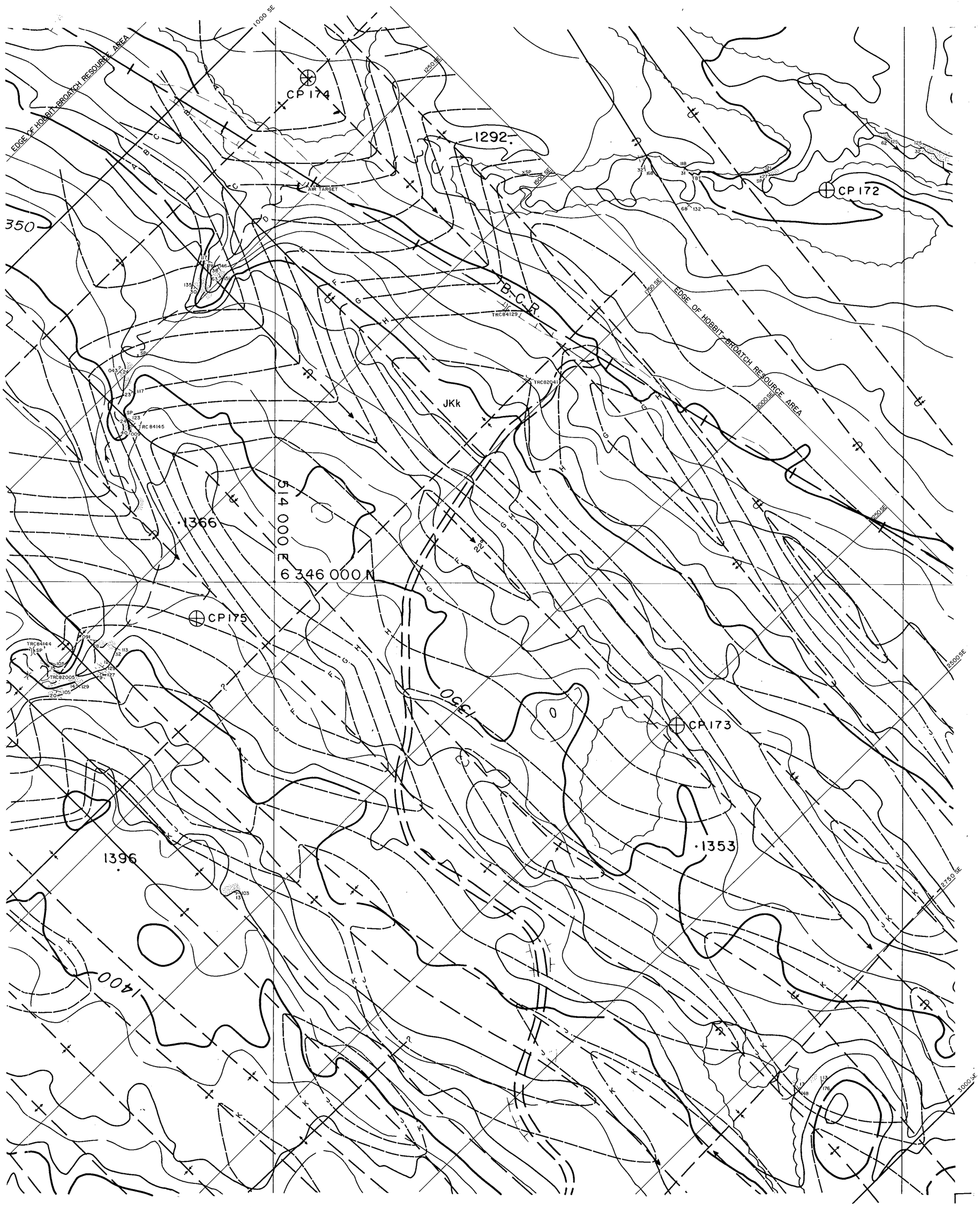
G.R. - Mt. Klappan 84(2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP J-6 S.W.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84 HB-21



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)

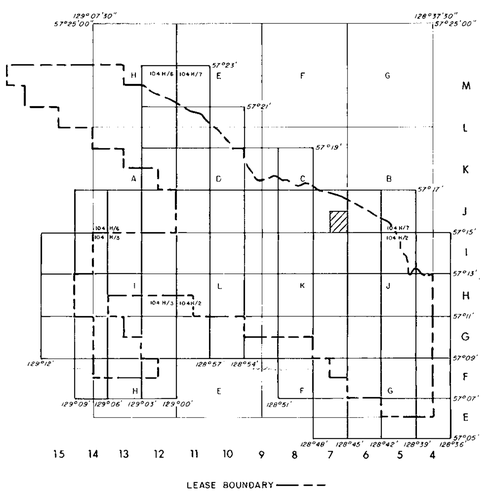
SCALE 1:2500

0 0.125 0.25 MILES

25 0 50 100 150 200 250 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.

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

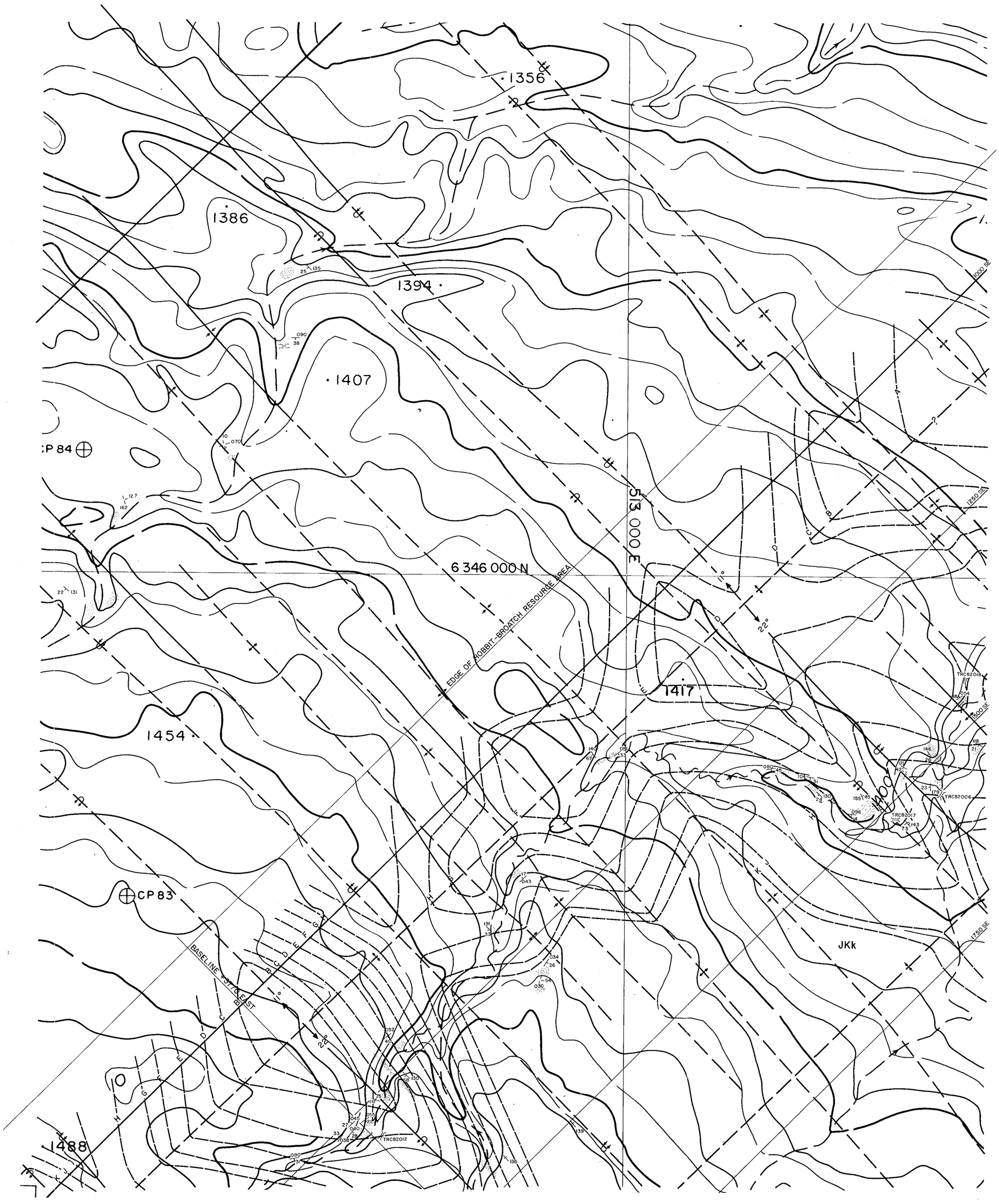
GR. - Mt. Klappan 84(2)A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP J-7 S.E.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84 HB-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.

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).

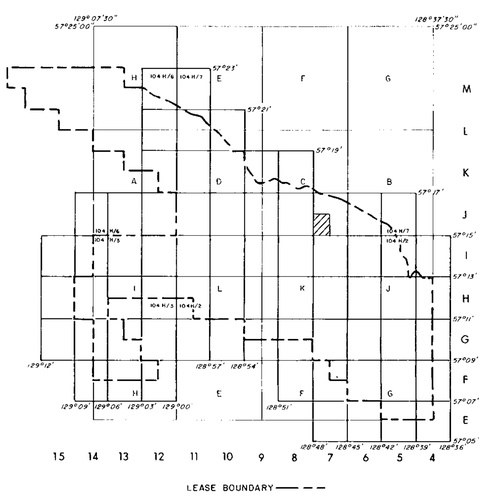
SCALE 1:2500

0 — 0.125 — 0.25 MILES

25 0 50 100 150 200 250 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
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

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.

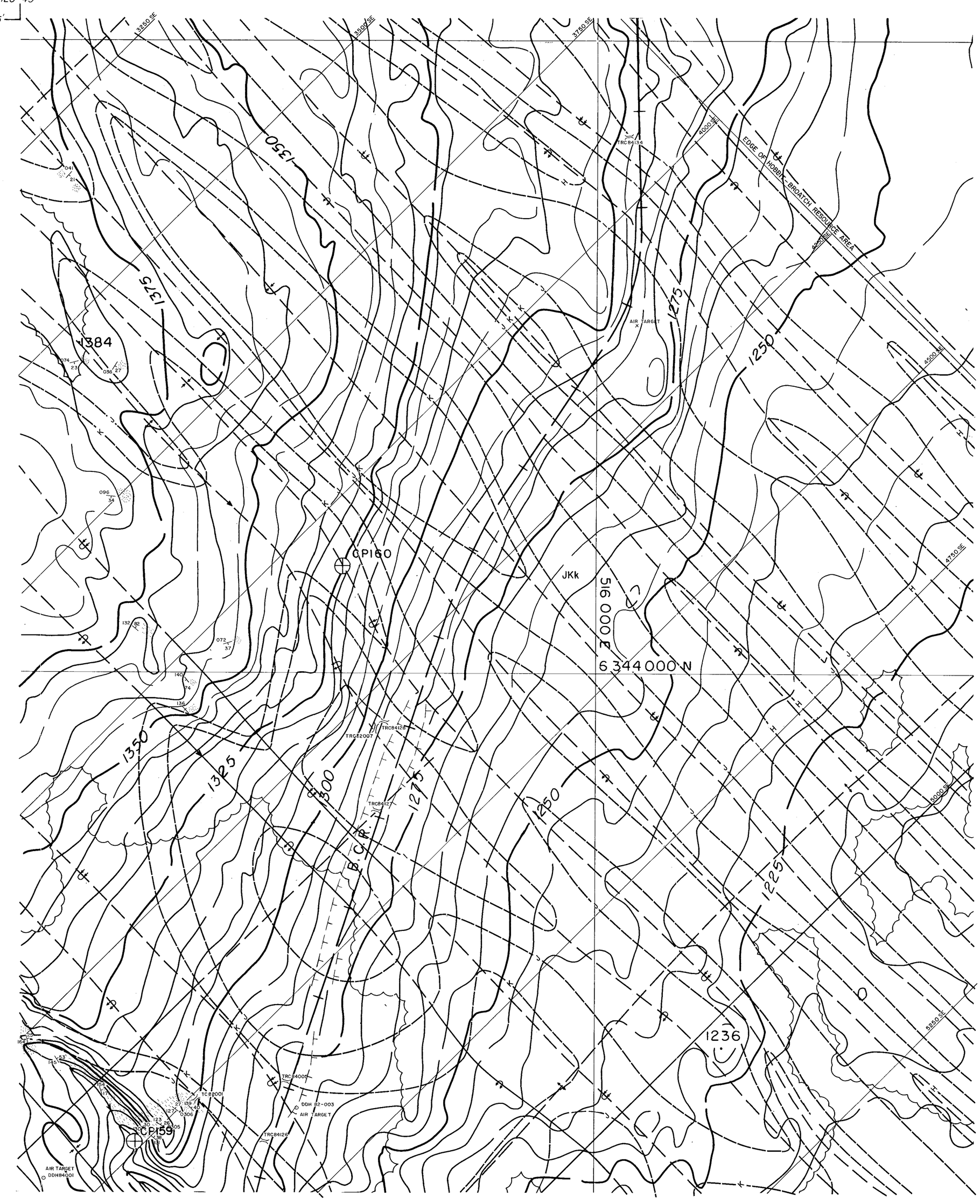
Gk.- Mt. Klappan 84(2) 19

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP J-7 S.W.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985 DRAWING No. KPN84 HB-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 — 1654
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)

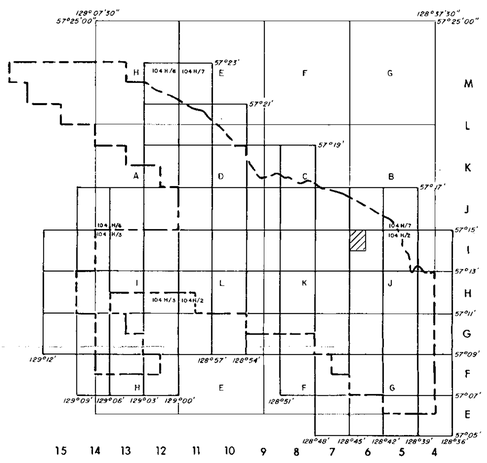
SCALE 1:2500

0 — 0.125 — 0.25 MILES

25 0 50 100 150 200 250 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

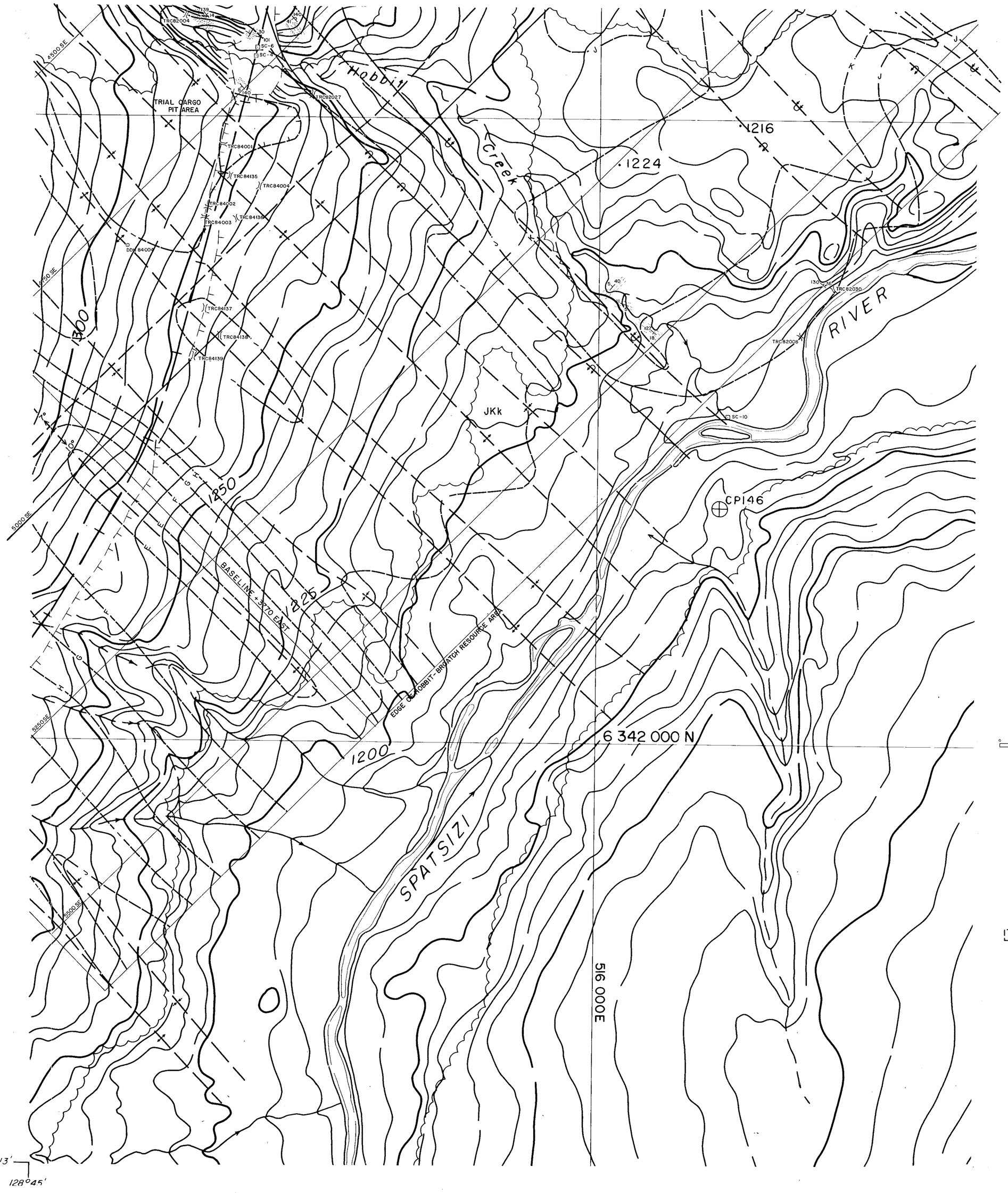
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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
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 695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP I-6 N.W.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84 HB-24



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.

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).

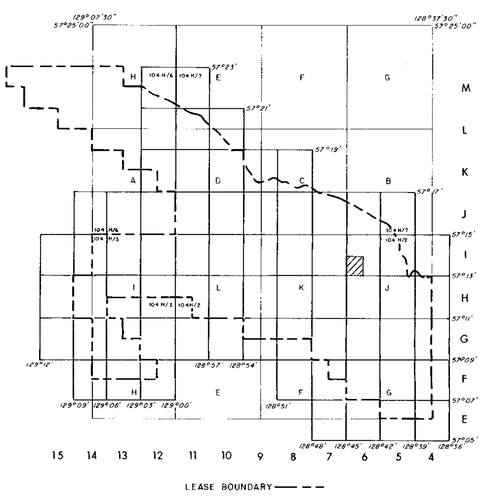
SCALE 1:2500

0 — 0.125 — 0.25 MILES

25 — 0 — 50 — 100 — 150 — 200 — 250 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.

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

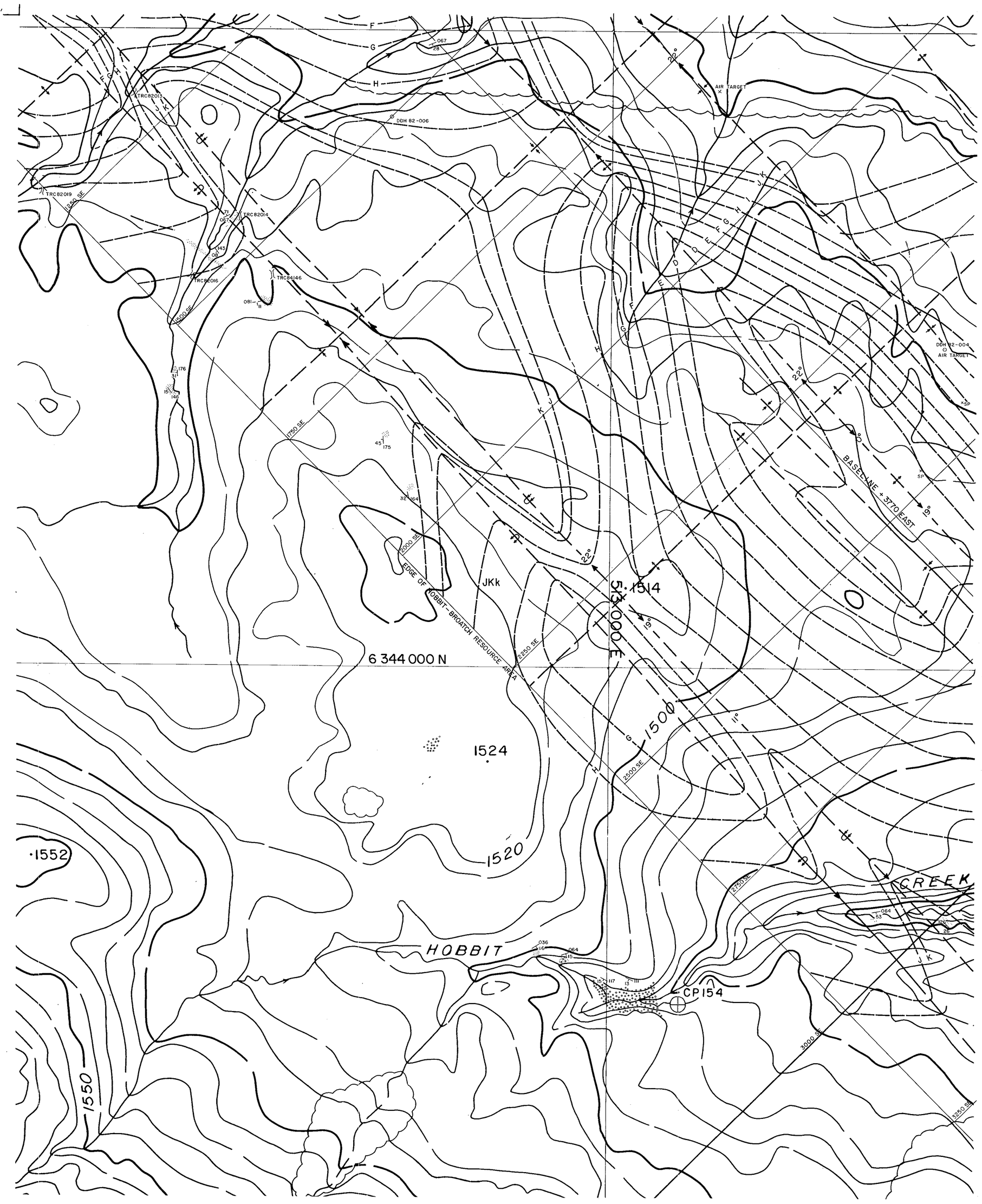
GR. - Mt. Klappan 84 (2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP I-6 S.W.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84 HB-25



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — EL 505.1
SWAMP
BEAVER DAM — 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).

N

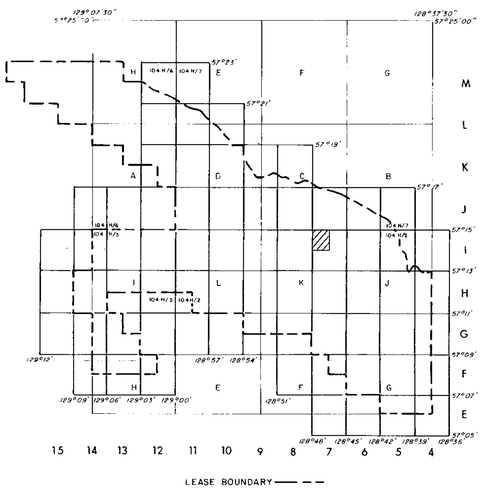
SCALE 1:2500

0 0.125 0.25 MILES

25 0 50 100 150 200 250 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
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)
GTC 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.

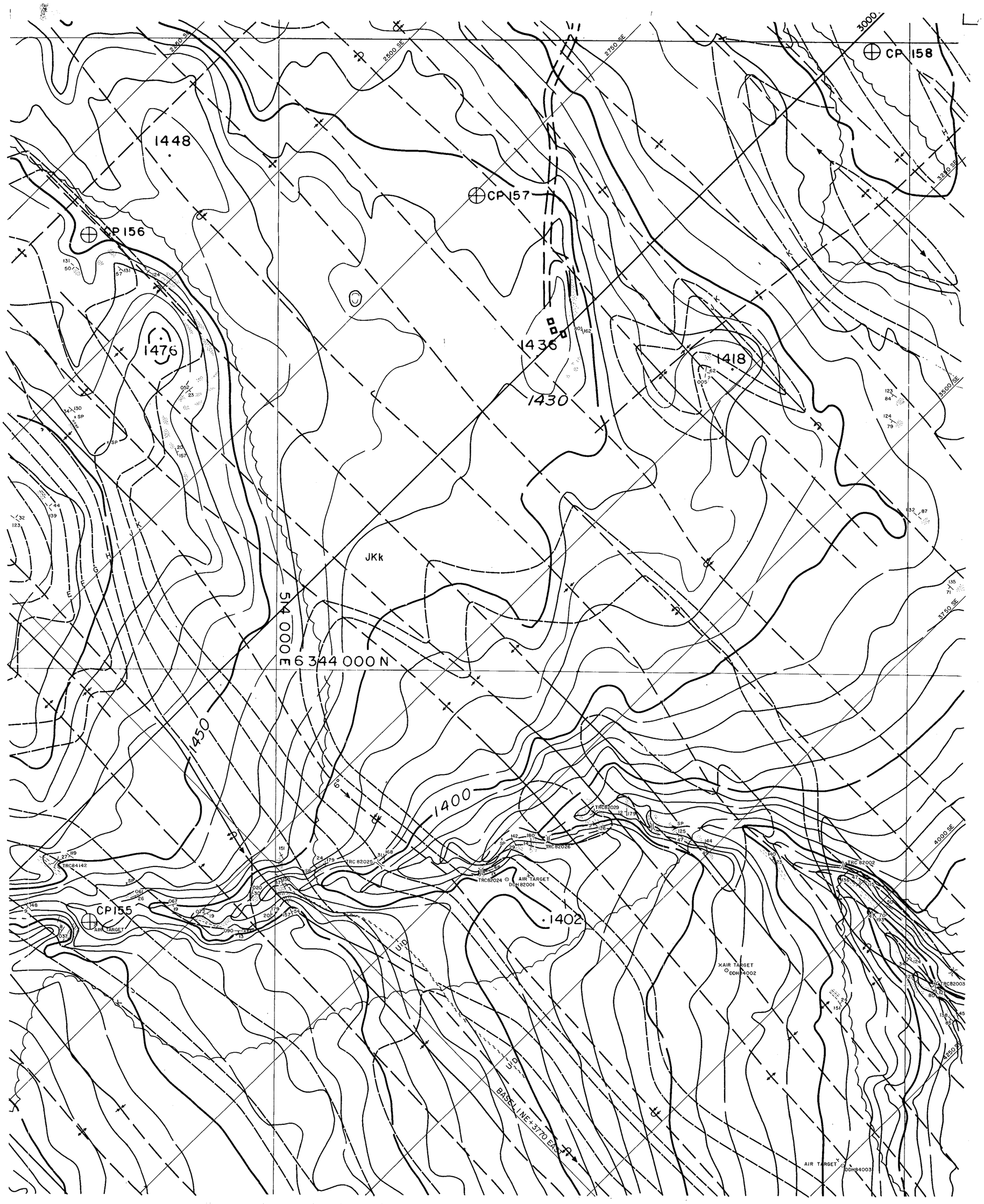
Gr. - Mt. Klappan 84(2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP I-7 N.W.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84 HB-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 — 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).

N

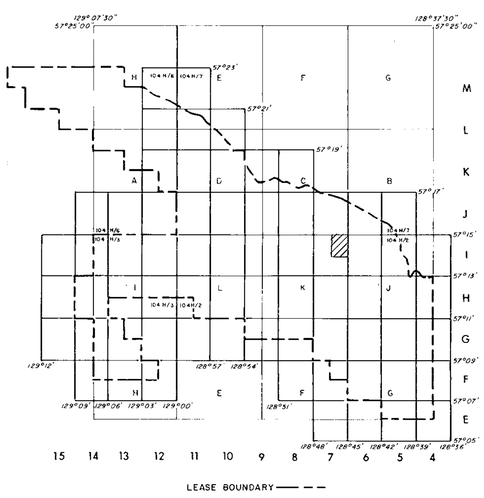
SCALE 1:2500

0 — 0.125 — 0.25 MILES

25 — 0 — 50 — 100 — 150 — 200 — 250 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.

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

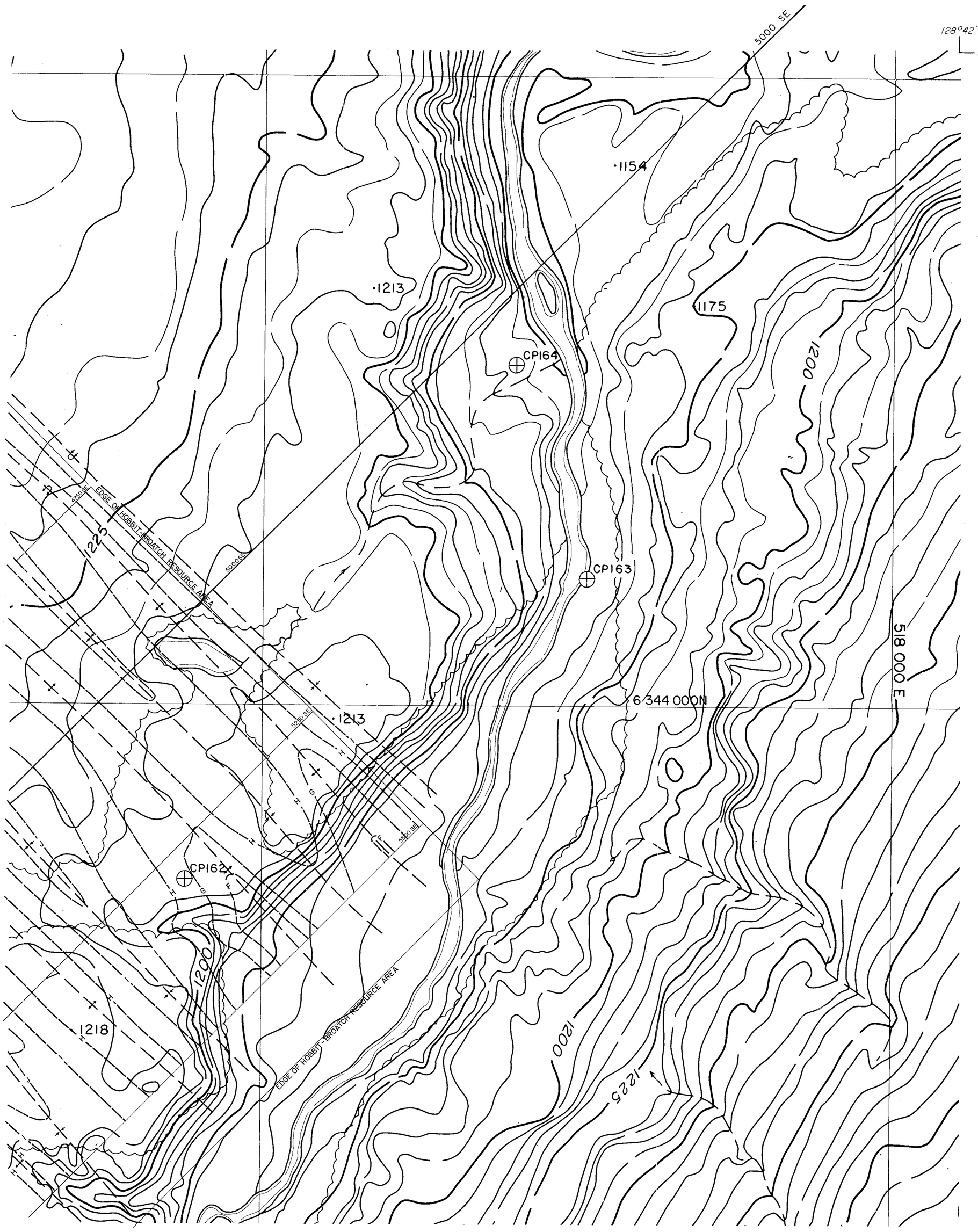
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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
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
HOBBIT-BROATCH AREA
MAP I-7 N.E.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985 DRAWING No. KPN84 HB-27



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — EL 505 ft
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 1:40,000 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)

N

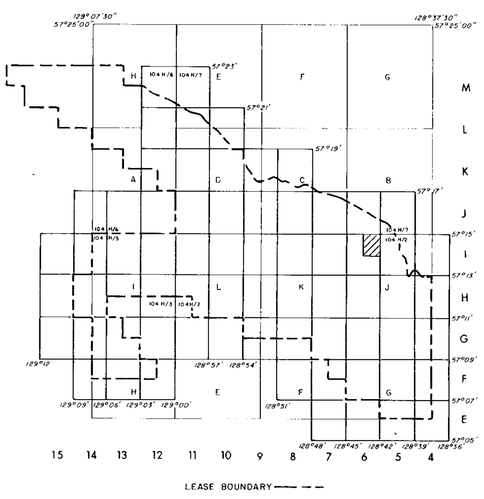
SCALE 1:2500

0 — 0.125 — 0.25 MILES

25 — 0 — 50 — 100 — 150 — 200 — 250 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
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

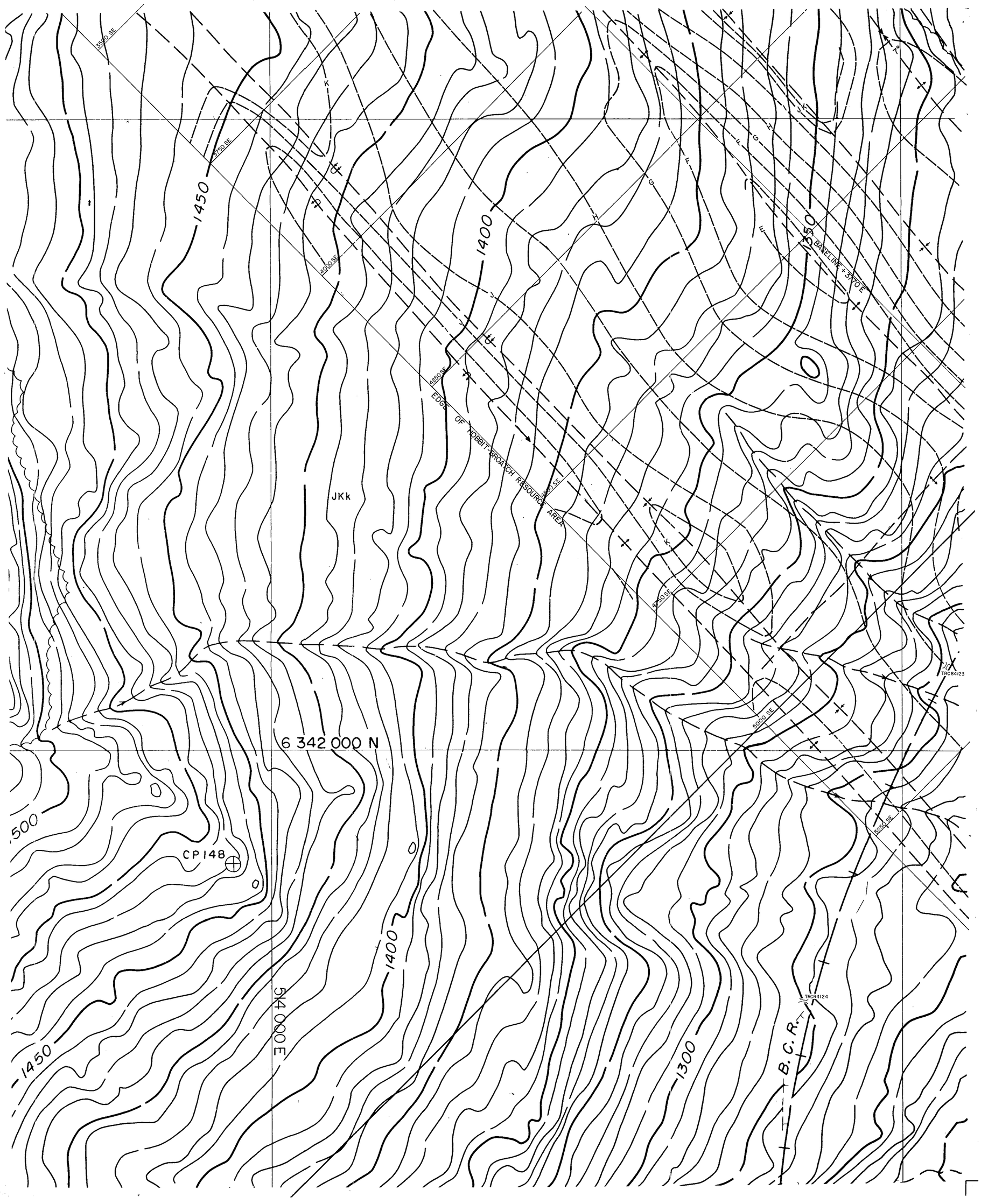
Js Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant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

GR.-Mt. Klappan 84(2) A — 695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP I-6 N.E.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84 HB-28



LEGEND

BUILDING
ROAD, HARD SURFACE
LOOSE SURFACE
CART TRACK
TRAIL
RAILROAD BED
RIVER
STREAM, DEFINITE
APPROXIMATE
SPLIT
LAKE
WATER LEVEL — EL 5051
SWAMP
BEAVER DAM — B.D. B.D.
TREE LINE
CUT LINE
CONTOURS, INDEX — 1750
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELLVATION — 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)

N

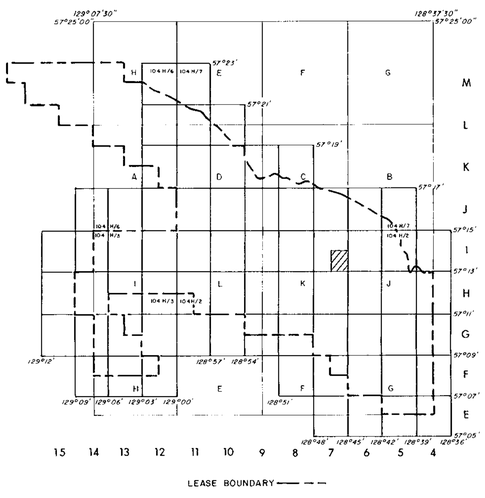
SCALE 1:2500

0 — 0.125 — 0.25 MILES

25 0 50 100 150 200 250 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
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

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.

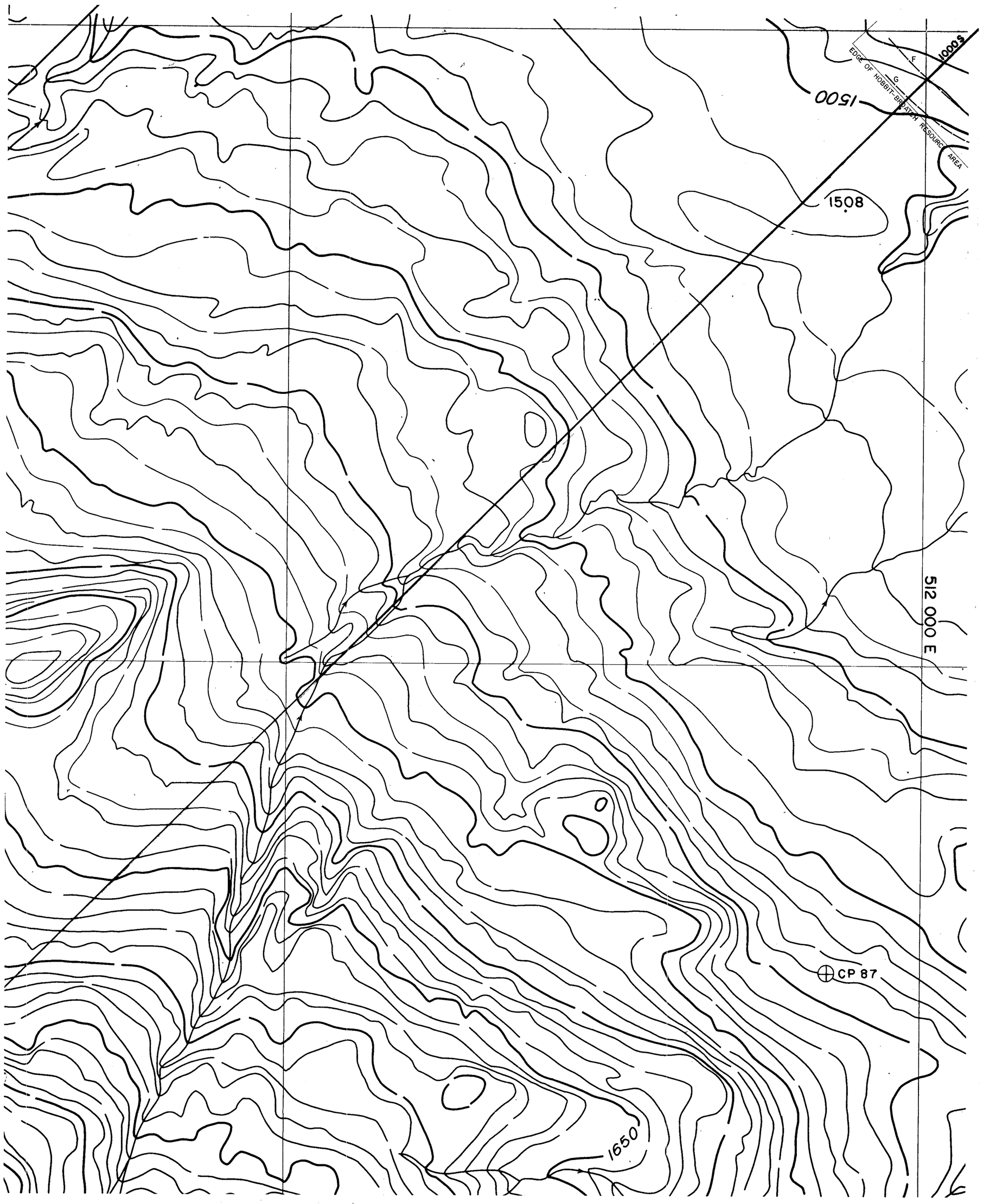
GR.-Mt. Klappan 84(2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP I-7 S.E.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84 HB-29



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
CONTOUR INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
FORM LINES
LEASE BOUNDARY POINT
LEGAL LINES

NOTES

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

CONTOUR INTERVAL 10.0M, WITH FORM LINES INTERVAL 2.5 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)

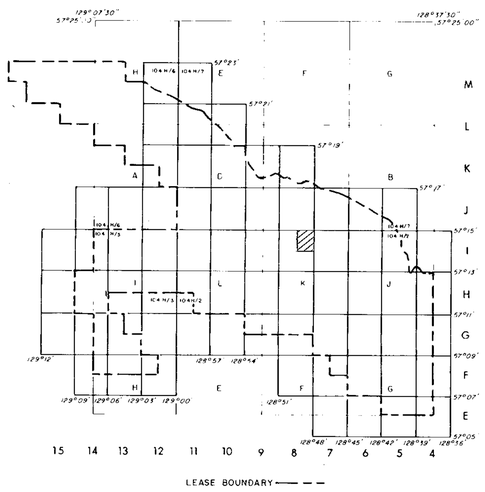
SCALE 1:~~5000~~ 2500

0 0.125 0.25 MILES

25 50 0 50 100 100 200 150 300 200 400 250 500 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.

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

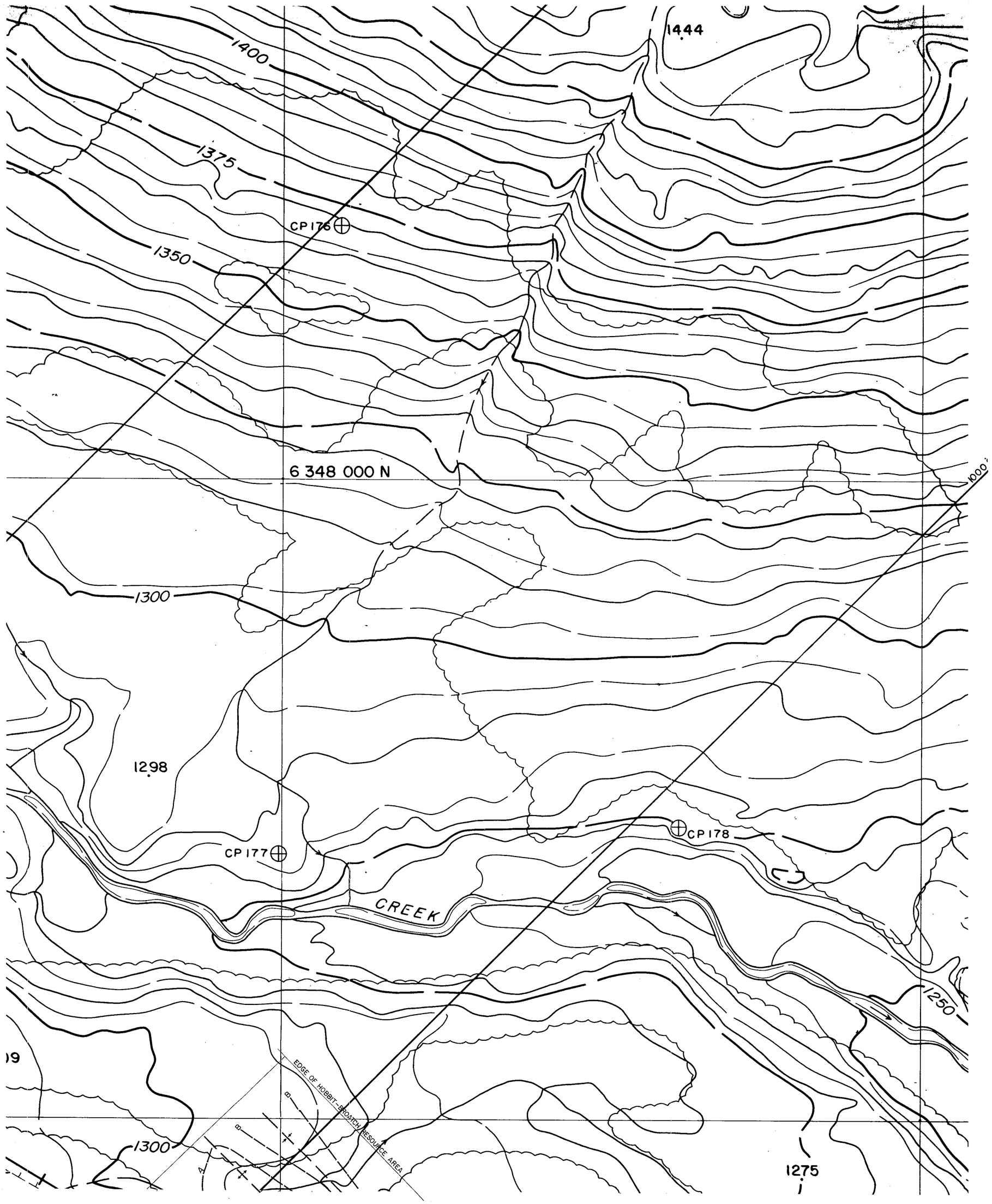
GR.-Mt. Klappan 84(2) B

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP I-8 N.E.

PREPARED BY: G.S., E.L.		SCALE 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985	DWG. No. KPN84HB-30



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
CONTOUR, INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
FORM LINE
CUT BANK
INFLECTION POINT
LEAD LENGTH

NOTES

MAPPING PRODUCED FROM PHOTOGRAPHIC ENLARGEMENTS OF 1:60,000 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.

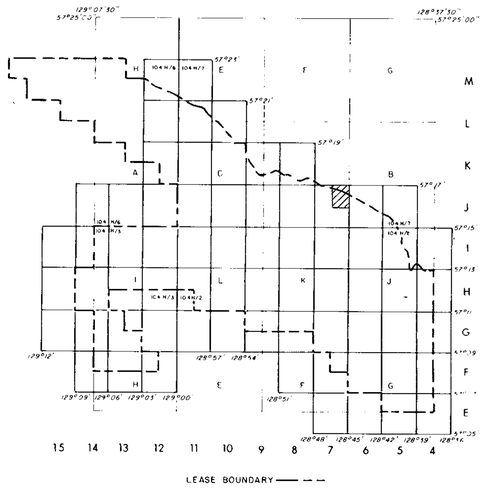
RAILROAD BED LOCATION BASED ON SEPT/82 AERIAL PHOTOGRAPHY

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 1:2500

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
- 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

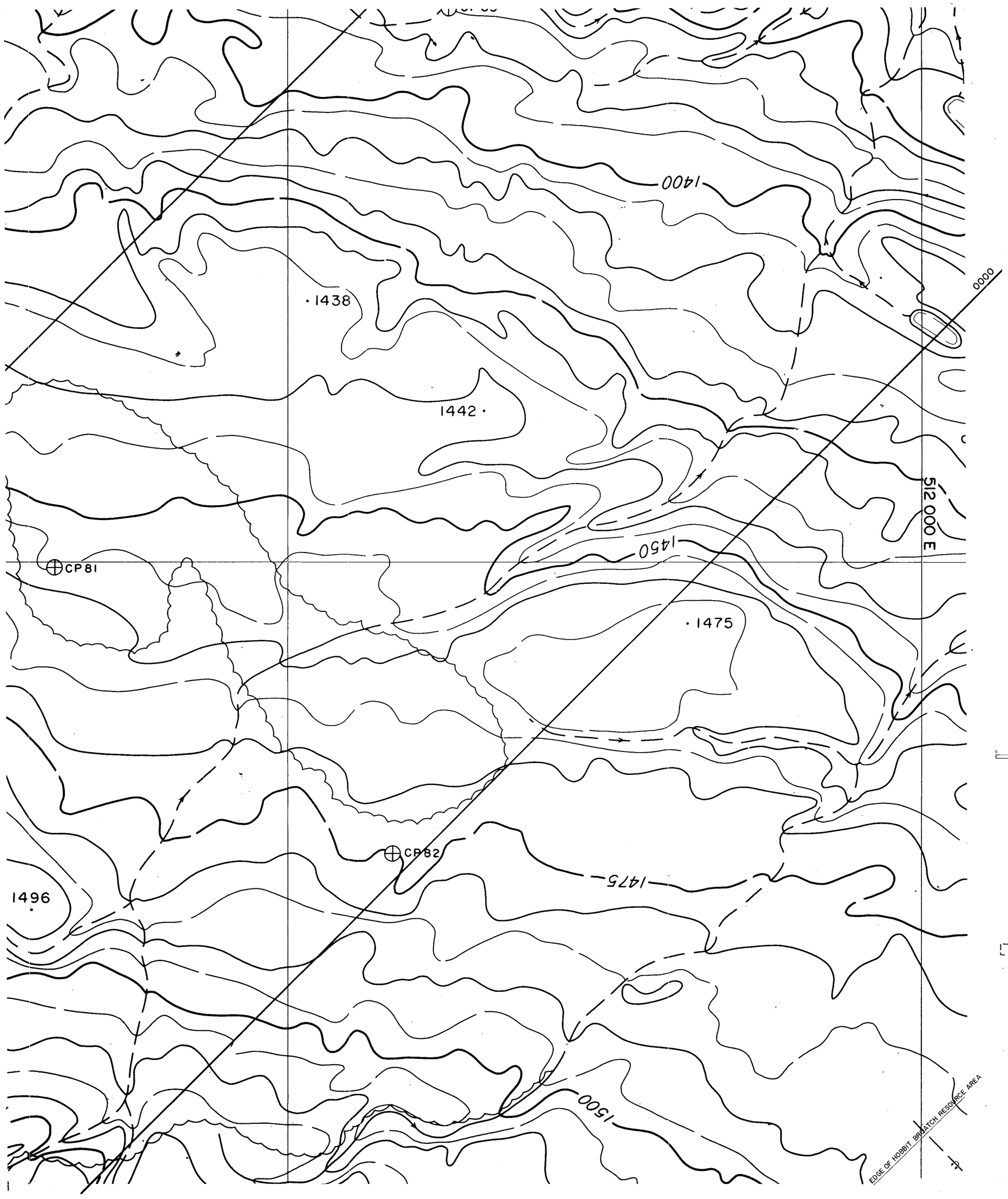
Gr. - Mt. Klappan 84(2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP J-7 N.E.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-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
CONTOUR INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
CONTROL POINT
SALT PANS

NOTES

MAPPING PRODUCED FROM PHOTOGRAPHIC ENLARGEMENTS OF 1:40,000 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 METRES 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)

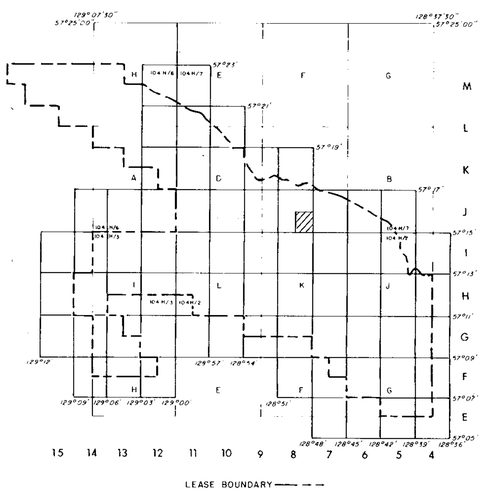
SCALE 1:~~5000~~ 2500

0 0.125 ~~0.25~~ 0.25 ~~0.5~~ MILES

25 ~~50~~ 0 25 ~~50~~ 100 ~~200~~ 150 ~~300~~ 200 ~~400~~ 250 ~~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.

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

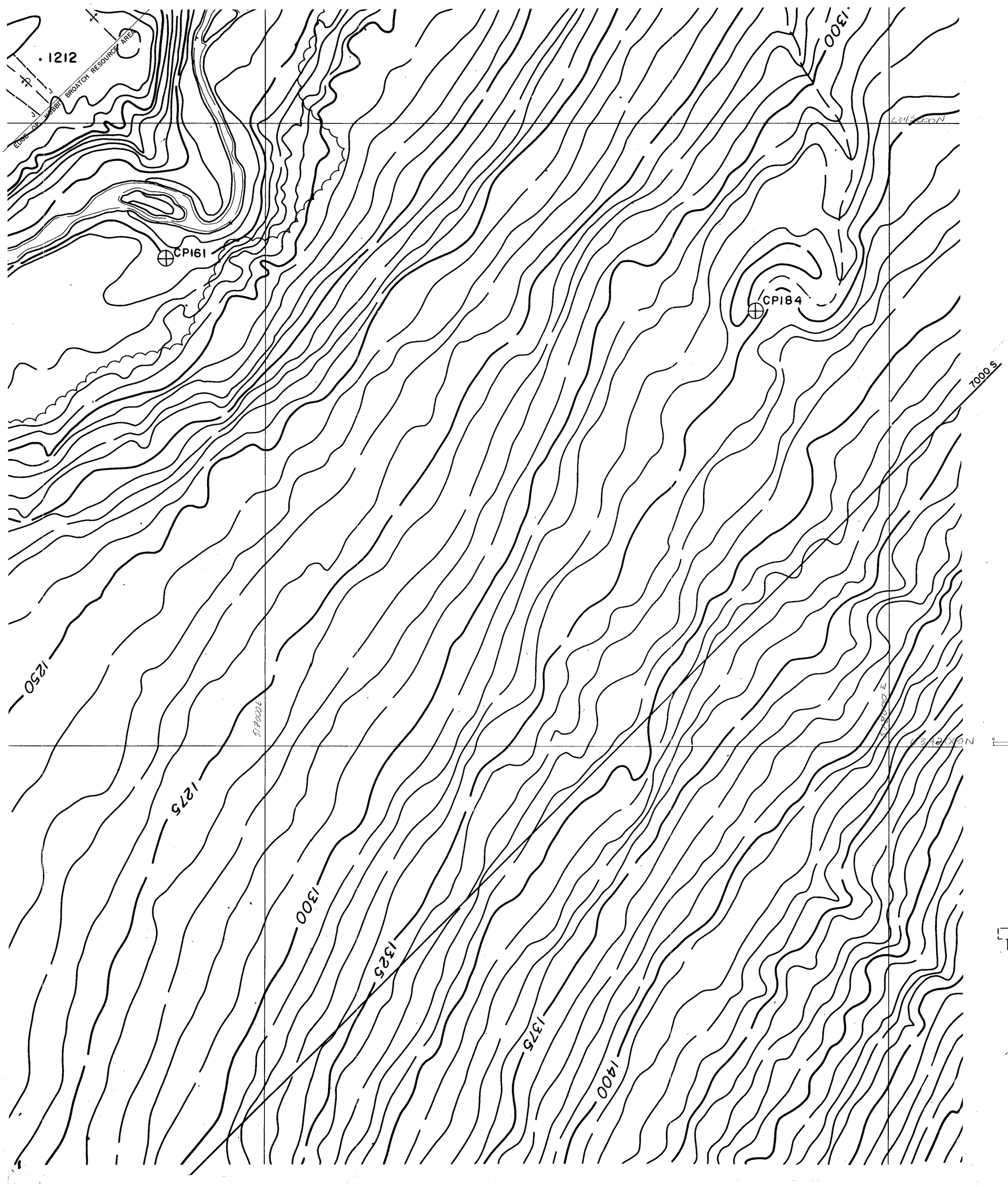
GR:- Mt. Klappan 84(2) 19

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP J-8 S.E.

PREPARED BY: G.S., E.L.		SCALE 1: 2500
APPROVED BY: G.S.	DATE: JAN. 1985	DWG. No. KPN84HB-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
CONTOUR: INDEX
INTERMEDIATE
DEPRESSION
APPROXIMATE
SPOT ELEVATION
FORM LINE
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 1:60000 (APPROXIMATE)

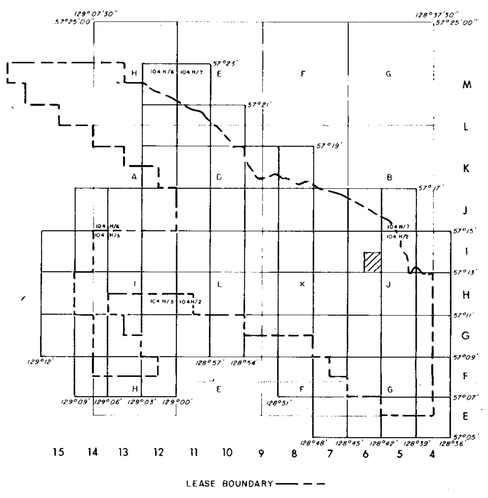
SCALE 1:~~5000~~ 2500

0 0.125 0.25 MILES

25 0 50 100 150 200 250 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.

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

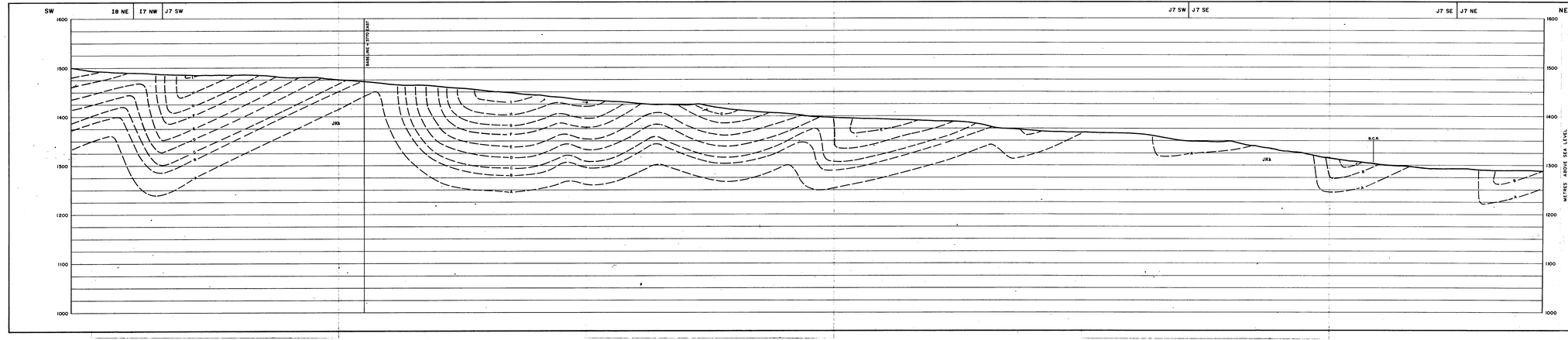
GR. - Mt. Klappan 84 (2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT-BROATCH AREA
MAP I-6 S.E.

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84 HB-33



RHONDDA SEQUENCE

J2Ry Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

J2Km 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)

J2Ks 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

J3 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 sandstone or conglomerate. Coal seams or coaly 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 85001 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR.-MT. KLAPPAN 84(G) 11

GULF CANADA RESOURCES INC.

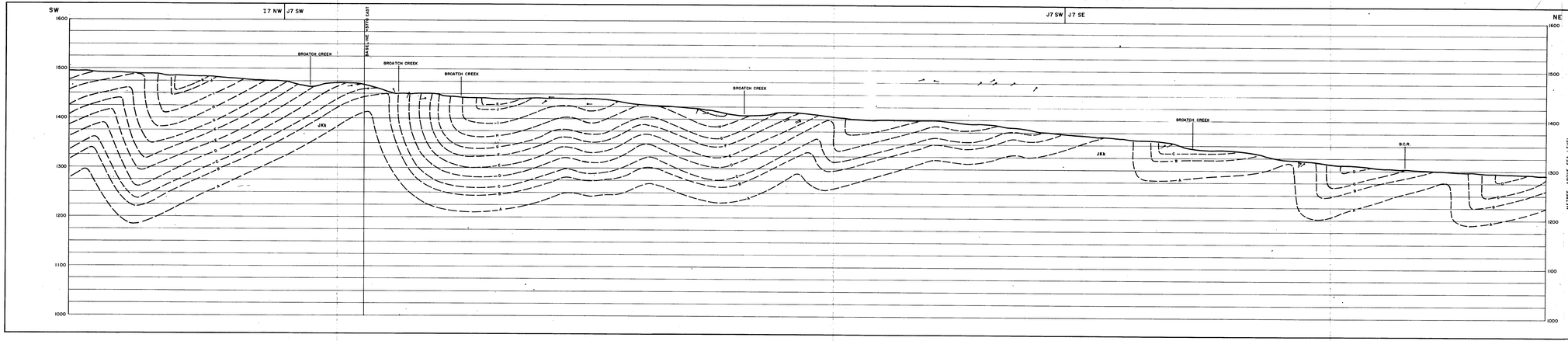
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
1 000 S (EAST)

PREPARED BY: G.S.,E.L.	SCALE 1:2500
APPROVED BY: G.S.	DATE-JAN.1985
	DRAWING No. FPM8448-41



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 permified 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 are laterally discontinuous and commonly show imbrication and high angle 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. Coal seams are rare. Conglomerate beds are laterally discontinuous and coarse 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.)

DOH 83001 BEDDING ATTITUDE

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR-M4. Klappan 84(23) A

GULF CANADA RESOURCES INC.

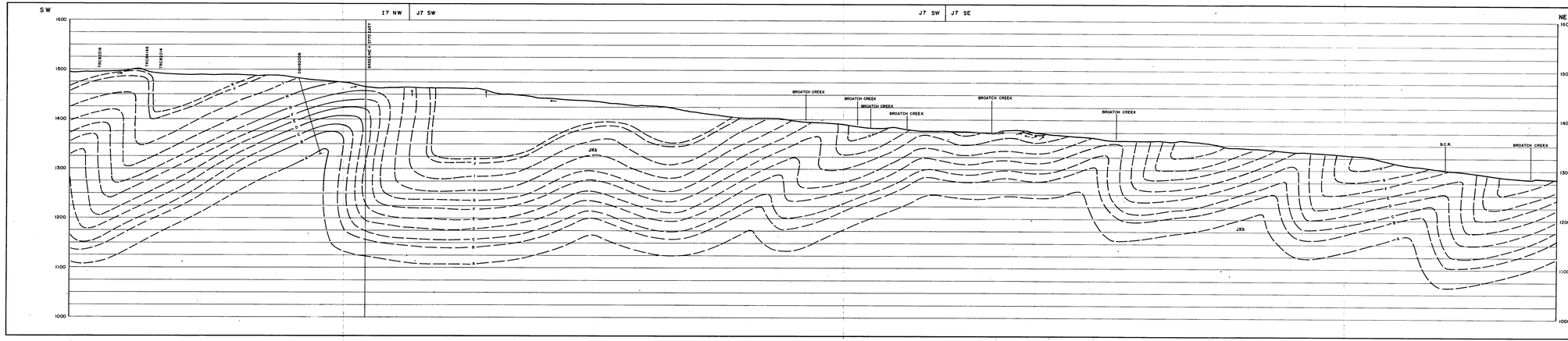
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
I 250 S (EAST)

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KP8484B-42



RHONDDA SEQUENCE

J7U Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

J6Km 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)

J2Kk 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.

SPATSIZI SEQUENCE

J1s 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 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR-Mt. Klappan 84(2)A

GULF CANADA RESOURCES INC.

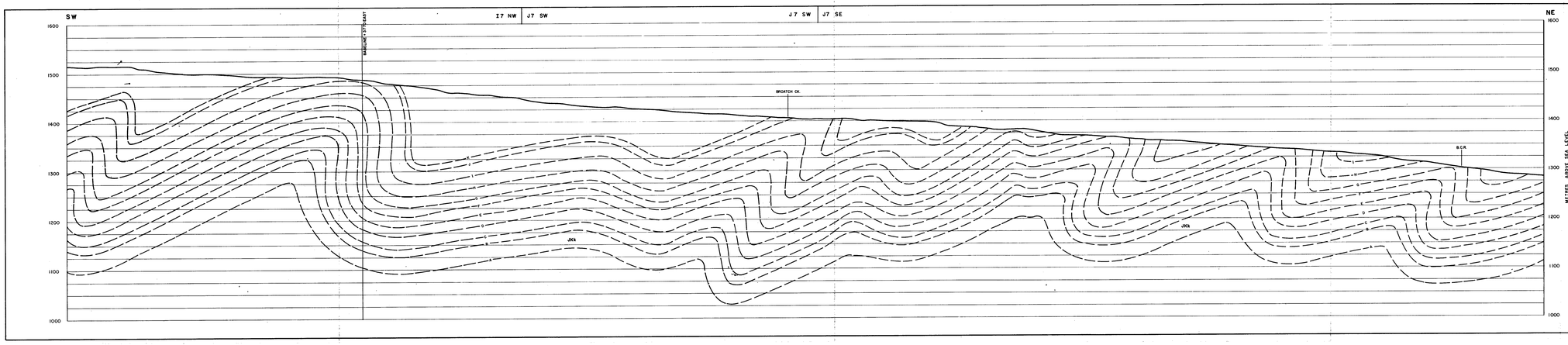
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
1500 S (EAST)

PREPARED BY: G.S., E.L.	SCALE: 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985
	DRAWING No. KM84HB-43



RHONDDA SEQUENCE

JRV — 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 sections of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of carbonaceous mudstones and carbonaceous indurated 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. Bioturbation 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 sandstone or conglomerate. Coal seams/carbonaceous 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 — 1/16 — 1/8 MILE

0 — 50 — 100 — 150 — 200 — 250 METERS

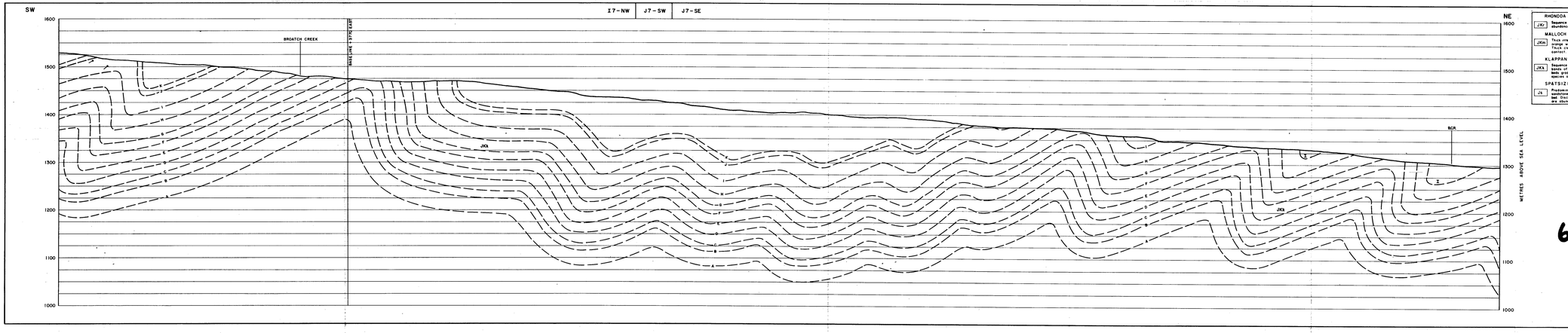
695

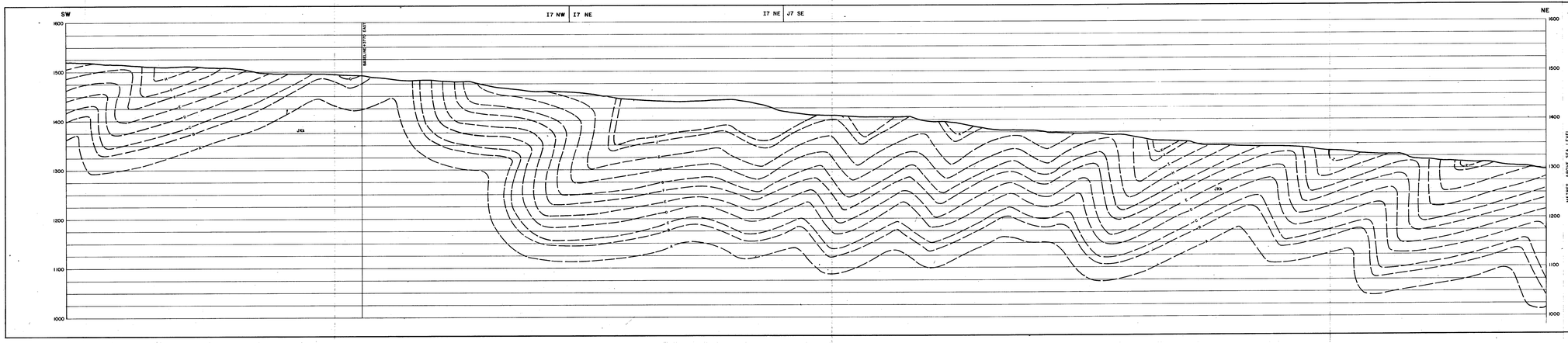
GR.-M. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
I 750 S (EAST)

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985 — DRAWING No. KPM8418-44


SW
NE
I7-NW
J7-SW
J7-SE
1600
1500
1400
1300
1200
1100
1000
METRES ABOVE SEA LEVEL
BROATCH CREEK
HOBBITS CREEK
JKR
JKG
BCR
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 poor fossils. Diversies 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.
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. Coal seams are abundant and thick beds lie in the upper portion of the sequence. Diversies 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 1/16 1/8 MILE
0 50 100 150 200 250 METERS
695
GR.-Mt. Klappan 94(2) A
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf
MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
2000 S (EAST)
PREPARED BY: G.S.,E.L.
SCALE 1:2500
APPROVED BY: G.S.
DATE: JAN. 1985
DRAWING No. 09N84NB-45



RHONDDA SEQUENCE

J7U 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 coal. Sandstones are commonly cross-bedded and grade laterally into siltstones and mudstones. Thick clean sandstone beds and the 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 coal seams and sandstones interbedded with mudstones, siltstones, accessory thin beds of pinkish 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 occurrance of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are abundant and belemnites are rare.

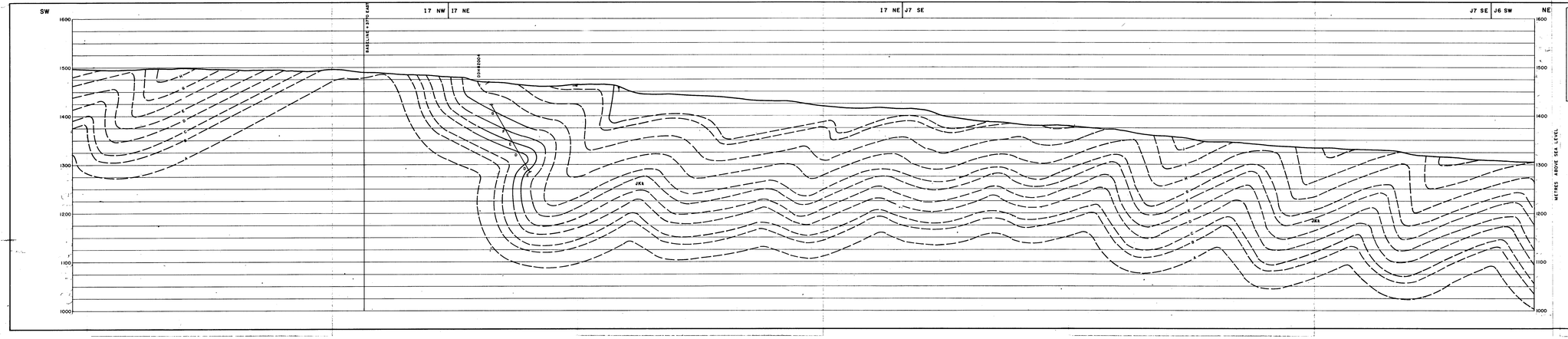
695

GR - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
2 250 S (EAST)

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985 DRAWING No. KM84HB-4C



RHONDDA SEQUENCE

JKr Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing sequence 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 fossil fauna. 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 coal and thick, massive conglomerates and abundant coal seams. Conglomerate beds tend to coarsen and become more abundant towards the top. Sandstones often display tabular or trough cross-bedding. Several species of pelecypods and plants are common. Bioturbite 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

DDH8300-4 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR.-M6 Klappan 84(2)11

GULF CANADA RESOURCES INC.

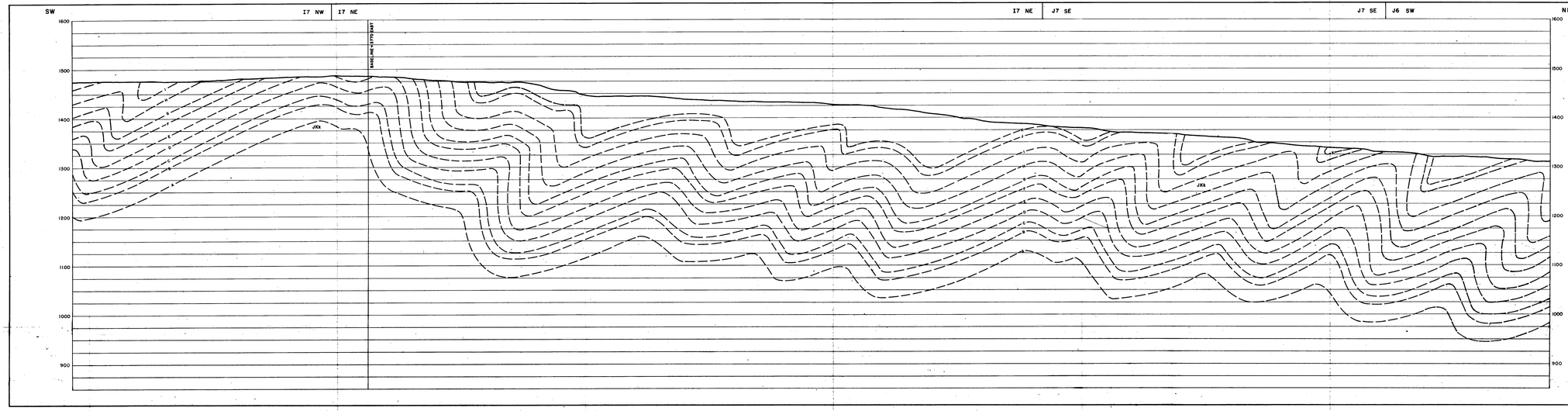
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
2 500 S (EAST)

PREPARED BY: G.S.,E.L.		SCALE 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985	DRAWING No. EPM8416B-47



JRHONDDA SEQUENCE

JRV — 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 coal. Conglomerate beds are rare and sandstones are generally argillaceous. Bivalves are abundant. Thick steep 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)

JKS — Sequence of fine to coarse grained sandstones interbedded with mudstones, siltstones, occasional thin bands of orange weathering carbonous siltstones, conglomerates and abundant coal seams. Conglomerate beds grade laterally into sandstones. 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 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR.-Mt. Klappan B4(2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
2 750 S (EAST)

PREPARED BY:		SCALE : 1:2500
APPROVED BY:	DATE: JAN. 1985	DRAWING No. EPN5448-48

RHONDDA SEQUENCE

JRr 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 are laterally continuous and tend to be more abundant towards the base. 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. Coal seams are rare. Sandstones are fine grained and tend to be massive bedded. 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 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR. - M. Klemm 84(2) A

GULF CANADA RESOURCES INC.

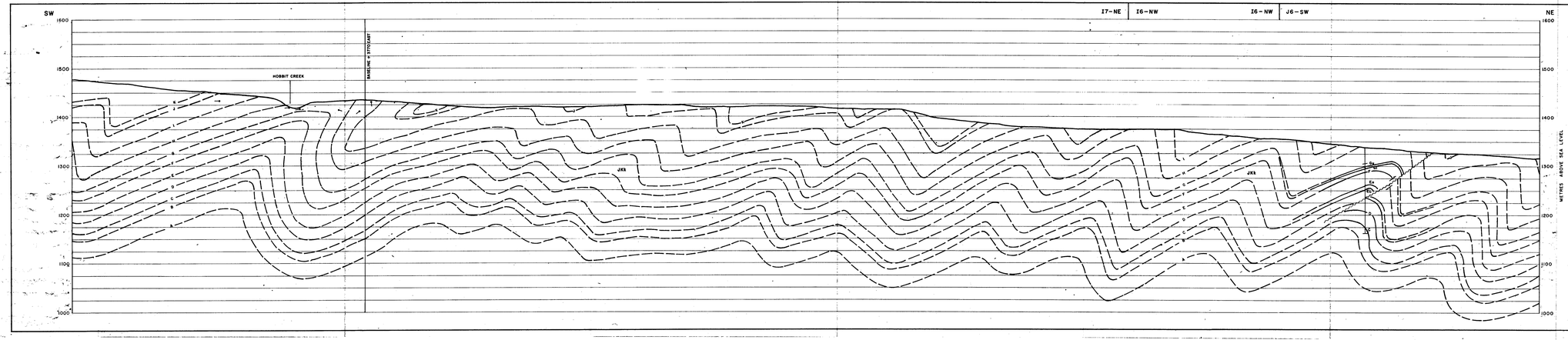
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
3 000 S (EAST)

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPR84HB-49



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. Bioturbs 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 tend to be laterally discontinuous. Sandstones are characterized by cross-trough 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. Thin beds of orange weathering calcareous siltstones are common near the contact. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bioturbs are abundant and belemnites are rare.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED, INFERRED)

GEOLOGICAL CONTACT (APPROX., INFERRED)

FAULT TRACE (DEFINED, APPROX.)

BEDDING ATTITUDE

DDH 83-001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

Gb - Mt. Klappan 84(2) a

GULF CANADA RESOURCES INC.

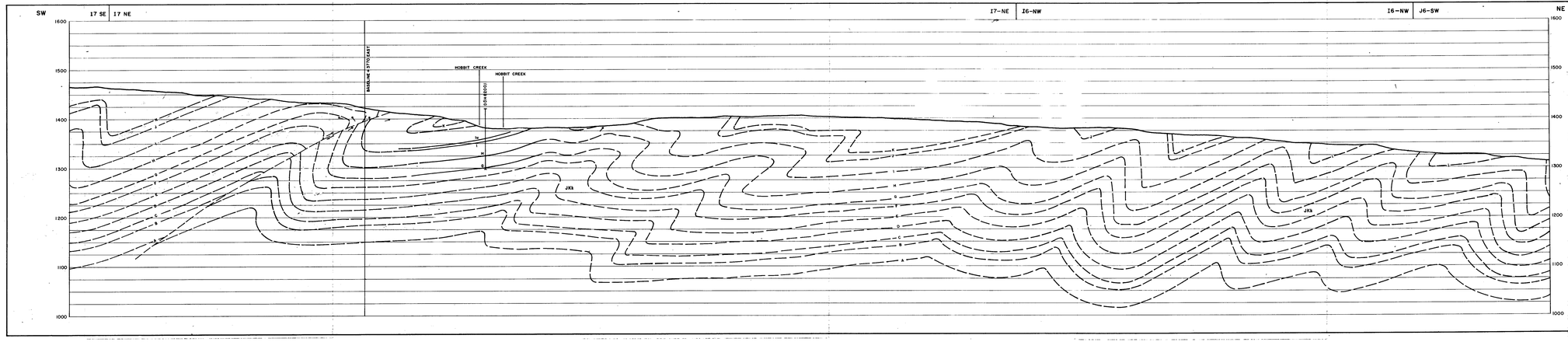
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
3 250 S (EAST)

PREPARED BY: G.S., E.S.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84HB-50



RHONDA SEQUENCE

JKC — Sequence of fairly massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the Swan contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous nodular siltstones. Sandstones are fine grained, well sorted, and quartzose. Thick clean sandstone beds and thin coal seams increase in abundance towards the Swan grandstand contact. Sequence can contain petrified wood and plant fossils. Bivalves are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKS — Sequence of fine to coarse grained sandstones variously bedded with mudstones, siltstones, occasional thin beds of orange weathering siliceous nodules, conglomerates and abundant coal seams. Conglomerate beds are generally crib conglomerate. 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

DDH85001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/16 — 1/8 MILE

0 — 50 — 100 — 150 — 200 — 250 METERS

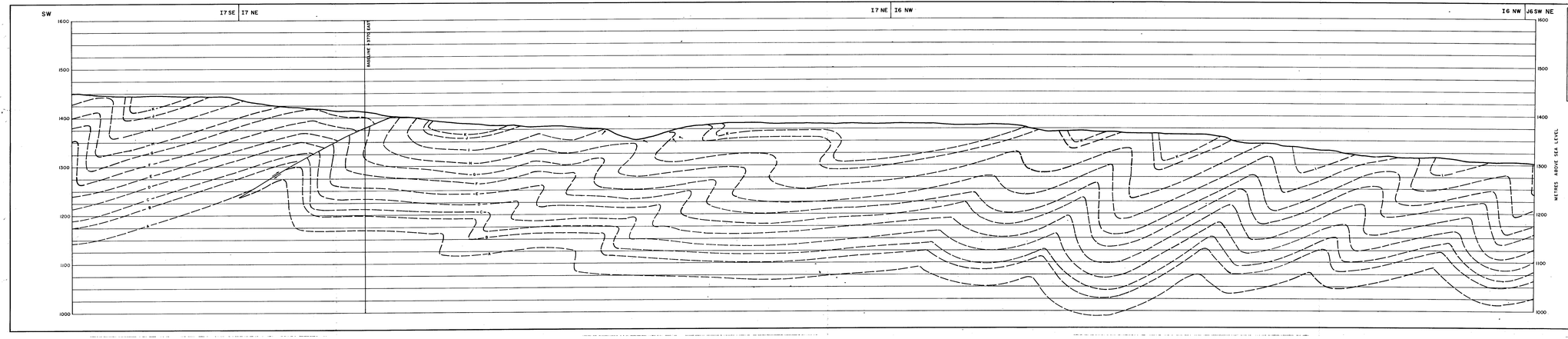
695

Gr. - Mt. Klappan 84(2) B

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
3 500 S (EAST)

PREPARED BY: G.S.L.E.L.	SCALE 1:2500
APPROVED BY: S.S.	DATE-JAN 1985 — DRAWING No. 6PB8418-S1



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 arg/ilaceous sandstones and thin beds of conglomerate. Sandstones are commonly cross-bedded and conglomerates are 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 thick coal seams and thick 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.

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 85001

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR.-MT. KLAPPAN BY(2) A

GULF CANADA RESOURCES INC.

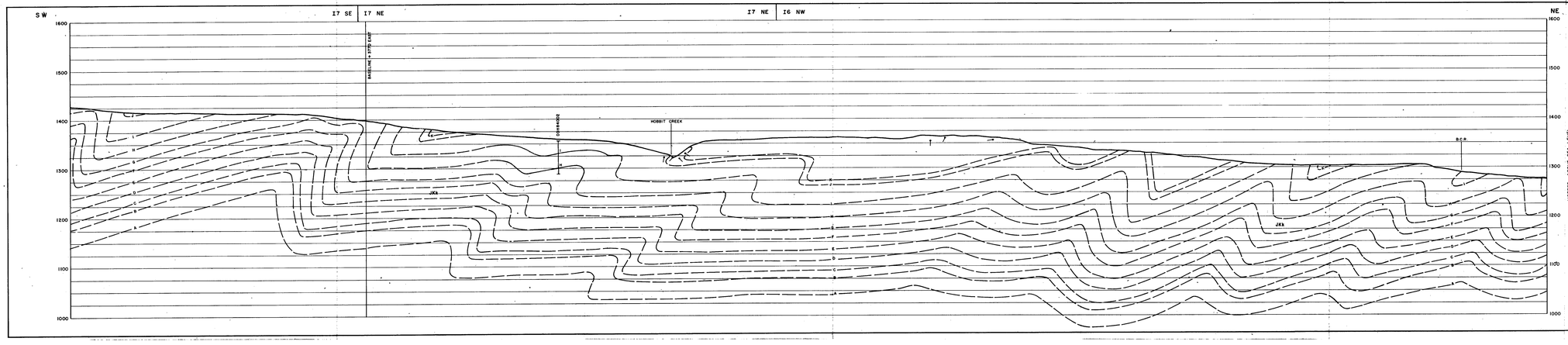
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
3750 S (EAST)

PREPARED BY: G.S., E.S.	SCALE 1:2500
APPROVED BY: G.S. DATE JAN 1985	DRAWING No RP86HB-02



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 sandstone and thin beds of coal. Sandstones are commonly cross-bedded and contain abundant coal seams. Coal seams are 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)

JKs 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 8300

DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR-MT. KLAPPAN 84(2)B

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY

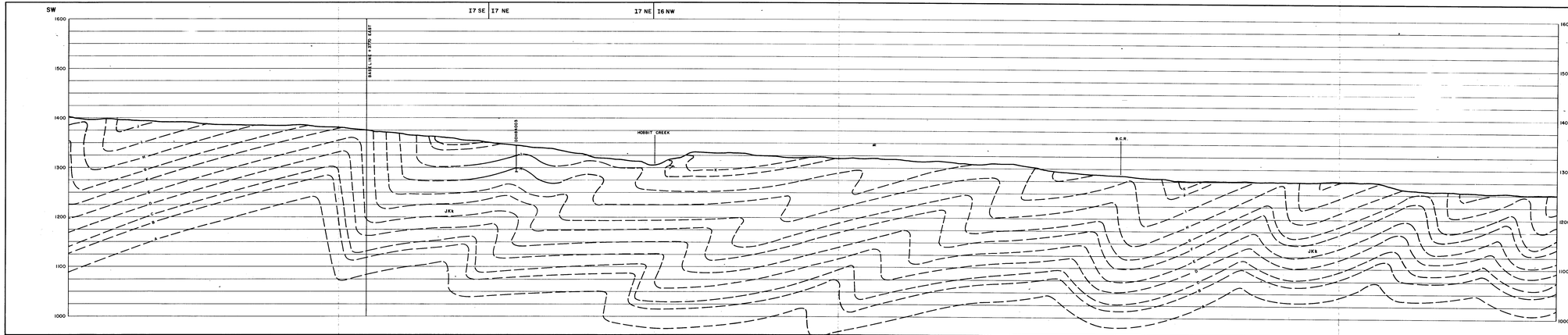
1984

GEOLOGICAL CROSS SECTION

HOBBIT-BROATCH AREA

4000 S (EAST)

PREPARED BY: S.S., E.L.	SCALE 1:2500
APPROVED BY: S.S.	DATE: JAN. 1985 DRAWING No. 2PR84HB-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 semi-fossil 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 sandstones. Sandstones often display tabular or trough cross-bedding. Several horizons of decorticated 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 sandstone/conglomerate. Numerous coal seams. Belemnite 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

DDH85001 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GB - Mt. Klappan BK(2) A

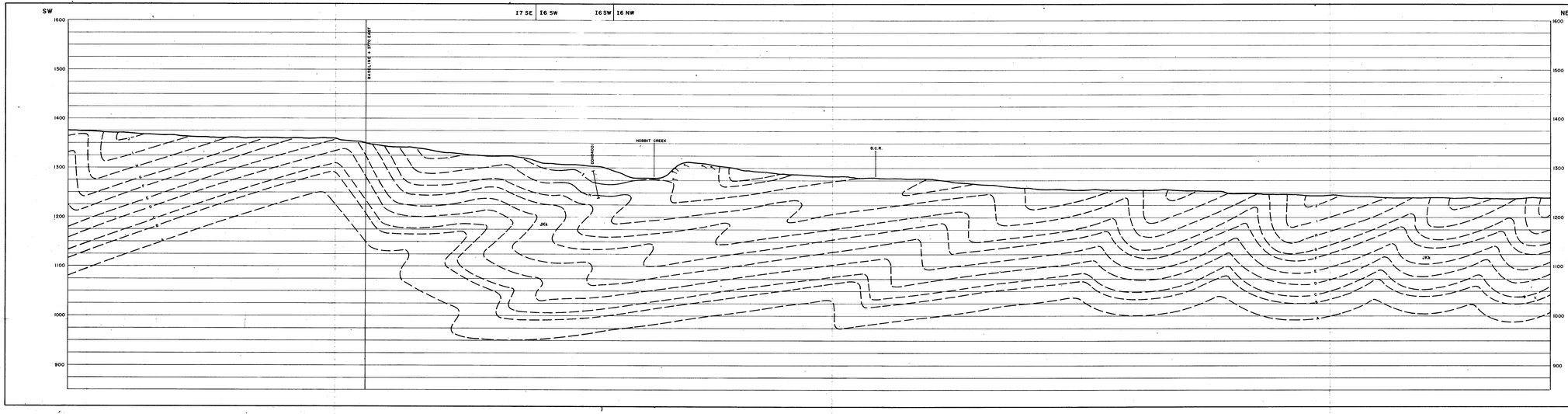
GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
4 250 S(EAST)

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPB8416-S4



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. Sequence has abundant coal seams. Sandstones are commonly coarsening upwards and have 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 siliceous nodular 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. Batonites 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

DDH85001 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

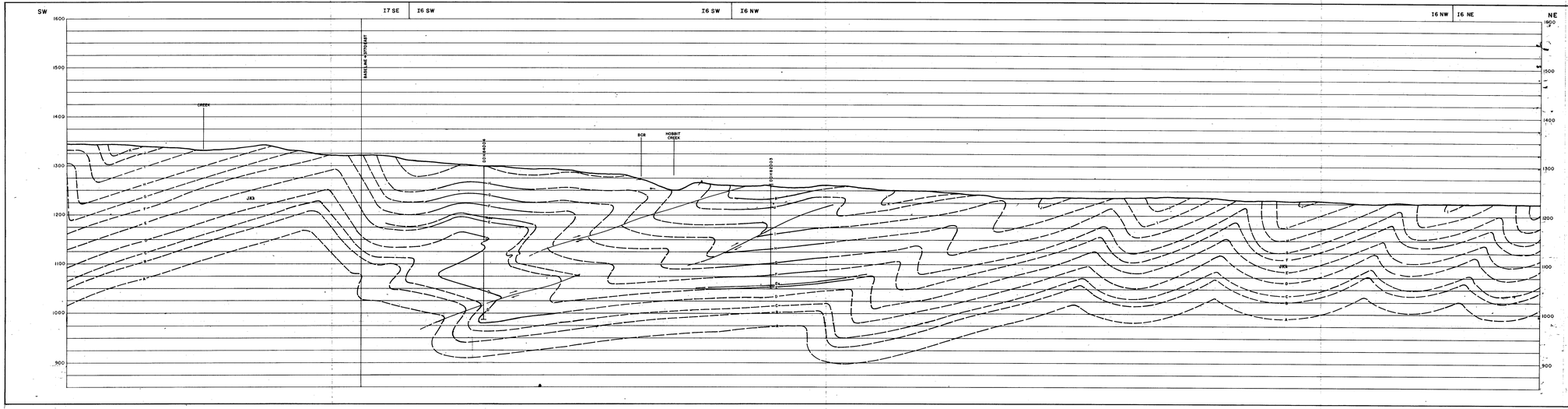
695

GB-M6 Klappan 84(2) B

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
4 500 S (EAST)

PREPARED BY:		SCALE 1:2500
APPROVED BY:	DATE: JAN 1985	DRAWING No. KM84HB-05



RHONDDA SEQUENCE

JK7 Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact.

MALLOCH SEQUENCE

JK6 Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous rudstar 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)

JK5 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 are laterally discontinuous. Sandstones often display tabular or trough cross-bedding. Several species of pelecypods and plants are common. Bulamites and ammonites are rare.

SPATSIZI SEQUENCE

J4 Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The basal 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

DDH8300 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

GR.-Mt. Klappan 84(2) A

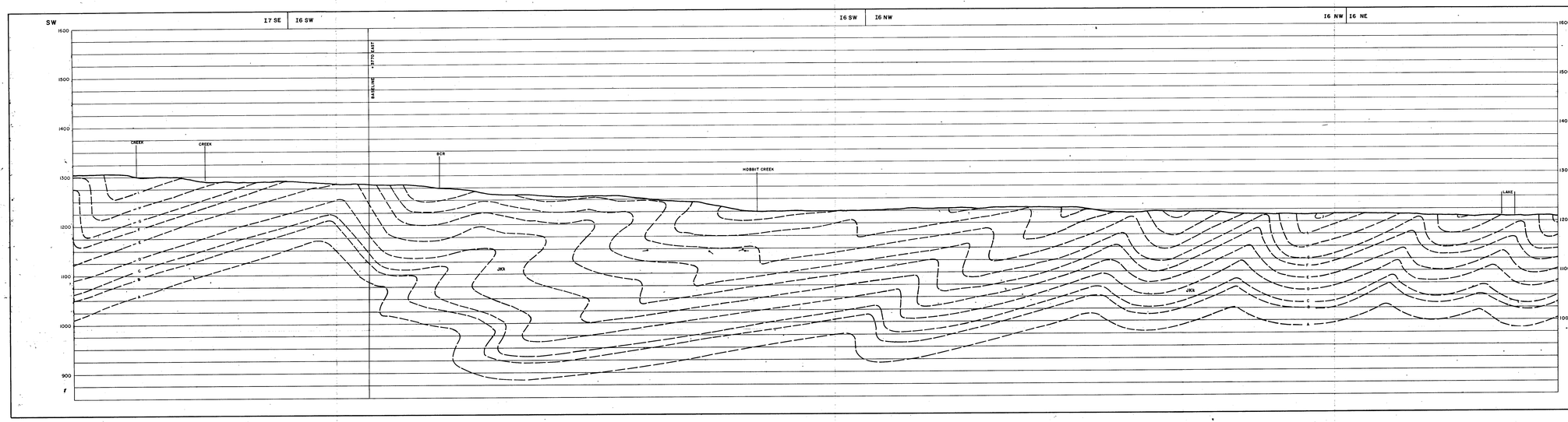
GULF CANADA RESOURCES INC.

CALGARY Coal Division ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
4 750 S (EAST)

PREPARED BY: G.S., E.L. SCALE 1:2500

APPROVED BY: S.S. DATE-JAN. 1985 DRAWING No. KPG 8410-90



RHONDDA SEQUENCE

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

MALLOCH SEQUENCE

JRm	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)

JKR	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 are laterally discontinuous and exhibit a complex lobular 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

DDH85001 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/16 1/8 MILE

0 50 100 150 200 250 METERS

695

Gr. - Mt. Klappan Bx(2) A

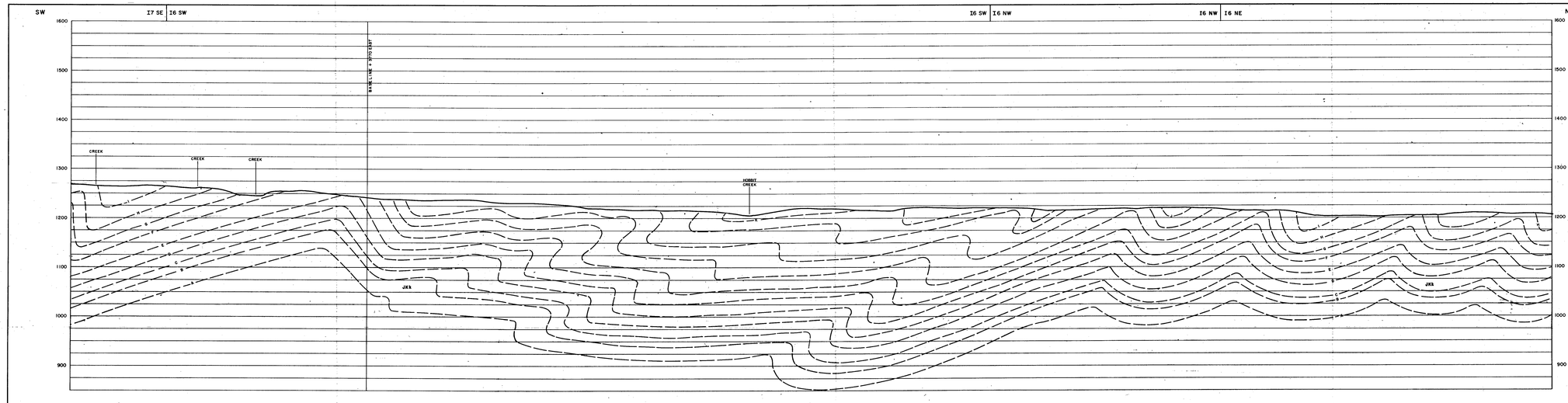
GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
5000 S (EAST)

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S.	DATE-JAN. 1985 DRAWING No. KM8841B-



RHONDDA SEQUENCE

JKr — Sequence of thick massive conglomerates and minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the lower 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 intermittently discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the lower 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. Conglomerate and abundant coal seams. Conglomerate beds are massive and discontinuous. Sandstones are display tabular or trough cross-bedding. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly 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

DDH85001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 — 1/16 — 1/8 MILE

0 — 50 — 100 — 150 — 200 — 250 METERS

695

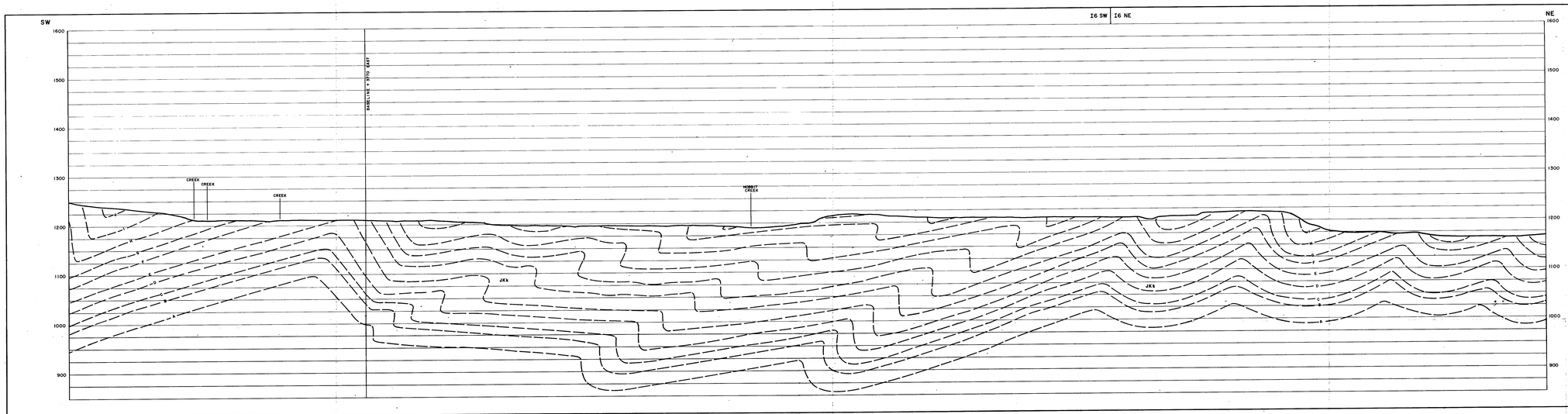
Gr. - Mt. Klappan Bylaw II

GULF CANADA RESOURCES INC.

CALGARY — Coal Division — ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
5 250 S (EAST)

PREPARED BY: G.S., E.L.	SCALE 1:2500
APPROVED BY: G.S.	DATE: JAN. 1985 — DRAWING No. KPR 5410-58



RHONDDA SEQUENCE

JRd — 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 chert 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 siliceous siltstones, conglomerates and abundant coal seams. Conglomerate beds tend to be laterally discontinuous. Sandstones are characterized by cross and wavy 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. Thin coal seams are present in the uppermost part of a non-marine bed. Calcareous 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 — 1/16 — 1/8 MILE

0 — 50 — 100 — 150 — 200 — 250 METERS

695 Gb-Mt. Klappan 84(12) 10

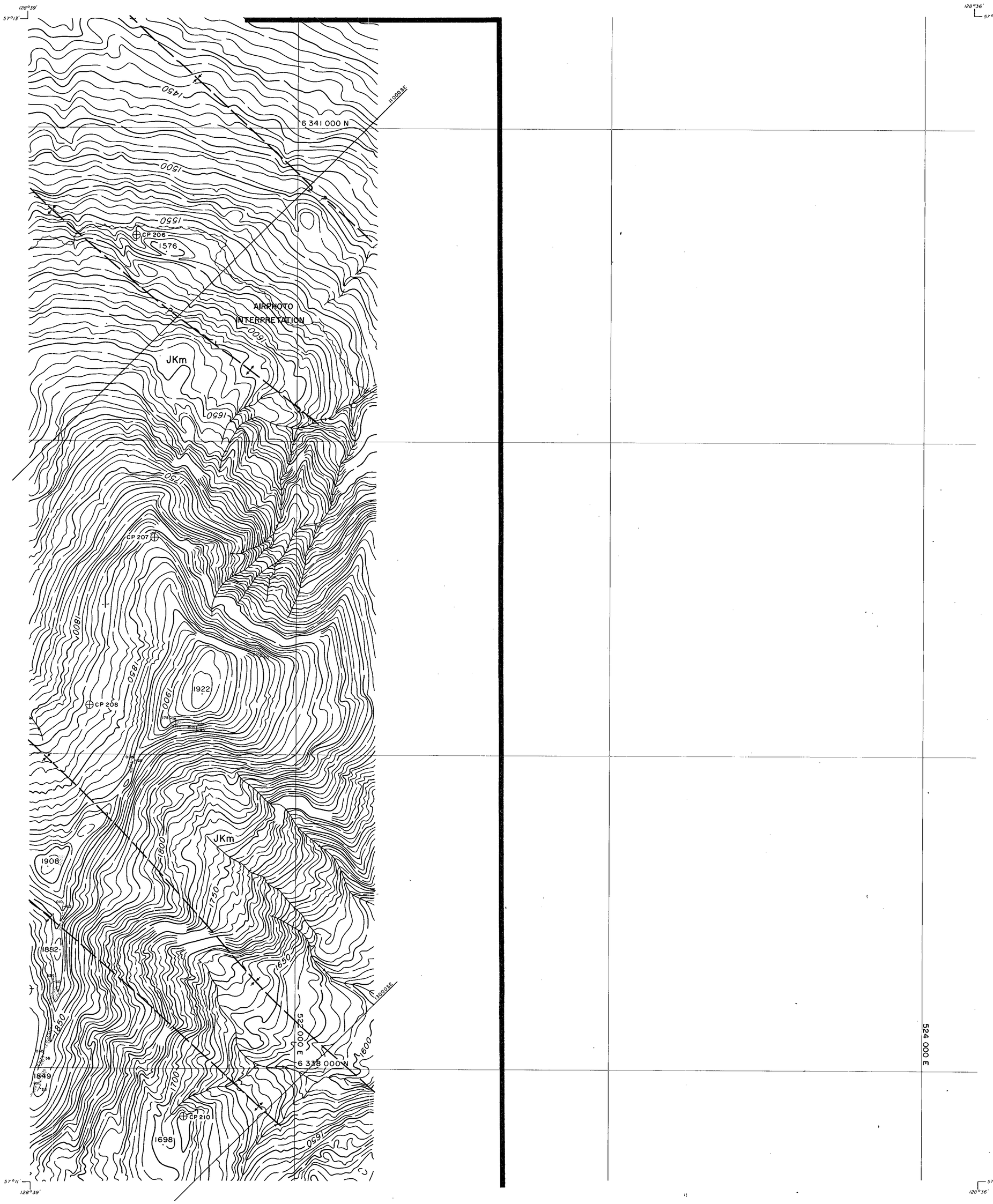
GULF CANADA RESOURCES INC.

Coal Division

CALGARY — ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
5 500 S (EAST)

PREPARED BY: R.S., E.L.	SCALE 1:2500
APPROVED BY: R.S.	DATE: JAN. 1985 — DRAWING No. KPR5840-90



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.

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).

N

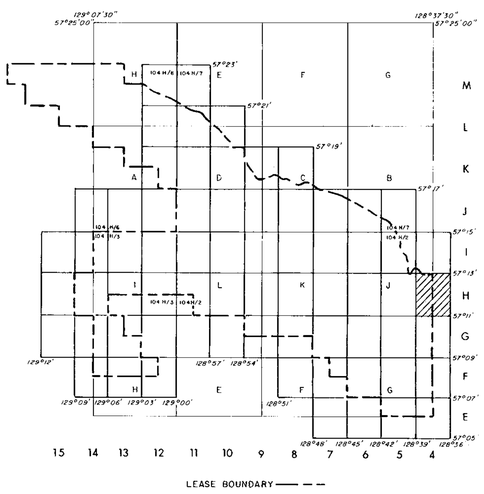
SCALE 1:5000

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.

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

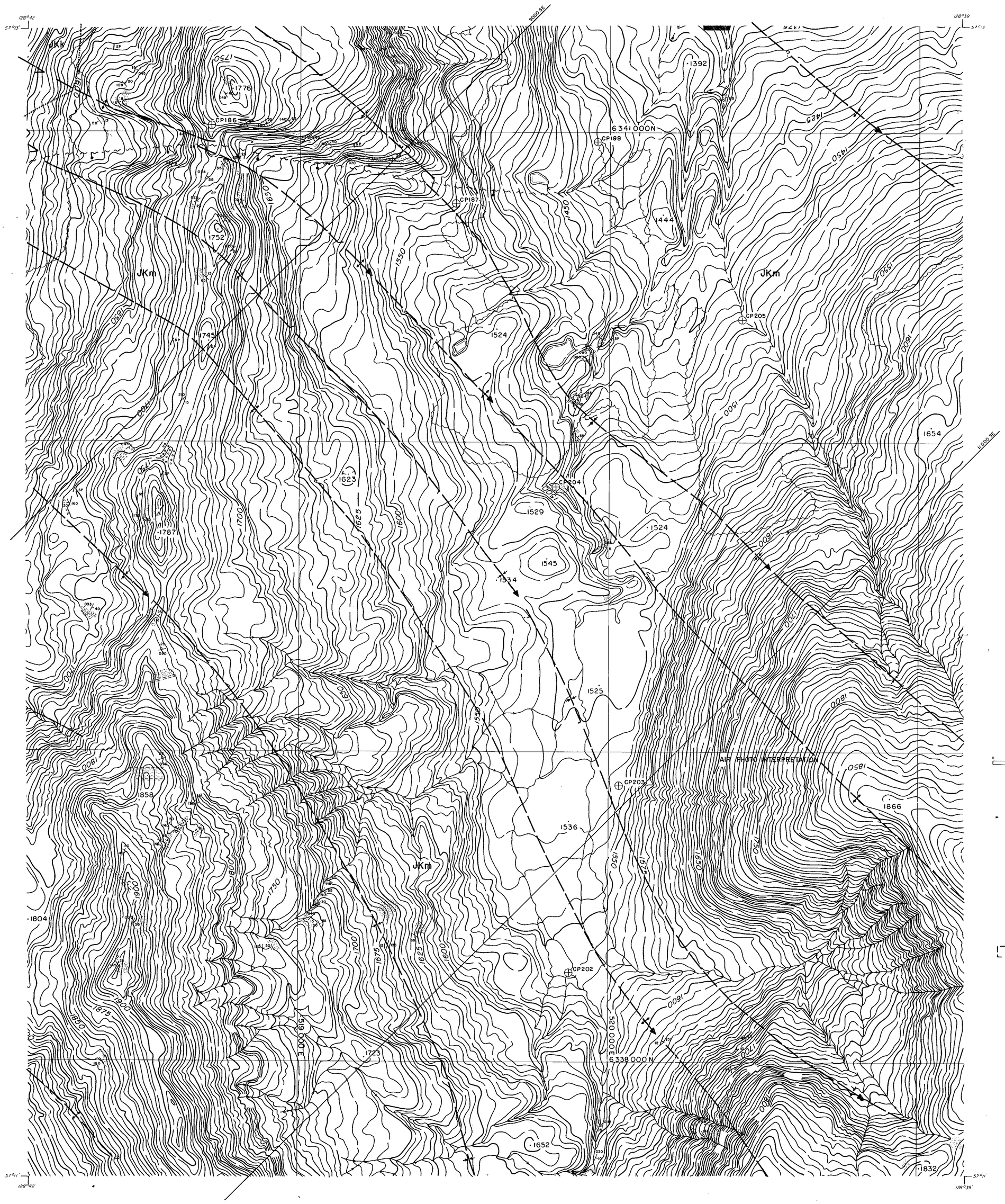
GR.-Mt. Klappan 84(2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP H-4

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-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. 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).

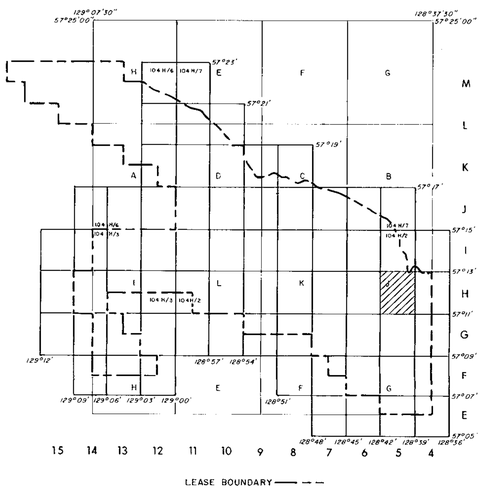
SCALE 1:5000

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.

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

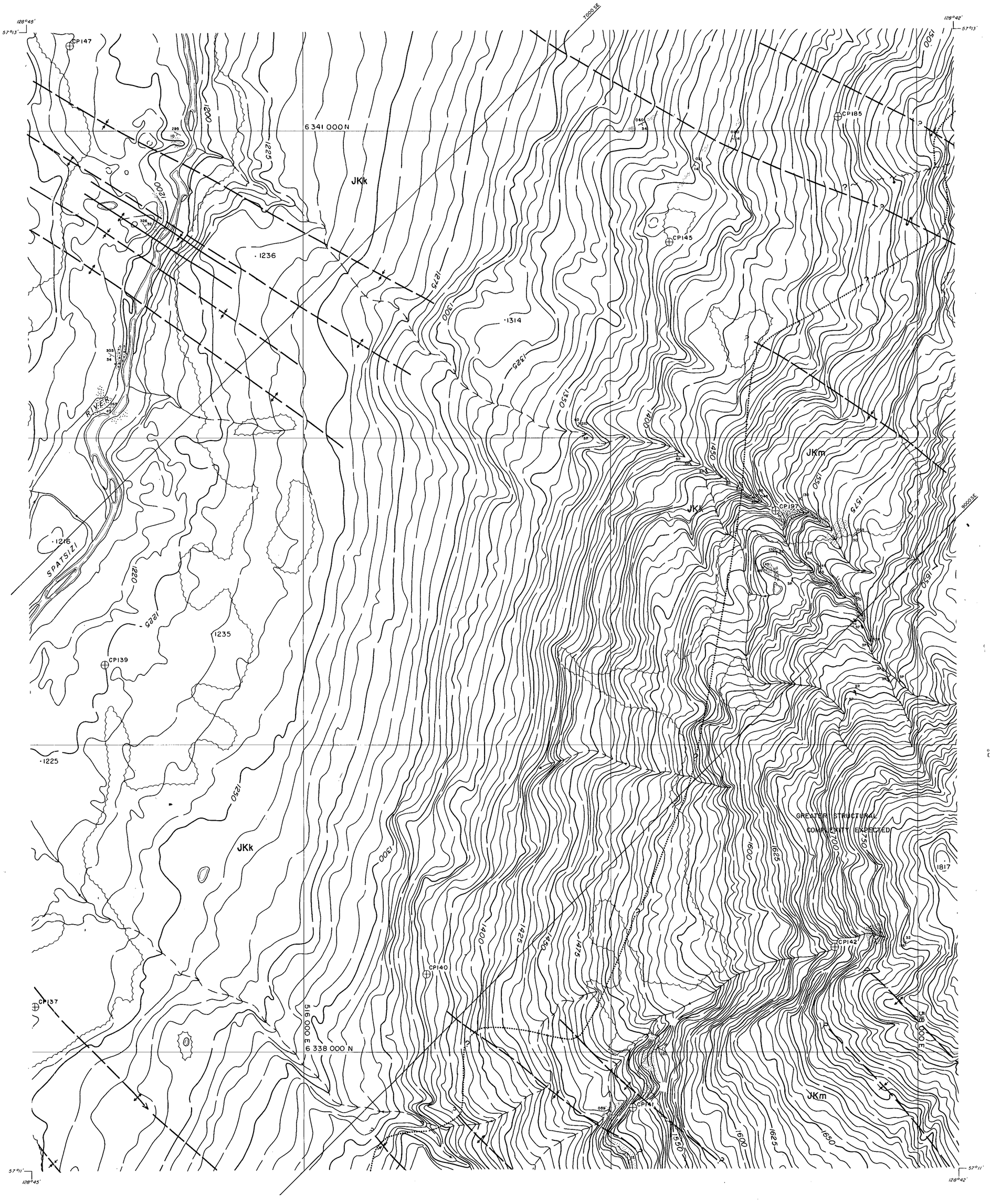
- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
- OVERTURNED SYNCLINE (DEFINED,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

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

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP H-5

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-62



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 — 765±
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).

N

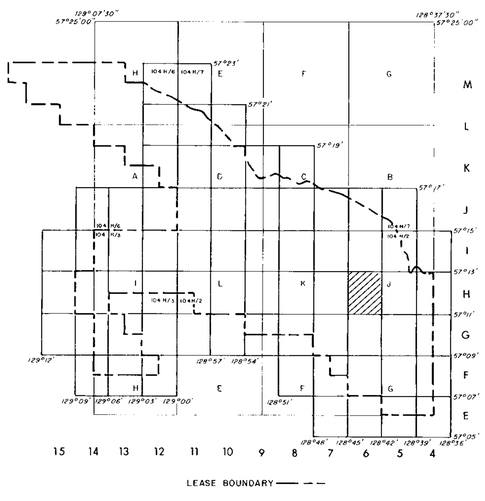
SCALE 1:5000

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.

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

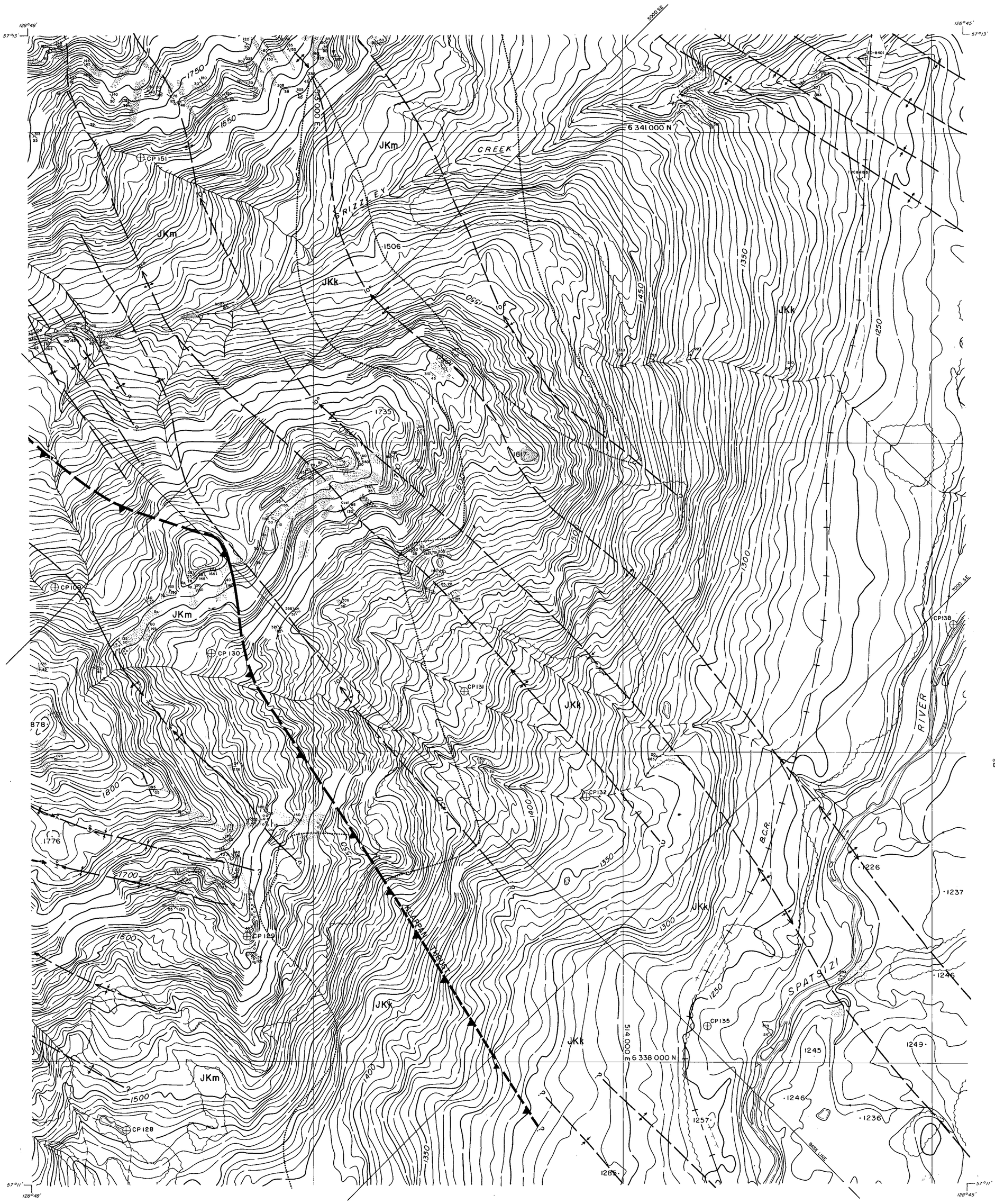
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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
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
HOBBIT - BROATCH AREA
MAP H-6

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-63



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).

N

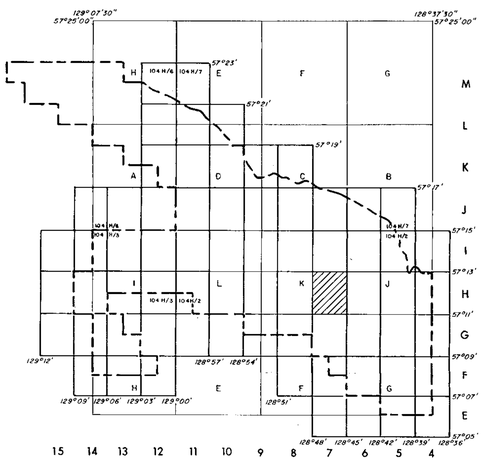
SCALE 1:5000

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

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.

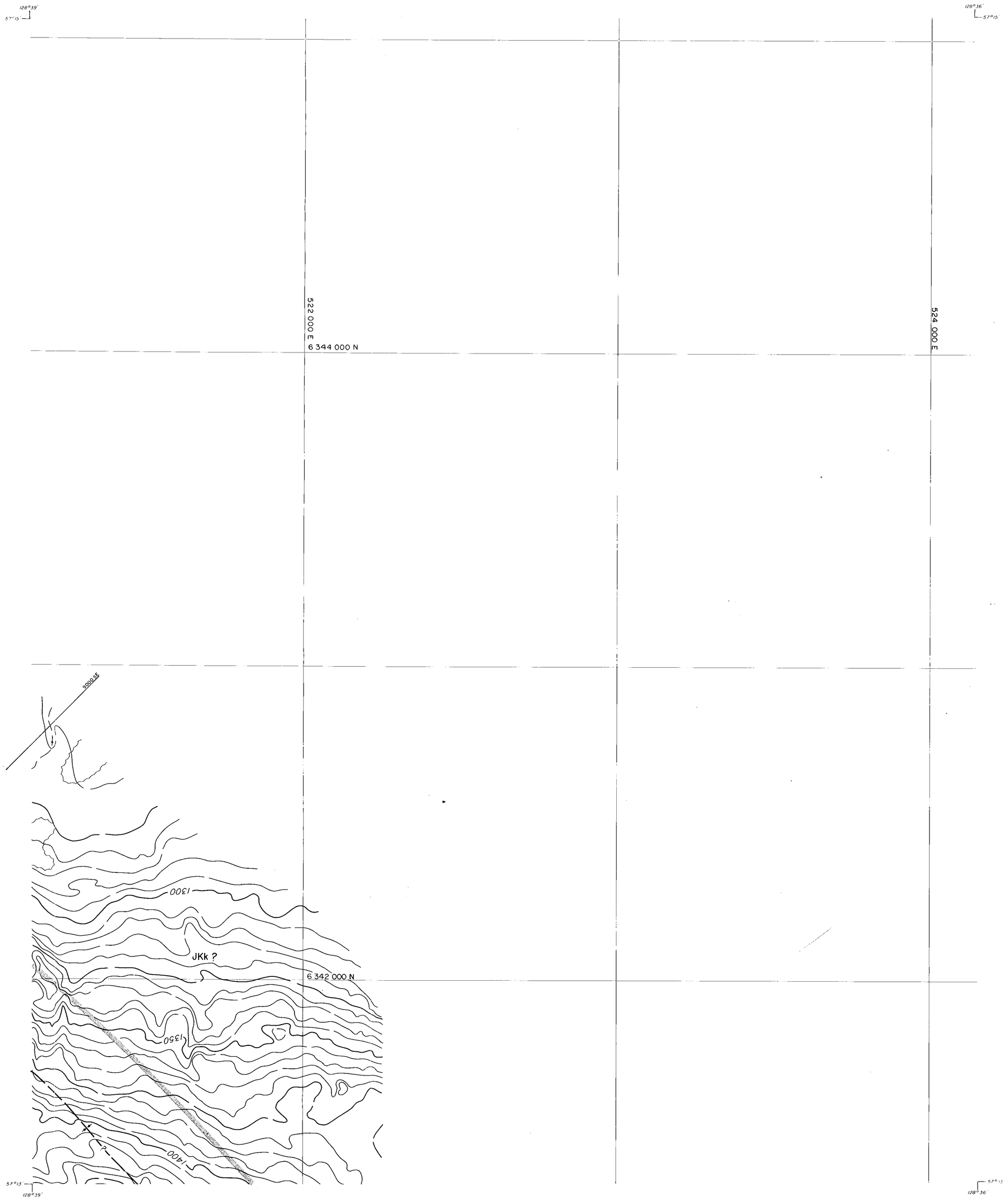
G.R. - Mt. Klappan 84 (2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP H-7

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-64



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 — H.O. 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).

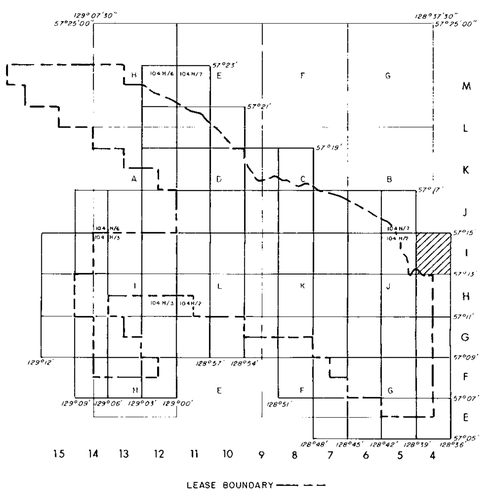
SCALE 1:5000

0 — 0.25 — 0.5 MILES

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

MT. KLAPPAN AREA

INDEX MAP



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
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

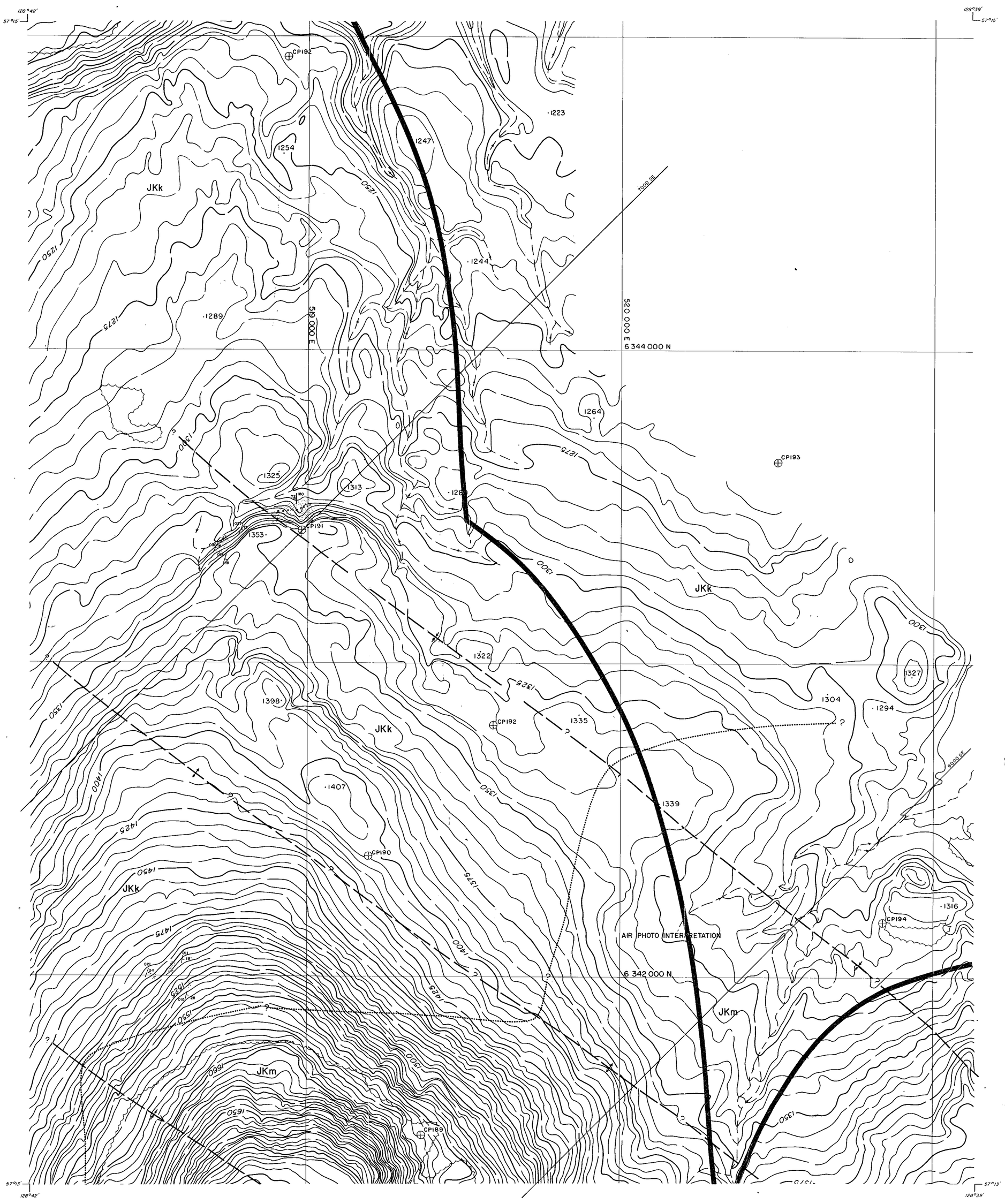
GR. - Mt. Klappan 84 (2) 19

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP I-4

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-65



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.

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).

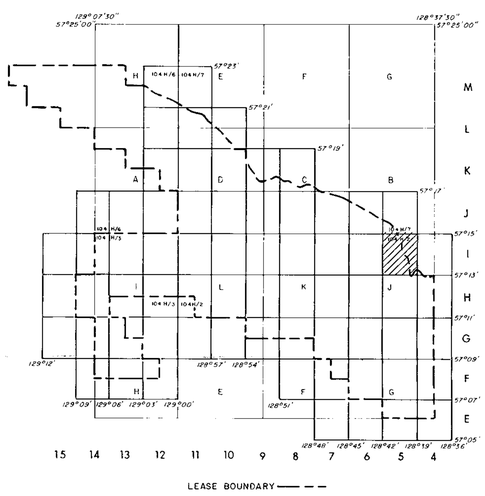
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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

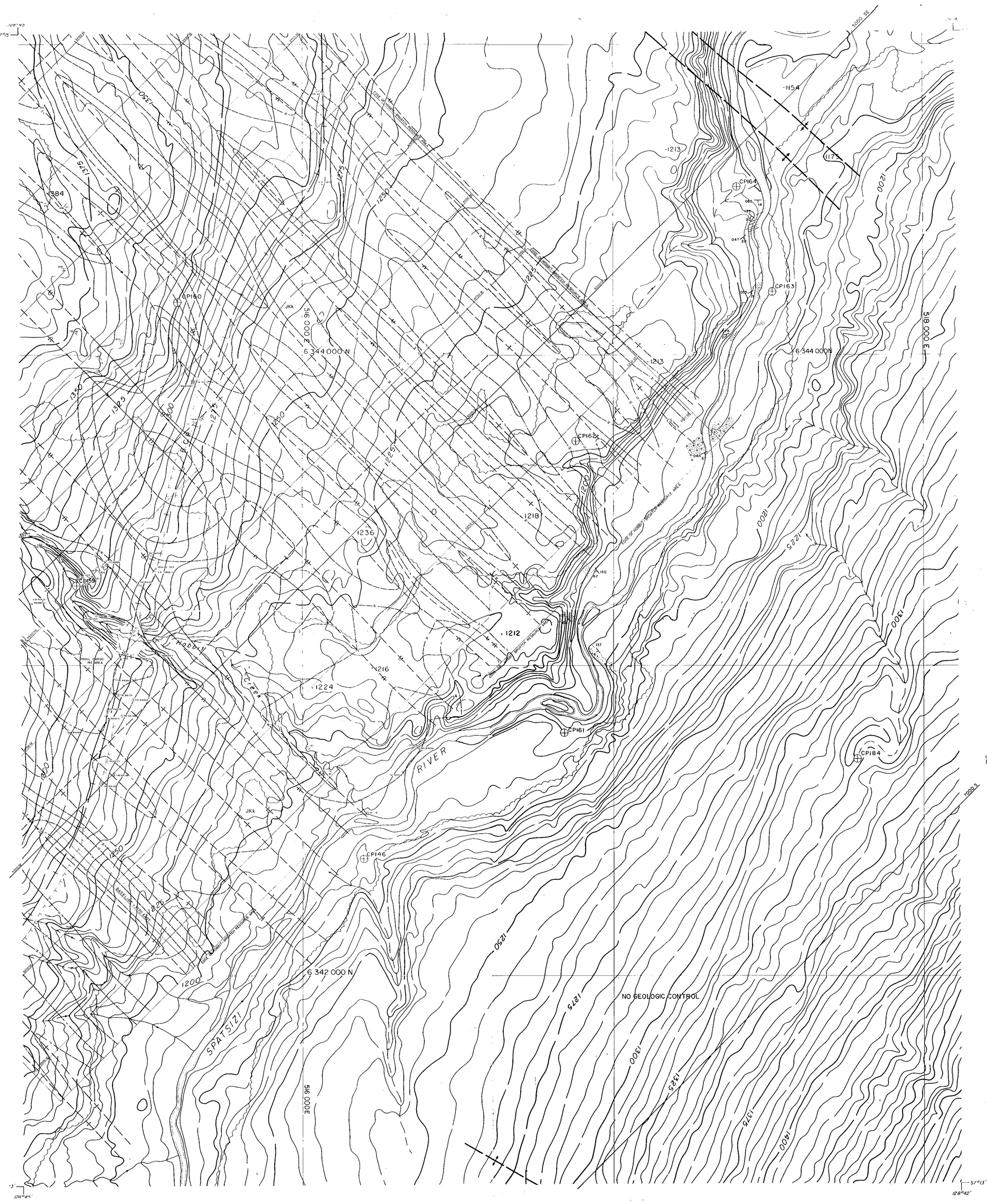
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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) — CDH RDH WKD
MEASURED SECTION — OTC 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

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP 1-5

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-66



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. S.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 NEGATIVE.

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).

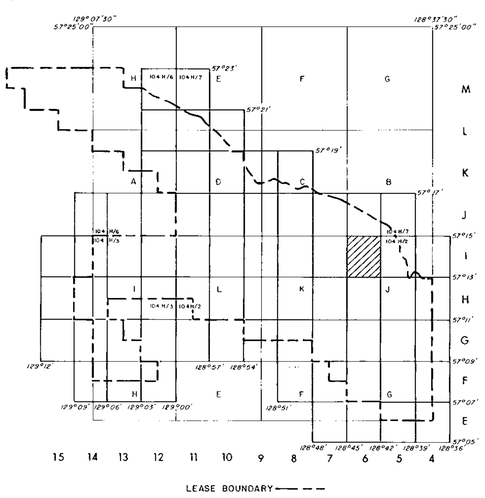
SCALE 1:5000

0 — 0.25 — 0.5 MILES

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

MT. KLAPPAN AREA

INDEX MAP



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

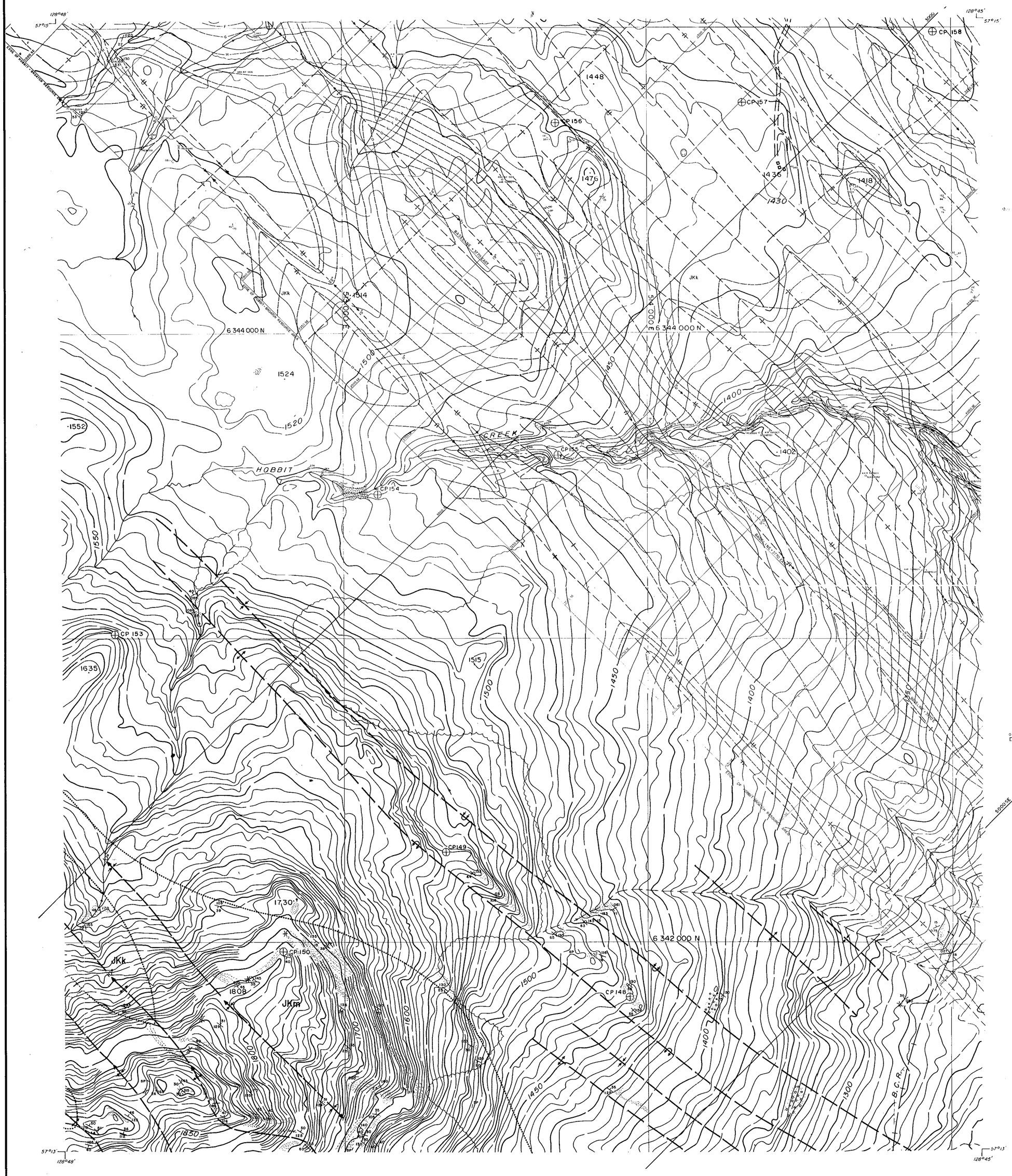
- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- COAL SEAM (DEFINED, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
- OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
- OVERTURNED SYNCLINE (DEFINED, 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, WKD)
- MEASURED SECTION (OTC 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

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP I-6

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-67



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.

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).

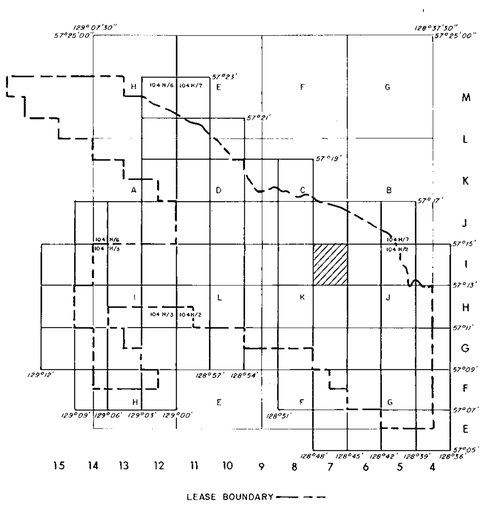
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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
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
HOBBIT - BROATCH AREA
MAP 1-7

PREPARED BY: J.T., K.J., B.G.	SCALE 1:5000
APPROVED BY: V.L.D. DATE: JAN. 1985	DWG. No. KPN84HB-68

LEGEND

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

NOTES

MAPPING PRODUCED FROM PHOTOGRAPHIC ENLARGEMENTS OF 1:40,000 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 OBSCURED 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)

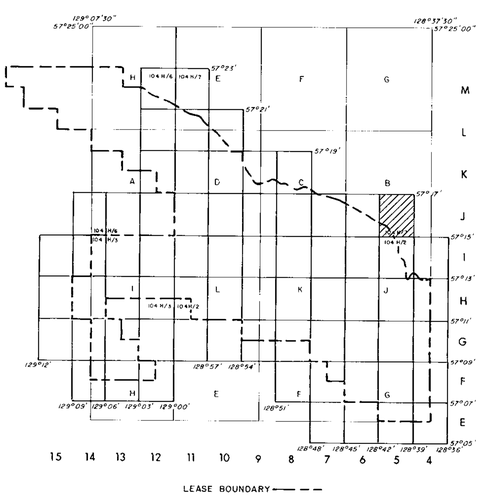
SCALE 1:5000

0 0.25 0.5 MILES

50 0 100 200 300 400 500 METERS

MT. KLAPPAN AREA

INDEX MAP



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

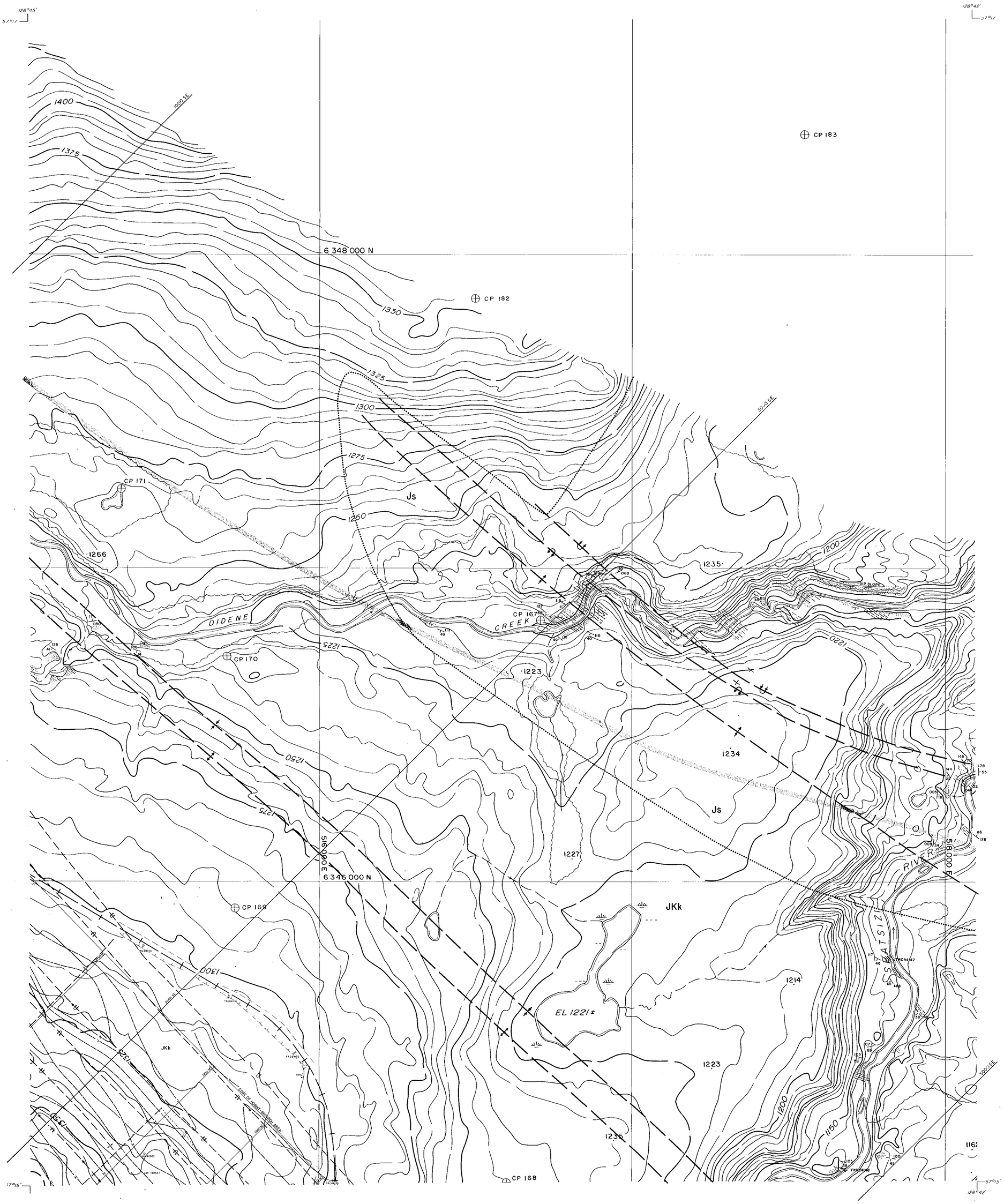
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
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
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
HOBBIT - BROATCH AREA
MAP J-5

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-69



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 171
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)

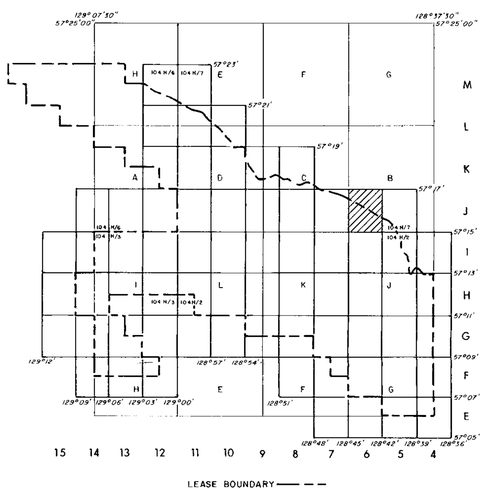
SCALE 1:5000

0 — 0.25 — 0.5 MILES

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

MT. KLAPPAN AREA

INDEX MAP



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

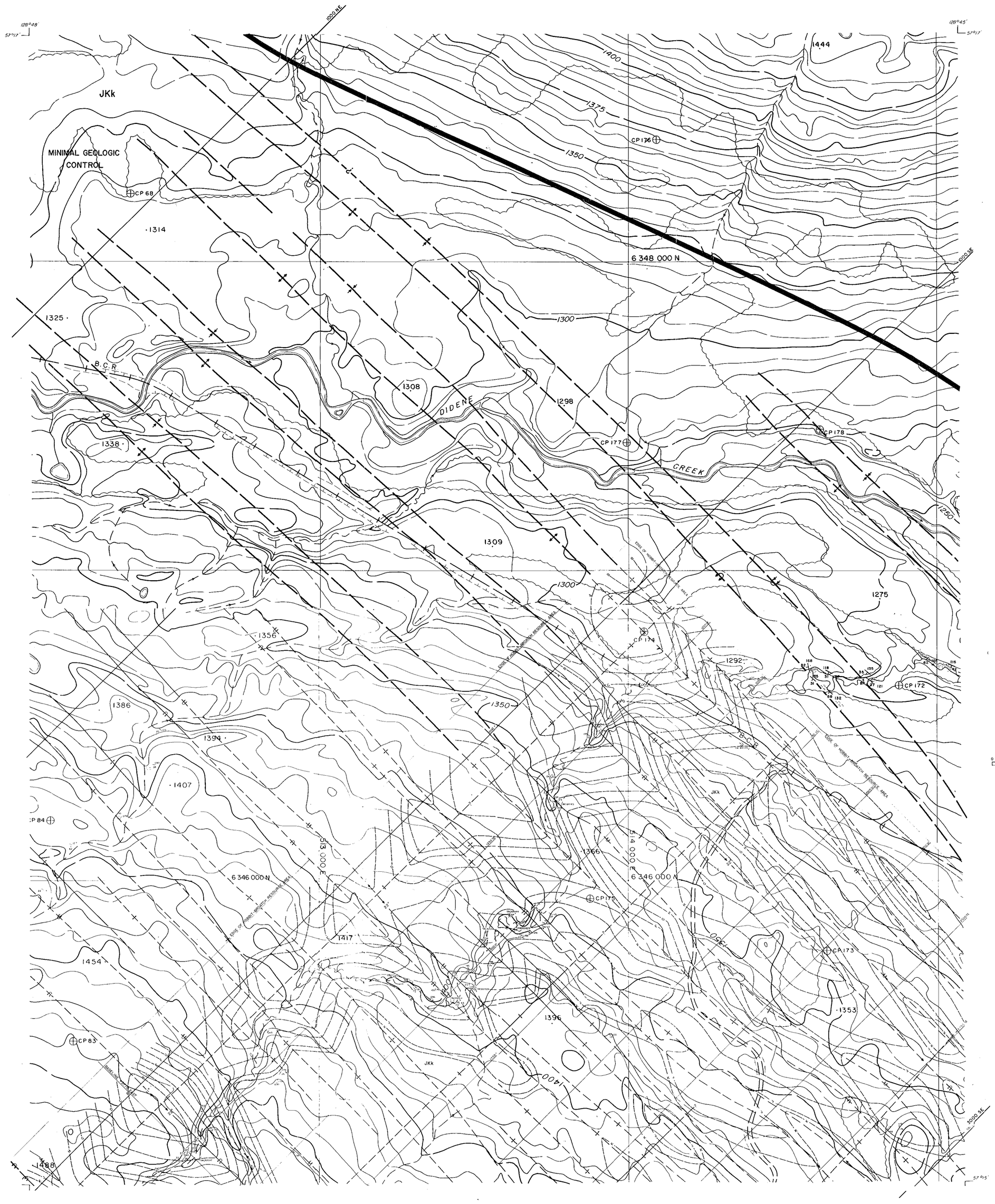
LICENCE BOUNDARY
GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
COAL SEAM (DEFINED, INFERRED)
ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)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

G.R. - Mt. Klappan 84(2) 19 695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP J-6

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-70



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).

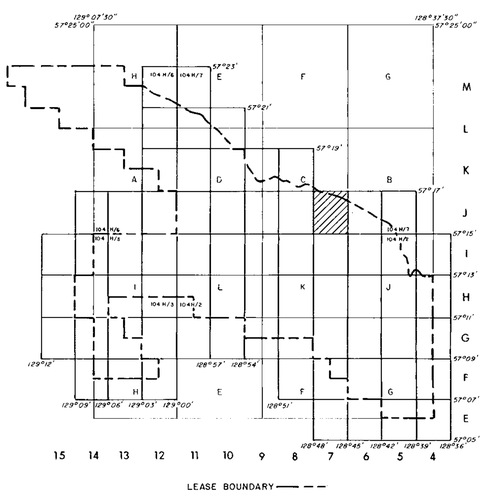
SCALE 1:5000

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
- 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

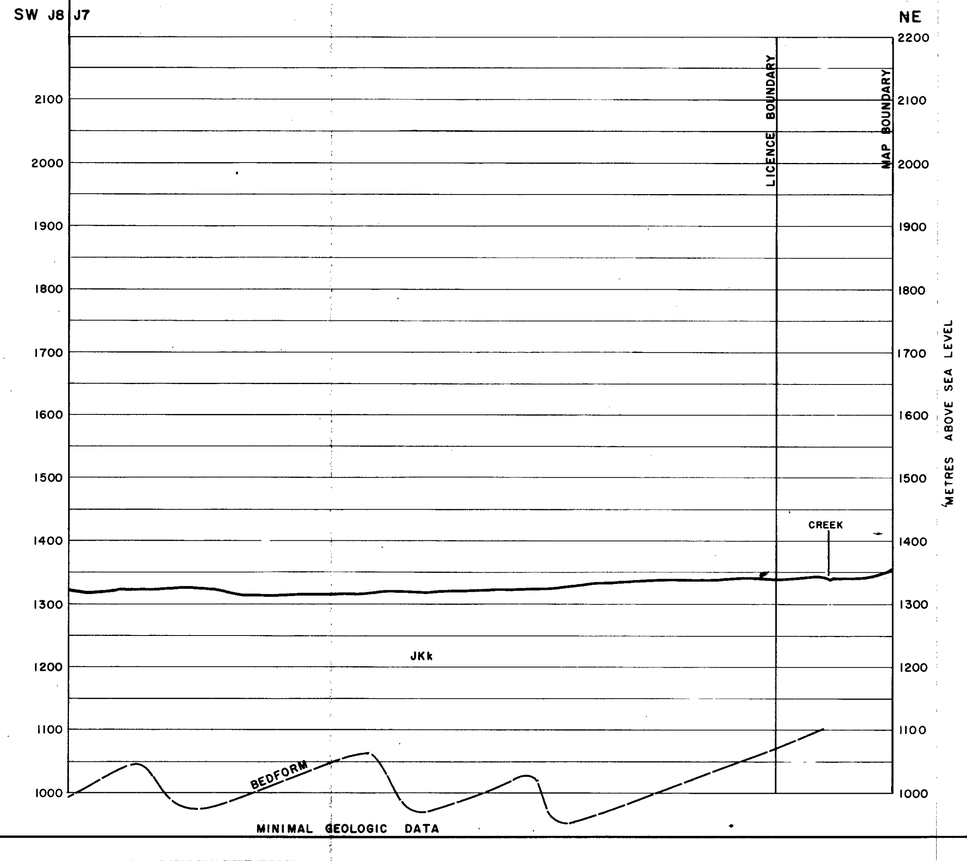
Js — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a non-marine bed. Discontinuous massive conglomerate beds lie in the upper portion of the sequence. Bivalves are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

GR. - Mt. Klappan 84 (G2) A 695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT - BROATCH AREA
MAP J-7

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-71



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

DDH63001 — 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.

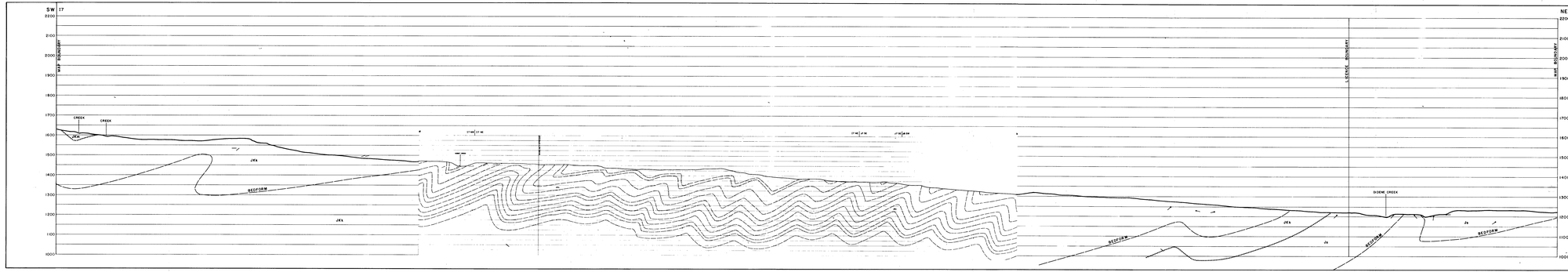
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
1 000 N (EAST)

PREPARED BY: R.K.		SCALE 1:5000
APPROVED BY: E.S.	DATE: JAN. 1985	DRAWING No. KPN84HB-81



RHONDDA SEQUENCE

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

MALLOCH SEQUENCE

JRM	Thick interbeds of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of coal. Sandstones are lithic arkoses with abundant carbonaceous material and rare coarse pebble lenses. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Bioturbate are rare.

KLAPPAN SEQUENCE (main coal-bearing unit)

JKR	Sequence of fine to coarse grained sandstones interbedded with mudstones, siltstones, occasional thin coal seams and conglomerate. Sandstones are lithic arkoses with abundant coal fragments. Sandstone beds grade upwards into sandstone. Sandstones often display tabular or through cross-bedding. Several coal seams are present in the upper part of the sequence. Bioturbate are common.

SPATSIZI SEQUENCE

JS	Predominantly a marine sequence composed of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The upper contact is defined as the first occurrence of a coal-bearing sandstone. Sandstone beds are lithic. Beds 1a in the upper portion of the sequence. Bioturbate are abundant and extensive. JS 1a is

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

695

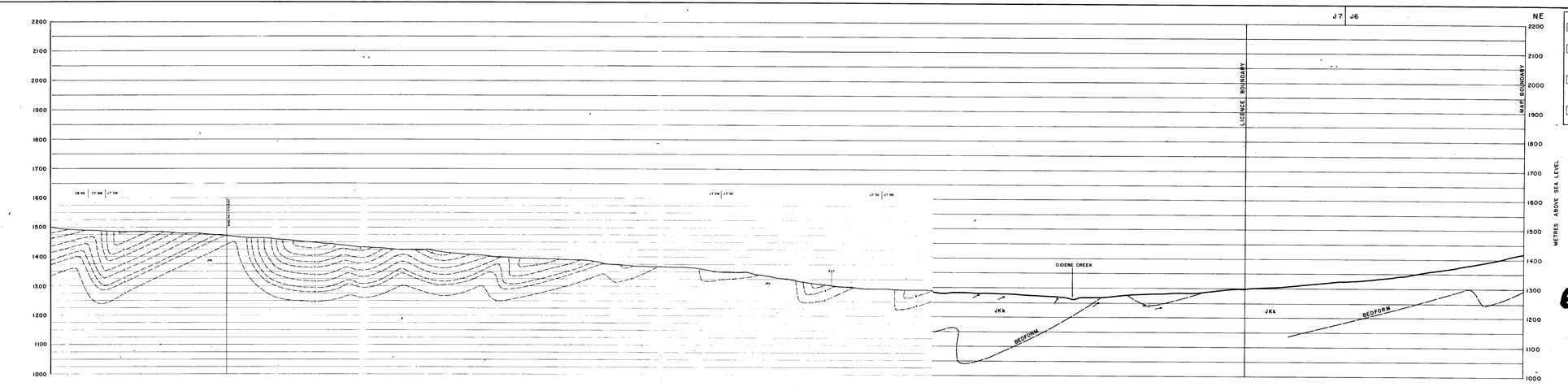
GA-711 Klappan 87/21.8

GULF CANADA RESOURCES INC.

CALGARY — Cost Division — ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT–BROATCH AREA
3 000 S(EAST)

PREPARED BY G.S., E.L.	SCALE 1:5000
APPROVED BY L.S.	DATE JAN. 1985 DRAWING NO.



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 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

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

DDH85001 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

GULF CANADA RESOURCES INC.

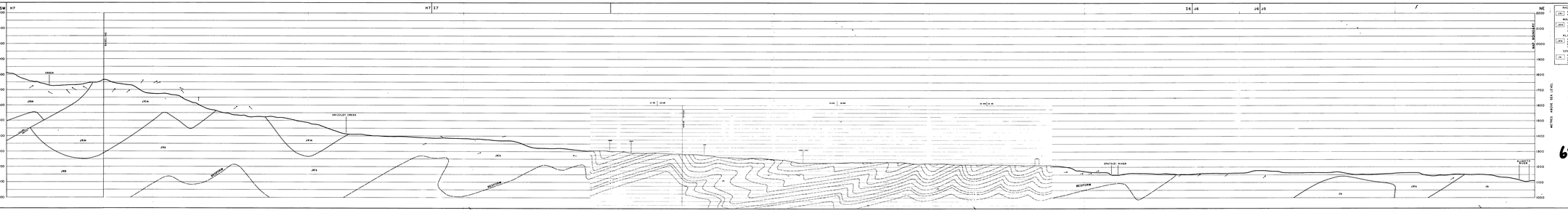
Coal Division

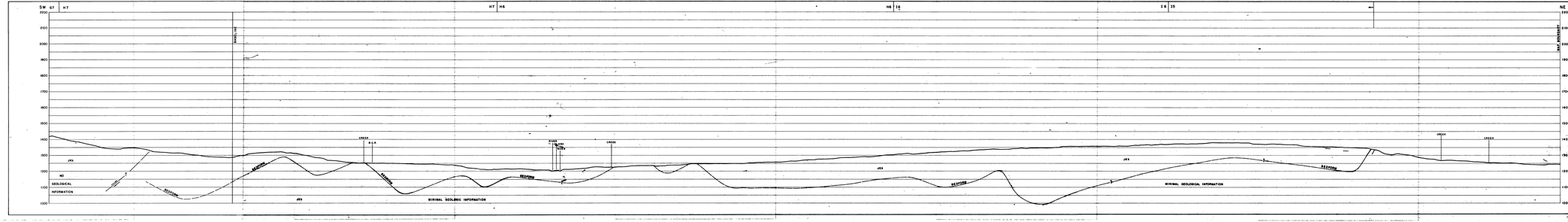
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
1 000 S (EAST)

PREPARED BY: G.S., E.L.	SCALE 1:5000
APPROVED BY: J.S. DATE: JAN. 1985	DRAWING No. KPN 84HB-82


SW
NE
H7
I7
I6
J6
J5
METRES ABOVE SEA LEVEL
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
CREEK
SHIELDS CREEK
SPATSIZI RIVER
JEM
JEK
JE
BEDFORD
BEDFORD
BEDFORD



PROVIDER SEQUENCE

(Jks) Thick sequence of coarse clastic components and minor silty sediments interbedded with an increasing abundance of siltstones and mudstones towards the upper contact.

MALLOCH SEQUENCE

(Jkm) Thick sequence of coarse, lithologically similar siltstones, the ground agglomerate conformable and the base of the sequence is defined by the lowest coarse sandstone. Conglomerate beds tend to be basally discontinuous. Thick coarse sandstone beds and thin coal seams increase in abundance towards the basal glauconitic sandstone. Sediments are dark grey, fine grained and well bedded.

KLAPPAN SEQUENCE (Fossil coal-bearing unit)

(Jkk) Sequence of fine to coarse grained sandstones interbedded with mudstones, siltstones, conglomerate. The sequence is characterized by the presence of numerous coal seams and carbonaceous shale. The sequence has a basal coarse sandstone and conglomerate. Coal seams vary in thickness from 1 to 10 m. Coal quality ranges from bituminous to sub-bituminous.

SPATSIZI SEQUENCE

(Jks) Predominantly a marine sequence comprised of beds of mudstones, siltstones and minor amounts of sandstones. Sediments are dark grey, well bedded, fine grained and contain abundant pelecypod and belemnite and Thalassinoides bioturbation components. Beds (m.) in the upper portion of the sequence illustrate an increasing sandstone content.

LICENCE BOUNDARY

COAL SEAM TRACE (DEFINED,INFERRED)

GEOLOGICAL CONTACT (APPROX.,INFERRED)

FAULT TRACE (DEFINED,APPROX.)

BEDDING ATTITUDE

DDH-E1000 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 100 200 300 400 500 METERS

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

ELEVATIONS IN FEET

695

G6-N6 SCALE 1:2000

GULF CANADA RESOURCES INC.

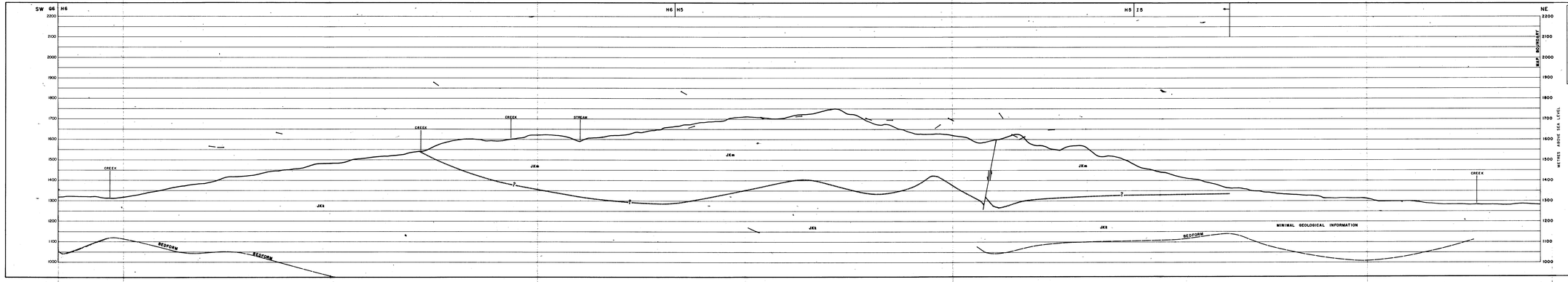
CALGARY THE OILSANDS ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984

GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
7000 S (EAST)

DRAWN BY: G.L.C. SCALE: 1:2000

APPROVED BY: DATE: JUL 1984 DRAWING NO. KPA0908-3B



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 intervals of mudstones, argillaceous siltstones, fine grained argillaceous sandstones and thin beds of orange weathering siliceous tuffaceous siltstones. Conglomerate beds tend to be laterally discontinuous. Thick clean sandstone beds and the 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)

JKs — Sequence of orange weathering argillaceous siltstones interbedded with mudstones, siltstones, occasional thin beds of orange weathering siliceous tuffaceous siltstones and abundant coal seams. Conglomerate beds grade laterally into sandstone. Sandstones often display tabular or trough cross-bedding. Several species of petrified wood and plants are common. Bivalves and ammonites are rare.

SPATSIZI SEQUENCE

JS — Predominantly a marine sequence comprised of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerate beds. The upper contact is defined as the last occurrence of a non-marine sandstone bed. Thick 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

DDH5300 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

695

GR. - 115 Kl. map 84(G) 11

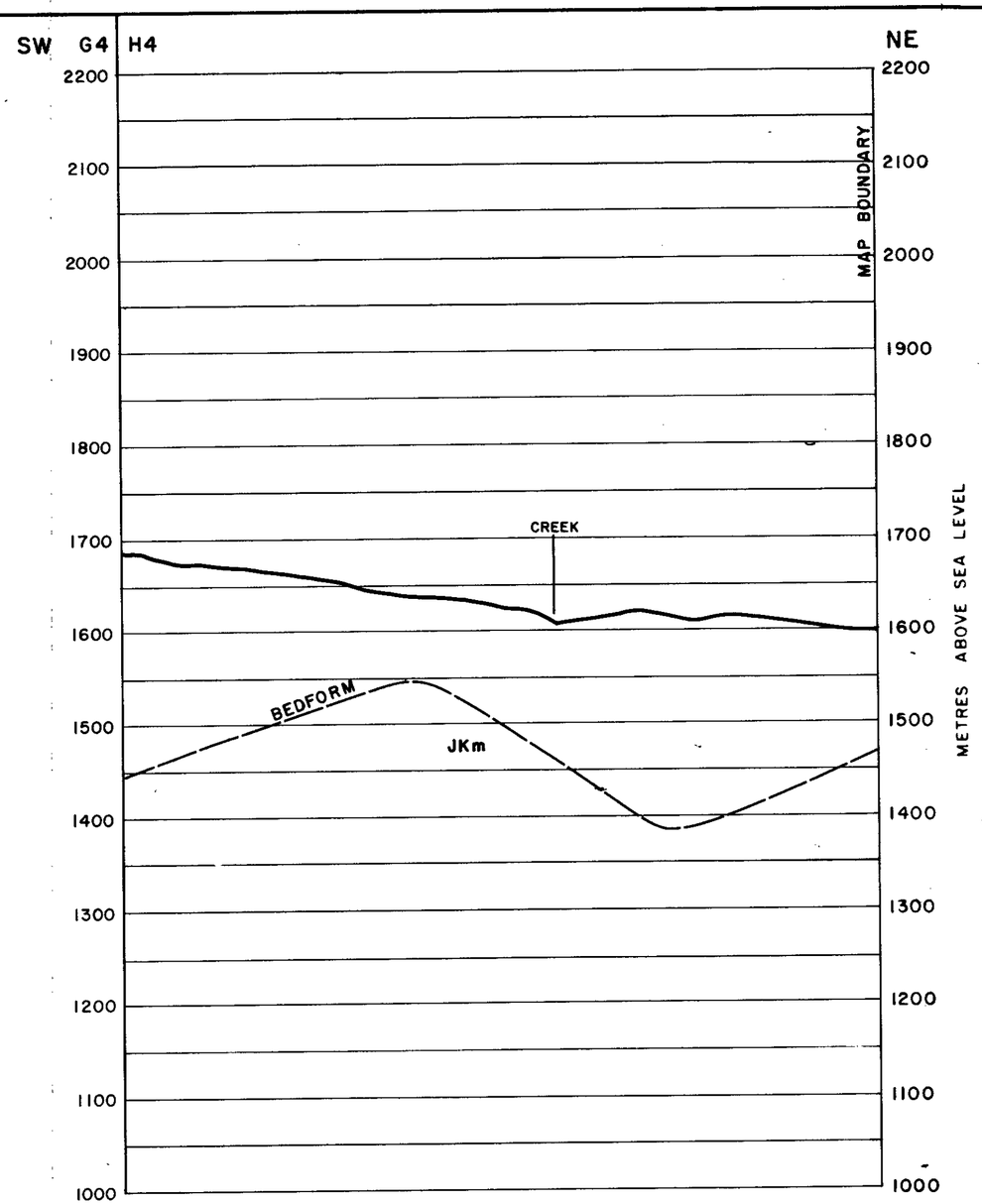
GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
9 000 S(EAST)

PREPARED BY: S.D.(E.)	SCALE: 1:5000
APPROVED BY: J.S.	DATE: JAN. 1985 DRAWING No: KPN8484B-86



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

DDH83001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/8 1/4 MILE

0 100 200 300 400 500 METERS

695

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

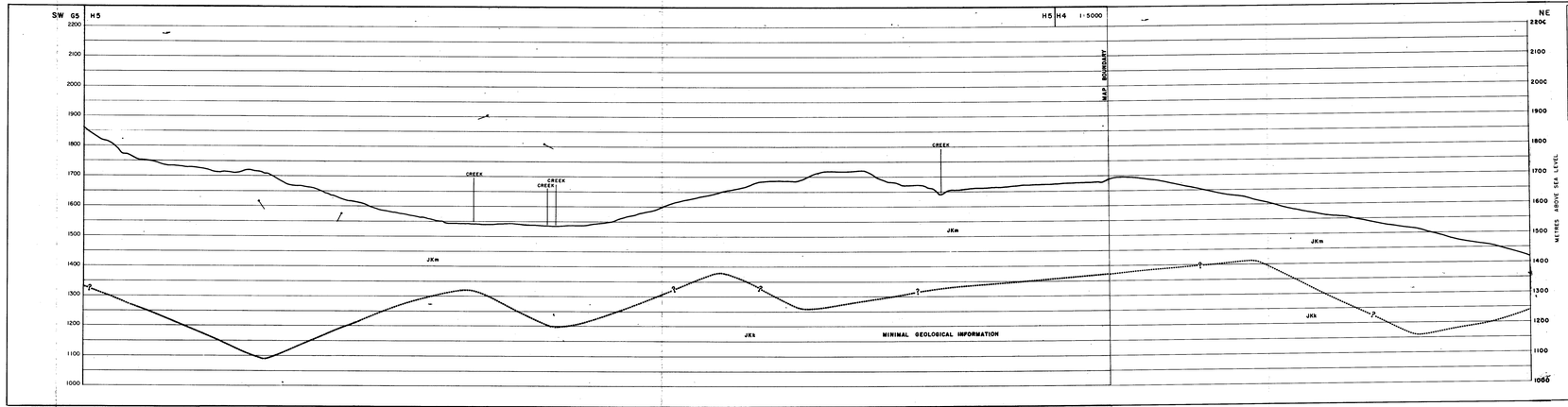
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT - BROATCH AREA
13 000 S (EAST)

PREPARED BY: R.K.	SCALE 1:5000
APPROVED BY: E.S. DATE: JAN. 1985	DRAWING No. KPN84HB-88



RHONDDA SEQUENCE

JRc — 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)

JKs — 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 are laterally discontinuous and contain chert pebbles. Tabular or through cross-bedding. Several species of pelecypods and plants are common. Belemnites and ammonites are rare.

SPATSIZI SEQUENCE

Js — Predominantly a marine sequence composed of beds of mudstones, siltstones and lesser amounts of sandstones and conglomerates. The basal 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

GR.-Mt. Klappan 84(G) A

GULF CANADA RESOURCES INC.

Coal Division

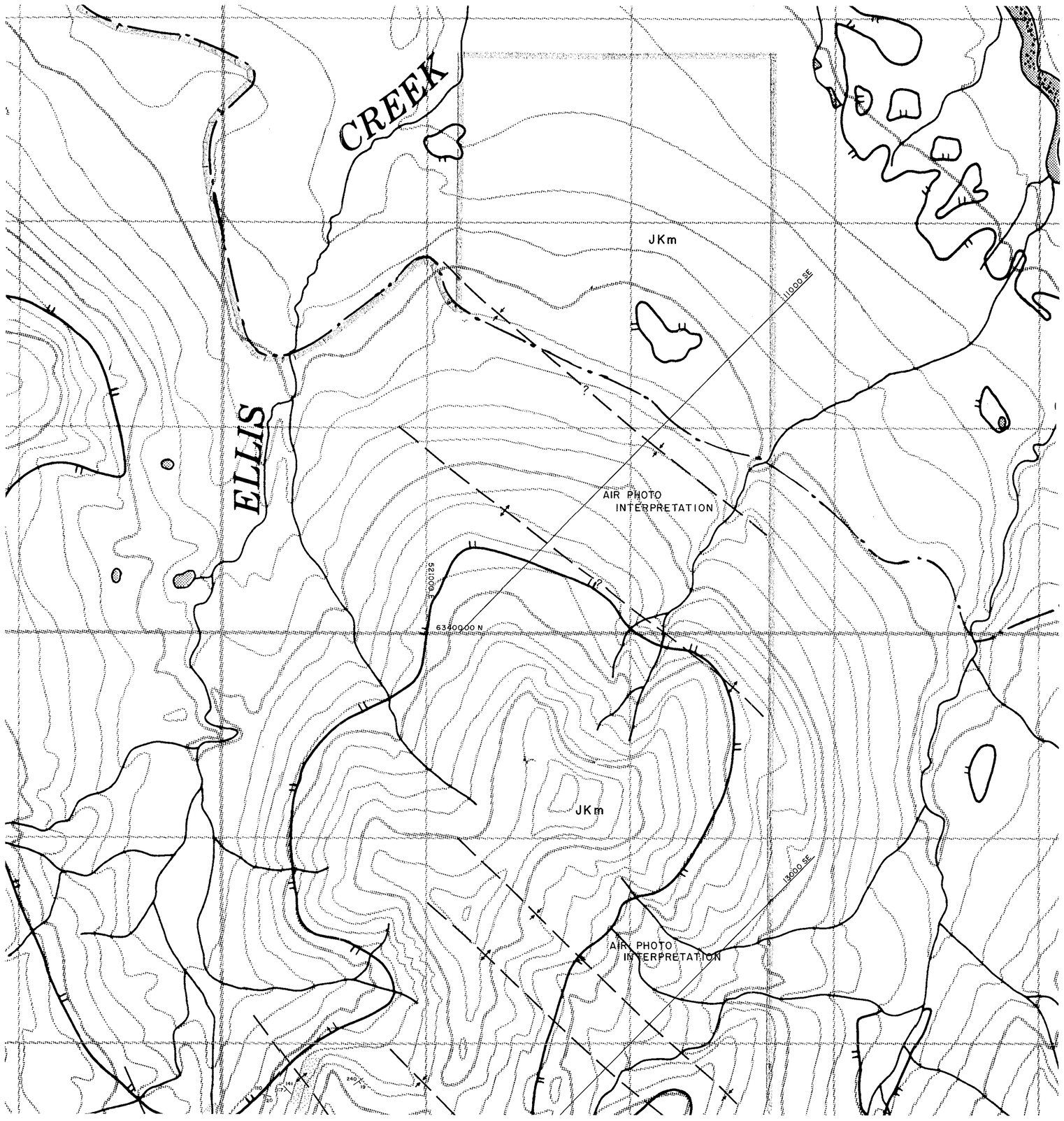
CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
11000 S (EAST)

PREPARED BY: G.D., E.L. SCALE: 1:5000

APPROVED BY: J.S. DATE: JAN. 1985 DRAWING No. PR6SAND-87



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 IDENTIFIARLE 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).

N

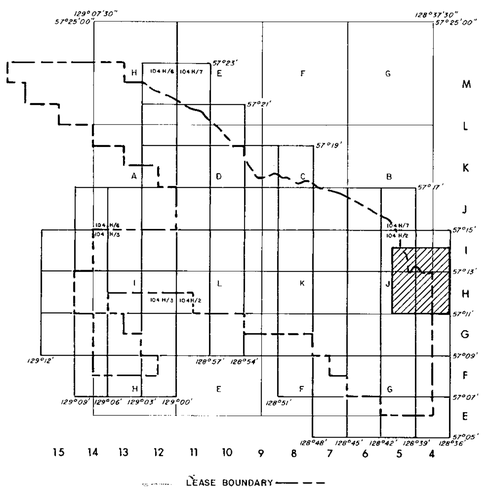
SCALE 1:10,000

0 0.125 0.25 0.50 0.75 1.0 MILES

100 0 200 400 600 800 1000 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.

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

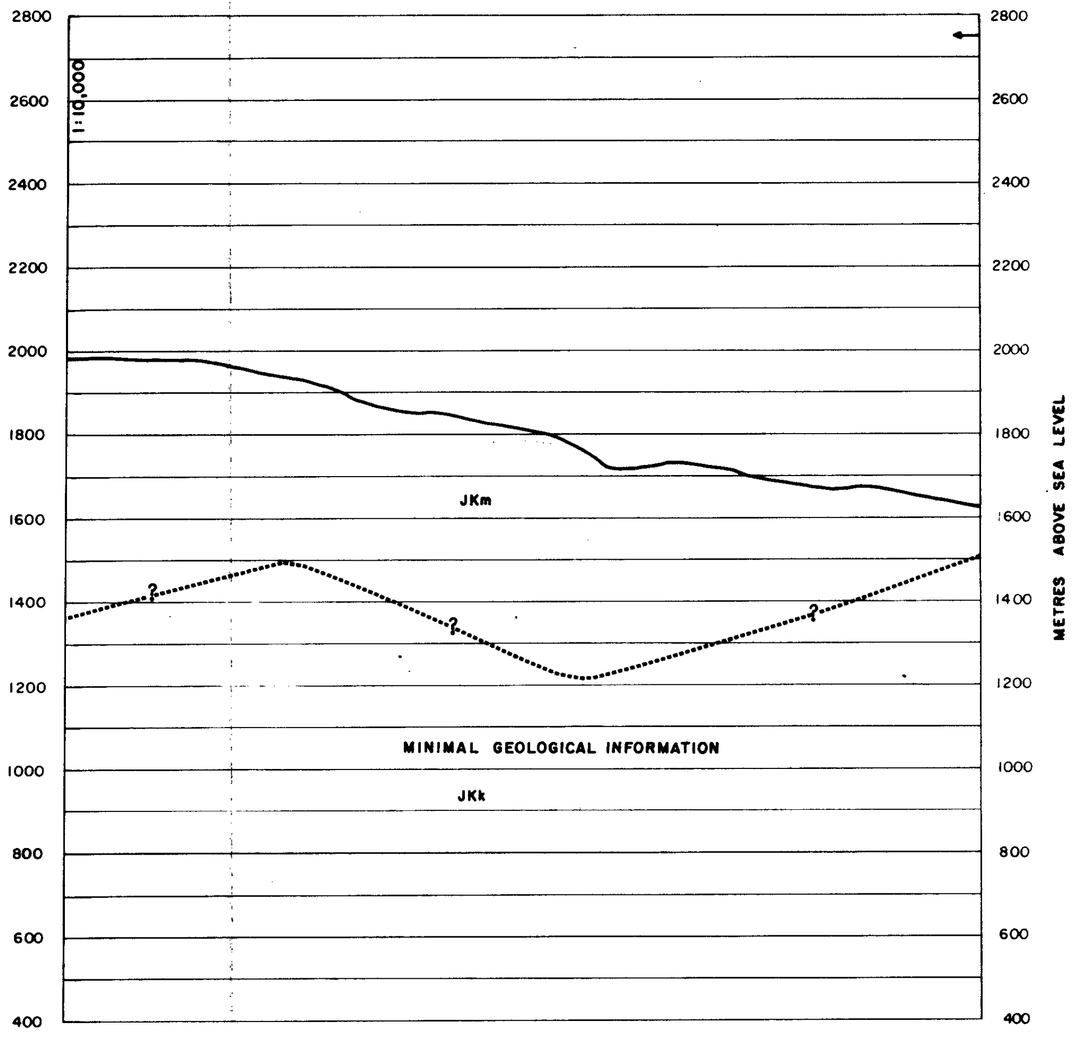
695

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
1984
GEOLOGY MAP
HOBBIT – BROATCH AREA
MAP 104 H/2 J

PREPARED BY: G.S.	SCALE 1:10,000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-91



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

DDH83001 DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

0 1/4 1/2 MILE

0 200 400 600 800 1000 METERS

695

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

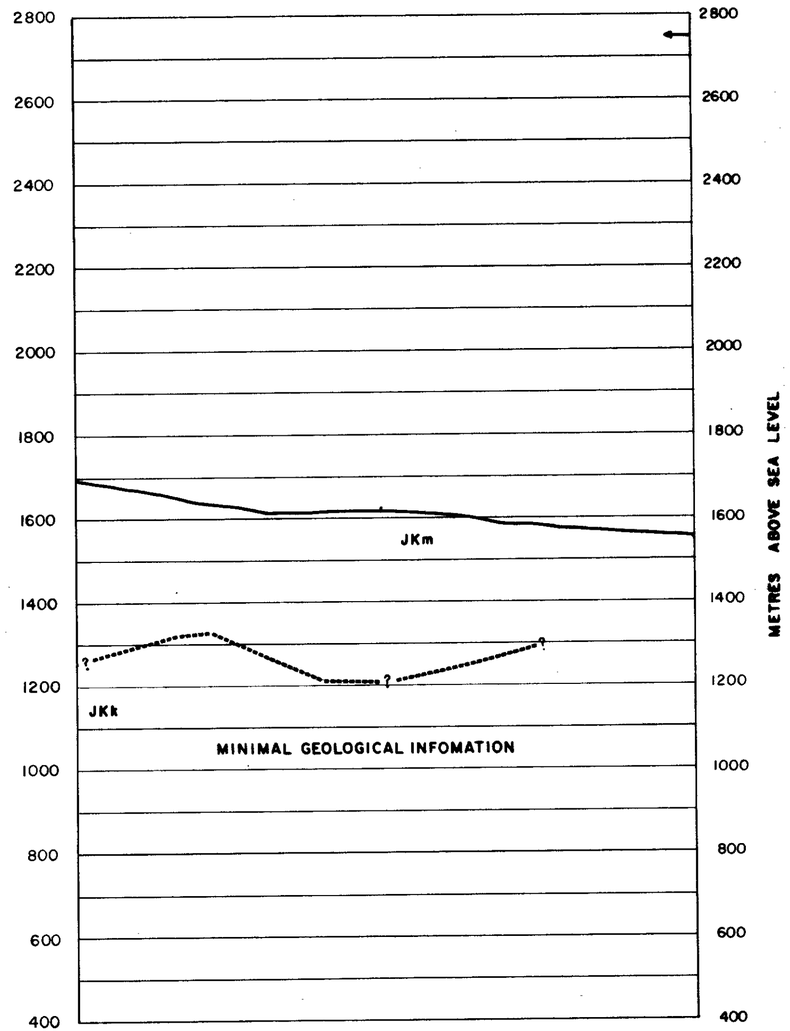
Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
11000 S (EAST)

PREPARED BY: M. B.	SCALE 1:10000
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84HB-92



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

695

GR. - Mt. Klappan 84(2) A

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MOUNT KLAPPAN COAL PROPERTY
1984
GEOLOGICAL CROSS SECTION
HOBBIT-BROATCH AREA
13000 S (EAST)

PREPARED BY: M.B.	SCALE 1:10000
APPROVED BY: G.S. DATE: JAN. 1985	DRAWING No. KPN84HB-93

MOUNT KLAPPAN COAL PROJECT

HOBBIT - BROATCH AREA

GEOLOGICAL REPORT

1984

APPENDIX III

1981, 1982, 1983, 1984

COAL TRENCH DATA

695

GULF CANADA RESOURCES INC.

COAL DIVISION

MOUNT KLAPPAN COAL PROJECT

APPENDIX III

COAL TRENCH DATA

PAGES CONTAINING
CONFIDENTIAL ANALYSES
DATA HAVE BEEN REMOVED

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC81001 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - R. JACKSON
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1251.00
ZONE - 9
NORTHING - 6343000.00
EASTING - 515520.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571354
LONGITUDE - 1284435

- O R I E N T A T I O N -

LENGTH - 9.22
INCLINATION - 0.0
AZIMUTH - 0.0

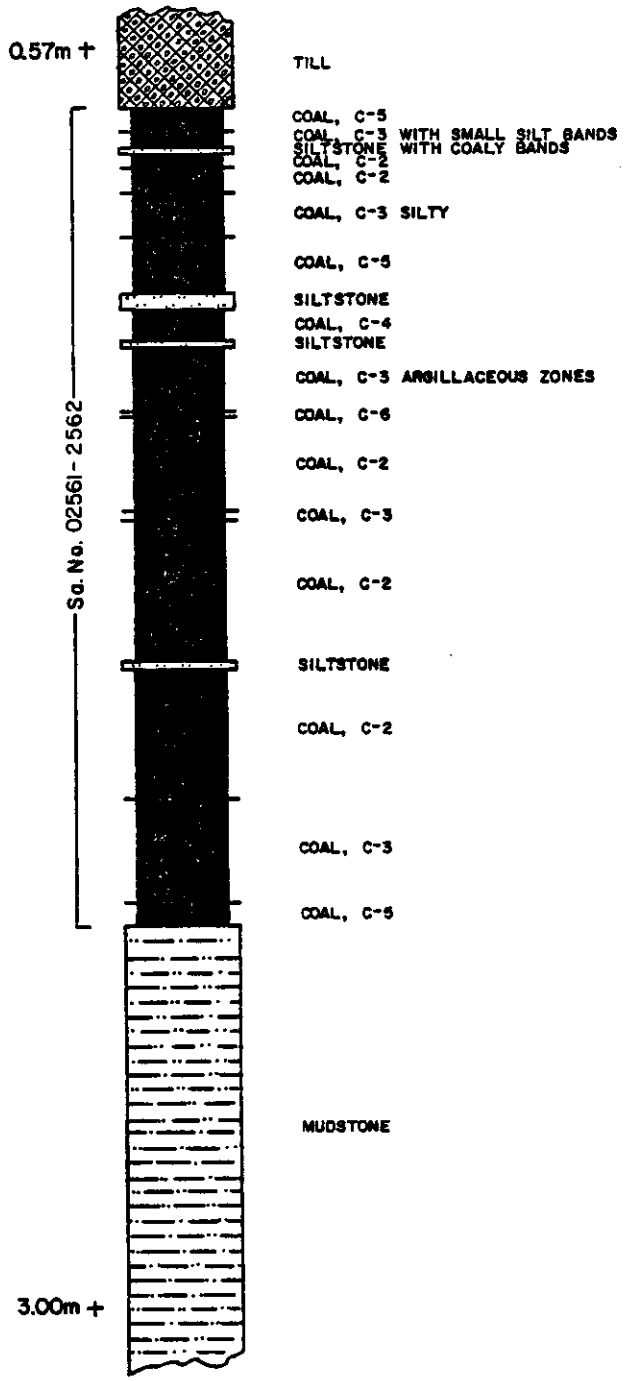
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 117
FLOOR DIP - 56
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

ROCK	COAL
	0.20
0.05	0.14
	0.11
	0.19
	0.31
	0.40
0.11	
	0.22
0.03	
	0.39
	0.02
	0.65
	0.05
	0.99
0.01	
	0.92
	0.71
	0.15
TOTAL 0.20	5.45

5.65



ATTITUDE OF ROOF = N/A
ATTITUDE OF FLOOR = 117/56°N

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROJECT
TRENCH LOG
KPN–TRC–81–001

DRAWN BY:	DATE: 16-11-81	SCALE 1:50
LOGGED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TR681001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.57	0.57			TILL	
	0.57	0.77	0.20			COAL	C-5
	0.77	0.91	0.14			COAL	C-3
	0.91	0.96	0.05			SILTSTONE	
	0.96	1.07	0.11			COAL	C-2
	1.07	1.26	0.19			COAL	C-2
	1.26	1.57	0.31			COAL	C-3
	1.57	1.97	0.40			COAL	C-5
	1.97	2.08	0.11			SILTSTONE	
	2.08	2.30	0.22			COAL	C-4
	2.30	2.33	0.03			SILTSTONE	
	2.33	2.72	0.39			COAL	C-3
	2.72	2.74	0.02			COAL	C-6
	2.74	3.39	0.65			COAL	C-2
	3.39	3.44	0.05			COAL	C-3

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.44	4.43	0.99			COAL	C-2
	4.43	4.44	0.01			SILTSTONE	
	4.44	5.36	0.92			COAL	C-2
	5.36	6.07	0.71			COAL	C-3
	6.07	6.22	0.15			COAL	C-5
	6.22	9.22	3.00			MUDSTONE	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC81002 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - R. JACKSON
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1366.00
ZONE - 9
NORTHING - 6343710.00
EASTING - 514335.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571417
LONGITUDE - 1284545

- O R I E N T A T I O N -

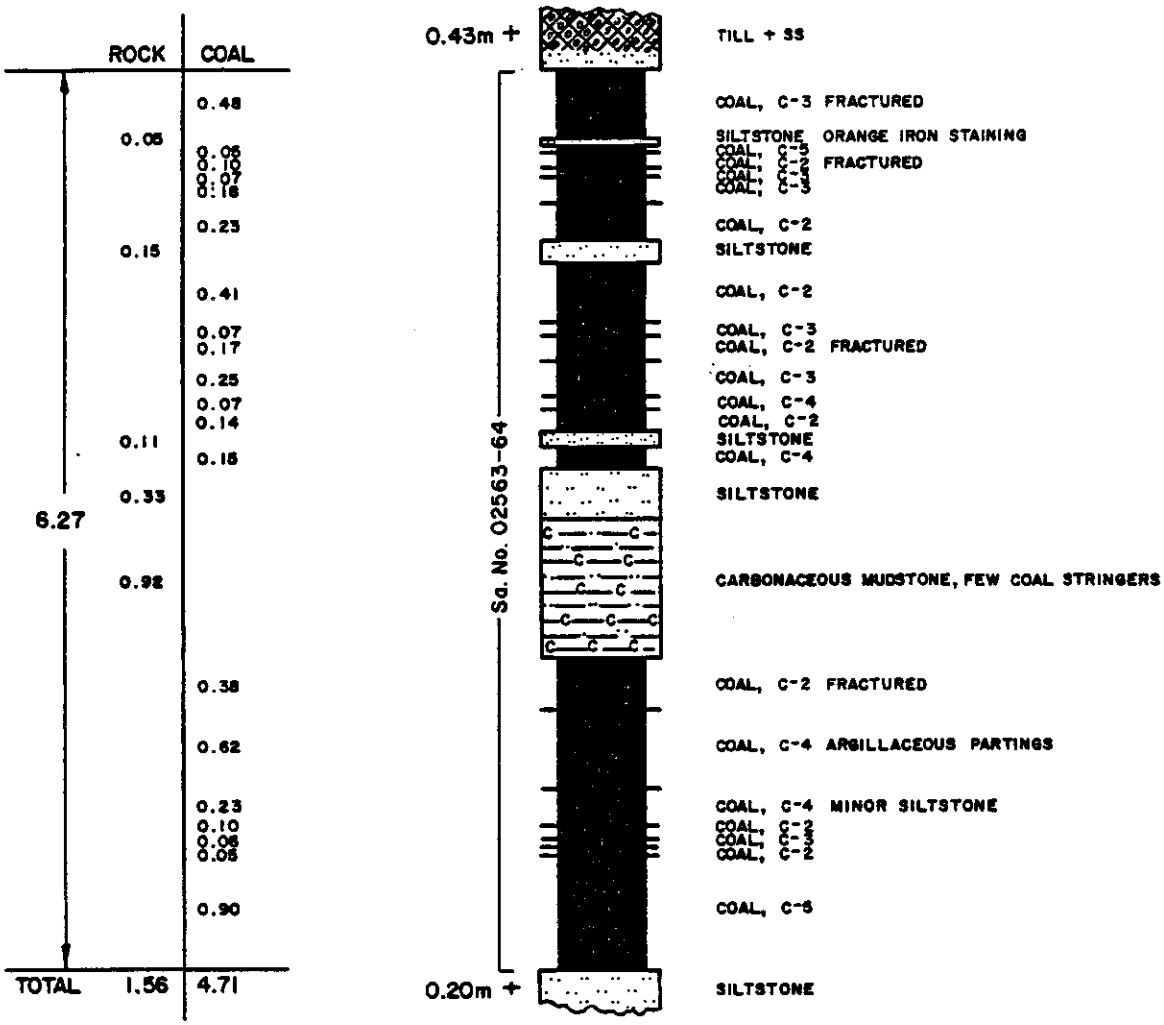
LENGTH - 6.80
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 110
ROOF DIP - 17
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========



ATTITUDE OF ROOF : 110/17°N
ATTITUDE OF FLOOR : 120/45°N

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCH LOG
KPN–TRC–81–002

DRAWN BY:	DATE: 16-11-81	SCALE 1 : 50
LOGGED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.43	0.43			TILL	FRACTURED FISSILE
	0.43	0.91	0.48			COAL	C-3 WEATHERED
	0.91	0.96	0.05			SILTSTONE	DK.GY POORLY LITHIFIED
	0.96	1.01	0.05			COAL	C-5
	1.01	1.11	0.10			COAL	C-2
	1.11	1.18	0.07			COAL	C-3
	1.18	1.36	0.18			COAL	C-3 IRON STAINING
	1.36	1.59	0.23			COAL	C-2 BRIGHT
	1.59	1.74	0.15			SILTSTONE	M.BN WEATHERED, COALY
	1.74	2.15	0.41			COAL	C-2 FRACTURED FE STAINS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.15	2.22	0.07			COAL	C-3.VFG
	2.22	2.39	0.17			COAL	C-2 FE STAINING
	2.39	2.64	0.25			COAL	C-3 DULL
	2.64	2.71	0.07			COAL	C-4.FG
	2.71	2.85	0.14			COAL	C-2 MASSIVE
	2.85	2.96	0.11			SILTSTONE	FG.M.BN POORLY LITHIFLED
	2.96	3.11	0.15			COAL	C-4
	3.11	3.44	0.33			SILTSTONE	WEATHERED MED
	3.44	4.41	0.97			MUDSTONE	CARB.THNB COAL BEDS
	4.41	4.79	0.38			COAL	C-2.FG FRACTURED FISSILE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	4.79	5.41	0.62			COAL	C-4 ARGILLACEOUS
	5.41	5.64	0.23			COAL	C-4.FG MINOR SILTSTONE
	5.64	5.74	0.10			COAL	C-2 FE STAINING
	5.74	5.80	0.06			COAL	C-3 WEATHERED
	5.80	5.85	0.05			COAL	C-2
	5.85	6.75	0.90			COAL	C-5 DISRUPTED AND WEATHERED
	6.75	6.95	0.20			SILTSTONE	M.GY

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNXXTRC81003 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - R. JACKSON
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1458.00
ZONE - 9
NORTHING - 6343950.00
EASTING - 515710.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571425
LONGITUDE - 1284423

- O R I E N T A T I O N -

LENGTH - 2.59
INCLINATION - 0.0
AZIMUTH - 0.0

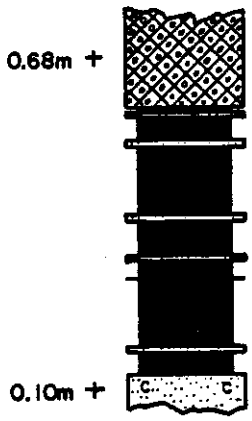
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
1.81	0.03	0.05
	0.04	0.17
		0.48
	0.02	
	0.01	0.25
		0.11
		0.47
	0.03	
		0.15
TOTAL	0.13	1.68



TILL

COAL, C-3 OCCASIONAL SILTSTONE PEBBLES
SILTSTONE
COAL, C-3
SILTSTONE, FOSSILIFEROUS

COAL, C-2 OCCASIONAL SILTSTONE THIN BANDS

SILTSTONE
COAL, C-2
SILTSTONE
COAL, C-5

COAL, C-2

SILTSTONE
COAL, C-3
CARBONACEOUS SILTSTONE, FOSSILIFEROUS

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : N/A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROJECT
TRENCH LOG

KPN-TRC-81-003

DRAWN BY:	DATE: 16-11-81	SCALE 1:50
LOGGED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: XX DATA SOURCE: TRC81003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.68	0.68			TILL	FISSILE COAL PARTICLES
	0.68	0.73	0.05			COAL	C-3 SILTSTONE PEBBLES
	0.73	0.76	0.03			SILTSTONE	LT.BN WEATHERED
	0.76	0.93	0.17			COAL	C-3 SILTSTONE PEBBLES
	0.93	0.97	0.04			SILTSTONE	FG.BN FOSSILIFEROUS WEATHERED
	0.97	1.45	0.48			COAL	C-2
	1.45	1.47	0.02			SILTSTONE	ORNG
	1.47	1.72	0.25			COAL	C-2 POWDERY
	1.72	1.73	0.01			SILTSTONE	ORNG
	1.73	1.84	0.11			COAL	C-5 MASSIVE

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: XX DATA SOURCE: TRC81003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.84	2.31	0.47			COAL	C-2 POWDERY
	2.31	2.34	0.03			SILTSTONE	ORNG
	2.34	2.49	0.15			COAL	C-3
	2.49	2.59	0.10			SILTSTONE	CARB.ORNG FOSSILIFEROUS, HARD

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC81004 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - R. JACKSON
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1449.00
ZONE - 9
NORTHING - 6344645.00
EASTING - 516000.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571447
LONGITUDE - 1284406

- O R I E N T A T I O N -

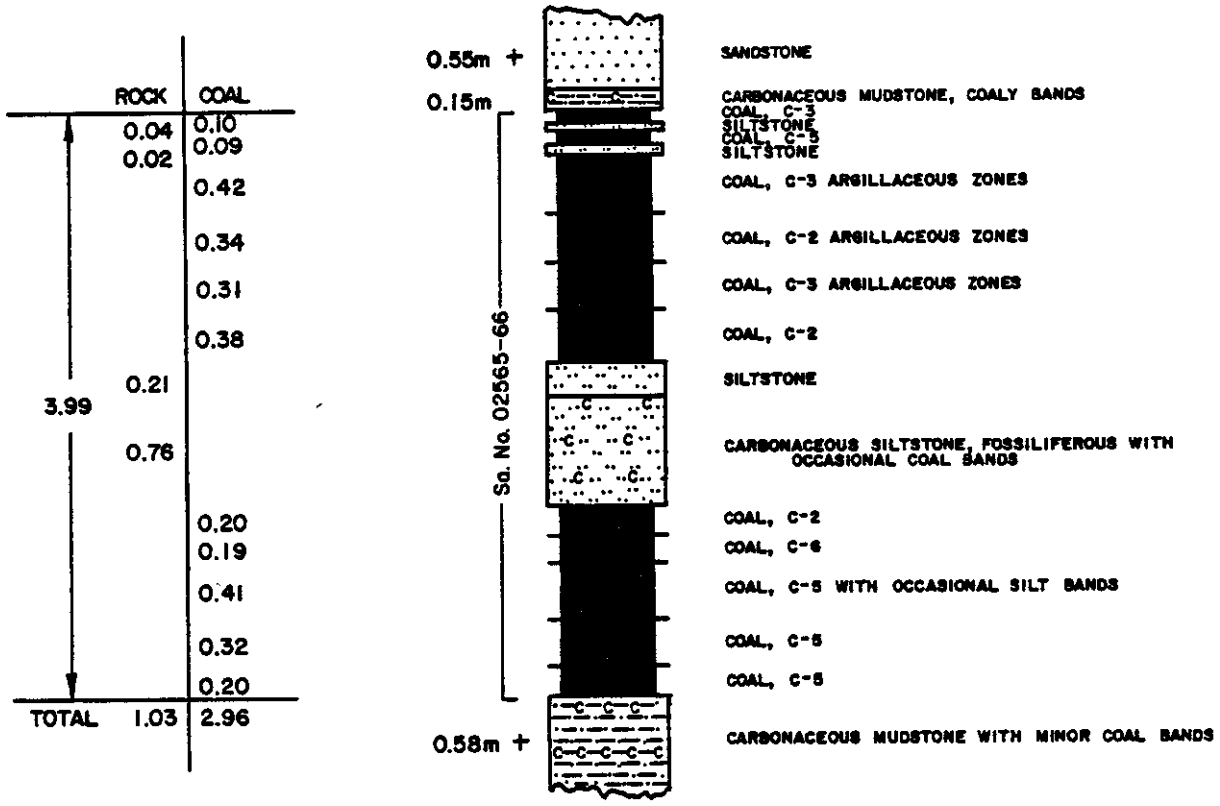
LENGTH - 5.27
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 140
ROOF DIP - 11
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========



ATTITUDE OF ROOF : 140/11° SW
ATTITUDE OF FLOOR : N/A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCH LOG
KPN–TRC–81–004

DRAWN BY:	DATE: 16-11-81	SCALE 1 : 50
LOGGED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.55	0.55			SANDSTONE	WEATHERED
	0.55	0.70	0.15			MUDSTONE	CARB COALY
	0.70	0.80	0.10			COAL	C-3
	0.80	0.84	0.04			SILTSTONE	SOFT
	0.84	0.93	0.09			COAL	C-5
	0.93	0.95	0.02			SILTSTONE	
	0.95	1.37	0.42			COAL	C-3 ARGILLACEOUS, WEATHERED
	1.37	1.71	0.34			COAL	C-2 ARGILLACEOUS, SOFT
	1.71	2.02	0.31			COAL	C-3 ARGILLACEOUS
	2.02	2.40	0.38			COAL	C-2 WEATHERED
	2.40	2.61	0.21			SILTSTONE	BN SOFT

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.61	3.37	0.76			SILTSTONE	CARB . FOSSILIFEROUS, HARD
	3.37	3.57	0.20			COAL	C-2 MASSIVE
	3.57	3.76	0.19			COAL	C-6.ORNG WEATHERED, MASSIVE
	3.76	4.17	0.41			COAL	C-5 SILTBANDS, MASSIVE
	4.17	4.49	0.32			COAL	C-5 *WEATHERED*
	4.49	4.69	0.20			COAL	C-5 MASSIVE
	4.69	5.27	0.58			MUDSTONE	CARB MNR COAL, HARD

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC81005 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - R. JACKSON
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1452.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6344890.00
EASTING - 516040.00
LATITUDE - 571455
LONGITUDE - 1284403

- O R I E N T A T I O N -

LENGTH - 4.66
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

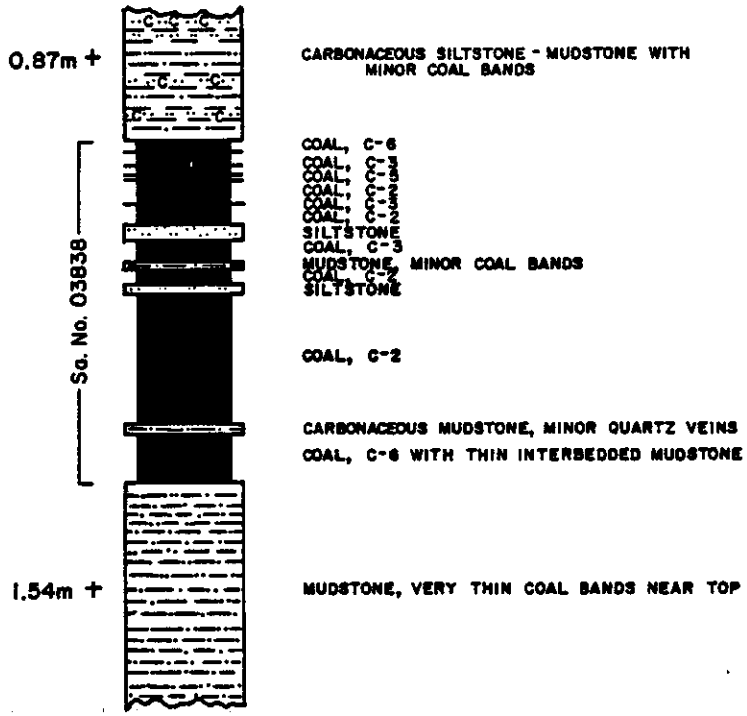
INCLINATION - 0.0
AZIMUTH - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
2.25		0.08
		0.05
		0.08
		0.04
		0.17
		0.16
	0.10	
		0.15
	0.03	
		0.07
	0.06	
		0.91
	0.06	
		0.32
TOTAL	0.24	2.01



ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : N/A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCH LOG

KPN–TRC–81–005

DRAWN BY:	DATE: 16-11-81	SCALE 1:50
LOGGED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.87	0.87			SILTSTONE	CARB.BN MUDSTONE, WEATHERED, MINOR COAL
	0.87	0.95	0.08			COAL	C-6.ORNG
	0.95	1.01	0.06			COAL	C-3
	1.01	1.07	0.06			COAL	C-5 MASSIVE
	1.07	1.11	0.04			COAL	C-2 BLOCKY
	1.11	1.28	0.17			COAL	C-3
	1.28	1.43	0.15			COAL	C-2
	1.43	1.53	0.10			SILTSTONE	BN
	1.53	1.68	0.15			COAL	C-3
	1.68	1.71	0.03			MUDSTONE	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC81005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.71	1.78	0.07			COAL	C-2 MASSIVE
	1.78	1.84	0.06			SILTSTONE	SOFT
	1.84	2.75	0.91			COAL	C-2
	2.75	2.80	0.05			MUDSTONE	CARB QUARTZ VEINS
	2.80	3.12	0.32			COAL	C-6 INTERBEDDED MUDSTONE
	3.12	4.66	1.54			MUDSTONE	FISSILE, SOFT, COAL BANDS

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNGCTRC81006 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - R. JACKSON

OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1443.00

LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6345535.00
EASTING - 515690.00

LATITUDE - 571516
LONGITUDE - 1284424

- O R I E N T A T I O N -

LENGTH - 2.09

INCLINATION - 0.0
AZIMUTH - 0.0

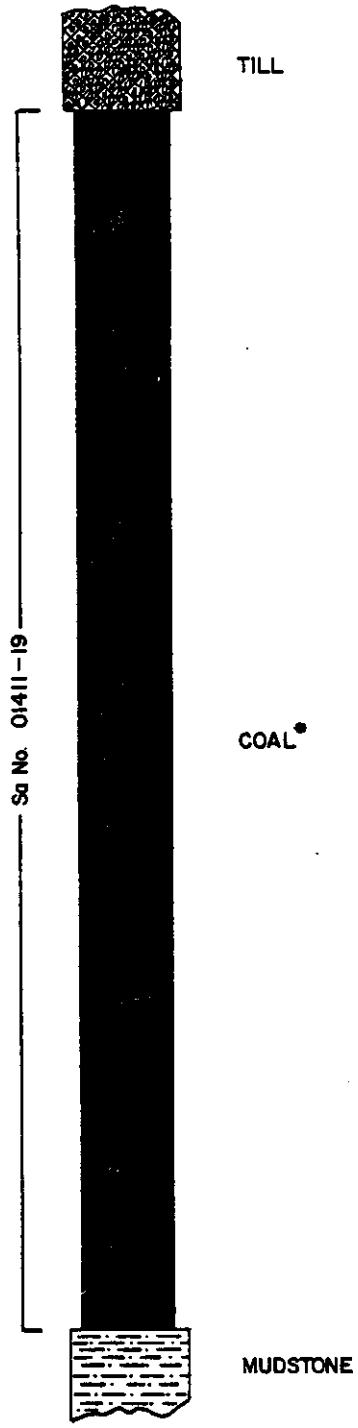
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 140
ROOF DIP - 85
ROOF DIR -

FLOOR STRIKE - 123
FLOOR DIP - 90
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
	8.4	8.4
TOTAL	0.0	8.4



* MINOR PARTINGS NOT SHOWN.

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

KPN-TRC-81-006

DRAWN BY:	DATE: FEB 82	SCALE
PREPARED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: GC DATA SOURCE: TRC81006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			SILTSTONE	LT.GY
	0.10	0.26	0.16			COAL	C-3
	0.26	0.38	0.12			COAL	C-5
	0.38	0.41	0.03			SILTSTONE	BN
	0.41	0.47	0.06			COAL	C-3
	0.47	0.56	0.09			SILTSTONE	CARB.GY C-1 STRINGERS
	0.56	0.67	0.11			COAL	C-1
	0.67	0.79	0.12			COAL	C-4
	0.79	1.00	0.21			SILTSTONE	CARB BRIGHT COAL BANDS
	1.00	1.09	0.09			CLAYSTONE	GY

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: GC DATA SOURCE: TRC81006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.09	1.20	0.11			MUDSTONE	GY
	1.20	1.22	0.02			COAL	C-2
	1.22	1.26	0.04			CLAYSTONE	GY
	1.26	1.30	0.04			MUDSTONE	GY
	1.30	1.36	0.06			MUDSTONE	GY
	1.36	1.40	0.04			COAL	C-4
	1.40	1.63	0.23			COAL	C-4 50% RUSTY BLOBS
	1.63	1.69	0.06			COAL	C-4
	1.69	1.94	0.25			SANDSTONE	LT.GY
	1.94	2.09	0.15			SILTSTONE	GY

• DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNXXTRC81010 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - J. INNIS
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1485.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6344840.00
EASTING - 512210.00
LATITUDE - 571454
LONGITUDE - 1284752

- O R I E N T A T I O N -

LENGTH - 6.05
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

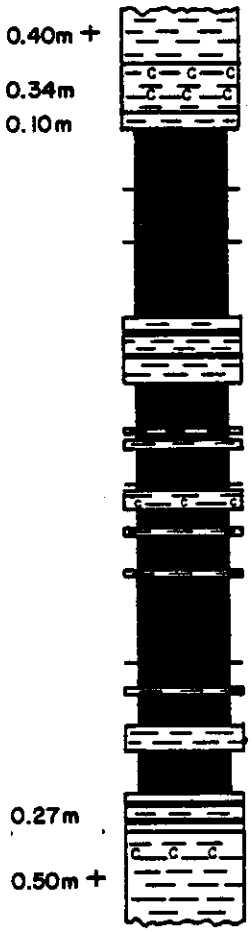
INCLINATION - 0.0
AZIMUTH - 0.0

ROOF STRIKE - 112
ROOF DIP - 70
ROOF DIR -

FLOOR STRIKE - 100
FLOOR DIP - 70
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
		0.44
		0.33
		0.55
	0.44	
		0.18
	0.05	
		0.03
4.44	0.06	
		0.25
		0.05
	0.12	
		0.14
	0.02	
		0.25
	0.03	
		0.61
		0.16
	0.04	
		0.24
	0.18	
		0.27
TOTAL	0.94	3.50



ATTITUDE OF ROOF : 112/70°S
ATTITUDE OF FLOOR : 100/70°S

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCH LOG
KPN–TRC–81–010

DRAWN BY:	DATE: 16-11-81	SCALE 1:50
LOGGED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: XX DATA SOURCE: TRC81010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.40	0.40			CLAYSTONE	
	0.40	0.74	0.34			CLAYSTONE	CARB
	0.74	0.84	0.10			CLAYSTONE	
	0.84	1.28	0.44			COAL	C-6
	1.28	1.61	0.33			COAL	C-4
	1.61	2.16	0.55			COAL	C-3
	2.16	2.60	0.44			MUDSTONE	C-3, C-2 BANDS
	2.60	2.78	0.18			COAL	C-4
	2.78	2.83	0.05			MUDSTONE	
	2.83	2.86	0.03			COAL	C-4
	2.86	2.92	0.06			MUDSTONE	
	2.92	3.17	0.25			COAL	C-4

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: XX DATA SOURCE: TRC81010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.17	3.22	0.05			COAL	C-3
	3.22	3.34	0.12			MUDSTONE	CARB
	3.34	3.48	0.14			COAL	C-4 C-3 BANDS
	3.48	3.51	0.02			MUDSTONE	
	3.51	3.76	0.25			COAL	C-4 C-3 BANDS
	3.76	3.79	0.03			MUDSTONE	
	3.79	4.40	0.61			COAL	C-4 C-3 BANDS
	4.40	4.56	0.16			COAL	C-5 10% C-3 AND C-2 BANDS
	4.56	4.60	0.04			MUDSTONE	
	4.60	4.84	0.24			COAL	C-6
	4.84	5.02	0.18			MUDSTONE	LOCAL QUARTZ VEINS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: XX DATA SOURCE: TRC81010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	5.02	5.29	0.27			COAL	C-6 C-3 BANDS
	5.29	5.56	0.27			MUDSTONE	C-3 BANDS
	5.56	6.06	0.50			CLAYSTONE	

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNXXTRC81011 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - J. INNIS

OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1464.00

LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6345125.00
EASTING - 512535.00

LATITUDE - 571503
LONGITUDE - 1284732

- O R I E N T A T I O N -

LENGTH - 3.50

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

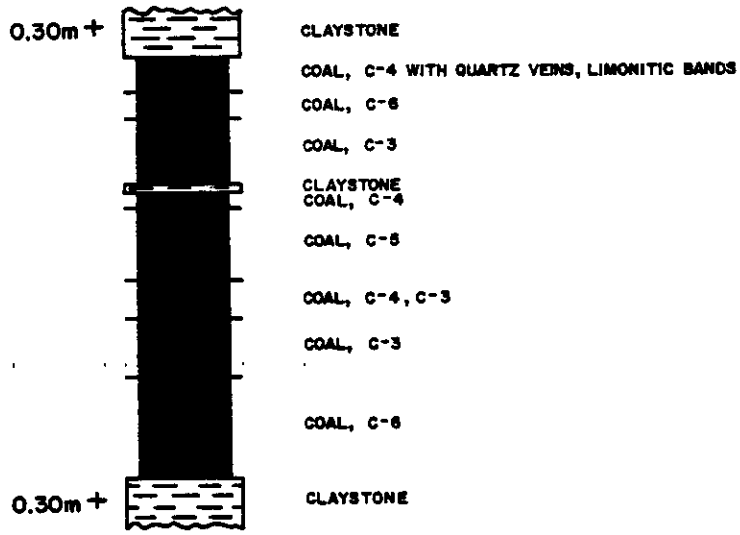
INCLINATION - 0.0
AZIMUTH - 0.0

ROOF STRIKE - 150
ROOF DIP - 50
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
		0.22
		0.20
		0.46
	0.03	0.11
2.90		0.50
		0.28
		0.40
		0.70
TOTAL	0.03	2.87



ATTITUDE OF ROOF : 150/50° E
ATTITUDE OF FLOOR : N/A (FLOOR IS SLUMPED)

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCHING LOGS

KPN–TRC–81–011

DRAWN BY:	DATE: 16-11-81	SCALE 1 : 50
PREPARED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: XX DATA SOURCE: TRC81011

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			CLAYSTONE	
	0.30	0.52	0.22			COAL	C-4 QUARTZ VEINS, LIMONITIC
	0.52	0.72	0.20			COAL	C-6
	0.72	1.18	0.46			COAL	C-3
	1.18	1.21	0.03			MUDSTONE	
	1.21	1.32	0.11			COAL	C-4
	1.32	1.82	0.50			COAL	C-5
	1.82	2.10	0.28			COAL	C-4
	2.10	2.50	0.40			COAL	C-3
	2.50	3.20	0.70			COAL	C-6
	3.20	3.50	0.30			CLAYSTONE	

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNXXTRC81012 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - J. INNIS
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1434.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6345260.00
EASTING - 512725.00
LATITUDE - 571508
LONGITUDE - 1284721

- O R I E N T A T I O N -

LENGTH - 1.25
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

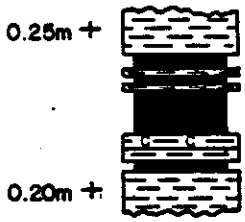
INCLINATION - 0.0
AZIMUTH - 0.0

ROOF STRIKE - 115
ROOF DIP - 80
ROOF DIR -

FLOOR STRIKE - 115
FLOOR DIP - 80
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
0.80	0.06	0.12
		0.07
	0.03	0.29
	0.08	
	0.07	0.08
TOTAL	0.24	0.56



ATTITUDE OF ROOF : 115/80°N
ATTITUDE OF FLOOR : 115/80°N

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROJECT
TRENCHING LOGS

KPN–TRC–81–012

DRAWN BY:	DATE: 16-11-81	SCALE 1 : 50
PREPARED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: XX DATA SOURCE: TRC81012

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25			CLAYSTONE	
	0.25	0.37	0.12			COAL	C-4
	0.37	0.43	0.06			MUDSTONE	
	0.43	0.50	0.07			COAL	C-4
	0.50	0.53	0.03			MUDSTONE	
	0.53	0.82	0.29			COAL	C-5 LOCAL RUSTY BANDS
	0.82	0.90	0.08			MUDSTONE	CARB
	0.90	0.97	0.07			MUDSTONE	
	0.97	1.05	0.08			COAL	C-4 LIMONITE BANDS
	1.05	1.25	0.20			CLAYSTONE	

• DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC81013 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - E. MORE
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1456.00
ZONE - 9
NORTHING - 6345005.00
EASTING - 512710.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571459
LONGITUDE - 1284722

- O R I E N T A T I O N -

LENGTH - 1.18
INCLINATION - 0.0
AZIMUTH - 0.0

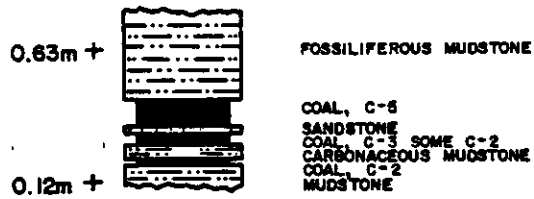
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 125
ROOF DIP - 36
ROOF DIR -

FLOOR STRIKE - 125
FLOOR DIP - 36
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
		0.20
.43	0.04	0.06
	0.10	0.03
TOTAL	0.14	0.29



ATTITUDE OF ROOF : 125/36°S
ATTITUDE OF FLOOR : 125/36°S

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROJECT

TRENCHING LOGS

KPN–TRC–81–013

DRAWN BY:	DATE: 16-11-81	SCALE 1:50'
PREPARED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

85/01/30 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC81013

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.63	0.63			MUDSTONE	LT.GY FOSSILS
	0.63	0.83	0.20			COAL	C-5 SOME C-4
	0.83	0.87	0.04			SANDSTONE.	BN
	0.87	0.93	0.06			COAL	C-3 SOME C-2
	0.93	1.03	0.10			MUDSTONE	CARB.BN INTERBEDDED C-2
	1.03	1.06	0.03			COAL	C-3
	1.06	1.18	0.12			MUDSTONE	BN C-1 STRINGERS

• DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC81014 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - E. MORE

OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1397.00

LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6345660.00
EASTING - 513405.00

LATITUDE - 571521
LONGITUDE - 1284640

- O R I E N T A T I O N -

LENGTH - 0.99

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

INCLINATION - 0.0
AZIMUTH - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

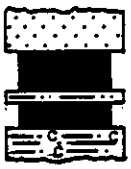
FLOOR STRIKE - 43
FLOOR DIP - 6
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
0.51	0.05	0.28
		0.18
TOTAL	0.05	0.46

0.28m +

0.20m +



SANDSTONE

COAL, C-6 LISTRIC SURFACES

MUDSTONE

COAL, C-6 WITH QUARTZ VEINS

CARBONACEOUS MUDSTONE

ATTITUDE OF ROOF : N/A

ATTITUDE OF FLOOR : 043/6° SE

GULF CANADA RESOURCES INC.

Coal Division

CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROJECT

TRENCHING LOGS

KPN–TRC–81–014

DRAWN BY:	DATE: 16-11-81	SCALE 1:50
PREPARED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC81014

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.28	0.28			SANDSTONE	
	0.28	0.56	0.28			COAL	C-6 LISTRIC SURFACES
	0.56	0.61	0.05			MUDSTONE	
	0.61	0.79	0.18			COAL	C-6 QUARTZ VEINS
	0.79	0.99	0.20			MUDSTONE	CARB

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC81015 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - E. MORE
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1495.00
ZONE - 9
NORTHING - 6344585.00
EASTING - 512305.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571446
LONGITUDE - 1284746

- O R I E N T A T I O N -

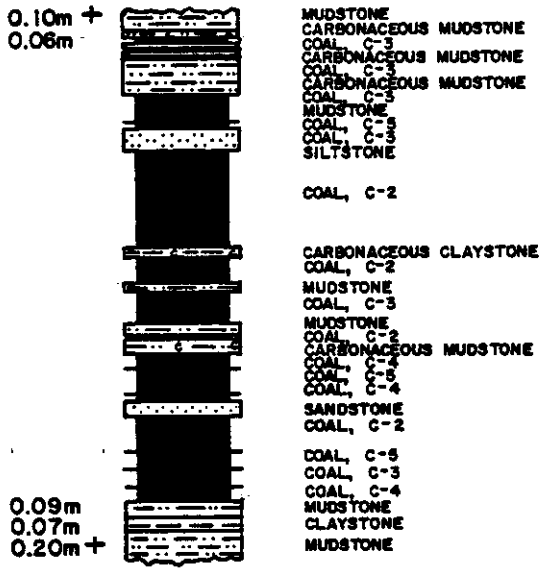
LENGTH - 3.56
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 164
ROOF DIP - 78
ROOF DIR -
FLOOR STRIKE - 152
FLOOR DIP - 32
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
	0.03	0.04
	0.03	0.01
	0.26	0.01
		0.16
		0.06
	0.12	
		0.67
3.04	0.07	0.17
	0.06	0.22
	0.08	0.02
	0.10	0.12
		0.17
		0.03
	0.09	0.21
		0.12
		0.11
		0.06
TOTAL	0.84	2.20



ATTITUDE OF ROOF : 164/78°E
ATTITUDE OF FLOOR : 152/32°E

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

MT. KLAPPAN COAL PROJECT
TRENCHING LOGS

KPN–TRC–81–015

DRAWN BY:	DATE: 16-11-81	SCALE 1:50
PREPARED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC81015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	GY FOSSILS
	0.10	0.16	0.06			MUDSTONE	CARB
	0.16	0.20	0.04			COAL	C-3
	0.20	0.23	0.03			MUDSTONE	CALCAREOUS
	0.23	0.24	0.01			COAL	C-3
	0.24	0.27	0.03			MUDSTONE	CARB
	0.27	0.28	0.01			COAL	C-3
	0.28	0.54	0.26			MUDSTONE	
	0.54	0.70	0.16			COAL	C-5
	0.70	0.76	0.06			COAL	C-3.DK.GY
	0.76	0.88	0.12			SILTSTONE	

• DENOTES MEASURED BCA

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC81015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.88	1.55	0.67			COAL	C-2
	1.55	1.62	0.07			MUDSTONE	CARB.DK.GY
	1.62	1.79	0.17			COAL	C-2
	1.79	1.85	0.06			MUDSTONE	GY
	1.85	2.07	0.22			COAL	C-3
	2.07	2.15	0.08			MUDSTONE	GY
	2.15	2.17	0.02			COAL	C-2
	2.17	2.27	0.10			MUDSTONE	CARB
	2.27	2.39	0.12			COAL	C-4
	2.39	2.56	0.17			COAL	C-5

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC81015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.56	2.59	0.03			COAL	C-4
	2.59	2.68	0.09			SANDSTONE	FG.BN
	2.68	2.89	0.21			COAL	C-2
	2.89	3.01	0.12			COAL	C-5
	3.01	3.12	0.11			COAL	C-3
	3.12	3.20	0.08			COAL	C-4
	3.20	3.29	0.09			MUDSTONE	MG.GY
	3.29	3.36	0.07			CLAYSTONE	MG.LT.GY
	3.36	3.56	0.20			MUDSTONE	LT.GY

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC81016 DATE - 01/29/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - GULF CANADA RES
GEOLOGIST - E. MORE
OPERATOR - GULF CANADA RES
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1373.00
ZONE - 9
NORTHING - 6345820.00
EASTING - 513610.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571526
LONGITUDE - 1284628

- O R I E N T A T I O N -

LENGTH - 1.57
INCLINATION - 0.0
AZIMUTH - 0.0

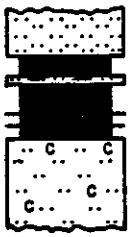
SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 10
FLOOR DIP - 34
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
0.57	0.03	0.15 0.22 0.08 0.09
TOTAL	0.03	0.54



SILTSTONE

COAL, C-5
MUDSTONE
COAL, C-5
COAL, C-4
COAL, C-4 WITH QUARTZ VEINS

CARBONACEOUS SILTSTONE

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 010/34° W

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCHING LOGS

KPN-TRC-81-016

DRAWN BY:	DATE: 16·11·81	SCALE 1:50
PREPARED BY: J. INNIS		DRAWING No.
APPROVED BY:	DATE:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC81016

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			SILTSTONE	DK.GY
	0.30	0.45	0.15			COAL	C-5
	0.45	0.48	0.03			MUDSTONE	CARB.GY
	0.48	0.70	0.22			COAL	C-5
	0.70	0.78	0.08			COAL	C-4
	0.78	0.87	0.09			COAL	C-4 QUARTZ VEINS BANDED
	0.87	1.57	0.70			SILTSTONE	CARB.GY

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82001 DATE - 02/05/85

- H I S T O R Y -

START DATE - 06/28/82
END DATE - 06/28/82

CONTRACTOR -
GEOLOGIST - DUFORD

OPERATOR -
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1290.00

ZONE - 9
NORTHING - 6343220.00
EASTING - 515350.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571401
LONGITUDE - 1284445

- O R I E N T A T I O N -

LENGTH - 9.40

INCLINATION - 34.0
AZIMUTH - 207.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 0.9

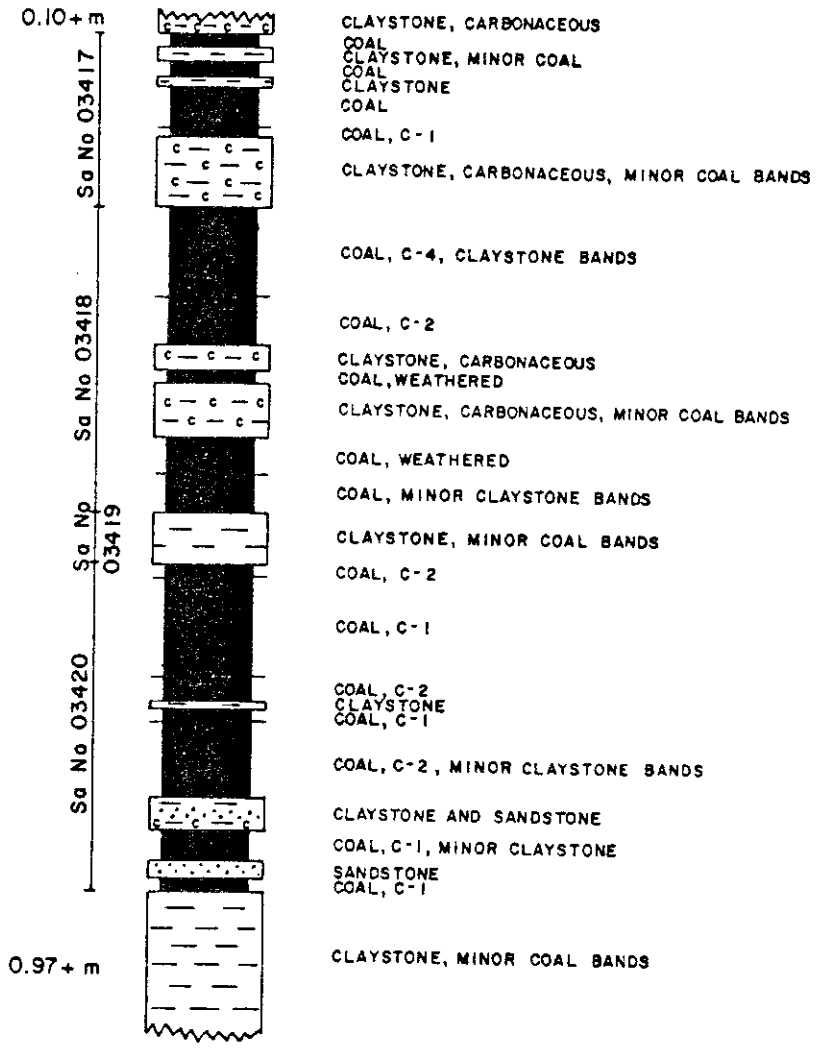
ROOF STRIKE - 136
ROOF DIP - 77
ROOF DIR - N

FLOOR STRIKE - 160
FLOOR DIP - 72
FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
	0.11	0.09
	0.07	0.08
		0.29
		0.04
	0.48	
		0.59
		0.35
	0.14	
		0.08
	0.38	
5.79		0.26
		0.24
	0.36	
		0.09
		0.66
	0.05	0.15
		0.08
		0.51
	0.20	
		0.25
	0.13	0.11
TOTAL	1.92	3.87



ATTITUDE OF ROOF	:	136/77° N
ATTITUDE OF FLOOR	:	160/72° N
FORMATION	:	
UTM COORDINATES	:	6343220 N, 515350 E
MAP CARD NUMBER	:	
AIR PHOTO NUMBER	:	
TRENCH DEPTH	:	0.9 m
TRENCH WIDTH	:	1.0 m
TRENCH LENGTH	:	3.4 m (upper) 6.0 (lower)
TRENCH BEARING	:	070° " 217° "
TRENCH SLOPE	:	15° " 34° "

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–001

DRAWN BY: P. WATSON	SCALE 1:50
LOGGED BY: K. JENNER	DATE 03/07/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			CLAYSTONE	CARB
	0.10	0.19	0.09	03417		COAL	
	0.19	0.30	0.11	03417		CLAYSTONE	MNR COAL
	0.30	0.38	0.08	03417		COAL	
	0.38	0.45	0.07	03417		CLAYSTONE	
	0.45	0.74	0.29	03417		COAL	
	0.74	0.78	0.04	03417		COAL	C-1
	0.78	1.26	0.48	03417		CLAYSTONE	CARB MNR COAL BANDS
	1.26	1.85	0.59	03418		COAL	C-4 CLAYSTONE BANDS
	1.85	2.20	0.35	03418		COAL	C-2
	2.20	2.34	0.14	03418		CLAYSTONE	CARB
	2.34	2.42	0.08	03418		COAL	WEATHERED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.42	2.80	0.38	03418		CLAYSTONE	CARB MNR COAL BANDS
	2.80	3.06	0.26	03418		COAL	WEATHERED
	3.06	3.30	0.24	03418		COAL	MNR CLAYSTONE BANDS
	3.30	3.66	0.36	03419		CLAYSTONE	MNR COAL BANDS
	3.66	3.75	0.09	03420		COAL	C-2
	3.75	4.41	0.66	03420		COAL	C-1
	4.41	4.56	0.15	03420		COAL	C-2
	4.56	4.61	0.05	03420		CLAYSTONE	
	4.61	4.69	0.08	03420		COAL	C-1
	4.69	5.20	0.51	03420		COAL	C-2 MNR CLAYSTONE BANDS
	5.20	5.40	0.20	03420		CLAYSTONE	WITH SS BED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	5.40	5.65	0.25	03420		COAL	C-1 MNR CLAYSTONE
	5.65	5.78	0.13	03420		SANDSTONE	
	5.78	5.89	0.11	03420		COAL	C-1
	5.89	6.86	0.97			CLAYSTONE	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82002 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/02/82
END DATE - 07/03/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1340.00 NORTHING - 6343700.00
EASTING - 514910.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571417
LONGITUDE - 1284511

- O R I E N T A T I O N -

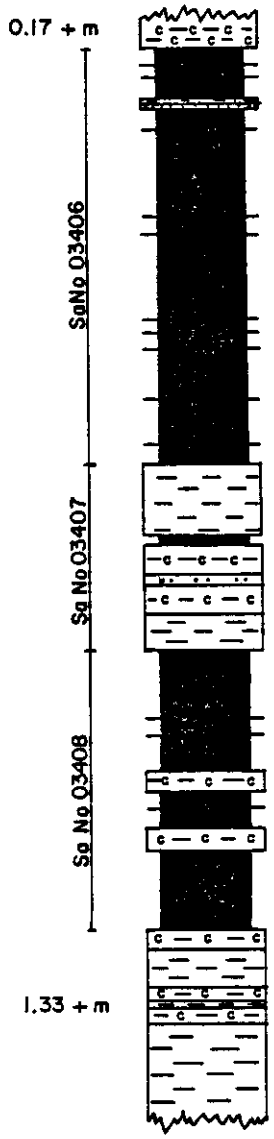
LENGTH - 7.00 INCLINATION - 32.0
AZIMUTH - 20.0
SIZE WIDTH - 0.7
SIZE HEIGHT - 0.4

ROOF STRIKE - 144 FLOOR STRIKE - 0
ROOF DIP - 34 FLOOR DIP - 0
ROOF DIR - N FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
		0.18
		0.01
	0.06	0.16
		0.16
		0.01
		0.60
		0.04
		0.10
		0.66
		0.15
		0.10
		0.30
		0.32
		0.10
6.17	0.53	
		0.06
	0.80	
		0.44
		0.14
		0.22
	0.13	
		0.10
		0.13
	0.13	
		0.54
TOTAL	1.65	4.52



CLAYSTONE, CARBONACEOUS
COAL, C-2
COAL, C-4
COAL, C-2
CLAYSTONE, CARBONACEOUS; SANDSTONE
COAL, C-2
COAL, C-4
COAL, C-2 SANDSTONE BANDS
COAL, C-4
COAL, C-2 CLAYSTONE BANDS
COAL, C-4
COAL, C-2
COAL, C-4
COAL, C-2 CLAYSTONE, CARBONACEOUS ZONES
COAL, C-4
COAL, C-2 CLAYSTONE, MINOR
CLAYSTONE, COAL BANDS
COAL, C-2
CLAYSTONE, CARBONACEOUS
SILTSTONE, MINOR COAL
CLAYSTONE, CARBONACEOUS
CLAYSTONE
COAL, C-2 WEATHERED CLAY MINOR
COAL, C-4 SILTSTONE BANDS
COAL, C-2 WEATHERED
CLAYSTONE, CARBONACEOUS
COAL, C-4 CLAYSTONE, CARBONACEOUS, MINOR
COAL, C-2 CLAYSTONE, CARBONACEOUS, MINOR
CLAYSTONE, CARBONACEOUS
COAL, C-2 SILTSTONE, MINOR
CLAYSTONE, CARBONACEOUS
CLAYSTONE
CLAYSTONE, CARBONACEOUS
CLAYSTONE
CLAYSTONE, CARBONACEOUS
CLAYSTONE

ATTITUDE OF ROOF : 144/34° N
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6343700N, 514910E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : .42 m
TRENCH WIDTH : .72 m
TRENCH LENGTH : 7.0 m
TRENCH BEARING : 020°
TRENCH SLOPE : 032°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC-82-002

DRAWN BY:	SCALE 1:50'
LOGGED BY:	DATE July 3/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.17	0.17			CLAYSTONE	CARB
	0.17	0.35	0.18	03406		COAL	C-2
	0.35	0.36	0.01	03406		COAL	C-4
	0.36	0.52	0.16	03406		COAL	C-2
	0.52	0.58	0.06	03406		CLAYSTONE	CARB SANDSTONE
	0.58	0.74	0.16	03406		COAL	C-2
	0.74	0.75	0.01	03406		COAL	C-4
	0.75	1.35	0.60	03406		COAL	C-2 SS BANDS
	1.35	1.39	0.04	03406		COAL	C-4
	1.39	1.49	0.10	03406		COAL	C-2 CLYST. BANDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.49	2.15	0.66	03406		COAL	C-4
	2.15	2.30	0.15	03406		COAL	C-2
	2.30	2.40	0.10	03406		COAL	C-4
	2.40	2.70	0.30	03406		COAL	C-2 CARB CLYST ZONES
	2.70	3.02	0.32	03406		COAL	C-4
	3.02	3.12	0.10	03406		COAL	C-2 MNR CLYST
	3.12	3.65	0.53	03407		CLAYSTONE	CLAY BANDS
	3.65	3.71	0.06	03407		COAL	C-2
	3.71	4.51	0.80	03407		CLAYSTONE	CARB SILTSTONE BANDS
	4.51	4.95	0.44	03408		COAL	C-2 WEATHERED,MNR CLAY

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	4.95	5.09	0.14	03408		COAL	C-4 SILTSTONE BANDS
	5.09	5.31	0.22	03408		COAL	C-2 WEATHERED
	5.31	5.44	0.13	03408		CLAYSTONE	CARB
	5.44	5.54	0.10	03408		COAL	C-4 MNR CARB CLYST,
	5.54	5.67	0.13	03408		COAL	C-2 CARB CLYST
	5.67	6.21	0.54	03408		COAL	C-2 MNR SILTSTONE
	6.21	7.54	1.33			CLAYSTONE	CARB

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82003 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/03/82
END DATE - 07/03/82

CONTRACTOR -
GEOLOGIST - JENNER
OPERATOR -
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1330.00
ZONE - 9
NORTHING - 6343535.00
EASTING - 515050.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571412
LONGITUDE - 1284502

- O R I E N T A T I O N -

LENGTH - 6.90
INCLINATION - 32.0
AZIMUTH - 47.0

SIZE WIDTH - 0.8
SIZE HEIGHT - 1.5

ROOF STRIKE - 136
ROOF DIP - 11
ROOF DIR - N

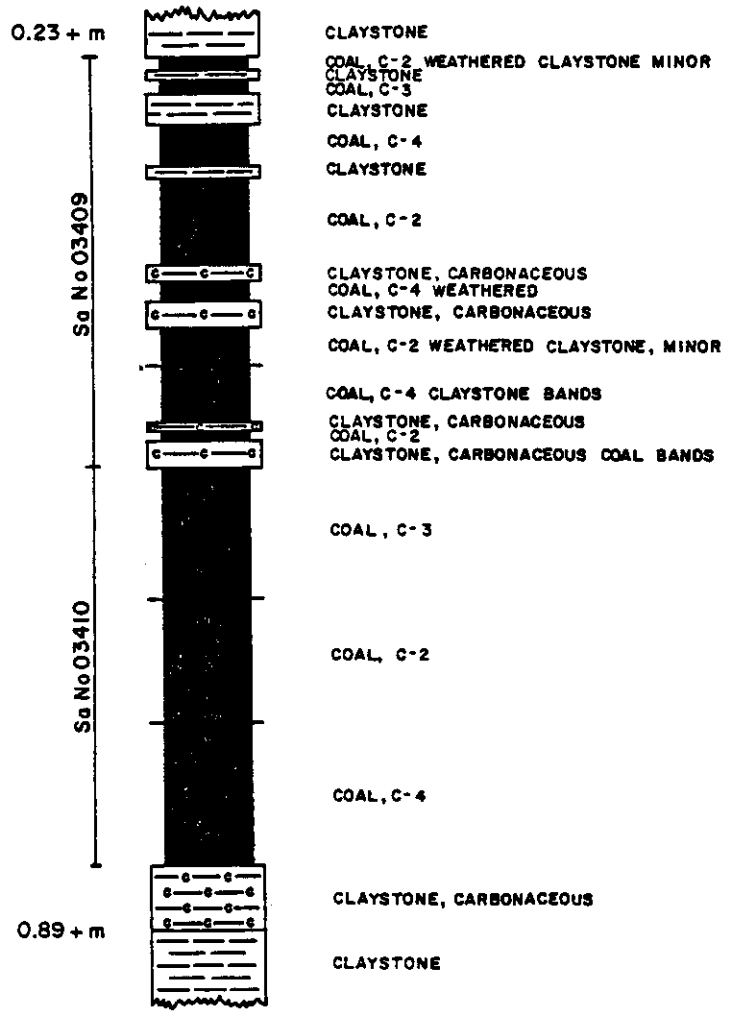
FLOOR STRIKE - 119
FLOOR DIP - 47
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

==========

ROCK	COAL
0.07	0.11
	0.09
0.20	
	0.29
0.07	
	0.63
0.09	
	0.15
0.19	
	0.27
	0.40
0.05	
	0.06
0.21	
	0.89
	0.86
	1.03
TOTAL 0.88	4.78

5.66



ATTITUDE OF ROOF : 136/11° N
ATTITUDE OF FLOOR : 119/47° N
FORMATION :
UTM COORDINATES : 6343535 N, 515070 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.48 m
TRENCH WIDTH : 0.74 m
TRENCH LENGTH : 6.9 m
TRENCH BEARING : 047°
TRENCH SLOPE : 32°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–003

DRAWN BY:	SCALE 1:50'
LOGGED BY:	DATE July 3/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.23	0.23			CLAYSTONE	
	0.23	0.34	0.11	03409		COAL	C-2 MNR CLAYSTONE
	0.34	0.41	0.07	03409		CLAYSTONE	
	0.41	0.50	0.09	03409		COAL	C-3
	0.50	0.70	0.20	03409		CLAYSTONE	
	0.70	0.99	0.29	03409		COAL	C-4
	0.99	1.06	0.07	03409		CLAYSTONE	
	1.06	1.69	0.63	03409		COAL	C-2
	1.69	1.78	0.09	03409		CLAYSTONE	CARB
	1.78	1.93	0.15	03409		COAL	C-4 WEATHERED
	1.93	2.12	0.19	03409		CLAYSTONE	CARB

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.12	2.38	0.26	03409		COAL	C-2 WEATHERED, MNR CLYST
	2.38	2.78	0.40	03409		COAL	C-4* CLYST BANDS
	2.78	2.83	0.05	03409		CLAYSTONE	CARB
	2.83	2.89	0.06	03409		COAL	C-2
	2.89	3.10	0.21	03409		CLAYSTONE	CARB COAL BANDS
	3.10	3.99	0.89	03410		COAL	C-3
	3.99	4.85	0.86	03410		COAL	C-2
	4.85	5.88	1.03	03410		COAL	C-4
	5.88	6.77	0.89			CLAYSTONE	CARB

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82004 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/03/82
END DATE - 07/03/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS - ROOF NOT REACHED

- L O C A T I O N -

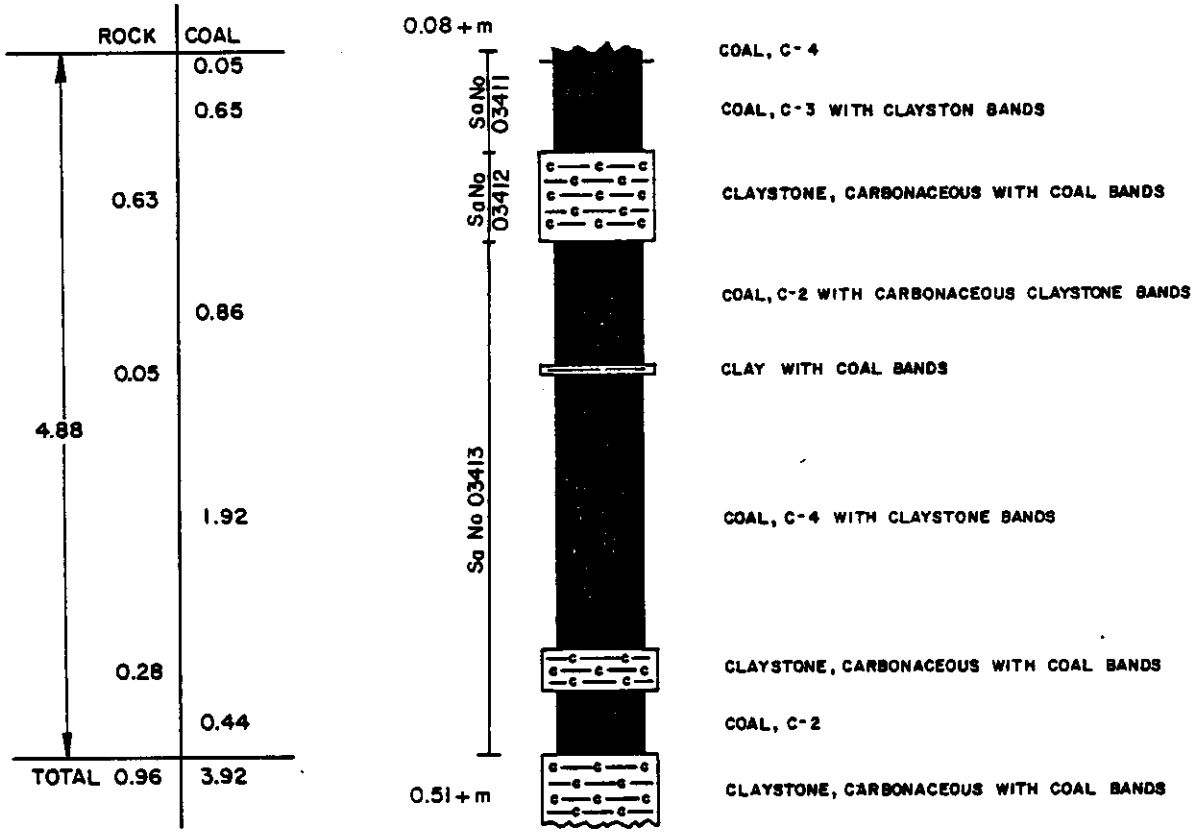
PROVINCE - BC ZONE - 9
ELEVATION - 1270.00 NORTHING - 6343140.00
EASTING - 515370.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571359
LONGITUDE - 1284443

- O R I E N T A T I O N -

LENGTH - 6.15 INCLINATION - 36.0
AZIMUTH - 9.0
SIZE WIDTH - 0.7
SIZE HEIGHT - 2.0

ROOF STRIKE - 0 FLOOR STRIKE - 94
ROOF DIP - 0 FLOOR DIP - 17
ROOF DIR - FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE



ATTITUDE OF ROOF	:	N/A
ATTITUDE OF FLOOR	:	094/17 N
FORMATION	:	
UTM COORDINATES	:	6343140N, 515370 E
MAP CARD NUMBER	:	
AIR PHOTO NUMBER	:	
TRENCH DEPTH	:	1.97 m
TRENCH WIDTH	:	0.66 m
TRENCH LENGTH	:	6.15 m
TRENCH BEARING	:	009°
TRENCH SLOPE	:	36°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–004

DRAWN BY: P. WATSON	SCALE 1:50
LOGGED BY: K. JENNER	DATE 03/07/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.08	0.08			CLAY	
	0.08	0.13	0.05	03411		COAL	C-4
	0.13	0.78	0.65	03411		COAL	C-3 CLYST BANDS
	0.78	1.41	0.63	03412		CLAYSTONE	CARB COAL BANDS
	1.41	2.27	0.86	03413		COAL	C-2 CARB CLYST BANDS
	2.27	2.32	0.05	03413		CLAY	COAL BANDS
	2.32	4.24	1.92	03413		COAL	C-4 CLAYSTONE BANDS
	4.24	4.52	0.28	03413		CLAYSTONE	CARB COAL BANDS
	4.52	4.96	0.44	03413		COAL	C-2
	4.96	5.47	0.51			CLAYSTONE	CARB COAL BANDS

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82005 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/04/82
END DATE - 07/04/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1380.00 NORTHING - 6345835.00
EASTING - 513640.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571526
LONGITUDE - 1284626

- O R I E N T A T I O N -

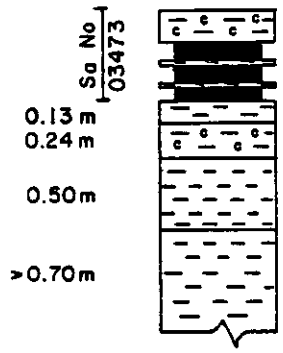
LENGTH - 2.50 INCLINATION - 52.0
AZIMUTH - 40.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 1.0

ROOF STRIKE - 0 FLOOR STRIKE - 130
ROOF DIP - 0 FLOOR DIP - 25
ROOF DIR - FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
0.60	0.20	
	0.01	0.15
	0.02	0.12
		0.10
TOTAL	0.23	0.37



CLAYSTONE, CARBONACEOUS WITH BRIGHT COAL BANDS
COAL, DULL AND BRIGHT
MUDSTONE, GRAY, SOFT
COAL; DULL BANDED
MUDSTONE; SOFT, BROWN
COAL, DULL
MUDSTONE; GRAY, SOFT
CLAYSTONE, CARBONACEOUS
SHALE: GRAY, FRACTURING ALONG BEDDING
MUDSTONE: DARK GRAY, FRACTURING ALONG BEDDING

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 130/25N
FORMATION :
UTM COORDINATES : 6345835 N, 513640E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.0 m
TRENCH WIDTH : 0.6 m
TRENCH LENGTH : 2.5 m
TRENCH BEARING : 40°
TRENCH SLOPE : 52°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCH LOG
TRC–82–005

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 4/82
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.50	1.50			TILL	ROCK FRAGMENTS
	1.50	1.70	0.20	03473		CLAYSTONE	CARB.BLK
	1.70	1.85	0.15	03473		COAL	
	1.85	1.86	0.01	03473		MUDSTONE	GY
	1.86	1.98	0.12	03473		COAL	
	1.98	2.00	0.02	03473		MUDSTONE	BN
	2.00	2.10	0.10	03473		COAL	
	2.10	2.23	0.13			MUDSTONE	BN
	2.23	2.47	0.24			CLAYSTONE	CARB.BLK
	2.47	2.97	0.50			SHALE	GY
	2.97	4.47	1.50			MUDSTONE	DK.BN

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82006 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/03/82
END DATE - 07/03/82

CONTRACTOR -
GEOLOGIST - SWANBERGSON
OPERATOR -
SURVEYOR -

REMARKS - ROOF ROCK ERODED OFF

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1380.00
ZONE - 9
NORTHING - 6345655.00
EASTING - 513495.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571520
LONGITUDE - 1284635

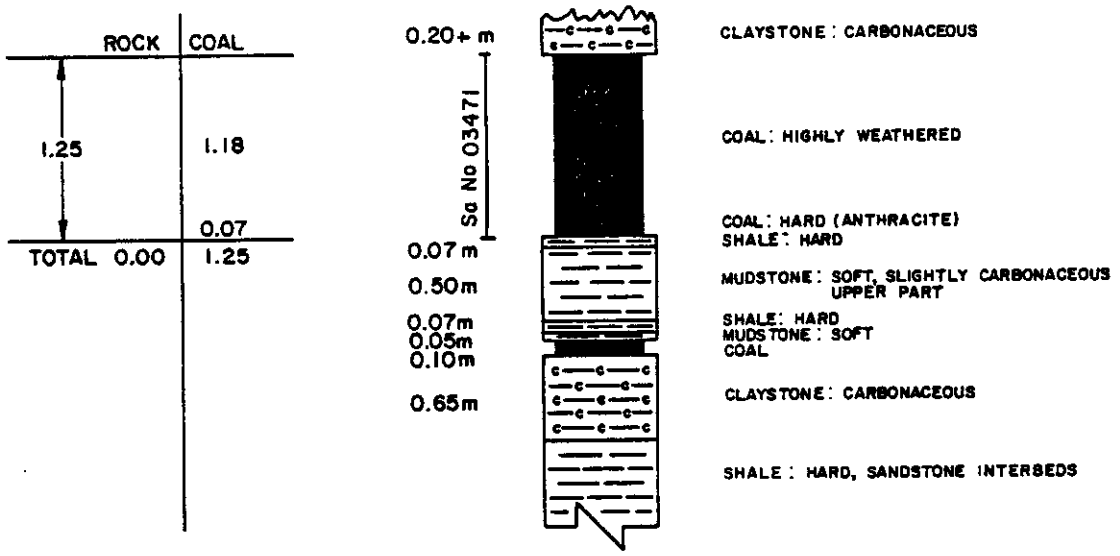
- O R I E N T A T I O N -

LENGTH - 3.32
INCLINATION - 90.0
AZIMUTH - 40.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 1.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 150
FLOOR DIP - 20
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE



ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 150/20°
FORMATION :
UTM COORDINATES : 6345655 N, 513495 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.00 m
TRENCH WIDTH : 1.00 m
TRENCH LENGTH : 3.50 m
TRENCH BEARING : 90°
TRENCH SLOPE : 75°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–006

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE 82/07/04
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.50	1.50			TILL	CARB AT BASE
	1.50	1.70	0.20			CLAYSTONE	CARB.BLK
	1.70	2.88	1.18	03471		COAL	HIGHLY WEATHERED
	2.88	2.95	0.07	03471		COAL	HARD(ANTHRACITE)
	2.95	3.02	0.07			SHALE	GY HARD
	3.02	3.52	0.50			MUDSTONE	BN SOFT, CARB IN UPPER HALF
	3.52	3.59	0.07			SHALE	GY HARD
	3.59	3.64	0.05			MUDSTONE	BN SOFT
	3.64	3.74	0.10			COAL	
	3.74	4.39	0.65			CLAYSTONE	CARB.BLK
	4.39	5.89	1.50			SHALE	SS INTERBEDS,HARD

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82007 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/05/82
END DATE - 07/05/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1290.00 NORTHING - 6343920.00
EASTING - 515650.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571424
LONGITUDE - 1284427

- O R I E N T A T I O N -

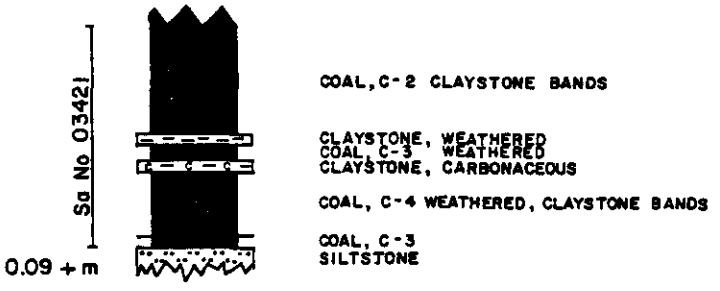
LENGTH - 2.80 INCLINATION - 32.0
AZIMUTH - 20.0
SIZE WIDTH - 0.9
SIZE HEIGHT - 1.2

ROOF STRIKE - 0 FLOOR STRIKE - 2
ROOF DIP - 0 FLOOR DIP - 16
ROOF DIR - FLOOR DIR - W

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
1.54	0.06	0.75
	0.09	0.12
		0.43
		0.09
TOTAL	0.15	1.39



ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 002/16° W
FORMATION :
UTM COORDINATES : 6343920 N, 515650 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.21 m
TRENCH WIDTH : 0.86 m
TRENCH LENGTH : 2.8 m
TRENCH BEARING : 095°
TRENCH SLOPE : 32°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–007

DRAWN BY:	SCALE 1:50
LOGGED BY: K. JENNER	DATE July 5, '82
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82007

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.80	0.80			TILL	
	0.80	1.55	0.75	03421		COAL	C-2 CLYST BANDS
	1.55	1.61	0.06	03421		CLAYSTONE	WEATHERED
	1.61	1.73	0.12	03421		COAL	C-3 WEATHERED
	1.73	1.82	0.09	03421		CLAYSTONE	CARB
	1.82	2.25	0.43	03421		COAL	C-4 WEATHERED, CLAYSTONE BANDS
	2.25	2.34	0.09	03421		COAL	C-3

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82008 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/09/82
END DATE - 07/09/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1185.00 NORTHING - 6342740.00
EASTING - 516330.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571346
LONGITUDE - 1284346

- O R I E N T A T I O N -

LENGTH - 10.70 INCLINATION - 31.0
AZIMUTH - 162.0

SIZE WIDTH - 0.8
SIZE HEIGHT - 0.8

ROOF STRIKE - 0 FLOOR STRIKE - 60
ROOF DIP - 0 FLOOR DIP - 11
ROOF DIR - FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

==========

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82008

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.33	0.33			TILL	TOP NOT REACHED
	0.33	0.59	0.26			COAL	HIGHLY WEATHERED
	0.59	0.93	0.34			COAL	C-2 CLAYSTONE INTB
	0.93	0.97	0.04	03414		COAL	C-2
	0.97	1.08	0.11	03414		CLAYSTONE	
	1.08	1.33	0.25	03414		COAL	C-2
	1.33	1.39	0.06	03414		CLAYSTONE	
	1.39	1.96	0.57	03414		COAL	C-2 MNR CLYST
	1.96	2.08	0.12	03414		CLAYSTONE	CARB FE STAINING
	2.08	2.87	0.79	03414		COAL	C-2 CLYST BANDS
	2.87	2.96	0.09	03414		CLAYSTONE	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82008

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.96	3.48	0.52	03414		COAL	C-2 MNR CLYST
	3.48	3.62	0.14	03414		CLAYSTONE	CARB
	3.62	3.81	0.19	03414		COAL	C-2 CLYST INTERBEDS
	3.81	4.16	0.35	03415		CLAYSTONE	CARB COAL BANDS
	4.16	4.34	0.18	03416		COAL	C-2 FE STAINS
	4.34	4.41	0.07	03416		CLAYSTONE	
	4.41	4.50	0.09	03416		COAL	C-3
	4.50	4.54	0.04	03416		CLAYSTONE	
	4.54	4.73	0.19	03416		COAL	C-2 CARB CLYST INTERBEDS
	4.73	4.91	0.18			CLAYSTONE	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNGCTRC82009 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/06/82
END DATE - 07/06/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1280.00 NORTHING - 6341775.00
EASTING - 514825.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571315
LONGITUDE - 1284516

- O R I E N T A T I O N -

LENGTH - 5.50 INCLINATION - 52.0
AZIMUTH - 145.0

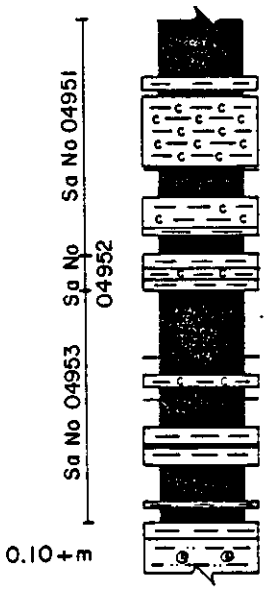
SIZE WIDTH - 1.0
SIZE HEIGHT - 0.5

ROOF STRIKE - 0 FLOOR STRIKE - 130
ROOF DIP - 0 FLOOR DIP - 30
ROOF DIR - FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
		0.38
	0.10	0.01
	0.40	
		0.01
		0.20
	0.23	
	0.08	0.15
3.23	0.08	
	0.08	
		0.43
	0.08	0.11
		0.08
		0.20
	0.25	
		0.23
	0.03	0.10
TOTAL	1.33	1.90



COAL : UNCONSOLIDATED

CLAY : BROWN, CARBONACEOUS PLANT FRAGMENTS
COAL : IRON STAINING

CLAYSTONE : CARBONACEOUS

COAL : IRON STAINING
COAL : INTERBAND, IRON STAINING, UNCONSOLIDATED
CLAYSTONE : CARB., IRON STAINING, MINOR COAL STRINGERS

COAL : MINOR IRON STAINED BANDS
CLAY : BROWN
CLAYSTONE : CARBONACEOUS
CLAY : BROWN

COAL : IRON STAINED BANDS, MINOR CARB. CLAYSTONE BANDS

COAL : BRIGHT BANDED
CLAYSTONE : CARBONACEOUS
COAL : WEATHERED
COAL : MINOR IRON STAINED BANDS

CLAYSTONE : MINOR COAL BANDS

COAL : IRON STAINING, MINOR CARB. CLAY BANDS

CLAYSTONE : CARBONACEOUS, WEATHERED
COAL : WEATHERED, MINOR IRON STAINING
CLAY : GREY

CLAYSTONE : SILTY PARTS, CONCRETIONARY

ATTITUDE OF FLOOR: 230/30° N
ATTITUDE OF ROOF : N/A
FORMATION :
UTM COORDINATES : 6341775 N, 514825 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.5 M
TRENCH WIDTH : 1.0M
TRENCH LENGTH : 5.5 M
TRENCH BEARING : 145°
TRENCH SLOPE : 52°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–009

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE 06/07/82
APPROVED BY:	

PROJECT: KPN BLOCK: GC DATA SOURCE: TRC82009

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			TILL	
	0.30	0.68	0.38	04951		COAL	UNCONSOLIDATED
	0.68	0.78	0.10	04951		CLAYSTONE	CARB.BN PLANT FRAGS
	0.78	0.79	0.01	04951		COAL	FE STAINING
	0.79	1.19	0.40	04951		CLAYSTONE	CARB
	1.19	1.20	0.01	04951		COAL	FE STAINING
	1.20	1.40	0.20	04951		COAL	UNCONSOLIDATED, FE STAIN BANDS
	1.40	1.63	0.23	04951		CLAYSTONE	CARB FE STAINING
	1.63	1.78	0.15	04951		COAL	MNR FE STAIN BANDS
	1.78	1.86	0.08	04952		CLAY	BN
	1.86	1.94	0.08	04952		CLAYSTONE	CARB
	1.94	2.02	0.08	04952		CLAY	BN

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: GC DATA SOURCE: TRC82009

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.02	2.75	0.73	04953		COAL	FE STAIN BANDS, MNR CARB CLAYSTONE BAND S
	2.75	2.86	0.11	04953		COAL	BRIGHT
	2.86	2.94	0.08	04953		CLAYSTONE	CARB
	2.94	3.02	0.08	04953		COAL	WEATHERED
	3.02	3.22	0.20	04953		COAL	MNR FE STAIN BANDS
	3.22	3.47	0.25	04953		CLAYSTONE	CARB MNR COAL BANDS
	3.47	3.70	0.23	04953		COAL	FE STAIN, MNR CARB BANDS
	3.70	3.73	0.03	04953		CLAYSTONE	CARB WEATHERED
	3.73	3.83	0.10	04953		COAL	WEATHERED, MNR FE STAIN BANDS
	3.83	3.93	0.10			CLAY	GY
	3.93	4.23	0.30			CLAYSTONE	SILTY IN PART, CONCRETIONARY

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82010 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/10/82
END DATE - 07/10/82

CONTRACTOR -
GEOLOGIST - JENNER
OPERATOR - GCRI
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1300.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6344715.00
EASTING - 516010.00
LATITUDE - 571450
LONGITUDE - 1284405

- O R I E N T A T I O N -

LENGTH - 5.56
SIZE WIDTH - 0.7
SIZE HEIGHT - 0.7

INCLINATION - 29.0
AZIMUTH - 69.0

ROOF STRIKE - 285
ROOF DIP - 25
ROOF DIR - S

FLOOR STRIKE - 296
FLOOR DIP - 19
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
2.91	0.09	0.10
		0.58
	0.05	
		0.50
	0.13	
		0.23
	0.05	
		0.76
	0.12	
		0.30
TOTAL	0.44	2.47

0.16 + m

Sa No 03422

0.44 + m

CLAYSTONE
COAL, WEATHERED, IRON STAINING, C-2
CLAY
COAL, C-2
COAL, C-3 WEATHERED
COAL, C-2
COAL, C-3
COAL, C-2
CLAY, UNCONSOLIDATED WITH COAL BANDS
COAL, C-2
COAL, C-3, WEATHERED WITH SOME UNCOLIDATED CLAYSTONE BANDS
CLAY, LIGHT BROWN, UNCONSOLIDATED
COAL, C-2, WITH VERY MINOR UNCONS
CLAYSTONE, LIGHT BROWN, UNCONSOLIDATED
COAL, C-2
COAL, C-3
COAL, C-2
COAL, C-2 WITH MINOR BANDS OF C-3 AND C-4
COAL, C-4
CLAYSTONE, CARBONACEOUS WITH COAL BANDS
COAL, C-3
C-4
C-2, DULL, CLAYSTONE INTERBEDS
CLAYSTONE, DARK GRAY, UNCONSOLIDATED WITH SOME COAL BANDS, INTERBEDS CARBONACEOUS, WEATHERED COAL BANDS, INTERBEDS

ATTITUDE OF ROOF : 105/25° S
ATTITUDE OF FLOOR 116/19°S
FORMATION :
UTM COORDINATES : 6344715 N, 516010 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : .56 m
TRENCH WIDTH : .78 m
TRENCH LENGTH : 5.56 m
TRENCH BEARING : 69°
TRENCH SLOPE : 29°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–010

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 12/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.65	2.77	0.12	03422		CLAYSTONE	CARB COAL BANDS
	2.77	3.07	0.30	03422		COAL	COAL C-2,C-3,C-4 PRESENT
	3.07	3.41	0.34			CLAYSTONE	DK.GY WEATHERED COAL BANDS
	3.41	3.51	0.10			CLAYSTONE	CARB WEATHERED COAL BANDS

* DENOTES MEASURED BCA
NEWPAGE

PROJECT: KPN BLOCK. HC DATA SOURCE: TRC82010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.16	0.16			CLAYSTONE	ROOF
	0.16	0.26	0.10	03422		COAL	C-2 WEATHERED, FE STAINING
	0.26	0.35	0.09	03422		CLAY	
	0.35	0.93	0.58	03422		COAL	C-2 SOME COAL C-3
	0.93	0.98	0.05	03422		CLAY	UNCONSOLIDATED, COAL BANDS
	0.98	1.48	0.50	03422		COAL	C-3 SOME COAL C-2, WEATHERED, SOME UNCONSOL IDATED CLAYSTONE INTBS
	1.48	1.61	0.13	03422		CLAY	LT.BN UNCONSOLIDATED
	1.61	1.84	0.23	03422		COAL	C-2 MNR UNCONSOLIDATED CLAY
	1.84	1.89	0.05	03422		CLAYSTONE	LT.BN UNCONSOLIDATED
	1.89	2.65	0.76	03422		COAL	C-2 SOME COAL C-3 AND C-4

* DENOTES MEASURED BCA

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82011 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/10/82
END DATE - 07/10/82

CONTRACTOR -
GEOLOGIST -

OPERATOR -
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1455.00

ZONE - 9
NORTHING - 6345170.00
EASTING - 512625.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571505
LONGITUDE - 1284727

- O R I E N T A T I O N -

LENGTH - 3.00

INCLINATION - 90.0
AZIMUTH - 30.0

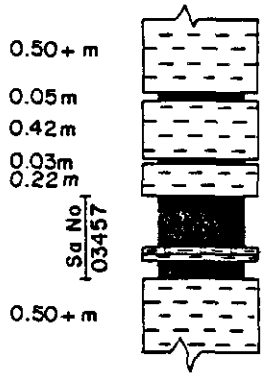
SIZE WIDTH - 1.0
SIZE HEIGHT - 0.6

ROOF STRIKE - 118
ROOF DIP - 77
ROOF DIR - N

FLOOR STRIKE - 135
FLOOR DIP - 85
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
0.57	0.05	0.35
	0.04	0.13
TOTAL	0.09	0.48



SHALE: GRAY, FRACTURING ALONG BEDDING

COAL: WEATHERED

SHALE: GREY, SOFT, FRACTURING ALONG BEDDING

COAL: WEATHERED

SHALE: MASSIVE, RESISTIVE, GRAY

COAL: DULL AND BRIGHT, WEATHERED

CARBONACEOUS CLAYSTONE: SOFT

SHALE: BROWN, SOFT

COAL: WEATHERED

SHALE: INTERBEDDED HARD AND SOFT UNITS

ATTITUDE OF ROOF : 118/77° N
ATTITUDE OF FLOOR : 135/85° N
FORMATION :
UTM COORDINATES : 6345170 N, 512625 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.6 m
TRENCH WIDTH : 1.0 m
TRENCH LENGTH : 3.0 m
TRENCH BEARING : 30°
TRENCH SLOPE : 90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–011

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 10/82
APPROVED BY:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82011

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.50	0.50			SHALE	GY FRACTURED ALONG BEDDING
	0.50	0.55	0.05			COAL	WEATHERED
	0.55	0.97	0.42			SHALE	GY SOFT,FRACTURED ALONG BEDDING
	0.97	1.00	0.03			COAL	WEATHERED
	1.00	1.22	0.22			SHALE	GY MASSIVE,RESISTIVE
	1.22	1.57	0.35	03457		COAL	DULL & BRIGHT, WEATHERED
	1.57	1.62	0.05	03457		CLAYSTONE	CARB SOFT
	1.62	1.66	0.04	03457		SHALE	BN SOFT,PUGGY
	1.66	1.79	0.13	03457		COAL	WEATHERED
	1.79	2.29	0.50			SHALE	INTERBEDDED HARD & SOFT UNITS

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82012 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/10/82
END DATE - 07/10/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1455.00 NORTHING - 6345115.00
EASTING - 512615.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571503
LONGITUDE - 1284727

- O R I E N T A T I O N -

LENGTH - 4.51 INCLINATION - 0.0
AZIMUTH - 60.0

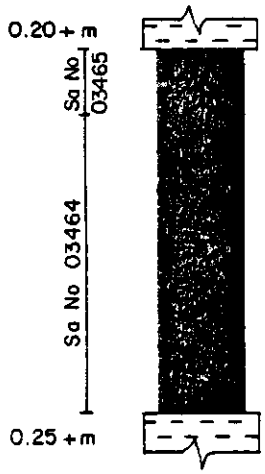
SIZE WIDTH - 0.5
SIZE HEIGHT - 1.1

ROOF STRIKE - 0 FLOOR STRIKE - 145
ROOF DIP - 0 FLOOR DIP - 66
ROOF DIR - FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

==========

ROCK	COAL
	0.45
2.53	2.08
TOTAL 0.00	2.53



SHALE: GRAY, HARD, MASSIVE

COAL: HARD, IRON STAINING ROCK PARTICLES IN PART

COAL: WEATHERED, MINOR IRON STAINING IN PART

SHALE: GRAY, FRACTURING ALONG BEDDING, WEAKLY BEDDED

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 145/66° N
FORMATION :
UTM COORDINATES : 6345115 N, 512615 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.1 m
TRENCH WIDTH : 0.5 m
TRENCH LENGTH : 4.5 m
TRENCH BEARING : 60°
TRENCH SLOPE : HORIZONTAL

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–012

DRAWN BY:	SCALE 1: 50
LOGGED BY:	DATE July 10/82
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82012

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.20	0.20			SHALE	GY HARD & MASSIVE
	0.20	0.65	0.45	03465		COAL	HARD,FE STAINING,ROCK PARTICLES
	0.65	2.73	2.08	03464		COAL	WEATHERED,MNR FE STAINING
	2.73	2.98	0.25			SHALE	GY FRACTURED ALONG BEDDING

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82013 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/11/82
END DATE - 07/11/82

CONTRACTOR -
GEOLOGIST - SWANBERGSON
OPERATOR -
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1480.00
ZONE - 9
NORTHING - 6344905.00
EASTING - 512245.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571456
LONGITUDE - 1284749

- O R I E N T A T I O N -

LENGTH - 6.70
INCLINATION - 0.0
AZIMUTH - 40.0

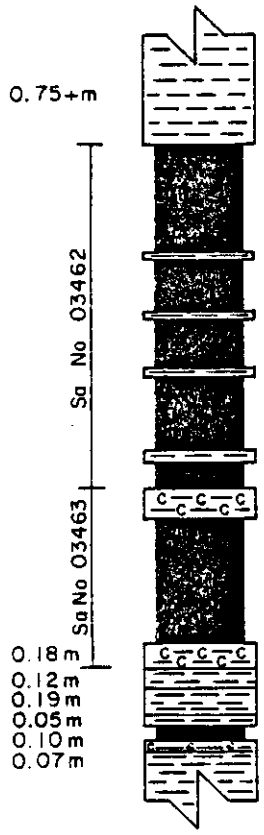
SIZE WIDTH - 0.7
SIZE HEIGHT - 0.8

ROOF STRIKE - 130
ROOF DIP - 53
ROOF DIR - S

FLOOR STRIKE - 160
FLOOR DIP - 54
FLOOR DIR - W

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
		0.76
	0.04	
		0.36
	0.05	
		0.33
3.42	0.05	
		0.51
	0.08	
		0.18
	0.20	
		0.86
TOTAL	0.42	3.00



SHALE: GRAY, FRACTURING ALONG BEDDING, MINOR ORANGE-BROWN INTERBEDS

COAL: WEATHERED, DULL AND BRIGHT BANDED, IRON STAINING IN PART

MUDSTONE: BROWN, SOFT

COAL: WEATHERED, DULL BANDED

MUDSTONE: BROWN, SOFT

COAL: WEATHERED, DULL BANDED

MUDSTONE: BROWN, SOFT

COAL: ANTHRACITIC IN PART, DULL AND BRIGHT

MUDSTONE: GRAY, SOFT

COAL: DULL BANDED

CARBONACEOUS CLAYSTONE

COAL: DULL BANDED

CARBONACEOUS CLAYSTONE

MUDSTONE: ORANGE-BROWN, SOFT

MUDSTONE: GRAPHITIC LUSTRE, POSSIBLY CARB.

MUDSTONE: ORANGE-BROWN, SOFT

COAL: HIGHLY WEATHERED

CARBONACEOUS CLAYSTONE

SHALE: DARK GRAY, WEATHERS TAN

ATTITUDE OF ROOF : 130/53°S
ATTITUDE OF FLOOR : 160/54°S
FORMATION :
UTM COORDINATES : 6344905 N, 512245E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.80m
TRENCH WIDTH : 0.70m
TRENCH LENGTH : 6.7 m
TRENCH BEARING : 40°
TRENCH SLOPE : Horizontal

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–013

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 11, 1982
APPROVED BY:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82013

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.75	0.75			SHALE	GY MNR OR-BN INTERBEDS
	0.75	1.51	0.76	03462		COAL	WEATHERED,DULL-BRIGHT BANDED,FE STAININ G
	1.51	1.55	0.04	03462		MUDSTONE	BN SOFT
	1.55	1.91	0.36	03462		COAL	WEATHERED,DULL BANDED
	1.91	1.96	0.05	03462		MUDSTONE	BN SOFT
	1.96	2.29	0.33	03462		COAL	WEATHERED,DULL BANDED
	2.29	2.34	0.05	03452		MUDSTONE	BN SOFT
	2.34	2.85	0.51	03462		COAL	ANTHRACITIC IN PART,DULL & BRIGHT
	2.85	2.93	0.08	03462		MUDSTONE	GY SOFT
	2.93	3.11	0.18	03462		COAL	DULL BANDED
	3.11	3.31	0.20	03463		CLAYSTONE	CARB

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82013

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.31	4.17	0.86	03463		COAL	DULL BANDED
	4.17	4.35	0.18	03463		CLAYSTONE	CARB
	4.35	4.47	0.12			MUDSTONE	SOFT,ORNG-BN
	4.47	4.66	0.19			MUDSTONE	PUGGY,GRAPHITIC LUSTRE,CARB?
	4.66	4.71	0.05			MUDSTONE	SOFT,ORNG-BN
	4.71	4.81	0.10			COAL	HIGHLY WEATHERED
	4.81	4.88	0.07			CLAYSTONE	CARB
	4.88	5.23	0.35			SHALE	DK.GY WEATHERS TAN

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82014 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/11/82
END DATE - 07/11/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1488.00 NORTHING - 6344705.00
EASTING - 512410.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571450
LONGITUDE - 1284740

- O R I E N T A T I O N -

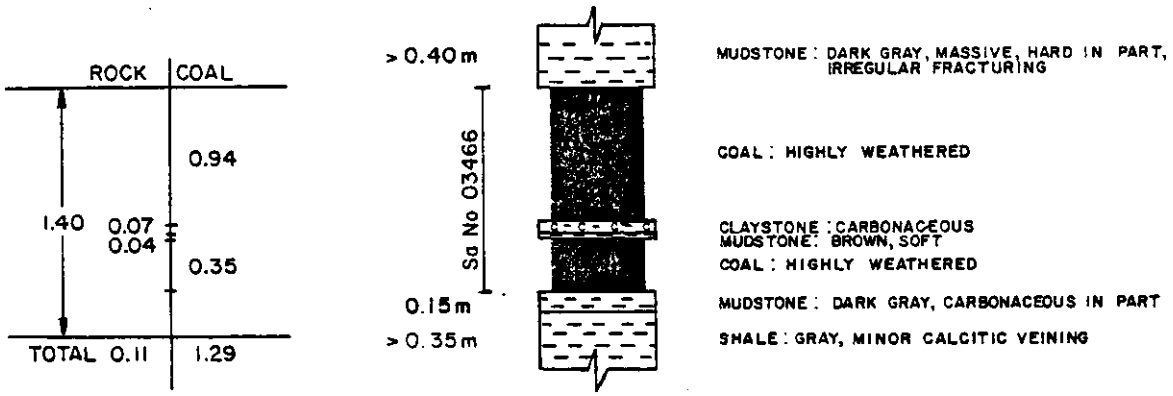
LENGTH - 1.90 INCLINATION - 35.0
AZIMUTH - 165.0

SIZE WIDTH - 0.9
SIZE HEIGHT - 1.5

ROOF STRIKE - 98 FLOOR STRIKE - 65
ROOF DIP - 65 FLOOR DIP - 76
ROOF DIR - S FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========



ATTITUDE OF ROOF : 098/65 °S (?)
ATTITUDE OF FLOOR: 065/76° N (?)
FORMATION :
UTM COORDINATES : 6344705N, 512410E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.5 m (MAX)
TRENCH WIDTH : 0.9m
TRENCH LENGTH : 1.9 m
TRENCH BEARING : 165°
TRENCH SLOPE : 35°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–014

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 11, 1982
APPROVED BY:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82014

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.40	0.40			MUDSTONE	DK.GY.MAS IRREG.FRACTURES,HARD IN PARTS
	0.40	1.34	0.94	03466		COAL	HIGHLY WEATHERED
	1.34	1.41	0.07	03466		CLAYSTONE	CARB
	1.41	1.45	0.04	03466		MUDSTONE	BN SOFT
	1.45	1.80	0.35	03466		COAL	HIGHLY WEATHERED
	1.80	1.95	0.15			MUDSTONE	DK.GY CARB IN PART
	1.95	2.30	0.35			SHALE	GY PUGGY TOWARDS BASE,MNR CALCIUM CARBONAT E VEINS

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82015 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/13/82
END DATE - 07/13/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1460.00 NORTHING - 6345065.00
EASTING - 512770.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571501
LONGITUDE - 1284718

- O R I E N T A T I O N -

LENGTH - 2.90 INCLINATION - 5.0
AZIMUTH - 18.0

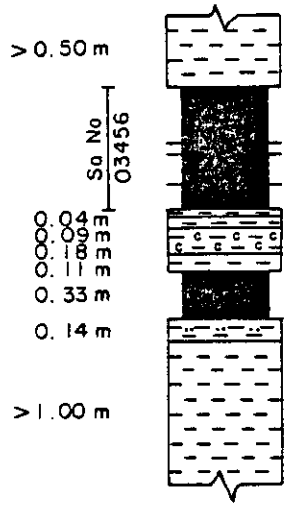
SIZE WIDTH - 0.8
SIZE HEIGHT - 1.3

ROOF STRIKE - 130 FLOOR STRIKE - 140
ROOF DIP - 79 FLOOR DIP - 76
ROOF DIR - E FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

==========

ROCK		COAL
		0.38
0.81		0.06
		0.20
		0.17
TOTAL	0.00	0.81



SHALE: GRAY, PLANT FRAGMENTS, SUB FISSILE

COAL: HIGHLY WEATHERED

COAL: HARD

COAL: DULL AND BRIGHT

COAL: DULL BANDED

SHALE: DARK GRAY, SOFT

SHALE: LIGHT GRAY, SOFT

CARBONACEOUS CLAYSTONE

SHALE: LIGHT GRAY, SOFT

COAL: DULL AND BRIGHT

SHALE: LIGHT ORANGE-BROWN, SOFT, WEATHERED, FINELY BEDDED, IRON STAINING

SHALE: GRAY, SOFT, IRREGULAR FRACTURING

ATTITUDE OF ROOF : 130/79° N
ATTITUDE OF FLOOR : 140/76° N
FORMATION :
UTM COORDINATES : 6345065N, 512770E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.25 m (Max)
TRENCH WIDTH : 0.8 m
TRENCH LENGTH : 2.9 m
TRENCH BEARING : 18°
TRENCH SLOPE : 5°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–015

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 13/82
APPROVED BY:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.50	0.50			SHALE	GY PLANT FRAGS,SUB-FISSILE
	0.50	0.88	0.38	03456		COAL	HIGHLY WEATHERED
	0.88	0.94	0.06	03456		COAL	HARD
	0.94	1.14	0.20	03456		COAL	DULL & BRIGHT
	1.14	1.31	0.17	03456		COAL	DULL BANDED
	1.31	1.35	0.04			SHALE	DK.GY SOFT
	1.35	1.44	0.09			SHALE	LT.GY SOFT
	1.44	1.62	0.18			CLAYSTONE	CARB
	1.62	1.73	0.11			SHALE	LT.GY SOFT
	1.73	2.06	0.33			COAL	DULL & BRIGHT
	2.06	2.20	0.14			SHALE	FG ORNG-BN,FE STAINING,WEATHERING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.20	3.20	1.00			SHALE	GY IRREG. FRACTURES, SOFT

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82016 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/13/82
END DATE - 07/13/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1490.00 NORTHING - 6344620.00
EASTING - 512338.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571447
LONGITUDE - 1284744

- O R I E N T A T I O N -

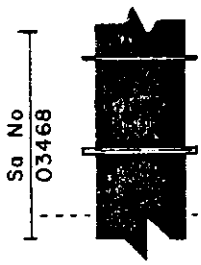
LENGTH - 2.30 INCLINATION - 70.0
AZIMUTH - 40.0

SIZE WIDTH - 1.2
SIZE HEIGHT - 1.3

ROOF STRIKE - 0 FLOOR STRIKE - 0
ROOF DIP - 0 FLOOR DIP - 0
ROOF DIR - FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
1.39	0.01	0.18
		0.60
	0.03	
		0.57
TOTAL	0.04	1.35



COAL: HIGHLY WEATHERED (ATTITUDE 58°/46° SE)
MUDSTONE: GRAY, SOFT

COAL: DULL BANDED

MUDSTONE

COAL: DULL BANDED (ATTITUDE 10° 88 E)

WATER TABLE

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6344620 N, 512338 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.3 m
TRENCH WIDTH : 1.2 m
TRENCH LENGTH : 2.3 m
TRENCH BEARING : 40°
TRENCH SLOPE : 70°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–016

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 13/82
APPROVED BY:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82016

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.50	0.50			TILL	
	0.50	0.68	0.18	03468		COAL	HIGHLY WEATHERED, 58/46S
	0.68	0.69	0.01	03468		MUDSTONE	GY SOFT
	0.69	1.29	0.60	03468		COAL	DULL BANDED
	1.29	1.32	0.03	03468		MUDSTONE	
	1.32	1.89	0.57	03468		COAL	DULL BANDED, 10/88E

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82017 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/13/82
END DATE - 07/13/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS - TRENCH SLOPE 45 DEGREES UPPER,HORIZONTAL LOWER. NO SE OF AN ANTICLINE. BEDS CHAOTIC NO ROOF.

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1390.00 NORTHING - 6345600.00
EASTING - 513425.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571519
LONGITUDE - 1284639

- O R I E N T A T I O N -

LENGTH - 3.60 INCLINATION - 45.0
AZIMUTH - 110.0

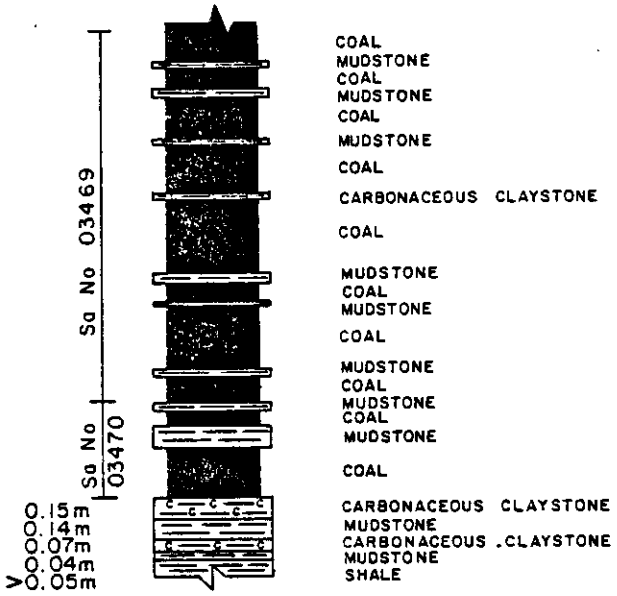
SIZE WIDTH - 0.9
SIZE HEIGHT - 1.8

ROOF STRIKE - 0 FLOOR STRIKE - 20
ROOF DIP - 0 FLOOR DIP - 35
ROOF DIR - FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
		0.25
	0.03	
		0.14
	0.03	
		0.32
	0.02	
		0.34
	0.02	
		0.50
3.16	0.04	
	0.01	0.16
		0.45
	0.03	
		0.18
	0.03	
		0.11
	0.15	
		0.35
TOTAL	0.36	2.80



ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 200/35°E
FORMATION :
UTM COORDINATES : 6345600 N, 513425 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.8 m
TRENCH WIDTH : 0.9 m
TRENCH LENGTH : 3.6 m
TRENCH BEARING : 110°
TRENCH SLOPE : UPPER: 45°
LOWER: HORIZONTAL

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–017

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 13/82
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82017

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.06	0.06			TILL	
	0.06	0.31	0.25	03469		COAL	
	0.31	0.34	0.03	03469		MUDSTONE	
	0.34	0.48	0.14	03469		COAL	
	0.48	0.51	0.03	03469		MUDSTONE	
	*0.51	0.83	0.32	03469		COAL	
	0.83	0.85	0.02	03469		MUDSTONE	
	0.85	1.19	0.34	03469		COAL	
	1.19	1.21	0.02	03469		CLAYSTONE	CARB
	1.21	1.71	0.50	03469		COAL	
	1.71	1.75	0.04	03469		MUDSTONE	
	1.75	1.91	0.16	03469		COAL	
	1.91	1.92	0.01	03469		MUDSTONE	
	1.92	2.37	0.45	03469		COAL	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82017

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.37	2.40	0.03	03469		MUDSTONE	
	2.40	2.58	0.18	03469		COAL	
	2.58	2.61	0.03	03470		MUDSTONE	
	2.61	2.72	0.11	03470		COAL	
	2.72	2.87	0.15	03470		MUDSTONE	
	2.87	3.22	0.35	03470		COAL	
	3.22	3.37	0.15			CLAYSTONE	CARB
	3.37	3.51	0.14			MUDSTONE	
	3.51	3.58	0.07			CLAYSTONE	CARB
	3.58	3.62	0.04			MUDSTONE	
	3.62	3.67	0.05			SHALE	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82018 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/13/82
END DATE - 07/13/82

CONTRACTOR -
GEOLOGIST - SWANBERGSON

OPERATOR - GCRI
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1380.00

LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6345830.00
EASTING - 513540.00

LATITUDE - 571526
LONGITUDE - 1284632

- O R I E N T A T I O N -

LENGTH - 2.30

INCLINATION - 80.0
AZIMUTH - 30.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 0.4

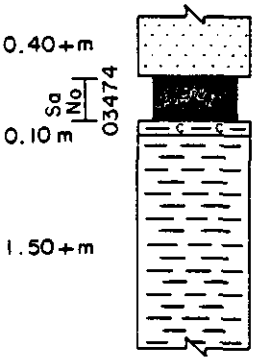
ROOF STRIKE - 310
ROOF DIP - 47
ROOF DIR - S

FLOOR STRIKE - 320
FLOOR DIP - 42
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
0.32		0.32
TOTAL	0.00	0.32



SANDSTONE: MEDIUM TO COARSE GRAIN, LIGHT GRAY, FRIABLE

COAL: HIGHLY WEATHERED

CARBONACEOUS CLAYSTONE

SHALE: DARK GRAY, HARD, FRACTURING ALONG BEDDING

ATTITUDE OF ROOF : 130/47° S
ATTITUDE OF FLOOR: 140/42° S
FORMATION :
UTM COORDINATES : 6345830 N, 513540 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.4m
TRENCH WIDTH : 0.6m
TRENCH LENGTH : 2.3m
TRENCH BEARING : 30°
TRENCH SLOPE : 80°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–018

DRAWN BY:	SCALE 1:50
LOGGED BY:	DATE July 13/82
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82018

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.40	0.40			SANDSTONE	MG.LT.GY GRAIN SIZE IS MEDIUM-COARSE
	0.40	0.72	0.32	03474		COAL	HIGHLY WEATHERED
	0.72	0.82	0.10			CLAYSTONE	CARB
	0.82	2.32	1.50			SHALE	DK.GY HARD,FRAC. ALONG BEDDING

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82019 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/19/82
END DATE - 07/19/82

CONTRACTOR -
GEOLOGIST - SWANBERGSON

OPERATOR -
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1490.00

LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6344750.00
EASTING - 512100.00

LATITUDE - 571451
LONGITUDE - 1284758

- O R I E N T A T I O N -

LENGTH - 7.00

INCLINATION - 7.0
AZIMUTH - 28.0

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.4

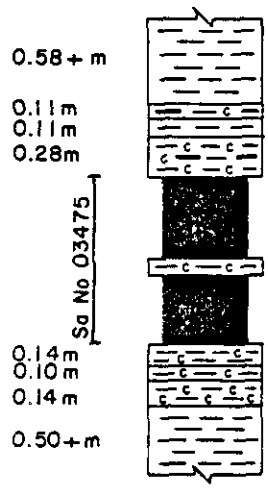
ROOF STRIKE - 315
ROOF DIP - 50
ROOF DIR - S

FLOOR STRIKE - 330
FLOOR DIP - 49
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
1.17	0.10	0.57
		0.50
TOTAL	0.10	1.07



MUDSTONE : GRAY TO DARK GRAY, SOFT

CLAYSTONE : CARBONACEOUS, MINOR WEATHERED COAL
SHALE : DARK GRAY

CLAYSTONE : CARBONACEOUS, SOME COAL, HIGHLY WEATHERED

COAL : DULL BANDED

CLAYSTONE : CARBONACEOUS

COAL : HARD, DULL BANDED TO DULL & BRIGHT

MUDSTONE : DARK GRAY, CARBONACEOUS IN PART
CLAYSTONE : CARBONACEOUS
MUDSTONE : DARK GRAY, CARBONACEOUS IN PART

SHALE : SOFT, DARK GRAY TO GRAY
REGULARLY FRACTURED

ATTITUDE OF ROOF	:	135/50° S
ATTITUDE OF FLOOR	:	150/49° S
FORMATION	:	
UTM COORDINATES	:	6344750 N, 512100 E
MAP CARD NUMBER	:	
AIR PHOTO NUMBER	:	
TRENCH DEPTH	:	1.4 m
TRENCH WIDTH	:	0.65 m
TRENCH LENGTH	:	7.0 m
TRENCH BEARING	:	028°
TRENCH SLOPE	:	007°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–019

DRAWN BY:	SCALE
LOGGED BY: E. SWANBERGSON	DATE July 19/82
APPROVED BY:	

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82019

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
00	0.00	0.58	0.58			MUDSTONE	DK.GY SOFT, PUGGY, ORIENTATION 135/50S
00	0.58	0.69	0.11			CLAYSTONE	CARB MNR WTHRD COAL
00	0.69	0.80	0.11			SHALE	DK.GY
00	0.80	1.08	0.28			CLAYSTONE	CARB * SOME HIGHLY WTHRD COAL
00	1.08	1.65	0.57	03475		COAL	C-4.BLK
00	1.65	1.75	0.10	03475		CLAYSTONE	CARB
00	1.75	2.25	0.50	03475		COAL	C-3
00	2.25	2.39	0.14			MUDSTONE	DK.GY CARB IN PART
00	2.39	2.49	0.10			CLAYSTONE	CARB
00	2.49	2.63	0.14			MUDSTONE	DK.GY CARB IN PART

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82019

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
00	2.63	3.13	0.50			SHALE	DK.GY SOFT, REGULARLY FRACTURED

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82023 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/11/82
END DATE - 07/11/82

CONTRACTOR - OPERATOR - GCRI
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1297.00 NORTHING - 6345060.00
EASTING - 516040.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571501
LONGITUDE - 1284403

- O R I E N T A T I O N -

LENGTH - 3.39 INCLINATION - 7.0
AZIMUTH - 200.0

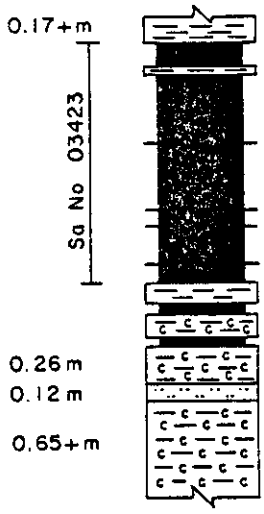
SIZE WIDTH - 0.5
SIZE HEIGHT - 0.4

ROOF STRIKE - 292 FLOOR STRIKE - 0
ROOF DIP - 55 FLOOR DIP - 0
ROOF DIR - S FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
		0.17
	0.05	
		0.47
		0.46
2.12		
		0.11
		0.26
		0.16
	0.14	
		0.06
	0.17	
		0.07
TOTAL	0.36	1.76



CLAYSTONE
COAL, C-2
CLAY, LIGHT BROWN
COAL, C-3, CARBONACEOUS CLAYSTONE BANDS
COAL, C-2
COAL, CARBONACEOUS CLAYSTONE INTERBEDS
COAL, C-4, CLAYSTONE INTERBEDS
COAL, C-3
CLAYSTONE, LIGHT BROWN
COAL, C-3, CARBONACEOUS CLAYSTONE BANDS
CLAYSTONE, CARBONACEOUS, MINOR COAL BANDS
COAL, C-2, CARBONACEOUS CLAYSTONE BANDS
CLAYSTONE, CARBONACEOUS, MINOR COAL BANDS
SILTSTONE, NODULAR
CLAYSTONE, CARBONACEOUS, COAL BANDS

ATTITUDE OF ROOF : 112/55°S
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6345060 N, 516040 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.39 m
TRENCH WIDTH : 0.52 m
TRENCH LENGTH : 3.39 m
TRENCH BEARING : 200°
TRENCH SLOPE : 007°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC-82-023

DRAWN BY: D. DURANT	SCALE 1:50
LOGGED BY: K. JENNER	DATE July 11/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82023

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.17	0.17			CLAYSTONE	ROOF
	0.17	0.34	0.17	03423		COAL	C-2 WEATHERED
	0.34	0.39	0.05	03423		CLAY	LT.BN UNCONSOLIDATED
	0.39	0.86	0.47	03423		COAL	C-3 FE-STAINS,CARB CLYST BANDS
	0.86	1.32	0.46	03423		COAL	C-2
	1.32	1.43	0.11	03423		COAL	CARB CLYST INTERBEDS
	1.43	1.69	0.26	03423		COAL	C-4 CLYST INTERBEDS
	1.69	1.85	0.16	03423		COAL	C-3
	1.85	1.99	0.14	03423		CLAYSTONE	LT.BN
	1.99	2.05	0.06	03423		COAL	C-3 CARB CLYST BANDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82023

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.05	2.22	0.17	03423		CLAYSTONE	CARB MNR COAL BANDS
	2.22	2.29	0.07	03423		COAL	C-2 CARB CLYST BANDS
	2.29	2.55	0.26			CLAYSTONE	CARB MNR COAL BANDS
	2.55	2.67	0.12			SILTSTONE	NODULAR
	2.67	3.32	0.65			CLAYSTONE	CARB COAL BANDS

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82024 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/15/82
END DATE - 07/15/82

CONTRACTOR -
GEOLOGIST - JENNER

OPERATOR -
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1402.00

ZONE - 9
NORTHING - 6343660.00
EASTING - 514290.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571416
LONGITUDE - 1284548

- O R I E N T A T I O N -

LENGTH - 5.00

INCLINATION - 58.0
AZIMUTH - 173.0

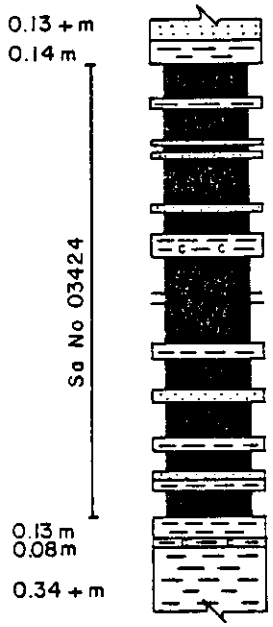
SIZE WIDTH - 0.8
SIZE HEIGHT - 0.6

ROOF STRIKE - 206
ROOF DIP - 15
ROOF DIR - E

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
		0.25
	0.08	
		0.25
	0.01	
	0.02	0.03
		0.33
	0.02	
		0.17
	0.12	
		0.23
2.90		0.07
		0.28
	0.10	
		0.22
	0.03	
		0.24
	0.05	
	0.03	0.13
	0.03	
	0.05	
		0.16
TOTAL	0.54	2.36



SANDSTONE: FINE GRAINED, FRESH SURFACE GRAY
CLAYSTONE: DARK GRAY
COAL: C-2, MINOR CARBONACEOUS CLAYSTONE BANDS
CLAY: BROWN, UNCONSOLIDATED
COAL: C-2, MINOR IRON STAINING
CLAYSTONE: CARBONACEOUS
COAL: C-2
SILTSTONE: LIGHT BROWN
COAL: C-2
SANDSTONE: LIGHT BROWN, FINE GRAINED
COAL: C-2
CLAYSTONE: CARBONACEOUS, IRON STAINING
COAL: C-2 WEATHERED IRON STAINING
COAL: C-3 MINOR FINE GRAINED SNDST/CLYST INTERBED
COAL: C-2 IRON STAINING
CLAYSTONE: MINOR COAL BANDS
COAL: C-2
SANDSTONE: UNCONSOLIDATED, FRESH BROWN, WEATHERS ORANGE BROWN
COAL
CLAYSTONE: CARBONACEOUS, COAL BANDING
SANDSTONE: MINOR COAL BANDS
CLAYSTONE: MINOR COAL BANDS
COAL
CLAYSTONE: BROWN, SLIGHTLY FOSSILIFEROUS
CLAYSTONE: CARBONACEOUS, MINOR COAL INTERBEDS
CLAYSTONE

ATTITUDE OF ROOF 026/15°E
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6343660N, 514290E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.55 m
TRENCH WIDTH : 0.74 m
TRENCH LENGTH : 5.0m
TRENCH BEARING : 173°
TRENCH SLOPE : 58°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC-82-024

DRAWN BY:	SCALE 1:50
LOGGED BY: KIM JENNER	DATE 15/07/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82024

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.13	0.13			SANDSTONE	FG.GY WEATHERS TAN
	0.13	0.27	0.14			CLAYSTONE	DK.GY
	0.27	0.52	0.25	03424		COAL	C-2 MNR CARB CLYST BANDS
	0.52	0.60	0.08	03424		CLAY	BN UNCONSOLIDATED
	0.60	0.85	0.25	03424		COAL	C-2 MNR IRON STAINS
	0.85	0.86	0.01	03424		CLAYSTONE	CARB
	0.86	0.89	0.03	03424		COAL	C-2
	0.89	0.91	0.02	03424		SILTSTONE	LT.BN
	0.91	1.08	0.17	03424		COAL	C-2
	1.08	1.20	0.12	03424		CLAYSTONE	CARB FE STAINING

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82024

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.20	1.43	0.23	03424		COAL	C-2 WEATHERED, FE STAINING
	1.43	1.50	0.07	03424		COAL	C-3 MNR FG SS AND CLYST INTBS
	1.50	1.78	0.28	03424		COAL	C-2 FE STAINING
	1.78	1.88	0.10	03424		CLAYSTONE	MNR COAL BANDS
	1.88	2.10	0.22	03424		COAL	C-2
	2.10	2.13	0.03	03424		SANDSTONE	BN UNCONSOLIDATED, WEATHERS OR-BN
	2.13	2.37	0.24	03424		COAL	C-2 FE STAINING
	2.37	2.42	0.05	03424		CLAYSTONE	CARB COAL BANDS
	2.42	2.45	0.03	03424		CLAYSTONE	BN
	2.45	2.58	0.13	03424		COAL	C-3 CARB CLYST INTBS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK. HC DATA SOURCE: TRC82024

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.58	2.61	0.03	03424		SANDSTONE	MNR COAL BANDS
	2.61	2.66	0.05	03424		CLAYSTONE	CARB MNR COAL BANDS
	2.66	2.82	0.16	03424		COAL	C-3 WEATHERED, CARB CLYST INTBS
	2.82	2.95	0.13			CLAYSTONE	BN SLIGHTLY FOSSILIFEROUS
	2.95	3.03	0.08			CLAYSTONE	CARB MNR COAL INTBS
	3.03	3.37	0.34			CLAYSTONE	

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82025 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/26/82
END DATE - 07/26/82

CONTRACTOR -
GEOLOGIST -

OPERATOR - GRRI
SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1400.00

ZONE - 9
NORTHING - 6343710.00
EASTING - 514170.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571417
LONGITUDE - 1284555

- O R I E N T A T I O N -

LENGTH - 6.50

INCLINATION - 44.0
AZIMUTH - 118.0

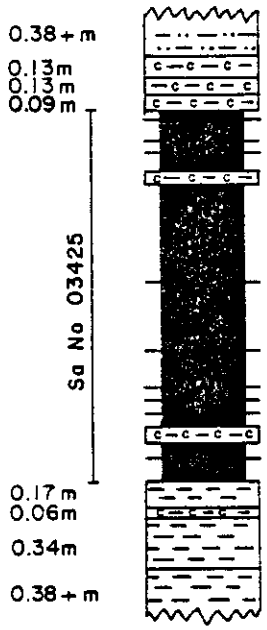
SIZE WIDTH - 0.5
SIZE HEIGHT - 0.8

ROOF STRIKE - 283
ROOF DIP - 32
ROOF DIR - S

FLOOR STRIKE - 295
FLOOR DIP - 19
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

ROCK	COAL
	0.07
	0.14
	0.06
0.08	0.12
	0.72
2.43	
	0.43
	0.26
	0.09
	0.10
	0.05
0.08	0.08
	0.15
TOTAL 0.16	2.27



ATTITUDE OF ROOF : 103/32° S
ATTITUDE OF FLOOR: 115/19° S
FORMATION :
UTM COORDINATES : 6343710 N, 514170 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : .84 m
TRENCH WIDTH : .53 m
TRENCH LENGTH : 6.5 m
TRENCH BEARING : 118°
TRENCH SLOPE : 44°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCH LOG
TRC–82–025

DRAWN BY: MARK HADLEY	SCALE 1:50
LOGGED BY: KIM JENNER	DATE July 26/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82025

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.38	0.38			CLAYSTONE	SILTY,FOSSILS
	0.38	0.51	0.13			CLAYSTONE	CARB COAL BANDS
	0.51	0.64	0.13			CLAYSTONE	UNCONSOLIDATED
	0.64	0.73	0.09			CLAYSTONE	CARB UNCONSOLIDATED,COAL BANDING
	0.73	0.80	0.07	03425		COAL	C-2 IRON STAINS
	0.80	0.94	0.14	03425		COAL	C-3 WEATHERED
	0.94	1.00	0.06	03425		COAL	C-2 CLAYSTONE INTERBEDS
	1.00	1.12	0.12	03425		COAL	C-3 WEATHERED,FE STAINED,CLAYSTONE BANDS
	1.12	1.20	0.08	03425		CLAY	UNCONSOLIDATED, MNR COAL BANDS
	1.20	1.92	0.72	03425		COAL	C-4 FE STAINS, CARB CLAYSTONE INTERBEDS
	1.92	2.35	0.43	03425		COAL	C-3 WEATHERED, CARB CLAYSTONE INTERBEDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82025

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.35	2.61	0.26	03425		COAL	C-2 CLAYSTONE INTERBEDS
	2.61	2.70	0.09	03425		COAL	C-2 UNCONSOLIDATED, CLAYSTONE BEDS
	2.70	2.80	0.10	03425		COAL	C-2 SS INTERBEDS
	2.80	2.85	0.05	03425		COAL	C-4 FE STAINS
	2.85	2.93	0.08	03425		CLAYSTONE	CARB COAL INTERBEDS
	2.93	3.01	0.08	03425		COAL	C-3 CARB CLAYSTONE INTERBEDS
	3.01	3.16	0.15	03425		COAL	C-2 WEATHERED
	3.16	3.33	0.17			CLAYSTONE	UNCONSOLIDATED
	3.33	3.39	0.06			CLAYSTONE	CARB COAL INTERBEDS
	3.39	3.73	0.34			CLAYSTONE	COAL INTERBEDS,WEATHERED
	3.73	4.11	0.38			CLAYSTONE	WEATHERED

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82026 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/26/82
END DATE - 07/26/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1390.00 NORTHING - 6343730.00
EASTING - 514455.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571418
LONGITUDE - 1284538

- O R I E N T A T I O N -

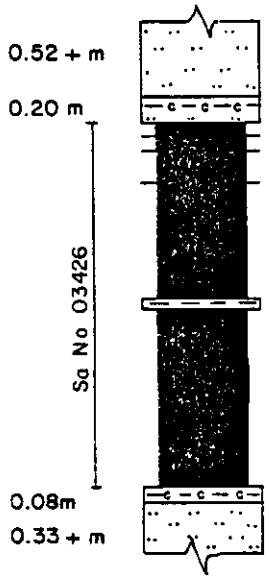
LENGTH - 4.00 INCLINATION - 35.0
AZIMUTH - 5.0
SIZE WIDTH - 1.2
SIZE HEIGHT - 1.1

ROOF STRIKE - 187 FLOOR STRIKE - 333
ROOF DIP - 18 FLOOR DIP - 3
ROOF DIR - E FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
		0.08
		0.08
		0.22
		0.81
2.51	0.07	
		1.25
TOTAL	0.07	2.44



SILTSTONE: SANDY

CLAYSTONE: CARBONACEOUS, COAL BANDS, CLAYSTONE

COAL

COAL, C-4 WEATHERED

COAL, C-2 WEATHERED, CLAYSTONE BANDS

COAL, C-3 CARBONACEOUS CLAYSTONE INTERBEDS

COAL, C-2 CLAYSTONE INTERBEDS

CLAYSTONE

COAL, C-2

CLAYSTONE : CARBONACEOUS

SILTSTONE

ATTITUDE OF ROOF : 007/18° E
ATTITUDE OF FLOOR : 153/03°S
FORMATION :
UTM COORDINATES : 6343730N, 514455 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.08 m
TRENCH WIDTH : 1.15 m
TRENCH LENGTH : 4.0 m
TRENCH BEARING : 005°
TRENCH SLOPE : 35°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC-82-026

DRAWN BY:	SCALE 1:50
LOGGED BY: KIM JENNER	DATE July - 26/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82026

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.52	0.52			SILTSTONE	SANDY
	0.52	0.72	0.20			CLAYSTONE	CARB COAL BANDS
	0.72	0.80	0.08	03426		COAL	C-4 WEATHERED
	0.80	0.88	0.08	03426		COAL	C-2 WEATHERED, CLAYSTONE BANDS
	0.88	1.10	0.22	03426		COAL	C-3 CARB CLAYSTONE INTERBEDS
	1.10	1.91	0.81	03426		COAL	C-2 CLAYSTONE INTERBEDS
	1.91	1.98	0.07	03426		CLAYSTONE	
	1.98	3.23	1.25	03426		COAL	C-2
	3.23	3.31	0.08			CLAYSTONE	CARB
	3.31	3.64	0.33			SILTSTONE	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82027 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/26/82
END DATE - 07/26/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1250.00 NORTHING - 6343040.00
EASTING - 515540.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571356
LONGITUDE - 1284433

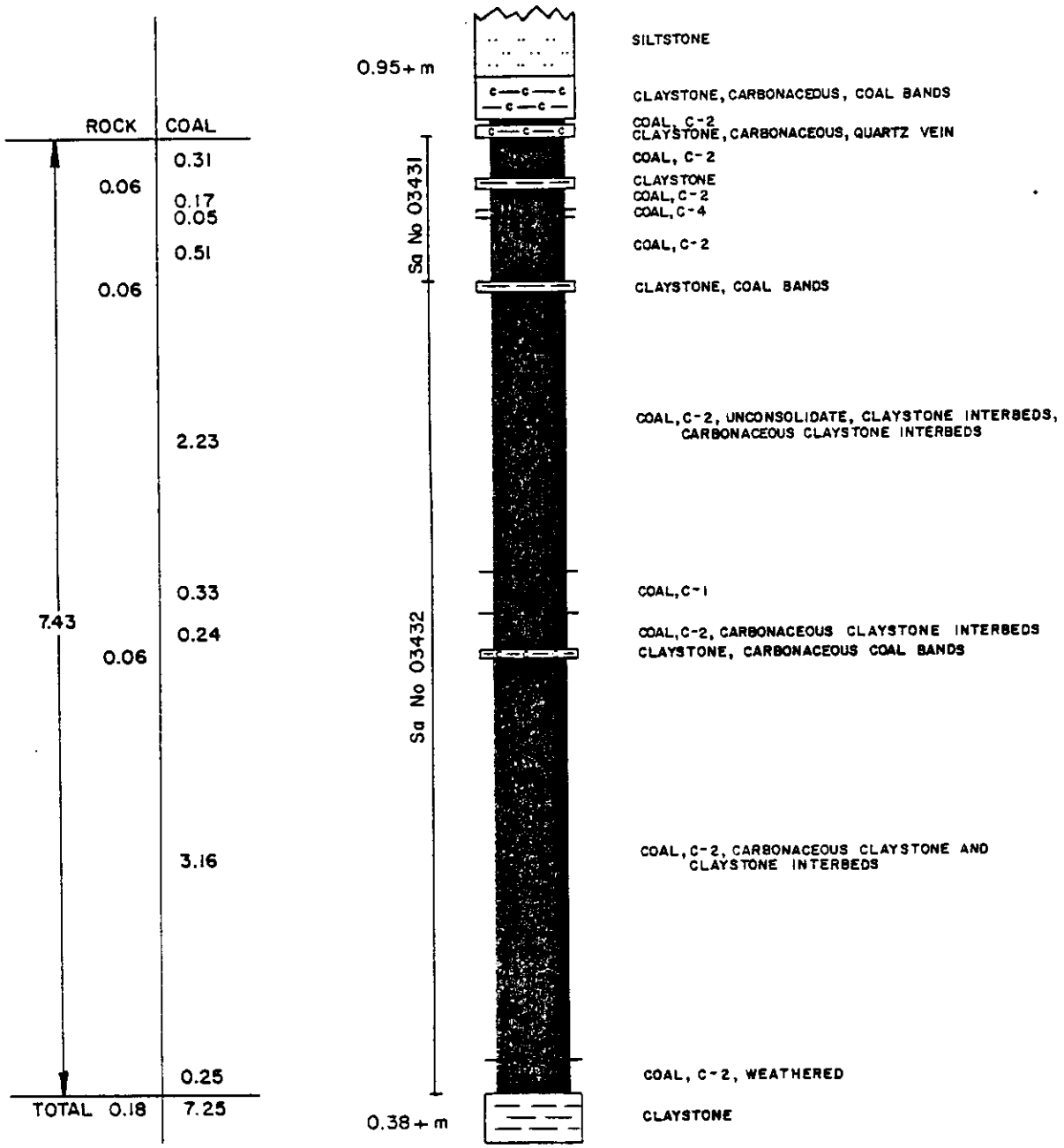
- O R I E N T A T I O N -

LENGTH - 8.70 INCLINATION - 44.0
AZIMUTH - 60.0
SIZE WIDTH - 1.8
SIZE HEIGHT - 1.0

ROOF STRIKE - 322 FLOOR STRIKE - 298
ROOF DIP - 89 FLOOR DIP - 45
ROOF DIR - FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========



ATTITUDE OF ROOF : 142/89° S
ATTITUDE OF FLOOR : 118/45° S

FORMATION :
UTM COORDINATES : 6343040N,515540 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.0 m
TRENCH WIDTH : 1.8 m
TRENCH LENGTH : 8.7 m
TRENCH BEARING : 060°
TRENCH SLOPE : 44°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–027

DRAWN BY:	SCALE 1:50
LOGGED BY: K. JENNER	DATE July 26/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82027

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.50	0.50			SILTSTONE	
	0.50	0.85	0.35			CLAYSTONE	CARB COAL BANDS
	0.85	0.88	0.03			COAL	C-2
	0.88	0.95	0.07			CLAYSTONE	CARB QUARTZ VEIN
	0.95	1.26	0.31	03431		COAL	C-2
	1.26	1.32	0.06	03431		CLAYSTONE	
	1.32	1.49	0.17	03431		COAL	C-2
	1.49	1.54	0.05	03431		COAL	C-4
	1.54	2.05	0.51	03431		COAL	C-2
	2.05	2.11	0.06	03432		CLAYSTONE	COAL BANDS
	2.11	4.34	2.23	03432		COAL	C-2 UNCONSOLIDATED,CLYST & CARB CLYST BANDS

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82027

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	4.34	4.67	0.33	03432		COAL	C-1
	4.67	4.91	0.24	03432		COAL	C-2 CLYST INTERBEDS
	4.91	4.97	0.06	03432		CLAYSTONE	CARB COAL BANDS
	4.97	8.13	3.16	03432		COAL	C-2 CLYST,CARB CLYST INTERBEDS
	8.13	8.38	0.25	03432		COAL	C-2 WEATHERED
	8.38	8.76	0.38			CLAYSTONE	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82028 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/26/82
END DATE - 07/26/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS - NO ROOF OBTAINED

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1200.00 NORTHING - 6342680.00
EASTING - 516050.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571344
LONGITUDE - 1284403

- O R I E N T A T I O N -

LENGTH - 2.59 INCLINATION - 28.0
AZIMUTH - 16.0

SIZE WIDTH - 0.9
SIZE HEIGHT - 1.1

ROOF STRIKE - 0 FLOOR STRIKE - 347
ROOF DIP - 0 FLOOR DIP - 16
ROOF DIR - FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
		0.07
0.63		0.46
		0.10
TOTAL	0.00	0.63

0.68+m

Sa No 03427

0.10+m

COAL, C-2, CLAY INTERBED

COAL, C-2, IRON STAINED
MINOR SILTSTONE BAND

COAL, C-2, WEATHERED, CLAYSTONE INTERBED
SILTY CLAYSTONE

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 167/16° S
FORMATION :
UTM COORDINATES : 6342680 N, 516050 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.13 m
TRENCH WIDTH : .87 m
TRENCH LENGTH : 2.59 m
TRENCH BEARING : 016°
TRENCH SLOPE : 28°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–028

DRAWN BY: M. HADLEY	SCALE 1:50.
LOGGED BY: K. JENNER	DATE July 26/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82028

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.68	0.68			TILL	NO ROOF
	0.68	0.75	0.07	03427		COAL	C-2 CLAY INTERBED
	0.75	1.21	0.46	03427		COAL	C-2 FE STAINED,MNR SLTST BAND
	1.21	1.31	0.10	03427		COAL	C-2 WEATHERED,CLYST INTERBED
	1.31	1.41	0.10			CLAYSTONE	SLTY

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82029 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/28/82
END DATE - 07/28/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS - NO FLOOR OBTAINED

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1360.00 NORTHING - 6343780.00
EASTING - 514550.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571420
LONGITUDE - 1284532

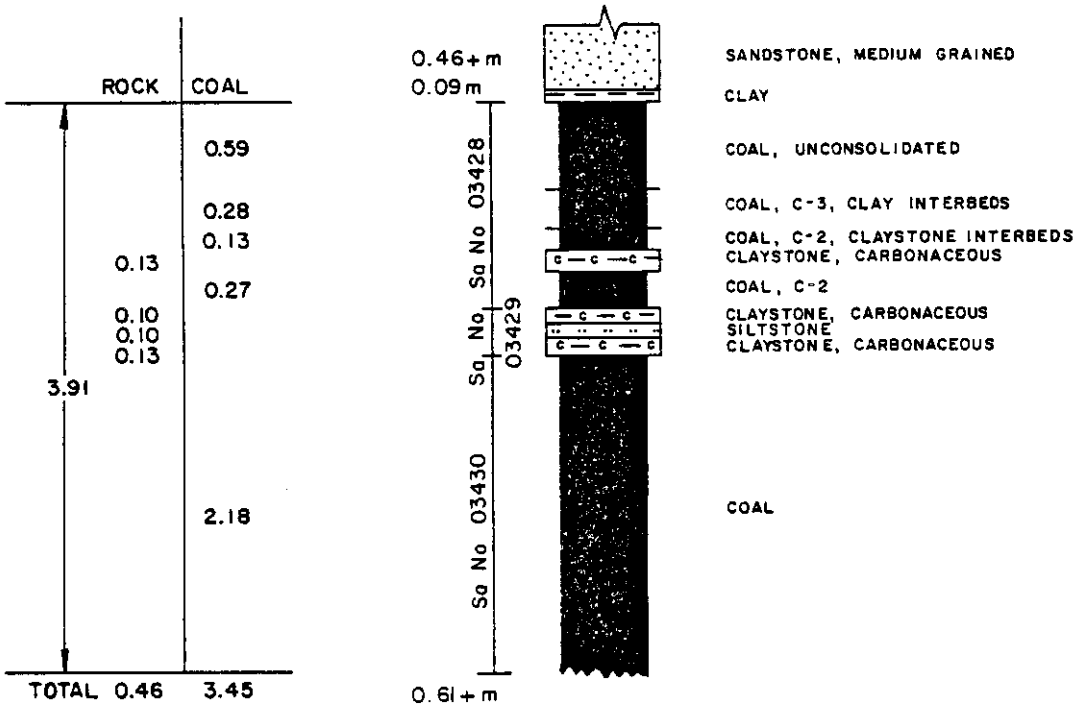
- O R I E N T A T I O N -

LENGTH - 8.68 INCLINATION - 39.0
AZIMUTH - 33.0
SIZE WIDTH - 0.6
SIZE HEIGHT - 1.0

ROOF STRIKE - 254 FLOOR STRIKE - 0
ROOF DIP - 10 FLOOR DIP - 0
ROOF DIR - S FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========



ATTITUDE OF ROOF 074/10°S
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6343780 N, 514550 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.03 m
TRENCH WIDTH : .57m
TRENCH LENGTH : 8.68 m
TRENCH BEARING : 033°
TRENCH SLOPE : 39°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC-82-029

DRAWN BY:	SCALE 1:50
LOGGED BY: K. JENNER	DATE July 28/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82029

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.46	0.46			SANDSTONE	MG ROOF
	0.46	0.55	0.09			CLAY	
	0.55	1.14	0.59	03428		COAL	UNCONSOLIDATED
	1.14	1.42	0.28	03428		COAL	C-3 CLAY INTERBEDS
	1.42	1.55	0.13	03428		COAL	C-2 CLYST INTERBEDS
	1.55	1.68	0.13	03428		CLAYSTONE	CARB
	1.68	1.95	0.27	03428		COAL	C-2
	1.95	2.05	0.10	03429		CLAYSTONE	CARB
	2.05	2.15	0.10	03429		SILTSTONE	
	2.15	2.28	0.13	03429		CLAYSTONE	CARB
	2.28	4.46	2.18	03430		COAL	

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82029

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	4.46	5.07	0.61			TILL	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82030 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/28/82
END DATE - 07/28/82

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS - NO ROOF OBTAINED

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1180.00 NORTHING - 6342780.00
EASTING - 516430.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571347
LONGITUDE - 1284340

- O R I E N T A T I O N -

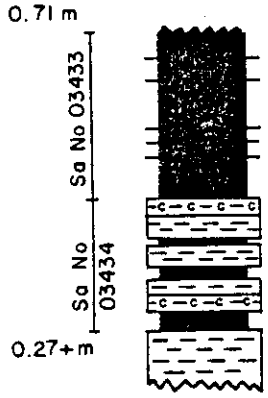
LENGTH - 7.60 INCLINATION - 36.0
AZIMUTH - 146.0
SIZE WIDTH - 0.5
SIZE HEIGHT - 0.4

ROOF STRIKE - 0 FLOOR STRIKE - 199
ROOF DIP - 0 FLOOR DIP - 21
ROOF DIR - FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
2.05		0.19
		0.13
		0.34
		0.12
		0.10
		0.26
	0.13	
	0.15	
	0.13	0.07
	0.10	0.09
	0.10	
		0.14
TOTAL	0.61	1.44



COAL, C-2, CLAY INTERBED
COAL, C-2, CLAY INTERBED
COAL, C-2
COAL, C-3, CARBONACEOUS CLAYSTONE
COAL, C-2
COAL, C-2, CARB. CLAYSTONE INTERBEDS
CARB. CLAYSTONE, COAL INTERBEDS
CLAYSTONE, WEATHERED BROWN
COAL, C-2
CLAYSTONE, CARB. COAL INTERBEDS
COAL, C-3, CARB. CLAYSTONE INTERBEDS
CLAY, LIGHT BROWN
CLAYSTONE, CARB. COAL BANDS
COAL, C-2
CLAYSTONE, DARK GRAY

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : 019/21°E
FORMATION :
UTM COORDINATES : 6342780 N, 516430 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : .04 m
TRENCH WIDTH : 0.5 m
TRENCH LENGTH : 7.6 m
TRENCH BEARING : 146°
TRENCH SLOPE : 36°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–030

DRAWN BY: M. HADLEY	SCALE 1: 50
LOGGED BY: K. JENNER	DATE July 28/82
APPROVED BY:	

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82030

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.20	2.33	0.13	03434		CLAYSTONE	CARB COAL INTERBEDS
	2.33	2.42	0.09	03434		COAL	C-3 CARB CLYST INTERBEDS
	2.42	2.52	0.10	03434		CLAY	LT.BN
	2.52	2.62	0.10	03434		CLAYSTONE	CARB COAL BANDS
	2.62	2.76	0.14	03434		COAL	C-2
	2.76	3.03	0.27			CLAYSTONE	DK.GY

* DENOTES MEASURED BCA
NEWPAGE

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82030

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.71	0.71			TILL,CLAY	COAL BEDS AND CARB CLYST
	0.71	0.90	0.19	03433		COAL	C-2 CLAY INTERBEDS
	0.90	1.03	0.13	03433		COAL	C-2 CLAY INTERBEDS
	1.03	1.37	0.34	03433		COAL	C-2
	1.37	1.49	0.12	03433		COAL	C-3 CARB CLYST
	1.49	1.59	0.10	03433		COAL	C-2
	1.59	1.85	0.26	03433		COAL	C-2 CARB CLYST INTERBEDS
	1.85	1.98	0.13	03434		CLAYSTONE	CARB COAL INTERBEDS
	1.98	2.13	0.15	03434		CLAYSTONE	WEATHERED BN
	2.13	2.20	0.07	03434		COAL	C-2

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82030

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.20	2.33	0.13	03434		CLAYSTONE	CARB COAL INTERBEDS
	2.33	2.42	0.09	03434		COAL	C-3 CARB CLYST INTERBEDS
	2.42	2.52	0.10	03434		CLAY	LT.BN
	2.52	2.62	0.10	03434		CLAYSTONE	CARB COAL BANDS
	2.62	2.76	0.14	03434		COAL	C-2
	2.76	3.03	0.27			CLAYSTONE	DK.GY

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNGCTRC82033 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/16/82
END DATE - 07/16/82

CONTRACTOR - OPERATOR - GCRI
GEOLOGIST - SURVEYOR -

REMARKS - SLUMP FEATURES

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1280.00 NORTHING - 6341096.00
EASTING - 514168.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571253
LONGITUDE - 1284556

- O R I E N T A T I O N -

LENGTH - 4.93 INCLINATION - 48.0
AZIMUTH - 118.0

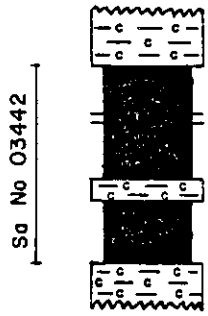
SIZE WIDTH - 0.7
SIZE HEIGHT - 2.0

ROOF STRIKE - 304 FLOOR STRIKE - 313
ROOF DIP - 22 FLOOR DIP - 20
ROOF DIR - S FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
1.34		0.78
	0.14	
		0.42
TOTAL	0.14	1.20



MUDSTONE : CARBONACEOUS, SLUMP FEATURES

COAL : UNCONSOLIDATED

COAL : C-3

COAL : W/ MINOR CARB. MUDSTONE, UNCONSOLIDATED

MUDSTONE : CARBONACEOUS

COAL : W/ MINOR CARB. MUDSTONE, UNCONSOLIDATED

MUDSTONE : CARBONACEOUS GRADING INTO MUDSTONE

ATTITUDE OF ROOF : 124/22° S
ATTITUDE OF FLOOR : 133/20° S
FORMATION :
UTM COORDINATES : 6341096 N, 514168 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 2.0 m
TRENCH WIDTH : .70 m
TRENCH LENGTH : 4.93 m
TRENCH BEARING : 118°
TRENCH SLOPE : 0.48°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT
TRENCH LOG
TRC-82-033

DRAWN BY: J. SHARPE	SCALE 1:50
LOGGED BY: G. SEVE	DATE July 16/82
APPROVED BY:	

PROJECT: KPN BLOCK: GC DATA SOURCE: TRC82033

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.50	0.50			MUDSTONE	CARB ROOF
	0.50	0.62	0.12	03442		COAL	UNCONSOLIDATED
	0.62	0.64	0.02	03442		COAL	FE STAIN
	0.64	0.83	0.19	03442		COAL	UNCONSOLIDATED WITH MINOR CARB MUDST FRAGS
	0.83	0.88	0.05	03442		COAL	C-3
	0.88	0.92	0.04	03442		MUDSTONE	COALY
	0.92	1.28	0.36	03442		COAL	
	1.28	1.42	0.14	03442		MUDSTONE	CARB
	1.42	1.56	0.14	03442		COAL	
	1.56	1.58	0.02	03442		MUDSTONE	COALY
	1.58	1.84	0.26	03442		COAL	
	1.84	2.34	0.50			MUDSTONE	CARB FLOOR

• DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNGCTRC82034 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/16/82
END DATE - 07/16/82

CONTRACTOR - OPERATOR - GCRI
GEOLOGIST - SEVE SURVEYOR -

REMARKS - NO ROOF OR FLOOR, SLUMP FEATURES

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1342.00 NORTHING - 6341150.00
EASTING - 514537.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571255
LONGITUDE - 1284534

- O R I E N T A T I O N -

LENGTH - 6.80 INCLINATION - 41.0
AZIMUTH - 55.0

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.5

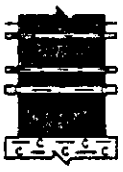
ROOF STRIKE - 0 FLOOR STRIKE - 0
ROOF DIP - 0 FLOOR DIP - 0
ROOF DIR - FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
0.85	0.02	0.06
	0.03	0.08
	0.03	0.20
		0.09
		0.34
TOTAL	0.08	0.77

Sa No 03443



COAL : UNCONSOLIDATED
COAL : DULL & BRIGHT
CLAYSTONE : BROWN
COAL: DULL & BRIGHT, IRON STAINING
CLAYSTONE : COALY
COAL : UNCONSOLIDATED
CLAYSTONE : COALY
COAL : DULL BANDED
CLAY STONE - CARBONACEOUS, COAL BANDS THROUGHOUT

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6341150 N, 514537 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.5 m
TRENCH WIDTH : .70 m
TRENCH LENGTH : 6.8 m
TRENCH BEARING : 055°
TRENCH SLOPE : 41°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC-82-034

DRAWN BY:	SCALE 1:50
LOGGED BY: G. SEVE	DATE July 16/82
APPROVED BY:	

PROJECT: KPN BLOCK: GC DATA SOURCE: TRC82034

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	2.00	2.00			OVERBURDEN	
	2.00	2.06	0.06	03443		COAL	UNCONSOLIDATED
	2.06	2.14	0.08	03443		COAL	C-3
	2.14	2.16	0.02	03443		CLAYSTONE	BN
	2.16	2.36	0.20	03443		COAL	C-3 FE STAIN
	2.36	2.39	0.03	03443		CLAYSTONE	COALY
	2.39	2.48	0.09	03443		COAL	UNCONSOLIDATED
	2.48	2.51	0.03	03443		CLAYSTONE	COALY
	2.51	2.85	0.34	03443		COAL	C-5
	2.85	2.95	0.10			CLAYSTONE	CARB WITH COAL BANDS THROUGHOUT

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC82040 DATE - 02/05/85

- H I S T O R Y -

START DATE - 08/06/82
END DATE - 08/06/82

CONTRACTOR - OPERATOR - GCRI
GEOLOGIST - SWANBERGSON SURVEYOR -

REMARKS - NO ROOF AND NO FLOOR, ORIENTATION WITHIN SEAM OF 9 7/42S

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1238.00 NORTHING - 6346770.00
EASTING - 515315.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571556
LONGITUDE - 1284446

- O R I E N T A T I O N -

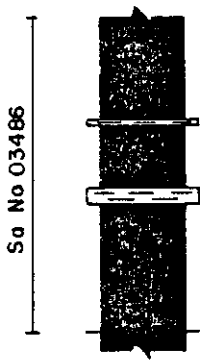
LENGTH - 3.50 INCLINATION - 51.0
AZIMUTH - 17.0
SIZE WIDTH - 0.9
SIZE HEIGHT - 1.0

ROOF STRIKE - 0 FLOOR STRIKE - 0
ROOF DIP - 0 FLOOR DIP - 0
ROOF DIR - FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

ROCK	COAL
	0.70
0.02	
	0.46
2.26+ 0.08	
	0.90
	0.10+
TOTAL 0.10	2.16+



COAL : WEATHERED, CRUMBLY, FERRUGINOUS STAINING IN PART, HIGHLY FRACTURED

SHALE : SILTY (100/43S) GRAY - GREEN

COAL : WTHRD. IN UPPER PART, BLOCKY & FERRUGINOUS STAINING AT BASE

MUDSTONE : SOFT (95/41S) BROWN

COAL : DULL BANDED TO DULL & BRIGHT

WATERLINE

COAL : AS ABOVE

ATTITUDE OF ROOF : N/A
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6346770 N, 515315 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1 m
TRENCH WIDTH : .85 m
TRENCH LENGTH : 3.5 m
TRENCH BEARING : 17°
TRENCH SLOPE : 51°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–040

DRAWN BY: J. SHARPE	SCALE 1:50
LOGGED BY: E. SWANBERGSON	DATE Aug. 3/82
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC82040

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			OVERBURDEN	
	1.00	1.70	0.70	03486		COAL	HIGHLY WEATHERED, FERRUGINOUS STAINING IN PART
	1.70	1.72	0.02	03486		SHALE	SLTY.GY
	1.72	2.18	0.46	03486		COAL	WEATHERED, BLOCKY
	2.18	2.26	0.08	03486		MUDSTONE	BN SOFT
	2.26	3.16	0.90	03486		COAL	C-3 MODIFIER RANGES C-3 TO C-4
	3.16	3.26	0.10	03486		COAL	C-3 BELOW WATER LINE, NO FLOOR REACHED

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC82041 DATE - 02/05/85

- H I S T O R Y -

START DATE - 08/16/82
END DATE - 08/16/82

CONTRACTOR -
GEOLOGIST - SWANBERGSON

OPERATOR - GCRI
SURVEYOR -

REMARKS - NO FLOOR

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1360.00

ZONE - 9
NORTHING - 6346330.00
EASTING - 514400.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571542
LONGITUDE - 1284541

- O R I E N T A T I O N -

LENGTH - 5.00

INCLINATION - 50.0
AZIMUTH - 117.0

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.0

ROOF STRIKE - 190
ROOF DIP - 52
ROOF DIR - W

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

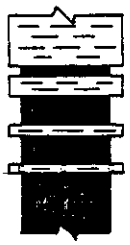
*** NOTE *** 0 INDICATES NO VALUE

==========

	ROCK	COAL
0.87	0.05	0.20
	0.05	0.22
		0.35
TOTAL	0.10	0.77

0.35 m
0.07 m
0.13 m

Sa No 03478



MUDSTONE: DARK GRAY MINOR COAL LENSES, PLANT FRAGMENTS IRREGULAR FRACTURING
COAL: C-4, QUARTZ VEINED
MUDSTONE: BROWN, SOFT
COAL: C-4, HARD, MINOR ROCK SPLITS
MUDSTONE: GRAY BROWN, SOFT
COAL: C-4
CLAYSTONE: CARB, BLACK, SOFT, COAL FLECKS
COAL: C-3

ATTITUDE OF ROOF : 010/52° W
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6346330 N, 514400 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.0 m
TRENCH WIDTH : 0.7 m
TRENCH LENGTH : 5.0 m
TRENCH BEARING : 117°
TRENCH SLOPE : 050°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC-82-041

DRAWN BY: D. DURANT	SCALE 1:50
LOGGED BY: E. SWANBERGSON	DATE Aug. 16/82
APPROVED BY:	

85/02/06 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC82041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.35	0.35			MUDSTONE	DK.GY MNR COAL LENSES, PLANT FRAGMENTS,IRREGU LAR FRACTURING, ROOF ROCK
	0.35	0.42	0.07			COAL	C-4 QTZ VEINED
	0.42	0.55	0.13			MUDSTONE	BN SOFT
	0.55	0.75	0.20	03487		COAL	C-4 HARD MNR ROCK SPLITS
	0.75	0.80	0.05	03487		MUDSTONE	GY SOFT
	0.80	1.02	0.22	03487		COAL	C-4
	1.02	1.07	0.05	03487		CLAYSTONE	CARB.BLK SOFT, COAL FLECKS
	1.07	1.42	0.35	03487		COAL	C-3 MINIMUM THICKNESS, NO FLOOR

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNGCTRC82050 DATE - 02/05/85

- H I S T O R Y -

START DATE - 07/10/82
END DATE - 07/10/82

CONTRACTOR -
GEOLOGIST - SEVE

OPERATOR - GCRI
SURVEYOR -

REMARKS - NO FLOOR,SLUMP FEATURES IN TRENCH

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1268.00

ZONE - 9
NORTHING - 6342169.00
EASTING - 515014.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571327
LONGITUDE - 1284505

- O R I E N T A T I O N -

LENGTH - 3.20

INCLINATION - 17.0
AZIMUTH - 183.0

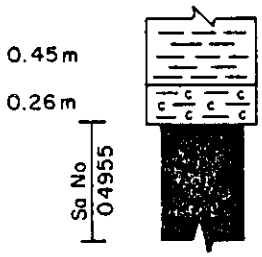
SIZE WIDTH - 0.6
SIZE HEIGHT - 1.2

ROOF STRIKE - 272
ROOF DIP - 26
ROOF DIR - N

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

	ROCK	COAL
	0.82	0.82
TOTAL	0.00	0.82



CLAYSTONE, GRAY

CLAYSTONE, CARBONACEOUS, UNCONSOLIDATED

COAL

NO BASE

SLUMPING NOTED IN TRENCH

ATTITUDE OF ROOF : 272/26° N
ATTITUDE OF FLOOR : N/A
FORMATION :
UTM COORDINATES : 6342169N, 515014E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 1.2 m
TRENCH WIDTH : 0.6 m
TRENCH LENGTH :
TRENCH BEARING : 183°
TRENCH SLOPE : 17°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROJECT

TRENCH LOG

TRC–82–050

DRAWN BY: G. SEVE	SCALE 1:50
LOGGED BY:	DATE July 10/82
APPROVED BY:	

PROJECT: KPN BLOCK: GC DATA SOURCE: TRC82050

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			OVERBURDEN	UNCONSOLIDATED
	1.00	1.45	0.45			CLAYSTONE	GY
	1.45	1.71	0.26			CLAYSTONE	CARB
	1.71	2.53	0.82	04955		COAL	UNCONSOLIDATED

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNBCTRC83046 DATE - 02/06/85

- H I S T O R Y -

START DATE - 07/28/83
END DATE - / /

CONTRACTOR -
GEOLOGIST - R MAYLOR
OPERATOR - GCRI
SURVEYOR -

REMARKS - FLOOR ATTITUDE NOT OBTAINED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1795.00
ZONE - 9
NORTHING - 6345605.00
EASTING - 513425.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571519
LONGITUDE - 1284639

- O R I E N T A T I O N -

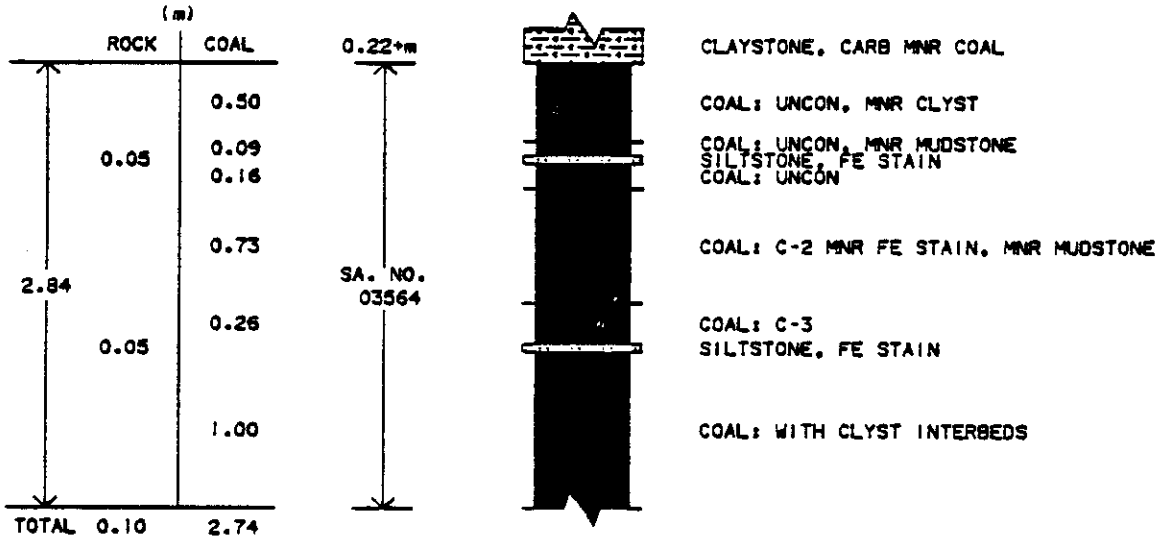
LENGTH - 11.60
INCLINATION - 41.0
AZIMUTH - 185.0

SIZE WIDTH - 0.9
SIZE HEIGHT - 1.5

ROOF STRIKE - 345
ROOF DIP - 25
ROOF DIR - N

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE



ATTITUDE OF ROOF	:	165/25
ATTITUDE OF FLOOR	:	NOT OBTAINED
UTM COORDINATES	:	6345605mN, 513425mE
ELEVATION	:	1795m
MAP CARD NUMBER	:	J 7
TRENCH DEPTH	:	1.50m
TRENCH WIDTH	:	0.90m
TRENCH LENGTH	:	11.60m
TRENCH BEARING	:	185°
TRENCH SLOPE	:	41°
TRENCH BLOCK	:	B.C.

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY

TRENCH LOG
KPN-TRC-83046

DRAWN BY: C. LOUIE	SCALE: 1:50
LOGGED BY: R. MAYLOR	DATE: 29/07/83
APPROVED BY: C.M.	

DGN:(205,571)S31024009.LOG: 27/10/83

PROJECT: KPN BLOCK: BC DATA SOURCE: TRC83046

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.28	1.35	0.07			CLAYSTONE	CARB
	1.35	1.50	0.15			CLAYSTONE	CARB MINOR COAL; ROOF
	1.50	2.00	0.50	03564		COAL	BLK UNCONSOLIDATED;MINOR CLAYSTONE
	2.00	2.09	0.09	03564		COAL	BLK UNCONSOLIDATED;MINOR MUDSTONE
	2.09	2.14	0.05	03564		SILTSTONE	IRON STAINING
	2.14	2.30	0.16	03564		COAL	BLK UNCONSOLIDATED
	2.30	3.03	0.73	03564		COAL	C-2.BLK MINOR IRON STAINING;MINOR MUDSTONE
	3.03	3.29	0.26	03564		COAL	C-3.BLK
	3.29	3.34	0.05	03564		SILTSTONE	IRON STAINING
	3.34	4.34	1.00	03564		COAL	INTERBEDDED CLAYSTONE

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC. - COAL DIVISION

15/MAR/84 HEAD ANALYSIS SUMMARY

PROJ - KPN ANALYSIS BASIS TYPE - AD NAME OF STANDARD - ASTM

DATA SOURCE	SSID	SEAM	SAMPLE ID	RESIDUAL MOISTURE%	ASH%	FIXED CARBON%	VOLATILE MATTER%	TOTAL SULPHUR%	GROSS CALORIFIC VALUE (MJ-KG)	SPG	FSI
TRC83046											
	HD1		3564	8.80	14.51	57.92	18.77	0.48	22.47		

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84101 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/08/84
END DATE - 07/08/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF ERODED, NO FLOOR ROCK REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1279.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6342952.00
EASTING - 515398.00
LATITUDE - 571353
LONGITUDE - 1284442

- O R I E N T A T I O N -

LENGTH - 4.20
SIZE WIDTH - 1.0
SIZE HEIGHT - 3.4

INCLINATION - 0.0
AZIMUTH - 92.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84101 SEAM : INTERVAL(M) : 0.00 - 3.47 ELEVATION(M) : 1279.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.10															
				3.37	100.0	1454	1454	3.37/ 0.00 3.37		3.15	17.45	4.35	75.05	0.45	27.94	—
	3.47															

PLOT 1 12.23.54 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84101

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.10	0.10			OVERBURDEN	
* 90	0.10	3.48	3.38	01454		COAL	IMMEDIATE FLOODING UPON BACKHOE DIGGING , BEDDING WAS SUB-HORIZONTAL, SAMPLE IS REPRESENTATIVE OF BACKHOE DIGGINGS
90	3.48	3.58	0.10			MUDSTONE	

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC. - COAL DIVISION

31/JAN/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC84101										
		1454	0.10	3.48	100.00	3.38	0.00	0.00	0.00	3.38- 0.00

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84101

SAMPLE ID 01454 DATA TYPE (REAL,BORO,AVER,CALC) REAL

SPLIT SAMPLE ID HD1 DATE ANALYSED 15/10/84

ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	10.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.45
TOTAL MOISTURE %	6.55	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	3.15	FSI	__._
ASH %	17.45	HGI	___._
VOLATILE MATTER %	4.35	CO2 %	__.__
FIXED CARBON %	75.05		

GROSS CALORIFIC VALUE (MJ/KG) 27.94

NET CALORIFIC VALUE (MJ/KG) __.__

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84102 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/08/84
END DATE - 07/08/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, FLOOR ROCK R
EACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1278.00

ZONE - 9
NORTHING - 6342854.00
EASTING - 515373.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571350
LONGITUDE - 1284443

- O R I E N T A T I O N -

LENGTH - 4.20

INCLINATION - 0.0
AZIMUTH - 103.0

SIZE WIDTH - 2.2
SIZE HEIGHT - 3.4

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84102 SEAM : INTERVAL(M) : 0.00 - 3.35 ELEVATION(M) : 1278.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.20			2.15	100.0	1455	1455	2.15 / 0.00 2.15		3.50	22.93	5.74	67.73	0.44	25.18
	3.35														

PLOT 1 18.56.23 TUES 12 MAR, 1985 JOB-TSTCE80 GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84102

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.20	1.20			OVERBURDEN	DISTURBED
* 90	1.20	3.35	2.15	01455		COAL	BEDDING IS DISTURBED, NO FLOOR ATTITUDE AVAILABLE,SAMPLE IS REPRESENTATIVE OF BACKHOE DIGGINGS

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC. - COAL DIVISION

29/JAN/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC84102										
		1455	1.20	3.35	100.00	2.15	0.00	0.00	0.00	2.15- 0.00

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84102

SAMPLE ID 01455 DATA TYPE (REAL,BORO,AVER,CALC) REAL

LIT SAMPLE ID HD1 DATE ANALYSED 15/10/84

ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	10.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.44
TOTAL MOISTURE %	7.68	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	3.60	FSI	__._
ASH %	22.93	HGI	___._
VOLATILE MATTER %	5.74	CO2 %	__.__
FIXED CARBON %	67.73		

GROSS CALORIFIC VALUE (MJ/KG) 25.18

NET CALORIFIC VALUE (MJ/KG) __.__

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84103 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/08/84
END DATE - 07/08/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, NO FLOOR REA
CHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1277.00

ZONE - 9
NORTHING - 6342838.00
EASTING - 515366.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571349
LONGITUDE - 1284444

- O R I E N T A T I O N -

LENGTH - 2.30

INCLINATION - 0.0
AZIMUTH - 103.0

SIZE WIDTH - 1.4
SIZE HEIGHT - 4.2

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84103 SEAM : INTERVAL(M) : 0.00 - 3.14 ELEVATION(M) : 1277.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 19/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.00															
	1.50			1.64	100.0	1456	1456	1.64 / 0.00 1.64		2.81	22.87	6.17	68.35	0.51	25.53	
	3.14															

PLOT 1 10.02.56 TUES 19 MAR, 1985 JOB-TSTUDGO GULF CANADA LMT DISSPLA 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84103

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.50	1.50			OVERBURDEN	BACKHOE DUG; OVERBURDEN IS DISTURBED
* 90	1.50	3.14	1.64	01456		COAL	ATTITUDES NOT AVAILABLE,SAMPLE IS REPRE SENTATIVE OF BACKHOE DIGGINGS;NO ROOF O R FLOOR REACHED

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC. - COAL DIVISION

29/JAN/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC84103										
		1456	1.50	3.14	100.00	1.64	0.00	0.00	0.00	1.64- 0.00

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84103

SAMPLE ID 01456
'LIT SAMPLE ID HD1

DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 15/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	10.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.51
TOTAL MOISTURE %	10.59	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.81	FSI	__._
ASH %	22.67	HGI	___._
VOLATILE MATTER %	6.17	CO2 %	__.__
FIXED CARBON %	68.35		

GROSS CALORIFIC VALUE (MJ/KG) 25.53
NET CALORIFIC VALUE (MJ/KG) __.__

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84104 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/08/84
END DATE - 07/08/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1270.00
ZONE - 9
NORTHING - 6342111.00
EASTING - 515455.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571326
LONGITUDE - 1284439

- O R I E N T A T I O N -

LENGTH - 4.20
INCLINATION - 0.0
AZIMUTH - 12.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.8

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84104 SEAM : INTERVAL(M) : 0.00 - 3.80 ELEVATION(M) : 1270.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.80														

PLOT 1 18.56.28 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84104

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.80	3.80			OVERBURDEN	OVERBURDEN ONLY,NO BEDROCK OR COAL ENCOUNTERED,BACHOE DUG.

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84105 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/08/84
END DATE - 07/08/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO FRESH COAL

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1274.00
ZONE - 9
NORTHING - 6343353.00
EASTING - 515512.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571406
LONGITUDE - 1284435

- O R I E N T A T I O N -

LENGTH - 4.20
INCLINATION - 0.0
AZIMUTH - 99.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 4.5

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84105 SEAM : INTERVAL(M) : 0.00 - 4.50 ELEVATION(M) : 1274.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	4.50														

PLOT 1 18.56.30 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84105

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	4.50	4.50			OVERBURDEN	PREDOMINATELY OVERBURDEN MIXED WITH A S MALL AMOUNT OF COAL SPOIL; BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84106 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/08/84
END DATE - 07/08/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1272.00

ZONE - 9
NORTHING - 6342968.00
EASTING - 515476.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571353
LONGITUDE - 1284437

- O R I E N T A T I O N -

LENGTH - 4.20

INCLINATION - 0.0
AZIMUTH - 114.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.2

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

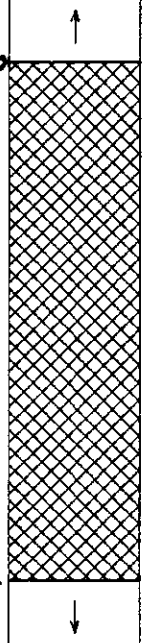
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84106 SEAM : INTERVAL(M) : 0.00 - 3.17 ELEVATION(M) : 1272.0

GEOLOGIST : SEVE SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.17														

PLOT 1 18.56.32 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LHT DISSPLA 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84106

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.17	3.17			OVERBURDEN	OVERBURDEN ONLY, ROOT HORIZON SUGGESTIN G OLD SURFACE BEFORE BCR DISTURBANCE AT 1.95 METERS; BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84107 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/17/84
END DATE - 07/17/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1268.00
ZONE - 9
NORTHING - 6342974.00
EASTING - 515523.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571353
LONGITUDE - 1284434

- O R I E N T A T I O N -

LENGTH - 4.20
INCLINATION - 0.0
AZIMUTH - 130.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 4.3

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84107 SEAM : INTERVAL(M) : 0.00 - 4.29 ELEVATION(M) : 1268.0

GEOLOGIST : SEVE SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	4.29														

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84107

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	4.29	4.29			OVERBURDEN	BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84108 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/17/84
END DATE - 07/17/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF ERODED, NO FLOOR ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1273.00

ZONE - 9
NORTHING - 6343002.00
EASTING - 515493.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571354
LONGITUDE - 1284436

- O R I E N T A T I O N -

LENGTH - 4.20

INCLINATION - 0.0
AZIMUTH - 108.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 4.1

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

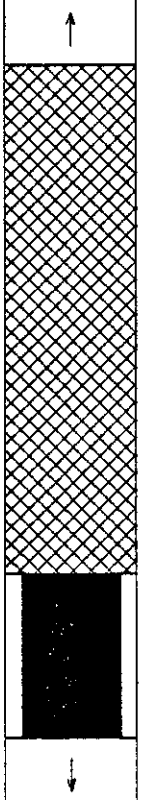
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84108 SEAM : INTERVAL(M) : 0.00 - 4.11 ELEVATION(M) : 1273.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	4.11														

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84108

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.11	3.11			OVERBURDEN	
* 90	3.11	4.11	1.00			COAL	ROOF LOST TO OVERBURDEN. 3.11 METERS OF OVERBURDEN NO ATTITUDES AVAILABLE, COAL IS HIGHLY WEATHERED, BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84109 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/17/84
END DATE - 07/17/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF ERODED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1277.00

ZONE - 9
NORTHING - 6343011.00
EASTING - 515457.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571355
LONGITUDE - 1284438

- O R I E N T A T I O N -

LENGTH - 25.00

INCLINATION - 0.0
AZIMUTH - 108.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.5

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

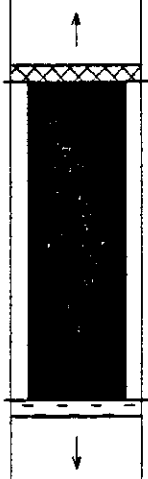
*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84109 SEAM : INTERVAL(M) : 0.00 - 2.03 ELEVATION(M) : 1277.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.10														
				1.93	100.0	1451									
	2.03														

PLOT 1 18.56.38 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84109

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.93	1.93	01451	I	COAL	1.93 M DEEP AT WEST END, 3.55 M DEEP AT EAST END,FLOOR DIPS TO THE EAST AT ABOUT 6 DEGREES, CHANNEL SAMPLE TAKEN UNDER TWO SAMPLE #S,TOP HALF #01451 BOTTOM HALF #01452; BACKHOE DUG
	1.93	2.03	0.10			MUDSTONE	

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84110 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/17/84
END DATE - 07/17/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF ERODED, NO FLOOR REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1275.00

ZONE - 9
NORTHING - 6342997.00
EASTING - 515474.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571354
LONGITUDE - 1284437

- O R I E N T A T I O N -

LENGTH - 4.20

INCLINATION - 0.0
AZIMUTH - 120.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 4.3

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84110 SEAM : INTERVAL(M) : 0.00 - 4.28 ELEVATION(M) : 1275.0

GEOLOGIST : SEVE SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.71														
				2.57	100.0	1457									
	4.28														

PLOT 1 19.06.53 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84110

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.71	1.71			OVERBURDEN	
* 90	1.71	4.28	2.57	01457		COAL	ATTITUDES NOT AVAILABLE,ROOF ERODED, FLOOR NOT REACHED; SAMPLE IS REPRESENTATIVE OF BACKHOE DIGGINGS

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84111 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/17/84
END DATE - 07/17/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF ERODED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1276.00

ZONE - 9
NORTHING - 6342995.00
EASTING - 515461.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571354
LONGITUDE - 1284438

- O R I E N T A T I O N -

LENGTH - 8.60

INCLINATION - 0.0
AZIMUTH - 110.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.6

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84111 SEAM : INTERVAL(M) : 0.00 - 3.60 ELEVATION(M) : 1276.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.97			1.63	100.0	1458									
	3.60														

PLOT 1 19.06.56 TUES 12 MAR, 1985 JOB-TSTCE80 GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84111

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.97	1.97			OVERBURDEN	
* 90	1.97	3.60	1.63	01458		COAL	SAMPLE IS REPRESENTATIVE OF BACKHOE DIG GINGS, MINOR BUCKLE IN FLOOR ATTITUDE S EEN, ATTITUDES NOT ATTAINABLE; FLOOR AT WEST END 1.97M,AT EAST END 3.60M

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84112 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/17/84
END DATE - 07/17/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF ERODED, FLOOR NOT REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1279.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6342974.00
EASTING - 515406.00
LATITUDE - 571353
LONGITUDE - 1284441

- O R I E N T A T I O N -

LENGTH - 4.20
SIZE WIDTH - 1.0
SIZE HEIGHT - 2.5

INCLINATION - 0.0
AZIMUTH - 95.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — TRUE THICKNESS

MOUNT KLAPPAN PROJECT

DATA SOURCE: KPN HC TRC84112 SEAM : INTERVAL(M) : 0.00 - 2.42 ELEVATION(M) : 1279.0

GEOLOGIST : SEVE SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.10														
				2.32	100.0	1459									
	2.42														

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84112

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.32	2.32	01459		COAL	NO ROOF ROCK, FLOOR SUBHORIZONTAL; BACK HOE DUG
	2.32	2.42	0.10			MUDSTONE	

* DENOTES MEASURED BCA

NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84113 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1284.00
ZONE - 9
NORTHING - 6343035.00
EASTING - 515395.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571355
LONGITUDE - 1284442

- O R I E N T A T I O N -

LENGTH - 4.10
INCLINATION - 0.0
AZIMUTH - 70.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 2.7

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC TRC84113 SEAM : INTERVAL(M) : 0.00 - 2.70 ELEVATION(M) : 1284.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	2.70														

PLOT 1 19.07.00 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84113

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.70	2.70			OVERBURDEN	BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84114 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, MINOR COAL SPOIL AT BASE

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1299.00
LICENCE/LEASE NUMBER - 0
ZONE - 9
NORTHING - 6343010.00
EASTING - 515246.00
LATITUDE - 571355
LONGITUDE - 1284451

- O R I E N T A T I O N -

LENGTH - 4.60
SIZE WIDTH - 1.0
SIZE HEIGHT - 3.8
INCLINATION - 0.0
AZIMUTH - 115.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

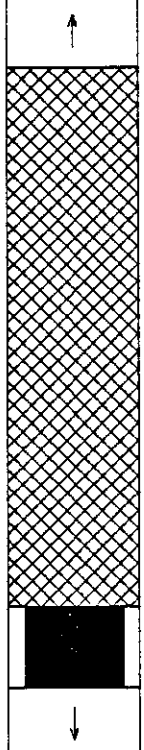
COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84114 SEAM : INTERVAL(M) : 0.00 - 3.90 ELEVATION(M) : 1299.

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.90														



PLOT 1 19.07.03 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84114

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.30	3.30			OVERBURDEN	
* 90	3.30	3.80	0.50			COAL SPOIL	COAL WEATHERED;NO SAMPLE TAKEN; TRENCH IS BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84115 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO FRESH COAL BUT SPOIL AT BASE

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1293.00
LICENCE/LEASE NUMBER - 0
ZONE - 9
NORTHING - 6343000.00
EASTING - 515303.00
LATITUDE - 571354
LONGITUDE - 1284447

- O R I E N T A T I O N -

LENGTH - 4.60
SIZE WIDTH - 1.0
SIZE HEIGHT - 3.9
INCLINATION - 0.0
AZIMUTH - 140.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

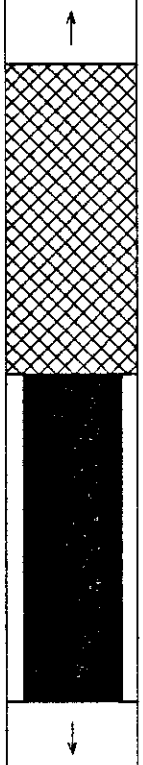
*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84115 SEAM : INTERVAL(M) : 0.00 - 3.90 ELEVATION(M) : 1293.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.90														

PLOT 1 19.07.05 TUES 12 MAR, 1985 JOB-TSTOEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84115

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.90	1.90			OVERBURDEN	
* 90	1.90	3.90	2.00			COAL SPOIL	OVERBURDEN OVERLYING COAL SPOIL, NO ATTITUDES AVAILABLE; COAL NOT ACCESSABLE TO SAMPLE; BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84116 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, NO FLOOR REA
CHED, IMMEDIATE FLOODING ON DIGGING

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1283.00

ZONE - 9
NORTHING - 6342979.00
EASTING - 515376.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571354
LONGITUDE - 1284443

- O R I E N T A T I O N -

*LENGTH - 3.40

INCLINATION - 0.0
AZIMUTH - 10.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.8

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84116 SEAM : INTERVAL(M) : 0.00 - 3.80 ELEVATION(M) : 1283.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	0.50														
				3.30	100.0	1480									
	3.80														

PLOT 1 19.07.08 TUES 12 MAR, 1985 JOB-TSTDEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84116

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.50	0.50			OVERBURDEN	
* 90	0.50	3.80	3.30	01460		COAL	SAMPLE IS REPRESENTATIVE OF BACKHOE DIGGINGS, NO ATTITUDES AVAILABLE,HOWEVER COAL NOTED TO BE SUBHORIZONTAL; TRENCH FILLED COMPLETELY WITH WATER AND HAD TO BE BACKFILLED FOR SAFETY

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84117 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, NO FLOOR REA CHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1282.00

ZONE - 9
NORTHING - 6342875.00
EASTING - 515351.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571350
LONGITUDE - 1284445

- O R I E N T A T I O N -

LENGTH - 3.70

INCLINATION - 0.0
AZIMUTH - 22.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.4

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84117 SEAM : INTERVAL(M) : 0.00 - 3.40 ELEVATION(M) : 1282.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.40														

PLOT 1 19.07.10 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84117

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.00	3.00			OVERBURDEN	
* 90	3.00	3.40	0.40			COAL	NO ATTITUDES AVAILABLE; NO COAL SAMPLES AVAILABLE ;BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84118 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1288.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6342996.00
EASTING - 515341.00
LATITUDE - 571354
LONGITUDE - 1284445

- O R I E N T A T I O N -

LENGTH - 3.60
SIZE WIDTH - 1.0
SIZE HEIGHT - 3.9

INCLINATION - 0.0
AZIMUTH - 154.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84118 SEAM : INTERVAL(M) : 0.00 - 3.90 ELEVATION(M) : 1288.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.90														

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84118

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.90	3.90			OVERBURDEN	OVERBURDEN IS VERY CLAY RICH; BACKHOE D UG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84119 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, NO FLOOR REA
CHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1287.00
ZONE - 9
NORTHING - 6342959.00
EASTING - 515346.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571353
LONGITUDE - 1284445

- O R I E N T A T I O N -

LENGTH - 3.60
INCLINATION - 0.0
AZIMUTH - 28.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.8

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84119 SEAM : INTERVAL(M) : 0.00 - 3.80 ELEVATION(M) : 1287.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 19/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.50			2.30	100.0	1461	1461	2.30/ 0.00 2.30		3.33	14.01	4.83	77.83	0.49	29.18
	3.80														

PLOT 1 10.02.59 TUES 19 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRCB4119

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.50	1.50			OVERBURDEN	
* 90	1.50	3.80	2.30	01461		COAL	NO ATTITUDES AVAILABLE, HOWEVER COAL NOTED TO BE SUBHORIZONTAL; TRENCH FLOODS RIGHT AFTER DIGGING; COAL SAMPLE REPRESENTATIVE OF BACKHOE DIGGINGS

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC. - COAL DIVISION

29/JAN/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC84119										
		1461	1.50	3.80	100.00	2.30	0.00	0.00	0.00	2.30- 0.00

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84119

SAMPLE ID 01461 DATA TYPE (REAL,BORO,AVER,CALC) REAL

LIT SAMPLE ID HD1 DATE ANALYSED 15/10/84

ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	10.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.49
TOTAL MOISTURE %	7.52	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	3.33	FSI	__._
ASH %	14.01	HGI	___._
VOLATILE MATTER %	4.83	CO2 %	__.__
FIXED CARBON %	77.83		

GROSS CALORIFIC VALUE (MJ/KG) 29.18

NET CALORIFIC VALUE (MJ/KG) __.__

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84120 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/19/84
END DATE - 07/19/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, NO FLOOR REA
CHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1286.00

ZONE - 9
NORTHING - 6342920.00
EASTING - 515345.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571352
LONGITUDE - 1284445

- O R I E N T A T I O N -

LENGTH - 3.90

INCLINATION - 0.0
AZIMUTH - 42.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.9

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

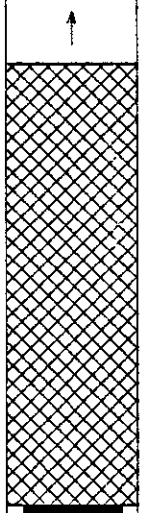
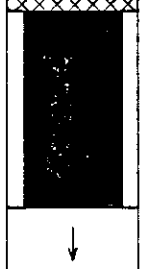
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84120 SEAM : INTERVAL(M) : 0.00 - 3.90 ELEVATION(M) : 1286.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.90														

PLOT 1 19.13.58 TUES 12 MAR, 1985 JOB-15TCEGU GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84120

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.70	2.70			OVERBURDEN	
* 90	2.70	3.90	1.20			COAL	SAMPLE IS REPRESENTATIVE OF BACKHOE DIGGINGS,ROOF ROCK ERODED OFF, FLOOR NOT REACHED; NO COAL SAMPLE AVAILABLE; BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84121 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1276.00

ZONE - 9
NORTHING - 6342920.00
EASTING - 515500.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571352
LONGITUDE - 1284436

- O R I E N T A T I O N -

LENGTH - 5.10

INCLINATION - 0.0
AZIMUTH - 125.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.7

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84121 SEAM : INTERVAL(M) : 0.00 - 3.70 ELEVATION(M) : 1276.0

GEOLOGIST : SEVE SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.70														

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84121

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.70	3.70			OVERBURDEN	ATTITUDES NOT AVAILABLE; BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84122 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1263.00

ZONE - 9
NORTHING - 6342850.00
EASTING - 515485.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571349
LONGITUDE - 1284437

- O R I E N T A T I O N -

LENGTH - 6.20

INCLINATION - 0.0
AZIMUTH - 102.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.9

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84122 SEAM : INTERVAL(M) : 0.00 - 4.20 ELEVATION(M) : 1263.0

GEOLOGIST : SEVE SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	4.20														

PLOT 1 19.14.02 TUES 12 MAR, 1985 JOB-TSTCE90 GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84122

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.90	3.90			OVERBURDEN	ATTITUDES NOT AVAILABLE; BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84123 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1269.00
ZONE - 9
NORTHING - 6342131.00
EASTING - 515071.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571326
LONGITUDE - 1284502

- O R I E N T A T I O N -

LENGTH - 4.20
INCLINATION - 0.0
AZIMUTH - 15.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 1.3

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

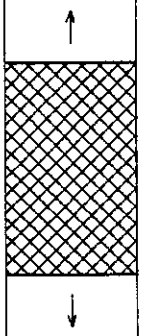
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84123 SEAM : INTERVAL(M) : 0.00 - 1.20 ELEVATION(M) : 1269.0

GEOLOGIST : SEVE SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.20														

PLOT 1 19.14.04 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LHT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84123

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.30	1.30			OVERBURDEN	NO ATTITUDES AVAILABLE; BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84124 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - LEGRESLEY
OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, NO FLOOR REA CHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1275.00
ZONE - 9
NORTHING - 6341604.00
EASTING - 515841.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571309
LONGITUDE - 1284416

- O R I E N T A T I O N -

LENGTH - 3.10
INCLINATION - 0.0
AZIMUTH - 135.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.1

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84124 SEAM : INTERVAL(M) : 0.00 - 3.10 ELEVATION(M) : 1275.0

GEOLOGIST : LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	0.70														
				2.40	100.0	1453									
	3.10														

PLOT 1 19.14.05 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84124

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.70	0.70			OVERBURDEN	
* 90	0.70	3.10	2.40	01453		COAL	NO ATTITUDES AVAILABLE, SAMPLE IS REPRE SENTATIVE OF BACKHOE DIGGINGS

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84125 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - SEVE

OPERATOR -
SURVEYOR -

REMARKS - BACKHOE DUG, ROOF LOST TO OVERBURDEN, FLOOR NOT RE ACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1273.00

ZONE - 9
NORTHING - 6340847.00
EASTING - 514774.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571245
LONGITUDE - 1284519

- O R I E N T A T I O N -

LENGTH - 3.70

INCLINATION - 0.0
AZIMUTH - 90.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 1.8

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

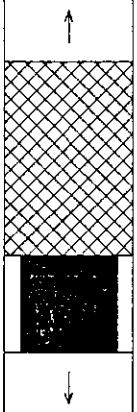
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84125 SEAM : INTERVAL(M) : 0.00 – 1.80 ELEVATION(M) : 1273.0

GEOLOGIST : SEVE SCALE: DATE : MAR 21/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.80														

.OT 1 16.53.16 THUR 21 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84125

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.20	1.20			OVERBURDEN	CARB CARBONACEOUS
* 90	1.20	1.80	0.60			COAL	ATTITUDES NOT ATTAINABLE; CONTACT SPRIN G ENCOUNTERED; NO COAL SAMPLE AVAILABLE , BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84126 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG NO COAL

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1279.00
ZONE - 9
NORTHING - 6343256.00
EASTING - 515482.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571403
LONGITUDE - 1284437

- O R I E N T A T I O N -

LENGTH - 2.60
INCLINATION - 0.0
AZIMUTH - 105.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 1.8

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

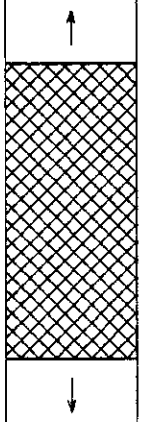
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84126 SEAM : INTERVAL(M) : 0.00 – 1.80 ELEVATION(M) : 1279.0

GEOLOGIST : E LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.80														

PLOT 1 19.19.46 TUES 12 MAR, 1985 JOB-TSTCE30 GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84126

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.80	1.80			OVERBURDEN	BACKHOE DUG; NO COAL

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84127 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY

OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG NO COAL

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1285.00

ZONE - 9
NORTHING - 6343784.00
EASTING - 515651.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571420
LONGITUDE - 1284427

- O R I E N T A T I O N -

LENGTH - 4.40

INCLINATION - 0.0
AZIMUTH - 115.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.2

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC TRC84127 SEAM : INTERVAL(M) : 0.00 - 3.20 ELEVATION(M) : 1285.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.20														

PLOT 1 19.19.48 TUES 12 MAR, 1985 JOB-TSTOLGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84127

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.20	3.20			OVERBURDEN	BACKHOE DUG; NO COAL

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84128 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG ROOF ROCK ERODED OFF,NO FLOOR REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 0.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6343925.00
EASTING - 515662.00
LATITUDE - 571424
LONGITUDE - 1284426

- O R I E N T A T I O N -

LENGTH - 4.40
SIZE WIDTH - 1.0
SIZE HEIGHT - 4.2

INCLINATION - 0.0
AZIMUTH - 112.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC TRC84128 SEAM : INTERVAL(M) : 0.00 - 4.20 ELEVATION(M) :

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL VAL MJ/KG
	0.00														
	1.20			3.00	100.0	1463									
	4.20														

PLOT 1 15:19:51 WED 12 MAR, 1985 JOB=15:LOGO WOLF CANADA LTD DISPLAY 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84128

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.20	1.20			OVERBURDEN	
* 90	1.20	4.20	3.00	01463		COAL	NO ROOF OR FLOOR ROCK ENCOUNTERED, SPRING AT COAL OVERBURDEN CONTACT; REPRESENTATIVE SAMPLE FROM BACKHOE DIGGINGS

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84129 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE NO FRESH COAL

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1302.00
ZONE - 9
NORTHING - 6346439.00
EASTING - 514366.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571546
LONGITUDE - 1284543

- O R I E N T A T I O N -

LENGTH - 4.20
INCLINATION - 0.0
AZIMUTH - 38.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 4.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84129 SEAM : INTERVAL(M) : 0.00 - 4.00 ELEVATION(M) : 1302.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	4.00														

PLOT 1 19.19.54 TUES 12 MAR, 1985 JOB-TSTLBU GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84129

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.80	3.80			OVERBURDEN	
* 90	3.80	4.00	0.20			COAL	SPOIL; TRENCH IS BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84130 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG ROOF ROCK ERODED NO FLOOR ROCK REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1305.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6345794.00
EASTING - 515440.00
LATITUDE - 571525
LONGITUDE - 1284439

- O R I E N T A T I O N -

LENGTH - 3.50
SIZE WIDTH - 1.0
SIZE HEIGHT - 4.5

INCLINATION - 0.0
AZIMUTH - 26.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84130 SEAM : INTERVAL(M) : 0.00 - 3.50 ELEVATION(M) : 1305.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	2.80			0.70	100.0	1482									
	3.50														

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84130

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.80	2.80			OVERBURDEN	CONTACT SPRING AT BASE OF OVERBURDEN
* 90	2.80	3.50	0.70	01462		COAL	BEDDING SUBHORIZONTAL; BACKHOE DUG TRENCH

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84131 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG ROOF ROCK ERODED,NO FLOOR REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1306.00
ZONE - 9
NORTHING - 6345640.00
EASTING - 515713.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571520
LONGITUDE - 1284422

- O R I E N T A T I O N -

LENGTH - 4.00
INCLINATION - 0.0
AZIMUTH - 42.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC TRC84131 SEAM : INTERVAL(M) : 0.00 – 4.00 ELEVATION(M) : 1306.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 12/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.20														
				2.80	100.0	1484									
	4.00														

PLOT 1 19.20.00 TUES 12 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84131

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.20	1.20			OVERBURDEN	
* 90	1.20	4.00	2.80	01464		COAL	NO ROOF OR FLOOR ROCK; SAMPLE IS REPRES ENTATIVE OF BACKHOE DIGGINGS

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84132 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG ROOF ERODED NO FLOOR ROCK REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1305.00
ZONE - 9
NORTHING - 6345457.00
EASTING - 515921.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571514
LONGITUDE - 1284410

- O R I E N T A T I O N -

LENGTH - 4.40
INCLINATION - 0.0
AZIMUTH - 60.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.5

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84132 SEAM : INTERVAL(M) : 0.00 - 3.50 ELEVATION(M) : 1305.0

GEOLOGIST : E LEGRESLEY SCALE: DATE : MAR 20/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.00			2.50	100.0	1465									
	3.50														

PLOT 1 18.12.13 WED 20 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84132

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
*	0.00	1.00	1.00			OVERBURDEN	
*	1.00	3.50	2.50	01465		COAL	SAMPLE IS REPRESENTATIVE OF BACKHOE DIG GINGS

• DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84133 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - G.SEVE
OPERATOR - DEASE LAKE
SURVEYOR -

REMARKS - RETRENCHED FROM 1982,SEE KPNHC82023

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1297.00
ZONE - 9
NORTHING - 6344848.00
EASTING - 516048.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571454
LONGITUDE - 1284403

- O R I E N T A T I O N -

LENGTH - 5.50
INCLINATION - 0.0
AZIMUTH - 96.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 4.8

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 281
FLOOR DIP - 52
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84133 SEAM : INTERVAL(M) : 0.00 - 2.22 ELEVATION(M) : 1297.0

GEOLOGIST : G.SEVE SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.10														
				2.12	100.0	1466									
	2.22														

PLOT 1 08:35:16 WED 13 MAR, 1985 JOB-TSTDIGD GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84133

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.12	2.12	01466		COAL	SEE TRCBC82023 FOR COMPLETE DETAILS OF TRENCH ; BACKHOE DUG
	2.12	2.22	0.10			MUDSTONE	

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84134 DATE - 01/24/85

- H I S T O R Y -

START DATE - 07/21/84
END DATE - 07/21/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG ROOF ERODED, NO FLOOR ROCK REACHED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1297.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6344848.00
EASTING - 516048.00
LATITUDE - 571454
LONGITUDE - 1284403

- O R I E N T A T I O N -

LENGTH - 4.30
SIZE WIDTH - 1.0
SIZE HEIGHT - 3.7

INCLINATION - 0.0
AZIMUTH - 95.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84134 SEAM : INTERVAL(M) : 0.00 - 3.70 ELEVATION(M) : 1297.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.20														
				3.50	100.0	1467									
	3.70														

PLOT 1 08.36.33 WED 13 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84134

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.20	0.20			OVERBURDEN	
* 90	0.20	3.70	3.50	01467		COAL	NO BEDDING OR CLEAT RECOGNIZED;BACKHOE DUG

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84135 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/07/84
END DATE - 08/07/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY

OPERATOR - GCRI
SURVEYOR -

REMARKS - NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1277.00

ZONE - 9
NORTHING - 6342905.00
EASTING - 515407.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571351
LONGITUDE - 1284441

- O R I E N T A T I O N -

LENGTH - 3.80

INCLINATION - 0.0
AZIMUTH - 11.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.5

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84135 SEAM : INTERVAL(M) : 0.00 - 3.80 ELEVATION(M) : 1277.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.80														

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84135

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.80	3.80			OVERBURDEN	NO COAL ENCOUNTERED;BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84136 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/07/84
END DATE - 08/07/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1272.00
ZONE - 9
NORTHING - 6342838.00
EASTING - 515415.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571349
LONGITUDE - 1284441

- O R I E N T A T I O N -

LENGTH - 3.70
INCLINATION - 0.0
AZIMUTH - 170.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84136 SEAM : INTERVAL(M) : 0.00 - 3.00 ELEVATION(M) : 1272.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.00														

PLOT 1 08.38.02 WED 13 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84136

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	3.00	3.00			OVERBURDEN	NO COAL ENCOUNTERED;BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84137 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/07/84
END DATE - 08/07/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG,NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1268.00
ZONE - 9
NORTHING - 6342694.00
EASTING - 515368.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571344
LONGITUDE - 1284444

- O R I E N T A T I O N -

LENGTH - 4.00
INCLINATION - 0.0
AZIMUTH - 10.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 3.5

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

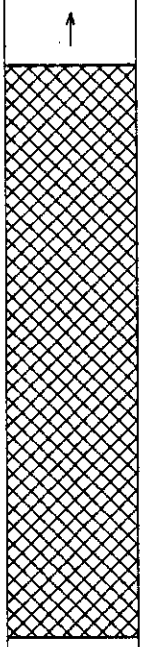
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84137 SEAM : INTERVAL(M) : 0.00 - 3.60 ELEVATION(M) : 1268.0

GEOLOGIST : E LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	3.60														

PLOT 1 08.38.43 WED 13 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84137

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.10	2.10			OVERBURDEN	IRON STAINED
* 90	2.10	3.50	1.40			CLAY	WATER FLOWING INTO TRENCH; BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

FORM 9999

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84138 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/07/84
END DATE - 08/07/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG,NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1203.00
ZONE - 9
NORTHING - 6342650.00
EASTING - 515392.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571343
LONGITUDE - 1284442

- O R I E N T A T I O N -

LENGTH - 4.00
INCLINATION - 0.0
AZIMUTH - 15.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 2.6

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84138 SEAM : INTERVAL(M) : 0.00 - 2.60 ELEVATION(M) : 1203.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	2.60														

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84138

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.60	2.60			OVERBURDEN	ROOT HORIZON AT 1.90M;BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84139 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/07/84
END DATE - 08/07/84

CONTRACTOR - DEASE LAKE
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - BACKHOE DUG,NO COAL ENCOUNTERED

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1269.00
ZONE - 9
NORTHING - 6342615.00
EASTING - 515350.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571342
LONGITUDE - 1284445

- O R I E N T A T I O N -

LENGTH - 4.00
INCLINATION - 0.0
AZIMUTH - 15.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 2.1

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

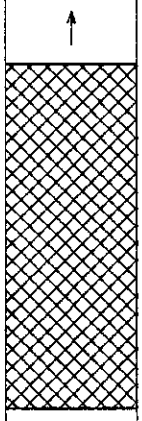
*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84139 SEAM : INTERVAL(M) : 0.00 - 2.10 ELEVATION(M) : 1269.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	2.10														

PLOT 1 08.39.58 WED 13 MAR, 1985 JOB-TSTCE80 GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84139

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	2.10	2.10			OVERBURDEN	TRENCH WALLS CAVE RIGHT AFTER TRENCHING ;BACKHOE DUG

* DENOTES MEASURED BCA

NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84140 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/24/84
END DATE - 08/24/84

CONTRACTOR -
GEOLOGIST - E.LEGRESLEY
OPERATOR - GCRI
SURVEYOR -

REMARKS - HAND DUG

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1425.00
ZONE - 9
NORTHING - 6343582.00
EASTING - 513930.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571413
LONGITUDE - 1284609

- O R I E N T A T I O N -

LENGTH - 4.60
INCLINATION - 50.0
AZIMUTH - 24.0

SIZE WIDTH - 0.5
SIZE HEIGHT - 1.0

ROOF STRIKE - 289
ROOF DIP - 23
ROOF DIR - S

FLOOR STRIKE - 301
FLOOR DIP - 23
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC TRC84140 SEAM : INTERVAL(M) : 0.00 - 1.20 ELEVATION(M) : 1425.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	0.35			0.52	100.0	1472									
			0.11												
				0.22											
	1.20														

PLOT 1 08.40.07 WED 13 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84140

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.35	0.35			CLAYSTONE	CARB.M.GY
* 90	0.35	0.87	0.52	01472		COAL	BLK IRON STAINED, PENETRATED BY ROOTS
* 90	0.87	0.98	0.11	01472		CLAYSTONE	CARB.DK.GY IRON STAINED
* 90	0.98	1.20	0.22	01472		COAL	BLK CLAY RICH ,IRON STAINING
* 90	1.20	1.70	0.50			CLAYSTONE	CARB.DK.GY

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84141 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/24/84
END DATE - 08/24/84

CONTRACTOR - OPERATOR - GCRI
GEOLOGIST - E.LEGRESLEY SURVEYOR -

REMARKS - HAND DUG

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1425.00 NORTHING - 6343612.00
EASTING - 513838.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571414
LONGITUDE - 1284615

- O R I E N T A T I O N -

LENGTH - 2.20 INCLINATION - 35.0
AZIMUTH - 174.0
SIZE WIDTH - 0.6
SIZE HEIGHT - 1.1

ROOF STRIKE - 278 FLOOR STRIKE - 265
ROOF DIP - 16 FLOOR DIP - 24
ROOF DIR - S FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84141 SEAM : INTERVAL(M) : 0.00 - 1.49 ELEVATION(M) : 1425.0

GEOLOGIST : E.LEGRESLEY SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	0.30			0.52											
			0.15		100.0	1473									
				0.21											
				0.27											
	1.49														

PLOT 1 08.40.20 WED 13 MAR, 1985 JOB-TSTDEGO GULF CANADA LMT DISSPLA 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84141

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.30	0.30			CLAYSTONE	M.GY.THNB RESISTANT,SHARP CONTACT WITH COAL BELOW
* 90	0.30	0.82	0.52	01473		COAL	WEATHERED,GRADING INTO CLAYSTONE BELOW
* 90	0.82	0.97	0.15	01473		CLAYSTONE	CARB WEATHERED GREY ORANGE,COALY IN PART
* 90	0.97	1.18	0.21	01473		COAL	C-2
* 90	1.18	1.22	0.04	01473		CLAYSTONE	WEATHERED GREY ORANGE
* 90	1.22	1.49	0.27	01473		COAL	C-3 WEATHERED
* 90	1.49	1.79	0.30			CLAYSTONE	

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84142 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/30/84
END DATE - 08/30/84

CONTRACTOR -
GEOLOGIST - G.SEVE

OPERATOR - GCRI
SURVEYOR -

REMARKS - HAND DUG

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1446.00

ZONE - 9
NORTHING - 6343704.00
EASTING - 513650.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571417
LONGITUDE - 1284626

- O R I E N T A T I O N -

LENGTH - 2.00

INCLINATION - 42.0
AZIMUTH - 45.0

SIZE WIDTH - 0.5
SIZE HEIGHT - 0.5

ROOF STRIKE - 310
ROOF DIP - 28
ROOF DIR - S

FLOOR STRIKE - 305
FLOOR DIP - 34
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84142 SEAM : INTERVAL(M) : 0.00 - 1.17 ELEVATION(M) : 1446.0

GEOLOGIST : G.SEVE SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	0.50		0.10	0.03											
			0.07	0.08	100.0	1474									
	1.17			0.35											

PLOT 1 08.40.31 WED 13 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84142

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.50	0.50			MUDSTONE	LT.BN
* 90	0.50	0.60	0.10	01474		MUDSTONE	CARB GRADES INTO COAL
* 90	0.60	0.63	0.03	01474		COAL	C-4
* 90	0.63	0.67	0.04	01474		MUDSTONE	LT.BN IRON STAINED
* 90	0.67	0.75	0.08	01474		COAL	C-4
* 90	0.75	0.82	0.07	01474		MUDSTONE	LT.BN
* 90	0.82	1.00	0.18	01474		COAL	C-4
* 90	1.00	1.17	0.17	01474		COAL	C-5
* 90	1.17	1.67	0.50			CLAYSTONE	BN

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84143 DATE - 01/24/85

- H I S T O R Y -

START DATE - 09/25/84
END DATE - 09/27/84

CONTRACTOR - LYLE GOLD + SON
GEOLOGIST - J INNIS
OPERATOR - GCRI
SURVEYOR - B LEECE

REMARKS - THIS TRENCH WAS EXCAVATED TO PROVIDE SAMPLES FROM THE HOBBIT CREEK 20,000 TONNE PIT.

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 0.00
LICENCE/LEASE NUMBER - 0

ZONE - 9
NORTHING - 6342990.00
EASTING - 515400.00
LATITUDE - 571354
LONGITUDE - 1284442

- O R I E N T A T I O N -

LENGTH - 58.00
SIZE WIDTH - 0.0
SIZE HEIGHT - 0.0

INCLINATION - 0.0
AZIMUTH - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

KPNTRC84143

Trench excavated in excess of 40 metres: seam data sheets and descriptive logs unavailable.

All coal quality included for this trench in Appendix V.

GULF CANADA RESOURCES INC. - COAL DIVISION

29/JAN/85 SIMPLE SAMPLE SUMMARY PAGE 1

APPARENT THICKNESS

KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC84143										
	I	2226	0.00	1.90	100.00	1.90	0.00	0.00	0.00	1.90- 0.00
	I	2227	0.00	1.90	100.00	1.90	0.00	0.00	0.00	1.90- 0.00
	I	2228	0.00	1.20	100.00	1.20	0.00	0.00	0.00	1.20- 0.00
	I	2229	1.90	2.45	100.00	0.55	0.00	0.00	0.00	0.55- 0.00

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02226
SPLIT SAMPLE ID HD1

DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 14/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	50.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.52
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	3.34	FSI	__._
ASH %	7.49	HGI	40.0
VOLATILE MATTER %	4.25	CO2 %	__.__
FIXED CARBON %	84.92		

GROSS CALORIFIC VALUE (MJ/KG) 31.60
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02226
SPLIT SAMPLE ID HD2

DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 14/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	25.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.51
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.86	FSI	__._
ASH %	8.27	HGI	39.0
VOLATILE MATTER %	4.21	CO2 %	__.__
FIXED CARBON %	84.66		

GROSS CALORIFIC VALUE (MJ/KG) 31.52
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02226
SPLIT SAMPLE ID HD3

DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 14/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	12.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.52
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	3.11	FSI	__._
ASH %	7.74	HGI	40.0
VOLATILE MATTER %	4.68	CO2 %	__.__
FIXED CARBON %	84.47		

GROSS CALORIFIC VALUE (MJ/KG) 31.42
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02226 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD4 DATE ANALYSED 14/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	5.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.50
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.74	FSI	__._
ASH %	13.48	HGI	43.0
VOLATILE MATTER %	4.83	CO2 %	__.__
FIXED CARBON %	78.95		

GROSS CALORIFIC VALUE (MJ/KG) 29.46
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02226 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD5 DATE ANALYSED 14/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	1.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.48
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.56	FSI	__._
ASH %	20.88	HGI	51.0
VOLATILE MATTER %	5.11	CO2 %	__.__
FIXED CARBON %	72.45		

GROSS CALORIFIC VALUE (MJ/KG) 26.94
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02226 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD6 DATE ANALYSED 14/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	0.50		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.46
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.21	FSI	__._
ASH %	20.05	HGI	___._
VOLATILE MATTER %	5.72	CO2 %	__.__
FIXED CARBON %	73.02		

GROSS CALORIFIC VALUE (MJ/KG) 27.24
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02227
SPLIT SAMPLE ID HD1
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	50.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.51
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	4.07	FSI	__._
ASH %	8.67	HGI	51.0
VOLATILE MATTER %	4.37	CO2 %	__.__
FIXED CARBON %	82.89		

GROSS CALORIFIC VALUE (MJ/KG) 30.68
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02227
SPLIT SAMPLE ID HD2
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	25.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.52
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.42	FSI	__._
ASH %	10.58	HGI	42.0
VOLATILE MATTER %	4.35	CO2 %	__.__
FIXED CARBON %	82.65		

GROSS CALORIFIC VALUE (MJ/KG) 31.09
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02227
SPLIT SAMPLE ID HD3
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	12.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.52
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.55	FSI	__._
ASH %	10.47	HGI	42.0
VOLATILE MATTER %	3.64	CO2 %	__.__
FIXED CARBON %	83.34		

GROSS CALORIFIC VALUE (MJ/KG) 31.10
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02227
SPLIT SAMPLE ID HD4
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	5.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.51
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.70	FSI	__._
ASH %	11.94	HGI	44.0
VOLATILE MATTER %	3.88	CO2 %	__.__
FIXED CARBON %	81.48		

GROSS CALORIFIC VALUE (MJ/KG) 30.18
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02227
SPLIT SAMPLE ID HD5
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	1.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.54
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.63	FSI	__._
ASH %	11.41	HGI	64.0
VOLATILE MATTER %	3.99	CO2 %	__.__
FIXED CARBON %	82.97		

GROSS CALORIFIC VALUE (MJ/KG) 30.81
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02227
SPLIT SAMPLE ID HD6
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	0.50		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.51
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.63	FSI	__._
ASH %	23.02	HGI	___._
VOLATILE MATTER %	4.33	CO2 %	__.__
FIXED CARBON %	71.02		

GROSS CALORIFIC VALUE (MJ/KG) 24.58
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02228
SPLIT SAMPLE ID HD1
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	50.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.49
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.70	FSI	__._
ASH %	7.96	HGI	43.0
VOLATILE MATTER %	3.15	CO2 %	__.__
FIXED CARBON %	86.19		

GROSS CALORIFIC VALUE (MJ/KG) 32.63
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02228
SPLIT SAMPLE ID HD2
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	25.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.47
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.75	FSI	__._
ASH %	15.46	HGI	40.0
VOLATILE MATTER %	4.53	CO2 %	__.__
FIXED CARBON %	78.26		

GROSS CALORIFIC VALUE (MJ/KG) 29.22
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02228
SPLIT SAMPLE ID HD3
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	12.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.52
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.79	FSI	__._
ASH %	9.83	HGI	39.0
VOLATILE MATTER %	3.81	CO2 %	__.__
FIXED CARBON %	84.57		

GROSS CALORIFIC VALUE (MJ/KG) 31.49
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02228
SPLIT SAMPLE ID HD4

DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	5.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.50
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.16	FSI	__._
ASH %	13.44	HGI	41.0
VOLATILE MATTER %	4.04	CO2 %	__.__
FIXED CARBON %	80.36		

GROSS CALORIFIC VALUE (MJ/KG) 29.91
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02228
SPLIT SAMPLE ID HD5

DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	1.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.54
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.16	FSI	__._
ASH %	13.97	HGI	60.0
VOLATILE MATTER %	4.52	CO2 %	__.__
FIXED CARBON %	80.35		

GROSS CALORIFIC VALUE (MJ/KG) 30.06
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02228
SPLIT SAMPLE ID HD6

DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD

NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	0.50		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.50
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.26	FSI	__._
ASH %	16.48	HGI	___._
VOLATILE MATTER %	4.72	CO2 %	__.__
FIXED CARBON %	77.54		

GROSS CALORIFIC VALUE (MJ/KG) 28.83
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02229 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD1 DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	50.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.45
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	2.61	FSI	__._
ASH %	21.82	HGI	43.0
VOLATILE MATTER %	2.60	CO2 %	__.__
FIXED CARBON %	72.97		

GROSS CALORIFIC VALUE (MJ/KG) 26.80
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02229 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD2 DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	25.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.41
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.79	FSI	__._
ASH %	22.37	HGI	45.0
VOLATILE MATTER %	6.14	CO2 %	__.__
FIXED CARBON %	69.70		

GROSS CALORIFIC VALUE (MJ/KG) 25.36
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02229 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD3 DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	12.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.44
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.63	FSI	__._
ASH %	21.82	HGI	43.0
VOLATILE MATTER %	4.42	CO2 %	__.__
FIXED CARBON %	72.13		

GROSS CALORIFIC VALUE (MJ/KG) 26.70
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02229
SPLIT SAMPLE ID HD4
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	5.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.47
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.91	FSI	__._
ASH %	19.97	HGI	42.0
VOLATILE MATTER %	4.16	CO2 %	__.__
FIXED CARBON %	73.96		

GROSS CALORIFIC VALUE (MJ/KG) 27.34
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02229
SPLIT SAMPLE ID HD5
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	1.00		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.46
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.24	FSI	__._
ASH %	22.14	HGI	64.0
VOLATILE MATTER %	4.88	CO2 %	__.__
FIXED CARBON %	71.74		

GROSS CALORIFIC VALUE (MJ/KG) 26.62
NET CALORIFIC VALUE (MJ/KG) __.__

GCRI COAL DIVISION HEAD PROJ KPN BLK HC DS TRC84143

SAMPLE ID 02229
SPLIT SAMPLE ID HD6
DATA TYPE (REAL,BORO,AVER,CALC) REAL
DATE ANALYSED 18/10/84
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	0.50		
SURFACE MOISTURE %	__.__	TOTAL SULPHUR %	0.40
TOTAL MOISTURE %	__.__	PHOSPHOROUS %	_.___
EQUILIBRIUM MOISTURE %	__.__	CHLORINE (PPM)	_____
		SPECIFIC GRAVITY	_.__
RESIDUAL MOISTURE %	1.31	FSI	__._
ASH %	30.58	HGI	___._
VOLATILE MATTER %	5.45	CO2 %	__.__
FIXED CARBON %	62.66		

GROSS CALORIFIC VALUE (MJ/KG) 23.08
NET CALORIFIC VALUE (MJ/KG) __.__

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84144 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/30/84
END DATE - 08/30/84

CONTRACTOR -
GEOLOGIST - G.SEVE

OPERATOR - GCRI
SURVEYOR -

REMARKS - HAND DUG

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1375.00

ZONE - 9
NORTHING - 6345890.00
EASTING - 513614.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571528
LONGITUDE - 1284628

- O R I E N T A T I O N -

LENGTH - 1.70

INCLINATION - 0.0
AZIMUTH - 171.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 1.3

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 314
FLOOR DIP - 52
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — **TRUE THICKNESS**

DATA SOURCE: KPN HC TRC84144 SEAM : INTERVAL(M) : 0.00 - 0.78 ELEVATION(M) : 1375.0

GEOLOGIST : G.SEVE SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	0.37		0.02	0.13											
				0.26	100.0	1477									
	0.78														

PLOT 1 09.08.48 WED 13 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84144

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	0.37	0.37			OVERBURDEN	BLK COAL SPOIL MIXED WITH ORANGE SOIL
* 90	0.37	0.50	0.13	01477		COAL	C-3.BLK
* 90	0.50	0.52	0.02	01477		MUDSTONE	ORNG HIGHLY WEATHERED
* 90	0.52	0.78	0.26	01477		COAL	C-3.BLK CONTACT SPRING AT BASE
* 90	0.78	1.28	0.50			MUDSTONE	CARB.LT.GY SOFT

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84145 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/30/84
END DATE - 08/30/84

CONTRACTOR - OPERATOR - GCRI
GEOLOGIST - G.SEVE SURVEYOR -

REMARKS - HAND DUG,NO ROOF OR FLOOR REACHED

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1350.00 NORTHING - 6346700.00
EASTING - 513732.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571554
LONGITUDE - 1284620

- O R I E N T A T I O N -

LENGTH - 1.30 INCLINATION - 0.0
AZIMUTH - 72.0
SIZE WIDTH - 0.6
SIZE HEIGHT - 1.3

ROOF STRIKE - 0 FLOOR STRIKE - 0
ROOF DIP - 0 FLOOR DIP - 0
ROOF DIR - FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

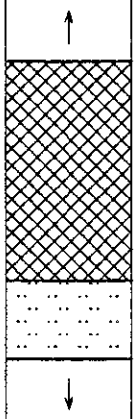
SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84145 SEAM : INTERVAL(M) : 0.00 - 1.80 ELEVATION(M) : 1350.0

GEOLOGIST : G.SEVE SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.80														

PLOT 1 09.08.53 WED 13 MAR, 1985 JOB-TSTUEGD GULF CANADA LMT UISSPLH 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84145

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.30	1.30			OVERBURDEN	BLK REWORKED COAL MIXED WITH OVERBURDEN, UP TO 20%;PYRITE IN COAL BOTH CRYSTALINE AND DISSEMINATED
* 90	1.30	1.80	0.50			SILTSTONE	M.GY BROKEN

* DENOTES MEASURED BCA
NEWPAGE

FORM 9999

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84146 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/30/84
END DATE - 08/30/84

CONTRACTOR -
GEOLOGIST - G.SEVE

OPERATOR - GCRI
SURVEYOR -

REMARKS - HAND DUG

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1500.00

ZONE - 9
NORTHING - 6344613.00
EASTING - 512464.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571447
LONGITUDE - 1284736

- O R I E N T A T I O N -

LENGTH - 2.20

INCLINATION - 0.0
AZIMUTH - 169.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 1.4

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -

FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

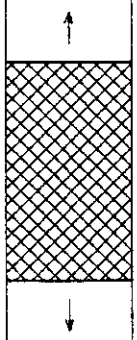
==========

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84146 SEAM : INTERVAL(M) : 0.00 - 1.40 ELEVATION(M) : 1500.0

GEOLOGIST : G.SEVE SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.40														

PLOT 1 09.08.57 WED 13 MAR, 1985 JOB-TSTCEGO GULF CANADA LMT DISSPLA 9.2

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84146

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.40	1.40			OVERBURDEN	BLK MIXED WITH COAL SPOIL,BECOMING MORE COALY TOWARDS BASE ,BROKEN ROCK ENCOUNTERED AT BASE ;SEAM THICKNESS ESTIMATE LESS THAN 1M.

* DENOTES MEASURED BCA
NEWPAGE

========== GULF CANADA RESOURCES INC. ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84147 DATE - 01/24/85

- H I S T O R Y -

START DATE - 08/30/84
END DATE - 08/30/84

CONTRACTOR -
GEOLOGIST - G.SEVE

OPERATOR - GCRI
SURVEYOR -

REMARKS - HAND DUG

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1135.00

ZONE - 9
NORTHING - 6345765.00
EASTING - 517820.00

LICENCE/LEASE NUMBER - 0

LATITUDE - 571523
LONGITUDE - 1284217

- O R I E N T A T I O N -

LENGTH - 3.46

INCLINATION - 35.0
AZIMUTH - 42.0

SIZE WIDTH - 0.5
SIZE HEIGHT - 0.3

ROOF STRIKE - 305
ROOF DIP - 59
ROOF DIR - S

FLOOR STRIKE - 313
FLOOR DIP - 55
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

==========

GULF CANADA RESOURCES INC.

SEAM DETAIL — COAL DIVISION — MOUNT KLAPPAN PROJECT — TRUE THICKNESS

DATA SOURCE: KPN HC TRC84147 SEAM : INTERVAL(M) : 0.00 - 3.65 ELEVATION(M) : 1135.0

GEOLOGIST : G.SEVE SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	1.00			0.24											
			0.09												
				0.33											
			0.07												
				0.28											
			0.07												
				0.44	100.0	1478									
			0.11												
				1.02											
	3.65														

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84147

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	0.00	1.00	1.00			MUDSTONE	CARB.DK.GY ROOF ROCK EXIBITS UNDULATING BEDDING;MI NOR COAL BANDS IN ROOF ROCK
* 90	1.00	1.24	0.24	01478		COAL	C-4.BLK SHEARED; IRON STAINED; MINOR MUDSTONE B ANDS; MINOR C-3 IN PART
* 90	1.24	1.33	0.09	01478		MUDSTONE	DK.GY COALY,SHEARED
* 90	1.33	1.58	0.25	01478		COAL	C-3.BLK MINOR IRON STAIN; SHEARED; MINOR CARBON ATEOUS MUDSTONE BANDS
* 90	1.58	1.66	0.08	01478		COAL	C-2.BLK
* 90	1.66	1.73	0.07	01478		MUDSTONE	DK.GY COALY
* 90	1.73	2.01	0.28	01478		COAL	C-2.BLK
* 90	2.01	2.08	0.07	01478		MUDSTONE	SLTY.DK.GY CARBONACEOUS COALY

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84147

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
• 90	2.08	2.40	0.32	01478		COAL	C-2.BLK MINOR MUDSTONE BANDS IN PART
• 90	2.40	2.52	0.12	01478		COAL	C-4.BLK
• 90	2.52	2.63	0.11	01478		MUDSTONE	CARB.DK.GY COAL BANDS IN PART
• 90	2.63	2.95	0.32	01478		COAL	C-3.BLK MINOR SHEARING
• 90	2.95	3.04	0.09	01478		COAL	C-3.BLK PYRITIC
• 90	3.04	3.34	0.30	01478		COAL	C-2.BLK
• 90	3.34	3.65	0.31	01478		COAL	C-4.BLK CARBONACEOUS MUDSTONE BANDS INCREASE TO WARDS BASE;HEAVLY SHEARED
• 90	3.65	4.15	0.50			MUDSTONE	CARB.DK.GY FLOOR ROCK; MODERATE QUARTZ VEINING; UN DULATING BEDDING; SLIGHTLY SHEARED

• DENOTES MEASURED BCA
NEWPAGE

GULF CANADA RESOURCES INC.

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - KPNHCTRC84148 DATE - 01/24/85

- H I S T O R Y -

START DATE - / /
END DATE - / /

CONTRACTOR - OPERATOR -
GEOLOGIST - SURVEYOR -

REMARKS -

- L O C A T I O N -

PROVINCE - BC ZONE - 9
ELEVATION - 1144.00 NORTHING - 6345086.00
EASTING - 517676.00
LICENCE/LEASE NUMBER - 0
LATITUDE - 571501
LONGITUDE - 1284225

- O R I E N T A T I O N -

LENGTH - 4.10 INCLINATION - 39.0
AZIMUTH - 88.0
SIZE WIDTH - 0.9
SIZE HEIGHT - 0.3

ROOF STRIKE - 280 FLOOR STRIKE - 290
ROOF DIP - 41 FLOOR DIP - 36
ROOF DIR - S FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN HC TRC84148 SEAM : INTERVAL(M) : 0.00 – 3.18 ELEVATION(M) : 1144.0

GEOLOGIST : SCALE: DATE : MAR 13/85 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00														
	0.50			0.13											
				0.27											
				0.10											
				0.14											
				0.26											
			0.37		100.0	1479									
			0.49												
				0.66											
	3.18														

PLOT 1 09.10.11 WED 13 MAR, 1985 JOB-TSTDEGO GULF CANADA LHT DISSPLA 9.2

85/02/12 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84148

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
• 90	0.00	0.50	0.50			SILTSTONE	CARB.DK.BN ABUNDENT PLANT INPRINTS ON BEDDING PLAN E; MINOR IRON STAIN
* 90	0.50	0.55	0.05	01479		MUDSTONE	CARB.DK.GY HIGHLY FRACTURED
* 90	0.55	0.68	0.13	01479		COAL	C-4.BLK HIGHLY FRACTURED; MINOR MUDSTONE BANDS
* 90	0.68	0.72	0.04	01479		MUDSTONE	CARB.M.BN
* 90	0.72	0.99	0.27	01479		COAL	C-3.BLK HIGHLY FRACTURED; MINOR IRON STAIN
* 90	0.99	1.04	0.05	01479		MUDSTONE	CARB.DK.GY MINOR CALCITE VEINING
• 90	1.04	1.14	0.10	01479		COAL	C-3.BLK HIGHLY FRACTURED
* 90	1.14	1.23	0.09	01479		MUDSTONE	CARB.DK.GY MINOR CALCITE VEINING
* 90	1.23	1.37	0.14	01479		COAL	C-3.BLK WELL BEDDED

* DENOTES MEASURED BCA

PROJECT: KPN BLOCK: HC DATA SOURCE: TRC84148

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 90	1.37	1.40	0.03	01479		MUDSTONE	BN
* 90	1.40	1.45	0.05	01479		COAL	C-3.BLK SHEARED; IRON STAINED
* 90	1.45	1.66	0.21	01479		COAL	C-3.BLK GOOD BEDDING
* 90	1.66	1.92	0.26	01479		MUDSTONE	CARB.DK.GY GRADATIONAL CONTACT WITH COAL; MINOR IR ON STAIN AT BASE
* 90	1.92	2.03	0.11	01479		MUDSTONE	CARB.DK.GY SHEARED
* 90	2.03	2.21	0.18	01479		CLAYSTONE	CARB.DK.BN IRON STAINED; VERY SOFT
* 90	2.21	2.52	0.31	01479		CLAYSTONE	CARB.DK.BN MINOR COAL STRINGERS
* 90	2.52	3.18	0.66	01479		COAL	C-5.BLK SHEARED; HEAVY IRON STAINING
* 90	3.18	3.68	0.50			CLAYSTONE	LT.GY FLOOR ROCK

LEGEND

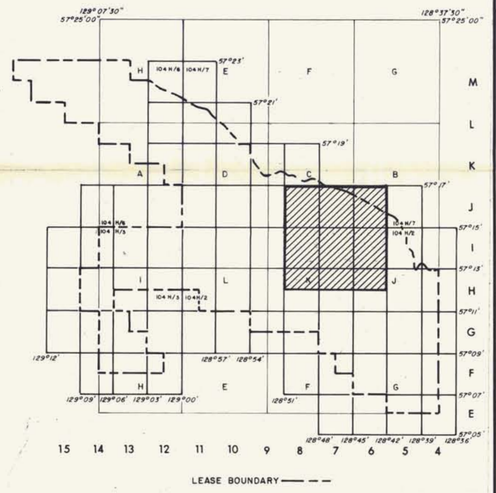
- RAILROAD BED
- RIVER
- STREAM, DEFINITE
  - APPROXIMATE
  - SPLIT
- LAKE
- SWAMP
- WATER LEVEL — EL 905±
- TREE LINE
- CONTOURS, INDEX — 1750
  - INTERMEDIATE
  - DEPRESSION
  - APPROXIMATE
- SPOT ELEVATION — .7654

SCALE 1:10,000

0 0.25 0.5 0.75 1.00 MILES

100 0 100 200 300 400 500 600 700 800 900 1 KM METRES

HOBBIT-BROATCH RESOURCE AREA
INDEX MAP



GEOLOGICAL LEGEND

FIELD CONTROL POINT	⊕ CP 155
DIAMOND DRILL HOLE	⊙ DDH82002
TRENCH LOCATION	⋊

GR. - Mt. Klappan 84(2) A

695

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY

HOBBIT-BROATCH

TRENCH & DRILL HOLE LOCATION MAP

PREPARED BY: G.S., E.L.	SCALE 1:10,000
APPROVED BY: G.S. DATE: JAN. 1985	DWG. No. KPN84HB-C03

Appendix III
Trench data