

LEGEND

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

NOTES

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

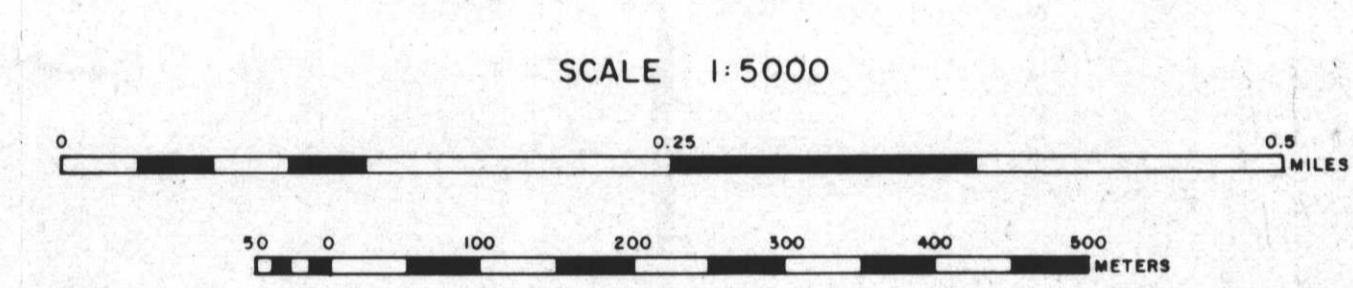
CONTOUR INTERVAL 10 M, WITH FORM LINES INTERVAL 1.5 M

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

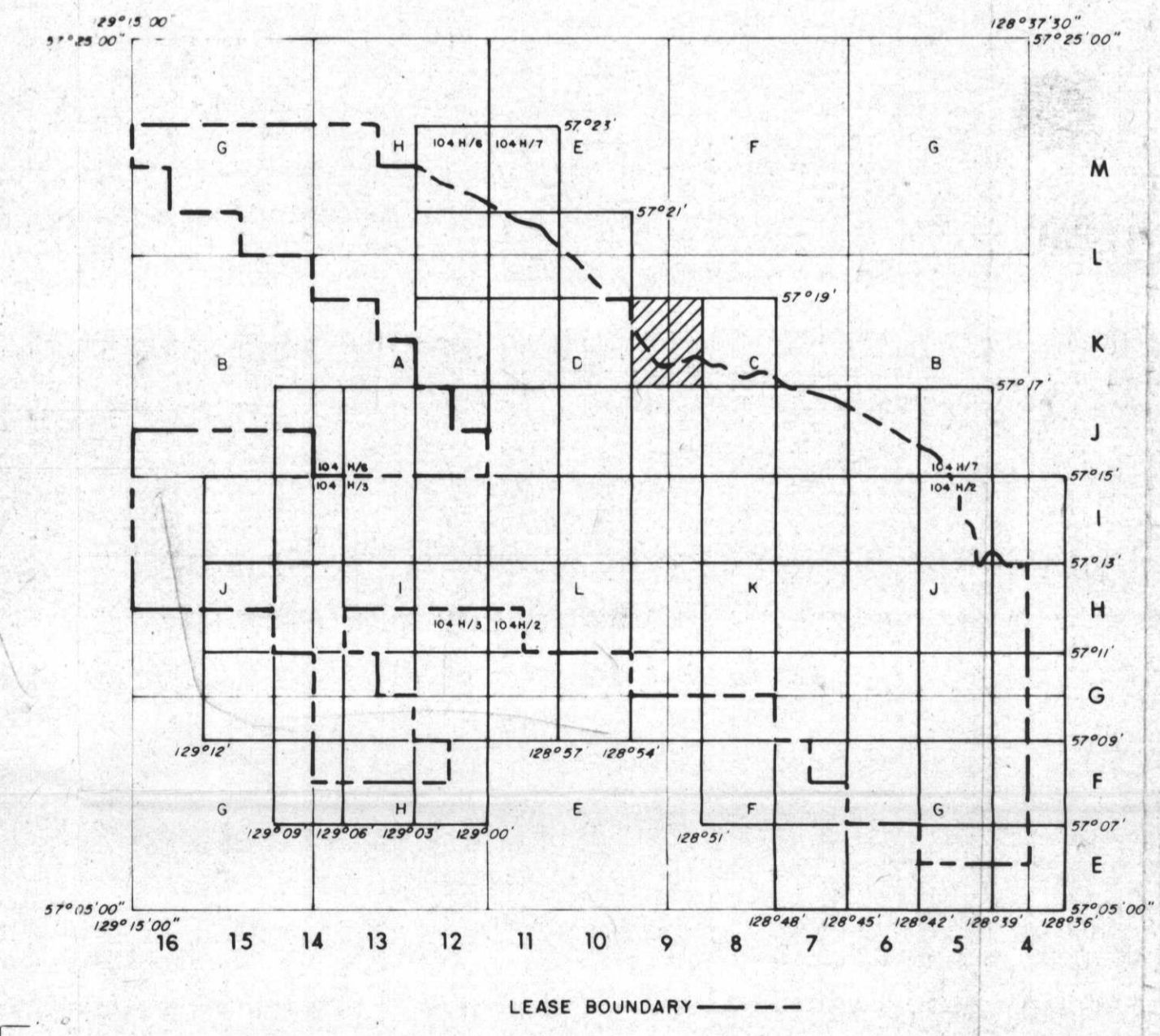
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

RAILROAD BED LOCATION BASED ON SEPT./82 AERIAL PHOTOGRAPHY

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



MT. KLAPPAN AREA
INDEX MAP



- RHONDDA SEQUENCE**
- Kr** Sequence of thick chert pebble conglomerates and minor gritty sandstones interbedded with an increasing number of siltstones and mudstones towards the basal contact. Large scale trough and tabular cross beds are common. Six species of plant fossils are found at the base of the sequence.
- MALLOCH SEQUENCE**
- Km** Thick interbeds of mudstones, argillaceous siltstones, fine grained sandstones and thin interbeds of orange weathering nodular siltstones. Many conglomerate beds display large scale bedding and tend to be laterally discontinuous. Thick clean sandstone beds and thin coal seams increase in abundance towards the basal gradational contact. Twenty-three species of plant fossils occur within the sequence.
- KLAPPAN SEQUENCE (main coal-bearing unit)**
- Jkk** Fine to coarse grained sandstones interbedded with mudstones, siltstones, occasional thin bands of orange weathering calcareous siltstones, conglomerates and abundant coal seams. Conglomerate beds grade laterally into sandstone. Sandstones often display tabular or trough cross bedding. Rhythmites occur in the middle of the sequence. Twenty-three species of bivalves and up to twenty-five species of plants occur throughout. Petrified wood and rare coquina may be present towards the upper contact.
- SPATSIZI SEQUENCE**
- Js** Predominantly a marine sequence of interbedded mudstones, siltstones, sandstones and conglomerates. Carbonaceous mudstones, coarsening upward sequences and chert pebble conglomerates are more abundant in the upper part of the sequence. Nineteen species of bivalves are present. Belemnites are rare. Plant debris may occur near the upper gradational contact.

LEGEND

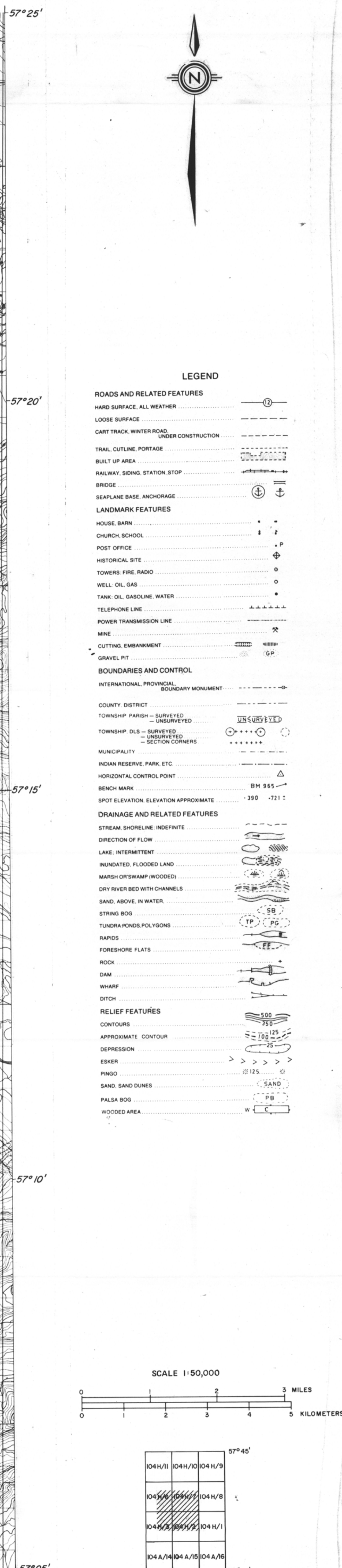
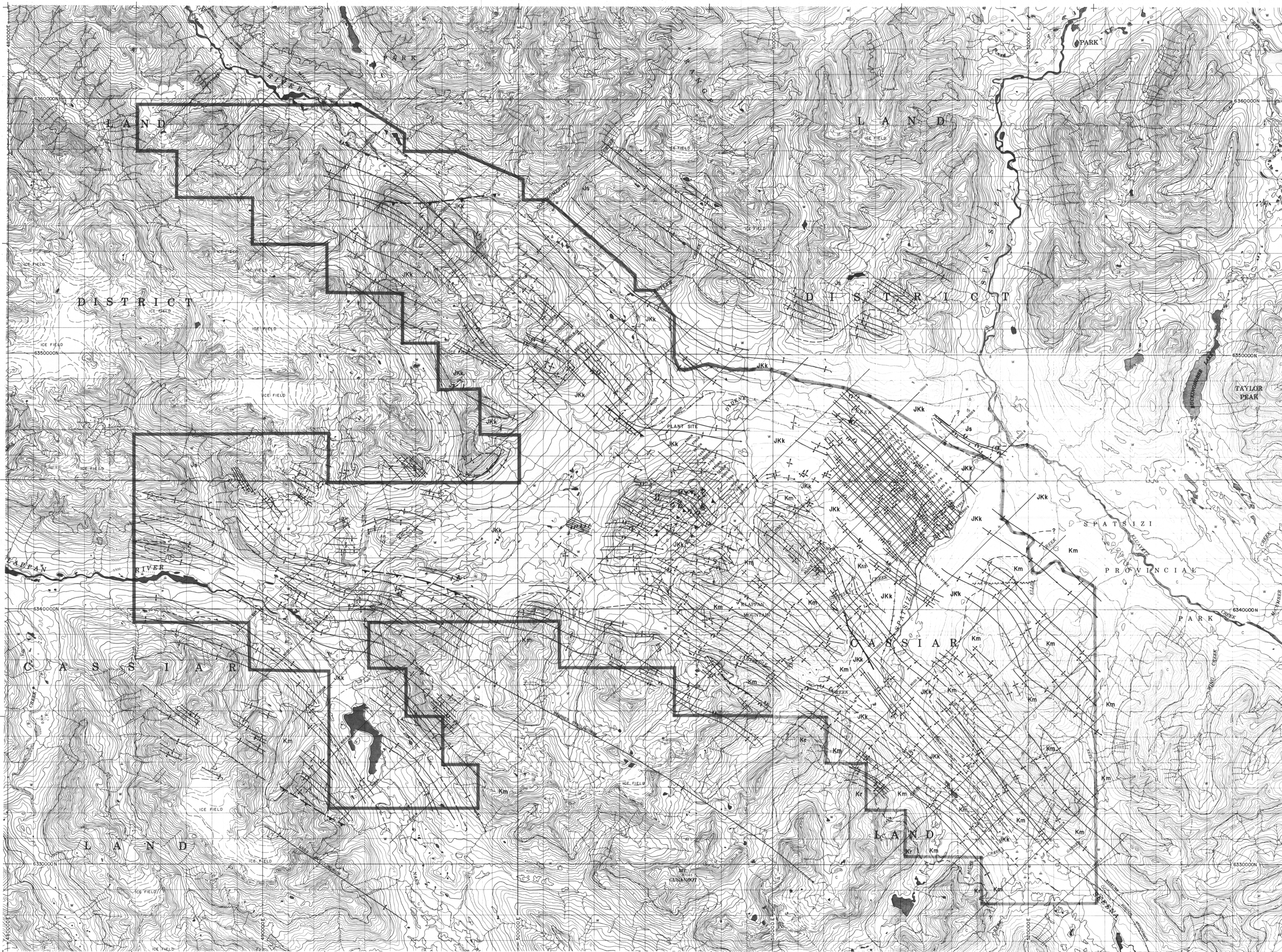
[Symbol]	LICENCE BOUNDARY
[Symbol]	GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
[Symbol]	COAL SEAM (DEFINED, INFERRED)
[Symbol]	ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
[Symbol]	SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
[Symbol]	OVERTURNED ANTICLINE (DEFINED,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

723

GULF CANADA CORPORATION
Calgary Coal Division ALBERTA

MT. KLAPPAN COAL PROPERTY
1986
GEOLOGY MAP
LOST-FOX AREA
MAP K-9

PREPARED BY: E.S. SCALE 1:5000
APPROVED BY: E.S. DATE: MAR. 1987 DRAWING No. KPN86LF-70



129°20'00" 129°15'00" 129°00'00" 128°45'00" 128°30'00"

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

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

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

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

LEGEND

— LICENCE BOUNDARY
 — GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
 — COAL SEAM (DEFINED, INFERRED)
 — ANTICLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
 — SYNCLINE (DEFINED, APPROXIMATE) ARROW INDICATES PLUNGE DIRECTION
 — OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
 — OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
 — MONOCLINE (DEFINED, APPROXIMATE)
 — BEDDING (HORIZONTAL, INCLINED, OVERTURNED, VERTICAL, UPRIGHT, ESTIMATED)
 — FOLIATIONS (INCLINED, VERTICAL, HORIZONTAL)
 — JOINTS (INCLINED, VERTICAL, HORIZONTAL)
 — THRUST FAULT (DEFINED, APPROXIMATE) TEETH INDICATE UP/THRUST SIDE
 — FAULT (DEFINED, APPROXIMATE) UPRIGHT, DOWNTOWN 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

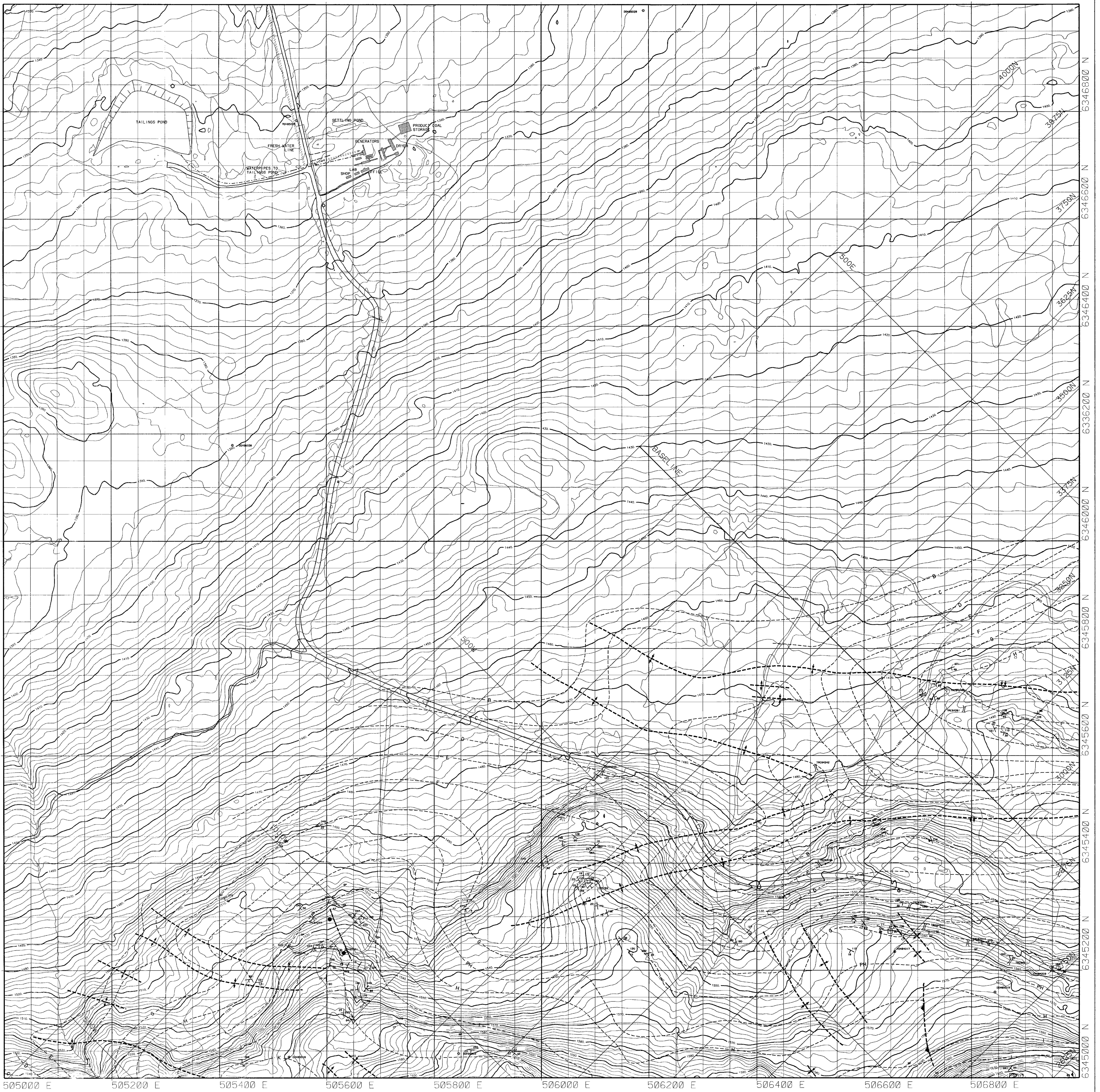
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GULF CANADA RESOURCES INC.
 Coal Division

CALGARY ALBERTA

MT. KLAPPAN COAL PROPERTY
 1986
 GEOLOGY MAP

PREPARED BY: A.P.E.S. DRAWING No. KPN 86001
 APPROVED BY: E.S., K.J. DATE: APR. 1987

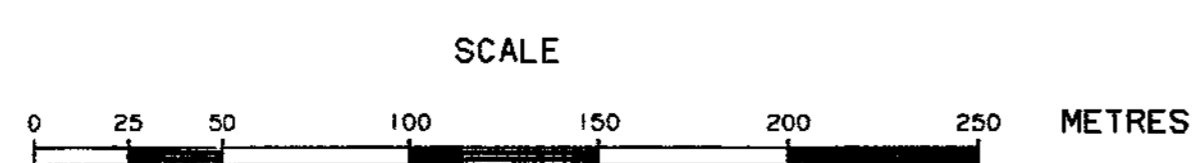


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6345000 N 6345200 N 6345400 N 6345600 N 6345800 N 6346000 N 6346200 N 6346400 N 6346600 N 6346800 N

INDEX

9								6346800 N
8								6346600 N
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6	20	14	5	9				6346200 N
5	21	15	3	4	8			6346000 N
4	22	16	2	1	7			6345800 N
3			17	18				6345600 N
2								6345400 N
1								6345200 N
								6345000 N
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LEGEND

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