

OPEN FILE

REPORT

- on the -

BOWRON RIVER COAL DEPOSIT

- for -

NORCO RESOURCES LTD.,

#711 - 850 W. Hastings Street,

VANCOUVER, B. C.

Prepared By:

KERR, DAWSON & ASSOCIATES LTD.,

#1 - 219 Victoria Street,

KAMLOOPS, B. C.

John R. Kerr, P. Eng.,

March 10th., 1977.

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SUMMARY

Norco Resources Ltd. owns three Coal Licences (#148, 162 and 163), covering three square miles, and situated 35 miles east of Prince George in the Bowron River Valley. Application has been made for adjoining licences; however, these have not been granted at this date.

Coal measures consist of at least three seams of a good quality bituminous coal, ^{each} measuring 5 - 11 ft. in thickness. The seams are located near the base of a thick (> 2,000 ft.) succession of Tertiary sediments. Total drill indicated and inferred coal reserves are estimated at 81,000,000 short tons, of which 57,000,000 short tons are located within the existing Norco coal licences. Further drilling is required to prove these reserves.

The coal contains substantial quantities, (estimated at 3 - 8%) of "Amber" and "Refined" resin, believed to have a market value of \$0.80/lb. Gross

value of the coal, including resin content, is estimated at \$105/Ton. Further laboratory work is required to study the quality and market ability of the resin, and further drilling and sampling is required to substantiate the average resin content. There are documented reports of zones of radioactivity in the sedimentary sequence associated with the coal seams. Further investigation for uranium is warranted.

A two phase development programme to prove the indicated coal reserves is recommended. The initial phase is a 4,500 ft. (4-5 hole) diamond drill programme, estimated to cost \$80,000.00. The second phase will be totally contingent upon the success of the initial drilling and continued laboratory results.

INTRODUCTION

General Statement:

Norco Resources Ltd. holds 3 Coal Licences (Nos. 148, 162, and 163) from the Government of British Columbia. The licences cover an area of 3 sq. mi. and are identified as Lots 9591, 9592, and 9593 on Provincial Land Maps.

At the request of M. M. Menzies, President of Norco, the writer was asked to summarize previous reports of L. S. Trenholme, P. Eng. (August 25, 1975, March 10, 1976, and January 27, 1977), and recommend an initial phase development programme of the known coal seams. The writer visited the property on February 16th. and 17th., 1977 to become familiar with local geology, topography, and other possible problems that may be encountered during a development programme. Due to an extensive snow cover, observation of outcrop was not possible. Samples of core and bags of coal, however, were examined at the mine camp.

Location and Access:

The property is located in the Bowron River Valley, approximately 35 miles east of Prince George, B. C. Geographic coordinates are Latitude 52°50'N and 122°55'W (NTS Reference 93H/13W 1/2).

Access to the mine camp on the west side of the Bowron River is possible along a gravel logging road, 37 miles east of Highway #97 at Buckhorn. Buckhorn is a small community, 10 miles south of Prince George. Access to the licences on the east side of the Bowron River is possible along a gravel logging road, 5 miles south of Highway #16 at Purden Lake. Purden Lake is 40 miles east of Prince George. Crossing the Bowron River is only possible by boat or raft.

Topography and Vegetation:

The property is located in the broad, flat-bottomed valley of the Bowron River. Relief is in the order of 1,600 ft., ranging from 2,400 ft. (a.s.l.) in the Bowron River to over 4,000 ft. (a.s.l.) in surrounding hills.

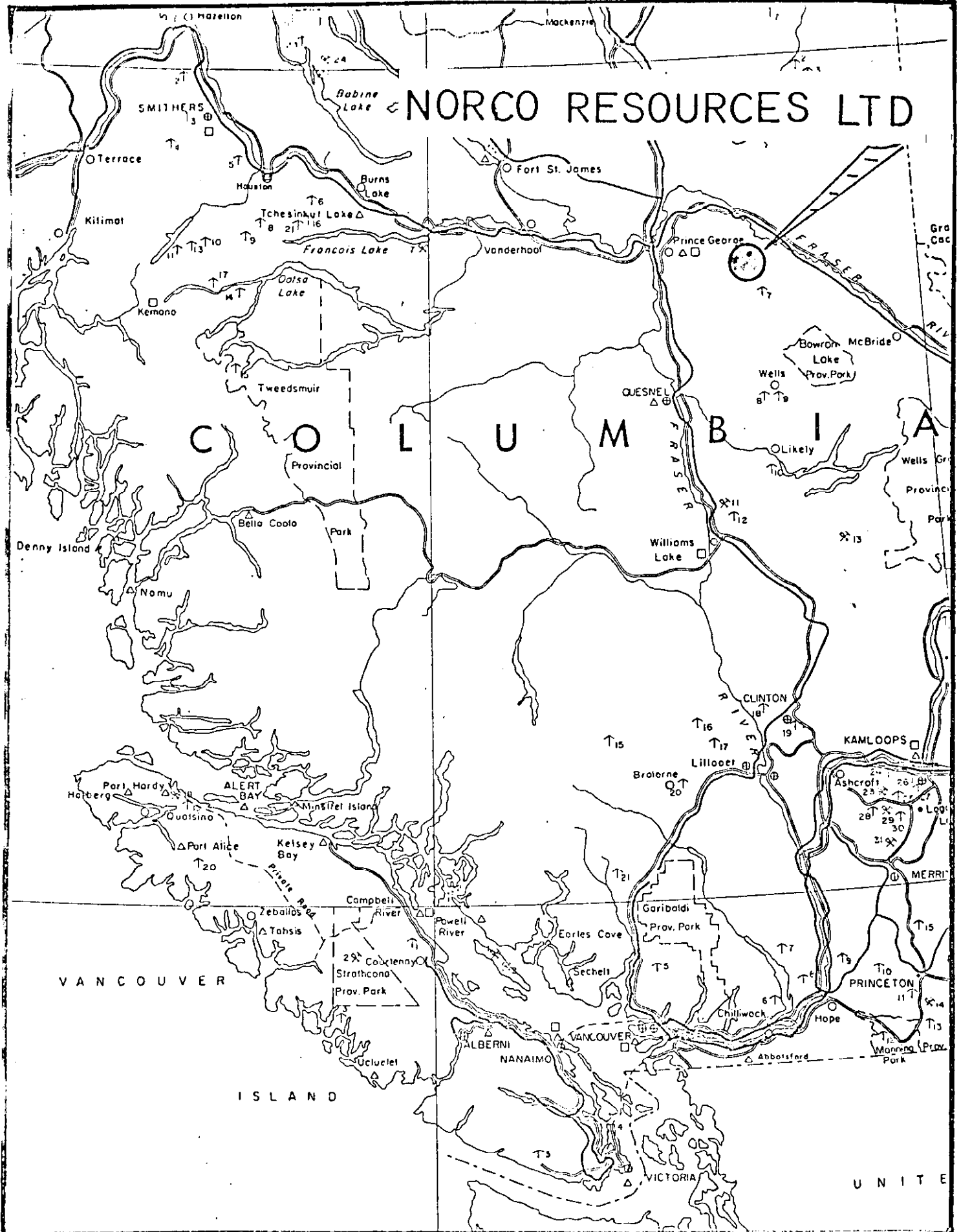


Figure 1
General Location Map 1 inch to 50 miles

Vegetation is dominantly stands of fir, jack pine, and poplar, with light scrubby underbrush. Much of the licenced area has been burned (1961) and subsequently salvage logged. Logging roads and skid trails are scattered throughout the property.

Property:

The Norco property consists of three contiguous coal licences, numbered 148, 162, and 163, and registered to Norco Resources Ltd. under the Coal Act of British Columbia. Additional contiguous licences have been applied for; however, have not been granted at this time.

The three licences contain 85% of the drill indicated coal reserves, as discussed in this report.

History:

Coal was discovered in the Bowron River Valley as early as 1870. Some preliminary exploration was

conducted in 1914. It is believed that the head-frame and 90 ft. vertical shaft existing on the property were part of a 1946 programme. During the period 1960 - 1967, 39 diamond drill holes were completed on the property, and two inclined adits, referred to as the "North" and "South" entries, exposed all seams of coal.

. In 1971, Bethlehem Mines Ltd., held an option on the property, completing 5 additional vertical diamond drill holes. During the period 1971 - 1976, the property was idle, and the underground workings were allowed to flood.

In the summer and early fall of 1976, the north workings were dewatered, and a 12 Ton bulk sample was obtained for detailed studies, and analyses in Edmonton, Alberta.

GEOLOGY

At least three coal seams ^{each} ranging in thickness from 5 - 11 ft. have been identified in a thick (> 2,000 ft.) Tertiary sedimentary rock sequence. The coal seams are located within 200 ft. of the base of the Tertiary sediments. The Tertiary sediments unconformably overlay a Mississippian volcanic-sedimentary assemblage referred to as the Slide Mountain Group.

The Tertiary sediments form a basin, 1 - 1 1/2 miles wide by 10 miles long, and consist of a sequence of shale, sandstone, conglomerate, argillite, and coal. In the western portion of the basin, dips have been interpreted as 5 - 20°E. Information is lacking in the eastern portion of the basin.

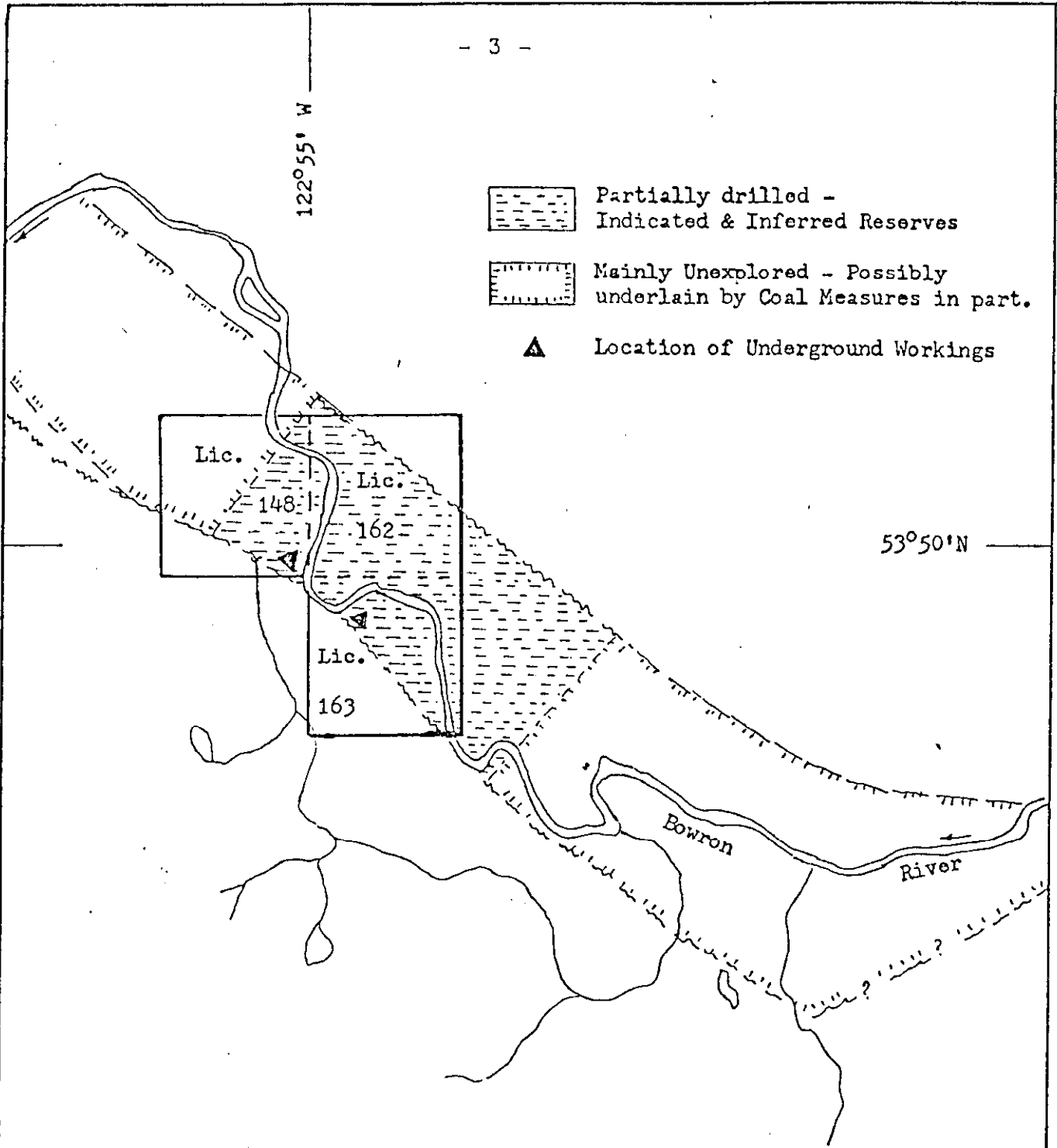
At least two offsetting faults have been interpreted through the coal seams.

COAL RESERVES

L. S. Trenholme, P. Eng. has completed an exhaustive study and compilation of all exploration work completed on the property during the period 1960 - present. He has provided a comprehensive calculation of drill indicated and drill inferred coal reserves on the Norco property and adjoining lots. These calculations were based on individual block calculations, considering each drill intersection of coal, and measured widths of each coal seam. The writer has not duplicated each calculated block; however, has reviewed the methods used, and the general calculated values. A factor of 23 was used (representing SG of coal - 1.4) to convert volume (cu. ft.) to short tons.

The following is a summary of Mr. Trenholme's calculations:

	<u>Norco Property</u>	<u>Adjacent Lots</u>	<u>Total Reserves</u>
I. DRILL-INDICATED ED (short tons)	49,808,000	8,757,000	58,565,000
II. DRILL INFERRED (short tons)	<u>7,072,000</u>	<u>15,773,000</u>	<u>22,845,000</u>
TOTAL (short tons)	56,880,000	24,530,000	81,410,000



NORCO RESOURCES LTD.
 Plan of Coal Licences in
 Bowron River Basin
 1 inch : 1 mile

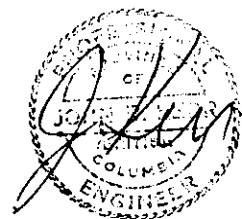
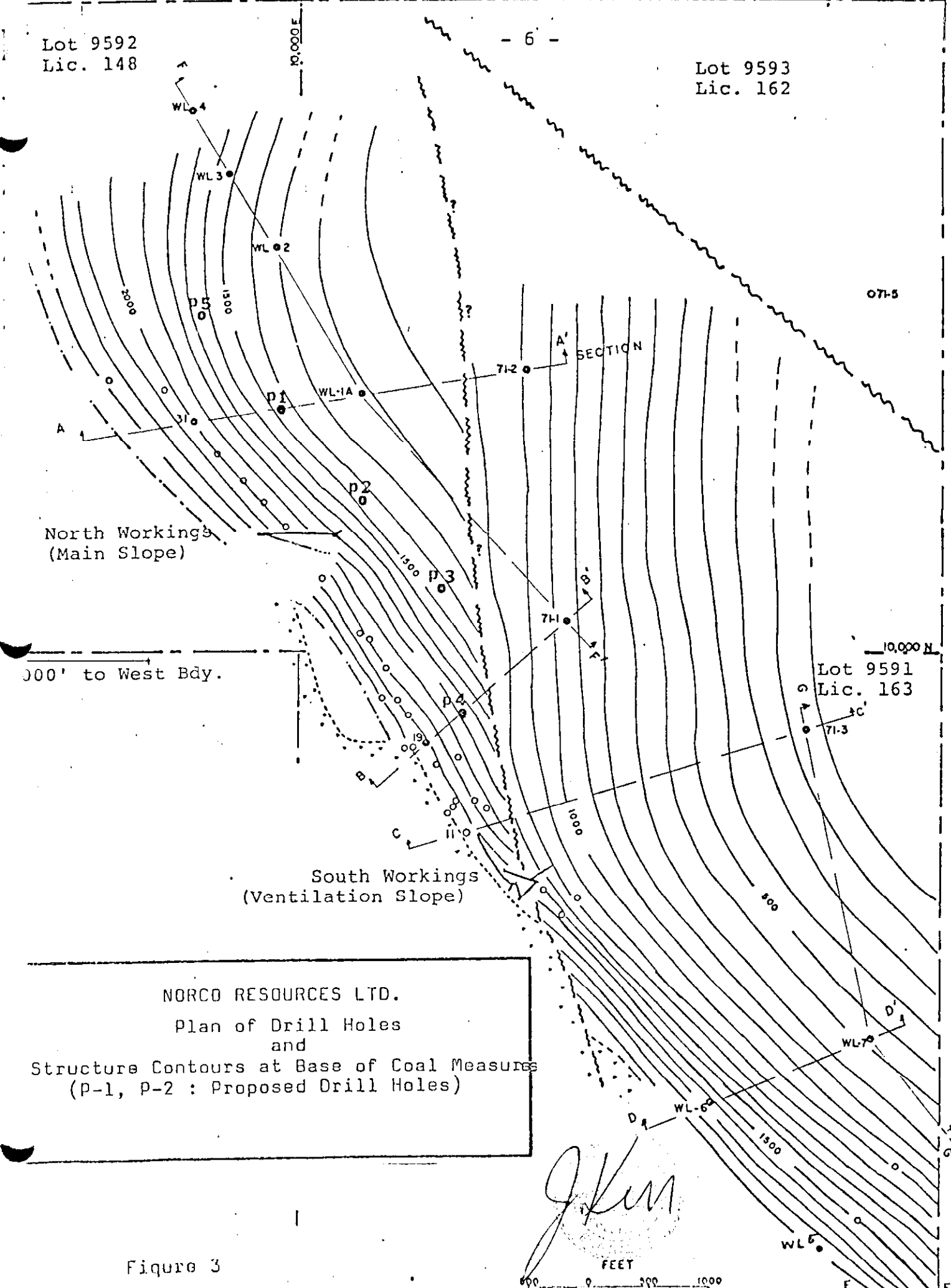


FIGURE 2

Lot 9592
Lic. 148

Lot 9593
Lic. 162



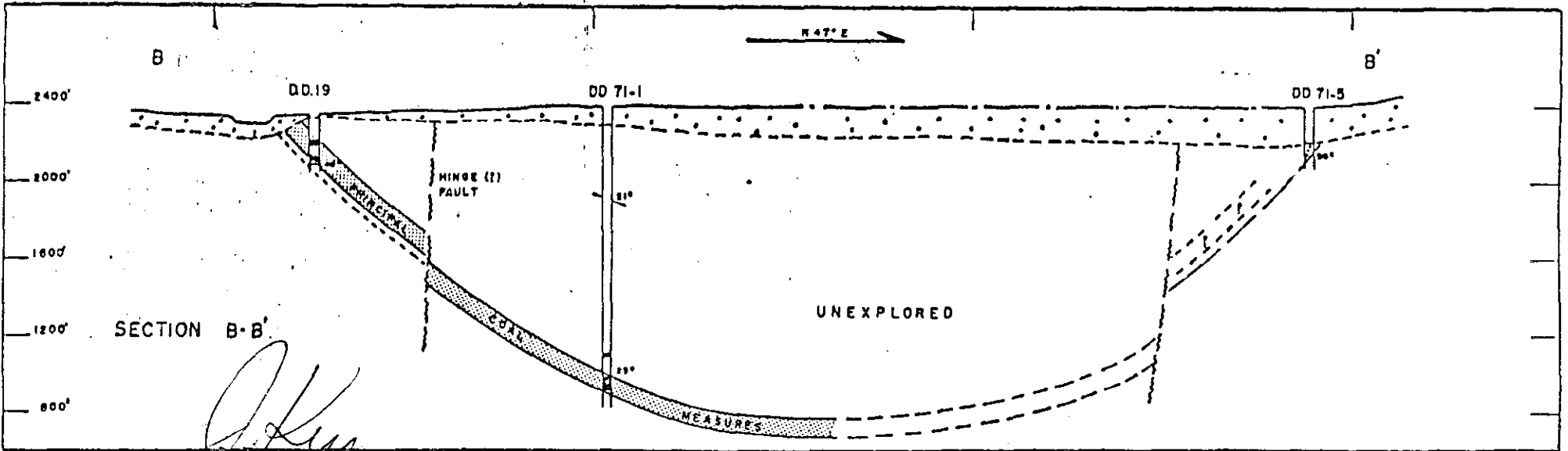
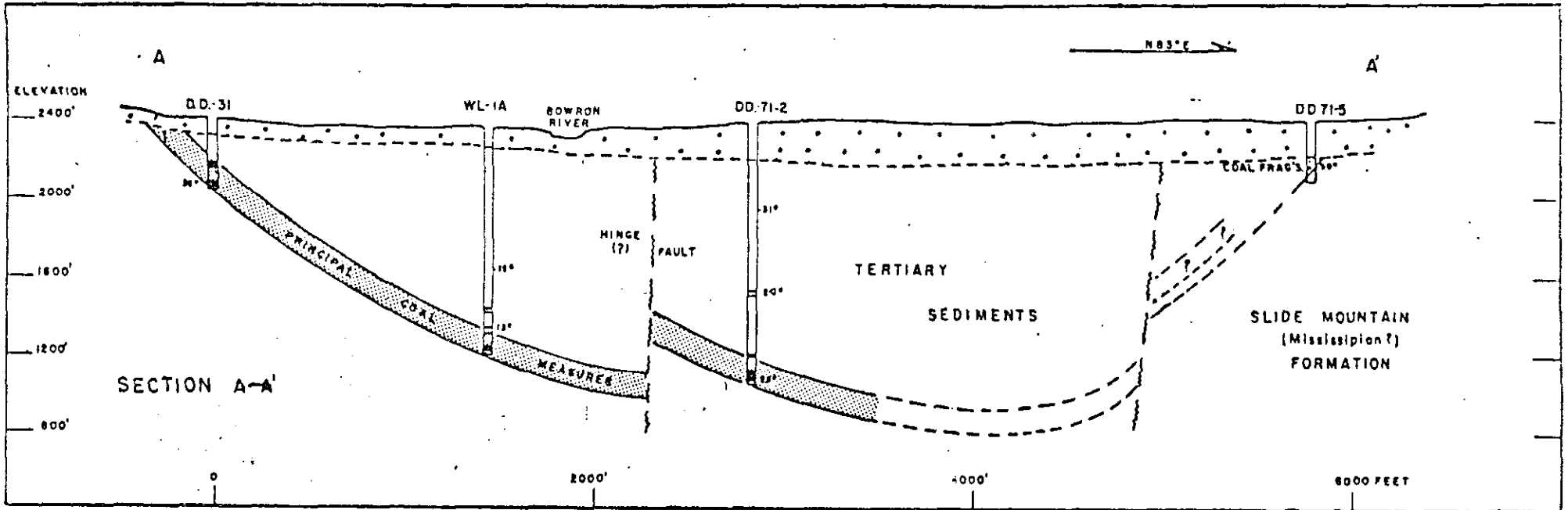
North Workings
(Main Slope)

South Workings
(Ventilation Slope)

NORCO RESOURCES LTD.
Plan of Drill Holes
and
Structure Contours at Base of Coal Measures
(P-1, P-2 : Proposed Drill Holes)

Figure 3

0 500 1000
FEET



NORCO RESOURCES LTD.

PLATE 4.

VERTICAL SECTIONS

BOWRON RIVER BASIN

ECONOMIC POTENTIAL

Coal at Bowron River has two marketable potentials:

(1). Thermal Coal - The quality of this coal is described by Trenholme -

"The rank is High Volatile B Bituminous. This coal is indicated to be good quality thermal coal, somewhat high in sulphur and subject to further testing, might be suitable for blending with other coals to produce a good quality metallurgical coke".

Recent tests of a 12 Ton bulk sample by Cyclone Engineering Sales Ltd. of Edmonton substantiate a 12,360 BTU/lb. coal product with sulphur content at 0.9%. There are no other undesirable impurities. Trenholme estimates the value of this coal at \$25.00/Ton.

(2). Resin Content - The following is quoted from Trenholme regarding the Resin Potential of the coal:
"The Bowron River coal deposit is known to contain significant amounts of natural resins which may be commercially important. Their extraction as primary products in a coal mining operation could be very profitable.

Natural and synthetic resins have many uses, particularly in special purpose varnishes resistant to heat and acids. The substitution of natural resins by synthetic resins

has been affected to a large extent by a more reliable source of supply for the latter; most of the natural resins being imported from Africa and the Far East.

However, substantial quantities of natural resins are still being imported from Africa, India, and Malaya and prices have risen from about 27¢ per lb. in 1972 to about 80¢ per lb. in 1976.

Research conducted to date indicates that the Bowron River "Refined Resin" is superior in most respects to the Congo Resin and that the Bowron River "Amber Resin" would likely prove superior to both (high melting point, light colour). It can therefore be assumed that the "Amber Resin" would command a still higher price if specifications can be documented and a steady source of supply can be assured."

The resin content of coal has been estimated at 3-8%. This variation in content has been established from tests at various locations in the coal seams, and an average content of resin cannot at this time be calculated. If the resin can be marketed at \$0.80/lb., as suggested by Trenholme, and the average resin content is 5% (100 lbs./T), the value of the resin would be \$80.00/Ton. With the estimated value of coal at \$25.00/Ton, the gross value of coal including resin would be \$105.00/Ton. Coal, at this value, could certainly be mined by underground methods at a profit.

SUMMARY OF RESULTS OF RESIN RESEARCH

"Refined Resin"

Amber Resin

Megascopically invisible.
Comprises about 8% of raw coal.

Amber nodules elongated to about 1 inch; random distribution through seams; visually "guesstimated" at 4% raw coal.

Microscopic; opaque; reddish brown; irregular outlines.

Light amber; transparent; sharp edges; conchoidal fracture.

Completely soluble in pyridine; actually "a soluble fraction of the coal"

Completely insoluble in chloroform, benzene or pyridine

Softens about 200°C.
S.G. = 1.04 - 1.05. Makes a 25% concentrate in coal-resin fraction float at S.G. 1.30

Does not soften at 400°C.
Melts and volatilizes about 450°C.
Separation: mechanical?
or froth flotation?

Possible Uses:

- (a). low cost rubber extender
- (b). Compares favourably with Congo resin in varnishes
- (c). High quality baked coatings

Possible Uses:

Not tested, but appears to be superior to "Refined Resin" for coating and varnishes.

Current testing at Cyclone Engineering Laboratories in Edmonton substantiates the above properties of the resin, and is oriented at establishing the marketability and value of the resin.

In addition to the indicated coal reserves, radioactivity in the overlying Tertiary sediments has been reported from previous drill programmes. Quantitative or qualitative assays are not available, therefore source of the radioactivity is not known. The radioactivity is reported to be 4 - 8 times background.

Scintillometer readings of drill core, and subsequent assaying of radioactive zones for uranium should accompany logging of core during the recommended drill programme.

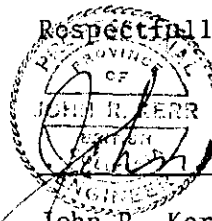
RECOMMENDATIONS

A two phase development programme is recommended to upgrade the drill-indicated reserves to proven reserves, and to provide samples for continued research and marketability studies.

PHASE I - Approximately 4,500 ft. of diamond drilling, consisting of 4 or 5 drill holes, locations suggested on Figure 3. The cost of this programme has been estimated at \$80,000 (See Appendix A).

PHASE II - Continued drilling, would be totally contingent upon the results of Phase I, and the results of continued laboratory testing and research. A suggested 15,000 ft. programme is estimated to cost \$250,000.

Respectfully Submitted By:



John R. Kerr, P. Eng.,
GEOLOGIST

Kamloops, B. C.,

March 10th., 1977.

APPENDIX A

COST ESTIMATES

COST ESTIMATES

PHASE I:

Diamond Drilling 4,500 ft. at \$14.00/ft.	\$63,000.00
Supervision	8,000.00
Miscellaneous - Supplies, Travel Expenses, Room and Board, Contingencies	<u>9,000.00</u>
TOTAL - PHASE I	<u><u>\$80,000.00</u></u>

PHASE II:

Diamond Drilling 15,000 ft. at \$14.00/ft.	\$210,000.00
Supervision, Supplies and Services	<u>40,000.00</u>
TOTAL - PHASE II	<u><u>\$250,000.00</u></u>

APPENDIX B

WRITER'S CERTIFICATE

JOHN R. KERR, P.ENG.

GEOLOGICAL ENGINEER

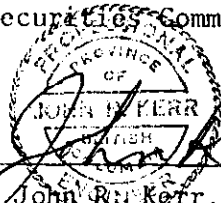
9 - 219 VICTORIA STREET
KAMLOOPS, B.C.

PHONE (604) 374-6427

CERTIFICATE

I, JOHN R. KERR, OF THE CITY OF KAMLOOPS, DO HEREBY CERTIFY THAT:

- (1). I am a member of the Association of Professional Engineers in the Province of British Columbia, and a Fellow of the Geological Association of Canada.
- (2). I am employed by Kerr, Dawson and Associates Ltd., with my office at #1 - 219 Victoria Street, Kamloops, B. C.
- (3). I have practised continuously as a geologist since graduation from the University of British Columbia in 1964 with a B.A. Sc. in Geological Engineering.
- (4). I have not directly or indirectly received nor do I expect to receive any interest in the properties or securities of Norco Resources Ltd., or any beneficial interest in any of the securities of Norco Resources Ltd.
- (5). This report is based on an exhaustive study of all available data, published and unpublished reports and my attendance on the property February 16th. and 17th., 1977.
- (6). I have reviewed the work of L. S. Trenholme, P. Eng. referred to in this report, and fully concur with his findings and calculations.
- (7). Permission is hereby granted to Norco Resources Ltd. to use this report to satisfy requirements of Securities Commissions and/or Stock Exchanges.


John R. Kerr

John R. Kerr, P. Eng.,
GEOLOGIST

Kamloops, B. C.,
March 10th., 1977.

APPENDIX C

REFERENCES

REFERENCES

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