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## ELECTRIC POWER DEVELOPMENT

JULY, 1967

During the period covered by this review, the most massive hydro-electric construction program in the history of British Columbia has been proceeding on schedule. Four major dams, one on the Peace River and three in the Columbia River Basin, are being constructed to provide power, flood control and downstream flow regulation.

### Generation and Load Growth

During 1966, the total amount of energy generated by hydro-electric plants in British Columbia was 17,042,531 megawatt-hours, representing an increase of 11.6% on the corresponding figure for 1965. Thermal-electric generation amounted to approximately 3,838,000 megawatt-hours, an increase of 18.5% over the previous year.

Table I shows the statistics for generation and load in the Province over the last ten years. Prior to 1966, with one exception, it had been possible to ignore the effects of import and export of power and to assume that generation and load growth were equal but as these effects may be substantial in the future, the difference is now being indicated. Table I also shows the overall percentage changes in the ten-year period and mean annual growth rates (compounded). It will be noted that the average increase in load over the 10-year period is just over 7.5 percent, somewhat less than the 45-year average of 7.8 percent per annum.

Current details of operating hydro-electric generating plants in British Columbia appear in Tables II (a) and II (b), and additions over the last ten years are shown in Table III.

### Undeveloped and Developed Power

The Inland Waters Branch of the Department of Energy, Mines and Resources, Government of Canada, and the Water Rights Branch of the Department of Lands, Forests and Water Resources, Government of British Columbia, recently prepared an Index of Undeveloped Hydro-Electric Power Sites in British Columbia. This Index is part of a study covering the whole of Canada. Although this study is continually being revised as more information becomes available, a current summary for British Columbia

has been prepared and appears in Table V. It must be pointed out that many of the sites have only received a cursory examination, and that an additional substantial potential, although not yet subject to study, is known to exist. Due to the doubtful nature of the material on which some of the Index is based, no data may be republished or quoted; however, further details may be obtained directly from either of the two departments. The Index merely lists the figures derived by many investigators over the course of thirty years or so, and therefore reference should be made to the original work in order to assess the current validity and relevance of the conclusions. Table V also shows the developed power in British Columbia, classified in the same manner as the undeveloped power listing.

#### Development - Columbia River

Duncan Lake Project - Construction of the project was officially started by Premier W.A.C. Bennett on May 19, 1965. By July, 1966, a total of \$18,491,604 worth of contracts had been awarded and construction progress was ahead of schedule. During the twelve-month period to July, 1967, one large contract was let for \$1,055,000 covering access roads.

On April 29, 1967, the diversion tunnels were closed and storing of the Duncan River flow began. At the time of going to print, all 7.2 million cubic yards of the earthfill embankment required to complete the structure are in place, and the reservoir has been filled to full supply level of 1892 feet. The official opening ceremony has been scheduled for August 17th, 1967.

Arrow Lakes - Construction of the concrete section of the Arrow Lakes Dam is over ninety percent complete. This 1200-foot long section will include a navigation lock and reservoir discharge works. The earth section of the dam is being constructed simultaneously. During construction, log handling facilities have been provided to allow an uninterrupted flow of raw material to the Celgar plant downstream. Toyomenka Incorporated of Japan was the low bidder on this contract and is providing equipment for the low level ports and the navigation lock, as well as a downstream gate. These three separate contracts total \$2,768,142. A number of other contracts were let during the previous period totalling \$2,069,559; the largest for \$1,156,712 being for the construction of the Big Eddy Dykes.

Mica Creek - On July 16, 1965, the contract for the two 45-foot-diameter diversion tunnels was let to a consortium

of Perini Pacific, Mannix, Northern and J.W. Stewart, and Morrison-Knudsen Company for \$21,155,388; this marked the start of the dam construction work. Prior to this, contracts had been let for houses and dormitories, and now more than 930 workers and their families are housed at Mica Village, six miles from the dam site. The contract for the main commercial area has now been let, and by 1972, the Village is expected to accommodate 4,000 persons.

The diversion tunnel contract is proceeding well, overall excavation being now complete. The main contract covering the dam, spillway, outlet works and power intake tunnel, was called on 29 May 1967, and is expected to be awarded by 30th August 1967. This contract is estimated to cost \$150 million, and if so, will be the largest single contract awarded in Canada.

#### Development - Peace River

At the end of the 1966 season, a total of 45,000,000 cubic yards of fill had been placed at the Portage Mountain Dam. An early start and a high placement rate have allowed the Kiewitt-Dawson-Johnson consortium to place some 6 million cubic yards during the 1967 season to date. This brings the embankment above the 2110-foot mark, representing 80 percent of the ultimate height of 600 feet to be reached by the end of the 1967 season.

Other phases of the project are going well: the intake channel excavation is complete, blanket grouting and core contact area treatment are complete. Powerplant excavation continued throughout the winter period, along with concreting of parts of the powerhouse complex.

The 205-mile section of transmission line from Prince George to Kelly Lake is virtually complete and the other sections are proceeding rapidly.

During the past year, contracts have been let for a total amount of \$46,064,795 the largest one of \$18,417,318 being for the powerplant completion and control building.

Table VII lists the more important contracts awarded and some of the pertinent details, relating to all four of the major hydro-electric projects now under construction in British Columbia.

TABLE I

ELECTRICAL GENERATION AND LOAD IN BRITISH COLUMBIA  
TEN-YEAR PERIOD 1956-1966

Year	Electrical Generation in B.C. (Gwh)			Net Import or Export (Gwh)	Total Electrical Load in B.C.		
	Hydro	Thermal	Total		(Gwh)	(Mw)	( % Change)
1956	9,315	688	10,003	4 (I)	10,007	1,142.3	20.4
1957	10,161	542	10,703	508 (I)	11,211	1,279.8	12.0
1958	11,219	686	11,905	20 (E)	11,885	1,356.7	6.0
1959	11,750	712	12,462	20 (I)	12,482	1,424.9	5.0
1960	12,669	965	13,634	4 (I)	13,638	1,556.8	9.2
1961	12,371	1,001	13,372	25 (I)	13,397	1,529.3	- 1.8
1962	13,572	1,176	14,748	9 (I)	14,757	1,684.6	10.1
1963	14,262	1,347	15,609	27 (E)	15,582	1,778.8	5.5
1964	15,558	1,713	17,271	6 (I)	17,277	1,966.8	10.5
1965	15,258	3,238	18,496	456 (I)	18,952	2,163.4	10.0
1966	17,043	3,838 (P)	20,881	27 (E)	20,854 (P)	2,380.6	10.0

Overall 10-year increase:

82.9%      457.8%      108.7%      108.4%

Mean annual increase:

6.2%      18.7%      7.6%      7.6%

(E) Net export to other provinces and/or U.S.A.  
(I) Net import from other provinces and/or U.S.A.  
(P) Preliminary figure subject to revision

Gwh = gigawatt-hour = 1 million kilowatt-hours  
Mw = 1 thousand kilowatts (average output)

TABLE 11 (a)

PRINCIPAL PRODUCERS OF ELECTRIC POWER IN BRITISH COLUMBIA

<u>UTILITIES</u>	<u>Installed Capacity (kw)</u>	
	<u>Hydro</u>	<u>Thermal</u>
B.C. Hydro & Power Authority	1,305,722	742,006
The Corporation of the City of Nelson	8,670	
The Corporation of the City of Revelstoke	8,900	2,000
East Kootenay Power Co. Ltd.	14,600	
Mirror Lake Power Ltd.	150	
West Kootenay Power and Light Co. Ltd.	42,280	
 <u>INDUSTRIES</u>		
Aluminum Co. of Canada Ltd.	812,800	8,000
Anaconda Co. (Canada) Ltd.	4,100	
Bralorne Pioneer Mines Ltd.	1,475	
B.C. Forest Products Ltd.		12,800
B.C. Bridge & Dredging Co. Ltd.		2,272
B.C. Sugar Refining Co. Ltd.		3,750
Canadian Fishing Co. Ltd.	450	
Canadian Forest Products Ltd.		15,000
Cariboo Gold Quartz Mining Co. Ltd.		1,875
Carnegie Mining Corporation	200	
Columbia Cellulose of Canada Ltd.		15,000
Cominco Ltd.	586,235	4,500
Crown Zellerbach Ltd.	13,320	14,500
Crown Zellerbach Building Materials Ltd.		12,500
Dolly Varden Mines Ltd.	1,200	
Eagle Lake Sawmills Co. Ltd.		1,800
Elk Falls Co. Ltd.		1,600
Ocean Cement Co. Ltd.	375	
Giant Mascot Mines Ltd.	100	
Hillcrest Lumber Co. Ltd.		2,610
MacMillan, Bloedel and Powell River Ltd.	53,750	87,150
Rayonier Canada Ltd.	4,250	23,200
S.M. Simpson Ltd.		7,750
Western Mines Ltd.	3,060	
Totals	2,861,637	958,313
TOTAL Hydro plus Thermal		3,819,950

TABLE II (b)

PRINCIPAL PRODUCERS OF ELECTRIC POWER IN BRITISH COLUMBIA  
DETAILS OF PLANTS IN OPERATION

Owner	Hydro Plant Code No.	NAME OF PLANT	Locality	Type (I)	Nameplate Capacity in kw
B.C. Hydro & Power Authority (Hydro Plants)	7100	Alouette	Mission	H	8,000
	7150	Ash River	Alberni	H	25,200
	7310	Big Falls	Prince Rupert	H	9,600
	7360	Bridge River No.1	Lillooet	H	180,000
	7410	Bridge River No.2	Lillooet	H	248,000
	7570	Cheakamus	Squamish	H	140,000
	1870	Clayton Falls	Bella Coola	H	702
	7720	Clowhom	Squamish	H	30,000
	7770	Coquitlam-Buntzen	Port Moody	H	76,700
	8330	John Hart	Campbell River	H	120,000
	8380	Jordan River	Victoria	H	26,400 (2)
	8600	La Joie	Bralorne	H	22,000
	8650	Ladore Falls	Campbell River	H	54,000
	8980	Puntledge	Courtenay	H	27,000
	9040	Ruskin	Mission	H	105,600
	9100	Seton	Lillooet	H	42,000
	9150	Shawatlans	Prince Rupert	H	1,320
	9200	Shuswap Falls	Vernon	H	5,200
	9300	Spillimacheen	Golden	H	4,000
9350	Stave Falls	Mission	H	52,500	
9570	Strathcona	Campbell River	H	33,750	
9630	Wahleach	Chilliwack	H	60,000	
9730	Whatshan	Arrow Lakes	H	33,750	
B.C. Hydro & Power Authority (Thermal Plants)			Alert Bay/Port Hardy	D	3,900
			Bella Coola	D	1,057
			Blue River	D	650
			Boston Bar	D	950 (3)
			Burns Lake	D	4,072
			Chetwynd/Dawson Creek	D	35,000
			Fort Nelson	D	3,161
		Hazelton	D	2,050	

TABLE II (b) Continued

Owner	Hydro Plant Code No.	Name of Plant	Locality	Type (I)	Nameplate Capacity in kw
B.C. Hydro and Power Authority (Thermal Plants)			Houston	D	1,200
			Lytton	D	879
			McBride	D	1,800
			Mica	D	5,175
			Prince George	D	21,000 (3)
			Prince Rupert	D	6,401
			Queen Charlotte	D	306 (3)
			Sandspit	D	1,700
			Smithers	D	6,880
			Stewart	D	1,225
			Tofino	D	400 (3)
			Valemont	D	1,550
			Mobile Unit No.80 (road)	D	) 10 @ 500
			Mobile Unit No.81 (road)	D	
			Mobile Unit No.82 (road)	D	
			Mobile Unit No.83 (road)	D	
			Mobile Unit No.84 (rail)	D	
			Mobile Unit No.85 (rail)	D	1,000
			Mobile Unit No.86 (rail)	D	1,000
			Mobile Unit No.87 (semi-mobile)	T	5,000
			Mobile Unit No.88 (rail)	D	1,000
			Mobile Unit No.89 (rail)	D	1,000
			Mobile Unit No.90 (rail)	D	1,000
		Mobile Unit No.91 (rail)	D	1,000	
		Burrard	Port Moody	S	450,000 (4)
		Georgia	Chemainus	T	75,500 (3)
		Port Mann	Port Mann	T	100,000 (3)



TABLE II (b) continued

Owner	Hydro Plant Code No.	Name of Plant	Locality	Type (I)	Nameplate Capacity in Kw
Corporation of the City of Nelson	7620	City of Nelson	Nelson	H	8,670
Corporation of the City of Revelstoke	7900	Walter Hardman	Revelstoke	H	8,000
	8270	Illecillewaet River	Revelstoke	H	900 (3)
			Revelstoke	D	2,000 (3)
East Kootenay Power Co.Ltd.	7050	Aberfeldie	Fernie	H	5,000
	7930	Elko	Fernie	H	9,600
Mirror Lake Power Ltd.	1420	Byerkness-Mirror	Kaslo	H	150
West Kootenay Power & Light Co.Ltd.	8050	Goat River	Creston	H	1,280 (3)
	8700	Lower Bonnington	Nelson	H	41,000
Aluminum Co.of Canada Ltd.	1090	Kemano	Kitimat	H	812,800
			Kitimat	D	8,000
Anaconda Co.(Canada) Ltd.(5)	7260	Beach Powerhouse	Britannia Beach	H	4,100
Bralorne Pioneer Mines	7520	Cadwallader-Bralorne	Bralorne	H	800
	8210	Hurley River No.2	Bralorne	H	675
B.C. Forest Products Ltd.			Victoria	S	4,500
			Youbou	S	4,300
			Hammond	S	4,000
B.C.Bridge & Dredging Co.Ltd.			Vancouver	D	2,272
B.C. Sugar Refining Co.Ltd.			Vancouver	S	3,750
Canadian Fishing Co.Ltd.(5)	1660	Butedale Creek	Princess Royal Island	H	430
	4160	Mercantile Creek	Ucluelet	H	20

TABLE II (b) Continued

Owner	Hydro Plant Code No.	Name of Plant	Locality	Type (I)	Nameplate Capacity in kw
Canadian Forest Products Ltd.			Port Mellon	S	5,000
			Vancouver	S	10,000
Cariboo Gold Quartz Mining Co.Ltd.			Wells	D	1,875
Carnegie Mining Corporation (5)	5640	Slocan Star	New Denver	H	200
Columbia Cellulose of Canada Ltd.			Watson Island	S	15,000
Cominco Ltd.	7460	Brilliant	Nelson	H	81,600
	7820	Corra Linn	Nelson	H	40,500
	9250	South Slocan	Nelson	H	47,250
	9520	Upper Bonnington	Nelson	H	55,125
	9680	Waneta	Trail	H	360,000 (4)
	4760	Raging River	Port Alice	H	1,760
Crown Zellerbach Ltd.(5)	8820	Ocean Falls	Kimberley	S	4,500
			Ocean Falls	H	13,320
			Ocean Falls	S	14,500
Dolly Varden Mines Ltd.	8490	Kitsault River	New Westminster	S	12,500
Eagle Lake Sawmills Co.Ltd.			Alice Arm	H	1,200
			Giscome	S	1,500
Elk Falls Co. Ltd.			Giscome	D	300
			Duncan Bay	S	1,600
Ocean Cement Ltd.	4220	Munro Creek	Port Moody	H	375
Giant Mascot Mines Ltd.	5520	Silverhope-Steelhead	Hope	H	100
Hillcrest Lumber Co.Ltd.			Mesachie Lake	S	2,610

TABLE II (b) Continued

Owner	Hydro Plant Code No.	Name of Plant	Locality	Type (I)	Nameplate Capacity in kw
MacMillan Bloedel & Powell River Ltd. (5)	8930	Powell River	Powell River	H	21,350
	9400	Stillwater	Powell River	H	32,400
			Powell River	S	16,450
			Vancouver	S	4,750
			Chemainus	S	3,750
			Port Alberni	S	27,000
			Harmac	S	35,200
Rayonier Canada Ltd.	880	Port Alice	Port Alice	H	2,000
	9780	Woodfibre	Squamish	H	2,250
			Port Alice	G	16,200
			Woodfibre	S	7,000
S.M. Simpson Ltd.			Peachland	S	750
			Kelowna	S	7,000
Western Mines Ltd.	6050	Tennent Lake	Strathcona Park	H	3,060

- NOTES: (1) Type of plant: H=Hydro; D=Diesel; G=Gas diesel; T=Gas turbine; S=Steam.
- (2) Head conditions normally only permit 25,000 kw. of capacity at Jordan River.
- (3) Used for stand-by or peaking.
- (4) See text for details of impending plant additions.
- (5) Also hydro-mechanical power development - see Table IV.

TABLE III  
 ADDITIONS TO PRINCIPAL ELECTRICAL GENERATING PLANTS OF BRITISH COLUMBIA  
 DURING THE PAST TEN YEARS

Year	Plant	Capacity Added (kw)	Details
1957	Ladore Falls	27,000	Second unit
	Cheakamus	140,000	New plant
	La Joie	22,000	One unit (2)
	Kemano	101,030	Sixth unit
1958	Clowhom	27,000	Rebuilt (total 30,000 kw)
	Strathcona	33,750	New plant
	Kemano	101,030	Seventh unit
	Georgia (thermal)	37,000	First two units
1959	Ash River	25,200	New plant
	Port Mann (thermal)	100,000	
	Bridge River No.2	124,000	First two units
	Georgia (thermal)	38,500	Third and fourth units
1960	Bridge River No.2	124,000	Third and fourth units
	Walter Hardman	4,000	First unit
	Big Falls	3,900	Second unit
1961	Clayton	702	New plant
1962	Burrard (thermal)	300,000	First two units
	Raging River	1,760	Rebuilt
1963	Waneta	90,000	Third unit
1965	Burrard (thermal)	150,000	Third unit
	Walter Hardman	4,000	Second unit
1966	Tennent Lake	3,060	New plant
	Kemano	105,600	Eighth unit
	Waneta	90,000	Fourth unit
Total installed during ten-year period		<u>1,653,532</u>	

(1) Year of commencement of operation, or availability for operation.  
 (2) Added to existing storage dam.

TABLE IV

## OPERATING HYDRO-MECHANICAL POWER PLANTS IN BRITISH COLUMBIA

Owner	Hydro Plant Code No.	Name of Plant	Locality	Installation in Hp
Anaconda Co. Canada Ltd.	9460	Tunnel Powerhouse	Brittania Beach	1,100
Crown Zellerbach Ltd.	8820	Ocean Falls	Ocean Falls	12,600
James J. Donaldson	2720	Georgetown Creek	Prince Rupert	230
MacMillan, Bloedel & Powell River	8930	Powell River	Powell River	26,760
Canadian Fishing Co.Ltd.	1660	Butedale Creek	Princess Royal Island	245
<u>Total for British Columbia</u>				<u>40,935 Hp</u>

TABLE V

## SUMMARY OF UNDEVELOPED AND DEVELOPED POWER SITES IN BRITISH COLUMBIA

Area	Description	Undeveloped Power (kw)	Developed Power (Av. kw)	
7E	Upper Peace River Basin	Above Hudson Hope	1,980,000	-
7F	Lower Peace River Basin	Below Hudson Hope	570,000	-
8B	Northern Coast	Includes Yukon Diversion	3,930,000	-
8C	Lower Northern Coast	Includes Stikine & Iskut Rivers	890,000	-
8D	Nass River Basin area		870,000	1,200
8E	Skeena River Basin		1,010,000	8,200
8F	Central Coastal Area	Rivers Inlet north to Skeena Basin	270,000	14,452
8G	Lower Coastal Area	Vancouver north to Rivers Inlet	1,070,000	307,175
8H	Vancouver Island		220,000	291,770
8J	Nechako River Basin		550,000	812,800
8K	Upper Fraser River Basin	Above Macalister, B.C.	1,000,000	-
8L	Thompson River Basin		1,440,000	5,200
8M	Lower Fraser River Basin	Below Macalister, B.C.	5,130,000	719,575
8N	Columbia River Basin		2,590,000	696,025
8ø	Queen Charlotte Islands		10,000	-
10B	Upper Liard River Basin		2,400,000	-
TOTAL			23,930,000	2,856,397

NOTE: This summary covers known undeveloped sites only and is based in many cases on very preliminary information. Some sites may prove to be not feasible or not representative of best resource development. See page 2 of text.

TABLE VI  
MAJOR HYDRO-ELECTRIC PROJECTS UNDER CONSTRUCTION

	Mica Creek	Arrow Lakes	Duncan Lake	Portage Mountain
Electrical installation in megawatts	1820	none	none	2300 <sup>(a)</sup>
Height of dam (feet)	645 <sup>(b)</sup>	190	120	600 <sup>(c)</sup>
Volume of dam (million cu.yds.)	37.0	8.5	6.4	56.7 <sup>(d)</sup>
Type of dam	Rockfill	Earthfill	Earthfill	Earthfill
Reservoir storage volume - live (millions acre-feet)	12.0	7.1	1.4	32.0
- gross	20.0	7.1	1.4	62.0 <sup>(e)</sup>
Average flow (c.f.s.)	20,700	39,800	3,600	35,000
Drainage area (sq.miles)	8,220	14,100	925	27,000
Schedules to commence operation	April 1973 (storage only)	April 1969	In operation April 1967*	October 1968

<u>Feature</u>	<u>World Rank</u>
(a) Underground powerhouse installation	First
(b) Height of fill	Third
(c) Height of fill	Fourth
(d) Volume of fill	Seventh
(e) Gross storage volume	Fifth.

\* Storage occurring simultaneously with dam completion.

TABLE VII  
 PRINCIPAL CONTRACTS AWARDED FOR HYDRO-ELECTRIC CONSTRUCTION  
 JULY 1966 - JULY 1967

Project	Nature of Contract	Successful Contractor	CONTRACT PRICE	TOTAL
Arrow	Three Service Elevators	Peterson Cowan Limited	111,270	
	Meter Control Centres and Unit Substation	-	102,324	2,069,559
	Big Eddy Dyke	A. C. McEachern Limited	1,156,712	
	Nakusp Bank Protection	Knights Gravel Limited	699,253	
Iuncan	Access Road Section 2	P. F. Law Construction	1,055,000	1,055,000
Mica	Community Centre	Dawson Housing	249,815	
	Bridge Decking	H. B. Contracting	208,070	
	Exploratory Tunnel	Manning Construction	98,330	943,100
		Gold River Construction	386,885	
Portage Mountain	Transmission Line - Right-of-Way Clearing, Section 23	McPhail's Construction Co. Ltd.	325,000	
	Transmission Towers, Line No.2	SPA Officine "V Ceccoli"	1,700,000	
	Conductor - Sections II, V & VI	Schulman Electric Int'l Ltd.	4,200,000	
	Transmission Line No.1			
	Insulators - Sections I & VII	Mitsubishi Canada Limited	321,300	
	Transmission Lines Nos.1 & 2			
	Foundations and Towers	Miller Cartage and Contracting Ltd.	735,000	
	Transmission Lines Nos.1 & 2			
	Sections I and VII Section IA			
	Tower Erection - Transmission Line No.1 - Section IA	Wesco Construction Inc. and Willamette-Western Corp.	1,230,000	
	Foundation - Transmission Line No.1 - Section IB	Standard General Construction (Intern.) Limited	925,000	
	Transmission Line No.1 - Tower Section IE	Tide Bay Construction and Tide Bay Dredging	2,388,000	
	Transmission Line No.2	Ben Ginter Construction Co. Ltd.	1,461,000	
Foundation & Tower Section VIIB	Chapman-Long Construction Ltd.	2,991,377		
Transmission Line No.2				
Foundations - Section VIIA				
Transmission Line No.2	CEDON	3,348,100		
Tower Section VIIA				



TABLE VII (Continued)

Project	Nature of Contract	Successful Contractor	CONTRACT PRICE	TOTAL	
Portage Mountain	Conductors - Transmission Lines Nos.1 and 2	Aluminum Company of Canada	1,448,000		
	Transmission Line No.2 Section II	Cattermole-Trethewey Contractors Ltd.	120,000		
	Transmission Line No.2 Section VIIIB Anchors	A.B. Chance Co. of Canada Ltd.	120,000		
	Transmission Lines-Miscellaneous	-	176,090		
	Unit Control Boards	Canadian Westinghouse Co.Ltd.	194,155		
	Control and Relay Switchboards	Canadian Westinghouse Co.Ltd.	331,295		
	Station Service Distribution Centres	Federal Pacific Electric of Canada	449,000		
	138 KV Braking Resistors	Canadian General Electric	506,464		
	138 KV Cable and Terminations	Canada Wire and Cable Co.Ltd.	129,180		
	500 KV Lightning Arrestors	Canadian Ohio Brass	107,736		
	138 KV Ring Bus Breakers	Canadian General Electric	122,086		
	138 KV Braking Resistor Breakers	Cegelec Canada Inc.	116,365		
	Central Control Equipment	Bedard Girard Limited	130,096		
	Annunciation and Event Recording Equipment	Rochester Instrument Systems of Canada	102,527		
	Data Logging Equipment	Canadian General Electric	227,865		
		Sub-total (transmission)		23,905,036	
	Powerplant Completion	Foundation-Comstock	18,417,318		
	Low Level Outlet Steelwork	Marubeni Iida Co.Ltd.	572,815		
	Draft Tube Gates and Hoist	C. Itoh & Co.(American)Inc.	228,298		
	Low Voltage Lead Shaft Skips	Meyer Machine Inc.	570,812		
	Spillway Radial Gates and Hoists	Viest (Austria)	776,000		
	Depressed Centre Rail Car	National Steel Car Corp.Ltd.	249,750		
	Reservoir Debris Booms	Antler Construction	306,038		
Spillway Slide Gates	Okura and Co. Canada Ltd.	160,000			
Misc.Switchyard Equipment	-	489,490			
Misc. Powerhouse Equipment	-	228,593			
Central Control Building Cranes and Misc. Equipment	-	160,045			
	Sub-total (Dam & Power House)		22,159,159.		