



ESTIMATE SUMMARY

HAJ/APD

PREPARED BY

14879-001

MF

CHECKED BY

JOB NO.

CONCEPTUAL

TYPE OF ESTIMATE

NOV. 1981

DATE

SHEET 1 OF 16

CHAKACHAMNA HYDROELECTRIC PROJECT
PROJECT

ALASKA POWER AUTHORITY

ALTERNATIVE C

PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	POWER PLANT STRUCTURE & IMPROVEMENTS						
	Valve Chamber						
	Excavation & Supports	10,500	CY	270	2,835,000		
	Concrete & Reinf Steel	6,520	CY	410	2,673,200		
	Struc. Steel & Misc. Metals	52	TON	1,800	93,600		
	Round-Off				(1,800)		
						5,600,000	
	Underground Powerhouse						
	Dewatering		LS		4,100,000		Entire Underground Complex
	Excavation & Supports	64,000	CY	155	9,920,000		
	Drilling-Percus.& Rotary	15,000	LF	30	450,000		
	Concrete & Reinf. Steel	14,200	CY	630	8,946,000		2" - 3" ϕ
	Struc. Steel & Misc Metals	330	TON	5,300	1,749,000		
	Architectural		LS		1,000,000		
	Round-Off				35,000		
						26,200,000	
	Bus Galleries Between Powerhouse & Transformer Vaults						
	Excavation & Supports	200	CY	825	165,000		
	Concrete	120	CY	290	34,800		
	Round Off				200		
						200,000	



ESTIMATE SUMMARY

HAJ/ APD
 PREPARED BY
 MF
 CHECKED BY

14879-001
 JOB NO.

NOV. 1981
 DATE

CHAKACHAMNA HYDROELECTRIC PROJECT

PROJECT
 ALASKA POWER AUTHORITY
 PREPARED FOR

SHEET 2 OF 16

ALTERNATIVE C

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>Transformer Gallery & Tunnels</u>						
	Excavation & Supports	11,960	CY	290	3,468,400		
	Concrete & Reinf Steel	830	CY	460	381,800		
	Struc Steel & Misc. Metals	120	TON	3,800	456,000		
	Round Off				(6,200)		
						4,300,000	
	<u>Valve Chamber & Transformer Gallery-Access Tunnels</u>						
	Excavation & Supports	1,500	CY	250	375,000		
	Concrete	60	CY	290	17,400		
	Round-Off				7,600		
						400,000	
	<u>Powerhouse Access Tunnel</u>						
	Portal Excav. & Protection	56,000	CY	10	560,000		
	Portal Conc. & Reinf. Steel	1,000	CY	570	570,000		
	Tunnel Excav. & Supports	24,000	CY	300	7,200,000		
	Tunnel Concrete	900	CY	290	261,000		
	Tunnel Misc. Metals	30	TON	11,000	330,000		
	Subsurface Exploration						
	Mobilization		LS		1,500,000		
	Exploratory Adit	1,000	LF	1,800	1,800,000		
	Core drilling	5,000	LF	140	700,000		
	Helicopter Service		LS		600,000		
	Round-Off				(21,000)		
						13,500,000	

ESTIMATE SUMMARY



HAJ/APD
 PREPARED BY _____
 MF
 CHECKED BY _____
 CONCEPTUAL
 TYPE OF ESTIMATE _____

14879-00J
 JOB NO.
 NOV. 1981
 DATE
 SHEET 4 OF 16

CHAKACHAMNA HYDROELECTRIC PROJECT

ALASKA POWER AUTHORITY PREPARED FOR

ALTERNATIVE C

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>RESERVOIR, DAM & WATERWAYS</u>						
	Reservoir						
	Water Level Recording		LS			100,000	
	<u>Intake Structure</u>						
	Site Exploration						
	Mobilization		LS		150,000		
	Core Drilling	5,000	LF	80	400,000		
	Helicopter Service		LS		150,000		
	Tunnel Excav. & Supports	12,000	CY	470	5,640,000		
	Tunnel Conc. & Reinf. Steel	100	CY	350	35,000		
	Lake-Tap (Final Round)		LS		3,000,000		L = 26'
	Place & Remove Temp. Conc	600	CY	700	420,000		
	Diving Crew	60	DAYS	10,000	600,000		
	Round-Off				5,000		
						10,400,000	
	<u>Intake Gate Shaft</u>						
	Shaft Excav. & Supports	10,000	CY	360	3,600,000		
	Mass Surface Excav.	50,000	CY	30	1,500,000		
	Concrete & Reinf. Steel	5,700	CY	890	5,073,000		
	Misc. Metals, Gates & Hoist	244	TON	12,500	3,050,000		
	Round-Off				(23,000)		
						13,200,000	



ESTIMATE SUMMARY

PREPARED BY HA/J/APD

14879-001

CHECKED BY MF

JOB NO.

TYPE OF ESTIMATE CONCEPTUAL

NOV. 1981

DATE

PROJECT CHAKACHAMNA HYDROELECTRIC PROJECT

SHEET 5 OF 16

ALASKA POWER AUTHORITY

ALTERNATIVE C PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>Access Tunnel at Intake</u>						
	Portal Excav. & Protection	6,000	CY	50	300,000		
	Tunnel Excav. & Supports	72,000	CY	295	21,240,000		
	Tunnel Conc. & Reinf. Steel	200	CY	500	100,000		
	Round-Off				(40,000)		
						21,600,000	
	<u>Access Tunnel at Surge Chamber</u>						
	Portal Excav. & Protection	6,000	CY	55	330,000		
	Tunnel Excav. & Supports	23,000	CY	323	7,429,000		
	Tunnel Conc. & Reinf. Steel	2,300	CY	420	966,000		
	Grouting Contact & Pressure	3,400	CF	58	197,200		
	Round-Off				(22,200)		
						8,900,000	



ESTIMATE SUMMARY

14879-001
JOB NO.

NOV. 1981
DATE

SHEET 6 OF 16

HAJ/APD
PREPARED BY

MF
CHECKED BY

CONCEPTUAL
TYPE OF ESTIMATE

CHAKACHAMNA HYDROELECTRIC PROJECT
PROJECT

ALASKA POWER AUTHORITY
PREPARED FOR

ALTERNATIVE C

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	Access Tunnel at Mile 3.5 No.1						
	Portal Excav & Protection	6,000	CY	53	318,000		
	Tunnel Excav & Supports	68,000	CY	297	20,196,000		
	Tunnel Conc & Reinf Steel	500	CY	430	215,000		
	Grouting-Contact & Pressure	1,125	CF	58	65,250		
	Round-Off				5,750		
						20,800,000	
	Access Tunnel at Mile 7.5 No.2						
	Portal Excav & Protection	6,000	CY	54	324,000		
	Tunnel Excav & Supports	45,000	CY	298	13,410,000		
	Tunnel Conc & Reinf Steel	1,600	CY	420	672,000		
	Grouting-Contact & Pressure	2,300	CF	58	133,400		
	Round-Off				(39,400)		
						14,500,000	
	Power Tunnel						
	Excavation & Supports	67,000	LF	7,698	515,766,000		
	Concrete	514,000	CY	334	171,676,000		
	Grouting-Contact & Pressure	464,000	CF	54	25,056,000		
	Round-Off				2,000		
						712,500,000	



ESTIMATE SUMMARY

HAJ/APD
PREPARED BY

14879-001

MF
CHECKED BY

JOB NO.

CONCEPTUAL
TYPE OF ESTIMATE

NOV. 1982

DATE

SHEET 8 OF 16

CHAKACHAMNA HYDROELECTRIC PROJECT
PROJECT

ALTERNATIVE C

ALASKA POWER AUTHORITY
PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>Penstock-Mys Branches to Valve Chamber</u>						
	Excavation & Supports	10,000	CY	432	4,320,000		
	Concrete & Reinf. Steel	7,200	CY	608	4,377,600		
	Steel Liner	650	TON	5,000	3,250,000		
	Grouting-Contact	3,000	CY	50	150,000		
	Round-Off				2,400		
						12,100,000	
	<u>Penstock Between Valve Chamber & Powerhouse</u>						
	Excavation & Supports	1,000	CY	440	440,000		
	Concrete & Backfill	600	CY	550	330,000		
	Round-Off				30,000		
						800,000	
	<u>Draft Tube Tunnels</u>						
	Rock Bolts & Grout	19,000	LF	27	513,000		
	Concrete & Reinf. Steel	3,300	CY	425	1,402,500		
	Round-Off				(15,500)		
						1,900,000	
	<u>Surge Chamber - Tailrace</u>						
	Excavation & Supports	5,000	CY	480			
						2,400,000	



ESTIMATE SUMMARY

HAJ/APD
PREPARED BY

14879-001

ME

JOB NO.

CHECKED BY

NOV. 1981

CONCEPTUAL
TYPE OF ESTIMATE

CHAKACHANNA HYDROELECTRIC PROJECT

DATE

SHEET 9 OF 16

ALTERNATIVE C

ALASKA POWER AUTHORITY

PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>Tailrace Tunnel & Structures</u>						
	Cofferdam & Dewatering		LS		2,000,000		
	Portal Excav. & Protection	2,000	CY	65	130,000		
	Concrete & Reinf. Steel	1,200	CY	600	720,000		
	Walkway Bridge		LS		65,000		
	Stoplogs & Hoists	81	TON	8,500	688,500		
	Tunnel Excav. & Supports	25,000	CY	260	6,500,000		
	Plug Excavation	4,000	CY	50	200,000		
	Round-Off				(3,500)		
						10,300,000	
	<u>Tailrace Channel</u>						
	Channel Excavation	100,000	CY	9		900,000	
	<u>River Training Works</u>						
	River Bed Deepening	50,000	CY	10		500,000	
	Mech & Elec.		LS			5,700,000	
	<u>TOTAL RESERVOIR, DAM AND WATERWAYS</u>					871,600,000	



ESTIMATE SUMMARY

HAJ/APD
 PREPARED BY

14879-001

MF
 CHECKED BY

JOB NO.

CONCEPTUAL
 TYPE OF ESTIMATE

NOV. 1981

DATE

CHAKACHAMNA HYDROELECTRIC PROJECT

SHEET 10 OF 16

ALASKA POWER AUTHORITY

ALTERNATIVE C

PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>Turbines & Generators</u>						
	Turbines	4	EA	7,970,000	31,880,000		300 MW
	Generators	4	EA	5,660,000	22,640,000		
	Round-Off			(20,000)			
						54,500,000	
	<u>Accessory Electrical Equipment</u>						
	Equipment		LS			9,000,000	
	<u>Misc. Power Plant Equipment</u>						
	Crane Bridge	1	EA		900,000		
	Other Power Plant Equip.		LS		6,000,000		
						6,900,000	
	<u>Switchyard Structures</u>						
	Earthworks	15,000	CY	25	375,000		
	Concrete & Reinf. Steel	3,800	CY	640	2,432,000		
	Struc. Steel & Misc. Metals	225	TON	3,500	787,500		
	Round-Off				5,500		
						3,600,000	



ESTIMATE SUMMARY

HAI/APD
PREPARED BY

14879-001
JOB NO.

MF
CHECKED BY

NOV. 1981

CONCEPTUAL
TYPE OF ESTIMATE

CHAKACHAMNA HYDROELECTRIC PROJECT
PROJECT

DATE

SHEET 12 OF 16

ALTERNATIVE C ALASKA POWER AUTHORITY
PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>TRANSPORTATION FACILITIES</u>						
	Port Facilities						
	Causeway	19,600	CY	80	1,568,000		
	Trestle Piles	50	TON	11,300	565,000		
	Trestle Struct. Steel	110	TON	3,500	385,000		
	Trestle Reinf. Conc.	150	CY	700	105,000		L = 150 LF, ϕ 12", t = 1/2"
	Facilities - Allowance		LS		2,000,000		
	Round-Off				(23,000)		
						4,600,000	
	<u>Airport</u>						
	Earthwork	54,500	CY	16	872,000		
	Culverts	1,000	LF	65	65,000		
	Subbase & Base	55,000	CY	14	770,000		
	Building - Allowance		LS		300,000		
	Round-Off				(7,000)		
						2,000,000	



ESTIMATE SUMMARY

HAI/APD
PREPARED BY

14879-001

MP
CHECKED BY

JOB NO.

CONCEPTUAL

NOV. 1981

TYPE OF ESTIMATE

CHAKACHAMNA HYDROELECTRIC PROJECT

ALASKA POWER AUTHORITY

DATE

SHEET 13 OF 16

ALTERNATIVE C

PROJECT PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	<u>Access & Construction Roads</u>						
	Mile 0+00 to 18+00						
	Earthwork	175,000	CY	6.60	1,155,000		
	Culverts	1,500	LF	65	97,500		
	Bridges	1,400	SF	150	210,000		
	Subbase & Base	85,400	CY	15	1,281,000		
	Guard Rail	1,200	LF	25	30,000		
	Repair Existing Road	95,000	LF	10	950,000		
	Snow Fences	5,000	LF	35	175,000		
	Round-Off				1,500	3,900,000	
	Mile 18+00 to 35+00						
	Earthworks	1,465,000	CY	6.60	9,669,000		
	Culverts	3,600	LF	80	288,000		48" ϕ CMP
	Subbase & Base	165,000	CY	15	2,475,000		
	Guard Rail	13,000	LF	25	325,000		
	Repair Existing Road	16,000	LF	10	160,000		
	Snow Fences	1,000	LF	35	35,000		
	Round-Off				48,000	13,000,000	
	Mile 35+00 to 39+00						
	Earthwork	445,000	CY	8.30	3,693,500		
	Culverts	1,000	LF	80	80,000		48" ϕ CMP
	Bridge	9,000	SF	150	1,350,000		
	Subbase & Base	38,000	CY	15	570,000		
	Guard Rail	10,000	LF	27	270,000		
	Snow Fences	2,000	LF	35	70,000		
	Round-Off				(33,500)	6,000,000	



ESTIMATE SUMMARY

HAJ/APD
PREPARED BY

14879-001
JOB NO.

MF
CHECKED BY

NOV. 1981
DATE

CONCEPTUAL
TYPE OF ESTIMATE

CHAKACHAMNA HYDROELECTRIC PROJECT
PROJECT

SHEET 14 OF 16

ALASKA POWER AUTHORITY
PREPARED FOR

ALTERNATIVE C

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	Walkway To Gate Shaft						
	Earthwork	1,200	CY	20	24,000		
	Guard Rail	1,000	LF	25	25,000		
	Bridge	200	SF	150	30,000		
	Riprap	100	CY	35	3,500		
	Round-Off				17,500	100,000	
	Access Road to Tailrace Tunnel						
	Earthwork	56,000	CY	8	448,000		
	Culverts	100	LF	80	8,000		48" ϕ CMP
	Subbase & Base	2,500	CY	20	50,000		
	Guard Rail	600	LF	25	15,000		
	Round-Off				(21,000)	500,000	



ESTIMATE SUMMARY

HAJ/APD
PREPARED BY

14879-001
JOB NO.

MF
CHECKED BY

Nov. 1981
DATE

CONCEPTUAL
TYPE OF ESTIMATE

CHAKACHAMNA HYDROELECTRIC PROJECT
PROJECT

SHEET 15 OF 16

ALTERNATIVE C

ALASKA POWER AUTHORITY
PREPARED FOR

NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COSTS	AMOUNT	TOTALS	REMARKS
	Access Road to Downstream Power Tunnel						
	Earthwork	215,000	CY	9.80	2,107,000		
	Culverts	800	LF	80	64,000		
	Bridge	3,000	SF	150	450,000		
	Subbase & Base	10,000	CY	21	210,000		
	Guardrail	9,000	LF	32	288,000		
	Snowshed & Slide Fall	1,000	LF	800	800,000		
	Round-Off				(19,000)	3,900,000	
	Temporary Construction Roads						
	Earthwork	61,000	CY	6	366,000		
	Culverts	600	LF	80	48,000		
	Bridge	3,000	SF	150	450,000		
	Guardrail	2,000	LF	25	50,000		
	Round-Off				(14,000)	900,000	
	Road Maintenance						
	Summer Season	36	MO	120,000	4,320,000		
	Winter Season	24	MO	480,000	11,520,000		
	Round-Off				(40,000)	15,800,000	
	TOTAL ACCESS & CONSTRUCTION ROADS					44,100,000	

