SOUTHEAST ALASKA POWER AGENCY
Special Board Meeting

Southeast Alaska Power Agency | Ketchikan, Alaska

Agenda for Thursday, January 17, 2013 at 1:30 PM AST

Access No. 1-800-315-6338
Access Code: 73272#

1. Call to Order
   A. Roll call

2. Approval of the Agenda

3. New Business
   A. Appointment of Pro Tem Chairman
   B. Consideration and Approval of Excavator Purchase *(R&R Project No. 233-13, Boom Truck)*
   C. Consideration and Approval of Transfer of Contract from Long View Associates to McMillen, LLC (Swan Lake Pool Raise Project)
   D. Consideration and Approval of Contracts for Wrangell Reactor Switching Study *(R&R Project No. 236-13, Wrangell Reactor)*
   E. Consideration and Approval of Contract Award to Electric Power Systems, Inc. for Wrangell Reactor Replacement Project *(R&R Project No. 236-13, Wrangell Reactor)*
   F. Consideration and Approval of Contract Award to Delta Star *(R&R Project No. 226-13, XFMR Junction Boxes)*
   G. Executive Session - Discussions Re Request for Offers of Power and Energy
   H. SEAPA Mission Statement

4. Adjourn

Southeast Alaska Power Agency

DATE: January 15, 2013

TO: SEAPA Board of Directors

FROM: Steve Henson, Operations Manager

SUBJECT: Swan Lake Track Excavator

To recap a little history, in SEAPA's FY13 budget, $220,000 was approved by the board as Project No. 233-13 for a Boom Truck (see attached). Board discussions following the budget approval determined that a Track Excavator would be more fully utilized at the facility than a Boom Truck. The board elected to defer a motion on the purchase until the last board meeting held on December 11, 2012, at which time I advised the board that bids were being solicited for an excavator of appropriate size.

SEAPA's Procurement Policy requires that competitive bidding is generally required on procurement contracts over $100,000; however, Section 7.10 of the policy provides that used vehicles or equipment may be purchased without competitive bidding when the purchase has been determined by the General Manager (CEO) to be in the best interest of the Agency. Purchasing used equipment is challenging because of shipping costs and availability. Vendors typically face the challenge of providing quotes on equipment that they can only hold for a limited amount of time before an on-site customer asks to purchase that same piece of equipment. Used equipment tends to move very quickly.

Given the above considerations, we did not advertise for competitive bids on the track excavator. Three quotes were solicited and received (see attached), which are summarized as follows:

Vendor	Location	Amount
NC Machinery	Juneau	$123,076
Construction Machinery Industrial, LLC	Ketchikan	$135,500
Yukon Equipment, Inc.	Anchorage	$186,962

I recommend we purchase the track excavator currently located in Ketchikan from Construction Machinery as it has slightly fewer hours, a longer reach (swing clearance is within the tracks of the machine, which is better for work around the gatehouse structure at the Swan Lake dam when removing logs), physical wear is less than the lowest bid, and Construction Machinery offers local service and support.

SUGGESTED MOTION

I move to authorize staff to contract with Construction Machinery Industrial, LLC for a value not-to-exceed $135,500.00 for a used Hitachi ZX225LC-3 Excavator, Serial No. FF01U4Q208378, for use at the Swan Lake Hydroelectric Facility.

Attachments:

R&R Project Sheets
Three Equipment Quotes

R&R PROJECT SHEETS

SEAPA
Southeast Alaska Power Agency

FY2013
R&R PROJECT
R&R 233-13

Project Name: **Boom Truck**

Project Number: **233-13**

Project Description: Replace existing boom truck and Grove crane at Swan Lake

Project Cost Estimate: $220,000

Project Start Date: 07/01/2012

Project Completion Date: 06/30/2013

Project Discussion: A new boom truck with a man-basket can replace the existing boom truck and Grove crane at Swan Lake and eliminate the need for a jib boom. The 1982 boom truck is in need of extensive repair. The 1990 Grove crane has been red-tagged and $35,000 was approved for repairs (R&R 220-12). The purchase of a new jib boom for $60,000 had also been approved (R&R 205-11). No monies have been spent on either of these projects. The new boom truck would be used for log removal from the lake, power house high work, some substation work when the buss is de-energized and normal lifting duties at the project.

Project Cost Estimate Summary	Item	Cost
	Labor	$00
	Material	$220,000
	Design/Engineering	$00
	Project Mgt/Inspection	$00
	Total	$220,000

Project Cost Estimate Discussion:

Budget Amount Requested for FY2013: $220,000

Budget Amount Requested for FY2014: $0

Project Responsibility:
Project Manager: Steve Henson
Make/Model: Terex BT3063

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Southeast Alaska Power Agency

FY2013
R&R PROJECT
R&R 233-13

R&R Project / Budget Approval		
Submitted By	Steve Henson	05/23/12
CEO Approval	Dave Carlson	May 2012
Project Approval	SEAPA Board	06/27/12
Budget Approval FY13	SEAPA Board	06/27/12

R&R Project Contracts (Contract Description, number and award date)		

Attach Project Close-Out Summary upon completion of project.

NC MACHINERY QUOTE

Sharon Thompson

From: Steve Henson
Sent: Tuesday, January 08, 2013 10:44 AM
To: Kay Key; Sharon Thompson
Subject: FW: 2006 320C LU Cat in Juneau
Attachments: 320C LU Juneau 001.jpg; 320C LU Juneau 002.jpg; 320C LU Juneau 003.jpg; 320C LU Juneau 004.jpg; 320CLU.pdf; Erik Clark.vcf

Here's # two excavator.

-----Original Message-----
From: Clark, Erik [mailto:EClark@NCMachinery.com]
Sent: Friday, December 14, 2012 3:04 PM
To: Steve Henson
Subject: 2006 320C LU Cat in Juneau

Steve,

This is a 2006 model with 3,612 hours

It has the Cat tool control system on it- was is a great for switching from one tool to another. It is a simple push button system that adjusts the hydraulic system to the proper Hyd. Pressure & flow.

Over all the machine is in good condition We just used the machine in the last couple weeks to dig up our yard looking for a leak- everything ran well.

I will send you pictures of the 66" clean up bucket which is in Seattle.

There are two machines just like this one running around Ketchikan- Ketchikan Ready Mix has one (Harold) and Dig It Const (Robert) Both machines have been bullet proof- they are great machines tried & true+ reliable.

Price FOB for everything Ketchikan: $123,076.00

If we are in the running I will be happy to pull the maintenance records for your review- I attached a business card & spec book at the end of the pictures

320C LU HYDRAULIC EXCAVATOR
R BOOM, REACH 18'7"
STICK, 9'6"
LINKAGE, BUCKET, B-FAMILY
BUCKET 42" CAT/PSM WITH K SERIES TEETH
PLATE, NEW MACHINE CERTIFICAT
CAB,WITH POLYCARBONATE WINDOW
INSTRUCTIONS, ENGLISH
COMPARTMENT, STORAGE WITH LID
SEAT, KAB 527P/C
WIPER, LOWER WINDSHIELD
CHANGER, HAND CONTROL PATTERN
POWER SUPPLY, 12V-7A
ALARM, TRAVEL
BUMPER, RUBBER
CONTROL, FINE SWING

GUARD, BOTTOM HEAVY DUTY
CIRCUIT, TOOL CONTROL
INSTRUCTIONS, ANSI
STARTING, COLD WEATHER
WATER SEPARATOR
ANTIFREEZE, -50C (-58F)
ROLL ON-ROLL OFF
LIGHTS, WORKING,CAB MOUNTED, 2
COOLING, HIGH AMBIENT
LINES, AUX., REACH BOOM
AM/FM RADIO
HYDR WEDGE QC, S/N #BBM00514 CAT/PSM
P/L THUMB, S/N #PMZ02431 CAT/PSM

Thank you,
Erik Clark
321-2665


CAT
CATERPILLAR
DANGER
STAY CLEAR
SWING RADIUS
CAT
320C LU
CAT


Service

320C/320C L Utility
Hydraulic Excavator

CAT®

Weights		
Operating Weight - Std. Undercarriage*	22 300 kg	49,200 lb
Operating Weight - Long Undercarriage**	23 000 kg	50,700 lb

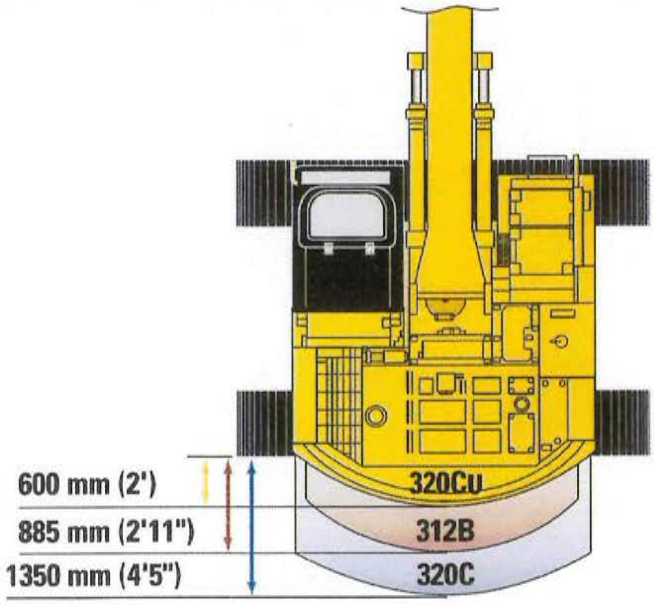
Engine		
Engine Model	Cat® 3066 T Diesel Engine	
Gross Power	107 kW	143 hp
Flywheel Power	103 kW	138 hp

*5.68 m (18'7") boom 2.9 m (9'7") stick w/600 mm (24") track

**5.68 m (18'7") boom 2.9 m (9'7") stick w/800 mm (32") track

320C L Utility Hydraulic Excavator

The 320C L Utility maintains the C Series characteristics and offers the same level of operating performance as the 320C L standard excavator with a smaller swing radius.



Performance

- 320C L Utility 2000 mm (6'7") tail swing radius falls within the track length.
- 320C L Utility features added flexibility for ideal use in urban construction, logging roads, and other space restricted sites.
- 320C L Utility offers the same level of performance as 320C L standard excavator.
- 320C L Utility uses a 70% heavier counterweight than 320C L, providing similar stability.

C Series Features

The 320C L Utility offers many of the same 320C L standard excavator features, including:

- Powerful and reliable Cat 3066 T six cylinder turbocharged engine.
- Exceptional efficiency and unmatched controllability from Caterpillar® hydraulics for consistently high performance in all applications.
- Strong, durable Caterpillar structural components and undercarriage.
- Proven flexibility and versatility from the 320C L reach boom, sticks and buckets.
- Redesigned interior operator station layout features increased operator space, exceptional comfort and ease of operation.
- Automatic boom and swing priority function selects the best mode, based on joystick movement.
- Factory-installed auxiliary hydraulics, including an optional hammer circuit, thumb circuit and tool control system.
- For added versatility, the Pin Grabber Plus Hydraulic Quick Coupler is also available.
- Longer service intervals and easier ground level maintenance.
- Complete customer support.

Technical Specifications

Engine

Engine Model	Cat 3066 T Diesel	
Gross Power	107 kW	143 hp
Flywheel Power	103 kW	138 hp
ISO 9249	103 kW	138 hp
SAE J1349	103 kW	138 hp
EEC 80/1269	103 kW	138 hp
Bore	102 mm	4.02 in
Stroke	130 mm	5.12 in
Displacement	6.37 L	389 in^3

- The 320C Utility meets worldwide Tier 2 emission requirements.
- Net Power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler, and alternator.
- No engine derating required below 2300 m (7,500 ft) altitude.

Weights

Operating Weight – Long Undercarriage	23 000 kg	50,700 lb
Operating Weight – Std. Undercarriage	22 300 kg	49,200 lb
Counterweight*	6514 kg	14,362 lb

* - including bolts and spacer

Service Refill Capacities

Fuel Tank Capacity	284 L	75 Gal
Cooling System	30 L	7.9 Gal
Engine Oil	30 L	7.9 Gal
Swing Drive	8 L	2.1 Gal
Final Drive (each)	10 L	2.6 Gal
Hydraulic System (including tank)	240 L	63 Gal
Hydraulic Tank	140 L	37 Gal

Hydraulic System

Main Implement System – Maximum Flow (2x)	205 L/min	54.2 gal/min
Max. Pressure – Implements (Full Time)	34 300 kPa	4,980 PSI
Max. Pressure – Travel	34 300 kPa	4,980 PSI
Max. Pressure – Swing	25 000 kPa	3,625 PSI
Pilot System – Maximum Flow	41 L/min	10.8 gal/min
Pilot System – Maximum Pressure	4120 kPa	600 PSI
Boom Cylinder – Bore	120 mm	5 in
Boom Cylinder – Stroke	1260 mm	50 in
Stick Cylinder – Bore	140 mm	5.5 in
Stick Cylinder – Stroke	1430 mm	56 in
B Family Bucket Cylinder – Bore	120 mm	5 in
B Family Bucket Cylinder – Stroke	1030 mm	41 in

Drive

Maximum Travel Speed	5.5 kph	3.4 mph
Maximum Drawbar Pull	196 kN	44,040 lb

Swing Mechanism

Swing Speed	11.5 RPM	
Swing Torque	61.8 kN.m	45,611 lb ft

Track

Standard w/Standard Undercarriage	600 mm	24 in
Standard w/Long Undercarriage	800 mm	32 in
Optional	600 mm	24 in
Optional	700 mm	28 in
Optional	800 mm	32 in

Standards

Meets the following standards:

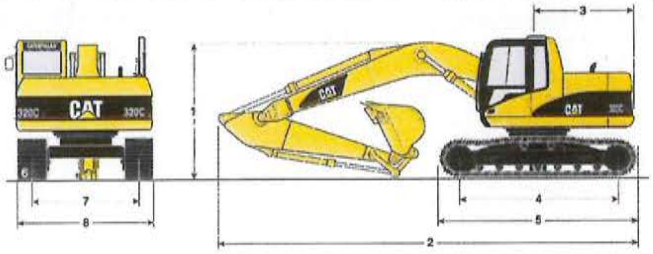
Brakes	SAE J1026 APR90
Cab/FOGS	SAE J1356 FEB88 ISO 10262

Sound Performance

The operator sound exposure Leq (equivalent sound pressure level) measured according to the work cycle procedures specified in ANSI/SAE J1166 OCT98 is 74 dB(A), for the cab offered by Caterpillar, when properly installed and maintained and tested with the doors and windows closed.

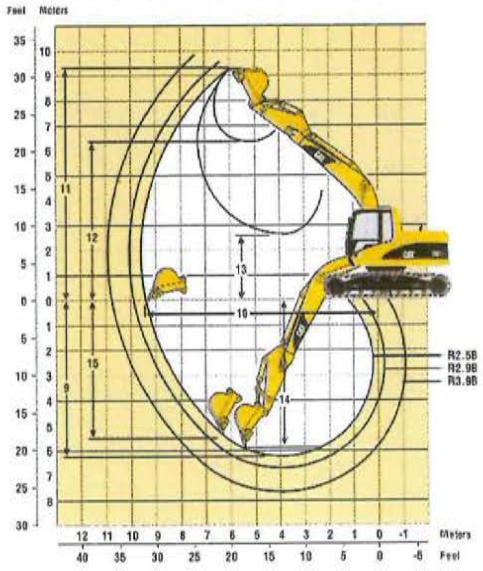
Dimensions

All dimensions are approximate.



Excavator Working Ranges

Reach (R) Boom configuration



Dimensions

Reach Boom 5.68 m (18'7")	R3.9B (12'8") Stick	R2.9B (9'7") Stick	R2.5B (8'2") Stick
1 Shipping height	3430 mm (11'3")	3010 mm (9'11")	3010 mm (9'11")
2 Shipping length: Standard	8710 mm (28'7")	8730 mm (28'8")	8750 mm (28'8")
Long	8900 mm (29'2")	8920 mm (29'3")	8940 mm (29'4")
3 Tail swing radius	2000 mm (6'7")	2000 mm (6'7")	2000 mm (6'7")
4 Length to center of rollers: Standard	3265 mm (10'9")	3265 mm (10'9")	3265 mm (10'9")
Long	3650 mm (12'0")	3650 mm (12'0")	3650 mm (12'0")
5 Track length: Standard	4075 mm (13'4")	4075 mm (13'4")	4075 mm (13'4")
Long	4455 mm (14'7")	4455 mm (14'7")	4455 mm (14'7")
6 Ground clearance	475 mm (1'7")	475 mm (1'7")	475 mm (1'7")
7 Track gauge: Standard	2200 mm (7'3")	2200 mm (7'3")	2200 mm (7'3")
Long	2380 mm (7'10")	2380 mm (7'10")	2380 mm (7'10")
8 Transport width	**800 mm (32") shoes**	**700 mm (28") shoes**	**600 mm (24") shoes**
Standard	3000 mm (9'10")	2900 mm (9'6")	2800 mm (9'2")
Long	3180 mm (10'5")	3080 mm (10'1")	2980 mm (9'9")

Working Ranges

Stick Length	R3.9B (12'8")	R2.9B (9'7")	R2.5B (8'2")
Bucket	1 m³ (1.3 yd³)	1 m³ (1.3 yd³)	1 m³ (1.3 yd³)
9 Maximum Digging Depth	7.66 m (25'1")	6.72 m (22'0")	6.33 m (20'9")
10 Maximum Reach at Ground Level	10.71 m (35'2")	9.86 m (32'4")	9.46 m (31'0")
11 Maximum Cutting Height	9.82 m (32'2")	9.49 m (31'1")	9.30 m (30'6")
12 Maximum Loading Height	6.85 m (22'5")	6.50 m (21'4")	6.30 m (20'8")
13 Minimum Loading Height	1.23 m (4'0")	2.17 m (7'11")	2.59 m (8'5")
14 Maximum Depth Cut for 2440 mm (8') Level Bottom	7.31 m (24'0")	6.37 m (20'10")	5.95 m (19'6")
15 Maximum Vertical Wall Digging Depth	6.86 m (22'6")	6.05 m (19'10")	5.65 m (18'6")

Weights	320C U		320C LU	
Operating Weight	600 mm (24") Shoes		800 mm (32") Shoes	
Reach Boom	kg	lb	kg	lb
Stick Options: 3.9 m (12'8")	22 600	49,800	23 200	51,100
2.9 m (9'7")	22 300	49,200	23 000	50,700
2.5 m (8'2")	22 300	49,200	23 000	50,700

Bucket Specifications
320C Utility (Standard Undercarriage) and 320C L Utility (Long Undercarriage)

Contact your Caterpillar dealer for special bucket requirements.

B Buckets for Reach Linkage	Capacity* m³	Capacity* yd³	Width mm	Width in	Tip Radius mm	Tip Radius in	Weight (without tips) kg	Weight (without tips) lb	Teeth Qty	320C – Reach Boom Stick R3.9B (12'8")	320C – Reach Boom Stick R2.9B (9'7")	320C – Reach Boom Stick R2.5B (8'2")	320C L – Reach Boom Stick R3.9B (12'8")	320C L – Reach Boom Stick R2.9B (9'7")	320C L – Reach Boom Stick R2.5B (8'2")
General Purpose (GP)	0.70	0.88	775	30	1626	64.0	665	1463	4	●	●	●	●	●	●
	0.90	1.12	932	36	1626	64.0	741	1630	5	○	●	●	●	●	●
	1.10	1.50	1082	42	1626	64.0	777	1710	5	∴	○	◒	○	●	●
	1.30	1.75	1230	48	1626	64.0	907	1995	6	–	∴	○	∴	○	◒
Heavy Duty (HD)	0.45	0.62	625	24	1563	61.5	639	1405	3	●	●	●	●	●	●
	0.60	0.75	775	30	1563	61.5	691	1520	4	●	●	●	●	●	●
	0.80	1.00	932	36	1563	61.5	765	1683	5	◒	●	●	●	●	●
	1.00	1.25	1082	42	1563	61.5	814	1790	5	∴	◒	●	◒	●	●
	1.10	1.50	1230	48	1563	61.5	942	2072	6	–	○	○	∴	◒	●
	1.10	1.50	1230	48	1563	61.5	912	2007	6	–	○	○	∴	◒	●
	1.30	1.75	1377	54	1563	61.5	1003	2206	7	–	∴	∴	∴	○	◒
	1.30	1.75	1377	54	1563	61.5	968	2130	7	–	∴	○	∴	○	◒
Power Bucket (PB)	0.83	1.09	932	36	1406	55.0	797	1757	5	○	●	●	◒	●	●
	1.0	1.31	1082	42	1406	55.0	863	1903	5	∴	◒	●	○	●	●
	1.17	1.53	1230	48	1406	55.0	936	2064	6	–	○	○	∴	◒	◒
Heavy Duty Rock (HDR)	0.45	0.62	625	24	1563	61.5	727	1600	3	●	●	●	●	●	●
	0.60	0.75	775	30	1563	61.5	845	1860	4	●	●	●	●	●	●
	0.80	1.00	932	36	1563	61.5	864	1900	5	○	●	●	●	●	●
	1.00	1.25	1082	42	1563	61.5	912	2006	5	∴	◒	●	◒	●	●
Ditch Cleaning (DC)	0.90	1.12	1422	56	1143	45.0	707	1555	0	◒	●	●	●	●	●
	1.10	1.50	1727	68	1143	45.0	786	1730	0	∴	○	◒	○	●	●

Assumptions for maximum material density rating:
1. Front linkage fully extended at ground line
2. Bucket curled
3. 100% bucket fill factor

* - Based on SAE J296, some calculations of capacity specs fall on borderlines. Rounding may allow two buckets to have the same English rating, but different metric ratings.

● 2100 kg/m³ (3,500 lbs/yd³) max material density
◒ 1800 kg/m³ (3,000 lbs/yd³) max material density
○ 1500 kg/m³ (2,500 lbs/yd³) max material density
∴ 1200 kg/m³ (2,000 lbs/yd³) max material density

320C L Utility Bucket and Stick Forces

Power Buckets

Stick	R3.9B (12'8")		R2.9B (9'7")		R2.5B (8'2")	
Bucket Digging Force (ISO)	159 kN	35,800 lb	159 kN	35,800 lb	159 kN	35,800 lb
Stick Digging Force (ISO)	86 kN	19,300 lb	103 kN	23,100 lb	117 kN	26,300 lb
Bucket Digging Force (SAE)	142 kN	31,800 lb	142 kN	31,800 lb	142 kN	31,800 lb
Stick Digging Force (SAE)	84 kN	18,900 lb	100 kN	22,400 lb	113 kN	25,400 lb

HD and HDR Buckets

Stick	R3.9B (12'8")		R2.9B (9'7")		R2.5B (8'2")	
Bucket Digging Force (ISO)	145 kN	32,500 lb	145 kN	32,500 lb	145 kN	32,500 lb
Stick Digging Force (ISO)	84 kN	18,900 lb	100 kN	22,500 lb	113 kN	25,500 lb
Bucket Digging Force (SAE)	128 kN	28,900 lb	128 kN	28,900 lb	128 kN	28,900 lb
Stick Digging Force (SAE)	82 kN	18,500 lb	97 kN	21,800 lb	110 kN	24,600 lb

Reach Boom Lift Capacities

 Load Point Height

 Load at Maximum Reach

 Load Radius Over Front

 Load Radius Over Side

R2.9B STICK – 2900 mm (9'7")
BUCKET – 1.0 m³ (1.3 yd³)

UNDERCARRIAGE – Long
SHOES – 800 mm (32") triple grouser

BOOM – 5680 mm (18'7")

		1.5 m (5.0 ft)		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)				
														m ft
7.5 m 25.0 ft	kg lb											*1800 *3950	*1800 *3950	7.76 25.11
6.0 m 20.0 ft	kg lb									*3300 *7300	*3300 *7300	*1700 *3700	*1700 *3700	8.77 28.62
4.5 m 15.0 ft	kg lb							*4550 *9800	*4550 *9800	*4200 *9100	3250 6950	*1700 *3700	*1700 *3700	9.37 30.66
3.0 m 10.0 ft	kg lb			*11 250 *23,850	*11 250 *23,850	*6950 *14,900	*6950 *14,900	*5350 *11,550	4650 10,000	*4550 *9950	3150 6750	*1750 *3800	*1750 *3800	9.64 31.60
1.5 m 5.0 ft	kg lb					*8600 *18,550	6850 14,750	*6200 *13,400	4400 9450	*5000 *10,850	3050 6500	*1900 *4150	*1900 *4150	9.61 31.54
Ground Line	kg lb			*5200 *12,000	*5200 *12,000	*9600 *20,750	6500 13,950	*6850 *14,800	4200 9000	5100 10,900	2950 6300	*2150 *4700	2050 4450	9.30 30.50
–1.5 m –5.0 ft	kg lb	*5200 *11,600	*5200 *11,600	*8800 *20,050	*8800 *20,050	*9800 *21,200	6400 13,700	*7050 *15,250	4100 8800	5050 10,800	2900 6200	*2550 *5600	2300 5050	8.66 28.36
–3.0 m –10.0 ft	kg lb	*9150 *20,500	*9150 *20,500	*13 550 *29,250	12 800 27,350	*9250 *20,000	6400 13,750	*6750 *14,450	4100 8800			*3300 *7300	2900 6450	7.60 24.79
–4.5 m –15.0 ft	kg lb			*11 000 *23,550	*11 000 *23,550	*7700 *16,350	6600 14,200					*3900 *8650	*3900 *8650	5.97 19.59

* Limited by hydraulic capacity rather than tipping load. The above loads are in compliance with SAE hydraulic excavator lift capacity rating standard J1097. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be deducted from the above lifting capacities.

R2.9B STICK – 2900 mm (9'7")
BUCKET – 1.0 m³ (1.3 yd³)

UNDERCARRIAGE – Standard
SHOES – 600 mm (24") triple grouser

BOOM – 5680 mm (18'7")

		1.5 m (5.0 ft)		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)				
														m ft
7.5 m 25.0 ft	kg lb											*1800 *3950	*1800 *3950	7.76 25.11
6.0 m 20.0 ft	kg lb									*3300 *7300	2900 6400	*1700 *3700	*1700 *3700	8.77 28.62
4.5 m 15.0 ft	kg lb							*4550 *9800	4250 9100	*4200 *9100	2800 5950	*1700 *3700	*1700 *3700	9.37 30.66
3.0 m 10.0 ft	kg lb			*11 250 *23,850	*11 250 *23,850	*6950 *14,900	6450 13,850	*5350 *11,550	4000 8600	4300 9250	2700 5750	*1750 *3800	1650 3650	9.64 31.60
1.5 m 5.0 ft	kg lb					*8600 *18,550	5850 12,650	6050 13,000	3750 8100	4200 9000	2600 5500	*1900 *4150	1600 3550	9.61 31.54
Ground Line	kg lb			*5200 *12,000	*5200 *12,000	9300 19,950	5550 11,850	5850 12,550	3600 7650	4100 8750	2500 5300	*2150 *4700	1700 3700	9.30 30.50
–1.5 m –5.0 ft	kg lb	*5200 *11,600	*5200 *11,600	*8800 *20,050	*8800 *20,050	9150 19,600	5400 11,600	5750 12,300	3500 7450	4050 8650	2450 5200	*2550 *5600	1900 4200	8.66 28.36
–3.0 m –10.0 ft	kg lb	*9150 *20,500	*9150 *20,500	*13 550 *29,250	10 700 22,900	9200 19,700	5450 11,650	5750 12,350	3500 7450			*3300 *7300	2450 5450	7.60 24.79
–4.5 m –15.0 ft	kg lb			*11 000 *23,550	*11 000 *23,550	*7700 *16,350	5600 12,100					*3900 *8650	3800 8300	5.97 19.59

* Limited by hydraulic capacity rather than tipping load. The above loads are in compliance with SAE hydraulic excavator lift capacity rating standard J1097. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be deducted from the above lifting capacities.

Reach Boom Lift Capacities

 Load Point Height

 Load at Maximum Reach

 Load Radius Over Front

 Load Radius Over Side

R3.9B STICK – 3900 mm (12'8")
BUCKET – 1.0 m³ (1.3 yd³)

UNDERCARRIAGE – Long
SHOES – 800 mm (32") triple grouser

BOOM – 5680 mm (18'7")

		1.5 m (5.0 ft)		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)		9.0 m (30.0 ft)				
																m ft
7.5 m 25.0 ft	kg lb									*2550 *5550	*2550 *5550			*1400 *3050	*1400 *3050	8.83 28.69
6.0 m 20.0 ft	kg lb									*3100 *6800	*3100 *6800			*1300 *2850	*1300 *2850	9.71 31.72
4.5 m 15.0 ft	kg lb									*3450 *7500	3300 7000	*2400 *5300	2250 4950	*1300 *2850	*1300 *2850	10.24 33.54
3.0 m 10.0 ft	kg lb							*4450 *9650	*4450 *9650	*3900 *8500	3150 6750	*3100 *6050	2200 4600	*1350 *2950	*1350 *2950	10.48 34.38
1.5 m 5.0 ft	kg lb			*9200 *22,250	*9200 *22,250	*7400 *15,900	7000 15,050	*5450 *11,700	4400 9450	*4450 *9600	3000 6400	*3700 *7200	2100 4450	*1500 *3250	*1500 *3250	10.46 34.33
Ground Line	kg lb			*6500 *14,850	*6500 *14,850	*8800 *19,000	6500 13,900	*6250 *13,500	4150 8850	*4900 *10,650	2850 6100	3700 *6950	2050 4300	*1650 *3650	1600 3550	10.18 33.40
–1.5 m –5.0 ft	kg lb	*4400 *9800	*4400 *9800	*8200 *18,650	*8200 *18,650	*9500 *20,550	6200 13,300	*6750 *14,600	3950 8500	4900 10,500	2750 5900			*2000 *4350	1800 3950	9.61 31.50
–3.0 m –10.0 ft	kg lb	*7200 *16,100	*7200 *16,100	*11 450 *26,100	*11 450 *26,100	*9450 *20,450	6150 13,150	*6800 *14,650	3900 8350	4900 10,450	2750 5850			*2550 *5600	2150 4800	8.69 28.40
–4.5 m –15.0 ft	kg lb	*10 700 *24,100	*10 700 *24,100	*12 800 *27,500	12 550 26,900	*8600 *18,500	6250 13,400	*6150 *13,100	3950 8500					*3650 *8250	3000 6800	7.27 23.56
–6.0 m –20.0 ft	kg lb			*9400 *19,800	*9400 *19,800	*6350 *13,100	*6350 *13,100							*4800 *10,550	*4800 *10,550	5.37 17.15

* Limited by hydraulic capacity rather than tipping load. The above loads are in compliance with SAE hydraulic excavator lift capacity rating standard J1097. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be deducted from the above lifting capacities.

R3.9B STICK – 3900 mm (12'8")
BUCKET – 1.0 m³ (1.3 yd³)

UNDERCARRIAGE – Standard
SHOES – 600 mm (24") triple grouser

BOOM – 5680 mm (18'7")

		1.5 m (5.0 ft)		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)		9.0 m (30.0 ft)				
																m ft
7.5 m 25.0 ft	kg lb									*2550 *5550	*2550 *5550			*1400 *3050	*1400 *3050	8.83 28.69
6.0 m 20.0 ft	kg lb									*3100 *6800	*2950 6250			*1300 *2850	*1300 *2850	9.71 31.72
4.5 m 15.0 ft	kg lb									*3450 *7500	2800 6000	*2400 *5300	1900 4150	*1300 *2850	*1300 *2850	10.24 33.54
3.0 m 10.0 ft	kg lb							*4450 *9650	4100 8750	*3900 *8500	2700 5750	3050 *6050	1800 3800	*1350 *2950	1300 2850	10.48 34.38
1.5 m 5.0 ft	kg lb			*9200 *22,250	*9200 *22,250	*7400 *15,900	6000 12,900	*5450 *11,700	3750 8050	4150 8900	2550 5400	3000 6350	1750 3650	*1500 *3250	1250 2750	10.46 34.33
Ground Line	kg lb			*6500 *14,850	*6500 *14,850	*8800 *19,000	5500 11,800	5800 12,400	3500 7500	4000 8550	2400 5100	2900 6200	1650 3550	*1650 *3650	1300 2850	10.18 33.40
–1.5 m –5.0 ft	kg lb	*4400 *9800	*4400 *9800	*8200 *18,650	*8200 *18,650	9000 19,250	5250 11,200	5600 12,000	3350 7100	3900 8350	2300 4900			*2000 *4350	1450 3200	9.61 31.50
–3.0 m –10.0 ft	kg lb	*7200 *16,100	*7200 *16,100	*11 450 *26,100	10 200 21,850	8900 19,100	5150 11,050	5550 11,850	3250 7000	3850 8300	2250 4850			*2550 *5600	1800 3950	8.69 28.40
–4.5 m –15.0 ft	kg lb	*10 700 *24,100	*10 700 *24,100	*12 800 *27,500	10 450 22,450	*8600 *18,500	5250 11,300	5600 12,000	3350 7150					*3650 *8250	2550 5700	7.27 23.56
–6.0 m –20.0 ft	kg lb			*9400 *19,800	*9400 *19,800	*6350 *13,100	5550 11,950							*4800 *10,550	4250 9750	5.37 17.15

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320C L Utility Hydraulic Excavators

Reach Boom Lift Capacities

 Load Point Height

 Load at Maximum Reach

 Load Radius Over Front

 Load Radius Over Side

R2.5B STICK – 2500 mm (8'2")
BUCKET – 1.0 m³ (1.3 yd³)

UNDERCARRIAGE – Long
SHOES – 800 mm (32") triple grouser

BOOM – 5680 mm (18'7")

		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)				
												m ft
7.5 m 25.0 ft	kg lb									*2450 *5400	*2450 *5400	7.24 23.39
6.0 m 20.0 ft	kg lb					*4350 *9450	*4350 *9450			*2300 *5050	*2300 *5050	8.34 27.17
4.5 m 15.0 ft	kg lb					*4900 *10,600	*4850 10,350	*4450 *9700	3250 6900	*2300 *5000	*2300 *5000	8.97 29.34
3.0 m 10.0 ft	kg lb			*7500 *16,050	7300 15,700	*5650 *12,250	4600 9850	*4800 *10,450	3150 6700	*2350 *5200	2150 4750	9.25 30.32
1.5 m 5.0 ft	kg lb			*9000 *19,400	6750 14,500	*6450 *13,950	4350 9350	*5200 11,100	3050 6450	*2550 *5600	2100 4600	9.22 30.27
Ground Line	kg lb			*9750 *21,100	6450 13,850	*7000 *15,100	4200 9000	5100 10,900	2950 6300	*2850 *6300	2200 4850	8.89 29.17
−1.5 m −5.0 ft	kg lb	*9150 *20,900	*9150 *20,900	*9750 *21,050	6400 13,700	*7050 *15,250	4100 8850	5050 11,150	2900 6400	*3400 *7500	2550 5600	8.21 26.90
−3.0 m −10.0 ft	kg lb	*12 700 *27,550	*12 700 *27,550	*8950 *19,350	6450 13,900	*6500 *13,900	4150 8950			*4350 *9450	3300 7350	7.07 23.04
−4.5 m −15.0 ft	kg lb	*9800 *20,850	*9800 *20,850	*6900 *14,550	6700 14,450					*5400 *11,800	5250 *11,800	5.32 17.16

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UNDERCARRIAGE – Standard
SHOES – 600 mm (24") triple grouser

BOOM – 5680 mm (18'7")

		3.0 m (10.0 ft)		4.5 m (15.0 ft)		6.0 m (20.0 ft)		7.5 m (25.0 ft)				
												m ft
7.5 m 25.0 ft	kg lb									*2450 *5400	*2450 *5400	7.24 23.39
6.0 m 20.0 ft	kg lb					*4350 *9450	*4350 9300			*2300 *5050	*2300 *5050	8.34 27.17
4.5 m 15.0 ft	kg lb					*4900 *10,600	4200 8950	4400 9400	2750 5900	*2300 *5000	2000 4400	8.97 29.34
3.0 m 10.0 ft	kg lb			*7500 *16,050	6300 13,550	*5650 *12,250	3950 8500	4300 9150	2650 5700	*2350 *5200	1800 3950	9.25 30.32
1.5 m 5.0 ft	kg lb			*9000 *19,400	5750 12,400	6000 12,900	3750 8000	4200 8950	2550 5450	*2550 *5600	1750 3850	9.22 30.27
Ground Line	kg lb			9250 19,800	5450 11,750	5850 12,500	3550 7650	4100 8750	2500 5300	*2850 *6300	1850 4050	8.89 29.17
−1.5 m −5.0 ft	kg lb	*9150 *20,900	*9150 *20,900	9150 19,600	5400 11,600	5750 12,350	3500 7500	4050 8950	2450 5400	*3400 *7500	2150 4700	8.21 26.90
−3.0 m −10.0 ft	kg lb	*12 700 *27,550	10 800 23,100	*8950 *19,350	5500 11,800	5800 12,450	3550 7600			*4350 *9450	2800 6200	7.07 23.04
−4.5 m −15.0 ft	kg lb	*9800 *20,850	*9800 *20,850	*6900 *14,550	5750 12,350					*5400 *11,800	4450 10,100	5.32 17.16

* Limited by hydraulic capacity rather than tipping load. The above loads are in compliance with SAE hydraulic excavator lift capacity rating standard J1097. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be deducted from the above lifting capacities.

www.CAT.com

AEHQ5417-02 (11-02)
(NACD/CACO)

CATERPILLAR®

CONSTRUCTION MACHINERY QUOTE

Construction Machinery Industrial, LLC
5280 Commercial Blvd.
Juneau, AK. 99801
Ph: (907) 780-4030 • Fax: (907) 780-4800

SALES PROPOSAL

Proposal No. EWC 12.8.2012 HE1286
Page 1 of 1
Date: December 8th, 2012
Issued By: Eric Cole

(907) 723-6930 Mobile

TO: ***Southeast Alaska Power Agency*** **ATTENTION:** ***Bob Sivertsen***

We at Construction Machinery Industrial, LLC are pleased to quote the following equipment for your review.

1 (One) Used Hitachi ZX225LC-3 Excavator, S/N FF01U4Q208378, CMI Unit # HE12186, with 3,470.3 hours, and Equipped with the Following Features and Options:

- **Isuzu AI-4HK1XYSA-02 Turbocharged Diesel Engine with 159 Horsepower**
- **Standard One-Piece Boom**
- **9' 7" Arm - **<u>This is the Longer Arm Option</u>**
- **32"Triple Grouser Shoes on 'Long-Crawler' Track Frame (has an extra roller)**
- **Deluxe Operator's Station with Heater and Air Conditioning**
- **Extra Work Lamps, Front and Rear**
- **Double-Acting Auxiliary Hydraulic Control (Breaker, Compactor, Etc)**
- **48" PSM HD Digging Bucket**
- **66" PSM Cleanout Bucket**
- **PSM Progressive Link Style Thumb**
- **Hydraulic Pin-Grabber Quick Coupler**

Total Purchase Price F.O.B. Ketchikan, AK:..... **$ 135,500.00**

Machine is currently available at the CMI Ward Cove office location.

This quotation is valid for 30 days. Subject to Prior Sale. Does NOT include any applicable taxes.

Construction Machinery Industrial, LLC
By _____
Title _____

Accepted by:
_____
Date _____

HITACHI

ZAXIS 225US LC-3

- **Engine Net Power:** 159 hp (118 kW) @ 2,000 rpm
- **Operating Weight:** 53,936 lb. (24 487 kg)
- **Backhoe Bucket:** 1.09 cu. yd. (0.83 m³)

Construction Machinery Industrial, LLC

Eric Cole
Equip. Sales/Product Support

5302 Commercial Blvd.
Juneau, Alaska 99801
Main: (907) 780-4030
Toll Free: (888) 399-4030

Direct: (907) 780-4037
Fax: (907) 780-4800
Cell: (907) 723-6930
Email: e.cole@cmiak.com

YUKON EQUIPMENT QUOTE

SERVING ALL OF ALASKA
Arctic Circle
SINCE 1945

Yukon Equipment, Inc.

Anchorage
2020 E 3rd Ave.
(907)277-1541

Fairbanks
3511 International St.
(907)457-1541

www.yukoneq.com

Quote Date: 12/18/2012
Prepared By: Earl P Lackey
Direct Line: (907) 355-1541
Fax: (907) 376-1557
Email: earl@yukoneq.com

QUOTE FOR: S.E. Alaska Power Authority
CONTACT: Steve Henson
PHONE: (907) 228-2281
EMAIL:shensen@seapahydro.org

QUOTATION

VALID FOR 30 DAYS

We at Yukon Equipment, Inc. are pleased to offer for your consideration our used 2010 Case 210B excavator equipped as follows:

Case 210B, long carriage, tier 3 excavator

28" 3 bar steel track shoes

Double acting Bi-Directional auxiliary hydraulics for hammer or thumb

Control pattern selector valve

Sun visor

18'8" boom and 9'8" stick

Hydraulic operated quick coupler

42" Heavy Duty bucket with teeth

66" smooth lip bucket with bolt on cutting edge

Hydraulic pro link thumb

Weight 47,400 pounds

1255 hours on the meter

Net price F.O.B. Fairbanks, AK **$186,962.00**

Accepted:_____ Date:_____


CASE
CASE


CASE
CX210B
CASE

Southeast Alaska Power Agency

DATE: January 15, 2013

TO: SEAPA Board of Directors

FROM: Eric Wolfe, Director of Special Projects

SUBJECT: Transfer of Sole Sourced Contract for Environmental and License Amendment Consulting for Swan Lake Pool Raise Project

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In a special board meeting held July 3, 2012, the board authorized the sole sourcing of a contract for a value not-to-exceed $332,920 to Long View Associates, Inc. The work was for environmental and license amendment consultation for the Swan Lake Pool Raise Project. Task Order No. 13-01 was issued to Long View for the work. In early December 2012, Long View Associates advised staff that McMillen, LLC was going to acquire Long View Associates effective January 1, 2013. For obvious reasons articulated in the July 3, 2012 board meeting to sole source the work, our concern was that Long View Associates' personnel continue the work. McMillen, LLC has written a letter to us assuring that Long View Associates' personnel will continue the work (see attached). We have contracted with McMillen on other projects and have found them to be reputable. Based on McMillen's assurance and Long View's concurrence, we would like to contract directly with McMillen, LLC for the remaining work left on Task Order No. 13-01 for the remaining $306,678 of work to be done under the contract.

Everything approved during the July 3 board meeting would be the same except a new Task Order would be issued directly to McMillen, LLC. It is essential given the work that has already taken place with the Agencies and deadlines we are under for the work to continue without any delays. A meeting with all of the Agencies is currently scheduled for February 27, 2013. We remain on schedule and under budget for this project relative to the scope schedule and budget, which is also attached and previously provided to the Board in June 2012. Staff is available to elaborate more on that during the board meeting.

SUGGESTED MOTION

I move to authorize staff to enter into an agreement with McMillen, LLC for a value not-to-exceed $306,678 for project management and license amendment consulting work for the Swan Lake Pool Raise Project.

Attachments:

01/08/2013 Letter from McMillen
Scope Schedule and Budget

MCMILLEN

DESIGN with Vision. BUILD with Integrity.

January 8, 2013

Sharon E. Thompson, Executive Assistant
Southeast Alaska Power Agency
1900 First Avenue, Suite 318
Ketchikan, Alaska 99901

Re: Long View Associates Personnel on Task Order No. 13-03 to CSA SEAPA-12-05Advice, Research & Review Services Re FERC Related Matters

Dear Mr. Hogan:

McMillen, LLC is excited to announce that as of January 1, 2013 we acquired Long View Associates. With regard to the contract referenced above we want to assure Southeast Alaska Power Agency that the personnel originally assigned from Long View will continue to be the same personnel that will be working on that task order. The only difference in executing this work is contractually it will be under McMillen, LLC. Everything else will remain the same.

If you have questions or need additional information, please contact me at (208) 342-4214 or on my cell phone at (208) 869-4007.

Sincerely,

Mara McMillen

Mara McMillen
President

Cc: File

1401 Shoreline Drive, Suite 100, Boise, Idaho 83702
phone (208) 342-4214 fax (208) 342-4216

SEAPA
Southeast Alaska Power Agency

Internal Memorandum

June, 2012

To:Dave Carlson, Steve Henson

From: Eric Wolfe

RE: The proposed Swan Lake reservoir expansion project scope, schedule, and budget.

We have investigated three nominal full pool reservoir increases at Swan Lake to increase our ability to off-set future winter diesel generation. The options investigated were 10 ft., 15 ft., and 20 ft. increases. At this time, the option with the best over-all benefit is the 15 ft option. Based on load and inflow forecasts we expect winter diesel generation to escalate from 2,000 MWh to over 30,000 MWh over the next 25 years even with the addition of the licensed Whitman Project. This memo is a brief summary document that outlines scope, schedule, and budget for the project.Details about the costs and benefits of the project can be found in the following documents available upon request in paper or digital form, or can be down-loaded from our web-site:

McMillen Engineering Feasibility Study
LongView Associates License Amendment planning summary
SEAPA benefit and Cost Study

Two primary tasks are required prior to construction; 1)we have to file and then be granted a non-capacity license amendment, and 2) we have to design dam modifications to satisfy FERC dam safety criteria. Both of these tasks require extensive agency review and project management time.

Scope-License Amendment

An amendment to modify the Swan Lakelicense would be considered by FERC to be non-capacity amendment, since the nameplate capacity of the Project will not change. However, it involves a modification of an existing dam that will "result in a significant change in the normal maximum surface area or elevation of an existing impoundment". Therefore pursuant to 18 CFR §4.38(a) (4) (v), three stage consultation is required. Three stage consultation is generally defined as follows:

- Stage 1 – Initiate consultation through the release of an Initial Consultation Document (ICD). Stage 1 ends when agencies have provided the applicant with a list of study requests. SEAPA is planning on filing the ICD with FERC in the late fall of 2012. Copies of the ICD will also be sent to Indian tribes and made available to the Public.
- Stage 2 – Develop information (e.g., analysis of existing information, studies, etc.) to address the questions identified in Stage 1. Stage 2 ends when the applicant has filed the amendment request with FERC.
- Stage 3 – FERC conducts post-filing consultation with agencies. This stage concludes with issuance of an amended license.

This process, from the filing of the initial consultation document to the issuance of the amended license could take 3 years. It may be possible to skip or truncate certain steps, which SEAPA would like to explore with the agencies, provided sufficient information can be developed in advance to allow all parties to knowledgably discuss the action and its implications. An exploratory meeting was held in Ketchikan with the agencies to discuss a truncated process; the response was favorable with the

agencies requesting study plans as soon as possible. SEAPA's project manager, Longview Associates distributed the study plans for review/comment during the second week of June.

Scope-License Amendment Project Management

Task 6 - Prep. for FERC Process	Task 7 - FERC Process Support	Task 8 - Parallel Processes
Complete Due Diligence	Project Management	DNR - Water Rights
Develop Style Guide and ICD Outline	Print, Distribute ICD / File with FERC joint Mtg #1 & Consult Rcds	DNR - Coastal Zone Questionnaire
Draft ICD to 80% Completeness	Review ICD Comments / Study Requests	DNR - Department of Forestry
Outline License Exhibits	Coordination with Environmental Contractor & PM studies	DNR - Leasing
Final ICD and Supplemental ICD	Review and respond to agency comments on study reports	ADF&G - Fish Habitat Permit
Develop Distribution List	Draft License Application (DLA)&Exbits	USACE - 404 Permit
Meeting with Agencies & Site Visit	Draft NEPA documents (APEA)	Section 106 Consultation
Communication Protocol	Manage Distribution of DLA / Filing	USFS - Special Use
FERC Regulatory Meeting	Joint Meeting #2	
Project Management	Revise DLA and File w/ Final FLA with FERC & Inf. Req	
Project Website	Respond/Coordinate license amendment review and response	

Scope-Environmental Studies

Environmental Studies
Project Management and Mtgs
Initial Site Assess. & Field Prep.
Fish Commun. & Aquatic Hab. Stdy
Spawning Assess.
Tributary Access Evaluation
Cultural Resources Study
Soils Study
Veg,. Study (RTE Plants, Invasives, Wetlands)
Wildlife Study (General Surveys-Gos)
Permitting and Reporting

Scope-Engineering

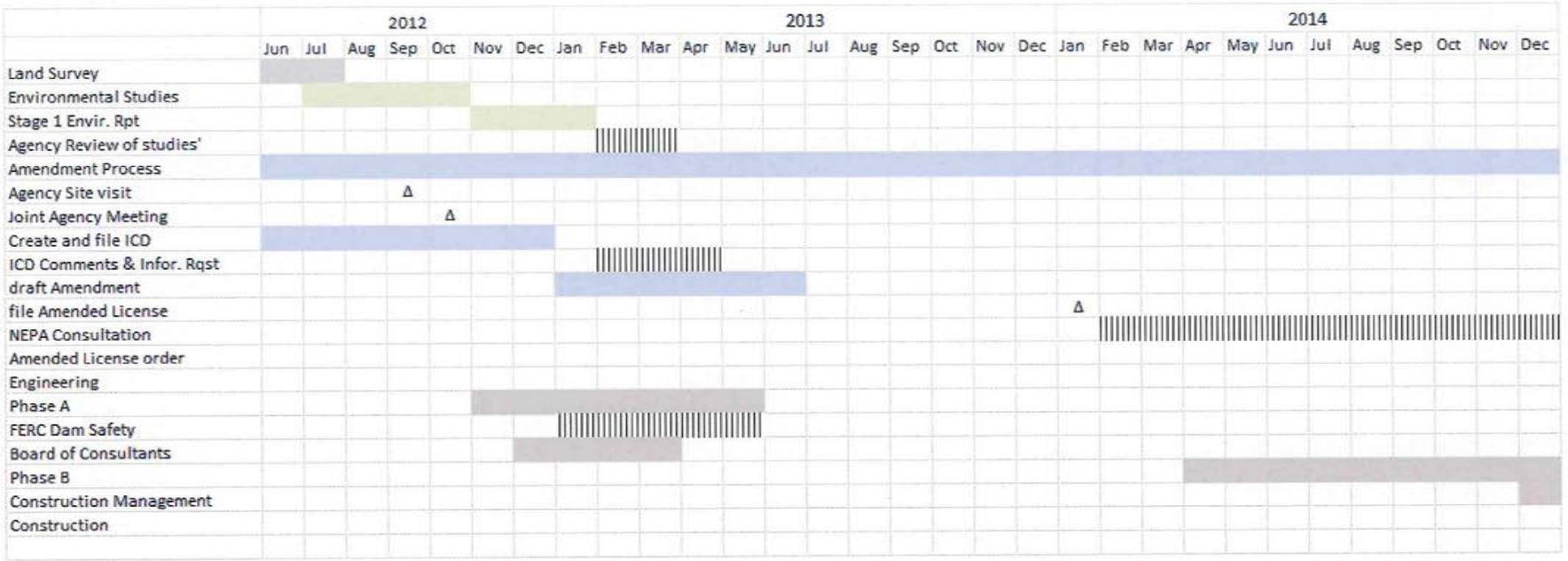
Task No.	Description
Phase A – Preliminary Design	
A1.0	Project Administration/Management
A2.0	FERC and SEAPA Coordination
A2.1	*SEAPA Coordination*
A2.2	*FERC Coordination*
A2.3	*Board of Consultants Coordination*
A3.0	Data Collection/Site Visit
A4.0	Design Criteria Technical Memorandum
A5.0	Geotechnical
A5.1	*Review of Existing Information*
A5.2	*Site Reconnaissance and Surface Mapping*
A5.3	*Preliminary Kinematic and Stability Analysis*
A5.4	*FERC Kickoff Design Workshop*
A5.5	*Supplemental Site Investigation (Crux Drilling Optional)*
A5.6	*Preliminary Design*
A5.7	*FERC Preliminary Design Workshop*
A5.8	*Final Geotechnical Report*
A6.0	Preliminary Design
A6.1	*Probable Maximum Flood (PMF) Analysis*
A6.2	*Spillway Design and Plunge Pool Design*
A6.3	*Dam Raise Structural Analysis*
A6.4	*Intake Gatehouse Modifications*

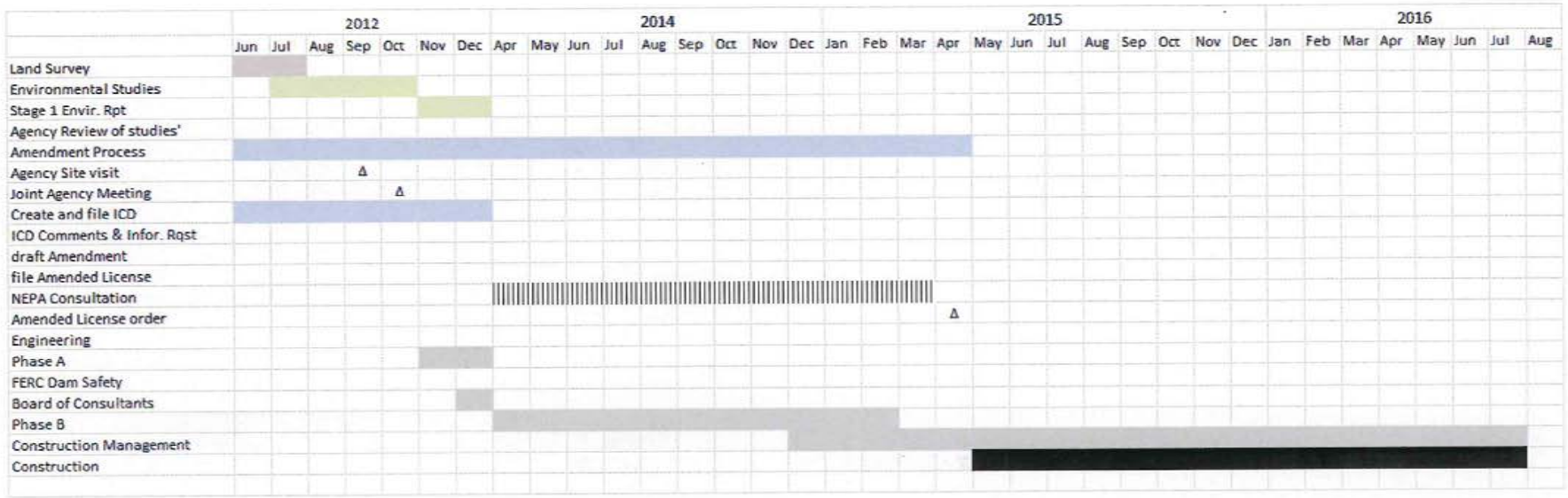
Task No.	Description
A6.5	*Electrical and Controls*
A6.6	*Civil and Roadways*
A7.0	Cost Estimates, Schedule, and Construction Sequencing
A8.0	Preliminary Design Report
A9.0	Permitting Support (Optional)
A10.0	Independent Technical Review (ITR)
Phase B – Final Design, Construction Management, and Commissioning	
B1.0	Project Administration/Management
B2.0	FERC and SEAPA Coordination
B2.1	*SEAPA Coordination*
B2.2	*FERC Coordination*
B2.3	*Board of Consultants Coordination*
B3.0	Construction Plans and Specifications
B4.0	Design Documentation Report (DDR)
B5.0	Cost Estimates, Schedule, and Construction Sequencing
B6.0	Permitting Support
B7.0	Independent Technical Review
B8.0	Construction Management and Commissioning

SEAPA
Southeast Alaska Power Agency

Internal Memorandum

Schedule of Services and Construction





SEAPA
6/15/2012

Swan Lake Reservoir Storage Increase
Scope, Schedule, and Budget

Budget-Services and Construction

Environmental Studies Contractor		License Amendment Consulting & PM		Engineering		
Environmental Studies					15 ft	20 ft
Project Management and Mtgs	$27,389	Task 6 - Prepare for FERC Process	$97,826	Phase A- Prelim.& FERC Dam Safety Design	$443,853	$679,988
Initial Site Assess. & Field Prep.	$5,361	Task 7 - FERC Process Support	$175,878			
Fish Commun. & Aquatic Hab. Stdy	$58,421	Task 8 - Parallel Processes Support	$46,414			
Spawning Assess.	$19,545	Travel	$6,400	Phase B- Final Design (% of Construction)	$700,000	$750,000
Tributary Access Evaluation	$2,076	Comm. Expenses (% of Billed)	$ 6,402.36	Engineering During Construction	$400,000	$623,877
Cultural Resources Study	$61,260			Construction Management	$667,954	$1,043,000
Soils Study	$8,493					
Veg,. Study (RTE Plants, Invasives, Wetlands)	$29,134			FERC Board of Consultants	$55,000	$75,000
Wildlife Study (General Surveys-Goshawk)	$33,578					
Permitting and Reporting	$40,636					
sub Total Environmental Studies	$285,893	sub Total License Amendment PM	$332,920	Total Engineering	$2,266,807	$3,171,865
Additional Costs for Studies						
helicopters and Float planes and Boats	$62,000	Agency meeting misc. Expense	$10,000			
Current Land Survey	$92,000					
Total all Studies and License Amend support	$439,893	Total All License Amendment PM	$342,920			

Fiscal Year Tabulation	FY13	FY14	FY15	FY16	total
Environmental Studies	$373,909	$65,984			$439,893
License Amendment Consulting & PM	$85,730	$171,460	$85,730		$342,920
Engineering (15 ft)	$155,349	$693,504	$683,977	$733,977	$2,266,807
Engineering (20 ft)	$237,996	$891,992	$896,500	$1,145,377	$3,171,865
Construction (15 ft Option)				$9,257,156	$9,257,156
Construction (20 ft Option)				$14,462,899	$14,462,899
15 ft FY totals	$614,988	$930,949	$769,707	$9,991,133	$12,306,776
20 ft FY totals	$697,635	$1,129,436	$982,230	$15,608,276	$18,417,577

Benefit and Cost Discussion

Costs and benefits of the reservoir storage increase options are listed in Table 1. Using the perspective of benefits to SEAPA and ignoring for now the regional benefit of displacing diesel generation, there is not a benefit to cost ratio above 1 for any option! If the regional diesel view is used, the best option is a raise of 20 ft as this displaces the most diesel generation, but at the greatest net cost to SEAPA (an annual loss of $821,872).
The middle ground with a high level of displaced diesel generation, and moderate costs is the full pool level of 345ft, but the best option is probably between 342 ft and 344 ft because of the problematic right abutment. An engineering solution that reduces exposure to right abutment issues, uses a standard sized Obermeyer gate, and minimizes license amendment impacts is the optimal solution.

Reservoir Full Pool Option	330	340	345	350
Active Storage	82,347	96,316	103,110	109,745
% Increase in Storage	0%	17%	25%	33%
Increased Generation	0	4200	7200	7400
Total Project Cost $	0	$7,000,000	$12,306,776	$18,417,577
Value of Annual Displaced Diesel	0	$1,120,000	$1,920,000	$1,973,333
Annual Financing Charge	$0	$503,622	$885,424	$1,325,072
SEAPA Benefit ($68/MWh)	0	$285,600	$489,600	$503,200
SEAPA net Annual Expense	0	$218,022	$395,824	$821,872
Benefit to cost-diesel	0.0	2.2	2.2	1.5
Benefit to cost-SEAPA	0	0.57	0.55	0.38

Table 1- Swan Lake storage increase, costs and benefits

Expected questions:

Why is the increased generation nearly the same for the 345 ft and 350 ft options? What if generation uncertainty is 20%?

Answer: For most inflow cycles the 15 foot raise captures whatwould have spilled, only the very wet years show a benefit of continuing to the 350 ft option. Interestingly, if the 350 ft option results are 20% off, and the 350 ft option returned an annual average benefit of 8,880 MWh as compared to 7,400 MWh; SEAPA revenues would increase to $603,840 from $503,200, but the net annual expense would still be $721,232 ($1,325,072 less $603,840). This is another way of sating construction costs are increasing faster than storage increase benefits as the options increase in elevation. So looking at the difference from 345 ft to 350 ft doesn't change the decision when generation uncertainty is considered.

Reservoir Full Pool Option	350	350 20% Uncert.
Active Storage (ac-ft)	109,745	109,745
% Increase in Storage	33%	33%
Increased Generation (MWh)	7,400	8,880
Total Project Cost $	$18,417,577	$18,417,577
Value of Annual Displaced Diesel	$1,973,333	$2,368,000
Annual Financing Charge	$1,325,072	$1,325,072
SEAPA Benefit ($68/MWh)	$503,200	$603,840
SEAPA net Annual Expense	$821,872	$721,232
Benefit to cost-diesel	1.5	1.8
Benefit to cost-SEAPA	0.38	0.46

Table 2- Considering generation uncertainty.

Doesn't this project just benefit Ketchikan? Why would Wrangell and Petersburg want this project?

Answer: Increasing storage at Swan Lake first captures Tyee spill. After Tyee no longer spills, then the storage increase will capture excess Whitman spill. In the short term, this project benefits all SEAPA members because it increases our revenues while we all share in the costs.

Will this project assist proposed new projects such as the Metlakatla-Kake exchange, Mahoney or Sunrise?

Answer:
There is a lot of uncertainty with predicting the future:
Load Forecasts- SEAPA load forecast vs. B&V load forecast, the SEAPA load forecast has more growth in the winter, and less growth in the summer
Inflow cycles- Do our recent inflow sequences and historic gage information reflect the next 30 years?
Size and configuration of future projects- if the new projects are too big, this small increment won't make a difference.

Given the uncertainty, what we do know, is that storage is at a premium, and more storage allows more hydro-operations flexibility. So with respect to MET-Kake, during times of hydro excess on either side of the system, additional storage could be used for "firming-up" imports and exports. SEAPA would structure the power exchange agreements such that there is mutual benefit and no harm to existing SEAPA system rate payers. In the future, as summer load growth consumes Tyee Lake, Swan Lake, and Whitman excess generation, the additional storage at Swan Lake will come into play when a new project comes on-line. The new project will have excess summer-fall generation; all our hydro projects, from Metlakatla to Juneau have the same problem; it's cold in the winter, it's wet in the summer and fall.

Storage benefits hydro operations flexibility; and flexibility is very difficult to model. Most models assume perfect efficiency of dispatch, foreseen inflow sequence all in the context of a given future load. Mathematical hydro operations models really don't model, these models are more of rough basis for decision. In the end, our decision of how much storage gain at Swan Lake is based on our knowledge of what has happened, and our "gut fell" for what will happen.

Is that all there is to this very large appropriation request, a memo and some guts?

Answer: No, there is already a mountain of research and analysis. I would start with the three documents referenced at the top of this memo.

SEAPA staff recommends the nominal 15 ft option with the expectation we can keep 95% of the 15 ft benefit but keep total project costs below $10M.

Southeast Alaska Power Agency

DATE: January 16, 2013

TO: SEAPA Board of Directors

FROM: Steve Henson, Operations Manager

SUBJECT: Wrangell Reactor Switching Study

Staff has discussed the need for a Reactor Switching Study the past few months and finds it prudent that a study be conducted to determine whether the undersea cables and overhead lines to Petersburg can be energized in the event of a failure of the Wrangell Reactor in the Wrangell Switchyard. The City of Wrangell would not be affected with a loss of the reactor. Petersburg on the other hand would suffer an undue hardship with having to burn diesel if the transmission system could not be energized to Petersburg. This study is to determine the feasibility of energizing the transmission system from Wrangell to Petersburg without the reactor and to quantify the risk associated with doing so to the generation system. If in fact the study finds this possible in theory, a test plan will be formulated and carried out at the earliest convenience to everyone.

We solicited advice from consultants knowledgeable with SEAPA's system and received the attached two proposals to conduct a joint study. The first proposal is for $14,550 from Segrity, LLC. Segrity submitted its proposal in conjunction with a companion proposal from Commonwealth Associates. The efforts of both consultants are required to accomplish the project. Commonwealth's cost for Task 1 which encompasses Tasks 1 through 7 of the Work Plan on the attached proposal is $26,880. If the option of a meeting in Ketchikan and the contingency are considered, the cost for Commonwealth's services would be $41,400.

The board authorized $3,615,000 for R&R Project No. 236-13 for the Wrangell Reactor Replacement Project in its FY13 budget (see attached). Staff recommends the companion proposals be funded from that R&R project to conduct the study.

SEAPA's Procurement Policy requires oral price quotations from three qualified vendors for contracts between $25,000 - $50,000; however, Section 7.4 of the policy provides an exception to the requirement for solicitation of oral quotes when considering contractual services of a professional nature such as engineering. Both vendors have vast experience in the field and knowledge of SEAPA's system. Staff is confident their companion services will produce accurate study results and recommends an award to Segrity, LLC for $14,550 and an award to Commonwealth Associates, Inc. for $26,880 for Task 1 outlined in the Work Plan in its proposal.

SUGGESTED MOTIONS

I move to authorize staff to contract with Segrity, LLC for a value not-to-exceed $14,550 for a Wrangell Reactor Switching Study.

I move to authorize staff to contract with Commonwealth Associates, Inc. for a value not-to-exceed $26,880 for Task 1 for a Wrangell Reactor Switching Study.

Attachments:

R&R Project Sheets
Segrity, LLC Proposal
Commonwealth Associates, Inc. Proposal

R&R PROJECT SHEETS

SEAPA
Southeast Alaska Power Agency

FY2013
R&R PROJECT
R&R 236-13

Project Name: **Replace Wrangell Reactor**

Project Number: **Proposed R&R 1316**

Project Description: Replace Wrangell Reactor with switchable reactors and capacitors.

Project Cost Estimate: $3,615,000

Project Start Date: 07/01/2012

Project Completion Date: 06/30/2013

Project Discussion: The Wrangell reactor is aging and producing gasses indicating a hot spot in the winding and paper insulation degradation. The reactor is critical for the energizing of the transmission line from Wrangell to Petersburg. Without it, SEAPA could not supply power to Petersburg. Replacing the reactor with switchable reactors would also allow better voltage control on the Tyee transmission system during the high inductive loads of the cannery season. This project is an integral part of our system reliability.

Project Cost Estimate Summary	Item	Cost
	Reactor	$1,125,000
	Reactor Switchers, Disconnects, Structures, Foundations	$750,000
	Capacitor Banks	$600,000
	Design/Engineering/Install	$1,040,000
	Project Management	$100,000
	Total	$3,615,000

Project Cost Estimate Discussion: The cost estimate is for a preliminary budget and reflects unknown contingencies. Engineering and design would need to be completed before the cost for the equipment and installation could be determined with accuracy. Project Management services will be retained for this project.

Budget Amount Requested for FY2013: $3,615,000

Budget Amount Requested for FY2014: $0

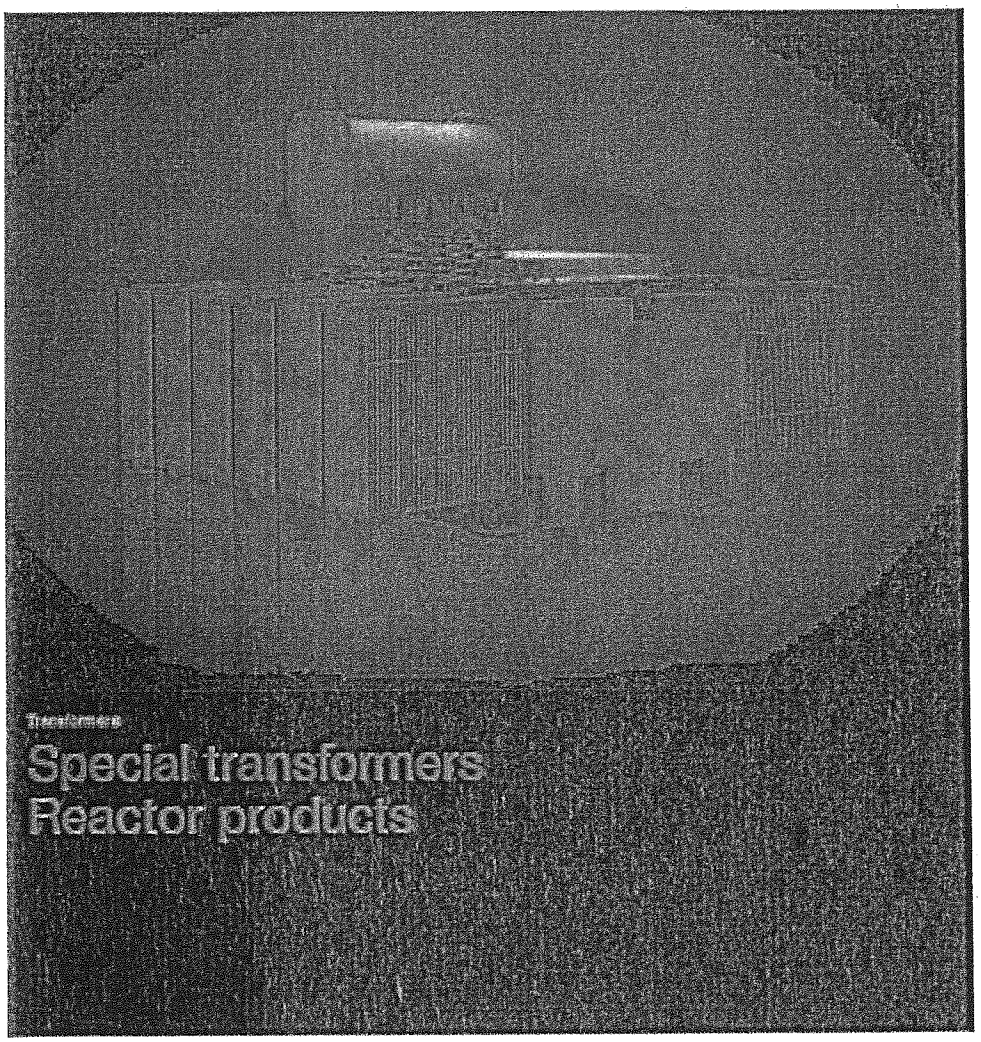
Project Responsibility:

Project Manager: Steve Henson
Design/Engineering: Southern States, LLC
Construction: Southern States, LLC
Construction Manager/Inspection: Brian Berner/ Southern States, LLC

Include additional project-related information here: detailed cost estimates, photos, drawings, etc.

SEAPA
Southeast Alaska Power Agency

R&R 236-13



Transformers

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SEAPA
Southeast Alaska Power Agency

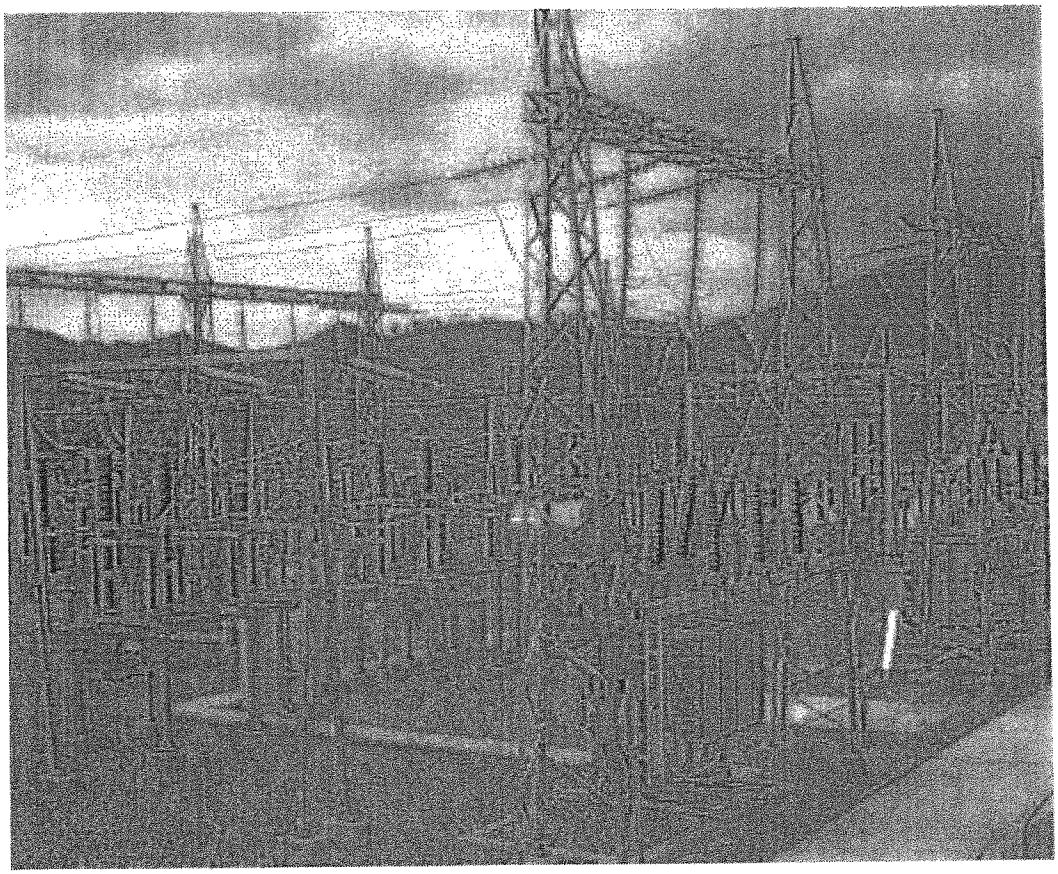
R&R 236-13

Reactors – Custom designed, custom built

ABB Oy Transformers has extensive experience and numerous references from different reactor applications, having the global product responsibility within the ABB group for special transformers and small and medium-size reactors.

Our compact and low-weight transformers and reactors fully comply with the customers' specifications. The products are developed involving customers and ABB system engineering know-how ensuring that the special requirements are always met. The high quality of our reliable products provides an outstanding capacity to withstand short circuits, harmonics, as well as fast and large load fluctuations.

Special and type tests and quality control ensure reliable and safe operation, while ABB's product support and global service network with fast response maximize the availability.



SEAPA
Southeast Alaska Power Agency

R&R 236-13

R&R Project / Budget Approval		
Submitted By	Steve Henson	May 2012
CEO Approval	Dave Carlson	May 2012
Project Approval	SEAPA Board	06/27/12
Budget Approval FY13	SEAPA Board	06/27/12

R&R Project Contracts (Contract Description, number and award date)		

Attach Project Close-Out Summary upon completion of project:

SEGRITY, LLC PROPOSAL

Proposal:

Southeast Alaska Power Agency
Wrangell Reactor Contingency Study

2601 W. 24th Ave, Denver CO 80211 • (303)482-1342

SEGRITY LLC

TABLE OF CONTENTS

SEGRITY LLC

January 14, 2013

Mr. Steve Hensen
Southeast Alaska Power Agency
1900 First Avenue, Suite 318
Ketchikan, Alaska 99901

SUBJECT: WRANGELL REACTOR SWITCHING STUDY

Dear Mr. Hensen,

Segrity LLC is pleased to submit this proposal to the Southeast Alaska Power Agency (SEAPA) to provide a reactor switching study. We are submitting this proposal in conjunction with a companion proposal submitted by Commonwealth Associates, Inc.. The efforts of both parties are required to accomplish this project. However, we have each submitted a separate proposal with the understanding that SEAPA would have a direct contract with each party.

Please contact me at the information below if you have any questions regarding this proposal.

Sincerely,

James E Volk P.E. PMP
Consulting Engineer
Segrity LLC
303-482-1342
James.volk@segrity.com

1. INTRODUCTION AND BACKGROUND

1.1 Introduction

The reactor contingency study will focus on evaluating the options available to operate the SEAPA system without the reactor located in the switch yard at Wrangell being connected to the power system. The reactor study will be performed as a joint project between Segrity LLC and Commonwealth Associates Inc. Commonwealth Associates has been involved in previous SEAPA projects and have developed a model of the SEAPA system that will be used as the starting point for this project.

Reference Commonwealth Associates Inc. proposal P-13-003 submitted to SEAPA on January 11, 2013.

2. SCOPE OF WORK – FEASIBILITY STUDY

The scope for work for Segrity LLC will include the following services for the feasibility phase of this project:

- Project Management
- Project Kick Off Meeting
- Data Gathering as defined by Commonwealth Associates Inc.
- Draft Report Review
- Project Review Meeting with SEAPA

2.1 Project Management

Segrity LLC will provide contact project management services to SEAPA for the duration of this project. The responsibilities will include tracking project cost and progress on a monthly basis. A monthly report will be prepared and submitted to SEAPA. The project management deliverables also include coordination between SEAPA, Commonwealth Associates Inc. and Segrity LLC.

2.2 Project Kick Off Meeting

Segrity LLC will attend kick off meeting either by remote teleconference or at a location determined by SEAPA. Segrity LLC will prepare meeting minutes, action items, and create a project schedule which will be used to track the progress of this project.

2.3 Data Gathering

Segrity LLC will be responsible for gathering the data that is required to further enhance the simulation models that have been developed by Commonwealth Associates. Segrity LLC will travel to the SEAPA sites in Wrangell and Petersburg and work with the local municipalities to gather the information and submit to CAI for their review.

2.4 Draft Report Review / CAI Coordination

Segrity LLC will review draft report prepared by CAI and will work with CAI to create the final report that will be submitted to SEAPA. Based on the findings of the feasibility phase and recommendations from CAI, Segrity LLC will create an estimate to continue the project or a recommendation to stop the project. This outcome will be reported to SEAPA in the Project Review Meeting with SEAPA.

2.5 Project Review Meeting

Segrity LLC will attend feasibility phase project review meeting either by teleconference or at a location defined by SEAPA. Meeting will review findings of feasibility study and review the options for continuing or stopping project.

3. ESTIMATE

This estimate is based on the actual costs associated with this project without considering the benefit that will come from leveraging project travel to meet the objectives of this project and the SEAPA LAN/WAN and SCADA projects.

The estimate does not include separate travel for a kick off meeting. It is assumed that the kick off meeting will be held via teleconference or will coincide with the travel associated with the data gathering trip.

Travel costs are an estimate for commercial airfare from Denver to Petersburg and Wrangell to Denver. Airfare between Petersburg and Wrangell was assumed to be a charter flight. Note that travel costs will be billed to SEAPA at the actual cost.

The estimated cost for this project is $14,550.00

Item	Travel Hours	Eng. Hours	Travel Cost
Project Management	0	32	
Kick Off Meeting	0	6	
Data Gathering	30	20	
Draft Report Review	0	12	
Project Review Meeting	0	4	
Total Hours	**30**	**74**	
Estimated Costs	**$2100**	**$9250**	**$3200**

Segrity LLC will invoice SEAPA monthly for actual time spent on the project at the rates defined in the existing rate sheet.

4. CONTRACT TERMS

Segrity LLC will perform these services under the same terms and rates agreed upon under the existing Southeast Alaska Power Agency Consulting Services Agreement SEAPA-12-08.

COMMONWEALTH ASSOCIATES, INC. PROPOSAL

PROPOSAL

P-13-003

Commonwealth
associates, inc.

SUBMITTED TO:

Southeast Alaska Power Agency
(SEAPA)

Connect With Confidence

Commonwealth associates, inc.

517-788-3000
www.cai-engr.com

P.O. Box 1124
Jackson, MI, 49204-1124

January 11, 2013
P-13-003

Mr. Steve Hensen
Southeast Alaska Power Agency
1900 First Avenue, Suite 318
Ketchikan, Alaska 99901

SUBJECT: WRANGELL REACTOR SWITCHING STUDY

Dear Mr. Hensen,

Commonwealth Associates, Inc. is pleased to submit this proposal to the Southeast Alaska Power Agency (SEAPA) to provide a Reactor Switching Study. We are submitting this proposal in conjunction with a companion proposal submitted by Mr. James Volk, Segrity, LLC. The efforts of both parties are required to accomplish this project. However, we have submitted each as a separate proposal with the understanding that SEAPA would have a direct contract with each party. If SEAPA prefers another arrangement, then we would be happy to modify this proposal accordingly.

Please contact me at the phone number below or Mr. John White, P.E. Vice President, Northwest at 360-404-1140.

Sincerely,

David A. Shafer

David A. Shafer, P.E., Vice President
Manager, Electrical Systems
517-788-3242

DAS/ksc

Commonwealth
associates, inc.

This proposal contains pricing and other information confidential and proprietary to Commonwealth Associates, Inc. Disclosure of this proposal's contents to persons or organizations outside your firm is not authorized without specific written permission of Commonwealth Associates, Inc.

Commonwealth associates, inc.

INTRODUCTION

The Southeast Alaska Power Agency (SEAPA) is reviewing the possibility of operating the grid without the reactor which is located in the Wrangell Switchyard. The reactor is 7.5 MVAR, 69 kV and is designed to absorb the submarine cable charging capacitance on the transmission line to Petersburg. There are two conditions to be evaluated:

1. Assume the reactor is unavailable because it has failed.
2. Assume the reactor is switched out during high load conditions to improve system voltages.

Commonwealth Associates, Inc. has already made preliminary studies without the reactor in-service. Those studies indicated that under light load conditions the system would require a minimum of three large hydro generating units online to absorb the cable charging, and even then the system voltages rose to 110 percent of nominal at Petersburg. System operation was not advisable with two or less units online because the generators are unable to absorb the system reactive power resulting in system high voltages.

The project approach would be in phases.

Phase I – Feasibility Study

A feasibility study would be made to identify feasible options, if any, for operating the grid without the reactor. The study would be conducted with a minimum number of simulations.

If there are scenarios that look feasible then there would be one or more detailed phases to further evaluate and define the operating requirements that would need to be implemented.

Commonwealth has prepared this proposal in cooperation with Mr. James Volk, P.E. of Segrity LLC. The services of Mr. Volk are an integral part of accomplishing the required services as outlined in the Scope of Services described below. However, it is our understanding that SEAPA would contract for Commonwealth and Segrity LLC under direct but separate contracts.

Commonwealth associates, inc.

SCOPE OF SERVICES

The scope of services outlined below is intended for identifying feasible operating options, if any, with minimal number of simulations, to make go, no go decisions. If feasible operating conditions can be identified, then additional studies would be required.

A. Steady State (power flow) Analysis

These studies look at the system in a steady state operating mode. Minimal studies would include: peak load and minimum load.

The following peak load cases are proposed:

Assumptions: Peak load, generators at normal dispatch, transformer taps and LTC normal

- Case 1a. Reactor in-service
- Case 1b. Reactor out-of-service

Results: Evaluate if system voltages are maintained within the normal expected ranges and if generators are operating within machine rated capabilities. From previous studies, we expect that voltages and generator operation will be acceptable in both cases. However, there could be low voltages with the reactor in-service. If Case 1a demonstrates low voltages, then additional cases will be run, showing possible mitigation strategies (with reactor in-service), such as the following:

- Case 1c. Reactor in-service, adjusting fixed tap settings at Petersburg and/or Wrangell to provide greater voltage control.

- Case1d. Reactor in-service, the Blind Slough units operating to provide var support (In previous studies, we modeled the Blind Slough units as operating at close to unit power factor.).

- Case1e. Reactor in-service, the addition of one or more capacitor banks to provide voltage support (purpose of this case is to evaluate use of capacitors to support voltage at peak load rather than switching the reactor in and out).

The following off-peak load cases are proposed:

Assumptions: Minimum system load, generators at normal dispatch, transformer taps and LTC normal

- Case 2a. Reactor in-service
- Case 2b. Reactor out-of-service

Results: Evaluate if system voltages are maintained within the normal expected ranges and if generators are operating within machine rated capabilities. From previous studies, we expect that voltages will be high and generators may be at limits without the reactor in-service. If so, then additional cases will be run to evaluate possible solutions, as follows:

- Case 2c. Reactor out-of-service, additional generation at Tyee Lake and/or Swan Lake operating to absorb excess vars and to control voltage (e.g. Operate the Swan Lake units in isochronous load sharing to maintain frequency and Tyee Lake units as synchronous condensers.)

- Case 2d. Same as 2c except with the Blind Slough units operating as a synchronous condenser to absorb excess vars and thereby, help reduce voltages on the system

- Case 2e. Same as 2c except with one or more diesel units at Petersburg and/or Wrangell operating to absorb excess vars and thereby, help reduce voltages on the system. *(Not sure this is a viable option. The diesels would generate real power which would reduce the power needed from the hydro units making it necessary to operating the hydro generation at even lower levels. Also, we would need to know from the plant owners how many vars they would allow the diesels to absorb. They may not be comfortable operating the plants in this manner. If they have to operate diesels are they better off just serving their loads from the diesel plants and opening the transmission? We can run the power flow case to see if it works technically but it may not be a desirable operating situation.)*

B. Dynamic Analyses

These studies would look at 60 Hz voltage excursions during switching events, such as, when the reactor is switched out. The power flow model is needed as the starting point for a dynamic analysis.

- Case D1a. We would start with Case 1a above (peak load) and simulate switching out the reactor. The dynamic model will show the voltage excursions and response of the generator exciter controls. It does not show other changes such as LTC or changes in generator voltage set points. The system will settle to a new steady state condition which is already modeled as Case 1b.

- Case D2a. This case would simulate switching the reactor back in service. It would require setting up a new power flow (initial condition). The power flow model would be with the reactor out-of-service and at a load level that we anticipate would be appropriate for switching the reactor back in-service (e.g. half way between peak load and minimum load but before we took a large hydro generator off line). The dynamic case would be run showing the reactor being switched in. This would show the voltage excursions and

response of the generator exciters following the switching event. We would also run another power flow simulation with the reactor switched in to show the steady state voltages (after LTC adjustments).

DATA NEEDED FROM SEAPA

1. **Peak Load Data** – we need both the MW and MVAR loads to model at peak load. Also, if you have generator and system voltages at the time of peak load we can calibrate our model to these values.

2. **Minimum Load Data** – same as above, MW and MVAR at minimum system load. Also, provide generator and system voltages at time of minimum load, so we can calibrate our model.

3. **Generation Dispatch at Peak Load** – your normal expected generation dispatch at time of peak load including any generation running in Ketchikan, Wrangell, and Petersburg.

4. **Generation Dispatch at Minimum Load** – your normal expected generation dispatch at time of minimum load including any generation running in Ketchikan, Wrangell, and Petersburg.

5. **Generator Voltages at Plant During Peak and Minimum Loads** – Our previous study provided the following operating voltage set points:

    a. Tyee Lake 1 and 2, 1.029 pu (14.2 kV) to 0.986 (13.6 kV)
    b. Swan Lake 1 and 2, 1.030 pu (14.2 kV) to 1.000 (13.8 kV)

    c. At peak load the plants would be operated at the higher voltages and at minimum loads the plants would be operated at the lower voltages. Is this data still correct?

6. **Blind Slough Plant Characteristics** – We have nameplate data for the larger unit as follows: 1600 kW, 2000 kVA, 80 percent pf, 2400 volts. The only data we have for the smaller unit is 400 kW, 2400 volts. Do both units typically run? Can the larger unit be run as a synchronous condenser? Can we get any data on the plant 2.4/24.9 kV transformer (i.e. impedance, taps available, existing tap setting, MVA rating of transformer, etc.)? Our previous study listed minimum and maximum voltages at the plant as 2.11 to 2.21 kV. Are these still correct? If there is a tap on the transformer, it may be possible to operate the plant at a slightly higher voltage. This may provide a slight advantage. Though we would also need to check the station service transformer for a corresponding change in tap setting.

7. **Petersburg Diesel Generation Data** – We show that Petersburg has seven diesel units located at their Main St. Power Station. The largest two units are each rated at 2100 kW, 2600 kVA, 80 percent pf, 4160 volts. Would Petersburg be willing to run one or both of these units to absorb vars? If so, to what level? What is the minimum kW that Petersburg would run these machines? What are the minimum and maximum voltages allowed on the 4160 V bus? We are missing the transformer data at Main St. Power Station. We would need transformer ratings, taps, actual tap setting, and impedance. This data was not available in our previous study. We would also need to model the 24.9 kV feeder from Petersburg Substation to Main St. Power Station (length, conductor size, pole top configuration, ratings of any switches in series, etc.)

8. **Wrangell Diesel Generation Data** – We show that Wrangell has four diesel units. The largest unit is 2500 kW, 2625 kVA, 80 percent pf, 4160 volts and the other three 2000 kW, 2500 kVA, 80 percent pf, 4160 volts Would Wrangell be willing to run any of these units to absorb vars? If so, to what level? What is the minimum kW that Wrangell would run these machines? What are the minimum and maximum voltages allowed on the 4160 V bus?

9. **Petersburg Transformer Fixed Tap** – Our data shows that the Petersburg transformer is set on Tap 1 (72.45 kV). Is this correct?

10. **Petersburg Nominal Voltage** – Our previous study indicated that the nominal operating voltage at Petersburg is 22.9 kV and is operated within the range of 21.8 – 24.0 kV. Is this data still correct?

11. **Wrangell Transformer Fixed Tap** – Our data shows that the Wrangell transformer is set on Tap 3 (69.00 kV). Is this correct?

WORK PLAN

Task 1 – Kick-off Meeting

A kick-off meeting would be held to review the scope of services, discuss data requirements and assumptions to be used in the project, and to establish the project schedule. This meeting would be attended by both Mr. Volk and Commonwealth. Commonwealth will take the lead on preparing the agenda and leading the meeting.

For estimating cost of service, Commonwealth has assumed that our attendance would be via a teleconference. However, if desired, Commonwealth can attend this in person.

Task 2 – Data Gathering

Mr. James Volk would be responsible for this task, with Commonwealth providing a list of data items that would be needed. A partial list is included in the proposal above.

Task 3 – Power Flow Modeling and Analysis

Commonwealth would be responsible for performing the power flow modeling and analysis as described in the Scope of Services above

Task 4 – Dynamic Modeling and Analysis of Reactor Switching

Commonwealth would be responsible for performing the dynamic modeling and analysis as described in the Scope of Services above

Task 5 – Draft Report

Commonwealth will summarize the results of the power flow and dynamic analysis in a draft report. Mr. Volk's input and insight will be included in the development of the report. This will be especially important with regard to operations of hydro or diesel generating plants. Commonwealth will make recommendations with regard to operating the system with or without the reactor. Also, if operating the system without the reactor appears to be viable, then an outline will be provided for what additional studies or other actions may be needed.

Task 6 – Project Review Meeting

Commonwealth will review the draft report with SEAPA. The review meeting will be to decide if additional studies are warranted and to review comments to the draft report.

For estimating cost of service, Commonwealth has assumed that our attendance would be via a teleconference. However, if desired, Commonwealth can attend this in person.

Task 7 – Final Report

Commonwealth will provide a final report based on comments received at the review meeting.

SCHEDULE

Commonwealth is prepared to begin the project at the earliest mutually agreeable date. We have most of the data needed to do the study from the earlier study. However, as listed above, there may be need to update certain data. We can discuss this at the kick-off meeting and decide what additional new data should be obtained prior to beginning the analysis. Once this data is collected, we expect that the analysis can be completed within four weeks.

Commonwealth associates, inc.

PROJECT TEAM

Commonwealth's proposes Mr. David Shafer, P.E. as the Project Manager. He will be assisted by one or more of the following system engineers based on their availability at the time of the study: Richard Cook, P.E., Gerry Callison, P.E. or John Stieber. Mr. Shafer has been the lead electrical engineer on the several Alaska projects including the Anchorage-Fairbanks intertie, studies for Homer Alaska, and more recently for the SEAPA study. Mr. Cook was the lead electrical engineer for studies of the SEAPA system as part of our work with D. Hittle and Associates on the Kake-Petersburg Intertie (KPI). Mr. Stieber was the electrical study engineer that prepared the power flow and dynamic models and performed the analysis for the recently completed SEAPA study.

ESTIMATED COST OF SERVICES

Commonwealth's estimated cost for the scope of services is $26,880. This assumes that we conduct all meetings via telephone. If you want to budget for an optional face-to-face meeting and include a contingency for additional analysis, the total not-to-exceed budget would be $41,400.

	Estimated Project Costs (2013 Dollars)			
Description	**Man-hours**	**Labor**	**Expense**	**Total**
T1 Feasibility, Phase I	156	$26,880	$ 0	$26,880
T2 Optional Meeting in Ketchikan, AK	18	3,980	2,780	6,760
T3 Contingency	40	7,760	0	7,760
Totals (not-to-exceed)	**214**	**$38,620**	**$2,780**	**$41,400**

Commonwealth will invoice SEAPA monthly for actual time spent on the project at Commonwealth Electrical Systems standard billing rates as included in Appendix C. Payment is due within 30 days of invoice date.

This proposal is valid for 60 days from January 11, 2013.

CONTRACT TERMS

Commonwealth will perform these services under the existing Southeast Alaska Power Agency Consulting Services Agreement SEAPA-10-03. The Commonwealth Electrical Systems billing rates for 2013 are included as Appendix C.

Appendix A

Commonwealth Profile

Commonwealth
associates, inc.

COMPANY PROFILE

Commonwealth Associates, Inc. (Commonwealth) is an employee-owned and employee-managed corporation dedicated to providing engineering and consulting services to the electric utility industry. We provide a complete package of services to assist clients with the successful licensing, design, and construction of their power generation facilities, electric distribution line, transmission line, and substation projects. Commonwealth also offers TRANSMISSION 2000®, a highly interactive, powerful software product used to analyze and plan electric utility transmission systems, and Transmission Access Information Library, a compact library of all available regional power flow models of the continental U.S. transmission system.

Briefly, Commonwealth's services include:

- Owner's engineering services
- Power and energy services
- Overhead transmission line engineering
- Underground transmission line engineering
- Substation engineering
- Industrial IC&E
- Distribution line engineering
- Electrical systems studies
- Due diligence reviews
- Project management
- Route selection
- Environmental studies/permitting
- GIS mapping
- Land acquisition
- Construction support
- Data resources
- TRANSMISSION 2000® software
- Customized training

Commonwealth's strength is its talented staff. Therefore, the company fosters an environment to promote innovation and technical excellence. We encourage employees to achieve professional status by licensure in their profession. We support our staff's participation in professional organizations and participation in professional conferences and committees, such as the Institute of Electrical and Electronics Engineers, the American Society of Civil Engineers, the National Society of Professional Engineers, and the Edison Electric Institute.

Commonwealth knows that each client is unique and has a different set of needs that must be addressed. Our broad exposure to many utility standards and procedures, our participation in professional and technical organizations, and our mix of engineering expertise provide opportunity for development of innovative ideas and solutions to our clients' engineering problems.

Commonwealth
associates, inc.

History

Commonwealth was established in 1988, following the closing of another engineering firm's Jackson, Michigan, office. The founders had worked closely together on domestic and foreign electric transmission and distribution projects for many years out of the Jackson office. Rather than leave Jackson, Commonwealth's founders left the company and took action to incorporate under a name that was—and remains—well known and respected in the electric power industry. The group devoted itself to structuring a new employee-owned company with the intent of upholding the previous Commonwealth Associates, Inc.'s reputation for providing high-quality engineering and consulting services. Other talented individuals, many of whom had worked previously with the founders, were brought in to lend their expertise. The new company flourished, and Commonwealth opened another office in the state of Washington in 1992 to serve clients in the western United States. Another principal office was opened near Atlanta, Georgia, in 2008.

Today, Commonwealth's staff of approximately 230 professional and technical employees represents one of the most skilled, experienced technical resources available to analyze, plan, design, and construct electric power generation and delivery projects. In addition to licensed engineers and engineering specialists, we have experts in environmental sciences, licensing, Geographical Information Systems (GIS), surveying, right-of-way acquisition, and construction management, many with more than 20 years of experience in their fields. Many of our professional engineers are active members of the Institute of Electrical and Electronics Engineers, American Society of Civil Engineers, Edison Electrical Institute, and National Society of Professional Engineers, which allows for interaction with our peers and access to problem-solving resources directed to the power generation and T&D industries.

Commonwealth's methods and tools have evolved over the years to incorporate emerging technologies and meet new challenges, but our devotion to engineering excellence has remained the same.

Office Locations

To serve clients throughout the United States efficiently, Commonwealth has principal offices in the following locations:

P.O. Box 1124
Jackson, MI 49204-1124
Tel.: 517-788-3000
Fax: 517-788-3003
E-mail: caiinfo@cai-engr.com

2021 E. College Way, Suite 101
Mount Vernon, WA 98273
Tel.: 360-466-2214
Fax: 360-466-1744
E-mail: cainw@cai-engr.com

114 Town Park Drive
Suite #150
Kennesaw, GA 30144
Tel.: 678-223-7020
E-mail: caise@cai-engr.com

Commonwealth also has satellite offices in Columbus, Ohio; Dayton, Ohio; and Roanoke, Virginia.

Appendix B

Project Team Resumes

Commonwealth associates, inc.

DAVID A. SHAFER, P.E.

Vice President/Manager, Electrical Systems Engineering

QUALIFICATIONS SUMMARY

Mr. Shafer has more than 38 years of experience in electrical engineering involving electric power systems studies, protection coordination studies; economic studies; electrical design of transmission lines and substations; electrical effects analysis, including EMF and radio and television interference; induced voltages; and public involvement programs.

EMPLOYMENT HISTORY

1988-Present	Commonwealth Associates, Inc., Jackson, Michigan
1978-1988	Gilbert/Commonwealth, Inc., Jackson, Michigan
1973-1978	Toledo Edison Company, Toledo, Ohio

REPRESENTATIVE EXPERIENCE

Various Projects: Project Manager for numerous studies to evaluate the electrical effects of high-voltage transmission lines and substations. This included calculations and field measurements of electrical fields, magnetic fields, audible noise, and radio and TV interference for pre- and post-construction of high-voltage transmission projects for the following: Bangor Hydro-Electric Company 345 kV transmission in Maine, Benham Holway 345 kV transmission in Oklahoma, Consumers Power Company 345 kV transmission in Michigan, Delmarva Power and Light Company 138 kV transmission in Delaware, and Wisconsin Electric Company 138 kV transmission in Wisconsin.

Bangor Hydro-Electric Company: Project Engineer for the Second 345 kV Tie Line to New Brunswick. Was responsible for economic evaluation and need, planning studies, calculations, and field measurements of electric and magnetic fields, corona-caused radio and TV interference, and audible noise generated by the line. Also testified at licensing hearings.

Project Engineer responsible for preparing a transmission planning study of the 115 kV and 46 kV subtransmission serving the city of Bangor, Maine. Work included evaluation of overhead and submarine river crossing alternatives, 115 kV versus 46 kV alternatives, and alternative locations for a new substation.

East Kentucky Power Cooperative: Electrical Engineer responsible for performing a comprehensive 20-year planning study of the 345 kV and 138 kV bulk power transmission system. Also, evaluated 345 kV and 765 kV transmission alternatives for the addition of a new generating unit and to strengthen interconnections with neighboring utility systems.

Alaska Power Authority: Project Engineer for the 345 kV Anchorage-Fairbanks Intertie Project. This project consisted of a 300-mile-long transmission intertie between two isolated electrical systems. The final design made use of three static var compensators. Responsibilities included feasibility evaluation, transient stability analysis, spinning reserve and load shedding analysis, planning of transmission system additions associated with the intertie, participation in a public involvement program, and evaluation of bids.

Aspen Environmental Group: Project Manager responsible for the study of EMF levels for several route options and alternative circuit configurations for two segments of the proposed San Diego Gas and Electric Company (SDG&E) Miguel-Mission 230 kV #2 project. The analyses evaluated alternatives to the segments modeled in SDG&E's Magnetic Field Management Plan for the project.

Memphis Gas, Light, and Water: Project Manager responsible for preparing an independent engineering assessment and needs analysis for a proposed 161 kV transmission line.

West Virginia Public Service Commission: Project Engineer responsible for assisting the West Virginia Public Service Commission in evaluating the need for and the transmission system impact of a new 765 kV transmission line from Wyoming, West Virginia, to Cloverdale, Virginia. The evaluation included review of the APCO application; interviews with AEP planning engineers and review of their power flow studies; and analysis of other data available through the Public Service Commission. Project responsibilities included preparing a report, providing expert testimony, and attending public hearings.

Kentucky Public Service Commission: Project Manager for an independent assessment of all proposed new power plants in Kentucky. The study evaluated the capability of the present transmission grid in the state to accommodate all proposed merchant plants.

Rhode Island Public Utilities Commission: Project Manager for an analysis of the cost effectiveness of various overhead and underground transmission designs to reduce electric and magnetic field levels.

EDUCATION

M.B.A., Eastern Michigan University, 1985
B.S. and M.S., Electrical Engineering, Ohio State University, 1973

REGISTRATION

Professional Engineer in Indiana, Kentucky, Michigan, North Carolina, Ohio, Tennessee, West Virginia

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers (IEEE), Senior Member
National Society of Professional Engineers
Michigan Society of Professional Engineers

PUBLICATIONS

Coauthor, "The Anchorage-Fairbanks Transmission Intertie: Electrical System Studies," presented at the 1982 Transmission & Distribution Expo, Atlanta, Georgia, December 13-15, 1982.

Coauthor, "The Evolution of New Transmission Line Design Requirements," presented at the Power-Gen Americas '93, Dallas, Texas, November 17, 1993.

Commonwealth associates, inc.

RICHARD D. COOK, P.E.
Electrical Engineer

QUALIFICATIONS SUMMARY

Mr. Cook has over 40 years of experience in electrical engineering related to utility transmission/distribution systems. His primary responsibilities include aiding clients in meeting their NERC compliance responsibilities especially with regard to TPL – Transmission Planning and MOD – electrical system modeling. In addition he has extensive experience in electrical system planning, studies of electrical environmental effects, special studies, and computer engineering applications. He was responsible for developing Commonwealth's Contingency Processor Program, a Microsoft Access-based tool that interfaces with Commonwealth's TRANSMISSION 2000® Power Flow program to automate the process of running and summarizing large Power Flow contingency studies. Rick also developed the PC-based MicroFAN program for Distribution Feeder Analysis.

EMPLOYMENT HISTORY

1997-Present	Commonwealth Associates, Inc., Jackson, Michigan
1988-1996	Ohio Edison Company, Akron, Ohio
1973-1988	Gilbert/Commonwealth, Inc., Jackson, Michigan
1971-1973	Harley Ellington Pierce Yee Assoc., Southfield, Michigan
1967-1971	Detroit Edison Company, Detroit, Michigan

REPRESENTATIVE EXPERIENCE

EEI: Responsible for studying and documenting the full range of NERC/SERC compliance studies for this Illinois-based utility. Including a full range of load flow, short circuit, and transient stability studies of the bulk power electrical transmission and subtransmission power grid for the EEI BES. Also, assisted with NERC/SERC Compliance Audits.

PacificCorp: Distribution Efficiency Study in the State of Washington. The study included updating distribution models in ABB Feederall program, tuning the models, and performing optimization to flatten the feeder voltage profile. Design options included reconductoring, load balancing, application of fixed and switched capacitors and application of voltage regulators.

Midland Cogeneration Venture: Developed PSSE Turbine Models for their thirteen generating units.

Southern Company Services: Updated the CAPE Protection System Model for digital and electro mechanical relay systems.

Lansing Board of Water and Light: Project manager responsible for a voltage flicker study of the arc welding operations at the new ASC plant in Lansing, Michigan.

Holland Board of Public Works: Prepared a preliminary study of adding a wind farm to augment their generator supply capability:

Interconnection Studies for Multiple Clients: Responsible for coordinating transmission interconnection studies on behalf of multiple utility companies impacted by a generating facility proposed by independent power producers (IPP). These studies required a full range of planning studies, including coordination of the impacts of numerous other nearby IPP projects; power flow, short circuit, and transient stability simulations; and identification of the preferred alternative power system configuration suitable for both the utility's and the IPP's requirements. Generation sites were studied in Michigan, Ohio, Illinois, Kentucky and Texas.

Eastern Michigan University: Project manager responsible for preparation of a specification for the expansion of the 13.2 kV underground distribution system on the west campus of the university.

NASA's Lewis Research Center: Engineer responsible for the study of a high-voltage power system at the facility in Cleveland, Ohio. The study included planning for expansion of the 138 kV transmission and 34.5, 13.2, 6.9 and 2.4 kV distribution systems, power flow, short circuit, and system protection, and considerations for upgrade and modernization of the 50-year-old underground distribution system.

Southeast Alaska Power Authority: Systems engineer for the Kake-Petersburg feasibility study that investigated extending the Southeast Alaska grid from Petersburg to Kale. Southeast Alaska is developing hydro and other renewable energy resources and tying remote villages together via a new transmission grid. The work involved building power flow models, evaluating transmission options, and recommending transmission voltage levels.

Vectren: Project manager responsible for a 20-year electric system planning study for Vectren. Performed power flow simulations of base case and alternative expansion plans, evaluated import and export capability, studied short circuit levels and breaker duties, and examined the transient stability performance of the electric system in Evansville, Indiana.

EDUCATION

MS, Electrical Engineering, Michigan State University, 1978
MBA, Wayne State University, 1972
BS, Electrical Engineering, Wayne State University, 1969

REGISTRATION

Professional Engineer in Michigan, Ohio

PUBLICATIONS

Coauthor, "Available Transfer Capability Applying Linear Phasor Methods to the AC Power Flow," *IEEE PES Power Systems Conference & Exposition*, March 2011.

Coauthor, "Pop-up Generator Step-Up: A Narrow Look at the State of U.S. and Canadian Transmission Model Data," *IEEE Transactions on Power Systems,* November 2004, Vol. 19, # 4.

Commonwealth associates, inc.

GERALD R. CALLISON, P.E.
Electrical Engineer

QUALIFICATIONS SUMMARY

Mr. Callison has excelled in environments ranging from academic research laboratories to OEM product development field work. He has worked with products and concepts involving the planning of large generator transmission interconnection, short circuit and protection modeling, electric motor simulations, HVAC control testing, analysis of electric switchgear, and monitoring of mining electrical distribution systems. Mr. Callison has an extensive knowledge of wind energy, transmission interconnection, and railway electrification.

EMPLOYMENT HISTORY

2009-Present	Commonwealth Associates, Inc., Jackson, Michigan
2006-2009	P&H Mining Equipment, Milwaukee, Wisconsin
2004-2006	Oak Ridge National Laboratory, Knoxville, Tennessee
2001-2004	Johnson Controls, Milwaukee, Wisconsin

REPRESENTATIVE EXPERIENCE

Energy Project Developer Interconnection Assistance: Aided developers with transmission interconnection process, including developing applications to MISO, PJM, and a variety of WECC Transmission Owners. Built and simulated power flow models to determine network capacities and constraints, searched Large Generator Interconnection and Transmission Service queues for competing projects, estimated ancillary services cost and application fees from Open Access Transmission Tariffs, estimated costs of physical infrastructure, analyzed System Planning Analysis reports to independently evaluate MISO conclusions, aided in filing of Large Generator Interconnection Requests.

System Studies: Performed detailed analysis and comparison of power flow simulations representing difficult operating scenarios to study how the retirement of a must-run power plant would impact voltage stability and thermal constraints.

Short Circuit Studies and Model Creation: Developed a network model and performed short-circuit studies on high-voltage power grids using ASPEN and CAPE software. Merged network models in multiple formats including CAPE, ASPEN, and PSSE and performed short-circuit studies for NERC compliance. Diagnosed flaws in a third-party vendor short-circuit format conversion tool.

Protection Modeling: Developed a model of a protection system including electromechanical and digital relays on a high-voltage power grid for major urban utility using CAPE software.

P&H Mining Equipment: Project Engineer responsible for the development and improvement of the design of a power quality monitoring system, evaluation of potential replacements for switchgear, development of a passive power filter to improve component reliability, and the discovery of a design flaw in a batch of DC drives.

Oak Ridge National Laboratory: Performed a computer-aided Finite Element Analysis on permanent magnet machines, performed research related to the optimization of Dual-Mode Inverter Controls, and assisted with risk analysis for weather-produced power outages at Army bases.

Johnson Controls: Performed electrical, radio frequency (RF), thermal, and vibration testing of HVAC equipment; assembled prototypes of HVAC-related controls; and built, analyzed, and tested a variety of circuits and components.

EDUCATION

M.S., Electrical Engineering, 2006, University of Tennessee
B.S., Electrical Engineering, 2004, University of Wisconsin-Milwaukee

REGISTRATION

Professional Engineer in Michigan

PROFESSIONAL AFFILIATIONS

- Institute of Electrical and Electronics Engineers, Power & Energy Society (IEEE-PES), Member of Transmission Planning group of Power Systems Planning and Implementation Committee
- American Railway Engineering and Maintenance of Way Association (AREMA), Member of Committee 33, Electrical Energy Utilization
- Michigan Society of Professional Engineers (MSPE) Member, Jackson Chapter 2010 Young Engineer of the Year

Commonwealth associates, inc.

JOHN M. STIEBER, E.I.T.
Electrical Engineer

QUALIFICATIONS SUMMARY

Mr. Stieber is a graduate of University of Michigan with a B.S. in Electrical Engineering. His main interests are in power system analysis, including planning studies, power flow and dynamic modeling, and protective relaying. He has experience in windfarm collector system analysis and design, reactive power and voltage support studies, load growth planning studies, transient stability studies, and transmission and distribution substation protective relay settings.

EMPLOYMENT HISTORY

2010-Present Commonwealth Associates, Inc., Jackson, Michigan

REPRESENTATIVE EXPERIENCE

Northeast Utilities: Site visits to take field measurements of voltage and current on PSNH's 345 kV and 34.5 kV networks at multiple substations. Programmed Dranetz power quality meters to capture transient events, harmonics, and P-Q data. Data captured was used to verify the EMTP model of the system.

American Electric Power: Developed protective relay settings, RTU point assignments, and alarming for distribution substations. Protection included feeder overcurrent, transformer overcurrent, bus differential, and transformer differential.

Northeast Utilities: Developed relay settings for Northeast Utilities transmission system up to 345 kV. Protection included line protection (step-distance), bus protection (high- and low-impedance), and capacitor bank protection and control. Relay settings developed for SEL and GE relays used in both primary and backup roles. System analysis and coordination performed with Aspen OneLiner.

Southern Company Services: Updated the short-circuit model of Southern Company's electrical system using CAPE software, including relaying, relay settings, and the logic required for use of the system simulator module inside CAPE. Focused on 230 kV and 500 kV line protection. This model will provide fault currents and estimate the operation of system protection devices under fault conditions.

Southeast Alaska Power Agency (SEAPA): Engineer responsible for power flow studies of the power system, load growth planning studies for both the northern and southern portions of the system, and a transient stability study analyzing certain recent events on the system. Developed power flow and dynamic stability models from physical system properties. Calculated overhead and submarine transmission line impedance values. Verified models against actual operating data. Performed steady-state and dynamic analysis. Evaluated maximum load that could be served from existing generation and transmission. Recommended mitigation to improve thermal and voltage constraints on the system. Evaluated underfrequency load-shedding plan and recommended changes to the system protection. Made recommendations for operating voltages, equipment upgrades, VAR loading, and tap settings.

Windemuller Electric: Engineer responsible for determining the reactive power requirements at the point of interconnection for a 40 MW wind farm near Cadillac, Michigan. After the requirements were determined, power flow studies were conducted to determine how to meet the requirements. A switched capacitor was added and sized to meet the requirements.

Wayne State University: Engineer responsible for writing a computer program to merge comprehensive EIA generator data with NERC MMWG power flow data in order to form a large database from which economic dispatch studies could be made.

EDUCATION

M.S., Electrical Engineering, Michigan Technological University, 2014 (expected)
B.S., Electrical Engineering, University of Michigan, 2011
B.S., Industrial Engineering, Northwestern University, 2009

REGISTRATION

Engineer-in-Training, Michigan, 2011

Appendix C

Electrical Systems Rates 2013

Southeast Alaska Power Agency

COMMONWEALTH ASSOCIATES, INC.
ELECTRICAL SYSTEMS & T2000
CATEGORY LABOR RATE SUMMARY

BUSINESS YEAR 2013

BILLING CATEGORY	TITLE	LABOR BILLING RATE PER HOUR
EXEMPT EMPLOYEES		
42	ENGINEER X	226
40	ENGINEER IX, LAND SERVICE SPECIALIST IX, PROJECT MANAGER IX, FIELD PROJECT REPRESENTATIVE IX	189
38	ENGINEER VIII, ENGINEERING SPECIALIST VIII, CONSULTANT VIII, LAND SERVICES SPECIALIST VIII, PROJECT MANAGER VIII, FIELD PROJECT REPRESENTATIVE VIII	166
36	ENGINEER VII, ENGINEERING SPECIALIST VII, ENVIRONMENTAL SPECIALIST VII, LAND SERVICES SPECIALIST VII, ADMINISTRATIVE SPECIALIST VII, PROJECT MANAGER VII, FIELD PROJECT REPRESENTATIVE VII	145
32	ENGINEER VI, ENGINEERING SPECIALIST VI, ENVIRONMENTAL SPECIALIST VI, LAND SERVICES SPECIALIST VI, ADMINISTRATIVE SPECIALIST VI, PROJECT MANAGER VI, FIELD PROJECT REPRESENTATIVE VI	135
30	ENGINEER V, ENGINEERING SPECIALIST V, ENVIRONMENTAL SPECIALIST V, LAND SERVICES SPECIALIST V, LAND SERVICES SUPERVISOR, PURCHASING AGENT V, ADMINISTRATIVE SPECIALIST V, PROJECT MANAGER V, FIELD PROJECT REPRESENTATIVE V	122
28	ENGINEER IV, ENGINEERING SPECIALIST IV, ENVIRONMENTAL SPECIALIST IV, LAND SERVICES SPECIALIST IV, TECHNICAL EDITOR IV, PURCHASING AGENT IV, ADMINISTRATIVE SPECIALIST IV, PROJECT MANAGER IV, FIELD PROJECT REPRESENTATIVE IV	111
26	ENGINEER III, ENGINEERING SPECIALIST III, ENVIRONMENTAL SPECIALIST III, LAND SERVICES SPECIALIST III, CARTOGRAPHER III, PROGRAMMER III, TECHNICAL EDITOR III, PURCHASING AGENT III, ADMINISTRATIVE SPECIALIST III, PROJECT MANAGER III, FIELD PROJECT REPRESENTATIVE III	103
25	ENGINEER II, ENGINEERING SPECIALIST II, ENVIRONMENTAL SPECIALIST II, LAND SERVICES SPECIALIST II, CARTOGRAPHER II, PROGRAMMER II, TECHNICAL EDITOR II, PURCHASING AGENT II, ADMINISTRATIVE SPECIALIST II, PROJECT MANAGER II, FIELD PROJECT REPRESENTATIVE II	96
21	ENGINEER I, ENGINEERING SPECIALIST I, ENVIRONMENTAL SPECIALIST I, LAND SERVICES SPECIALIST I, CARTOGRAPHER I, PROGRAMMER I, TECHNICAL EDITOR I, PURCHASING AGENT I, ADMINISTRATIVE SPECIALIST I, PROJECT MANAGER I, FIELD PROJECT REPRESENTATIVE I	84
NONEXEMPT EMPLOYEES		
19	ADMINISTRATIVE ASSISTANT V, CADD OPERATOR V, DESIGNER V, TECHNICIAN V	96
17	ADMINISTRATIVE ASSISTANT IV, CADD OPERATOR IV, DESIGNER IV, TECHNICIAN IV	84
16	ADMINISTRATIVE ASSISTANT III, CADD OPERATOR III, DESIGNER III, TECHNICIAN III	74
15	ADMINISTRATIVE ASSISTANT II, CADD OPERATOR II, DESIGNER II, TECHNICIAN II	64
11	ADMINISTRATIVE ASSISTANT , CADD OPERATOR , DESIGNER , TECHNICIAN	54

Notes:
1. *Technology charges are included in rates.*
2. *Individuals may move between categories at time of promotion*
3. *Rates are based on Net 30. Invoices paid after Net 30 may be assesed a 1.5% late fee per month.*
4. *If any government entity takes a legislative action that imposes new taxes, fees or charges on services provided by Commonwealth or its subcontractors, then Commonwealth may invoice such new taxes, fees or charges at actual cost incurred without an additional markup.*

1/10/2013

PRINCIPAL OFFICES

MIDWEST OFFICE

P.O. Box 1124
Jackson, MI 49204-1124

Street address:
2700 W. Argyle St.
Jackson, MI 49202

Telephone: 517.788.3000
Fax: 517.788.3003

NORTHWEST OFFICE

2021 E. College Way, Suite 101
Mount Vernon, WA 98273

Telephone: 360.466.2214
Fax: 360.466.1744

SOUTHEAST OFFICE

114 TownPark Drive, Suite 150
Kennesaw, GA 30144

Telephone: 678.223.7020
Fax: 770.427.9768

WWW.CAI-ENGR.COM

Connect With Confidence

Commonwealth associates, inc.

Southeast Alaska Power Agency

DATE: January 15, 2013

TO: SEAPA Board of Directors

FROM: Steve Henson, Operations Manager

SUBJECT: Design Engineering, Construction Phase Support, and Project Management Services for the Wrangell Reactor Replacement Project

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During our June 27, 2012 board meeting, the board approved in its FY13 budget, $3,615,000 for R&R Project No. 236-13 for the Wrangell Reactor Replacement Project (see attached).

The project was put out to bid and Southern States, LLC was awarded the contract at our board meeting held on December 11, 2012. SEAPA was informed by Southern States that they were not capable of accomplishing the engineering/design required by this contract due to the exit of key staff from the company. As such Southern States requested they be released from their contract and stated there would be no charges for any of the time expended by them.

As a consequence, our option is to choose from the two remaining proposers, Commonwealth Associates, Inc. and Electric Power Systems, Inc. or rebid the project. Copies of their bids are attached. I do not recommend rebidding the project because of time constraints. Although both remaining vendors are qualified to do the project and have prior knowledge of our system, I recommend the next lower priced proposer, Electric Power Systems, Inc. ('EPS'), be awarded the project for $100,999. I recommend that we include in the award the option offered in their proposal to conduct a power flow study for $17,147 because it is anticipated additional power flow analysis will be required as part of the assessment for a step reactor verses a direct replacement of the existing reactor.

SUGGESTED MOTION

I move to authorize staff to contract with Electric Power Systems, Inc. for a value not-to-exceed $118,146 for the Wrangell Reactor Replacement Project.

Attachments:

R&R Project Sheets
Electric Power Systems, Inc. Proposal
Commonwealth Associates, Inc. Proposal

R&R PROJECT SHEETS

SEAPA
Southeast Alaska Power Agency

FY2013
R&R PROJECT
R&R 236-13

Project Name: **Replace Wrangell Reactor**

Project Number: **Proposed R&R 1316**

Project Description: Replace Wrangell Reactor with switchable reactors and capacitors.

Project Cost Estimate: $3,615,000

Project Start Date: 07/01/2012

Project Completion Date: 06/30/2013

Project Discussion: The Wrangell reactor is aging and producing gasses indicating a hot spot in the winding and paper insulation degradation. The reactor is critical for the energizing of the transmission line from Wrangell to Petersburg. Without it, SEAPA could not supply power to Petersburg. Replacing the reactor with switchable reactors would also allow better voltage control on the Tyee transmission system during the high inductive loads of the cannery season. This project is an integral part of our system reliability.

Project Cost Estimate Summary	Item	Cost
	Reactor	$1,125,000
	Reactor Switchers, Disconnects, Structures, Foundations	$750,000
	Capacitor Banks	$600,000
	Design/Engineering/Install	$1,040,000
	Project Management	$100,000
	Total	$3,615,000

Project Cost Estimate Discussion: The cost estimate is for a preliminary budget and reflects unknown contingencies. Engineering and design would need to be completed before the cost for the equipment and installation could be determined with accuracy. Project Management services will be retained for this project.

Budget Amount Requested for FY2013: $3,615,000

Budget Amount Requested for FY2014: $0

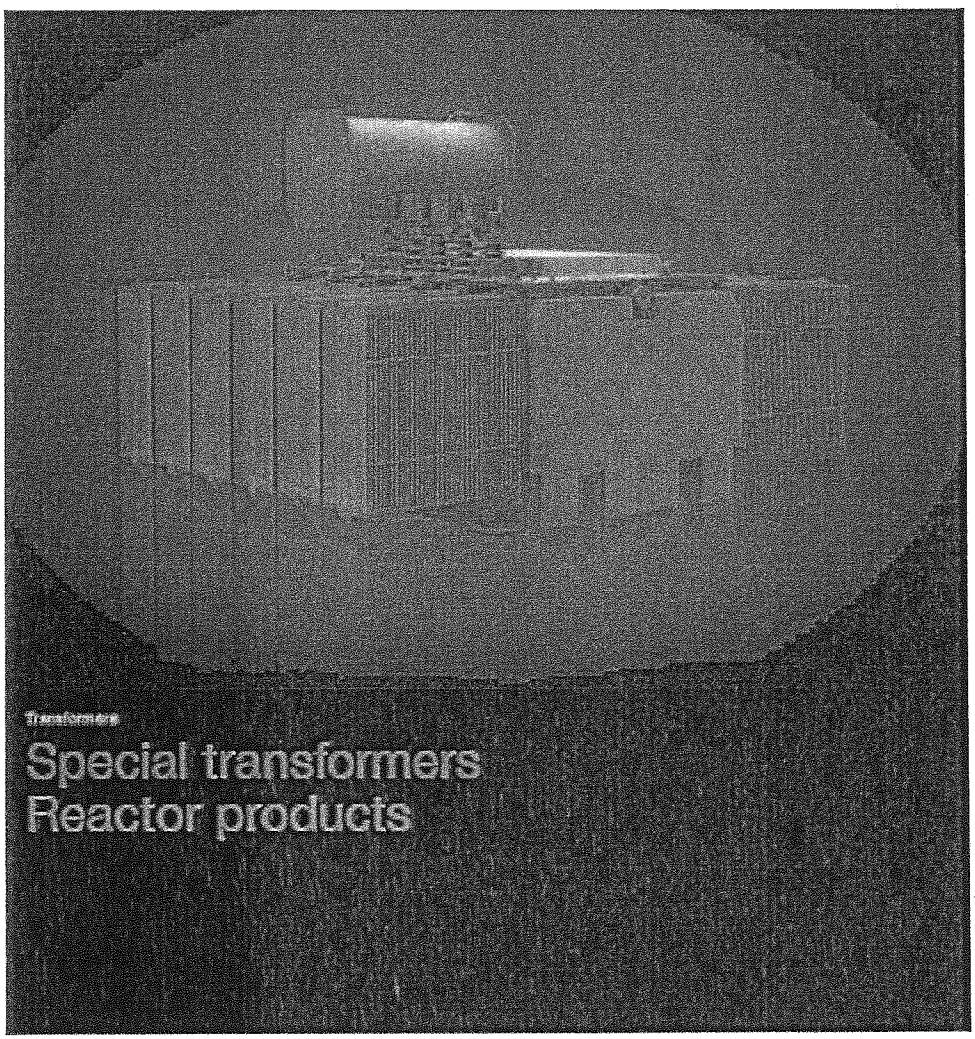
Project Responsibility:

Project Manager: Steve Henson
Design/Engineering: Southern States, LLC
Construction: Southern States, LLC
Construction Manager/Inspection: Brian Berner/ Southern States, LLC

Include additional project-related information here: detailed cost estimates, photos, drawings, etc.

SEAPA
Southeast Alaska Power Agency

R&R 236-13



Transformers

Special transformers
Reactor products

Power and productivity
for a better world™

ABB

SEAPA
Southeast Alaska Power Agency

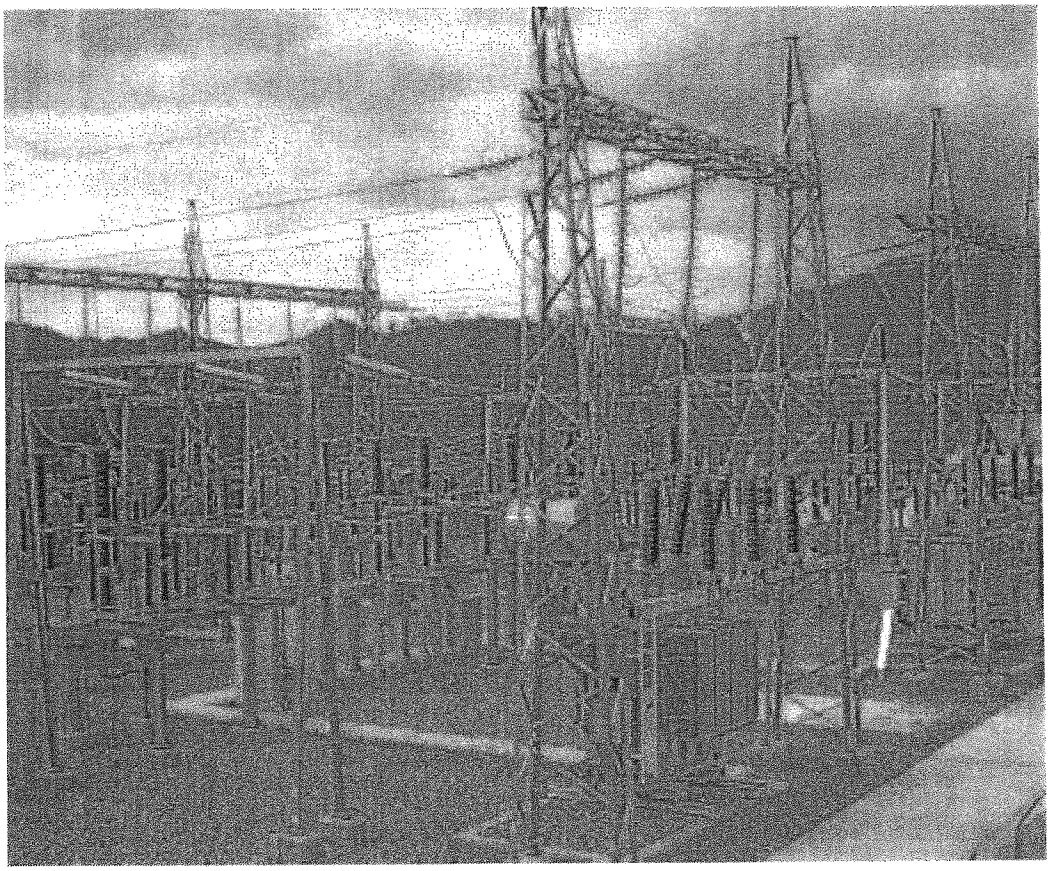
R&R 236-13

Reactors – Custom designed, custom built

ABB Oy Transformers has extensive experience and numerous references from different reactor applications, having the global product responsibility within the ABB group for special transformers and small and medium-size reactors.

Our compact and low-weight transformers and reactors fully comply with the customers' specifications. The products are developed involving customers and ABB system engineering know-how ensuring that the special requirements are always met. The high quality of our reliable products provides an outstanding capacity to withstand short circuits, harmonics, as well as fast and large load fluctuations.

Special and type tests and quality control ensure reliable and safe operation, while ABB's product support and global service network with fast response maximize the availability.



SEAPA
Southeast Alaska Power Agency

R&R 236-13

R&R Project / Budget Approval		
Submitted By	Steve Henson	May 2012
CEO Approval	Dave Carlson	May 2012
Project Approval	SEAPA Board	06/27/12
Budget Approval FY13	SEAPA Board	06/27/12

R&R Project Contracts (Contract Description, number and award date)		

Attach Project Close-Out Summary upon completion of project:

ELECTRIC POWER SYSTEMS PROPOSAL

Electric Power Systems inc.
Consulting Engineers

2213 Jordan Ave
Juneau, Alaska 99801
Phone: 907.523.3101
Fax: 907.789-4939
dbuss@epsinc.com

October 1, 2012

Sharon E. Thompson
Executive Assistant
Southeast Alaska Power Agency
1900 First Avenue, Suite 318
Ketchikan, Alaska 99901

RE: Proposal for Project Management, Design Engineering and Construction Support – Wrangell Reactor Replacement

Electric Power Systems, Inc. (EPS) is pleased to present our proposal to Southeast Alaska Power Agency (SEAPA) for Project Management, Design Engineering and Construction Support Services for the replacement of the Wrangell Reactor.

In 2005, Engineered Solutions Group, Inc. (ESG) was formed to combine the resources of its two main subsidiaries, Electric Power Systems, Inc. (EPS) and Dryden and LaRue, Inc. (D&L). EPS has been providing power system operation, engineering, planning and administration consulting services to Alaska's electrical power industry for 15 years. D&L has been providing total project services to Alaska's utilities in the discipline of electrical engineering since their founding in 1977. These services range from initial system planning and studies, evaluation, engineering and design, to on-site inspection and construction/project management.

The following is an overview of why EPS is the right team for this project:

- Alaska Firm with Unmatched Knowledge of SEAPA's Infrastructure The EPS team has been living and working in southeast Alaska for decades and has knowledge and experience with the SEAPA's electrical infrastructure unmatched by any other consulting firm. We have years of experience with local conditions and policies and know what works and what doesn't in Alaska's harsh environment. Our familiarity with the SEAPA system will allow us to deliver a quality solution and design for the project. Our design team is Alaskan, specifically Juneau, based which allows for quick and easy determination of field investigations and questions as they arise during the design and construction process.

- Experienced Project Manager – **David Buss, PE,** has 16 years of experience in power system operation, engineering and administration. His Alaska experience includes a full range of services, from planning studies, design, construction, and start-up/commissioning to periodic testing and maintenance. His experience with SEAPA projects and knowledge of SEAPA's system is extensive. David understands the importance to SEAPA members of scheduling and performance for the timely and successful completion of this project. He provides a strong commitment from EPS to the successful completion of this project.

Thank you for considering our qualifications and feel free to contact me at (907) 522-1953 with any questions you may have.

Sincerely,

David Buss, PE

PROPOSAL FOR

SEAPA

Southeast Alaska Power Agency

PROJECT MANAGEMENT AND DESIGN ENGINEERING

WRANGELL REACTOR REPLACMENT

October 1, 2012

ELECTRIC POWER SYSTEMS ePs inc.

electric Power Systems inc.

Consulting Engineers

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Appendix

QUALIFICATIONS OF ELECTRIC POWER SYSTEMS, INC.

Electric Power Systems, Inc. (EPS) is an Alaska based company with over 120 employees located in Anchorage, Juneau and Palmer, Alaska as well as Redmond, Olympia and Vancouver, Washington. We have considerable experience in generation, transmission and substation projects for Alaskan utilities, including SEAPA. Upgrading existing facilities requires considerable field work throughout the design and construction phases to document existing facilities' configurations, equipment conditions, operational issues and possible conflicts. We have proposed our Juneau based staff to support this project, allowing us to perform site visits, review SEAPA records and interface with operators without the delays and expense of travel from outside locations. Our Juneau based personnel are available to meet with SEAPA personnel in Ketchikan or in the EPS Juneau office. We believe this hands-on approach will be essential in completing the SEAPA Wrangell Switchyard reactor replacement.

RATES, FEES AND ESTIMATED COST

The following fee estimate is a time and materials estimate. The base estimate assumes no additional studies are required. The fee estimate for the design is based on a similar size an style reactor will be used to replace the existing unit. The design will include new reactor foundation and oil containment if required. If additional studies or the selected replacement option is not similar to the exiting unit, additional design and project management costs may be required. The EPS rate sheet is included in the appendix of this proposal.

EPS estimates the cost for project management, design services and construction support to be $100,999 including a 5% contingency. If it is determined a study is required, EPS is providing an optional a power flow study to consider peak, valley and mid-level load cases for three different line configurations; Tyee only, Tyee with STI and Tyee, STI and Petersburg-Kake. For each load scenario the study will analyze a max Tyee/min Swan generation and a min Tyee/max Swan generation. These scenarios would be used to determine operating boundaries for replacement reactor. The estimate can be broken down as follows:

Study evaluation and replacement option selection	$ 9,549
Design Engineering, procurement and bid	$ 34,476
Construction Support	$ 52,165
Contingency (5%)	$ 4,809
Total	$100,999
Optional Power Flow Study	$ 17,147

The fee estimate is based on the scope of services as outlined in the RFP and in this proposal. The detailed estimate has been included at the end of this proposal.

GENERAL EXPERIENCE OF ELECTRIC POWER SYSTEMS, INC.

Substation Experience

From feasibility studies and site selection through final design, to construction and final inspection, EPS has exceptional capabilities to provide the expertise necessary to successfully complete substation projects for both new and upgrade projects. Our staff's substation experience has varied from medium-voltage through 230 kV and includes a wide range of design and construction approaches. The firm's experience includes a wide range of voltage levels for new, upgraded, and repaired facilities. Our staff specializes in Alaska projects and their unique challenges with widely varying foundation, climate, and terrain conditions. The following is a representative sampling of EPS' experience and technical competence on substation projects recently completed:

D Street Substation – Fort Richardson, Alaska, Doyon Utilities

D Street Substation consists of a 34.5 kV substation with four breakers in metal-clad switchgear, a 47 MVA 34.5 kV/12.47 kV transformer and eleven 12.47 kV breakers in metal-clad switchgear. The substation includes remote control and automation to the local emergency generation and integration with a remote substation over fiber-optic communications for emergency restoration. The project utilizes SEL-351S protective relays for the distribution feeders and SEL-311C relays for the 34.5 kV ties. The station uses SEL-734 meters for metering, and SEL-3354's and SEL-2100's for automation and control. The station is designed for the future construction of a 115 kV Ring bus and one 115 kV/ 34.5 kV 47 MVA transformers. The substation includes three 3 MW Cat C-175 generators to serve as emergency service and blackout restoration. EPS provided the engineering design, Electric Power Constructors, Inc. (EPC) provided the construction and Specialty Engineering, Inc. (SEI) provided the commissioning services for the generation, distribution and sub-transmission stations.

Completion Date: 2011

Client Reference: Bill Farrell, Doyon Utilities, (907) 455-1566

Arctic Warrior Substation – Fort Wainwright, Alaska, Doyon Utilities

The Arctic Warrior Substation is a critical interconnection between the FWA generation and distribution feeders and the local utility's transmission system. The substation consists of a 138 kV bay with a 20 MVA 138 kV/12.47 kV transformer and eighteen 12.47 kV breakers. The station is configured as a double-ended station with a 2.0 MVA emergency generator. The substation includes remote control and automation to the local emergency generation and integration with the central power plant over fiber-optic communications and Wonderware interface. The project utilizes SEL-351S protective relays for the distribution

feeders and SEL-311C relays for the 138 kV intertie. The station uses SEL-734 meters for metering and SEL-2032's and SEL-2100's for automation and control. The station includes automated demand management for load control, and differential protection to the 20 MVA power plant. EPS provided the engineering design, and SEI provided the commissioning services.

Completion Date: 2009

Client Reference: Marvin Riddle, Project Manager, (941) 518-0266

Diamond Ridge Substation – Homer, Alaska, Homer Electric Association

The Diamond Ridge Substation is a 115 kV main and transfer bus station with a 115/69 kV sub-transmission transformer and a 115 / 24.9 kV distribution transformer. The station serves as a critical switching station as well as a critical distribution source for the Homer area loads. The 115 kV main and transfer bus encompasses six breakers and utilizes SEL 487, SEL 311C and SEL-421 protective relays and an SEL-3351 for station automation. The distribution station includes 6 breakers and SEL-451 relays, SEL-487 relays and an SEL-3351 for station automation. The station was designed for extreme snow conditions that have been observed in the area. The project included extensive site work due to poor soil and permafrost conditions.

Completion Date: 2010

Client Reference: Maynard Smith, Homer Electric Association, (907) 235-3393

PROJECT RESUMES (THREE PROJECTS)

Swampy Acres Substation Upgrades – Kodiak, Alaska, Kodiak Electric Association

The Swampy Acres substation is a combined 138kV-69kV transmission and 12.47kV distribution facility built in the 1990s to distribute power from Terror Lake Hydroelectric project. EPS was contracted to as-built station control equipment to quantify the state of the system. This was followed with a series of controls projects to upgrade line relaying, metering, substation automation, battery and battery charger replacements. With corresponding EPS projects at far end transmission line terminals, a dual primary redundant relaying system was implemented utilizing line current differential over fiber optic and backup POTT (communication assisted) distance relaying schemes on two 69kV and one 138kV links. Outdoor renovations were also undertaken, including replacement and testing of the 12.47kV and 138kV level breakers, with replacement of the 69kV level breakers scheduled for 2013. EPS has performed design, construction management, commission and testing services for these projects in support of KEA's multi-year plan to renovate the substation.

Completion Date: 2009-2013 (ongoing)

Client Reference: Bob Coates, Kodiak Electric Association, (907) 486-7755

Redington Substation – Wasilla, Alaska, Matanuska Electric Association

The Redington Substation is a 115 kV 4-breaker ring bus station with a 115/24.9 kV distribution transformer, and 24.9 kV reclosers. The station serves as a critical distribution source for Knik-Goose Bay area loads and the new Goose Creek Correctional Facility. The 115 kV ring bus encompasses three breakers and one future breaker position, and utilizes SEL-421, SEL-451 and SEL-487 protective relays and an SEL-3354 for station automation. The distribution station includes 2 reclosers and SEL-451 relays, SEL-487 relays and an SEL-3354 for station automation. The project included extensive site work due to poor soil and frost susceptible conditions. The design also includes provisions for connecting, and long-term storage, of the Railbelt Utilities mobile substation.

Completion Date: 2012

Client Reference: Gary Kuhn, Matanuska Electric Association, (907) 761-9280

Interceptor Substation - Fort Greely, Alaska, Doyon Utilities

The Interceptor Substation consisted of a nine 24.9 kV breakers in a metal-clad switchgear and a 20 MVA transformer. The substation serves the vital loads at the Fort Greely Army Post. The station utilizes SEL-351, SEL-487 relays and SEL-2032 and SEL-2100 integration components. The station is integrated with the emergency generation at the powerhouse to allow complete restoration of Post loads and also serves as an emergency connection to the local utility. The station is fully automated and controlled through the Doyon power plant several miles away. The station was designed to withstand the arctic conditions of interior Alaska.

Completion Date: 2009

Client Reference: Marvin Riddle, Project Manager (941) 518-0266

ADDITONAL REFERENCES

Additional references are as follows:

- Ed Jenkin, Chugach Electric Association. (907) 762-4600
- Bob Zacharzki, Doyon Utilities Ltd. (907) 338-3600
- Clay Hammer, Wrangell Municipal Light and Power. (907) 874-3602

APPROACH TO PROJECT

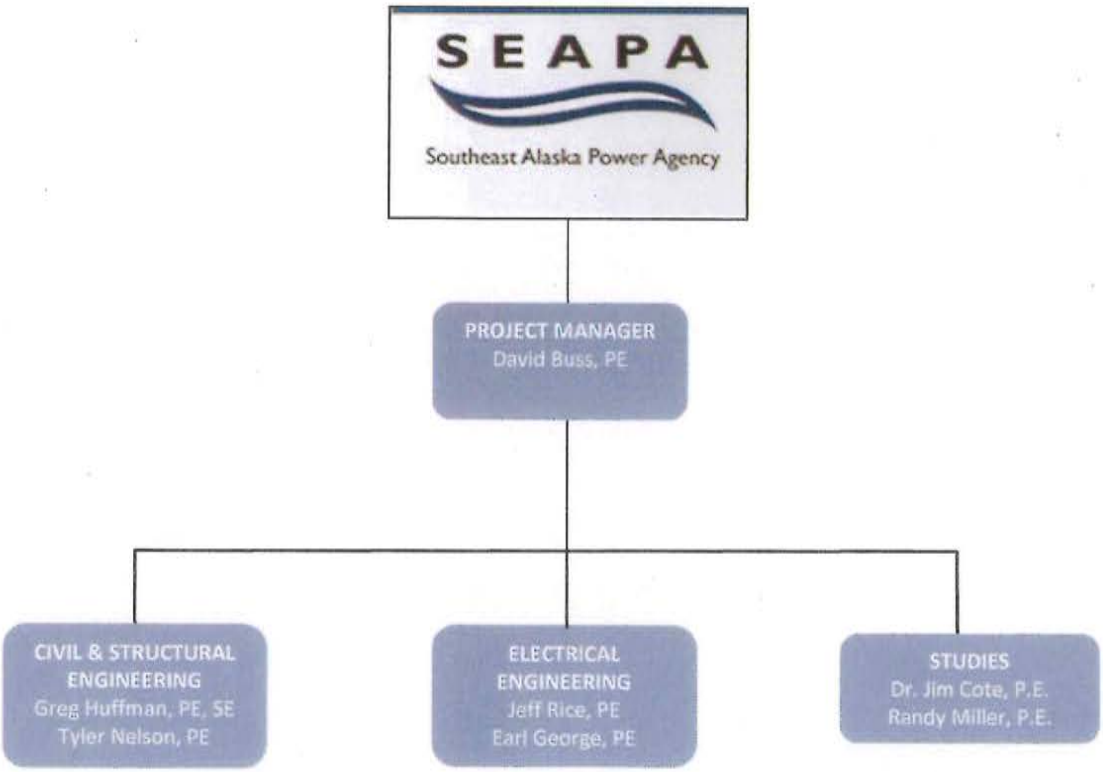
EPS understands the general scope of this project is to replace the existing Tyee Transmission line reactor located in the Wrangell Switchyard. The reactor was installed as part of the original Tyee Hydro project before the inclusion of the Swan Tyee Intertie (STI) transmission line in the system. As part of this project, SEAPA would like the size and operational characteristics of the reactor to be evaluated. The evaluation should take into consideration the addition of the STI line and future transmission line from Petersburg to Kake. It should also take into account the load growth being experienced by both Wrangell and Petersburg and how it impacts the system power flow.

Based on the scope of services as outlined in the request for proposals and our understanding of the scope, EPS proposes the following approach.

- EPS will work directly with SEAPA to gather operational data along with previous studies to identify the need for additional studies to be performed. If it is determined a study is required, EPS will rely on in-house resources to complete that study. Mr. Buss will work with SEAPA to clearly define the operational requirements so that guidelines can be identified for the study. The study can then be performed by Jim Cote of EPS under the direction of Mr. Buss. The results of the study will be used to define the boundaries needed to specify the replacement options.
- Selection of the replacement option will be based on the results of the study taking into consideration the cost of all options and physical space available for the equipment. Mr. Buss will work closely with SEAPA to make this selection.
- Once the replacement equipment has been selected, EPS will rely on the Juneau staff to lead the design of the project. Mr. Rice will lead the effort to prepare a complete bid ready design package. Resources from our Anchorage office will be used as required for civil and mechanical components of the project. The level of the design and associated tasks will be dependent on the selected replacement option. We assume that the replacement reactor will require new foundation and oil containment and bus support modifications may also be required due to changes in bushing heights and location.
- Mr. Buss will work with SEAPA to finalize the bid documents and assist with the bid process. This will include fielding questions from prospective bidders, assisting with bid evaluation and selection.
- EPS will provide Juneau based staff for construction management, field engineering, inspections and monthly reports.

KEY PERSONNEL PROFILE

EPS has compiled a team of highly qualified and experienced individuals to staff this contract. The following organizational chart depicts our proposed project team:



SEAPA is familiar with many of these individuals, having worked together on projects in recent years.

The following is an overview of the key Alaskan based personnel which will perform this project.

David Buss, PE, Electrical Engineer

EXPERIENCE SUMMARY

- 16 years of experience in power utility engineering and construction
- B.S., Electrical Engineering, Washington State University
- Alaska Professional Electrical Engineer, E10466

Mr. Buss has over 16 years of experience in power system design and construction management. He has extensive experience working in the power systems industry with particular expertise on system coordination, relay settings, power generation controls, switchgear controls, motor controls, system start-ups, troubleshooting and maintenance and design engineering. He is skilled in working on projects that require close attention to sequence of events and tight project scheduling. Mr. Buss is skilled at managing and directing technical staff in both engineering design and start-up of generating facilities. His specific project experience includes the following:

- Bradley Lake exciter upgrade, Homer Electric Association, Homer Alaska
- Valdez Terminal feeder relay upgrade, Alyeska Pipeline Services Company
- Valdez Terminal generator protection upgrade, Alyeska Pipeline Services Company
- Wrangell and Petersburg Substation relay upgrade, Southeast Alaska Power Agency
- Switchgear replacement and upgrade, Doyon, Fort Wainwright Army Base, Fairbanks, Alaska
- Switchgear and generation upgrade, Doyon, Fort Greely Army Base, Fort Greely, Alaska
- Tyee Generation relay replacement and upgrade, Southeast Alaska Power Agency
- Powerplant Switchgear Replacement, Kotzebue Electric, Kotzebue, Alaska

Jeff Rice, PE, Electrical Engineer

EXPERIENCE SUMMARY
- 9 years of engineer experience
- B.S., Electrical Engineering, Gonzaga University
- Alaska Professional Electrical Engineer, E12144

Mr. Rice has over eight years of electrical engineering experience in Alaska. This experience includes being responsible design and construction supervision for transmission, sub-transmission and distribution relay and meter upgrades. He has been responsible for the design and implementation of substation controls, powerhouse controls, engine monitoring systems and SCADA systems. His experience also includes being the project lead in electrical automation systems, electrical system hazard analysis, engine and generator controls systems, and electrical system studies. Some of his specific project experience includes the following:

- Swampy Acres Substation expansion, Kodiak Electric Association, Kodiak Alaska
- Swampy Acres Substation distribution retrofit, Kodiak Electric Association, Kodiak, Alaska
- Nymans Substation line relaying upgrade, Kodiak Electric Association, Kodiak, Alaska
- Bradley Lake exciter upgrade, Homer Electric Association, Homer Alaska
- Wrangell and Petersburg Substation relay upgrade, Southeast Alaska Power Agency
- Glennallen Diesel Plant Upgrades and Expansion, Copper Valley Electric Association, Glennallen, Alaska
- Greens Creek coordination study, Greens Creek Mine, Juneau, Alaska
- Kensington Mine voltage study, Couer Alaska, Juneau, Alaska

Earl George, PE, Electrical Engineer

EXPERIENCE SUMMARY
- 15 years of engineer experience
- B.S., Electrical Engineering, University of Alaska Fairbanks
- Alaska Professional Electrical Engineer, E10700

Mr. George has fifteen years of electrical engineering experience in Alaska. This experience includes being responsible for the design, construction supervision, and testing of many components built into transmission, sub-transmission, and distribution substations. He has been responsible for the design, testing, evaluation/studying, and implementation of substation metering, substation high and low voltage apparatus, substation ground grids, powerhouse high voltage and low voltage apparatus. His experience also includes being the project management of multi-disciplinary design and construction teams for generation and substation and commercial/industrial projects, inspection/evaluation of

NEC/NESC code violations, electrical system hazard analysis, and various studies. Some of his specific project experience includes the following:

- South Anchorage Substation (now known as Retherford Substation), Chugach Electric Association, Anchorage, AK
- Tyee, Wrangell, Petersburg Substation panel meter and transducer testing, Thomas Bay Power Authority
- Snake River Power Plant Relocation, Nome Joint Utility System, Nome, Alaska
- Dutch Harbor Power Plant Relocation, City of Unalaska, Unalaska, Alaska
- Wrangell Diesel Plant & Distribution Upgrades, Wrangell Municipal Light & Power, Wrangell, Alaska
- Distribution Substation Ground Grid Analysis/Evaluation, Homer Electric Association, Soldotna/Kenai/Anchor Point/Homer, Alaska
- Metlakatla Hydro Governor and Feeder Relay Upgrades, Metlakatla Power & Light, Metlakatla, Alaska
- Waste Heat Feasibility Evaluation, City of Unalaska, Unalaska, Alaska
- Boiler Replacement Study, Wrangell Municipal Light & Power, Wrangell, Alaska

James Cote, Jr., PhD, PE, Senior Planning and System Studies Engineer

EXPERIENCE SUMMARY
- 30 years of engineer experience
- Ph.D., Electrical Engineering, University of Washington
- California Professional Electrical Engineer, E12226

Dr. Cote has 30 years of experience with the electrical power industry. He has expertise at conducting system studies including power flow, fault analysis, and transient stability studies. He has also developed detailed custom models for transient stability simulations and specializes in advanced dynamic modeling and analysis of unique power system components. Mr. Cote will manage all studies as part of this project. A short snapshot of his relevant project experience includes the following:

- Transmission Stability Planning Studies and Assessment, Grant County, Ephrata, Washington
- Tacoma Power System Impact Study, Tacoma, Washington
- Terror Lake Hydroelectric Project Studies, Kodiak Electric Association, Inc., Kodiak, Alaska
- Susitna Hydro Transmission Study, Alaska Energy Authority, Anchorage, Alaska
- Bradley Lake Loss Evaluation Studies, Homer Electric Association, Inc., Homer, Alaska
- Wheeler Road IRS Study, Grant County PUD, Ephrata, Washington
- Hawaii Big Wind Feasibility Studies, Hawaii Electric Company, Honolulu, Hawaii

Greg Huffman, PE, SE, Transmission Line Manager

EXPERIENCE SUMMARY

- 29 years of electrical engineering experience
- B.S., Civil Engineering, University of Washington
- Alaska Professional Civil Engineer, CE8349

Mr. Huffman has been working in the electrical power consulting field for 29 years. Throughout his tenure, he has been responsible for the civil and structural engineering of generation, substation, transmission and distribution, and communications structures projects. Mr. Huffman has designed foundations for a wide variety of geotechnical conditions. His experience includes design of spread footings, drilled piers, driven piles, grouted piles, and micro-piles. He has experience analyzing, upgrading and designing transmission line and substation structures up to 345 kV using wood, steel, aluminum, and concrete materials. These include self-supporting pole structures, guyed pole structures, H-frames, A-frames, lattice towers, guyed V-towers, guyed X-towers, and four-legged "swingset" structures. He has also been responsible for permitting and agency coordination for several projects. Mr. Huffman will manage civil and structural portion of the project. His specific project experience includes the following:

- Marathon to Ivanoff 115 kV Intertie, Homer Electric Association, Homer, Alaska
- Teeland to Redington 115 kV Upgrade, Matanuska Electric Association, Wasilla, Alaska
- South Anchorage to University 138 kV Transmission Line, Chugach Electric Association, Anchorage, Alaska
- Diamond Ridge Substation, Homer Electric Association, Homer, Alaska
- Eklutna Transmission Line – Double Circuit 230 kV Upgrade, Municipal Light & Power, Eklutna, Alaska
- Fritz Creek 115 kV Switch Replacement, Homer Electric Association, Homer, Alaska

CAPACITY OF ELECTRIC POWER SYSTEMS, INC.

EPS proposes the following schedule. Additional time has been added for evaluation of existing studies and making recommendation to allow for additional studies if required. The additional time would allow for a high level power flow study to take in account for a limited number of operating scenarios. If a more detailed study is required additional time will be necessary.

Project Management and Design Engineer firm selected	October 12, 2012
Evaluations and recommendation submitted	November 30, 2012
Engineering and design of selected recommendation	January 25, 2013
Long lead items specified and ordered by owner	February 4, 2013
Complete bid package for procurement and installation	February 28, 2013
Completion of project	November 30, 2013

EPS is prepared to make the Juneau office dedicated to completing this project within time and budget.

EXCLUSIONS, CONDITIONS OR QUALIFICATIONS

ASSUMPTIONS AND CLARIFICATIONS

EPS has thoroughly reviewed the RFP and supporting documents. We have based our work plan and "not-to-exceed" cost on the following assumptions and clarifications.

General

1. As-building of existing equipment is not included.
2. SEAPA to provide drawings electronically in native AutoCAD format. Estimate does not include conversion of raster drawings to AutoCAD.
3. Estimate is based on project management and engineering for direct replacement only. It is assumed the foundation and containment will need to be redesigned or modified as part of this estimate. Additional design and project management costs may be incurred depending on selected replacement option.
4. The estimate for the optional study is based on a power flow study with three loading scenarios, three line configurations and two different generation scenarios. If additional studies or parameters are required, there may be additional costs.

APPENDIX – FEE ESTIMATE

DATE:	9/24/2012	FIRM: Electric Power Systems, Inc				PROJECT NAME:		SEAPA Wrangell Switchyard Reactor		PREPARER: Buss		
		TASK NO.:		TASK DESCRIPTION: Reactor Replacement								
SUB-TASK NO.	SUB-TASK DESCRIPTION	Engineer XII	Engineer XI	Engineer X	Engineer IX	Engineer VI	Engineer V	Engineer Tech III	Clerical	Office Manager	Expeditor	OTHER	
	SEAPA WRGL Reactor Replacement												
	Review and Evaluate Existing studies	4.0	16.0			16.0							
	Additional Study												
	Present findings to SEAPA		4.0										
	Review options and make selection of option	1.0	12.0										
	Design direct replacement		4.0			40.0		40.0					
	Structural Review of Existing Foundations	4.0					24.0						
	Long Lead Time Item specifications (Reactor)		4.0			8.0					8.0		
	100% Design and Bid Ready Documents		16.0			40.0		40.0					
	Assist with bid evaluation and selection		24.0										
	Construction Support												
	Construction Management		60.0						16.0	4.0			
	Field Engineering					60.0					16.0		
	Inspections		24.0										
	Reports		48.0			16.0							
	As-built Drawing Package		4.0			16.0		40.0					
	Final Construction Report		4.0			16.0							
	SUBTOTALS	9.0	220.0	0.0	0.0	212.0	24.0	120.0	16.0	4.0	24.0		
	LR ($/HR)	$198.00	$183.00	$170.00	$155.00	$138.00	$132.00	$103.00	$52.00	$65.00	$78.00		
	DCDL ($)	$1,782	$40,260	$0	$0	$29,256	$3,168	$12,360	$832	$260	$1,872	$0.00	$0.00

SUB-TASK NO.	EXPENSES ITEM		QUANTITY	UNIT PRICE	TOTAL PRICE
	Study findings presentation airfare	Lot	1	$450.00	$450.00
	Design Review in Ketchikan - airfare and expenses	Lot	1	$658.00	$658.00
	Field Engineering - hotel and expenses	Day	8	$200.00	$1,600.00
	Airfare - Inspections, field engineering, etc	Lot	6	$385.00	$2,310.00
	Other expenses - inpsections, PM	Day	4	$200.00	$800.00
		Day			$0.00
		Day			$0.00
		Day			$0.00
		Day			$0.00
			Overhead:	10%	$582
			Profit:	0%	$0
				TOTAL:	$6,400

ASSUMPTIONS:

1. Estimate is based on design for direct replacement of existing reactor.
2. Study not included.

TOTAL COST OF LABOR:			$89,790
TOTAL OTHER COSTS:			$0
TOTAL EXPENSES			$6,400
CONTIGENCY		5%	$4,809
TOTAL COST			$100,999

APPENDIX – FEE SCHEDULE

electric Power Systems inc.
Consulting Engineers

Electric Power Systems, Inc. Fee Schedule

Valid through 12/31/12

Testimony, deposition/expert witness	$372.00
Engineer XII	$198.00
Engineer XI	$183.00
Engineer X	$170.00
Engineer IX	$155.00
Engineer VIII	$149.00
Engineer VII	$143.00
Engineer VI	$138.00
Engineer V	$132.00
Engineer IV	$124.00
Engineer III	$111.00
Engineer II	$99.00
Engineer I	$91.00
Engineer Tech VI	$149.00
Engineer Tech V	$138.00
Engineer Tech IV	$118.00
Engineer Tech III	$103.00
Engineer Tech II	$90.00
Engineer Tech I	$78.00
ROW Manager	$151.00
ROW Senior Agent	$131.00
ROW Agent	$94.00
ROW Assistant	$70.00
Expeditor	$78.00 ST; $101.00 OT
Clerical	$52.00
Office Manager	$65.00

1. The above listed rates are per hour.
2. The fee schedule is subject to review on January 1, 2013, and on January 1 of each year thereafter.
3. Expenses incurred, as necessary part of engineering services under this contract will be billed at cost plus 10%. Incidental expenses, such as computer usage, local phone service, and copying are included in the above rates. If Per Diem is utilized (vs. expenses and markup), it will be at the Federal Rates.
4. Services and materials purchased by Electric Power Systems, Inc. at the request of the owner will be billed at cost plus 10%.
5. Services and materials provided by other Engineered Solutions Group, Inc. companies will not be subject to intra-company markup, and are subject to the above fee schedule.
6. Interest at the rate of 1.5% per month (less, if restricted by law) may be charged for invoices greater than 60 days past due.

Electric Power Systems, Inc.
A division of Engineered Solutions Group, Inc.
3305 Arctic Blvd., Suite 201
Anchorage, AK 99503
Phone (907) 522-1953
Fax (907) 522-1182

COMMONWEALTH ASSOCIATES PROPOSAL

Commonwealth associates, inc.

360-466-2214
www.cai-engr.com

2021 E. College Way, Suite 101
Mount Vernon, WA 98273

October 1, 2012
P-12-179

Ms. Sharon E. Thompson
Executive Assistant
Southeast Alaska Power Agency
1900 First Avenue, Suite 318
Ketchikan, Alaska 99901

SUBJECT: PROPOSAL – DESIGN ENGINEERING, CONSTRUCTION PHASE SUPPORT, AND PROJECT MANAGEMENT SERVICES FOR THE WRANGELL REACTOR REPLACEMENT PROJECT

Dear Ms. Thompson,

Commonwealth Associates, Inc. (Commonwealth) is pleased to submit this proposal to the Southeast Alaska Power Agency (SEAPA) to provide design engineering, construction phase support, and project management services for the Wrangell Reactor Replacement project. Commonwealth would be pleased to help you meet your project goals. When you select a consultant, you want one that can take your project, assess your specific requirements, and do the work in an efficient, cost-effective manner. Commonwealth is that consultant.

Commonwealth is an employee-owned and -managed firm specializing in services for the electrical power industry. With a staff of over 240 employees, we offer a complete package of services to assist our clients with the successful planning, operation, maintenance, siting, permitting, design, and construction of their electric generation, transmission, substation and distribution projects. Commonwealth has several offices from which to draw expertise. Our headquarters is in Jackson, Michigan, and we have principal offices in Mount Vernon, Washington, and near Atlanta, Georgia.

You will find Commonwealth is well qualified and ideally suited to meeting your needs for professional engineering services. Commonwealth has significant experience with all aspects of project management as well as providing full services for substation, transmission and distribution design, including construction management. We have extensive experience in providing professional services to electrical utilities as well as other clients. Western clients served by Commonwealth include:

- Southeast Alaska Power Agency
- SE Conference
- Ketchikan Public Utilities
- Tacoma Power
- Douglas County PUD
- PacifiCorp
- Modesto Irrigation District
- Snohomish County PUD
- Sacramento Municipal Utility District
- Seattle City Light
- Klickitat County PUD
- Seneca Group
- Okanogan County PUD
- Puget Sound Energy
- Whatcom County PUD
- Inland Power and Light
- American Energy, Inc.
- Pacific Gas and Electric

Commonwealth
associates, inc.

Commonwealth fosters an environment for innovation and technical excellence. We encourage employees to obtain professional licensure and support their participation in professional organizations, such as the Institute of Electrical and Electronics Engineers, the American Society of Civil Engineers, and the National Society of Professional Engineers. Commonwealth is a member of the Rocky Mountain Electric League (RMEL) and the Northwest Public Power Association (NWPPA).

Meeting SEAPA's project goals is important to you and to us. We know that good communication between your staff and ours is the key to the success of your projects. We'll work closely with you and your teams to make sure we all understand the goals of the project and how the goals will be reached.

SEAPA's RFP specifies a 20-page maximum exclusive of resumes, cover letters, questionnaires, cover sheets, etc. Our proposal complies with this requirement.

Thank you for your consideration of Commonwealth. If you have any questions or would like additional information on Commonwealth's capabilities and experience, please call me at 360-395-4475. You may also find additional information on our web site: www.cai-engr.com. We look forward to having the opportunity to provide professional engineering services to SEAPA.

Yours very truly,

Lloyd Marquardt, P.E.
Program Manager

Approved for Submittal,

Steven W. Arnold, P.E.
Senior Vice President

Enclosure

PROPOSAL

Design Engineering, Construction Phase Support, and Project Management Services for the Wrangell Reactor Replacement Project

P-12-179

Commonwealth
associates, inc.

SUBMITTED TO:

Southeast Alaska Power Agency

October 1, 2012

Connect With Confidence

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SECTION 1. QUALIFICATIONS OF THE FIRM

Commonwealth's Alaska Experience Includes:

- In 1976 Commonwealth personnel worked on the 6-mile Snettisham rebuild project near Juneau. They coordinated the realignment survey, worked on the design, and served as design representative during construction.
- In 1996, Ketchikan Public Utilities retained Commonwealth to provide consulting services relative to the organization and management of the Swan-Tyee Intertie project.
- Provided design services for Swan Lake to Ketchikan 115 kV transmission line (31 miles) and Green Lake 69 kV transmission line (13 miles).
- Commonwealth served as the project manager for the Swan-Tyee Intertie.
- Project Manager for SEAPA for the Solomon Gulch Low Level Outlet Works, Solomon Gulch Anchor Block Enhancements, warranty inspection of the STI, and some annual maintenance work.
- Designed the Anchorage to Fairbanks intertie and upgrades to substations along the line. Work was for the Alaska Power Authority. Commonwealth was on-site to start up the substations and energizing the line. Performed study work on the Static VAR controls that were installed on the line.
- Commonwealth was the design engineer, construction manager and commissioning engineer for the transmission line from Soldotna to Homer and the Soldotna substation.

Commonwealth is eager to provide professional engineering services for Southeast Alaska Power Agency's (SEAPA) Wrangell Reactor Replacement project. Commonwealth's expertise includes project management; construction management; electric transmission line and substation design; electric system analysis; and cost of service, rate, and financial analysis. A leading consulting engineering firm, Commonwealth offers a complete package of services to assist clients with the successful project management, planning, licensing, design, and construction management of their electrical power delivery projects.

Commonwealth is an employee-owned and -managed firm that focuses on services related to the transmission and distribution of electrical energy. Our experienced, diverse staff includes managers, engineers, and financial analysts as well as experts in environmental sciences, licensing, surveying, right-of-way acquisition, and construction management.

Commonwealth is well qualified to perform the services necessary for this reactor replacement project. Commonwealth has extensive experience with substation design, having been involved with the design of approximately 200 substations in the last five years. Additionally, in early 2012 Commonwealth completed the Power System Study for SEAPA that thoroughly analyzed this reactor and its effects on SEAPA's electrical system. Commonwealth also has extensive transmission line and distribution line design experience, having been involved with approximately 90 projects in the last five years.

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Specialized Experience

Commonwealth provides consulting and engineering services for facilities ranging from 2.5 kV to 765 kV.

Project Management Services

Commonwealth furnishes a variety of services designed to aid clients in achieving successful completion of their projects. This encompasses project management services as well as project control. Commonwealth offers professional project management services in support of transmission line and substation projects. Commonwealth uses a unique team approach, with specific services tailored to meet the exact needs of each client. Each staff member is dedicated to serving our client's best interest, working in partnership as an extension of the client's staff. Project challenges are anticipated in advance and good communication among all project participants is facilitated.

Commonwealth offers the most up-to-date computer methods available for project control services. Commonwealth uses software such as Microsoft Project and Primavera to assist with planning and scheduling; budget monitoring and performance evaluation; estimates and cash flow information processing; status reports; and resource planning and monitoring.

Substation Engineering

Commonwealth's substation engineering staff is highly experienced in designing additions to existing substations as well as developing new substations from the "ground up." We have completed hundreds of substation projects ranging from small distribution substations to large bulk transmission facilities, some of which were completed using a turnkey approach. Some projects have required innovative designs to overcome aesthetic or geological concerns. Recent projects have reflected modern trends to utilize transmission assets more efficiently with the installation of phase shifting transformers, static VAR compensators and flexible AC transmission systems (FACTS).

Electrical Systems

Commonwealth's electrical systems engineering staff provides a broad spectrum of electrical systems analyses to utilities, independent power producers, governmental agencies, industrial firms, and contractors offering turnkey services. We use a variety of software packages, including our own TRANSMISSION 2000® suite of programs, to conduct our studies. We specialize in evaluation of high-voltage power systems.

Transmission and Distribution Line Engineering

Commonwealth's diverse staff represents one of the most experienced transmission and distribution (T&D) technical resources available to the electric energy industry worldwide. Our projects include the design of new facilities as well as expansion and upgrading of existing ones. These facilities vary in engineering costs from a few thousand to several million dollars. We are actively engaged in the development and assessment of the most advanced overhead, underground, and submarine power

delivery systems and use the latest in technological tools, such as PLS-CADD, to complement our engineering skills.

Cost of Service, Rate and Financial Analysis

The Commonwealth team has public sector experience in economic and financial analysis and management. Experience includes cost-of-service analysis and rate design as well as economic analysis of electric power and transmission projects.

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SECTION 2. RATES, FEES AND ESTIMATED COST

Commonwealth's cost estimate is to the right, and the 2012 and 2013 fee structures follow.

Commonwealth proposes work be done on a time and expense or materials basis.

Commonwealth will invoice SEAPA monthly for actual man-hours expended and for expenses incurred during the business month, in accordance with established contract terms and rates. Payment is due within 30 days of the invoice date.

Travel expenses shown assume SEAPA will pay for local travel via its contracts for local air travel to Wrangell as has been done with other projects.

Estimated Project Costs (2013 Dollars)

Description	Man-hours	Labor	Expense	Total
T1 Kick-off Meeting	120	21,320	4,746	26,066
T2 Evaluate Options	154	21,694	1,510	23,204
Totals	274	$ 43,014	$ 6,256	$ 49,270

The approach to the project is included in Section 6. Costs are included above for Task 1 and Task 2 as outlined in Section 6. This includes two meetings with SEAPA staff in Ketchikan. The first meeting is for the project kick-off meeting and also includes a site visit to the Wrangle Substation. The second is to provide recommendations regarding:

Option A – Replace reactor with new reactor with same characteristics as the old.

Option B – Replace reactor with a dynamic device (STATCOM, DVAR, or SVC).

Option C – Other alternatives as may be identified in review of studies and discussions with SEAPA staff.

Costs for the balance of the work will be determined when design option A, B, or C is selected.

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SEAPA
COMMONWEALTH ASSOCIATES, INC.
CATEGORY LABOR RATE SUMMARY
BUSINESS YEAR 2012

BILLING CATEGORY	TITLE	LABOR BILLING RATE PER HOUR
EXEMPT EMPLOYEES		
42	ENGINEER X	206
40	ENGINEER IX, LAND SERVICE SPECIALIST IX, PROJECT MANAGER IX, FIELD PROJECT REPRESENTATIVE	170
38	ENGINEER VIII, ENGINEERING SPECIALIST VIII, CONSULTANT VIII, LAND SERVICES SPECIALIST VIII, PROJECT MANAGER VIII, FIELD PROJECT REPRESENTATIVE VIII	149
36	ENGINEER VII, ENGINEERING SPECIALIST VII, ENVIRONMENTAL SPECIALIST VII, LAND SERVICES SPECIALIST VII, ADMINISTRATIVE SPECIALIST VII, PROJECT MANAGER VII, FIELD PROJECT	129
32	ENGINEER VI, ENGINEERING SPECIALIST VI, ENVIRONMENTAL SPECIALIST VI, LAND SERVICES SPECIALIST VI, ADMINISTRATIVE SPECIALIST VI, PROJECT MANAGER VI, FIELD PROJECT	119
30	ENGINEER V, ENGINEERING SPECIALIST V, ENVIRONMENTAL SPECIALIST V, LAND SERVICES SPECIALIST V, LAND SERVICES SUPERVISOR, PURCHASING AGENT V, ADMINISTRATIVE SPECIALIST V, PROJECT MANAGER V, FIELD PROJECT REPRESENTATIVE V	107
28	ENGINEER IV, ENGINEERING SPECIALIST IV, ENVIRONMENTAL SPECIALIST IV, LAND SERVICES SPECIALIST IV, TECHNICAL EDITOR IV, PURCHASING AGENT IV, ADMINISTRATIVE SPECIALIST IV, PROJECT MANAGER IV, FIELD PROJECT REPRESENTATIVE IV	96
26	ENGINEER III, ENGINEERING SPECIALIST III, ENVIRONMENTAL SPECIALIST III, LAND SERVICES SPECIALIST III, CARTOGRAPHER III, PROGRAMMER III, TECHNICAL EDITOR III, PURCHASING AGENT III, ADMINISTRATIVE SPECIALIST III, PROJECT MANAGER III, FIELD PROJECT REPRESENTATIVE III	89
25	ENGINEER II, ENGINEERING SPECIALIST II, ENVIRONMENTAL SPECIALIST II, LAND SERVICES SPECIALIST II, CARTOGRAPHER II, PROGRAMMER II, TECHNICAL EDITOR II, PURCHASING AGENT II, ADMINISTRATIVE SPECIALIST II, PROJECT MANAGER II, FIELD PROJECT REPRESENTATIVE II	82
21	ENGINEER I, ENGINEERING SPECIALIST I, ENVIRONMENTAL SPECIALIST I, LAND SERVICES SPECIALIST I, CARTOGRAPHER I, PROGRAMMER I, TECHNICAL EDITOR I, PURCHASING AGENT I, ADMINISTRATIVE SPECIALIST I, PROJECT MANAGER I, FIELD PROJECT REPRESENTATIVE I	70
NONEXEMPT EMPLOYEES		
	ADMINISTRATIVE ASSISTANT V, CADD OPERATOR V, DESIGNER V, TECHNICIAN V	82
17	ADMINISTRATIVE ASSISTANT IV, CADD OPERATOR IV, DESIGNER IV, TECHNICIAN IV	70
16	ADMINISTRATIVE ASSISTANT III, CADD OPERATOR III, DESIGNER III, TECHNICIAN III	61
15	ADMINISTRATIVE ASSISTANT II, CADD OPERATOR II, DESIGNER II, TECHNICIAN II	51
11	ADMINISTRATIVE ASSISTANT , CADD OPERATOR , DESIGNER , TECHNICIAN	42

Notes: 1. Technology charges are included in rates.
2. Individuals may move between categories based on promotions

9/7/2012M

EXPENSE BILLING RATE SUMMARY
BUSINESS YEAR 2012

PRODUCTION COPIES (NOTE 1)	8-1/2" x 11" 11" x 17" Large format drawings	$0.10/sht. $0.16/sht. $1.00/sq. ft.
OUTSIDE REPRODUCTION	---	At cost
EPRI SOFTWARE	Such as TLWorkstation & SG Workstation	EPRI royalty fee for non EPRI members (if use requested by client)
VEHICLE USAGE	---	At prevailing rate
TRAVEL, LODGING AND MEALS	---	At cost or specified per diem
MAIL DELIVERY SERVICES	Fed-Ex, UPS, USPS, etc.	At cost
SUBCONTRACTORS	---	Cost plus 7%
OTHER MISC. CLIENT OR PROJECT REQUIRED EXPENSES	---	At cost

Notes:

1. No charge for reproduction unless the total number of reproduced sheets is greater than 100.

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SEAPA
COMMONWEALTH ASSOCIATES, INC.
CATEGORY LABOR RATE SUMMARY
BUSINESS YEAR 2013

BILLING CATEGORY	TITLE	LABOR BILLING RATE PER HOUR
EXEMPT EMPLOYEES		
42	ENGINEER X	216
40	ENGINEER IX, LAND SERVICE SPECIALIST IX, PROJECT MANAGER IX, FIELD PROJECT	179
38	ENGINEER VIII, ENGINEERING SPECIALIST VIII, CONSULTANT VIII, LAND SERVICES SPECIALIST VIII, PROJECT MANAGER VIII, FIELD PROJECT REPRESENTATIVE VIII	156
36	ENGINEER VII, ENGINEERING SPECIALIST VII, ENVIRONMENTAL SPECIALIST VII, LAND SERVICES SPECIALIST VII, ADMINISTRATIVE SPECIALIST VII, PROJECT MANAGER VII, FIELD PROJECT	135
32	ENGINEER VI, ENGINEERING SPECIALIST VI, ENVIRONMENTAL SPECIALIST VI, LAND SERVICES SPECIALIST VI, ADMINISTRATIVE SPECIALIST VI, PROJECT MANAGER VI, FIELD PROJECT	125
30	ENGINEER V, ENGINEERING SPECIALIST V, ENVIRONMENTAL SPECIALIST V, LAND SERVICES SPECIALIST V, LAND SERVICES SUPERVISOR, PURCHASING AGENT V, ADMINISTRATIVE SPECIALIST V, PROJECT MANAGER V, FIELD PROJECT REPRESENTATIVE V	112
28	ENGINEER IV, ENGINEERING SPECIALIST IV, ENVIRONMENTAL SPECIALIST IV, LAND SERVICES SPECIALIST IV, TECHNICAL EDITOR IV, PURCHASING AGENT IV, ADMINISTRATIVE SPECIALIST IV, PROJECT MANAGER IV, FIELD PROJECT REPRESENTATIVE IV	101
26	ENGINEER III, ENGINEERING SPECIALIST III, ENVIRONMENTAL SPECIALIST III, LAND SERVICES SPECIALIST III, CARTOGRAPHER III, PROGRAMMER III, TECHNICAL EDITOR III, PURCHASING AGENT III, ADMINISTRATIVE SPECIALIST III, PROJECT MANAGER III, FIELD PROJECT REPRESENTATIVE III	93
25	ENGINEER II, ENGINEERING SPECIALIST II, ENVIRONMENTAL SPECIALIST II, LAND SERVICES SPECIALIST II, CARTOGRAPHER II, PROGRAMMER II, TECHNICAL EDITOR II, PURCHASING AGENT II, ADMINISTRATIVE SPECIALIST II, PROJECT MANAGER II, FIELD PROJECT REPRESENTATIVE II	86
21	ENGINEER I, ENGINEERING SPECIALIST I, ENVIRONMENTAL SPECIALIST I, LAND SERVICES SPECIALIST I, CARTOGRAPHER I, PROGRAMMER I, TECHNICAL EDITOR I, PURCHASING AGENT I, ADMINISTRATIVE SPECIALIST I, PROJECT MANAGER I, FIELD PROJECT REPRESENTATIVE I	74
NONEXEMPT EMPLOYEES		
	ADMINISTRATIVE ASSISTANT V, CADD OPERATOR V, DESIGNER V, TECHNICIAN V	86
17	ADMINISTRATIVE ASSISTANT IV, CADD OPERATOR IV, DESIGNER IV, TECHNICIAN IV	74
16	ADMINISTRATIVE ASSISTANT III, CADD OPERATOR III, DESIGNER III, TECHNICIAN III	64
15	ADMINISTRATIVE ASSISTANT II, CADD OPERATOR II, DESIGNER II, TECHNICIAN II	54
11	ADMINISTRATIVE ASSISTANT , CADD OPERATOR , DESIGNER , TECHNICIAN	44

Notes: 1. Technology charges are included in rates.
2. Individuals may move between categories based on promotions

EXPENSE BILLING RATE SUMMARY
BUSINESS YEAR 2013

PRODUCTION COPIES (NOTE 1)	8-1/2" x 11" 11" x 17" Large format drawings	$0.10/sht. $0.16/sht. $1.00/sq. ft.
OUTSIDE REPRODUCTION	---	At cost
EPRI SOFTWARE	Such as TLWorkstation & SG Workstation	EPRI royalty fee for non EPRI members (if use requested by client)
VEHICLE USAGE	---	At prevailing rate
TRAVEL, LODGING AND MEALS	---	At cost or specified per diem
MAIL DELIVERY SERVICES	Fed-Ex, UPS, USPS, etc.	At cost
SUBCONTRACTORS	---	Cost plus 7%
OTHER MISC. CLIENT OR PROJECT REQUIRED EXPENSES	---	At cost

Notes:

1. No charge for reproduction unless the total number of reproduced sheets is greater than 100.

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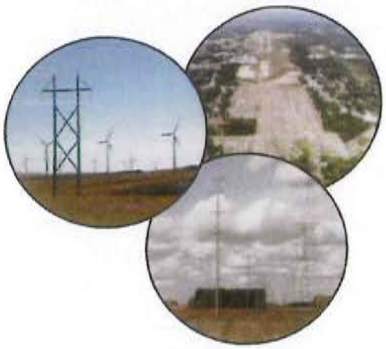
SECTION 3. GENERAL EXPERIENCE OF FIRM



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Gahanna, OH 43230
Tel.: 614-729-2500
Email: caiColumbusOffice@cai-engr.com

Commonwealth also has satellite offices in Dayton, Ohio, and Roanoke, Virginia.

Commonwealth is an employee-owned and employee-managed corporation dedicated to providing engineering and consulting services to the electric utility industry. We provide a complete package of services to assist clients with the successful licensing, design, and construction of their power generation facilities, electric distribution line, transmission line, and substation projects. Commonwealth also offers TRANSMISSION 2000®, a highly interactive, powerful software product used to analyze and plan electric utility transmission systems, and Transmission Access Information Library, a compact library of all available regional power flow models of the continental U.S. transmission system.

Commonwealth's strength is its talented staff. Therefore, the company fosters an environment to promote innovation and technical excellence. We encourage employees to achieve professional status by licensure in their profession. We support our staff's participation in professional organizations and participation in professional conferences and committees, such as the Institute of Electrical and Electronics Engineers, the American Society of Civil Engineers, the National Society of Professional Engineers, and the Edison Electric Institute.

Commonwealth knows that each client is unique and has a different set of needs that must be addressed. Our broad exposure to many utility standards and procedures, our participation in professional and technical organizations, and our mix of engineering expertise provide opportunity for development of innovative ideas and solutions to our clients' engineering problems.

History

Commonwealth was established in 1988, following the closing of another engineering firm's Jackson, Michigan, office. The founders had worked closely together on domestic and foreign electric transmission and distribution projects for many years out of the Jackson office. Rather than leave Jackson, Commonwealth's founders left the company and took action to incorporate under a name that was—and remains—well known and respected in the electric power industry. The group devoted itself to structuring a new employee-owned company with the intent of upholding the previous Commonwealth Associates, Inc.'s reputation for providing high-quality engineering and consulting services. Other talented individuals, many of whom had worked previously with the founders,

Commonwealth associates, inc.

Commonwealth's services include:

- Owner's engineering services
- Power and energy services
- Overhead transmission line engineering
- Underground transmission line engineering
- Substation engineering
- Industrial IC&E
- Distribution line engineering, overhead and underground
- Electrical systems studies
- Due diligence reviews
- Project management
- Route selection
- Environmental studies/permitting
- GIS mapping
- Land acquisition
- Construction support
- Data resources
- TRANSMISSION 2000® software
- Customized training

were brought in to lend their expertise. The new company flourished, and Commonwealth opened another office in the state of Washington in 1992 to serve clients in the western United States. Another principal office was opened near Atlanta, Georgia, in 2008. The office near Columbus, Ohio, was opened in 2011.

Today, Commonwealth's staff of more than 240 professional and technical employees represents one of the most skilled, experienced technical resources available to analyze, plan, design, and construct electric power generation and delivery projects. In addition to licensed engineers and engineering specialists, we have experts in environmental sciences, licensing, Geographical Information Systems (GIS), surveying, right-of-way acquisition, and construction management, many with more than 20 years of experience in their fields. Many of our professional engineers are active members of the Institute of Electrical and Electronics Engineers, American Society of Civil Engineers, Edison Electrical Institute, and National Society of Professional Engineers, which allows for interaction with our peers and access to problem-solving resources directed to the power generation and T&D industries.

Commonwealth's methods and tools have evolved over the years to incorporate emerging technologies and meet new challenges, but our devotion to engineering excellence has remained the same.

SECTION 4. PROJECT RESUMES

Commonwealth has considerable experience working on projects located in Alaska, as demonstrated below, as well as on projects that are remotely based and require intense logistical coordination. Commonwealth's staff has worked on projects from Alaska to the desert and windy areas of central Texas, to the densely wooded areas of western Washington and the San Juan Islands. The Commonwealth team is a hardy group and includes ocean and river kayakers, fishermen, hunters, hikers, and ski instructors. Examples of our applicable experience are:

Laurens County

Mitsubishi Electric Power Products, Inc. Georgia Power - Laurens County Static VAR Compensator (SVC): Commonwealth provided the balance of the plant engineering service to Mitsubishi Electric Power Products. Inc. (MEPPI) for installation of a new SVC in Laurens County, Georgia. MEPPI was the prime contractor for an Engineer, Procure & Construct (EPC) contract with Georgia Power to deliver a new SVC in southern Georgia. The SVC is rated 0 MVAR reactive to 87 MVAR capacitive and is used to support voltage on the 115 kV systems during periods of heavy load at a steel mill.

The SVC station included:

- Four single-phase transformers rated 115-11.5 kV at 29 MVA each
- Shunt reactor assembly rated 87 MVAR
- 5th harmonic filter bank
- 7th harmonic filter bank
- Station power rack
- Control House with redundant HVAC units
- Thyristor assemblies with liquid cooling system
- Fire detection/protection system
- Protective relay system and SVC controls

Commonwealth's scope of services is described as balance of plant engineering and design. This included physical electrical design, foundation/structural design and control/relaying design activities. Deliverables included drawing packages issued for construction, preparation of bills of materials and circuit lists, and development of calculations to support design decisions. Completed in 2006. Terry Croasdaile, (724) 816-3979.

SEAPA – Power System Study: With the completion of the Swan-Tyee 115 kV Intertie (STI) in 2009, two previously separate systems were interconnected. The electrical systems of Ketchikan, Wrangell, and Petersburg are now operated as a combined power system by the Southeast Alaska Power Agency (SEAPA). The system has two major hydro plants, Tyee Lake and Swan Lake (each rated approximately 22


POWER SYSTEM STUDY

Volume I
EXECUTIVE SUMMARY

February 15, 2012

SEAPA

Commonwealth

MW), that are operated to provide economic power to the three cities. The sizes of the hydro units are large relative to the system size. Also, the transmission system consists of a single line between the two hydro plants, a single line north to service Wrangell and Petersburg, and a single line south to serve Ketchikan. The relatively large size of the generating units and the radial nature of the transmission system make for a unique power system with regard to operating and reliability considerations. The purpose of the study was to better understand the operating characteristics of the system, provide an evaluation of system reliability, and review future load expansion. The scope of the study included steady-state (power flow), dynamic (transient stability), and fault (short-circuit) relay coordination. The study included the evaluation of three voltage support strategies: capacitors, switching the reactor, and adding a dynamic var compensation (STATCOM or DVAR). Completed in 2012. Dave Carlson LLC, (SEAPA Retired CEO), 60832 Scotts Bluff Place, Bend, Oregon 97702, 907-317-1365.

Mitsubishi Electric Power Products, Inc. 345/238 kV Substation with Static VAR Compensation. Commonwealth provided engineering design for the addition of a static VAR compensation (SVC) system and the expansion of the 345 kV substation yard. Mitsubishi Electric Power Products, Inc. (MEPPI) was the EPC (Engineering, Procurement, Construction) contractor for the project. The substation owner is a confidential client.

Mitsubishi Project

The substation consisted of new towers for one of the existing 345 kV feeds to the substation. New 345 kV bays were added to provide connection to the static VAR compensation system. The design consisted of site development work including grading, fence, drainage, oil containment, and spill prevention control and countermeasures (SPCC).

New equipment included four 345/27 kV transformers, one 27 kV grounding transformer, three 150 MVA 345 kV capacitor banks, three 5th and three 7th harmonic filter reactors, a new 345 kV yard control house, a new SVC control house, AC and DC auxiliary systems (including 750 kW emergency generator and new station power system), protection and control systems, SCADA, DFRs, new grounding, conduit, and cable trench system.

Bethe Before Picture

Ketchikan Public Utilities – Bethe Substation: Ketchikan Public Utilities (KPU) has an existing substation, the Bethe Substation, located at the intersection of Third Avenue and Tongass Avenue in Ketchikan. The station serves approximately 1,350 customers including SEAPA's

Bethe Under Construction

Bethe with Fence

STI Construction

Low Level Outlet Works

offices and electrical loads are growing. Because of the growing electrical loads, KPU determined modifications to the station were necessary.

Commonwealth was retained to review the electrical load forecasts and develop recommendations on how the existing station could be expanded or if a new station were required and possible locations. Commonwealth recommended the existing station be expanded.

Commonwealth was subsequently asked to design the new station. The station included a new 12/16/20 MVA three phase 34.5/12.47kV transformer. Work included detailed design, writing specifications, management of a geotechnical survey, management of land purchase, determining site grade feasibility, civil/structural redevelopment and on call services. Andy Donato, P.E. Ketchikan Public Utilities, 1065 Fair Street, Ketchikan, Alaska, 99901, 907-225-5505.

SEAPA – Swan-Tyee Intertie Project Management, Southeast Alaska: Project Manager for SEAPA's 57-mile high-voltage Swan-Tyee Intertie. The line is designed for 138 kV and operated at 69 kV. Work included overall project management during the construction phase. Contributing to the success of this project was the excellent communication among all parties. Commonwealth organized and managed frequent meetings and/or conference calls of all parties, including the environmental consultant, design engineer, construction inspectors, SEAPA and, as needed, FERC. Commonwealth also opened an office in Ketchikan to facilitate communication and management. This was a unique project due to its remote location and the extensive use of helicopters for construction. Dave Carlson LLC (SEAPA Retired CEO), 60832 Scotts Bluff Place, Bend, Oregon 97702, 907-317-1365. Completed in 2009, $1,126K. Key employees included Dean Scott and Mark Schinman.

SEAPA – Solomon Gulch Hydroelectric Project Low Level Outlet Works and Anchor Block Enhancements, Valdez, Alaska: Project Manager for the installation of a low level outlet for emergency use if determined the reservoir needed lowering and for enhancing the anchor blocks supporting the penstock. These were two separate SEAPA projects. Work included management of several RFP processes resulting in the hiring of engineering and construction firms to complete the work as well as purchasing a long-lead material item. Work also included management of the projects to completion and interfacing with the project owner, Copper Valley Electric Association, and FERC for necessary approvals. Dave Carlson LLC, (SEAPA Retired CEO), 60832 Scotts Bluff Place, Bend, Oregon 97702, 907-317-1365.

Completed 2012, $52K. Key employees included Mark Schinman.

Douglas County PUD, Pangborn Substation: This project had three phases. For Phase 1, Commonwealth developed substation conceptual designs providing different reliability levels for a potential new high tech load as well as a cost estimate for each design. Completed in 2006, $10K. Phase 2 was the design of a 115 kV transmission tap, a 115 kV ring bus, a 13.2 kV 2-bank substation with 4 feeders designed for each bank. The substation's two power transformers operate in parallel. The ratings of the transformers are 25/33.25/41.75 MVA @ 55°C. The design started in September 2006, and the substation was energized in October 2007. Phase 2 design cost, $544K. Phase 3 involved construction management of the installation of the required facilities. Jerry Kyle, Douglas County PUD, 1151 Valley Mall Parkway, East Wenatchee, WA 98802, (509) 881-2234. Key employees included John White and Mark Schinman.

Pangborn Substation

Note: Dollars indicated are the dollar values of the contract and do not include construction and other costs.

Substation and Transmission Line Design Projects: Commonwealth has been responsible for approximately 200 substation over 65 transmission design projects ranging in voltages from 69 kV to 500 kV in the last five years. Additional information can be provided on request.

Commonwealth associates, inc.

SECTION 5. ADDITIONAL REFERENCES

Dave Carlson
Dave Carlson LLC (SEAPA Retired CEO)
60832 Scotts Bluff Place
Bend, Oregon 97702
907-317-1365

Rick Lungman
Project Manager
PacifiCorp
780 North Main
Smithfield, UT 84335
435-563-2901

Jerry Kyle
Douglas County PUD
1151 Valley Mall Parkway
East Wenatchee, WA 98802
509-881-2234

Dennis Yabsley
Whatcom PUD
1705 Trigg Road
Ferndale, WA 98248
360-384-4288 x22.

Commonwealth associates, inc.

SECTION 6. APPROACH TO PROJECT

Commonwealth's Project Manager and project team are quite familiar with Southeast Alaska through earlier projects in which they have participated.

Commonwealth's approach to project management is to be pro-active, look ahead, anticipate, and include input from all major participants.

Quality, on-time, open, and complete communication among all parties is key to a project's success. Commonwealth will facilitate this.

Petersburg Substation

Scope of Services

The intent of this project is to assess previous studies, design, and install a replacement for the Reactor that best provides the voltage support and system stability required for the interconnected system.

Commonwealth understands SEAPA is seeking a firm to provide Construction Phase Support, Design Engineering and overall Project Management for the project. Duties may include, but are not limited to, the following:

- Review and evaluate existing studies and recommend any further studies needed to determine the need for a step reactor and/or capacitors vs. a direct replacement of the Wrangell Reactor taking into consideration the Kake-to-Petersburg intertie.
- Assist SEAPA with selection of replacement option and prepare cost estimate.
- Complete a design of approved option, including all civil, mechanical, and electrical design for the installation phase of the project.
- Prepare Request for Proposal documents required as a part of standard bid protocol and documents for materials and installation of the preferred option to replace the Wrangell Reactor.
- Assist in evaluation of bids.
- During the construction phase of the project, provide construction management, field engineering, inspections, and monthly reports.

Project Schedule

- Project Management and Design Engineer firm selected, October 12, 2012
- Evaluations and recommendation submitted, November 14, 2012
- Engineering and design of selected recommendation, December 12, 2012
- Complete bid package for procurement and installation submitted, January 31, 2013

Wrangell Distribution Substation

Wrangell Sub with Reactor

- Completion of project, November 30, 2013

Work Approach

Commonwealth is available to begin the project upon award and written authorization to begin is received. The following work tasks are anticipated:

1. Kick-off Meeting – Critical to the success of this project is deciding the options to be pursued. Commonwealth will review existing studies and come to the kick-off meeting prepared to discuss options. Establishment of quality communication lines is important for project success, and this will be discussed at the kick-off meeting also.

2. Evaluate Options and Recommend Approach – Commonwealth has previously prepared studies of both the SEAPA existing system and the Kake-to-Petersburg transmission extension. Based on our existing experience, we expect that the following options are available:

Option A – Replace Reactor with new Reactor with same characteristics as the old.

Option B – Replace Reactor with a dynamic device (STATCOM, DVAR, or SVC).

Option C – Other alternatives as may be identified in review of studies and discussions with SEAPA staff.

We also understand that the Kake-to-Petersburg transmission line is still being evaluated and decisions on the final design of that line will not be completed prior to the need to make decisions on the Wrangell reactor. Therefore, we suggest an approach where we evaluate the costs and benefits of the options. We suspect that Option A is the least-cost plan but Option B (or C) would be preferred because it provides greater control of voltage at Wrangell. Commonwealth will provide the following:

1. Define the options based on our review of existing studies and experience. We will select the best two options for more detailed analysis as listed below.
2. Provide updated budgetary cost estimates of the two selected options.
3. Provide a comparison of the two options in terms of benefits.

Commonwealth will meet with the SEAPA staff to present results and to work with the SEAPA staff to select the preferred approach. The goal is to have this task completed by November 14, 2012.

Wrangell Reactor

Reactor Nameplate

3. Preliminary Engineering Design – Commonwealth will provide engineering design of the recommended option. The engineering effort can be considerably different depending upon the option selected.

If Option A (Reactor Replacement) is selected: The design will include specifications for the reactor and, likely, minimal other design changes to the existing substation.

If Option B (Dynamic Device) is selected: The engineering design will require considerable more effort, including a site plan to expand the substation, one-line drawing, plan and elevation drawing, equipment and bus details, foundation plan and detail, relay and control drawings, etc.

The preliminary engineering will include an updated project budget and a project schedule to identify long-lead-time equipment and materials and construction requirements.

A Preliminary Engineering Design Package will be completed by December 12, 2012, for review by SEAPA staff.

4. Bid Packages – Commonwealth will prepare bid packages for the equipment and for construction. The bid packages will be available for review and submittal by SEAPA on January 31, 2013.

5. Bid Evaluations – Commonwealth will assist SEAPA staff with bid evaluations.

6. Equipment Factory Testing Witness (optional) – If required, Commonwealth will assist SEAPA staff with witnessing equipment factory testing.

7. Construction Liaison – Commonwealth will provide engineering-related construction liaison, as well as construction observation and reporting.

Commonwealth associates, Inc.

SECTION 7. KEY PERSONNEL

The project team that Commonwealth proposes to assign to this project is highly experienced and led by a seasoned project manager. Commonwealth and the project team have many years of experience and familiarity with Alaska, transmission/substation construction and design, electric utilities, and SEAPA's expectations. Commonwealth's team is knowledgeable of the project to be constructed and has provided services to SEAPA in the past. Resumes for the key project team members are attached.

Commonwealth is pleased to offer **Lloyd Marquardt, P.E.,** as the Project Manager. Mr. Marquardt has over 37 years of diversified experience in project management, system design and planning, and field installation and start-up. He has extensive experience in all areas of electric utility operations, planning, underground and overhead distribution design, problem investigation, testing, and troubleshooting. Mr. Marquardt is licensed as a Professional Engineer in Alaska as well as several other states. He also has experience with design, on-site construction support, and review for numerous projects in Southeast Alaska.

Mark Schinman, P.E., will serve as the Assistant Project Manager. Mr. Schinman has over 40 years of professional experience in the electric utility industry. His background includes management of all aspects of public electrical utilities including customer service; electric rates; cost of service studies; budgeting; engineering management related to substations and transmission and distribution lines (overhead and underground); project management; planning; human relations, personnel, contract negotiations; public presentations; and working with community groups, government agencies, the IBEW, and elected officials. Mr. Schinman retired as General Manager of Snohomish County Public Utility District in 1999.

David A. Shafer, P.E., Vice President/Manager, Electrical Systems Engineering: Mr. Shafer has more than 38 years of experience in electrical engineering involving electric power systems studies, protection coordination studies; economic studies; electrical design of transmission lines and substations; electrical effects analysis, including EMF and radio and television interference; induced voltages; and public involvement programs.

Michael C. Bloder, P.E., Electrical Engineer: Mr. Bloder has 25 years of experience in electrical engineering related to utility and industrial power systems. His primary responsibilities include managing and performing engineering studies for system protection, system planning, power quality; design engineering for protection and control systems, and field engineering for commissioning and startup.

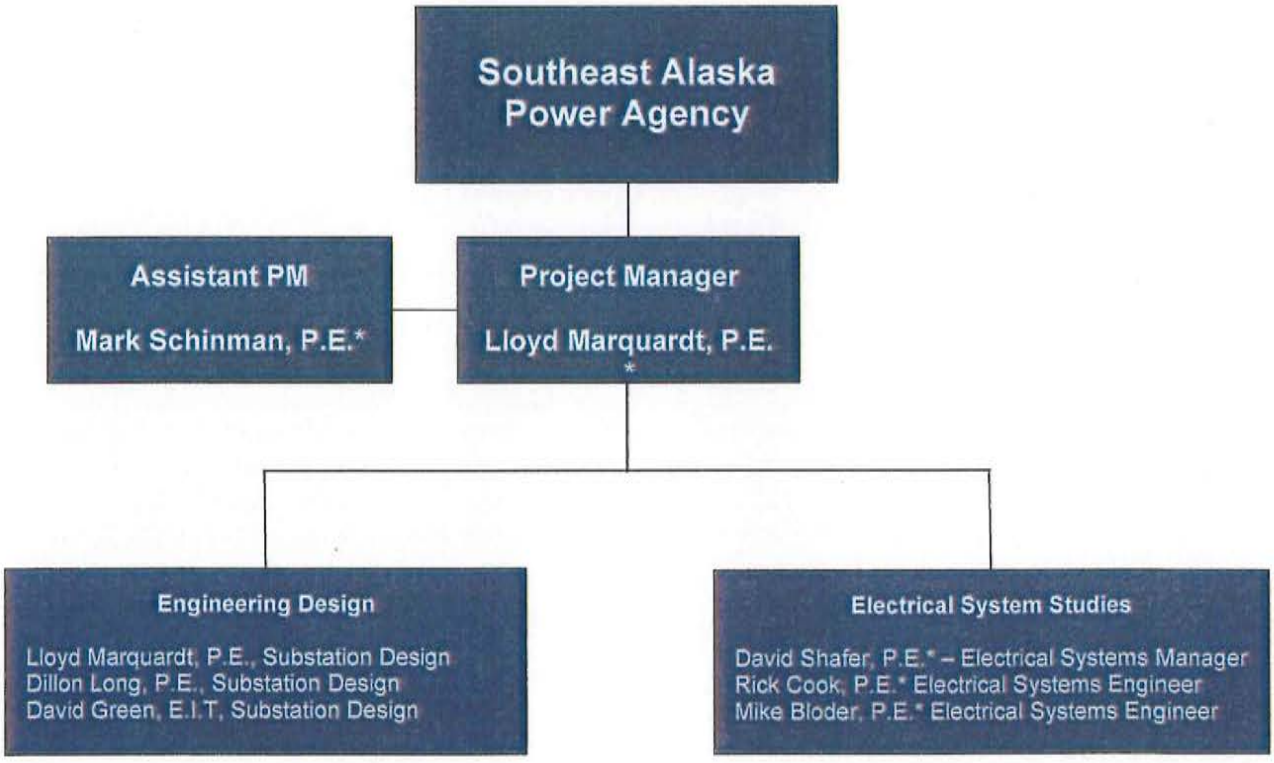
Richard C. Cook, P.E., Electrical Engineer: Mr. Cook has over 40 years of experience in electrical engineering related to utility transmission/distribution systems. His primary responsibilities include aiding clients in meeting their NERC compliance responsibilities especially with regard to TPL – Transmission Planning and MOD – electrical system modeling. In addition, he has extensive experience in electrical system planning, studies of electrical environmental effects, special studies, and computer engineering applications. He was responsible for developing Commonwealth's Contingency Processor Program, a Microsoft Access-based tool that interfaces with Commonwealth's TRANSMISSION 2000® Power Flow program to automate the process of running and summarizing large Power Flow

contingency studies. He also developed the PC-based MicroFAN program for Distribution Feeder Analysis.

David Green, E.I.T., has professional experience in electrical engineering that encompasses substation physical electrical design, analysis, troubleshooting, and testing various electrical systems and components. He is proficient in the use of Assembly, C, C++, MATLAB, AutoCAD, Maple, ADS, SKM, and Microsoft Office Pro.

Matthew Hartig, E.I.T., brings experience in the design and installation of power systems for wind farm substations and interconnecting switching stations. He has been involved with preparing key studies that impact new power plants (solar photovoltaic) and their interconnection to the power grid.

M. Dylan Long, P.E. specializes in the design and analysis of distribution substations and substation protection and control system design. He also has experience in evaluating and designing transmission structures for antenna collocation sites. Mr. Long is proficient in the use of PowerPlot, PLS-CADD, MathCAD, AutoCAD, MatLab/Simulink, PSpice, Advanced Design System, Visual Basic, and C.



* Alaska experience

Commonwealth associates, inc.

SECTION 8. CAPACITY OF FIRM

Commonwealth is an employee-owned and employee-managed corporation dedicated to providing engineering and consulting services to the electric utility industry. We provide a complete package of services to assist clients with the successful licensing, design, and construction of their power generation facilities, electric distribution line, transmission line, and substation projects. Commonwealth also offers TRANSMISSION 2000®, a highly interactive, powerful software product used to analyze and plan electric utility transmission systems.

Commonwealth has the capacity to complete the required work. The Commonwealth team's depth of experience, as indicated in the provided resumes, is significant.

Commonwealth's staff of more than 240 professional and technical employees represents one of the most skilled, experienced technical resources available to analyze, plan, design, and construct electric power generation and delivery projects. In addition to licensed engineers and engineering specialists, we have experts in environmental sciences, licensing, Geographical Information Systems (GIS), surveying, right-of-way acquisition, and construction management, many with more than 20 years of experience in their fields. Many of our professional engineers are active members of the Institute of Electrical and Electronics Engineers, American Society of Civil Engineers, Edison Electrical Institute, and National Society of Professional Engineers, which allows for interaction with our peers and access to problem-solving resources directed to the power generation and T&D industries.

Commonwealth's entire staff of professional and technical employees is available to draw from to meet project needs.

SECTION 9. EXCLUSIONS, CONDITIONS OR QUALIFICATIONS

None

SECTION 10. ADDITIONAL INFORMATION

None

Commonwealth
associates, inc.

RESUMES

Resumes of key staff follow in alphabetical order.

Commonwealth associates, inc.

MICHAEL D. BLODER, PE
Electrical Engineer

QUALIFICATIONS SUMMARY
Mr. Bloder has 25 years of experience in electrical engineering related to utility and industrial power systems. His primary responsibilities include managing and performing engineering studies for system protection, system planning, power quality; design engineering for protection and control systems, and field engineering for commissioning and startup.

EMPLOYMENT HISTORY

1999-Present	Commonwealth Associates, Inc., Jackson, Michigan
1997-1999	Peak Power Engineering, Inc., Golden, Colorado
1990-1997	NEI Electric Power Engineering, Inc., Wheatridge, Colorado
1989-1990	Strom Engineering, Englewood, Colorado
1987	Martin Marietta, Littleton, Colorado

REPRESENTATIVE EXPERIENCE
Northeast Utilities: Lead Engineer responsible for supervising relay settings development for the Relay Replacement Program. The first phase of the program consisted of upgrading 345 kV and 115 kV primary/backup transmission line protection with microprocessor-based relays for approximately 125 station terminals. Performed quality control checking of system analysis and relay coordination using ASPEN OneLiner.

Project Manager responsible for 348 line protective relaying upgrade of a three-terminal 345 kV transmission line near Hartford, Connecticut. Primary, backup, and transfer trip schemes were developed along with SCADA and DFR interface. Equipment specifications, panel modifications, and wiring design were also coordinated. Performed a system short-circuit analysis and relay coordination study and developed settings for the SEL-421 and GE D60 relays.

American Electric Power (AEP): Lead Engineer responsible for supervising relay settings development for outsourced projects with American Electric Power. Developed settings and performed quality control checking of SEL and GE relays for breaker failure, bus differential, transformer differential, transformer overcurrent, and distribution feeder overcurrent protection. Performed system analysis and coordination using ASPEN OneLiner.

Electric Energy, Inc.: Project Manager responsible for multiple generator protection upgrade projects in Joppa, Illinois. The Joppa Power Plant has six 180 MW steam turbine generators, two of which have been upgraded to microprocessor-based protective relays. Primary and backup protection schemes were developed for the generator, step-up transformer, and unit auxiliary transformer. Led the design team in the development of the detail design package, performed analysis for relay settings, developed test plan, and led commissioning and start-up activities.

Project Engineer responsible for performing the Joppa Short Circuit and Relay Control Study for a 600 MVA, 345/161 kV substation, and 300 MW combustion turbine peaking plant in Joppa, Illinois. Protection schemes for the 161 kV three-terminal lines included current differential and directional comparison blocking. A 161 kV, two-terminal line utilized permissive over-reaching transfer trip

over fiber optic communications. Developed relay settings for synch-check/reclosing, breaker failure, transformer differential, and bus differential protection. Also reviewed generator protection settings for combustion turbine generators.

Holland Board of Public Works: Project Manager responsible for a protective relaying study of the City of Holland's 138 kV transmission system, seven 138 kV-12.47 kV distribution substations, and interconnection to generating facilities totaling 230 MW. The work included development of an ASPEN model to determine the coordination of protective relays and a TRANSMISSION 2000® model to evaluate regional transient stability. Deficiencies were determined for existing settings, and recommendations were provided for relaying upgrades and improvements in system protection and coordination.

PG&E National Energy Group: Responsible for conceptual design and layout of the Covert 345 kV switchyard interconnection between the 1200 MW Covert Generating Station and Consumers Energy 345 kV transmission system in Michigan. Performed detail design of the 345 kV switchyard relay and control panels, fiber optic communication system, telemetering, and SCADA interface. Other responsibilities included liaison activities for utility and plant interface, procurement of 345 kV switchyard equipment, development of relay settings, and cost tracking/scheduling activities.

Consolidated Edison: Project Engineer responsible for protective relaying and control design of a 200 MW generating unit interconnection owned by Orion Power at the Astoria Power Plant in Queens, New York. The generating unit had been brought out of retirement and required a modified interconnection to Consolidated Edison's 138 kV system. Served as the liaison to Consolidated Edison for coordinating system protection requirements. Provided field engineering for commissioning and start-up assistance.

Eastern Michigan University: Responsible for protective relaying and control design of tie-circuits at the university in Ypsilanti, Michigan. The tie-circuits provided the interconnection of an existing 4.8 kV, 3.5 MW cogeneration plant to a recently developed 13.2 kV system. The tie-circuit protection scheme utilized fiber optic communications to perform direct transfer trip of remote breakers. Developed commissioning procedures and provided start-up assistance.

EDUCATION

M.S., Electrical Engineering, 1992, University of Colorado at Denver
B.S., Electrical Engineering, 1987, University of Colorado at Boulder

REGISTRATION

Professional Engineer in Colorado and Connecticut
NCEES

PROFESSIONAL AFFILIATIONS

ETA Kappa NU - National Electrical Engineering Honor Society
IEEE - The Institute of Electrical and Electronics Engineers
NCEES - Problem writer for National Council of Examiners for Engineering and Surveying

Commonwealth associates, inc.

RICHARD D. COOK, PE
Electrical Engineer

QUALIFICATIONS SUMMARY

Mr. Cook has over 40 years of experience in electrical engineering related to utility transmission/distribution systems. His primary responsibilities include aiding clients in meeting their NERC compliance responsibilities especially with regard to TPL – Transmission Planning and MOD – electrical system modeling. In addition he has extensive experience in electrical system planning, studies of electrical environmental effects, special studies, and computer engineering applications. He was responsible for developing Commonwealth's Contingency Processor Program, a Microsoft Access-based tool that interfaces with Commonwealth's TRANSMISSION 2000® Power Flow program to automate the process of running and summarizing large Power Flow contingency studies. Rick also developed the PC-based MicroFAN program for Distribution Feeder Analysis.

EMPLOYMENT HISTORY

1997-Present	Commonwealth Associates, Inc., Jackson, Michigan
1988-1996	Ohio Edison Company, Akron, Ohio
1973-1988	Gilbert/Commonwealth, Inc., Jackson, Michigan
1971-1973	Harley Ellington Pierce Yee Assoc., Southfield, Michigan
1967-1971	Detroit Edison Company, Detroit, Michigan

REPRESENTATIVE EXPERIENCE

EEI: Responsible for studying and documenting the full range of NERC/SERC compliance studies for this Illinois-based utility. Including a full range of load flow, short circuit, and transient stability studies of the bulk power electrical transmission and subtransmission power grid for the EEI BES. Also, assisted with NERC/SERC Compliance Audits.

PacificCorp: Distribution Efficiency Study in the State of Washington. The study included updating distribution models in ABB Feederall program, tuning the models, and performing optimization to flatten the feeder voltage profile. Design options included reconductoring, load balancing, application of fixed and switched capacitors and application of voltage regulators.

Midland Cogeneration Venture: Developed PSSE Turbine Models for their thirteen generating units.

Southern Company Services: Updated the CAPE Protection System Model for digital and electro mechanical relay systems.

Lansing Board of Water and Light: Project manager responsible for a voltage flicker study of the arc welding operations at the new ASC plant in Lansing, Michigan.

Holland Board of Public Works: Prepared a preliminary study of adding a wind farm to augment their generator supply capability:

Interconnection Studies for Multiple Clients: Responsible for coordinating transmission interconnection studies on behalf of multiple utility companies impacted by a generating facility proposed by independent power producers (IPP). These studies required a full range of planning studies, including coordination of the impacts of numerous other nearby IPP projects; power flow, short circuit, and transient stability simulations; and identification of the preferred alternative power system configuration suitable for both the utility's and the IPP's requirements. Generation sites were studied in Michigan, Ohio, Illinois, Kentucky and Texas.

Eastern Michigan University: Project manager responsible for preparation of a specification for the expansion of the 13.2 kV underground distribution system on the west campus of the university.

NASA's Lewis Research Center: Engineer responsible for the study of a high-voltage power system at the facility in Cleveland, Ohio. The study included planning for expansion of the 138 kV transmission and 34.5, 13.2, 6.9 and 2.4 kV distribution systems, power flow, short circuit, and system protection, and considerations for upgrade and modernization of the 50-year-old underground distribution system.

Southeast Alaska Power Authority: Systems engineer for the Kake-Petersburg feasibility study that investigated extending the Southeast Alaska grid from Petersburg to Kale. Southeast Alaska is developing hydro and other renewable energy resources and tying remote villages together via a new transmission grid. The work involved building power flow models, evaluating transmission options, and recommending transmission voltage levels.

Vectren: Project manager responsible for a 20-year electric system planning study for Vectren. Performed power flow simulations of base case and alternative expansion plans, evaluated import and export capability, studied short circuit levels and breaker duties, and examined the transient stability performance of the electric system in Evansville, Indiana.

EDUCATION

MS, Electrical Engineering, Michigan State University, 1978
MBA, Wayne State University, 1972
BS, Electrical Engineering, Wayne State University, 1969

REGISTRATION

Professional Engineer in Michigan, Ohio

PUBLICATIONS

Coauthor, "Available Transfer Capability Applying Linear Phasor Methods to the AC Power Flow," *IEEE PES Power Systems Conference & Exposition*, March 2011.

Coauthor, "Pop-up Generator Step-Up: A Narrow Look at the State of U.S. and Canadian Transmission Model Data," *IEEE Transactions on Power Systems,* November 2004, Vol. 19, # 4.

Commonwealth associates, inc.

DAVID I. GREEN, EIT
Electrical Engineer

QUALIFICATIONS SUMMARY

Mr. Green's professional experience in electrical engineering encompasses design, analysis, troubleshooting, and testing various electrical systems and components. He is proficient in the use of Assembly, C, C++, MATLAB, AutoCAD, Maple, ADS, SKM, and Microsoft Office Pro.

EMPLOYMENT HISTORY

2011-Present	Commonwealth Associates, Inc., Mount Vernon, Washington
2009-2011	Washington River Protection Solution, Richland, Washington
2008-2009	Commonwealth Associates, Inc., Mount Vernon, Washington
1997-2000	Providence Portland Medical Center, Portland, Oregon
1981-1996	United States Navy

REPRESENTATIVE EXPERIENCE

Whatcom County Public Utility District #1: Evaluated Potable Water Plants #1 and #2 for electrical safety. Assisted with the upgrading of the existing 480V system within the pump houses.

Conoco Philips: Performed an assessment of the Conoco Philips 115kV Substation upgrade to a breaker and a half system from the step-down transformers to the first poles outside of the substation.

Hydrogen Energy International: Assisted in the Hydrogen Energy International, HECA Project's 230 kV Buttonwillow Transmission Line preliminary routing design. This included the evaluation of conductor possibilities of ACCC, ACSS, and ACRS.

International Transmission Company: Assisted in the modification of METC, International Transmission Company's 138kV Alma Substation Control wiring system to accommodate the addition of a new breaker.

Washington River Protection Solution: Established and managed the Load Study and Arc Flash program for Washington River Protection Solution utilizing SKM software. Interpreted national codes and standards and applied them to Washington River Protection Solution policies, plans, and procedures. Performed independent design review of the redesign of electrical distribution to eight industrial facilities to ensure compliance with national and company standards and practices. Developed project design criteria, verifying that projects meet the criteria, and being accountable for the technical quality of engineering work.

Acted on behalf of Washington river Protection Solutions as their company liaison, addressing regulatory issues (DNFSB, Washington State Department of Ecology) and concerns.

United States Navy: Managed a team of 35 electricians and mechanics performing troubleshooting, repair, and maintenance of Advance Technical Naval, Propulsion and Maneuvering, and Electrical Generation and Electro-Mechanical systems.

Developed a prototype robot using an Intel-based RISC chip, PXA255 X-scale processor, and adapted the Intel station board to provide an expanded capability of the Amigobot robot using Linux-based Red Hat OS.

EDUCATION

B.S., Electrical Engineering, Portland State University, 2006

Commonwealth associates, inc.

MATTHEW HARTIG, EIT
Engineer II

QUALIFICATIONS SUMMARY
Mr. Hartig brings experience in the design and installation of power systems for wind farm substations and interconnecting switching stations. He has been involved with preparing key studies that impact new power plants (solar photovoltaic) and their interconnection to the power grid.

EMPLOYMENT HISTORY
2011-2012	Sargent & Lundy, Chicago, Illinois
2012-2011	Community Energy Solutions, Seattle, Washington

REPRESENTATIVE PROJECTS

Sargent & Lundy: Project Associate responsible for AC and DC schematic and wiring design for major substation equipment for three wind farm collection substations and their associated interconnecting switching stations. Designed auxiliary power systems for power substations. Prepared system impact and facility studies for the interconnection of new power plants (mainly solar photovoltaic) to a participating power utility's grid. Developed fiscal year unit costs of new generator interconnections for a major utility. Coordinated project schedules with clients.

Community Energy Solutions: Board of Directors Member responsible for developing solar projects for Seattle area schools. Researched a Washington-made grid-tie inverter system for use in small scale solar photovoltaic projects. Led the *Kitsap County Solar Tour* in 2010.

EDUCATION
BS, Electrical Engineering, University of Wisconsin at Madison, 2010

PROFESSIONAL AFFILIATIONS
Washington State Engineer in Training (Certificate License #30884)

ADDITIONAL COURSEWORK:
Designed several on and off shore wind generating facilities to offset two large fossil fuel generating stations.

Designed and build a 400watt wind turbine using low cost labor and materials that could be reproduced in a developing country.

Solar Energy International: Intern for Solar Electric Fundamentals and Grid-Direct Design (October 2010) responsible for the design and installation of a 14killowatt batteryless grid-tie solar photovoltaic system for a residence on Guemes Island, Washington.

ADDITIONAL SKILLS:

Proficient in the following programs:

AutoCAD
Microstation
PowerWorld
PVWatts
Microsoft Visio and Office

Commonwealth associates, inc.

M. DYLAN LONG, PE
Electrical Engineer

QUALIFICATIONS SUMMARY

Mr. Long specializes in the design and analysis of distribution substations. He also has experience evaluating and designing transmission structures for antenna collocation sites. Mr. Long is proficient in the use of PowerPlot, PLS-CADD, MathCAD, AutoCAD, MatLab/Simulink, PSpice, Advanced Design System, Visual Basic, and C.

EMPLOYMENT HISTORY

2008–Present	Commonwealth Associates Inc., Mount Vernon, Washington
2007- 2008	Marne and Associates, Inc., Missoula, Montana
2004-2007	Montana State University, Bozeman, Montana
1997-2002	Opportunity Resources, Inc., Missoula, Montana

REPRESENTATIVE EXPERIENCE

Performed electrical engineering services associated with scope development and replacement of the switchgear in an urban distribution substation. Work included removal and cleanup of the existing 4 kV, T-951 switchgear and asbestos abatement. New construction included a 4 kV bus, breaker disconnect switches, station service transformer, metering and protection PTs and CTs, transducers, 15 kV self-contained breakers, conduits, and wiring.

Provided engineering services for the change out of a power transformer and regulators in a rural distribution substation. This work involved the evaluation of the existing installation, design of foundations for the replacement equipment, and design and drawing preparation for a transformer metering panel, evaluation of the transformer protection, and SCADA.

Evaluated medium- and low-voltage systems for circuit breaker coordination. Produced circuit breaker settings and reported recommendations for achieving coordinated system protection for an industrial-type power system.

Provided design services to replace existing electro-mechanical relays with solid state SEL relays. This involved removal of the existing equipment and design of a new relay panel along with all associated wiring and control design. A final set of construction-ready drawings was produced to complete this job.

Performed transmission pole analysis and design for numerous joint use collocation facilities. The work included: taking field measurements of existing structures; calculating loadings due to wind, ice and equipment; structure modeling using PLS software; and development of construction drawings and reports.

Mission Valley Power: Performed design and drafting of the Hot Springs Substation for Mission Valley Power in Montana. This substation was a total rebuild replacing a fully depreciated station. This was a 34.5/12.47 kV with approximately 5 MVA capacity. Work included creating the physical layouts (plans and elevations) and one-line and three-line diagrams. Grounding plans, conduit

plans and schedules were developed to meet the Rural Utilities Service standards for substation design.

Mission Valley Power: Provided design and drafting of modifications to Mission Valley Power's South Shore Substation in Montana. The existing substation had a 69/34.5 kV autotransformer serving a distribution line and three local feeders via a 34.5/12.47 kV transformer bank. To reduce the load on the autotransformer, a new 69/12.47 kV transformer (12 MVA) was designed and provided to supply the existing feeders. Work included creating the physical layouts (plans and elevations) and one-line and three-line diagrams. Grounding plans, conduit plans, and schedules were developed to meet the Rural Utilities Service standards for substation design.

Mission Valley Power: Provided design and drafting for Mission Valley Power's Ronan West Substation project in Montana. This project replaced a temporary distribution network with a permanent one and provided for future expansion of the substation. An existing 69 kV bus was tapped and stepped down to 12.47 kV with a transformer bank rated at approximately 10 MVA. The work included creating the physical layouts (plans and elevations) and one-line and three-line diagrams. Grounding plans, conduit plans, and schedules were developed to meet the Rural Utilities Service standards for substation design.

Assisted in the development of a switching and clearance procedures manual for a Northwest utility.

Created a day-long seminar presentation teaching the fundamentals of arc flash regulations and calculation methods geared toward electric utilities, rather than the more commonly seen commercial and industrial applications.

EDUCATION

B.S., Electrical Engineering, Montana State University, 2007
Fundamentals of Substation Equipment and Control Systems, University of Wisconsin, 2011
Principles of Substation Design, University of Wisconsin, 2009
Substation Equipment Protection, Schweitzer Engineering Labs, 2008
Load Tap Changer and Voltage Regulator Fundamentals, IEEE, 2008
How to Perform an Arc Flash Study Workshop, RMEL, 2007

REGISTRATION

Professional Electrical Engineer, Montana

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers (IEEE)

RECOGNITION

Research Fellowship Award, Montana State University, 2006
Tau Beta Pi Engineering Honor Society

Commonwealth associates, inc.

LLOYD B. MARQUARDT, PE
Section Manager/Electrical Engineer

QUALIFICATIONS SUMMARY

Mr. Marquardt has over 37 years of diversified experience in project management, system design and planning, and field installation and start-up. He has extensive experience in all areas of electric utility operations, planning, underground and overhead distribution design, problem investigation, testing, and troubleshooting.

Professional Background:

2007-Present	Commonwealth Associates, Inc., Mount Vernon, Washington
1995-2007	LM Technical Services, Inc., P.S., Lake Stevens, Washington
1991-1995	R.W. Beck, Seattle, Washington
1990-1991	Electro-Test, Inc., Bellevue, Washington
1986-1990	Cegelec ESCA Corporation, Bellevue, Washington
1983-1986	City of Pierre, Pierre, South Dakota
1975-1983	Northwestern Public Service Company, Huron, South Dakota

REPRESENTATIVE EXPERIENCE

Division Engineer responsible for distribution design, operations, and maintenance of overhead and underground 4 kV, 12.5 kV, and 13.8 kV distribution systems.

Relay Engineer responsible for transmission and distribution system protection settings, substation design, substation operations and maintenance, SCADA installations, substation testing and commissioning.

Responsible for system planning, design, operations, and maintenance of a municipal electric system. Designed a 12 kV underground system to completely replace all overhead distribution in the city. Was responsible for designing, procuring, installing, and operating a combination SCADA/Load Management System. Specified all underground cable, switches, and equipment for conversion projects and provides detailed design for construction crews to install underground cables and remove overhead conductors.

Consolidated Edison: Designed a power control and SCADA system in New York City.

Los Angeles Department of Water: Responsible for designing a water SCADA system in California.

Responsible for testing all types of electrical equipment and systems, conducting research, and troubleshooting specific problem areas.

Reviewed sites for proper compliance with necessary codes, NESC and NEC requirements, reviewed test results, and made recommendations as to the resolution of problems encountered and preventative maintenance procedures to be followed.

Field Project Manager responsible for all electrical issues on movable bridge rehabilitation and on-call maintenance services for floating and movable bridges and other transportation projects.

Responsible for review and approval of all project electrical submittals, design changes, schedules, and on-site inspections. Researched issues for compliance with necessary codes, regulations, and specifications and coordinated with contractors to resolve disputes and problems in a timely fashion. Developed and evaluated estimates and negotiated final design change orders to resolve field problems.

Investigated and evaluated cause and effect of electrical failures due to lighting, power surges, harmonics, construction accidents, auto accidents, equipment malfunctions, fires, storms, and natural disasters.

Provided investigative services and expert witness testimony for accidental contact accidents and other situations involving personal contact with electrical lines or equipment both in public and utility electrical systems.

Project Manager of substation design, substation modification, and transmission line projects.

EDUCATION

BS, Electrical Engineering, South Dakota School of Mines & Technology, 1975
General Electric Protective Relay Seminar, 1979

REGISTRATION

Professional Engineer in California, Oregon, Utah, Washington and Alaska.

LICENSES

FCC Amateur Radio Extra Class License

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers
International Association of Electrical Inspectors
National Society of Professional Engineers

Commonwealth associates, inc.

MARK A. SCHINMAN, PE
Consultant

QUALIFICATIONS SUMMARY

Mr. Schinman has over 40 years of professional experience in the electric utility industry. His background includes management of all aspects of public electrical utilities including customer service; electric rates; cost of service studies; budgeting; engineering management as related to substations and transmission and distribution lines (overhead and underground); project management; planning; human relations, personnel, contract negotiations; public presentations; working with community groups, government agencies, the IBEW and elected officials. Mr. Schinman retired as General Manager of Snohomish County Public Utility District in 1999.

EMPLOYMENT HISTORY

2004-Present	Commonwealth Associates, Inc., Mount Vernon, Washington
2000-2004	EES Consulting, Inc., Kirkland, Washington
1998-1999	Snohomish County PUD, Everett, Washington
1998	EES Consulting, Inc., Kirkland, Washington
1984-1997	Snohomish County PUD, Everett, Washington
1983-1984	Truckee Donner PUD, California
1969-1983	Snohomish County PUD, Everett, Washington
1967-1969	U.S. Army

REPRESENTATIVE PROJECTS

Southeast Alaska Power Authority (SEAPA): Provided support for the project management activities for the Swan-Tyee Intertie in Alaska. Commonwealth was selected by the project's owner, SEAPA, to provide project management services for the Swan-Tyee Intertie 138 kV transmission line and the associated substation modifications. The Swan-Tyee Intertie is a 57-mile tubular steel transmission line that interconnects two remote hydro sites in southeastern Alaska. The geography consists of mountainous and timbered terrain, as well as avalanche zones. Work included construction management, contract drafting and management, budget tracking, scheduling, interfacing with the U.S. Forest Service, and report writing.

Solomon Gulch Hydroelectric Project Low Level Outlet Works, Valdez AK: Project Manger for the installation of a low level outlet for emergency use if determined the reservoir needs lowering. Work included management of several RFP processes resulting in the hiring of engineering and construction firms to complete the work as well as purchasing a long lead material item. Work also included management of the project to completion and interfaces with the project owner and FERC for necessary approvals. Completed 2012,

Solomon Gulch Hydroelectric Project Anchor Block Enhancements: Provided project management services. Periodic required inspections identified a need to enhance the anchor blocks supporting the penstock for the hydroelectric project. Work included completing the contract with the selected engineering firm, managing a RFP process to bring a construction on firm, project management through engineering and construction and also interfaces with the project owner and FERC for necessary approvals. Completed 2012,

Snohomish County Public Utility District: Project Manager for Providence Everett Medical Center to Delta Feeder in Marysville, Washington. Provided engineering and design, including construction bidding documents and construction support to rebuild and extend 2,100 feet of 12 kV. Work included conversion of 1,500 feet of existing single-phase overhead distribution to three phase using 336AAC. Work included trenching and installing approximately 600 feet of new 1000 kCM URD feeder.

Multiple Projects: Project Manager of an Engineer/Procure/Construct team bidding on multiple design/build projects in Canada. The projects included large substations (for example, a 400 MVA 230 kV to 138 kV substation), long 260 kV transmission lines, and 260 kV switching stations.

Various Projects: Project Manager for numerous transmission line and overhead and underground distribution line designs, routing studies, and analysis for both new lines and rebuilds or enhancements of existing lines. Projects included 20-mile 138 kV lines to single transmission and distribution poles for cellular antenna collocations. Design work included both laminated wood and steel poles. Performed electrical substation design, cost estimating, and construction-related work, including serving as the owner's agent for a city in Canada for a design/build process to construct a 130 MVA, 138 kV to 13.8 kV substation.

Snohomish County PUD: General Manager and Deputy General Manager for a major Northwest public utility overseeing nearly 1,000 employees and a $350 million annual budget. Responsible for management of all administrative and operational functions, while reporting to a three-member elected board of commissioners. Accomplishments included a reduction of spending by 15 percent, improved employee communications and morale, improved relationship with staff and the Board of Commissioners and renewal of the IBEW union contract. Also served as Assistant General Manager, Employee Resources and Safety responsible for the Employee Relations and Safety departments. Responsible for organizational development, project management, strategic planning, conflict resolution, change management, restructuring and team building.

Truckee Donner PUD: Acting Manager on an interim basis while on leave from Snohomish County PUD. Responsible for complete management of the PUD, including hiring a new general manager.

EDUCATION

MBA, Business Administration (with honors), City University, Seattle, Washington, 1981
BS, Electrical Engineering, University of Washington, 1967
Public Utilities Executive Course, University of Idaho, 1982

REGISTRATION

Professional Engineer in Washington

PROFESSIONAL AFFILIATIONS

American Public Power Association, Past Chair of Energy Services Committee
Northwest Public Power Association, Life Membership Award, Vice Chair of Conservation Committee

Commonwealth associates, inc.

DAVID A. SHAFER, PE

Vice President/Manager, Electrical Systems Engineering

QUALIFICATIONS SUMMARY

Mr. Shafer has more than 38 years of experience in electrical engineering involving electric power systems studies, protection coordination studies; economic studies; electrical design of transmission lines and substations; electrical effects analysis, including EMF and radio and television interference; induced voltages and public involvement programs.

EMPLOYMENT HISTORY

1988-Present	Commonwealth Associates, Inc., Jackson, Michigan
1978-1988	Gilbert/Commonwealth, Inc., Jackson, Michigan
1973-1978	Toledo Edison Company, Toledo, Ohio

REPRESENTATIVE EXPERIENCE

SEAPA – Power System Study: With the completion of the Swan-Tyee 115 kV Intertie (STI) in 2009, two previously separate systems were interconnected. The electrical systems of Ketchikan, Wrangell, and Petersburg are now operated as a combined power system by the Southeast Alaska Power Agency (SEAPA). The system has two major hydro plants, Tyee Lake and Swan Lake (each rated approximately 22 MW), that are operated to provide economic power to the three cities. The sizes of the hydro units are large relative to the system size. Also, the transmission system consists of a single line between the two hydro plants, a single line north to service Wrangell and Petersburg, and a single line south to serve Ketchikan. The relatively large size of the generating units and the radial nature of the transmission system make for a unique power system with regard to operating and reliability considerations. The purpose of the study was to better understand the operating characteristics of the system, provide an evaluation of system reliability, and review future load expansion. The scope of the study included steady-state (power flow), dynamic (transient stability), and fault (short-circuit) relay coordination. The study included the evaluation of three voltage support strategies: capacitors, switching the reactor, and adding a dynamic var compensation (STATCOM or DVAR).

Various Projects: Project Manager for numerous studies to evaluate the electrical effects of high-voltage transmission lines and substations. This included calculations and field measurements of electrical fields, magnetic fields, audible noise, and radio and TV interference for pre- and post-construction of high-voltage transmission projects for the following: Bangor Hydro-Electric Company 345 kV transmission in Maine, Benham Holway 345 kV transmission in Oklahoma, Consumers Power Company 345 kV transmission in Michigan, Delmarva Power and Light Company 138 kV transmission in Delaware, and Wisconsin Electric Company 138 kV transmission in Wisconsin.

Bangor Hydro-Electric Company:

Project Engineer for the Second 345 kV Tie Line to New Brunswick responsible for economic evaluation and need, planning studies, calculations, and field measurements of electric and magnetic fields, corona-caused radio and TV interference, and audible noise generated by the line. Also testified at licensing hearings.

Project Engineer responsible for preparing a transmission planning study of the 115 kV and 46 kV subtransmission serving the city of Bangor, Maine. Work included evaluation of overhead and submarine river crossing alternatives, 115 kV versus 46 kV alternatives, and alternative locations for a new substation.

East Kentucky Power Cooperative: Electrical Engineer responsible for performing a comprehensive 20-year planning study of the 345 kV and 138 kV bulk power transmission system. Also, evaluated 345 kV and 765 kV transmission alternatives for the addition of a new generating unit and to strengthen interconnections with neighboring utility systems.

Alaska Power Authority: Project Engineer for the 345 kV Anchorage-Fairbanks Intertie Project. This project consisted of a 300-mile-long transmission intertie between two isolated electrical systems. The final design made use of three static var compensators. Responsibilities included feasibility evaluation, transient stability analysis, spinning reserve and load shedding analysis, planning of transmission system additions associated with the intertie, participation in a public involvement program, and evaluation of bids.

West Virginia Public Service Commission: Project Engineer responsible for assisting the West Virginia Public Service Commission in evaluating the need for and the transmission system impact of a new 765 kV transmission line from Wyoming, West Virginia, to Cloverdale, Virginia. The evaluation included review of the APCO application; interviews with AEP planning engineers and review of their power flow studies; and analysis of other data available through the Public Service Commission. Project responsibilities included preparing a report, providing expert testimony, and attending public hearings.

EDUCATION

MBA, Eastern Michigan University, 1985
BS and MS, Electrical Engineering, Ohio State University, 1973

REGISTRATION

Professional Engineer in Indiana, Kentucky, Michigan, North Carolina, Ohio, Tennessee, West Virginia.

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers (IEEE), Senior Member
National Society of Professional Engineers
Michigan Society of Professional Engineers

PUBLICATIONS

Coauthor, "*The Anchorage-Fairbanks Transmission Intertie: Electrical System Studies*," presented at the 1982 Transmission & Distribution Expo, Atlanta, Georgia, December 13-15, 1982.

Coauthor, "*The Evolution of New Transmission Line Design Requirements*," presented at the Power-Gen Americas '93, Dallas, Texas, November 17, 1993.

PRINCIPAL OFFICES

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WWW.CAI-ENGR.COM

Connect With Confidence

Commonwealth associates, inc.

Southeast Alaska Power Agency

DATE: January 10, 2013

TO: SEAPA Board of Directors

FROM: Steve Henson, Operations Manager

SUBJECT: SEAPA Transformer Junction Boxes | Bailey Substation

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This memo is a request to solicit the board's approval to sole source the manufacture of four junction boxes (control cabinets) on SEAPA's transformers located at the Bailey substation and request additional funding for installation. The junction boxes on the SEAPA owned transformers at the substation have rusted and deteriorated to the point that they are no longer waterproof and consequently the internal components are corroding to the point of being inoperable. Replacement of the boxes and components is necessary to insure the operation and reliability of the transformers. As indicated on the attached, R&R Project No. 226-13 was approved in SEAPA's FY13 budget for $65,000 for replacement of these deteriorating junction boxes.

We received the attached quote from Delta Star, Inc. (formerly known as H K Porter) for $59,124 for the manufacture of four cabinets, which does not include shipping. We have not solicited further competitive bidding in an effort to prevent incompatibility with the previously manufactured junction boxes. Delta Star, Inc. has the control panel prints and original bill of materials so with those documents they simply have to check their old files to duplicate the boxes. KPU has contracted with H K Porter in the past for transformer control cabinets and have been satisfied with their work. Section 7.5 of SEAPA's Procurement Policy provides that materials, equipment or contractual services should be purchased from a specific source in order to prevent incompatibility with previously purchased supplies, materials, equipment, or contractual services.

The funds budgeted will cover manufacture of the control boxes but not installation. We also seek the board's approval for an additional $20,000 for installation of the junction boxes in the event KPU does not have the manpower available for the work.

SUGGESTED MOTION

I move to authorize staff to contract with Delta Star, Inc. for a value not to exceed $65,000 for the manufacture of four junction boxes for SEAPA's transformers located at the Bailey Substation. I further move to increase the funding in SEAPA's R&R Account No. 226-13 by an additional $20,000 to cover installation of the four junction boxes.

Attachments:

R&R Project Sheet
Delta Star, Inc. Quote dated 01/10/2013

R&R PROJECT SHEET

SEAPA
Southeast Alaska Power Agency

FY2013
R&R PROJECT
R&R 226-13

Project Name: **Transformer Junction Boxes at Bailey**

Project Number: **226-13**

Project Description: Replace Junction Boxes on SEAPA Transformers in Bailey Substation

Project Cost Estimate: $65,000

Project Start Date: July 2012

Project Completion Date: June 2013

Project Discussion: The junction boxes on the SEAPA owned transformers at the Bailey substation have rusted and deteriorated to the point that they are no longer water proof and consequently the internal components are corroding to the point of being inoperable. Replacement of the boxes and components is necessary to insure the operation and reliability of the transformers.

Project Cost Estimate Summary	Item	Cost
	Labor	$10,000
	Material	$55,000
	Total	$65,000

Project Cost Estimate Discussion: The project estimate was based on a quote received from one vendor to replace the boxes with stainless steel cabinets which is durable and long lasting but perhaps not necessary. Less costly options could be proposed when a RFP is released.

Budget Amount Requested for FY2013: $65,000.00

Budget Amount Requested for FY2014: $0

Project Responsibility:
Project Manager: Steve Henson
Design/Engineering:
Construction Manager/Inspection:

Include additional project-related information here: detailed cost estimates, pictures, drawings, etc.

R&R Project / Budget Approval		
Submitted By	Steve Henson	April 2012
CEO Approval	Dave Carlson	May 2012
Project Approval	SEAPA Board	06/27/12
Budget Approval FY13	SEAPA Board	06/27/12

R&R Project Contracts (Contract Description, number and award date)		
Material Contract		
Design/Engineering/Inspection		

Attach Project Close-Out Summary upon completion of project.

DELTA STAR QUOTE

Ivan Tepper
President & CEO

Steve Newman
Vice President
Member,
Board of Directors

Barry Beaster
Vice President

DELTA STAR INCORPORATED

DELTA STAR EAST
3550 Mayflower Drive
Lynchburg, VA 24501
800-368-3017

DELTA STAR WEST
270 Industrial Road
San Carlos, CA 94070
800-892-8673

www.DeltaStar.com

January 10, 2013

City of Ketchikan, KPU Electric Division

Attn: Andy Donato

E-mail ANDREWD@city.ketchikan.ak.us

Subject: HK Porter Control Cabinets E7141/44 & E7149

Andy, the following is the updated pricing for the cabinets:

SS cabinet with SS back panel $4,428 ea.

SS cabinet with all devices $14,781 ea.

Our shipping lead time is 8 – 10 weeks ARO.

Prices do not include taxes, freight or field service.

If you have a preference as to mode of shipping we will be happy to get quotes for your consideration. Each cabinet weighs approximately 400 lbs.

If you need more information or wish to place an order after January 11th please contact Liz Finch, Contracts Supervisor, 650-508-3318 or e-mail: lizf@deltastar.com.

Sincerely,

Denise Exner
Sr. Contract Administrator

ATERWYNNE LLP

MEMORANDUM

TO: Chairman Pro Tem
Southeast Alaska Power Agency

FROM: Joel R. Paisner, Ater Wynne LLP

DATE: January 15, 2013

RE: Suggested Motion for Executive Session on January 17, 2013

To the extent the Board of Directors seeks to conduct further discussions relating to a Request for Offers of Power and Energy, I recommend the following motion be made:

"I move to recess into Executive Session for further discussions related to soliciting Requests for Offers of Power and Energy. The executive session will be conducted pursuant to SEAPA's Bylaws and Alaska State Law as the discussions may involve matters the immediate knowledge of which would clearly have an adverse impact upon the finances of the Agency, the Projects, or any of the Member Utilities represented on the Board."

Southeast Alaska Power Agency

DATE: January 16, 2013

TO: SEAPA Board of Directors

FROM: Trey Acteson, CEO

SUBJECT: SEAPA Mission Statement

At SEAPA's December 11, 2012, board meeting, staff was directed to manage a public relations effort to reach out to the communities to enhance the communities' knowledge of the Agency and explain SEAPA's role in the region. It is important that we provide clear messaging with regard to SEAPA's mission during this process. I have drafted the attached Mission Statement in an effort to communicate the following areas of emphasis as SEAPA's goals and guiding principles:

- Lowest wholesale power rate
- Regional focus
- Sound utility planning
- Best business practices
- Long-term perspective
- Unified regional leadership for project development
- Prudent management of our interconnect system

I strongly recommend that we adopt a Mission Statement that can be utilized as part of the community outreach effort and serve to clearly define SEAPA's role moving forward.

SUGGESTED MOTION

I move to adopt the following as SEAPA's Mission Statement: "SEAPA's mission is to provide the lowest wholesale power rate consistent with sound utility planning and business practices. We exist for the long-term benefit of our member utilities and the rate payers, providing unified regional leadership for project development and prudent management of our interconnected power system."

SEAPA

Southeast Alaska Power Agency

YOUR REGIONAL LOW-COST WHOLESALE POWER PROVIDER!

SEAPA's mission is to provide the lowest wholesale power rate consistent with sound utility planning and business practices. We exist for the long-term benefit of our member utilities and the rate payers, providing unified regional leadership for project development and prudent management of our interconnected power system.