

**ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT**

Community: Wainwright
Evaluation Date: Sept 26-27, 2012 Time Started 8:00a Completed 4:00p
Evaluator(s): Craig Lemire

*** Indicates that only one from the group shall be chosen. Otherwise choose all that apply**

Powerhouse Building

Site Location

- ☒ Site suitable for powerhouse
- ☐ < 100 feet from a public well
- ☐ < 25 feet from an eroding bank or beach, or in a flood plain

*** Foundation**

- ☒ Powerhouse on acceptable foundation (pad & post, piling, concrete, etc.)
- ☐ Powerhouse directly on gravel pad or light timbers (raised timbers, on permeable gravel)
- ☐ Powerhouse directly on tundra or natural soils (no foundation)
- ☐ Powerhouse leaning considerably or unstable foundations (seismic hazard)

*** Flooring**

- ☒ Welded steel deck plate or concrete (sealed)
- ☐ Steel deck plate or concrete (unsealed)
- ☐ Wood (sealed or painted)
- ☐ Wood (non-sealed or bare)

*** Interior Walls**

- ☐ Concrete or metal skin
- ☒ Fiberglass reinforced paneling (FRP)
- ☐ Gypsum board
- ☐ Wood (painted or sealed)
- ☐ Wood (non-painted or bare)

*** Exterior Walls**

- ☒ Concrete or metal siding
- ☐ Wood (painted or sealed)
- ☐ Wood (non-painted or bare)

* Roof Penetration

- ☐ None
- ☒ Properly installed (rain tight)
- ☐ Minor leaks (repairable)
- ☐ Major leaks (not repairable)

* Ventilation

- ☒ Proper ventilation (air intake & exhaust fans, louvers & hoods)
- ☐ Adequate ventilation (air intake & exhaust fans)
- ☐ Minimum ventilation (air intake)
- ☐ No ventilation (doors or windows have to be left open)

* Lighting

- ☐ Excellent lighting
- ☐ Adequate lighting
- ☒ Poor lighting
- ☐ No lighting

Security

- ☐ Powerhouse fenced in & door locks
- ☒ Door locks
- ☐ No fence
- ☐ No door locks

Generator Equipment and Installation

Diesel Engines

	Unit #1	Unit #2	Unit #3	Unit #4	Unit #5
Kw	430kW	430kW	430kW	910kW	910kW
Hours of Operation	53499	24052	46865	40637	49453

* Generator Condition

	Unit #1	Unit #2	Unit #3	Unit #4	Unit #5
Good, like new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fair	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Poor, guards/covers missing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Load Sizing

- ☐ Properly sized generation to meet the community loads
- ☒ Undersized generation to meet the community loads
- ☐ Oversized generation to meet the community loads

* Load Balance

- ☒ <10% Imbalance
- ☐ 10% to 25% Imbalance
- ☐ >25% Imbalance

* Control Switchgear

- ☒ Fully automatic synchronizing switchgear
- ☐ Semi-automatic synchronizing switchgear
- ☐ Manually synchronizing switchgear
- ☐ Manual transfer switches
- ☐ Manual mounted breakers

* Electrical

- ☒ Wiring appears appropriate
- ☐ Exposed wiring, improper grounding, missing covers etc.

* Fuel System Inside Powerhouse

- ☐ Welded piping
- ☐ Welded & threaded piping
- ☒ Threaded piping
- ☐ Rubber hose

Fuel System Appurtenances

- ☐ No day-tank
- ☒ Additional for active leaks

Totalizing & Station Service Meter

- ☒ Properly installed and working totalizing & station service meter
- ☐ No totalizing meter
- ☐ No station service meter

*** Fuel Meter**

- ☒ Properly installed & working fuel meter
- ☐ No fuel meter

Environmental

Interior of Powerhouse

- ☒ Clean, well-kept
- ☐ Old generator part stored inside facility
- ☐ Waste oil stored inside facility
- ☐ Apparent oil spills

Under Facility

- ☒ Clean, well-kept
- ☐ Old generator part stored under facility
- ☐ Waste oil stored under facility
- ☐ Apparent oil spills

Surrounding of Powerhouse

- ☒ Clean, well-kept
- ☐ Old generator part stored on site
- ☐ Waste oil stored on site
- ☐ Apparent oil spills

*** Waste Oil Disposal**

- ☐ Waste oil blending system
- ☒ Waste oil incinerator
- ☐ Drum or tank storage for waste oils

*** Life, Health, & Safety**

- ☒ Code Compliant
- ☐ Low risk
- ☐ Medium risk
- ☐ High risk
- ☐ Potential for loss of life

Electrical Distribution Line Evaluation

Overhead Distribution System

* Pole type

- ☒ Fully treated poles
- ☐ Butt treated poles
- ☐ Native pole (trees)

* Pole installation

- ☒ Proper depth (can be determined by the manufacture's mark or button on pole)
- ☐ Within 12 inches of recommended depth
- ☐ Within 24 inches of recommended depth
- ☐ Greater than 24 inches of recommended depth

* Pole alignment

- ☐ Poles straight
- ☒ Poles leaning less than 10°
- ☐ Poles leaning greater than 10°

* Distribution voltage

- ☒ =>7200 volts
- ☐ 2400 volts
- ☐ 480/277 volts
- ☐ 208/120 volts

* Anchors

- ☒ Properly installed (<12 inches of the anchor rod exposed)
- ☐ 12 - 24 inches of the anchor rod exposed
- ☐ >24 inches of the anchor rod exposed

* Primary conductor

- ☒ Appears properly installed (sag, conductor size, etc)
- ☐ Improperly installed (conductor needs resagging, etc)

* Service conductor

- ☒ Appears properly installed (sag, conductor size, etc)
- ☐ Improperly installed (conductor needs resagging, etc)

*** Meter installation**

- ☒ Appears to be properly installed (height, grounding, etc)
- ☐ Improperly installed (height, no ground, etc)

*** Meter Condition Residential & Commercial**

- ☒ Good (appears in good condition)
- ☐ Fair (minor corrosion)
- ☐ Poor (major corrosion, needs replacing)

*** Over all condition of the system**

- ☒ Excellent (no repairs needed)
- ☐ Good (minor repairs, re-sag guys, re-sag service drops, etc.)
- ☐ Poor (major repairs needed, pole, guy, conductor, meter replacement, etc)

Underground Distribution System

*** Primary conductor**

- ☐ Appears to be properly installed
- ☐ Exposed conductor

*** Transformers**

- ☐ Appears to be properly installed
- ☐ Improperly installed (no pad, leaning, etc)

*** Service conductor**

- ☐ Appears to be properly installed
- ☐ Exposed conductor

Operator Proficiency

* Meter Reading

- ☐ Excellent
- ☒ Good
- ☐ Acceptable
- ☐ Unacceptable

* Daily Logs

- ☒ Excellent
- ☐ Good
- ☐ Acceptable
- ☐ Unacceptable

* Routine Maintenance

- ☒ Excellent
- ☐ Good
- ☐ Acceptable
- ☐ Unacceptable

* Scheduled Maintenance

- ☒ Excellent
- ☐ Good
- ☐ Acceptable
- ☐ Unacceptable

* Maintenance Planning

- ☒ Excellent
- ☐ Good
- ☐ Acceptable
- ☐ Unacceptable

Waste Heat Recovery

* Waste Heat Recovery Operational

- ☒ Yes
☐ No

List current users

Public Works Bldg & Sewage plant

* BTU/Hr Meter

- ☒ Yes
☐ No

* Additional Waste Heat Available

- ☒ No
☐ Yes

List Potential New Users

System Information

Supply / Return Delta T **12deg F**

Estimate of current annual heating fuel gallons displaced

Unknown

Estimate of potential annual heating fuel gallons displaced

Unknown

Existing Heat Sales Agreement(s)

None

General Questions

Use separate sheet(s) to answer these questions.

1. If records are available, indicate the number, duration, and causes of all forced outages during the last 12 months. If records are not available, provide whatever reasonable estimates available from utility personnel regarding outages number, duration, and causes. **3 outages recorded in the last year due to switchgear circuit breaker problems**

ALASKA ENERGY AUTHORITY

VILLAGE POWER SYSTEM INVENTORY

DATE	Sept 26-27, 2012	TIME START	8:00a	TIME END	4:00p
COMMUNITY	Wainwright	UTILITY	North Slope Borough		
OWNERSHIP	North Slope Borough	CONTACT			
OPERATOR	5 OPERATORS	PHONE	907.852.2611		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar
ENGINE MODEL	3508	3508	3508	3512	3512
ENGINE RPM	1200	1200	1200	1200	1200
SERIAL NUMBER	70Z00641	70Z00643	70Z00642	67Z01942	67Z01904
GOVERNOR TYPE	WOODWARD	WOODWARD	WOODWARD	WOODWARD	WOODWARD
MODEL ACTUATOR	EG-3P	EG-3P	EG-3P	EG-3P	EG-3P
MODEL SPEED CONTROL	2301A	2301A	2301A	2301A	2301A
DC VOLTAGE	24VDC	24VDC	24VDC	24VDC	24VDC
UNIT CIRCUIT BREAKER	GE SPECTRA	GE SPECTRA	GE SPECTRA	GE POWER BREA	GE POWER BREA
TYPE/AMP/VOLT	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE
CURRENT HOURS	800 A/ 600V	800 A/ 600V	800 A/ 600V	1600 A/ 600V	1600 A/ 600V
GENERATOR MAKE	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar
GENERATOR MODEL #	SR4	SR4	SR4	SR4	SR4
GENERATOR SERIAL #	5RA00711	5RA00709	5RA00710	9GZ00526	9GZ00517
GENERATOR CAPACITY (kW)	430kW	430kW	430kW	910kW	910kW
GENERATOR VOLTAGE	480	480	480	480	480
VOLTAGE REGULATOR, MAKE & MODEL	BASLER SSR 32-12	BASLER SSR 32-12	BASLER SSR 32-12	BASLER SSR 32-12	BASLER SSR 32-12
PARALLEL SWITCH GEAR (Y or N)	YES	YES	YES	YES	YES
kWh METER(Yes or No)	YES				
POWERHOUSE kWh METER TYPE	GE EPM				
CATALOG # or TYPE	PLE3ESBG14				
DEMAND ?	YES				
CT RATIO	WEST FEEDER 1600:5 EAST FEEDER 2500:5 STATION 600:5				
STATION SERVICE METER (Yes or No)	YES				
STATION SERVICE METER TYPE	GE EPM				
CATALOG # or TYPE	PLE3ESBG14				
BATT. CHARGER/TYPE/MODEL	LAMARCHE A46				
FUEL DAY TANK TYPE	BUILT ON SITE DUPLEX PUMP SET AND STAND-ALONE 500 GALLON TANK				
PUMP #	No Data				
MOTOR #	BALDOR MT3554T				
FUEL DAY TANK METER	LIQUID CONTROLS MODEL - M-7-1				
FIRE PROTECTION	ABC Fire Extinguishers				
TYPE/OPERATIONAL?	YES				
ORIGINAL CONTRACTOR					