

ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT

Community: Russian Mission
Evaluation Date: 10/15/12 Time Started 12:45 PM Completed 1:30 PM
Evaluator(s): Brendan Costello

*** 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	268kW	376kW	260kW	_____	_____
Hours of Operation	<u>3,100</u>	<u>501</u>	<u>21,147</u>	_____	_____

* 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 type="checkbox"/>	<input 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

school

*** BTU/Hr Meter**

☐ Yes

☒ No

*** Additional Waste Heat Available**

☒ No

☐ Yes

List Potential New Users

Unknown excess capacity

System Information

Supply / Return Delta T - - unknown

Estimate of current annual heating fuel gallons displaced - - unknown

Estimate of potential annual heating fuel gallons displaced - - unknown

Existing Heat Sales Agreement(s) - - unknown

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.

ALASKA ENERGY AUTHORITY

VILLAGE POWER SYSTEM INVENTORY

DATE	10/15/12	TIME START	12:45 PM	TIME END	1:30 PM
COMMUNITY	Russian Mission	UTILITY	AVEC		
OWNERSHIP	AVEC	CONTACT	Joe Kozevnikoff		
OPERATOR	Joe Kozevnikoff	PHONE	584-5117		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	Cummins	Detroit Diesel	Detroit Diesel		
ENGINE MODEL	LTA10	6063MK35	6063GU60		
ENGINE RPM	1800	1800	1200		
SERIAL NUMBER	34531213	06R0639588	06R0122268		
GOVERNOR TYPE	GAC	GAC	GAC		
MODEL ACTUATOR	-	-	-		
MODEL SPEED CONTROL	ESD5520E	EAM104	EAM104		
DC VOLTAGE	24	24	24		
UNIT CIRCUIT BREAKER	Unknown – no access	Unknown – no access	Unknown – no access		
TYPE/AMP/VOLT	Unknown – no access	Unknown – no access	Unknown – no access		
CURRENT HOURS	3,100	501	21,147		
GENERATOR MAKE	Kato	Stamford	Kato		
GENERATOR MODEL #	A263650000	unknown	A258440000		
GENERATOR SERIAL #	11902-02	1/14	10146-07		
GENERATOR CAPACITY (kW)	268	376	260		
GENERATOR VOLTAGE	480	480	480		
VOLTAGE REGULATOR, MAKE & MODEL	Basler APR 63-5	Basler APR 63-5	Basler APR 63-5		
PARALLEL SWITCH GEAR (Y or N)	Y	Y	Y		
BATT. CHARGER TYPE	Unknown	Unknown	Unknown		
BATT. CHARGER MODEL	Unknown	Unknown	Unknown		
kWh METER(Yes or No)	Yes				
POWERHOUSE kWh METER TYPE	Elster				
CATALOG # or TYPE	A3TL				
DEMAND ?	60-290 kW				
CT RATIO	100:5				
STATION SERVICE METER (Yes or No)	Yes				
STATION SERVICE METER TYPE	Elster				
CATALOG # or TYPE	A3TL				
FUEL DAY TANK TYPE	500 gal.				
PUMP #	Worthington 3GA U 8771				
MOTOR #	UL SV588908				
FUEL DAY TANK METER	Gasboy				
FIRE PROTECTION	Yes				
TYPE/OPERATIONAL?	Halon, yes				
ORIGINAL CONTRACTOR	unknown				

General Questions and Comments

Generator 2 experiencing auto-shutdown episodes due to “low oil pressure.” Operator believes that problem is minor and will shortly be resolved, that it is a problem with indication, not actual pressure.

Operator reports that there have been approximately 2 power outages in the past 2 years.

The screws holding the switchgear covers over the breakers were stripped. Consequently, the cover could not be removed to gather breaker information.