

**ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT**

Community: Akiak
Evaluation Date: 10/15/12 Time Started 1:00pm Completed 2:45pm
Evaluator(s): Jesse Walty

*** 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	230kw	230kw	230kw	230kw	
Hours of Operation	<u>302</u>	<u>280</u>	<u>110</u>	<u>61</u>	

* Generator Condition

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

Water plant and community building

* BTU/Hr Meter

☒ Yes

☐ No

* Additional Waste Heat Available

☒ No

☐ Yes

List Potential New Users

System Information

Supply / Return Delta T 9 degrees

Estimate of current annual heating fuel gallons displaced N/A

Estimate of potential annual heating fuel gallons displaced N/A

Existing Heat Sales Agreement(s) N/A

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.
No records, new plant.

ALASKA ENERGY AUTHORITY

VILLAGE POWER SYSTEM INVENTORY

DATE	10/15/12	TIME START	1:00pm	TIME END	2:45pm
COMMUNITY	AKIAK	UTILITY			
OWNERSHIP		CONTACT			
OPERATOR	Kurt Foss	PHONE	907-765-2015		

	G-1	G-2	G-3	G-4	
ENGINE MAKE	JOHN DEERE	JOHN DEERE	JOHN DEERE	JOHN DEERE	
ENGINE MODEL	6090AFM75	6090AFM75	6090AFM75	6090AFM75	
ENGINE RPM	1800	1800	1800	1800	
SERIAL NUMBER	RG6090G007101	RG6090G007075	RG6090G007107	RG6090G007240	
GOVERNOR TYPE	J. DEERE	J. DEERE	J. DEERE	J. DEERE	
MODEL ACTUATOR					
MODEL SPEED CONTROL	L14	L14	L14	L14	
DC VOLTAGE	24v	24v	24v	24V	
UNIT CIRCUIT BREAKER	GE SPECTR RMS SGHA36AT0400	GE SPECTR RMS SGHA36AT0400	GE SPECTR RMS SGHA36AT0400	GE SPECTR RMS SGHA36AT0400	
TYPE/AMP/VOLT	400A/600V	400A/600V	400A/600V	400A/600V	
CURRENT HOURS	302	280	110	61	
GENERATOR MAKE	MARATHON	MARATHON	MARATHON	MARATHON	
GENERATOR MODEL #	432RSL4915	432RSL4915	432RSL4915	432RSL4915	
GENERATOR SERIAL #	WA-580044-0212	WA-580041-0212	WA-580051-0212	WA-580053-0212	
GENERATOR CAPACITY (kW)	230kw	230kw	230kw	230kw	
GENERATOR VOLTAGE	480	480	480	480	
VOLTAGE REGULATOR, MAKE & MODEL	CAT 314-7755	CAT 314-7755	CAT 314-7755	CAT 314-7755	
PARALLEL SWITCH GEAR (Y or N)	Y	Y	Y	Y	
kWh METER(Yes or No)	Y				
POWERHOUSE kWh METER TYPE	ELECTRO IND. GAUGE TECH				
CATALOG # or TYPE	SHARK 200				
DEMAND ?					
CT RATIO	600:5				
STATION SERVICE METER (Yes or No)	Y				
STATION SERVICE METER TYPE	ELECTRO IND. GAUGE TECH				
CATALOG # or TYPE	SHARK 200				
BATT. CHARGER/TYPE/MODEL	SENS NRG24-20-RCLS				
FUEL DAY TANK TYPE	100 GAL.				
PUMP #	OBERDORFER C992M3E5QF50				
MOTOR #	BALDOR CL3501				
FUEL DAY TANK METER	CONTOIL VZO 25 6327 GALLONS PUMPED				
FIRE PROTECTION					
TYPE/OPERATIONAL?	HI-FOG WATER MIST SYSTEM / NEEDS TO BE RECHARGED				
ORIGINAL CONTRACTOR					