

ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT

Community: Crooked Creek
Evaluation Date: 10/12/12 Time Started 2:30 PM Completed 3:45 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	<u>95kW</u>	<u>64kW</u>	<u>64kW</u>	_____	_____
Hours of Operation	<u>9186</u>	<u>33010</u>	<u>19363</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

Washateria, water treatment plant

*** BTU/Hr Meter**

☐ Yes

☒ No

*** Additional Waste Heat Available**

☒ No

☐ Yes

List Potential New Users

Unknown excess capacity

System Information

Supply / Return Delta T - approx. 5 deg. F

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	10/12/12	TIME START	2:30 PM	TIME END	3:45 PM
COMMUNITY	Crooked Creek	UTILITY	MKEC		
OWNERSHIP	MKEC	CONTACT	Chuck Fletcher		
OPERATOR	Chuck Fletcher	PHONE	432-2214		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	John Deere	John Deere	John Deere		
ENGINE MODEL	PE6068TF250BASE-6.8L	PE4045TF150BASE-4.5L	PE4045TF150BASE-4.5L		
ENGINE RPM	1800	1800	1800		
SERIAL NUMBER	PE6068T342227	PE4045T419302	PE4045T419301		
GOVERNOR TYPE	Woodward	Woodward	Woodward		
MODEL ACTUATOR	8256-017	8256-017	8256-017		
MODEL SPEED CONTROL	8290-186	8290-186	8290-186		
DC VOLTAGE	12	12	12		
UNIT CIRCUIT BREAKER	GE Spectra	GE Spectra	GE Spectra		
TYPE/AMP/VOLT	SGHA36AT0400/400A/600V	SFHA36AT0250/250A/600V	SFHA36AT0250/250A/600V		
CURRENT HOURS	9,186	33,010	19,363		
GENERATOR MAKE	Marathon Electric	Marathon Electric	Marathon Electric		
GENERATOR MODEL #	363PSL1607	362PSL1604	362PSL1604		
GENERATOR SERIAL #	LM-406341-0205	LM-406634-0205	LM-406805-0205		
GENERATOR CAPACITY (kW)	95	64	64		
GENERATOR VOLTAGE	480	480	480		
VOLTAGE REGULATOR, MAKE & MODEL	Marathon Electric DVR2000E	Marathon Electric DVR2000E	Marathon Electric DVR2000E		
PARALLEL SWITCH GEAR (Y or N)	Y	Y	Y		
BATT. CHARGER TYPE	Charles Industries	Charles Industries	Charles Industries		
BATT. CHARGER MODEL	93-AA1220HLPR	93-AA1220HLPR	93-AA1220HLPR		
kWh METER(Yes or No)	Yes				
POWERHOUSE kWh METER TYPE	ION 7650				
CATALOG # or TYPE	-				
DEMAND ?	30-80 kW				
CT RATIO	unknown				
STATION SERVICE METER (Yes or No)	Yes				
STATION SERVICE METER TYPE	ION 7550				
CATALOG # or TYPE	-				
FUEL DAY TANK TYPE	100 gal.				
PUMP #	Oberdorfer Lot: T17277				
MOTOR #	Baldor M13B				
FUEL DAY TANK METER	AMCO P/N 19812				
FIRE PROTECTION	Yes				
TYPE/OPERATIONAL?	Halon, yes				
ORIGINAL CONTRACTOR	Unknown				

General Questions and Comments

Operator reports that gen. 3 will shut itself down after 4-8 of operation, for unknown reasons. Attempts to fix it discover why have failed. It has been this way for the last approx. 5 years.

Although system is designed to be fully auto switch/sync, it has been only manual switch/sync for long time. The PLC was replaced about a year ago, but the problem persists.

The Internet connection has been down for the past 1 month, which prevents remote attempts to fix problem, but operator reports that sincere attempts are being conducted to do so.

Waste oil used to be blended, but clogged injectors so operator stopped. He now uses it to heat his bathhouse.

Waste heat recovery is in effect, and operator reports that it is working well. Anecdotal, he believes the Washateria fuel oil consumption has dropped from approx. 4,000 gal. /yr. to 750 gal. /yr. There is talk about adding the clinic to the loop.

The station service meter is broken.

There is a small diesel leak from the pipe that comes from the day tank. There is a bucket to collect drips.