

**ALASKA ENERGY AUTHORITY  
VILLAGE POWER SYSTEM ASSESSMENT**

Community: **Noatak**  
Evaluation Date: **9/21/12** Time Started **0900** Completed **1230**  
Evaluator(s): **Ben Hopkins**

**\* 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	_____	314	_____	500	370
Hours of Operation	_____	10,186	_____	30,341	7,713

\* 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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Poor, guards/covers missing	<input type="checkbox"/>	<input checked="" 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** (15 points max.)

- ☐ 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**

\* BTU/Hr Meter

☐ Yes

☒ No

\* Additional Waste Heat Available

☒ No

☐ Yes

List Potential New Users

System Information

Supply / Return Delta T

**10°F**

Estimate of current annual heating fuel gallons displaced

**Unknown, system appeared to not be in operation while I was there.**

Estimate of potential annual heating fuel gallons displaced

**Unknown, system wasn't operating when I was there.**

Existing Heat Sales Agreement(s)

**Unknown, AVEC has records. AVEC linemen indicated that plant will likely be relocated in the future, the school and clinic are on the opposite side of town, about a mile away.**

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.

**Overall system has been fairly reliable. AVEC line crew had a scheduled outage while I was on the ground to work on a line by the airport that has leaning poles and needs primary and secondary conductor re-sagged. The plant is old and showing it's age.**



# ALASKA ENERGY AUTHORITY

## VILLAGE POWER SYSTEM INVENTORY

DATE	9/21/12	TIME START	0900	TIME END	1230
COMMUNITY	Noatak	UTILITY	AVEC		
OWNERSHIP	AVEC	CONTACT	Mark Bryan		
OPERATOR	Mickey @ 485-2417	PHONE	565-5316		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE		Detroit		Cummins	Cummins
ENGINE MODEL		Series 60		QSX-15 G9	KTA19G5
ENGINE RPM		1800		1800	1800
SERIAL NUMBER		06R0270151		14031260	Tag painted over
GOVERNOR TYPE		DDC Electronic		Cummins Elect	Cummins
MODEL ACTUATOR		--		--	EFC
MODEL SPEED CONTROL		--		--	GAC ESD5520E
DC VOLTAGE		24VDC		24VDC	24VDC
UNIT CIRCUIT BREAKER		GE Molded Case		GE Molded Case	GE Molded Case
TYPE/AMP/VOLT		3ph/400A/480V		3ph/700A/480V	3ph/500A/480V
CURRENT HOURS		10186		30341	7713
GENERATOR MAKE		Kato		Cummins	Newage
GENERATOR MODEL #		268-483361111		DFEK-5561997	Unknown, no tag
GENERATOR SERIAL #		88688		F020381170	Unknown, no tag
GENERATOR CAPACITY (kW)		314kW		500kW	370kW
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)		Yes, manual		Yes, manual	Yes, manual
kWh METER(Yes or No)	Yes				
POWERHOUSE kWh METER TYPE	Elster CL20 FM 9S Kh 1.8 P/R 24 TA 2.5A				
CATALOG # or TYPE	A3T				
DEMAND ?	313				
CT RATIO	Unknown				
STATION SERVICE METER (Yes or No)	Yes				
STATION SERVICE METER TYPE	Elster CL200 FM 16S Kh 21.6 P/R 24 TA 30A				
CATALOG # or TYPE	A3T				
BATT. CHARGER/TYPE/MODEL	Nife SCB-110-24-40				
FUEL DAY TANK TYPE	Single wall 300 gallon				
PUMP #	Ingersol-Dresser 3GASM1D0				
MOTOR #	Century CS-184-LMD-6-320452-01 1.5HP 115/230V 1750 RPM				
FUEL DAY TANK METER	Gasboy				
FIRE PROTECTION TYPE/OPERATIONAL?	Halon and ABC 20lb extinguishers, all indicate charged. No tags show current inspection.				
ORIGINAL CONTRACTOR	Unknown				
	Plant is showing it's age. Foundation appears to be leaning and plant is literally on the riverbank (flood plain). There are				
	Several areas that need work in the distribution as well, leaning poles, tight service drops, etc.				