

**ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT**

Community: **Kiana**
Evaluation Date: **9/18/12** Time Started **1230** Completed **1530**
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	365	empty	330	500	_____
Hours of Operation	11,446	_____	198	1,289	_____

* 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" 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

* BTU/Hr Meter

- ☐ Yes
☒ No

* Additional Waste Heat Available

- ☒ No
☐ Yes

List Potential New Users

Other city facilities are not close to plant.

System Information

Supply / Return Delta T

25deg 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.

Outages in the last year have all been due to operator error that operator on shift is aware of (Daniel). Undersized generator has been left on in winter, shutdown on overload (under frequency). He is aware of his shift only. AVEC has logs of all outages.

ALASKA ENERGY AUTHORITY

VILLAGE POWER SYSTEM INVENTORY

DATE	9/18/12	TIME START	12:30	TIME END	15:30
COMMUNITY	Kiana	UTILITY	AVEC		
OWNERSHIP	AVEC	CONTACT	Mark Bryan		
OPERATOR	Daniel @ 475-5330	PHONE	565-5316		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	Detroit		Cummins	Cummins	
ENGINE MODEL	Series 60		KTA1150	KTA19 G4	
ENGINE RPM	1800		1200	1800	
SERIAL NUMBER	06R0639587		Data tag missing	Data tag missing	
GOVERNOR TYPE	Electronic		Mechanical	Mechanical	
MODEL ACTUATOR	DDEC		EG1P	EG1P	
MODEL SPEED CONTROL	LSM/SPM		2301A	2301A	
DC VOLTAGE	24VDC		24VDC	24VDC	
UNIT CIRCUIT BREAKER	GE Molded Case		GE Molded Case	GE Molded Case	
TYPE/AMP/VOLT	3ph/480V/450A		3ph/480V/500A	3ph/480V/700A	
CURRENT HOURS	11,447		198	1,289	
GENERATOR MAKE	Newage		Kato	Martin Machinery	
GENERATOR MODEL #	HCI504C1L		6P4-1363	MCD-500-3	
GENERATOR SERIAL #	B010213495		69398-6	M060499818	
GENERATOR CAPACITY (kW)	365		330	500	
GENERATOR VOLTAGE	480V		480V	480V	
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 TA2.5A				
CATALOG # or TYPE	A3TL				
DEMAND ?	250kW				
CT RATIO	Unknown, didn't have correct tools to remove panel covers to access				
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	A3TL				
BATT. CHARGER/TYPE/MODEL	Nife SCL 24-15				
FUEL DAY TANK TYPE	Single Wall, 500 gallon				
PUMP #	Worthington 3GAU				
MOTOR #	1 1/2HP 1750 RPM				
FUEL DAY TANK METER	GPI MR 5-30				
FIRE PROTECTION TYPE/OPERATIONAL?	Halon system & 20lb ABC extinguishers. Unknown original contractor, tags from almost every vendor in Alaska in different parts of the system. Halon indicates charged except in gen #4 module				
ORIGINAL CONTRACTOR					
	Operator says most outages are from operator error. He feels like AVEC is supporting them well when needed.				