

**ALASKA ENERGY AUTHORITY  
VILLAGE POWER SYSTEM ASSESSMENT**

Community: Shishmaref  
Evaluation Date: Sept 23, 2012 Time Started 12:30p Completed 5:30p  
Evaluator(s): Kris Tolson

**\* 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 #15	Unit #16	Unit #12	Unit #14	Unit # 18
kW	376kW	300kW	400kW	500kW	_____
Hours of Operation	Unknown	8383	11593	23615	_____

\* Generator Condition

	Unit #15	Unit #16	Unit #12	Unit #14	Unit #18
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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Poor, guards/covers missing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" 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

**Asbestos Hazard**

## 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

**Living Quarters and Storage**

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### \* BTU/Hr Meter

- ☐ Yes  
☒ No

### \* Additional Waste Heat Available

- ☐ No  
☒ Yes

List Potential New Users

**City Hall, Fire Station**

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## System Information

Supply / Return Delta T **10 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)

**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. **Numerous outages caused by line faults due to weather, and generator shutdowns**



# ALASKA ENERGY AUTHORITY

## VILLAGE POWER SYSTEM INVENTORY

DATE	Sept 23, 2012	TIME START	12:30p	TIME END	5:30p
COMMUNITY	Shishmaref	UTILITY	AVEC		
OWNERSHIP	AVEC	CONTACT	Winfred Obruk		
OPERATOR	Winfred Obruk	PHONE	907-649-3091		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	Detroit Diesel	Caterpillar	Cummins	Cummins	
ENGINE MODEL	Series 60	D353E	KTA-19-G2	QSX15-G9	
ENGINE RPM	1800	1800	1800	1800	
SERIAL NUMBER	06R0640760	46B5674	31134013	14031666	
GOVERNOR TYPE	DDEC Electronic	Woodward	Woodward	Cummins Elect	
MODEL ACTUATOR	--	D8250-501	D8250-501	--	
MODEL SPEED CONTROL	--	2301A	2301A	--	
DC VOLTAGE	24VDC	24VDC	24VDC	24VDC	
UNIT CIRCUIT BREAKER	GE TKM3F	GE TKM3F	GE TKM3F	GE TKM3F	
TYPE/AMP/VOLT	450A / 480V	500A / 480V	600A / 480V	700A / 480V	
CURRENT HOURS	Unknown	8383	11593	23615	
GENERATOR MAKE	Stamford	Kato	Kato	Stamford	
GENERATOR MODEL #	No Data	300-SR-9-D	A2251300	No Data	
GENERATOR SERIAL #	No Data	10012065	88720	No Data	
GENERATOR CAPACITY (kW)	376kW	300kW	400kW	500kW	
GENERATOR VOLTAGE	480	480	480	480	
VOLTAGE REGULATOR, MAKE & MODEL	Basler APR 63-5	Basler APR 63-5	Basler APR 63-5	Basler APR 63-5	
PARALLEL SWITCH GEAR (Y or N)	Yes	Yes	Yes	Yes	
kWh METER(Yes or No)	Yes				
POWERHOUSE kWh METER TYPE	Elster				
CATALOG # or TYPE	A3TL				
DEMAND ?					
CT RATIO	No Access				
STATION SERVICE METER (Yes or No)	Yes				
STATION SERVICE METER TYPE	Elster				
CATALOG # or TYPE	A3TL				
BATT. CHARGER/TYPE/MODEL	SENS DCT 24-35-A643				
FUEL DAY TANK TYPE	500gal Custom				
PUMP #	Worthington 3GAU				
MOTOR #	Baldor X5236L3				
FUEL DAY TANK METER	GP1 FM-350				
FIRE PROTECTION TYPE/OPERATIONAL?	Fenwal Halon / ABC Extinguishers - Functional				
ORIGINAL CONTRACTOR					