

**ALASKA ENERGY AUTHORITY**  
**VILLAGE POWER SYSTEM ASSESSMENT**

Community: Manokotak  
Evaluation Date: Sept 18, 2012 Time Started 6:30pm Completed 9:30pm  
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) (\*\*SEALING FIBERGLASS\*\*)
- ☐ 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	260kW	260kW	190kW	120kW	_____
Hours	23063 (eng @ 22684)	29048 (eng @ 25676)	7617	5005	

\* 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 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

**Two neighboring shops.**

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**\* BTU/Hr Meter**

☒ Yes

☐ No

**\* Additional Waste Heat Available**

☒ No

☐ Yes

List Potential New Users

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**System Information**

Supply / Return Delta T **10deg 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.

**No records available, but only outages were this summer for low oil and low fuel.**



# ALASKA ENERGY AUTHORITY

## VILLAGE POWER SYSTEM INVENTORY

DATE	Sept 18, 2012	TIME START	6:30pm	TIME END	9:30pm
COMMUNITY	Manokoak	UTILITY	Manokotak Native Limited		
OWNERSHIP	City of Manokotak	CONTACT	Moses (Moody) Toyakuk		
OPERATOR	Moses (Moody) Toyakuk	PHONE	907-289-6256		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	John Deere	John Deere	John Deere	John Deere	
ENGINE MODEL	6125AF001	6125AF001	6081AF001	6081TK001	
ENGINE RPM	1800	1800	1800	1800	
SERIAL NUMBER	SE6125A583505	SE6125A583502	RG6081A169045	RG6081T166424	
GOVERNOR TYPE	JD Electronic	JD Electronic	Woodward	Woodward	
MODEL ACTUATOR	--	--	8256-017	8256-017	
MODEL SPEED CONTROL	--	--	8290-186	8290-186	
DC VOLTAGE	12V	12V	12V	12V	
UNIT CIRCUIT BREAKER	GE SGHA36AT0600	GE SGHA36AT0600	GE SGHA36AT0600	GE SGHA36AT0400	
TYPE/AMP/VOLT	600A/600V	600A/600V	600A/600V	400A/600V	
CURRENT HOURS	23063	29048	7617	5005	
GENERATOR MAKE	MAGNA	MAGNA	MAGNA	MAGNA	
GENERATOR MODEL #	433PSL6220	433PSL6220	432PSL6210	431PSL6204	
GENERATOR SERIAL #	WA-541277-0904	WA-541357-0904	WA-541387-0904	WA-541384-0904	
GENERATOR CAPACITY (kW)	260	260	190	120	
GENERATOR VOLTAGE	277/480	277/480	277/480	277/480	
VOLTAGE REGULATOR, MAKE & MODEL	MARATHON DVR 2000E	MARATHON DVR 2000E	MARATHON DVR 2000E	MARATHON DVR 2000E	
PARALLEL SWITCH GEAR (Y or N)	Y	Y	Y	Y	
kWh METER(Yes or No)	Y				
POWERHOUSE kWh METER TYPE	ION				
CATALOG # or TYPE	7550				
DEMAND ?					
CT RATIO	800:5				
STATION SERVICE METER (Yes or No)	Y				
STATION SERVICE METER TYPE	ION				
CATALOG # or TYPE	7550				
BATT. CHARGER/TYPE/MODEL	CHARLES 93-AA1220HLP, SENS NRG12-20-RCLS				
FUEL DAY TANK TYPE					
PUMP #	126143				
MOTOR #	6K570G (Dayton)				
FUEL DAY TANK METER	641768				
FIRE PROTECTION	Y				
TYPE/OPERATIONAL?					
ORIGINAL CONTRACTOR					