

**ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT**

Community: Tuntutuliak
Evaluation Date: 10-15-12 Time Started 4:20p Completed
Evaluator(s): John Haase

*** 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	122kW	180kW	250kW	250kW	_____
Hours of Operation	<u>2865</u>	<u>2854</u>	<u>ECM-9838</u>	<u>ECM-16428</u>	_____

Unit #3 has a new engine installed at ECM-8592

* Generator Condition

	Unit #1	Unit #2	Unit #3	Unit #4	Unit #5
Good, like new	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fair	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 76-126-90, Wind power is ON-LINE
- ☐ >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 Not in use
- ☒ Waste oil incinerator Smart ash Burner is in use
- ☐ Drum or tank storage for waste oils

*** Life, Health, & Safety**

- ☐ Code Compliant
- ☐ Low risk
- ☐ Medium risk
- ☒ High risk No Fire Suppression, System is DISCHARGED
- ☐ 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)

Service drop to house nearest to plant is within human reach ~7.5'

*** 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 NONE

*** 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 Automatic Meter Reading System (AMR)
- ☐ Good
- ☐ Acceptable
- ☐ Unacceptable

* Daily Logs

- ☐ Excellent
- ☐ Good
- ☐ Acceptable
- ☒ Unacceptable Non-standard extremely abbreviated form

* Routine Maintenance

- ☒ Excellent
- ☐ Good
- ☐ Acceptable
- ☐ Unacceptable

* Scheduled Maintenance

- ☐ Excellent
- ☒ Good
- ☐ Acceptable
- ☐ Unacceptable

* Maintenance Planning

- ☐ Excellent
- ☐ Good
- ☐ Acceptable
- ☒ Unacceptable Waits until break down

Waste Heat Recovery

* Waste Heat Recovery Operational

☐ Yes

☒ No

List current users

Only used for internal plant use

* BTU/Hr Meter

☐ Yes

☒ No

* Additional Waste Heat Available

☐ No

☒ Yes

List Potential New Users

Plant is located a long distance from any potential users

System Information

Supply / Return Delta T Supply=192, Return=188, Wind Power is load shedding heat into plant coolant

Estimate of current annual heating fuel gallons displaced

Estimate of potential annual heating fuel gallons displaced

Existing Heat Sales Agreement(s)

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	10-15-12	TIME START	1646	TIME END	
COMMUNITY	Tuntutuliak	UTILITY	Same		
OWNERSHIP	TCSA Electrical Svcs	CONTACT	Carl Andrew 256-2529		
OPERATOR	Gabe Olick	PHONE	256-6025		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	John Deere	John Deere	John Deere	John Deere	
ENGINE MODEL	6081TF001	6081AF001	6090HF485	6090HF485	
ENGINE RPM	1800	1800	1800	1800	
SERIAL NUMBER	SE6081T015062	RG6081A403360	SE6090L124922	RG6090L055725	
GOVERNOR TYPE	WW-EPG	WW-EPG	ECM	ECM	
MODEL ACTUATOR	WW-1712	WW-1712	ECM	ECM	
MODEL SPEED CONTROL	WW-SG2D-T-HO	WW-SG2D-T-HO	ECM	ECM	
DC VOLTAGE	12vdc	12vdc	12vdc	12vdc	
UNIT CIRCUIT BREAKER	ALL Powerpact	PG-800	PGF36080ACSKMO		
TYPE/AMP/VOLT	800A/ 600vac	800A/ 600vac	800A/ 600vac	800A/ 600vac	
CURRENT HOURS	2865	2854	9838 new @8592	16428	
GENERATOR MAKE	Marathon	Marathon	Marathon	Marathon	
GENERATOR MODEL #	431PSL6204	432PSL6212	432RSL4015	432RSL4015	
GENERATOR SERIAL #	LM-237314-1000	LM-237745-1000	WA-569470-0209	WA-569444-0309	
GENERATOR CAPACITY (kW)	125	190	275	275	
GENERATOR VOLTAGE	277/480	277/480	277/480	277/480	
VOLTAGE REGULATOR, MAKE & MODEL	DVR2000E	DVR2000E	DVR2000E	DVR2000E	
PARALLEL SWITCH GEAR (Y or N)	YES	YES	YES	YES	
kWh METER(Yes or No)	YES, ION7300, s/n-PA0011A287-11				
POWERHOUSE kWh METER TYPE	Electronic Panel Mount				
CATALOG # or TYPE	Power Measurements Ltd., ION 7300, p/n-P730A0D0A0A0A0A				
DEMAND ?	YES, Max Reading-178, Total-9986950				
CT RATIO	Unable to verify ratio				
STATION SERVICE METER (Yes or No)	YES,ION 7300, s/n-PA0011A288-11				
STATION SERVICE METER TYPE	Electronic Panel Mount				
CATALOG # or TYPE	P730A0D0A0A0A0A, Max Reading-4.7, Total-350134				
BATT. CHARGER/TYPE/MODEL	4each, Charles C-Charger, p/n-93AA122)H11				
FUEL DAY TANK TYPE	AEA, 275 gallon				
PUMP #	Wotec, Model-15XDC, p/n-3946, s/n-000121				
MOTOR #	220vac				
FUEL DAY TANK METER	ABB, p/n-92157, s/n-4220706				
FIRE PROTECTION	YES, Kidde FM-200				
TYPE/OPERATIONAL?	NOT OPERATIONAL, TOTALLY DISCHARGED				
ORIGINAL CONTRACTOR	AEA				