

**ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT**

Community: Nuiqsut
Evaluation Date: Sept 24-25, 2012 Time Started 2:00p Completed 10:00a
Evaluator(s): Craig Lemire

*** 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

<u>Diesel Engines</u>				<u>GAS</u>	<u>GAS</u>
	Unit #1	Unit #2	Unit #3	Unit #5	Unit # 6
Kw	910	910	450	820	820
Hours of Operation	15013	33630	23530	18962	17258

UNITS 5 AND 6 ARE NATURAL GAS.

UNIT 4 SLOT IS EMPTY – DIESEL UNIT WAS REMOVED AND IS BEING REPLACED WITH A GAS UNIT.

* Generator Condition

	Unit #1	Unit #2	Unit #3	Unit #5	Unit #6
Good, like new	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Fair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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

School

* BTU/Hr Meter

☐ Yes

☒ No

* Additional Waste Heat Available

☒ No

☐ Yes

List Potential New Users

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)

Unknown

General Questions

Use separate sheet(s) to answer these questions.

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. **11 outages in last year – all due to distribution faults – most in mid winter.**

ALASKA ENERGY AUTHORITY

VILLAGE POWER SYSTEM INVENTORY

DATE	Sept 24-25, 2012	TIME START	2:00p	TIME END	10:00a
COMMUNITY	Nuiqsut	UTILITY	North Slope Borough		
OWNERSHIP	North Slope Borough	CONTACT			
OPERATOR	6 OPERATORS	PHONE	907.852.2611		

	G-1	G-2	G-3	G-5	G-6
ENGINE MAKE	CAT	CAT	CAT	CAT	CAT
ENGINE MODEL	3512 DIESEL	3512 DIESEL	3508 DIESEL	3516 GAS	3516 GAS
ENGINE RPM	1200	1200	1200	1200	1200
SERIAL NUMBER	67Z01688	67Z01658	70Z01007	ZBA00281	ZBA00305
GOVERNOR TYPE	WOODWARD	WOODWARD	WOODWARD	WOODWARD	WOODWARD
MODEL ACTUATOR	EG-3P	EG-3P	EG-3P	EG-3P	EG-3P
MODEL SPEED CONTROL	2301A & DSLC	2301A & DSLC	2301A & DSLC	2301A & DSLC	2301A & DSLC
DC VOLTAGE	24	24	24	24	24
UNIT CIRCUIT BREAKER	GE POWER BREAK	GE POWER BREAK	GE POWER BREAK	GE POWER BREA	GE POWER BREA
TYPE/AMP/VOLT	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE	MOLDED CASE
CURRENT HOURS	1600 A/F – 600V	1600 A/F – 600V	1600 A/F – 600V	1600 A/F – 600V	1600 A/F – 600V
GENERATOR MAKE	CAT	CAT	CAT	CAT	CAT
GENERATOR MODEL #	SR4	SR4	SR4	SR4	SR4
GENERATOR SERIAL #	5ZA00704	5ZA00714	5VA00780	5ZA00815	5ZA00816
GENERATOR CAPACITY (kW)	910 PRIME	910 PRIME	450 PRIME	820 CONT	820 CONT
GENERATOR VOLTAGE	480	480	480	480	480
VOLTAGE REGULATOR, MAKE & MODEL	CAT DVR	CAT DVR	CAT DVR	CAT DVR	CAT DVR
PARALLEL SWITCH GEAR (Y or N)	YES	YES	YES	YES	YES
kWh METER(Yes or No)	YES				
POWERHOUSE kWh METER TYPE	GE EPM				
CATALOG # or TYPE	PLE3ESDG14				
DEMAND ?	YES				
CT RATIO	EAST FEEDER 1600:5 WEST FEEDER 1600:5 STATION 400:5				
STATION SERVICE METER (Yes or No)	YES				
STATION SERVICE METER TYPE	GE EPM				
CATALOG # or TYPE	PLE3ESDG14				
BATT. CHARGER/TYPE/MODEL	LAMARCHE A46				
FUEL DAY TANK TYPE	SIMPLEX SPS-25-SD PACKAGED DUPLEX PUMP SET WITH SEPARATE STAND-ALONE 500 GAL TANK				
PUMP #	No Data				
MOTOR #	MARATHON				
FUEL DAY TANK METER	AMCO 25 RC USG				
FIRE PROTECTION	WATER MIST				
TYPE/OPERATIONAL?	YES				
ORIGINAL CONTRACTOR					