

**ALASKA ENERGY AUTHORITY
VILLAGE POWER SYSTEM ASSESSMENT**

Community: Nunam Iqua
Evaluation Date: July 6, 2012 Time Started 1:00pm Completed 8:00pm
Evaluator(s): Tim Gardner

*** Indicates that only one from the group shall be chosen. Otherwise choose all that apply**

Powerhouse Building

Site Location

- X Site suitable for powerhouse
☐ < 100 feet from a public well
☐ < 25 feet from an eroding bank or beach, or in a flood plain

*** Foundation**

- X 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)
X 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
X Wood (painted or sealed)
☐ Wood (non-painted or bare)

*** Exterior Walls**

- ☐ Concrete or metal siding
X Wood (painted or sealed)
☐ Wood (non-painted or bare)

* Roof Penetration

- X None
☐ Properly installed (rain tight)
☐ Minor leaks (repairable)
☐ Major leaks (not repairable)

* Ventilation

- ☐
☐ Adequate ventilation (air intake & exhaust fans)
☐ Minimum ventilation (air intake)
X No ventilation (doors or windows have to be left open)

* Lighting

- ☐ Excellent lighting
X Adequate lighting
☐ Poor lighting
☐ No lighting

Security

- ☐ Powerhouse fenced in & door locks
X Door locks
X No fence
☐ No door locks

Generator Equipment and Installation

Diesel Engines

	Unit #1	Unit #2	Unit #3	Unit #4	Unit # 5
kW	229 KW	250 KW	229 KW	_____	_____
Hours of Operation	14162 O/H @ 12561	25084	13313	_____	_____

* Generator Condition

	Unit #1	Unit #2	Unit #3	Unit #4	Unit #5
Good, like new	X	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Fair	<input type="checkbox"/>	X	<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
X Undersized generation to meet the community loads
X Oversized generation to meet the community loads

* Load Balance

- ☐ <10% Imbalance
☐ 10% to 25% Imbalance
X >25% Imbalance

* Control Switchgear

- ☐ Fully automatic synchronizing switchgear
☐ Semi-automatic synchronizing switchgear
X Manually synchronizing switchgear
☐ Manual transfer switches
☐ Manual mounted breakers

* Electrical

- X Wiring appears appropriate
☐ Exposed wiring, improper grounding, missing covers etc.

* Fuel System Inside Powerhouse

- ☐ Welded piping
X Welded & threaded piping
☐ Threaded piping
☐ Rubber hose

Fuel System Appurtenances

- ☐ No day-tank
☐ Additional for active leaks

Totalizing & Station Service Meter

- X Properly installed and working totalizing & station service meter
☐ No totalizing meter
☐ No station service meter

*** Fuel Meter**

- X Properly installed & working fuel meter
☐ No fuel meter

Environmental

Interior of Powerhouse

- X Clean, well-kept
☐ Old generator part stored inside facility
☐ Waste oil stored inside facility
☐ Apparent oil spills

Under Facility

- X Clean, well-kept
☐ Old generator part stored under facility
☐ Waste oil stored under facility
☐ Apparent oil spills

Surrounding of Powerhouse

- ☐ Clean, well-kept
X Old generator part stored on site
☐ Waste oil stored on site
☐ Apparent oil spills

*** Waste Oil Disposal**

- ☐ Waste oil blending system
X Waste oil incinerator
☐ Drum or tank storage for waste oils

*** Life, Health, & Safety**

- X Code Compliant
☐ Low risk
☐ Medium risk
☐ High risk
☐ Potential for loss of life

Electrical Distribution Line Evaluation

Overhead Distribution System

* Pole type

- X 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
- X Greater than 24 inches of recommended depth

* Pole alignment

- ☐ Poles straight
- X Poles leaning less than 10°
- ☐ Poles leaning greater than 10°

* Distribution voltage

- X =>7200 volts
- ☐ 2400 volts
- ☐ 480/277 volts
- ☐ 208/120 volts

* Anchors

- X 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)
- X Improperly installed (conductor needs resagging, etc)

* Service conductor

- ☐ Appears properly installed (sag, conductor size, etc)
- X Improperly installed (conductor needs resagging, etc)

*** Meter installation**

- ☐ Appears to be properly installed (height, grounding, etc)
X Improperly installed (height, no ground, etc)

*** Meter Condition Residential & Commercial**

- ☐ Good (appears in good condition)
☐ Fair (minor corrosion)
X 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.)
X 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

- X Excellent
- ☐ Good
- ☐ Acceptable
- ☐ Unacceptable

* Daily Logs

- ☐ Excellent
- ☐ Good
- ☐ Acceptable
- X Unacceptable

* Routine Maintenance

- ☐ Excellent
- X Good
- ☐ Acceptable
- ☐ Unacceptable

* Scheduled Maintenance

- ☐ Excellent
- ☐ Good
- X Acceptable
- ☐ Unacceptable

* Maintenance Planning

- ☐ Excellent
- ☐ Good
- X Acceptable
- ☐ Unacceptable

Waste Heat Recovery

* Waste Heat Recovery Operational

☒ Yes

☐ No

List current users

Water Plant / Sewer Plant

* BTU/Hr Meter

☐ Yes

☒ No

* Additional Waste Heat Available

☐ No

☒ Yes

List Potential New Users

Unoccupied City Store

System Information

Supply / Return Delta T----- **20deg F**

Estimate of current annual heating fuel gallons displaced

9000 gal

Estimate of potential annual heating fuel gallons displaced

Unknown

Existing Heat Sales Agreement(s)

Donated

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. **See Below**

July 2, 2012: Power outage due to loss of speed signal on #1

July 1, 2012: Power outage due to loss of speed signal on #1

June 24, 2012: Power outage due to main breaker trip on #3

May 30, 2012: Power outage due to main breaker trip

ALASKA ENERGY AUTHORITY

VILLAGE POWER SYSTEM INVENTORY

DATE	July 6, 2012	TIME START	1:00 PM	TIME END	8:00 PM
COMMUNITY	Nunam Iqua	UTILITY	Nunam Iqua Electric Co		
OWNERSHIP	Nunam Iqua Electric Co	CONTACT	Carin Finch		
OPERATOR	John Canoe / Felix Adams	PHONE	907-498-4226 / 907-498-2037		

	G-1	G-2	G-3	G-4	G-5
ENGINE MAKE	John Deere	John Deere	John Deere		
ENGINE MODEL	6090HF485	6125AF001	6090HF485		
ENGINE RPM	1800	1800	1800		
SERIAL NUMBER	RG6090L031726	RG6125A014763	RG6090L031718		
GOVERNOR TYPE	JD Electronic	JD Electronic	JD Electronic		
MODEL ACTUATOR					
MODEL SPEED CONTROL					
DC VOLTAGE	12VDC	12VDC	12VDC		
UNIT CIRCUIT BREAKER	ABB	ABB	ABB		
TYPE/AMP/VOLT	S5N/400A/600V	S5N/400A/600V	S5N/400A/600V		
CURRENT HOURS	14162	25084	13313		
GENERATOR MAKE	Stamford	Stamford	Stamford		
GENERATOR MODEL #	HCI434D1L-0080	HCI434C	HCI434D1L-0080		
GENERATOR SERIAL #	M08C303541-01	?010262146	M08C303541-02		
GENERATOR CAPACITY (kW)	229kW	250kW	229kW		
GENERATOR VOLTAGE	277/480 V	277/480 V	277/480 V		
VOLTAGE REGULATOR, MAKE & MODEL	Newage MX341	Newage MX341	Newage MX341		
PARALLEL SWITCH GEAR (Y or N)	Y	Y	Y		
kWh METER(Yes or No)	YES				
POWERHOUSE kWh METER TYPE	Itron Sentinel				
CATALOG # or TYPE	Type SS4S1D				
DEMAND ?	YES				
CT RATIO	600:5 / 1200:5				
STATION SERVICE METER (Yes or No)	YES – Schlumberger Vectron				
STATION SERVICE METER TYPE	SV4SD 4WY				
CATALOG # or TYPE	Type: FM16S – 25 926 560				
BATT. CHARGER/TYPE/MODEL	SENS FC12-10-20114 (#1) / Charles C-Charger 93-AA1220HLPR (#2)				
FUEL DAY TANK TYPE	Custom				
PUMP #	Oberdorfer N991-32A97 Lot T38582				
MOTOR #	Leeson Cat#: 100116.00 MDL: A4C17DB2E				
FUEL DAY TANK METER	ABB P/N: 92145 S/N: 4253446				
FIRE PROTECTION	FIRE EXTINGUISHERS/ OPERATIONAL				
TYPE/OPERATIONAL?	TYPE ABC				
ORIGINAL CONTRACTOR	UNKNOWN				