Q. It is stated that Rattling Brook is a "critical black start plant". Please provide a copy of the relevant black start procedure indicating the role of Rattling Brook. In addition, please provide a list of occasions when Rattling Brook was used for black start purposes and identify the occasions when it failed to provide black start service owing to the lack of redundancy in the station service supply (page E-1, Appendix E, Volume 11).

A. A copy of the Rattling Brook Black Start Procedure is provided in Attachment A.

 Black start refers to the capability of a hydro plant to be started in the absence of an external power source. In circumstances where external power is not available to the hydro plant, such as in the case of storm damage to the transmission system, black start capability allows a hydro plant that is not already operating to be brought into service. Once the plant is operational, it is available to supply power to customers through portions of the transmission or distribution systems that are still operational.

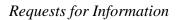
A system event, such as damage to a transmission line, could cause protection equipment to operate and shut down the plant. Without black start capability, the plant would be unavailable until the external power supply was restored. During a widespread winter outage on the Avalon Peninsula in December 1994, for example, the inability of Newfoundland & Labrador Hydro to black start the Holyrood Generating Facility complicated power restoration activities and prolonged the outage by many hours.

In the case of a loss of supply from the provincial grid, the black start capability of the Rattling Brook Plant would enable the plant to be restarted to supply power to customers served by the local feeder in the Norris Arm area as well as to nearby substations such as the one in Lewisporte. In this way, electric service can be restored to customers much faster than repairs could be completed on the transmission system.

It has not been necessary in recent memory to black start the Rattling Brook Plant under emergency conditions. However, the plant has on occasion been required to carry the Rattling Brook and Lewisporte feeders isolated from the island system when transmission lines to the local area were out of service. If the plant were to trip under such conditions, it could not be restarted without black start capability. Newfoundland Power relies on its hydroelectric facilities to provide electrical service to customers under emergency conditions affecting the electrical system.

The proposed redundant station service at the Rattling Brook facility consists of two components. A transformer capable of serving the increased station service load will be installed in the substation to provide station service during normal operating conditions. In addition, a second, smaller station service transformer will be installed in the new switchgear to provide station service sufficient to provide black start capability at the plant when service from the substation is unavailable. This is more cost-effective than installing a single larger station service transformer as part of the plant's internal switchgear equipment.

CA-10 NP
Attachment A
NP 2007 CBA



Rattling Brook Black Start Procedure

NEWFOUNDLAND LIGHT & POWER CO. LIMITED

170.23



OPERATIONS MANUAL

Bulletin Ng. : 8.25

Subject :

Date Issued: 89 10 23

BLACK START MACHINE AT RATTLING BROOK PLANT

Revision Date:____

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Prepared By:

Approved

Corportate Manual Reference:

C. Hayter

PRELIMINARY CONDITION: Energy is available on the 125 volt control battery, i.e. relay #80LO has not caused lock-out.

The following discription is mainly for Black Starting Unit #1 the Black Starting of Unit #2 being a duplicate of Unit #1.

Place TRANSFER SWITCHES in the manual position. When manual starting is used none of the automatic starting equipment is in operation and everything must be separately initiated by its manual control.

This is a list of transfer switches:

SWITCH LOCATION

#43-1..... Gen.#1 control panel #43-2..... Gen.#2 control panel #43-3..... Annunciator panel
REMOTE/LOCAL..... 101L & 102L Breaker Control panel.

Local Telemetering ... Nichols Panel

- 2. Check and open RBK-101L-B.
- з. Check and open RBK-102L-B.
- 4. Check and open RBK-T1-B.
- 5. Check and open RBK-T2-B.
- Block LOW GOVERNOR OIL PRESSURE SWITCH, located near Governor 6. oil pump on Turbine Floor.

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- Reset LOCKOUT RELAY, device 86-1.
- Place Governor in HAND CONTROL by:
 - Turning off main valve (2 1/2") on Governor oil pressure line"yellow pipe".
 - 2. Open by-pass valve.
 - Engage hand gear. Lever located under large hand wheel.
 - Check gate position closed. Pointer at "0". If pointer not at "0" release Governor Brake and adjust as required.
 - Apply brake again after adjusting.
- Open PIVOT VALVE, by pushing on device #20 PVM-1 located on Generator Breaker control panel metalclad switchgear.
- Check VOLTAGE ADJUSTING RHEOSTAT device #88-1 is in the home position (white light on). If not adjust control device #88CS-1. White light will indicate normal position.
- Close 1CS-1 to energize Governor. Check GOVERNOR BRAKE released.
- Open GOVERNOR GATES approximately ten percent, or until unit attains synchronous speed 514.3 RPM or 60 cycles.
- Close GENERATOR BREAKER, device #52CS-1. The 6.9KV Bus is now energized
 - NOTE: Once 6.9 KV bus is energized, it will be necessary to synchronize the second Unit when it is brought on stream.
- Check STATION SERVICE supply normal. Reset any tripped breakers, i.e. Governor oil pumps, station air compressor etc..
- When Governor oil pressures are normal, return GOVERNOR TO AUTO operation. Close by-pass valve. Open main valve on 2 1/2" line yellow pipe. Check Unit speed and adjust to normal (speed adjusting device #15CS-1, metal clad switch panel).

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- Check and open RBK-01-R1.
- Close RBK-T1-B. (Energizes 66 KV Bus).
- Close RBK-T2-B.
- Close RBK-01-R1 and adjust speed. This will restore local power supply
- Switch as required to restore system to normal)