

# ATTACHMENT 3

## GE SHUTDOWN PROCEDURE FOR 2X1 7FA PLANT

Shutdown of the plant begins from the gas turbines at base load or current operating load if below base. The gas turbines can be unloaded separately or together. Assuming the intent is to remove all plant generation as quickly as possible, the following description is for both gas turbines unloading together.

Over a period of approximately 10 minutes, the gas turbines unload to the point where gas turbine exhaust temperature is slightly above rated steam temperature. This is the lowest load at which the gas turbine can operate without causing the steam temperature to drop below rated the rated steam temperature. The purpose of this hold is to avoid intentionally cooling the steam turbine which might cause the next plant startup to be longer than necessary. This gas turbine hold is expected to be around 20 percent load.

While the gas turbines are holding, the steam turbine is unloaded by closing all steam turbine control valves. As the steam turbine control valves close, the steam turbine bypass valves begin to divert steam from the steam turbine to the condenser, essentially maintaining constant steam pressure. After approximately 5 minutes, the steam turbine will be completely unloaded, desynchronized, and the steam turbine will begin to decelerate. Once the steam turbine is offline, the gas turbines will resume ramping to zero load over a period of about 3 to 4 minutes whereupon they will desynchronize and begin fired shutdown. Flame is maintained in the gas turbines during deceleration to reduce thermal shock on the hot gas path parts. At about 20 percent gas turbine speed, fuel is cut off, the gas turbine flames out, and decelerates freely from this point to turning gear.

## PURGE CREDIT OPTION

The Oakley Generating Station will be provided with “purge credit” capability. Plants incorporating “purge credit” to reduce start time will include a slight modification of the above shutdown procedure. This modification is intended to reduce the potential for HRSG superheater lower header damage during the purge operation shortly following shutdown.

After the steam turbine has unloaded and the gas turbine resumes unloading, a second low load hold will occur when the gas turbine reaches approximated 10 percent load. This hold is designed to further reduce steam temperature and allow the cooler steam to reduce the temperature of the superheater lower header. Ten minutes are allotted for this hold per HRSG manufacturer direction. At the end of this hold, the gas turbine unloading will resume to desynchronization as described above.