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GEORGIA POWER
POWER GENERATION DEPARTMENT
VOGTLE ELECTRIC GENERATING PLANT

INSTRUCTIONAL UNIT

TITLE: RESPOND TO EMERGENCY DIESEL GENERATOR (DISABLED) ALARMS NUMBER: NL-IU-11205-007-01-C

PROGRAM: OUTSIDE AREA OPERATOR REVISION: 1

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REFERENCE:

VOGTLE PROCEDURE 17035-1, ANNUNCIATOR RESPONSE PROCEDURES (REV 4)

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PERFORMANCE OBJECTIVE

Given a directive from the control room, respond to a DIESEL GENERATOR DISABLED alarm.

The alarm must be acknowledged and its validity determined. The condition causing the alarm must be investigated and, where applicable, corrective actions taken. All communication and activities must be performed in accordance with current, approved procedures.

INFORMATION

The seven DIESEL GENERATOR DISABLED alarms on the annunciator panel at the engine control panel also appear on the diesel generator annunciator panel in the control room. These alarms are:

1. DG1A DISABLED LOW PRESS STARTING AIR
2. DG1A DISABLED DC START POWER FAILURE
3. DG1A DISABLED ENGINE CONTROL IN LOCAL
4. DG1A DISABLED NONRESET OF EMERGENCY TRIP
5. DG1A DISABLED DG CKT BRKR INOPERABLE
6. DG1A DISABLED MAINTENANCE LOCKOUT
7. DG1A DISABLED GEN CONTROL FWR FAILURE

These alarms indicate conditions that could lead to the inability of the diesel generator to start and load automatically when required to do so in an emergency. Some of these alarms indicate that the diesel generator will not start due to interlocks. Upon receipt of any one of these alarms, the control room operator will direct performance of OAO local actions in accordance with Plant Vogtle ARP 17035-1 (17038-1 for DG1B).

F02 DG1A DISABLED LOW PRESS STARTING AIR

ACKNOWLEDGE THE ALARM:

The LO will contact the OAO after the alarm is acknowledged in the control room.

These alarms also appear locally at the same time. An alarm horn will sound for each of the alarms. In response, silence the alarm by pressing the SILENCE pushbutton. With multiple alarms on the annunciator panel, it is helpful to make note of the alarms.

INVESTIGATE THE ALARM

This alarm will activate at a starting air pressure of 215 psi and decreasing. The diesel engine has a starting interlock at 150 psi starting

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air pressure, i.e., the starting air pressure must be greater than or equal to 150 psi in order for the diesel generator to be started on a safety injection signal (or emergency start.) The DG can be normal started below this pressure however.

Upon receipt of this alarm, the control room operator will dispatch the OAO to:

1. Check the starting air pressure at 1-PI-9052 and 1-PI-9056 on the engine control panel to determine the system that is affected.
2. Check local gauges 1-PI-9060 and 9064 for starting air pressure, and compare the readings with the ones on the engine control panel. These local gauges are located at the starting air receiver tank. The starting air pressure must be above 210 psig in at least one receiver to meet Technical Specifications.
3. Investigate the cause of the low starting air pressure upon direction from the control room operator as follows:
 - a. Check to ensure that the starting air compressor breakers on the MCC are closed. If the air compressor is not running, there will be a green indicator light on the MCC. If no lights are illuminated on the MCC for the air compressor and the circuit breaker is closed, this indicates that the incoming 480V to the MCC is interrupted. If this condition initiated the alarm, there would be no indicating lights on the MCC. If the breaker is closed and indication lights are illuminated (amber-AUTO - green-OFF) for the air compressor, and the oil level is normal, pressing the RESET pushbutton at the breaker for the air compressor motor resets thermal overloads. The air compressor should restart if the problem is due to thermal overload being overheated and opening.
 - b. Check to ensure that the handswitch indicating light (amber) is illuminated. The air compressor starting in MANUAL but not in AUTO when the air pressure is low, indicates that the starting air compressor switch for the air compressor has malfunctioned and the control room operator should be notified to initiate an MWO for repairs.
 - c. Check for low oil level in the air compressor using the dipstick. If low oil level is observed, oil should be added before starting the air compressor. There is a low oil level trip on the starting air compressors.
 - d. Check for air leaks in the air compressor. Check the pressure relief valves for the air compressor discharge header and the relief air start receiver to see if they are leaking. If a leak is present, you will be able to hear it.
 - e. Check that air receiver isolation valve 755 and 760 are open.

TAKE CORRELATIVE ACTION

The LO will dispatch the OAO to restore the starting air pressure as soon as possible. Follow the actions directed by the LO.

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At least one bank of the Starting Air System must be above 210 psia or the LO will have to refer to Technical Specifications.

LOG THE ACTIVITY

The activity must be logged in the DG log book. This must be done after the cause of the alarm is determined and action is taken to correct the condition causing the alarm.

F04 DGLA DISABLED DC START POWER FAILURE

ACKNOWLEDGE THE ALARM:

The LO will contact the QAO after the alarm is acknowledged in the control room.

These alarms also appear locally at the same time. An alarm horn will sound for each of the alarms. In response, silence the alarm by pressing the SILENCE pushbutton. With multiple alarms on the annunciator panel, it is helpful to make note of the alarms.

INVESTIGATE THE ALARM

Upon receipt of this alarm, the control room operator will direct the QAO to check for DC power failure at the engine control panel.

Check for tripped breakers for A, B, and C power on the front of the engine control panel. Report the findings to the control room operator and await further instructions. If the breakers are in the ON position, and no white lights are lit, this indicates that 125V DC power is not available to the engine control panel. Report this to the control room operator, and respond to any request from the control room operator.

TAKE CORRECTIVE ACTION

Corrective actions, for the most part, are described in the appropriate procedure. Perform the actions, as directed by the CRO, in accordance with the procedure.

If a breaker is open and the light is not on, confer with the control room operator before attempting to reset the breaker. Check that breakers 1AD-11-11 and 1AD-11-12 are closed.

LOG THE ACTIVITY

The activity must be logged in the DG log book. This must be done after the cause of the alarm is determined and action is taken to correct the condition causing the alarm.

E05 DGLA DISABLED ENGINE CONTROL IN LOCAL

ACKNOWLEDGE THE ALARM:

The LD will contact the CMO after the alarm is acknowledged in the control room.

These alarms also appear locally at the same time. An alarm horn will sound for each of the alarms. In response, silence the alarm by pressing the SILENCE pushbutton. With multiple alarms on the annunciator panel, it is helpful to make note of the alarms.

INVESTIGATE THE ALARM

This alarm will activate when the LOCAL/REMOTE control switch on the generator control panel has been placed in the LOCAL position. Upon receipt of this alarm, verify the position of the control switch at the generator control panel (1-HS-4516 at panel PDG2).

If the control switch is placed in LOCAL, the diesel generator will not start automatically on receipt of a safety injection actuation signal (SIAS); therefore, it is not in standby readiness when in LOCAL.

If the control switch is in LOCAL, determine why it has been placed in this position. Observe the area for the presence of any personnel who may be in the diesel generator room, and ask why the control switch has been placed in LOCAL.

NOTE: Indiscriminate changing of switches for the diesel generator, without prior approval from the control room operator, must never be done.

TAKE CORRECTIVE ACTION

Corrective actions, for the most part, are described in the appropriate procedure. Perform the actions, as directed by the CRO, in accordance with the procedure.

Determine why the control switch is in the LOCAL position, and report your findings to the control room operator. Upon direction from the control room operator, place the control switch back to the REMOTE position and reset the alarm.

LOG THE ACTIVITY

The activity must be logged in the DG log book. This must be done after the cause of the alarm is determined and action is taken to correct the condition causing the alarm.

C10 DGLA DISABLED NONRESET OF EMERGENCY TRIP

The two types of emergency stop are manual and automatic. The manual stop can be performed from two different locations, the engine control panel and

from the control room. The AUTO emergency stop includes diesel generator differential relay trip, two-out-of-three lube oil pressure detectors detecting pressure less than 30 psi, two-out-of-three jacket water temperature detectors detecting temperature greater than or equal to 200 degrees F, or an overspeed of 517 rpm.

ACKNOWLEDGE THE ALARM:

The IO will contact the OAO after the alarm is acknowledged in the control room.

These alarms also appear locally at the same time. An alarm horn will sound for each of the alarms. In response, silence the alarm by pressing the SILENCE pushbutton. With multiple alarms on the annunciator panel, it is helpful to make note of the alarms.

INVESTIGATE THE ALARM

Upon receipt of this alarm, the OAO will be directed to the engine control panel to assist in determining and correcting the cause of the emergency trip. Verify the red emergency stop light is illuminated on the engine control panel and the diesel generator has shut down. Note any generator differential targets that are present.

In the event of an AUTO emergency trip, determine the cause. Report your findings to the control room operator.

TAKE CORRECTIVE ACTION

Corrective actions, for the most part, are described in the appropriate procedure. Perform the actions, as directed by the CRO, in accordance with the procedure.

After the situation has been corrected, and only upon direction from the control room operator, you should depress the EMERGENCY STOP RESET push button. The red emergency stop light should extinguish.

If the DG1A DISABLED NONRESET OF EMERGENCY TRIP alarm exists because of a manual emergency trip, discuss with the IO when the emergency stop can be reset.

If the alarm is present and the diesel generator has tripped due to low lube oil pressure or high jacket water temperature, perform the actions as directed by the IO. Corrective actions due to leaks are usually performed by Maintenance personnel.

If the alarm is present, and the diesel generator tripped due to one or more of the three 187 differential relays detecting a fault, verify it by:

- Checking that the DG1A TRIP GEN DIFF alarm has annunciated on the annunciator panel.
- Checking for target flags on the 187 relay for each phase.

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- c. Checking that the 186A lockout switch has tripped over to the TRIP position. Never reset a lockout relay until directed.
- d. Reporting findings to the control room operator. The cause of the differential alarm causing the diesel generator to emergency trip must be determined by Maintenance personnel and corrected before an attempt is made to reset the diesel generator.

If the alarm is present, and the diesel generator tripped due to an overspeed, the DGA TRIP OVERSPEED alarm also annunciates. After being dispatched by the control room operator, check the governor for loss of oil, or loose or damaged linkage from the governor to the fuel racks. Report findings to the control room operator. Determining the cause of the overspeed may include an extensive investigation before the diesel generator is operable again. When the cause has been determined and corrected, and directed to do so, reset the overspeed trip device by depressing both overspeed latches downward to relatch them, then press the EMERGENCY TRIP RESET pushbutton to reset the alarm. This is pushbutton 1-HS-1581 on the engine control panel.

Restore the diesel generator to standby readiness or restart it as directed by the control room operator.

LOG THE ACTIVITY

The activity must be logged in the DG log book. This must be done after the cause of the alarm is determined and action is taken to correct the condition causing the alarm.

D10 DGA DISABLED DG CKT BRKR INOPERABLE

This alarm would be annunciates both locally and in the control room, and response to this alarm is more applicable to the auxiliary building operator (ABO) than to the QAO. The QAO should be aware, however, of how it affects diesel generator operation in that the diesel generator is inoperable when this alarm is in. The breaker will not close when required. Probable causes include the control room handswitch being in pull-to-lock, the selector switch on the switchgear in local, the breaker not racked in, and loss of DC control power.

ACKNOWLEDGE THE ALARM

The IC will contact the QAO after the alarm is acknowledged in the control room.

These alarms also appear locally at the same time. An alarm horn will sound for each of the alarms. In response, silence the alarm by pressing the SILENCE pushbutton. With multiple alarms on the annunciator panel, it is helpful to make note of the alarms.

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INVESTIGATE THE ALARM

Observe local indications, where applicable, to verify that the condition which caused the alarm. Follow the directions of the CRO. Determine whether the condition is holding steady, changing, or worsening. Determine how quickly the condition is changing. Investigate related systems which can be causing the alarm condition or can be affected by the alarm condition. Relate all of your findings to the CRO. Perform any actions as directed by the CRO.

TAKE CORRECTIVE ACTION

The LO will dispatch the OAO to ensure handswitch HS-1AA0219B is in the CONTROL ROOM position, the breaker is racked in, and the DC control power is ON.

LOG THE ACTIVITY

The activity must be logged in the LG log book. This must be done after the cause of the alarm is determined and action is taken to correct the condition causing the alarm.

E10 DGLA DISABLED MAINTENANCE LOCKOUT

ACKNOWLEDGE THE ALARM:

The LO will contact the OAO after the alarm is acknowledged in the control room.

These alarms also appear locally at the same time. An alarm horn will sound for each of the alarms. In response, silence the alarm by pressing the SILENCE pushbutton. With multiple alarms on the annunciator panel, it is helpful to make note of the alarms.

INVESTIGATE THE ALARM

This alarm will be expected when maintenance is being performed on the diesel generator. With this alarm present, the diesel generator will not start in manual or automatic.

If this alarm activates unexpectedly, this indicates that someone has inadvertently placed the LOCAL/REMOTE switch in the LOCAL position and has pressed the MAINTENANCE pushbutton.

NOTE: Indiscriminate changing of switches for the diesel generator, without prior approval from the control room operator, must never be done.

TAKE CORRECTIVE ACTION

The OAO will be directed to go to the diesel generator room to determine the cause of the switch being placed in this position.

Notify the control room operator of all findings. Once the situation has been corrected and the LO has issued a directive, reset the alarm.

LOG THE ACTIVITY

The activity must be logged in the DG log book. This must be done after the cause of the alarm is determined and action is taken to correct the condition causing the alarm.

B10 DG1A DISABLED GEN CONTROL PWR FAILURE

This alarm occurs if control power is not available to the generator, and probable causes include the tripping of breaker 1AD11-06 at panel 1AD11, or tripping of the breaker on the right hand bay of the generator control panel.

With the engine running, there will be no protective relaying available for the diesel generator.

ACKNOWLEDGE THE ALARM

The LO will contact the OAO after the alarm is acknowledged in the control room.

If the alarms also appear locally at the same time. An alarm horn will sound for each of the alarms. In response, silence the alarm by pressing the SILENCE pushbutton. With multiple alarms on the annunciator panel, it is helpful to make note of the alarms.

INVESTIGATE THE ALARM

Ensure breaker 1AD11-06 is closed and the breaker in panel PDG1 is closed.

TAKE CORRECTIVE ACTION

Correct the situation by closing a tripped breaker (as directed by the control room operator).

Should a breaker trip open again, immediately notify the control room operator prior to resetting it.

LOG THE ACTIVITY

Obtain the proper log book and record the event and any actions taken.

PERFORMANCE GUIDE

Follow these steps to investigate a DIESEL GENERATOR DISABLED alarm.

1. Acknowledge the alarm.
2. Investigate the alarm.
3. Take corrective action.
4. Log the activity.

SELF-TEST

Before proceeding to the Task Practice, answer the following questions.

1. When you are investigating the DGLA DISABLED DC START FAILURE alarm, if the breakers are in the ON position and no white lights are lit, what does this indicate?
2. When the diesel generator's LOCAL/REMOTE control switch is in the LOCAL position, it is available for an automatic emergency start on an SIAS.
 - a. True
 - b. False
3. When a lockout relay trips, you should reset it immediately and notify your supervisor.
 - a. True
 - b. False

ANSWERS

1. 125V DC power is not available to the engine control panel
2. False. The diesel generator is not available for an automatic emergency start on an SIAS if the control switch is in LOCAL.
3. False. Do not reset a lockout relay until directed by your supervisor.

TASK PRACTICE

Before proceeding to the Performance Test, complete the following Task Practice exercise(s).

1. Review Procedures 17035-1 and 17038-1. Be sure that you understand all precautions, limitations, and steps associated with responding to DG "Disabled" alarms.
2. Take this instructional unit and Procedures 17035-1 and 17038-1 to the diesel generator building. Be sure that you can locate all local components and instrumentation associated with responding to DG "Disabled" alarms.
3. In the diesel generator building, walk through the task of responding to DG "Disabled" alarms. If possible, have a fellow trainee evaluate your performance using Procedures 17035-1 and 17038-1 and this instructional unit.

FEEDBACK ON TASK PRACTICE

1. If you have any questions about the precautions, limitations, or steps in Procedures 17035-1 and 17038-1, ask your instructor.
2. You should have been able to locate all local components and instrumentation associated with responding to DG "Disabled" alarms. If you had any difficulty, ask your instructor for help.
3. You should have walked through the steps necessary to respond to DG "Disabled" alarms. If you had any difficulty, re-read the pertinent sections of this instructional unit and the procedure. Resolve any questions with your instructor.