

**ATTACHMENT**

**Replacement Technical Specification and Bases Pages**

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The attached marked up and retyped Technical Specification pages 3.3.7-3 and Bases insert pages B 3.8.1-16c and B 3.8.1-16d are replacements for the pages in reference 1. All other Technical Specification and Bases pages in reference 1 are unchanged.



SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.7.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.7.2 Perform CHANNEL FUNCTIONAL TEST.	18 months
SR 3.3.7.3 Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function $\geq 3697$ V and $\leq 3786$ V $\geq 28.6$ seconds and Time delay: $\leq 35$ seconds <del>at 3744 V</del> ; and b. Loss of Voltage Function <del>(<math>\geq 3250</math> V)</del> $\geq 10.3$ seconds and $\leq 12.6$ Time delay: <del>(<math>\leq 11.4</math>)</del> seconds at 2929.5 V	18 months

*, and  $\geq 2.0$  seconds and  $\leq 2.4$  seconds at 0V.*



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SR 3.3.7.3 Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: <ul style="list-style-type: none"> <li>a. Degraded Voltage Function <math>\geq 3697</math> V and <math>\leq 3786</math> V Time delay: <math>\geq 28.6</math> seconds and <math>\leq 35</math> seconds; and</li> <li>b. Loss of Voltage Function Time delay: <math>\geq 10.3</math> seconds and <math>\leq 12.6</math> seconds at 2929.5 V, and <math>\geq 2.0</math> seconds and <math>\leq 2.4</math> seconds at 0 V.</li> </ul>	18 months



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The formula for  $MVA_{MAX}$  is based on calculations, 01, 02, 03-EC-MA-221, which analyze many different bus alignment conditions. The load limit is conservative, with sufficient margin to account for analytical uncertainties and to provide assurance that the degraded voltage relays will not actuate as a result of an accident.

If an accident results in a loss of local switchyard voltage control (last operating unit trips), transmission system studies have concluded that the switchyard voltage will stabilize at or above the levels specified above, depending on the number of 525 kV transmission lines in service. At these switchyard voltages, post-trip loading at or below the allowed  $MVA_{MAX}$  assures that the degraded voltage relays will not actuate.

If the required capability in Condition G is not met, the effects of an AOO or DBA could cause further depression of the voltage at the ESF bus and actuation of the degraded voltage relays. These actuations would result in disconnection of the bus from the offsite circuits. Regulatory Guide 1.93 (Ref. 6) defines this condition as "The Available Offsite Power Sources Are One Less Than the LCO" or "The Available Offsite AC Power Sources Are Two Less Than the LCO," depending on the number of affected circuits. However, degraded post-trip voltage could also cause ESF electrical equipment to be exposed to a degraded condition during the degraded voltage relay time-out period. There is a risk that equipment misoperation or damage could occur during this time. In this scenario, the ESF equipment may not perform as designed following an automatic disconnection of the offsite circuits and reconnection to the diesel generators (DGs), even though adequate power is available from the DG. For certain DBAs, an additional consideration is that the initial sequencing of the ESF equipment onto the offsite circuits, subsequent tripping of the degraded voltage relays, and interruption in equipment credited in the UFSAR Chapter 6 and 15 safety analyses could challenge the credited equipment response times. Therefore, it is appropriate to implement Required Actions that are more stringent than those specified in Condition A or C.

If the required capability in Condition G is not met, the following options are available to restore full or partial Operability. Options are listed in their order of preference.

1. Improve post-trip switchyard voltage. In most cases this can be accomplished by raising the VAR output of one or more of the operating Palo Verde units. However, if only one Palo Verde unit is operating, that unit's VAR output would be lost if it were to trip regardless of its pre-trip level, so other changes to the grid operation would need to be implemented to improve the post-trip voltage. There are a number of methods that the Energy Control Center may be able to implement to achieve this.



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2. Reduce post-trip loading. One way that this could be accomplished is by disabling fast bus transfer. Although Palo Verde has no formal restrictions on the amount of time that fast bus transfer can be out of service, this option should be used judiciously in order to maintain forced circulation capability. Besides blocking fast bus transfer, there may be other methods available to reduce the loading, such as removing loads or realigning equipment power sources.
3. Transfer the safety bus(es) to the diesel generator(s). This is less desirable than option 2, because it would perturb the plant. It would cause the plant to remain in an LCO 3.8.1 condition (A or C, depending on whether one or two buses are transferred).

Options 1 and 2 satisfy Required Action G.1, and Option 3 satisfies Required Action G.2. With more than one offsite circuit that does not meet the required capability, Condition G could be satisfied for each offsite circuit by the use of Required Action G.1 or G.2. The Completion Time for both Required Action G.1 and G.2 is one hour. The one hour time limit is appropriate and consistent with the need to remove the unit from this condition, because the level of degradation exceeds that described in Regulatory Guide 1.93 (Ref. 6) for two offsite circuits inoperable. The regulatory guide assumes that an adequate onsite power source is still available to both safety trains, but in a scenario involving automatic load sequencing and low voltage to the ESF buses, adequate voltage is not assured from any of the power sources for the following systems immediately after the accident signal has been generated (i.e., while the degraded voltage relay is timing out): radiation monitors Train A RU-29 or Train B RU-30 (TS 3.3.9), Train B RU-145; ECCS (TS 3.5.3); containment spray (TS 3.6.6); containment isolation valves (TS 3.6.3); auxiliary feedwater system (TS 3.7.5); essential cooling water system (TS 3.7.7); essential spray pond system (TS 3.7.8); essential chilled water system (TS 3.7.10); control room essential filtration system (TS 3.7.11); ESF pump room air exhaust cleanup system (TS 3.7.13); and fuel building ventilation.

Required Action G.2 is modified by a Note. The reason for the Note is to ensure that the offsite circuit is not inoperable for a time greater than the Completion Time allowed by LCO 3.8.1 Condition A or C. Therefore, if Conditions A or C are entered, the Completion Time clock for Conditions A and C would start at the time Condition G was entered.

