California High-Speed Train Project

TECHNICAL MEMORANDUM

Utility Power Supply
TM 3.1.5.3

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Revision	Date	Description
0	2 Jun 09	Initial Release, voltage and supply redundancy requirements

Note: Signatures apply for the latest technical memorandum revision as noted above.

Prepared by

for the California High-Speed Rail Authority

System Level Technical and Integration Reviews

The purpose of the review is to ensure:

- Technical consistency and appropriateness
- Check for integration issues and conflicts

System level reviews are required for all technical memorandums. Technical Leads for each subsystem are responsible for completing the reviews in a timely manner and identifying appropriate senior staff to perform the review. Exemption to the System Level technical and integration review by any Subsystem must be approved by the Engineering Manager.

System Level Technical Reviews by Subsystem:

Systems:	_NOT REQUIRED_____	_____
	Print Name:	Date
Infrastructure:	_NOT REQUIRED_____	_____
	Print Name:	Date
Operations:	_NOT REQUIRED_____	_____
	Print Name:	Date
Maintenance:	_NOT REQUIRED_____	_____
	Print Name:	Date
Rolling Stock:	_NOT REQUIRED_____	_____
	Print Name:	Date

Note: Signatures apply for the technical memorandum revision corresponding to revision number in header and as noted on cover.

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ABSTRACT

The California High Speed Rail (CHSR) Line will be an electrified line with traction power for vehicles being supplied and distributed using a 2 x 25kV 60Hz Autotransformer System and an Overhead Contact System.

Utility power supplies will be required for the 2 x 25kV Autotransformer System and for passenger stations, maintenance facilities, train control equipment, communications equipment and other miscellaneous systems, buildings and structures associated with the CHSR line.

This Technical Memorandum will only discuss the Utility supply requirements for the 2 x 25kV Autotransformer System. The Utility supply requirements for passenger stations, other facilities and other systems will be discussed in separate memorandums.

The purpose of this Technical Memorandum is to:

- Specify the minimum voltage levels for the 3 Phase 60Hz. Utility circuits supplying the Traction Power Supply Stations.
- Provide information on the single phase feeding arrangement necessary for the Traction Power Supply Station HV transformer primary windings.
- Specify the requirements for redundant Utility supply circuits.
- List the various Utility supply companies that serve the CHSR Line alignment.
- Provide the Design Manual criteria for the Utility supply circuits.

A supplement to this TM will be prepared when information is obtained from the various utility supply companies that will allow the following to be provided:

- Information on the utilities' requirements for making connections to the utility's HV supply lines.
- Information on the utility requirements for utility owned equipment in the Traction Power Supply Stations.
- Information on the utility requirements for CHSR structures and easements necessary to allow connection to the utilities' power supply circuits.
- Information on any power factor correction or harmonic filtering required by the utility companies.
- Information on the Utilities' acceptance and/or limitations of energy returned to the utilities' system as a result of regenerative braking by electrically powered rolling stock.

Note:

1. See TM 3.1.1.1 for the Technical Memorandum for the Traction Power 2 x 25kV Autotransformer Electrification System.
2. See TM 3.1.1.3 for the Technical Memorandum for Traction Power Supply Sites General Standardization Requirements.

6.0 DESIGN MANUAL CRITERIA

6.1 INFORMATION FOR INCLUSION IN DESIGN MANUAL

1. Minimum Utility Supply Voltage – 115kV 3 phase 60Hz.
2. Acceptable Utility Supply Voltages – 115, 230 & 500kV 3 phase 60Hz.
3. Minimum Utility Circuit redundancy requirements – Separate 3 phase circuits, originating from different bus systems, may be carried on same transmission towers.