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Southern California Rapid Transit District

METRO RAIL PROJECT

TEST PROGRAM PLAN APPENDIX B PRELIMINARY LIST OF SYSTEM EQUIPMENT TESTS

SEPTEMBER 1988

REVISION 0

APPENDIX B - PRELIMINARY LIST OF SYSTEMS EQUIPMENT TESTS

T A B L E O F C O N T E N T S

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* To be added at a later date.

TEST LIST FOR CONTRACT SPECIFICATION A620

AUTOMATIC TRAIN CONTROL

LA0171057R

Master List of Metro Rail Test Program Tests

Contract Number: A620
 Contract: Automatic Train Control
 Contract Date: 03/01/88

Sheet: 1 of 14
 Revision: 0
 Date: 9/26/88

Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A620 N Q XXX-RO	Track Circuit Qualification Tests	13.5.3		NO			
		Environmental	13.5.3.A			CO		planned
		Operating qualification	13.5.3.B			CO		planned
		Electrical characteristics	13.5.3.C			CO		planned
		Durability	13.5.3.D			CO		planned
		Simulated EMI	13.5.3.E			CO		planned
		Maintainability	13.5.3.F			CO		planned
2	A620 N Q XXX-RO	Vehicle Equipment Qualification Test	13.5.4.B		NO			
		Speed sensor input	13.5.4.B.1			CO		planned
		Adjustment range	13.5.4.B.2			CO		planned
		Receiver frequencies sensitivity	13.5.4.B.3			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A620
 Contract: Automatic Train Control
 Contract Date: 03/01/88

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
2	A620 N Q XXX-RO	Vehicle Equipment Qualification Tests (continued)			NO			
		Command rate decoder sensitivity	13.5.4.B.4			CO		planned
		Additional safety tests	13.5.4.B.5			CO		planned
		Maintainability	13.5.4.B.6			CO		planned
		Environmental integrity	13.5.4.B.7			CO		planned
		Simulated EMI	13.5.4.B.8			CO		planned
		Vibration	13.5.4.B.9			CO		planned
3	A620 N A XXX-RO	Electronic Assemblies Factory Acceptance Tests	13.6.2.B		NO			
		Simulated I/O and approved software	13.6.2.B.1			CO		planned
		Environmental Chamber	13.6.2.B.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
4	A620 S A XXX-RO	Vehicle ATC Equipment Factory Acceptance Tests	13.6.3.B		YES	CO		planned
		Receiver coils	13.6.3.B.1			CO		planned
		Vehicle ATC equipment I/O response	13.6.3.B.2.a			CO		planned
		Command speed versus actual comparison	13.6.3.B.2.b			CO		planned
		Power supply regulation	13.6.3.B.2.c			CO		planned
		Assurance logic wiring	13.6.3.B.2.d			CO		planned
		Mechanical dimensions	13.6.3.B.2.e			CO		planned
		Reaction times	13.6.3.B.2.f			CO		planned
5	A620 S A XXX-RO	ATC Equipment Rooms Factory Acceptance Tests	13.6.4.C		YES			
		Power distribution	13.6.4.C.1			CO		planned

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5	A620 S A XXX-RO	ATC Equipment Rooms Factory Acceptance Test (continued)	13.6.4.C		YES			
		Vital circuit verification	13.6.4.C.2			CO		planned
		Non-vital circuit verification	13.6.4.C.3			CO		planned
		ATP Track module checkout	13.6.4.C.4			CO		planned
		Control line verification (simulation)	13.6.4.C.5			CO		planned
		Simulated operation	13.6.4.C.6			CO		planned
6	A620 S A XXX-RO	Wayside Equipment Factory Acceptance Tests	13.6.5		YES			
		Impedance bond layouts	13.6.5.A			CO		planned
		Switch machines	13.6.5.B			CO		planned
		Signals	13.6.5.C			CO		planned

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6	A620 S A XXX-RO	Wayside Equipment Factory Acceptance Tests (continued)	13.6.5		YES			
		Train stops	13.6.5.D			CO		planned
		Cabling	13.6.5.E			CO		planned
7	A620 S I XXX-RO	Equipment Grounding Field Acceptance Tests	13.7.2.A		YES	CO		planned
8	A620 S I XXX-RO	Power Distribution Field Acceptance Tests	13.7.2.B		YES	CO		planned
9	A620 S I XXX-RO	Vital Circuit Verification Field Acceptance Tests	13.7.2.C		YES	CO		planned
10	A620 N I XXX-RO	Nonvital Circuit Verification Field Acceptance Tests	13.7.2.D		NO	CO		planned
11	A620 S I XXX-RO	ATP Track Modules Checkout	13.7.2.E		YES	CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
12	A620 S I XXX-RO	Wayside Cable Field Acceptance Tests	13.7.2.F		YES			
		Before installation	13.7.2.F.1			CO		planned
		After installation	13.7.2.F.2			CO		planned
13	A620 S I XXX-RO	DFE Wayside Cable and Tubing Field Acceptance Tests	13.7.2.G		YES			
		34.5 KV Power cable circuit	13.7.2.G.1			CO		planned
		Communication cables	13.7.2.G.2			CO		planned
		Gas Monitoring Sample Lines	13.7.2.G.3			CO		planned
14	A620 S I XXX-RO	Wayside Signal Checkout Field Acceptance Tests	13.7.2.H		YES			
		Wired per drawings	13.7.2.H.1			CO		planned
		Located per drawings	13.7.2.H.2			CO		planned
		Proper aspects	13.7.2.H.3			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
14	A620 S I XXX-RO	Wayside Signal Checkout Field Acceptance Tests (continued)	13.7.2.H		YES			
		Proper voltage	13.7.2.H.4			CO		planned
		Visibility	13.7.2.H.5			CO		planned
15	A620 S I XXX-RO	Switch Machine Checkout Field Acceptance Tests	13.7.2.I		YES			
		Installation	13.7.2.I.1			CO		planned
		Proper voltage	13.7.2.I.2			CO		planned
		Functions (reference specifications)	13.7.2.I.3			CO		planned
		Mechanical adjustments	13.7.2.I.4			CO		planned
		Obstruction adjustments	13.7.2.I.5			CO		planned
		Operation and ATC interface	13.7.2.I.6			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
15	A620 S I XXX-RO	Switch Machine Checkout Field Acceptance Tests (continued)	13.7.2.I		YES			
		Controller contact gaps	13.7.2.I.7			CO		planned
		Correspondence relay	13.7.2.I.8			CO		planned
		Clutch test and adjust	13.7.2.I.9			CO		planned
		Auto lockout selector	13.7.2.I.10			CO		planned
		Hand crank auto lockout	13.7.2.I.11			CO		planned
16	A620 S I XXX-RO	Impedance Bond Checkout Field Acceptance Tests	13.7.2.J		YES			
		Installation	13.7.2.J.1			CO		planned
		Frequency sweep	13.7.2.J.3			CO		planned
		ATP connection	13.7.2.J.4			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
17	A620 S I XXX-R0	Power Bonding Checkout Field Acceptance Tests	13.7.2.K		YES			
		Installation	13.7.2.K.1			CO		planned
		Resistance	13.7.2.K.2			CO		planned
18	A620 S I XXX-R0	Train Stop Checkout Field Acceptance Tests	13.7.2.L		YES			
		Installation	13.7.2.L.1			CO		planned
		Proper voltage	13.7.2.L.2			CO		planned
		Functional	13.7.2.L.3			CO		planned
		Indicates proper position	13.7.2.L.4			CO		planned
19	A620 S I XXX-R0	Control Line Verification Field Acceptance Tests	13.7.2.M		YES			
		Routes and speed commands	13.7.2.M.1			CO		planned
		Actual transmitted codes	13.7.2.M.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
20	A620 S I XXX-R0	Audio Frequency Track Circuit Adjustment Field Acceptance Test	13.7.2.N		YES	CO		planned
21	A620 S I XXX-R0	Power Frequency Track Circuit Adjustment Field Acceptance Test	13.7.2.0		YES	CO		planned
22	A620 S I XXX-R0	Speed Limit Transmission Loop Checkout Field Acceptance Tests	13.7.2.P		YES	CO		planned
23	A620 S I XXX-R0	Interlocking Field Operation Acceptance Tests	13.7.2.Q		YES			
		Switch and correspondence	13.7.2.Q.1			CO		planned
		Switch locking circuit operation	13.7.2.Q.2			CO		planned
		Antipreconditioning operation	13.7.2.Q.3			CO		planned
		Detector operation	13.7.2.Q.4			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
23	A620 S I XXX-RO	Interlocking Field Operation Acceptance Tests (continued)	13.7.2.Q		YES			
		Route locking operation	13.7.2.Q.5			CO		planned
		Approach locking operation	13.7.2.Q.6			CO		planned
		Signal operation	13.7.2.Q.7			CO		planned
		Route security operation	13.7.2.Q.8			CO		planned
		Speed limit transmission	13.7.2.Q.9			CO		planned
		Overrun protection	13.7.2.Q.10			CO		planned
		Train stop operation	13.7.2.Q.11			CO		planned
		Automatic routing	13.7.2.Q.12			CO		planned
24	A620 S I XXX-RO	Line Circuit Checkout Field Acceptance Tests	13.7.2.R		YES			
		Labeling and continuity	13.7.2.R.1			CO		planned
		Traffic circuits	13.7.2.R.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
24	A620 S I XXX-RO	Line Circuit Checkout Field Acceptance Tests (continued)	13.7.2.R		YES			
		Route clearing (with trains)	13.7.2.R.3			CO		planned
		Repeater operation	13.7.2.R.4			CO		planned
		Bidirectional traffic stick	13.7.2.R.5			CO		planned
		Traffic stick	13.7.2.R.6			CO		planned
25	A620 S I XXX-RO	Local/Manual Panel Operation and Indication Field Acceptance Test	13.7.2.S		YES	CO		planned
		Local/Manual Control Panel Test	13.7.2.S.3			CO		planned
26	A620 N I XXX-RO	SCADA Interface Checkout Field Acceptance Tests	13.7.2.T		NO			
		Control signals operation	13.7.2.T.1			CO		planned
		Indications at interface terminal	13.7.2.T.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
27	A620 S S XXX-RO	Vehicle ATC Equipment Static and Dynamic Field Acceptance Tests	13.7.2.U		YES			
		Decoding of speed limit signal	13.7.2.U.1			CO		planned
		MTO and ATO operation	13.7.2.U.2			CO		planned
		Brake assurance logic	13.7.2.U.3			CO		planned
		Other tests	13.7.2.U.4			CO		planned
28	A620 N S XXX-RO	SCADA Interface Operation Test Assistance	13.7.2.V		NO	DI		planned
29	A620 S S XXX-RO	ATC Dynamic Acceptance Tests	13.8.2.C		YES			
		Safe braking	13.8.2.C.1			CO		planned
		ATP signal level	13.8.2.C.2.a			CO		planned

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 Contract: Automatic Train Control
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
29	A620 S S XXX-RO	ATC Dynamic Acceptance Tests (continued)	13.8.2.C		YES			
		Pre and post shunt	13.8.2.C.2.b			CO		planned
		Control line	13.8.2.C.2.c			CO		planned
		Signal aspect to speed limit and visibility	13.8.2.C.2.d			CO		planned
		Headway	13.8.2.C.3		NO	CO		planned
30	A620 S R XXX-RO	System Demonstration Test Assistance	13.10		YES	DI		planned
31	A620 N R XXX-RO	Reliability Demonstration	13.12		NO	DI		planned
32	A620 N R XXX-RO	Maintainability Demonstration	13.13		NO	CO		planned
33	A620 S S XXX-RO	Operating System Environment EMI	13.14		YES	CO		planned

TEST LIST FOR CONTRACT SPECIFICATION A630

SUBSTATION EQUIPMENT PROCUREMENT

Master List of Metro Rail Test Program Tests

Contract Number: A630
 Contract: Substation Equipment Procurement
 Contract Date: 07/18/88

Sheet: 1 of 7
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A630 N Q XXX-RO	Switch Gear Assembly Qualification Test	03.13.1.A		NO	CO		planned
2	A630 S V XXX-RO	Switch Gear Assembly Production Test	03.13.1.B		YES	CO		planned
3	A630 N Q XXX-RO	HVAC Circuit Breaker Qualification Test	03.13.2.A		NO	CO		planned
4	A630 S Q XXX-RO	HVAC Circuit Breaker Production Test	03.13.2.B		YES	CO		planned
5	A630 N Q XXX-RO	HV Load Interrupter Switches Qualification Tests	03.13.3.A		NO	CO		planned
6	A630 S V XXX-RO	HV Load Switch Production Tests	03.13.3.B		YES			
		Wiring checks	03.13.3.B.1			CO		planned
		Mechanical adjustment	03.13.3.B.2			CO		planned
		Mechanical operation	03.13.3.B.3			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A630

Contract: Substation Equipment Procurement

Contract Date: 07/18/88

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
6	A630 S V XXX-RO	HV Load Switch Production Tests (continued)	03.13.3.B		YES			
		Stored energy system	03.13.3.B.4			CO		planned
		Electrical resistance	03.13.3.B.5			CO		planned
		Withstanding voltage	03.13.3.B.6			CO		planned
7	A630 N Q XXX-RO	Instrument Transformer Qualification Tests	03.13.4.A		NO	CO		planned
8	A630 S V XXX-RO	Instrument Transformer Production Tests	03.13.4.B		YES	CO		planned
9	A630 N Q XXX-RO	Surge Arrester Qualification Test	03.13.5.A		NO	CO		planned
10	A630 S V XXX-RO	Surge Arrester Production Test	03.13.5.B		YES	CO		planned
11	A630 N Q XXX-RO	Rectifier Transformer Qualification Tests	04.8.1.A		NO			
		Lighting impulse	04.8.1.A.1			CO		planned
		Temperature rise	04.8.1.A.2			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A630
 Contract: Substation Equipment Procurement
 Contract Date: 07/18/88

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
11	A630 N Q XXX-RO	Rectifier Transformer Quali- fication Tests (continued)	04.8.1.A		NO			
		Audible sound level	04.8.1.A.3			CO		planned
		Mechanical	04.8.1.A.4			CO		planned
12	A630 S V XXX-RO	Rectifier Transformer Production Tests	04.8.1.B		YES			
		Resistance	04.8.1.B.1			CO		planned
		Dielectric	04.8.1.B.2			CO		planned
		Partial Discharge Test	04.8.1.B.3			CO		planned
		No load loss	04.8.1.B.4			CO		planned
		Impedance Voltage and load loss	04.8.1.B.5			CO		planned
		Transfer Ratio	04.8.1.B.6			CO		planned
		Polarity and phase	04.8.1.B.7			CO		planned
		Tank leak (outdoor)	04.8.1.B.8			CO		planned

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 Contract: Substation Equipment Procurement
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13	A630 N Q XXX-R0	Rectifier Qualification Tests	04.8.2.A		NO			
		Rated voltage	04.8.2.A.1			CO		planned
		Rated current	04.8.2.A.2			CO		planned
		Interphase Transformer loss	04.8.2.A.3			CO		planned
14	A630 S V XXX-R0	Rectifier Production Tests	04.8.2.B		YES			
		Dielectric	04.8.2.B.1			CO		planned
		Rated voltage	04.8.2.B.2			CO		planned
15	A630 S V XXX-R0	Combined Transformer and Rectifier Assembly Tests	04.8.3		YES			
		Efficiency	04.8.3.1			CO		planned
		Inherent voltage regulation	04.8.3.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
15	A630 S V XXX-RO	Combined Transformer and Rectifier Assembly Tests (continued)	04.8.3		YES			
		Displacement power factor	04.8.3.3			CO		planned
		Temperature rise	04.8.3.4			CO		planned
		DC Harmonic Content	04.8.3.5			CO		planned
16	A630 N D XXX-RO	AC Bus Duct Qualification Tests	04.8.4.A		NO	CO		planned
17	A630 S V XXX-RO	AC Bus Duct Production Test	04.8.4.B		YES			
18	A630 N Q XXX-RO	Switchgear Assembly Qualification Test	05.10.1.A		NO	CO		planned
19	A630 S V XXX-RO	Switchgear Assembly Production Test	05.10.1.B		YES	CO		planned
20	A630 N Q XXX-RO	LVDC Circuit Breakers Qualification Tests	05.10.2.A		NO	CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
21	A630 S V XXX-RO	LVDC Circuit Breakers Production Tests	05.10.2.B		YES	CO		planned
22	A630 N Q XXX-RO	Switchgear Assembly Qualification Tests	06.10.1.A		NO	CO		planned
23	A630 S V XXX-RO	Switchgear Assembly Production Tests	06.10.1.B		YES	CO		planned
24	A630 N Q XXX-RO	LVAC Circuit Breakers Qualification Tests	06.10.2.A		NO	CO		planned
25	A630 S V XXX-RO	LVAC Circuit Breakers Production Tests	06.10.2.B		YES	CO		planned
26	A630 N Q XXX-RO	Instrument Transformers Qualification Tests	06.10.3.A		NO	CO		planned
27	A630 S V XXX-RO	Instrument Transformers Production Tests	06.10.3.B		YES	CO		planned
28	A630 N Q XXX-RO	LV Auxiliary Power Transformer Qualification Tests	07.5.1.A		NO	CO		planned

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29	A630 S V XXX-RO	LV Auxiliary Power Transformer Production Tests	07.5.1.B		YES	CO		planned
30	A630 N Q XXX-RO	LV Auxiliary Power AC Bus Duct Qualification Tests	07.5.2.A		NO	CO		planned
31	A630 S V XXX-RO	LV Auxiliary Power AC Bus Duct Production Tests	07.5.2.B		YES	CO		planned
32	A630 N Q XXX-RO	Transformer for Emergency Back-up: Qualification Test	08.4.A		NO	CO		planned
33	A630 S V XXX-RO	Transformer for Emergency Back-up: Production Test	08.4.B		YES	CO		planned
34	A630 S I XXX-RO	Substation Short-Circuit Tests	11.2.2.A		YES	CO		planned
35	A630 S I XXX-RO	Substation Train-Start Tests	11.2.2.B		YES	CO		planned
36	A630 S I XXX-RO	Substation Low Current Interruption Tests	11.2.2.C		YES	CO		planned
37	A630 N I XXX-RO	Harmonic Content Verification	11.2.2.D		NO	CO		planned
38	A630 S I XXX-RO	Substation Final Test and Adjustments	11.2.2.E		YES	CO		planned

TEST LIST FOR CONTRACT SPECIFICATION A631

TRACTION POWER INSTALLATION

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 Contract: Traction Power Installation
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A631 N C XXX-RO	Compaction and Grade Control	02512.3.9		NO	CO		planned
2	A631 N C XXX-RO	Grout Compressive Strength	03600.3.4		NO	CO		planned
3	A631 N C XXX-RO	Roof Plates	07510.3.11		NO	CO		planned
4	A631 N C XXX-RO	Sealant Leakage	07920.3.5		NO	CO		planned
5	A631 S I XXX-RO	Insulating Flooring Electrical Resistance	09660.3.7		YES	CO		planned
6	A631 N C XXX-RO	Paint Tests	09900.3.5		NO	CO		planned
7	A631 S I XXX-RO	Fuel Oil System Test	15176.3.7		YES	CO		planned
8	A631 S V XXX-RO	Single Conductor Cable Production Test	16120.2.3.I		YES	CO		planned
9	A631 S V XXX-RO	Power Cable Production Test	16120.2.4.F		YES	CO		planned
10	A631 S I XXX-RO	DC Control Power Supply	16371.3.2		YES	CO		planned
11	A631 S I XXX-RO	District Furnished Equipment	16405.3.5		YES	CO		planned

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Contract Number: A631
 Contract: Traction Power Installation
 Contract Date: 08/01/88

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
12	A631 S I XXX-RO	DC No-load Disconnect Switches	16442.3.2		YES	CO		planned
13	A631 S I XXX-RO	DC Load Interuptors	16443.3.2		YES	CO		planned
14	A631 S I XXX-RO	Grounding System Fall-of-Potential and Continuity	16455.3.2		YES	CO		planned
15	A631 N Q XXX-RO	Non-Safety Qualification Test: Lighting Fixtures	16500.1.4		NO	CO		planned
16	A631 N C XXX-RO	Luminaries Inspection	16500.3.5		NO	CO		planned
17	A631 N I XXX-RO	Generator Performance Test	16622.3.3		NO	CO		planned
18	A631 N I XXX-RO	Local Annunciator	16761.3.3		NO	CO		planned

TEST LIST FOR CONTRACT SPECIFICATION A640

COMMUNICATIONS

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Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A640 N Q XXX-RO	Qualification - General	16.5		NO	CO		planned
2	A640 N Q XXX-RO	Factory Acceptance - Tests General	16.6		NO	CO		planned
3	A640 N A XXX-RO	SCADA Subsystem Master Station Hardware Integration Test	16.6.3.A.1		NO	CO		planned
4	A640 N V XXX-RO	SCADA Factory Acceptance Functional Performance Tests	16.6.3.B.3		NO			
		Physical conformance	16.6.3.B.3.a			CO		planned
		Hardware function	16.6.3.B.3.b			CO		planned
		Software function	16.6.3.B.3.c			CO		planned
		Status change and system alarm simulation	16.6.3.B.3.d			CO		planned
		Remote inputs simulation	16.6.3.B.3.e			CO		planned
		Communications channel noise and failure simulation	16.6.3.B.3.f			CO		planned

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 Contract: Communications
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
4	A640 N V XXX-R0	SCADA Factory Acceptance Functional Performance Tests (continued)	16.6.3.B.3		NO			
		Local/remote input simulation	16.6.3.B.3.g			CO		planned
		Control outputs simulation	16.6.3.B.3.h			CO		planned
		Man-Machine Interface functions	16.6.3.B.3.i			CO		planned
		Failure simulation of redundant components	16.6.3.B.3.j			CO		planned
		Points and RTUs addition/deletion	16.6.3.B.3.k			CO		planned
		Software maintenance	16.6.3.B.3.l			CO		planned
		Spare capacity	16.6.3.B.3.m			CO		planned
		Data-link verification	16.6.3.B.3.n			CO		planned
		On-line modification demonstration	16.6.3.B.3.o			CO		planned

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 Contract: Communications
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
4	A640 N V XXX-RO	SCADA Factory Acceptance Functional Performance Tests (continued)	16.6.3.B.3		NO			
		Average and peak load system timing	16.6.3.B.3.p			CO		planned
		On-line/off-line diagnostics	16.6.3.B.3.q			CO		planned
		Substitution of system spares	16.6.3.B.3.r			CO		planned
		Power failure recovery	16.6.3.B.3.s			CO		planned
		Software/hardware documentation	16.6.3.B.3.t			CO		planned
		Software source media	16.6.3.B.3.u			CO		planned
		System generation demonstration	16.6.3.B.3.v			CO		planned
		System monitoring software	16.6.3.B.3.w			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
5	A640 N V XXX-RO	SCADA Factory Acceptance Heat Test	16.6.3.C		NO	CO		planned
6	A640 N V XXX-RO	SCADA Factory Acceptance Hardware Integration Test	16.6.3.D		NO	CO		planned
7	A640 S A XXX-RO	Radio Subsystem Equipment Local Field Acceptance Tests	16.7.1.A		YES			
		FCC compliance	16.7.1.A.1			CO		planned
		Transmitter power output	16.7.1.A.2			CO		planned
		Transmitter alarm Verification	16.7.1.A.3			CO		planned
		Transmitter and receiver alignment	16.7.1.A.4			CO		planned
		Transmit and receive coverage	16.7.1.A.5			CO		planned

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 Contract: Communications
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
7	A640 S A XXX-RO	Radio Subsystem Equipment Local Field Acceptance Tests (continued)	16.7.1.A		YES			
		Frequency select capability	16.7.1.A.6			CO		planned
		Transmit indication	16.7.1.A.7			CO		planned
		Voice check	16.7.1.A.8			CO		planned
		Repeater disable Verification	16.7.1.A.9			CO		planned
8	A640 S A XXX-RO	EPABX Local Field Acceptance Tests	16.7.2		YES			
9	A640 S A XXX-RO	Power Subsystem: Negative 48 Vdc Power Source Local Field Acceptance Tests	16.7.3.B		YES			
		Audible transformer noise	16.7.3.B.1			CO		planned
		Rated voltage and current for input leads	16.7.3.B.2			CO		planned
		Rated voltage and current for input and output leads	16.7.3.B.3			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
9	A640 S A XXX-RO	Power Subsystem: Negative 48 Vdc Power Source Local Field Acceptance Tests (continued)	16.7.3.B		YES			
		Rated voltage and current for combination of extremes	16.7.3.B.4			CO		planned
		Ripple measurement	16.7.3.B.5			CO		planned
		Voltage regulations with varied input voltage	16.7.3.B.6			CO		planned
		Voltage regulations with varied load	16.7.3.B.7			CO		planned
10	A640 S A XXX-RO	Power Subsystem: Control and Distribution Equipment Local Field Acceptance Tests	16.7.3.C		YES			
		Simulate all alarm conditions for SCADA	16.7.3.C.1			CO		planned
		Audible and visual alarms	16.7.3.C.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
11	A640 S A XXX-R0	Public Address Subsystem Local Field Acceptance Tests	16.7.4		YES			
		Speaker resistance, bench test	16.7.4.A			CO		planned
		Speaker resistance, installation test	16.7.4.B			CO		planned
		Amplifier test and specification verification	16.7.4.C			CO		planned
		Amplifier sound pressure levels	16.7.4.D			CO		planned
		Automatic level adjustment circuitry	16.7.4.E			CO		planned
		Tape deck	16.7.4.F			CO		planned
		Supervisory signal at each passenger station	16.7.4.G			CO		planned
		Fault indication activation	16.7.4.H			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
11	A640 S A XXX-R0	Public Address Subsystem Local Field Acceptance Tests (continued)	16.7.4		YES			
		Hot standby amplifier switching	16.7.4.I			CO		planned
		Sound level measurements	16.7.4.J			CO		planned
		Priority logic circuit	16.7.4.K			CO		planned
		Busy indication	16.7.4.L			CO		planned
		Tape machine at RCC	16.7.4.M			CO		planned
		Noise and distortion of tape recordings	16.7.4.N			CO		planned
12	A640 S A XXX-R0	CCTV Substation Passenger Station Local Field Acceptance Tests	16.7.5.A		YES			
		Proper camera voltage	16.7.5.A.1			CO		planned
		Proper camera equipment	16.7.5.A.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
12	A640 S A XXX-RO	CCTV Subsystem Passenger Station Local Field Acceptance Tests (continued)	16.7.5.A		YES			
		Video output quality	16.7.5.A.3			CO		planned
		Proper camera resolution	16.7.5.A.4			CO		planned
		Camera iris action	16.7.5.A.5			CO		planned
		Vertical and horizontal hold synchronization	16.7.5.A.6			CO		planned
		Video smear check	16.7.5.A.7			CO		planned
		Video signal-to-noise	16.7.5.A.8			CO		planned
		Full video under emergency lighting conditions	16.7.5.A.9			CO		planned
		Modulator on-channel performance	16.7.5.A.10			CO		planned
		Proper pan-tilt-zoom function	16.7.5.A.11			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
13	A640 S A XXX-RO	RCC CCTV Room Local Field Acceptance Tests	16.7.5.B		YES			
		Central monitors functions	16.7.5.B.1			CO		planned
		Control video switches	16.7.5.B.2			CO		planned
14	A640 S A XXX-RO	Cable Transmission Subsystem Local Field Acceptance Test of Fiber Optic Cable	16.7.6.A		YES	CO		planned
15	A640 S A XXX-RO	Cable Transmission Subsystem Local Field Acceptance Tests of PCM MUX Channel and Fiber Optic MUX Equipment	16.7.6.B		YES			
		Power supply voltage	16.7.6.B.1			CO		planned
		Channel unit positioning	16.7.6.B.2			CO		planned
		Interface between channel banks and fiber optic MUX equipment	16.7.6.B.3			CO		planned
		Operation of line supervision	16.7.6.B.4			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
16	A640 S I XXX-RO	SCADA Subsystem Local Field Installation Test	16.7.7.C		YES	CO		planned
17	A640 S A XXX-RO	SCADA Subsystem Field Performance Test	16.7.7.E		YES	CO		planned
18	A640 S A XXX-RO	F&EM Local Field Acceptance Tests	16.7.8.G.2		YES			
		Initiating device connection	16.7.8.G.2.a			CO		planned
		Control Panel Functions	16.7.8.G.2.b		YES	CO		planned
		Trouble Circuit for Supervised circuits and interface to SCADA	16.7.8.G.2.c			CO		planned
		Alarm device connection & I/O interface to SCADA	16.7.8.G.2.d			CO		planned
		Activator circuits	16.7.8.G.2.e			CO		planned
		Control Function Outputs for Local Control	16.7.8.G.2.f			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
18	A640 S A XXX-RO	FE&M Local Field Acceptance Tests (continued)	16.7.8.G.2		YES	CO		planned
		EMP, CP, FCT, Control functions, indications and alarms	16.7.8.G.2.g			CO		planned
19	A640 N A XXX-RO	F&EM Fire Services Telephone Voice Quality	16.7.8.C.1		NO	CO		planned
20	A640 N A XXX-RO	F&EM EMP Phone 4-Party Voice Quality	16.7.8.C.2		NO	CO		planned
21	A640 S A XXX-RO	Gas Monitoring and Seismic Event Detection Local Field Acceptance Tests	16.7.9.A		YES			
		Gas monitoring equipment pressure test	16.7.9.A.2			CO		planned
		Gas monitoring equipment vacuum test	16.7.9.A.3			CO		planned
		Gas monitoring equipment flow test	16.7.9.A.4			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
22	A640 S A XXX-R0	Radio Subsystem Base Station: System-wide Field Acceptance Tests	16.8.1.A.1		YES			
		Minimum isolation	16.8.1.A.2			CO		planned
		Simultaneous base station operations	16.8.1.A.3			CO		planned
		Operation of base station and satellite receivers	16.8.1.A.4			CO		planned
		Operation of automatic station identifiers	16.8.1.A.5			CO		planned
		Transmit and receive coverage	16.8.1.A.6			CO		planned
		Portables	16.8.1.A.7			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
23	A640 S A XXX-RO	Radio Subsystem: Radio Coverage Capability and Voting Comparators	16.8.1.B		YES			
		Minimum acceptance level	16.8.1.B.1			CO		planned
		Readings in tunnels and passenger stations	16.8.1.B.2			CO		planned
		Reception at the RCC and Portables	16.8.1.B.3			CO		planned
		Voice reception signal quality	16.8.1.B.4			CO		planned
		Base station and satellite receiver voting verification	16.8.1.B.5			CO		planned
24	A640 S A XXX-RO	EPABX Subsystem: System-wide Field Acceptance Tests	16.8.2		YES			
		RCC, ETEL, ATEL, and MTEL lines and equipment	16.8.2.A			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
24	A640 S A XXX-R0	EPABX Subsystem: System-wide Field Acceptance Tests (continued)	16.8.2		YES			
		Passenger stations distributed-node trunk circuit	16.8.2.B			CO		planned
		Transmission to each trunk circuit in every passenger station	16.8.2.C			CO		planned
		EPABX node operations	16.8.2.D.1			CO		planned
		Alarms to RCC consoles	16.8.2.D.2			CO		planned
		Data transmission	16.8.2.D.3			CO		planned
		Traffic load tests	16.8.2.D.4			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
25	A640 S A XXX-RO	Power Subsystem: System-wide Field Acceptance Tests	16.8.3		YES			
		Verify Rated Output Voltage and Current Commensurate with Load	16.8.3.A			CO		planned
		Corrosion control test voltage power supply	16.8.3.B			CO		planned
26	A640 S A XXX-RO	Public Address Subsystem: System-wide Field Acceptance Tests	16.8.4		YES			
		Public address at each station activation	16.8.4.A			CO		planned
		Positive indication of completed circuit	16.8.4.B			CO		planned
		Higher priority message precedence	16.8.4.C			CO		planned
		Lamp-test button	16.8.4.D			CO		planned
		Lamp indications and voice access to station	16.8.4.E			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
26	A640 S A XXX-RO	Public Address Subsystem: System-wide Field Acceptance Tests (continued)	16.8.4		YES			
		EMP/CP announcements	16.8.4.F			CO		planned
		Alarm at RCC for disabled speaker loop, amplifier, and tape deck	16.8.4.G			CO		planned
27	A640 S A XXX-RO	CCTV Subsystem: System-wide Field Acceptance Tests	16.8.5		YES			
		Completed video recording	16.8.5.A			CO		planned
		Reception quality at Light Rail CCF	16.8.5.B			CO		planned
28	A640 S A XXX-RO	Cable Transmission Sub-system: System-wide Field Acceptance Tests	16.8.6		YES			
		Span lines transmission and reception measurement levels	16.8.6.A			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
28	A640 S A XXX-R0	Cable Transmission Sub-system: System-wide Field Acceptance Tests (continued)	16.8.6		YES			
		Channel unit transmission and reception measurement levels	16.8.6.B				CO	planned
		Alarm output verification through inducements of failures	16.8.6.C				CO	planned
		Switch over of optical fibers and channel units	16.8.6.D				CO	planned
		Gain, jitter, and transmission delay at each terminal	16.8.6.E				CO	planned
		Channel cross talk	16.8.6.F				CO	planned
		Order wire facility voice check	16.8.6.G				CO	planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
29	A640 S A XXX-R0	SCADA Subsystem: System-wide Field Acceptance Tests	16.8.7		YES			
		Scan and transmission time of terminals	16.8.7.A.1			CO		planned
		Processor tests	16.8.7.A.2			CO		planned
		Ability to generate summary messages	16.8.7.A.3			CO		planned
		Messages at supervisor's printer	16.8.7.A.4			CO		planned
		Control console test	16.8.7.B.1			CO		planned
30	A640 S A XXX-R0	RCC Telephone Subsystem: System-wide Field Acceptance Tests	16.8.8.A		YES			
		EPABX attendant console	16.8.8.A.1			CO		planned
		Main node printer and CRT terminal	16.8.8.A.2			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
30	A640 S A XXX-RO	RCC Telephone Subsystem: System-wide Field Acceptance Tests (continued)	16.8.8.A		YES			
		Multibutton electronic digital telephone instruments at each console	16.8.8.A.3			CO		planned
		Calls from every ETEL	16.8.8.A.4			CO		planned
		PAI calls from every PAI	16.8.8.A.5			CO		planned
		Hookswitch operation emulations	16.8.8.A.6			CO		planned
		Queued ETEL and PAI calls	16.8.8.A.7			CO		planned
31	A640 S A XXX-RO	RCC SCADA Subsystem: System-wide Field Acceptance Tests	16.8.8.B		YES			
		Workstation element high-lighting	16.8.8.B.1.a			CO		planned
		Quality code and tag indications	16.8.8.B.1.b			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
31	A640 S A XXX-RO	RCC SCADA Subsystem: System-wide Field Acceptance Tests (continued)	16.8.8.B		YES			
		User feedback for multistep procedures	16.8.8.B.1.c			CO		planned
		Cursor positioning	16.8.8.B.1.d			CO		planned
		Notification of invalid entries	16.8.8.B.1.e			CO		planned
		Inter-console interlocks	16.8.8.B.1.f			CO		planned
		Keyboards, trackballs, touch screens, and function panels	16.8.8.B.1.g			CO		planned
		Visual alarm lamps and audible alarm chimes	16.8.8.B.1.h			CO		planned
		Workstation functional partitioning	16.8.8.B.2.a			CO		planned
		Display selection	16.8.8.B.2.b			CO		planned

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
31	A640 S A XXX-R0	RCC SCADA Subsystem: System-wide Field Acceptance Tests (continued)	16.8.8.B		YES			
		Data entry	16.8.8.B.2.c			CO		planned
		Supervisory control sequences	16.8.8.B.2.d			CO		planned
		Placement and removal of control inhibits	16.8.8.B.2.e			CO		planned
		Data control procedures	16.8.8.B.2.f			CO		planned
		Video hardcopies of all types of CRT displays	16.8.8.B.3			CO		planned
		Display response and update characteristics	16.8.8.B.4			CO		planned
		Graphic display generator attributes	16.8.8.B.5			CO		planned
		CRT monitor replaceability/interchangeability	16.8.8.B.6			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

Sheet: 23 of 33
 Revision: 0
 Date: 9/26/88

Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
31	A640 S A XXX-R0	RCC SCADA Subsystem: System-wide Field Acceptance Tests (continued)	16.8.8.8		YES			
		Display and printing of alarms	16.8.8.8.7			CO		planned
		System event displays and printing	16.8.8.8.8			CO		planned
		Display and control of real-time and historical data trending	16.8.8.8.9			CO		planned
		Data base parameters	16.8.8.8.10			CO		planned
		Heading, scratch pad, alarm area, and message area	16.8.8.8.11			CO		planned
		Master index display	16.8.8.8.12			CO		planned
		System application displays	16.8.8.8.13			CO		planned
		Reports and logs are assignable to printers	16.8.8.8.14			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

Sheet: 24 of 33
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
31	A640 S A XXX-RO	RCC SCADA Subsystem: System-wide Field Acceptance Tests (continued)	16.8.8.B		YES			
		Alarm and event text messages	16.8.8.B.15			CO		planned
		Workstation sign-on and set-up procedures	16.8.8.B.16			CO		planned
		Transitions among screen format	16.8.8.B.17			CO		planned
		Software-assignable function pushbuttons	16.8.8.B.18			CO		planned
32	A640 S A XXX-RO	RCC CCTV Subsystem: System-wide Field Acceptance Tests	16.8.8.C		YES			
		VCR control from the CCTV Workstations	16.8.8.C.1			CO		planned
		Monitor control via the CATV selector	16.8.8.C.2			CO		planned

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Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
32	A640 S A XXX-RO	RCC CCTV Subsystem: System-wide Field Acceptance Tests (continued)	16.8.8.C		YES			
		Connectability of 17-inch CCTV monitor	16.8.8.C.3			CO		planned
		CCTV camera selection and control	16.8.8.C.4			CO		planned
33	A640 S A XXX-RO	RCC PA Subsystem: System-wide Field Acceptance Tests	16.8.8.D		YES			
		Tape machines control	16.8.8.D.1			CO		planned
		Alarm appearance	16.8.8.D.2			CO		planned
		Accessibility of PA equipment in yard and shops	16.8.8.D.3			CO		planned
		Accessibility of RCC PA equipment	16.8.8.D.4			CO		planned
		Operability of PA remote access	16.8.8.D.5			CO		planned

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Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

Sheet: 26 of 33
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
34	A640 S A XXX-R0	RCC Radio Subsystem: System-wide Field Acceptance Tests	16.8.8.E		YES			
		Radio speaker and volume control	16.8.8.E.1.a			C0		planned
		Receipt of incoming audio	16.8.8.E.1.b			C0		planned
		Transfer of selected received radio audio	16.8.8.E.1.c			C0		planned
		Transmission of telephone and radio audio	16.8.8.E.1.d			C0		planned
		Controls and indications on the CRT/keyboard	16.8.8.E.1.e			C0		planned
		Notch filter	16.8.8.E.1.f			C0		planned
		Information displays	16.8.8.E.1.g			C0		planned
		Transmit audio level meter	16.8.8.E.1.h			C0		planned
		Unselected, mixed received radio audio loudspeakers	16.8.8.E.1.i			C0		planned

Master List of Metro Rail Test Program Tests

Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
34	A640 S A XXX-RO	RCC Radio Subsystem: System-wide Field Acceptance Tests (continued)	16.8.8.E		YES			
		Transmit key/footswitch operation	16.8.8.E.2			CO		planned
35	A640 S A XXX-RO	RCC Radio Channels: System-wide Field Acceptance Tests	16.8.8.F		YES	CO		planned
36	A640 S A XXX-RO	SCADA Subsystem Outage Simulation	16.8.8.G		YES	CO		planned
37	A640 S A XXX-RO	RCC Additional Workstation: System-wide Field Acceptance Tests	16.8.8.H		YES			
		SCADA elements simulated failures	16.8.8.H.1			CO		planned
		Telephone circuit and radio channel coordination	16.8.8.H.2			CO		planned
		Time-of-day display	16.8.8.H.3			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
37	A640 S A XXX-R0	RCC Additional Workstation: System-wide Field Acceptance Tests (continued)	16.8.8.H		YES			
		Audio circuit patching	16.8.8.H.4			CO		planned
		Voice and signalling protocol	16.8.8.H.5			CO		planned
		EPABX failure simulation	16.8.8.H.6			CO		planned
38	A640 S A XXX-R0	Yard Control Tower: System-wide Field Acceptance Tests	16.8.9		YES			
		ETEL calls	16.8.9.A			CO		planned
		Yards and shops PA equipment access and control	16.8.9.B			CO		planned
		Train Dispatcher workstation controls and displays	16.8.9.C			CO		planned
39	A640 S A XXX-R0	Light Rail System Central Control Facility Tests	16.8.10		YES	CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A640
 Contract: Communications
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
40	A640 S A XXX-RO	F&EM Subsystem: System-wide Field Acceptance Tests	16.8.11		YES			
		Communications software	16.8.11.A			CO		planned
		Telephone and PA panels in EMP and CP	16.8.11.B			CO		planned
		FTEL to ETEL connections	16.8.11.C			CO		planned
		Entry signals and intrusion alarms	16.8.11.D			CO		planned
41	A640 S A XXX-RO	Gas Monitoring Subsystem: System-wide Field Acceptance Tests	16.8.12.A		YES			
		LAFD gas analyzer tests	16.8.12.B			CO		planned
		Gas monitoring control unit tests	16.8.12.C			CO		planned
42	A640 S A XXX-RO	Seismic Event Detection Subsystem: System-wide Field Acceptance tests	16.8.12.D		YES	CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
43	A640 S S XXX-RO	Radio Subsystem: Operability of Mobile, TICU, CCU, and Central Data Unit	16.9.2.A		YES	C0		planned
44	A640 S S XXX-RO	Radio Subsystem: Power availability	16.9.2.B		YES			
		Nominal voltage	16.9.2.B.1			C0		planned
		Self-diagnostic check	16.9.2.B.2			C0		planned
45	A640 S S XXX-RO	Radio Subsystem: Local equipment operation	16.9.2.C		YES			
		Operable CCU	16.9.2.C.1			C0		planned
		Radio Audio	16.9.2.C.2			C0		planned
		Time-out timer	16.9.2.C.3			C0		planned
		R.4 channel	16.9.2.C.4			C0		planned
		Speaker activation	16.9.2.C.5			C0		planned
		Operator entries	16.9.2.C.6			C0		planned

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Contract Number: A640
 Contract: Communications
 Contract Date: 04/15/87

Sheet: 31 of 33
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
46	A640 S S XXX-RO	Alerting tone verification	16.9.2.D		YES	CO		planned
47	A640 S S XXX-RO	PA equipment in vehicle	16.9.2.E		YES	CO		planned
48	A640 S S XXX-RO	Preoperation check	16.9.2.F		YES	CO		planned
49	A640 S S XXX-RO	Emergency check message	16.9.2.G		YES	CO		planned
50	A640 S S XXX-RO	Electrical contact set	16.9.2.H		YES	CO		planned
51	A640 S S XXX-RO	RCC status command transmission	16.9.2.I		YES	CO		planned
52	A640 S S XXX-RO	Valid and invalid run numbers transmission	16.9.J		YES	CO		planned
53	A640 S S XXX-RO	Power Subsystem: Preliminary Integration System Tests	16.9.3		YES			
		Alarm simulation	16.9.3.A			CO		planned
		RCC alarm acknowledgement	16.9.3.B			CO		planned

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Contract Number: A640
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
54	A640 S S XXX-R0	Cable Transmission Sub-system: Preliminary Integration System Tests	16.9.4		YES			
		Error rate and error detection	16.9.4.A			CO		planned
		System integration	16.9.4.B			CO		planned
55	A640 S S XXX-R0	SCADA Subsystem: Preliminary Integration System Tests	16.9.5		YES			
		Error detection	16.9.5.A			CO		planned
		Systems integration	16.9.5.B			CO		planned
56	A640 S S XXX-R0	EMI Mitigation: Preliminary Integration System Tests	16.9.6		YES			
		Susceptibility to electrical energy	16.9.6.A			CO		planned
		Susceptibility to transient interference	16.9.6.B			CO		planned

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Contract Number: A640
 Contract: Communications
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
56	A640 S S XXX-RO	EMI Mitigation: Preliminary Integration System Tests (continued)	16.9.6		YES			
		Susceptibility to inter-modulations	16.9.6.C			CO		planned
		Magnetic fields	16.9.6.D			CO		planned
		Electric fields	16.9.6.E			CO		planned
		Susceptibility to short-duration magnetic fields	16.9.6.F			CO		planned
		Susceptibility to magnetic fields and electric fields	16.9.6.G			CO		planned
		Grounding and bonding	16.9.6.H			CO		planned
57	A640 N D XXX-RO	Reliability Demonstration	16.10		NO	CO		planned
58	A640 S D XXX-RO	SCADA Subsystem Availability	16.11		YES	CO		planned
59	A640 N D XXX-RO	Maintainability Demonstration	16.12		NO	CO		planned

TEST LIST FOR CONTRACT SPECIFICATION A650

PASSENGER VEHICLE

Master List of Metro Rail Test Program Tests

Contract Number: A650
 Contract: Passenger Vehicle
 Contract Date: 01/28/88

Sheet: 1 of 9
 Revision: 0
 Date: 9/26/88

Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A650 S A XXX-R0	Vehicle Factory Acceptance Tests	21.4.1.A		YES			
		Subsystem energization and operation	21.4.1.A.1			C0		planned
		Trainline functions	21.4.1.A.2			C0		planned
		Circuit check	21.4.1.A.3			C0		planned
		Insulation resistance	21.4.1.A.4			C0		planned
		High potential	21.4.1.A.5			C0		planned
		Vehicle and truck weights	21.4.1.A.6			C0		planned
		Carbody watertightness	21.4.1.A.7			C0		planned
		Underfloor watertightness	21.4.1.A.8			C0		planned
		Traction motor connections	21.4.1.A.9			C0		planned
		Coupler, truck, and cable clearance	21.4.1.A.10			C0		planned

Master List of Metro Rail Test Program Tests

Contract Number: A650
 Contract: Passenger Vehicle
 Contract Date: 01/28/88

Sheet: 2 of 9
 Revision: 0
 Date: 2/27/87

Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A650 S A XXX-RO	Vehicle Factory Acceptance Tests (continued)	21.4.1.A		YES			
		Interior lighting levels	21.4.1.A.11			CO		planned
		Side door interlocks	21.4.1.A.12			CO		planned
		Interior emergency door release	21.4.1.A.13			CO		planned
		Compressed air leakage	21.4.1.A.14			CO		planned
		Compressed air system high pressure	21.4.1.A.15			CO		planned
		Braking/motoring interlocks	21.4.1.A.16			CO		planned
		False signals to door and brake subsystems	21.4.1.A.17			CO		planned
		Vehicle Outline	21.4.1.A.18			CO		planned
2	A650 N A XXX-RO	Vehicle Factory Acceptance: Interior Lighting	21.4.1.B		NO	CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A650
 Contract: Passenger Vehicle
 Contract Date: 01/28/88

Sheet: 3 of 9
 Revision: 0
 Date: 9/26/88

Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
3	A650 S A XXX-RO	Modified Vehicle Acceptance Tests at SCRTD Site	21.4.2		YES	CO		planned
4	A650 N A XXX-RO	Vehicle Train Rolling and Air Resistance Performance Tests	21.4.3.A		NO	CO		planned
5	A650 S A XXX-RO	Vehicle Emergency Duty Capability Performance Test	21.4.3.B		YES	CO		planned
6	A650 S A XXX-RO	Vehicle Spin/Slide Efficiency Performance Test	21.4.3.C		YES	CO		planned
7	A650 N A XXX-RO	Vehicle Ride Quality Performance Test	21.4.3.D		NO	CO		planned
8	A650 S A XXX-RO	Vehicle Compressed Air Storage Capacity Performance Test	21.4.3.E		YES	CO		planned
9	A650 S A XXX-RO	Vehicle Friction Brake Sub-system High Pressure Test	21.4.3.F		YES	CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A650
 Contract: Passenger Vehicle
 Contract Date: 01/28/88

Sheet: 4 of 9
 Revision: 0
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
10	A650 S A XXX-R0	Vehicle Friction Brake Response Time Test	21.4.3.G		YES	CD		planned
11	A650 S A XXX-R0	Vehicle Parking Brake Capability Test	21.4.3.H		YES	CO		planned
12	A650 N A XXX-R0	Vehicle Interior and Wayside Noise Level Tests	21.4.3.I		NO	CO		planned
13	A650 S A XXX-R0	Vehicle Component Vibration and Shock Level Check Tests	21.4.3.J		YES	CO		planned
14	A650 S A XXX-R0	Vehicle Brake Rate Test	21.4.3.K		YES	CO		planned
15	A650 N D XXX-R0	Test to Verify ATO Functions	21.4.3.L		NO	CO		planned
16	A650 S D XXX-R0	Test to verify conducted, induced, and radiated emissions	21.4.3.M		YES	CO		planned
17	A650 N S XXX-R0	Vehicle Clearance Test	21.4.4		NO	CO		planned
18	A650 S A XXX-R0	Vehicle Performance on District Property Tests	21.4.5		YES	DI		planned

Master List of Metro Rail Test Program Tests

Contract Number: A650
 Contract: Passenger Vehicle
 Contract Date: 01/28/88

Sheet: 5 of 9
 Revision: 0
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
19	A650 N P XXX-R0	System Integration Test: Personnel Training Demonstration	21.4.6.A		NO	DI		planned
20	A650 S P XXX-R0	System Integration Test: Vehicle/ATC Interface Demonstration	21.4.6.B		YES	DI		planned
21	A650 S P XXX-R0	System Integration Test: Communication Demonstration	21.4.6.C		YES	DI		planned
22	A650 N D XXX-R0	Reliability Demonstration	21.4.7		NO	CO		planned
23	A650 N D XXX-R0	Maintainability Demonstration	21.4.8		NO	CO		planned
24	A650 S V XXX-R0	TTC Specification Compliance and Performance Assessment	21.5.4.B		YES	CO		planned
25	A650 N V XXX-R0	TTC Endurance Test	21.5.4.C		NO	CO		planned
26	A650 N V XXX-R0	Supplemental Carbody Tests	21.6.1		NO	CO		planned
		Carbody compression	21.6.1.A			CO		planned
		Carbody vertical load	21.6.1.B			CO		planned
		Carbody jacking	21.6.1.C			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A650
 Contract: Passenger Vehicle
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
27	A650 N Q XXX-R0	Supplemental Passenger Seat Tests	21.6.2.A		NO			
		Vertical drop	21.6.2.A.1			CO		planned
		Squirming impact	21.6.2.A.2			CO		planned
		Swinging impact	21.6.2.A.3			CO		planned
		Grabrail deflection	21.6.2.A.4			CO		planned
28	A650 N Q XXX-R0	Supplemental Operator Seat Tests	21.6.2.B		NO			
		Vertical drop	21.6.2.B.1			CO		planned
		Swinging impact	21.6.2.B.2			CO		planned
		Squirming impact	21.6.2.B.3			CO		planned
29	A650 N Q XXX-R0	Destination Sign Life Cycle	21.6.2.C		NO	CO		planned
30	A650 N Q XXX-R0	Interior Lighting Ballast Life Cycle	21.6.2.D		NO	CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A650
 Contract: Passenger Vehicle
 Contract Date: 01/28/88

Sheet: 7 of 9
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
31	A650 N Q XXX-RO	Windshield Wipers Life Cycle	21.6.2.E		NO	CO		planned
32	A650 N Q XXX-RO	Operator Cab Sun Visor Life Cycle	21.6.3.A		NO	CO		planned
33	A650 N Q XXX-RO	Operator Cab Windshield Defogging Effectiveness	21.6.3.B		NO	CO		planned
34	A650 N Q XXX-RO	Vehicle Side Door Life Cycle	21.6.4		NO	CO		planned
35	A650 N Q XXX-RO	Trucks and Suspension Tests	21.6.5		NO			
		Dynamic load	21.6.5.A			CO		planned
		Static overload	21.6.5.B			CO		planned
		Weight distribution	21.6.5.C			CO		planned
36	A650 N Q XXX-RO	Coupler and Draft Gear Tests	21.6.6		NO			
		Stress test	21.6.6.A			CO		planned
		Cycle test	21.6.6.B			CO		planned
		Operation test	21.6.6.C			CO		planned

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Contract Number: A650
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
37	A650 N Q XXX-RO	Motor Transient Qualification Test	21.6.7		NO	CO		planned
38	A650 N Q XXX-RO	Propulsion Subsystem Tests	21.6.8		NO			
		Production traction motor tests	21.6.8.A			CO		planned
		Production gear unit dynamometer	21.6.8.B			CO		planned
		Resistor grid heat capacity and rejection	21.6.8.C			CO		planned
		Line breaker operation	21.6.8.D			CO		planned
		Regeneration transient test	21.6.8.E			CO		planned
39	A650 N Q XXX-RO	Friction Brake Tests	21.6.9		NO			
		Dynamometer test	21.6.9.A			CO		planned
		Endurance	21.6.9.B			CO		planned

Master List of Metro Rail Test Program Tests

Contract Number: A650
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
39	A650 N Q XXX-R0	Friction Brake Tests (continued)	21.6.9		NO			
		Service life demonstration	21.6.9.C			CO		planned
		Brake rate characteristics demonstration	21.6.9.D			CO		planned
40	A650 N Q XXX-R0	HVAC Tests	21.6.10.A		NO			
		Cooling capacity	21.6.10.A.1			CO		planned
		Heating capacity	21.6.10.A.2			CO		planned
		Over-temperature operation	21.6.10.A.3			CO		planned
		Air delivery	21.6.10.A.4			CO		planned
		Safety devices operation	21.6.10.A.5			CO		planned
		Sound pressure level	21.6.10.A.6			CO		planned
41	A650 N Q XXX-R0	Vehicle-Mounted HVAC Test	21.6.10.B.1		NO	CO		planned
42	A650 N Q XXX-R0	Microprocessor Assembly Temperature Cycle	21.6.11		NO	CO		planned

TEST LIST FOR CONTRACT SPECIFICATION A671

LOCOMOTIVE

Master List of Metro Rail Test Program Tests

Contract Number: A671
 Contract: Locomotive
 Contract Date: 02/13/85

Sheet: 1 of 2
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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A671 S Q XXX-RO	Pre-Acceptance Function and Operation	12.2.A		YES	CO		planned
2	A671 S A XXX-RO	Acceptance Function and Operation	12.2.B		YES	CO		planned
3	A671 S A XXX-RO	Locomotive Electrical Tests	12.2.1		YES			
		Continuity and polarity	12.2.1.A			CO		planned
		Direct current ground insulation	12.2.1.B			CO		planned
		Hi-potential ground insulation	12.2.1.C			CO		planned
		All circuits	12.2.1.D			CO		planned
		Self-load and circuitry	12.2.1.E			CO		planned
		Auxiliary circuit	12.2.1.F			CO		planned
4	A671 S A XXX-RO	Locomotive Air Brake Test	12.2.2.A		YES	CO		planned
5	A671 S A XXX-RO	Locomotive Hand Brake Test	12.2.2.B		YES	CO		planned

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Contract Number: A671
 Contract: Locomotive
 Contract Date: 02/13/85

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Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
6	A671 N V XXX-RO	Locomotive Carbody Water-tightness	12.2.3		NO	CO		planned
7	A671 S A XXX-RO	Locomotive Performance	12.2.4		YES	CO		planned
8	A671 N A XXX-RO	Locomotive Dimension and Clearances	12.2.5.A		NO	CO		planned
9	A671 N V XXX-RO	Locomotive Mechanical Assemblies Fit and Function	12.2.5.B		NO	CO		planned
10	A671 N A XXX-RO	Locomotive Noise	12.2.6		NO	CO		planned
11	A671 S A XXX-RO	Locomotive Engine Emission	12.2.7		YES	CO		planned

TEST LIST FOR CONTRACT SPECIFICATION A795

UNINTERRUPTABLE POWER SUPPLY

Master List of Metro Rail Test Program Tests

Contract Number: A795
 Contract: Uninterruptable Power Supply
 Contract Date: 10/01/85

Sheet: 1 of 1
 Revision: 0
 Date: 9/26/88

Item	Test Number	Test Title	Specification Reference Section	Test Frequency	Safety Test YES/NO	Test Group	Scheduled Completion Date	Current Status
1	A795 N Q XXX-RO	Factory Tests	16610.3.1.B		NO	CO		planned
2	A795 N Q XXX-RO	UPS operational capacity	16610.3.1.C.1		NO	CO		planned
3	A795 N Q XXX-RO	UPS operational transient response	16610.3.1.C.2		NO	CO		planned
4	A795 S I XXX-RO	Field Tests	16610.3.2		YES	CO		planned
5	A795 S I XXX-RO	UPS field quality control	16610.3.4.E		YES	CO		planned
		Circuits	16610.3.4.E.1			CO		planned
		Insulation resistance	16610.3.4.E.2			CO		planned
		Enclosures for continuity	16610.3.4.E.3			CO		planned
		Operations of circuits and controls	16610.3.4.E.4			CO		planned
		Battery charger	16610.3.4.E.5			CO		planned
		Inverter and static transfer switch	16610.3.4.E.6			CO		planned