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**PURCHASE SPECIFICATION FOR  
Set of Cable Looms-VCU Connection  
GROUP: TRACTION ENGINEERING**

P.S NO. : PS/445/2839

REV. NO: 01

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**REVISION HISTORY SHEET**

REV. NO.	DATE	NATURE OF CHANGE	REASONS	PREPARED BY	APPROVED BY
00	16.09.2022	FIRST ISSUE	--	L Sunitha	Agosh C
01	05.10.2023	Wiring Chart updated		Vipindas	Agosh C

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REVISIONS 01 DT: 05.10.2023

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ISSUED BY

DATE

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TRACTION ENGG

05.10.2023



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**SPECIFICATION FOR  
Set of Cable Looms of VCU  
Connection  
For  
3-Ph Electric Locomotives**



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**1.0 SPECIFICATION:**

Complete set of cable looms for connecting VCU 1 & VCU2 panel to the SB1 & SB2 panel respectively.

**2.0 TECHNICAL REQUIREMENTS:**

**2.1** The connectors used for the cable assembly shall be conforming to CLW specification CLW/ES/3/0124 and should be sourced from vendors approved by CLW (As per latest CLW vendor directory)

**2.2** The cables used for the cable assembly shall be conforming to CLW specification CLW/ES/3/0458, CLW/ES/3/0459 and should be sourced from vendors approved by CLW/RDSO (As per latest CLW/RDSO vendor directory)

**2.3** The cable chart is as per annexure 1& 2 for VCU 1 & VCU2 respectively. One set of cable loom includes all the cable connections from VCU1 & VCU2 to SB1 & SB2 panels respectively.

**2.4** The wires to be identified using yellow color heat shrink sleeve. The sleeve should be flame retardant and free from halogens. The marking shall be as per the wiring chart provided in the annexure.

**2.5** The cable loom should be protected with suitable nylon (polyamide 6.6) braided hose. The protection sleeve shall be flame retardant and free from halogens.

**2.6** The Sub-D connectors should be identified with suitable stickers as per their designation given in the wiring chart.

**2.7** The cables shall have Sub-D connection at one end with the other end free except for the cable at SI No.21 in VCU-1 which will have 09P female Sub-D connector at both the end.

**2.8** The earthing screen of multi core cable to be properly terminated at the Sub-D connector body.



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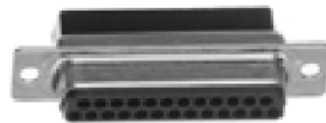
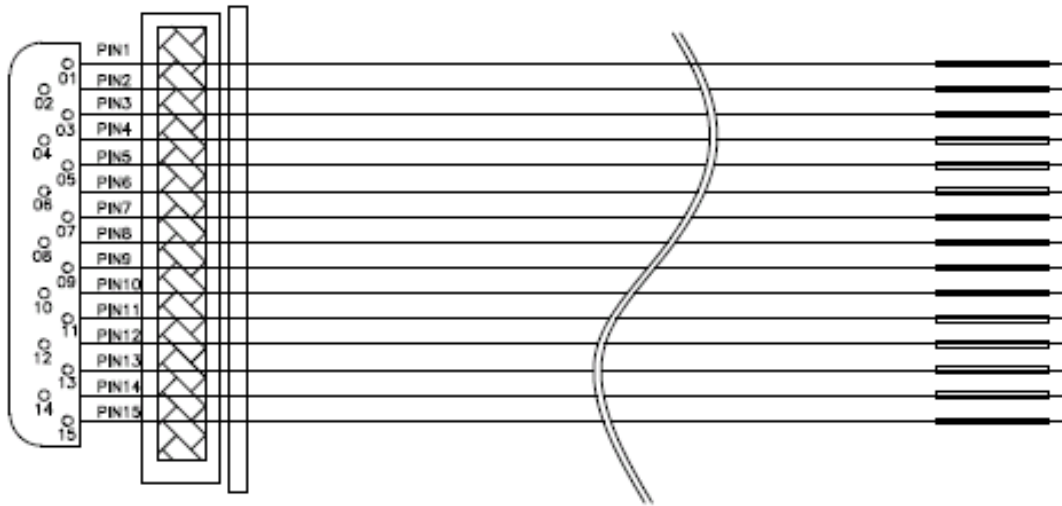
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**3.0 ASSEMBLY DRAWINGS:**



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**4.0 BILL OF MATERIALS:**

The Bill of Materials for one set of cable loom shall be as follows. The marking sleeves, ferrules and nylon protection sleeves shall be used as per the requirement.

SI No	Item	Description	VCU-1 Qty	VCU-2 Qty	Unit
1	Sub D Plug, 25P Contact Socket	HBTB316240R0025	3	3	Nos
2	Sub D Plug, 17P Contact Socket	HBTB316240R0017	2	2	Nos
3	Sub D Plug, 15P Contact Socket	HBTB316240R0015	13	13	Nos
4	Sub D Plug, 9P Contact Socket	HBTB316240R0009	4	0	Nos
5	Socket Contact AWG24-20		178	148	Nos
6	Pin Contact Size8		4	4	Nos
7	Shielded Cable	As per CLW spec 0458	3.8	0	M
8	Cable 2.5 Sqmm, 600V grade	As per CLW spec 0458	12.8	12.8	M
9	Cable 0.5 Sqmm, 600V grade	As per CLW spec 0458	538.2	508.6	M

**5.0 REFERENCE DOCUMENTS:**

The following documents as provided as annexure-1 & 2 shall be referred for the cable loom details

- Wiring Chart\_VCU1- SB1 - Doc No: TE/445/388011/1 Rev.01
- Wiring Chart\_VCU2-SB2 - Doc No: TE/445/388011/2 Rev.01

Sr No	Connector	Desig	Pin No	Destination	Wire No	Wire Size	Marking	Loom Length
1	Sub-D 17P	411.AJ	A1	XF22S:01-30	<b>4201</b>	2.5	4201;XF22S:01-30	3200
			A2	XB22S-5	<b>2050</b>	2.5	2050;XB22S-5	
2	Sub-D 17P	411.CJ	A1	XF22S:01-34	<b>4202</b>	2.5	4202;XF22S:01-34	3200
			A2	XB22S-9	<b>2050</b>	2.5	2050;XB22S-9	
3	Sub-D 15P	411.JA	1	XF22S02-1/5	<b>2840A</b>	0.5	2840A;XF22S02-1/5	3200
			2	XF22S:02-22	<b>2520A</b>	0.5	2520A;XF22S:02-22	
			3	XF22S:02-17	<b>2500A</b>	0.5	2500A;XF22S:02-17	
			4	XF22S:03-12	<b>2541A</b>	0.5	2541A;XF22S:03-12	
			8	XB22S-9	<b>2050</b>	0.5	2050;XB22S-9	
			9	XF22S:02-1/2	<b>3060A</b>	0.5	3060A;XF22S:02-1/2	
			10	XF22S:03-15	<b>2803A</b>	0.5	2803A;XF22S:03-15	
			11	XF22S:03-1/3	<b>4242A</b>	0.5	4242A;XF22S:03-1/3	
			12	XF22S:03-16	<b>2804A</b>	0.5	2804A;XF22S:03-16	
4	Sub-D 15P	411.JD	15	XF22S:01-30	<b>4201</b>	0.5	4201;XF22S:01-30	3400
			1	XF22S:03-1/1	<b>3117A</b>	0.5	3117A; XF22S:03-1/1	
			2	XF22S:03-8	<b>2526A</b>	0.5	2526A;XF22S:03-8	
			3	XF22S:02:23	<b>2521A</b>	0.5	2521A;XF22S:02:23	
			4	XF22S:02:25	<b>2523A</b>	0.5	2523A;XF22S:02:25	
			8	XB22S-9	<b>2050</b>	0.5	2050;XB22S-9	
			9	XF22S:02-26	<b>2524A</b>	0.5	2524A;XF22S:02-26	
			10	XF22S:03-36	<b>3000</b>	0.5	3000;XF22S:03-36	
			11	XF22S:02-24	<b>2522A</b>	0.5	2522A;XF22S:02-24	
5	Sub-D 25P	411.JG	12	XF22S:02-50	<b>3008</b>	0.5	3008;XF22S:02-50	3200
			15	XF22S:01-25	<b>4201</b>	0.5	4201;XF22S:01-25	
			2				Spare	
			4	XF22S:03- 1/5	<b>5672A</b>	0.5	5672A;XF22S:03- 1/5	
			6	XF22S:02-4	<b>2099A</b>	0.5	2099A;XF22S:02-4	
			7	XF22S:02-5	<b>2099A</b>	0.5	2099A;XF22S:02-5	
			9	XF22S:03-26	<b>3020A</b>	0.5	3020A;XF22S:03-26	
			10	XF22S:02-5	<b>2099A</b>	0.5	2099A;XF22S:02-5	
			12	XF22S:01-49	<b>xxxx</b>		xxxx;XF22S:01-49	
			14				Spare	
			17	XF22S:02-4	<b>2099A</b>	0.5	2099A;XF22S:02-4	
			18	XF22S:02-1/4	<b>3071A</b>	0.5	3071A;XF22S:02-1/4	
			19	XF22S:03-13	<b>2542A</b>	0.5	2542A;XF22S:03-13	
			20	XF22S:03-10	<b>2532A</b>	0.5	2532A;XF22S:03-10	
			22	XF22S:02-6	<b>2099A</b>	0.5	2099A;XF22S:02-6	
6	Sub-D 15P	411.JJ	23	XF22S:03-17	<b>2807A</b>	0.5	2807A;XF22S:03-17	4000
			24	XF22S:01-50	<b>xxxx</b>		xxxx ;XF22S:01-50	
			2	89.7/A	<b>2801A</b>	0.5	2801A;89.7/A	
			3	XF22S:01-21	<b>3042</b>	0.5	3042;XF22S:01-21	
			4	XF22S:01-31	<b>4201</b>	0.5	4201;XF22S:01-31	
			6	XF22S:02-3	<b>2099A</b>	0.5	2099A;XF22S:02-3	
			9	XF22S01-1/1	<b>2805</b>	0.5	2805;XF22S01-1/1	
			10	XF22S:01-31	<b>4201</b>	0.5	4201;XF22S:01-31	
			12	XF22S:01-1/5	<b>3046A</b>	0.5	3046A; XF22S:01-1/5	
			13	XF22S:03- 1/6	<b>5673A</b>	0.5	5673A;XF22S:03- 1/6	

## Wiring Chart VCU1 to SB1

7	Sub-D 15P	411.LA	1	XF22S:01-1/4	<b>2517</b>	0.5	2517;XF22S:01-1/4	3500
			2	154-4	<b>2402</b>	0.5	2402;154-4	
			3	152-2	<b>5675</b>	0.5	5675;152-2	
			4	XF22S:03-1/4	<b>5671A</b>	0.5	5671A;XF22S:03-1/4	
			8	XB22S-5	<b>2050</b>	0.5	2050;XB22S-5	
			9	154-2	<b>2401</b>	0.5	2401;154-2	
			10	160-4	<b>2404</b>	0.5	2404;160-4	
			11	XF22S:01-41	<b>4243</b>	0.5	4243;XF22S:01-41	
			12	XF22S:02-48	<b>3034B</b>	0.5	3034B;XF22S:02-48	
			15	XF22S:01-25	<b>4201</b>	0.5	4201;XF22S:01-25	
8	Sub-D 15P	411.LD	1	161-14	<b>2405</b>	0.5	2405;161-14	4000
			2	XF22S:01-42	<b>5676</b>	0.5	5676;XF22S:01-42	
			3	XF22S:02-12	<b>2330A</b>	0.5	2330A;XF22S:02-12	
			4	78-B	<b>2088</b>	0.5	2088;78-B	
			8	XB22S-9	<b>2050</b>	0.5	2050;XB22S-9	
			9	XF22S:01-3	<b>2312</b>	0.5	2312;XF22S:01-3	
			10	XF22S01-1/2	<b>2806</b>	0.5	2806;XF22S01-1/2	
			11	XF22S:01-33	<b>4201</b>	0.5	4201;XF22S:01-33	
			12	XF22S:02-49	<b>3035B</b>	0.5	3035B;XF22S:02-49	
			15	XF22S:01-26	<b>4201</b>	0.5	4201;XF22S:01-26	
9	Sub-D 25P	411.LG	2	XF22S:01-26	<b>4201</b>	0.5	4201;XF22S:01-26	4000
			3	161-X1	<b>2407</b>	0.5	2407;161-X1	
			4	XF22S:02-6	<b>2099A</b>	0.5	2099A;XF22S:02-6	
			6	XF22S:01-33	<b>4201</b>	0.5	4201;XF22S:01-33	
			7	XF22S03-45	<b>2066</b>	0.5	2066; XF22S03-45	
			9	136.4A-2+	<b>2311</b>	0.5	2311;136.4A-2+	
			10	XF22S:01-7	<b>2325</b>	0.5	2325;XF22S:01-7	
			12	XF22S:03-37	<b>2320</b>	0.5	2320;XF22S:03-37	
			14	XF22S01-17	<b>2506</b>	0.5	2506; XF22S01-17	
			15	XF22S:02-7	<b>2099A</b>	0.5	2099A;XF22S:02-7	
			17	XF22S03-47	<b>3503A</b>	0.5	3503A;XF22S03-47	
			18	XF22S:01-15	<b>2518</b>	0.5	2518;XF22S:01-15	
			19	XF22S:01-32	<b>4201</b>	0.5	4201;XF22S:01-32	
			21	XF22S:01-5	<b>2316</b>	0.5	2316;XF22S:01-5	
			23	XF22S:01-8	<b>2326</b>	0.5	2326;XF22S:01-8	
			24	XF22S:03-38	<b>2329</b>	0.5	2329;XF22S:03-38	
10	Sub-D 15P	411.LJ	2	XF22S:01-22	<b>3114</b>	0.5	3114;XF22S:01-22	3400
			4				Spare	
			6	XF22S:01-53	<b>HL01</b>	0.5	HL01;XF22S:01-53	
			7				Spare	
			9	XF22S:01-32	<b>4201</b>	0.5	4201;XF22S:01-32	
			12				Spare	
			13	XF22S:03-57	<b>HL11</b>	0.5	HL11;XF22S:03-57	
			15				Spare	
11	Sub-D 15P	411.OA	1	XF22S:02-51	<b>5671B</b>	0.5	5671B;XF22S:02-51	3200
			2	XF22S:03-25	<b>3005A</b>	0.5	3005A;XF22S:03-25	
			3	XF22S:03-11	<b>2540A</b>	0.5	2540A;XF22S:03-11	
			4	XF22S:03-27	<b>3034A</b>	0.5	3034A;XF22S:03-27	
			8	XB22S-10	<b>2050</b>	0.5	2050;XB22S-10	
			9	XF22S:02-17	<b>2500A</b>	0.5	2500A;XF22S:02-17	
			10	XF22S02-1/6	<b>2896</b>	0.5	2896;XF22S02-1/6	
			11	XF22S:02-1/3	<b>3069A</b>	0.5	3069A; XF22S:02-1/3	
			12	XF22S:03-28	<b>3035A</b>	0.5	3035A;XF22S:03-28	
			15	XF22S:01-34	<b>4202</b>	0.5	4202;XF22S:01-34	

12	Sub-D 15P	411.OD	1	XF22S:02-1/1	3033A	0.5	3033A;XF22S:02-1/1	3200
			2	XF22S:03-9	2527A	0.5	2527A;XF22S:03-9	
			3	XF22S:02-23	2521A	0.5	2521A;XF22S:02-23	
			4	XF22S:02-25	2523A	0.5	2523A;XF22S:02-25	
			8	XB22S-10	2050	0.5	2050;XB22S-10	
			9	XF22S:03-7	2525A	0.5	2525A;XF22S:03-7	
			10	XF22S:02-22	2520A	0.5	2520A;XF22S:02-22	
			11	XF22S:02-24	2522A	0.5	2522A;XF22S:02-24	
			12	XF22S:03-1/4	5671A	0.5	5671A;XF22S:03-1/4	
			15	XF22S:01-35	4202	0.5	4202;XF22S:01-35	
13	Sub-D 25P	411.OG	2	XF22S:02-7	2099A	0.5	2099A;XF22S:02-7	3400
			3	XF22S:03-1/2	4237A	0.5	4237A;XF22S:03-1/2	
			7	XF22S:02-8	2099A	0.5	2099A;XF22S:02-8	
			14	XF22S02-45	4239A	0.5	4239A;XF22S02-45	
			15	XF22S:02-8	2099A	0.5	2099A;XF22S:02-8	
			19	XF22S:03- 1/5	5672A	0.5	5672A;XF22S:03- 1/5	
			20	XF22S:03- 1/6	5673A	0.5	5673A;XF22S:03- 1/6	
14	Sub-D 15P	411.OJ	2	XF22S:01-35	4202	0.5	4202;XF22S:01-35	3400
			3	XF22S:01-16	2519	0.5	2519;XF22S:01-16	
			9	XF22S:01-23	3115	0.5	3115;XF22S:01-23	
			10	XF22S:01-36	4202	0.5	4202;XF22S:01-36	
15	Sub-D 15P	411.QA	1	XF22S:01-18	2854	0.5	2854;XF22S:01-18	3400
			2	XF22S:03-21	2853A	0.5	2853A;XF22S:03-21	
			3	XF22S:03-24	2857A	0.5	2857A;XF22S:03-24	
			4	XF22S:03-18	2850A	0.5	2850A;XF22S:03-18	
			8	XB22S-10	2050	0.5	2050;XB22S-10	
			9	XF22S:03-22	2855A	0.5	2855A;XF22S:03-22	
			10	XF22S:03-20	2852A	0.5	2852A;XF22S:03-20	
			11	XF22S:03-23	2856A	0.5	2856A;XF22S:03-23	
			12	XF22S:03-19	2851A	0.5	2851A;XF22S:03-19	
			15	XF22S:01-36	4202	0.5	4202;XF22S:01-36	
16	Sub-D 15P	411.QD	1	XF22S:01-19	2859	0.5	2859;XF22S:01-19	4000
			2	XF22S:02-13	2330B	0.5	2330B;XF22S:02-13	
			3	XF22S:01-20	2869	0.5	2869;XF22S:01-20	
			4	XF22S:01-37	4202	0.5	4202;XF22S:01-37	
			8	XB22S-11	2050	0.5	2050;XB22S-11	
			9	XF22S03-56	2860	0.5	2860;XF22S03-56	
			10	XF22S:01-3	2312	0.5	2312;XF22S:01-3	
			11	89.7-B	2870	0.5	2870;89.7-B	
			12	152-2	5675	0.5	5675;152-2	
			15	XF22S:01-37	4202	0.5	4202;XF22S:01-37	
17	Sub-D 15P	411.QJ	1	XF22S:02-11	2313A	0.5	2313A;XF22S:02-11	3400
			3	XF22S02-46	2509	0.5	2509;XF22S02-46	
			4	XF22S:01-7	2325	0.5	2325;XF22S:01-7	
			6	XF22S:03-38	2329	0.5	2329;XF22S:03-38	
			9	XF22S:01-5	2316	0.5	2316;XF22S:01-5	
			10	XF22S:01-37	4202	0.5	4202;XF22S:01-37	
			12	XF22S:01-8	2326	0.5	2326;XF22S:01-8	
			13	XF22S:03-37	2320	0.5	2320;XF22S:03-37	
18	Sub-D 15P	411.NI	1	XF22S::02-2	2098A	0.5	2098A;XF22S::02-2	4000
			3	XB22S-10	2050	0.5	2050;XB22S-10	
19	Sub-D 09P	381.7D	1	XF22S:01-29	4201	0.5	4201;XF22S:01-29	4000
			2	XF22S:01-29	4201	0.5	4201;XF22S:01-29	
			4	XB22S-8	2050	0.5	2050;XB22S-8	
			5	XB22S-8	20250	0.5	20250;XB22S-8	
20	Sub-D 09P	381.7F	1	XF22S:02-37	U10A	9 x 0.5 sqmm	U10A;XF22S:02-37	1600
			2	XF22S:02-37	U10A		U10A;XF22S:02-37	
			3	XF22S:02-38	U11A		U11A;XF22S:02-38	
			4	XF22S:02-38	U11A		U11A;XF22S:02-38	
			6	XF22S:02-40	U10B		U10B;XF22S:02-40	
			7	XF22S:02-40	U10B		U10B;XF22S:02-40	
			8	XF22S:02-41	U11B		U11B;XF22S:02-41	
			9	XF22S:02-41	U11B		U11B;XF22S:02-41	



Wiring Chart VCU1 to SB1

			QE			Shield cable		
21	Sub-D 09P	411.XG	1	381.7H:1	5501	9x 0.5 sqmm Shield cable	Other end (381.7H) to be terminated in Sub- D 09P. Both side having female 9pin Sub-D connector	1600
			2	381.7H:2	5502			
			3	381.7H:3	5503			
			4	381.7H:4	5504			
			5	381.7H:5	5505			
			6	381.7H:6	5506			
			7	381.7H:7	5507			
			8	381.7H:8	5508			
			9	381.7H:9	5509			
			QE					

SI No	Connector	Desig	Pin No	Destination	Wire No	Wire Size	Marking	oom Lengt
1	Sub-D 17P	412.AJ	A1	XF77S:02-12	<b>4203</b>	2.5	4203;XF77S:02-12	3200
			A2	XB77S-11	<b>2050</b>	2.5	2050;XB77S-11	
2	Sub-D 17P	412.CJ	A1	XF77S:02-16	<b>4204</b>	2.5	4204;XF77S:02-16	3200
			A2	XB77S-11	<b>2050</b>	2.5	2050;XB77S-11	
3	Sub-D 15P	412.JA	1	XF77S:02-1/1	<b>2520B</b>	0.5	2520B;XF77S:02-1/1	3200
			2	XF77S:02-1/2	<b>2521B</b>	0.5	2521B;XF77S:02-1/2	
			3	XF77S:03-20	<b>2500B</b>	0.5	2500B;XF77S:03-20	
			4	XF77S:02-1/11	<b>2541B</b>	0.5	2541B;XF77S:02-1/11	
			8	XB77S-9	<b>2050</b>	0.5	2050;XB77S-9	
			9	XF77S:03-1/6	<b>3060B</b>	0.5	3060B;XF77S:03-1/6	
			10	XF77S:03-1/1	<b>2803B</b>	0.5	2803B;XF77S:03-1/1	
			11	XF77S:03-34	<b>4242B</b>	0.5	4242B;XF77S:03-34	
			12	XF77S:03-1/2	<b>2804B</b>	0.5	2804B;XF77S:03-1/2	
4	Sub-D 15P	412.JD	15	XF77S:02-8	<b>4203</b>	0.5	4203;XF77S:02-8	3200
			1	XF77S:03-1/9	<b>3117B</b>	0.5	3117B;XF77S:03-1/9	
			2	XF77S:02-1/7	<b>2526B</b>	0.5	2526B;XF77S:02-1/7	
			3	XF77S:02-24	<b>4208</b>	0.5	4208;XF77S:02-24	
			4	XF77S:02-1/4	<b>2523B</b>	0.5	2523B;XF77S:02-1/4	
			8	XB77S-9	<b>2050</b>	0.5	2050;XB77S-9	
			9	XF77S:02-1/5	<b>2524B</b>	0.5	2524B;XF77S:02-1/5	
			10	XF77S:02-1/3	<b>2522B</b>	0.5	2522B;XF77S:02-1/3	
			11	XF77S:02-40	<b>4244</b>	0.5	4244;XF77S:02-40	
5	Sub-D 25P	412.JG	12	XF77S:02-23	<b>4207</b>	0.5	4207;XF77S:02-23	3200
			15	XF77S:02-8	<b>4203</b>	0.5	4203;XF77S:02-8	
			3	XF77S:03-7	<b>2099B</b>	0.5	2099B;XF77S:03-7	
			4	XF77S:03-8	<b>2099B</b>	0.5	2099B;XF77S:03-8	
			6	XF77S:03-7	<b>2099B</b>	0.5	2099B;XF77S:03-7	
			7	XF77S:03-8	<b>2099B</b>	0.5	2099B;XF77S:03-8	
			9	XF77S:03-25	<b>3020B</b>	0.5	3020B;XF77S:03-25	
			10	XF77S:03-8	<b>2099B</b>	0.5	2099B;XF77S:03-8	
			15	XF77S:03-1/12	<b>5673B</b>	0.5	5673B;XF77S:03-1/12	
6	Sub-D 15P	412.JJ	17	XF77S:03-1/11	<b>5672B</b>	0.5	5672B;XF77S:03-1/11	4000
			18	XF77S:03-1/8	<b>3071B</b>	0.5	3071B; XF77S:03-1/8	
			19	XF77S:02-1/12	<b>2542B</b>	0.5	2542B;XF77S:02-1/12	
			20	XF77S:02-1/9	<b>2532B</b>	0.5	2532B;XF77S:02-1/9	
			22	XF77S:03-9	<b>2099B</b>	0.5	2099B;XF77S:03-9	
			23	XF77S:03-1/3	<b>2807B</b>	0.5	2807B;XF77S:03-1/3	
			1	XF77S:01-11	<b>2315</b>	0.5	2315;XF77S:01-11	
			4	XF77S:02-13	<b>4203</b>	0.5	4203;XF77S:02-13	
			6	XF77S:03-9	<b>2099B</b>	0.5	2099B;XF77S:03-9	
6	Sub-D 15P	412.JJ	9	130.1A-2+	<b>2301</b>	0.5	2301;130.1A-2+	4000
			12	XF77S:02-6	<b>3118</b>	0.5	3118;XF77S:02-6	
			13	(123.1/2)/14	<b>3503B</b>	0.5	3503B;(123.1/2)/14	

7	Sub-D 15P	412.LA	1	XF77S:01-1/5	<b>2855B</b>	0.5	2855B;XF77S:01-1/5	3400
			2	XF77S:01-1/3	<b>2852B</b>	0.5	2852B;XF77S:01-1/3	
			3	XF77S:01-1/6	<b>2856B</b>	0.5	2856B;XF77S:01-1/6	
			4	XF77S:01-1/2	<b>2851B</b>	0.5	2851B;XF77S:01-1/2	
			8	XB77S-12	<b>2050</b>	0.5	2050;XB77S-12	
			9	XF77S:01-1/4	<b>2853B</b>	0.5	2853B;XF77S:01-1/4	
			10	XF77S:01-1/7	<b>2857B</b>	0.5	2857B;XF77S:01-1/7	
			11	XF77S:01-1/1	<b>2850B</b>	0.5	2850B;XF77S:01-1/1	
			12	XF77S:01-15	<b>2858</b>	0.5	2858;XF77S:01-15	
			15	XF77S:02-13	<b>4203</b>	0.5	4203;XF77S:02-13	
8	Sub-D 15P	412.LD	1	XF77S:01-6	<b>2302</b>	0.5	2302;XF77S:01-6	3400
			2	XF77S:02-32	<b>4228</b>	0.5	4228;XF77S:02-32	
			3	XF77S:01-32	<b>3051</b>	0.5	3051;XF77S:01-32	
			4	XF77S:02-28	<b>4220</b>	0.5	4220;XF77S:02-28	
			8	XB77S-12	<b>2050</b>	0.5	2050;XB77S-12	
			9	XF77S:01-33	<b>3052</b>	0.5	3052;XF77S:01-33	
			10	XF77S:02-33	<b>4229</b>	0.5	4229;XF77S:02-33	
			11	XF77S:01-39	<b>3070</b>	0.5	3070;XF77S:01-39	
			12	XF77S:01-16	<b>3000</b>	0.5	3000;XF77S:01-16	
			15	XF77S:02-9	<b>4203</b>	0.5	4203;XF77S:02-9	
9	Sub-D 15P	412.LJ	2	XF77S:01-2	<b>2064</b>	0.5	2064;XF77S:01-2	3400
			3	XF77S:02-01	<b>3110</b>	0.5	3110;XF77S:02-01	
			4	XF77S:02-09	<b>4203</b>	0.5	4203;XF77S:02-09	
			5				Spare	
			6	XF77S:01-54	<b>HL02</b>	0.5	HL02;XF77S:01-54	
			7				Spare	
			9	XF77S:03-14	<b>2105A</b>	0.5	2105A;XF77S:03-14	
			10	XF77S:02-10	<b>4203</b>	0.5	4203;XF77S:02-10	
			11				Spare	
			12	XF77S:02-4	<b>3113</b>	0.5	3113;XF77S:02-4	
			13	XF77S:03-55	<b>HL12</b>	0.5	HL12;XF77S:03-55	
			15				Spare	
10	Sub-D 15P	412.OA	1	XF77S:01-1/8	<b>2840B</b>	0.5	2840B;XF77S:01-1/8	3400
			2	XF77S:03-24	<b>3005B</b>	0.5	3005B;XF77S:03-24	
			3	XF77S:02-1/10	<b>2540B</b>	0.5	2540B;XF77S:02-1/10	
			4	XF77S:03-26	<b>3034B</b>	0.5	3034B;XF77S:03-26	
			8	XB77S-13	<b>2050</b>	0.5	2050;XB77S-13	
			9	XF77S:03-20	<b>2500B</b>	0.5	2500B;XF77S:03-20	
			10	XF77S:01-1/9	<b>2897</b>	0.5	2897;XF77S:01-1/9	
			11	XF77S:03-1/7	<b>3069B</b>	0.5	3069B;XF77S:03-1/7	
			12	XF77S:03-1/5	<b>3035B</b>	0.5	3035B;XF77S:03-1/5	
			15	XF77S:02-14	<b>4204</b>	0.5	4204;XF77S:02-14	

11	Sub-D 15P	412.OD	1	XF77S:03-1/4	<b>3033B</b>	0.5	3033B;XF77S:03-1/4	3200
			2	XF77S:02-1/8	<b>2527B</b>	0.5	2527B;XF77S:02-1/8	
			3	XF77S:02-1/2	<b>2521B</b>	0.5	2521B;XF77S:02-1/2	
			4	XF77S:02-1/4	<b>2523B</b>	0.5	2523B;XF77S:02-1/4	
			8	XB77S-13	<b>2050</b>	0.5	2050;XB77S-13	
			9	XF77S:02-1/6	<b>2525B</b>	0.5	2525B;XF77S:02-1/6	
			10	XF77S:02-1/1	<b>2520B</b>	0.5	2520B;XF77S:02-1/1	
			11	XF77S:02-1/3	<b>2522B</b>	0.5	2522B;XF77S:02-1/3	
			12	XF77S:03-1/10	<b>5671B</b>	0.5	5671B;XF77S:03-1/10	
			15	XF77A:02-14	<b>4204</b>	0.5	4204;XF77A:02-14	
12	Sub-D 25P	412.OG	2	XF77S:03-10	<b>2099B</b>	0.5	2099B;XF77S:03-10	3000
			3	XF77S:03-32	<b>4237B</b>	0.5	4237B;XF77S:03-32	
			7	XF77S:03-10	<b>2099B</b>	0.5	2099B;XF77S:03-10	
			14	XF77S:03-33	<b>4239B</b>	0.5	4239B;XF77S:03-33	
			15	XF77S:03-10	<b>2099B</b>	0.5	2099B;XF77S:03-10	
			19	XF77S:03-1/11	<b>5672B</b>	0.5	5672B;XF77S:03-1/11	
			20	XF77S:03-1/12	<b>5673B</b>	0.5	5673B;XF77S:03-1/12	
13	Sub-D 15P	412.OJ	2	XF77S:01-41	<b>3101</b>	0.5	3101;XF77S:01-41	3400
			3	XF77S:01-1/10	<b>3046B</b>	0.5	3046B;XF77S:01-1/10	
			4	XF77S:02-17	<b>4204</b>	0.5	4204;XF77S:02-17	
			6	XF77S:02-17	<b>4204</b>	0.5	4204;XF77S:02-17	
			7	XF77S:01-18	<b>3016</b>	0.5	3016;XF77S:01-18	
			9	XF77S:02-29	<b>4224</b>	0.5	4224;XF77S:02-29	
			10	XF77S:01-42	<b>3101</b>	0.5	3101;XF77S:01-42	
			12	XF77S:01-1/11	<b>4226</b>	0.5	4226;XF77S:01-1/11	
			13	XF77S:02-30	<b>4225</b>	0.5	4225;XF77S:02-30	
			14	XF77S:01-32	<b>3051</b>	0.5	3051;XF77S:01-32	
14	Sub-D 15P	412.QA	1	XF77S:01-7	<b>2307</b>	0.5	2307;XF77S:01-7	3400
			2	XF77S:01-39	<b>3070</b>	0.5	3070;XF77S:01-39	
			3	XF77S:01-37	<b>3056</b>	0.5	3056;XF77S:01-37	
			4	XF77S:01-38	<b>3059</b>	0.5	3059;XF77S:01-38	
			8	XB77S-13	<b>2050</b>	0.5	2050;XB77S-13	
			9	XF77S:01-8	<b>2308</b>	0.5	2308;XF77S:01-8	
			10	XF77S:01-17	<b>3008</b>	0.5	3008;XF77S:01-17	
			11	XF77S:01-36	<b>3055</b>	0.5	3055;XF77S:01-36	
			12	XF77S:01-32	<b>3051</b>	0.5	3051;XF77S:01-32	
			15	XF77S:02-18	<b>4204</b>	0.5	4204;XF77S:02-18	

15	Sub-D 15P	412.QD	1	XF77S:01-31	<b>3050</b>	0.5	3050;XF77S:01-31	3400
			2	XF77S:01-24	<b>3038</b>	0.5	3038;XF77S:01-24	
			3	XF77S:01-34	<b>3053</b>	0.5	3053;XF77S:01-34	
			4	XF77S:01-23	<b>3036</b>	0.5	3036;XF77S:01-23	
			8	XB77S-9	<b>2050</b>	0.5	2050;XB77S-9	
			9	XF77S:01-6	<b>2302</b>	0.5	2302;XF77S:01-6	
			10	XF77S:02-31	<b>4227</b>	0.5	4227;XF77S:02-31	
			11	XF77S:01-28	<b>3044</b>	0.5	3044;XF77S:01-28	
			12	XF77S:01-27	<b>3043</b>	0.5	3043;XF77S:01-27	
			15	XF77S:02-18	<b>4204</b>	0.5	4204;XF77S:02-18	
16	Sub-D 25P	412.QG	2	XF77S:02-19	<b>4204</b>	0.5	4204;XF77S:02-19	3400
			3	XF77S:02-3	<b>3112</b>	0.5	3112;XF77S:02-3	
			4	XF77S:01-42	<b>3101</b>	0.5	3101;XF77S:01-42	
			6	XF77S:01-43	<b>3101</b>	0.5	3101;XF77S:01-43	
			9	XF77S:01-43	<b>3101</b>	0.5	3101;XF77S:01-43	
			10	XF77S:01-1	<b>2064</b>	0.5	2064;XF77S:01-1	
			12	XF77S:01-22	<b>3029</b>	0.5	3029;XF77S:01-22	
			14	XF77S:02-2	<b>3111</b>	0.5	3111;XF77S:02-2	
			15	XF77S:02-19	<b>4204</b>	0.5	4204;XF77S:02-19	
			17	XF77S:01-21	<b>3028</b>	0.5	3028;XF77S:01-21	
			18	XF77S:01-30	<b>3048</b>	0.5	3048;XF77S:01-30	
			22	XF77S:01-29	<b>3047</b>	0.5	3047;XF77S:01-29	
			23	XF77S:03-15	<b>2105B</b>	0.5	2105B;XF77S:03-15	
			24	XF77S:01-43	<b>3101</b>	0.5	3101;XF77S:01-43	
17	Sub-D 15P	412.QJ	1	XF77S:03-18	<b>2309B</b>	0.5	2309B;XF77S:03-18	3400
			3	XF77S:02-14	<b>4204</b>	0.5	4204;XF77S:02-14	
			9	XF77S:01-11	<b>2315</b>	0.5	2315;XF77S:01-11	
			10	XF77S:02-5	<b>3116</b>	0.5	3116;XF77S:02-5	
18	Sub-D 15P	412.NI	1	XF77S:03-3	2098B	0.5	2098B;XF77S:03-3	4000
			3	XB77S-13	<b>2050</b>	0.5	2050;XB77S-13	