

PROGRESS SUMMARY  
(from the MICE Hall to the Hall 2)

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for the LOI collaboration group

The moving of all the LOI modules is completed from the MICE Hall to the newly built mezzanine in the Hall2. The cabling work in the new area has begun in November. Almost all the control cables have been sorted out, and the termination work is in progress. Some cables are found to be short at the new arrangement. These cables are to be terminated at the 'breakout box' from where the cables are extended. Laying the AC power cables is in progress from the switched board of the Hall 2 to the LOI distribution boards as well as to the step-start of the final anode power supply. The terminations of these lines will be made in January and February, 2007 during the ISIS shutdown period.

The 195kW chiller unit was purchased for the cooling of the BURLE4648 tetrode. The EEV1643J2 triode can be cooled by the circulating cooling water (20°C) in the Hall 2. The two 52 kW chillers are also available for the cavity and liquid resistor. During the ISIS shutdown, will also be made the plumbing to branch the circulating cooling water into the LOI water manifold, and the partitioning of the LOI experimental area for HPD, cavity and water manifold.

### CABLES

Fig.1 shows the cable connections between the LOI modules. The present cable lengths seem long enough for the connections, except for those to the HPD, water manifold and cavity as listed in Table 1 and 2. These cables are relayed through the 'breakout boxes', which will be located at some convenient place in the Hall 2. The breakout boxes are also used for extending the cables when all these modules are moved into the synchrotron room at SP6 for the forthcoming beam test (fig. 2). The information on the cables in hand is given in the comments in Fig. 1.

### AC POWER AND WATER

Table 3 shows the requirements for the AC power and the cooling water, the total amount of which is the same with that required in the original arrangement in the MICE Hall and the SP8 in 2004. **Needs to check whether those are available at the SP6 and the Hall 2.**

WORK IN FEBRUARY 2007

All works mentioned above should be completed by February, 2007. We then start with checking all the cable connections and interlocks of every module. Reconnection of the ferrite bias system is also required for the LOI experiments. The goal of this period will be to reproduce the performance of the LOI we have achieved in 2005.

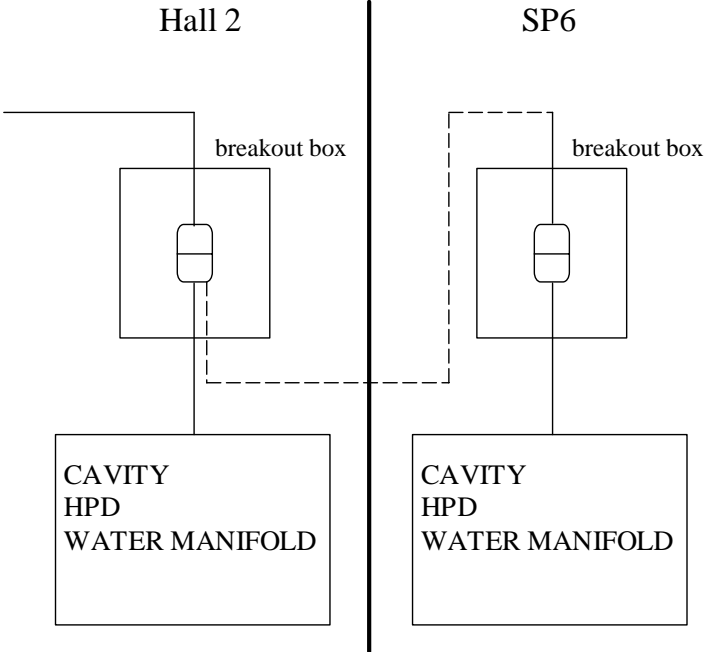


Figure 2. Breakout box for cable extension

Table 1. Cable List for Replacement and/or Extension

CATEGORY	NAME	SPECIFICATION	CABLE LABEL	CABLE TYPE	FROM	TO	PRESENT STATUS	REQUIRED LENGTH [m]
LLRF	RF law	RF signal		10D-SFA	ENI 300W Amp	HPD		
HT	Tetrode Anode Supply	DC 8kV, 40A		coaxial 12.4/6	Tetrode Anode PS	HPD		
HT	Triode Anode Supply	DC16kV, 25A		RG218U	Triode Anode PS			
HT	Screen Grid (G2) Supply	1.4kV, 10A		RG8U		HPD		
HT	Control Grid (G1) Supply	pattern	CBL-RG4	RG8U	PS chassis	HPD		
HT	Grid Supply	pattern	CBL-RG3	RG8U	Grid Switcher	HPD		
Control	Control (1)	door	CBL-121	MVVS-0.75-12	Control Rack	HPD		
Control	Control (2)	door, fan, blower	CBL-122	MVVS-0.75-12	Control Rack	HPD		
Control		water flow	CBL-120	MVVS-0.75-12	Control Rack	Water manifold		
Control		water temperature	CBL-T1~T10	EXC-KH-TypeK	Control Rack	Water manifold	100m x 10, missing	
Control		water conductivity			Control Rack	Water manifold		
Control		HPD flow			Control Rack	Water manifold		
Control		Chiller flow, faults, conductivity(?)			Control Rack	Chiller	see Table 2 'New Signals'	
Monitor	4848 heater current		CBL-A7	3D-2V	Control Rack	HPD		
Monitor	164312 heater current		CBL-A12	3D-2V	Control Rack	HPD		
Monitor	Cavity input current		CBL-A17	3D-2V	Control Rack	HPD		
Monitor	Grid voltage			3D-2V	Control Rack	HPD		
Monitor	Gap voltage		CBL-A16	3D-2V	Control Rack	HPD		
AC line	Blower	AC200V, 1P	CBL-111(#603)		PS chassis	HPD		
AC line	Fan	AC200V, 3P	CBL-112(#604)		PS chassis	HPD		
AC line	1643 heater		CBL-118, -119		PS chassis	HPD		
AC line	4648 heater		CBL-116, -117		PS chassis	HPD		
Control Cable	Step-start interlock	oil level, oil temperature, door, nitrogen		(4 pairs)	T/R set	Step-start	missing	
Control Cable	Step-start interlock	Buck Regulator 'ready'		(1 pair)	Buck Regulator	Step-start	missing	
Control Box		ON/OFF control of the ENI 300W Amplifier					missing	

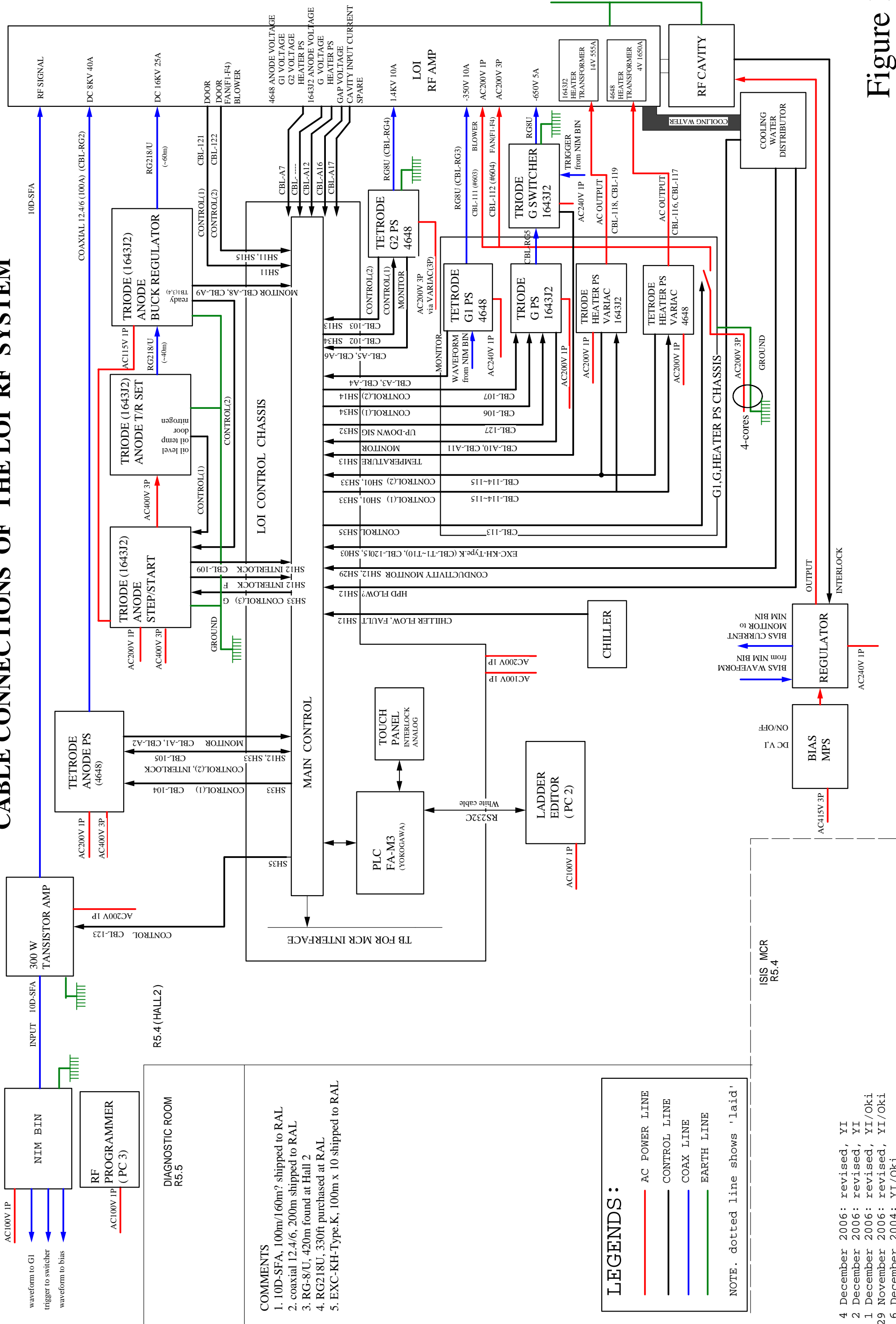
MODULE	NAME	SIGNAL TYPE	CABLE	CABLE GROUPING	TB6	LOI CONTROL	
HPD water manifold	conductivity	contact			35	PLC SH12	X254
	(spare)	contact			36		X255
	flow	contact	2-core		37		X256
					38		
					39		
					40		
Chiller	flow	contact	2-core		~	P24A N24A	X261
					49		
	conductivity	contact	2-core		50		X262
	(spare)	contact	2-core		51		
					52		
					53		X263
HPD water manifold	+24V	+24V	4-core with shield		TB5	PLC SH29	
	-24V	-24V					
	conductivity	analog					
		shield sheath					
Chiller	+24V	+24V	4-core with shield		TB4	P24A N24A	
	-24V	-24V					
	conductivity	analog					
		shield sheath					
						F3AD08-IN-CH.2	
						F3AD08-IN-CH.3	

EQUIPMENT	AC POWER		COOLING WATER			
	HALL 2		SP6		HALL 2	
	VOLTS	KVA	l / min	dissipation, KW	l / min	dissipation, KW
FINAL ANODE(EEV BW164312)	3 $\phi$ , 400V	peak 400 ave. 240	180 $\ddagger$	240.0		pmax<7 kg 16KV, 25A
step-start buck regulator		4.0				
DRIVER ANODE(Burle 4648)	3 $\phi$ , 400V	200.0	130 $\ddagger$	120.0	19-38	5-10gpm@ pmax<7 kg resistivity>
BIAS POWER SUPPLY	1 $\phi$ , 200V 3 $\phi$ , 400V	0.4 100.0				
stainless circuit copper circuit						
FINAL FILAMENT	1 $\phi$ , 200V	10.0			40.0	7.5 bar, 21'
FINAL GRID SUPPLY	1 $\phi$ , 200V	1.5			80.0	2.7 bar, 24'
DRIVER FILAMENT	1 $\phi$ , 200V	10.0			3.8	cooling of :
DRIVER G1 SUPPLY	1 $\phi$ , 200V	1.0				
DRIVER G2 SUPPLY	3 $\phi$ , 200V	3.0				
CAVITY			130			pmax<7 kg
SOLID-STATE-AMPLIFIER	1 $\phi$ , 200V	2.0				
ANCILLARY						
FAN etc	3 $\phi$ , 200V	0.7				
4648 Fil, Fil Gnd, G1, G2			38 $\diamond$			
SHUNT LOAD (Rsh)			40 $\diamond$	15.0		
LOI CONTROL CONSOLE	1 $\phi$ , 100V 1 $\phi$ , 200V	0.3 0.2				
		peak 733.1 ave. 573.1	518	455.0	142.8 ~161.8	
TOTAL	peak 733.1 KW ave. 573.1 KW			661 l/min ~680 l/min		

$\ddagger$ ) Water to 4648 is reduced by 40% by the switching grid

$\diamond$ ) LOI requires 388 l/min

# CABLE CONNECTIONS OF THE LOI RF SYSTEM



## COMMENTS

1. 10D-SFA, 100m/160m? shipped to RAL
2. coaxial 12.4/6, 200m shipped to RAL
3. RG-8/U, 420m found at Hall 2
4. RG218U, 330ft purchased at RAL
5. EXC-KH-Type.K, 100m x 10 shipped to RAL

## LEGENDS:

- AC POWER LINE
- CONTROL LINE
- COAX LINE
- EARTH LINE

NOTE. dotted line shows 'laid'

- 4 December 2006: revised, YI
- 2 December 2006: revised, YI
- 1 December 2006: revised, YI/Ok1
- 29 November 2006: revised, YI/Ok1
- 6 December 2004: YI/Ok1

Figure 1