

JLAB LLRF EPICS SCREENS

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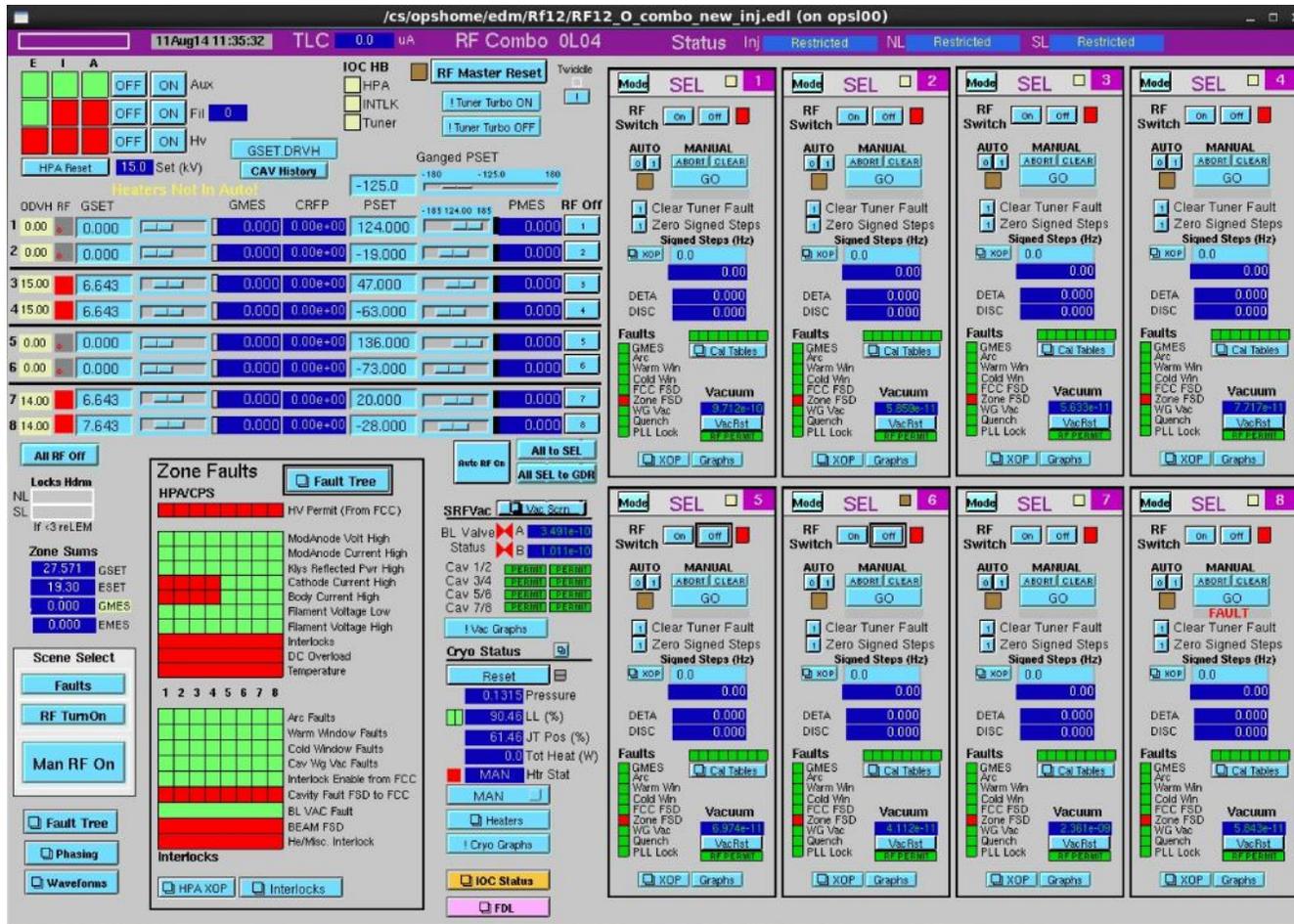
Overview

- Multiple layers of screens
- Still work in progress
- Operated 11 modules last winter
 - 1.1 GeV in North Linac
 - 2.2 GeV per pass
 - > 6 GeV to Hall A (3 pass beam)
 - > 10 GeV to Hall D (5.5 pass beam)

C100 Gradients

Zone	Energy (MeV) (from 2.2 GeV/pass)	Notes
1L22	76.58	Two cavities were bypassed with cps problem
1L23	101.8	
1L24	103.81	
1L25	101.15	
1L26	87.57	Cav 6 and 7 @ 10 MV/m due to FE
2L22	79.24	Cav 1 @ 9.7 MV/m due to FE
2L23	100.31	
2L24	94.01	
2L25	93.8	
2L26	100.17	

12 GeV RF Zone – 8 Seater



HPA

RF 12GcV HPA 0L04 OPS RF Zone R04 iocin04rthpa 0L04 0L04 Heart Beat

G Lohfi-28Jun2011

HPA CONTROL

High Voltage OFF ON ON ON

Filaments OFF ON ON ON

Aux OFF ON ON ON

Reset

Filament Timer (s) 600

Filament Timer Set 600

HPA Enable From FCC MASK

1	2	3	4	5	6	7	8
<input type="checkbox"/> OFF							
<input type="checkbox"/> ON							

1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

HV Permit (From FCC 1-8)
 ModAnode Volt: High
 ModAnode Current: High
 Klystron Reflected Pwr: High
 Cathode Current: High
 Body Current: High
 Filament Voltage: Low
 Filament Voltage: High
 Interlocks
 DC Overload
 Temperature

CPS Voltage Set: 15.00 kV

CPS Current: 0.03 A

CPS Voltage: 0.05 kV

CPS Status

	1	2	3	4	5	6	7	8
Filament Voltage Set	6.40	6.00	6.20	6.00	6.10	6.10	6.20	6.20
Filament Voltage	0.00	0.00	0.00	LL2	0.00	LL1	0.00	0.00
Filament Voltage High Limit	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Filament Voltage Low Limit	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Filament Current	0.00	0.04	0.25	0.28	0.25	0.28	0.24	0.27
Mod Anode Voltage Set	6.70	6.00	6.70	6.00	6.00	6.00	6.70	6.70
Mod Anode Voltage	0.00	0.00	0.00	CC3	0.00	CC0	0.00	0.00
Mod Anode Voltage High Limit	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Mod Anode Current	0.00	0.00	0.00	LL0	0.00	LL0	0.00	0.00
Mod Anode Current High Limit	2.50	2.80	2.50	2.50	2.50	2.50	2.50	2.50
Body Current	211.42	211.42	0.85	211.88	0.71	LL9	0.73	0.12
Body Current High Limit	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
Cathode Current	2.00	2.00	0.00	2.00	0.00	CC0	0.00	0.00
Cathode Current High Limit	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Klystron Reflected Power	0.00	0.00	0.00	CC0	0.00	CC0	0.00	0.00
Klystron Reflected Power High Limit	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00
Coupler Attenuation	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00

Waveforms 0

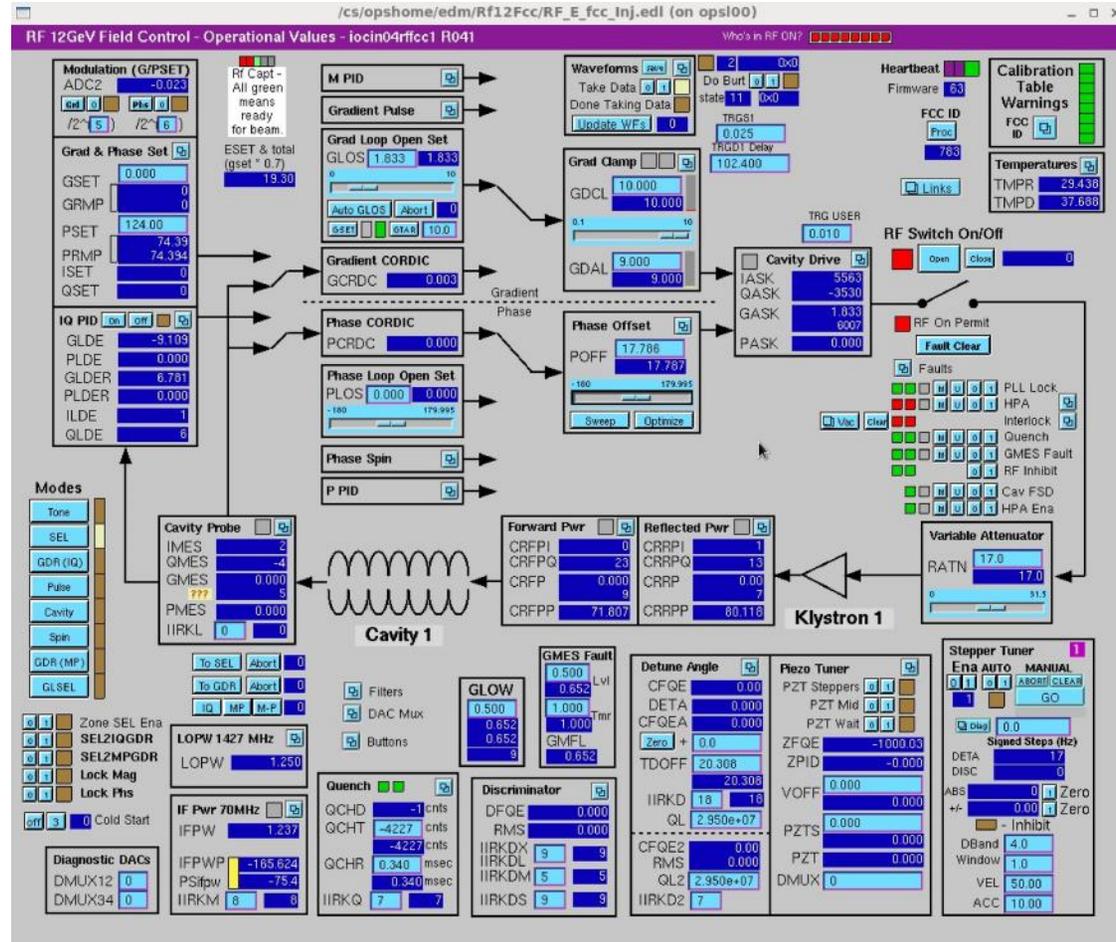
Temperatures (deg C)

TM16 0.07 TM17 0.04

TV23 0.08 TV24 0.04

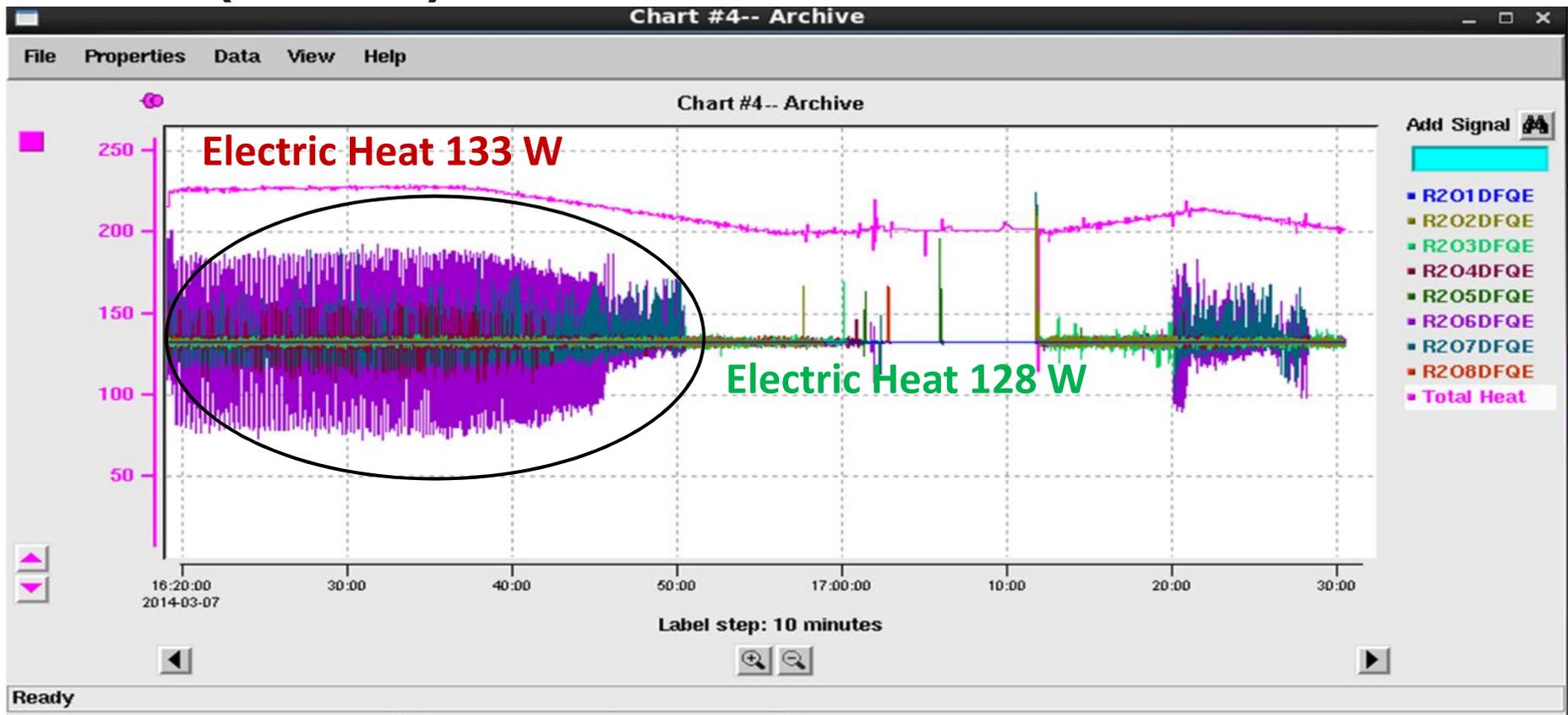
Hardware Version 0.02

Field Control



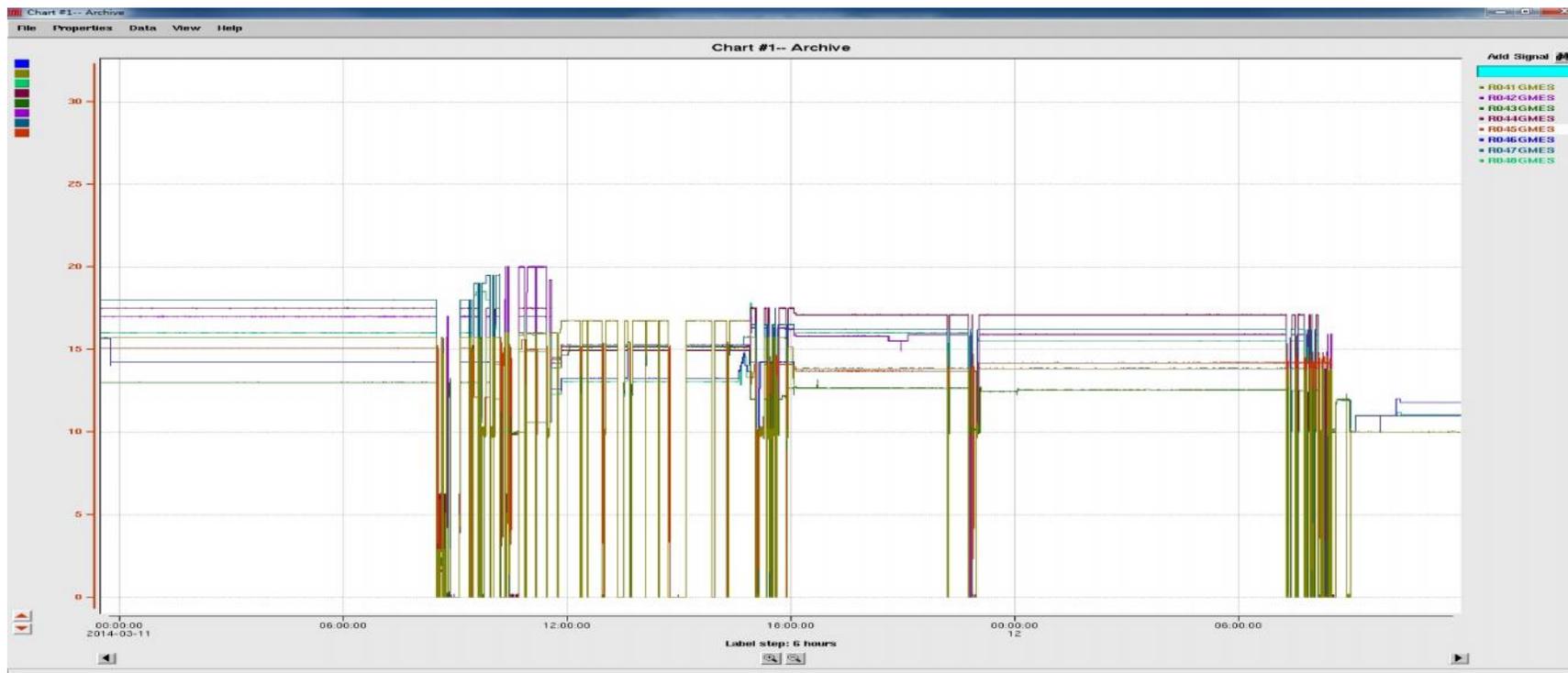
Heater Configuration

- 2L24 with Total heat of ~210 watts
- Cavities 6 and 7 have very high detuning (in SEL)



Microphonics

- Highly visible from R100 performance
 - Quiet during swing and owl
 - Lowered the energy to 56 MeV and scaled the machine to 800 MeV. Had to lower the gradients in 2L24 and 2L25



Work In Progress

- Individual Heater Control
- Fault analysis/ cavity bypassing
- Stepper Optimization
- One button recovery at higher gradients
- Q_0 VS Gradient curve implementation for heat load