

BRF-21 and BRF-22 Plan

95 degree LCW, about 160 GPM

480 VAC 3-phase, about 550 Amps

Infrastructure Modifications

Space

We need additional LCW Flow

2 RF Cavitys, 2 x 18 GPM		36
2 Power Amplifiers, 2 x 25 GPM	50	
2 Modulators, 2 x 20 GPM	40	
2 Bias Supplies, 2 x 13 GPM		26
2 Solid State Amps, 2 x 7 GPM		<u>14</u>

166_GPM

95 Degree LCW system is running at full capacity.

More CUB flow requires more pressure or bigger pipes.

We can conserve water; examples:

.Valve out the four PEI's in the cooling room, 28 GPM

.Close the 150 GPM bypass valve at XGW-000, 150 GPM

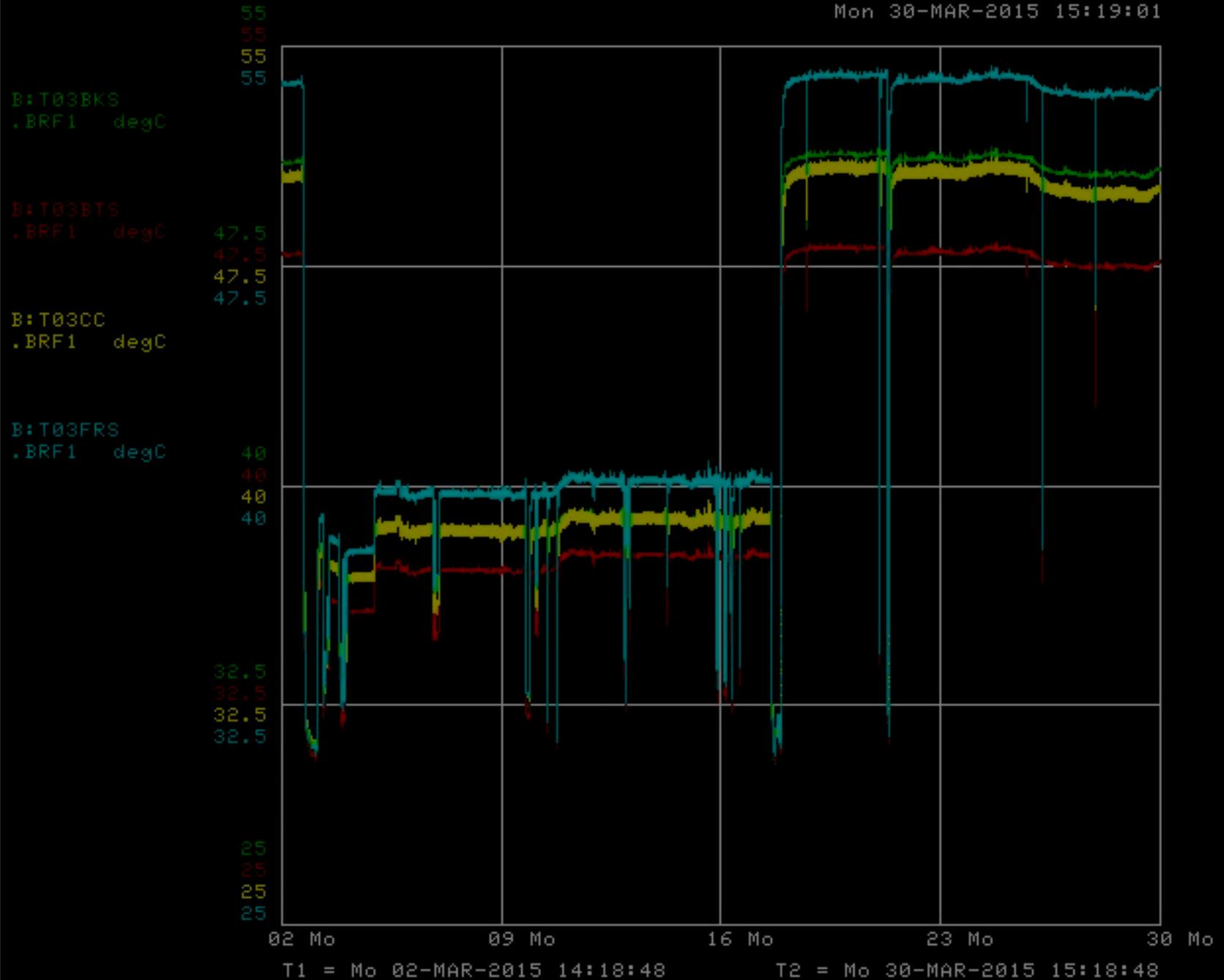
.Closed the bypass at the end of TG-9 ,
30 GPM

.Cut both APS skids by half,
50 GPM

.We can gain another 200 GPM with a \$60K recirculation pump at TG-9 to Switch-Yard. Dave Hixson.

.We may need it.

Mon 30-MAR-2015 15:19:01



Tuner thermisters are pushing 60 C, (140 F)
at 15 Hz in the winter time.

Can CUB keep up in July, August, and September?

The \$60K recirculation pump may be needed.

Power

The new RF needs 570 amps or 475 KVA.

- Hard to route new power from Y-BW1.

- Y-L5 is only a 500 KVA, 600 amp transformer.

- A new 1000 KVA transformer for Y-L5 is \$72K.

- That leaves Y-L4 and USS-Y-L3.

- USS-Y-L3 is 1500 KVA or 1800 Amps at 480 VAC 3ph and has about 700 amps per phase while NTF runs.

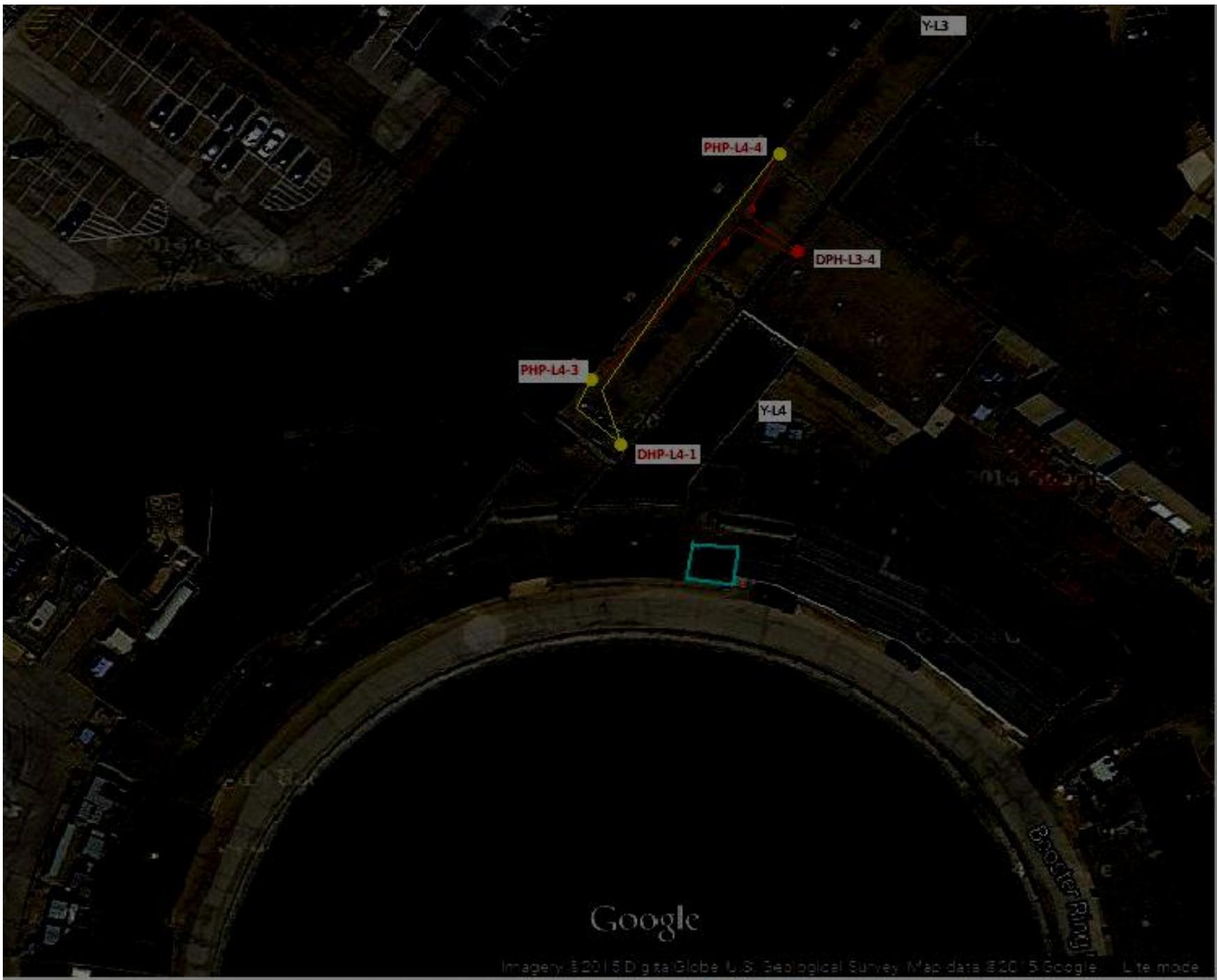
- It has 1100 amps or 950 KVA of spare capacity. It runs about 150 amps/phase w/o NTF.

Power

- .Clamp-on ammeter on Y-L4 during normal operations shows:
- .900 amps/phase, or 50% of 1500 KVA capacity.
- .We can free up more capacity and better isolate linac from booster, if we rearrange panels in linac lower-level.

Power

- Panels PHP-L4-3 and PHP-L4-4 are in the linac lower level. Clamp-on shows only ~100 amps-phase will run both panels.
- Change supply for those two panels from transformer Y-L4 to transformer USS-Y-L3.
- The cable pulls are quick and the cable is reusable.

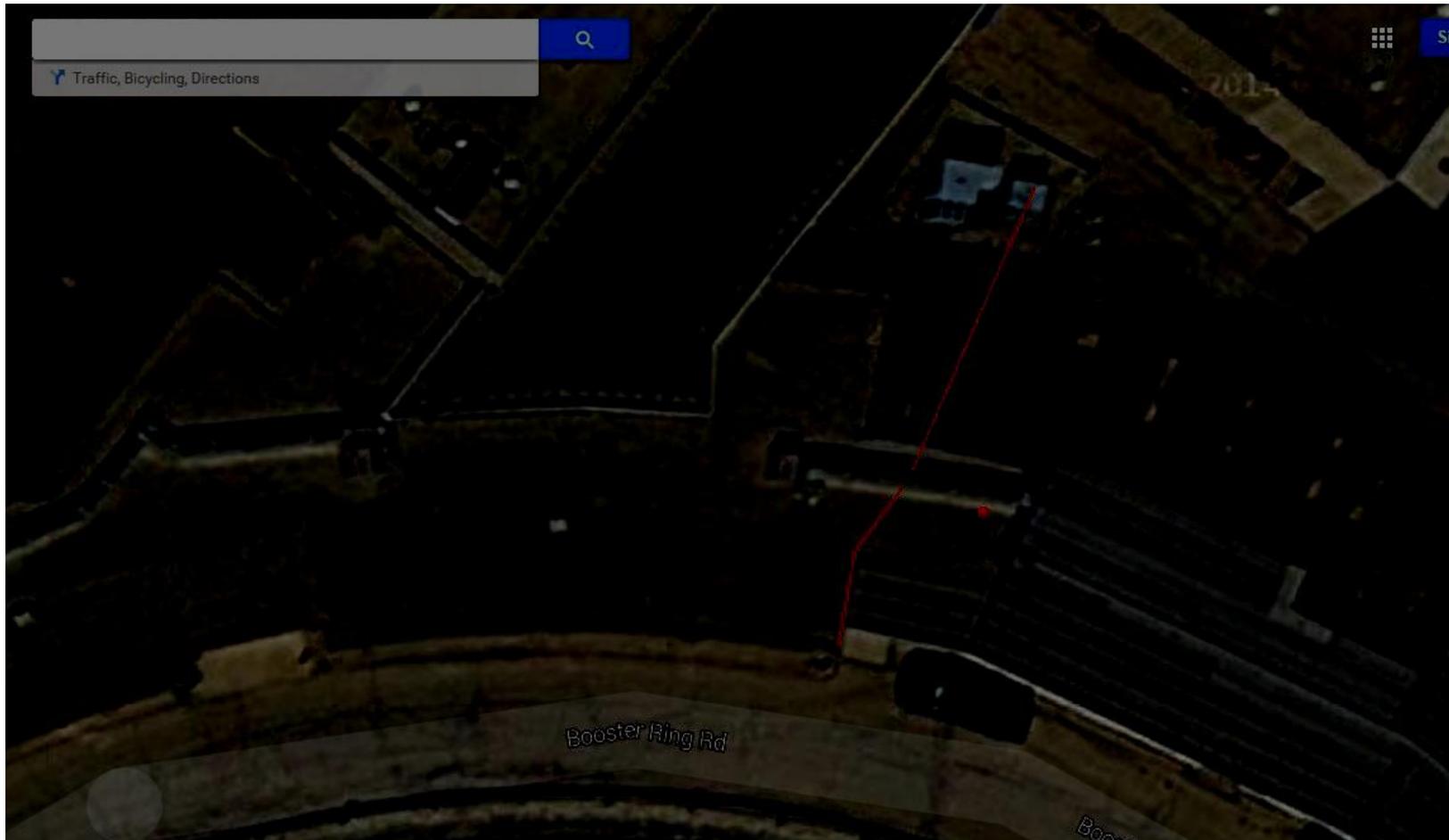


Google



The run from DHP-L4-1 to BGW-124
This is about 15 large conductors.

Alternate power costs about \$85K more with new Y-L5
1000KVA transformer.



Infrastructure

- .Take out the door and make a bigger hole.
- .Cut a hole in the north wall to route LCW, the station coax bundles, BIAS buss bar, small signals, HV. Fire safety does not object to opening the room. No fire stops needed.
- .Avoid long coax runs to the MCR and LLRF:
- .Steal RFA from BRF-17. Sum BRF-21 with BRF-17.
- .Steal RFB from BRF-18. Sum BRF-22 with BRF-18.
- .Pull 30KV, 750V, grounds from WAPS.
- .Maybe build a wall to isolate the carpeted area for noise and air conditioning. Re-use the door, gain a foot of rack-space.

Infrastructure

- .Cut and cap some un-used ICW that interferes with buss-bar.
- .Cut and patch a hole in the ceiling to install buss-bar with crane.
- .Raise the lighting fixtures.
- .Redo the large AC ductwork that partially blocks the hole in the north wall.
- .Remove the unused fire hose cabinets and 2" feeds and cap the line near BWT. This is likely, no-cost. This makes more room to get stuff over the duct-work.



Cut out the door.
Make a big hole



North wall. Buss-
bar comes out
over the duct.
DP18 review
done with
“no-comment”



North east corner.
Sprinkler test can
be moved.
Overhead
sprinklers are OK.

Lights can be
raised.



LCW manifold.
Two go on the
north wall.

Final
Questions?

tomlin@fnal.gov