NOvA Experiment Status

Steve Magill Argonne National Laboratory

All Experimenter's Meeting, December 16, 2013

FarDet Outfitting Progress

Di-Block Status (12/16/13)

Di-Block Outfitting Status

Position	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
	DiBlock														
1			Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Install	APD Avail	APD Avail	APD Avail	APD Avail	Vertical
2			Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	APD Avail	APD Avail	APD Avail	
3			Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	APD Avail	APD Avail	APD Avail	
4			Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	APD Avail	APD Avail	APD Avail	
5			Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	APD Avail	APD Avail	APD Avail	
6			Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	APD Avail	APD Avail	APD Avail	
7	DCM Avail	DCM Avail	Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Install	FEB Avail	FEB Avail	APD Avail	APD Avail	Horizontal
8	DCM Avail	DCM Avail	Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
9	DCM Avail	DCM Avail	Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
10	DCM Avail	DCM Avail	Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
11	DCM Avail	DCM Avail	Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	
12	DCM Avail	DCM Avail	Filling	Filling	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	FEB Avail	APD Avail	APD Avail	

Block Installation Status

	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Block																											
Status			Set	Set	Set	Filling	Filling	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled	Filled

Today 12/16: Topping up block 21 (22nd block)horizontals. Install APDs on DCM-2-05-01

Tuesday 12/17: Begin filling block 22 (23rd block) horizontals. Install APDs on DCM-2-05-07, 08 (DCM-2-03-07 pending APD availability). Install FEBs on block 21 (top first then side).

Wednesday 12/18: Begin cooling APDs on di-blocks 04,05 top. Install APDs location pending type of parts available (prioriority di-block 03 side).

Filling

Block 21

Vertical Modules

Position	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
0		196	251	250	251	251	250	247	250	249	249	247	249	249	249	250
1		251	251	251	250	250	250	250	250	247	253	247	252	248	249	248
2	250	252	251	250	248	251	249	249	251	251	251	250	251	249	250	253
3	42	249	251	255	248	250	252	250	249	251	250	253	250	253	249	251
4	150	250	254	250	249	252	248	250	249	251	248	249	251	252	249	251
5		251	252	250	252	250	246	246	249	251	249	253	248	251	248	252
6	251	251	253	251	252	250	233	249	249	249	250	252	251	249	248	251
7	145	105	254	252	250	251	252	251	248	248	252	249	252	249	249	249
8	164	253	251	250	248	253	251	249	249	248	247	252	250	248	245	250
9		252	251	248	249	250	250	253	249	248	248	250	250	249	252	247
10	120	253	249	251	251	250	247	249	250	253	247	251	250	253	248	253
11		251	250	251	251	249	248	253	248	251	250	251	250	250	252	252

Horizontal Modules

Position	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0
11	244	240	242	242	243	250	239	240	249	247	247	245	247	249	249	244
10	239	131	248	151	249	131	247	71	239	125	244	172	245	145	246	147
9	243	245	245	244	245	242	245	243	239	248	244	243	248	242	245	245
8	240	230	241	228	244	235	239	236	237	229	243	231	246	227	244	234
7	240	243	245	243	248	245	242	246	242	243	249	244	245	247	248	241
6	245	242	247	246	245	248	243	245	242	244	247	246	245	248	245	240
5	244	241	247	246	246	246	248	249	247	247	250	241	246	251	247	239
4	244	245	244	248	247	248	247	246	246	247	246	249	246	246	245	246
3	244	246	247	244	245	243	243	248	247	243	244	243	244	245	244	245
2	245	243	244	243	243	246	246	248	243	248	246	246	245	244	245	245
1	237	248	245	249	249	250	244	248	250	249	245	247	245	248	252	247
0	247	246	245	243	246	246	245	245	249	246	246	246	247	246	245	248

Friday day 12/13/13

Monday day 12/16/13

Block 20

Vertical Modules

Position	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
0	253	251	238	251	253	252	251	251	251	250	249	249	249	251	252	251
1	250	253	251	251	251	252	254	252	249	252	251	250	250	251	251	251
2	249	252	253	253	252	251	252	250	251	251	251	252	250	251	251	252
3	252	251	253	251	249	252	254	250	250	248	254	248	250	250	252	252
4	253	252	251	251	252	253	252	251	252	252	247	250	250	251	253	252
5	252	250	250	250	251	251	250	250	251	252	252	252	250	249	251	252
6	252	248	254	252	251	252	250	251	250	249	253	249	250	251	250	251
7	247	250	252	254	250	251	251	252	252	251	252	253	250	253	252	250
8	252	250	251	252	252	251	248	249	249	250	251	253	250	251	251	250
9	253	252	251	252	251	251	250	250	249	250	250	251	253	250	251	251
10	249	253	249	250	253	252	251	249	250	252	251	250	251	251	253	251
11	248	250	251	251	252	251	249	250	251	250	251	251	251	250	250	251

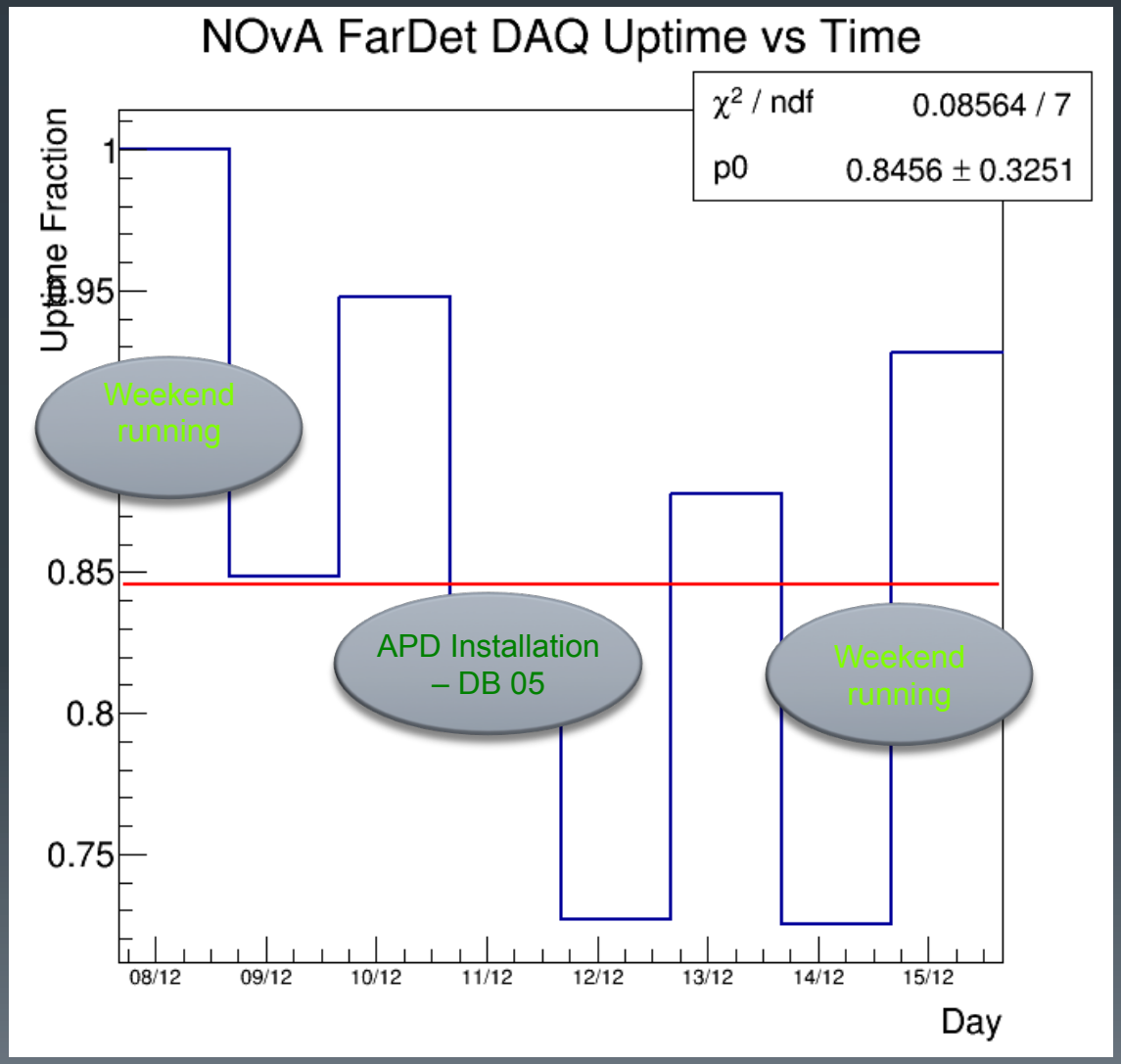
Horizontal Modules

Position	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0
11	246	251	250	241	249	233	237	241	239	246	232	239	244	240	245	244
10	245	247	240	244	246	245	246	244	250	247	247	247	245	241	248	239
9	251	248	241	246	243	251	249	248	248	247	247	247	252	246	247	243
8	245	248	247	246	243	246	247	247	247	248	248	246	246	249	249	248
7	242	247	248	248	248	250	246	246	244	246	246	248	247	247	249	247
6	246	245	246	249	247	253	246	242	244	242	247	244	247	249	247	241
5	249	247	243	246	243	247	250	246	244	244	247	247	246	247	249	247
4	246	83	246	248	246	244	245	245	245	246	244	245	246	247	247	101
3	244	244	246	249	246	248	248	243	245	243	245	245	242	247	248	248
2	245	245	249	246	244	248	244	248	244	243	246	243	240	244	251	243
1	250	242	248	246	248	237	245	245	240	231	244	228	238	226	247	245
0	243	243	249	247	243	251	244	247	249	245	248	246	242	243	251	247

Tuesday eve 11/26/13

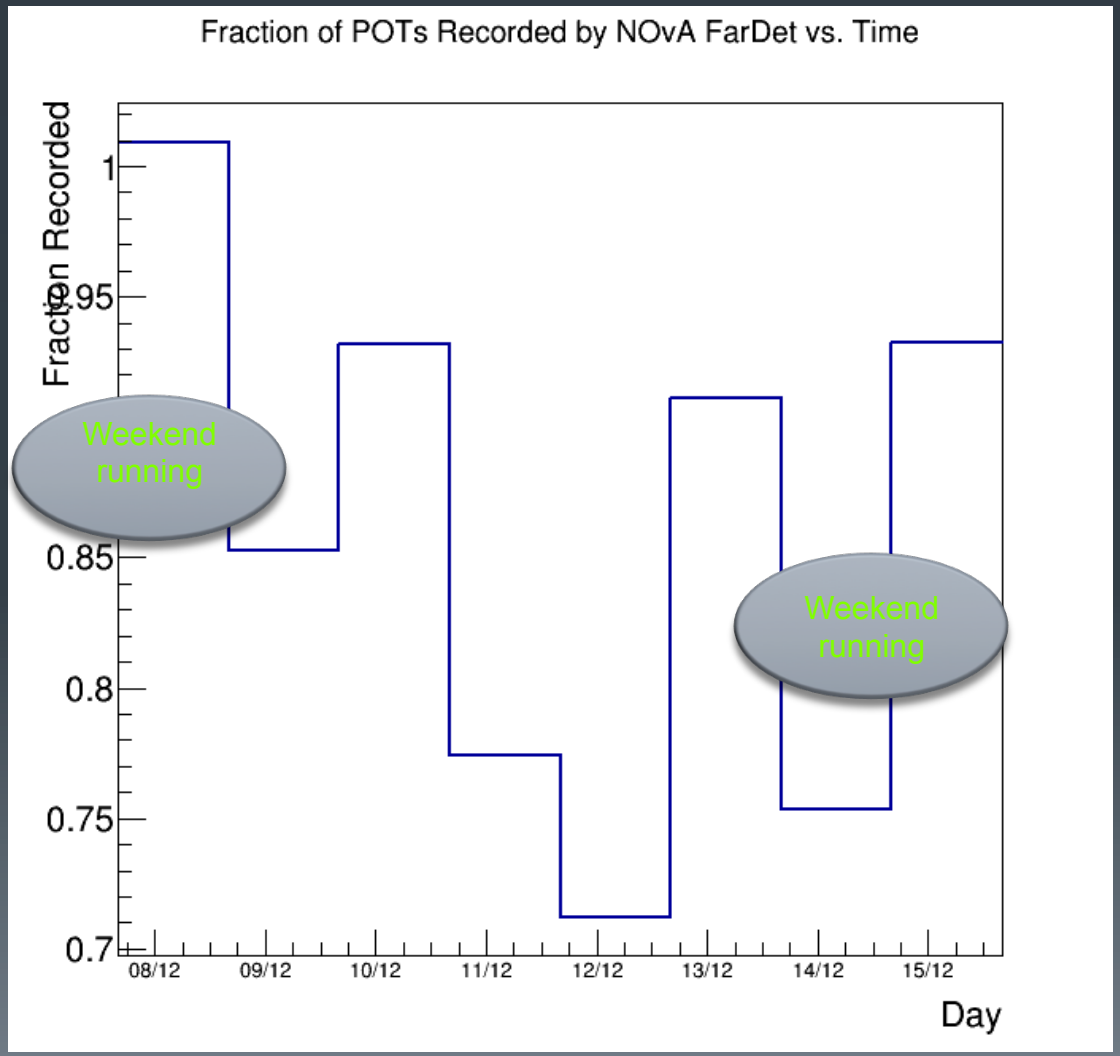
Monday day 12/2/13

FarDet performance – DAQ Uptime



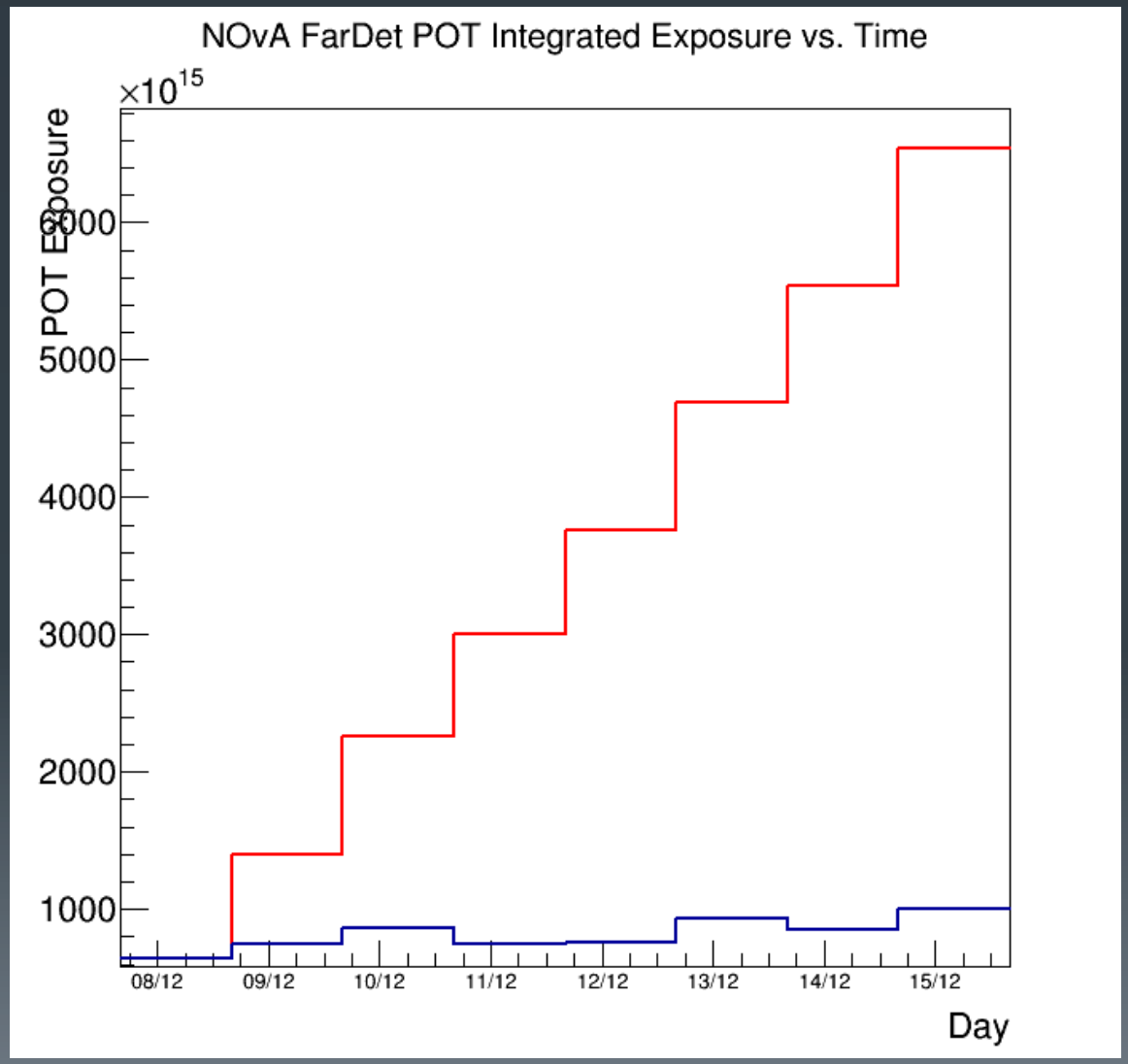
- Very reliable, continuous running on weekends
- APD installation weekdays interrupts DAQ
- Weekday replacements also stops DAQ
- On when beam is off (commissioning with c-rays)
- Some problems starting runs over past week/weekend (DAQ size?, full disks?)

FarDet Performance – Fraction of POTs Recorded



- Very reliable, continuous running on weekends
- DAQ uptime when beam is off (commissioning with c-rays)

FarDet Performance – Integrated POT



- Daily (blue) and integrated (red) POT exposure
- During APD installation and hardware replacement, DAQ uptime and POT exposure depends on location of work
- Steady increase (however HORN OFF)

Require ~5E19 POT to see a neutrino at 90% CL – with 2 kT (2 diblocks)

So far ~9.3E18 has been collected in good runs

Near Detector Schedule

News and Schedule

- Block #8 assembly started last Thursday, Dec 12
  - *47 module delivered Dec 12, one more shipment this Thursday*
  - *Projected assembly finish date is Jan 3*
- Electronics ORC granted last Wednesday, Dec 11
  - *Thanks Bill for tracking down the HVAC network cable issue*
  - *FEB-DCM cabling status?*
- Scintillator filling ORC review started
  - *Safety documentations submitted*
  - *First safety walk-though this Wednesday(?)*
  - *Setting up filling machines – Nathan Mayer/Nitin Yadav/Karen*
- FNAL tanker–to-MSB moving schedule
  - *MSB window fire-protection insulation underway?*
  - *Secondary containment berm installation right after window insulation*
  - *New Teflon lined tanker hose with 35' long ordered last week*
  - *Hole on MSB door or wall – Bill taking to fire chief and Jim Priest*
  - *More statis-425 to the tanker before moving over*
- FEB5 testing news?

8th Block completes the Near Detector!

Summary

- NDOS Prototype running smoothly, useful for testing of software/ firmware/monitoring upgrades before rolling out at FarDet – presently testing new FEBs for Near Detector
- FarDet – 2.5 diblocks running cold at full gain – very smooth running, >3 diblocks instrumented with APDs, 26th block (out of 28) in place – new APD installation ongoing
- Very good performance of APDs w/o A174 primer - 2*(1/2) diblocks running with full gain.
- Plan to run with 2 + 3*(1/2) diblocks of instrumented APDs in cold configuration with full gain over holidays
- NearDet – 7/8 of the Near Detector blocks are in place – last block in place by January 3, 2014, scintillator filling to start immediately after