

Control Room Operations WG

ICARUS Technical Meeting || December 10 2019

Bruce Howard



Diana Mendez

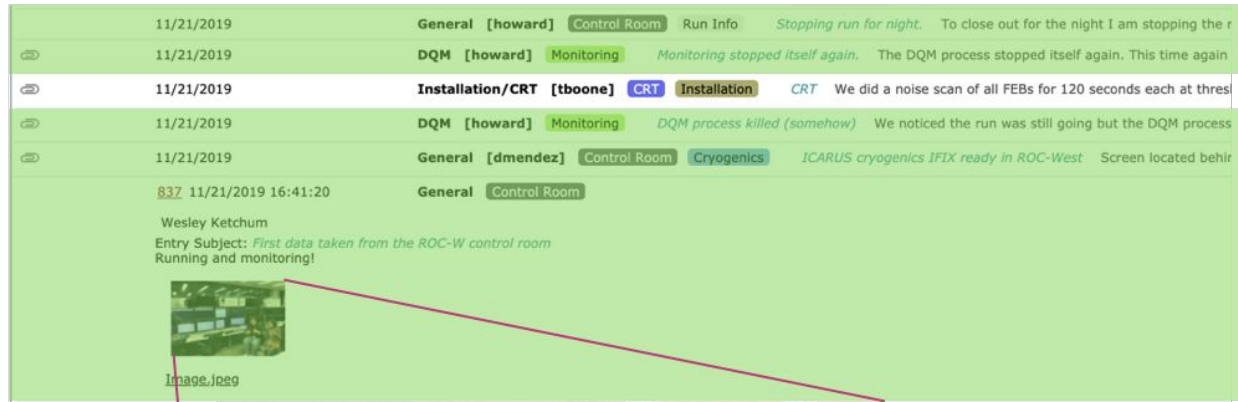


We have already been doing work

**November 21st:
First pass of setup
which took data and
used monitoring.**

Have since developed
more & continued
testing from ROC-West
setup

* Check ECL for further
updates



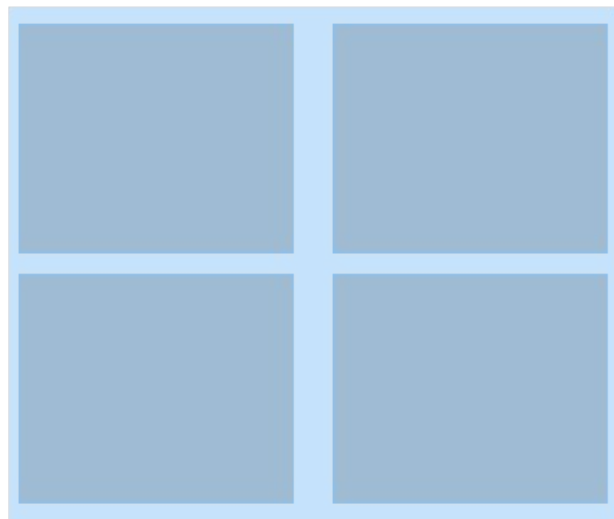
Thanks to Wes
for his help, and
for taking pic!

First data taken using
CR machines!

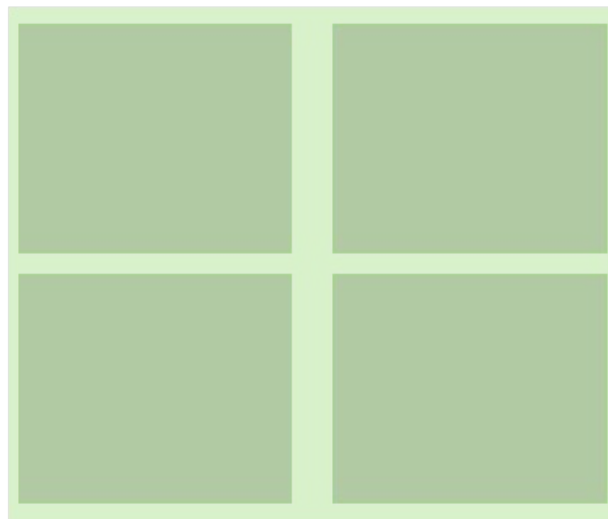
ROC-West CPUs and screens

ROC-West computers
icarus cr 01 – 4 monitors
icarus cr 02 – 4 monitors
icarus cr 03 – 2 monitors

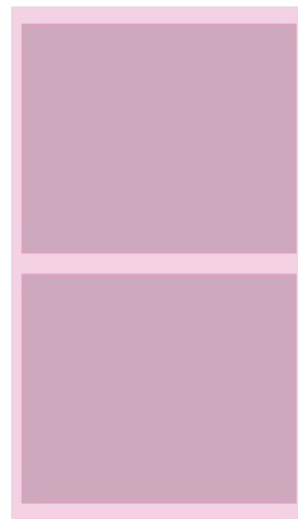
icarus-cr01



icarus-cr02



icarus-cr03



NOvA
main operations



NOvA
test beam



Screens layout

* Further details in DocDB [15868](#) and [15584](#)

PENDING



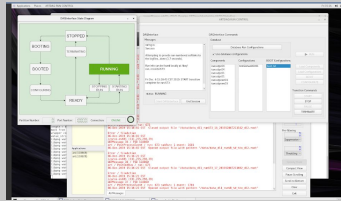
PENDING



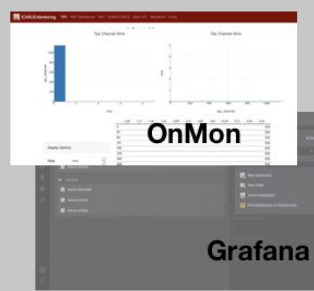
Description and slides

PENDING
DCS/Slow controls

RC GUI



OnMon

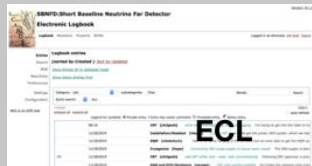


Grafana



Live detector

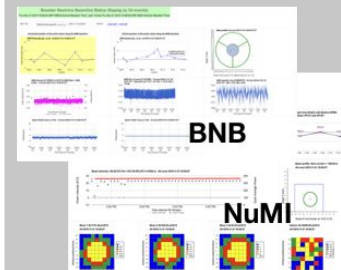
PENDING



ECL

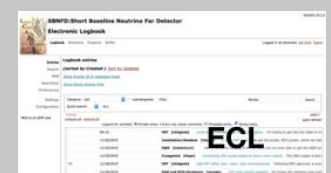


ECL



BNB

NuMI



ECL

More notes on GUIs/etc.

- Have gotten many things up and working. Will be getting new CR computers shortly, so will set things up again
- Testing NoVNC connected to evb-01, once vnc server set, only requires ssh tunnel & Internet browser
 - VNC is **flexible** option. Multiple users can be using or viewing the machines on-site from (essentially) anywhere
 - Some options to speed up, but if too slow for European collaborators, can explore more traditional VNC

More notes on GUIs/etc.

Zoom

It has become more and more necessary to keep live contact between ROC-West and FD building during testing.

Harry will try to set up the Zoom number this week.

Logo and info slides on other extra screen

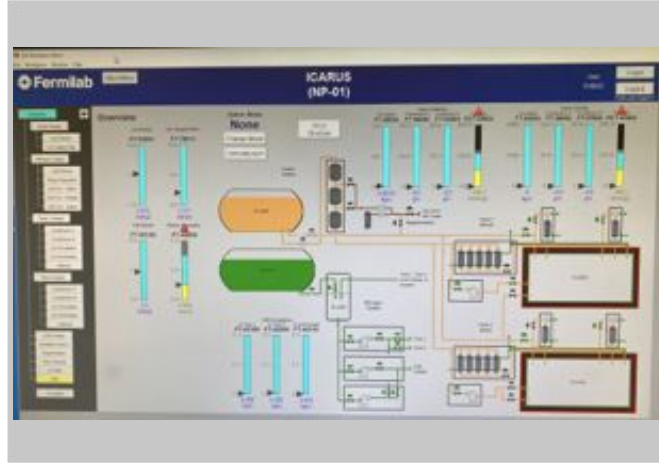
Contacted Bob W. a couple of weeks ago for help with this. Haven't received news.

FD live cameras

We have links. When in more stable state, will display as well.

Cryo/IFIX

ICARUS



NOvA's
control room

MicroBooNE



Cryogenics

Is good to have alternative options or complementing monitoring tools:

- **iFix**
- **EPICs**

Cryogenics

iFix Already up in ROC-West (behind main NOvA screens) but needed to test connection from remote sites.

We got granted access to the `ppd-ifix2.fnal.gov` and successfully connected (next slides)

We will require a list of users connecting from remote ROCs to add them to grant them access

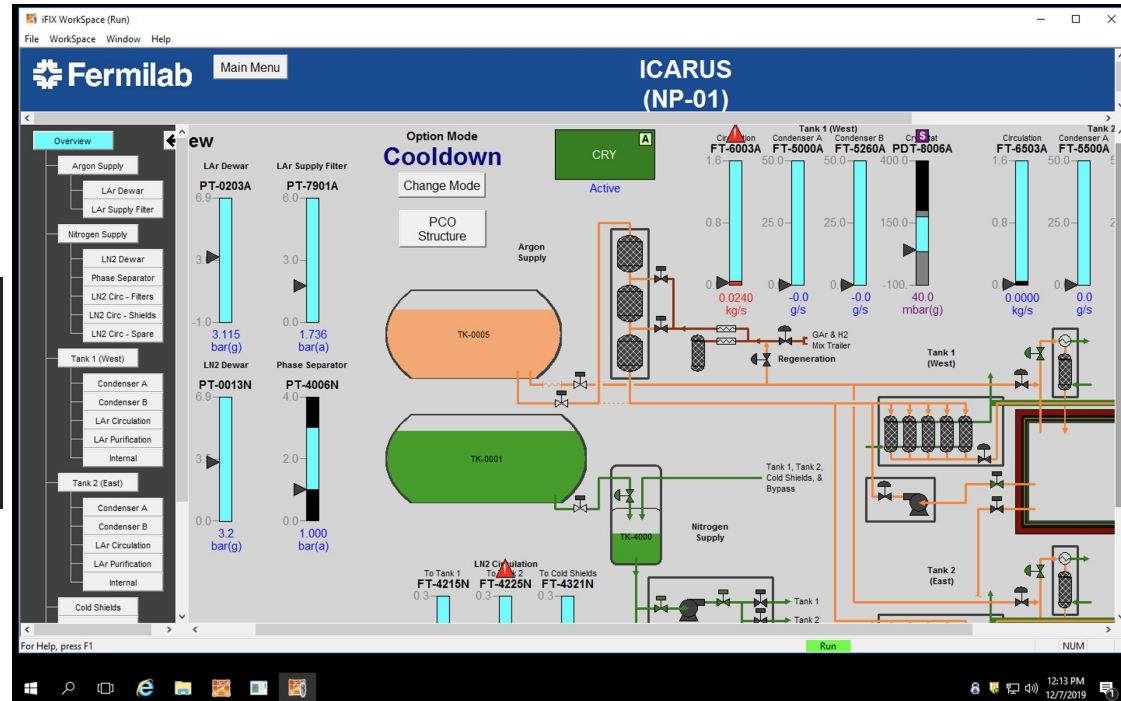
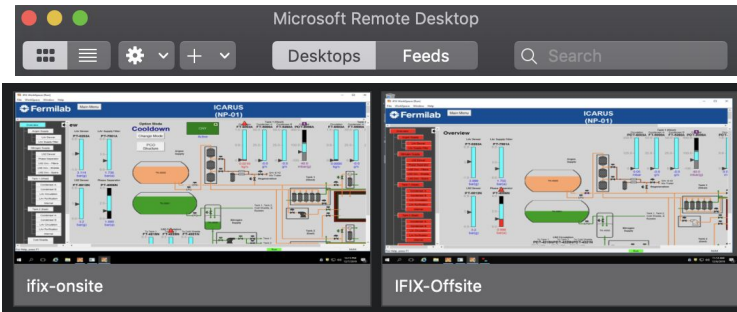
EPICS GUI might get installed this week in ROC-West

Molly developing -- will be talking w/ her this week (Thu?)

Cryogenics

iFix RDP connection

Connection to PPD-iFix servers



Moving forward

- List of shifters who will be at FNAL for shift is needed (kerberos principals added to CR machines k5 login files)
- As tools monitored grows this will take up more space. Slack as well.
- Streamline as much as possible, but may use the “extra” screens at least at first

Documentation

Wikis

— — —

We need info from sub-system experts about what they need shifters to check

Pointing us to documentation to populate wiki will be incredibly helpful

ICARUS [List of Acronyms](#)

ICARUS operations [Main page](#)

The screenshot shows the top navigation bar of the ICARUS Wiki with tabs for Overview, Activity, Issues, Spent time, Gantt, Calendar, News, Documents, Wiki (selected), Files, and Settings. Below the navigation bar, the page title is 'ICARUS List of acronyms'. A link to the main ICARUS wiki page is provided. The main content is a table of acronyms and their full names.

BNB	Booster Neutrino Beam
CRT	Cosmic Ray Tagger
DAQ	Data Acquisition
DCS	Detector Control System
DQ	Data Quality
DQM	Data Quality Monitoring
EVB	Event Builder
ICARUS	Imaging Cosmic And Rare Underground Signals
NuMI	Neutrinos at the Main Injector
OM	Online Monitoring
PMT	Photomultiplier Tube
SBN	Short Baseline Neutrino
TPC	Time Projection Chamber
VST	Vertical Slice Test

The screenshot shows the top navigation bar of the ICARUS Wiki with tabs for Overview, Activity, Issues, Spent time, Gantt, Calendar, News, Documents, Wiki (selected), and Files. Below the navigation bar, the page title is 'ICARUS operations'. The main content includes sections for Wiki, ICARUS Shifts, What to do while on shift, Main page for shifters, Shift bulletin board, Expert bulletin board, Expert Contact List, and SBN DAQ Documentation.

Wiki

ICARUS Shifts

[What to do while on shift](#)

Main page for shifters

[Shift bulletin board](#)

Page for revising currently running conditions. Check right before taking over the shift or in the very first minutes.

[Expert bulletin board](#)

Page with things to be aware of by experts.

[Expert Contact List](#)

List of experts and contact information

SBN DAQ Documentation

The following links are in constant update. Please make sure to check the most recent versions for troubleshooting.

Main page <https://cdcvs.fnal.gov/redmine/projects/sbndaq/wiki>

CRT Readout https://cdcvs.fnal.gov/redmine/projects/sbndaq/wiki/Running_CAEN_DT5702_readout_of_CRT

Useful Links

Electronic Logbook <http://dbweb6.fnal.gov:8080/ECL/sbnfd/E/index>
List of Acronyms <https://cdcvs.fnal.gov/redmine/projects/icarus/wiki/Acronyms>

Wikis

PRELIMINARY What to do while on shift

PRELIMINARY Shift bulletin board template

ICARUS - **ICARUS operations** Search:

+ Overview Activity Issues Spent time Gantt Calendar News Documents **Wiki** Files Settings

What to do while on shift

[New wiki page](#) [Edit](#) [Watch](#) [Lock](#) [Rename](#) [Delete](#) [History](#)

Before the start of your shift

1. Check that all screens are present and correct, and that there are no alarms. Click here to see what should be in each screen.
2. Talk to the outgoing shifter and find about any issues that occurred during the shift and anything else that you should be aware of during yours.
3. Read the current running conditions and ECL entries for the last 24 hours, even if you were on shift on the previous day. Running conditions can change daily.
4. Log in as yourself on any open ECL pages for speediness. This will save you time when filling the shift forms and reporting issues.
5. Call the main Fermilab control room (x3721) and let them know that the new ICARUS shifter has arrived and inform it of the control room you are shifting from. This is specially useful as people from the main control room might call you to inform about any work that might affect the beam status or the experiment's operations in general.

Throughout the shift

Below is a list of the ECL forms that you should fill out throughout your shift. It is your responsibility to fill out all these forms during every shift. There are also other forms that you should fill out in certain situations and others that will be filled by experts.

Main ECL forms to be filled out during every shift

When	Form	Category	Tag
Before the previous shifter leaves	Shift check-in	General	Control Room, General
Immediately after shift check-in	Start of shift	General	Control Room
Once every hour	IFIX Cryogenics	General	Control Room, Cryogenics
In the last hour of your shift	Shift summary	General	Control Room
After the new shifter has arrived and you have handed things over	Shift check-out	General	Control Room, General

Suggested schedule to fill out main ECL shift forms

Time into shift	Forms to complete
-0:15 - 0:00	Shift check-in
0:00 - 0:15	Start of shift

ICARUS - **ICARUS operations** Search:

+ Overview Activity Issues Spent time Gantt Calendar News Documents **Wiki** Files Settings

Shift bulletin board

[New wiki page](#) [Edit](#) [Watch](#) [Lock](#) [Rename](#) [Delete](#) [History](#)

Don't forget to read both the **TEMPORARY** and **PERMANENT** conditions

Colour guide for this page

[Current Running Conditions](#) [Temporary Conditions](#) [New and Permanent Conditions](#) [Attention](#)

General comments from the Run Coordinators

Run Coordinator	Until (Date)	Phone Number
Name Surname	January 1st, 8am	(xxx) xxx-xxx

Current Running Conditions

This current running condition item
Blablaba

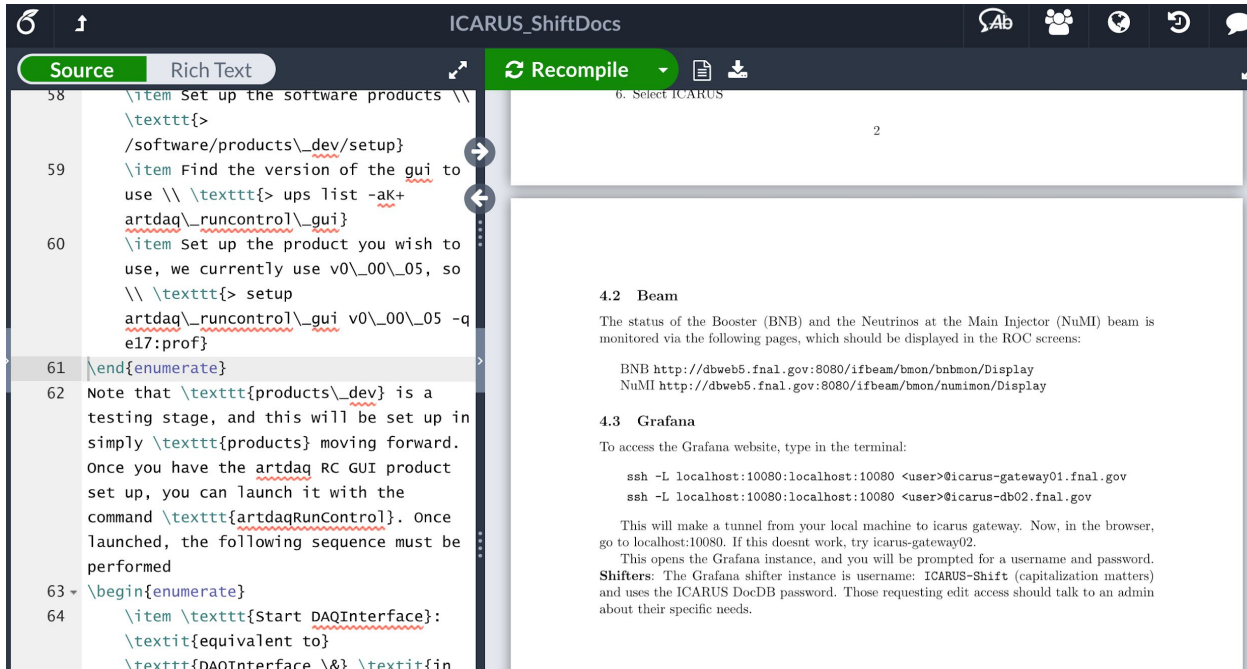
Temporary Conditions

This temporary condition item
Blablaba

New and Permanent Conditions

This new and permanent condition item
Blablaba

Control room master document



The screenshot shows a document editor interface for 'ICARUS_ShiftDocs'. The left pane displays source code with line numbers 58-64. The right pane shows the rendered HTML output. The source code includes instructions for setting up software products, finding GUI versions, and launching the artdaq GUI. The rendered HTML shows a section titled '4.2 Beam' with monitoring information and '4.3 Grafana' with terminal commands for setting up a tunnel.

```
58 \item Set up the software products \\  
\texttt{>  
/software/products\_dev/setup}  
59 \item Find the version of the gui to  
use \ \texttt{> ups list -ak+  
artdaq\_runcontrol\_gui}  
60 \item Set up the product you wish to  
use, we currently use v0\_00\_05, so  
\ \texttt{> setup  
artdaq\_runcontrol\_gui v0\_00\_05 -q  
e17:prof}  
61 \end{enumerate}  
62 Note that \texttt{products\_dev} is a  
testing stage, and this will be set up in  
simply \texttt{products} moving forward.  
Once you have the artdaq RC GUI product  
set up, you can launch it with the  
command \texttt{artdaqRunControl}. Once  
launched, the following sequence must be  
performed  
63 \begin{enumerate}  
64 \item \texttt{Start DAQInterface}:  
\textit{equivalent to}  
\texttt{DAQInterface \&} \textit{fin
```

What has to be where

- Run Control GUI
- Pages to monitor (beam, grafana)
- Tabs to keep open (ECL)

How to

- Set up ROC connection (NoVPN)
- Tunnel for Grafana
- Initiate run (manually or with Run Control GUI)

Likely serves purpose in full form & also parts will be split into pages/sections on wiki

Other items

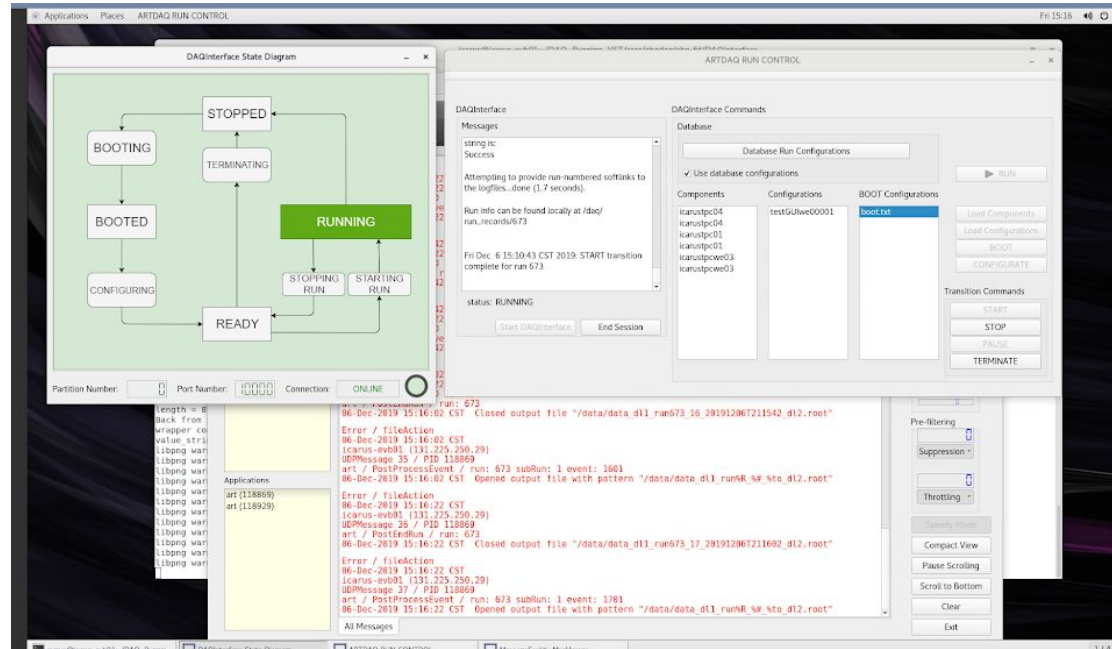
CUT FOR TIME: Some info about state of ECL and shift assignment algorithm which don't fit into this talk but are still useful. See backups

Run Control GUI

Using RC GUI v00_00_05 with config database.

Thanks to tinkering by **Gennadiy** in our area & work by **Iker, Esteban, et al.** in developing the GUI.

We **successfully read and wrote DB items, and took data.**



VNC to evb-01 machine

Remote Control Rooms

- Testing to date has been done at CSU - Matt H
 - Was able to connect to VPN using his own credentials
 - Connect to VNC session from CSU machines, interacted with terminal
 - As more VNC screens and more monitoring tools become available, will want to test more
- Bonnie (SLAM team) indicated that site-specific VPN accounts may be achievable (rather than individual user)
- Those who require iFix access should talk to us - we will have to pass names to Mark Knapp
- Plans for future ROCs?
 - Have reached out to Andrea - INFN Pavia

Conclusions/To Do

- Have run DAQ and several of the monitoring tools, ECL, etc. from the CR machines.
 - See earlier slides for full set of comments here
 - Will do more testing on monitoring tools when we have new computers
 - Will be discussing EPICS and implementation with Molly
- As things come together, more testing from off-site ROCs is necessary. Off-site ROC liaisons need to contact us.
- We need your help:
 - Once shifters are known, we need to know who is on-site
 - Need to know if certain off-site experts/shifters (and locations) need access to some things like iFix
 - We need to know sub-system on-call experts and their info
 - We need to know what needs to be monitored/how. -> **Documentation.**

Backup

The following are items where members have help with. However, they **don't** fall into the responsibilities of the group.

To document any work being done or being carried out at the FD and for shifter's activity, such as filling the different shift forms.

Tags available for easier browsing, such as **Installation**, **Vertical Slice Test**, **Caution**. Please use them (click **Add** and then **Update tags**). Contact us if you need another tag to be added to the list.

SBNFD: Short Baseline Neutrino Far Detector Version: 8.1.2

Electronic Logbook

Logbook Members Projects Shifts login

Entries **Logbook entries**
 (sorted by Created) [Sort by Updated](#)
 Search [Show Sticky Entries First](#)
 RSS

Who is on shift now

Category: (all) subcategories Words: Search
 Quick search: Run

< newer older >
 collapse all expand all auto-refresh

Legend for symbols: ● Private entry, I Entry has newer comment, Threaded entry, ★ Sticky entry.

10:02	Cryogenics [hope]	Status of vacuum pumpdowns	As of this morning, the following vacuums are reached (one pumpd:
09:29	Cryogenics [hope]	Status of the Regeneration System for Fil Filter	This morning, I completed verification of the mech
08:30	CRT [chilgenb]	north wall commissioning 11/19/2019	Today we worked at FD only for the afternoon, People present a
18:39	General [howard]	Control Room Run Info	Stopping run for night. To close out for the night I am stopping the ru
18:30	DQM [howard]	Monitoring	Monitoring stopped itself again. The DQM process stopped itself again. This time again it
17:59	Installation/CRT [tboone]	CRT Installation	CRT We did a noise scan of all FEBs for 120 seconds each at thresh
17:31	DQM [howard]	Monitoring	DQM process killed (somehow) We noticed the run was still going but the DQM process s
16:54	General [dmendez]	Control Room Cryogenics	ICARUS cryogenics IPiX ready in ROC-West Screen located behind
16:41	General [wketchum]	Control Room	First data taken from the ROC-W control room Running and monitoring!

ECL

<http://dbweb5.fnal.gov:8080/ECL/sbnfd/E/index>

As of version 1 of the shifter manual (Claudio Montanari), slide 5, I've created **three shifts per day**, from **Monday to Friday**. I have, however, readjusted the suggested schedules to assign **8 hours per shift**.

Each shift overlaps by 15 minutes with the next, to allow the incoming shifter to arrive, receive relevant information from the outgoing shifter and to take over.

SBNFD:Short Baseline Neutrino Far Detector
Shift Scheduler

Logbook Members Projects **Shifts**

Calendar
Schedule Intervals
Shift quotas
Shifts by Institution
Open shifts
My shifts
Who is on shift now

Shifts for December 2019
week view <November 2019 December 2019 January 2020>
 Week Day Week Swing Week Night
 Filter

Mon 25	Tue 26	Wed 27	Thu 28	Fri 29	Sat 30	Sun 01
Week Day Mon-Fri 07:45-16:15 Shifter (1.0)						
Week Swing Mon-Fri 15:45-00:15 Shifter (1.0)						
Week Night Mon-Fri 23:45-07:45 Shifter (1.0)						

ECL

<http://dbweb5.fnal.gov:8080/ECL/sbnfd/E/index>

- Some **forms** already exist for shifters to fill out during shift-taking, such as:
 - Shift check-in
 - Start Shift
 - Shift check-out
- Other possibilities:
 - Run Status
 - Beam status
- Sub-system experts will have to feed more information about what needs to be checked/how often/etc.

Shift assignment algorithm

A **NOvA** original from **Gary Feldman**, who granted use for **ICARUS** and **SBND**

- Logic generally understood but need to go through it in more detail.
- Tested code with files used for real life shift assignment
- Will need to know calendar, shifts per day, point system, institution quotas, priorities, etc to test usage with ICARUS specifics.

Other backups



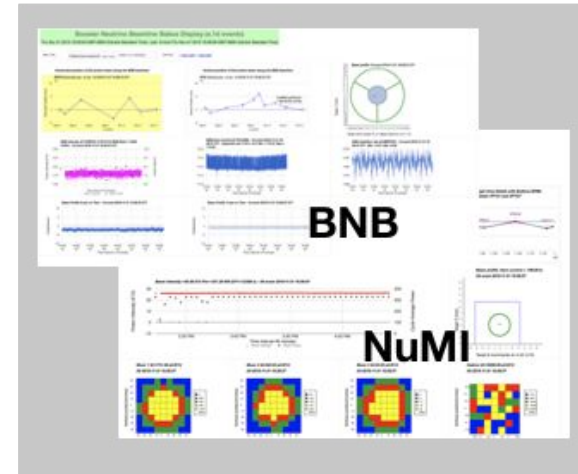
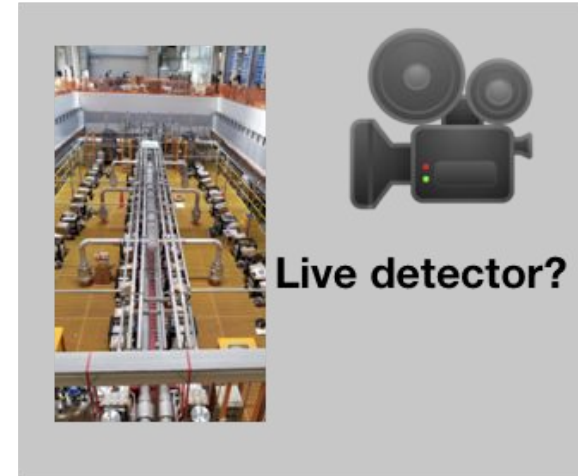
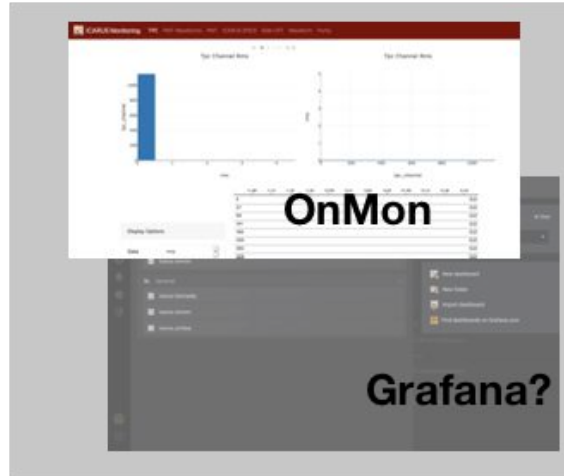
Future home of
DCS/Slow Control?

DAQ on evb-01

**ECL or
maybe grafana**

Time	User	Message
12/12/2014 10:00:00	admin	System started successfully.
12/12/2014 10:00:01	admin	Configuration loaded.
12/12/2014 10:00:02	admin	Database connection established.
12/12/2014 10:00:03	admin	Logging initialized.
12/12/2014 10:00:04	admin	Ready for operation.

CR-02: Monitoring



CR-03: More Monitoring?



Description
and slides

