

# The MINERvA Operations Report

## All Experimenters Meeting

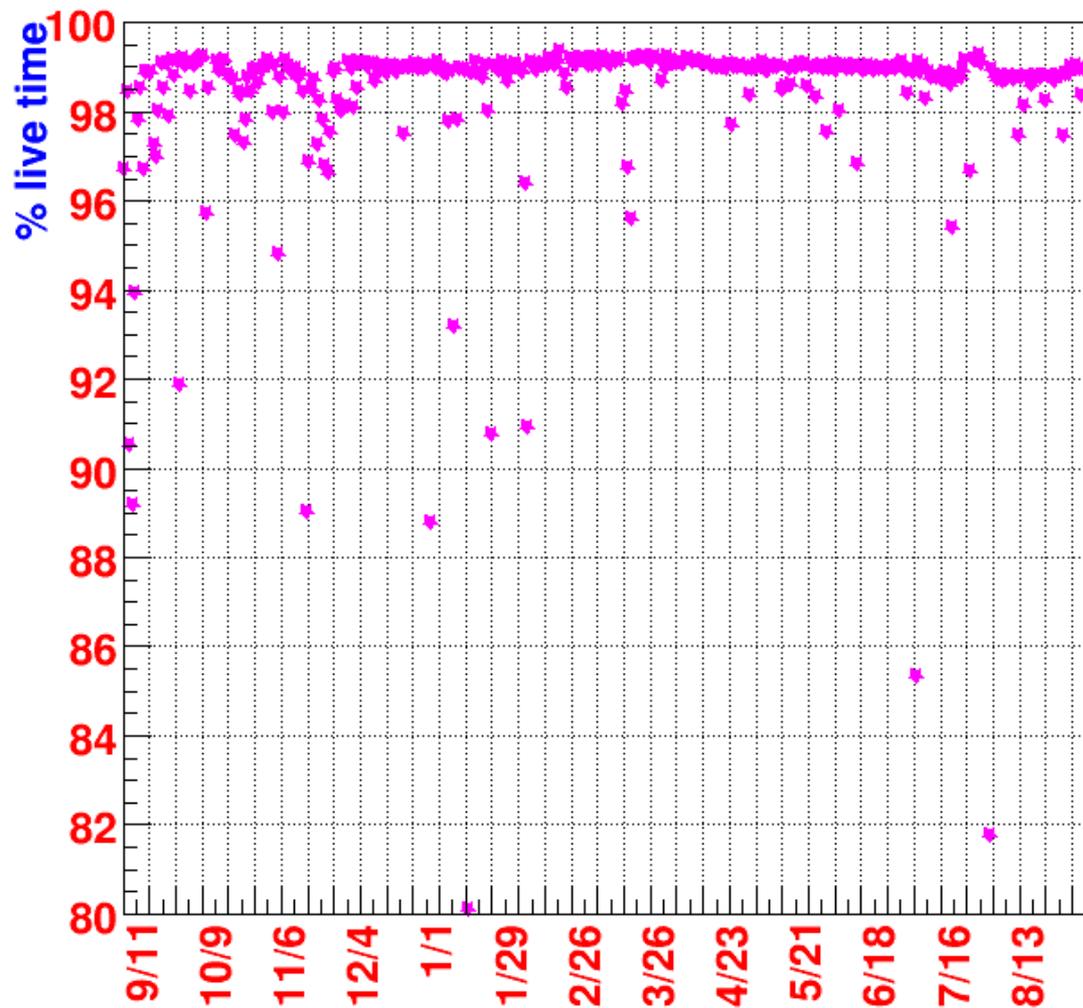
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Sep 22, 2014





# v Data

Sep 6 2013-Sep 5 2014



- Live times ME Run to shutdown
  - Plot does not include 1/1/2014, FEB failed
    - 35%
  - Does not include 4/4/2014, FEB failed & the roof had to be removed.
    - 49%
- 97.5% live time – ME Run
  - 18 days had live time < 96%
  - A low efficiency for 1 day almost always means just 1 thing went wrong



# Cause of Down Times > 4%



Date	POT sent	Live Time	Comment
9/8/2013	3.74E+17	90.53	?
9/9/2013	5.35E+17	89.17	?
9/10/2013	1.98E+17	93.96	?
9/27/2013	9.38E+17	91.9	RC problem
10/7/2013	8.97E+17	95.73	RC problem, shifter clicked refresh
11/3/2013	1.16E+18	94.8	? But "uptime" says we took data all day
11/14/2013	1.09E+18	89.05	FEB replaced, Hangs chain
12/31/2013	1.15E+18	88.81	FEB replaced, Hangs chain
1/1/2014	1.12E+18	35.1	Same event as above
1/9/2014	1.09E+18	93.19	2 FEB replaced, 1 HV = 400v, other no problem
1/14/2014	1.11E+18	80.1	Setup to fill helium target
1/23/2014	7.55E+17	90.78	FEB caused skipping subrun, not replaced
2/6/2014	8.86E+17	90.93	FEB replaced, Hangs chain
3/17/2014	1.03E+18	95.6	FEB replaced, HV problem
4/4/2014	9.60E+17	49.49	FEB replaced, hangs chain, roof removed
7/3/2014	1.06E+18	85.33	DAQ computer problem, computer replaced
7/17/2014	1.21E+18	95.4	RC problem, scripts rewritten
7/31/2014	4.60E+17	81.77	FEB replaced, Hangs chain



# Other FEB & PMT Replacements during ME run



Date	POT sent	Live Time	Comment
12/2/2013	9.03E+17	98.11	FEB replaced, HV spike
12/4/2013	1.93E+17	99.13	FEB replaced, bad lows
3/26/2014	1.93E+17	99.26	2 FEB replaced, PMT gain vary, FEB dead channel
7/24/2014	4.28E+17	96.66	FEB replaced, hot TriP
12/4/2013	1.93E+17	99.13	FEB replaced, bad lows, PMT replaced, HV spike
3/27/2014	9.24E+13	0	no beam, PMT Replaced, HV spike
9/11/2014	0.01	0	PMT replace, high sigma on HV & low period



# FEB Failures



- 14 total FEBs replaced during the ME run to now
  - a) 5 - Hangs the chain
  - b) 1 - Bad HV = 400 volts
  - c) 4 - Bad channels
  - d) 1 - Gain of PMT was varying
  - e) 2 - HV spikes (originally call HV Varying problem)
    - a) FEBs are probably OK as HV spike either in PMT or base, probably PMT
  - f) 1 Hangs the chain, but is almost certainly OK. This one was replaced when we were trying to fix the HV=400 FEB.
- (a) & (b) caused 0.5% loss of live time. If nothing goes wrong, the efficiency is roughly 99%. Therefore with a total live time of 97.5%, (a) & (b) account for about 33% of live time loss from hardware and software failures.



# PMT Box Replacements



- 3 PMTs replaced
  - No loss of data from these replacements.
  - 1 HV voltage has high sigma & low period
  - 2 HV spike problem ( originally called “HV varying problem”)
    - Note, that these PMT boxes had the HV problem in the LE run. There were pulled off and their base and cable were replaced. There were put back on the detector. They showed this HV spike again. Hence, the HV spike is almost certainly coming from the PMT



# PMT Box Replacement



- On Sep 10, we replaced the PMT box whose HV is slightly low, with high RMS, and high Cockcroft Walton frequency.
  - This required removal of only one roof panel out of the 3 panels
  - This is the 1<sup>st</sup> PMT which was not on the edge of the detector which a FNAL person replaced, in this case it was Steve Chappa.
    - Steve and Roberto prepared for the replacement with many practice sessions at a Lab G with a setup by Dan Ruggiero.
    - This PMT had was surrounded on 3 sides by PMT, so it was not one of the hardest one to replace.
    - Steve said if he had to replace a PMT surrounded on all sides by other PMTs he might have to remove more than 1 PMT. He was not looking forward to this.
- We have no other replacement on the detector planned



# Shutdown



- During the shutdown we are doing ~ 4 hour day shift, Monday – Friday, to ensure the detector stays operating. Should an element fail we will replace the element.
  - We are doing the MINOS Near Detector shift checklist.
- At the last AEM talk I presented the tasks we will do during the shutdown.
- Due to the ICW outage starting Sep 19, power outages on Sep 20 & Sep 22, we turned off the MINERvA detector on Sep 18. We will turn on the detector tomorrow, Sep 23.