

Operational Readiness Clearance

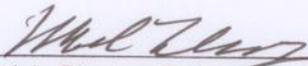
SeaQuest E906

30 Oct 2013

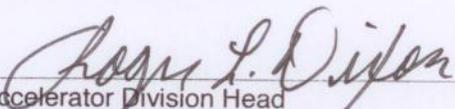
AUTHORIZATION TO RESUME THE REMOTE OPERATION OF E906 (SeaQuest)

REVIEWED AND APPROVED BY:

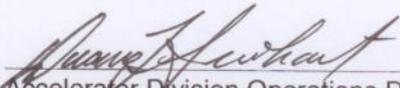
DATE

 10/11/2013

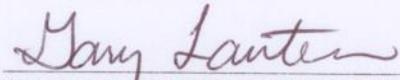
Particle Physics Division Head
Comments/Exceptions:

 10/31/13

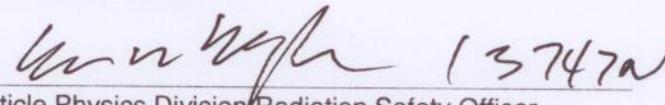
Accelerator Division Head
Comments/Exceptions:

 10/31/13

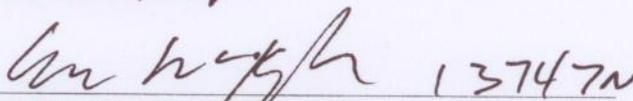
Accelerator Division Operations Department Head
Comments/Exceptions:

 31 Oct 13

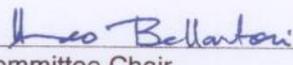
Accelerator Division Radiation Safety Officer
Comments/Exceptions:

 13747N 30 Oct 13

Particle Physics Division Radiation Safety Officer
Comments/Exceptions:

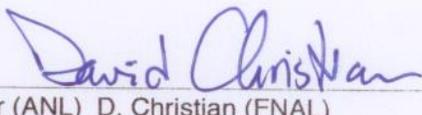
 13747N 30 Oct 13

Particle Physics Senior Safety Officer
Comments/Exceptions:

 30 Oct 2013

Committee Chair
Comments/Exceptions:

Submitted By:

 Nov 1, 2013

Requester P. Reimer (ANL) D. Christian (FNAL)

A signed paper form (copy) of this document will exist in the Particle Physics Division Office. The original signed document will stay with the experiment requesting clearance.

Tug T Arkan <arkan@fnal.gov>
To: Leo Bellantoni <leobellantoni@me.com>
Cc: Russell A Rucinski <rucinski@fnal.gov>
RE: Preliminary walk-through of SeaQuest

October 14, 2013 11:13 AM

Hi Leo,
I went through all three engineering notes. The notes are very thorough.
I do not have any questions and I recommend ORC to this experiment for the mechanical stand point of view. I cc'ed Russ to this reply for his comments.

Thanks,
Tug

From: Leo Bellantoni [leobellantoni@me.com]
Sent: Tuesday, October 08, 2013 10:33 AM
To: Karen M Kephart; Eric D McHugh; Robert J Bushek; Teri L Dykhuis; Walter F Jaskierny; Tug T Arkan; Russell A Rucinski; James L. Priest; Kathy J Graden; Steve J Chappa; Angela M Aparicio
Cc: Paul E Reimer; David C Christian
Subject: Re: Preliminary walk-through of SeaQuest

Hi folks,
Let us do this Wednesday at 9AM.
thanks,

Leo

Dr. Leo Bellantoni
(630)730-2155

On Oct 7, 2013, at 2:05 PM, Leo Bellantoni <leobellantoni@me.com> wrote:

Dear colleagues,

We have a request for a preliminary walk-through of E906, SeaQuest. Issues are:

Electrical

- 1) New transistorized PMT bases; these have already received some review
- 2) There is a new readout board for the Cherenkov counters in NM3; the board goes in the SeaQuest hall. It isn't clear to me that it is ready yet though.

Mechanical

- 1) Two engineering notes on 80/20 load tests ([note 753](#)) and the Prop Tube suspension ([note 849](#)) for station 4 have been OK'd by our engineering dept; we should take a look-see at the actual installation
- 2) We should also look at new "Station 3-minus" which has an approved note ([note 525](#)).
- 3) There is a new concrete wall downstream of the FMag.

Russell A Rucinski <rucinski@fnal.gov> 
To: Leo Bellantoni <bellanto@fnal.gov>
Cc: Tug T Arkan <arkan@fnal.gov>
SeaQuest installation - mechanical

October 28, 2013 3:08 PM

Hi Dr. Leo,

I participated in a final walk through of SeaQuest today, October 28th at 2:30 pm. Walking through, I did not observe anything that concerned me. The arrangement of the detector was the same as the last walk through a few weeks ago on which both myself and Tug Arkan participated. I offer my recommendation that SeaQuest be approved for operations from the standpoint of a mechanical safety review.

Regards,

Russ Rucinski

James L. Priest <priest@fnal.gov>
To: Leo Bellantoni <bellanto@fnal.gov>
Cc: Eric D McHugh <emchugh@fnal.gov>
Re: Final walkthrough for SeaQuest

October 25, 2013 10:27 AM

Leo, Paul and I are meeting at 7 am Tues. He has already confirmed that my open items were addressed in previous emails and my conversation with Paul today. I had already taken a look at the wiring when at SeaQuest for a building issue with the fire techs. Angela Sands has entered into iTack the items that concerned the building and those have been addressed. My items are well documented as closed. Tues 730am - Monday Nov 4th I will be gone again.

Jim

On Oct 25, 2013, at 9:38 AM, Leo Bellantoni <bellanto@fnal.gov> wrote:

That is a needs-fix issue; this is an inspection that really needs you're OK.

Please arrange with Paul to find some time that you can do your own walkthrough.

Leo

Dr. Leo Bellantoni
(630)730-2155
MS 357, Fermilab Batavia, IL 60510

On Oct 24, 2013, at 11:36 PM, James L. Priest <priest@fnal.gov> wrote:

Will be out of town that week

Dr. James Priest PhD / MS119
Fire Strategist / Researcher
ESH&Q Section
Fermi National Accelerator Lab
Office of Science/U.S. Department of Energy
Managed by Fermi Research Alliance
PO Box 500
Batavia IL 60510
Tel. 630-840-4283
Cell. 312-636-6259
Fax. 630-840-3390

James L. Priest <priest@fnal.gov>

October 29, 2013 7:04 AM

To: Leo Bellantoni <leobellantoni@me.com>

Cc: Russell A Rucinski <rucinski@fnal.gov>, Karen M Kephart <karenk@fnal.gov>, Walter F Jaskierny <waltj@fnal.gov>, Kathy J Graden <graden@fnal.gov>, David Mertz <mertz@fnal.gov>, Robert J Bushek <bushek@fnal.gov>, Eric D McHugh <emchugh@fnal.gov>, Steve J Chappa <chappa@fnal.gov>, Tug T Arkan <arkan@fnal.gov>, Teri L Dykhuis <dykhuis@fnal.gov>, Angela M Aparicio <asands@fnal.gov>

Re: SeaQuest Safety Walk Through

Leo I reviewed my items of concern with the ORC. They have all been completed. I recommend operation.
Priest

Dr. James Priest PhD / MS119
Fire Strategist /Researcher
ESHQ Section
Fermi National Accelerator Lab
Office of Science/U.S. DOE
Managed by Fermi Research Alliance
PO Box 500
Batavia IL 60510
Tel. 630-840-4283
Cell. 312-636-6259
Fax. 630-840-3390

On Oct 21, 2013, at 11:58 AM, "Leo Bellantoni" <leobellantoni@me.com> wrote:

Dear ORC members

Here is a status update re. SeaQuest which Paul sent to me a while ago, when I was much busier than I am now :)
Take a look, send Paul & I a correction if anything is wrong; we will use this as an (non-encompassing) checklist when we come to our final walkthrough.

Leo

Dr. Leo Bellantoni
(630)730-2155

Begin forwarded message:

From: "Paul E. Reimer" <reimer@anl.gov>
Subject: SeaQuest Safety Walk Through
Date: October 15, 2013 10:26:05 AM CDT
To: Leo Bellantoni <leobellantoni@me.com>, ICE Paul Edwin Reimer <reimer@anl.gov>
Reply-To: reimer@anl.gov

Hello Leo,

Below is my compilation of the issues noted at the Safety Walk Through at SeaQuest. Could you forward them to the walk through participants so that I'm sure I have all of their comments?

Angela M Aparicio <asands@fnal.gov> 
To: Leo Bellantoni
RE: Status of ORC

October 29, 2013 3:45 PM

Hi Leo,

My only concern/request was that Paul send me monthly Greenhouse Gas usage numbers.

Angela

From: Leo Bellantoni [mailto:leobellantoni@me.com]
Sent: Tuesday, October 29, 2013 3:38 PM
To: Paul E Reimer
Cc: Karen M Kephart; Angela M Aparicio; Eric D McHugh
Subject: Re: Status of ORC

Hi Paul,

That is the list of what I have heard at the walk-through.
It is also a list of what I have in email from all of the walkthrough participants
Except for Karen and Angela; well, Eric too; these three have not emailed me.

Leo

Dr. Leo Bellantoni
(630)730-2155

On Oct 29, 2013, at 3:12 PM, Paul E. Reimer <reimer@anl.gov> wrote:

Hi Leo,

I'm sort of looking for an action list. I have

- must do--HV shielding on chamber
- should do--better grounding on chamber
- should do--better grounding on cable trays.

Paul

--

Paul E. Reimer	+1-630-252-4037 (Argonne Office)
Physics Division Bldg 203	+1-630-252-3903 (Argonne Fax)
9700 S. Cass Ave.	+1-630-840-5709 (Fermilab)
Argonne, IL 60439	+1-630-344-9207 (Cell)

Karen M Kephart <karenk@fnal.gov> 
To: Leo Bellantoni <leobellantoni@me.com>, Paul E Reimer <reimer@anl.gov>
Cc: Angela M Aparicio <asands@fnal.gov>, Eric D McHugh <emchugh@fnal.gov>
RE: Status of ORC

October 29, 2013 3:39 PM

I have no objections to granting the ORC once Chamber shielding specified by Steve is completed.

K.

Karen M Kephart
Fermi National Accelerator Laboratory
Particle Physics Division
Assistant Head for Technical Support
630-840-6625
630-485-0587
karenk@fnal.gov

From: Leo Bellantoni [mailto:leobellantoni@me.com]
Sent: Tuesday, October 29, 2013 3:38 PM
To: Paul E Reimer
Cc: Karen M Kephart; Angela M Aparicio; Eric D McHugh
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Dr. Leo Bellantoni
(630)730-2155

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- should do--better grounding on cable trays.

Paul

Steve J Chappa <chappa@fnal.gov>

To: Leo Bellantoni <bellanto@fnal.gov>

October 28, 2013 6:11 PM

Cc: Paul E Reimer <reimer@fnal.gov>, David Mertz <mertz@fnal.gov>, Karen M Kephart <karenk@fnal.gov>, Walter F Jaskierny <waltj@fnal.gov>, Kathy J Graden <graden@fnal.gov>, Robert J Bushek <bushek@fnal.gov>, Eric D McHugh <emchugh@fnal.gov>, Teri L Dykhuis <dykhuis@fnal.gov>, Angela M Aparicio <asands@fnal.gov>, Kazutaka Nakahara <nakahara@UMD.EDU>

RE: SeaQuest Safety Walkthrough issues:

Hi Dr. Leo,

During the ORC walkthrough review at the KTeV hall (NM4) at 1:30 this afternoon, I found:

The items from the previous review, which was conducted October 9th, are labeled items 1-7. With the exception of the listed item 6 (HV protective cover), the other items have been satisfactorily addressed.

- 1) The Beam Intensity Readout NIM module was reviewed. The incoming DC power from the NIM power connector is fused and the wires are of sufficient size. There is no off-board power (unprotected) being used. Module OK for use.
- 2) The floor cable trays used to route and channel the HV and signal RG58 cables, laying under the detector frames, are not connected to building ground. While bonding these cable trays to building ground is not required in this particular situation, it is good practice to ground all cable trays. Therefore, it is **recommended** that these cable trays be connected to building ground.
- 3) The cover plate, which was installed as a requirement from the previous review (item 6), still leaves the small HV wires at the bottom of the frame unprotected. These wires are accessible and are exposed to potential damage. Therefore, **require** an additional cover plate, notched out for the gas fittings, to extend the plate's protection to these HV wires at the bottom of the detector frame. Also, require that a HV warning label be placed on this cover plate (Done during the review.)
- 4) While the dedicated grounding (to building ground) of the detector frames was decided not to be done due to operational concerns, it has been my experience that the best noise performance is achieved when there is either dedicated grounding of all metal or dedicated isolation between metal sections. Intermittent metal-to-metal connections between grounded and ungrounded pieces of metal tend to allow noise to appear and are most difficult to troubleshoot. However, the operational concerns of HV return ground loops are noted and thus the detector frames' grounding is only **recommended**.

Once the cover plate for those HV wires is installed, a picture of its installation would be required. Once received, the recommendation of the issuance of the ORC will be forwarded.

Regards,
Steve

From: Leo Bellantoni

Sent: Monday, October 28, 2013 12:24 PM

To: Karen M Kephart; Walter F Jaskierny; Kathy J Graden; Robert J Bushek; Eric D McHugh; Steve J Chappa; Teri L Dykhuis; Angela M Aparicio; Kazutaka Nakahara

Subject: Re: SeaQuest Safety Walkthrough issues:

Just a reminder 1:30 today

Leo

Dr. Leo Bellantoni (630)730-2155
MS 357, Fermilab Batavia, IL 60510

On Oct 25, 2013, at 3:07 PM, bellanto <bellanto@fnal.gov> wrote:

Dear All,

Let us do our walk-through on Monday, 28 Oct at 1:30PM at the SeaQuest Hall. We don't have quite a complete quorum, but that is our best option. We will have to have some committee members examine things asynchronously.

Leo

Dr. Leo Bellantoni (630)730-2155
MS 357, Fermilab Batavia, IL 60510

Begin forwarded message:

From: pereimer <reimer@anl.gov>

Subject: SeaQuest Safety Walkthrough issues:

Date: October 24, 2013 3:10:06 PM CDT

To: <emchugh@fnal.gov>, <bellanto@fnal.gov>

Cc: <reimer@anl.gov>

Reply-To: pereimer <reimer@anl.gov>

Items 1-7 from Steve Chappa, 8 from Leo Bellantoni, 9-11 Jim Priest, 12-17 from Kaz Nakahara's list

1. Done. A HV power supply with cables plugged in but not connected on the load side, was left ON. This rack does not appear to part of the installation for ORC operation but is a rack to supply Hv for testing purposes. The power supply was turned OFF
2. Done. There is an Ethernet controlled AC power strip that is plugged into the rack's rear power strip. Several racks have similar situations. Since this rack power strip is hard-wired into a junction box

and each rack is on a dedicated circuit. Thus, the outlets on this strip is considered, in this case, to be the point of outlet (for AC distribution). *Therefore, the use of the Ethernet controlled power strip being plugged into the rack's power strip is not considered to violate the rule against daisy-chaining AC power strips. However, these AC power strips should be placed off of the floor and definitely not buried within cable bundles.*

3. **Done.** The cabling and gas tubing in and around the refrigeration pump cart, needs to be separated and not supported by the AC conduit. Gas tubing should not be intermingled with power cords and low-level control signal cables. In fact, these separate groups of tube and cable runs should be separated and individually supported. All cables and tubing in this area must be detached from the conduit that is used to support these runs.
4. **Done.** A loose-hanging chain should be removed from the north face of the magnet. Done.
5. **Done.** General house-keeping needs to be kept up in and around some racks. Examples: loose NIM modules sitting on a scope, loose connectors and adapters resting on top of crates, scissors left laying in a floor-level cable tray, unused extension cord left plugged in, etc.
6. **Done.** There appears to be a new HV distribution box on the lower area of the new detector panels. The outputs from this box looks to be HV being distributed on unshielded wires that are not protected and the insulation of these wires looks to be soft neoprene or rubber (voltage rating?). At a minimum, this area, since it is at hand level, needs to be covered with a grounded metal plate to protect these wires and limit their exposure. There is a similar HV box near the top of the detector panel. This likewise, should be covered.
7. **An internal SeaQuest discussion decided that, this is not necessary for noise reduction. Unless this is seen as a safety issue, we will not add the braid.** The hanging detector panels' metal framing structure looks to be grounded to building beams by only incidental contact with metal beams and rollers. For operation (noise and HV grounding) these detector frames should be grounded to the building metal using a dedicated grounding connection, preferably using a wide braid.
8. **Done.** Also, the "Crimp connection" Cu tubing on the LN2 Dewar near the target.
9. **Done.** The small gas bottles should be in a crate or if ties are used UV type. The white ties will not make it though the winter.
10. **Done.** The main gas rack has a unsecured small bottle near the gas shed.
11. **Done.** The flammable 3 gas crash buttons need to be covered as they are not functional. Two are by exit stairs and one outside gas shed.
12. **Done.** Gas shed: label H2/D2 pipes in the gas shed with a flammable gas label
13. **Done.** Gas shed: Get rid of the barbecue items (charcoal, etc). Put it in a metal garbage can, and move it out of the entrance hallway.
14. **Done.** Server Room: Need better walkway access
15. **Done.** Server Room: UPS labels are needed for the yellow racks with the UPS
16. **In progress.** Counting Room: need cones over holes in the floor.
17. **Done.** Counting Room: coax/lemo cables hanging above across the racks should be higher to avoid getting people caught

Angela Sand's list

PER Comments	Item ID	Item Title	Status	Item Description
#12 Done	86818	Flammable gas lines in gas shed need labels	CLOSED 10/15/2013	Flammable gas lines within gas shed not currently labeled
#13 Done	86819	Charcoal, lighter fluid and matches storage	CLOSED 10/16/2013	Charcoal, lighter fluid and matches were stored in the exit vestibule. Need to be moved into a flammable liquids cabinet or other suitable storage location.

#15 Done	86820	Electronics racks containing UPS not labeled	CLOSED 10/22/2013	Electronics racks containing UPS need to be labeled so fire department personnel can see there are UPS within the racks
#14 Done	86821	Racks next to counting house have restricted access	CLOSED 10/15/2013	There are chairs in the aisle to the electronics racks that are impeding access. Clear aisle.
#16	86822	Floor openings in the counting room not barricaded	OPEN	Floor openings in the counting room were left open, should be barricaded (or use cones) to warn others of the floor openings.
Done	86823	Mechanical room doors were propped open	CLOSED 10/09/2013	The mechanical room doors had been propped open.
Done	86824	No emergency lights in restrooms, which are designated as emergency shelters	OPEN	The restrooms are currently listed as emergency shelters for the building, but do not have any emergency lighting. Need to add emergency lighting if the restrooms are to remain designated as emergency shelters
Done	86825	Light burnt out in men's restroom	OPEN	A light is burnt out in the men's restroom.
#9, 10 Done	86826	Gas cylinders secured to outdoor gas rack using zip ties	CLOSED 10/16/2013	There are some small gas cylinders that have been secured to the flammable gas rack using zip ties. The ties will not withstand UV exposure for long. A more appropriate method should be found to secure these cylinders.
Done	86827	Emergency light in west exit stairwell not working	OPEN	
#11 Done	86828	Emergency gas shut off buttons not currently functional	OPEN	The emergency gas shut off buttons (two in experimental hall, one outside gas shed) are not currently functional with this gas system. Cover the buttons to reduce confusion.

Sent from Evernote

Eric D McHugh <emchugh@fnal.gov> 
To: Leo Bellantoni
RE: Status of ORC

October 30, 2013 8:24 AM

Hello Leo

I have corrected the issues that we were concerned with. I recommend operations.

Eric McHugh
PPD/SSO
x3199 or 708-514-4603

Nothing is so important that it cannot be done safely.

From: Leo Bellantoni [mailto:leobellantoni@me.com]
Sent: Tuesday, October 29, 2013 3:38 PM
To: Paul E Reimer
Cc: Karen M Kephart; Angela M Aparicio; Eric D McHugh
Subject: Re: Status of ORC

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Paul

--

Charles N Brown <chuckb@fnal.gov>
To: Leo Bellantoni <bellanto@fnal.gov>, Steve J Chappa <chappa@fnal.gov>
FW: Pictures of completed safety work

October 30, 2013 12:39 PM

2 Attachments, 341 KB

Paul asked me to forward the enclosed pictures to you.

Chuck Brown, 630-840-5708/3202, <http://home.fnal.gov/~chuckb/>

From: Charles N Brown
Sent: Wednesday, October 30, 2013 11:38 AM
To: reimer@anl.gov
Cc: Robert K Barger; Nakahara Kaz
Subject: Pictures of completed safety work

Paul,
Bob Barger grounded the Station 4 cable trays on the floor.
He also extended the HV connection cover on the Station 3 minus chamber.
See Pictures.

Chuck Brown, 630-840-5708/3202, <http://home.fnal.gov/~chuckb/>



