

# Getting started with Operational Readiness Clearances for FTBF Users

Experiments in the Particle Physics Division of Fermilab require ES&H review to help ensure that all appropriate standards and requirements are met. The Operational Readiness Clearance (ORC) review process performs this review and grants final operational authority with an ORC or, as appropriate, partial ORC. Tests and R&D efforts may require ES&H reviews and ORC prior to start-up. The controlling document is [PPD ESH 006](#). Extensive information may be found in the Fermilab ES&H Manuals (“Fesh-em” in popular parlance) which may be found on the web like so: FNAL Homepage > For Physicists > Fermilab at Work > Divisions, Sections and Centers > ES&H > FESHM. The direct link is <http://esh.fnal.gov/xms/FESHM>.

In <http://home.fnal.gov/~bellanto/work/ORC> are several documents entitled “Helpful Hints About...” which informally discuss some of the more common issues that occur. These were written by various members of the ORC committee. Links to all of these documents are also on the FTBF website.

In the case of a relatively small apparatus that has neither cryogenics nor pressure vessels, you initiate the ORC process by sending an email to [bellanto@fnal.gov](mailto:bellanto@fnal.gov). You need to include the following information:

1. Name and contact information for the representative who will be on hand for your experiment / facility / apparatus.
2. Where is the apparatus to be reviewed. We need to know two things. We need to know if the apparatus will be in a beamline, and we need to know where to find it so that we can look at it.
3. When it will be ready for inspection. We really do need to look at the apparatus in situ.
4. What is to be reviewed, e.g. “A wire chamber, 2 CAMAC crates and a tokamak”. A little history might be useful but is not the central thing, except possibly in regards to what parts of the apparatus may have been reviewed earlier and at what date.
5. What type of hazards might exist. In the case where an MOU exists, this is simply Appendix I – Hazard Identification Checklist. You don’t need to send the form per-se; what is critical is the information that would belong on it.

Please try to do this as early as you can – scheduling the walkthrough involves getting a number of people together and that is always harder at the last moment. The apparatus needs to be fully installed for the walkthrough, so in the scheduling process, the experimenter should not only consider when he is available, but also when the experiment itself will be ready.

**NEW PROCEDURE!** At least 2 weeks before your walkthrough date, please send us electrical schematics, as follows:

a) Simplified (block) electrical diagram of entire installation, including commercial components, with special emphasis on power handling issues. These must be of sufficient detail that reviewers can verify that you have observed good systems engineering practices and have used proper fusing, wire sizes and insulation, termination etc.

b) Line diagrams of custom manufactured circuitry or modifications of commercial components of similar detail.

**HELPFUL HINT:** Many test run apparatuses are relatively small and are placed on the movable table in the enclosure. In this case, you need to make sure that the table is grounded and that its motion stops are in place. FBTF staff are quite familiar with these 2 simple steps.

The walk through is conducted with the experimental representative, but depending on the situation it may be helpful to have (a) other experimenters and (b) a digital camera. The former is so that minor issues that arise can be addressed immediately without delaying the process. The latter is valuable in the case where an experiment plans to run, cease data taking for more than 30 days, and then return to take more data. More on that below. The photos are intended to provide a careful check that the apparatus is indeed unchanged; if we know that the apparatus is unchanged the process is simplified.

Larger experiments, or apparatus containing pressure vessels and cryogenics are handled in different ways according to what issues there might be. Again, [PPD ESH 006](#) is the controlling document. Pressure vessels have a detailed protocol, described in FESHM 5031; here and with other mechanical structures that merit engineering notes, the ORC committee will verify that they have been appropriately reviewed prior to the walk through & sign-off. On the electrical side, some information about what we look for is, again, available in

<http://home.fnal.gov/~bellanto/work/ORC>; look at “Helpful Hints About Electrical Issues”. We will look in particular at the power and current used, protections for any potential overcurrent, personnel hazards (i.e. shock) and mechanical hazards (tripping, tight spaces, etc.).

After the walk through (and any appropriate remediations are in place), you will have to get a sequence of sign-offs. The last signatory is the Particle Physics Division Head. Leave a copy of the signed-off sheet with the administrative staff there and please also send a copy to me via inter-office mail.

Regarding experiments that have not run for more than 30 days, PPD\_ESH\_006 reads:

Experiments that have been previously approved but have been idle for greater than 30 days must contact the ES&H Review Coordinator to determine whether another review is needed. The experiment will verify, in writing, the end date of the previous run and that the experiment has not changed. The ES&H Review Coordinator will then inform all ORC signatories of the approval to run or any recommendations determined necessary to resume the experiment. In any case, a renewal ORC will be generated.

The key thing here is that phrase "the experiment has not changed". If for example, your experiment has not changed in the sense that all you want is maybe a little bit more calibration data, but has changed in the sense that some power supply had to be replaced for some reason, then you do NOT have an unchanged experiment. Because while you, as an experimenter, might be concerned about the calibration of your dataset, it is the power supply that might catch fire!

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