



# Fermilab Shift Protocols and Checklist Shifts

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In partnership with:



## Background

- Shifts run by Fermilab accelerator-based experiments are governed by the Fermilab Shift Protocol
  - <https://web.fnal.gov/organization/programplanning/Shared%20Documents/Experiment%20Protocols.pdf>
  - Current version effective from 8 December 2016.
- Specifies protocols, guidelines, and approval procedures for
  - Communication regarding Experiment Downtimes.
  - Remote Shifts - shifts from Remote Operations Centers (ROCs) equivalent to ROCs at Fermilab.
    - “There must be no ESH function provided by on-site shifters that would be compromised”
  - Checklist Shifts - non-interactive shifts that can be run from office or home, for well-established experiments that are ***not Primary users of a beamline.***
    - Defines requirements for initial and ongoing approval from CRO, based on demonstration of minimal impact on data-taking, data quality, and timely communications with AD.
- Due to Covid-19 pandemic, NOvA and other Primary user experiments have lost access to virtually all ROCs.
  - **Without a change to the Protocol, it may be impossible for experiments to take beam.**

## Proposed Updated Protocol

- Defines Qualifying Contingency.
  - Widespread disruption to access to ROCs, preventing normal shift operations.
- To qualify for Checklist shifts, Experiment must submit an Application to CRO
  - Demonstrates that experiment meets preconditions for safe remote operations.
  - Demonstrates need for checklist shifts on the basis of a Qualifying Contingency (Primary users only).
  - Demonstrates that the experiment meets existing requirements of minimal incremental impact.
    - Less than 5% additional downtime due to checklist shift
    - No incidents of delayed reporting of downtimes more than 2 hours (beyond 30 minute window).
  - Documents experiment's procedures & protocols for running checklist shifts, including communication.
- Draft update shared with spokes of current and future running experiments, AD, PPD, ND Division Heads, OCRO.

## Feedback

- g-2 intends to keep a shifter on-site, so checklist shifts are likely not applicable for foreseeable future.
- ICARUS' experience with commissioning has taken place within the pandemic, and will operations will begin during the pandemic.
  - Discussion on plan to move to checklist shifts as part of ORR?
- Communications
  - Protocol: Checklist shifters must be reachable by phone, and provide number to MCR at start of shift.
  - NOvA has provided 20+ ROC numbers, but with checklist shifts we will have up to 12 new numbers per week.
    - Call forwarding solutions such as Google Voice are not without risk, paid solutions not straightforward.
  - Can non-telephone channels be allowed, provided Run Coordinators serve as back-up via telephone?
    - E.g., Zoom, Slack?

# NOvA and Checklist Shifts

- NOvA has been taking non-beam data in Checklist shifts since start of pandemic restrictions.
  - No data loss attributable to checklist shifts.
  - We achieve this with
    - improved automatic notification of experts,
    - frequent updates of web-based, non-interactive shifter interface,
    - requirement that shifters continuously monitor the experiment.

