

Review Office

Steve Kettell, Sam Zeller, Philippe Farthouat, Mary Bishai
DUNE Remote Collaboration Meeting
21 September 2020

What is the Review Office

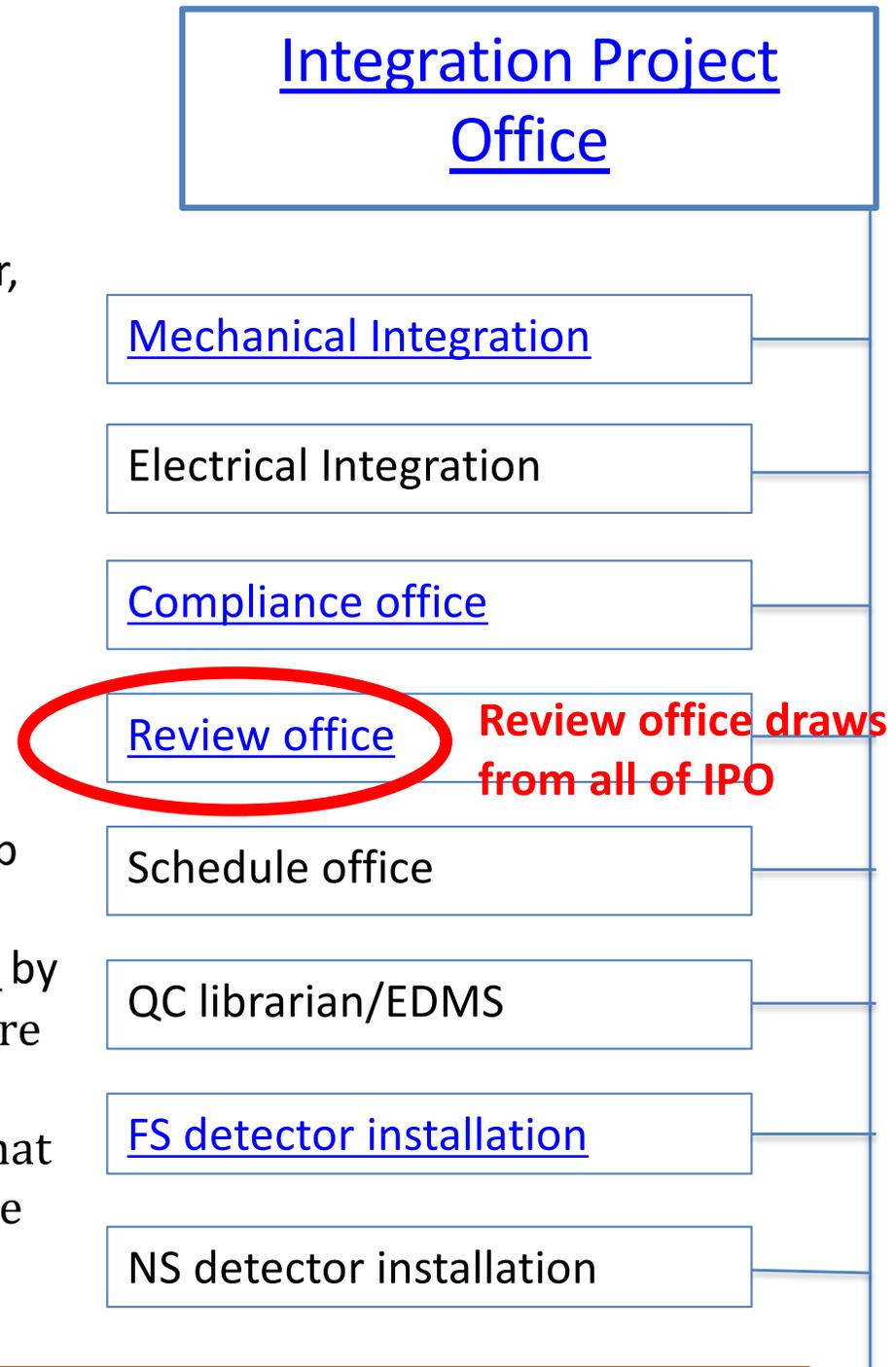
<https://edms.cern.ch/document/2173197>

The Review Office is part of the Integration Project Office and reports to the Project Integration Director, Technical Coordinator and LBNF Project manager.

Reviews organized by the Review Office

- Final Design Review (FDR)
 - Production Readiness Review (PPR)
 - Installation Readiness Review (IRR)
 - Operations Readiness Review (ORR)
- + progress reviews

The Review Office works with the DUNE TC, LBNF subsystem managers and DUNE Consortia leadership teams to organize reviews and followup to those reviews... FDR recommendations must be signed off by the Review Office before proceeding to a PRR. Before significant funds can be obligated for production purchases, the DUNE TC or LBNF PM will verify that PPR recommendations have been signed off by the Review Office.



Who is the Review Office

The Review Office members consist of

- Steve Kettell
- Sam Zeller
- Philippe Farthouat
- Mary Bishai

We rely heavily on and coordinate closely with the entire integration team:

- Systems Engineering
- Compliance Office (CO)
- Quality Assurance
- ES&H
- Coordinate closely with CO on mechanical and electrical safety ([EDMS CERN-0000204072](https://cds.cern.ch/record/2714447/files/EDMS_CERN-0000204072))
- Draw on scientific and technical personnel within and from outside the collaboration

- Work closely with consortia and LBNF subsystems managers.
- We have accomplished quite a few reviews for ProtoDUNE and several Preliminary Design Reviews for LBNF and DUNE.
- We have held the first FDRs this year and expect several in early 2021.

- Our mandate is for full system FDR, PRR, IRR and ORR; but we also help organize other reviews — we have been helping organize many PDRs for example

Compliance Office

The [Compliance Office](#) (CO) members consist of

- Olga Beltramello
- Giuseppe Gallo
- Terri Shaw
- Jean-Louis Grenard
- Mariana Zimbru

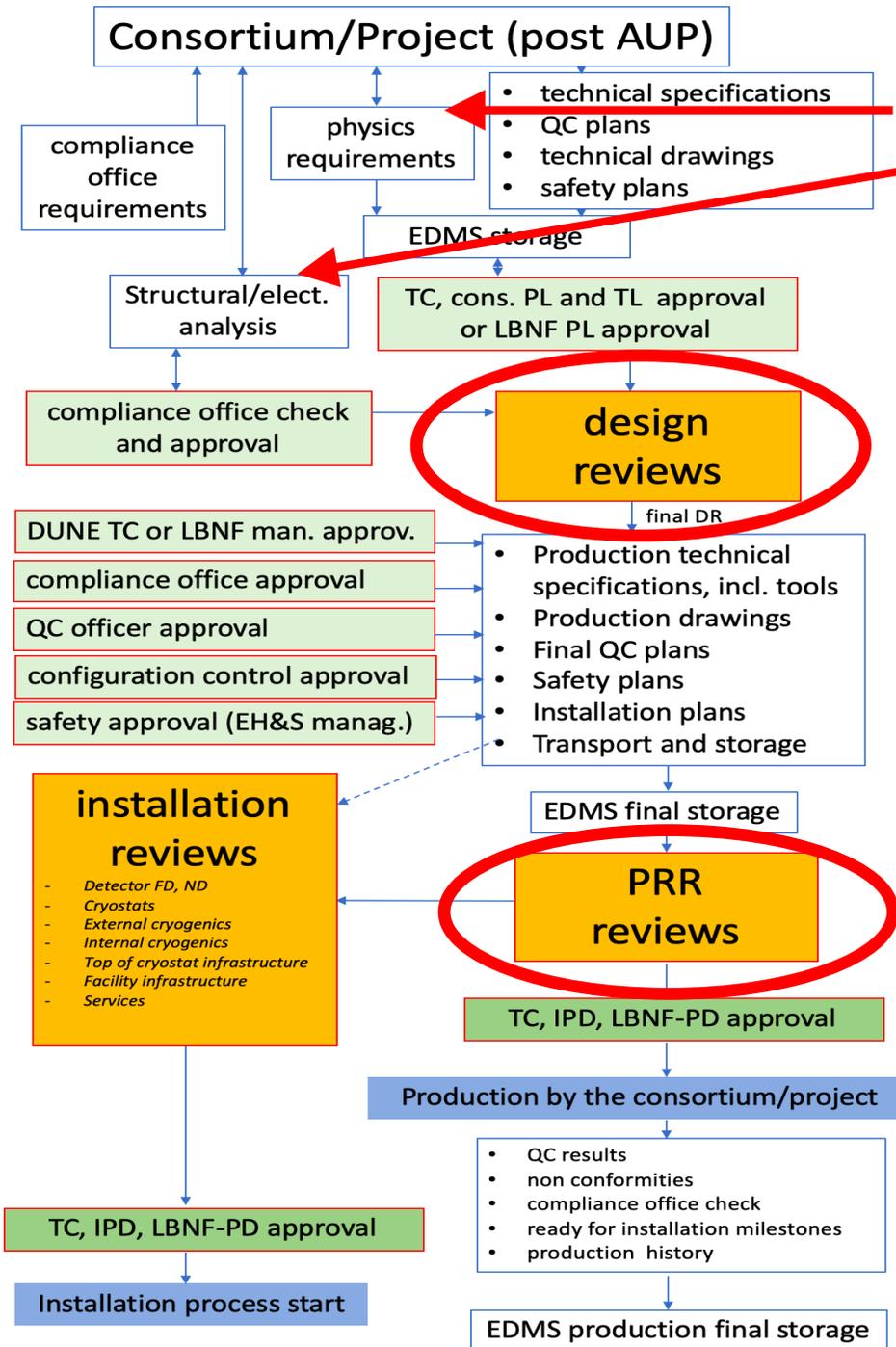
The CO [mandate](#) is to assess, validate and sign-off the mechanical and electrical compliance to applicable codes and standards for all LBNF/DUNE equipment.

- 1) Assess rules and regulations (including European and US equivalency) in consultation with FNAL/SURF safety representatives*
 - 2) Ensure equipment structural and electrical safety compliance checks and validation*
 - 3) Implement the equipment sign off process for structural and electrical safety aspects.*
- Coordinate with Review Office and the review process
 - Work with each consortium and subsystem team to develop the engineering file:
 - Verify applicable rules and regulations
 - Define the analysis plan
 - Assess and validate compliance with rules and regulations

The purpose of the engineering file is to demonstrate and document that equipment has been designed, fabricated, installed, commissioned and operated respecting the safety rules and principles.

Overall review process

<https://edms.cern.ch/document/2302829>



- Verify requirements
- Ensure engineering design safety via CO
- Verify model and drawings
- Verify interfaces
- Check manufacturing plans, QC plans, installation plans, safety plans
- Review cost, schedule, risks, resources

Review schedule

<https://edms.cern.ch/document/2303959>

The screenshot shows the CERN EDMS interface. At the top, it says 'CERN Accelerating science' and 'Signed in as: skettell'. The navigation bar includes 'Home', 'Favourites', 'Inbox', and 'Caddie'. A search bar is on the right. The left sidebar shows a tree view of folders, with 'Review Office' circled in red. The main content area displays document details for '2303959 v.4 Review Schedule' by STEVE HERBERT KETTEL. The 'Info' section includes a description 'Links to Review Schedule' and various metadata. The 'Files' section shows a table of documents, with '2020-Review_schedule_v6h.docx' marked as the 'Latest draft'. Below the files, there are tabs for 'Sub-Documents', 'Used In', 'Approval & Comments', 'Access rights', 'Versions', and 'History'. A table at the bottom lists document details.

#	Id	Title	Fl...	Status	Created on	Author	Document type	Tags
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Past Reviews

Reviews

DUNE & ProtoDUNE

<https://indico.fnal.gov/category/586>

September 2020

16 Sep - 18 Sep [DUNE: Ionization Laser review](#)

July 2020

28 Jul - 30 Jul [DUNE PDR: APA Shipping box](#)

21 Jul [DUNE FDR: DAQ Timing System review](#)

07 Jul - 09 Jul [DUNE CDR: Near Detector](#)

02 Jul [LBNF 30% PDR: Near Site Cryogenic Systems Process Controls Review](#)

01 Jul [LBNF 30% PDR: Near Site Cryogenics Review](#)

01 Jul - 02 Jul [DUNE PDR: DSS](#)

June 2020

18 Jun - 19 Jun [DUNE PDR: Photon Detection System](#)

09 Jun [DUNE PDR: HV](#)

March 2020

17 Mar - 07 Apr [DUNE PDR: Cold Electronics WIB and System](#)

February 2020

27 Feb - 28 Feb [Far Site Integration & Installation](#)

24 Feb [LBNF FDR: Beam Optics Review](#)

05 Feb - 07 Feb [DUNE PDR: TPC electronics ASIC/FEM](#)

LBNF: Beam, Cryogenics, Cryostat

<https://web.fnal.gov/project/LBNF/ReviewsAndAssessments>



Reviews, Workshops and Assessments

LBNE Meetings and Reviews

Search this site

Reviews, Workshops, Meetings

Untitled

Beamline	CF	Cryo	Detectors	DOE, Dir, LBNC	Interface, Risk, Requirements	
Cryo						
✓	Item			Preparation URL	Location	Date
▶ Event (1)						
▶ Meeting (3)						
◀ Review (10)						
		LBNF/DUNE-US Near Site Cryogenics Systems Process Controls Review				July 2, 2020
		LBNF/DUNE-US Near Site Cryogenics Systems Design Review			remote	July 1, 2020
		Process Controls Preliminary Design Review October 2019			Fermilab	October 2-3, 2019
		LBNF Cryogenics Systems Preliminary Design Review			Fermilab	July 29-31, 2019
		LBNF LN2 System SOW Review Follow-Up			Fermilab	February 5, 2018
		LBNF LN2 System SOW Review			Fermilab	January 22, 2018
		LBNF Cryostat #1 Steel Structure (Warm Structure) Final Design Review			Lead, South Dakota	August 21-22, 2017

Current Schedule of Reviews

- **Cold Electronics Systems Review (remote March 17, 2020)**
- LBNF/DUNE-US Director's Review (remote May 20-22, 2020)
- **HV System Review (remote June 9, 2020)**
- **PD System Review (remote June 18-19, 2020)**
- **DSS Review (remote July 1-2, 2020)**
- **LBNF Near Site Cryogenics CDR (remote July 1 2020)**
- **LBNF Near Site Cryogenic Control CDR (remote July 2 2020)**
- **Near Detector Review (remote July 7-9, 2020)**
- LBNF/DUNE-US DOE IPR (remote July 14-16, 2020)
- **DAQ Timing system review (remote July 21 2020)**
- **APA Shipping Box Review (remote July 28-30, 2020)**
- LBNC Meeting (remote September 14-16, 2020)
- **Calibration Laser System Design Review (remote September 16-18, 2020)**
- LBNF DOE IPR FSCF (remote September 22-24, 2020)
- **LBNF Magnet stands FDR (October 2020)**
- **Post AUP facility review (November 2020)**
- **LBNF Primary Beam Window FDR (November 2020)**
- LBNF/DUNE-US DOE IPR (January 2021)
- **APA Final Design Review (March 2021)**
- **HV FDR (March 2021)**
- **Installation design review (March 2021)**
- **LBNF Beam Horn-A prototype FDR (March 2021)**
- **APA PRR (April 2021)**
- **DAQ preliminary Design Review (April 2021)**
- **LBNF Cryostat Readiness Review (April 2021)**
- **LBNF Beam controls FDR (April 2021)**
- **LBNF Beam primary vacuum FDR (April 2021)**
- **LBNF Beam absorber FDR (May 2021)**
- **TPC electronics FDR (June 2021)**
- **PD FDR (June 2021)**
- **Near Detector PDR (June 2021)**
- LBNF/DUNE-US DOE CD-2 (July 2021)

Completed Reviews

Confirmed

Tentative (estimated)

External events

Summary

- The review process is critical for our own internal validation (and provides confidence to external stakeholders)
- Consortia and LBNF subsystems work with the Review Office to schedule reviews as needed
- We try to maintain a draft schedule (in addition to [Indico](#) and [Sharepoint](#) scheduled reviews)
- Followup with subsystems on recommendation responses
- Passing the PRR is required before management will allow money to be spent on production
- We need collaboration support in this review process

Backup

Preliminary Design Review deliverables

- Design choice identified
- Design in accordance with detector requirements
- Detail engineering drawings, schematics, models, interface drawings and preliminary parts list
- Interface documentation review with other systems
- Engineering analyses and documentation
- Installation and testing plans
- Incorporation of ProtoDUNE & other prototyping lessons learned
- Finalization of applicable design codes and standards
- Manufacturing methods and acquisition strategy
- Plans for production and evaluation of prototypes
- Draft manufacturing, quality assurance, testing and procurement plans
- Installation plans including special tools and fixtures
- Preliminary cost and schedule estimate
- Value engineering exercise
- Resolution of TDR or relevant ProtoDUNE review recommendations

Final Design Review deliverables

- Approved system requirements
- Complete manufacturing drawings, schematics, and specifications
- Engineering and safety analysis reports including calculations related to the design
- Procurement specifications
- Interface drawings and documents
- Production site plans for all production sites
- Evaluation of prototypes and design modifications
- Final quality assurance plan and quality control tools
- Final cost and schedule estimate
- Related risks and mitigations
- List of deliverables to the installation sites (Parts Breakdown Structure)
- Resolution of PDR recommendations
- Installation plans, schedules, procedures as understood at the time, to assess the adequacy of design related to installation.

Production Readiness Review deliverables

- Validation of a “module-0” is expected as input to a PRR.
- Final QA plans
- Final list of deliverables and Parts Breakdown Structure (PBS)
- Final production drawings, specifications and manufacturing and test procedures
- Final assembly drawings, where applicable
- Final safety documents (i.e., Hazard Analysis documentation and engineering final safety reports)
- Component QC plan (i.e., travellers, test plans and reports, software verification and validation documents, supplier documentation)
- Final procurement documents per institution practice,
- Completion and evaluation of prototypes, review of production process and QC results
- Resolution of FDR recommendations
- Acquisition Plan and Advanced Procurement Plan packages as required
- RFIs, RFPs and RFQs
- Total estimated cost and baseline cost estimate
- Delivery Schedule, timeframe, total number of calendar days
- Specific Roles and Responsibilities
- QA and ES&H requirements for purchasing
- Risks summary