

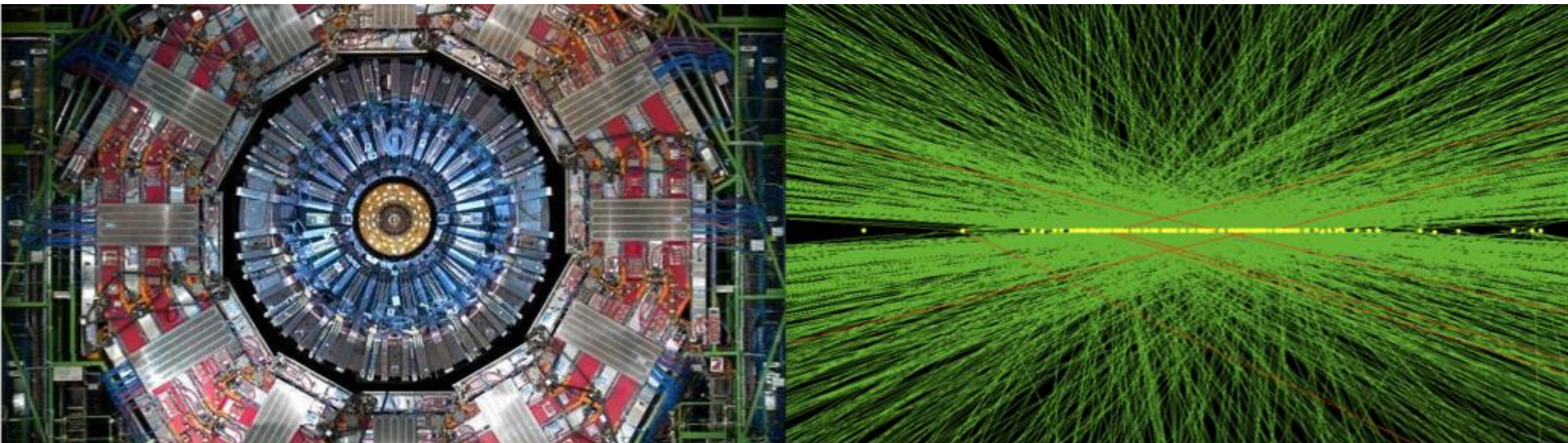


B04: DOE Order 413.3B documentation review and process

Vaia Papadimitriou, Deputy Project Manager

CD-1 Review

October 23, 2019





Outline

- Biographical Sketch
- Introduction
- Status of DOE O 413.3B documentation
- Review and approval process for documents
- Response to recommendations from previous Reviews
 - Recommendations from the June 2018 IPR
 - Recommendations from the March 2019 pre-CD-1 Director's Review
- Additional controlled documents
- Summary

This presentation will address charge questions #5, #7 and #8



Biographical Sketch

Charge #5

- **Senior Scientist** at Fermilab since August 2003 (Particle Physics and Accelerator Divisions).
- U.S. CMS HL-LHC Upgrade **Deputy Project Manager** since July 2018.
- LBNE/LBNF Beamline (~\$200M) **Project Manager** for 8.5 years (2009-2018).
- **Assistant/Associate Division Head** of Accelerator Division for 3/8.5 years (2006-2018).
- **Professor of Physics** for 11 years at TTU, followed by 3 years as Adjunct Professor (1994-2008). PI/co-PI of successful DoE research proposals. Reviewer of scientific proposals for past 19 years.
- **34 years of experience** in the design, construction, operation, data/physics analysis and management of **particle physics experiments and of accelerators/beamlines** (E731-Kaon, CDF, CDF-II, Fermilab Accelerator Complex, LBNE/LBNF/DUNE,CMS).
- **Certificates** from Booth School of Business on **management and leadership training**.
- B. Sc., M. Sc., and PhD in **Physics**; L. M. Lederman Fellow at FNAL.



Checklist from 413.3B for CD-1 approval

TOTAL PROJECT COST (TPC)		Less than \$400M to \$100M
DECISION / REQUIREMENTS ¹ / APPROVAL ²		
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	Complete a Conceptual Design ★	Project
	Document High Perf. & Sustainable Bldg. & Sustainable Env. Stewardship considerations	Project
	Conduct a Conceptual Design Review	Team external to project
	Complete a Conceptual Design Report	Project
	Prepare a Preliminary Hazard Analysis Report ★	Site Office or Lab
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Update PDS, or other funding documents for MIE and OE projects, and OMB 300s, if applicable.	SC-AD	

<https://science.energy.gov/opa/processes-and-procedures/>



Checklist from 413.3B for CD-1 approval

Charge #7

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[\(CMS-doc-13517\)](#)

Owned by DOE

**Acquisition Strategy
for the
High Luminosity Large Hadron Collider (HL-LHC)
Compact Muon Solenoid (CMS)
Detector Upgrade Project**

Project # 402

at

Fermi National Accelerator Laboratory
Batavia, IL

Office of High Energy Physics
Office of Science
U.S. Department of Energy

Date Approved:
October 2019

Total Project Cost Range: \$144.1M to \$183.0M

CD-0 Approval Date: 4/13/2016

October 2019



Checklist from 413.3B for CD-1 approval


Charge #7

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([CMS-doc-13092](#))

Owned by DOE

Preliminary PEP
HL-LHC CMS



U.S. DEPARTMENT OF ENERGY | Office of Science

**Preliminary Project Execution Plan
for the
High Luminosity Large Hadron Collider (HL-LHC)
Compact Muon Solenoid (CMS)
Detector Upgrade Project**

Project # 402

at
Fermi National Accelerator Laboratory
Batavia, IL

Office of High Energy Physics
Office of Science
U.S. Department of Energy

September 2019



Checklist from 413.3B for CD-1 approval

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- ✓ Done
- ✓ Done

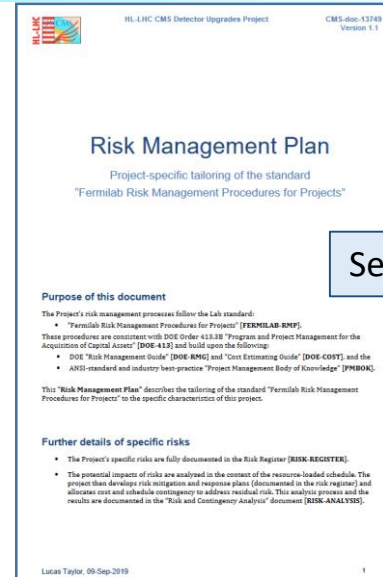
- FPD: Robert Caradonna
- Deputy FPD: Alan Harris
- IPT Membership discussed within the pPEP ([CMS-doc-13092](#))



Checklist from 413.3B for CD-1 approval

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See also talk by L. Taylor – P03

- Risk Management Plan: [CMS-doc-13749](#) (reviewed, approved)
- We follow the Fermilab Risk Management Procedures for Projects subject to 413.3B: [PPP-doc-65](#)
- Risk Register(DOE): [CMS-doc-13480](#) , which is the input for the document below
- Risk and Contingency Analysis (DOE): [CMS-doc-13481](#)



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Held technical reviews of the conceptual design for all L2 subprojects: [Outer Tracker CMS-doc-13406](#), [Endcap Calorimeter CMS-doc-13464](#), [Trigger/DAQ CMS-doc-13410](#), [MIP Timing Detector CMS-doc-13698](#))



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Oct 8, 2019

CONCEPTUAL DESIGN REPORT FOR THE US HL-LHC UPGRADE OF THE COMPACT MUON SOLENOID

A 327-page document covering the DOE scope of the Project

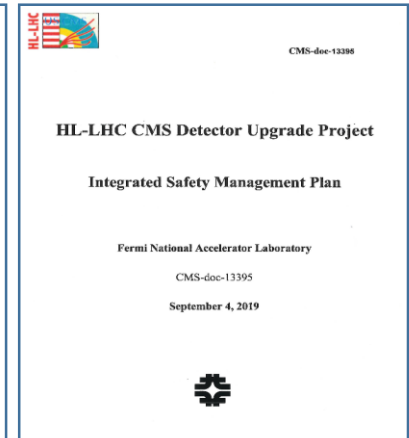
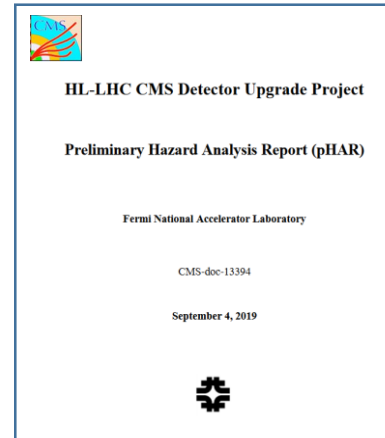
Conceptual Design Report:
[CMS-doc-13151](https://cds.cern.ch/record/1315111/files/CMS-doc-13151.pdf)



Checklist from 413.3B for CD-1 approval

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pHAR complete, reviewed, approved
([CMS-doc-13394](#))

ISM complete, reviewed, approved
([ICMS-doc-13395](#))


See also talk by T. J. Sarlina – PM B02



Checklist from 413.3B for CD-1 approval

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CMS-doc-13093

Quality Assurance Plan for the U.S. HL-LHC CMS Upgrade Project

Revision 6.1
August 26, 2019

CMS-doc-13093

Quality Assurance Plan complete, reviewed, approved ([CMS-doc-13093](#)); accompanied by detailed appendix.

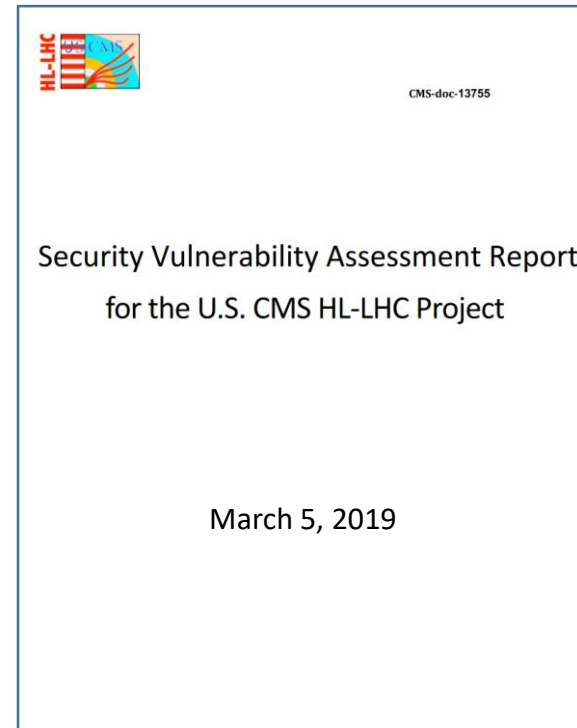
See also talk by C. Wilkinson – PM B03



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Security Vulnerability Assessment Report complete, reviewed, approved ([CMS-doc-13755](#))



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National Environmental Policy Act (NEPA) review complete:
Categorical Exclusion issued on 01/12/2018
([CMS-doc-13483](#))



Approving Project Documents

Charge #7

- Revision control within the CMS Document Database
- Approval of documents

Preliminary Hazard Analysis Report

(Document Status: Approved)

Document #: CMS-doc-13394-v17
Document type: Report
Submitted by: Vivian O'Dell
Updated by: Vaia Papadimitriou
Document Created: 07 Sep 2017, 22:16
Contents Revised: 09 Sep 2019, 23:10
Metadata Revised: 09 Sep 2019, 23:10
Last Signed: 09 Sep 2019, 23:23

Update Document
 Update Metadata
 Add Files
 Create Similar
 Watch Document

Abstract:

Preliminary Hazard Analysis Report for HL-LHC activities.

Files in Document:

- USCMS HL-LHC Preliminary Hazard Analysis Report (pHAR_v2.0_HL-LHC_CMS signed 20190909.docx, 119.2 kB)

Other Files:

- USCMS HL-LHC Preliminary Hazard Analysis Report (pHAR_v2.0_HL-LHC_CMS signed 20190909.pdf, 618.0 kB)

Get all files as tar.gz, zip.

Topics:

- Countries: USA: US HL-LHC Upgrades: ESH&Q
- Countries: USA: US HL-LHC Upgrades

Authors:

- T.J. Sarlina

Related Documents:

- CMS-doc-13093: [Quality Assurance Plan for the US HL-LHC CMS Project](#) (Unapproved - Last approved: [version 30](#))
- CMS-doc-13395: [Integrated Safety Management Plan](#) (Approved - 10 Sep 2019)
- CMS-doc-13605: [Institutional contact lists of Pls. support staff, OSP contacts, and ES&H contacts](#)
- CMS-doc-13668: [US HL-LHC CMS ESH & QA Audit Field Checklists](#)
- CMS-doc-13717: [USCMS HL-LHC Codes and Standards](#) (Approved - 06 Mar 2019)

Referenced by:

- CMS-doc-13605: [Institutional contact lists of Pls. support staff, OSP contacts, and ES&H contacts](#)
- CMS-doc-13788: [Overview SOW's for MREFC](#)
- CMS-doc-13804: [Fermilab SiDet CO2 Cooling System](#)

Signoffs:

- T.J. Sarlina (signed 09 Sep 2019, 23:23)
 - Vaia Papadimitriou
 - Steve Nahn (signed 16 Sep 2019, 11:35)

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26 Feb 2019, 01:12
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12 Feb 2019, 21:14
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- CMS-doc-13394-v13
11 Feb 2019, 20:44
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- CMS-doc-13394-v12
28 Jan 2019, 19:18
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25 Sep 2018, 16:43
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05 Sep 2018, 19:26
CMS-doc-13394-v6
24 Jul 2018, 00:20
CMS-doc-13394-v5
05 Jun 2018, 17:50

Fermi National Accelerator Laboratory

CMS-doc-13394

Approvals


 _____ 9/9/2019
Robert Caradonna Date
 Federal Project Director, Brookhaven Site Office, DOE

Signed/approved electronically via CMS DocDB
Steve Nahn Date
 HL-LHC CMS Project Manager

Signed/approved electronically via CMS DocDB
Anders Ryd Date
 HL-LHC CMS Deputy Project Manager (NSF)

Signed/approved electronically via CMS DocDB
Vaia Papadimitriou Date
 HL-LHC CMS Deputy Project Manager (DOE)

Signed/approved electronically via CMS DocDB
T.J. Sarlina Date
 HL-LHC CMS ESH&Q Coordinator

ii



Responses to Review Recommendations

Related to Project Documentation

Charge #7

Charge #8

- See [CMS-doc-13604](#), Review Recommendations Tracking Document, which includes:
 - Answers to recommendations, comments, findings from the June 2018 IPR
 - Answers to recommendations from the November 2018 ESH&Q Review
 - Answers to recommendations from the November 2018 MTD Technical Review
 - Answers to recommendations and actionable comments from the March 2019 pre-CD-1 Director's Review.



Responses to the June 2018 IPR

Charge #7

Charge #8

- #24 (Management) – Review and revise required documentation to comply with the CD-1 minimum requirements ensuring that document control practices and revision control are properly applied throughout with approval or approval process defined and consistency in the project cost and schedule data.
 - All project documents have been reviewed/revise by the Project Office to ensure consistency.
 - Overlapping cost and schedule information in various project documents has been removed wherever possible to avoid inconsistencies; referencing other documents instead of repeating information (e.g. [CMS-doc-13723](#) on DOE cost and schedule assumptions; [CMS-doc-13750](#) on critical procurements).
 - A process has been established for owners and designated reviewers of documents to sign off on their documents using the CMS document database.



Responses to the June 2018 IPR

Charge #7

Charge #8

- #17 (Cost & Schedule) – Prior to seeking CD-1, work with DOE to define project funding profile guidance that supports the entire project scope, cost and schedule estimate, including Objective KPPs. **Update the Acquisition Strategy, Preliminary Project Execution Plan, and other relevant CD-1 documents to reflect this agreement.**
 - The Acquisition Strategy ([CMS-doc-13517](#)) and the Preliminary Project Execution Plan ([CMS-doc-13092](#)) have been updated by the Federal Project Director in collaboration with the Project.
 - All other relevant project documentation has been updated accordingly.

See also Plenary talks P02 and P03



Responses to the June 2018 IPR

Charge #7

Charge #8

- #18 (Cost & Schedule) – Prior to seeking CD-1, synchronize all documents to have consistency between project data points such as schedule dates, budget amounts, and WBS numbering.
 - All project documents have been reviewed/revised by the Project Office to ensure consistency. For example:
 - the “Cost Book” and the “Risk and Contingency Analysis” are up to date and have been verified to be mutually consistent
 - the project data information within the Acquisition Strategy and the Preliminary Project Execution Plan has been verified to be the same
 - Overlaps in documents have been removed wherever possible to avoid inconsistencies; referencing other documents instead of repeating information (e.g. [CMS-doc-13723](#) on DOE cost and schedule assumptions).
 - A formal sign-off of project documents has been instigated by using electronic signatures within the CMS document database.



Responses to the March 2019 DR

Charge #7

Charge #8

- R6: (Management) – Prior to DOE CD-1 IPR, apply consistent rounding approach to all BOEs.
 - BOE tables have been centrally generated from P6, and precision retained to \$0.01 – the granularity of the costbook, to avoid differences in rounding when aggregating multiple activities into BOERefs.
- C1: (Management) – The milestones in the monthly report table should be updated and included a description of the impact on the schedule.
 - Near term milestones for the DOE monthly report have been updated. They are now being compared with the previous month’s projection and impact of missed milestones on the schedule is being described.



Additional controlled documents

Charge #7

Document Type	CMS Document #	Status
Project Management Plan	CMS-doc-13104	approved
Procurement Management Plan	CMS-doc-13267	approved
Systems Engineering Management Plan	CMS-doc-13194	approved
Key Assumptions	CMS-doc-12919	approved
Configuration Management Plan	CMS-doc-12907	approved
Codes and Standards	CMS-doc-13717	approved



Summary

- All required project documents for CD-1 are in place, and at the appropriate level for this stage of the Project.
- Have addressed all relevant Review recommendations.
- We are ready to proceed to CD-1.