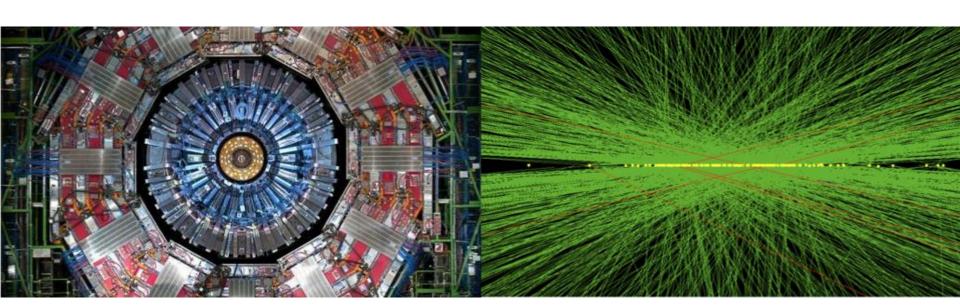


# B07: DOE Order 413.3B documentation review and process

Vaia Papadimitriou CD-1 Director's Review March 20, 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
- Additional controlled documents
- Summary



# Biographical Sketch

- 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 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.



	TOTAL PROJECT COST (TPC)	Less than \$400M to \$100M
DECISIO	N / REQUIREMENTS <sup>1</sup> / APPROVAL <sup>2</sup>	
CD-1A RANGE	PPROVE ALTERNATIVE SELECTION AND COST	SC-1
	Approve Acquisition Strategy	Reviewed by SC-28 Approved by SC-2
	Approve Preliminary Project Execution Plan (PEP)	Reviewed by SC-28 Approved by SC-2
	Appointment of the Federal Project Director (FPD)	SC-1
	Approve Integrated Project Team (IPT)	SC-2
	Develop a Risk Management Plan	Project
	Comply with the One-for-One Building Space Replacement	Project
	Complete a Conceptual Design	Project
N O	Document High Perf. & Sustainable Bldg. & Sustainable Env. Stewardship considerations	Project
DES	Conduct a Conceptual Design Review	Team external to project
LAL	Complete a Conceptual Design Report	Project
CEP	Prepare a Preliminary Hazard Analysis Report	Site Office or Lab
OO	Develop and Implement an Integrated Safety Management 🚖 Plan	Site Office or Lab
D-1-	Establish Preliminary Quality Assurance Program (QAP)	Site Office or Lab
T0 C	Identify general Safeguards and Security requirements for the recommended alternative	Site Office or Lab
PRIOR TO CD-1-CONCEPTUAL DESIGN	Complete National Environmental Policy Act (NEPA)Strategy by issuing a determination (i.e., EIS, EA)	Site Office or Lab
8	Conduct Independent Project Review or External Independent Review	ICE or ICR by APM with SC-28
	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/



Charge #7
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	TOTAL PROJECT	
	TOTAL PROJECT COST (TPC)	Less than \$400M to \$100M
DECISIO	ON / REQUIREMENTS <sup>1</sup> / APPROVAL <sup>2</sup>	
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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:

Month/Year

Total Project Cost Range: \$142.6M to \$183.1M

CD-0 Approval Date: 4/13/2016

March 2019



### Checklist from 413.3B for CD-1 approval

Cha	arge	#7

	TOTAL PROJECT COST (TPC)	Less than \$400M to \$100M			
DECISIO	DECISION / REQUIREMENTS <sup>1</sup> / APPROVAL <sup>2</sup>				
CD-1A RANGE	APPROVE ALTERNATIVE SELECTION AND COST	SC-1			
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LUAL	Complete a Conceptual Design Report	Project			
CEP	Prepare a Preliminary Hazard Analysis Report	Site Office or Lab			
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PRIOR TO CD-1-CONCEPTUAL DESIGN	Establish Preliminary Quality Assurance Program (QAP)	Site Office or Lab			
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	Complete National Environmental Policy Act (NEPA)Strategy by issuing a determination (i.e., EIS, EA)	Site Office or Lab			
PA	Conduct Independent Project Review or External Independent Review	ICE or ICR by APM with SC-28			
	Update PDS, or other funding documents for MIE and OE projects, and OMB 300s, if applicable.	SC-AD			

(CMS-doc-13092)

### Owned by DOE



**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

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

June 2019

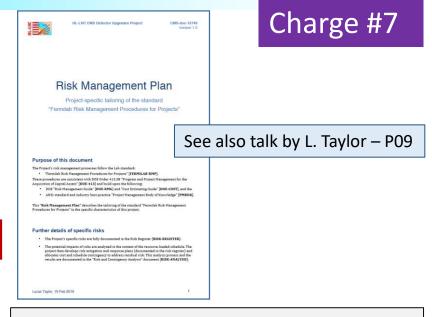


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	Update PDS, or other funding documents for MIE and OE projects, and OMB 300s, if applicable.	SC-AD

- Done
- ✓ Done
- FPD: Robert Caradonna
- Deputy FPD: Alan Harris
- IPT Membership discussed within the pPEP (<u>CMS-doc-13092</u>)



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



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	Comply with the One-for-One Building Space Replacement	N/A	Project
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<u>8</u>	Document High Perf. & Sustainable Bldg. & Sustainable Env. Stewardship considerations	N/A	Project
DES	Conduct a Conceptual Design Review	Tea	ım external to project
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Charge #7

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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### Charge #7



A 310 page document covering the DOE scope of the Project

### Conceptual Design Report:

CMS-doc-13151



	TOTAL PROJECT COST (TPC)	Less than \$400M to \$100M
DECISIO	N / REQUIREMENTS <sup>1</sup> / APPROVAL <sup>2</sup>	
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Ī	Update PDS, or other funding documents for MIE and OE projects, and OMB 300s, if applicable.	SC-AD

### Charge #7

HL-LHC CMS Detector Upgrade Project

Preliminary Hazard Analysis Report (pHAR)

Fermi National Accelerator Laboratory

CMS-doc-13394

February 14, 2019



pHAR complete, reviewed, approved (CMS-doc-13394)

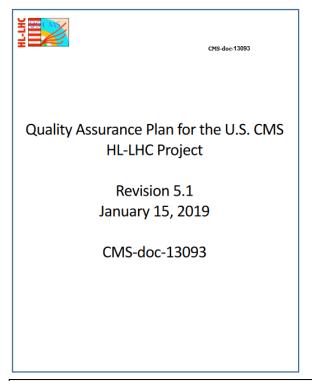
ISM complete, reviewed, approved (<a href="ICMS-doc-13395">ICMS-doc-13395</a>)

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



TOTAL PROJECT COST (TPC) Loss than \$400M to \$10			
		Less than \$400M to \$100M	
	ON / REQUIREMENTS <sup>1</sup> / APPROVAL <sup>2</sup>		
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### Charge #7



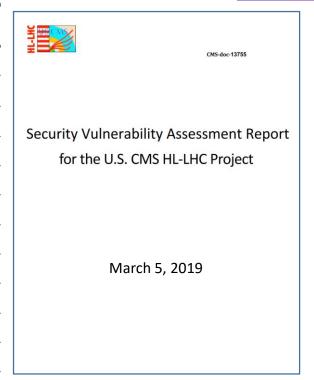
Quality Assurance Plan complete, reviewed, approved (CMS-doc-13093)

See also talks by T. J. Sarlina – PM B05 & C. Wilkinson – PM B06



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### Charge #7



Security Vulnerability Assessment Report complete, reviewed, approved (<u>CMS-doc-13755</u>)



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Charge #7

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-v16

Document type:

Report
Submitted by:

Submitted by: Vivian O'Dell Updated by:

Vaia Papadimitriou
Document Created:
07 Sep 2017, 22:16
Contents Revised:
26 Feb 2019, 01:12
Metadata Revised:

26 Feb 2019, 01:12 Last Signed: 26 Feb 2019, 04:37

Update Document
Update Metadata

Add Files

Create Similar

Watch Document

Abstract:

Preliminary Hazard Analysis Report for HL-LHC activities.

#### Files in Document:

 <u>USCMS HL-LHC Preliminary Hazard Analysis Report</u> (pHARv1.9-CMS HL-LHC RC signed.docx, 115.9 kB)

#### Other Files

 <u>USCMS HL-LHC Preliminary Hazard Analysis Report</u> (pHARv1.9-CMS\_HL-LHC RC signed.pdf, 622.5 kB)

Get all files as tar.qz, zip.

#### Topics:

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

#### Authors:

TJ Sarlina

#### Notes and Changes:

Uploading a signed copy by the FPD

#### Related Documents:

- CMS-doc-13093: Quality Assurance Plan for the US HL-LHC CMS Project
- (Approved 02 Mar 2019)
- CMS-doc-13395: Integrated Safety Management Plan (Approved - 09 Jan 2019)
- CMS-doc-13605: Institutional contact lists of PIs, support staff, OSP contacts, and ES&H contacts
- CMS-doc-13668: <u>US HL CMS ESH & QA Audit Field Checklists</u>
   CMS-doc-13717: USCMS HL-LHC Codes and Standards
- CMS-doc-13/1/: <u>USCMS HL-LHC Codes and Standa</u> (Approved - 06 Mar 2019)

#### Referenced by:

 CMS-doc-13605: Institutional contact lists of Pls, support staff, OSP contacts, and ES&H contacts

#### Signoffs:

- T.J. Sarlina (signed 26 Feb 2019, 04:37)
- o Vaia Papadimitriou Remove Signature
- Vivian O'Dell (signed 26 Feb 2019, 16:31)

#### Viewable by:

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- <u>USCMS-MGMT</u>
   <u>USCMS-UP-</u>
- REVIEWS
- USCMS-UP-TEAM
- USCMS-UP-PHASE2

#### Modifiable by:

- CMSDocAdmin
- <u>USCMS-MGMT</u>
- USCMS-UP-TEAM
- USCMS-UP-PHASE2

#### Quick Links:

Latest Version

#### Other Versions:

CMS-doc-13394-v15 12 Feb 2019, 21:32

Unapproved <u>CMS-doc-13394-v14</u> 12 Feb 2019, 21:14

12 Feb 2019, 21:14 Unapproved

CMS-doc-13394-v13 11 Feb 2019, 20:44 Unapproved

CMS-doc-13394-v12 28 Jan 2019, 19:18

28 Jan 2019, 19:18 Unapproved

CMS-doc-13394-v11 26 Dec 2018, 22:21

Unapproved <u>CMS-doc-13394-v10</u> 25 Sep 2018, 16:43

CMS-doc-13394-v9 11 Sep 2018, 19:21 CMS-doc-13394-v8 10 Sep 2018, 23:42

CMS-doc-13394-v7 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

#### Fermilab

Approved electronically via CMS DocDB Vivian O'Dell date HL-LHC CMS Project Manager

#### Approved electronically via CMS DocDB

Vaia Papadimitriou date HL-LHC CMS Deputy Project Manager

#### Approved electronically via CMS DocDB

T.J. Sarlina date HL-LHC CMS ESH&Q Coordinator

Robert Caradonna

date

Federal Project Director, Brookhaven Site Office, DOE

ii



### Responses to Review Recommendations

Related to Project Documentation

- See <u>CMS-doc-13604</u>, 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



### Responses to the June 2018 IPR

- #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/revised 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. <u>CMS-doc-13723</u> on DOE cost and schedule assumptions).
  - 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

- #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 P09



# Responses to the June 2018 IPR

- #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. <u>CMS-doc-13723</u> 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.



## Additional controlled documents

Document Type	CMS Document #	Status
Project Management Plan	<u>CMS-doc-13104</u>	In signing process
Procurement Management Plan	<u>CMS-doc-13267</u>	approved
Systems Engineering Management Plan	CMS-doc-13194	approved
Key Assumptions	<u>CMS-doc-12919</u>	approved
Configuration  Management Plan	CMS-doc-12907	approved
Codes and Standards	<u>CMS-doc-13717</u>	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.