Date: March 1, 2018
To: Bob Tschirhart, Chief Project Officer
From: Nigel Lockyer, Director
Re: Director’s CD-1 Review of the HL-LHC CMS Detector Upgrade Project

Message:

Please organize and conduct a Director’s Review of the HL-LHC CMS Detector Upgrade Project on April 4-6, 2018 to assess the project’s readiness for the DOE CD-1 review and approval process. The purpose of the Review is to assess all aspects of the project’s conceptual design and associated plans.

The review committee should respond to the following questions:

1. **Design and Scope.** Is the conceptual design sound and likely to meet the performance requirements? Is the DOE project scope well defined within the CERN HL-LHC project? Does the conceptual design support the stated cost range and duration?

2. **Cost and Schedule.** Has a credible and sufficient alternatives analysis been performed? Are the estimated cost and schedule ranges credible and realistic for this stage of the project? Is adequate scope, cost, and schedule contingency included? Is the schedule compatible with the overall CERN HL-LHC schedule?

3. **Management.** Are the management structure and resources adequate to produce a credible technical, cost and schedule baseline? Have appropriate and efficient human and technical resources been planned to execute the project, whether from national labs, universities, vendors, or other sources? Does the acquisition strategy document a carefully considered analysis of alternatives that supports the preferred alternative? Is the required DOE Order 413.3b documentation on track to be complete for CD-1?

4. **Environment, Safety, Health, and Quality (ESH&Q).** Is ESH&Q being appropriately addressed for this stage of the project? Are Integrated Safety Management Principles being followed?

The committee is asked to present a draft of their report at the review closeout and to issue the final report within two weeks of the review’s conclusion.

Nigel S. Lockyer
Director of Fermilab