U. S. Chemical Safety and Hazard Investigation Board
RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	ExxonMobil Torrance Refinery Explosion
Recommendation Number:	2015-02-I-CA-R3
Date Issued:	May 3, 2017
Recipient:	ExxonMobil Corporation
New Status:	Open – Acceptable Response or Alternative Response
Date of Status Change:	April 15, 2019

Recommendation Text:

The spent catalyst slide valve, specified as a safety-critical device for normal operation, could not perform its safety-critical function of preventing air and hydrocarbons from mixing while the FCC unit was in its "Safe Park" mode of operation. Also, ExxonMobil Torrance did not operate the FCC unit as if the reactor steam was a safety critical safeguard. Require identification of all safety critical equipment and consequence of failure for each mode of operation and ensure safety critical devices can successfully function when needed. Develop and implement a policy that requires all U.S. ExxonMobil refineries to:

(1) specify each safety-critical device's safety function;
(2) identify the consequences of failure of each safety-critical device;
(3) specify the testing strategy used to verify whether the safety-critical device can function as intended to perform its required safety function; and
(4) maintain target availability (e.g. safe operating life) for each safety-critical device through inspection and maintenance.

Require that items (1) through (4) above consider each mode of operation, including but not limited to normal operation, start up, shut down, and "Safe Park" modes of operation.

Board Status Change Decision:

A. Rationale for Recommendation

On February 18, 2015, an explosion occurred in the ExxonMobil Torrance, California refinery's Electrostatic Precipitator (ESP); a pollution control device in the fluid catalytic cracking (FCC) unit that removes catalyst particles using charged plates that produce sparks during normal operation. The incident occurred when ExxonMobil was attempting to isolate equipment for maintenance while the unit was in an idle mode of operation. Preparations for the maintenance activity caused a pressure deviation that allowed hydrocarbons to backflow through the process and ignite in the ESP.

As a part of its investigation, the U.S. Chemical Safety and Hazard Investigation Board (CSB) found that this incident occurred due to weaknesses in the ExxonMobil Torrance refinery's process safety management (PSM) system. These weaknesses led to operation of the FCC unit without pre-established safe operating limits and criteria for unit shutdown, reliance on safeguards that could not be verified, the degradation of a safety-critical safeguard, and the re-use of a previous procedure deviation without a sufficient hazard analysis to confirm that the assumed process conditions were still valid.

As a result, the CSB made five recommendations to ExxonMobil Corporation regarding their PSM system. This status change summary is specific to Recommendation No. 2015-02-I-CA-R3.

B. Response to the Recommendation

EM has been very responsive to our recommendations and kept the CSB regularly apprised of implementation progress. They formed an internal multidisciplinary task force to address each recommendation. They updated and issued their Global Manufacturing OIMS Practice *6.3 Critical Equipment* which contains updated requirements for safety critical devices (SCD) and anticipates full implementation of the recommendation by the end of calendar year 2019.

C. Board Analysis and Decision

Based upon the information above, the Board voted to change **Recommendation No. 2015-02-I-CA-R3** to: **"Open – Acceptable Response or Alternate Response."**