



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:	Closed – Acceptable Action
Date of Status Change:	January 20, 2021

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 (EM) 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 EM 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 the investigation, the U.S. Chemical Safety and Hazard Investigation Board (CSB) found that this incident occurred due to weaknesses in the EM Torrance refinery’s process safety management (PSM) system. These weaknesses led to the 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 issued five recommendations to EM 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 formed an internal multidisciplinary task force to address each recommendation. The task force worked to update and implement their Global Manufacturing OIMS Practice *6.3 Critical Equipment* which contains updated requirements for safety critical devices that were addressed in the recommendation.

Board Analysis and Decision

Based upon EM's actions to implement the recommendation, the Board voted to change **Recommendation No. 2015-02-I-CA-R3 to: "Closed-Acceptable Action."**