Managing Change Within a Change
Field Change Management

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• Introduction
• What – describe what kind of change
• Why – describe why we wanted to manage the changes
• When – Define when it is used
• How – Show how it works
• When we make a change within our facilities we manage that change with a process.

• There is more than one process that we use. There is one to manage the business side and one to manage the process safety or risk side of making the change.

• During the design and development there is significant effort to identify hazard scenario and mitigate the process safety risk of a project.

• But what about changes that occur after design and development? Changes that can occur during construction, commissioning and start-up.

• I would like to comment at this point that this presentation it not going to talk about how we manage the business side of a project nor will it talk about how we manage the process safety and risk items identified during design and development.

• What I will be talking about is how we manage the changes that
What kind of changes are we talking about?

- Clashes are identified in the field
- New information becomes available that the installation is either "not safe" or "will not work" because:
  - Vendor product available is different than what was identified in design development or detailed stages
  - Scope wasn’t identified during the design development or detailed stage
- What happens when the change identified needs and engineered resolution / solution?

- What kind of changes are we talking about?
- During construction it is not unheard of to have clashes identified in the field and
- Many project management processes have ways to deal with managing changes that are associated with minor structural and piping clashes in the field. However, these existing project processes are created to minimizing scope change or creep, but are inadequate when the change identified is related to items that “do not work” or are “not safe”.

- What if the change identified requires an engineered resolution/solution?
- We are not talking about a pipe rack running into or needing an extra support, these are items that are identified that have been identified to either “not be safe” or “not work” installed as designed.
Anytime you “engineer” a solution to a change you could be changing the risk you have identified for your project at the design phase risk assessment.

Equally important when managing engineered changes in a project being executed is updating the documentation affected by the change.

So many times you hear it will get caught in the “as-building” stage.

So many times you see when documentation is not up to date in the unit because it wasn’t caught in the as-built stage.

This prompted me to asked the question shouldn’t we have a more rigorous method to ensure that the documentation we turn over to the unit for continued operation is accurate?

My own answer to this question was yes, we do need a better way to manage these changes and ensure that the documentation it...
What I wanted to do was create a process to assess the depth of an engineered change.

If the resolution impacts any of the documents at the top of this slide then it potentially could impact the documents on the bottom of the slide.
• This Field Change Management process is used after your drawings have been issued for construction

• There are a different number of steps required depending on which implementation stage you are in
  • Pre-Mechanical Completion – during construction
  • After Mechanical Completion – during Commissioning
  • During Start-up
How?

- Simplified answering a series of questions using a flowchart

Use the flow chart below to determine if a risk assessment is required and which forms are necessary for the change being proposed.

1. Does the change require an acknowledgment to be signed?
   - Yes: Complete response forms (DLI, CRM, etc.) or data change.
   - No: Go to next question.

2. Is it a file or change sheet or control log?
   - Yes: Is there engineering control of the change?
     - Yes: Complete response forms (DLI, CRM, etc.) or data change.
     - No: Proceed to question 3.
   - No: Is it an administrative update? (e.g., move, edit, level, type, etc.)
     - Yes: Complete response forms (DLI, CRM, etc.) or data change.
     - No: Proceed to question 4.

3. What is the risk assessment summary form (RAS)?
   - Yes: The addition of a "Y" in the RAS table is required. Proceed to question 5.
   - No: Proceed to question 6.

4. Does it add or modify data that changes the intent of the process path?
   - Yes: Complete response forms (DLI, CRM, etc.) or data change.
   - No: Proceed to question 7.

5. Risk assessment summary form.
   - Yes: Complete full RAS form.
   - No: Proceed to question 8.

6. Example: A change that does not change the risk.
   - No: Proceed to question 9.
   - Yes: Complete response forms (DLI, CRM, etc.) or data change.

7. The addition of a "Y" in the RAS table is required. Proceed to question 10.

8. This review is at a minimum, a review of the existing database existed in reality.
   - No: Proceed to question 11.
   - Yes: A full risk assessment may be required if the deviation from the original intent is significant.

9. This path would typically be for end drawings.
   - No: Changes that do not change the risk.
   - Yes: Changes that do not change the risk (e.g., the addition of a blank value).
• Does the change require a documentation update?
• This question is meant to ensure that clarification questions do not get caught up in the process. An answer of no, directs the user to the typical response to a field request for information or clarification.
• An answer of yes leads to the next question, Is it a P&ID, Datasheet or Logic Description?
• This doesn’t mean that there isn’t engineering content to the clarification, but it takes minor structural support or piping changes an additional shoe, hanger, pipe need to move a foot, etc. Changes that require engineering documentation to be updated but do not change the risk identified during the risk assessment. This type of change completes the “Documentation update Field Change Management forms”
• This path would typically be for:
  • civil drawings
  • Iso changes that do not change the P&ID (i.e. the addition of a block valve)
  • Electrical drawings
  • Instrumentation location or detail drawings
• If you say yes to updating either P&ID, datasheet or logic description
• Then we assess what type of change to the documentation it is.
• The “Documentation update Field Change Management forms” is used for either strictly administrative updates
The documentation Update Field Change Management forms consist of a cover sheet which in addition to identifying what the change is, the reason for the change, what type of change, the duration of the change and where the files are to be stored.

It also lists the documents that are required to be updated and the close out signatures once the change has been completed.
• Documentation update tracking ensures that the required updates are given to document control, if there are hardcopy master drawings (typically P&ID’s) then it tracks if they have been manually updated and then finally when the electronic master copies are updated.
Beyond administrative changes we still need to assess the depth of the change by asking Does it add or modify data that changes the intent of the process node?

An example of a no answer would be the addition of a Temperature or a pressure transmitter for information or alarming purposes only.

An example of a yes answer would be the addition of a temperature or a pressure transmitter and a valve to be used for control purposes.

This review is at a minimum, a review of the existing Database resulting in updates. A full risk assessment may be required if the deviation from the original intent is significant.
For a Full FCM, in addition to the previously shown Cover sheet and documentation update forms, a risk assessment tracking form is also required.

- It identifies who participated in the change, if there were any additional requirements due to the change and a signature to accept the risk associated with the change.
• If the change is being made after Mechanical Completion and during commissioning then a construction review and turnover form is required to be filled out.
If the change is being made after commissioning and during start-up then addition to the construction review and turnover form the commissioning and pre-start-up check form is required to be filled out.
Summary

- Field Change Management (FCM) is a streamlined facility management of change process for projects.
- Depending the extent of the change and the timing of the change defines the steps required in the process.
Questions???