"Managing Change"

This article originally appeared in *World Pipelines*, November 2008

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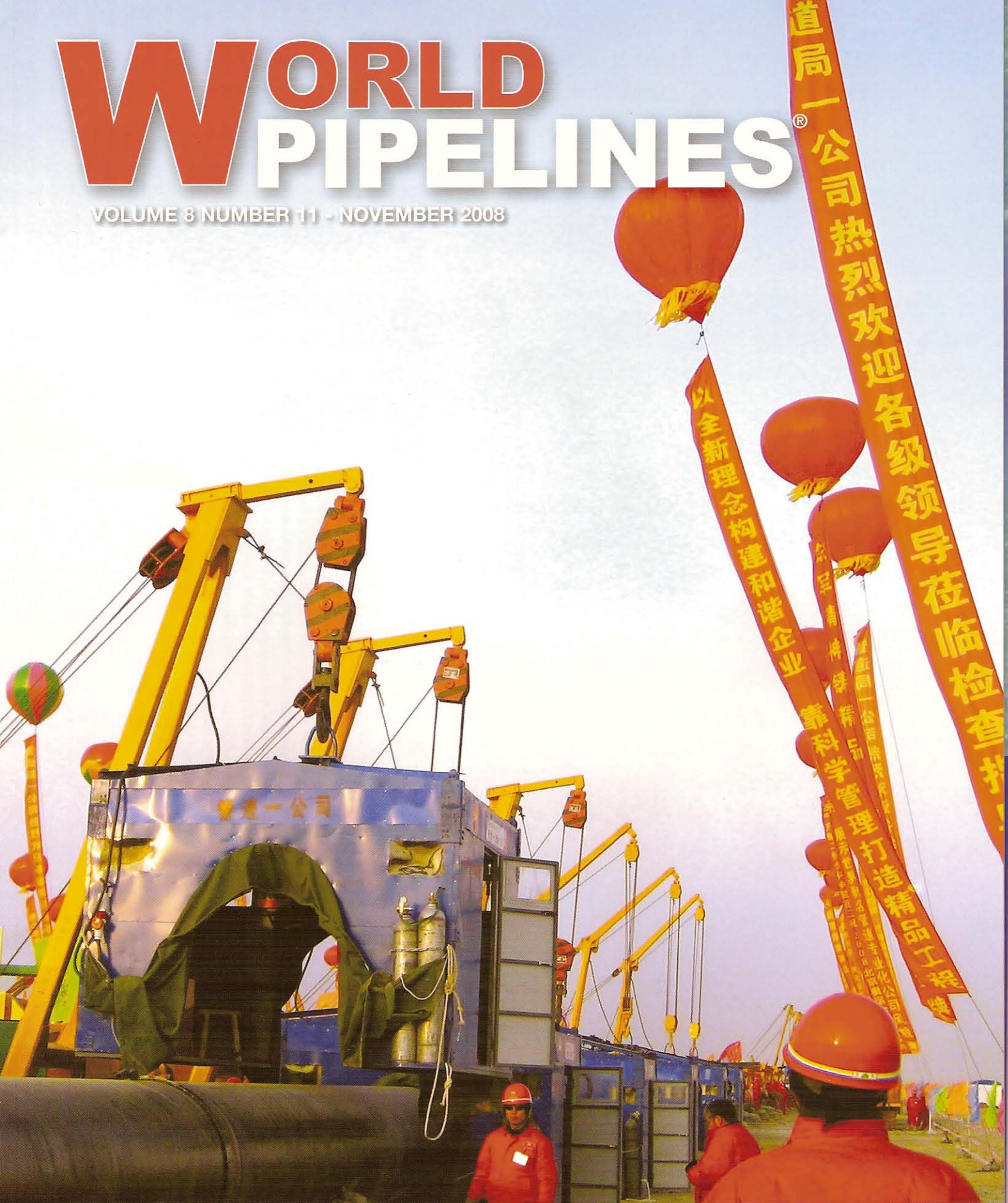
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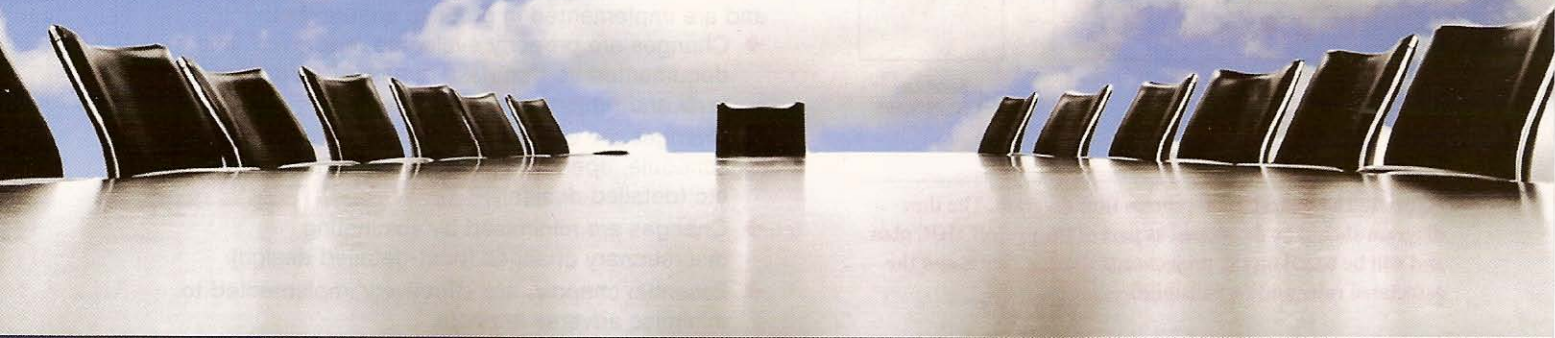Suite 290

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change

MOC process should be managed by the Project Management Team (PMT) (Figure 1).

Changes in operations, procedures, contract terms, site standards, facilities, or personnel must be evaluated and managed to ensure that safety, health, cost, schedule and environmental risks arising from these changes remain at an acceptable level.

During the early phases of a project, change and optimisation is encouraged to improve project

FORMAL
(MOC) PROCESS
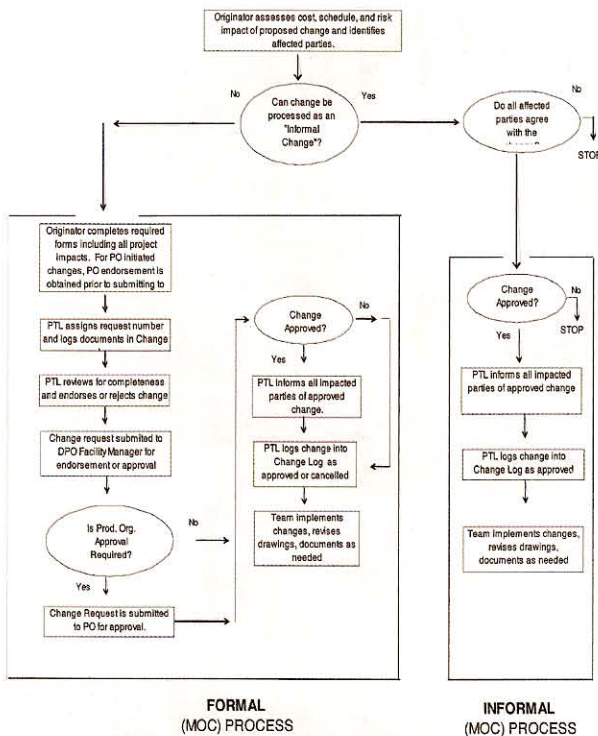
INFORMAL
(MOC) PROCESS

Figure 1. The typical MOC process flow diagram. The flow diagram should be developed as part of the project MOC plan and will be based on the project organisation charts and the associated roles and responsibilities.
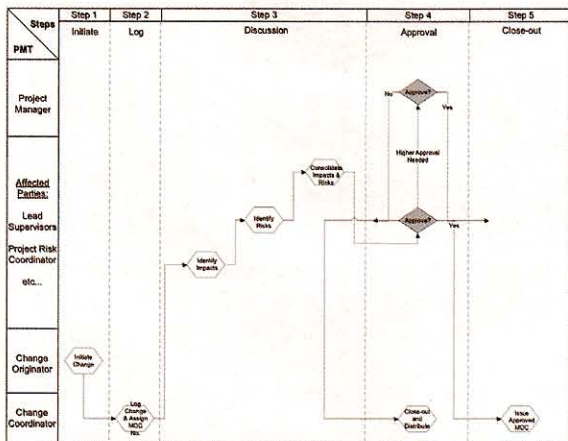

Figure 2. MOC pre-FEED flow chart.

performance. As such, the change process is much less restrictive during this time. After commencement of detail design however, the project goal should be zero discretionary changes in order to minimise growth and waste. To facilitate accomplishing this, the process becomes much more restrictive and rigorous as the project progresses.

All changes, regardless of the project stage, will be evaluated on their impact to the project in the areas of safety, health, environment, regulatory, cost, schedule, risk, weight and operability.

It is the responsibility of the PMT to incorporate the theory and fundamental tenets of the MOC process in all dealings with contractors and suppliers. Therefore, the MOC Process guidelines and responsibilities must be included in the Invitation to Tender documents (ITT) as co-ordination procedures and/or purchase order terms and conditions.

Another important aspect of an effective MOC process is the delegation of authority guidelines (DOAG) that should be communicated across the project. DOAG assigns specific levels of authority along the PMT that allows for minor and moderate changes to be managed at the appropriate levels and forces major changes to those in the best position to make the relevant decisions.

MOC objectives

The objectives of the MOC process are multi-faceted and are implemented in order to ensure that:

➔ Changes are properly evaluated, approved, and documented so that risks remain at an acceptable level and project objectives are met.

➔ Changes are encouraged to capture cost, schedule, operability, weight saving opportunities, etc (detailed design).

➔ Changes are minimised by eliminating discretionary changes (post-detailed design).

➔ Essential changes are effectively implemented to minimise adverse impacts.

➔ Changes are communicated and implemented on a timely basis so that all work is done with consistent, up-to-date project documents.

➔ Appropriate contractual actions are taken to implement changes in a timely and cost effective manner.

➔ Changes are categorised by type and documented in such a way to allow trending information to be extracted.

A well developed MOC Process is done very early in the life of a project (prior to initiating FEED) and when properly implemented will allow the effective management of change throughout the life of the project.

Valid reasons for making changes

Generally, any change should be considered prior to detailed design if it improves project performance.

Some example areas include safety, health, environmental, regulatory, cost, schedule, weight, profit and productivity.

Changes after freezing the Controlled Project Documents should only be considered if the condition that is the impetus for the change either:

→ Was not safe.
→ Did not meet regulations.
→ Did not work.
→ Did not meet specifications.
→ Was significantly higher cost or longer schedule.
→ Was significantly less profitable.

If a change does not fall into one of the above 'buckets', the change should be rejected.

Pre-detailed design MOC process

Prior to detailed design, the MOC process is less restrictive and is intended to document and communicate change (Figure 2). It is an integral part of the pre-detailed design stewardship process. MOCs need to be managed during this phase of the project and can assist with eventual reconciliation of cost estimates.

Design development changes need to be reported and communicated, but do not necessarily need formal project approval. Outlined below are the basic steps for design development changes. All changes affecting project scope or basis should require approval by the PMT, and must follow the post-detailed design MOC process.

Step 1 - Initiate change

When a change has been requested by anyone on the project, the originator should complete an MOC summary sheet.

Step 2 - Log

The MOC Summary Sheet is then submitted to the change co-ordinator who determines whether the

Figure 3. MOC post-FEED flow chart.

proposed change requires an MOC. If so, the change co-ordinator assigns the MOC a number and logs it in the MOC log (The change co-ordinator may be a position or a role. For example on smaller projects, the Project Engineer may act as the change co-ordinator; on larger, more complex projects it may be justified to have a stand-alone position).

Step 3 - Discussion

The proposed change is then discussed by the affected parties. At this time all impacts such as cost, schedule and weight are recognised and consolidated to aid in the approval decision. In addition to the impacts, the Lead Supervisor from the affected area determines whether the necessary risk assessment should be minor, moderate or major.

This step is completed when all affected parties have been involved in the discussion, all impacts have been identified and consolidated for the MOC and the required risk assessment has been performed.

Step 4 - Approval

After completion of the discussion step, the Lead Supervisor reviews all the consolidated impacts and risks. Based on the information gathered, the change is then approved, rejected or endorsed and forwarded to a higher approval level. Following the approval decision, the change, whether accepted or rejected, is given to the change co-ordinator for closeout.

Step 5 - Close-out and execution

Upon receipt of the approved or rejected change, the change co-ordinator completes the MOC and distributes the change to the affected groups.

If the change is rejected, the affected groups will receive the reason for the rejection.

If the change is approved, the affected groups will receive a notice to proceed with the work associated with the change. At this point, the change is executed and all affected project documents are modified to reflect the approved change.

Post-detailed design MOC process

After the kick-off of detailed design, changes should be closely controlled to allow only changes that are necessary to achieve the stated project objectives and goals. Therefore, the post-detailed design MOC process is considerably more rigorous and structured than the pre-detailed design process, but the underlying principles are similar (Figure 3).

Steps 1 and 2 are essentially the same as in the pre-detail design phase. After detail design it is assumed a major contract or contracts have been let. After identifying the potential MOC, the review
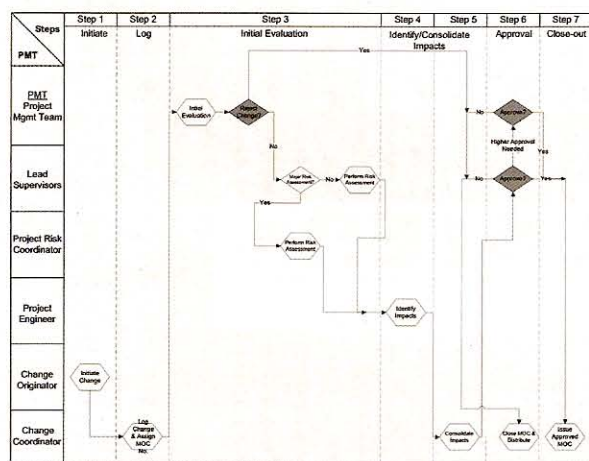
and approval of the change order should follow procedures set forth in that particular contract.

The Lead Supervisor evaluates the details of the MOC. In the post-detail design phase, the identification and assessment of each MOC becomes more involved. This will include a detailed look at all of the impacted project components such as safety, cost, schedule, environmental and regulatory, weight impacts, operability, etc of the proposed MOC. This evaluation includes a detailed look at the MOC's impact to applicable specifications, codes, and standards as well as which project documents are affected. The need for supplementary permits should also be evaluated. Lastly, it should be determined which appropriate Cost Work Breakdown Structure (WBS) codes are affected. Assuming the MOC is deemed valid, the appropriate level of risk assessment (RA) should be applied, i.e., minor, moderate, or major.

After a full evaluation, including the RA, if the MOC has merit, then it is forwarded to the appropriate levels of the PMT for review and approval. If the PMT does not endorse the proposed MOC at this point, it is rejected and the MOC is forwarded to the Change Co-ordinator for close out.

If a minor or moderate risk assessment is required, the Lead Supervisor will co-ordinate and complete the RA and send the results to the project risk co-ordinator for incorporation into the risk resolution log. If the RA is considered major, the appropriate actions should be taken to conduct a risk assessment according to the project risk management process.

Normally, if an MOC is rejected at any level, the MOC is to be sent back to the change co-ordinator for close out of the MOC. The change co-ordinator will notify all affected groups indicating that the MOC has been rejected along with the reason for rejection.

Once the change co-ordinator issues the approved MOC, the change is executed and all affected project documents should be modified to reflect the approved change.

MOC reporting and follow up

Internal assessments will typically be made by the Project Business Manager to confirm that approved and disapproved changes are periodically reviewed to verify that approvals are occurring at the appropriate level and that key changes are being handled properly. These assessments will also assure the process and its supporting procedures are being followed and that acceptable results are being achieved.

Reporting of changes can be done through a variety of means, at a minimum they should be tracked on the monthly project progress report. This will include maintaining a change order log, tracking the total estimated cost of changes against contingency rundown, tracking individual and cumulative number of changes over time, tracking key schedule milestones, forecasting work-hours against the budget for key contracts/activities, re-forecasting of the project cost and schedule on an ongoing basis to reflect the impact of changes, and monthly reviews of change activity by the PMT via cost reviews.

Assessment of contractors and suppliers should be done on an ongoing basis as changes are processed.

MOC process maintenance

The purpose of including a 'maintenance' requirement for the MOC process is to act on the information gathered from the assessments, verifications and measurements; from comments by process users; from the observations of the internal assessments; and from other sources that indicate the degree to which the MOC process is meeting its purpose and objectives.

Periodically (the timing needs to be set by the PMT and will be project dependent, but at least quarterly), the MOC process should be evaluated to accomplish the following:

➔ Analyse the verification and measurement data that has been collected and look for common themes or systemic deficiencies.
➔ Solicit feedback from process users who have been involved in implementation of the MOC process.
➔ Compile and review the observations relative to the MOC process from the internal assessments (These can be in the form of independent project assessments (IPA), audits, project readiness reviews (PRR), other internal reviews set up by the PMT or that are corporate requirements) and look for common themes or systemic deficiencies.
➔ Develop recommendations for additional improvements to the MOC process.
➔ Report the results and improvement recommendations to the MOC process owner.

Follow up

Process improvements should be sought and when found and applicable these improvements should be scheduled for implementation and tracked, including:
➔ Revising documentation.
➔ Training personnel in the improvement.
➔ Implementing and controlling any temporary measures prior to completing the improvement.
➔ Communicating best practices within the PMT and between business units and with other corporate functions as required. (●

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