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Change Management – A Case Study for Project Engineers

By Anil Seth
Larson & Toubro, Ltd.

The changes after award of contract in any project scenarios are never a win-win situation and often accounts to losses for LSTK contractor. A situation was studied in Revamping of GGS-II (NZR/MM/AA/HES/ REVAMP/ GGS-II/12/2005) at RDS Field, ASSAM, INDIA and the outcome is a DRIFT-STEP hypothesis and 8 STEP CHANGE ORDER MANAGEMENT ROUTE MAP which helps the Project Engineer's in Tenability Cases.

He who rejects change is the architect of decay. The only human institution which rejects progress is the cemetery
- Harold Wilson

I put a dollar in one of those change machines. Nothing changed.
- George Carlin

"Change" however painful, is a reality in most projects. Sometimes these changes become a necessary evil.

The CHANGE in any project is based on NEED and the change will have COST attached to it. In simple words any CHANGE without REQUIREMENT is not acceptable or the CHANGE is not TENABLE if the REQUIREMENT is not established. And any requirement without change has no BUDGET and SCHEDULE impact scenario. The Changes, tenability and requirements are all interwoven i.e. the TENABILITY is a function of CHANGE and REQUIREMENT:

TENABILITY = f (CHANGE, REQUIREMENT)

This need of change was realized very early during detail engineering schedule of Revamping project of GGS-II RDS Field, ASSAM, INDIA. The project duration of seventeen months started from 1st May 2006 on LSTK basis. The site was surveyed by the L&T Engineering Faridabad Team in late August 2006 and the estimation of project scope and the budget was compared. The doubts were raised on the civil structural and piping feasibilities. The requirements versus scope lead to change in plot size by twenty-four percent.

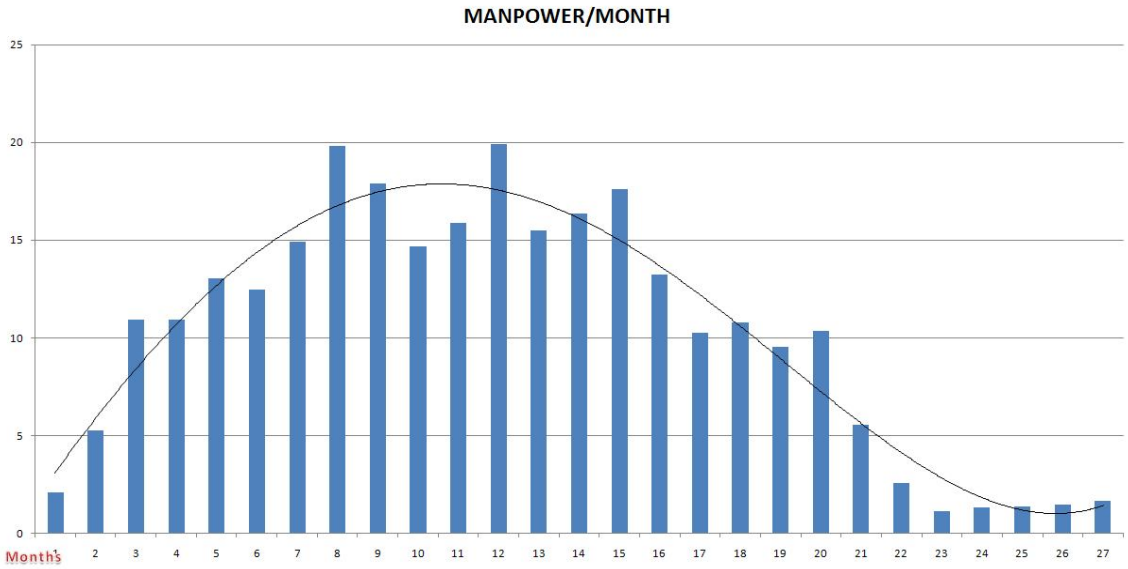
During execution of GGS-II RDS Field through “Area of Concern” the requirement of revised plot plan was suggested to client. The reason was attributed to various mismatches in the contract. The objective of all these efforts was to surface the engineering discrepancies in early stage of project. But if the project scope shifts from the original the schedule may predict delay or would look for rescheduling with catch-up plans without disturbing the critical path.

When the shortfall on the delay till March 2007 was captured and communicated on the original scope, the client and PMC started looking for contractual venues of delays. However the contractual project land acquisition which was done on the 63rd day of Project Start date gave unconditional drift in overall Project schedule this later became one of the ground to settle the extra claims. The question the project schedule cycle of submission and approval is normally 60-90days cycle then how any change within this period becomes governing .The answer is in milestone chart and 90 days look ahead which is given within 15days of receipt of letter of intent .This look ahead provide the activities planned for next 60-90 days or in other words these are those activities which are fixed entries when overall project schedule is proposed.

The change in Plot Area requirement is a tricky situation for client as all the bulk items or the Plot Requirements change leads to disadvantage of General and Special Contract Conditions. The material change is quantifiable but the engineering efforts are difficult to predict therefore to control the efforts or ENGINEERING MANHOURS a STEP style was developed.

To explain this style the LUMPSUM TURNKEY (LSTK) engineering man hour consumption in a normal Engineering Procurement and Construction (EPC) schedule is compared with LSTK schedule where in quantified Changes are major requirement.

In typical thirty-six months EPC schedule the engineering man-power distribution generally follows a standard bell curve Distribution A.



DISTRIBUTION A

What happens in the case of scope change?

The initial FIVE months of any LSTK project schedule is usually unaffected as the effect of Procurement and the Pressure of construction goes more towards planning than execution. Considering this as a base in Revamping project of GGS-II RDS Field the Distribution B was mapped wherein from 8th month onward the distribution started showing the Project DRIFT. It was also observed that this uncontrolled DRIFT may lead to an OPEN schedule (when the schedule becomes OPEN the Timeline analysis becomes meaningless).

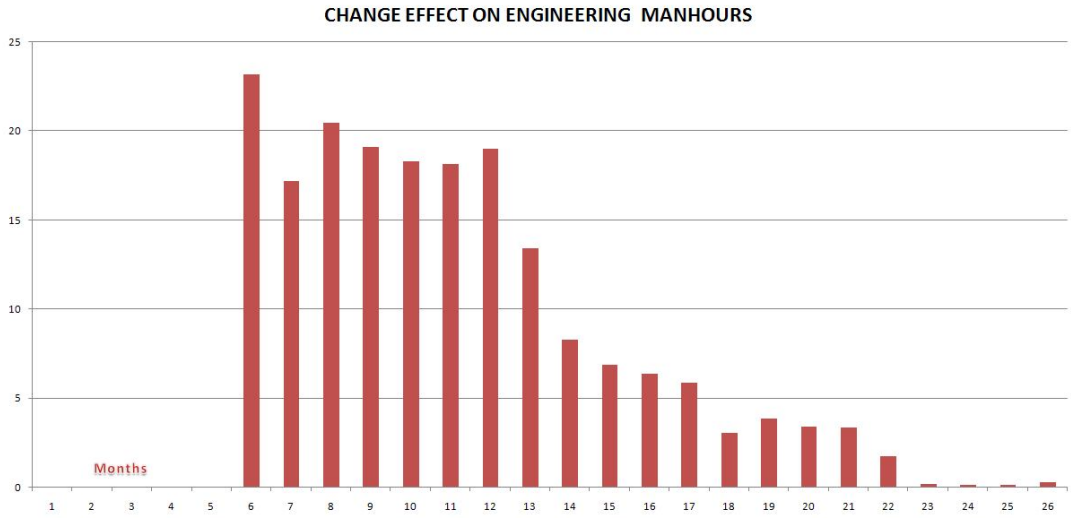
The STEP demand is a function of Scope DRIFT and scope Tenability.

STEP demand =f (Scope DRIFT, Tenability)

The engineering planning for CHANGE is STEP-DEPENDENT on the outcome of CHANGEORDER negotiations. This DRIFT is controlled by adjusting engineering schedule to the STEP demand. In Revamping project of GGS-II RDS Field the ENGINEERING MANHOURS were sanctioned on need of CHANGE. It was observed that the change is required but since the change was not budgeted the schedule had original relationships for predecessors and successors. Therefore the revised scope was tabulated and discussed with client wherein the need was negotiated.

Tenability and change order reports are generally submitted when the additional activities are in late stages or over but the Engineering being first step in Project Execution can not wait .Here the role of Engineering Manger becomes important as the RISK comes in negotiations, negative CHANGES and rejections.

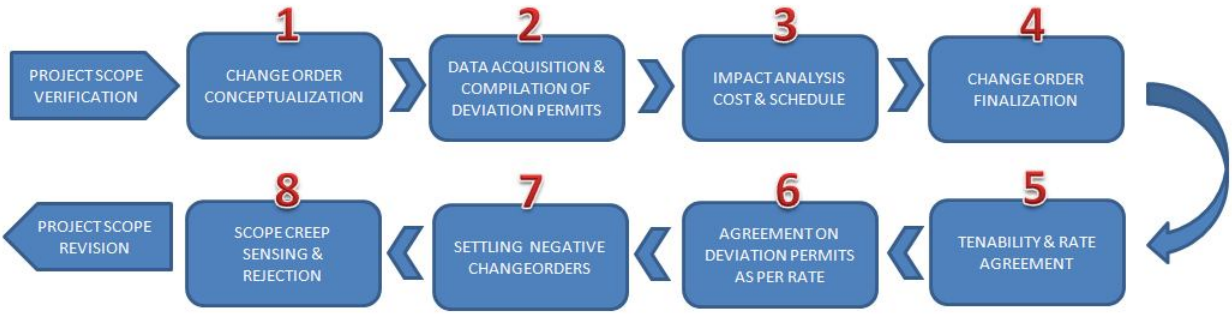
To reduce this RISK the revamp project was divided into smaller engineering modules, these modules were interrelated but had separate budgets. On sensing the positive negotiations the engineering was drifted through these modules and the result was a STEP output as shown in Distribution B.



DISTRIBUTION B

The last step in the change order management after the Change order is certified Tenable is not to get trapped in SCOPE CREEP. Here a Technical Report from engineering generally helps in sensitizing the scope creep.

With this experience CHANGE ORDER route map was formulated which helps the Project Engineer's in Tenability Cases. The possible mistake envisaged is in STEP 2; it is of utmost importance that the deviation permits are only to be issued on original scope and not on the revised scope.



8 STEP CHANGE ORDER MANAGEMENT ROUTE MAP

There are various tools which comes handy at the time of change acceptance, some are-

1. Pre Engineering Survey Report
2. 90 Days look ahead schedule
3. Clause of Area of Concern in –
    a. Weekly progress report and
    b. Monthly progress report
4. Management Review Meetings minutes on HOLD-UP list
5. Land acquisition by owner post order
6. General and Special Contract Conditions
7. Negative Change Report.
8. Scope Creep Rejection Report post Tenability.

The CHANGE starts with engineering and completes the 8 step cycle, therefore:

THE ENGINEERING PRACTISES AND APPROACH ARE BACK BONE OF ANY CHANGE MANAGEMENT

AND FOR ANY SUCCESSFUL CHANGE THE REQUIREMENTS FROM ENGINEERING IS ALWAYS HIGH.

About the Author

Anil Seth

Author

Mr. Anil Seth is working as Assistant General Manager in Project Engineering Department of Larsen & Toubro Engineering at Faridabad, India and manages the Project Engineering Manager Portfolio for hydrocarbon projects. Before joining Larsen & Toubro Ltd. Engineering and construction division he has worked for Indian Petrochemicals Corporation Limited. He holds B.E. degree with Honors in CHEMICAL Engineering from Panjab University Chandigarh and has also done Diploma in Environmental Management. He is Certified for Harvard Manage Mentor and specializes in Building High Performance cross functional Task Force as well as Converting Breakeven Projects to Profitable scenario. He can be reached at anil_seth@lntenc.com or anilshivani99@gmail.com

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