How NetPoint® is Improving Schedule Quality & Engaging Stakeholders in New Ways in the Oil Industry

By Kaveh Dabiran, LEED AP
Case Study

CLIENT
Major Oil & Gas Refinery

PURPOSE
• Demonstrate the important role NetPoint and GPM have played in improving the overall Planning & Scheduling function at the Oil Refinery
• Communicate the way in which these departmental improvements have positively impacted the execution of capital projects at the refinery

Abstract
The first large scale refining operation began in the mid 1800’s. With evolving technology in the oil and gas industry over the last 150+ years, emerged a need to develop and execute more complex projects emerged to ensure that facilities remained competitive. Maintaining the infrastructure became a critical variable and oil refining capital budgets has grown exponentially into the hundreds of millions of dollars per year. With this growth comes greater risk to the stakeholders, and a need to address these risks through effective project controls. This case study will profile the planning/ scheduling environment at the and identify the various ways NetPoint is being leveraged in the existing P6-centric structure to improve the overall planning effort and stakeholder involvement.
PMA’s Involvement

- Engaged by client to provide initial review of WPT Planning/Scheduling practice
- Involvement – 22 months
- Staff of 3 full time planning/scheduling consultants (and growing!)
Organizational Change

What prompted the deep dive into their existing Project Controls practices?

- Ensure more projects delivered on schedule
- Need to deliver more projects on or under budget
- Need to Better Control of Annual Spending Targets

There is room for improvement!
Controls Environment

- Time & Material-NTE Contracts + “rolling-wave” engineering
- Minimal Change Order entitlement discussions
- No Liquidated Damage penalties tied to project milestones
- Baseline schedule meaningless to Contractors (no constructor participation)
- Wrong people in the wrong seats
- Contractor’s belief the client has the ability to absorb any cost
Project Services Organization

Owner operates under a balanced matrix organization
OPT Planning/Scheduling Breakdown

- 9 Total Planner/Schedulers, range of ~8-25 projects, ~500-2000 activities, 1 Mo -3 Yrs
- Operate under a P6 Enterprise Portfolio System (on Citrix Server)
- Each Planner/Scheduler has read/write access (with appropriate database limitations)
- Project templates that establish a Level 1 WBS, required project/activity codes, and reporting LOE’s
- Contractors NOT allowed in the database, all schedules developed/maintained by OPT Schedulers
- Importing of Schedules NOT allowed (with exception of NetPoint)
- Schedules updated every two weeks
- Resources reconciled every month
The Projects We Service

- Average ~$275M annual expenditure on OPT capital projects
- Over 100 active projects in the database (in various stages of development)
- Forecasted annual capital expenditure for the next 5 years of $400M/year
- Majority of projects are revamp – construction on LIVE operating units.

Example: Replacing a section of seating during a football game
Client Goals

- **Goal 1**: Provide the business with the assurance that we’ve undergone all planning avenues to ensure project will be developed, tracked, monitored, and delivered on time. This includes project performance reporting.

- **Goal 2**: Provide the OPT with a sound project schedule to allow team decision makers to proactively adjust the plan to ensure efficient project execution.
Typical Issues in Planning & Scheduling

“Produces a complete & well-documented plan”
“Proves to the business we’re ready to start execution”
“Communication tool for all stakeholders – all the way down to the laborer in the field”
“Forces coordination and planning of resources”
“Ensures the team is aligned with the Project Execution Plan”
“Allows for early identification of issues and risks to the project”
“Supports cash-flow forecasting”

“I’ve executed projects here longer than you’ve been alive. I don’t need a schedule”
“A schedule is just a check in the box for project funding”
“I just don’t have time to read through all 70 pages of this schedule”
“This isn’t my schedule - It’s the schedulers’”
Owner Capital Value Process (CVP)

- Align with Business
- Finalize project scope, cost, and schedule
- Compile, Evaluate, and Select an Option
- Build & Commission
- Detailed Engineering
- Make sure it works
- Project Funded

FEL 1
FEL 2
FEL 3
EXECUTION
OPERATION
The Big Picture

- Submission of a resource loaded EPC Schedule is required at every stage gate
- Before entering each stage, scope, schedule, and estimate reviewed
- Upon approval, this “sanctioned schedule” becomes the **commitment to the business**

**WHY IS THIS IMPORTANT?**

- Key Project Performance Indicators are measured against this baseline
- Labor resources from sanctioned schedule are used for high level capital program planning as well as monthly cost forecasting
- Consent Decree projects (EPA)

**THE SCHEDULE NEEDS TO BE ACCURATE**
The Problem is the Communication Gap

Work product = Form of communication

• Schedules difficult to understand by non-schedulers
• P6 schedules too detailed - too many activities
• P6 layouts “all over the place”. Work Breakdown Structure inconsistent
• Field crafts have no interest in a detailed schedule
• Contractors sometimes view scheduling as an administrative function not applicable in the field
• P6 review/markup/update process not collaborative
• Impacts to project milestones not easily understood by all
• Schedulers not invited to key project meetings

We’re not speaking the same language!
Not enough buy-in from all stakeholders!
Solution: Get More Stakeholders Engaged in the Scheduling Process

• **OPTION 1:** Stay with P6 Schedules to engage all key input holders – but not very effective

• **OPTION 2:** Present the schedule in a new way with NetPoint
"If the only tool you have is a hammer, you tend to see every problem as a nail."

-Abraham Maslow
The NetPoint Era – How Did It All Begin?

Wallpaper PERT markup session
The First NetPoint Schedule
The Spread of NetPoint – Equipment Planning
The Spread of NetPoint – Summary Schedules

- With project complexity and size increasing, NetPoint schedules were developed and used as a Level 2 Summary Schedules for executive leadership.
The Spread of NetPoint – Engineering

- Better communication with Engineering
The Spread of NetPoint – Cashflow Analysis

Resource loaded NetPoint schedules were created for programs with yearly cashflow constraints. What-if analysis was conducted to organize the work in a fashion that produced the most output.
The Spread of NetPoint – Field Involvement

- Trades started taking ownership of the schedule
- Schedules posted in the field
The Spread of NetPoint – Field Involvement
The Spread of NetPoint – Lean Planning

- Last Planner System – production planning system aimed at producing predictable uninterrupted workflow in the field.

**Last Planner System**

- **Master Schedule**: Set milestones and key dates
- **Phase Schedule**: Specify handoffs between trades
- **Look-Ahead Plan**: Make ready and initiate re-planning as required
- **Weekly Work Plan**: Will Do
- **Progress Tracking**: Doing & Done
- **Feedback & Learning**: Measure progress and remedy issues
The Spread of NetPoint – Lean Planning

Pull Planning Meeting
The Spread of NetPoint – Lean Planning

Typical Pull Planning Meeting
The Spread of NetPoint – Lean Planning Output
The Spread of NetPoint – Obstacles

- **Additional Work:** In some cases, there is a need to develop and track multiple schedules.

- **Focus:** The project team may start to focus more on the NetPoint schedule rather than the detailed P6 schedule of record in the database.

- **Blurred lines of responsibility:** Non-schedulers have shown interest in NetPoint which is not always well accepted by established schedulers.
Transformation – of the Process

- Increased participation of leadership in schedule development
- The role of the Planner/Scheduler as a key project member reinstated
- New input holders inserting themselves into the process (Operations)
- Field Crafts (Last Planners) pushing for interim planning sessions
- Contractor commitments agreed to by all “on-the spot”
- Better functioning teams

Better Schedules

Improved Communication

Improved perception of Planning/Scheduling
Result: Improved Business Performance

- **Cost** – 2012 monthly cash flow – within 5% of projections, better forecasting of annual capital program expenditures
- **Estimating** – Increased communication within project team produces better information to project estimators
- **Scheduling** – 17% improvement on Schedule Performance Index (SPI)
- **Project Engineering** – More Construction input = more confidence in IFC package requests
- **Project Management** – More confidence in plan allows for better decision making
- **Project Team** – Culture of collaboration dominant over isolation (working in silos)
- **Executive Leadership** – Scheduling data presented in more tangible format building more faith in work product.

**End Goal?**

*Set the industry benchmark!*
What’s Next? – Moving the Ship Forward

- **NetRisk** – By the end of 2014, perform SRA internally on all mid cap projects
- **Lean Planning** – Utilize NetPoint live in Pull Planning sessions- continue to support Lean
- **Training** – Provide formal training (NPT & GPM) to project teams
- **Reporting** – Develop customized schedule reports directly from NetPoint
Questions?

PRESENTED BY:
Kaveh Dabiran, LEED AP
Associate
kdabiran@pmaconsultants.com