



SAFETY & PRODUCTIVITY MOMENT

COAA BP CONFERENCE, 2016

SHELL ALBIAN SANDS

MRM RC1 PROJECT

Andrea Torroba, Project Manager



SHELL ALBIAN SANDS MRM RC1 PROJECT

**BETTER SAFETY, BETTER
PRODUCTIVITY**



Competitive, credible, and affordable. Our projects, like our business, needs to be all of these things

- Safety is the ‘silver bullet’
- A failure of safety is a failure of collective leadership
- Cultural change: behaviors, behaviors, behaviors:
 - safety AND productivity can only be delivered by ‘delivering together’
 - overcoming barriers together
 - discipline around planning
 - no confusion around systems, procedures, priorities
 - care for people
 - **productivity enhances engagement and motivation**

All of the above turns into benefits on cost, schedule and quality:

MRM RC1 Project TRCF = 0.66 project to date (based on 1M manhours)

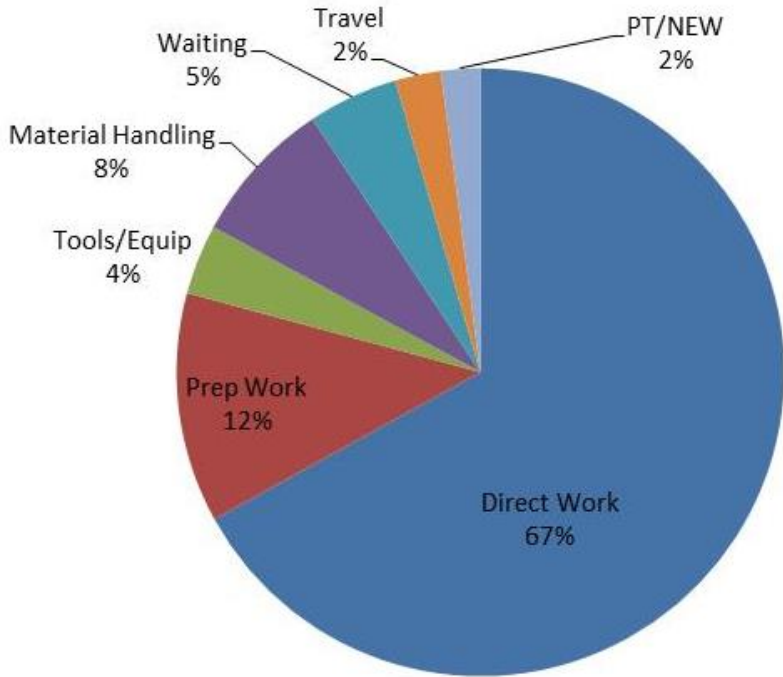


SHELL ALBIAN SANDS MRM RC1 PROJECT

TIME ON TOOLS STUDY
December 2015

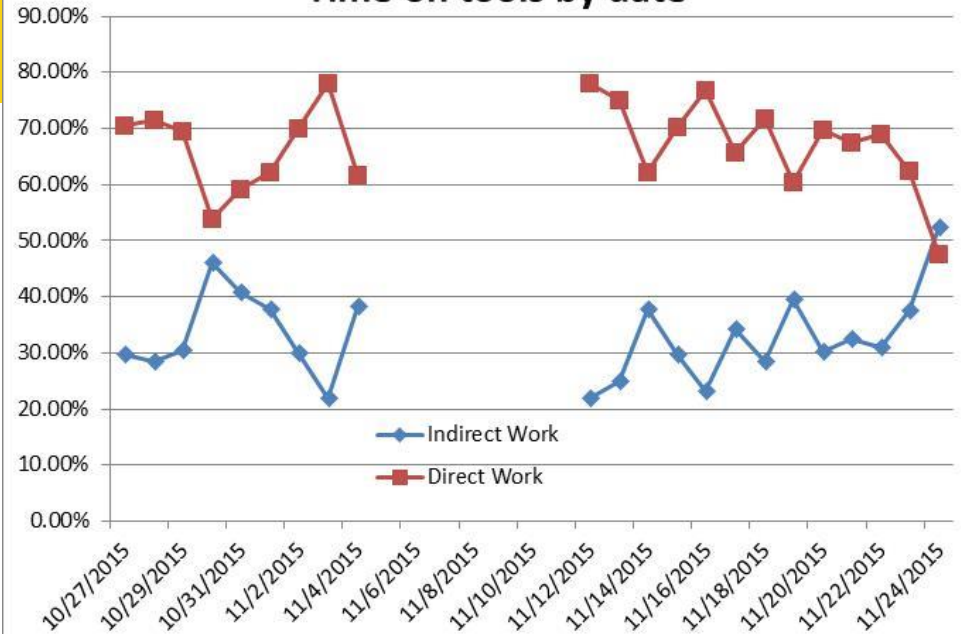
WHAT WAS MEASURED

Time on Tools

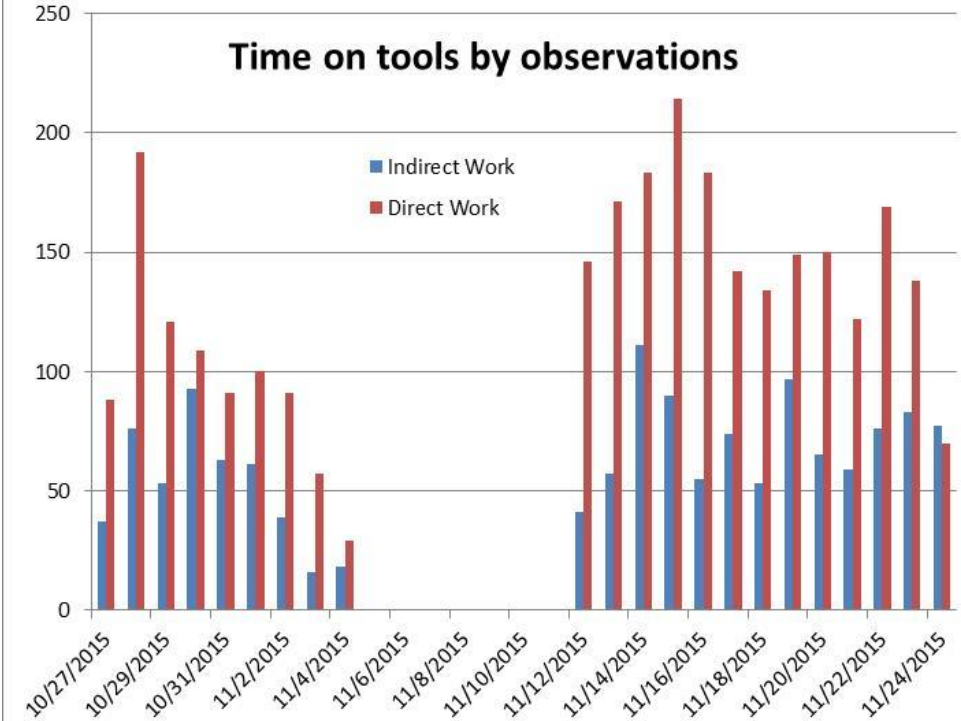


* PT/NEW: Personal Time/Non engaged worker

Time on tools by date



Time on tools by observations



WHAT WAS MEASURED

| Total study | |
|--------------------|---------|
| Direct work | 66.97% |
| Indirect work | 33.03% |
| Total observations | 4,243 |
| Duration | 22 days |
| Period PF | 0.86 |
| Additional work | 20.17% |

| Validation | |
|------------------------|--------|
| Period PF | 0.86 |
| Additional work | 20.17% |
| Calculated ToT | 67.47% |
| Observed ToT | 66.97% |
| Calculated study error | 0.50% |

- **Data shows best in class direct work = 70%**
- Best in class ToT was observed, validated with PF and additional work data, therefore the study is considered conclusive
 - PF was lower than normal for the period, driven by additional work being higher than normal
 - Additional work is not included in the baseline and PF calculations
 - Weather shows no significant influence (snow on the ground shift 2 only)

HOW IT WAS MEASURED

- Basis: CII Guide to Activity Analysis 252-2a:
 - Objective: to quantify time expended by craft on productive and non-productive activities so that productivity improvements may be determined and implemented.
 - Tour method using construction coordinators as observers
 - Craft identification: each coordinator working within their discipline
- Duration: 2 rotations,
- Avg manpower ~ 270, minimum sample size needed: 189 per hour @ 10-hour day = 1,890 observations needed
- Craft information sessions:
 - *Management made it clear that, rather than being an assessment of craft worker performance, activity analysis is an audit of the effectiveness of the site management team. It was stressed that the study would help provide the resources that craft workers need to accomplish their work.*

WHAT WAS LEARNED

- Learnings:
 - Immediate feedback and resolution of issues
 - Skill improvement for Construction staff, could extend outside of construction group with good training
 - More and better engagement between CMT and workers
 - High value qualitative comments
 - Another way of showing care for people

- Opportunities:
 - No independent third party validation
 - One more layer of details for non-productive categories (requires formal training for observers)
 - Do it earlier in construction to accelerate PF improvements
 - Formal or better training for observers
 - Better understanding and quantification of errors

KEY FACTORS FOR HIGH TIME ON TOOL

- Construction progress 52%: with the exception of electrical contractor who had just ramped up (which also had a temporary impact on PF), contractor and management team had already gone through learning curves and removed most barriers for productivity.
- Work Face Planning was followed on every phase of the project.
 - Self-assessed WFP checklist results:

| Project Phase | Score | Acceptance Criteria |
|---|-----------|---|
| Select Phase Elements | 59 (84%) | 0 -42 Unacceptable; 43-70 Acceptable |
| Define Phase Elements | 59 (79%) | 0 -45 Unacceptable; 46-75 Acceptable |
| Execute Phase Elements | 63 (84%) | 0 -45 Unacceptable; 46-75 Acceptable |
| Assessing the Contractor's AWP Implementation | 113 (73%) | 0 -100 Unacceptable; 101-155 Acceptable |

KEY FACTORS FOR HIGH TIME ON TOOL

- Highly engaged contractors and management teams; transparency and communication
 - Project success = success of all parties
- Safety culture performs: strong safety culture enables strong delivery across all areas
- Construction management team in the field for 70-80% of their time: mandate to monitor, assist and support where and whenever they can
- Engaged workforce: workers enjoy being productive and are held accountable
- War-room: construction, scaffolding, completions
- Dedicated permit issuers for all areas, largest area deemed greenfield with complete care, custody and control by project team
- Productivity monitored closely with specific interventions when needed

