



SHELL ALBIAN SANDS PRIMARY SEPARATION CELL (PSC) CONSTRUCTION

Impact of Execution Strategy and Planning on Productivity

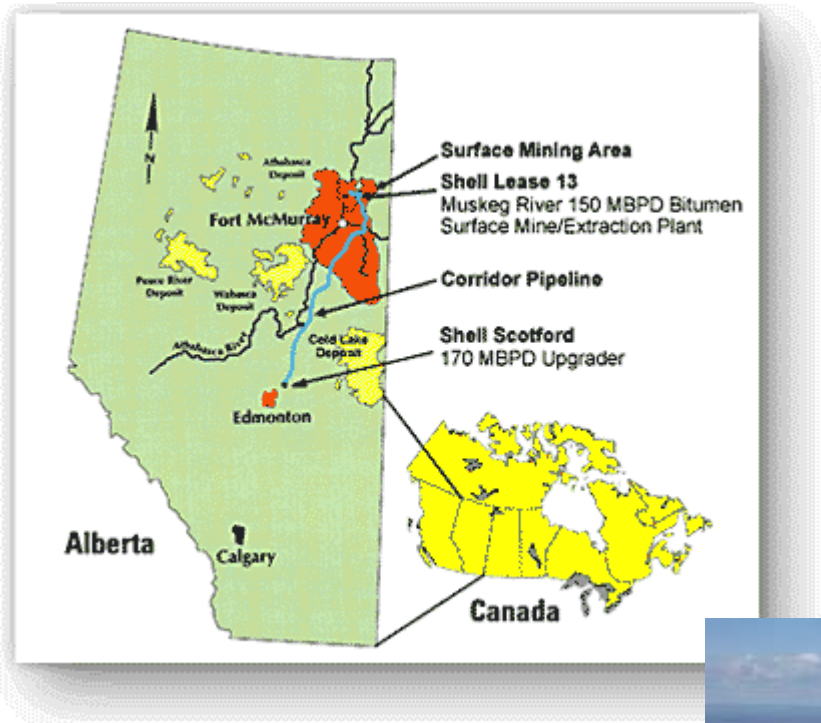
INTRODUCTION

Comparison of 2 Primary Separation Cells constructed at Albian JPM site, a case study to identify benefits of replication, site conditions and contracting strategy on productivity.

Items to discuss

- ❑ What is a PSC
- ❑ Comparison of key factors
- ❑ Plot plans, 3D view
- ❑ Challenges / Opportunities
- ❑ Benefits of planning and set-up
- ❑ Improvement in productivity

WHERE



PRIMARY SEPARATION CELL (PSC)

Large open gravity separation vessel

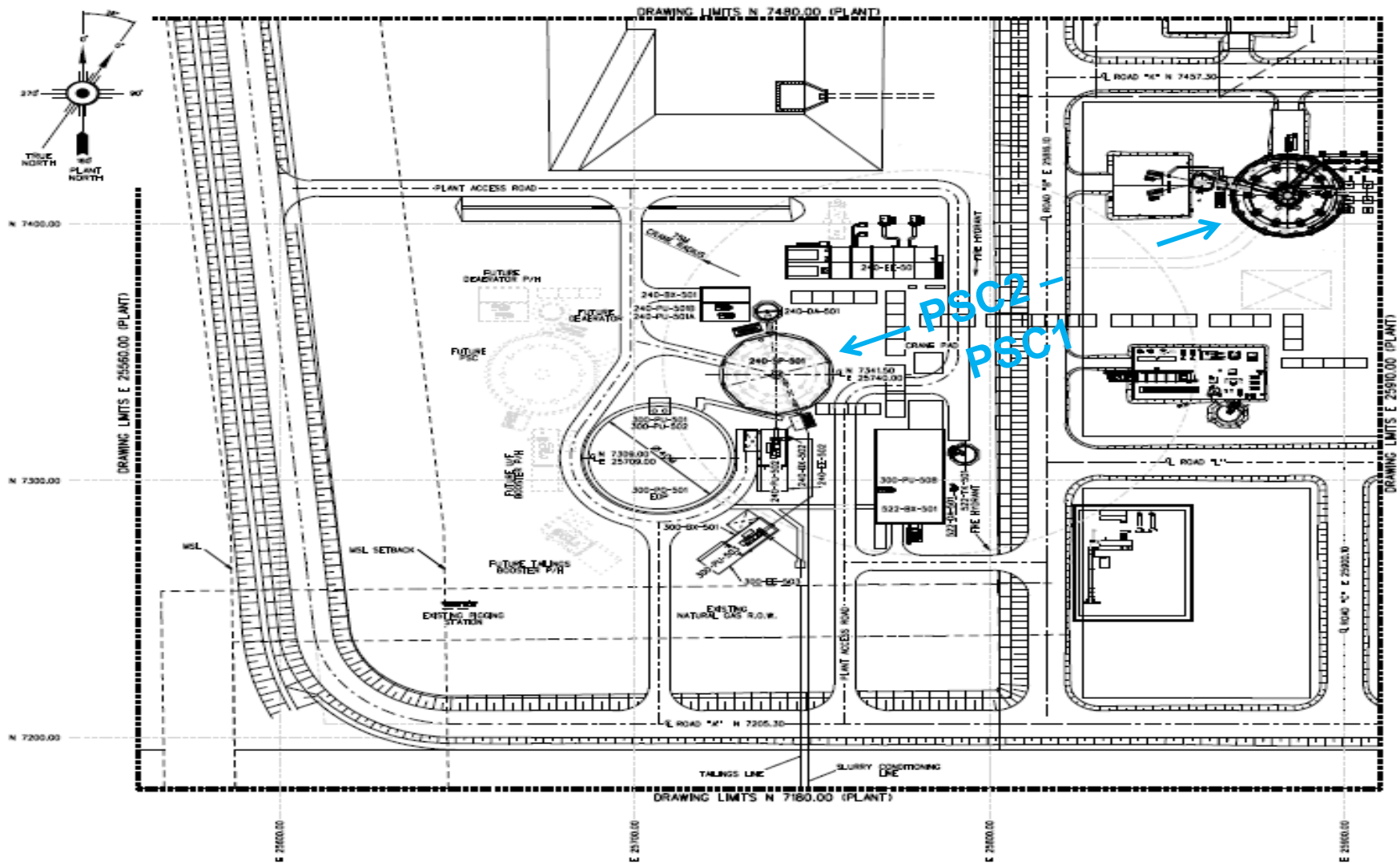
- Froth (contains the majority of the bitumen) top of the vessel
- Middlings containing hard to separate clay particles
- The bottoms phase where majority of the sand separates



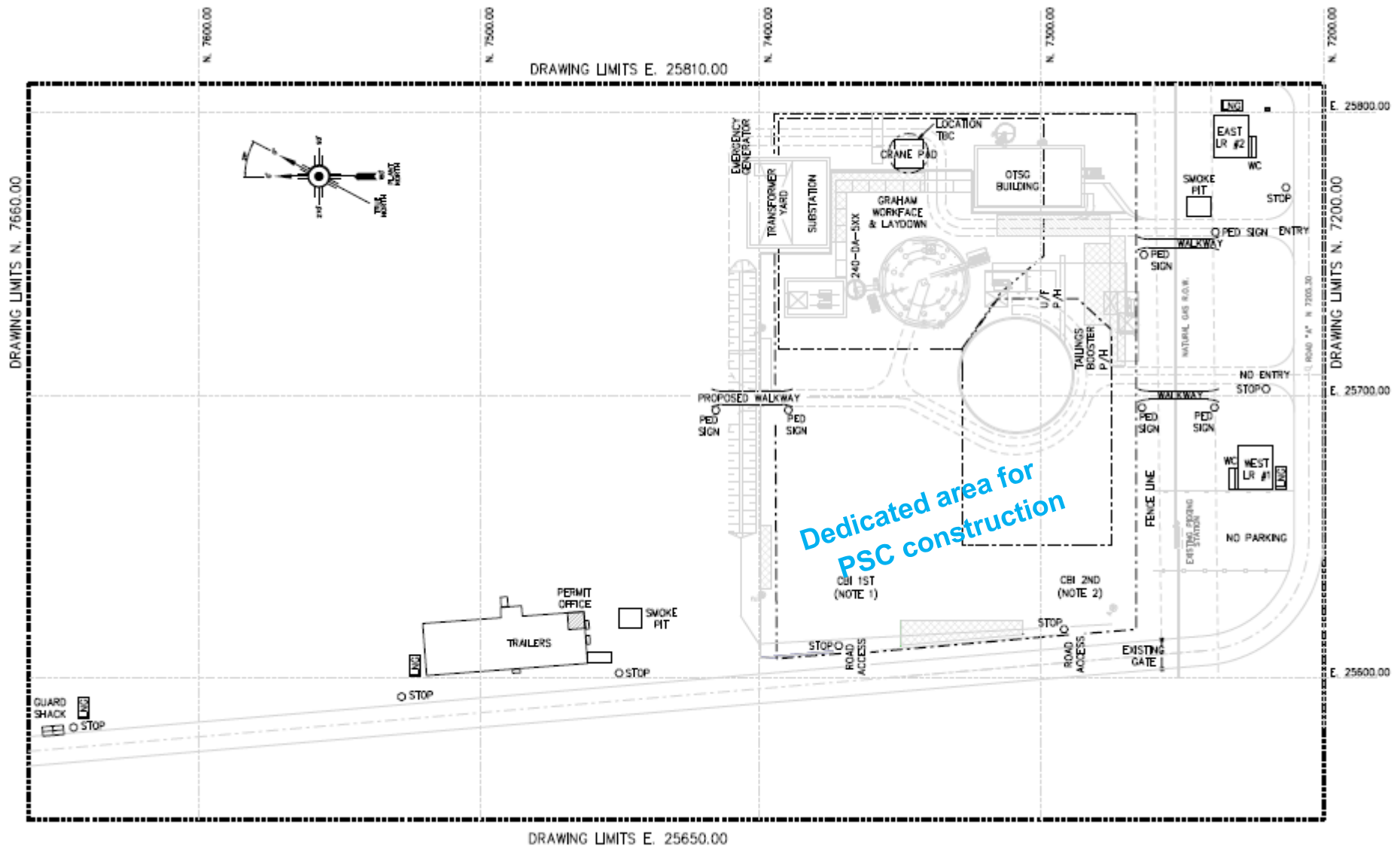
PSC CONSTRUCTION (EXP 1 2010 Vs. DB3 2013)

| | Exp-1 | DB3 (Replication) |
|----------------------------|---|--|
| Construction Strategy | EPCM | Owner |
| Contracting Strategy | T&M | Lump Sum |
| Total Schedule (EPC) | 3 years | 2.5 years |
| Site Manhours | 139,000 (direct only) | 106,000 (total) |
| Site conditions | Greenfield (multiple contractors) | Brownfield (Ring fenced area-reduced permitting) |
| Site Congestion/Interfaces | Multiple | Single |
| Market conditions | Hot labour market, multiple mega projects | Stable labour market |

THE SET UP....



THE SET UP....



THE SET UP....



CHALLENGES / OPPORTUNITIES

Exp – 1

- ❑ Build during a mega project construction
- ❑ Schedule constraints
- ❑ Engineering delays
- ❑ Interface issues with EPCM ownership

DB3

- ❑ Constructed as a ring fenced stand alone activity
- ❑ Time and previous experience for planning
- ❑ Contractors' participation in planning
- ❑ Well planned site and infrastructure set-up
- ❑ Shell managed contract, direct interface with owners team

BENEFITS OF PLANNING AND SET-UP

- ❑ HSSE performance improved
 - ❑ Early HSSE engagement
 - ❑ Construction Hazid, CWPP review
 - ❑ Constructability review
- ❑ Built on a Construction Driven Execution Approach
 - ❑ Reduce rework
 - ❑ Improved performance
 - ❑ Improved quality
- ❑ Improved construction schedule and predictability
- ❑ Improved cost control and predictability
- ❑ Increased supervision and craft motivation

IMPROVEMENT IN PRODUCTIVITY

- ❑ Completed construction 0 LTI
- ❑ 5 months reduction on construction schedule
- ❑ 23% reduction on total exposure hours
- ❑ Significant (all in) cost reduction
- ❑ Improved workers welfare
 - ❑ < 2% Attrition
- ❑ High quality
 - ❑ Reduced number of RFIs and NCRs
 - ❑ < 1% on rework hrs

IN THE END

Exp-1



DB3



