



# Schlumberger New Product Development Cell (NPD)

28 May 2012

## NPD Overall summary of accomplishments

- We have transitioned our most experienced employee, Chris Wee, from our Singapore facility to Sugar Land to be our fulltime, onsite NPD support personnel
  - Chris will be evaluating the level of work required and will recommend whether we need to add additional onsite resources
- We have transitioned our best engineer, Peter Ruler, from our Phoenix facility to Singapore to lead our engineering efforts for NPD parts
  - Peter will be dedicated to NPD parts
- We have transitioned Lee Shargel, a six sigma master black belt, from our Phoenix facility to Singapore to lead our engineering team
- We have placed purchase orders for seven new pieces of equipment which will be dedicated to producing tier 1 NPD parts
- We are currently working on our overall layout for our Singapore facility & the allocation of our best operators to be assigned to the NPD cell

## The NPD Cell Equipment Summary

- 7 new purchased machines – dedicated machines
  - Large Mill (2x), 3m
  - Large Turn-Mill Lathe, 3m
  - Large Gun-Drill, 2.5m
  - Large EDM, 3m
  - Large CMM (2x), 3m
- 2 existing machines allocated for NPD cell – shared machines
  - Large Deep Hole Boring Machine (1x), 3m
  - Large Honing, 2m
- In total, 9 pieces of equipment for NPD cell

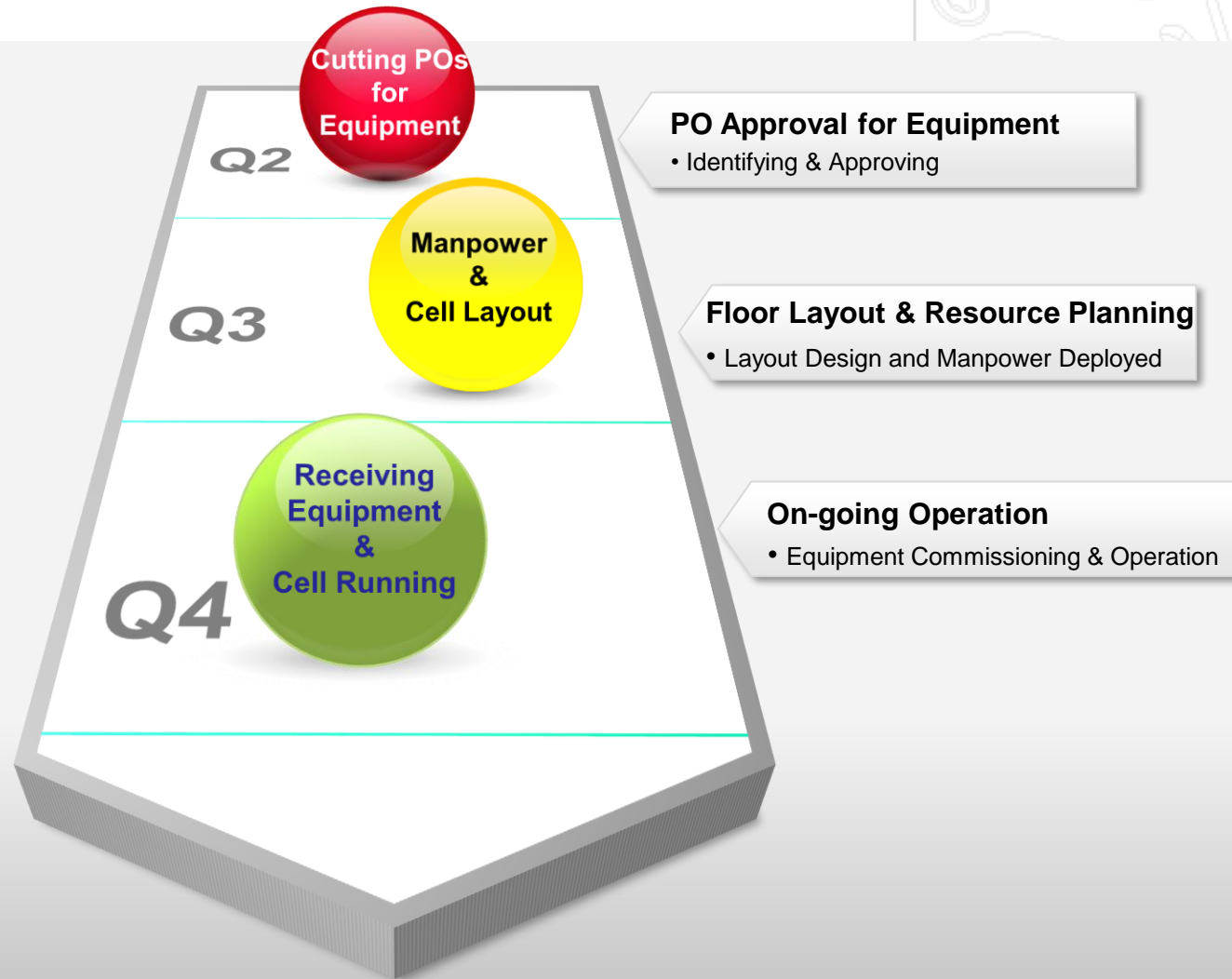
# A highlevel overview of the timeline for the Tier 1 NPD Cell

## Current Status

- **Equipment** – By **middle of May**, we issued all purchase orders for 7 pieces of equipment for NPD CELL
- **People** – By **end of May**, MMI Houston based representative on site and NPD CELL key engineer on board;

## Next Steps

- **Floor Layout** – Planning the NPD cell layout and engaging Professional Engineer for necessary structure re-enforcement required
- **People** – Shortlisting the manpower for NPD cell
- **NPD Process** – Start to quote for NPD parts by using MMI existing equipment



# The monthly timeline for the implementation of the tier 1 NPD Cell

## 2012



### Phase 1

- DFM sessions with SLB design teams
- RFQ of parts up to 2m length with gundrill up to 1m
- Producing parts using existing equipment

### Phase 2 (RFQ)

- RFQ of parts up to 2.5m length & gundrill up to 1m length

### Phase 2 (Machining)

- Production of actual parts longer than 2m to start in Oct/Nov

### Phase 3 (RFQ)

- RFQ of parts up to 2.5m length & gundrill up to 2.5m length

### Phase 3 (Machining)

- Production of parts on the gundrill to start in Dec



# MMI NPD Cell New Equipment List

S/ N	Type	No. of Axis	Brand	Model	Qty	Est. Commissioning Date
1	1 <sup>ST</sup> CMM	3	Hexagon (Italy)	Global Silver Advantage 12.40.10	1	21-Sep-12
2	2 <sup>ND</sup> CMM	3	Hexagon (Italy)	Global Silver Advantage 12.40.10	1	25-Oct-12
3	EDM	3	Makino (Japan)	EDNC 106 w/extended 3M Tank	1	16-Nov-12
4	1 <sup>ST</sup> Mill	5	Deckel Maho (Germany)	DMF 360 (Y1100)	1	30-Nov-12
5	Turn-Mill	4	Mori seiki (Japan)	NL3000/3000	1	19-Dec-12
6	Gundrill	3	Unisig (USA)	USK25-2000	1	8-Jan-13
7	2 <sup>ND</sup> Mill	5	Deckel Maho (Germany)	DMF 360 (Y1100)	1	15-Mar-13
<b>Total Qty:</b>					<b>7</b>	



CMM Hexagon Global Silver Advantage 12.40.10



Makino EDM EDNC106



DMG DMF 360

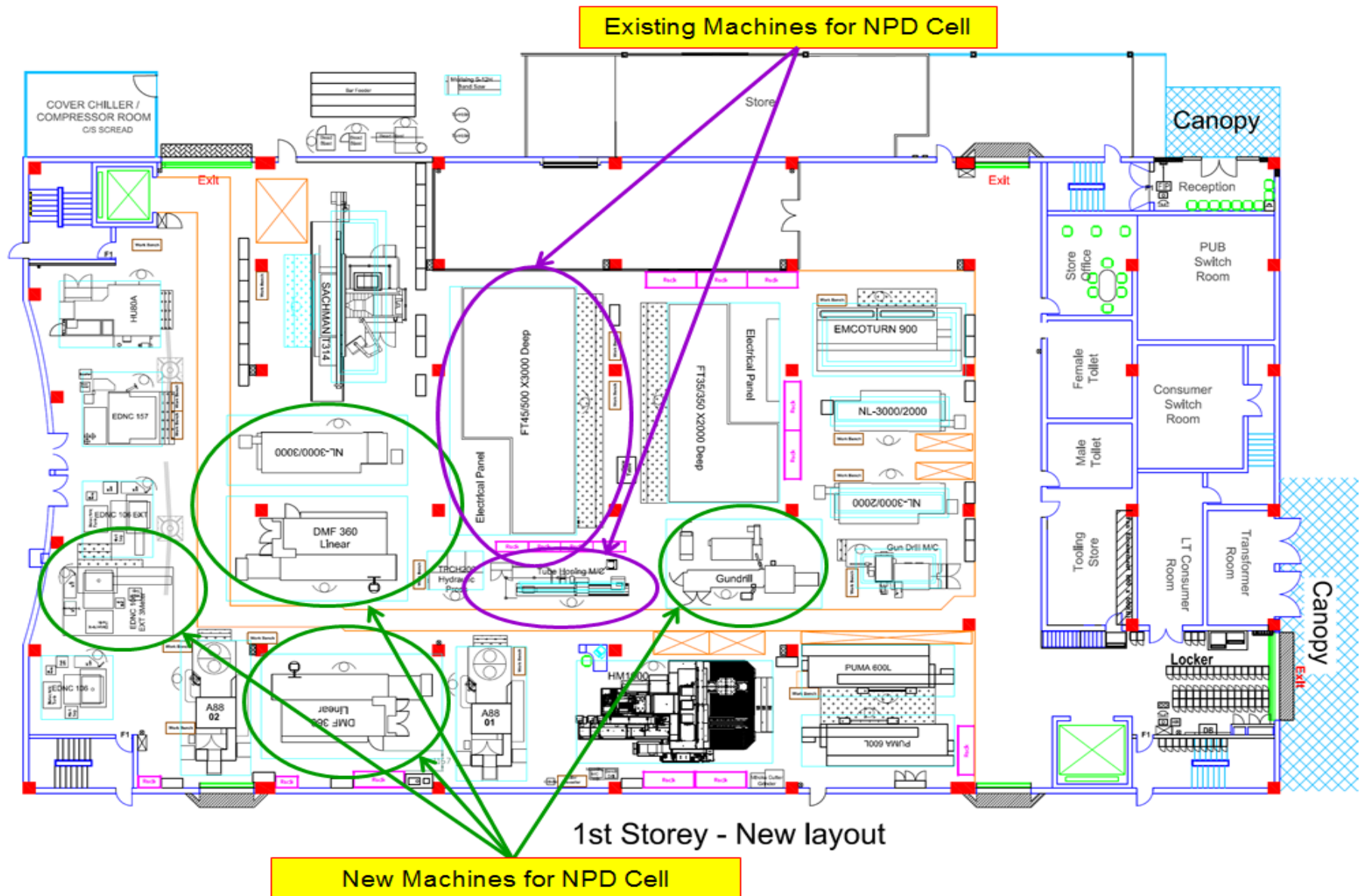


NL3000/3000



Gundrill Unisig USK25-2000

# The Preliminary Planned NPD Cell Layout – 1st Floor









## | Next Steps

- Starting to quote and run NPD parts by using our existing available equipment
- Finalizing the floor layout by optimizing available space and reducing part handling to improve efficiency
- Preparing the floor structure strengthening for the incoming new equipment
- Identifying suitable manpower for the NPD cell

## Appendix



**Hexagon CMM –  
Global Silver Advantage 12.40.10**

**MMi**

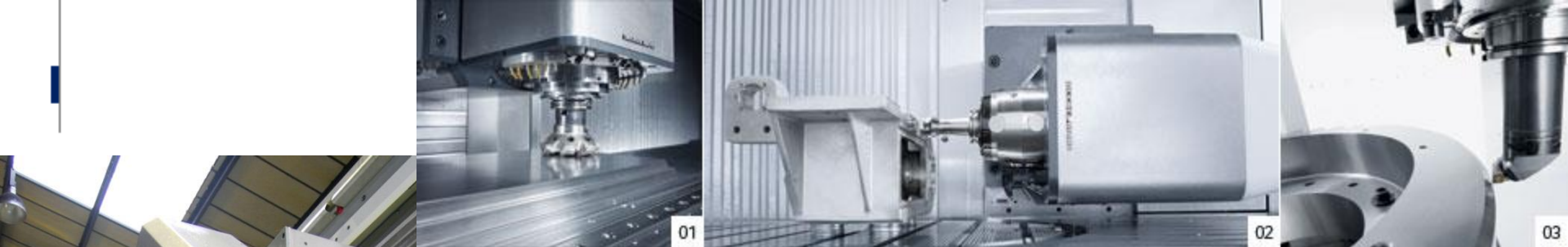
MMI HOLDINGS LIMITED



**Makino EDM EDNC 106 with  
3 meter extended tank**

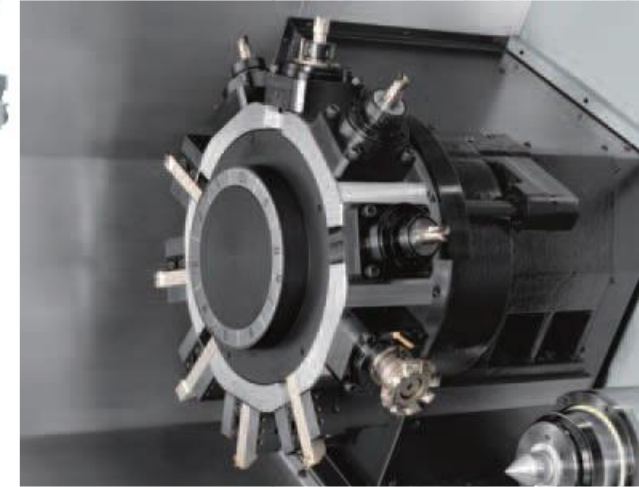




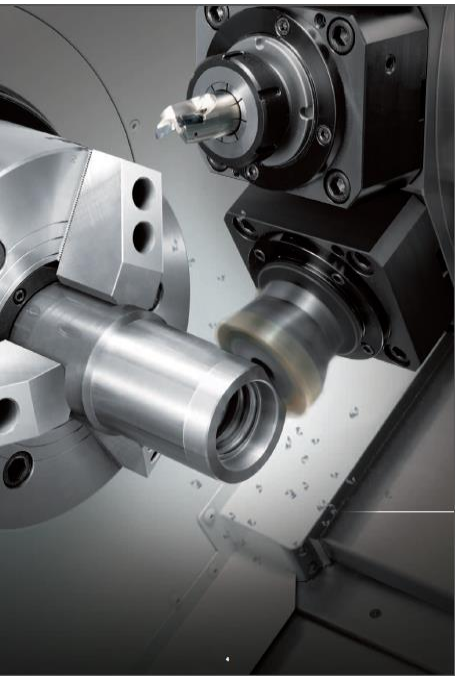


## DMG-Mori Seiki DMF 360 Mill



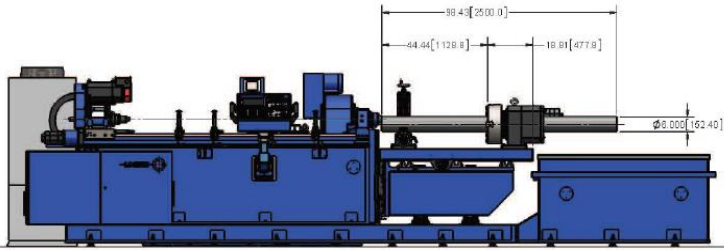


## Mori Seki Turn-Mill Lathe - NL3000/3000

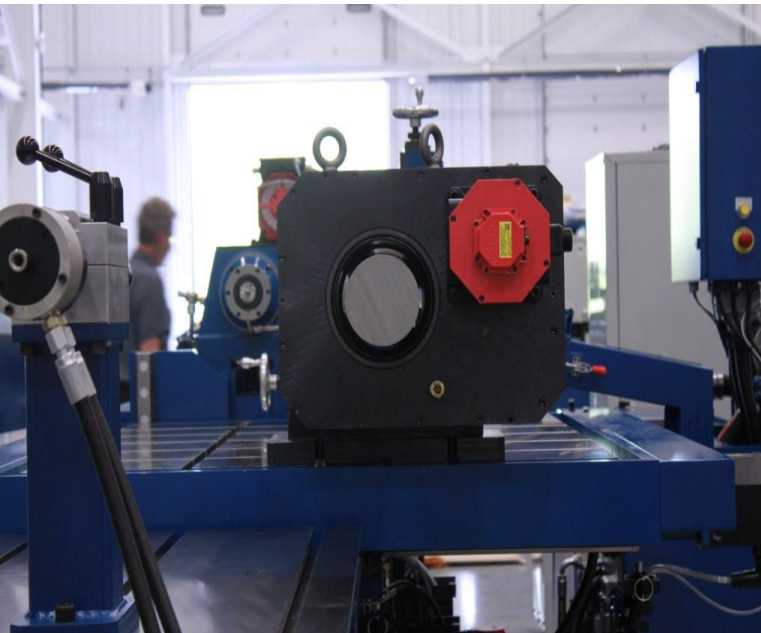
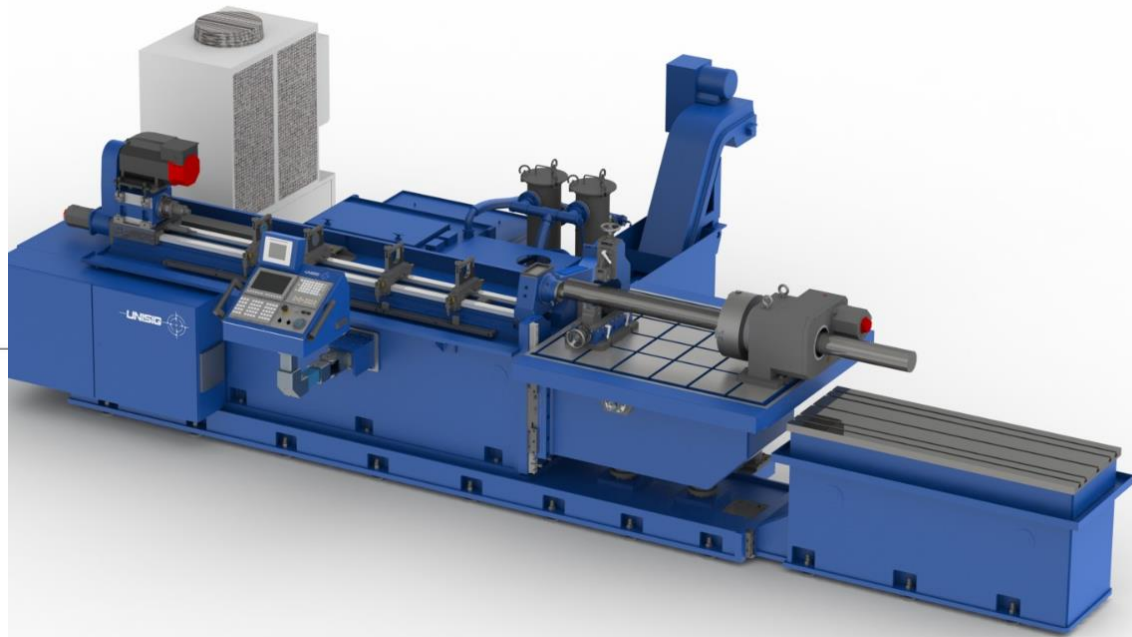


NL3000MC/3000





## Unisig Gundrill Machine – USK25-2000







**Large Deep Hole Boring Machine –  
Tacchi FT45/500  
(already in place)**







**Sunnen Tube Hone  
(already in place)**

