

Wellbay Design NCOC

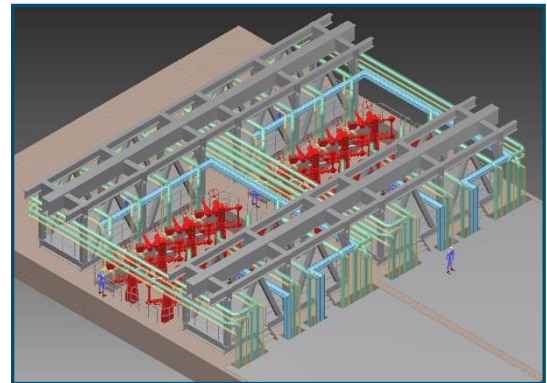
PROJECT DESCRIPTION / MAIN ISSUES

The design of this well bay has been driven by routing of flow lines, from Christmas trees to manifolds, located along the cellars. Criteria as defined by the COMPANY:

- The design had to optimize random drilling
- No piping pre-installation has to be done for the flow lines. They have to be accessible and connectable to the manifolds at any time, regardless of the well or the phase of the drilling campaign.
- The cluster is divided into seven cellars due to regulations in Kazakhstan imposing a maximum of 32 wells or a production of 2000mT/day per cellar.
- Flow lines shall not cross the cellars. Due to the two rows configuration, 2m width spaces have been arranged between cellars to run the flow lines.
- Top of skidding beams support has to be located no higher than 5m above the ground.

GENERAL DATA

| | |
|--------------------------------|------------------------------|
| Wellbay type | Cellars & skidding structure |
| Location | Kazakhstan |
| Owner / Company | NCOC |
| Clients / Partners | Technip |
| Project Phase | Engineering |
| Type of Contract | Reimbursable day rate |
| Contract Start / Finish | October 2012 – June 2013 |
| Man-hours | 500 hours |



TECHNICAL DATA

| | | |
|--|---|---|
| Cellars Configurations | 6 cellars of 8 wells, 1 cellar of 6 wells, separated by 2m thickness walls, 1,5m depth | |
| 54 Wells in Two Rows of 27 as Follows | Basis of Design: - 28 x 8" producers + 28 x 2" gas lift - 1 x 6" gas injector - 6 x 6" water injector - 1 x 6" cutting injector - 1 x 6" waste water injector | Spare slots for Full Field Development: - 14 x 8" producers + 14 x 2" gas lift - 1 x 6" water injector - 1 x 6" cutting injector - 1 x 6" waste water injector |
| Insulation Thickness | 4" insulation thickness for 6" diameter pipe and above, 3" insulation thickness below | |

