

Cost and Schedule Development

Michael Dinnon Director's Progress Review of SBN 15-17 December 2015

Schedule Development

- Engineering work was estimated by engineering support familiar with other similar projects (MicroBoone, Mu2e)
- Set of tasks as developed by the Cryogenics Manager to complete the work on the system
- Many tasks were created From that package, a crosswalk was performed by the Installation Manager to develop the current Cryogenics Project Schedule
- Future work to integrate the ND and FD Cryogenics is anticipated





Preliminary Design

 Preliminary Design is where work package agreements are signed, initial schemes are determined, and preliminary ODH analysis is completed.

Other tasks:

- Finalize Requirements
- Final Schedule Development
- Interface Documentation
- Updating P&ID Drawings





Final Design

- Integration
 - Documentation, Engineering Notes, Specifications
- Internal
 - Final Design of components inside the Cryostat related to the Cryogenics system
- External
 - Finalize information for smart P&ID's, Piping contract, reliefs, analyzers, etc
- Proximity
 - Filter skids, pumps instrumentation
 - Interconnecting Piping





Construction/Installation

- Procurement of hardware and services
- Bid and Procure piping by A&E
- Finalize documentation
- Installation of Hardware
- Moving Dewars on piers
- Developing Smart P&IDs and Isometric drawings for main piping



Example of Mapping

Near Detector -Schedule

Near Detector- Information supplied for schedule (work to be done)

ND Cryogenics Preliminary Integration

Ongoing development of the final design and fabrication work plans

Updates to preliminary requirements, interface and P&ID documents

Preliminary design and portions of Final Design - integration

Schedule with major FNAL costs - preliminary

Work Package Agreement (signed)

Milestome: All Work Package Agreements are signed

Milestome: All preliminary interface documents are discussed

Requirements for SBN Cryogenics - finalize

Interface document - preliminary (updated)

Determine filtration scheme

Need for additional "normal ops" filter skid(s) by testing at Microboone

Results from filter tests at CERN

Update P&ID





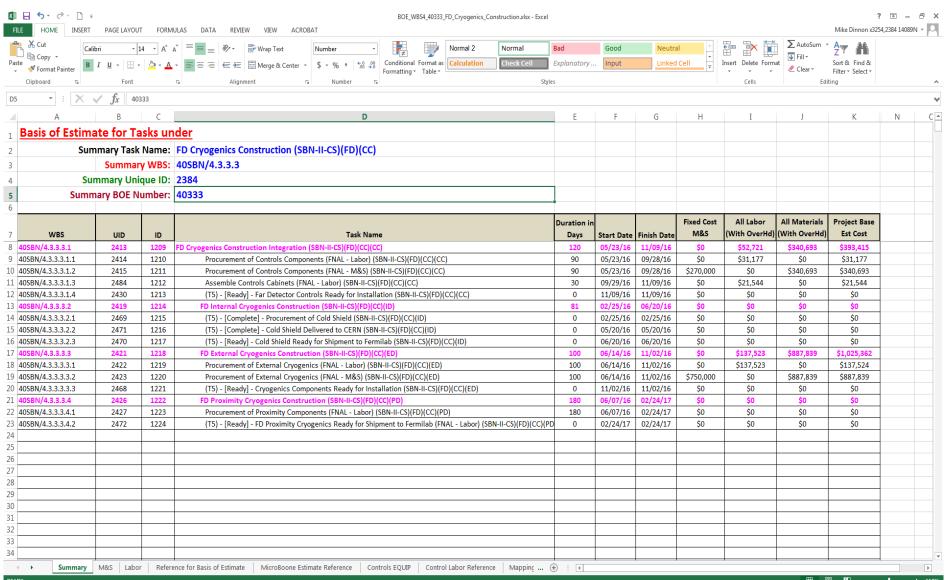
Resources

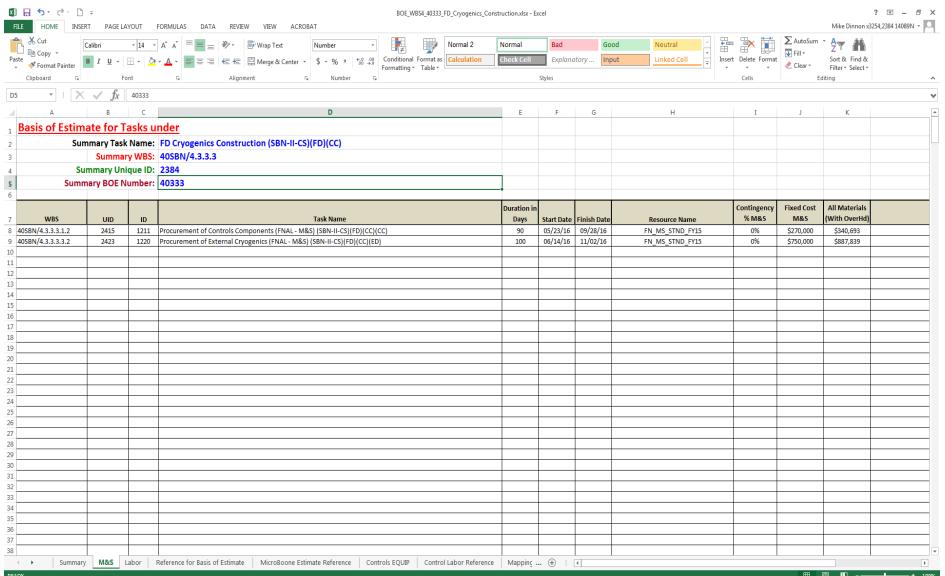
- Resources were determined from past experience and expert opinion
- Work was identified by Cryogenics Manager. Assignments were then made by having discussions with management regarding availability.
- Individuals will be assigned as work area expertise dictates.

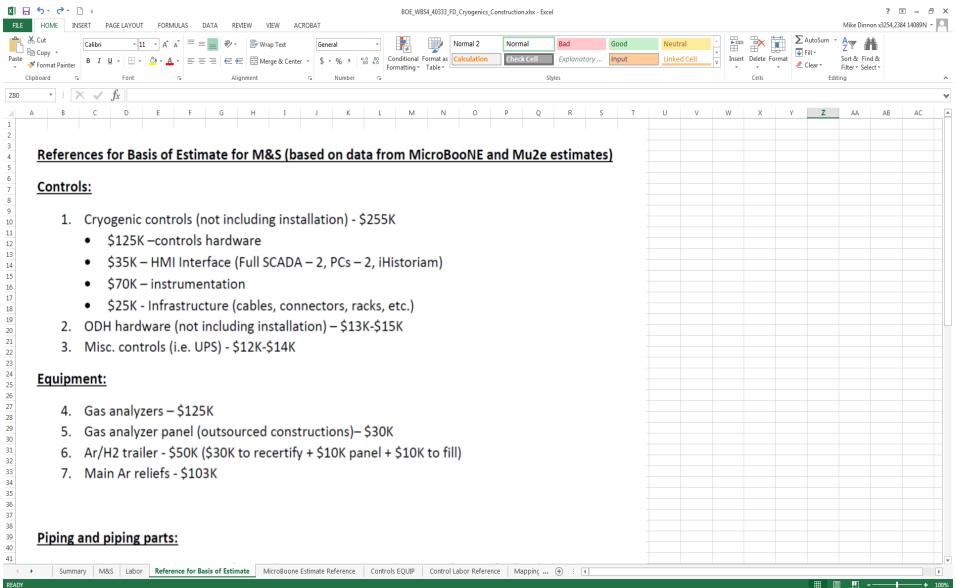


- Estimates were completed by the Cryogenics Manager
- Information based on past experience and expert opinion
- Supporting documentation was gathered
- Estimates and quotes
- BOE reports are generated by Project Controls
- Supporting information is added to each BOE report
- Schedule information can be easily updated and still archives the supporting documentation









 Complete Basis Of Estimate (BOE) forms can be found in the SBN docdb per the table below:

SBN Docdb 740-v2	BOE ND Cryogenics Installation
SBN Docdb 739-v2	BOE ND Cryogenics Construction
SBN Docdb 738-v2	BOE ND Cryogenics Final Design
SBN Docdb 737-v2	BOE ND Cryogenics Preliminary Integration
SBN Docdb 736-v2	BOE FD Cryogenics Preliminary Integration
SBN Docdb 735-v2	BOE FD Cryogenics Installation
SBN Docdb 724-v3	BOE FD Cryogenics Construction
SBN Docdb 725-v3	BOE FD Cryogenics Final Design



In Conclusion

The Cryogenics team has been actively engaged in developing the cost and schedule for the Cryogenics portion of the SBN program. We will continue to iterate and work with the other sub projects to ensure task links are correct and we have the most up to date information.



Thank You!

