

Americas Region Conventional Facilities and Siting Global Group (ARCFS)

Americas Region Update

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Overview

- *Current R&D Plan Milestone Status*
- *ARCFS Responsibilities for TDP II*
- *Near Term CFS Plan for FY 10*
- *Summary*

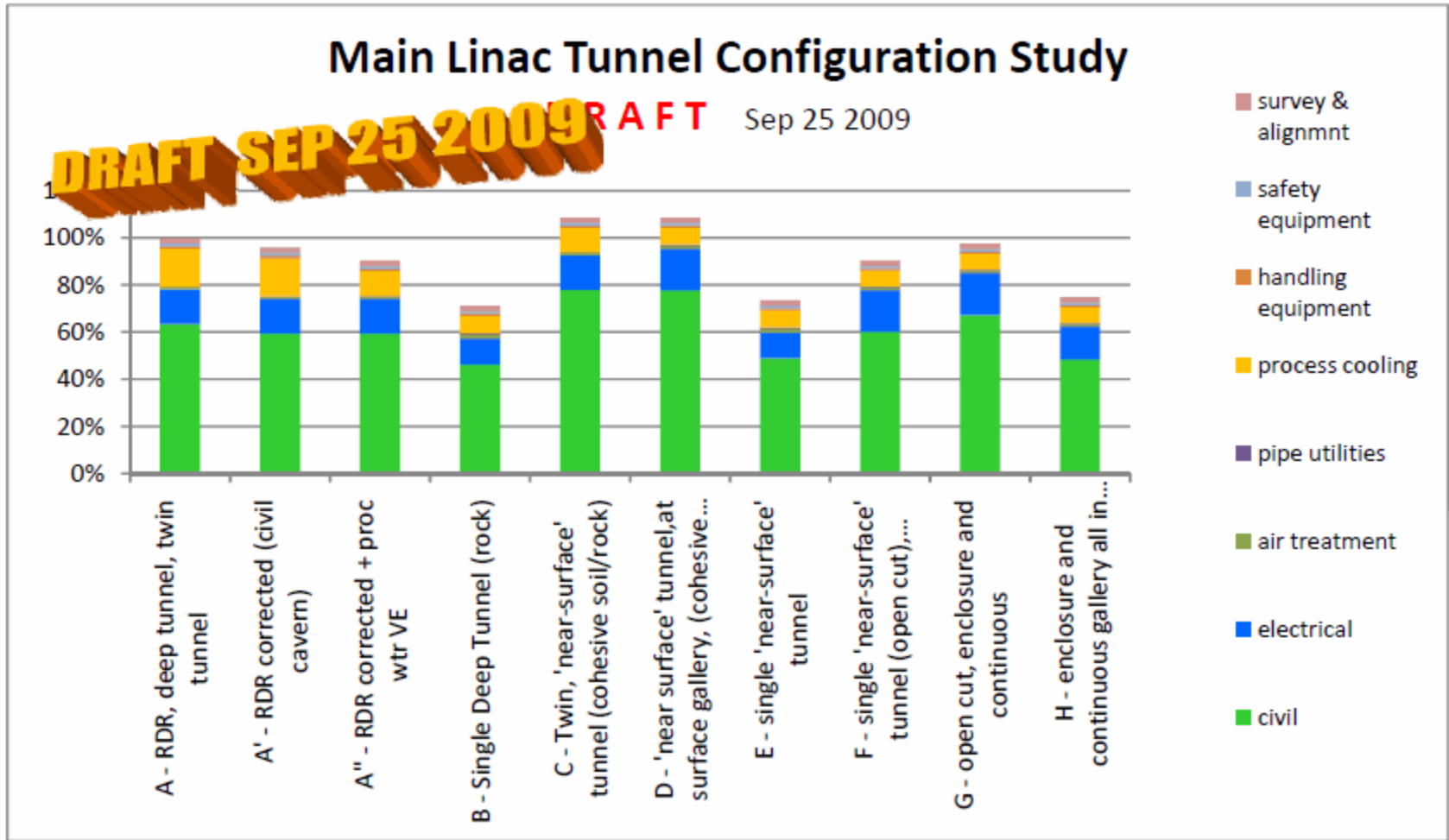
ILC CFS R&R Plan Milestones

Table 4.1: Functional Requirements and Value Engineering Milestones (stages 1 & 2)

| calendar year | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|----------------------------------|------|------|------|------|
| Tech. Design Phase I | [Blue bar spanning 2008-2012] | | | | |
| Tech. Design Phase II | [Blue bar spanning 2010-2012] | | | | |
| CFS Design work | [Red bars indicating milestones] | | | | |
| Process Water and HVAC Value Engineering | [Red bar: Q3 2008 - Q1 2009] | | | | |
| Main linac Tunnel Configuration Alternative Investigation | [Red bar: Q1 2009 - Q3 2009] | | | | |
| Minimum Machine CFS design | [Red bar: Q3 2009 - Q1 2010] | | | | |
| Review and Improve Surface Building Facilities Criteria | [Red bar: Q1 2010 - Q3 2010] | | | | |
| Functional Requirements template publication | [Red bar: Q3 2010 - Q1 2011] | | | | |
| Functional Requirements complete for main Linac | [Red bar: Q1 2011 - Q3 2011] | | | | |
| Functional Requirements complete for BDS and IR | [Red bar: Q3 2011 - Q1 2012] | | | | |
| Functional Requirements complete for Sources, DR and RTML | [Red bar: Q1 2012 - Q3 2012] | | | | |
| Update RDR Main Linac design | [Red bar: Q3 2012 - Q1 2013] | | | | |
| Update RDR design for all other areas | [Red bar: Q1 2013 - Q3 2013] | | | | |
| Develop Project Schedule | [Blue bar: Q3 2013 - Q1 2014] | | | | |

Specific Milestone Status

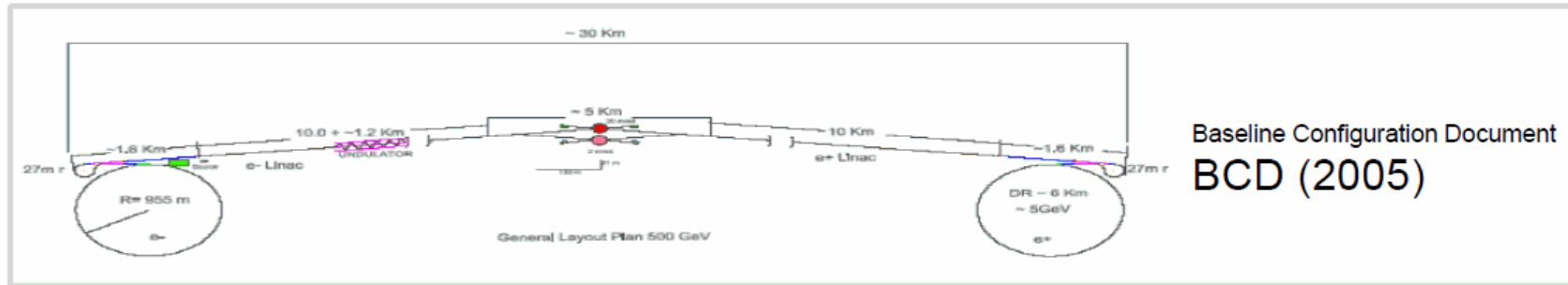
- **Process Water and HVAC Value Engineering**
 - **Completed in FY 09 Q2**
- **Main Linac Tunnel Configuration Alternative Investigation**
 - **Completed in FY 09 Q4**
 - **Complimentary Life Safety and Egress Study for the Main Linac Tunnel Alternatives was Also Completed in FY 09 Q4**
- **ARCFS Design for Accelerator Design and Integration Study**
 - **Completed in FY 10 Q1**
 - **Criteria Gathered in Two Separate CFS/Area System Workshops at SLAC and the Daresbury Laboratory, UK**
 - **A New Baseline 2-D Layout was Completed by the Americas Region CFS Group in FY10 Q1**
 - **A 3-D Overall Machine Layout is Currently Being Generated for the Americas Region Sample Site**
- **Review and Improve Surface Building Facilities Criteria**
 - **Study Currently Underway with Completion Due FY 10 Q4**



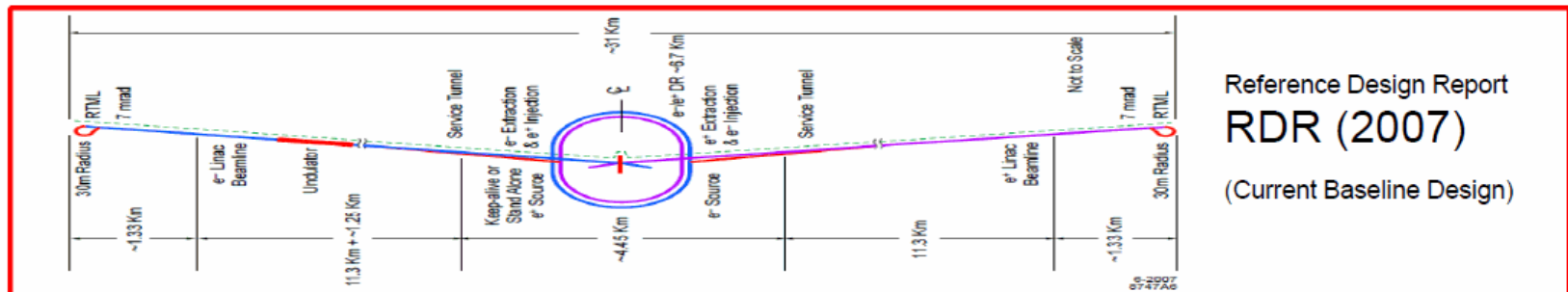
Americas ILC Baseline Design

- *Single Main Linac and Damping Ring Tunnel and Connecting Beam Transport Tunnels*
- *Service Tunnel and Tunnel/Enclosures for e- & e+ Sources, Ring to Main Linac (RTML) and Beam Delivery System*
- *The Americas CFS Group will Develop a Design Solution for Both the Klystron Cluster (KCS) and Distributed RF System (DRFS) Alternatives*
- *Life Safety and Egress Requirements do not Require Tunnel Compartmentalization and Consequently Large Supply and Exhaust Air Ducts are not Required*

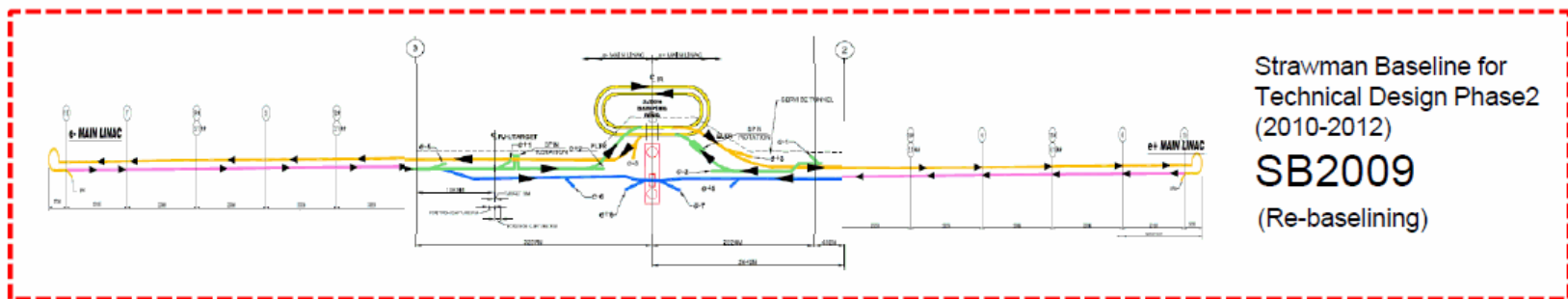
Evolution of ILC Baseline Design



Baseline Configuration Document
BCD (2005)



Reference Design Report
RDR (2007)
(Current Baseline Design)



Strawman Baseline for
Technical Design Phase2
(2010-2012)
SB2009
(Re-baselining)

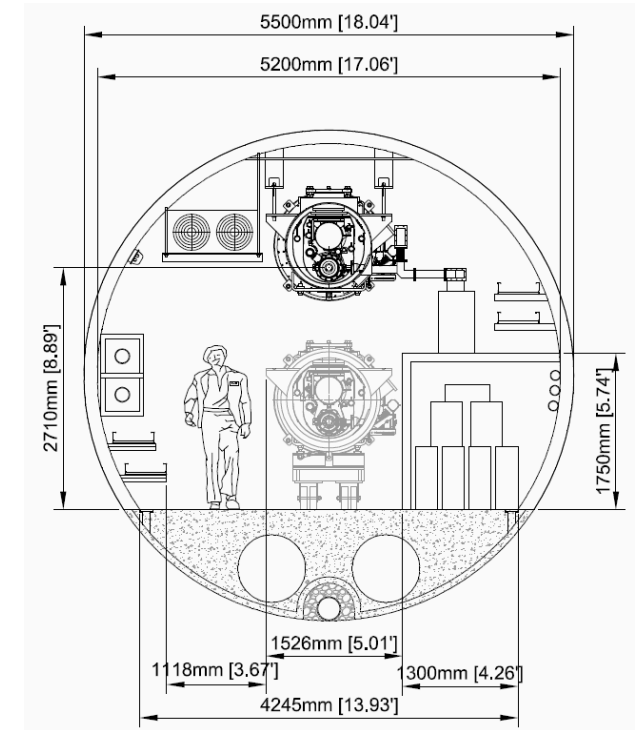
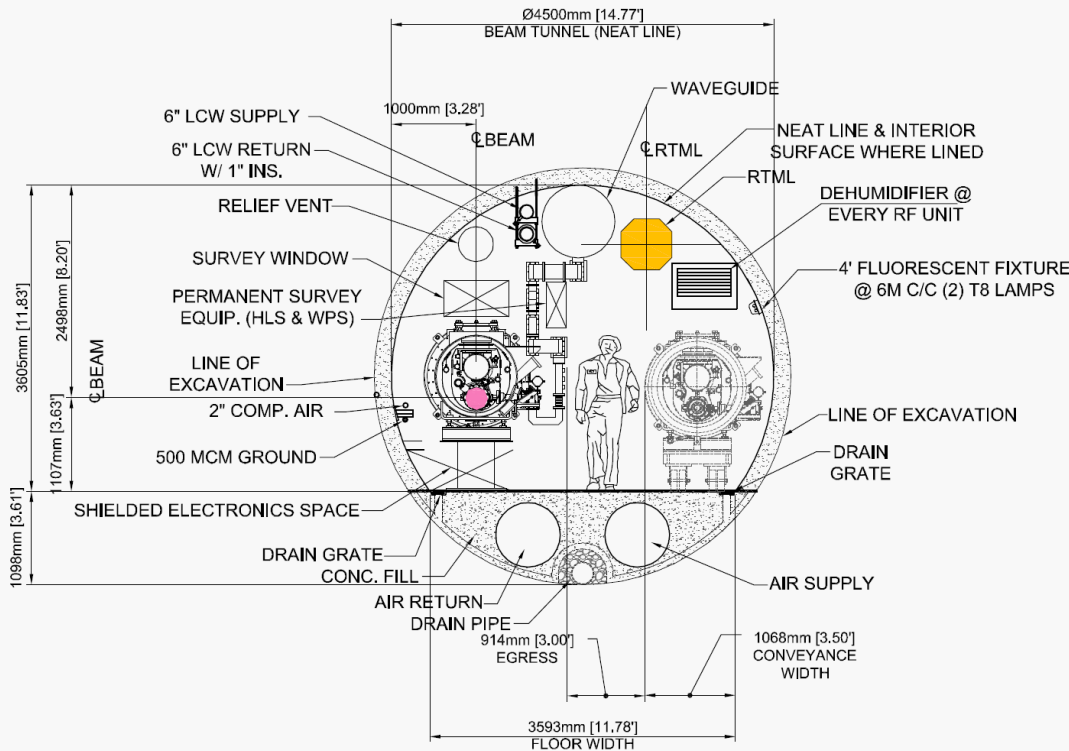
More on Single Tunnel Life Safety

- **While Most Regions do have Regulations that Directly Control Traffic Tunnel Design, in the Americas Region Two Distinct Codes have been Developed**
 - **NFPA 130-2007, Standard for Fixed Guideway Transit Systems**
 - **NFPA 520-2005, Standard for Subterranean Spaces**
- **Based on NFPA 520, the Main Linac Single Tunnel Must be Divided into “Building” Space (i.e. Functional or Operation Space) and “Common” Space (i.e. Space Used Only for Exit Travel to the Surface)**
- **A 2 hr Firewall and 1-1/2 hr Fire Doors Must be Used to Separate the Two Spaces**
- **Alcoves are Also Required in the Common Space to Limit the Distance to an Exit or Area of Refuge to 610 m**

More on Single Tunnel Life Safety cont.

- *The Americas Region Main Linac Single Tunnel Life Safety Solution is Supported by an Independent Fire Protection Consultant Report Which Uses Available Applicable Fire Safety Codes*
- *This Report will be Supplemented by a Computer Generated Model for Smoke Development and Egress Scenarios for both the KCS and DRFS RF Configurations Expected to be Completed by FY 10 Q4*
- *The Final Life Safety and Egress Design for the ILC if Sited in the Americas Region Cannot be Completed Until a Specific Site is Chosen and an Approving Authority has been Established*

Americas Region KCS and DRFS

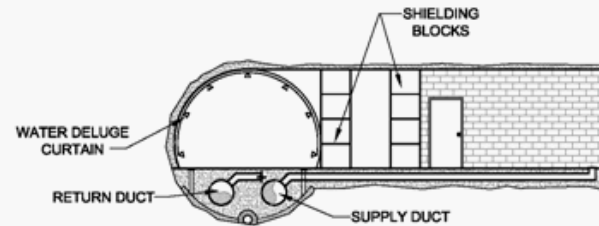
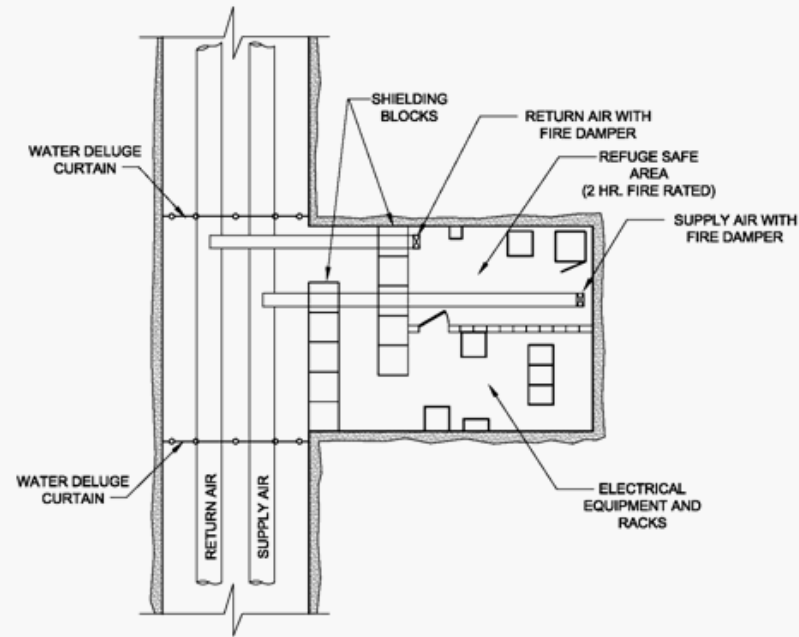


Americas Region KCS 4.5 m Dia.

Americas Region DRFS 5.2 m Dia.

Americas
Areas of
Refuge

Area of Refuge



ARCFS Responsibilities for TDP II

- *The Final TDP II ILC Baseline has not yet Been Established*
- *Proposals from the AD&I Efforts are Still Under Consideration*
- *The Americas Region CFS Group will Continue to Respond to These Adjustments to the Baseline Design for Both KCS and DRFS Alternate RF Systems*
- *The ARCFS Group will Participate in the Scheduled Baseline Assessment Workshops (BAW 1&2) in September, 2010 and January 2011*
- *It is Anticipated that a Final Approved TDP II Baseline will be Completed by the End of 2011*
- *ARCFS Efforts will be Primarily Devoted to the Completion of the CFS TDP II Design Solution, Revision of the CFS Cost Estimate and the Completion of the CFS Portion of the Technical Design Report for the Americas Region Sample Site*

Near Term ARCFS Plan for FY 10

- ***Complete the Surface Building Facilities Criteria Study***
- ***Complete the Americas Region 3D Machine Layout***
- ***Refine the Criteria and Design Solutions for the CFS Mechanical and Electrical Systems***
- ***Repeat CFS/Area System Workshops from Last Year at SLAC and Daresbury Laboratory, UK***
- ***Engage, Through the MDI Panel, Both Detector Collaborations to Establish Point of Contact and Criteria Requirements for the ILC Interaction Region***
- ***Complete the Life Safety Computer Model Analysis***
- ***Complete a Tunnel and Enclosure Lining Study for the Americas Sample Site***

Summary Comments

- *The Americas Region Continues to Make Good Progress on the Development of the TDP II Baseline Machine Layout in Conjunction with the CFS Global Design Effort*
- *It is Important that the Technical R&D Effort Makes Timely and Definitive Decisions in Order for the ARCFS Group to have Adequate Time to Revise and Adjust the Enclosure Layout to Accommodate Required Changes*
- *Available ARCFS Resources will be Used to their Maximum Benefit to Develop the Most Comprehensive Design Solution Permitted*
- *Specific Site Investigation for the Americas Sample Site is not Included in any Planning Prior to 2013*