

ML-SCRF: Monthly WebEx Meeting

June 26, 2012

1. Reports from PMs

- Organization updated: Chris Adolphsen accepting the SCRF Associate PM
- GDE activity and meeting plan

2. Reports from TA Group Leaders (very briefly, if any?)

- Cavity, Cavity Integration, Cryomodule, Cryogenics, HLRF, ML

3. Special Discussions on

- Progress in TDR Drafting
- Central region SCRF and Cryogenics
 - A brief report from ADI meeting, June 20, 2012

ML & SCRF Action/Meeting Plan (2012)

Month	Day	Place	Meeting
 June	26		ML-SCRF Monthly Meeting
July	4-11 12-13 25		36 th ICHEP (Melbourne) GDE-EC face-to-face Meeting (TDR draft discussed) ML-SCRF Meeting
Aug.	22		ML-SCRF Meeting
Sept.	10-14 19	Telaviv	Linac-2012 ML-SCRF meeting
Oct.	22-26 29-30	Texas Anaheim	LCWS (TDR draft to be finalized) IEEE-NS (LC event)
Nov.	5-6 15	JLab	TTC Final Draft of TDR
Dec.	13-14	KEK	ILC-PAC (@ KEK)

TDR Technical Volumes

2007

2011

2013*



Reference Design Report



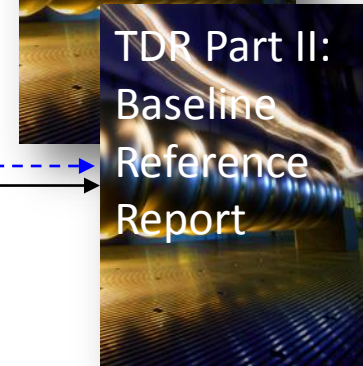
ILC Technical Progress Report ("interim report")

AD&I



TDR Part I:
R&D

~250 pages
Deliverable 2



TDR Part II:
Baseline
Reference
Report

~300 pages
Deliverables
1,3 and 4

Technical Design Report

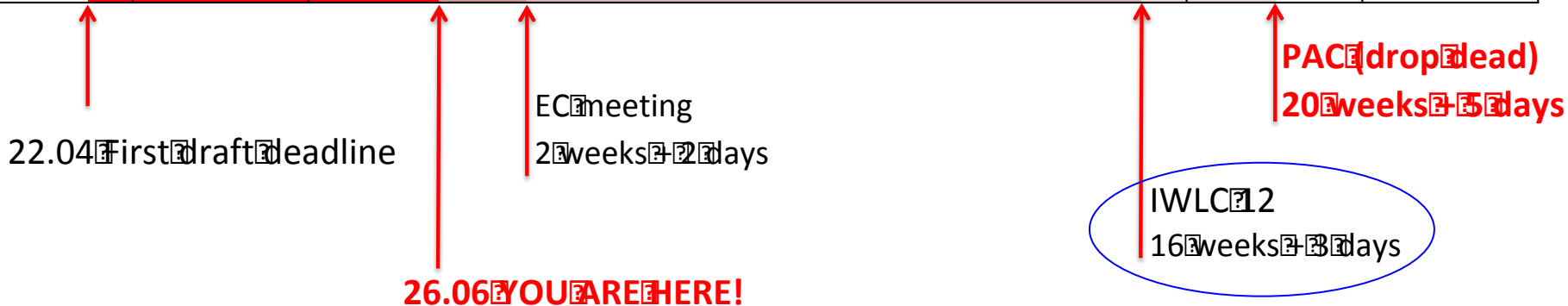
More discussed by J. Carwardine
On Jan. 20, tomorrow

* end of 2012 – formal publication early 2013



TDR Parts I and II

April	May	June	July	August	September	October	November	December



• Milestones:

- First drafts 22.04 (KILC 12) Long gone!
- Melbourne EC 12-13.07 (deadline 9.07) 1st snapshot
- IWLC'12 22-26.10 (deadline 19.10) complete draft
- PAC submission 18.11 final draft

• Approximately 40% of both Part I and II submitted

- First iteration editing – probably <10%

Editors being re-organized

- **Editor status:**
 - In work – Nan, Elsen, Burrows, Hitoshi
 - Added and appreciated – Harrison, Adolphsen, Yokoya
 - Coming soon/later: Foster (english/hyphens), Toge
- **Issues**
 - Piecewise editing of sections/chapters
 - difficult to manage – John doing his best
 - Real communications still to be done between editors
 - Consistency between chapters/sections
 - TEB 'editing' meetings 'have not really started' – poor attendance!
 - JC will now schedule one per week (awareness raising!)
- **Second stage (iteration) across entire report will be needed**
 - PMs final sign off
 - Consistency / quality control / English!

ILC TDR public

<https://forge.linearcollider.org/tdr>

TDR - ILC TDR public - ILC Forge

12/06/26 20:09

Portal for Authors and Editors of the ILC Technical Design Report

TDR Editorial Team

Chair: *John Carwardine (Argonne)*

Editors, Part-I: *Eckhard Elsen (DESY), Hitoshi Hayano (KEK)*

Editors, Part-II: *Phil Burrows (OXON), Nan Phinney (SLAC), Kaoru Yokoya (KEK), Nobu Toge (KEK)*

Project Managers: *Marc Ross (Fermilab), Nick Walker (DESY), Akira Yamamoto (KEK)*

Technical Editors: *Maura Barone (Fermilab), Benno List (DESY)*

Reference material for the TDR Baseline Design

- [Top-Level ILC Parameter Tables \(EDMS\)](#)
- [Technical Design Documentation Portal \(linearcollider.org\)](#)

File uploader

Select the 'Upload files' button below to start uploading your content (text and/or images). Please remind that figures should be uploaded as separate files from the text, possibly in original.

A pop-up window will open, from there:

- Enter your email address and the common password (ilctdr) - note: that's a common password for all the TDR authors, valid for the file upload only, it's not your Forge password!
- Select the chapter using the drop-down menu
- Add the files to upload using the 'Add files' button - you can add up to 20 files at a time
- Hit 'Start upload' (IMPORTANT: files will not be uploaded to the server until you hit 'start')
- The figures will be submitted to a staging area for printing quality check. You will be contacted if the image quality is unsatisfactory for printing.

Upload files

Status of TDR Part-1: Chap-3, SCRF

Chap.	Subject	Draft provided by	Status/Plan
3	SCRF R&D		
	Development of Infrastructure	J. Kerby	Received
	R&D toward mass production	J. Kerby	Received
	Overview	A. Yamamoto	Received
	High gradient cavity R&D	R. Geng	Received
	Cavity Integration	H. Hayano	by end of June
	S1-Global experiment	H. Hayano	to be received
	CM, thermal balance / SCQ	P. Pierini, / J. Kerby	uploaded / TBD
	RF-power and PDS	S. Fukuda, C. Nantista	just submitted
4	Beam Test Facility (SCRF related)		
	FLASH	J. Carwardine	by end of June
	Quantum Beam	H. Hayano	to be received

Status of TDR Part-2: Chap-3,4,5, ML Technology

Chap.	Subject	Draft provided by	Status/Plan
3	ML Technology (common)		
	ML Top-level parameters and general layout	C. Adolphsen	
	Cavity performance and production requirements	A. Yamamoto	by end of June
	Cavity Integration (couplers, tuners, mag. shield)	H. Hayano	by end of June
	CM design, SCQ, Cryog.	P. Pierini, J.K., T. Peterson	by end of July
	RF-power source	S. Fukuda. C. Nantista	uploaded
	Low-level RF control	J. Carwardine	by end of June
	Cavity and CM tests	H. Hayano	by end of June
4	ML for <u>flat-topography</u> layout		
	... Layout: Klystron Cluster RF Scheme (KCS)	C. Adolphsen	
	... Low-level RF for KCS	J. Cawardine	by end of June
	... Power distribution system	C. Nantista	Received
5	ML for <u>mountainous-topography</u> layout		
	... Layout: Distributed Klystron RF Scheme (DKS)	C. Adolphsen	
	... Low-level RF for DKS	S. Michizono	Received by JC
	... Power distribution system	S. Fukuda	Received

ADI Action Items remaining: Works still to be done w/ML-SCRF

	#	Subjects	Prepared by	Status
SRF	36	Review local PDS design and cost estimate	S.F., C.N., A. Y,	done
	48	Review/update He gas or liquid storage requirements	T. P, A.Y.,	
	50	Update CFS requirements to reflect Marx modulator	S.F., C.N.	done
MLI	64	Mechanical: Insulation for cavity RF loads		
	65	Documentation: Main linac layout for mountain topography.	A.E., A.Y.,	done
	66	Updated ML lattice file for Mountainous Topography site		
	74	RF power requirement accounting documentation (parameters) for EDMS KCS	M.R.	
	75	RF power requirement accounting documentation (parameters) for EDMS DKS	M.R.	

ILC Central Region Cryogenics for DR, BDS/MDI, and Detectors

Akira Yamamoto (GDE-PM)

in cooperation with

SCRF, BDS, DR, Detector groups, and PMs

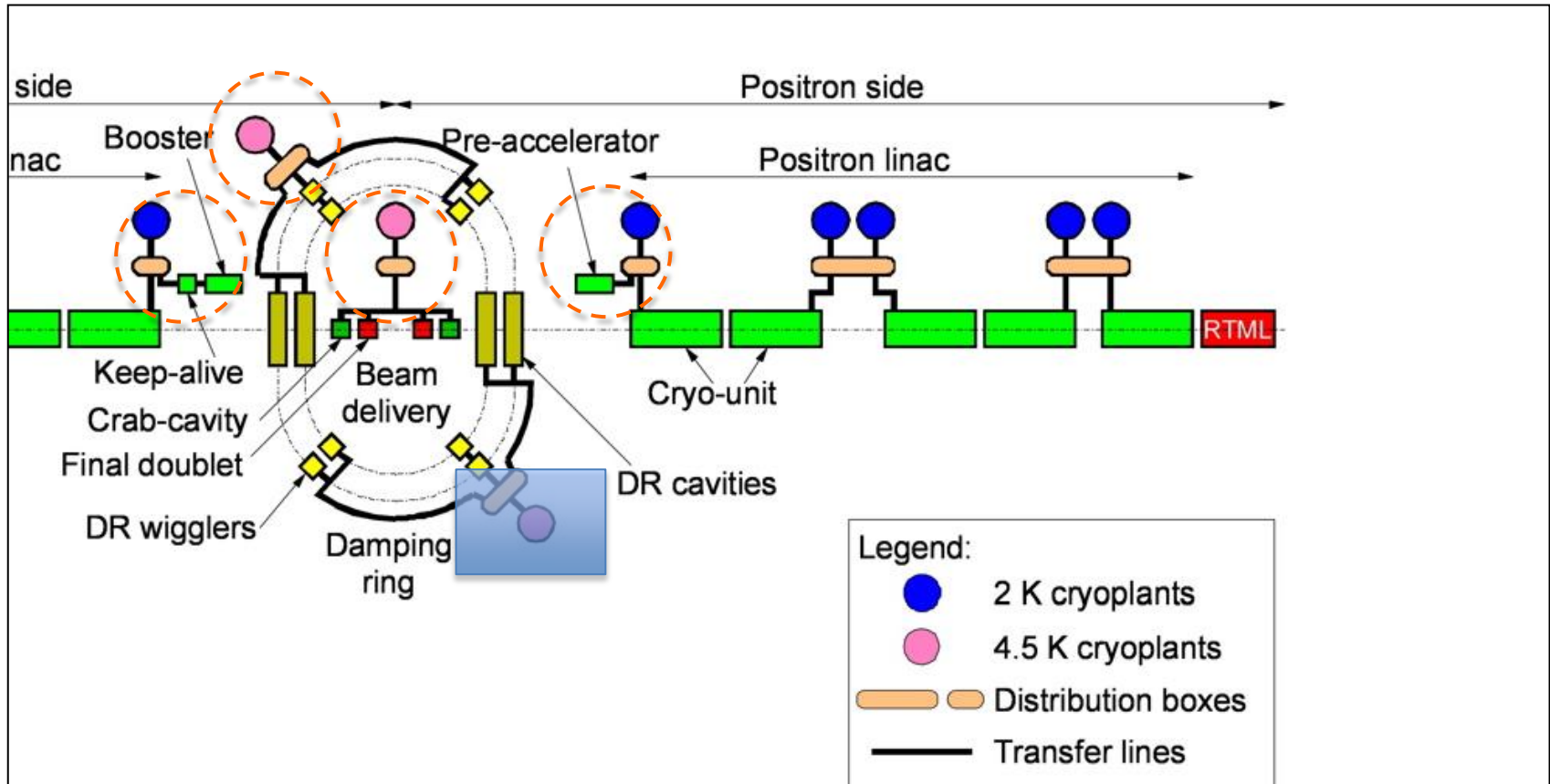
GDE-ADI meeting, June 20, 2012

This is outcome from Intensive Meetings, since early 2012

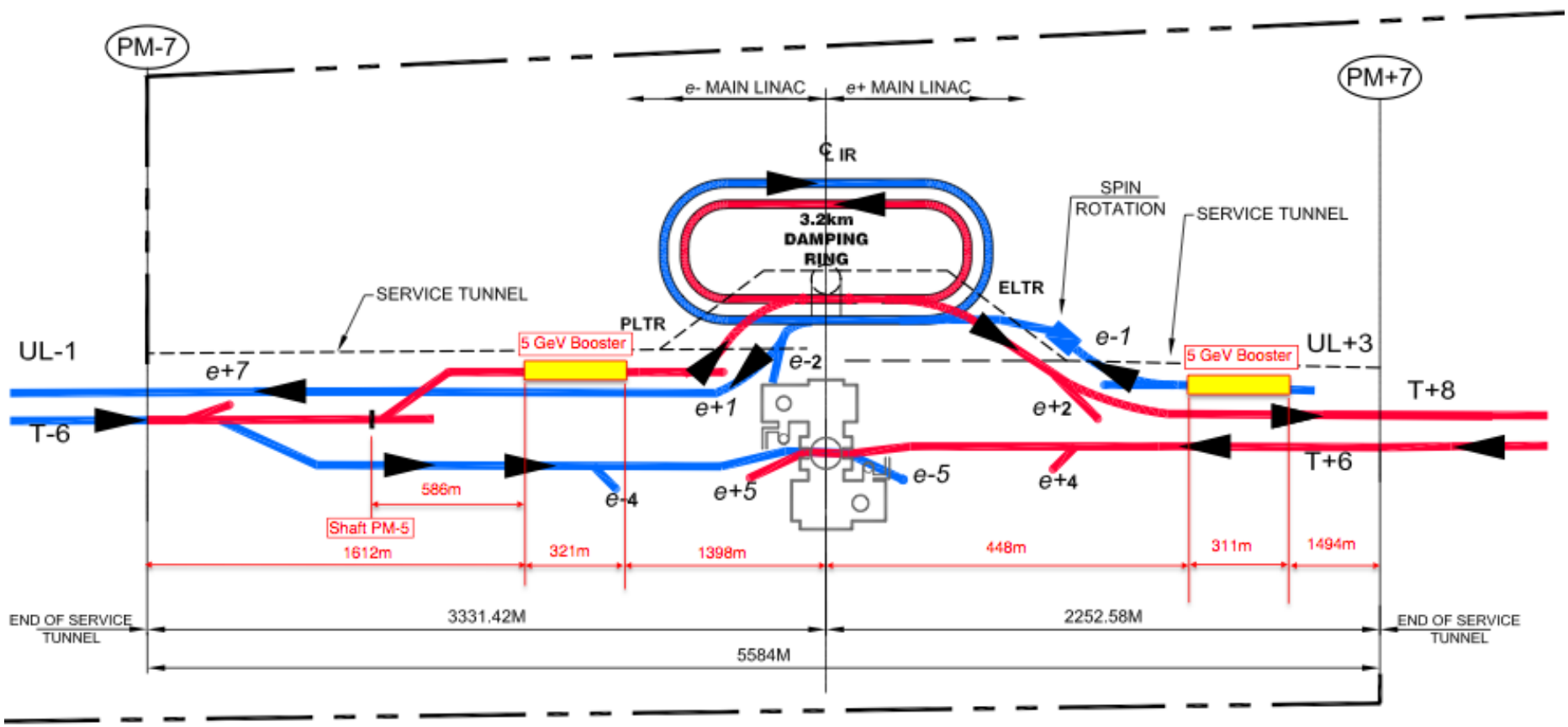
- February GDE, ADI and cryogenics meetings
- March: GDE Cryogenics Meeting
- April: KILC12, Central Region Session
- May : GDE/Detector Cryogenics Meeting
- May: GDE ADI meeting
- June: MDI/Detector Cryogenics Meetings (2~3)
- **Today:** GDE ADI meeting

We would thank everyone's much effort and contribution for better understanding and discussions.

RDR cryogenics layout, for reference



5 GeV booster linac locations



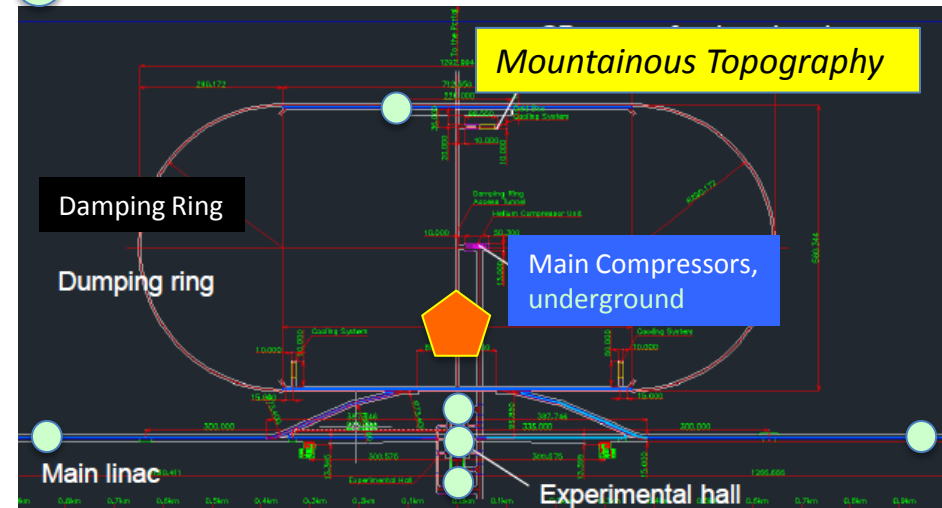
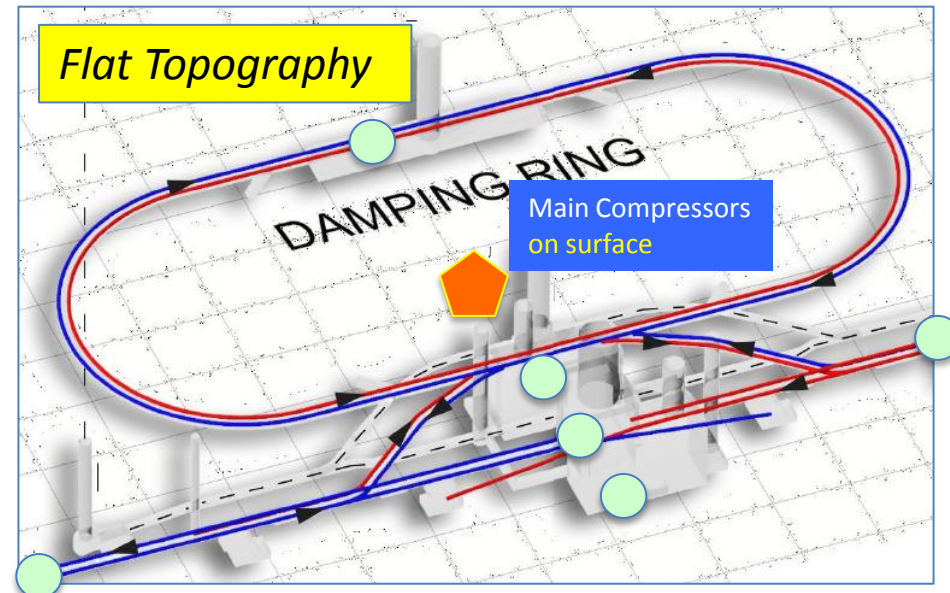
Cryogenics Location in Central Region

Cryogenics at Central Region

- Damping Ring
- e- source: Booster Linac
- e+source: Booster Linac
- Focusing (QF1) + Crab Cavity
- Focusing (QD0) + Comp. Sol. + **SiD** Solenoid
- Focusing (QD0) + Comp. Sol. + **ILD** Solenoid

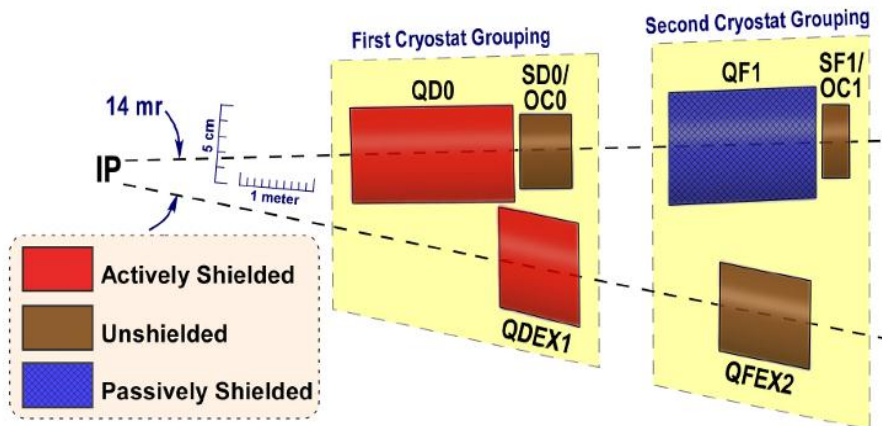
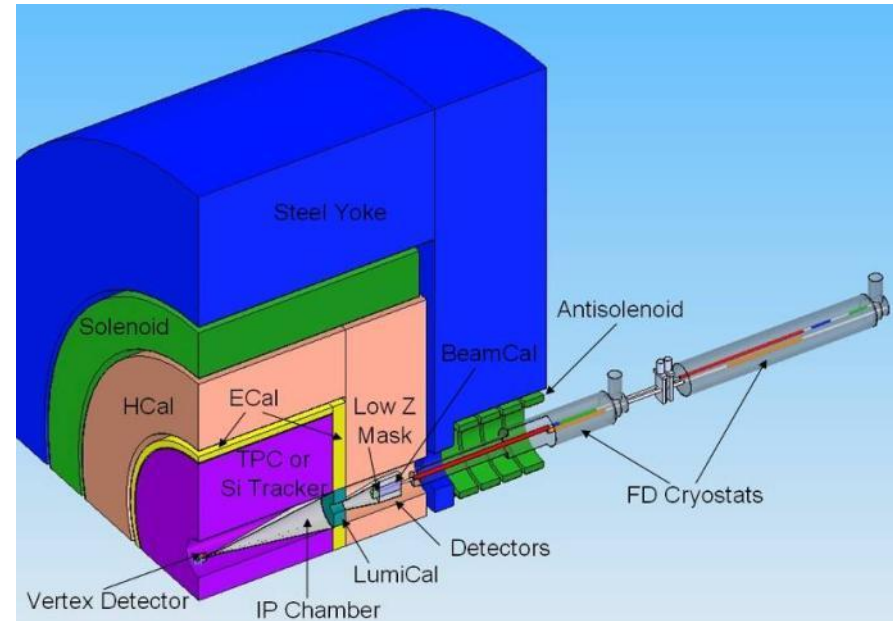
An important Concept suggested:

- Distributed Refrigerators (Cold-Boxes)
 - Best efficiency in themodynamics
- Centralized Main-compressor station
 - Well isolated from detector hall
 - Major vibration source distanced
 - CFS interface to be unified
 - electricity and water-cooling



IR Region and Final Doublet

- FD arrangement for push pull
 - different L^*
 - ILD 4.5m, SiD 3.5m
- Short FD for low E_{cm}
 - Reduced β_x^*
 - increased collimation depth
 - “universal” FD
 - avoid the need to exchange FD
 - conceptual - requires study
- Many integration issues remain
 - requires engineering studies beyond TDR
 - No apparent show stoppers

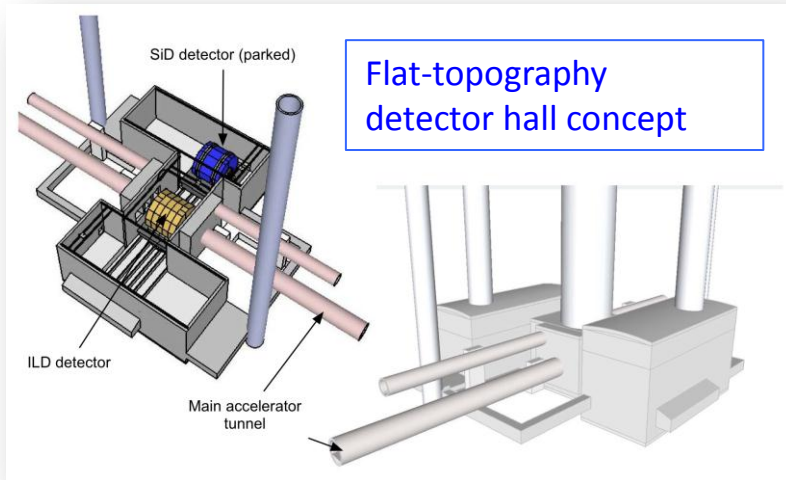


Tom's Conclusions

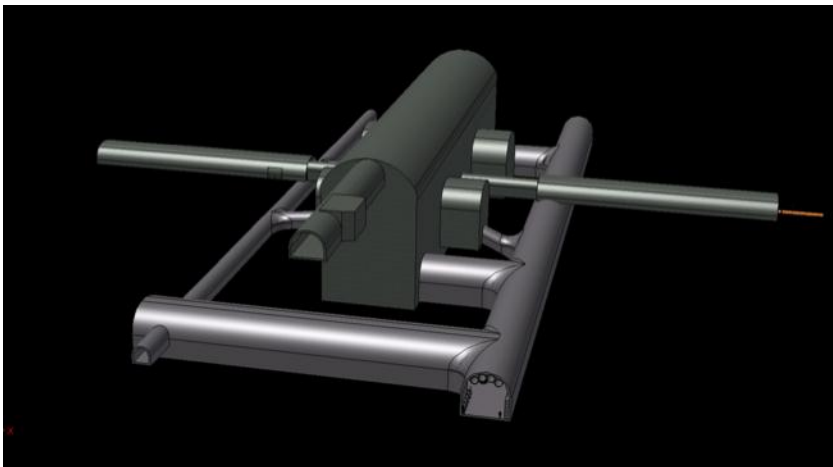
as of May 31, 2012

- Piping to 5 GeV booster linacs and other central region cryogenics from one central compressor location looks practical
- Next step is detailing cryogenic supply to undulators and some of the small isolated devices in the central region
 - Energy compressor, spin rotator solenoids
 - Add those cryogenic cooling powers to total
- Document helium warm pipe lengths and cold transfer line lengths
 - Refine total heat load estimates
 - Include in cost estimates

Detector Hall CFS Review



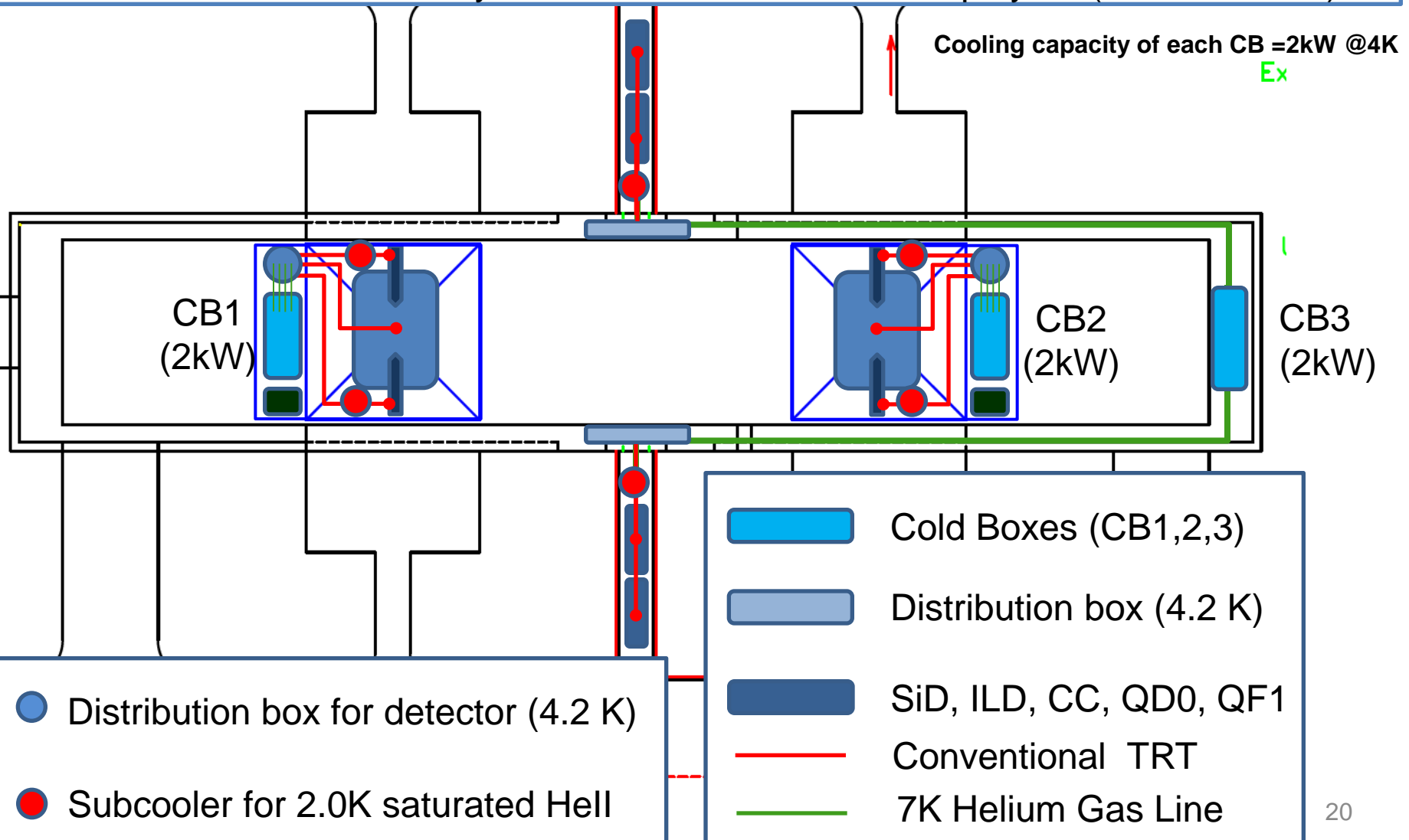
- Review Questions:
 - Criteria understood?
 - Design satisfy the criteria?
 - What are the cost-drivers?
 - What are the outstanding issues?
- Presentations:
 - **Alignment** requirements (special tunnels)
 - Underground **Assembly** schemes
 - **Cryogenic systems**
 - Cost roll-up
- Report to be written.



Mountainous topography detector hall

Cryogenic Layout in the experimental hall

- ✓ CB3 and distribution boxes for CC and QF1 are installed on the 6F.
- ✓ CB1, 2, distribution boxes and PSs are installed on the each platform for detector
- ✓ Several numbers of ordinary flexible tubes have to be employed. (see P8 & P10)



Proposal and Home Work

by AY as of June 20, 2012

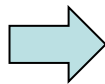
- Cryogenics Layout in the Central Region
 - Distributed cold boxes and centralized main compressor banks for individual cryoplant
 - Unified interface to CFS, better isolated from detector
 - Be an important consensus, today !
 - Individual Cryoplant/cold box to QD0+ anti-solenoid + Detector Solenoid
- Push-pull/Movable option
 - Home work to have common flexible pipe-line design
 - Either cold or warm flexible line
 - Common design needed to adapt it also to adapt to QD0.



TDR Publication and Review

First-draft sections	* 23 April *
Complete edited draft	22 October (LCWS 12)
Final draft (for PAC)	15 November
PAC review	15-16 December

Formal publication at
Lepton Photon Conf.
(SF, June 2013)



Expect international
reviews:
Both technical and cost
(Q1-22 2013)

Status (JC +update)

- Milestones:
 - Melbourne EC <3 weeks
 - IWLC'12 ~19 weeks
 - 18.11 PAC deadline ~24 weeks
- Approximately 40% of both Part I and II submitted
 - First iteration editing – probably <10%

Work flow and resources

- Responsibility:
 1. Authors
 2. TEB (Carwardine)
 3. Project Managers
 4. Director / EC
- Ask John for formalise this
- PM's must read everything for technical content
 - before going to EC
- (Note “dual hats” everywhere – but nothing unusual)
- Again: chapter by chapter submission will not be final report!!
 - but should be close.