



Working Groups A & C

Parallel Session Summary

IRENG07

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Global Design Effort



- **Agenda Items for Parallel Sessions**
 - **On-Surface and Underground Assembly Options**
 - **Detector Shielding Designs**
 - **Hall and Building Sizes**
 - **Crane Coverage and Capacity**
 - **Shafts and Cavern Sizes**
 - **Minimum Space Requirements**
 - **Services**
 - **Utilities**



Parallel Sessions

- **Due to the Commonality of the Working Group Charges, Both Groups Participated in Joint Parallel sessions**
- **Details of Specifications and Criteria to Support and/or Adjust the RDR Design were Discussed and Refined**
- **Decisions/Consensus were Recorded on Spreadsheets that will be Edited and Included in the Interface Document that is Currently in Draft Form**



Parallel Sessions

- **Alternatives to the RDR Design Basis were Reviewed**
 - **Off-Set Access Shafts from Surface Assembly Buildings**
 - **Alterations Required to the Interaction Region for $\gamma\gamma$ Collisions**
- **A Number of Items were also Identified for the CFS Group to Investigate**
 - **Further Development of Cavern Cross Section with Realistic Crane Dimensions and Supports**
 - **Investigation of Alternate Shaft Configurations with Related Costs**
- **Substantial Changes to the RDR Design will Require Formal Review and Approval by the ILC Project Management Group**



Criteria Examples

IRENG07 Draft Utilities Requirements							
20-Sep-07							
Item	Description	Generic	GLD	GLDc	LDC	SiD	4th Type
1	Hall SA End Temperature (Deg C)	21	21	21	21	21	21
2	Hall Stratified Temperature Rise (Deg C)	3	3	3	3	3	3
3	Hall Air Temperature Stability (+/- Deg C)	2	2	2	2	2	2
4	Hall Dew Point Temperature (Deg C)	13	13	13	13	13	13
5	Hall Maximum Relative Humidity (%)	60	60	60	60	60	60
6	Process Load to Hall Air per Detector (kW)	40	40	40	40	40	40
7	Process Detector Load to CHW per Detector (kW)	200	200	200	200	200	200
8	Process Load to Other CHW per Detector (kW)	100	100	100	100	100	100
9	Process Load to LCW per Detector (kW)	200	200	200	200	200	200
10	Hall Space Load to Air (W/Sq M - Dry Xfmrs, tools, pumps, lights, etc.) ???	40	40	40	40	40	40
11	Ventilation (Numer of Persons in Hall - Add separate fan coil people heat load)	100	100	100	100	100	100
12	Ventilation (Cu M/Hr)	4300	4300	4300	4300	4300	4300
13	Hall Pressurization (Negative milliBars)	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
14	Hall Pressurization Stabilization (+/- milliBar - Bubblers or Chambers)	0.05	0.05	0.05	0.05	0.05	0.05
15	Shaft/Egress Pressurization (Positive milliBar)	0.2	0.2	0.2	0.2	0.2	0.2
16	Process CHW Supply Temperature (Deg C)	16	16	16	16	16	16
17	LCW Supply Temperature (Deg C)	16	16	16	16	16	16
18	LCW Make Up Source (Accelerator? Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
19	Hall ODH Purge (Y/N - Cu M/ Hr if Y)	No	No	No	No	No	No
20	Hall Activated Air Purge (Y/N - Cu M /Hr if Y)	No	No	No	No	No	No
21	Permanent Hall Smoke Purge (Y/N - If No use ventilation AHU at high-speed)	No	No	No	No	No	No
22	Thermal Dimensional Stability Provided from Skids (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
23	Sub-Atmospheric Utility Water Systems Needed (Y/N)	No	No	No	No	No	No
24	CHW Cooling for Magnets & Power Supplies (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
25	Non-Dessicant Dehumidification for Hall (Y/N - If Yes Hall surfaces are sealed)	Yes	Yes	Yes	Yes	Yes	Yes
26	Ventilation Provided by Ground Level AHU's (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
27	Hall Air Load & Dehumidification Provided by Hall Fan-Coils (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
28	All Cooling to Hall Provided by Insulated CHW to HXs (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
29	Surface to Hall CHW Pressure Interruption Provided by HXs (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
30	Utility / Detector Interface at Hall Spiggots (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
31	Compressed Air Supply Volume per Detector (Standard Cu M /Min)	200	200	200	200	200	200
32	Compressed Air Supply Pressure (MegaPascals)	1	1	1	1	1	1
33	Compressed Air Supply Oil-Free Plant at Ground Level (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes



Value Engineering

- **Where Options or Alternative Design Solutions are Being Considered, the Value Engineering Process can be Used to Facilitate the Decision Process**
- **When Employing the Value Engineering Process all Aspects of the Various Alternatives must be Considered in Order to Determine the Best “Value”**
- **“Value” does not Necessarily Equate to “Cost”**



Other Topics of Discussion

- **Air Pads vs Platform for Detector Movement**
- **Impacts of Schedule on the RDR Base Design**
 - **Surface Assembly of Detectors**
 - **Implications of Below Ground Detector Assembly**
- **Requirements for Shielding Walls in the Interaction Region**
- **Cryo Supply to Detectors**
- **Other Services Required for Detectors**



Summary

- **A Very Productive Exchange of Information**
- **There are Still Evolving Constraints and Criteria**
- **The CFS Group has a Few More Tasks to Add to Their Work List**
- **We will Need to Revisit Some Issues**
- **What's the Next Step**