ATLAS project		CERN		INNER DETECTOR ENGINEERING REVIEW				
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ATC-R1-EX-0001	ATC	ATC-R1-EX-0001			$\begin{array}{c c} fied \\ 8^{\text{th}} \text{ Oct } 98 \end{array} \xrightarrow{Rev. No.} \mathbf{D} \mathbf{F}$			
INNER DETECTOR ENGINEERING REVIEW - OCT 1998 This document describes the areas of design/prototyping to be covered in the Engineering review to be held 20 th to 23rd of October 1998. It is expected that only baseline solutions are presented for each Sub-detector. This review is to freeze sub-detector envelopes within the Inner Detector so that the TRT Production Readiness Reviews can be completed. It is also to review the progress made since the review in Nov 1997 in the engineering design and prototyping of the pixels, SCT, and TRT. The TRT End-cap Production readiness review will take place on Friday 23rd Oct.								
Prepared by :		Checked by :		Approved			<i>d by</i> :	
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Atlas Technical Co-ord Inner Detector Institute Inner Detector steering Inner Detector working	ination. 5. group. group.	Distribution List						





Presentations of the sub-detectors:-

Each of the sub-detectors listed below will select representatives to give presentations of the work on mechanical engineering issues to the committee.

- Pixels including "B" layer, barrel and disks.
- Silicon tracker detector, Barrel and end-caps.
- TRT, barrel and end-caps in view of the October and December PRRs.
- Inner Detector integrated services.

- The envelopes of the sub-detectors and the overall ID layout as approved by the IDSG.
- The mechanical specification including justification for the mechanical engineering tolerances for each of the sub-detector structures.
- Identify materials that are proposed to be used and why.
- The mean temperature of operation and permitted variations and gradients.
- The operating pressure and permitted pressure difference within the Inner Detector and in particular the thermal enclosures
- The cooling medium chosen for the application.
- Safety issues.
- Compatibility of the structures with the environment and detectors, e.g. corrosion, humidity.
- Drawings showing the parameters of sub-detectors, and identifying any problem areas, and their planned solution.
- Consequences of structural failure and measures to be taken. Is the design completely fail safe. Is there any experience from previous experiments.
- Status of computations and in particular FEA. To include what steps have been taken to ensure that the FEA model is correct. What is the confidence factor in results.
- Status and results of prototype tests.
- Show how the Inner Detector is assembled on the surface and installed in the pit.
- The limits of supply and responsibility, e.g. sole source.

The presentations of the proposed mechanical engineering structures should concentrate on areas not covered by the review last Nov. It is expected that the presentations will include in particular sub-detector boundaries, access, installation and maintenance plans. Ten minutes should be allowed within each presentation for discussions. Also they should cover the following:-



Mandate for the Committee

The aim of the status report is to make a critical assessment of the status of the overall mechanical engineering structures that are being proposed for the Inner Detector.

The Committee should answer the following questions:

Technical considerations:

- Are the approved envelopes agreed by all sub-detectors?
- Is there sufficient space for all the services?
- Is the cooling scheme proposed adequate.
- Does the design satisfy the TDR or later specification requirements?
- Has the correct material been chosen for the structure requirements?
- Are the proposed designs to relevant safety standards?
- What prototyping, and to what schedule remains to be done?
- Have industrial companies been identified and consulted on proposed manufacturing techniques?
- What are the installation, and access requirements for routine maintenance and repair?
- What are the possible causes of a failure in the structures?
- Do similar structures exist that give proof of in-service operation?
- Indicate areas where further work (design, tests, calculation, verification) is needed.
- Is it possible to standardise on support structure techniques?

Cost and resource considerations:

- What are the critical items, and for what reason?
- Are there any potential schedule problems?
- The Review Committee will have a Chair who organises the work of the Committee and reports to the ATLAS Technical Co-ordinator and Inner Detector Project Engineer and Scientist.



16.45- 17.15 Squirrel cage and services (Claude Menot)



Place:- CERN, Building 40-SS-D01

TRT Barrel

09.00 - 09.15	Barrel mechanics overview (John Callahan)
09.15 - 09.45	TRT Barrel structure (Claude Hauviller)
09.45 - 10.45 Callahan)	Module design, mechanical analysis, production and assembly (John
10.45 - 11.15	Coffee
11.15 - 11.30	Module cooling and thermal analysis (John Callahan)
11.30 - 12.00	TRT barrel services (John Callahan)

12.00 - 13.00 Lunch

SILICON TRACKER

13.00 - 13.15 Overview (Mike Tyndel)
13.15 - 14.00 Barrel cylinder, interlinks, inc FEA, cte and verification of prototype results (Eric Perrin/Alan Holmes).

14.00 - 14.30	Services on barrel (Tim Hayler)
14.30 - 14.45	Barrel cooling prototype results (Eric Perrin)
14.45 - 15.15	Coffee
15.15 - 15.45	End-cap cylinder and discs inc services (Andy Pilling/Gert-Jan Pols).
15.45 - 16.15 Nelson/Jarl Bu	End-cap structures design - disc and cylinder stress analysis (Chris skopf).
16.15 - 16.45	End-cap cooling (Tim Hayler/Andy Pilling)



The Production readiness review for the TRT end-caps will take place on Friday 23rd Oct in the same room.