



# Pixel Disk Ring and Global Support Production Plan

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## ATLAS PIXEL DISK SUPPORT RING AND GLOBAL SUPPORT PRODUCTION PLAN



The production plan for the ATLAS pixel disk support rings and the ATLAS pixel global support structures are presented.



Prepared by:  
**M. Gilchriese. W. O. Miller**

Checked by:

Approved by:

*Distribution List*



***History of Changes***

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## 1 Introduction

This note and the attached appendices summarize the production plans for the Disk Ring Supports of the ATLAS Pixel System and Pixel Global Support Frame. The Disk Support Ring is illustrated below in Figure 1. It supports eight disk sectors holding pixel modules. The disk sectors are located and held by three mounting holes per sector. The Disk Support Ring is attached at four points to the Pixel Global Support Frame.

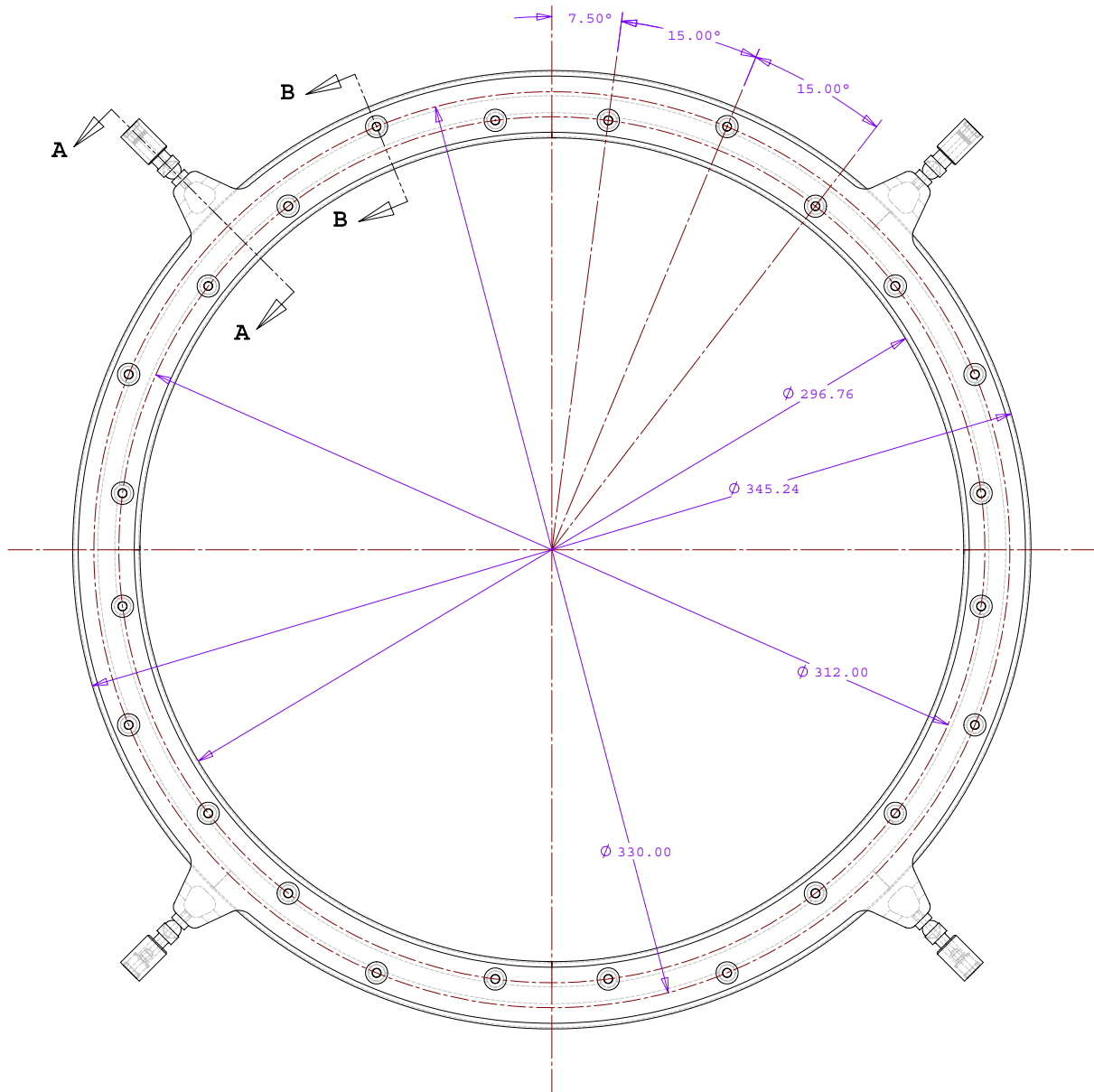


Figure 1. Disk Ring Support with nominal dimensions.

The global support frame consists of a flat-panel space frame in three sections - a barrel section and two, identical disk sections as shown in Figure 2. These sections are joined to make the complete frame.

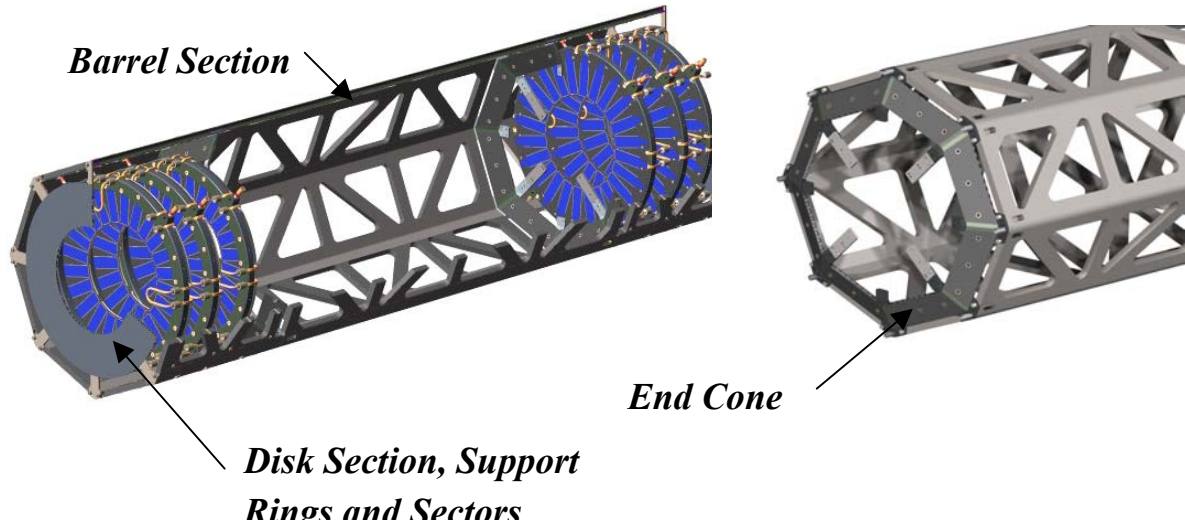


Figure 2. ATLAS Pixel global support frame, which consists of three sections - barrel and two disk sections. The barrel and two disk sections are shown joined on the left. One of the support cones for the barrel shells is shown in the right model.

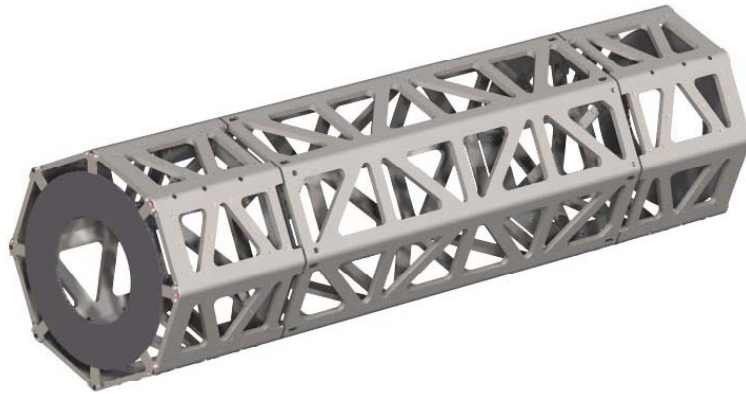
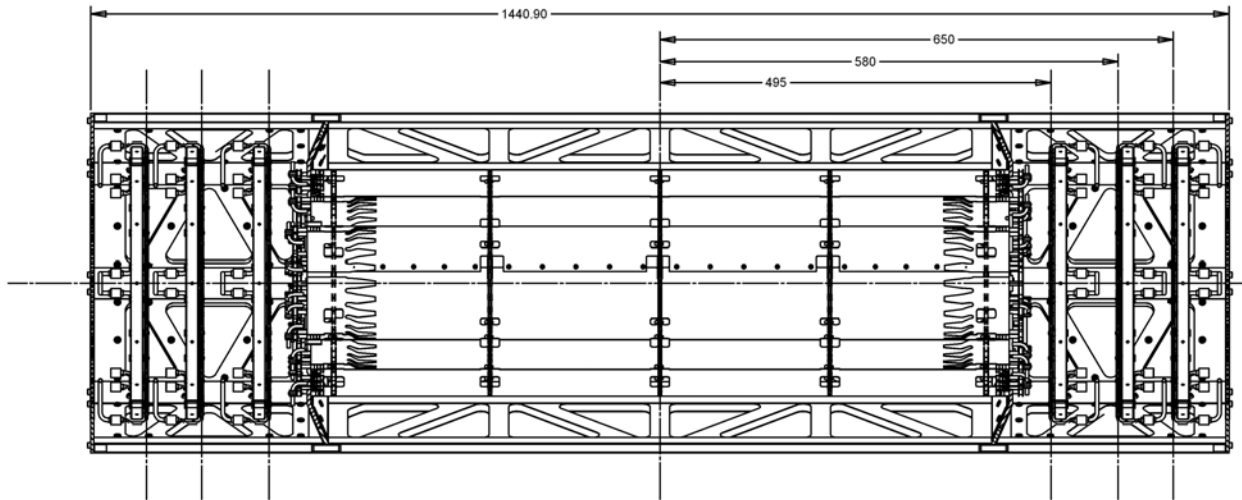


Figure 3: Solid Model of the Global Support Structure, illustrating all of the components exclusive of the Disk Support Rings. Elements contained in this view are the two disk sections with two end plates, and the barrel section with two end cones.

Figure 4 is a view of the ATLAS Pixel Detector with location of the disks denoted.



**Figure 4: Cross-section of the ATLAS Pixel Detector Global Support Structure. Illustration depicts the Disk Region and Barrel Region with two barrel layers (L1 and L2). Dimensions are in mm.**

## 2 Background

The requirements and interfaces for the Disk Support Rings and the Global Support Frame were reviewed in July 2001. The documents ([http://edmsoraweb.cern.ch:8001/cedar/doc.info?cookie=884786&document\\_id=316092&version=1](http://edmsoraweb.cern.ch:8001/cedar/doc.info?cookie=884786&document_id=316092&version=1)) presented then remain valid. There have been no significant changes to requirements since the review in July 2001. There have been minor changes to interfaces to take into account small modifications in dimensions of the internal pixel components (eg. the barrel shells) and the support of the Global Support Frame. Critical interfaces are summarized in ATL-IP-ES-0045. This note presents only the production plans for the Disk Support Rings and the Global Support Frame.

## 3 Production Overview

We present here a brief overview of the proposed production plan. The Disk Support Rings and the Global Support Frame will be provided by the United States. All procurements related to these items will be handled by Lawrence Berkeley National Laboratory.

### 3.1 Disk Support Rings

The disk support rings will be produced in three phases. Phase I is the production of C-channels meeting specifications. The C-channels are the most demanding fabrication item. Phase II is the fabrication of one pre-production ring. Phase III is the fabrication of all production rings (currently six). The fixed-price contract for Phase I and Phase II was placed in November 2001. The scheduled date for completion of Phase I is 7-March-2002. The scheduled date for completion of Phase II is 4-April-2002. These elements are currently on schedule but the schedule is tight. The contract for Phase III will be placed after inspection of the pre-production ring, which is planned to be completed by the end of April 2002. Production of the Disk Support Rings is planned to be completed by October 2002.

The documents controlling the fabrication and inspection of the Disk Ring components and final assemblies are given in Appendix A ("Procurement Plan for the ATLAS Pixel Detector Disk Support Rings", HTN-106210-0005) and Appendix B ("Process Control Inspection 432mm Disk Support Ring", HTN-106210-0006). A list of drawings related to the Disk Support Rings is also given in Appendix A. These drawings will be posted on EDMS and undergo a formal approval before the production (Phase III) begins.

### 3.2 Global Support Frame

The production of the Global Support Frame is planned to occur in two major phases: production of tooling and production of sub-components and assembly of the final frame elements. We plan to have a separate contract (or contracts) for the fabrication of tooling. The tooling will be provided to a vendor (or vendors) for fabrication of the major sub-components of the Global Support Frame. A maximum of two vendors is planned for the fabrication of sub-components and assembly of the Global Support Frame Elements, and one vendor is preferred. The document controlling the fabrication of the Global Support Frame is given in Appendix C (HTN-106210-0007-DRAFT) - A list of drawings for tooling, sub-components and assembly is given in Appendix D. These drawings will be posted on EDMS and undergo a



*procurements. The intent of this interaction to shorten somewhat the nine months estimated for producing and evaluating the intricate frame components. The issue is to establish as-built interface dimensions, needed for finalizing the internal barrel structure dimensions. In this manner, we will lower the cost of producing the Global Support Structures by eliminating expensive and troublesome final machining. Note that the "Global Support Structure Trial Assembly" given in Figure 6 does not include insertion of the Disk Support Rings.*