

# Building the Observatory 1991-1999

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# 1991 to 1999 - Outline

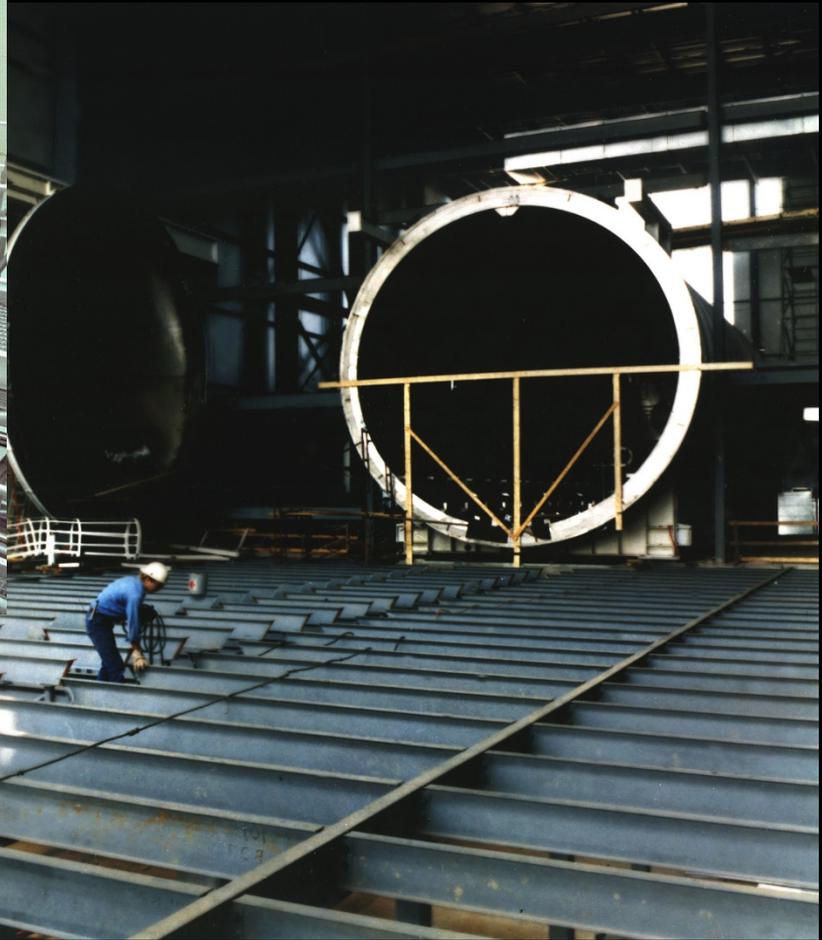
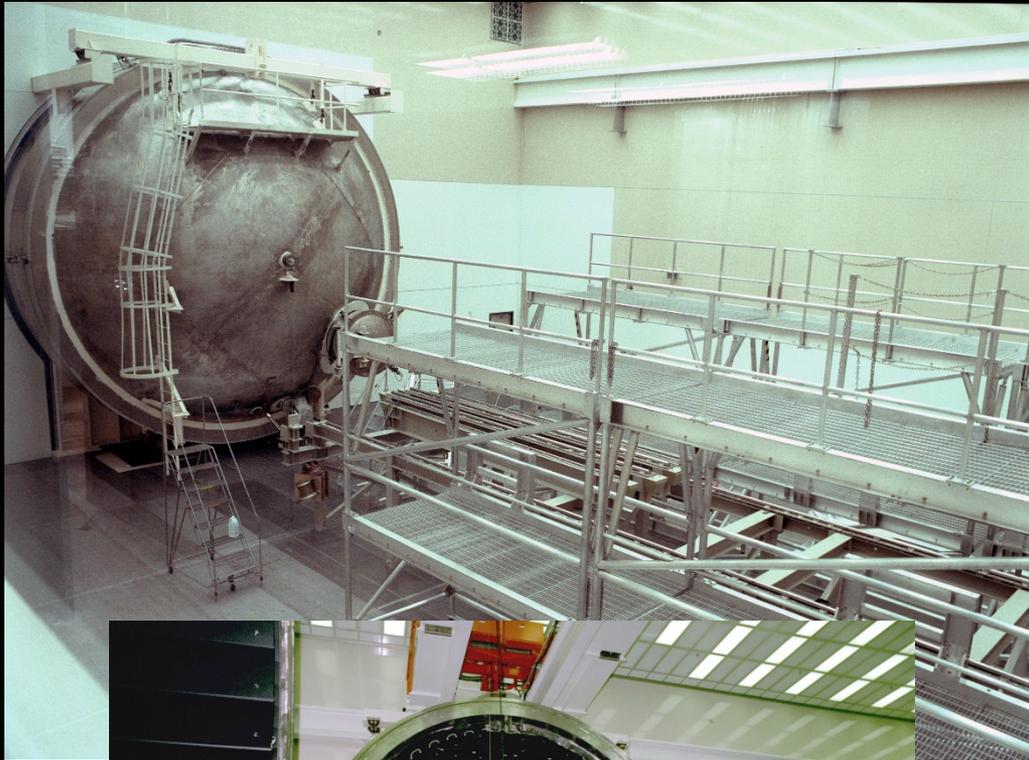
- The Congressional challenge
  - Prove it to me (Verification Engineering Test Article aka VETA)
  - Build that facility!
- Building of the Observatory
- Calibrating the Observatory
- Launch, deployment & first light!

# THE XRCF

(X-ray Calibration Facility)



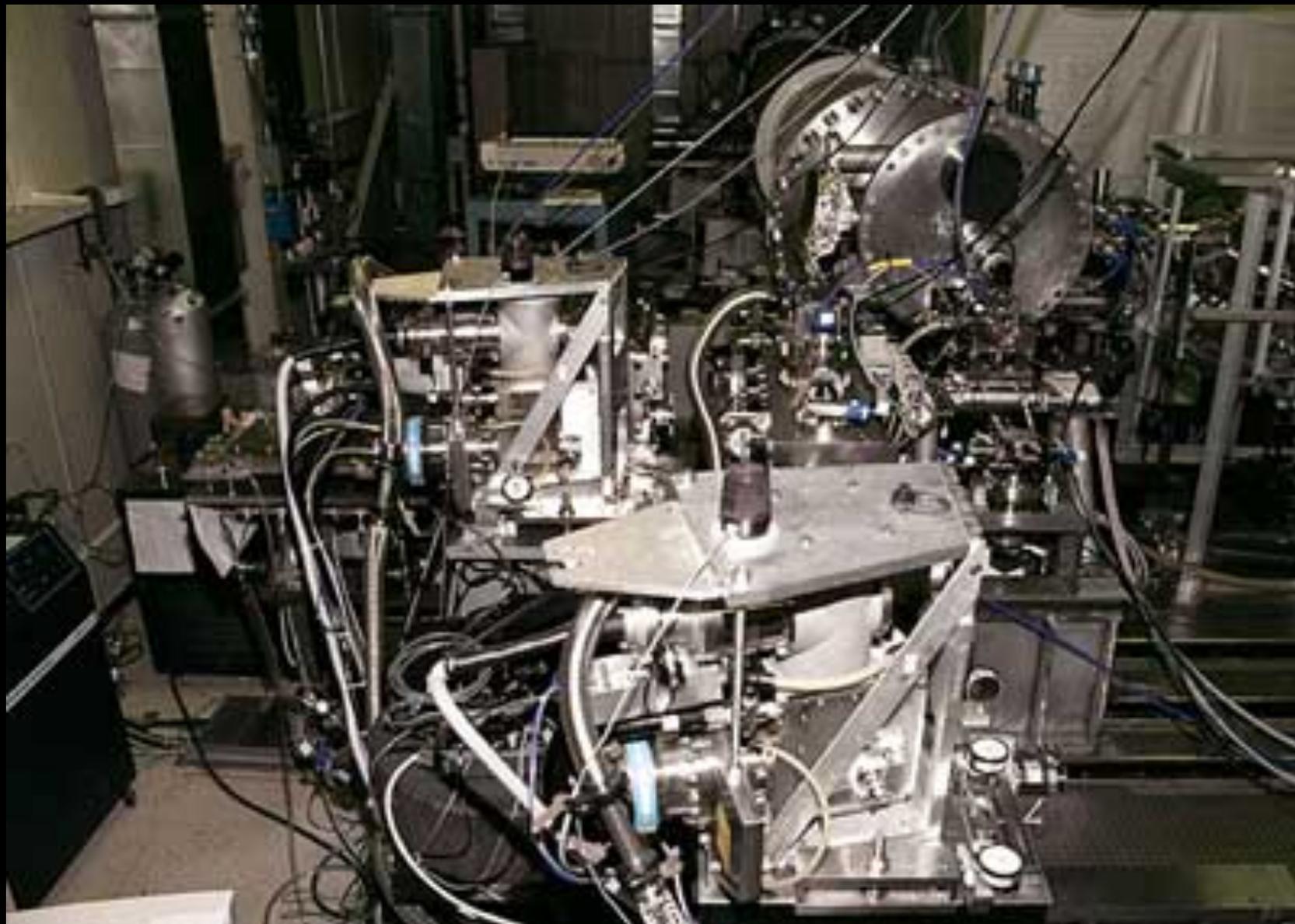
# XRCF



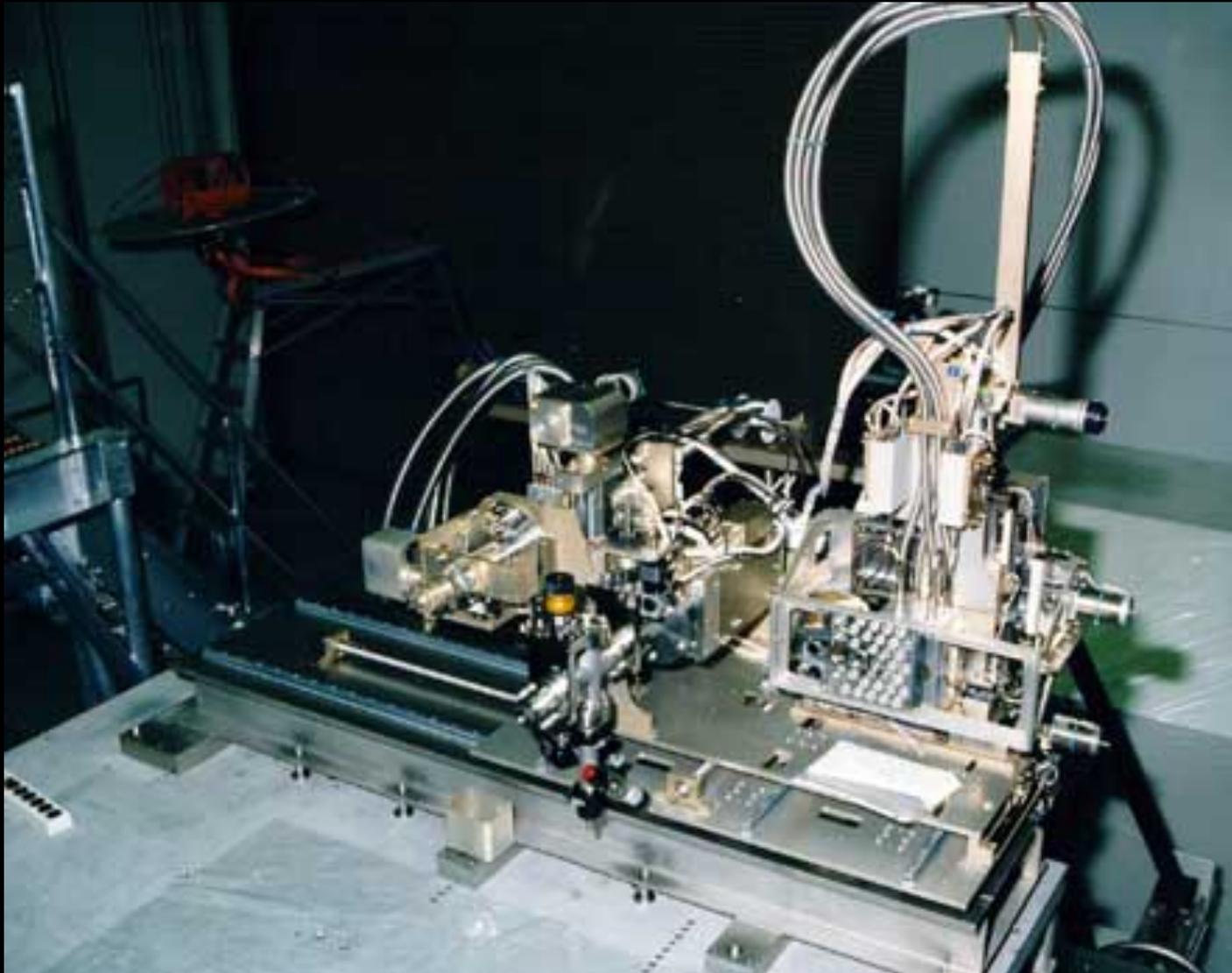
# XRCF - "Guide" Tube



# XRCF – X-ray Sources



# X-Ray Detection System (XDA)

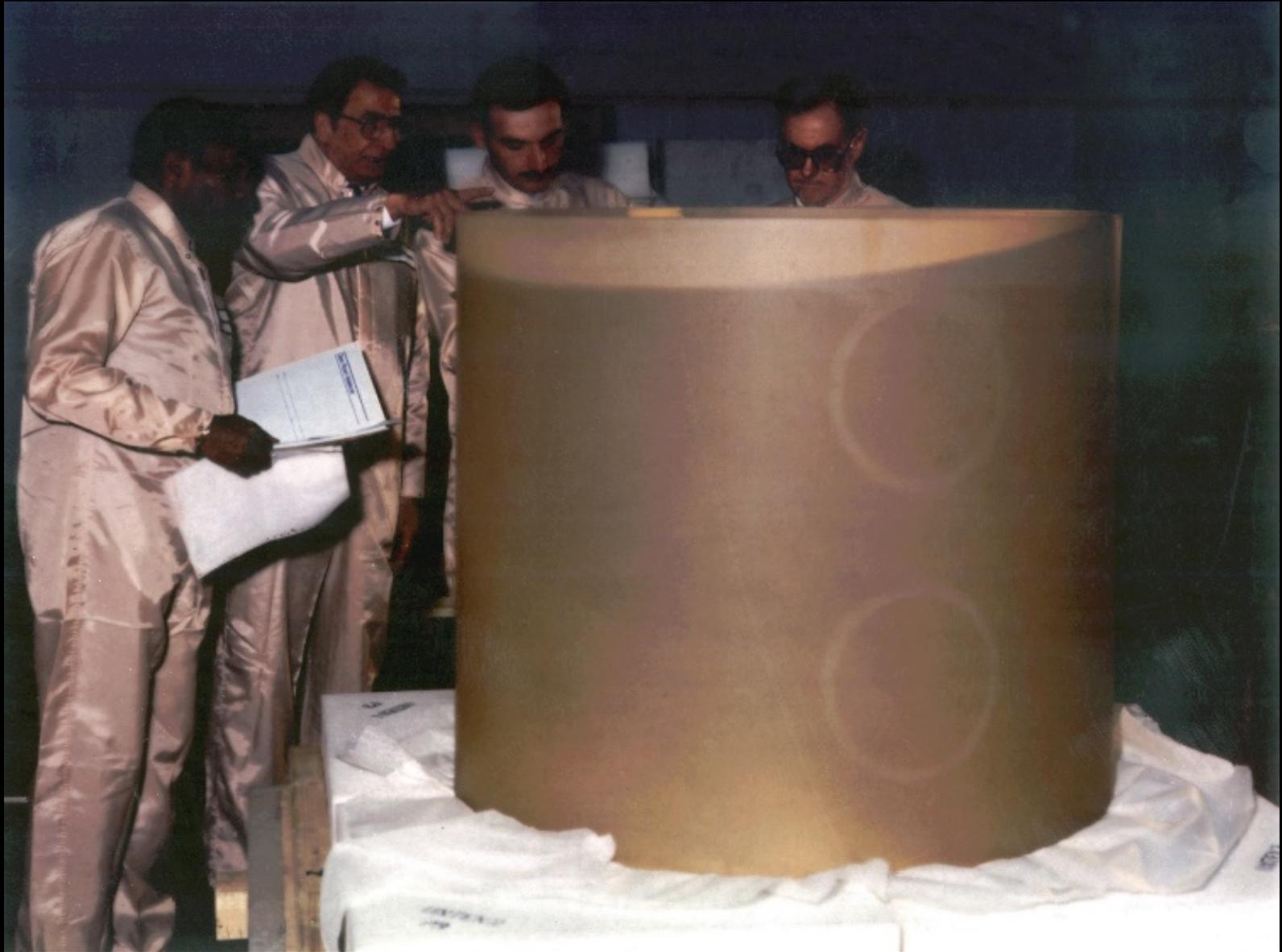


# The X-ray Calibration Facility (XRCF) at MSFC



# VETA

(Verification Engineering Test Article)



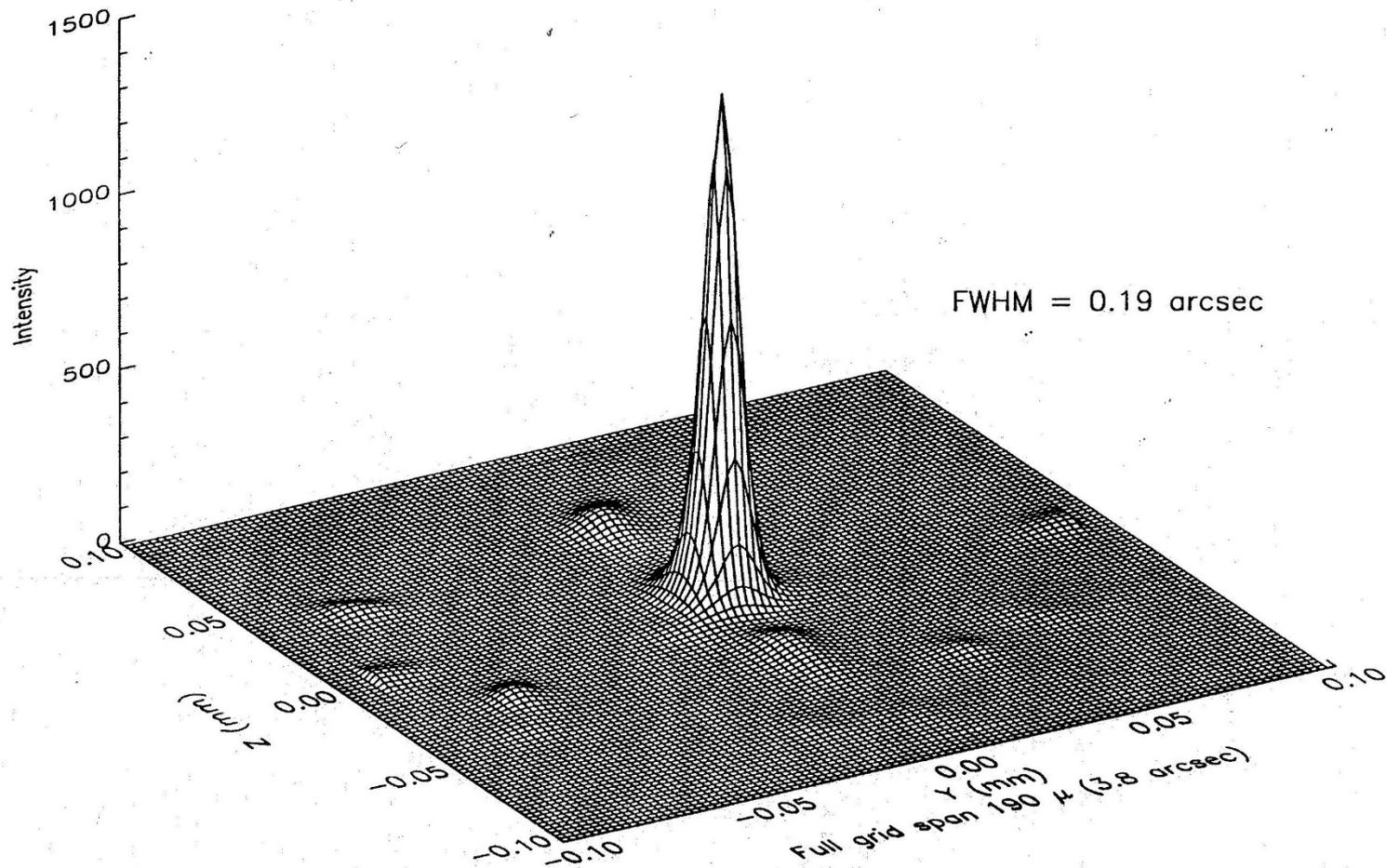
# VETA 1991

- P1/H1 – uncoated & uncut
- Needed Test Facility at least one year earlier than scheduled



Estimated Mirror Performance on Orbit  
Facility Effects Removed Using Lucy Deconvolution of 19 x 19 Scan

Energy: 1.49 keV



# Restructuring

- Servicing Disappears
  - Assured by new orbit for AXAF-I
  - But benefits
    - Higher observing efficiency
    - Fewer earth occultations
    - Use of iridium to enhance reflectivity
- But loss of two mirrors
- Ultimately “loss” of AXAF-S
  - Cancelled in the fall of 1993

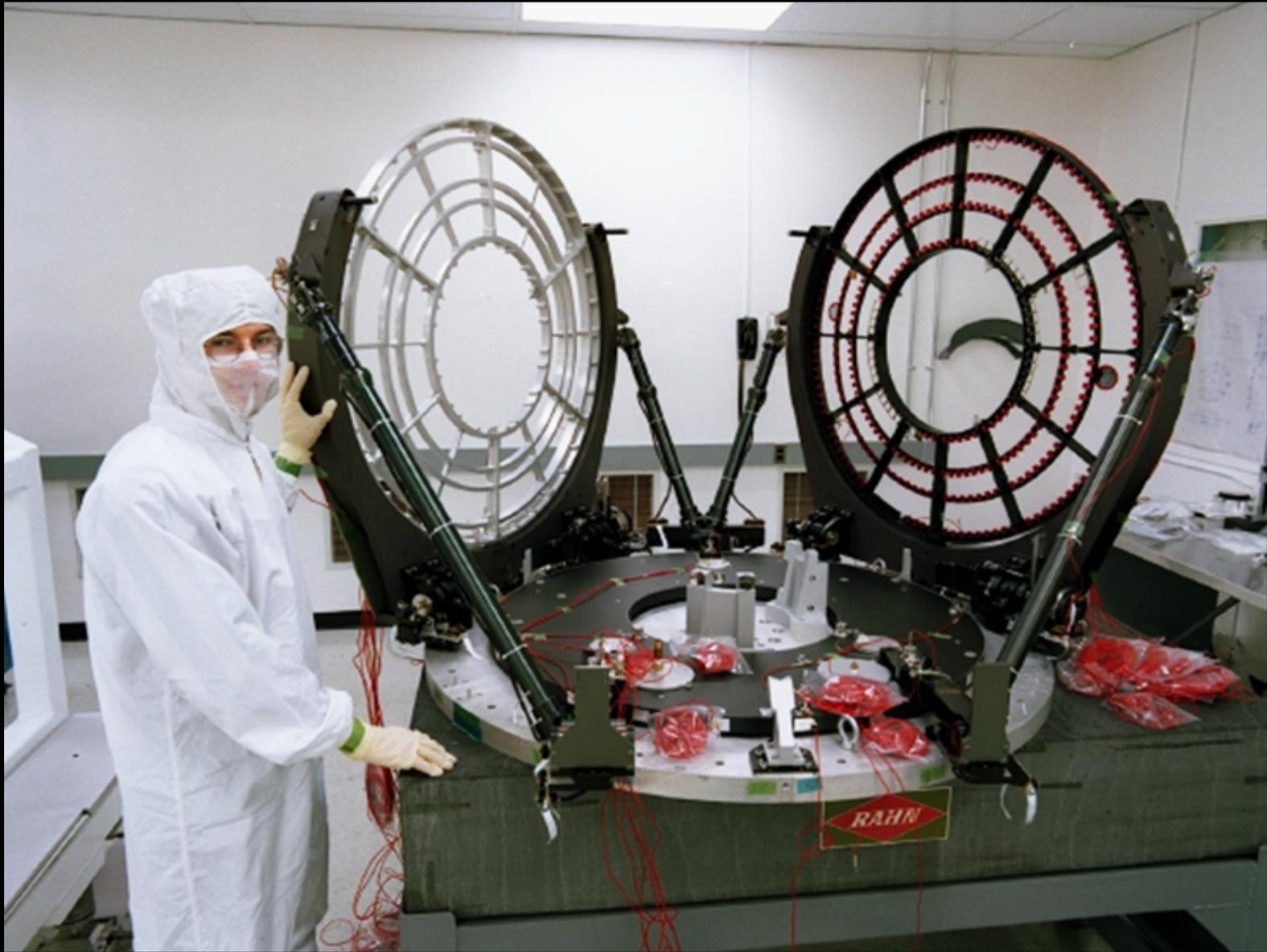
# OPTICS

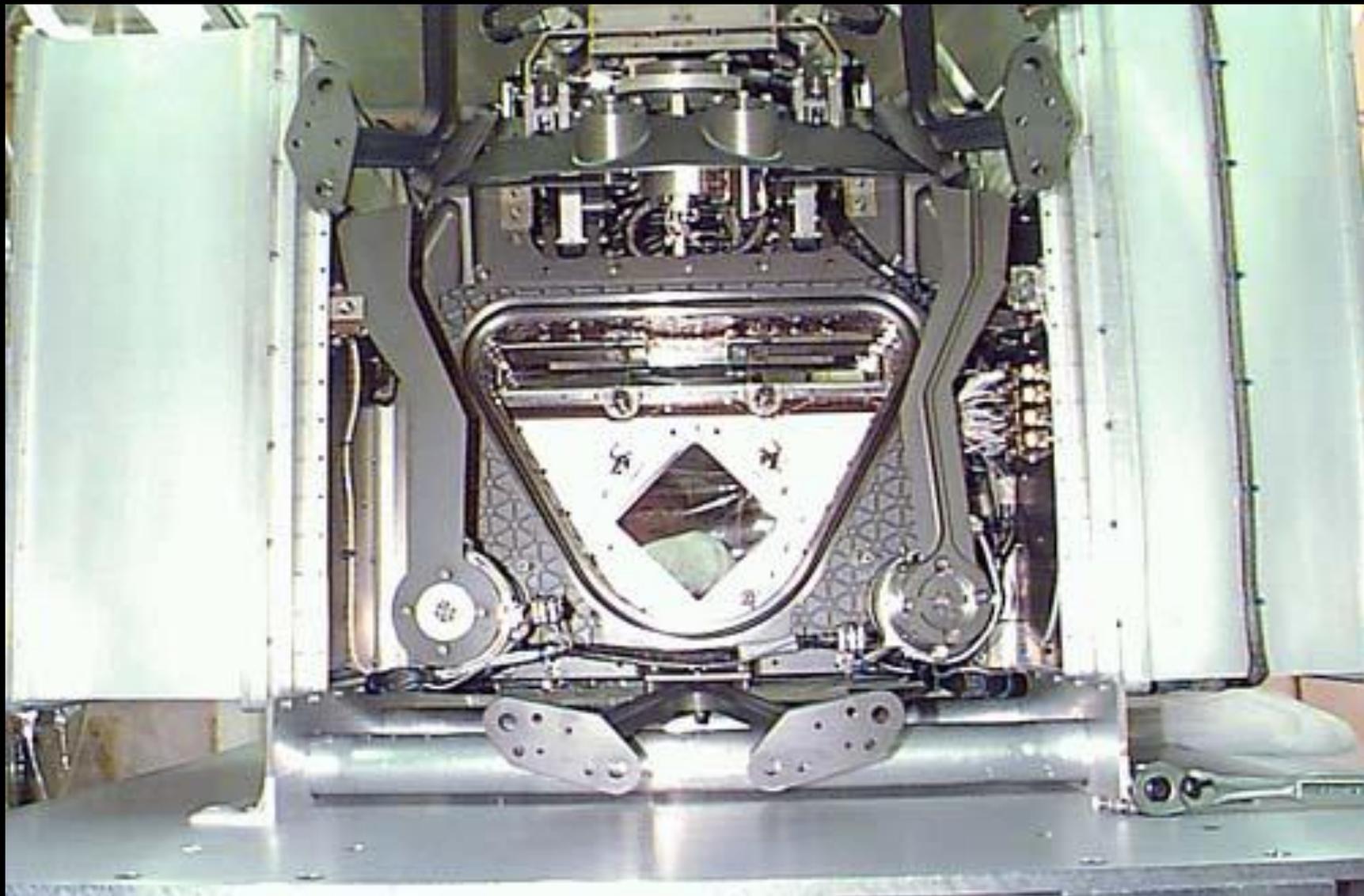
# Optics - Assembly & Alignment

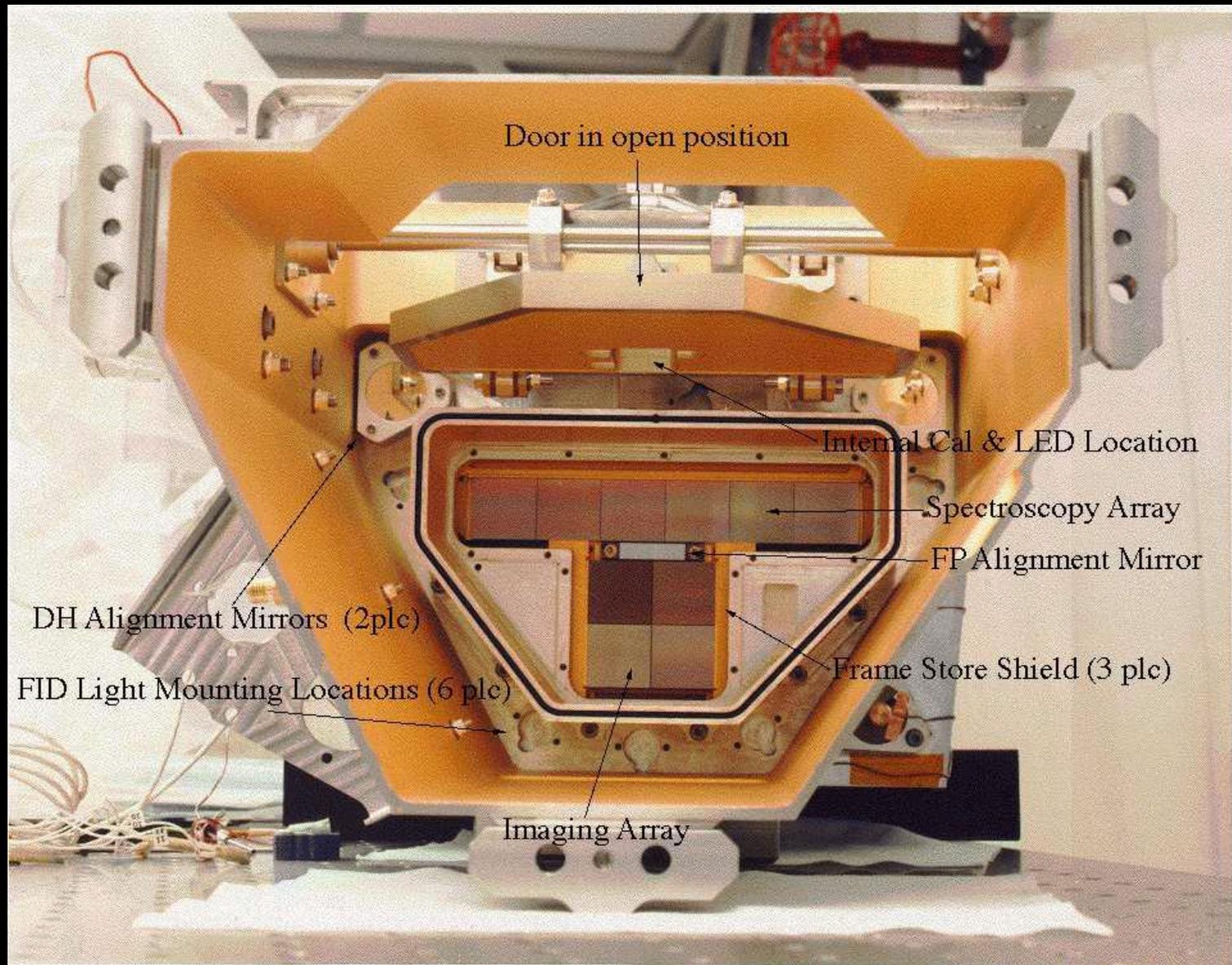


# INSTRUMENTS

# Gratings







# CALIBRATION

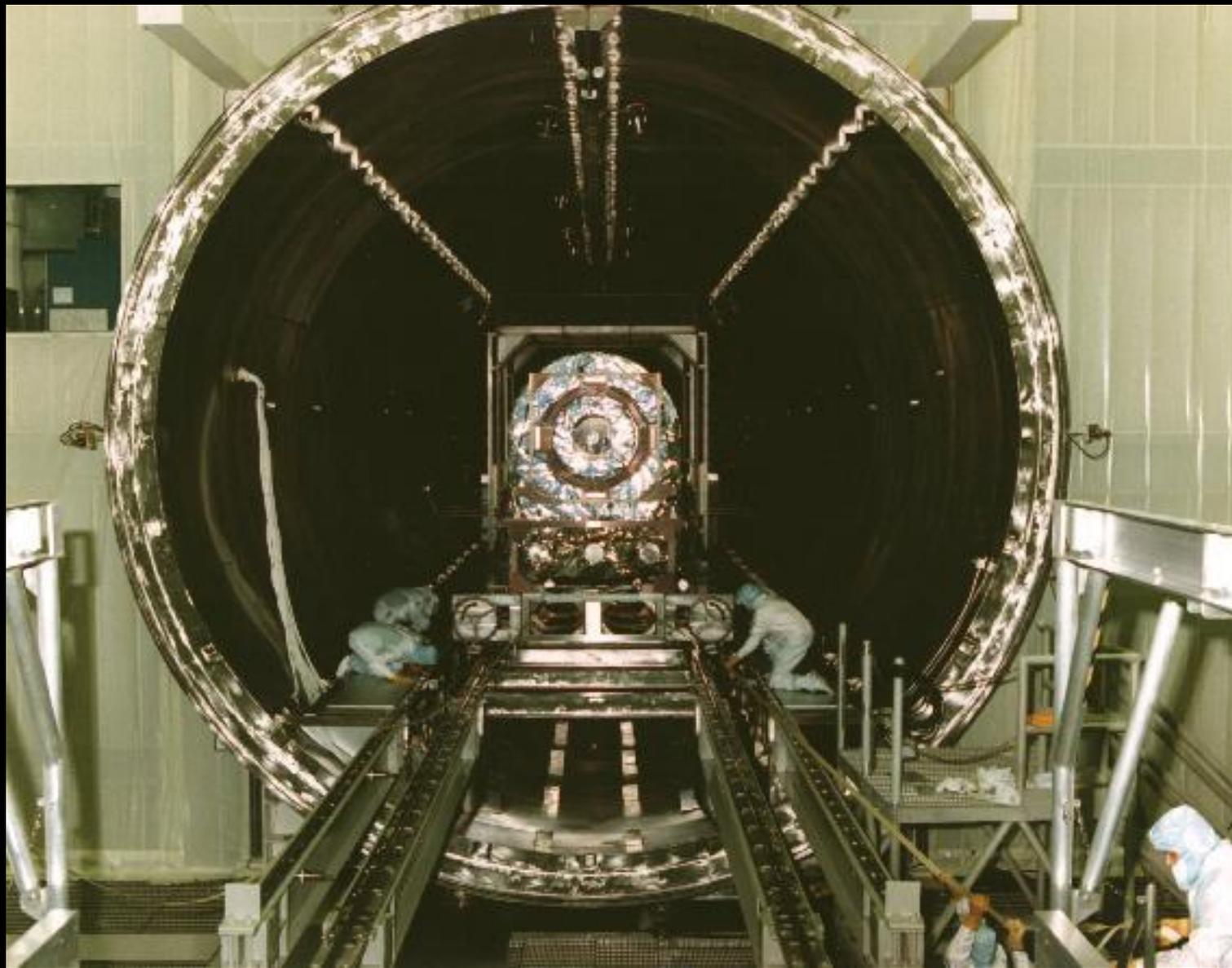
# X-Ray Calibration (1996-1997)



# X-Ray Calibration (1996-1997)



# X-Ray Calibration (1996-1997)



# Life at the XRCF



# TO THE CAPE AND LAUNCH

# On to the Cape – Feb 4 1999



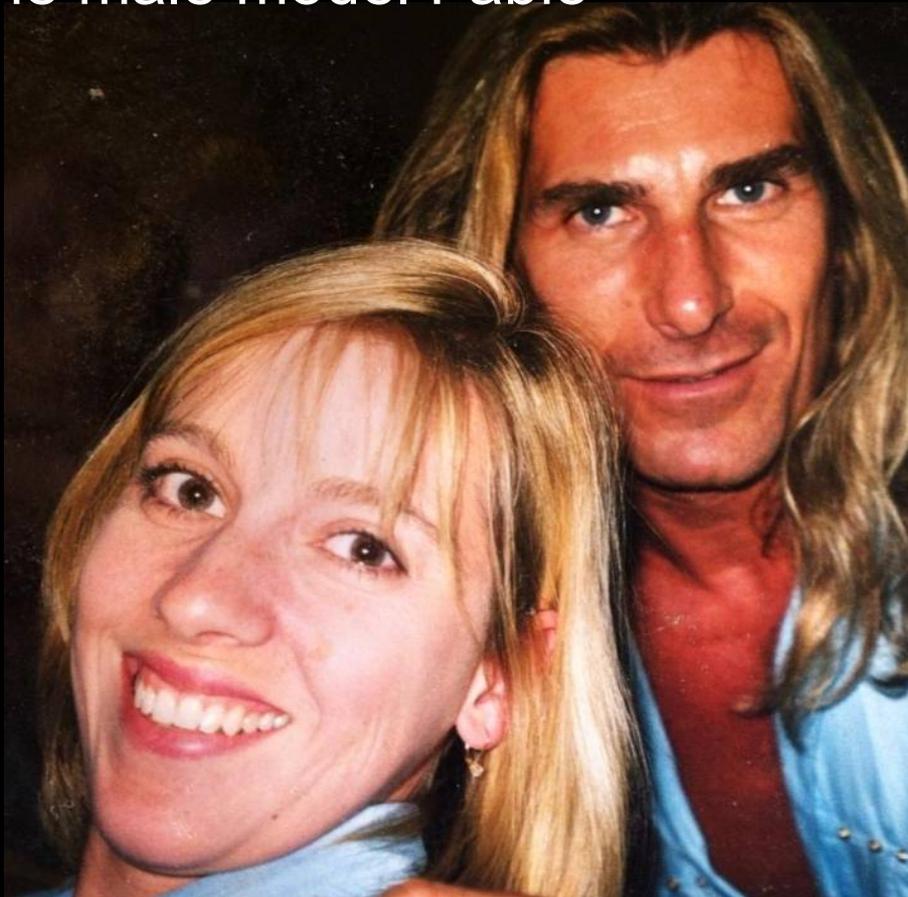
# Include the Upper Stage in the Shuttle



The longest and heaviest payload ever launched by the Shuttle

# Notables at the Launch

- Hillary Clinton
- The women's soccer team
- Mrs. Chandrasekhar
- The male model Fabio



# Three Launch Attempts

- Mon/Tue July 19/20
  - Sensor spike --- hydrogen in the engine
- Wed/Thurs July 21/22
  - Lightening in the vicinity
- Thurs/Fri July 22/23
  - Third time is a charm



Launch – July 23, 1999

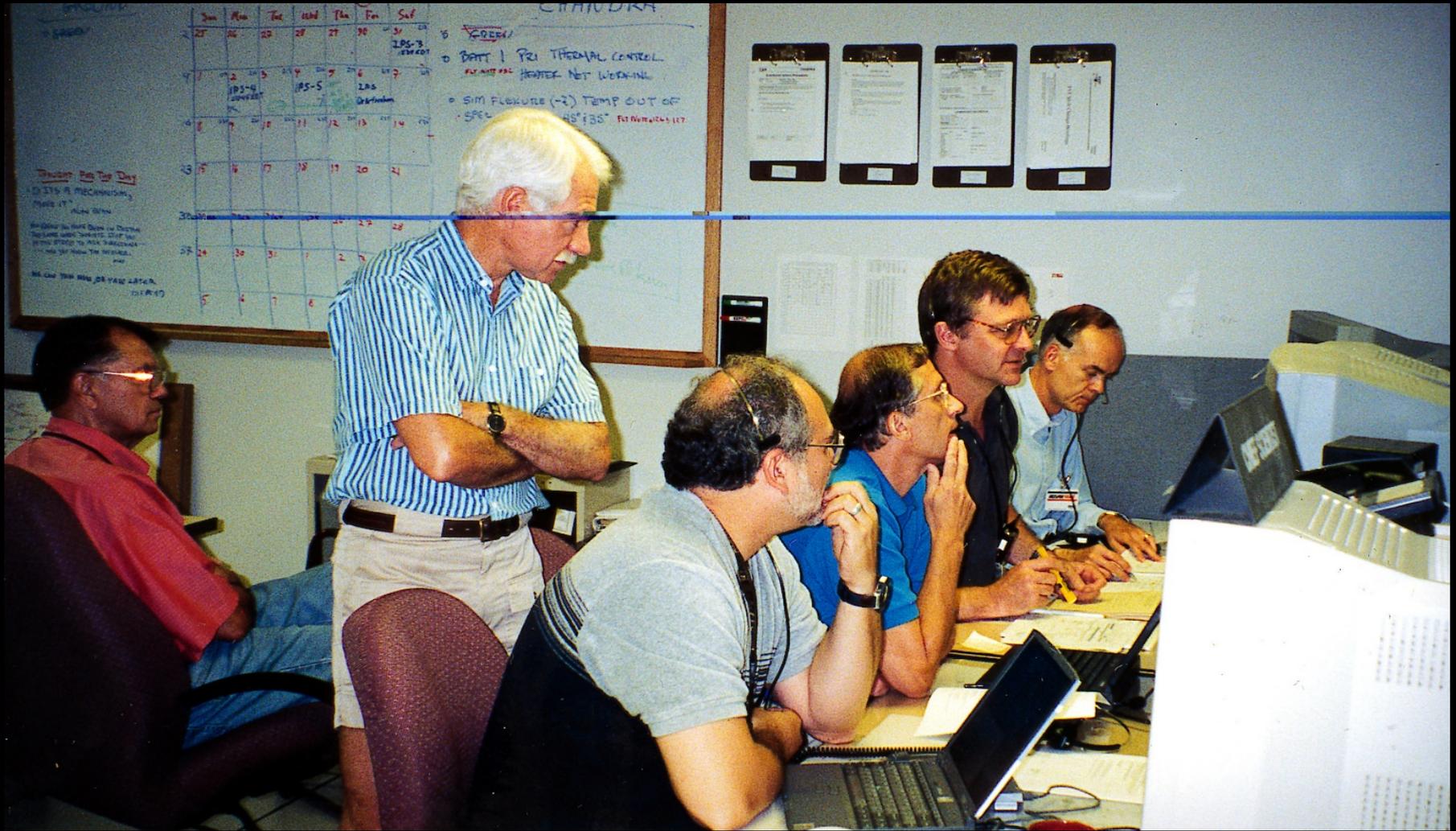
## Beyond the Sky

Words and Music by Judy Collins

And we will fly beyond the sky  
Beyond the stars beyond the heavens  
Beyond the dawn we'll carry on  
Until our dreams have all come true  
To those who fly - we sing to you



# Sitting in the Control Center

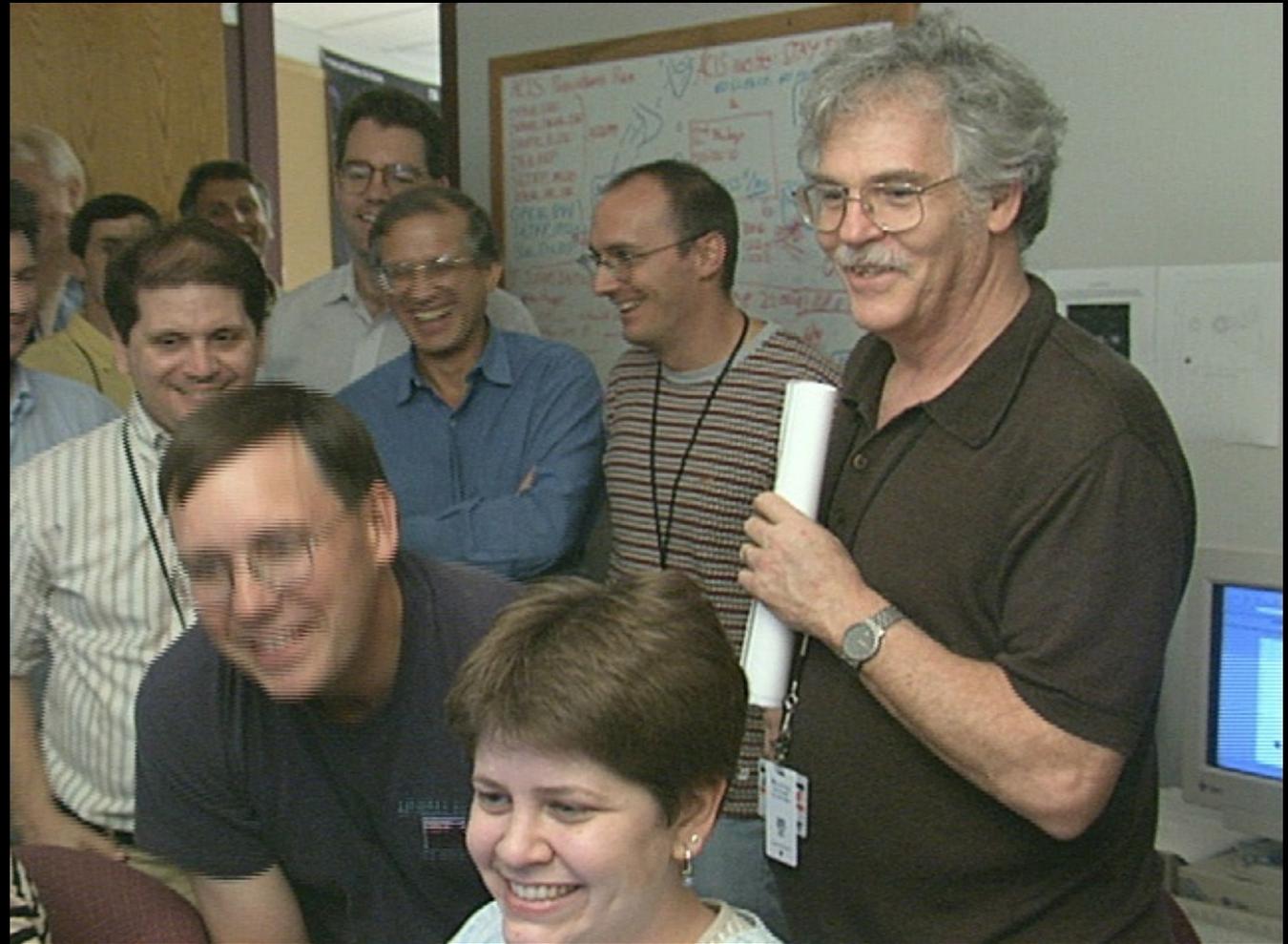


# Door Openings

- August 11 – HRMA aft cover
- August 12 – HRMA forward cover



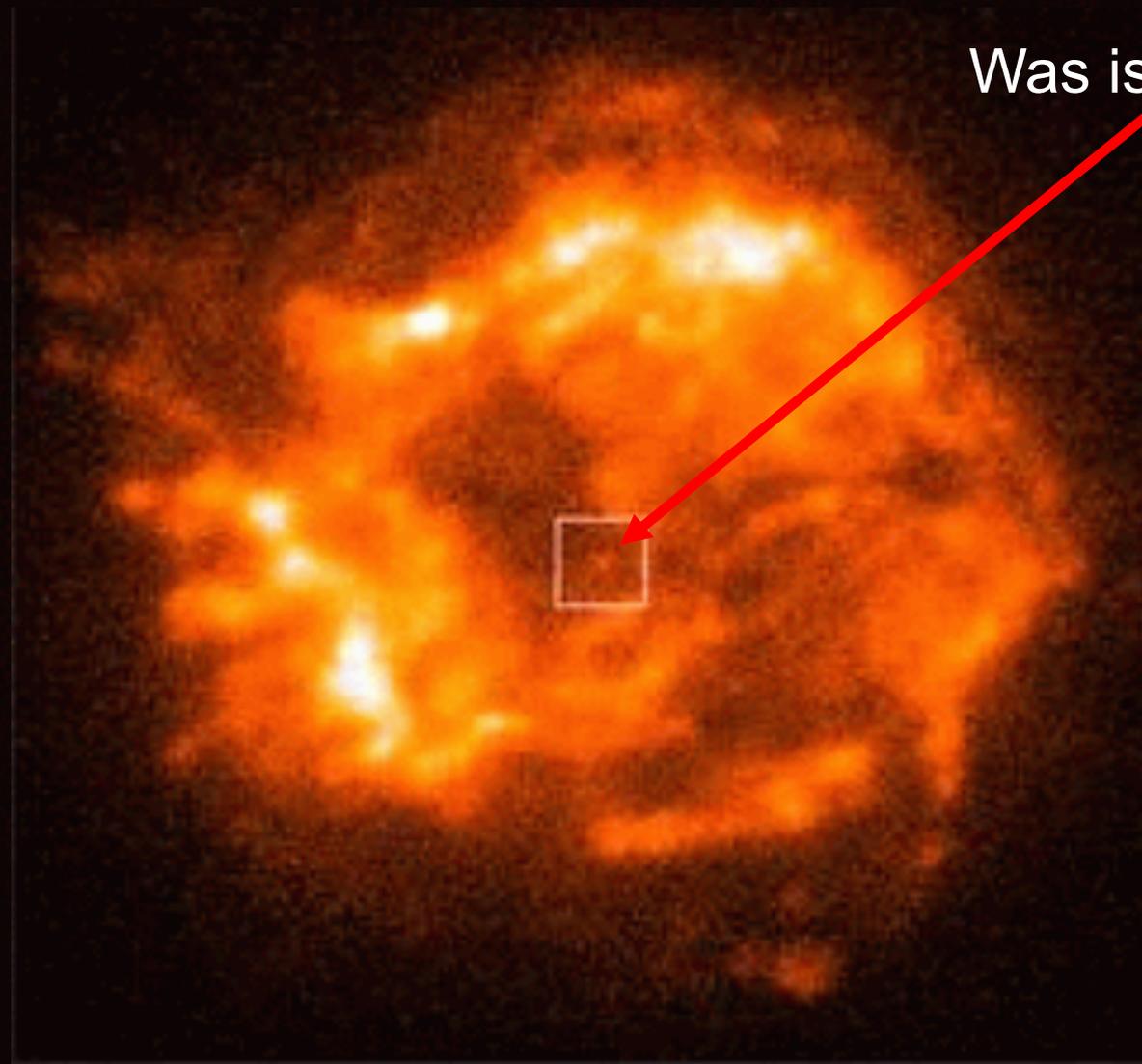
# Unofficial First Light - LEON X-1



# First Light



# Official First Light — Cassiopeia A



Was ist das?

1 arcminute

