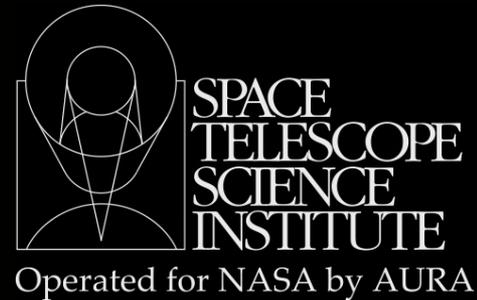


# Hubble SM4 *space servicing in action*



John Mace Grunsfeld PhD  
Space Telescope Science Institute

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STS-125 May 2009



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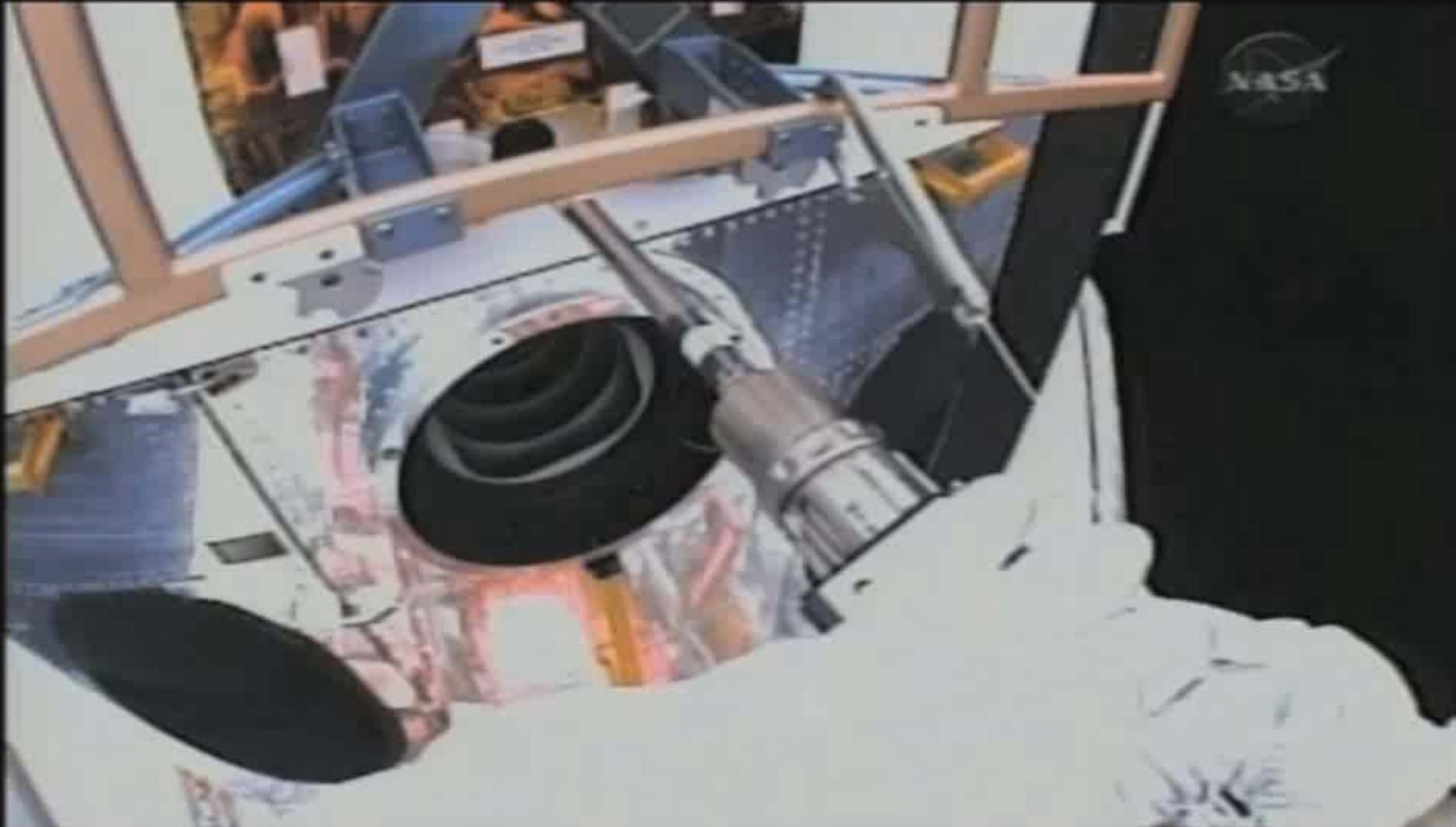


You're  
listening to  
CAR TALK,  
with 'Click'  
and 'Clack'  
The Tappet  
Brothers...  
Go ahead  
Florida  
caller...

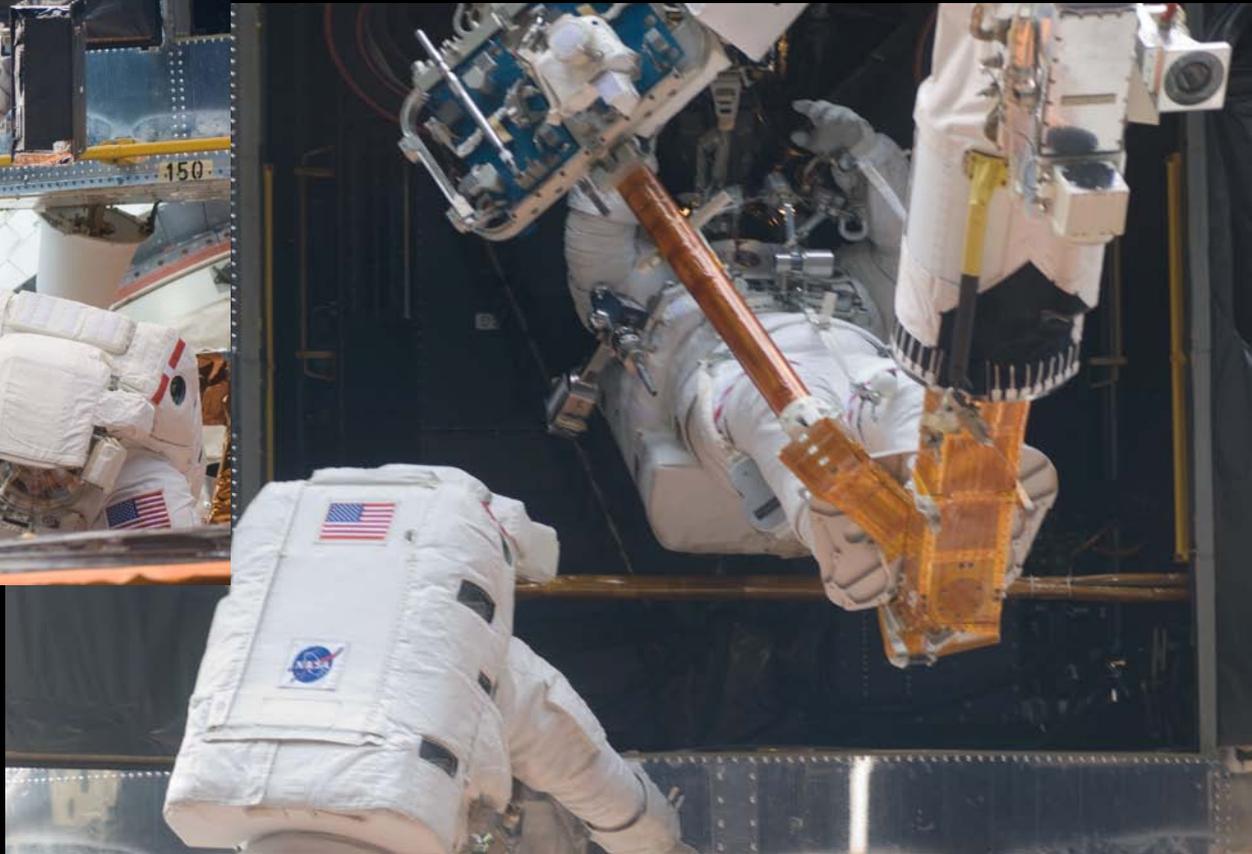
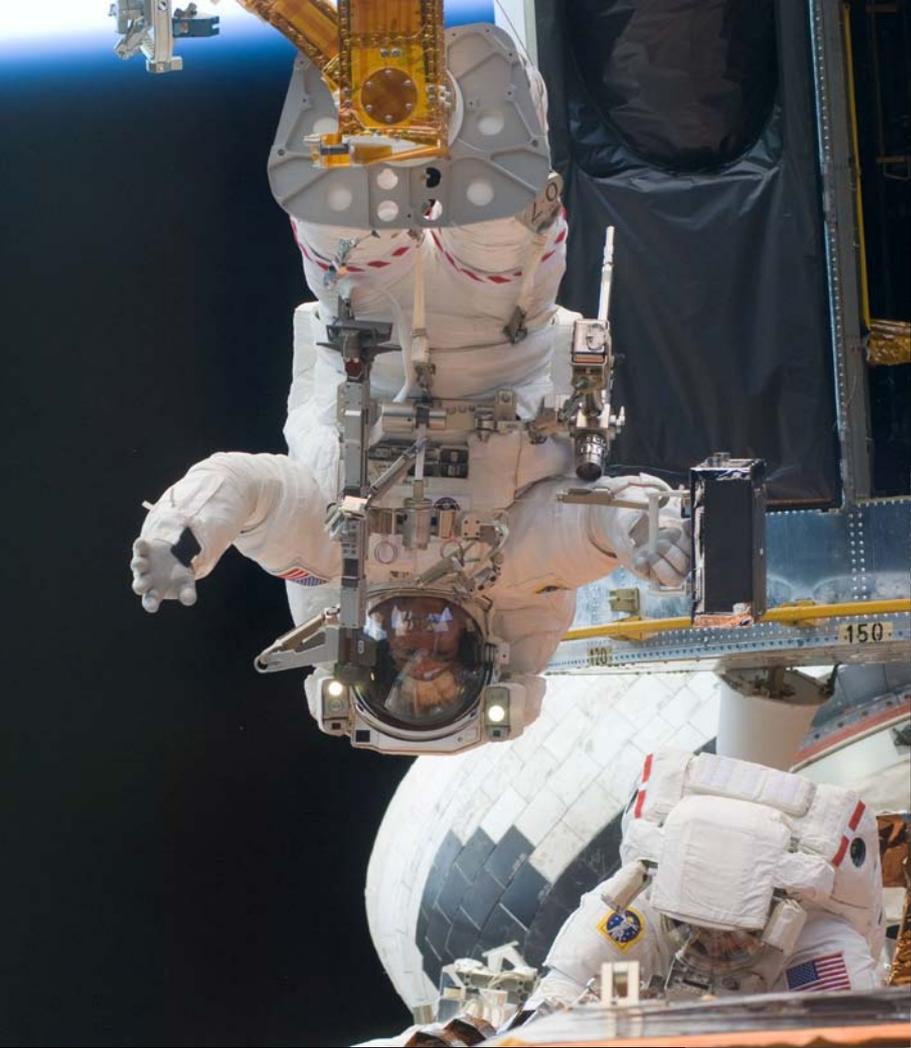
OK...  
Here's my  
problem...



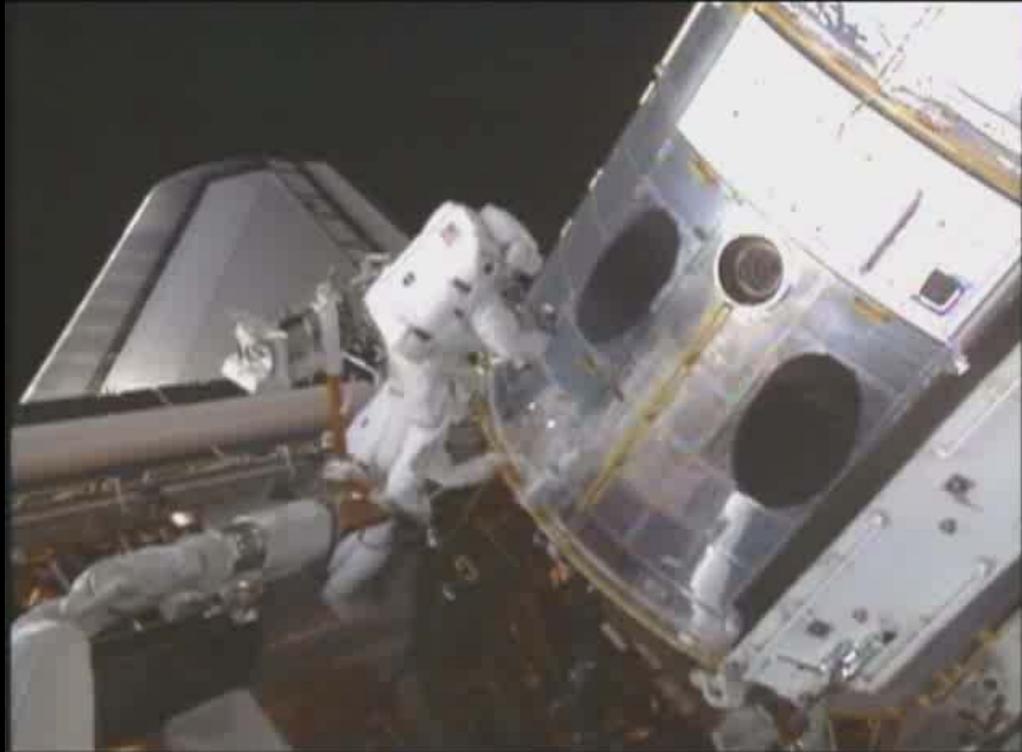
MARGULIES  
© 2005 THE RECORD NEW BRUNSWICK  
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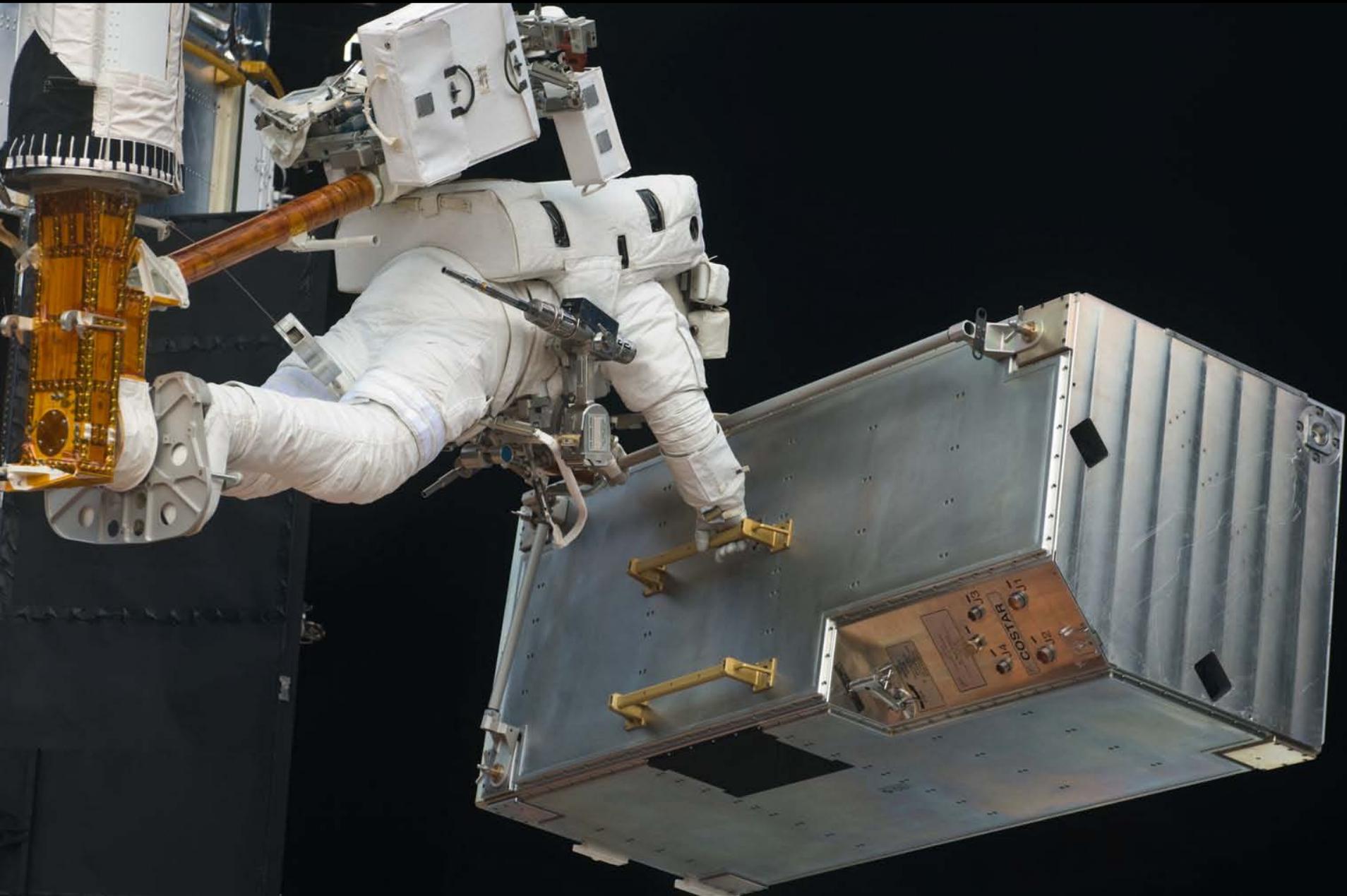
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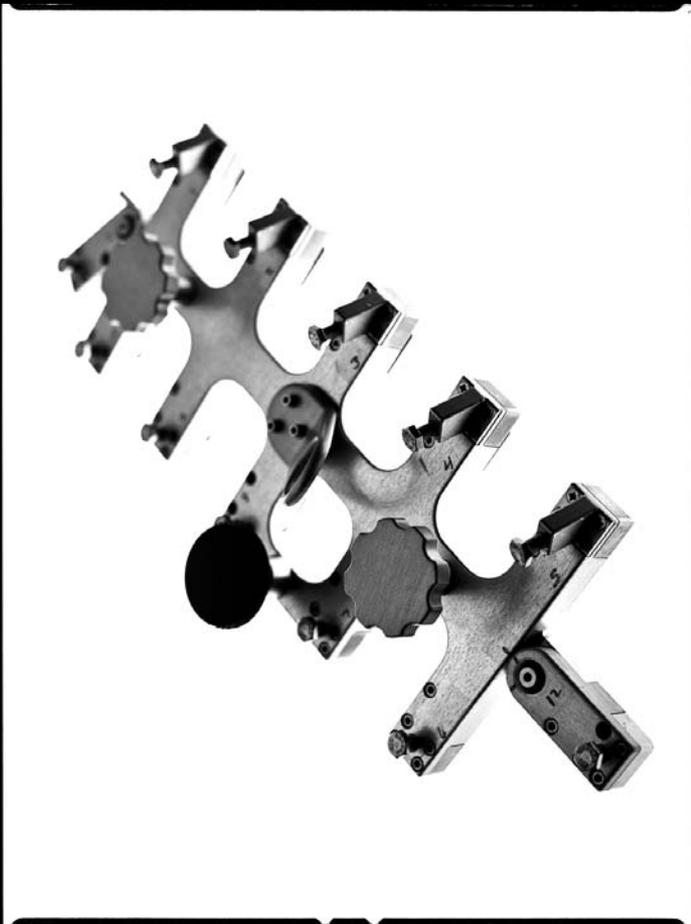
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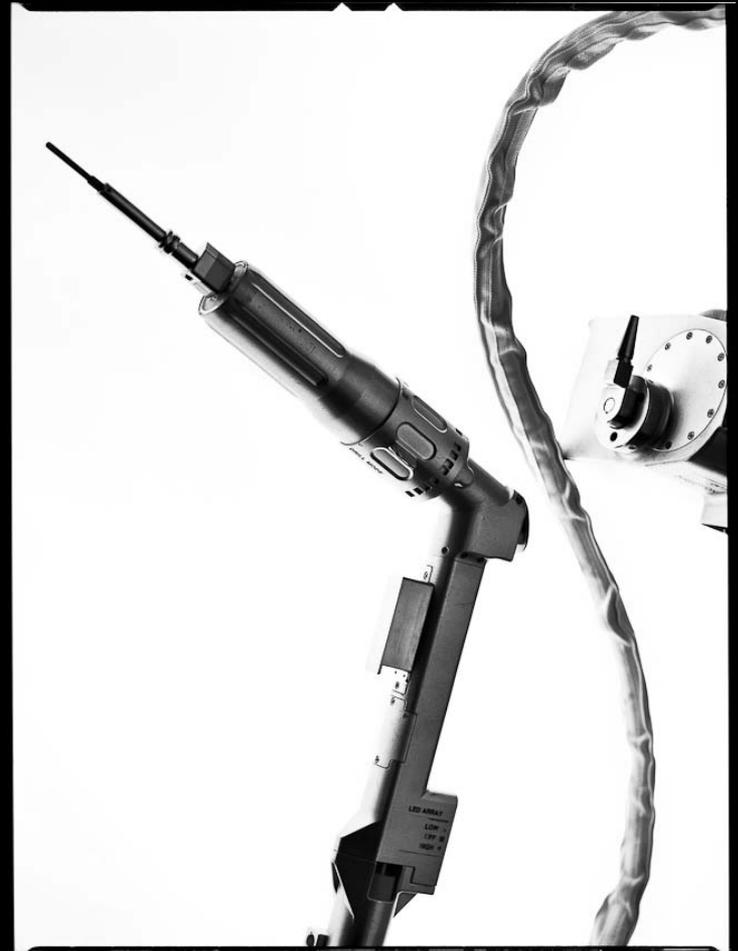
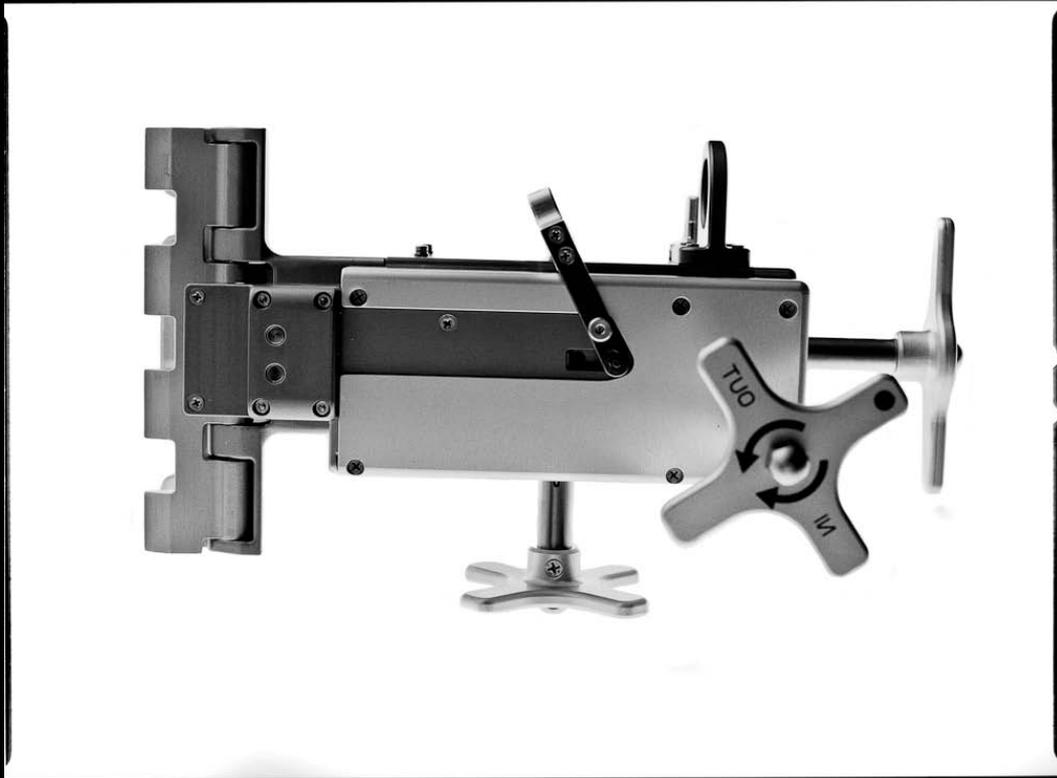


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Images by  
NASA/Michael Soluri

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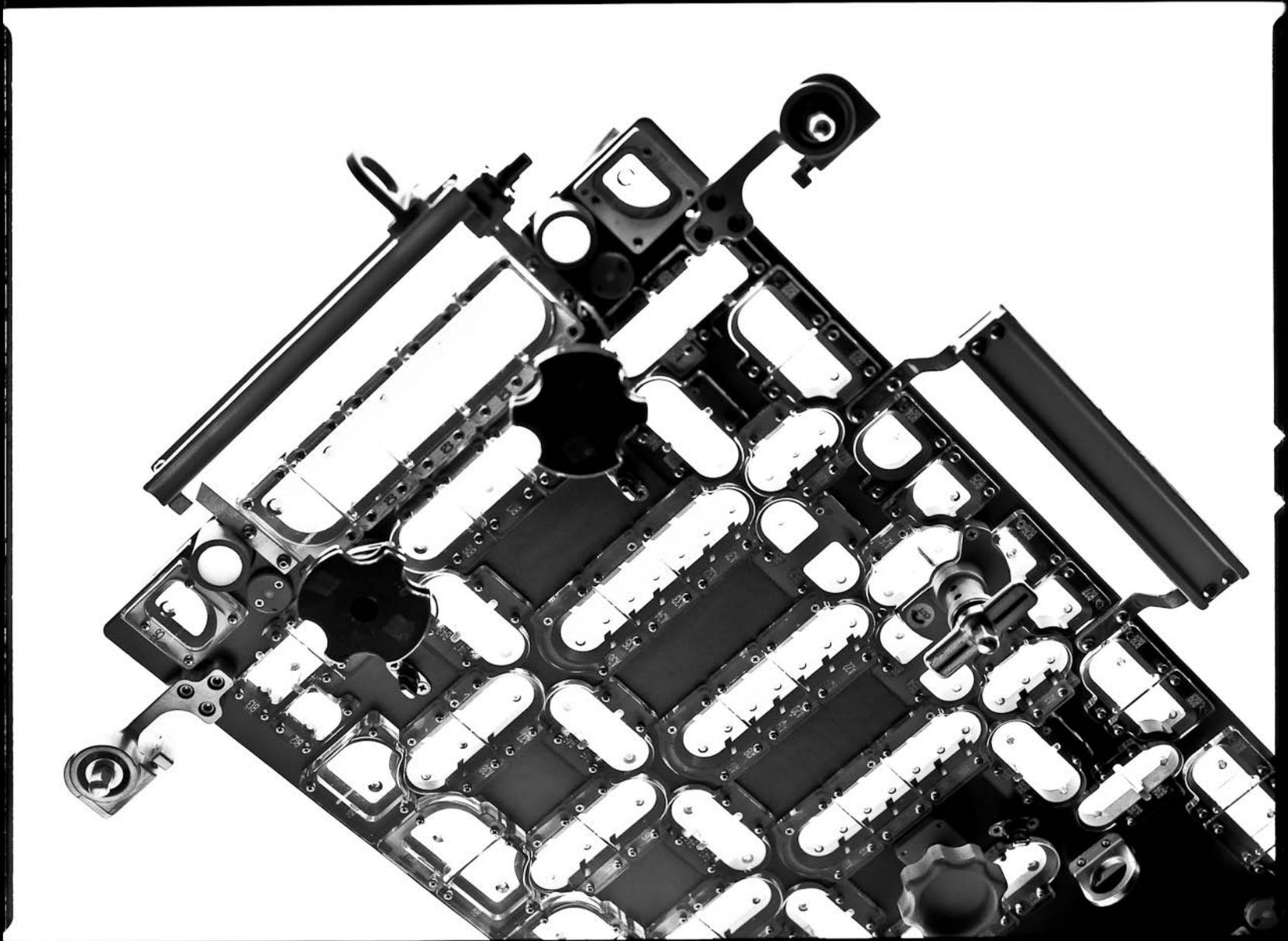
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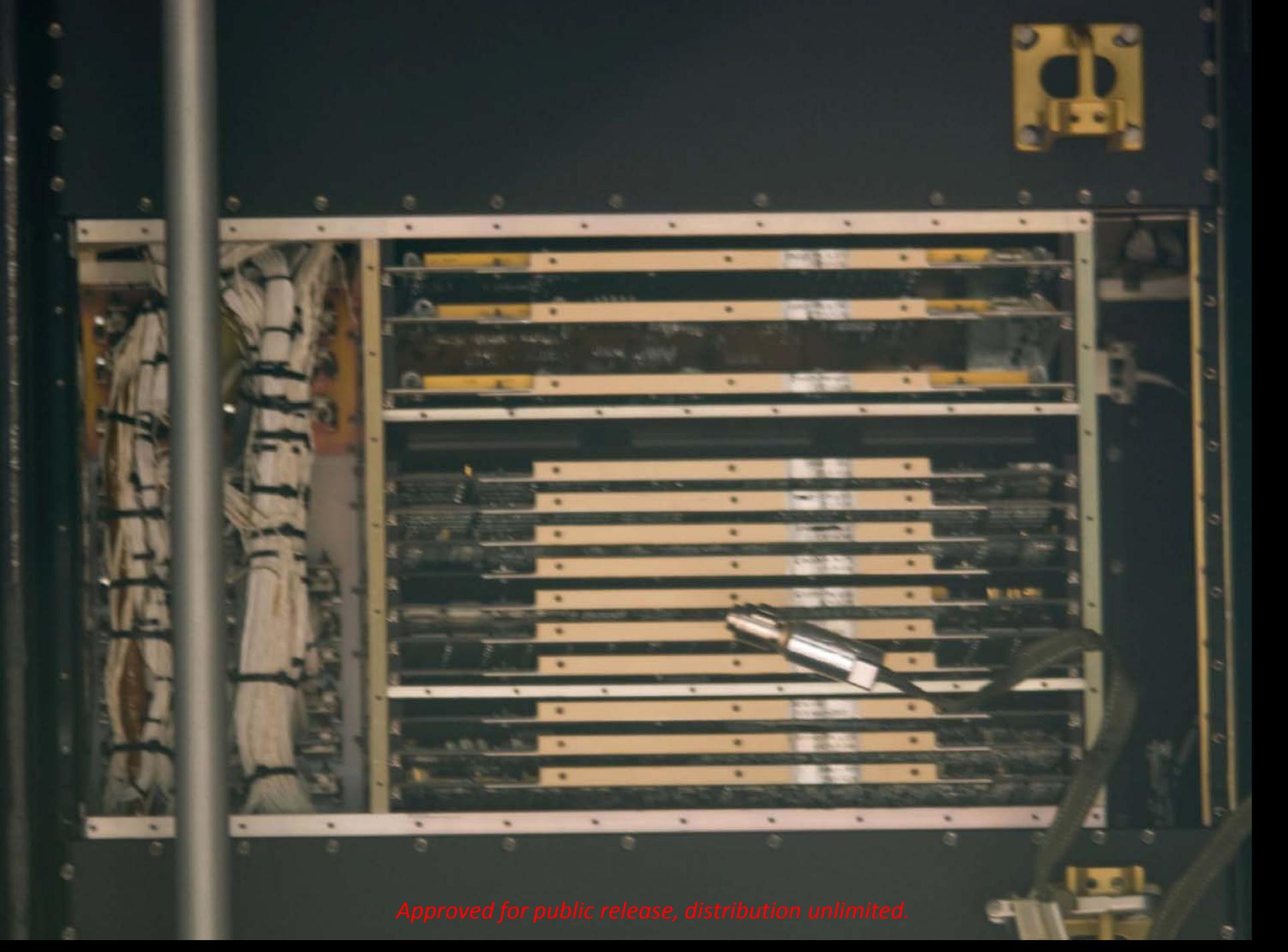
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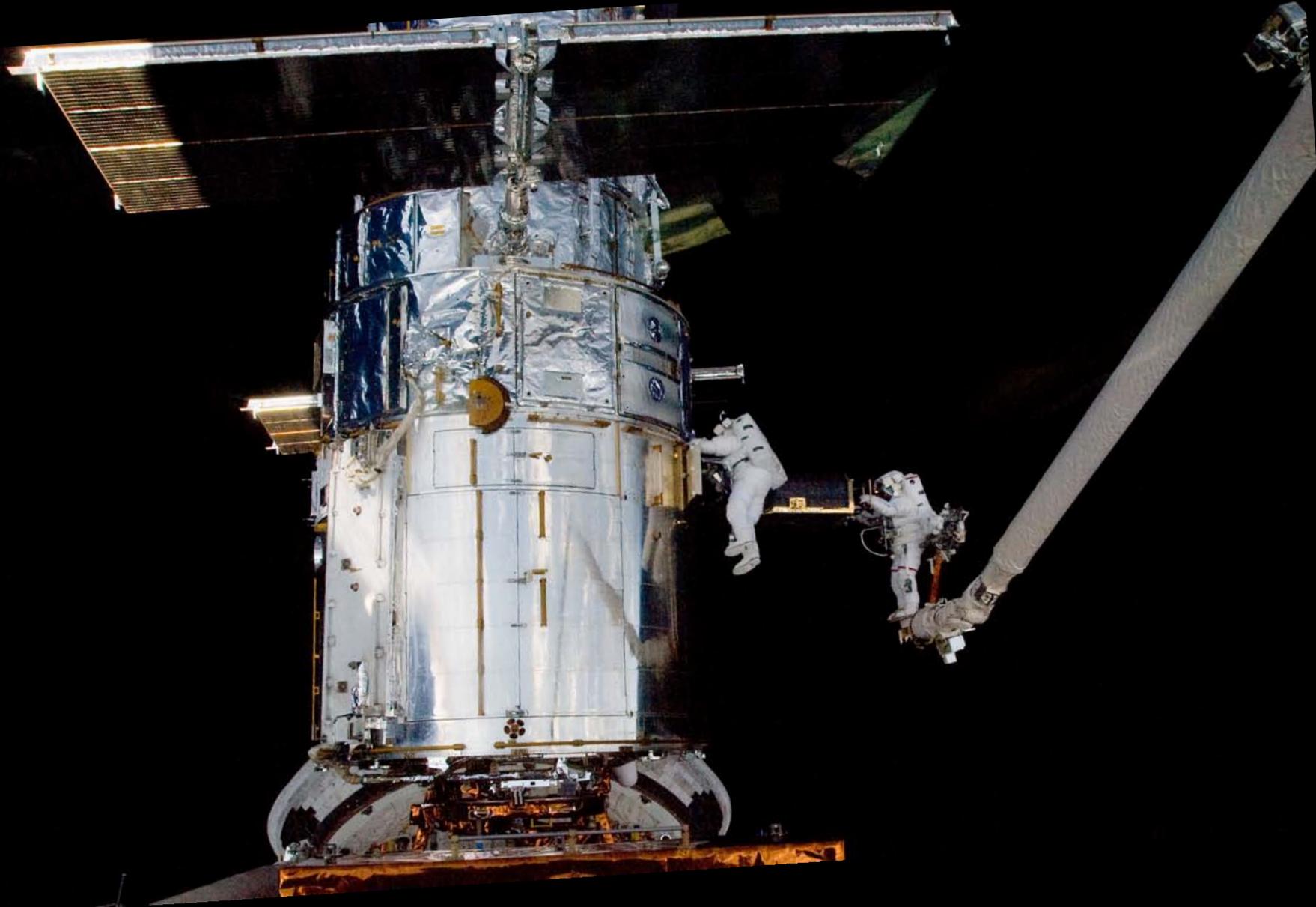
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Three of the four #10 socket head bolts were stripped!





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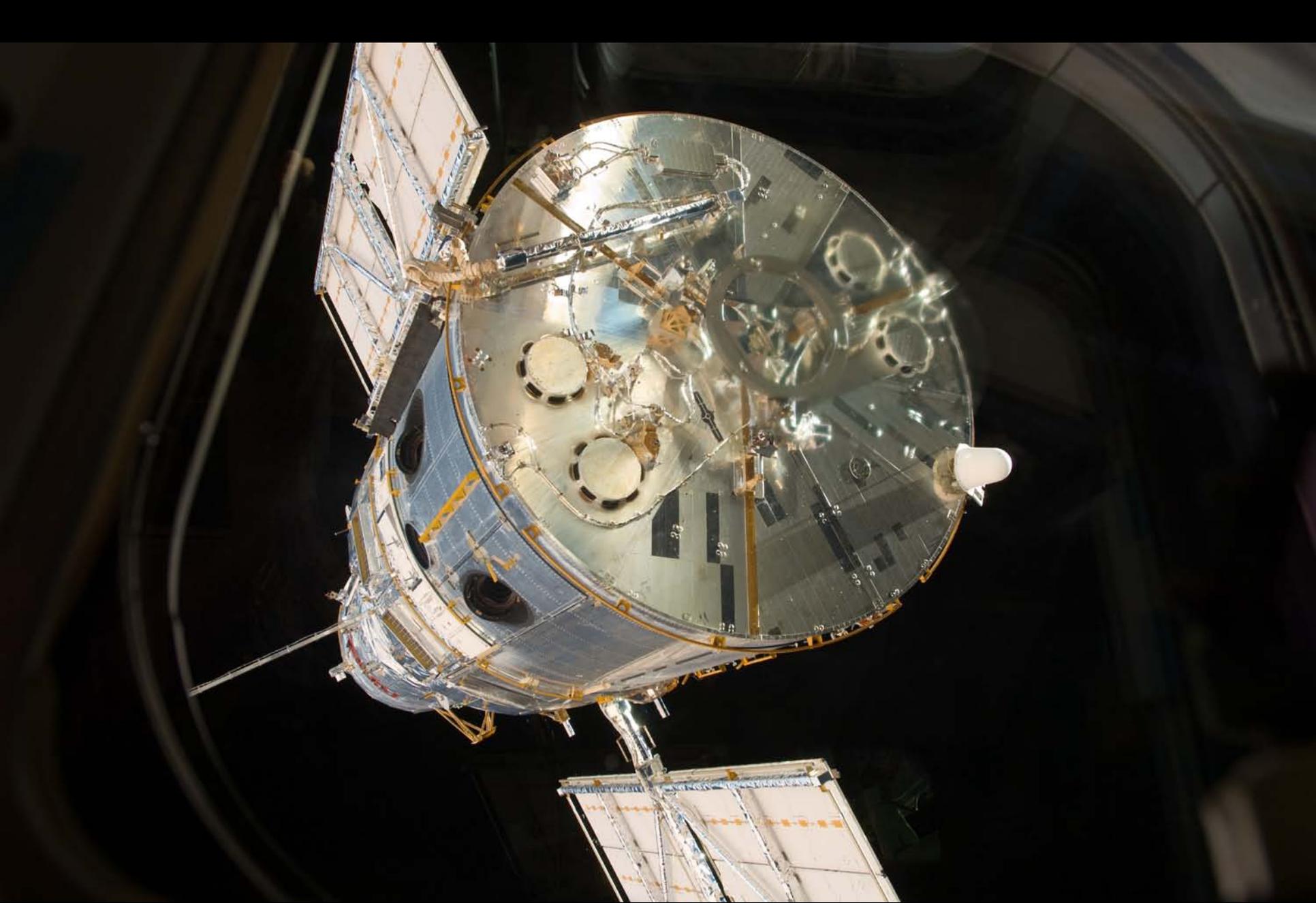


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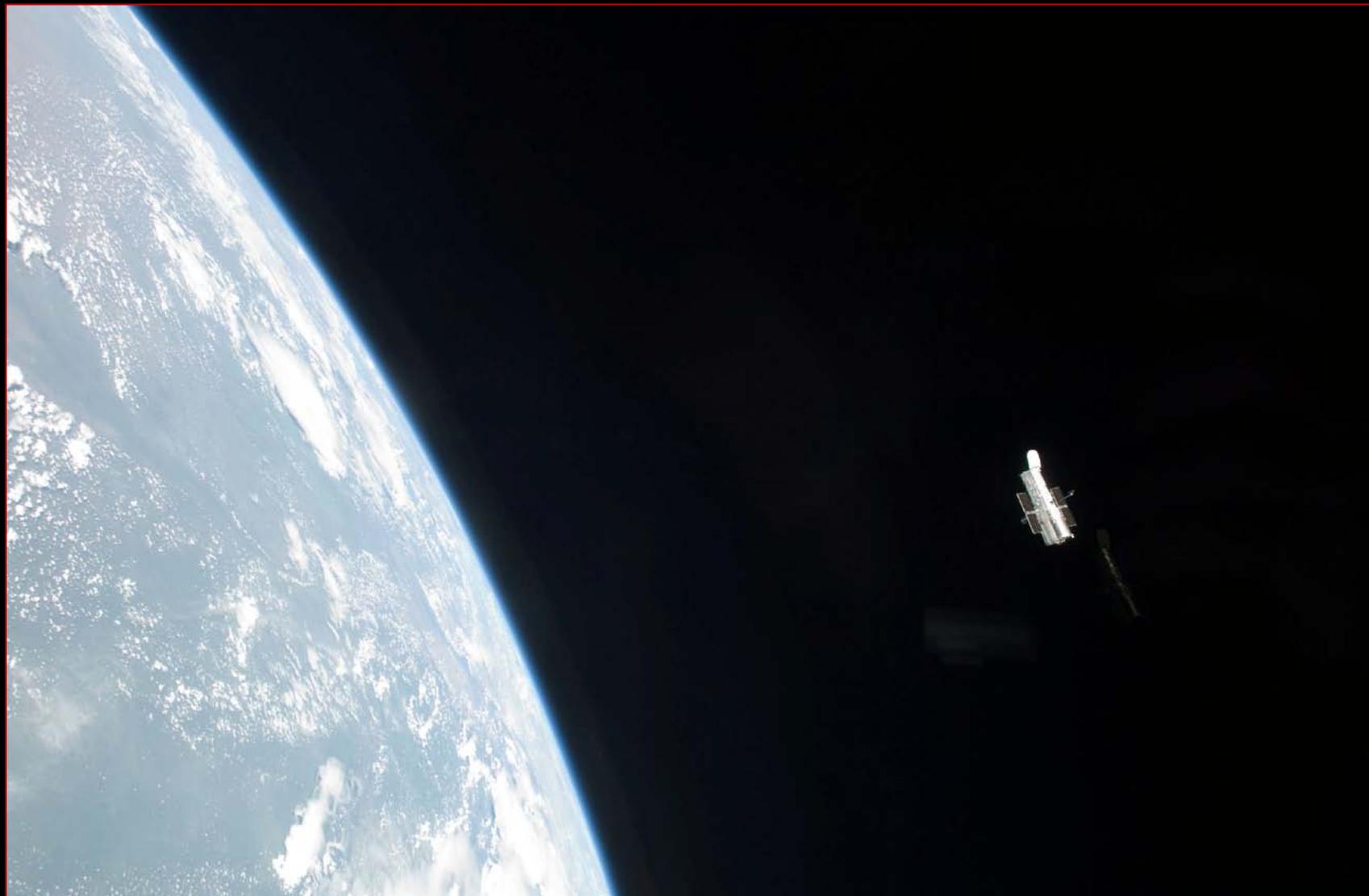




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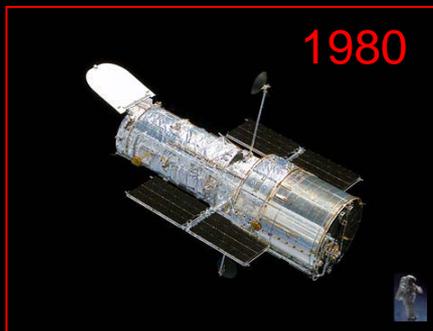
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# The Challenge

*We've proven the value of servicing on Hubble, and are doing the non-servicable experiment with JWST. What will we do on the next generation observatory?*

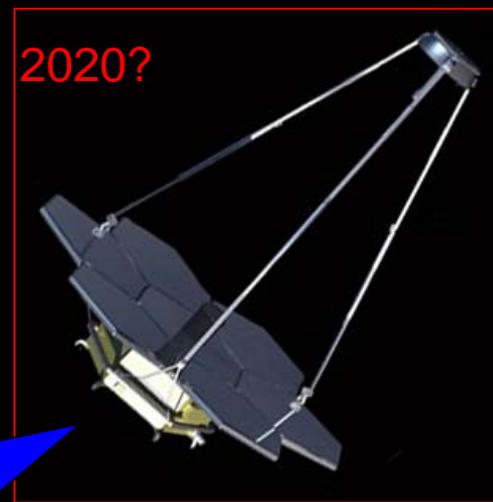


2.4m ~ \$4.5B (FY07)



6.5m ~ \$4B (FY07)

2020?



16m ~ \$4.5B (FY07)

The Hubble Story and that of space  
servicing are just beginning...

*It's all about the tools!*



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