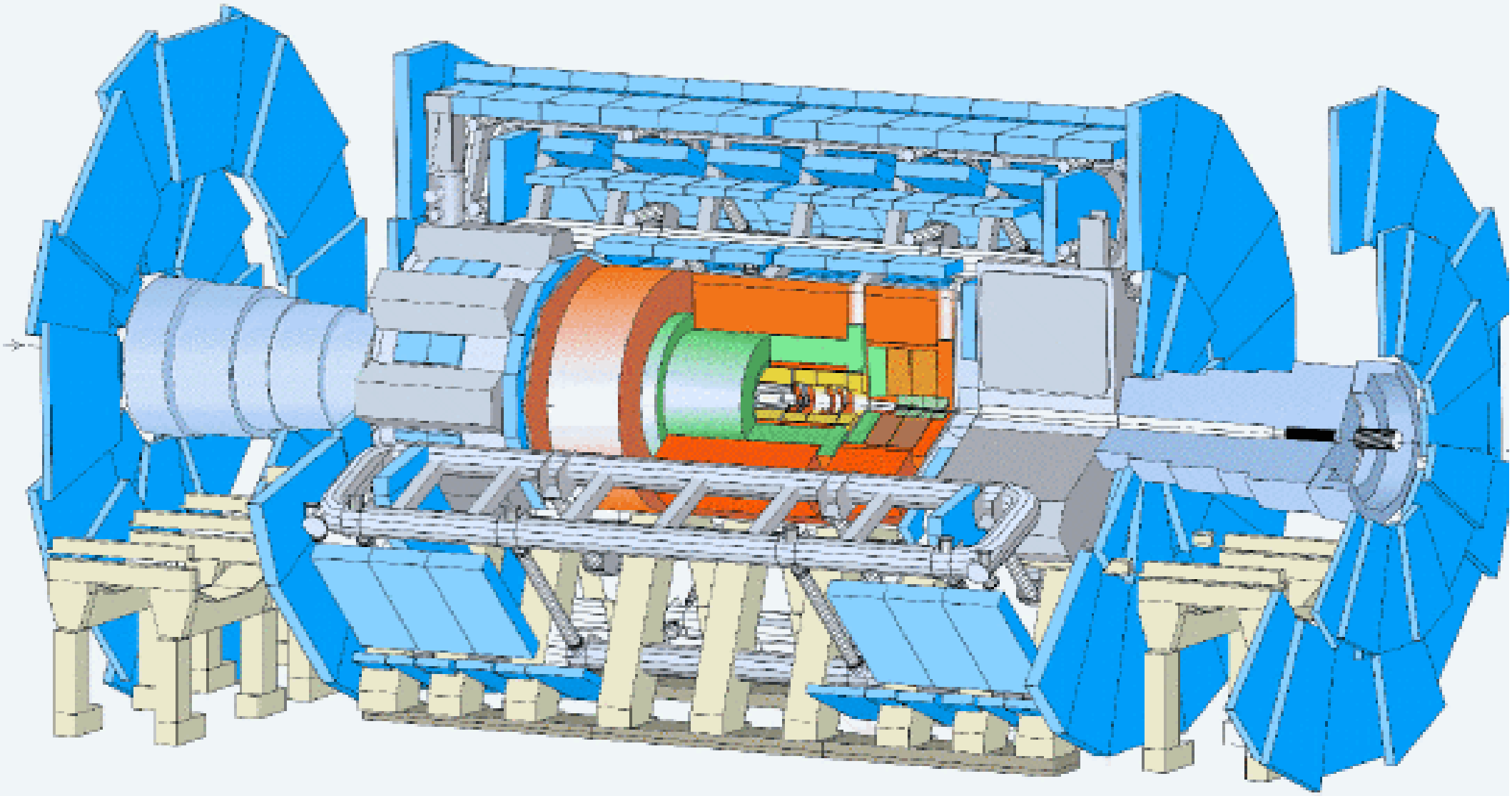
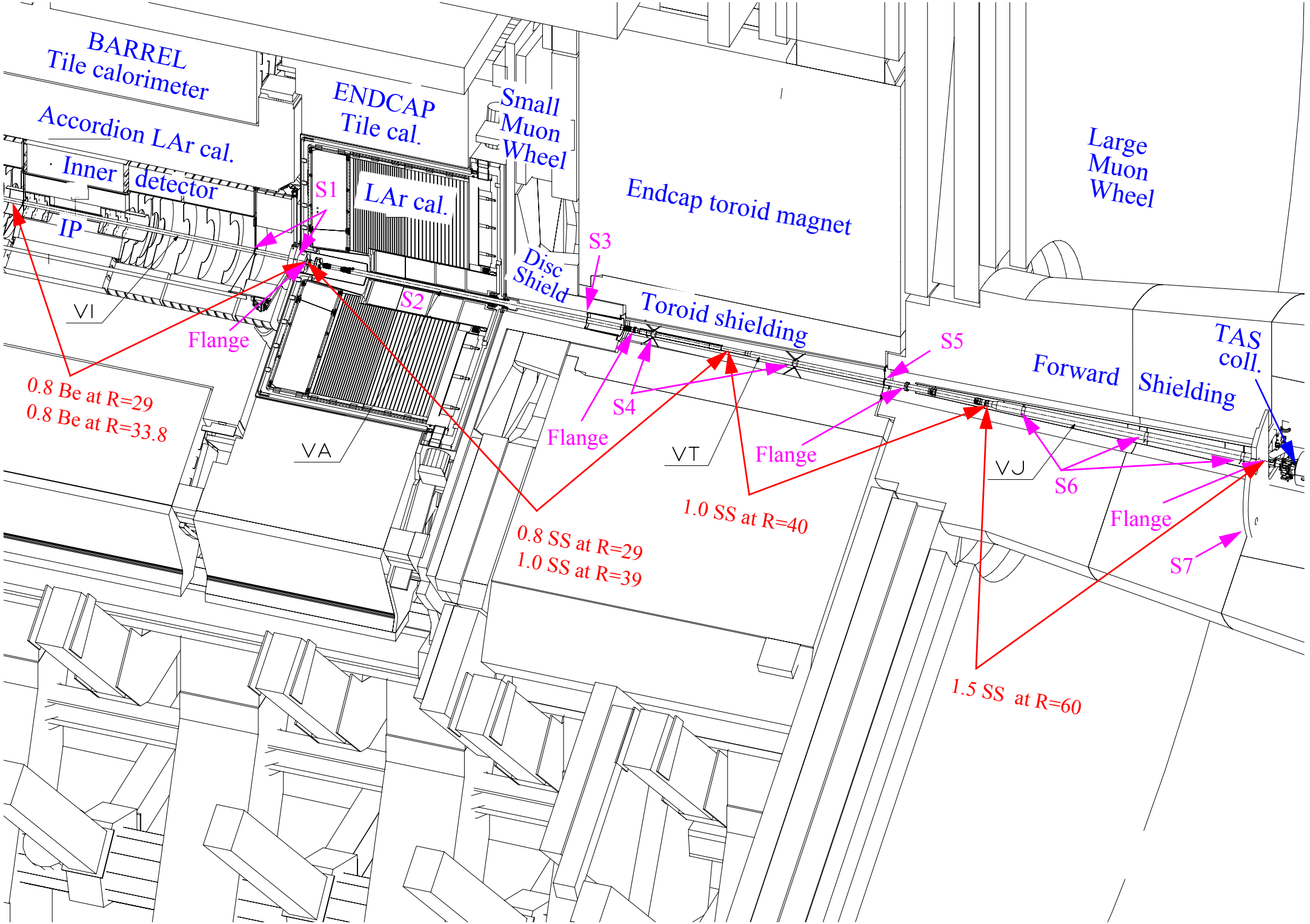
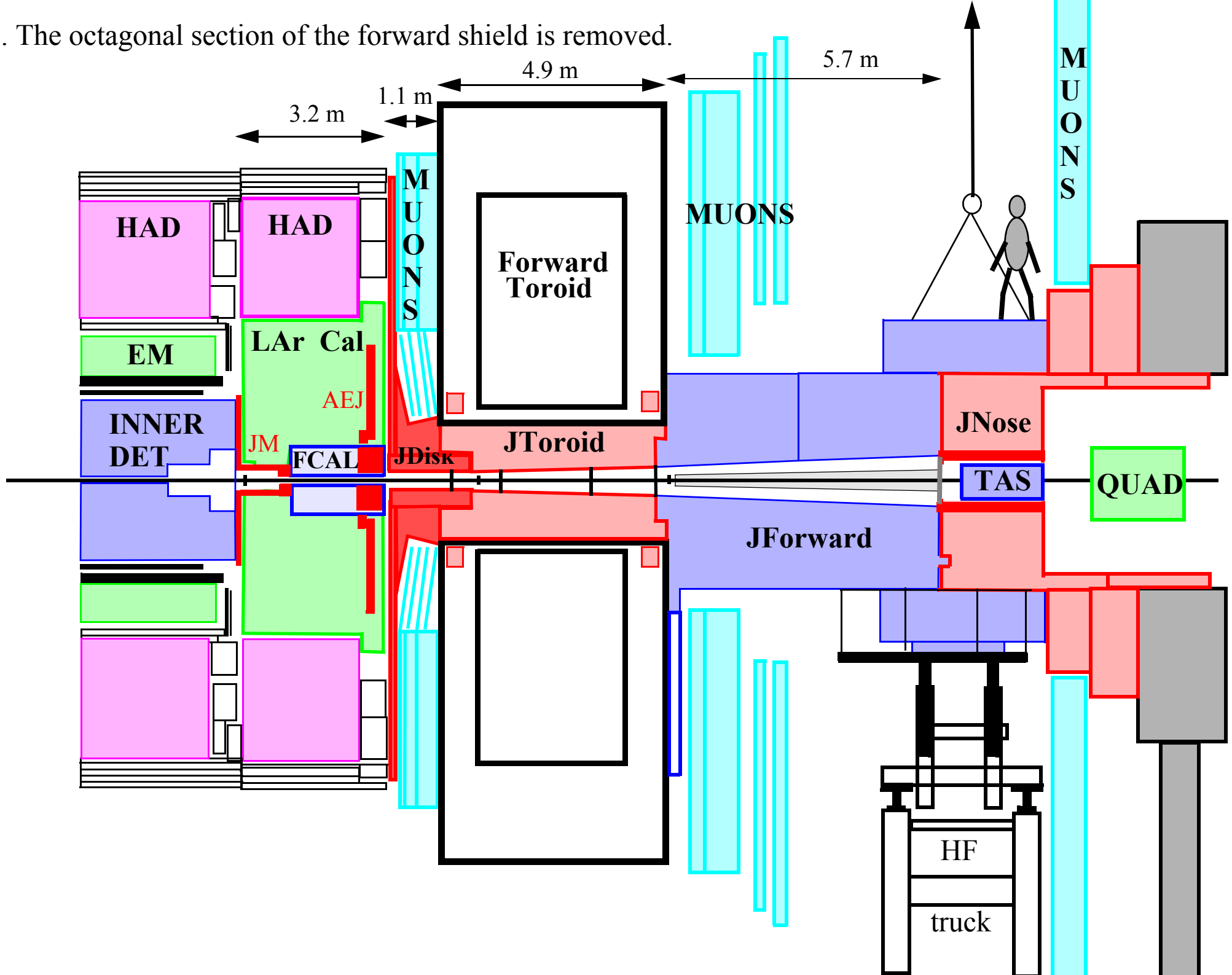



BARREL
Tile calorimeter
Accordion LAr cal.
Inner detector
IP
ENDCAP
Tile cal.
LAr cal.
Small
Muon
Wheel
Endcap toroid magnet
Large
Muon
Wheel
Disc
Shield
Toroid shielding
Forward
Shielding
TAS
coll.
S1
S2
S3
S4
S5
S6
S7
VI
VA
VT
VJ
Flange
Flange
Flange
Flange
Flange
0.8 Be at R=29
0.8 Be at R=33.8
0.8 SS at R=29
1.0 SS at R=39
1.0 SS at R=40
1.5 SS at R=60

1. The octagonal section of the forward shield is removed.



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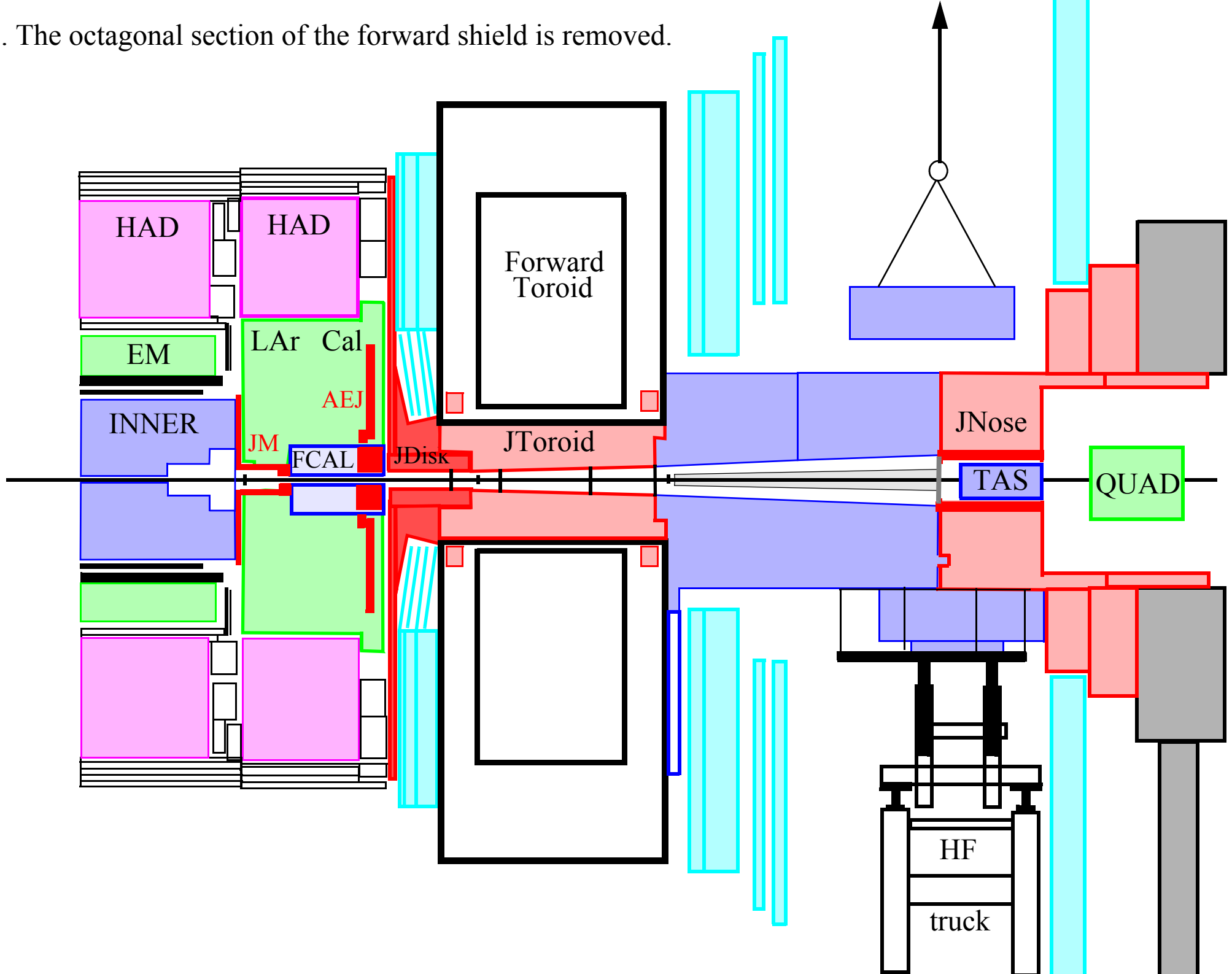
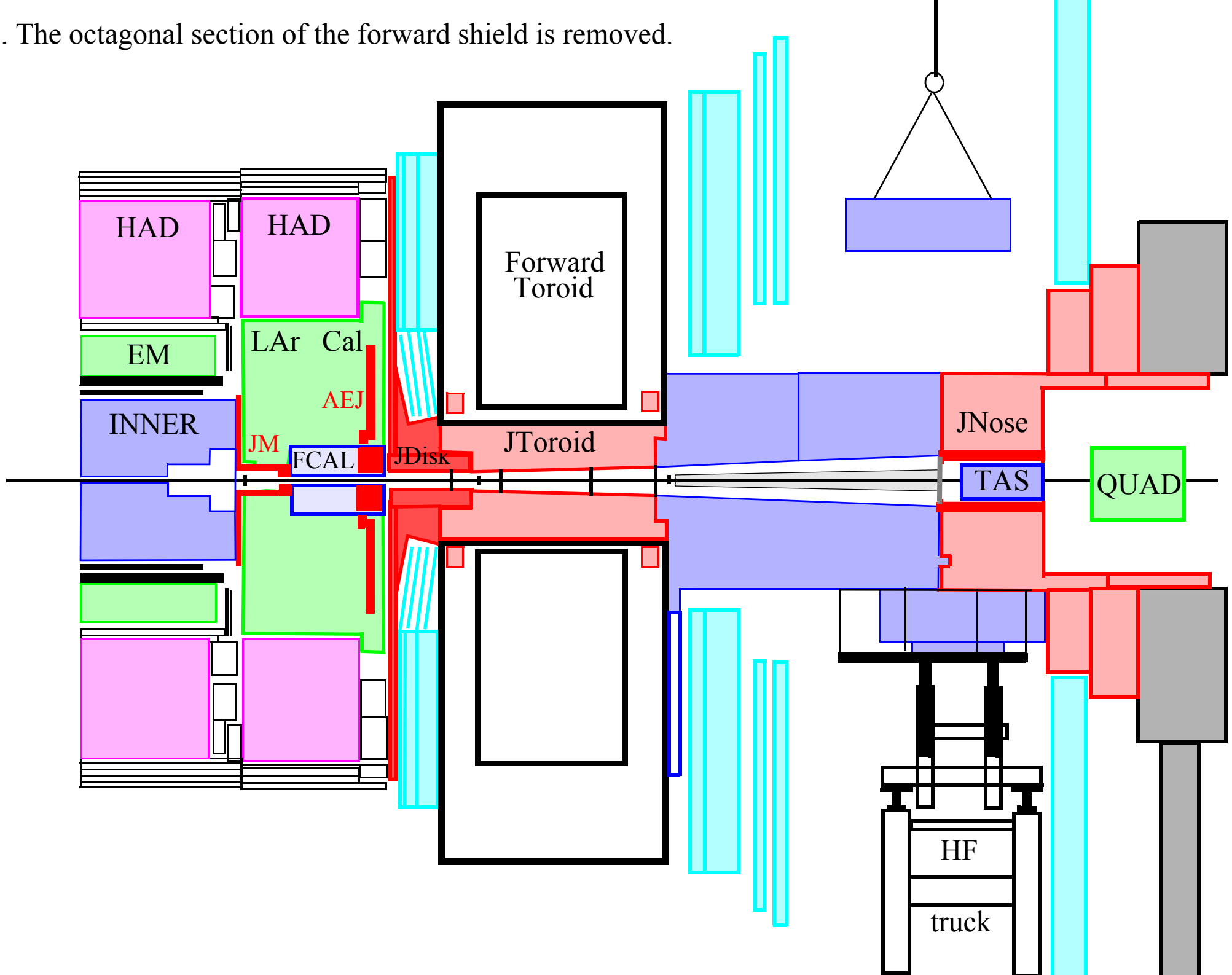
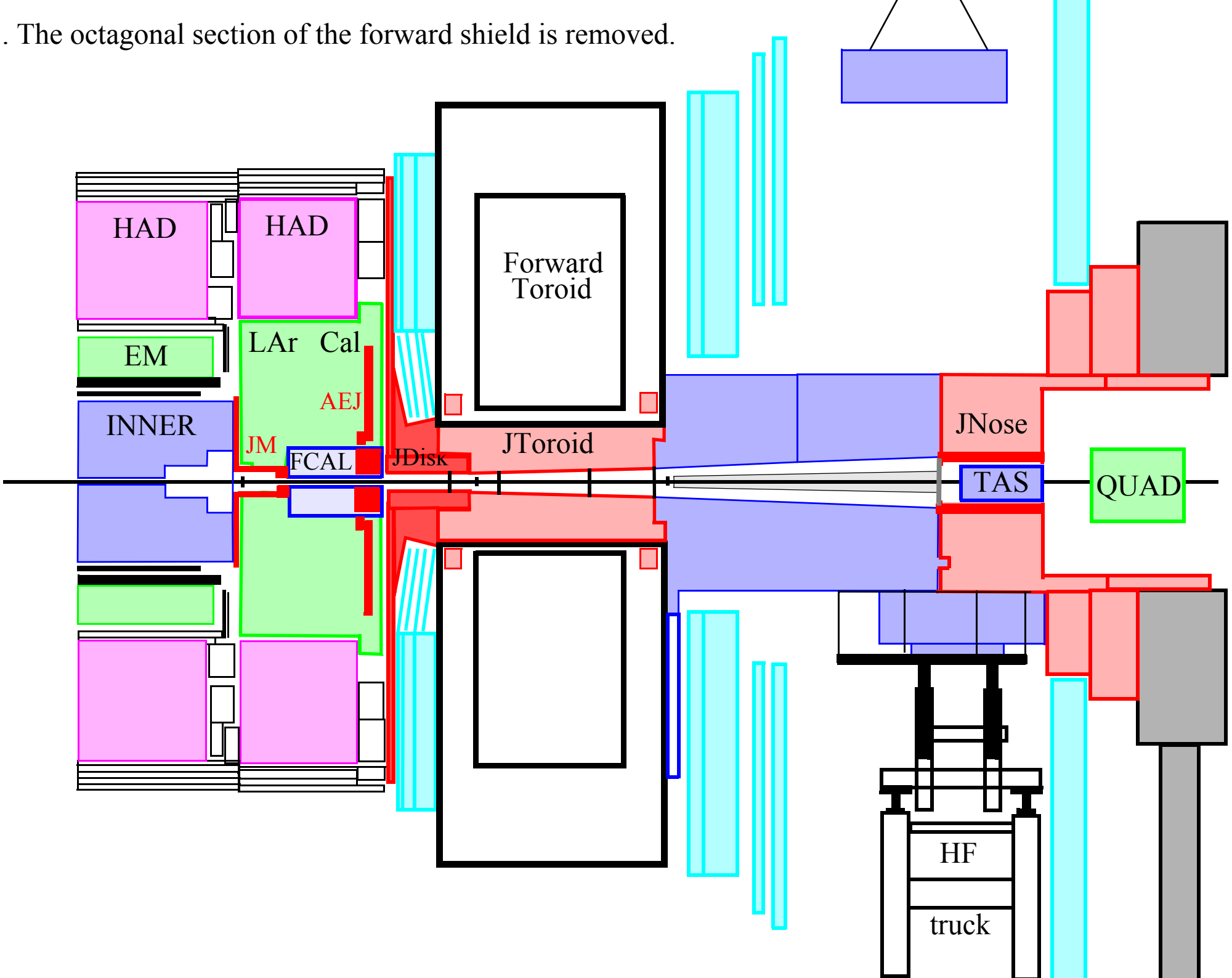


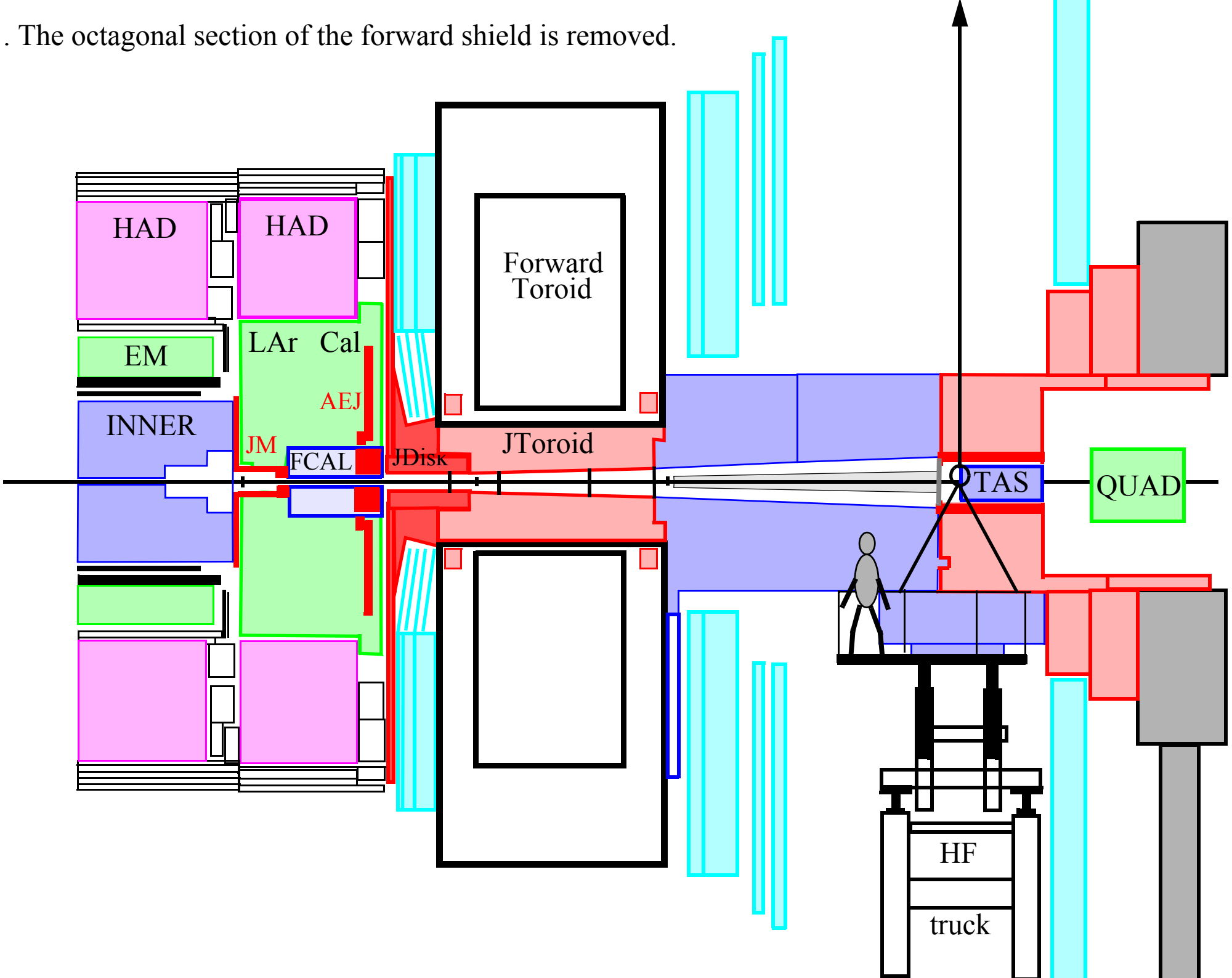
1. The octagonal section of the forward shield is removed.



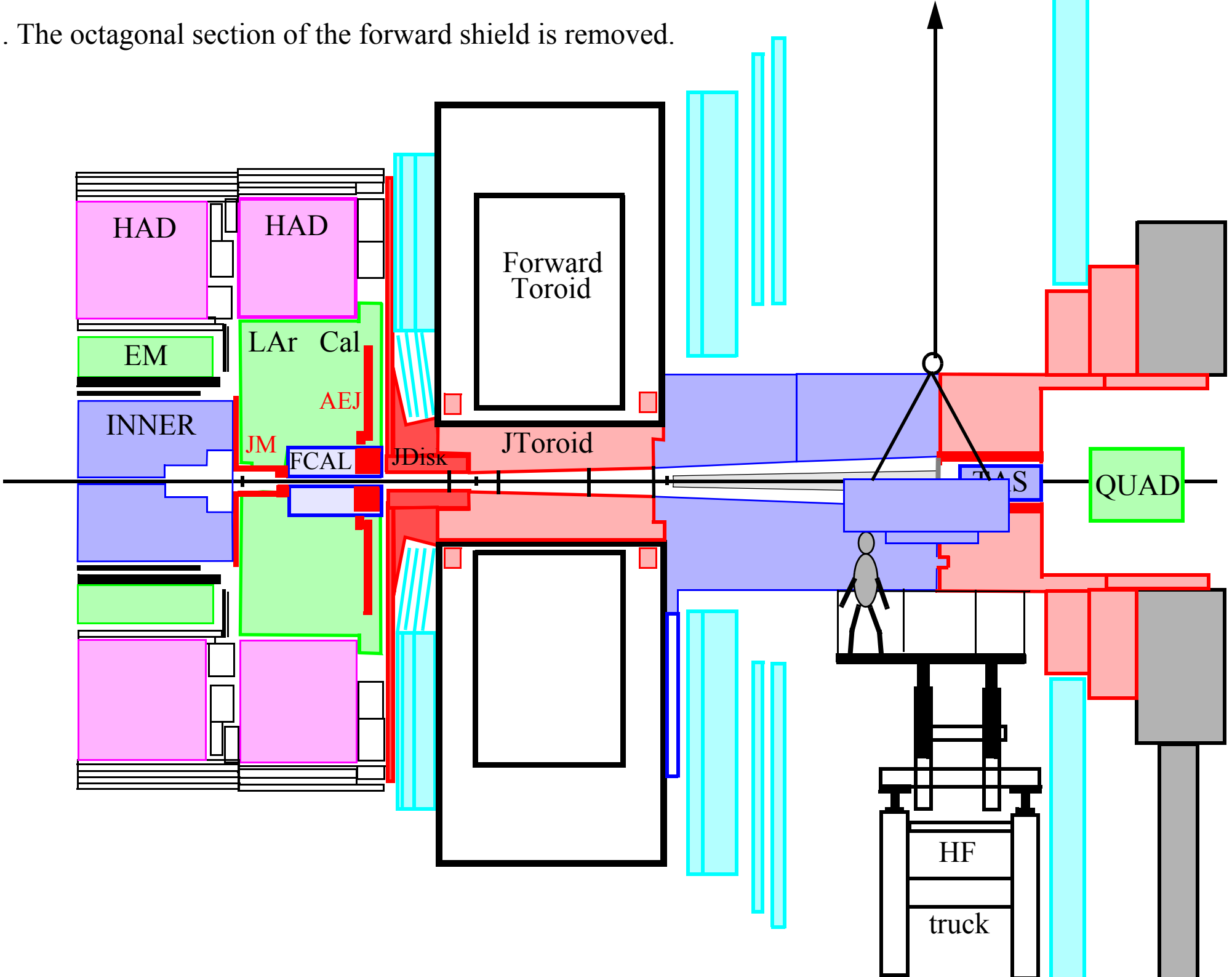
1. The octagonal section of the forward shield is removed.



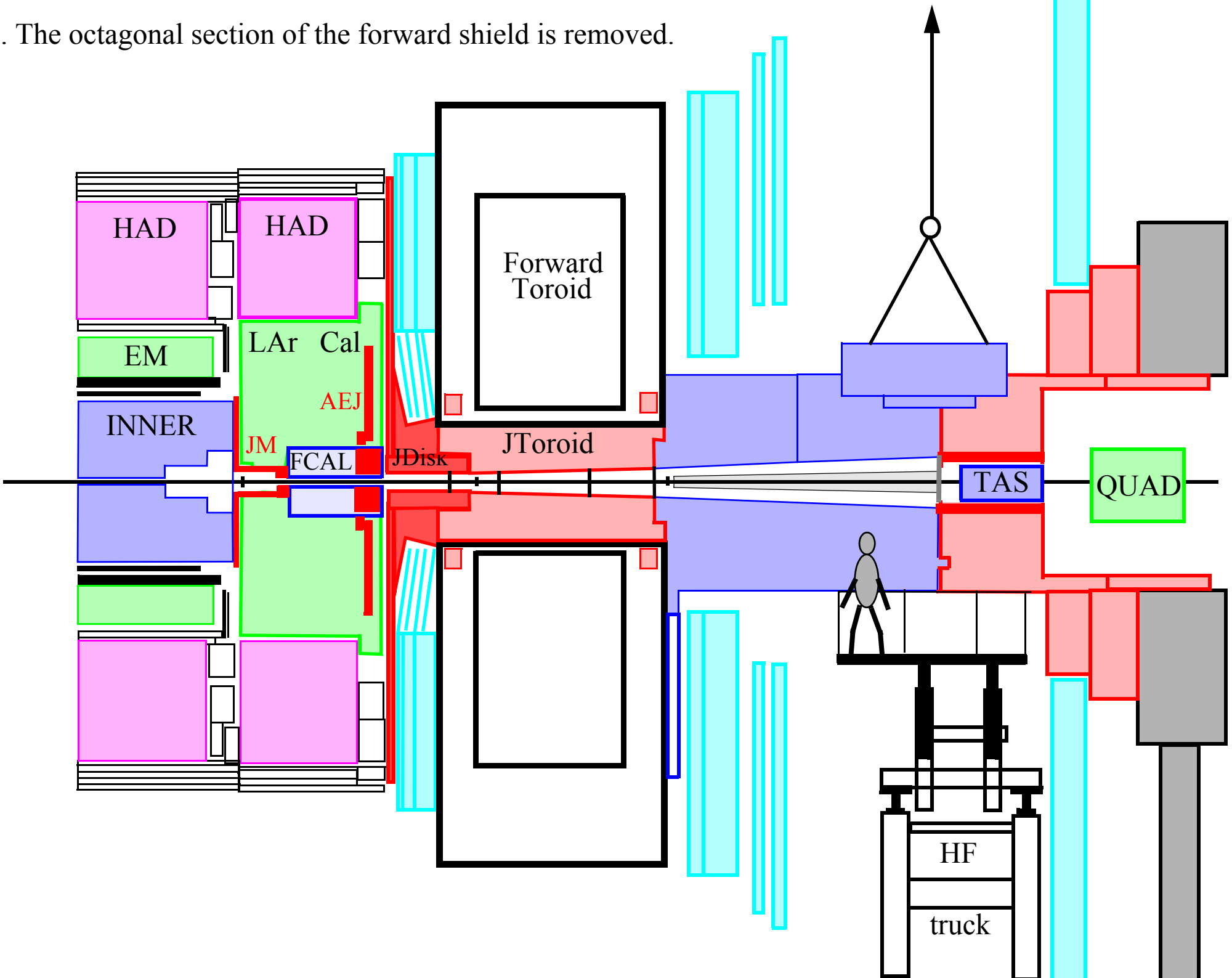
1. The octagonal section of the forward shield is removed.



1. The octagonal section of the forward shield is removed.



1. The octagonal section of the forward shield is removed.



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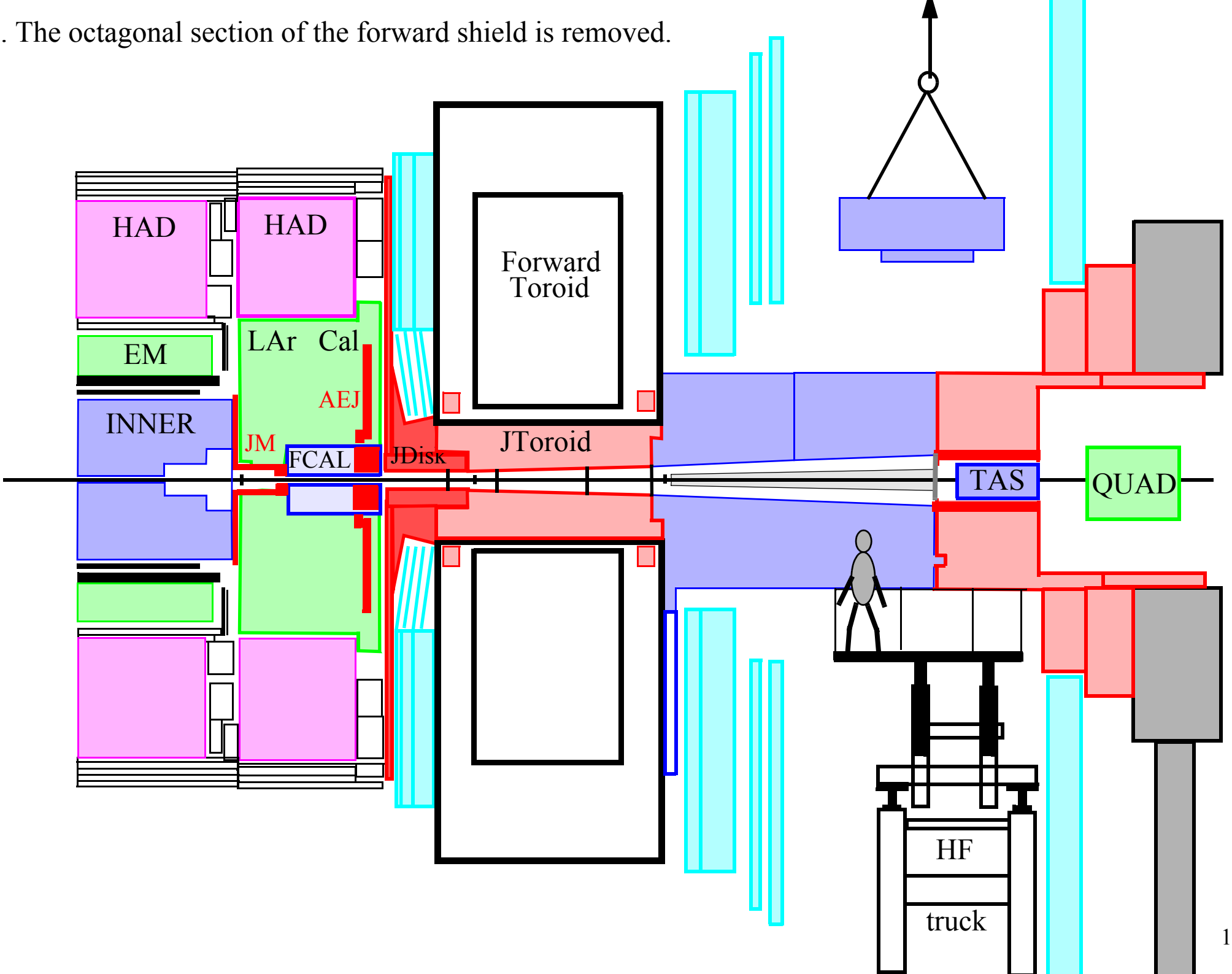
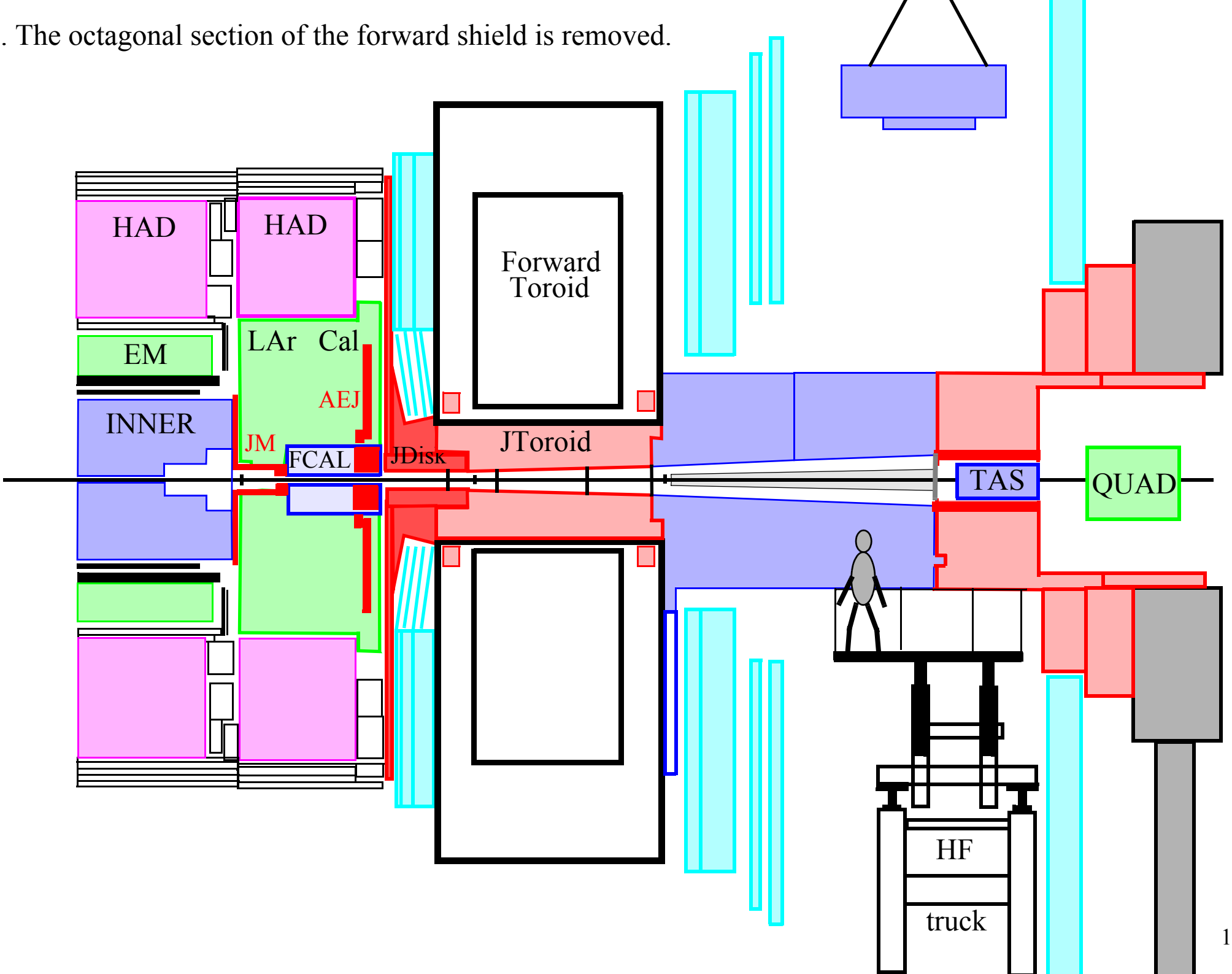
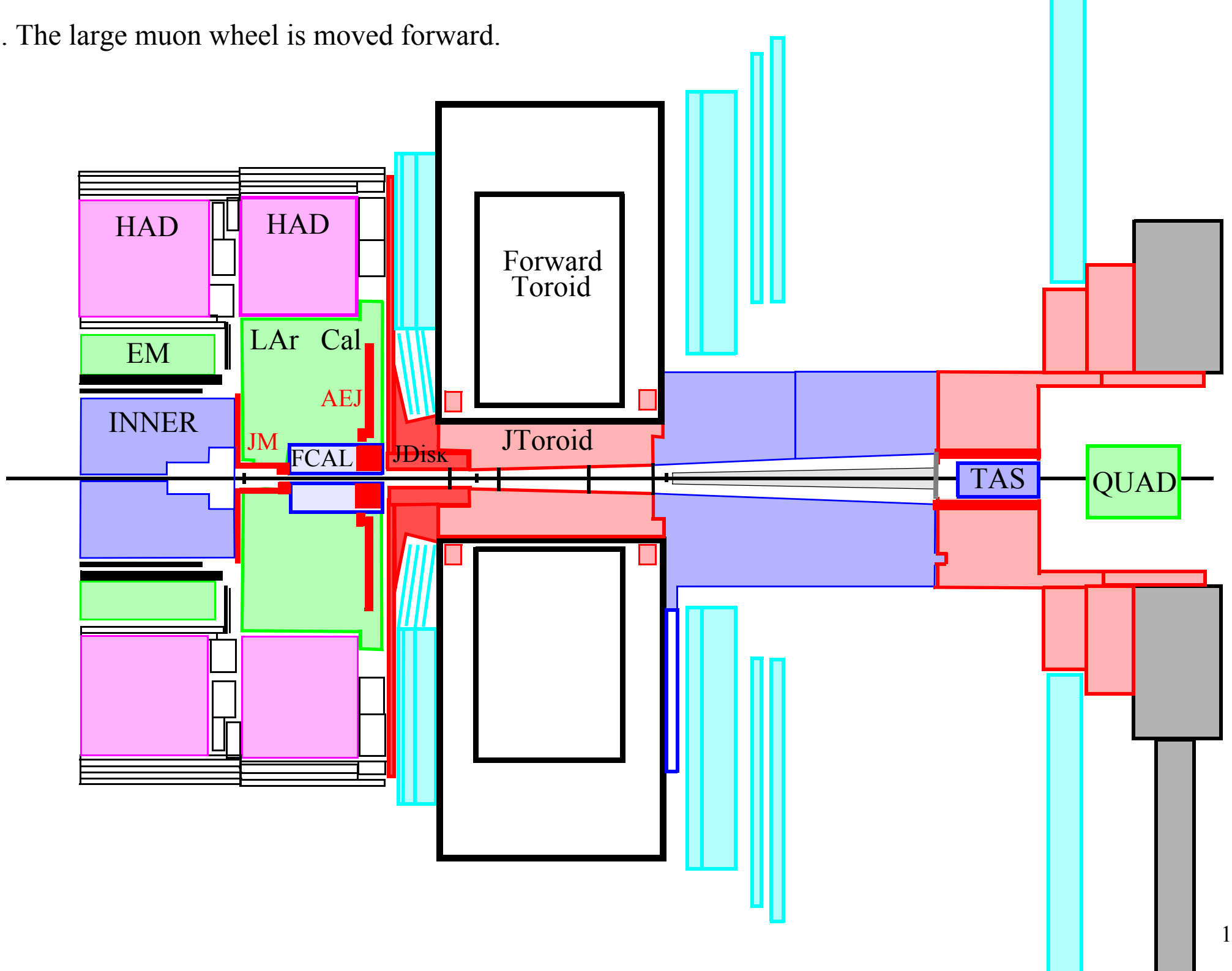


1. The octagonal section of the forward shield is removed.



2. The large muon wheel is moved forward.



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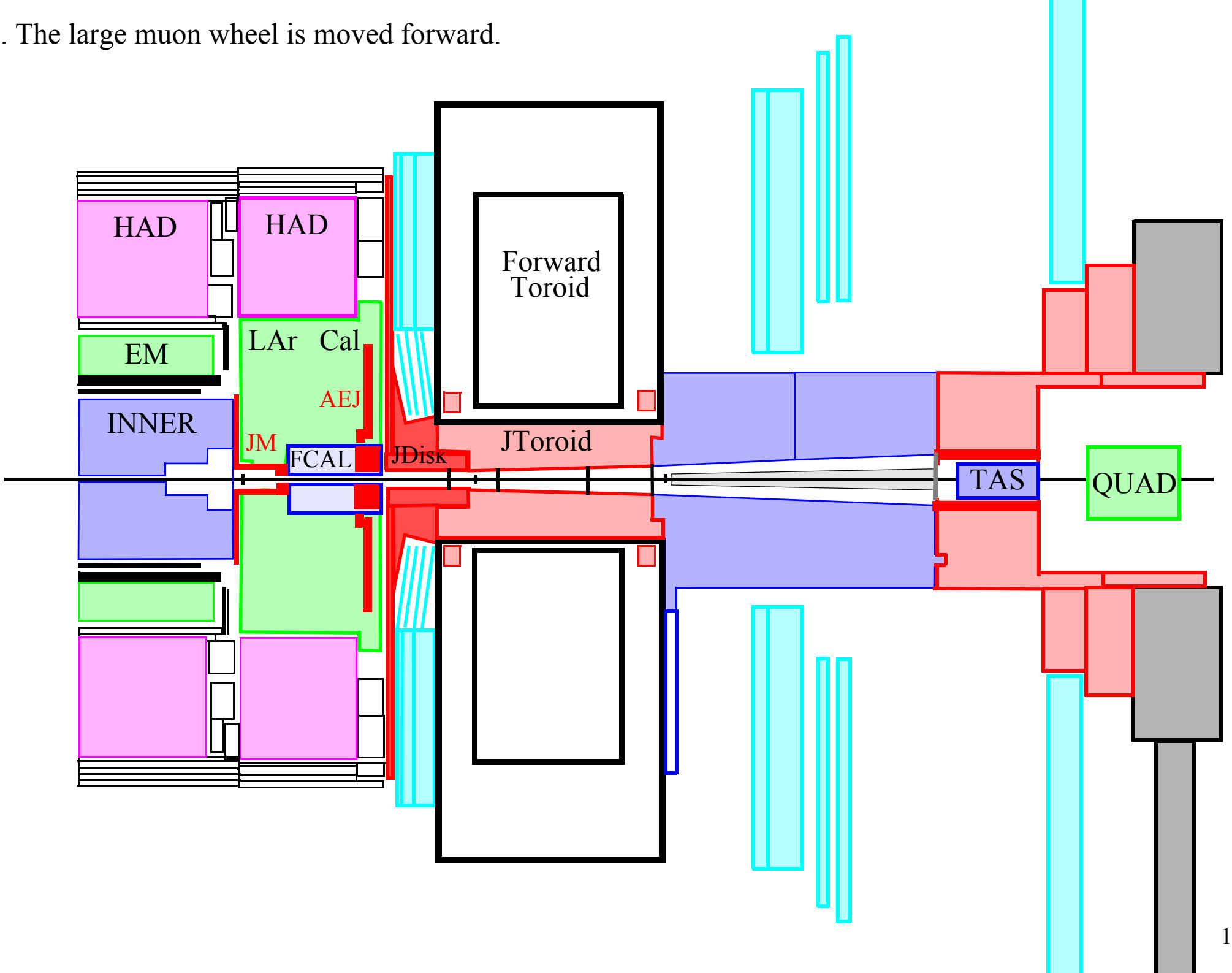
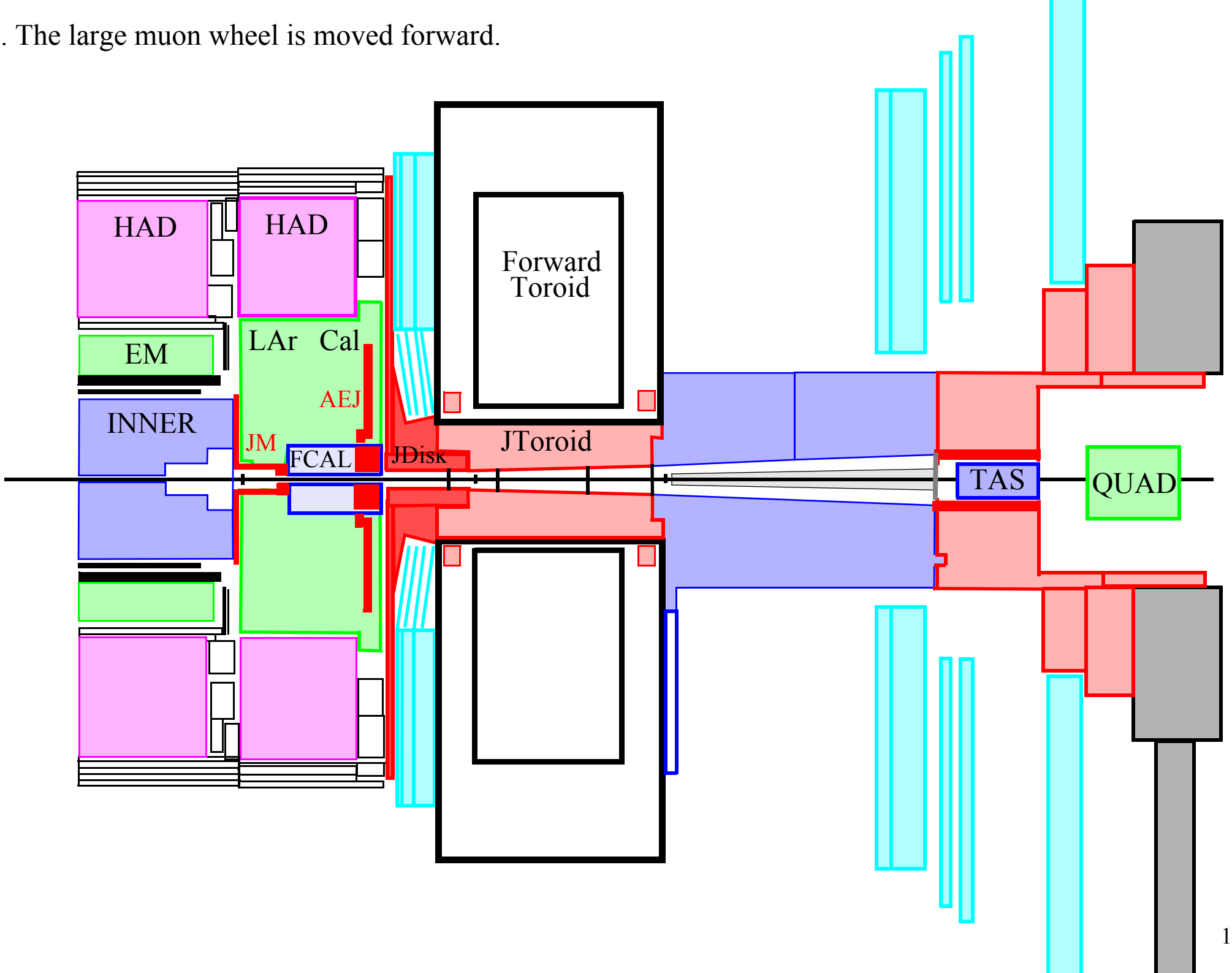


2. The large muon wheel is moved forward.



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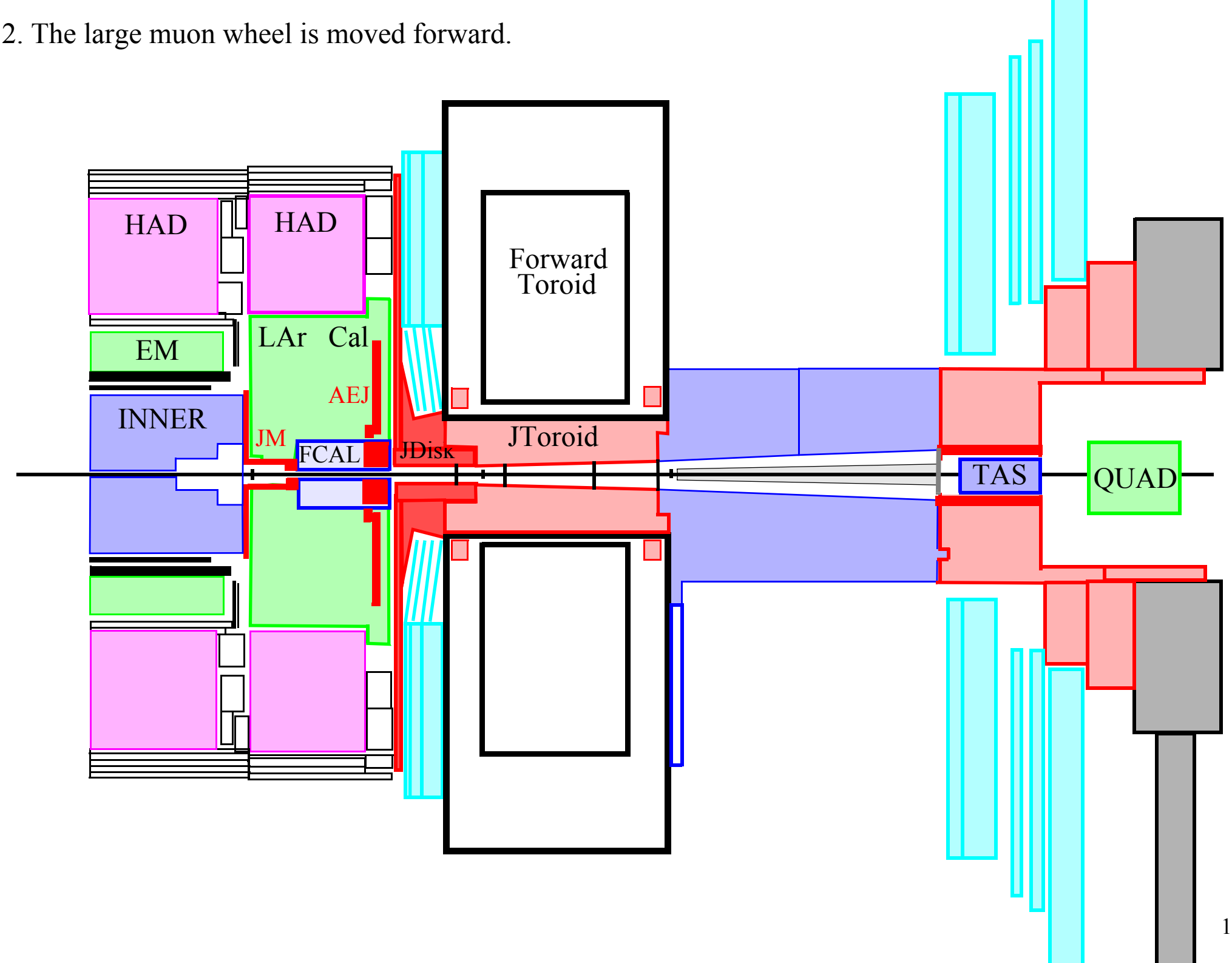
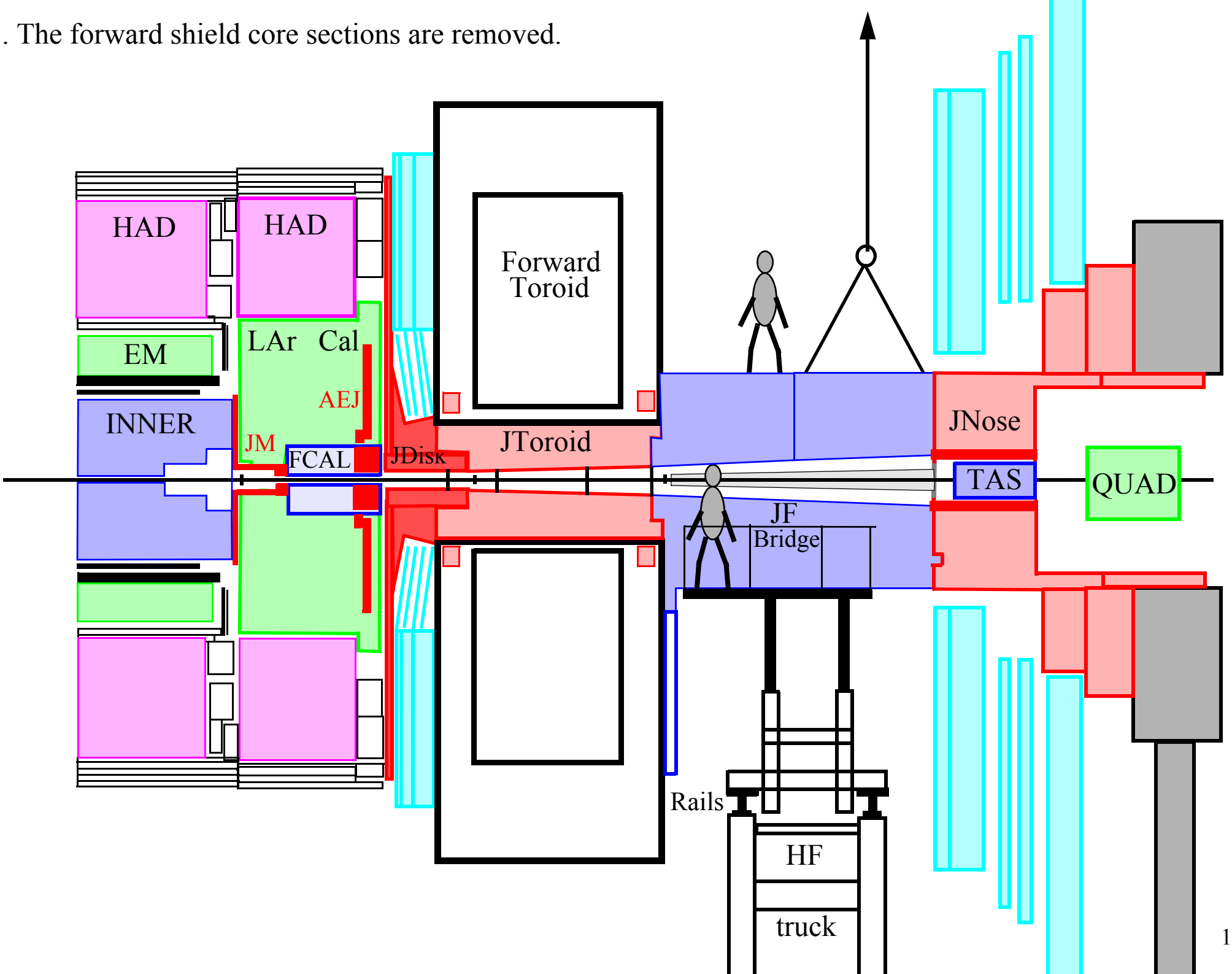


3. The forward shield core sections are removed.



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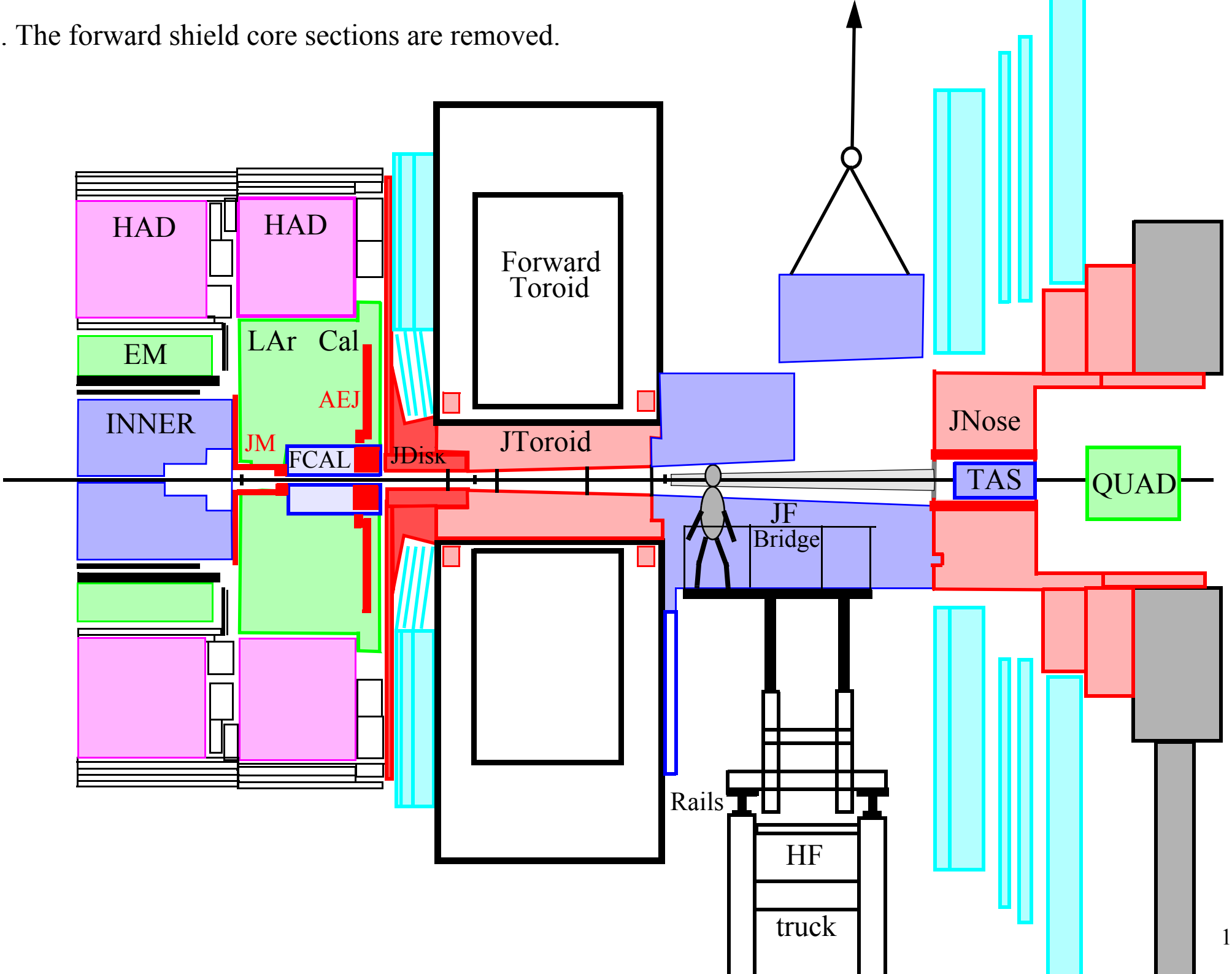

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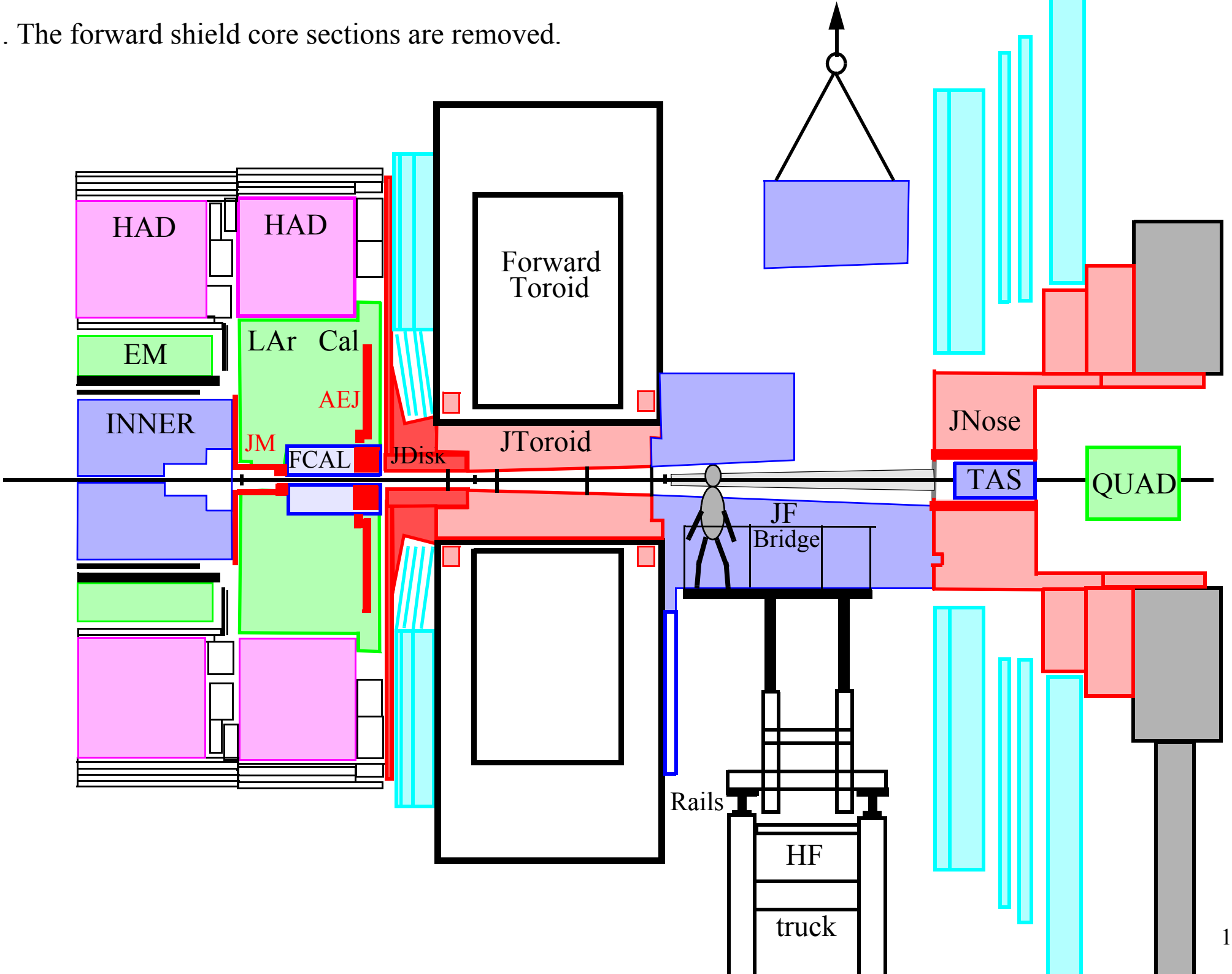

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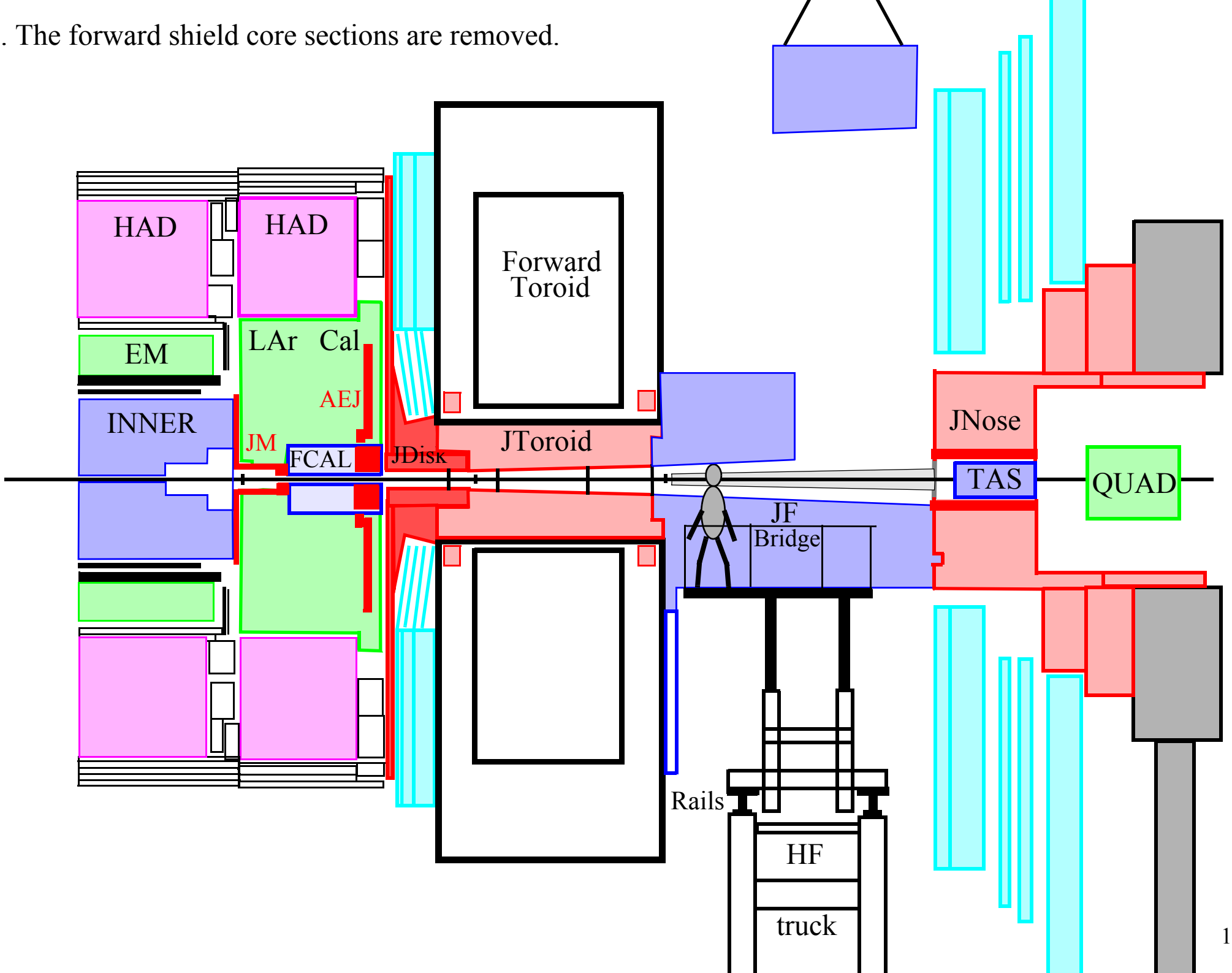
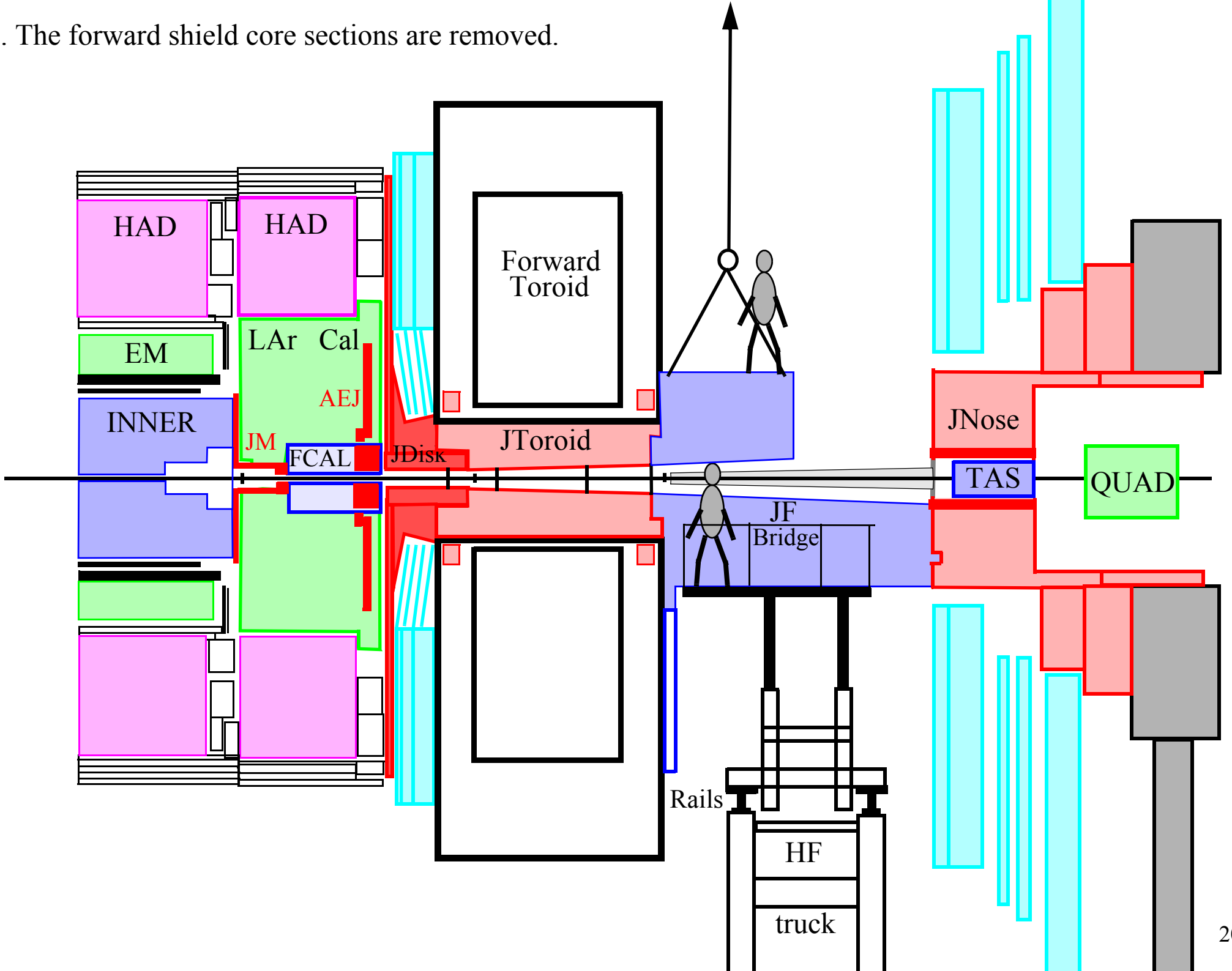
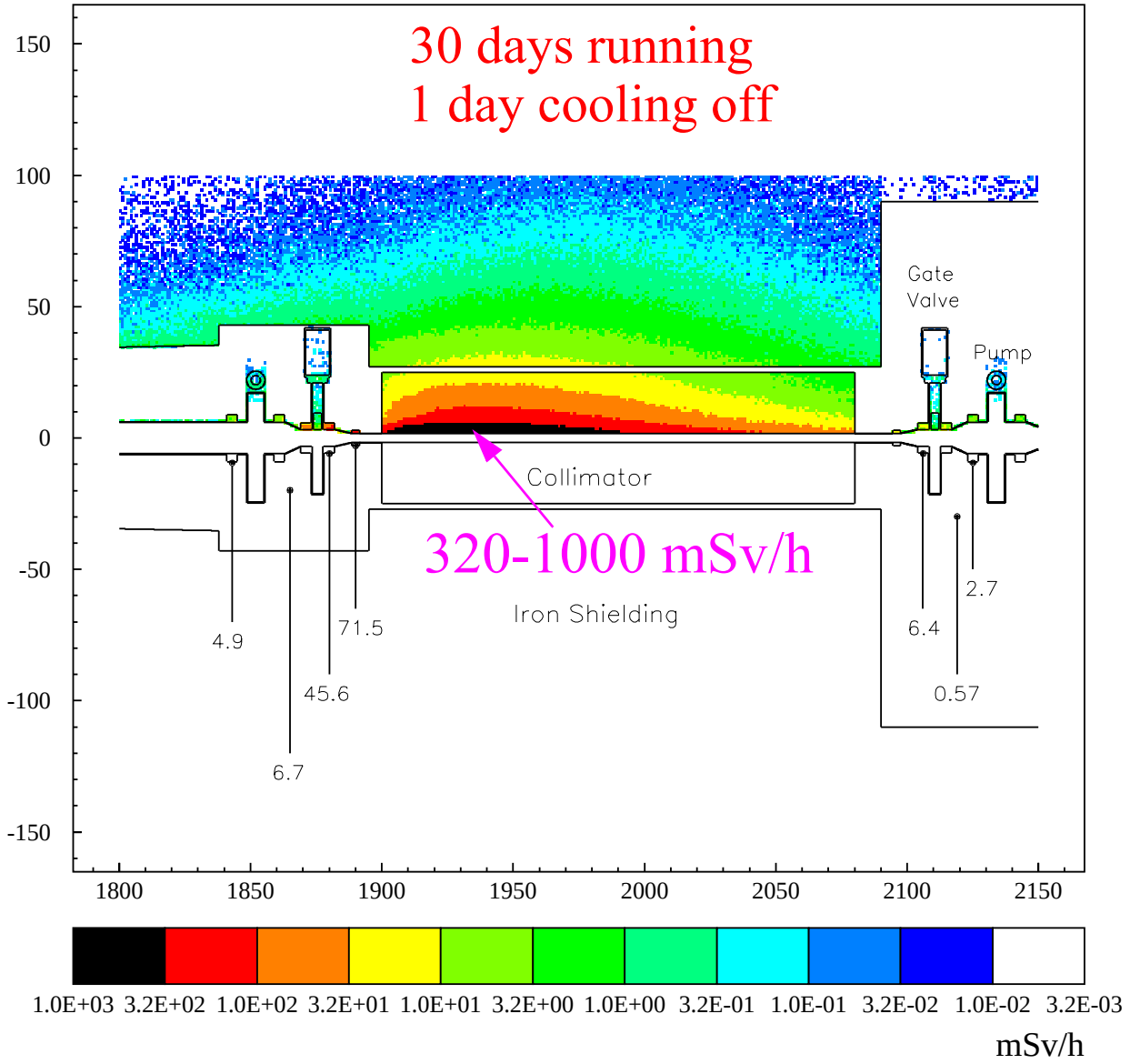


3. The forward shield core sections are removed.

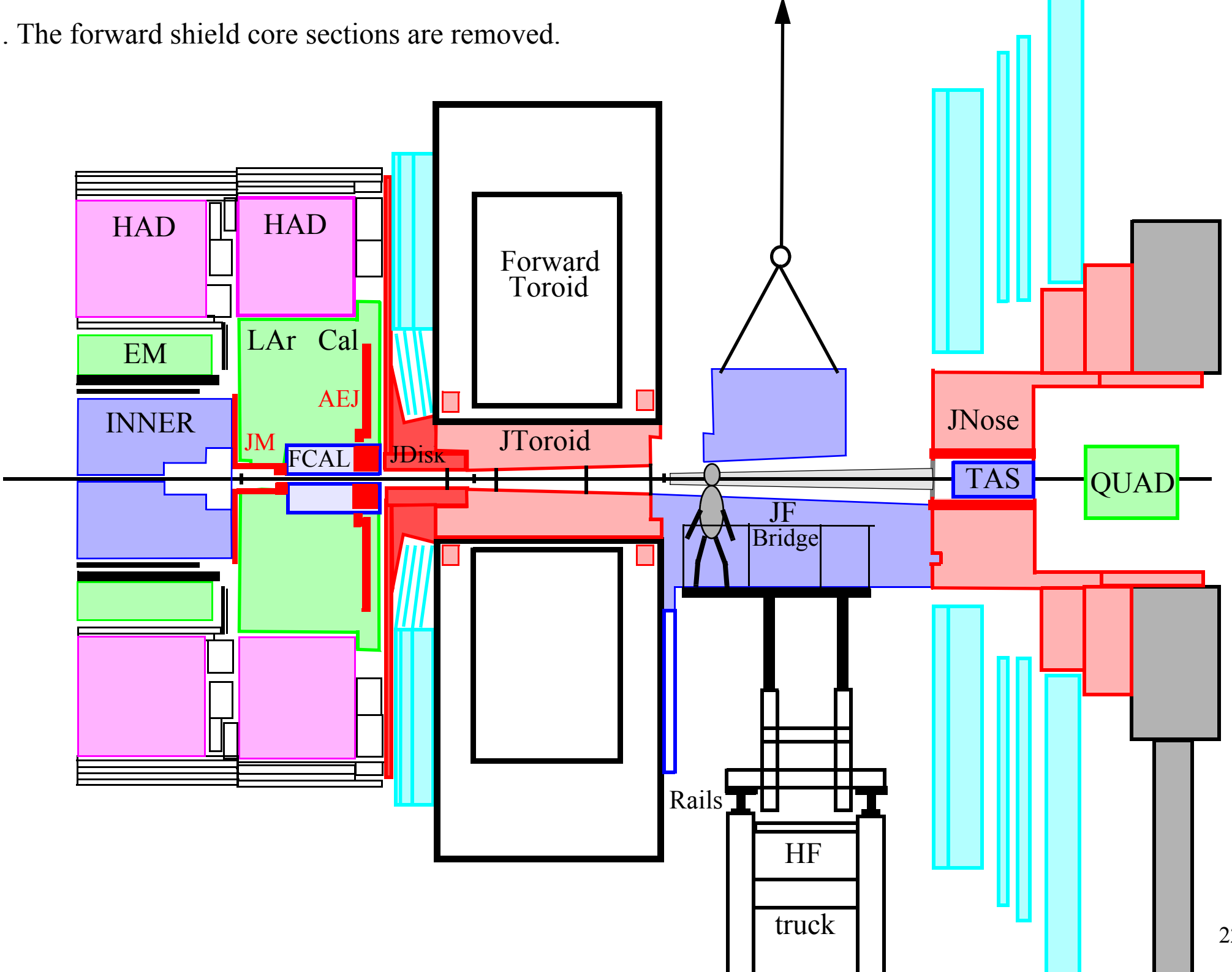


Dose rates in mSv/h around the TAS collimator

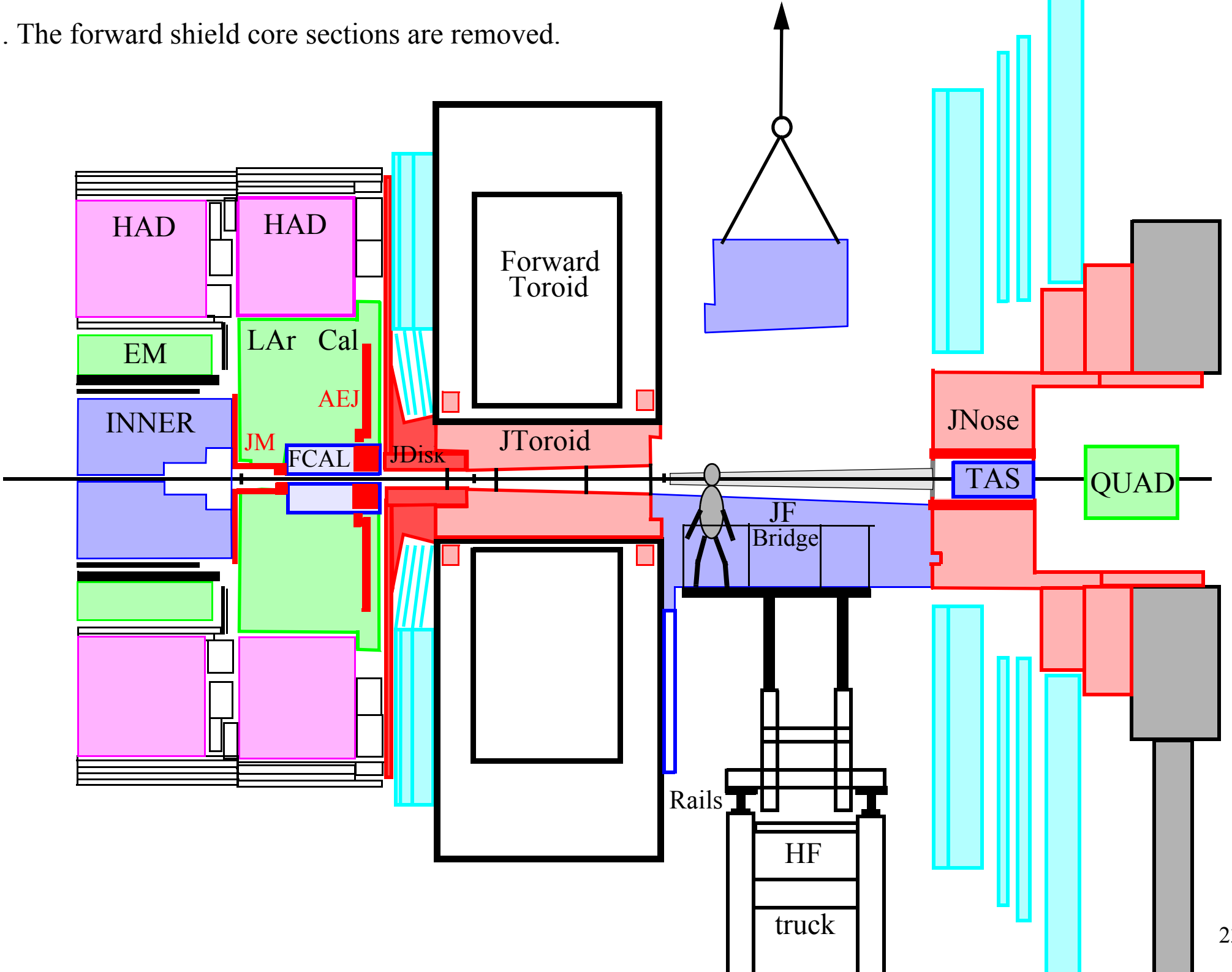
(calculation by I. Dawson and G. Stevenson using omega factors)



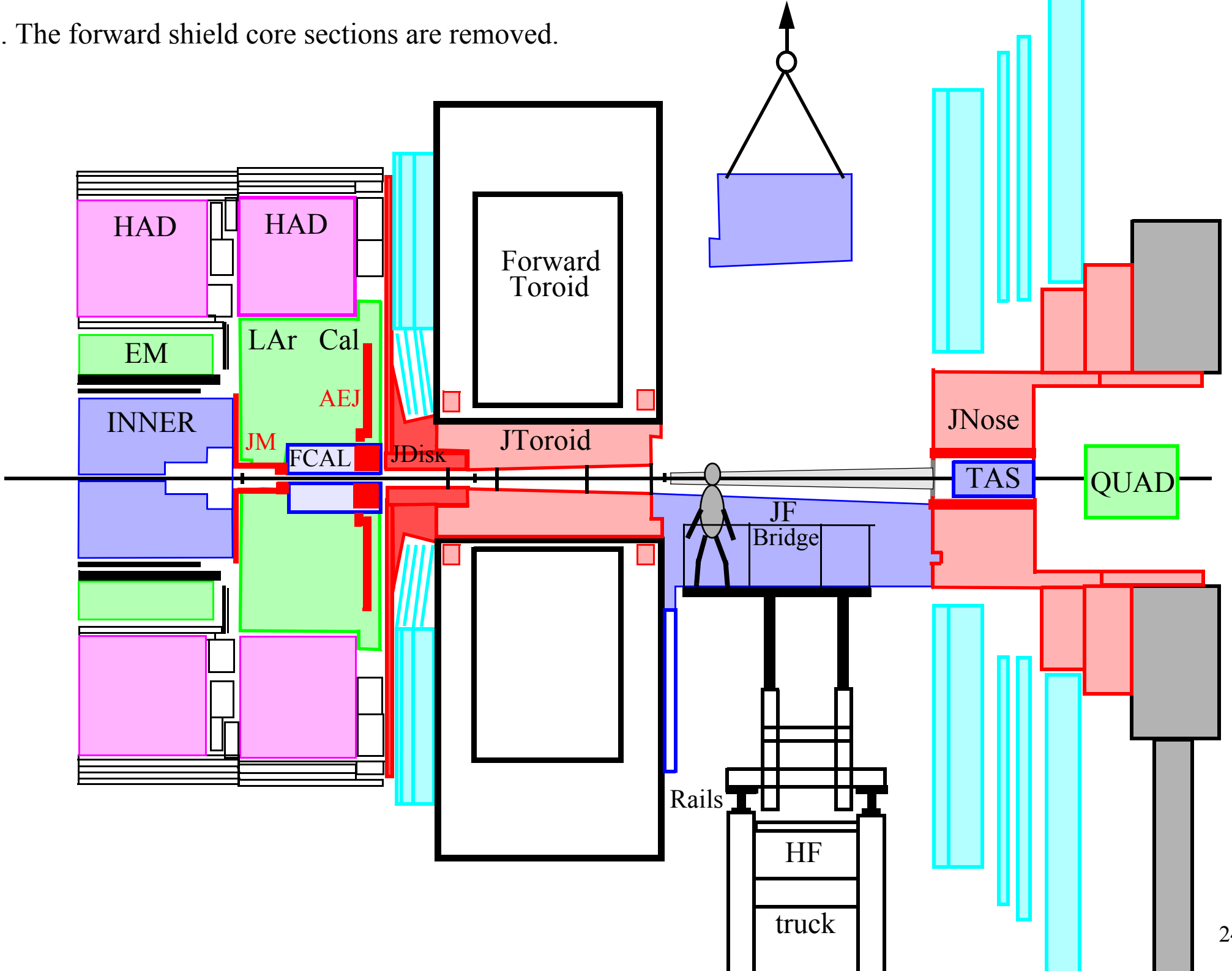
3. The forward shield core sections are removed.



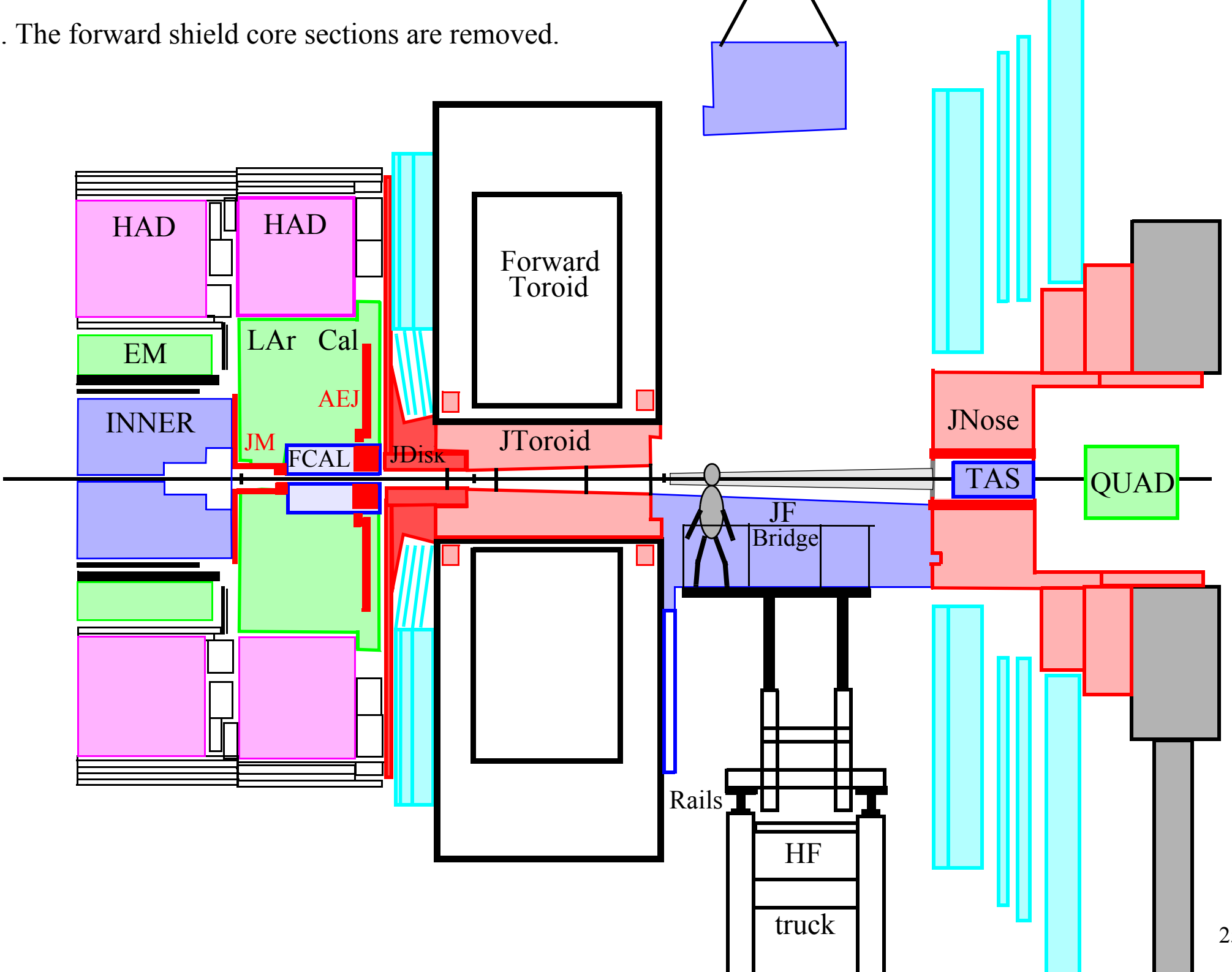
3. The forward shield core sections are removed.



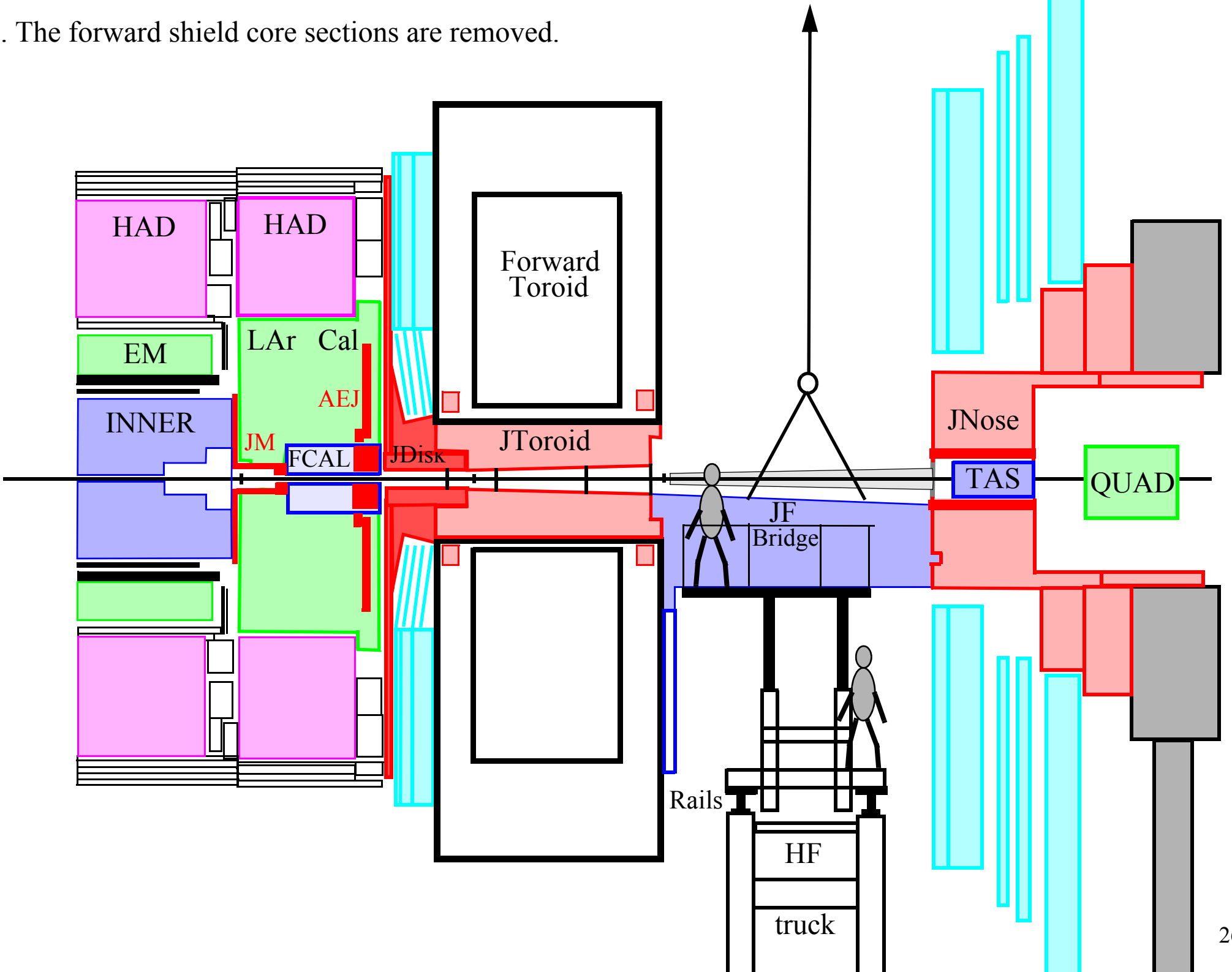
3. The forward shield core sections are removed.



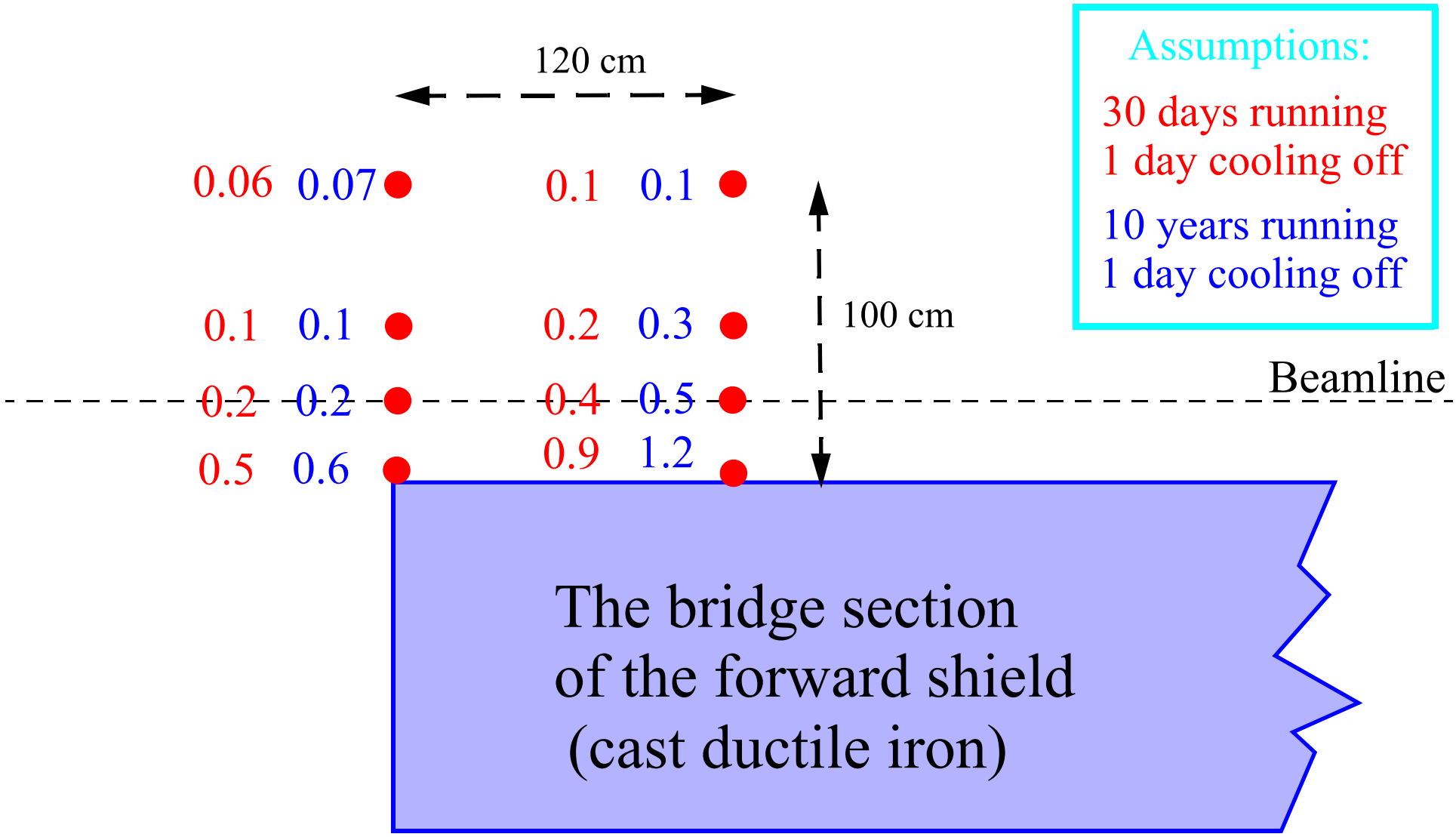
3. The forward shield core sections are removed.



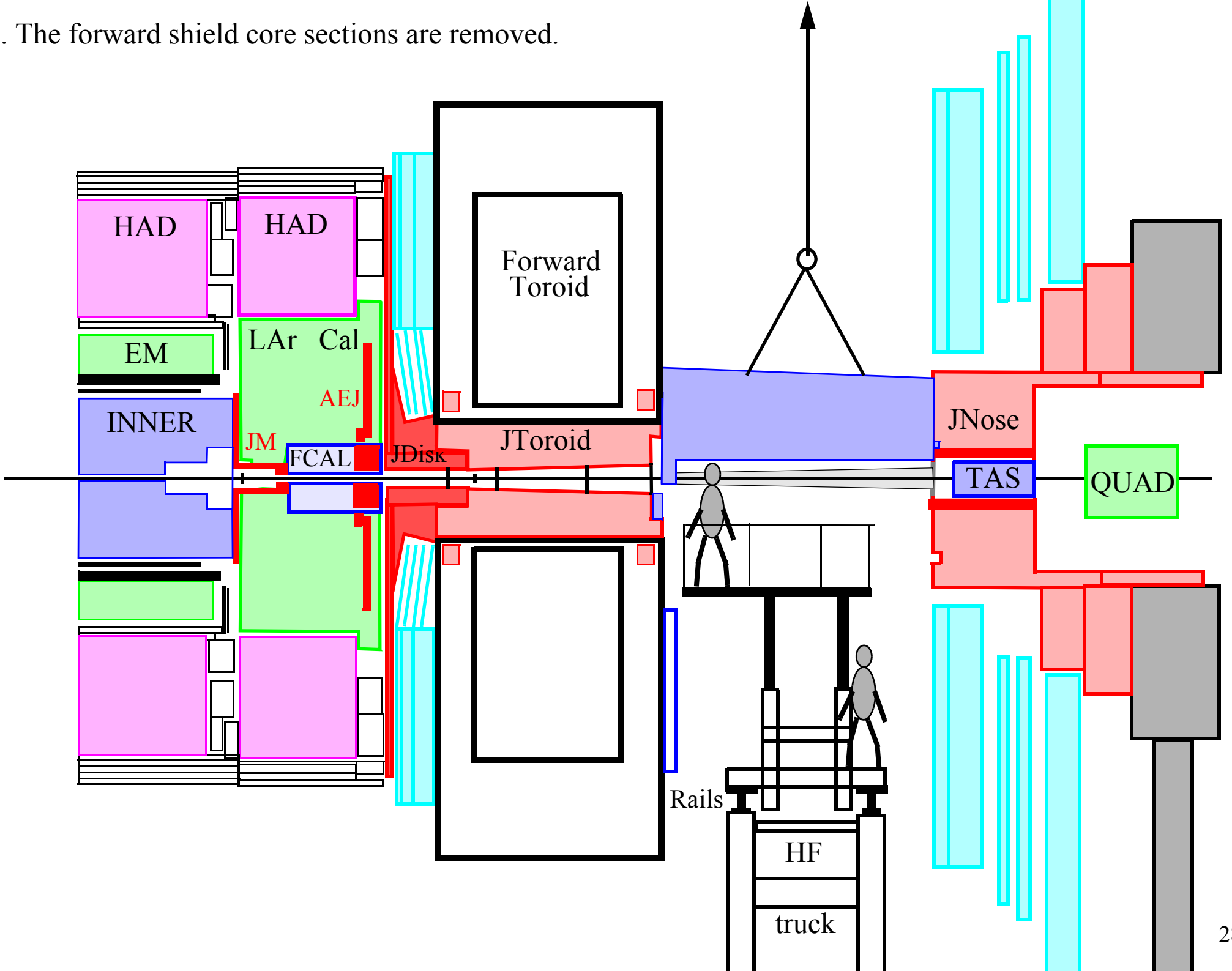
3. The forward shield core sections are removed.



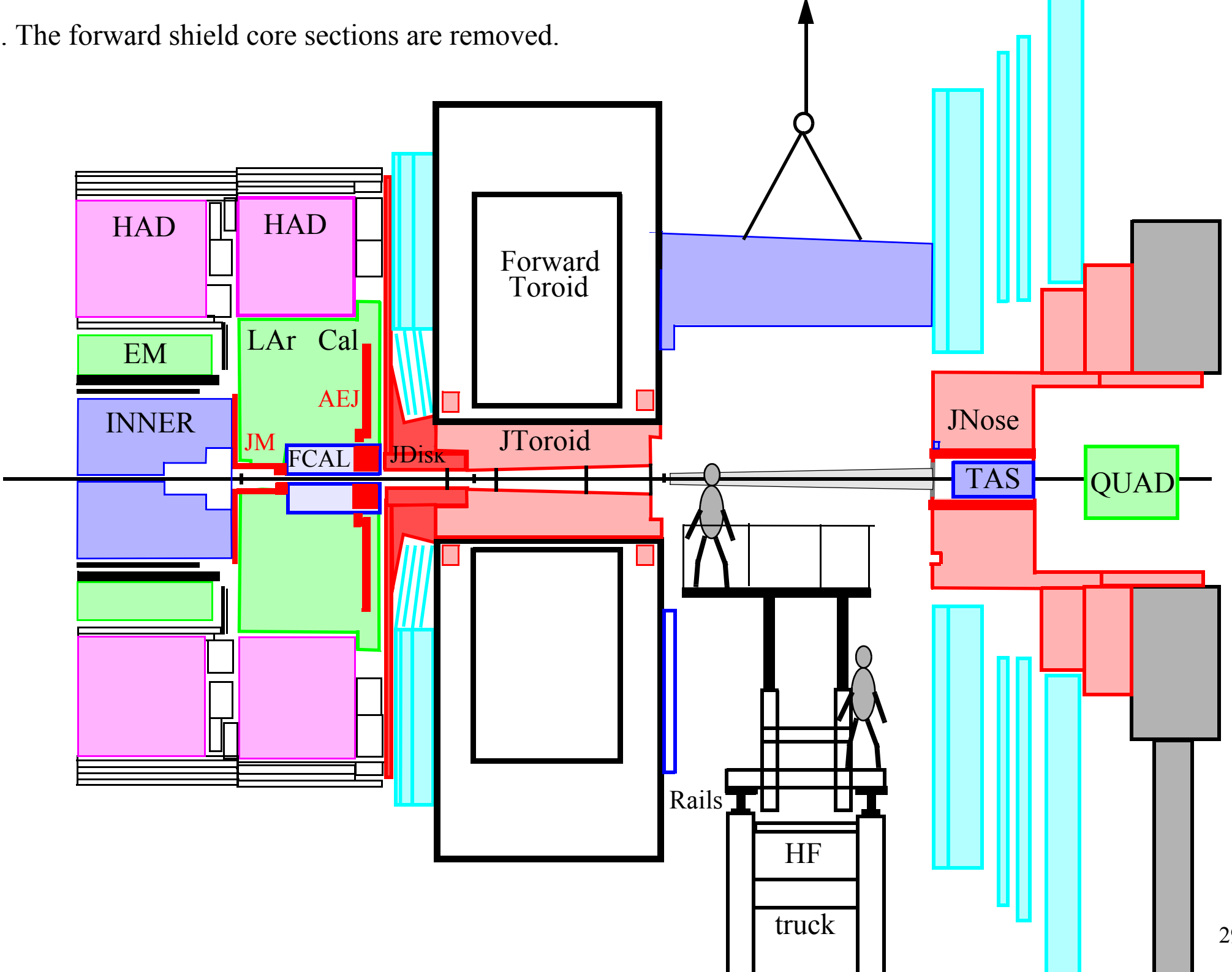
Dose rates in mSv/h around the bridge section of the forward shield. (Calculation by M. Morev)



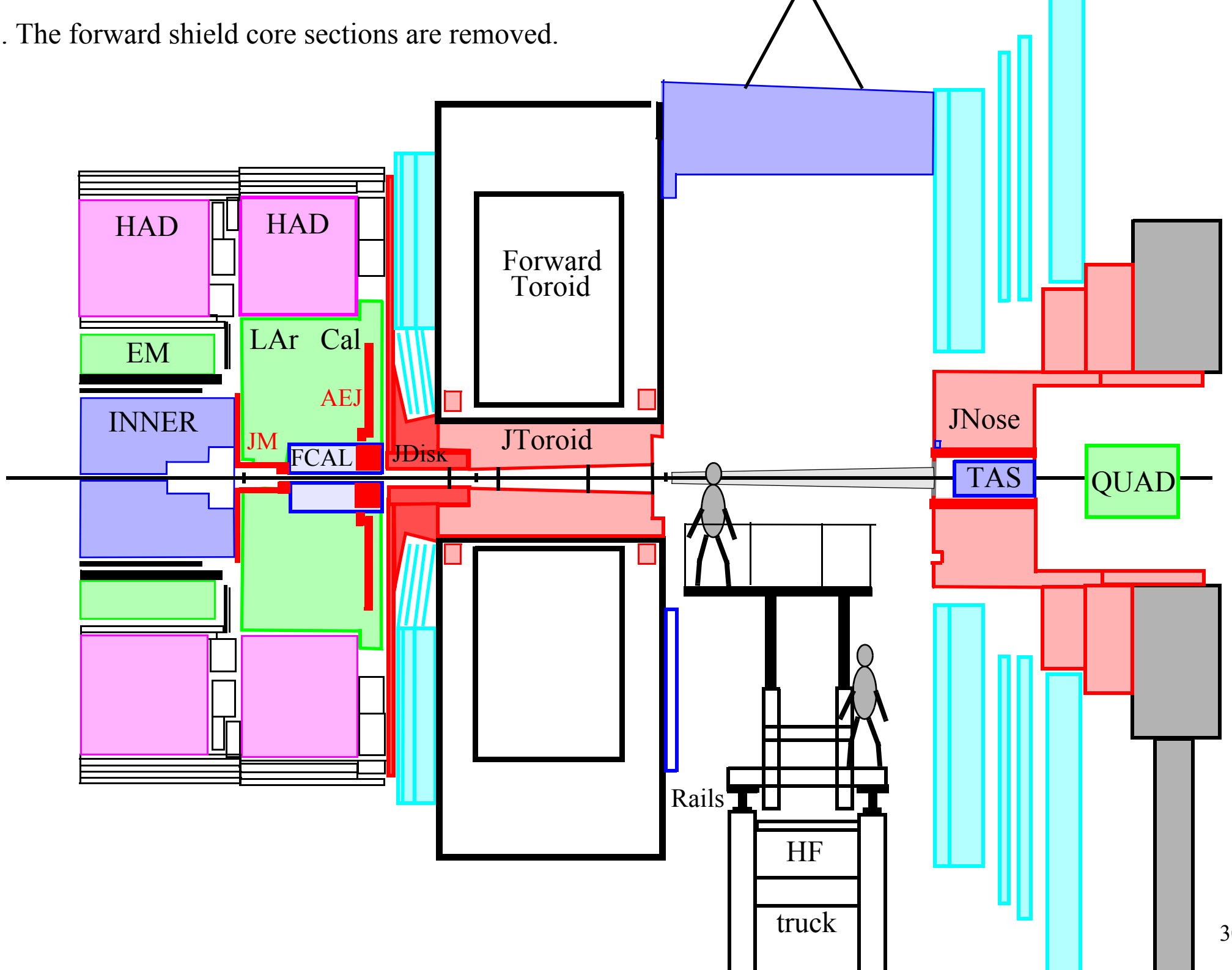
3. The forward shield core sections are removed.



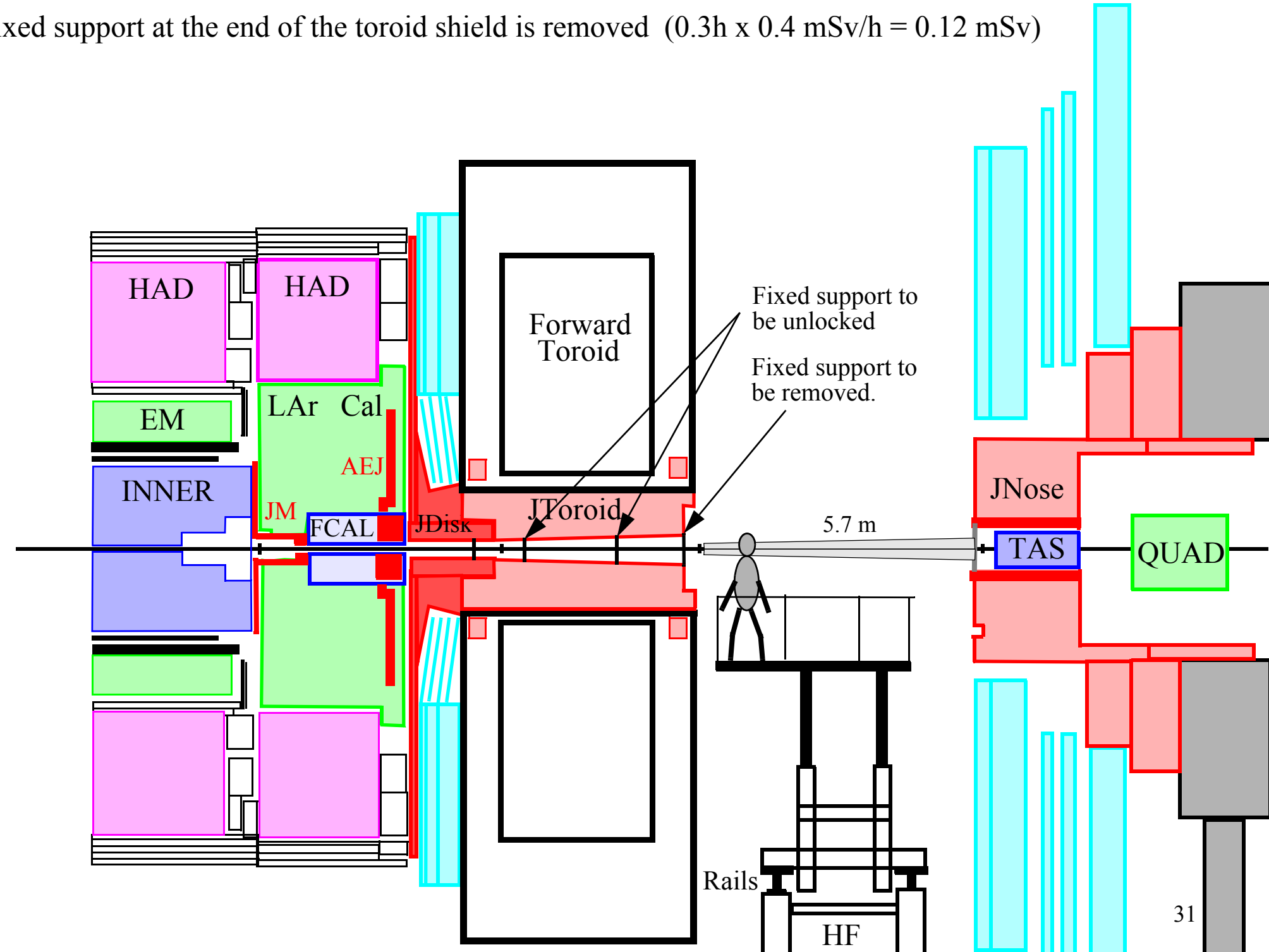
3. The forward shield core sections are removed.



3. The forward shield core sections are removed.



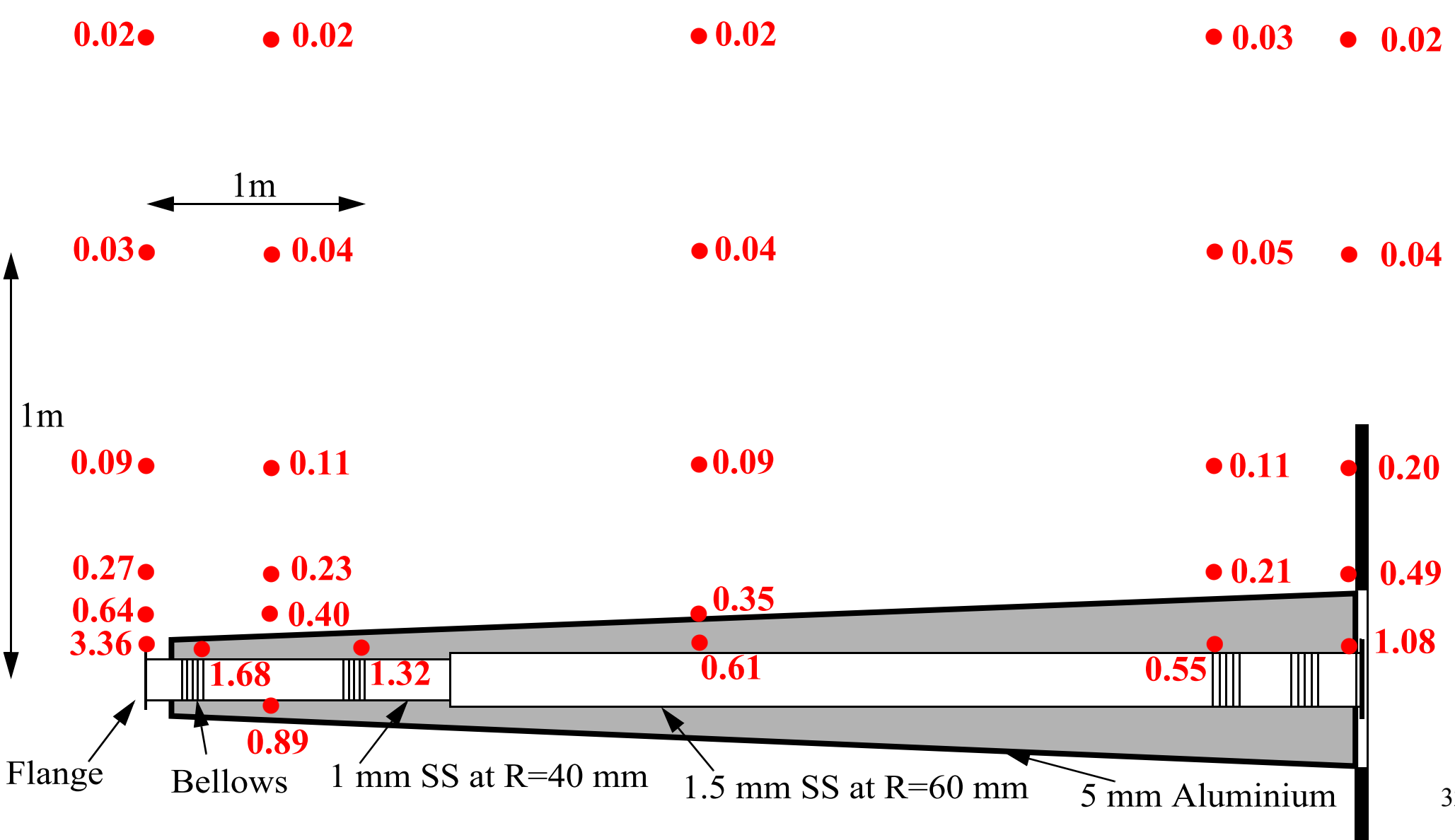
4. The two fixed supports inside the toroid shielding are unlocked (0.2h x 0.3 mSv/h = 0.06 mSv)
5. The fixed support at the end of the toroid shield is removed (0.3h x 0.4 mSv/h = 0.12 mSv)



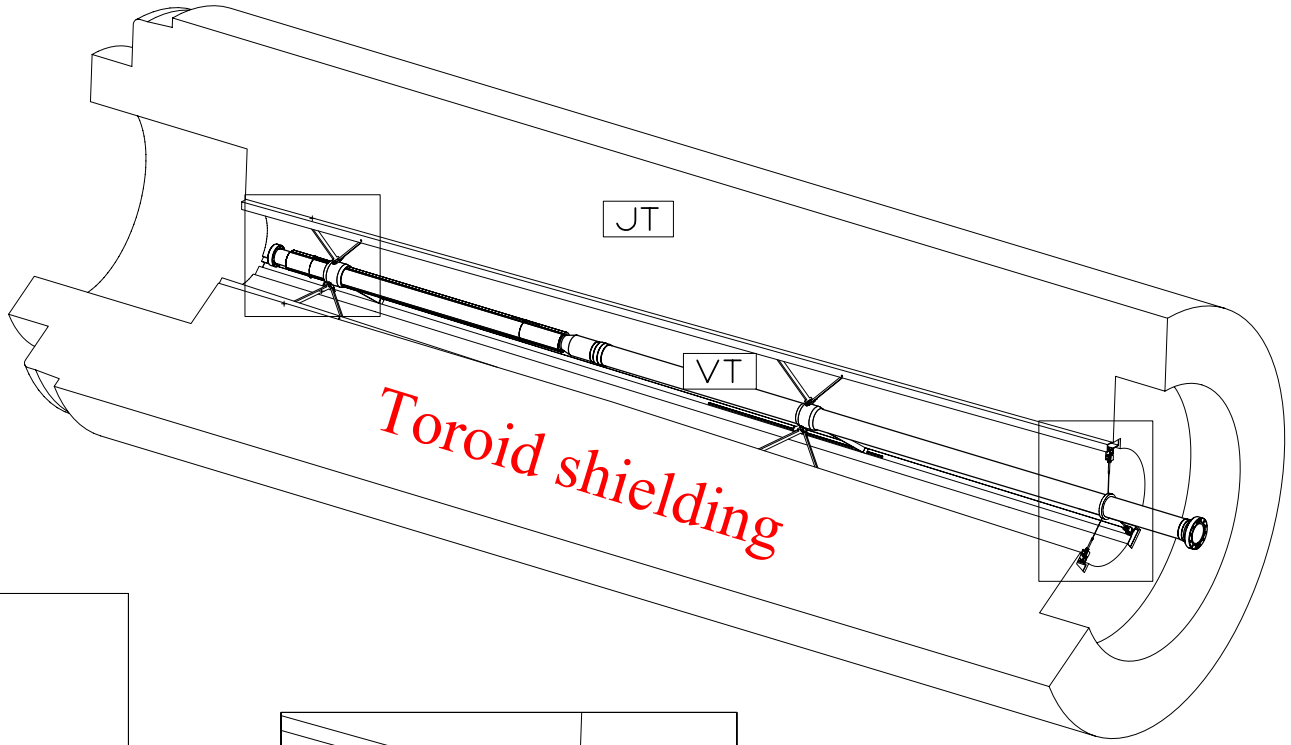
Dose rates in mSv/h after 100 days of running and 1 day of cooling

(M. Morev et al.)

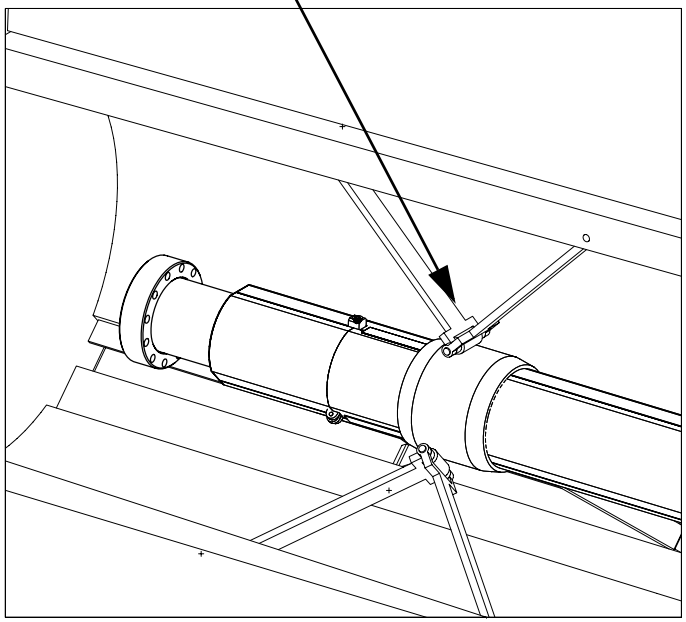
Dose rates from only the VJ beampipe

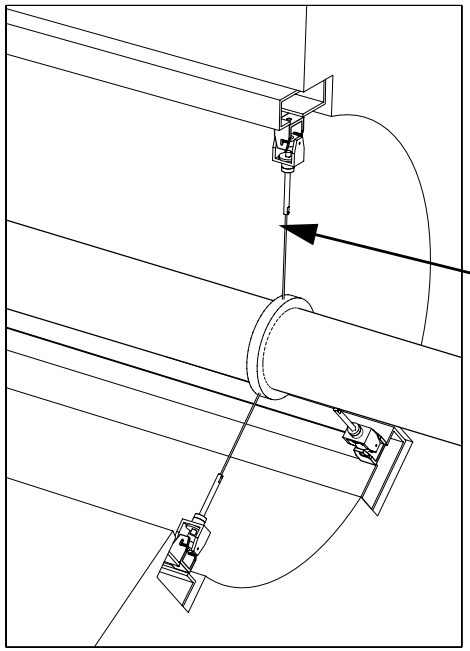


Beampipe supports



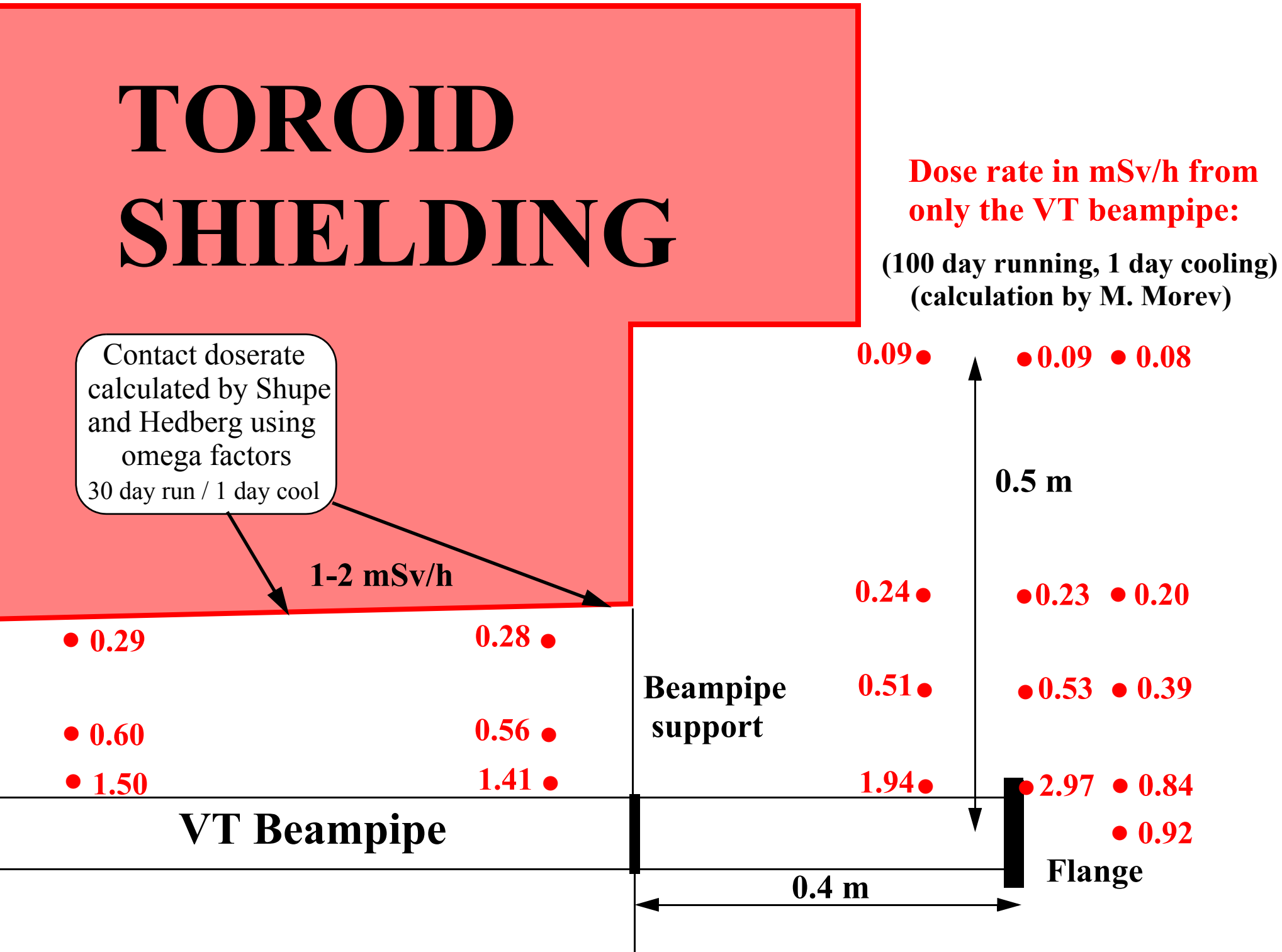
This support has to be retracted.



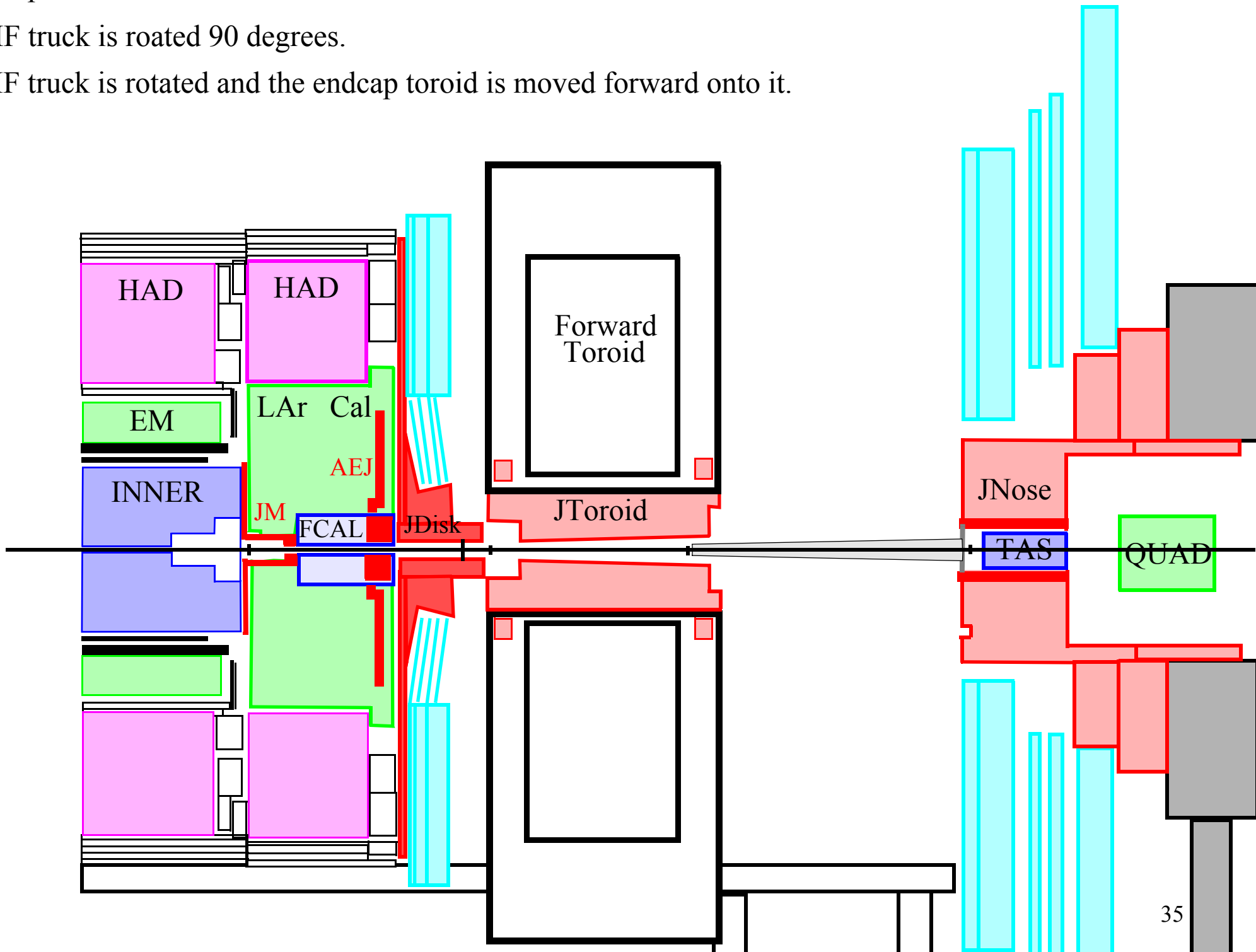


This support has to be removed and replaced by a support that rolls against the shielding.

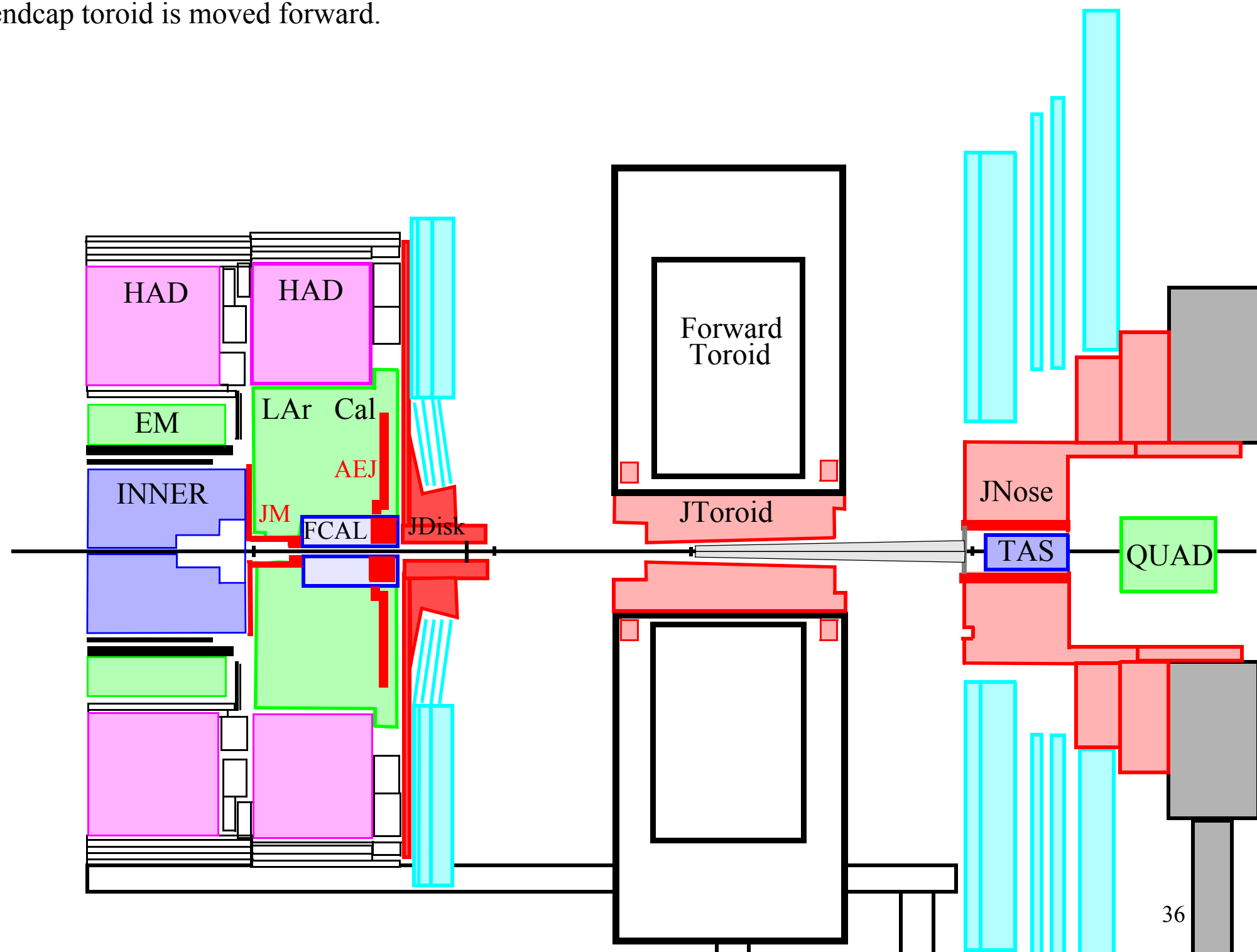
TOROID SHIELDING



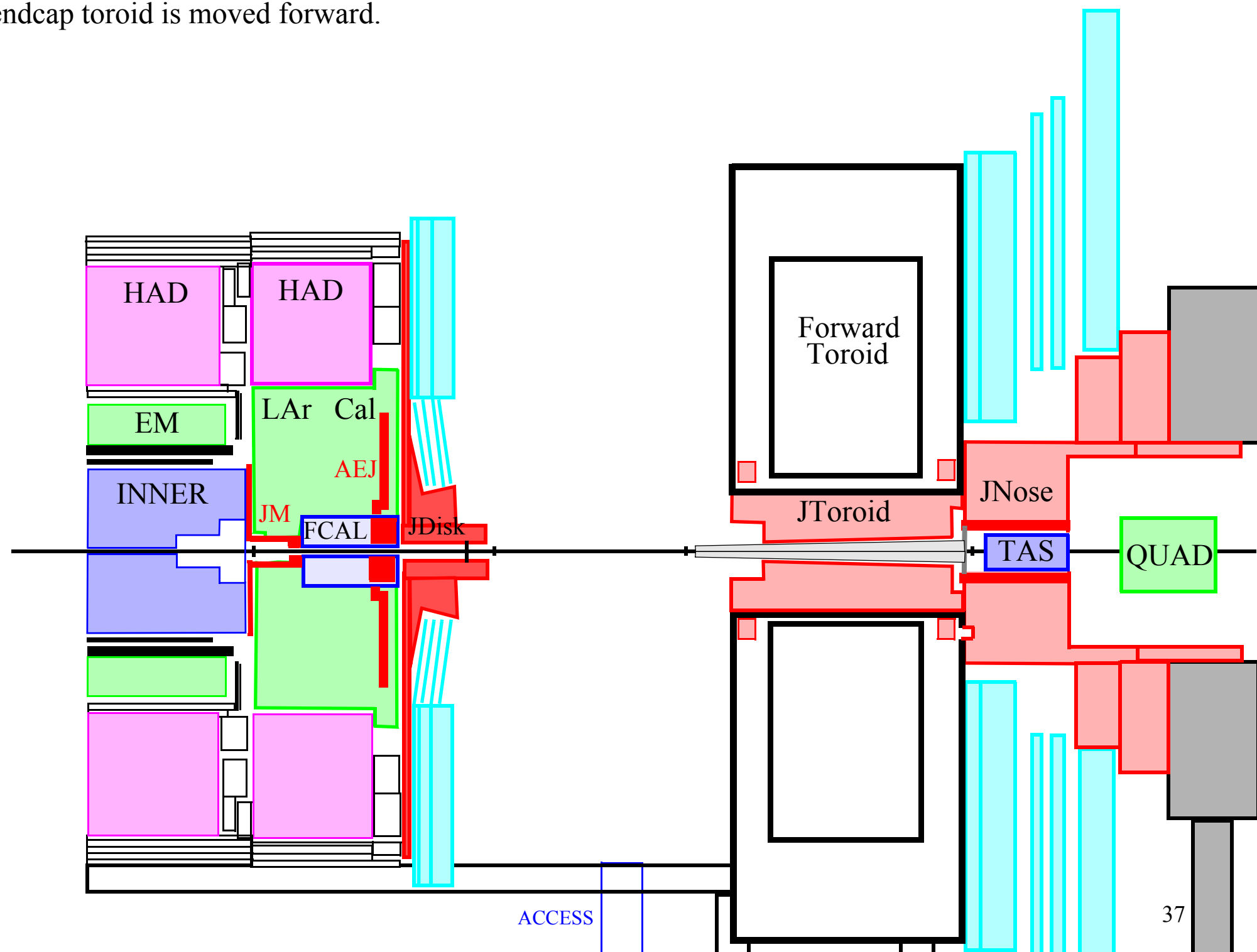
6. The HF platform is removed.
7. The HF truck is roated 90 degrees.
8. The HF truck is rotated and the endcap toroid is moved forward onto it.



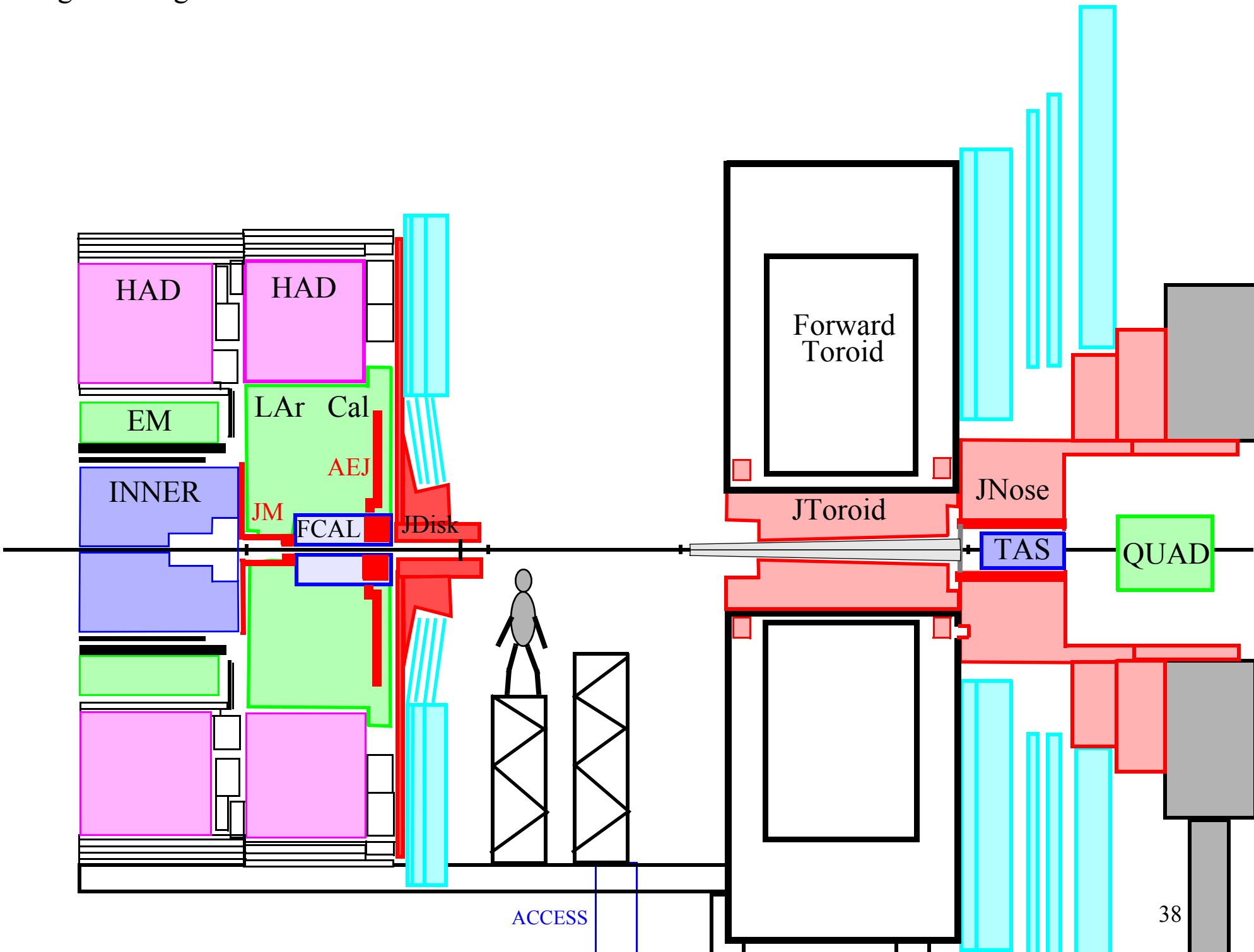
8. The endcap toroid is moved forward.



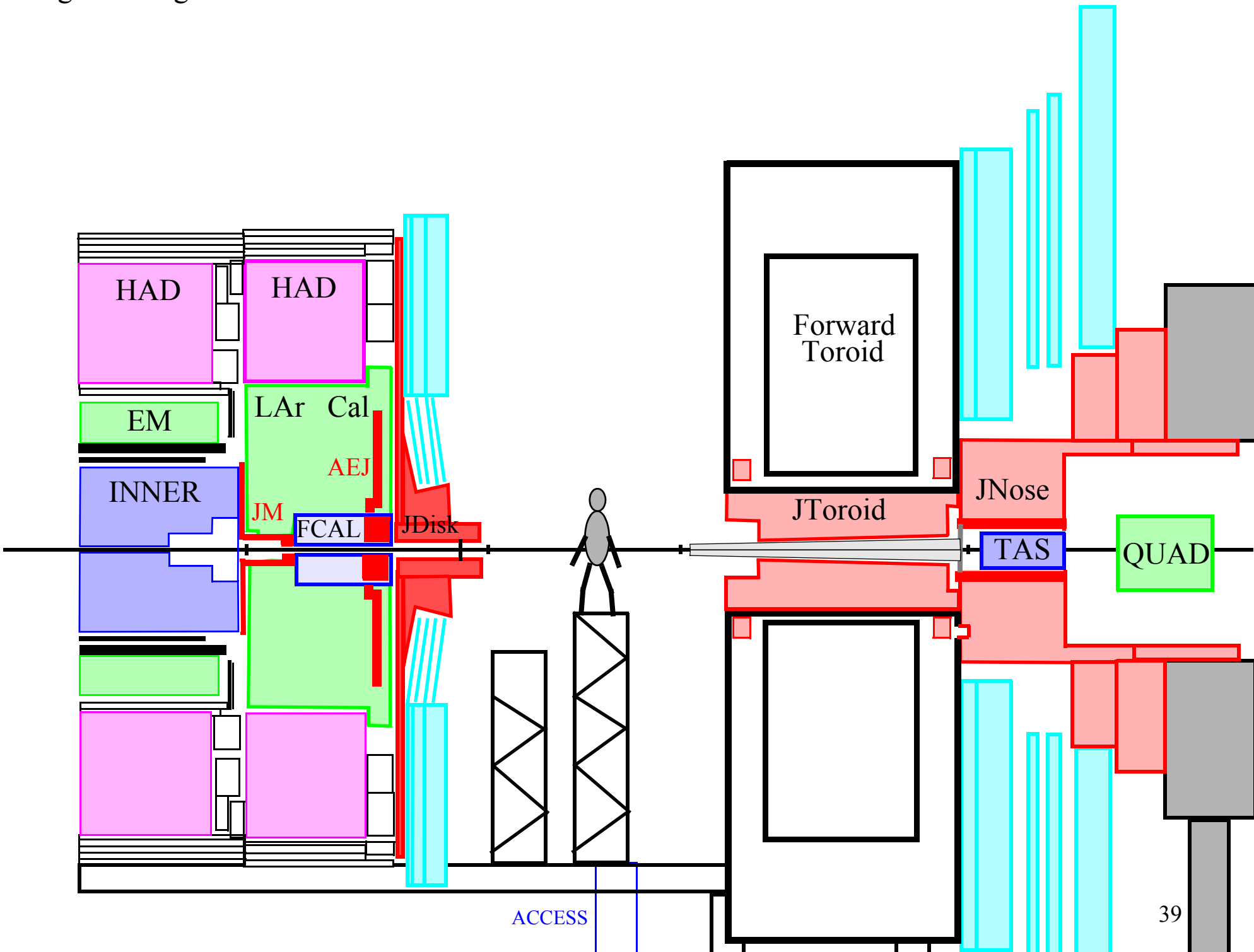
8. The endcap toroid is moved forward.



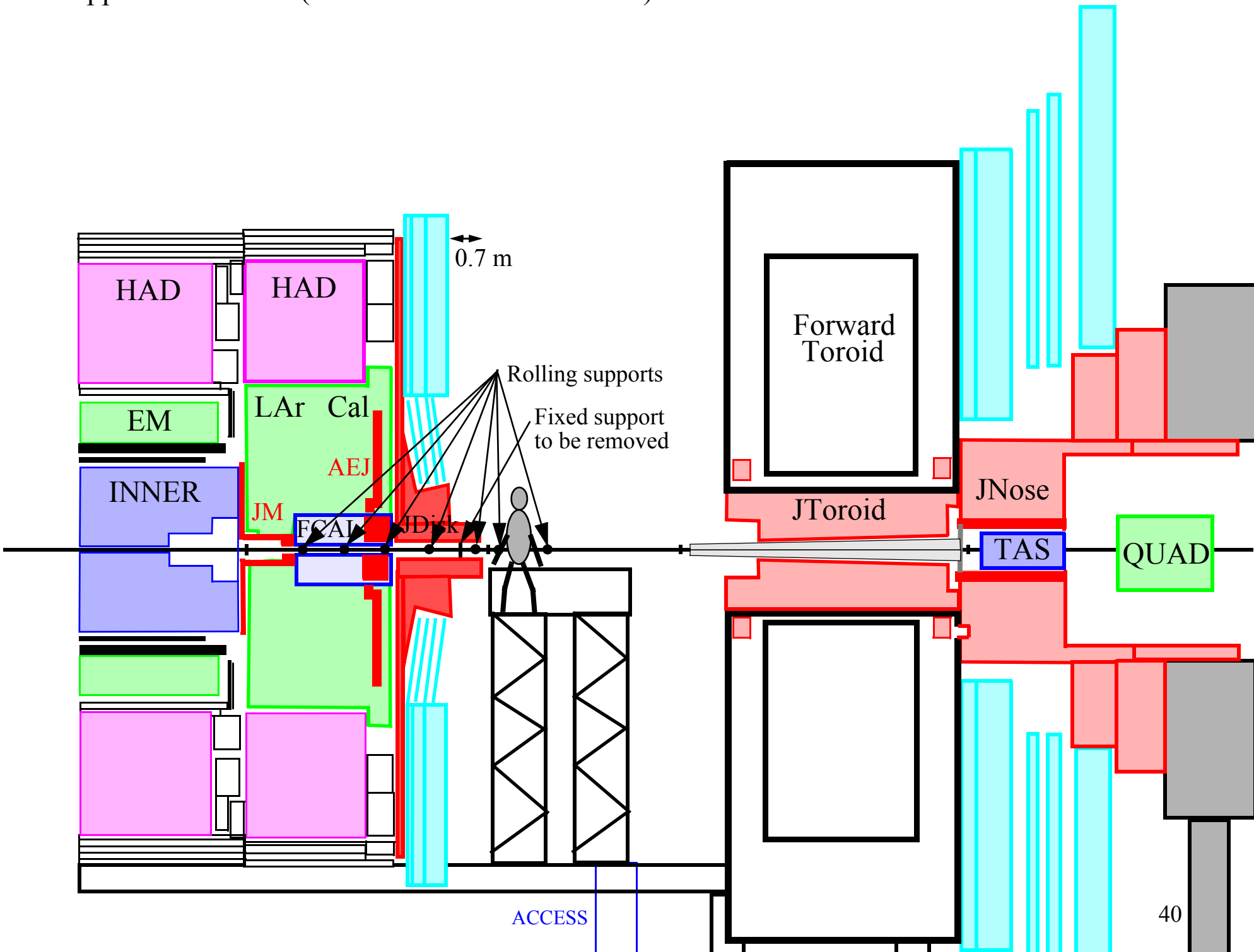
9. Scaffolding is beeing built.



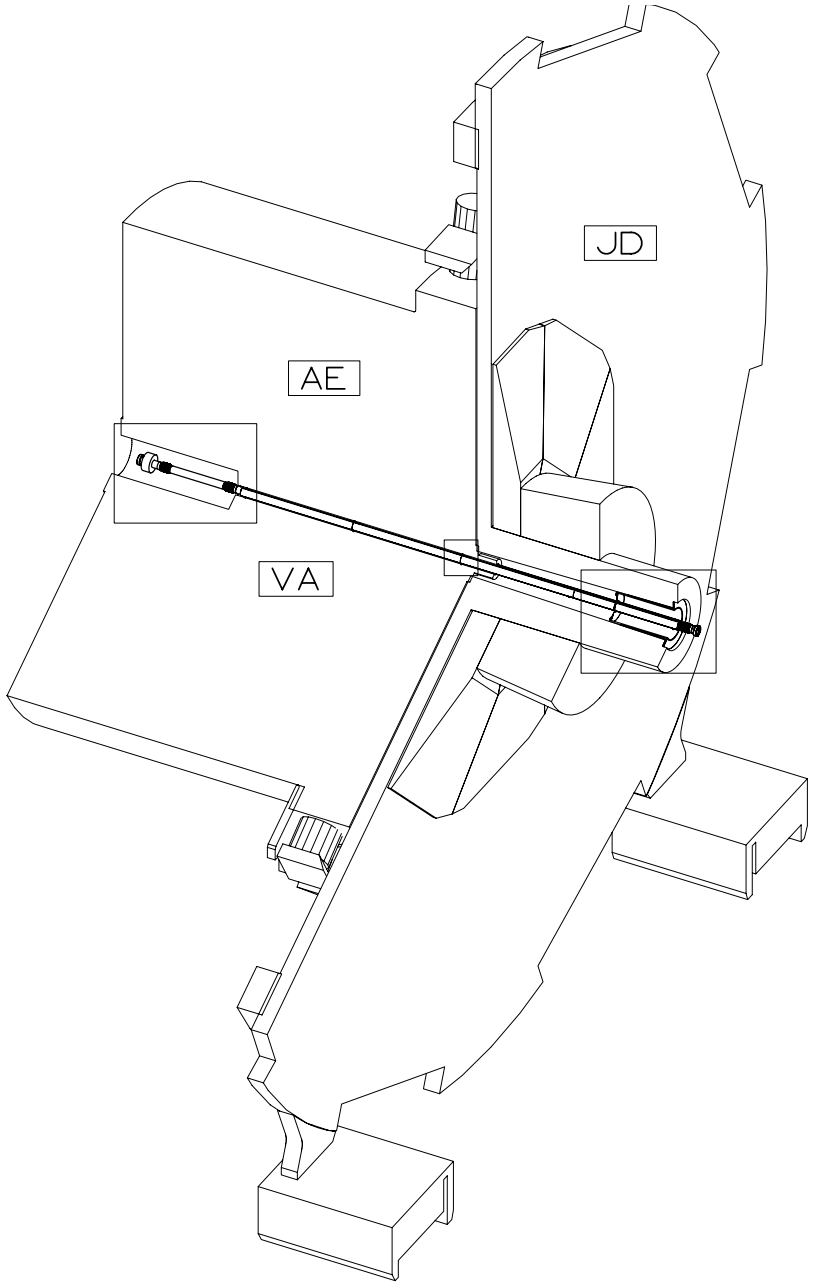
9. Scaffolding is beeing built.

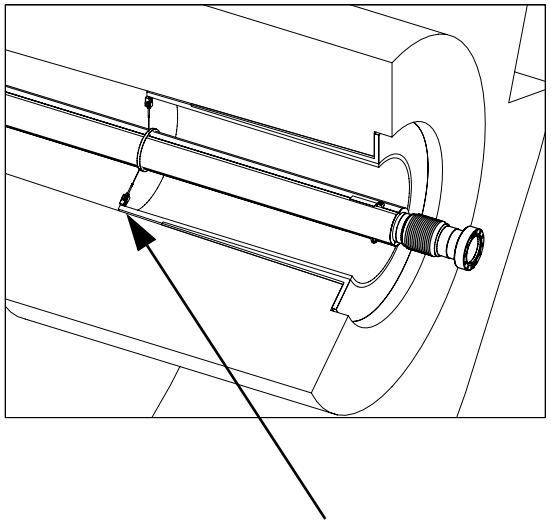


10. The fixed support is removed (0.2h x 1.0mSv/h = 0.2 mSv)

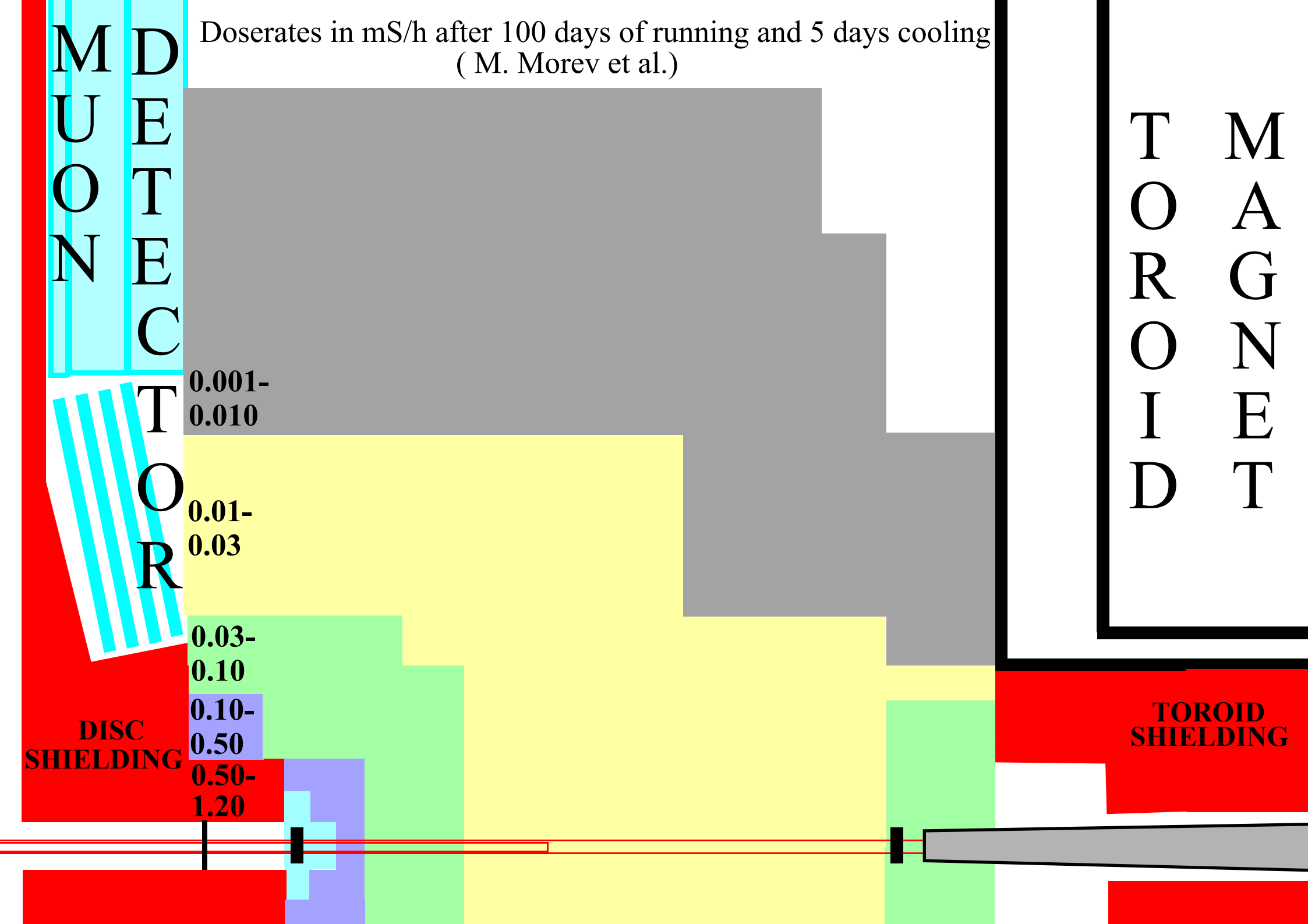


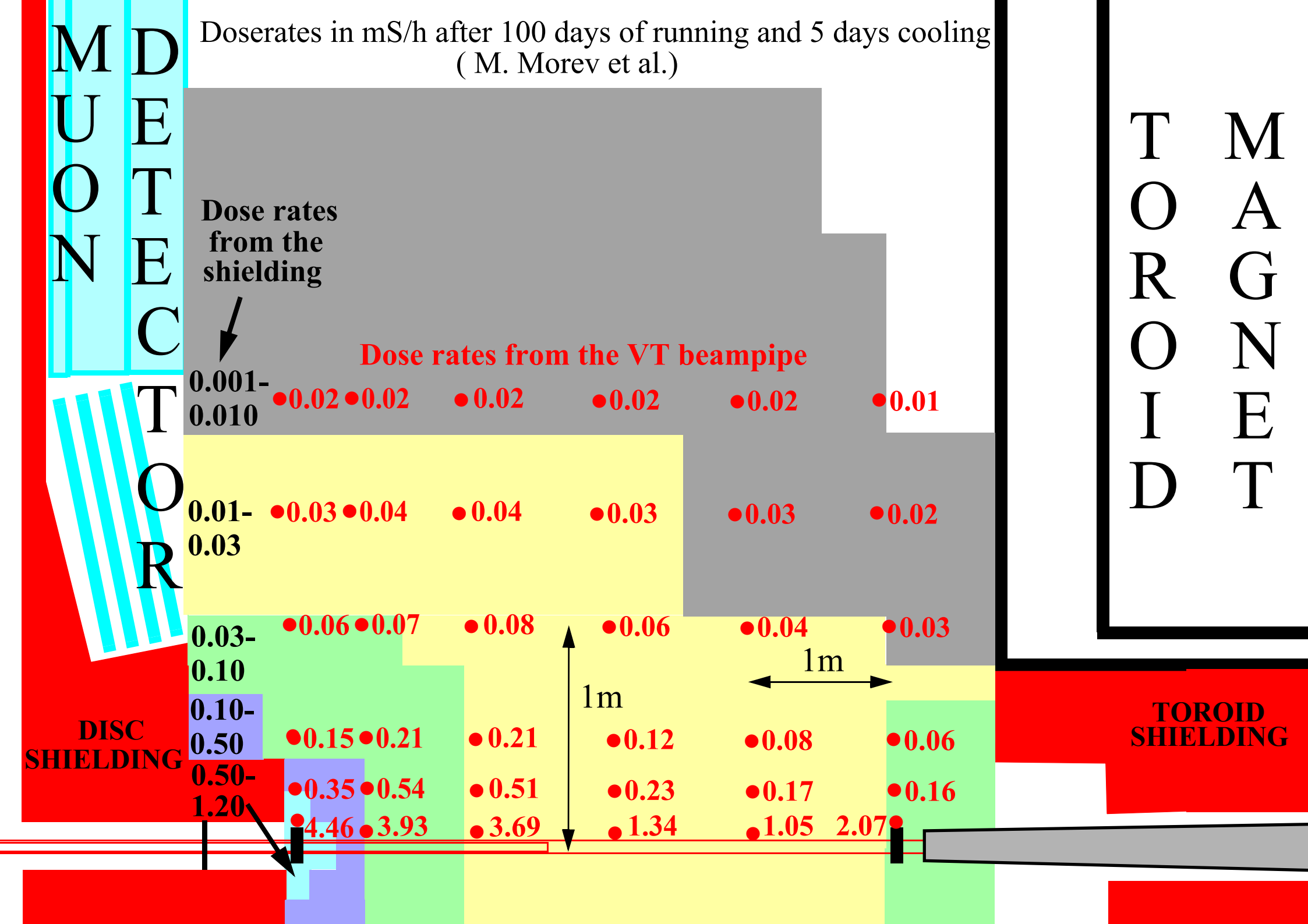
Beampipe supports



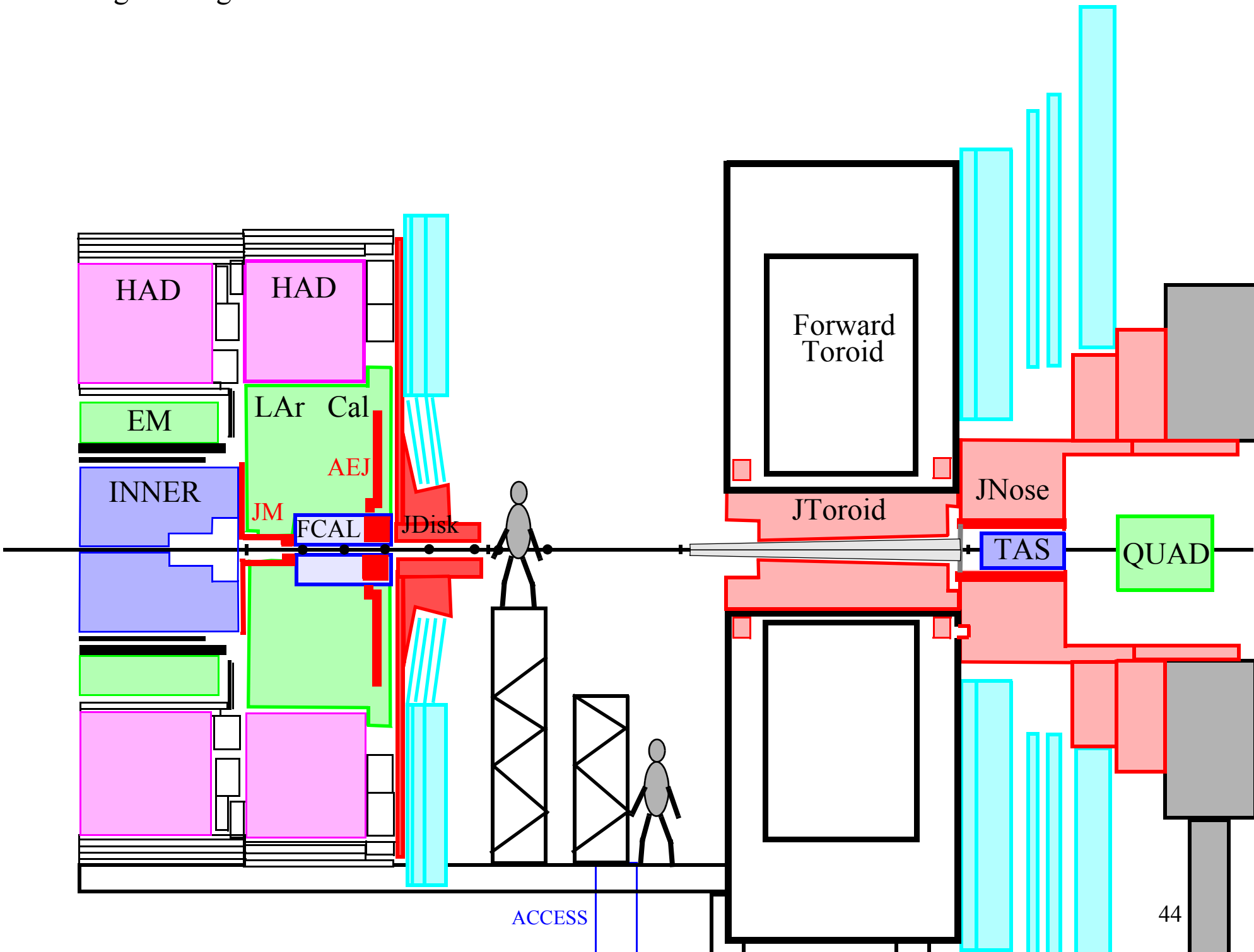


This support has to be removed.

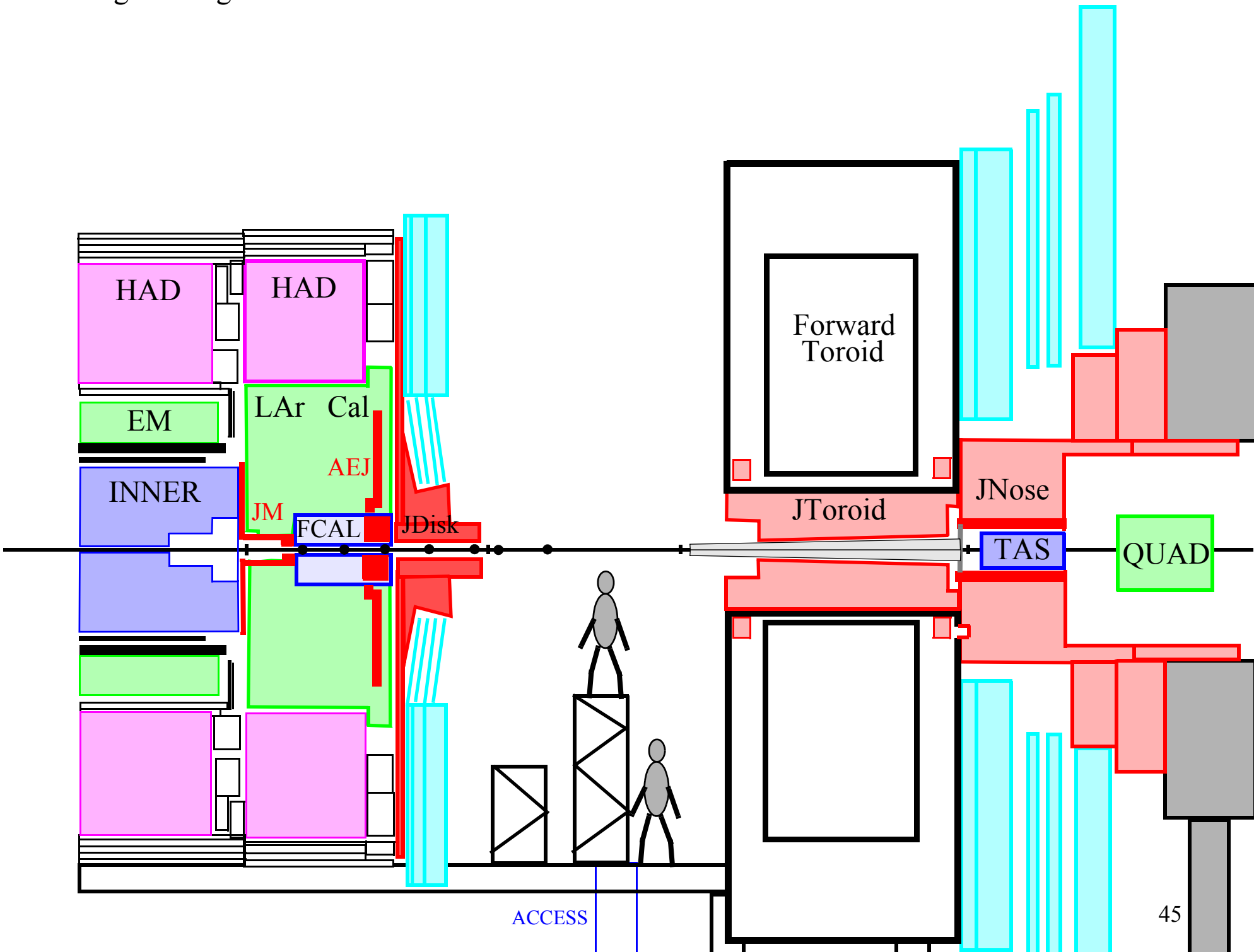

Doserates in mS/h after 100 days of running and 5 days cooling
(M. Morev et al.)
MUON DETECTOR
TOROID MAGNET
0.001-
0.010
0.01-
0.03
0.03-
0.10
0.10-
0.50
0.50-
1.20
DISC
SHIELDING
TOROID
SHIELDING


Doserates in mS/h after 100 days of running and 5 days cooling
(M. Morev et al.)
MUON DETECTOR
TOROID MAGNET
Dose rates from the shielding
Dose rates from the VT beampipe
0.001-0.010
0.01-0.03
0.03-0.10
0.10-0.50
0.50-1.20
●0.02 ●0.02 ●0.02 ●0.02 ●0.02 ●0.01
●0.03 ●0.04 ●0.04 ●0.03 ●0.03 ●0.02
●0.06 ●0.07 ●0.08 ●0.06 ●0.04 ●0.03
●0.15 ●0.21 ●0.21 ●0.12 ●0.08 ●0.06
●0.35 ●0.54 ●0.51 ●0.23 ●0.17 ●0.16
●4.46 ●3.93 ●3.69 ●1.34 ●1.05 2.07●
1m
1m
DISC SHIELDING
TOROID SHIELDING

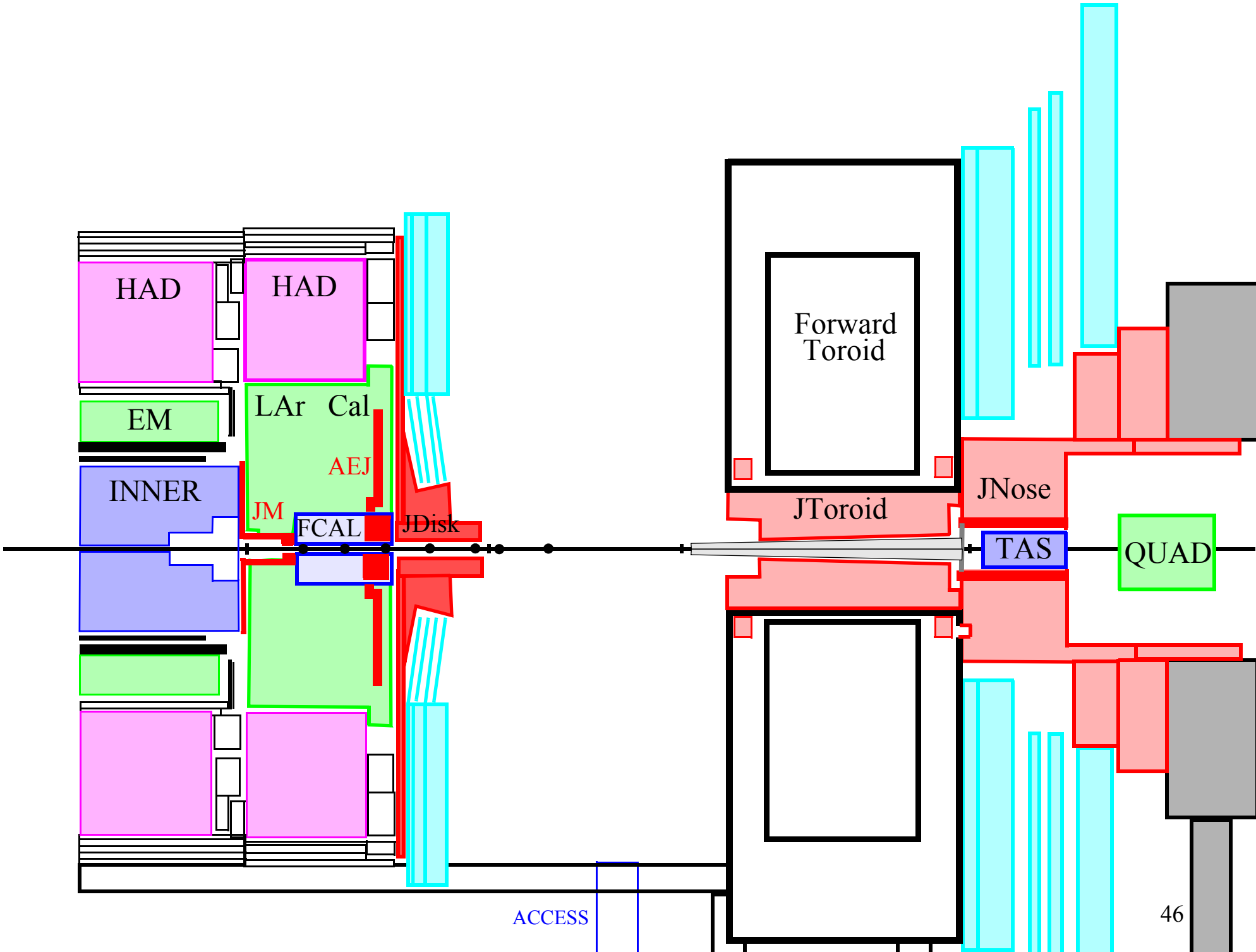
11. The scaffolding is being removed.



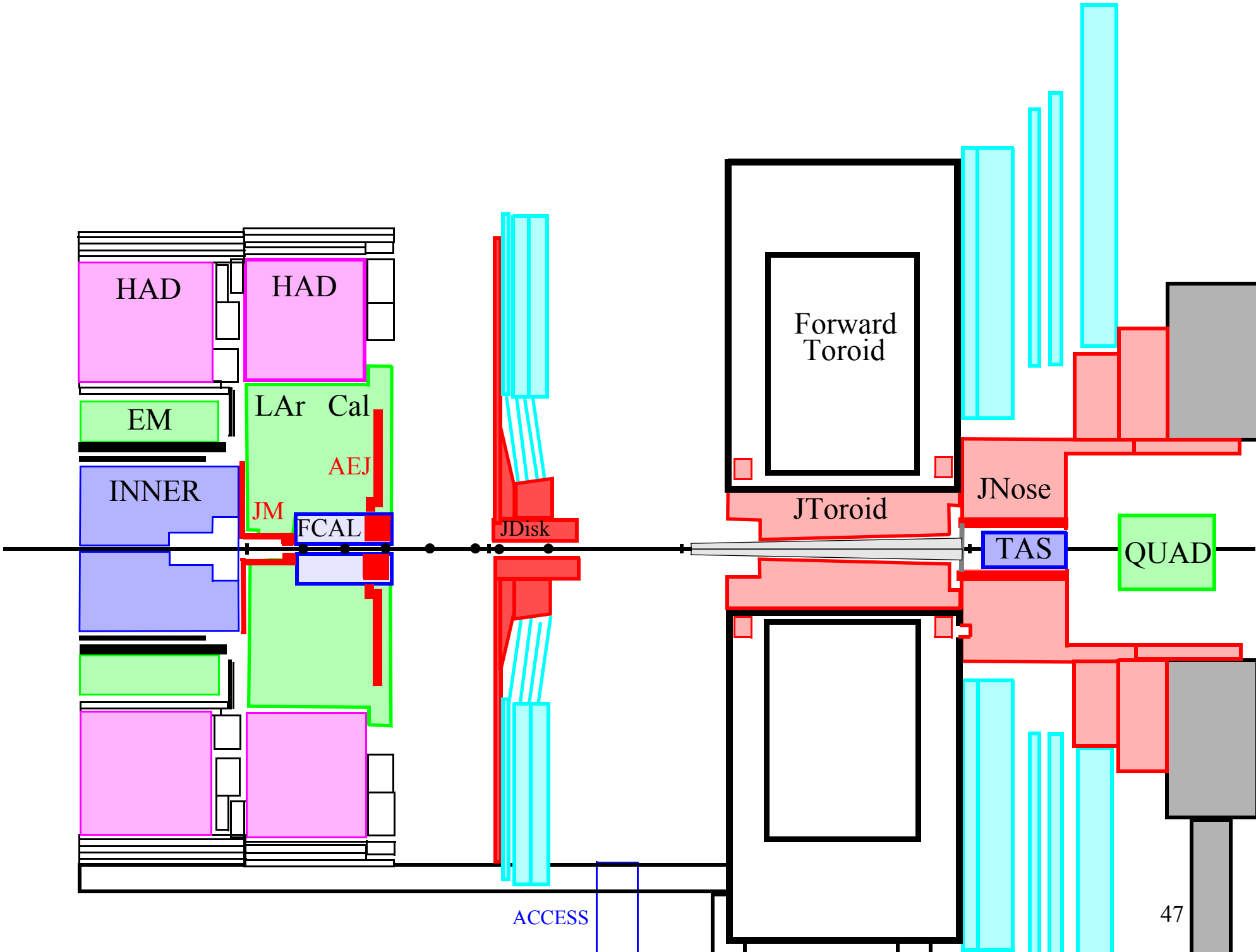
11. The scaffolding is being removed.



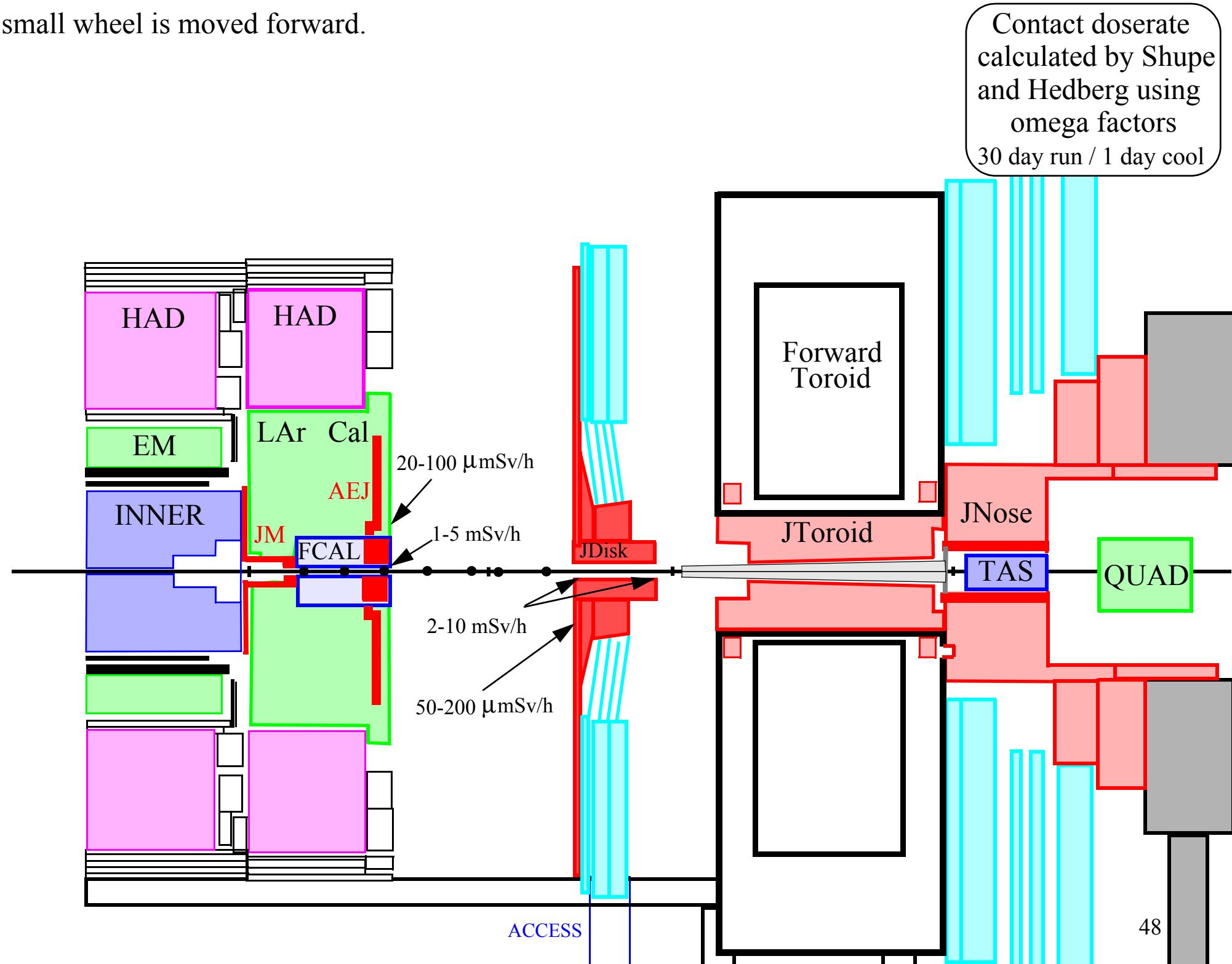
12. The small wheel is moved forward.



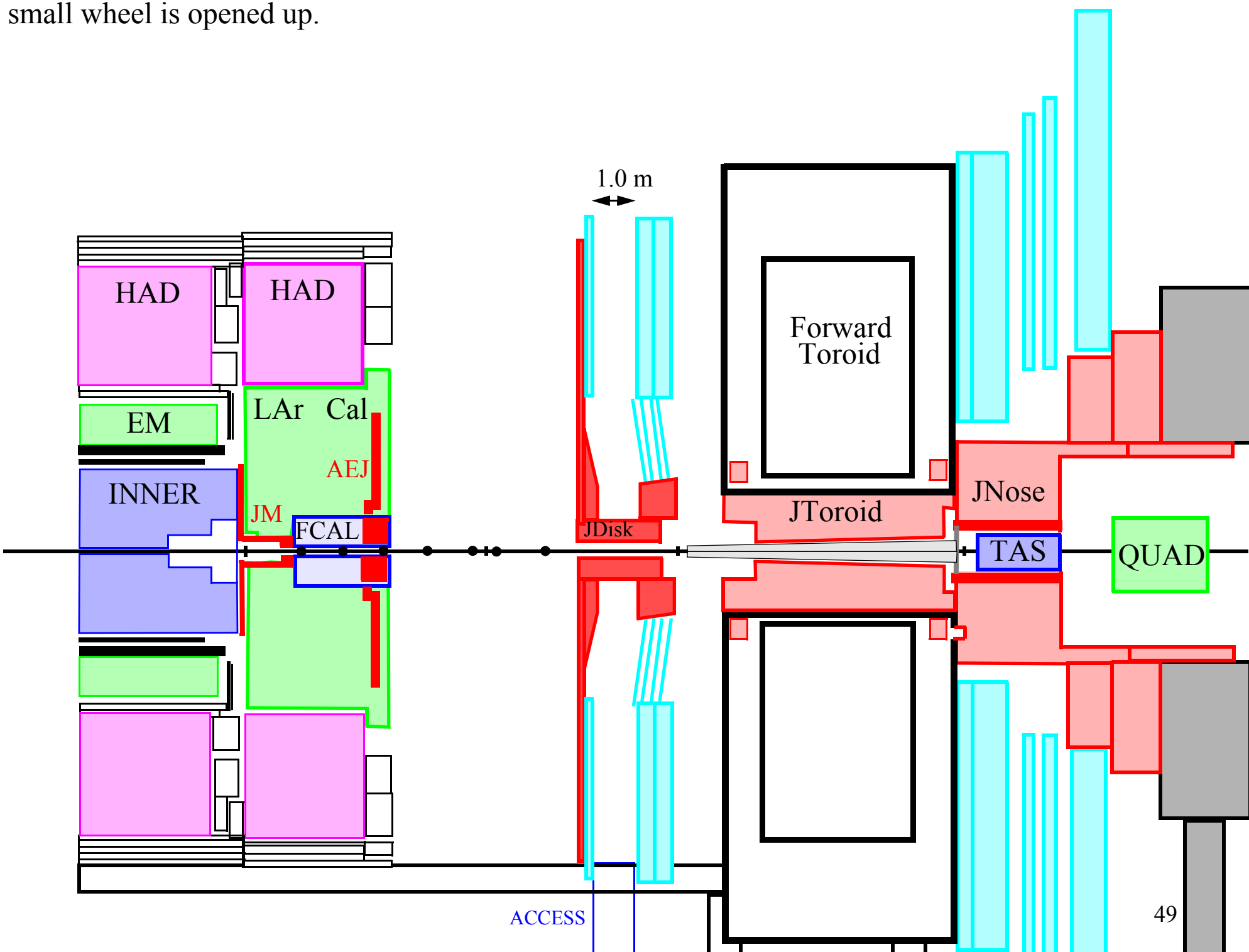
12. The small wheel is moved forward.

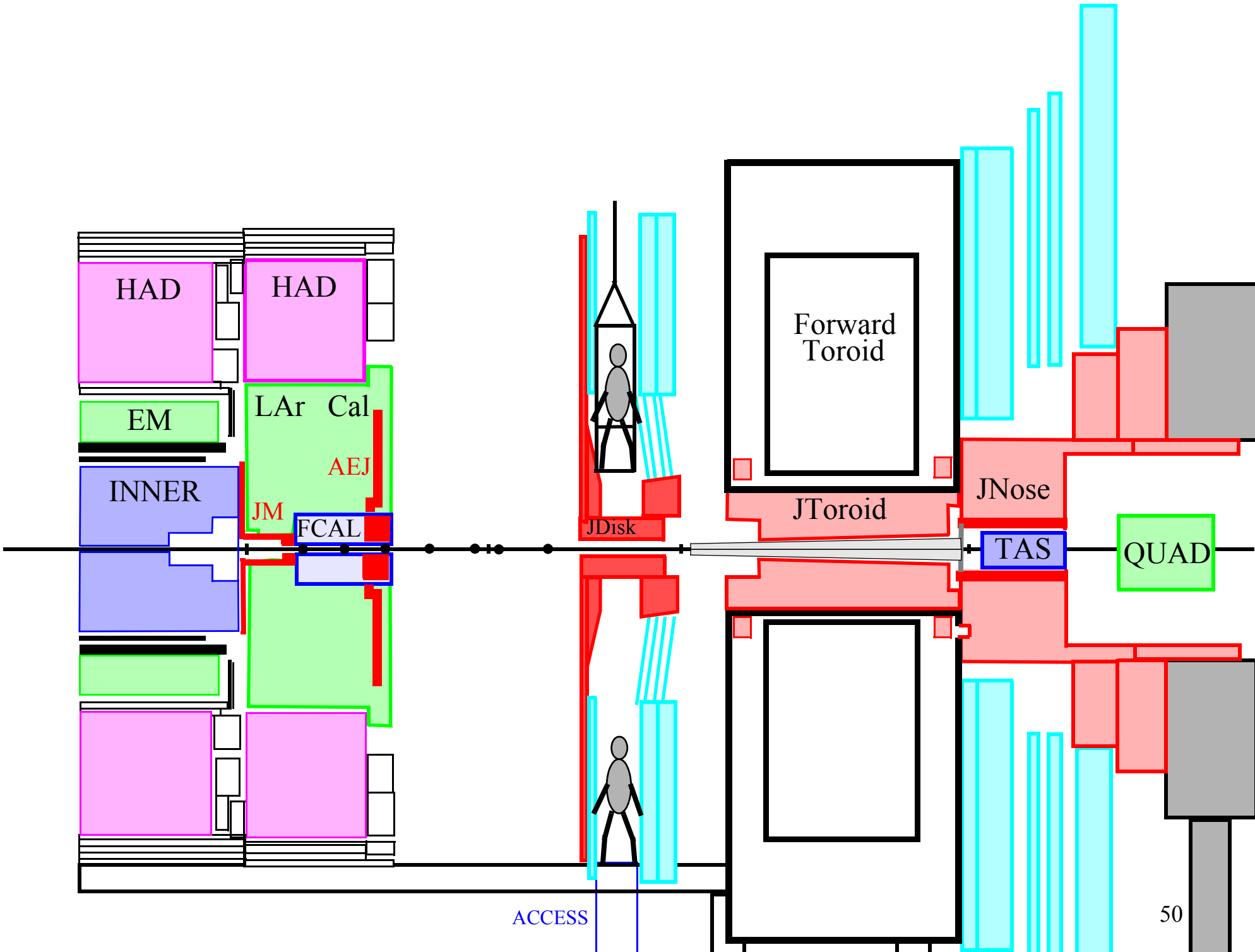


12. The small wheel is moved forward.

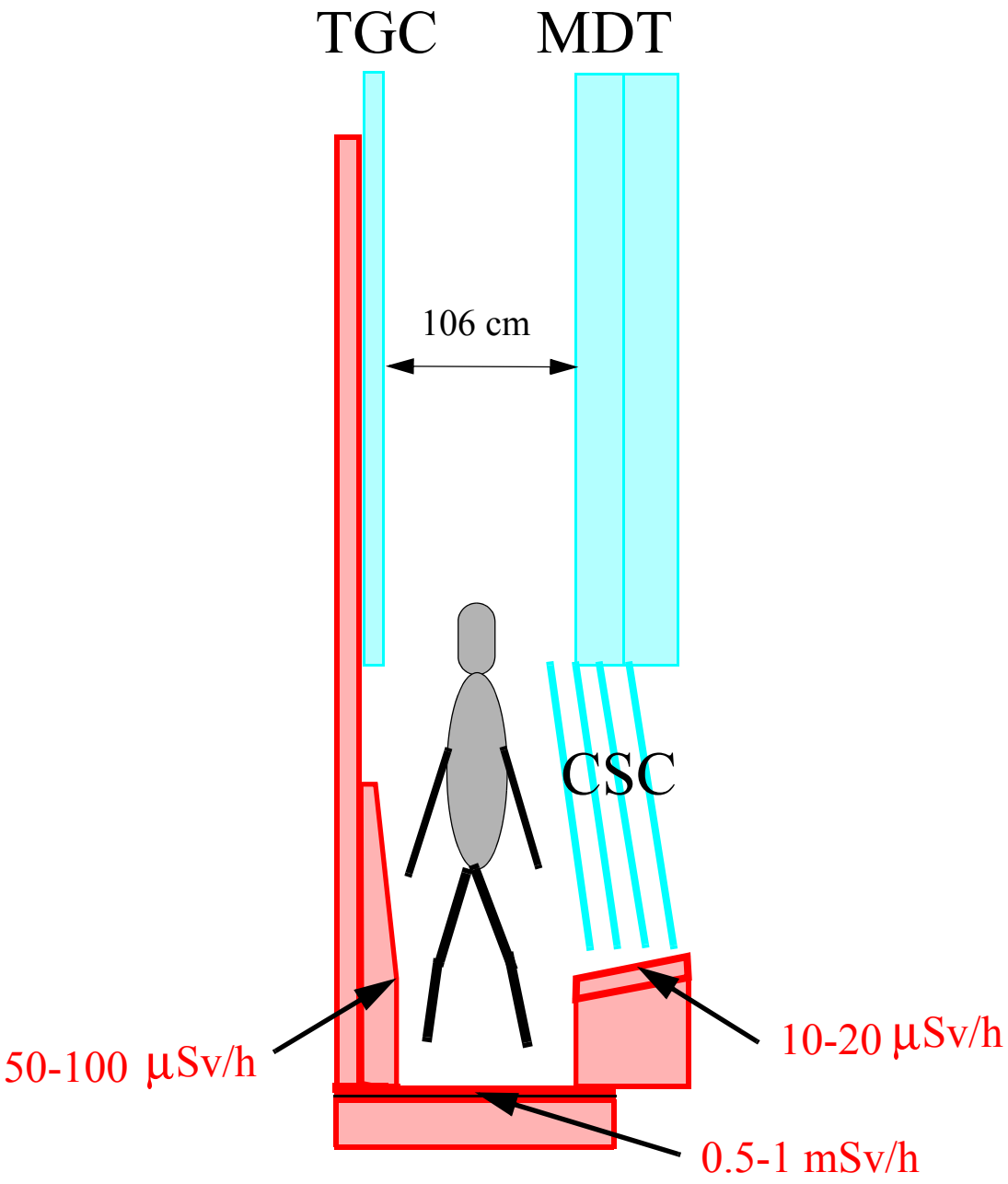


13. The small wheel is opened up.

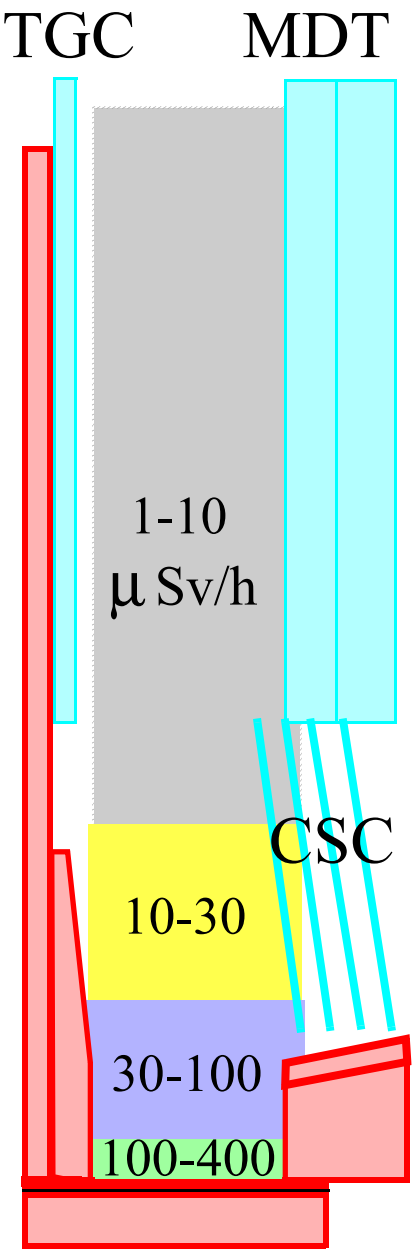



HAD
HAD
EM
LAr Cal
AEJ
INNER
JM
FCAL
JDisk
Forward
Toroid
JToroid
JNose
TAS
QUAD
ACCESS

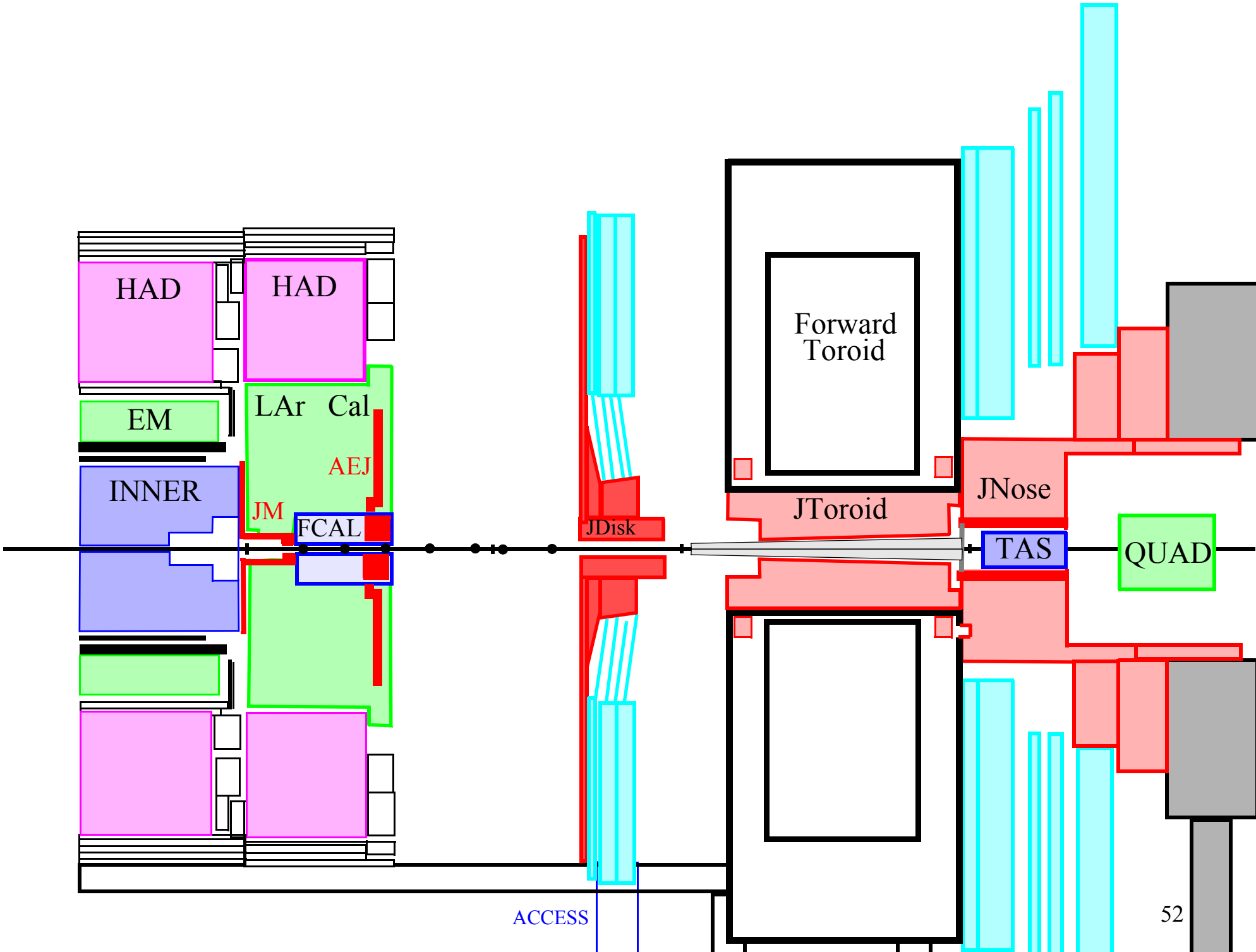
Contact doserate calculated by Shupe and Hedberg using omega factors.
30 day run / 1 day cooling



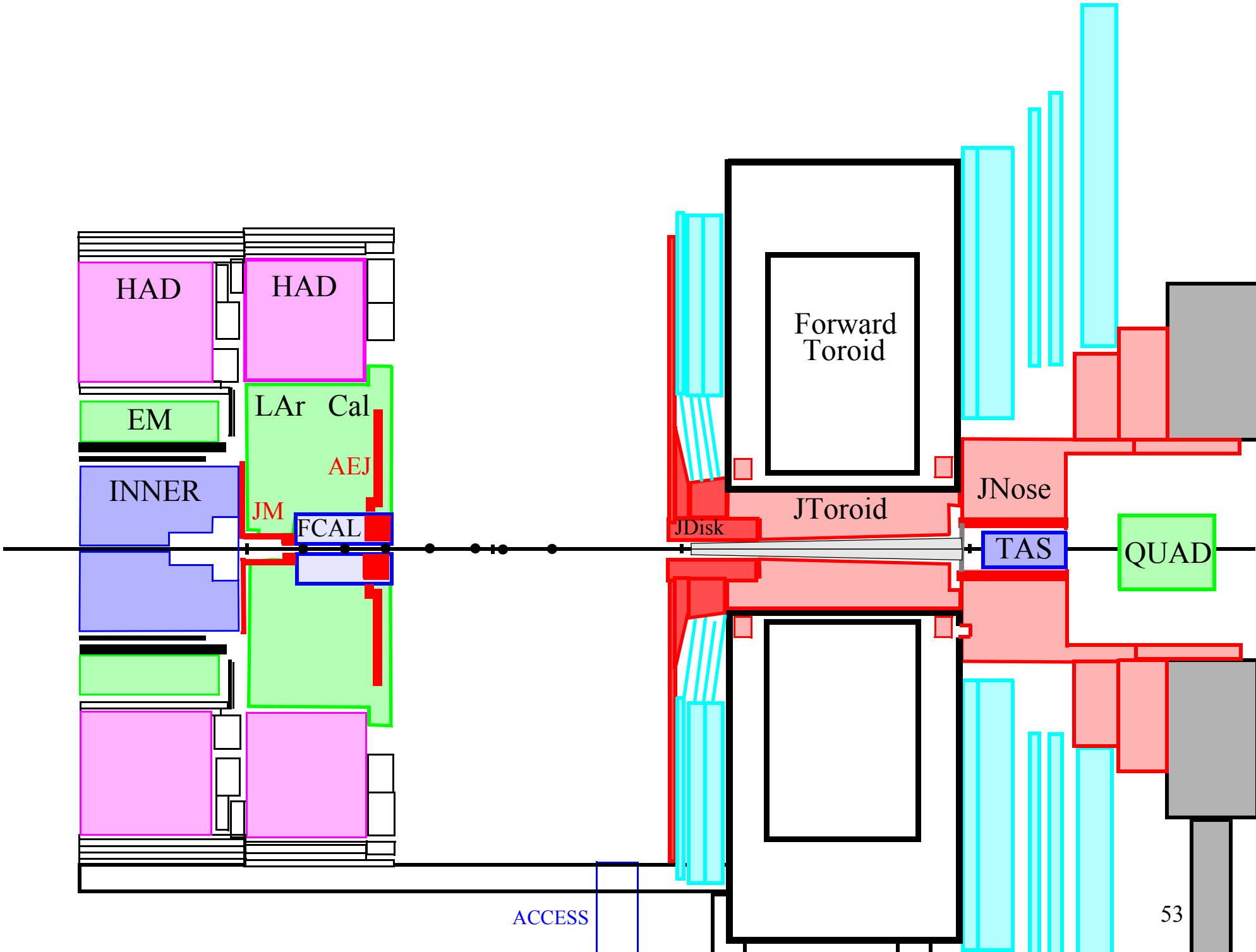
Doserates in the small wheel after 100 days of running and 5 days of cooling.
Calculation by M. Morev.



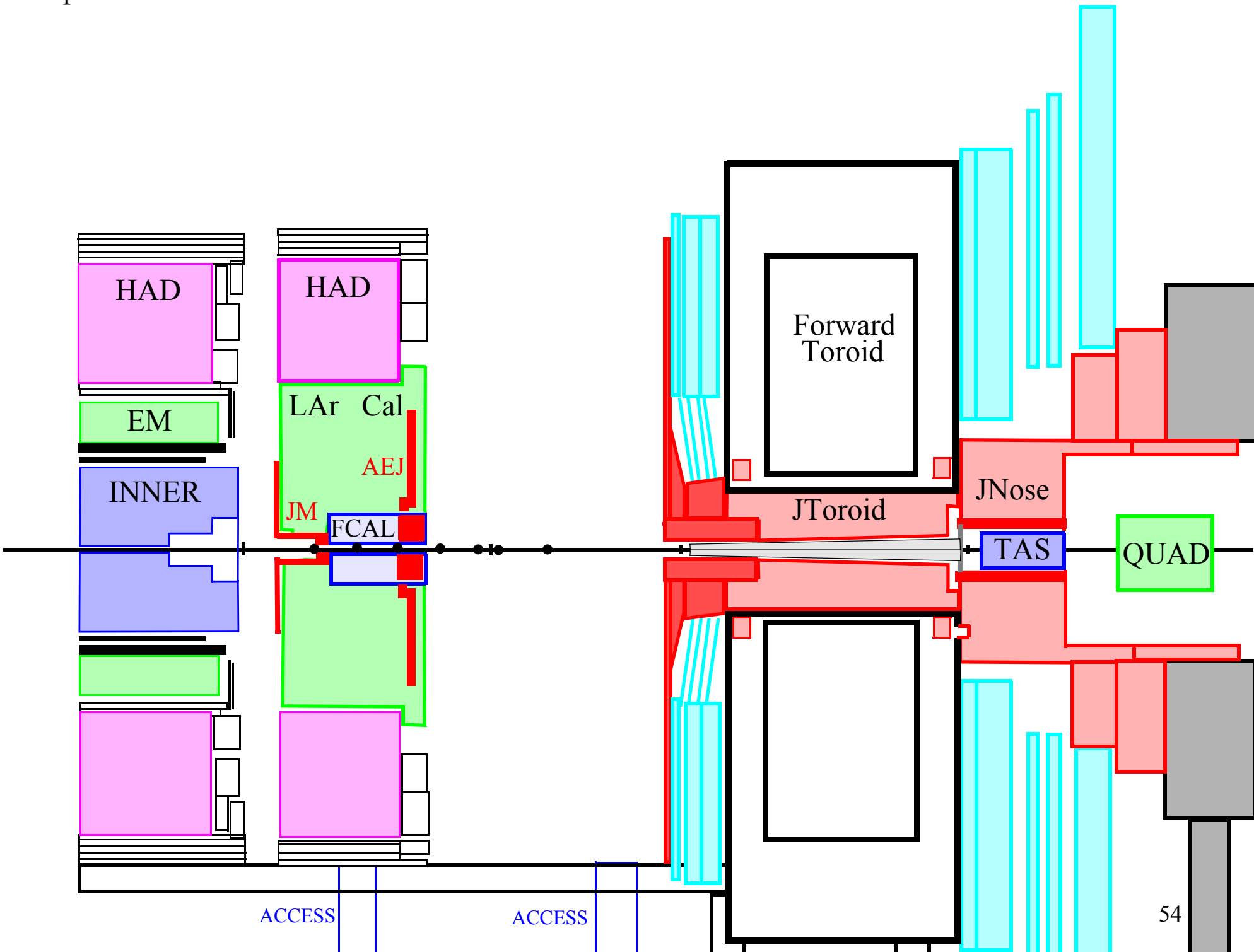
15. The small wheel is closed.



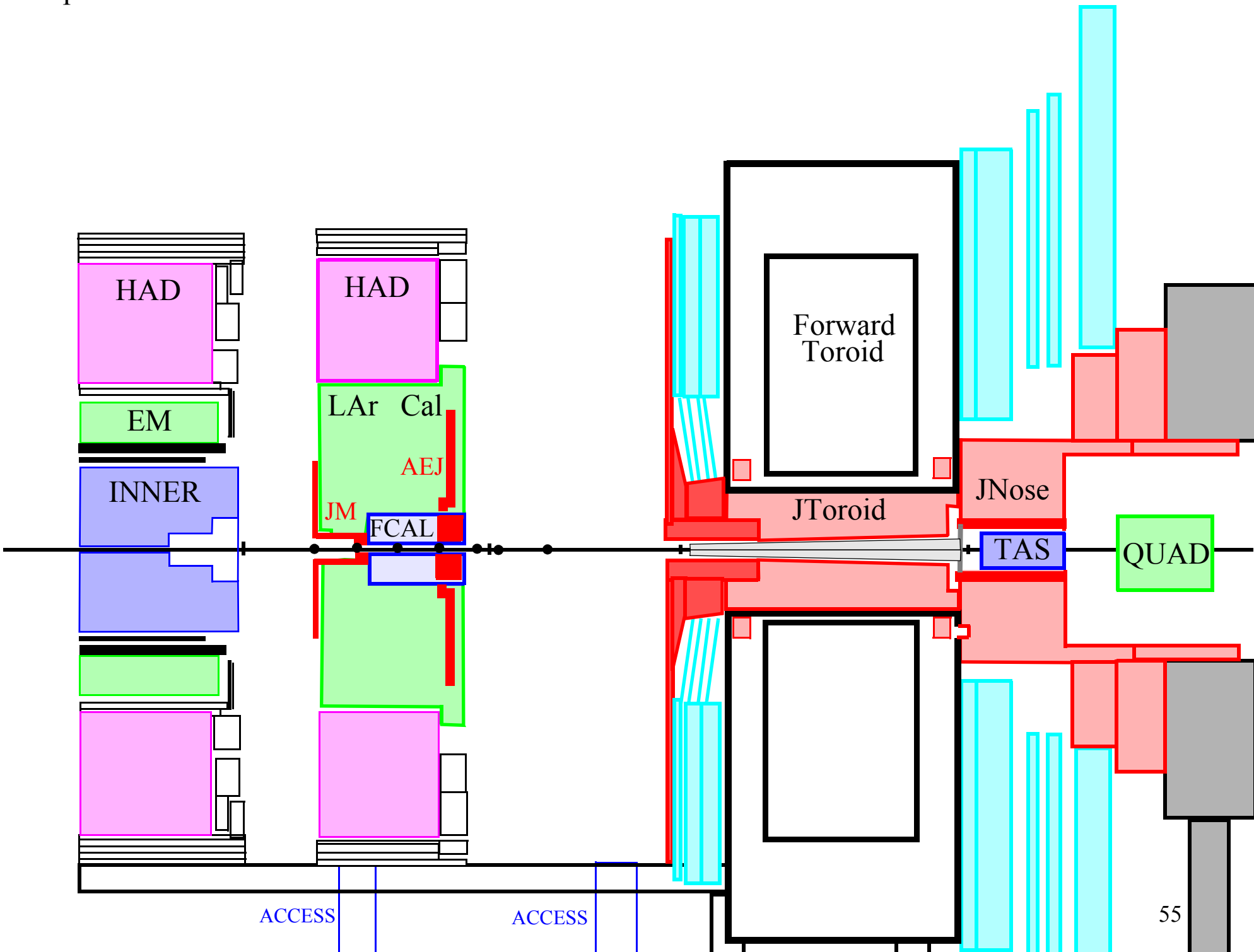
16. The small wheel is moved forward.



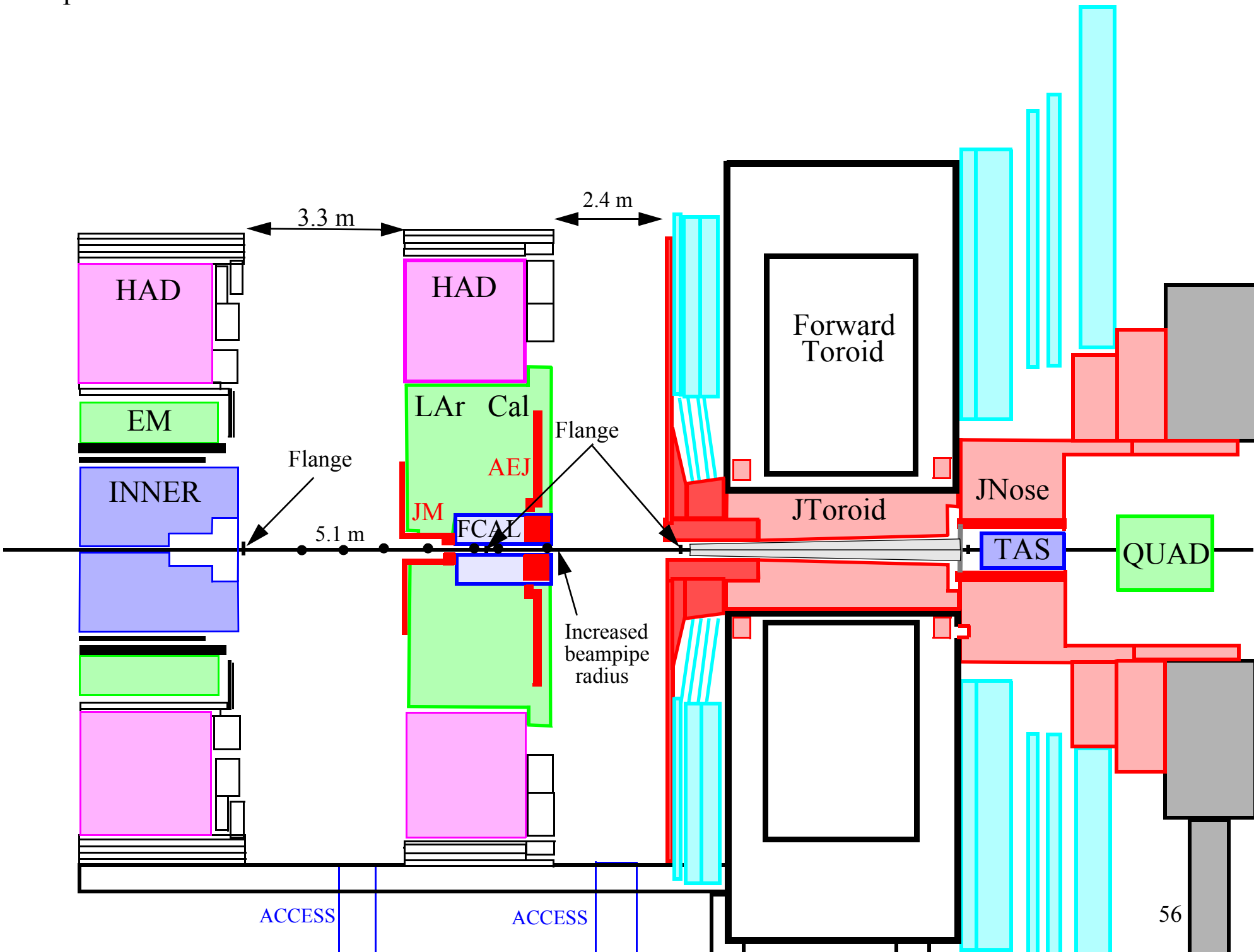
17. The endcap calorimeter is moved forward.



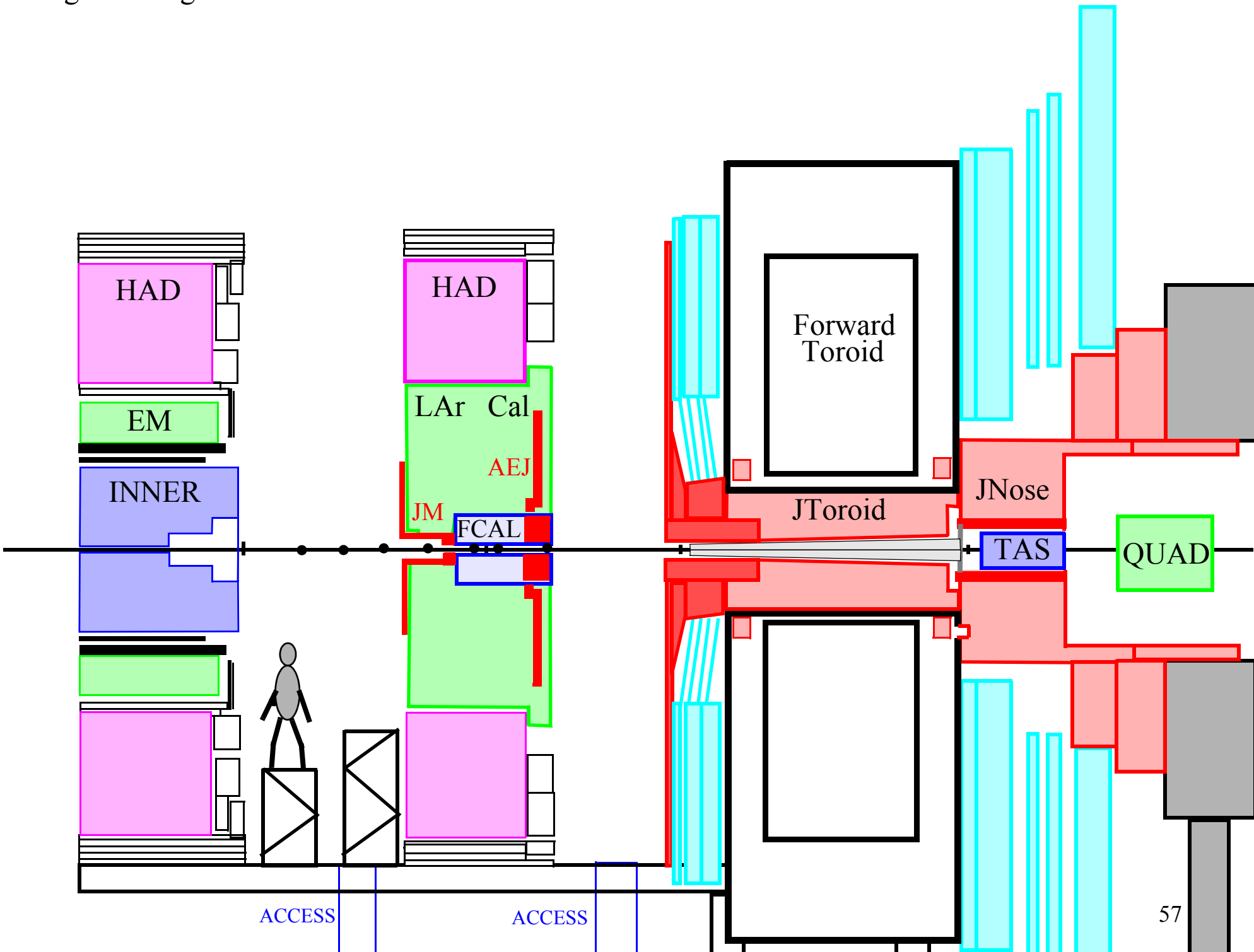
17. The endcap calorimeter is moved forward.



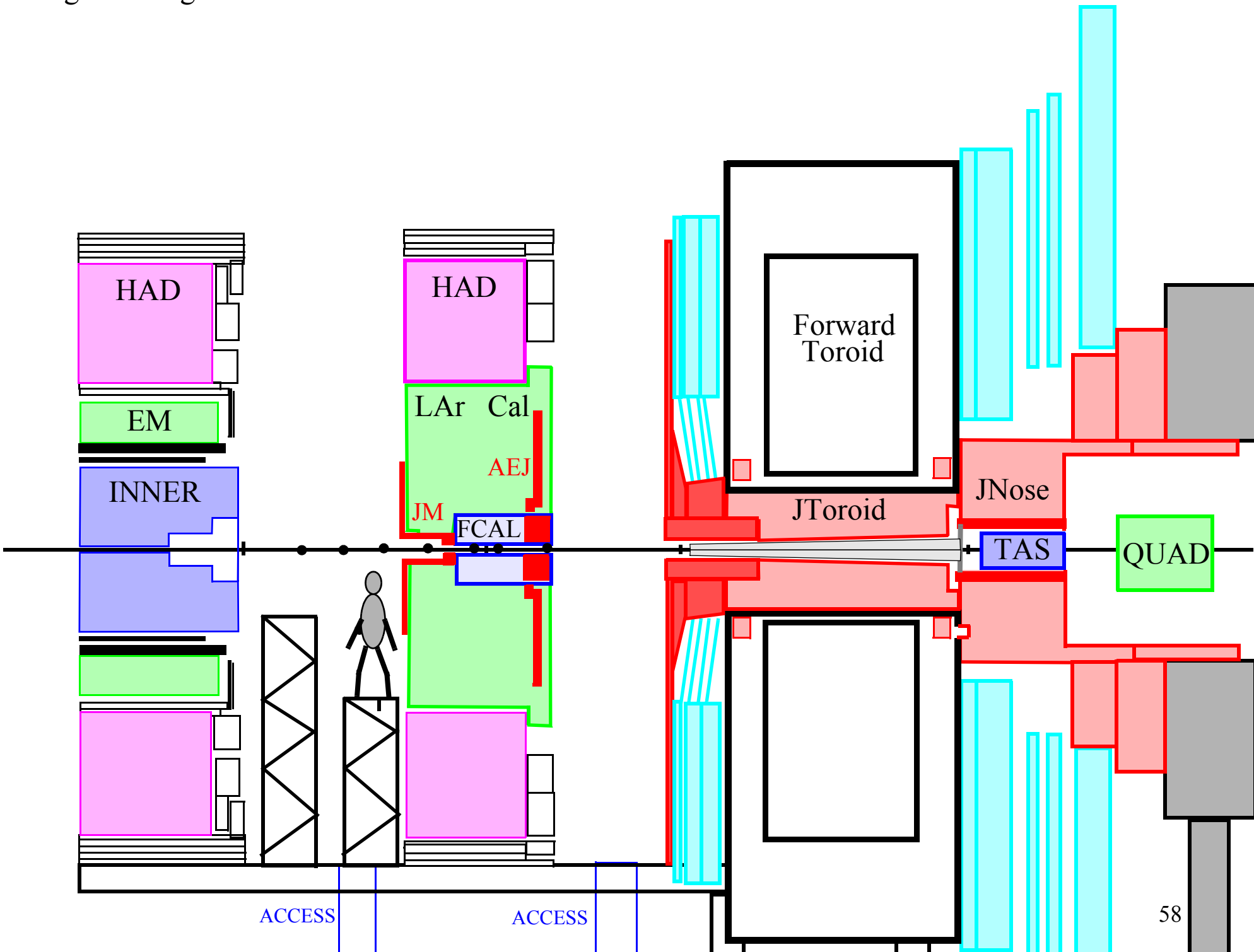
17. The endcap calorimeter is moved forward.



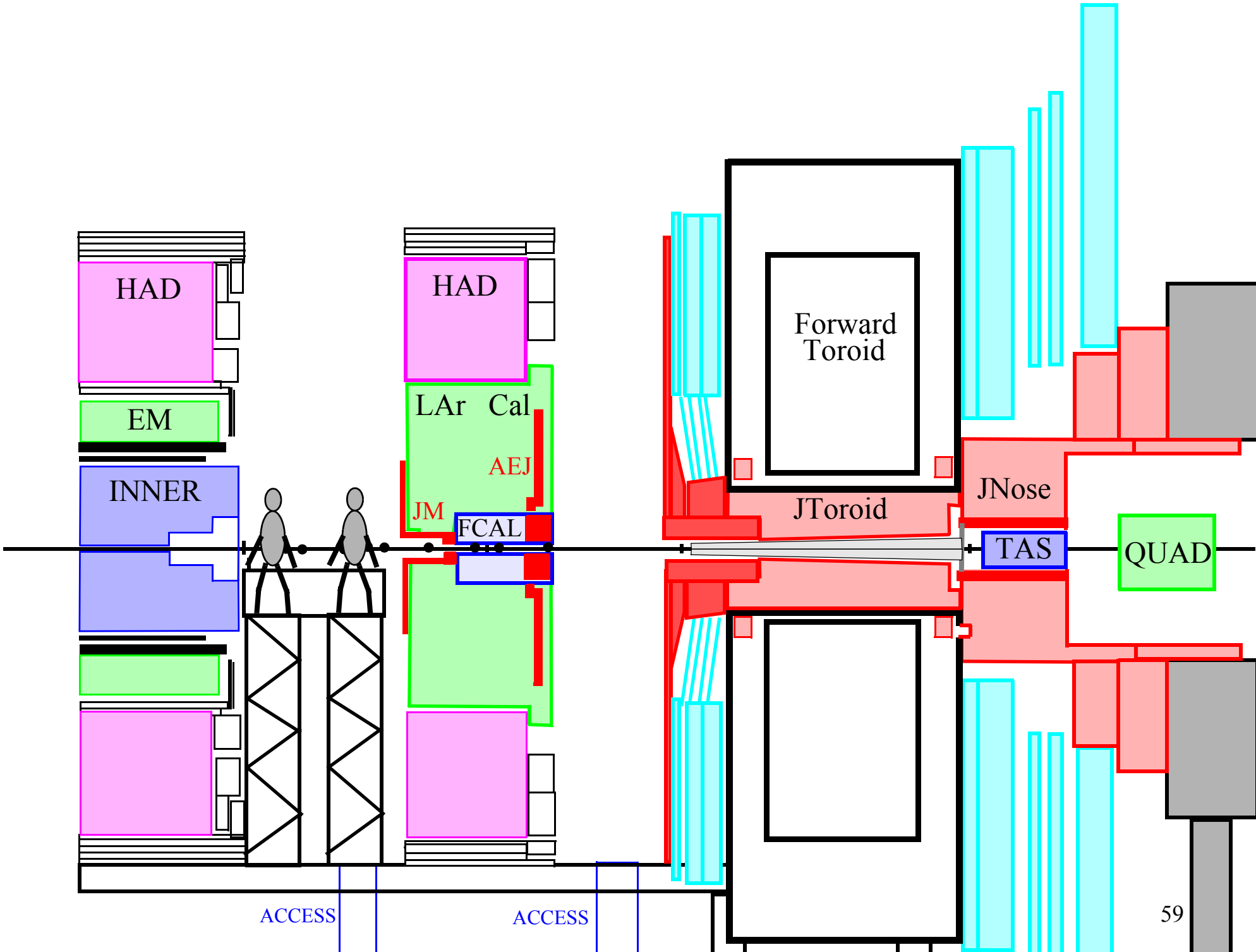
18. Scaffolding is beeing built.



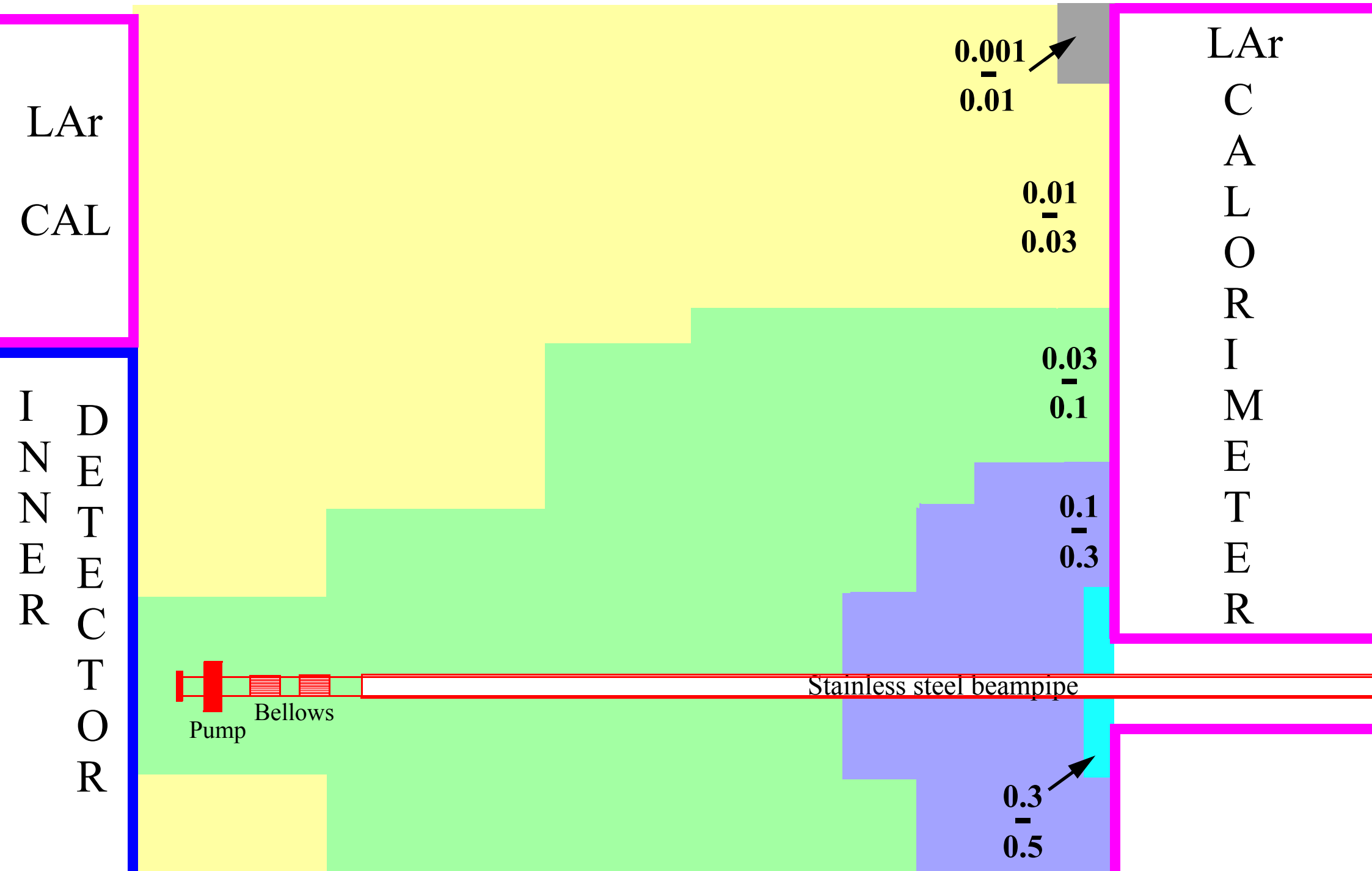
18. Scaffolding is beeing built.



19. Maintenance of the inner detector.

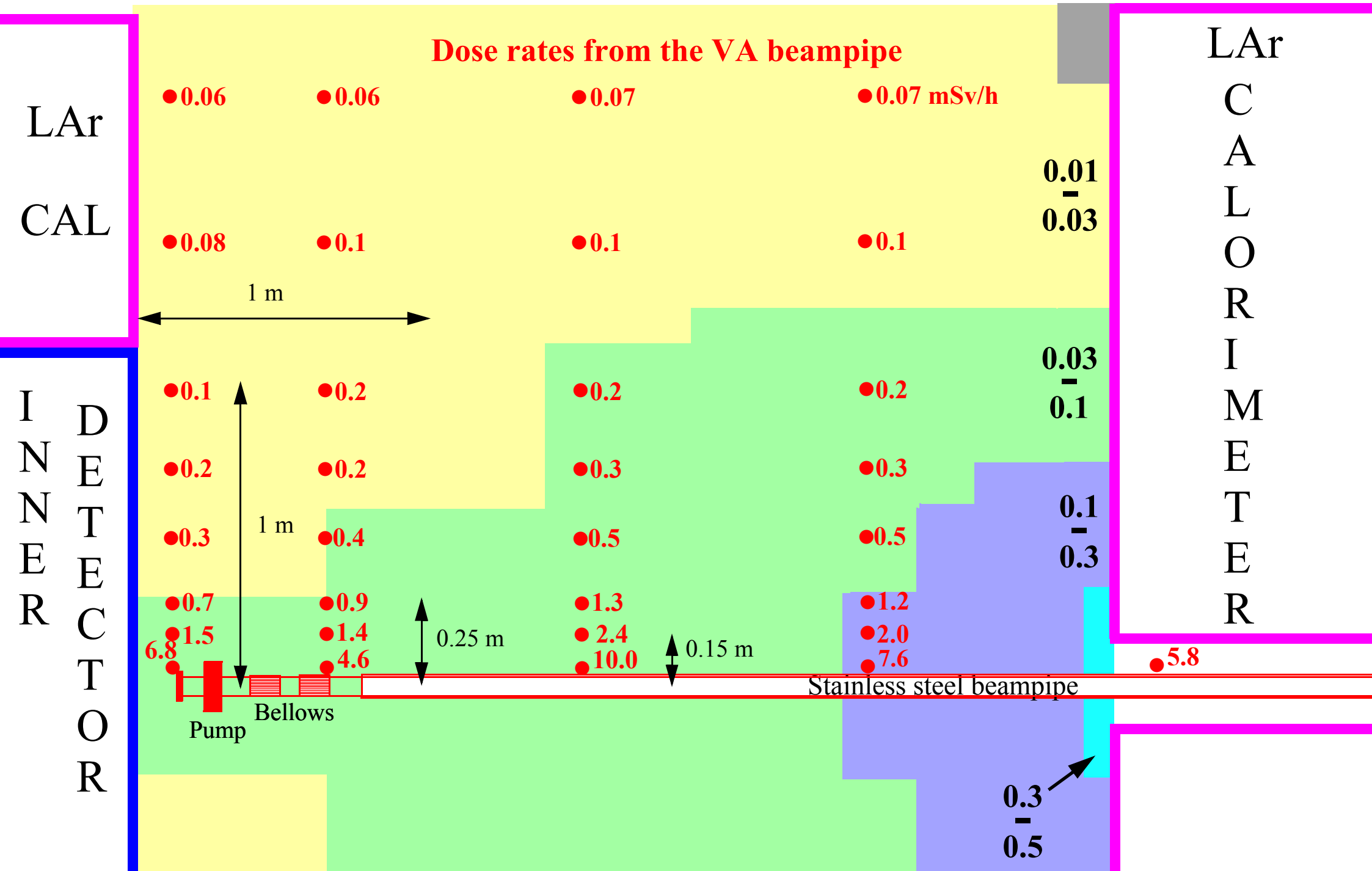


Dose rates after 10 years running and 5 days cooling

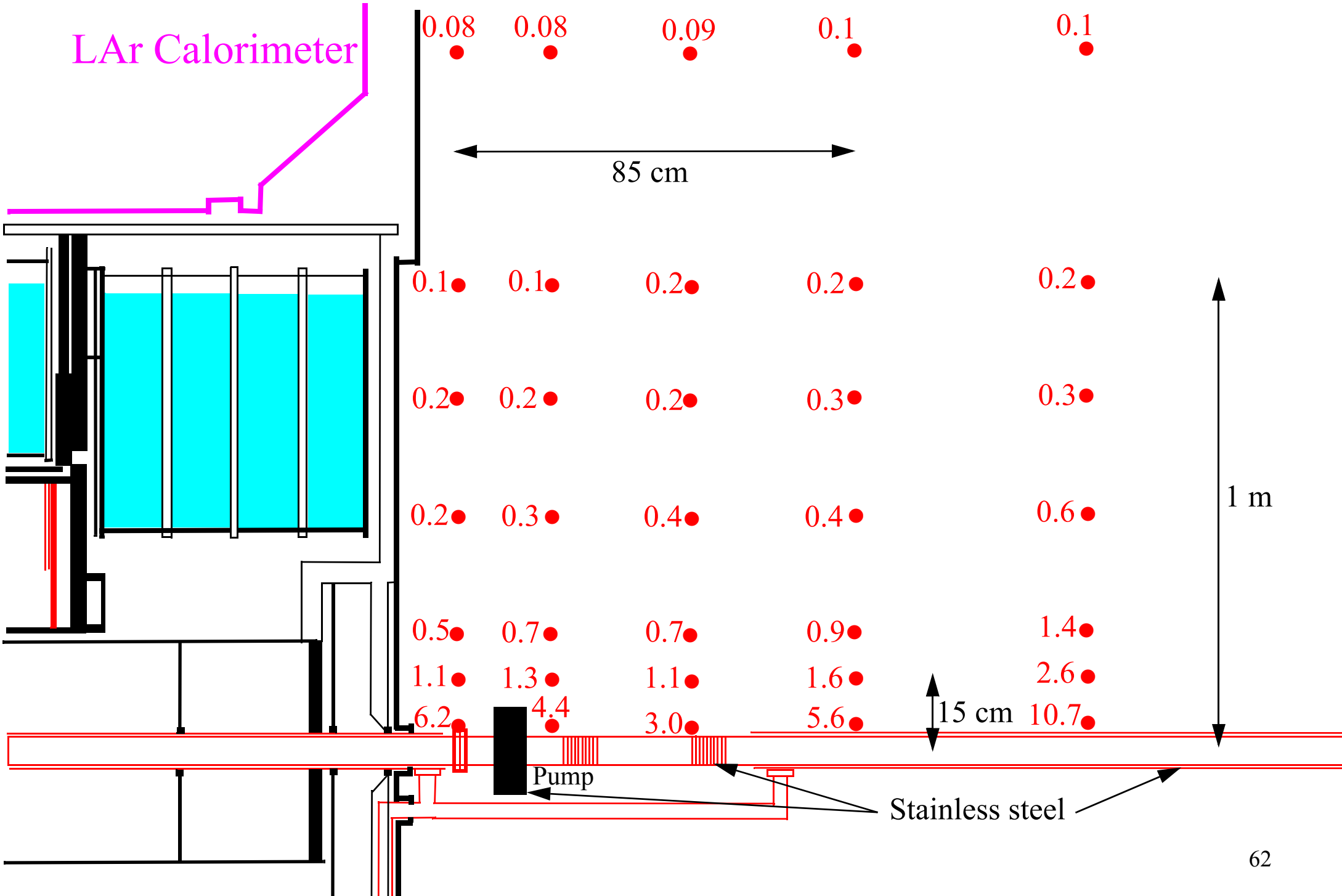
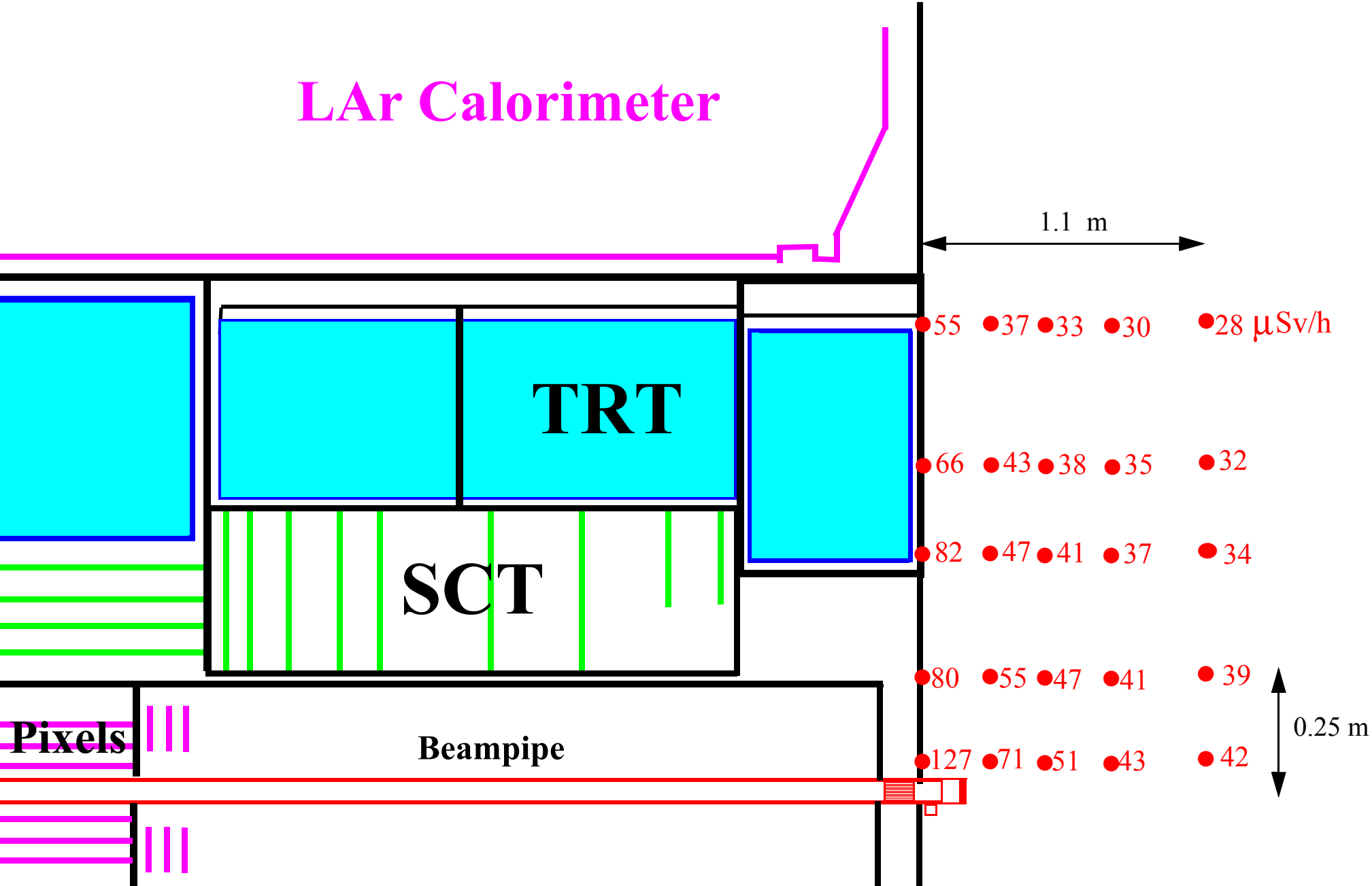


Dose rates after 10 years running and 5 days cooling

Dose rate in mSv/h
from the calorimeters



Dose rates in mSv/h from the VA beampipe after 10 years running and 5 days cooling.



Dose rates in μSv/h from the Pixels+SCT+TRT+LAr cal.+VI beampipe after a 100 day run and 5 days cooling. Calculation by M. Morev.