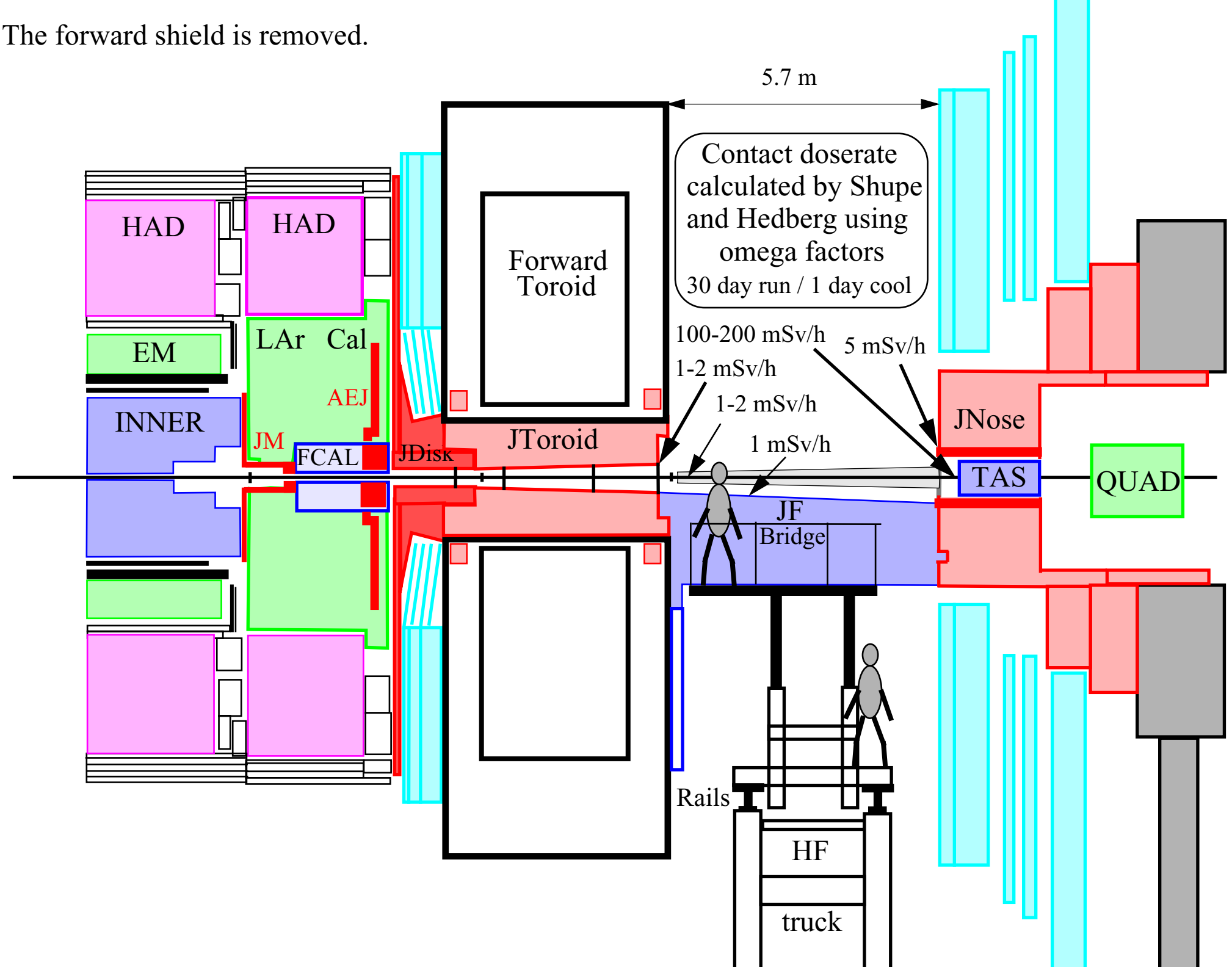
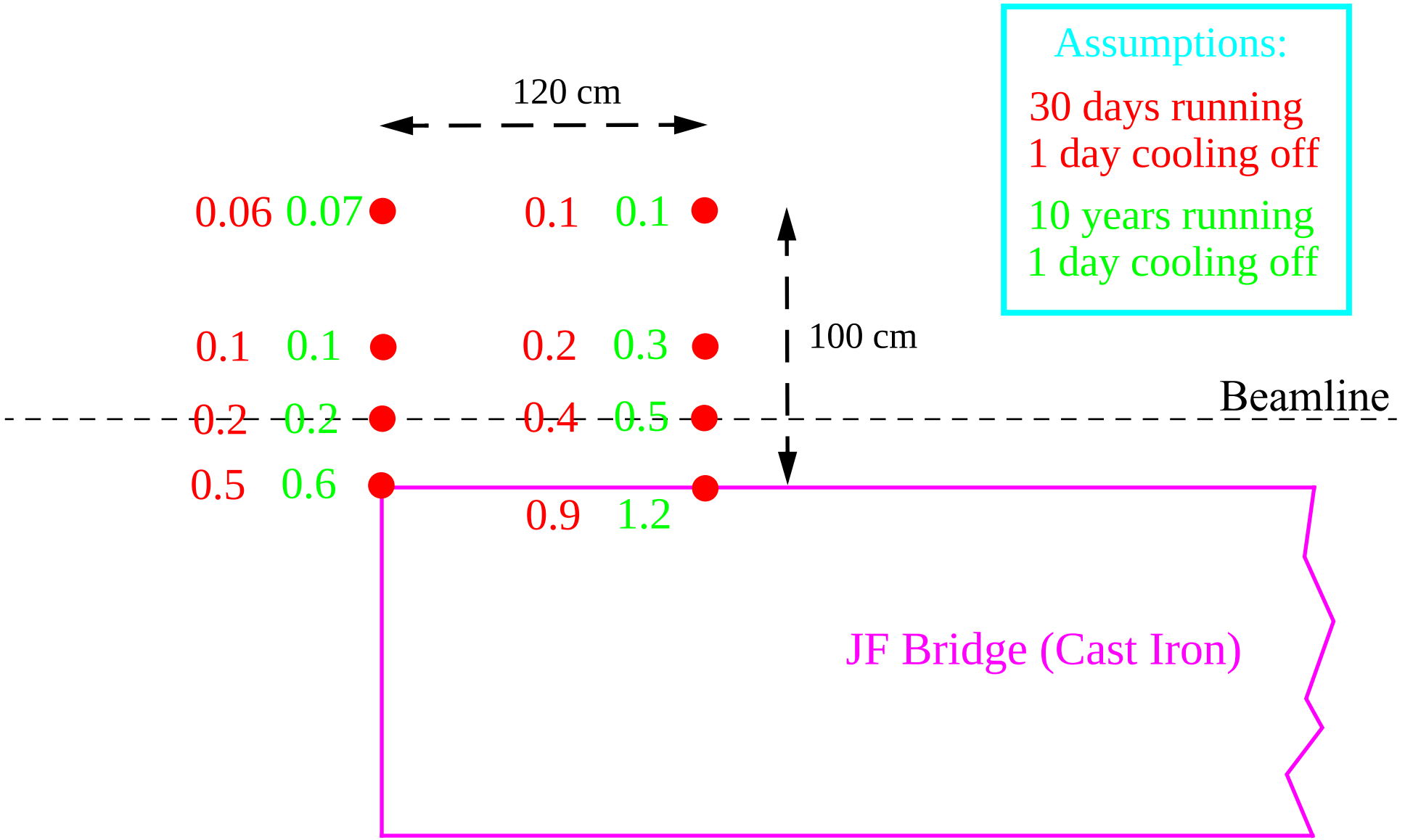
1. The forward shield is removed.

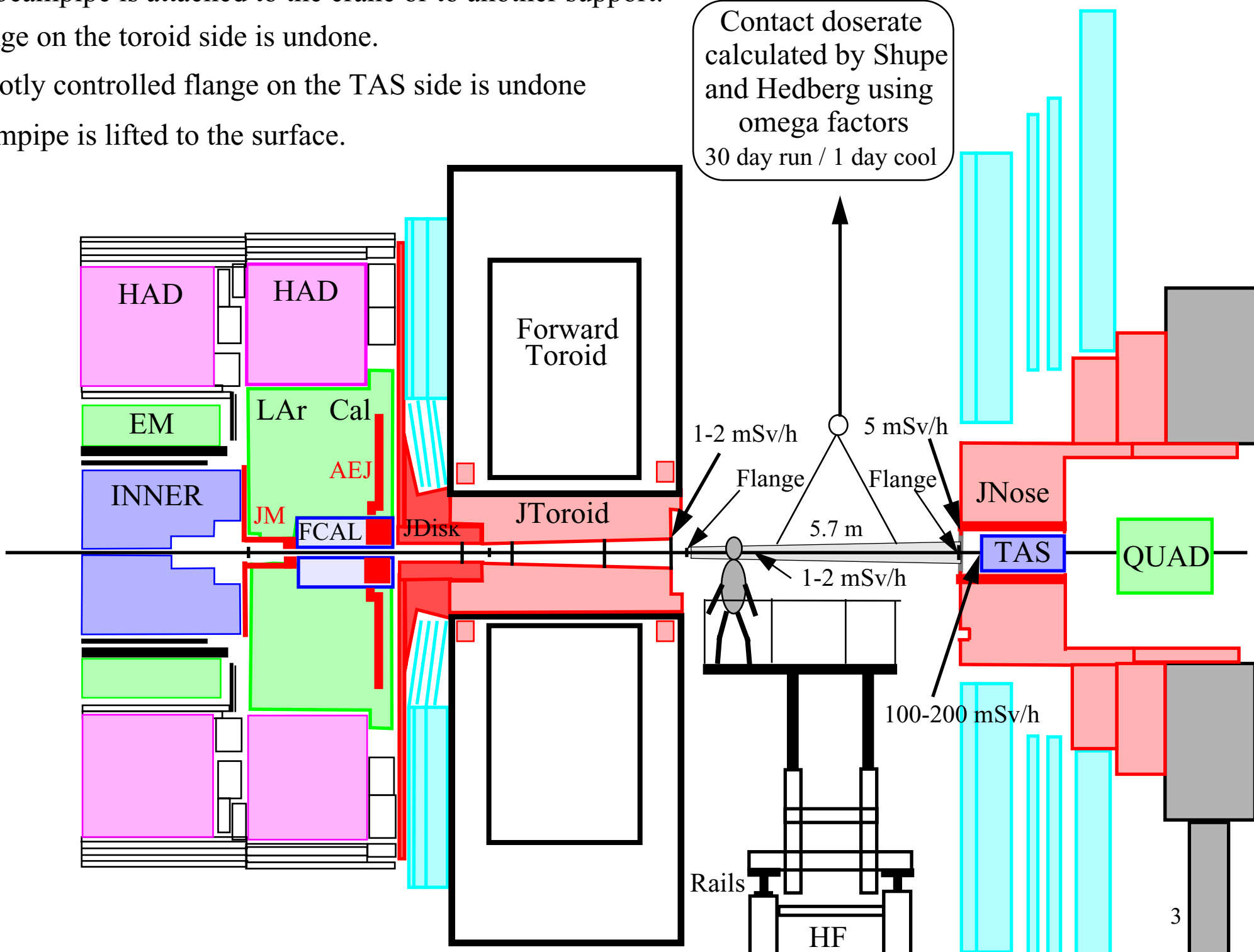


Dose rates in mSv/h around the bridge section of the JF

(calculation by M. Morev)

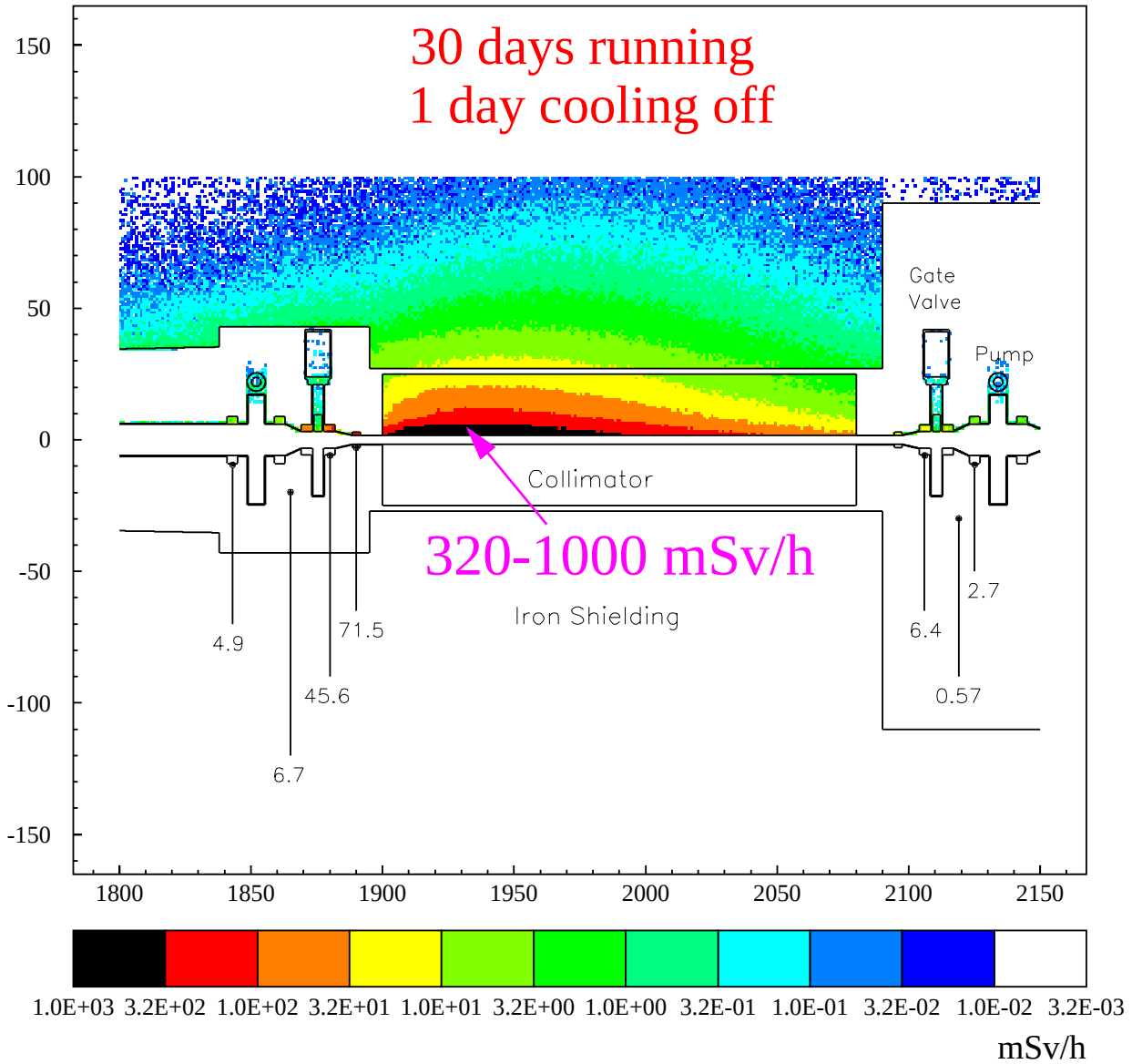


2. The VJ beampipe is attached to the crane or to another support.
3. The flange on the toroid side is undone.
4. The remotly controlled flange on the TAS side is undone
5. The beampipe is lifted to the surface.

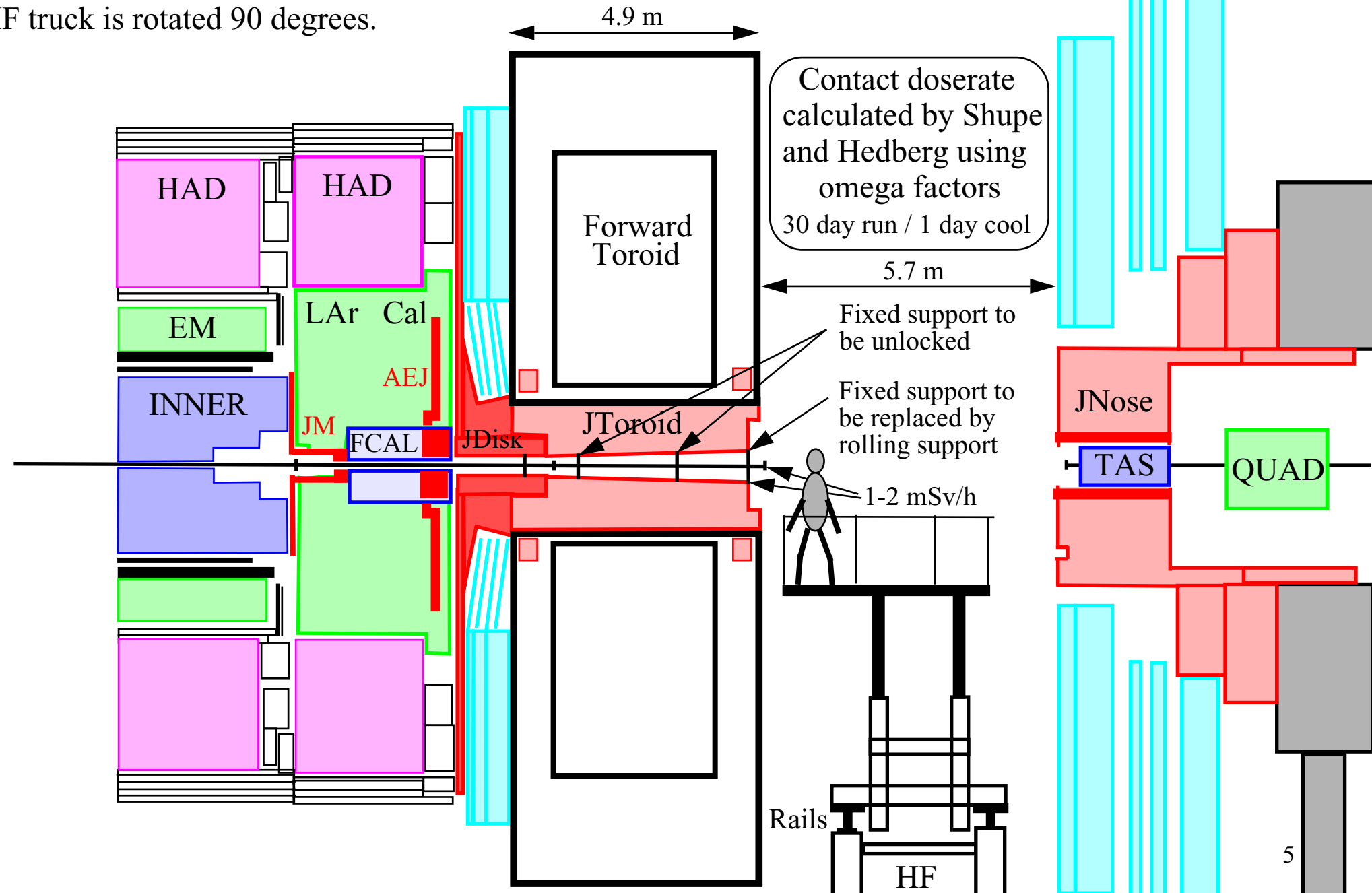


Dose rates in mSv/h around the TAS collimator

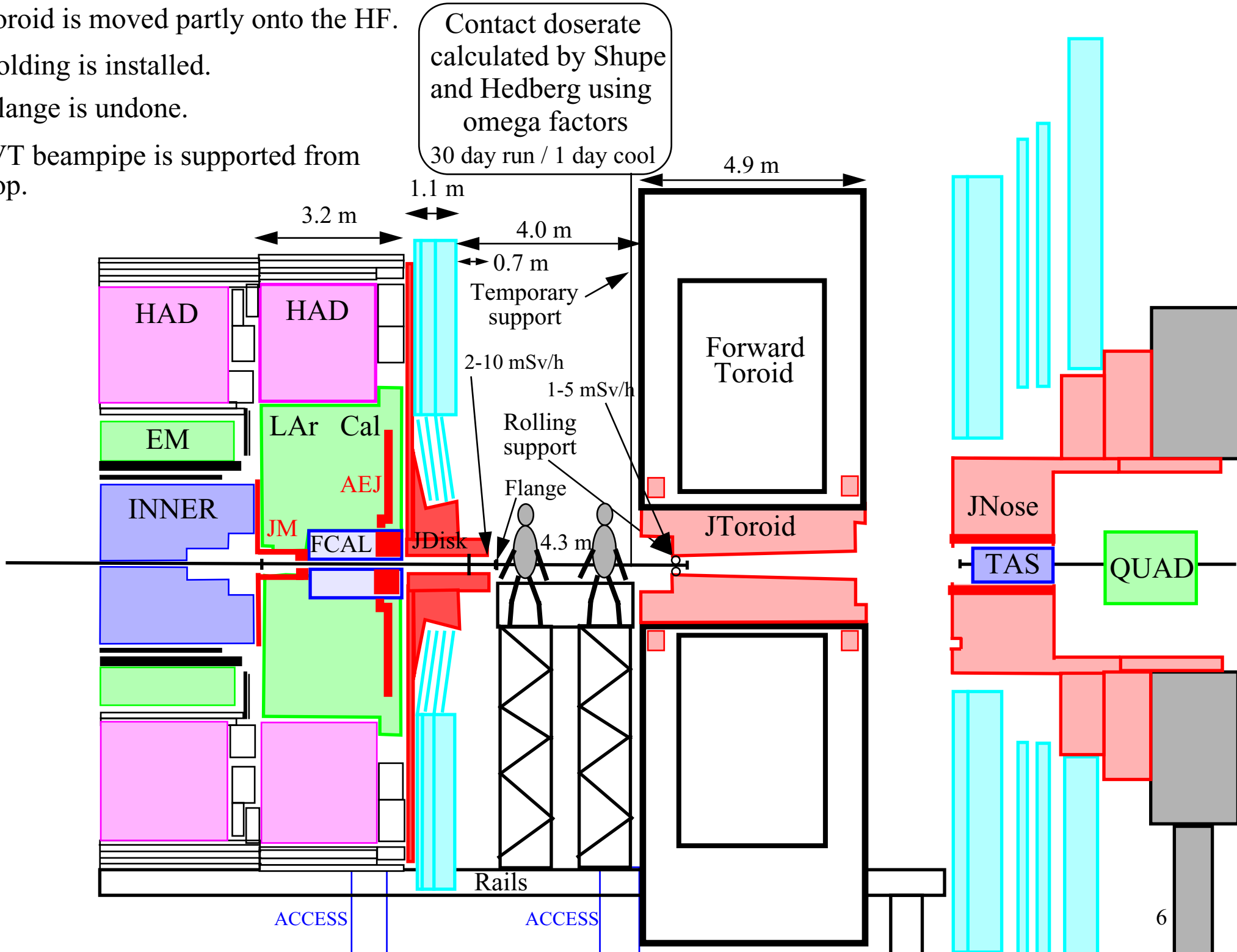
(calculation by I. Dawson and G. Stevenson using omega factors)

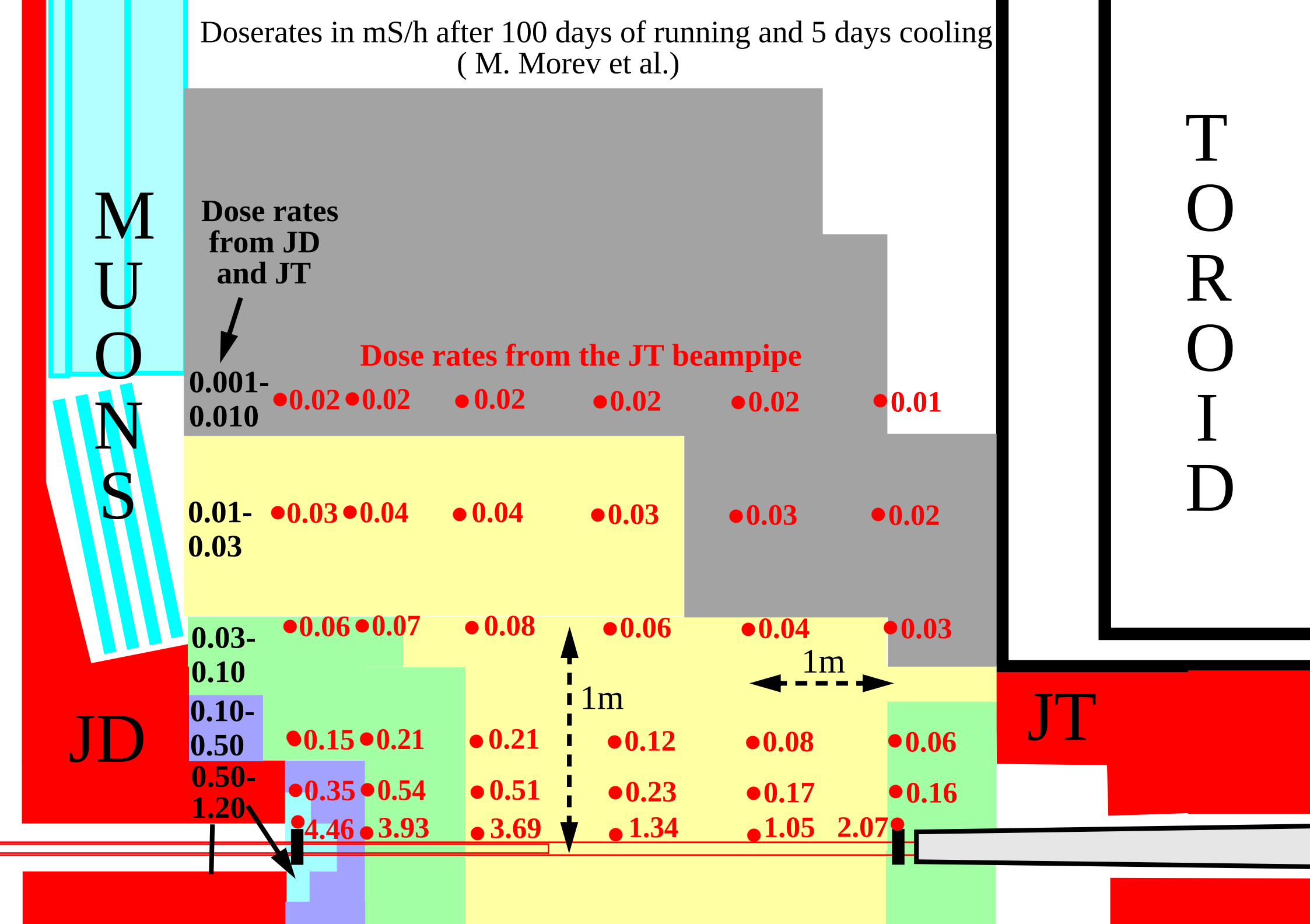


6. The two fixed supports inside the toroid shielding are unlocked.
7. The fixed support at the end of the toroid shield is removed and replaced with a rolling support.
8. The HF platform is removed.
9. The HF truck is rotated 90 degrees.

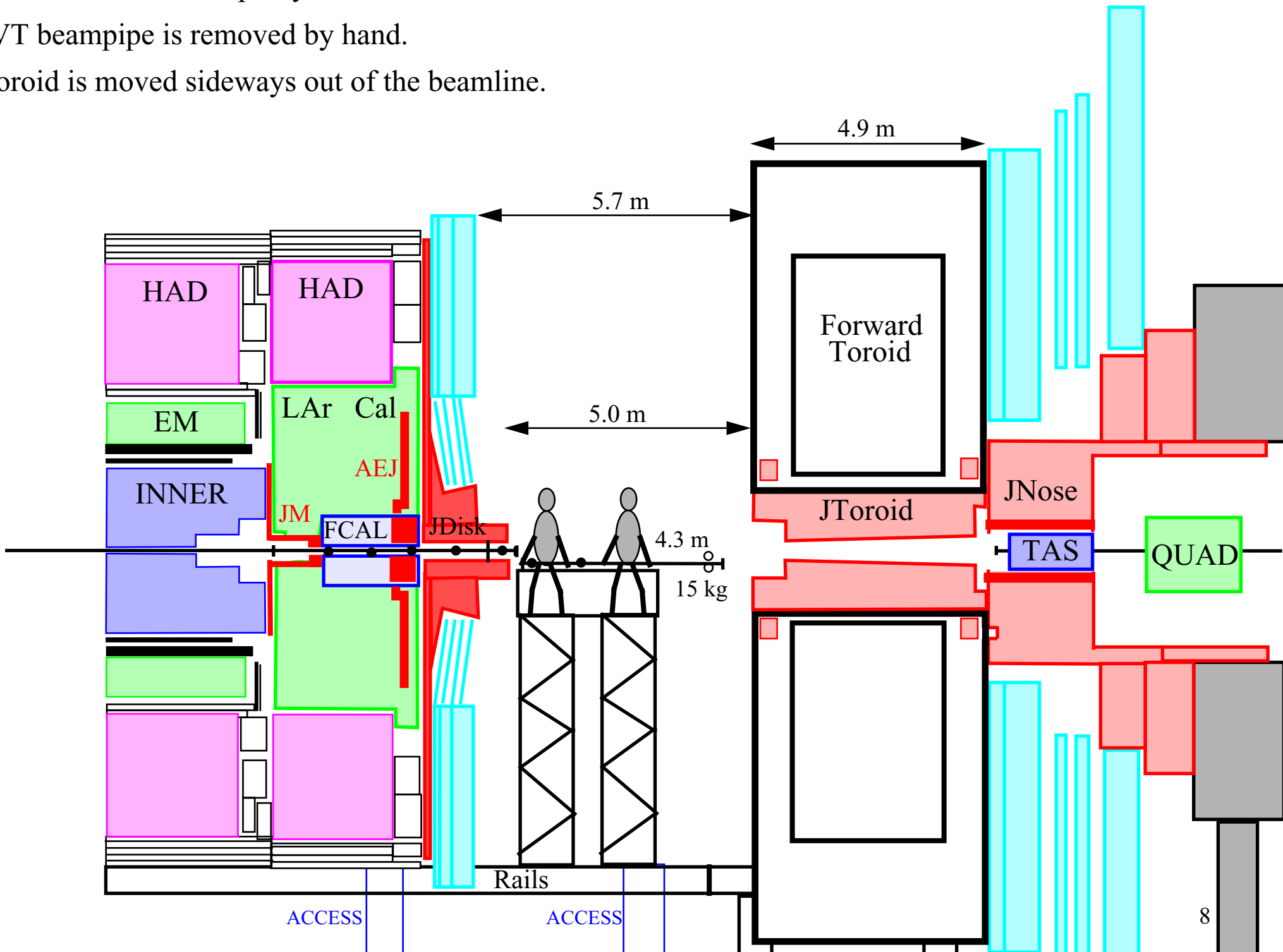


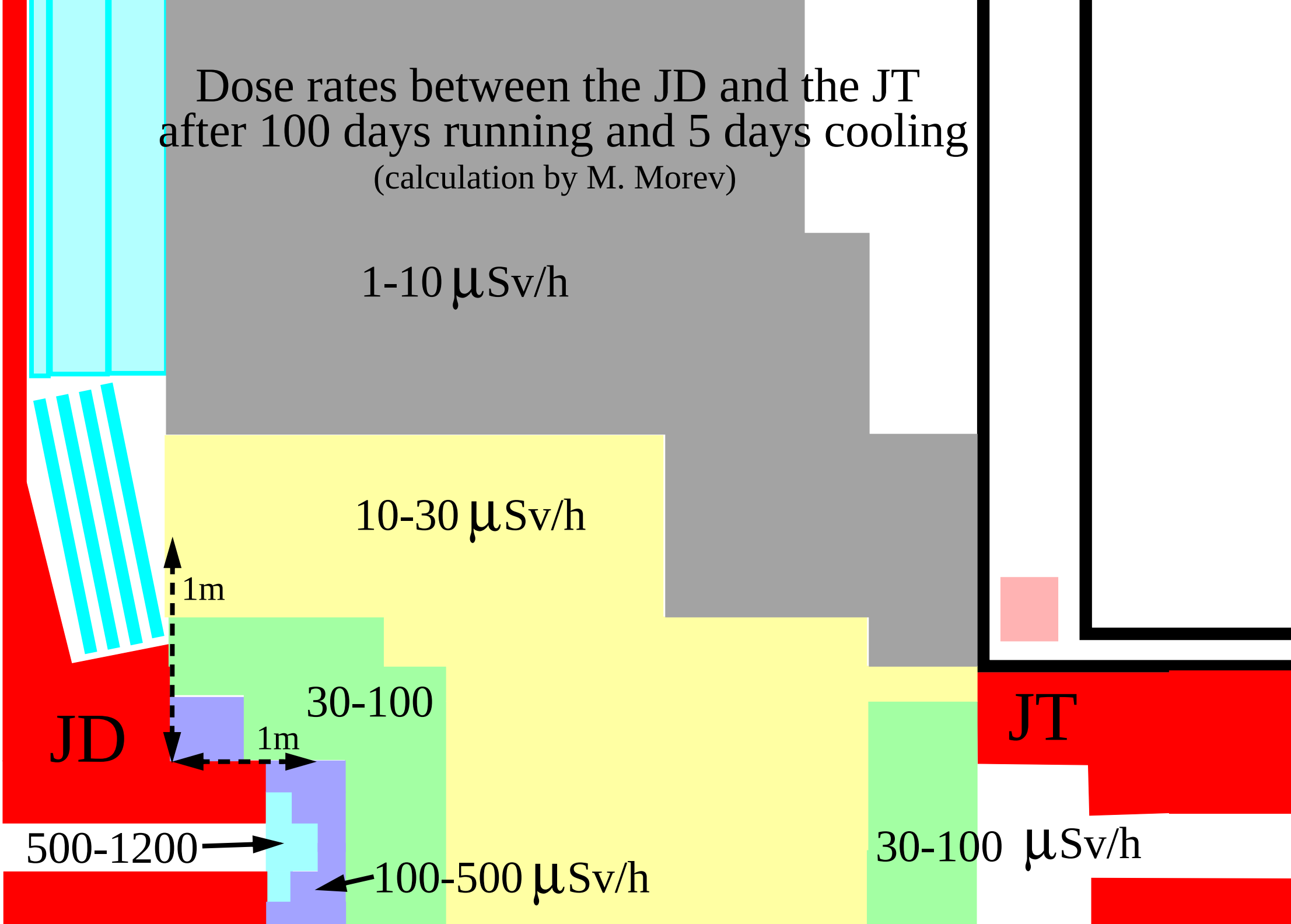
10. The toroid is moved partly onto the HF.
11. Scaffolding is installed.
12. The flange is undone.
13. The VT beampipe is supported from the top.




Doserates in mS/h after 100 days of running and 5 days cooling
(M. Morev et al.)
MUONS
TOROID
Dose rates from JD and JT
Dose rates from the JT beampipe
0.001-0.010
0.02 0.02 0.02 0.02 0.02 0.01
0.01-0.03
0.03 0.04 0.04 0.03 0.03 0.02
0.03-0.10
0.06 0.07 0.08 0.06 0.04 0.03
0.10-0.50
0.15 0.21 0.21 0.12 0.08 0.06
0.50-1.20
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
JD
JT

14. The toroid is moved completly back.
15. The VT beampipe is removed by hand.
16. The toroid is moved sideways out of the beamline.

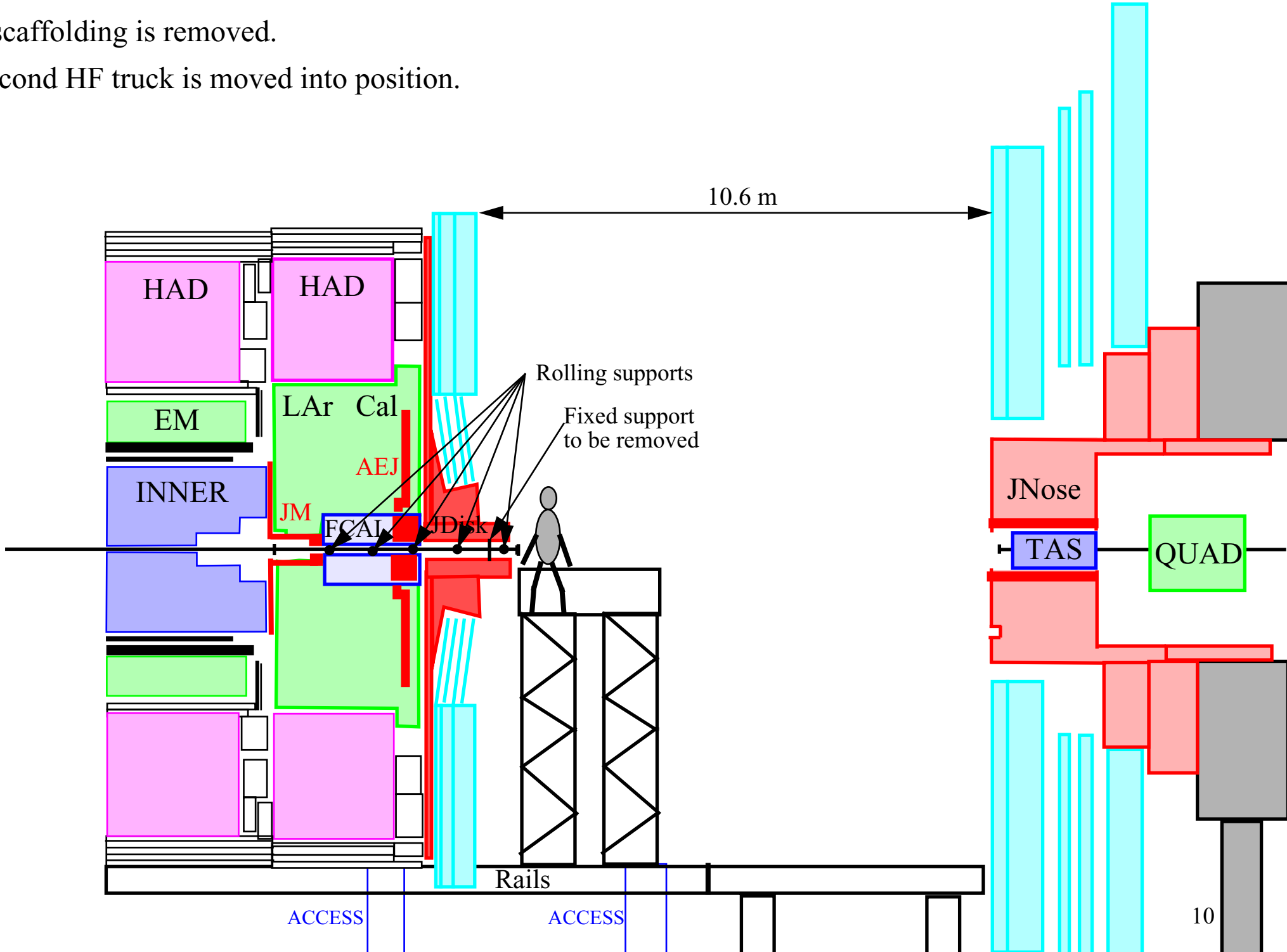



Dose rates between the JD and the JT
after 100 days running and 5 days cooling
(calculation by M. Morev)
1-10 μSv/h
10-30 μSv/h
1m
30-100
JD
1m
JT
500-1200
100-500 μSv/h
30-100 μSv/h

17. The fixed support is removed.

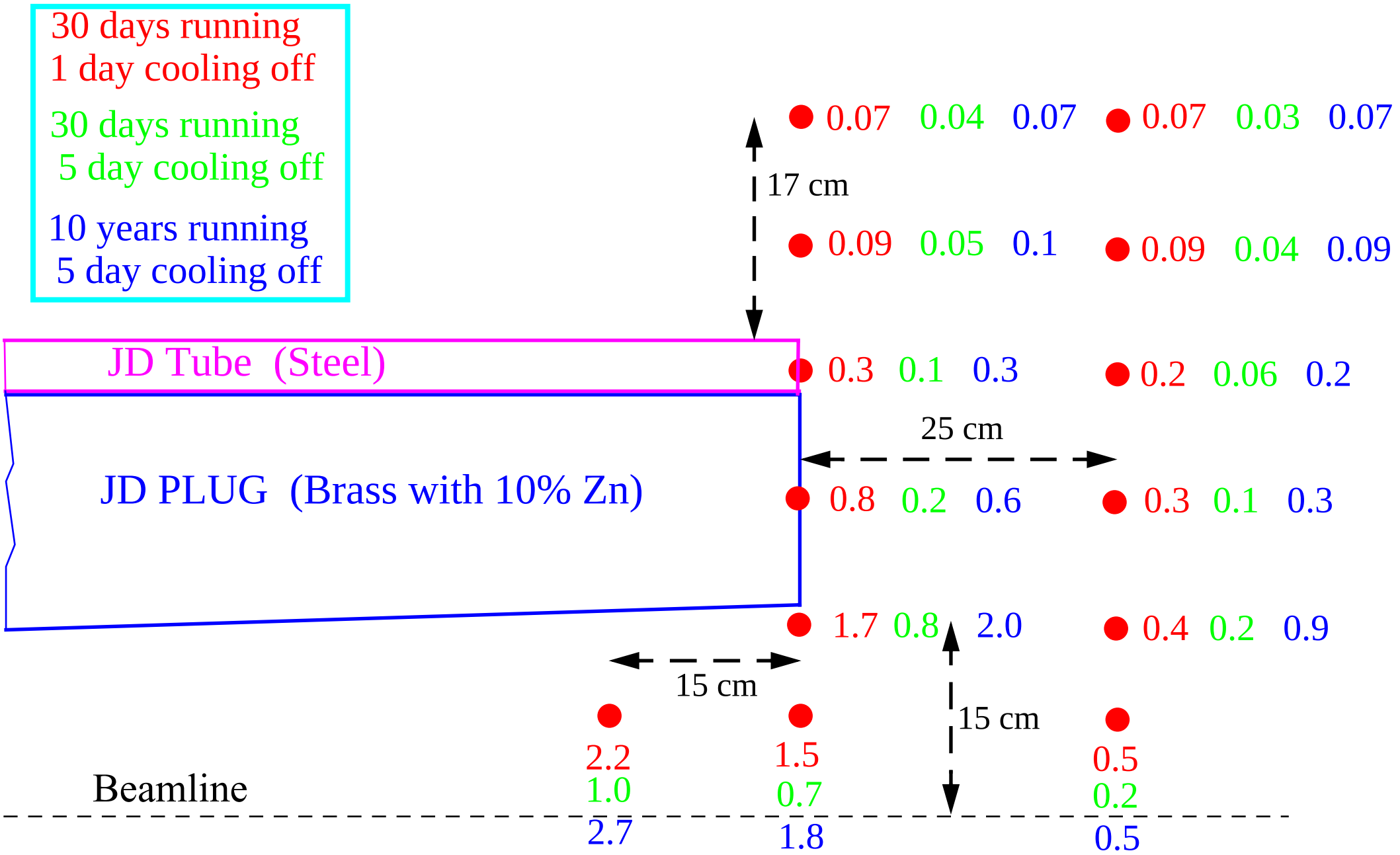
18. The scaffolding is removed.

19. A second HF truck is moved into position.



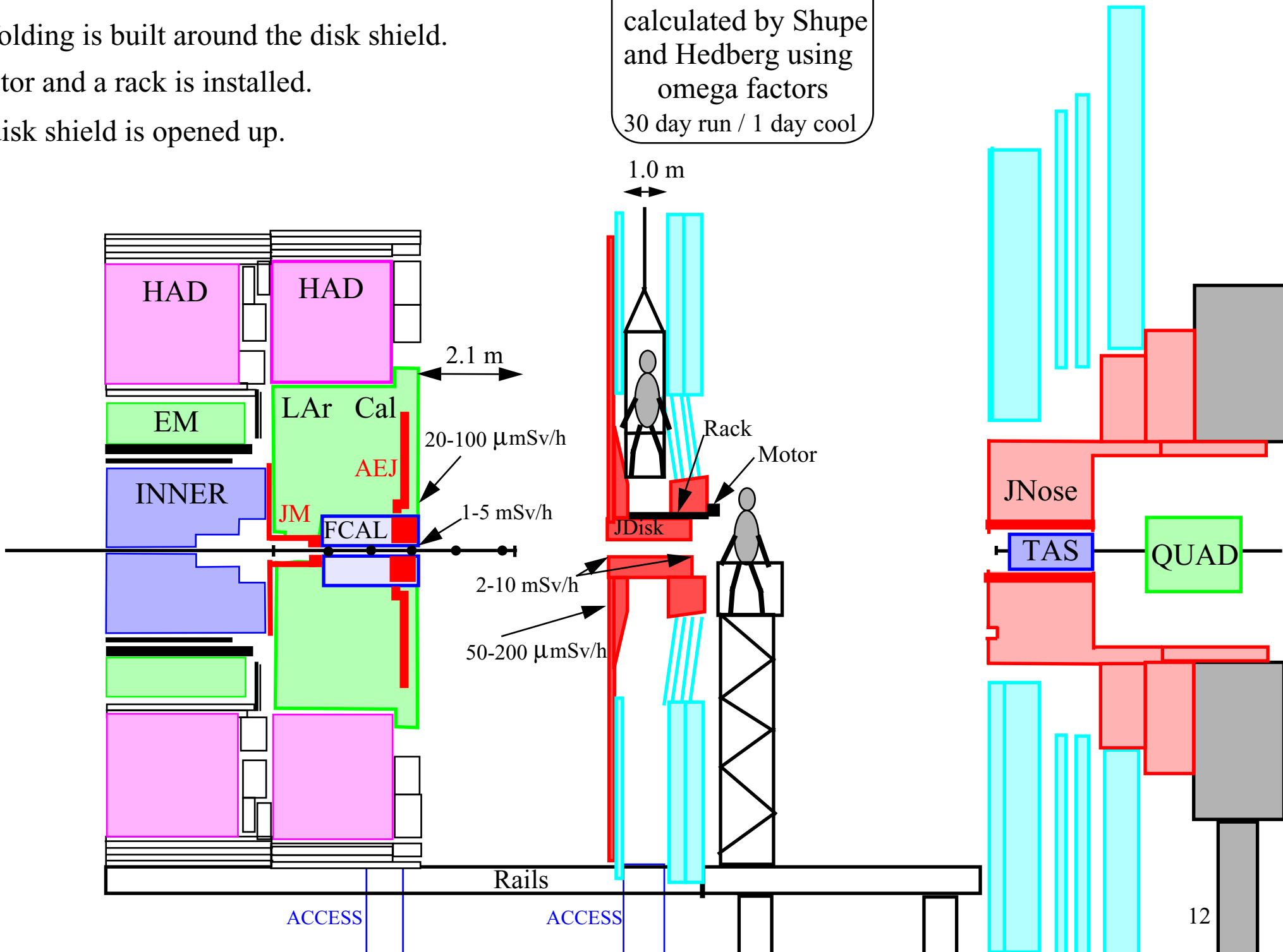
Dose rates in mSv/h at the back of the JD plug

(calculation by M. Morev)

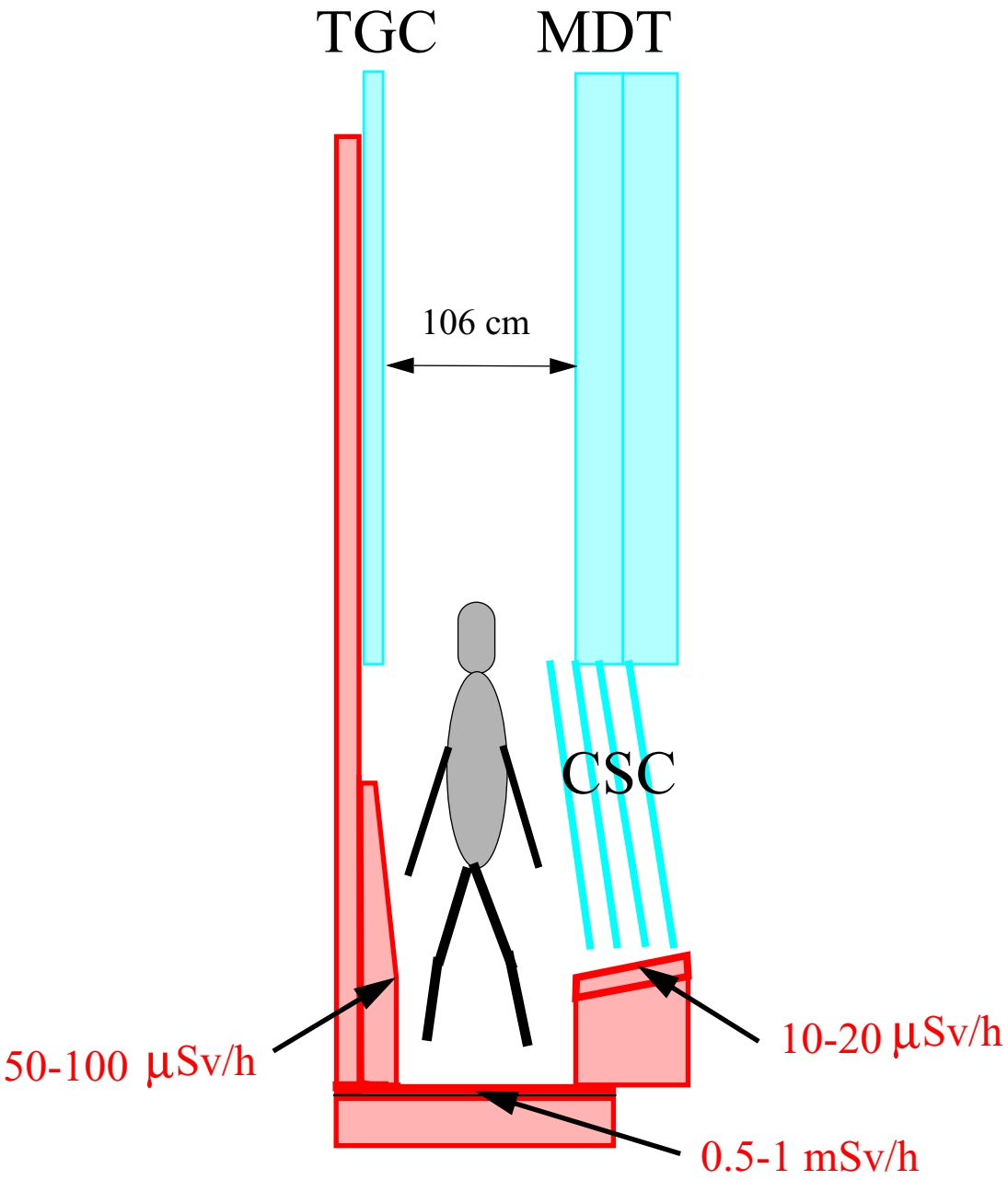


20. The disk shield is moved back.
21. Scaffolding is built around the disk shield.
22. A motor and a rack is installed.
23. The disk shield is opened up.

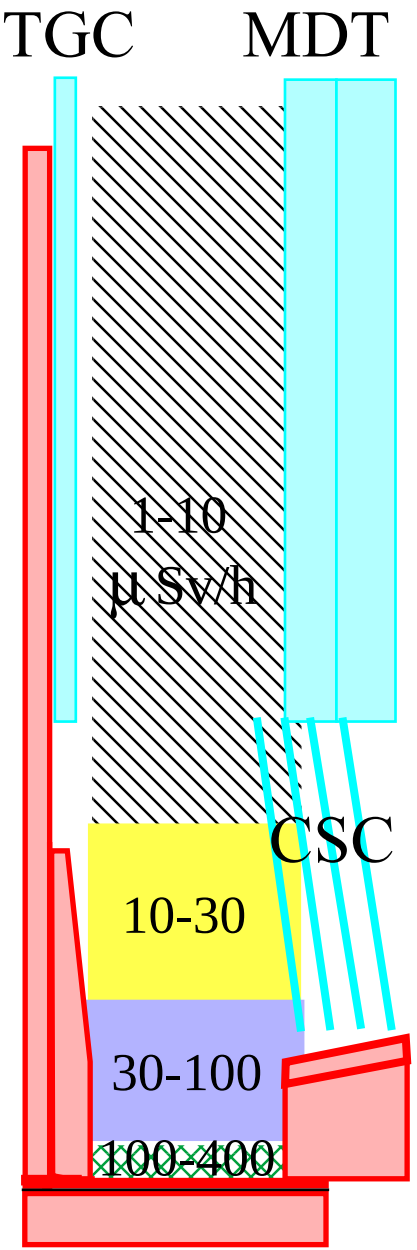
Contact doserate calculated by Shupe and Hedberg using omega factors
30 day run / 1 day cool



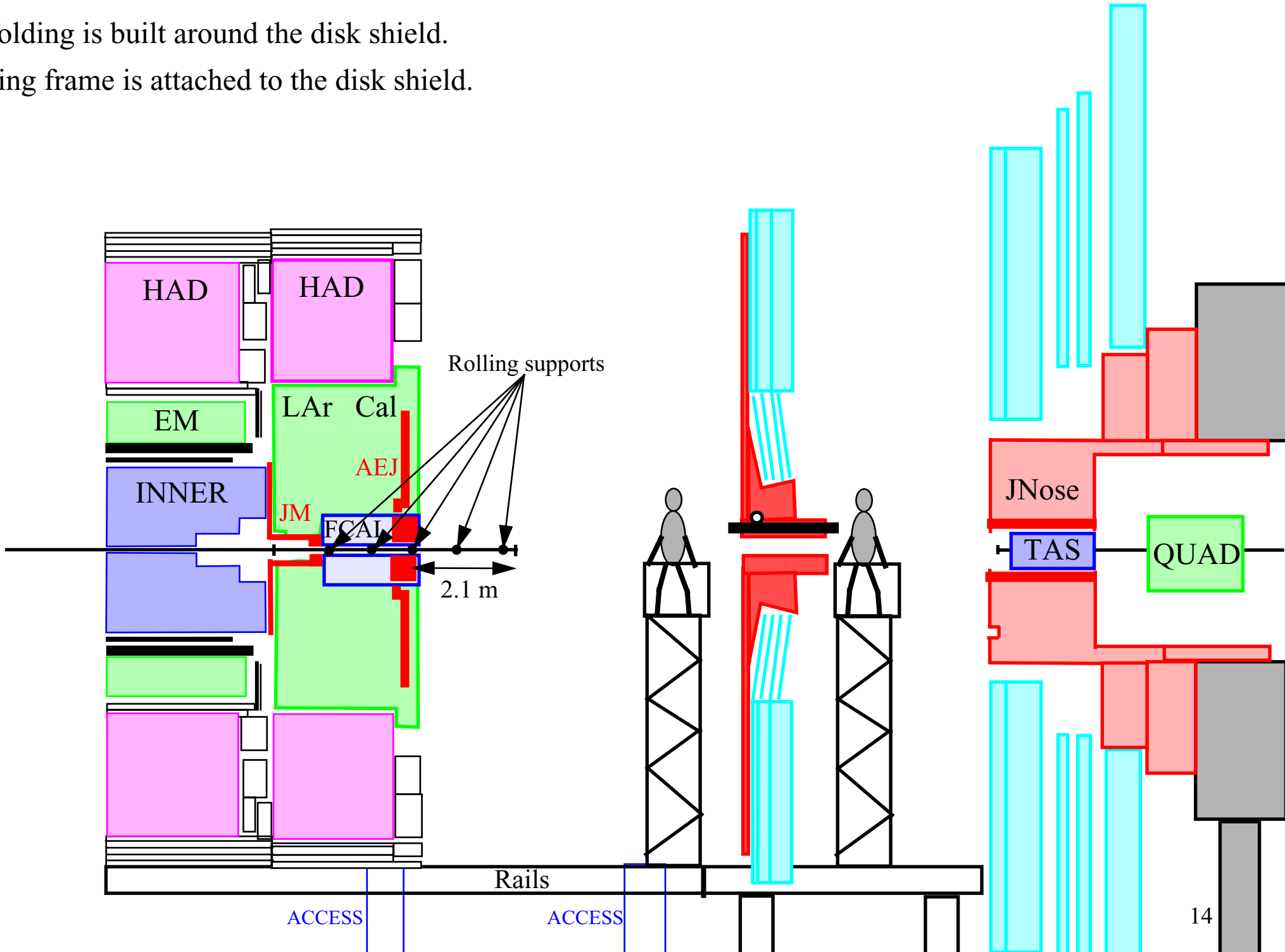
Contact doserate calculated by Shupe and Hedberg using omega factors.
30 day run / 1 day cooling



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

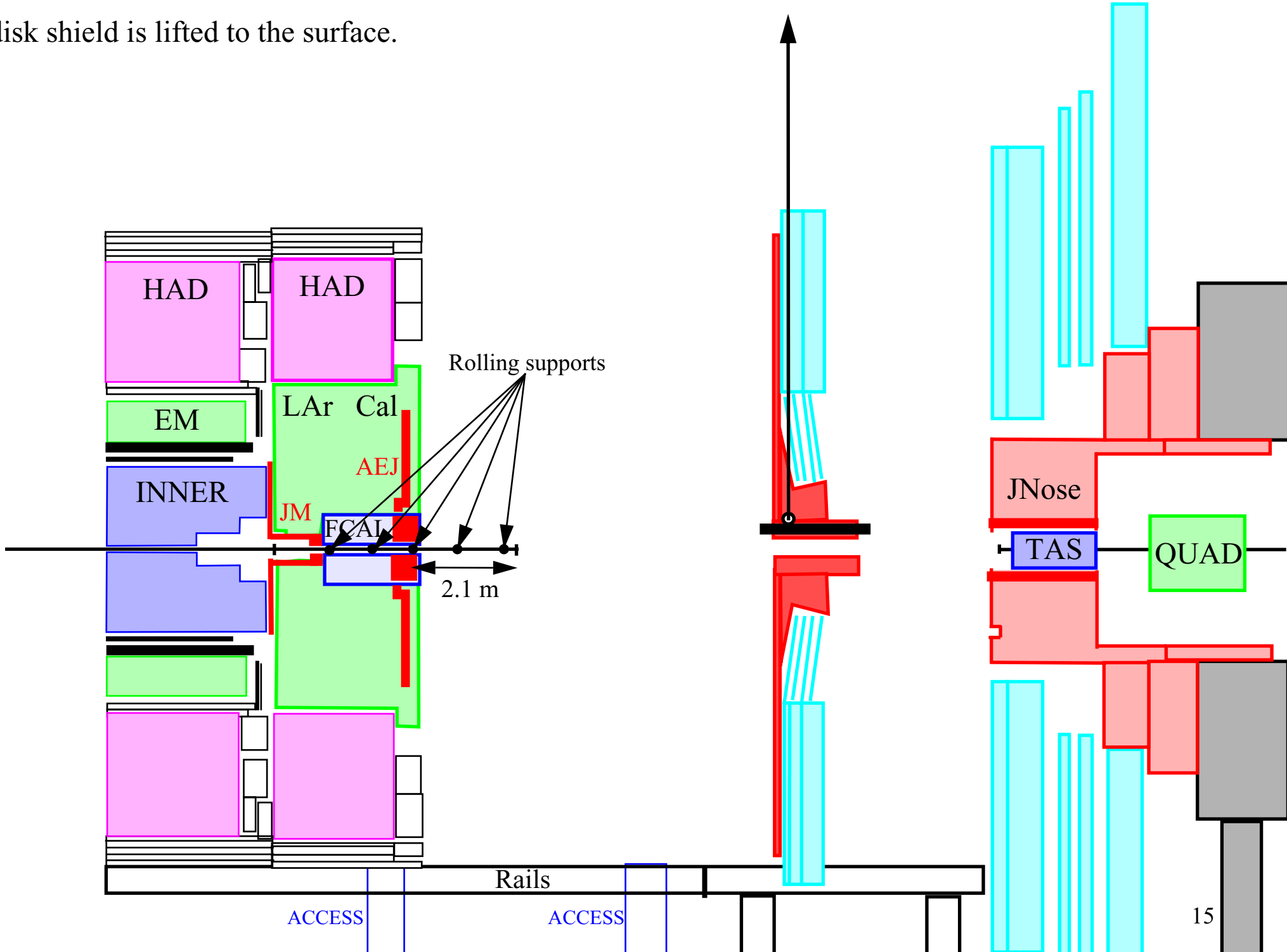


24. The disk shield is moved back onto the HF truck.
25. Scaffolding is built around the disk shield.
26. A lifting frame is attached to the disk shield.

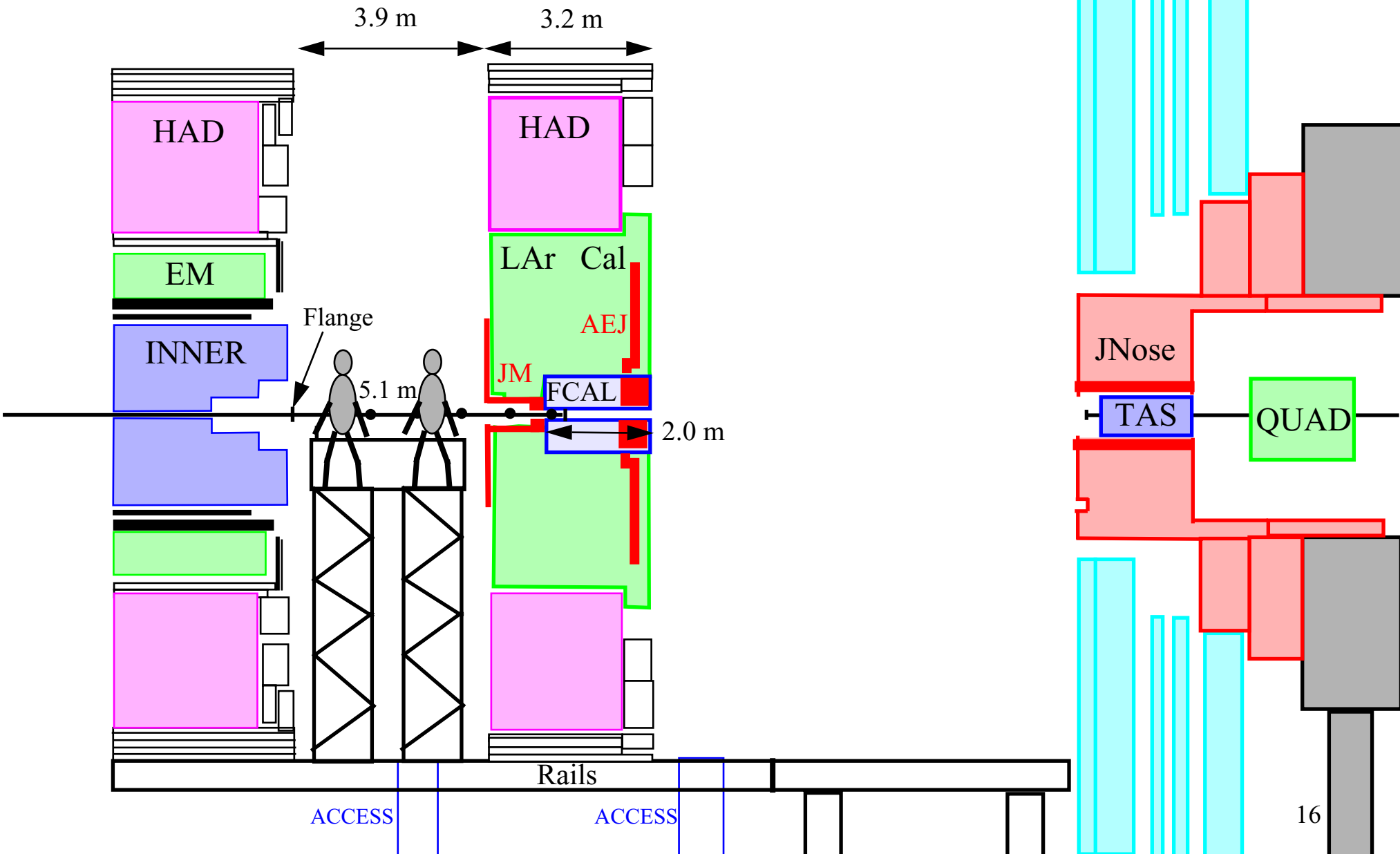


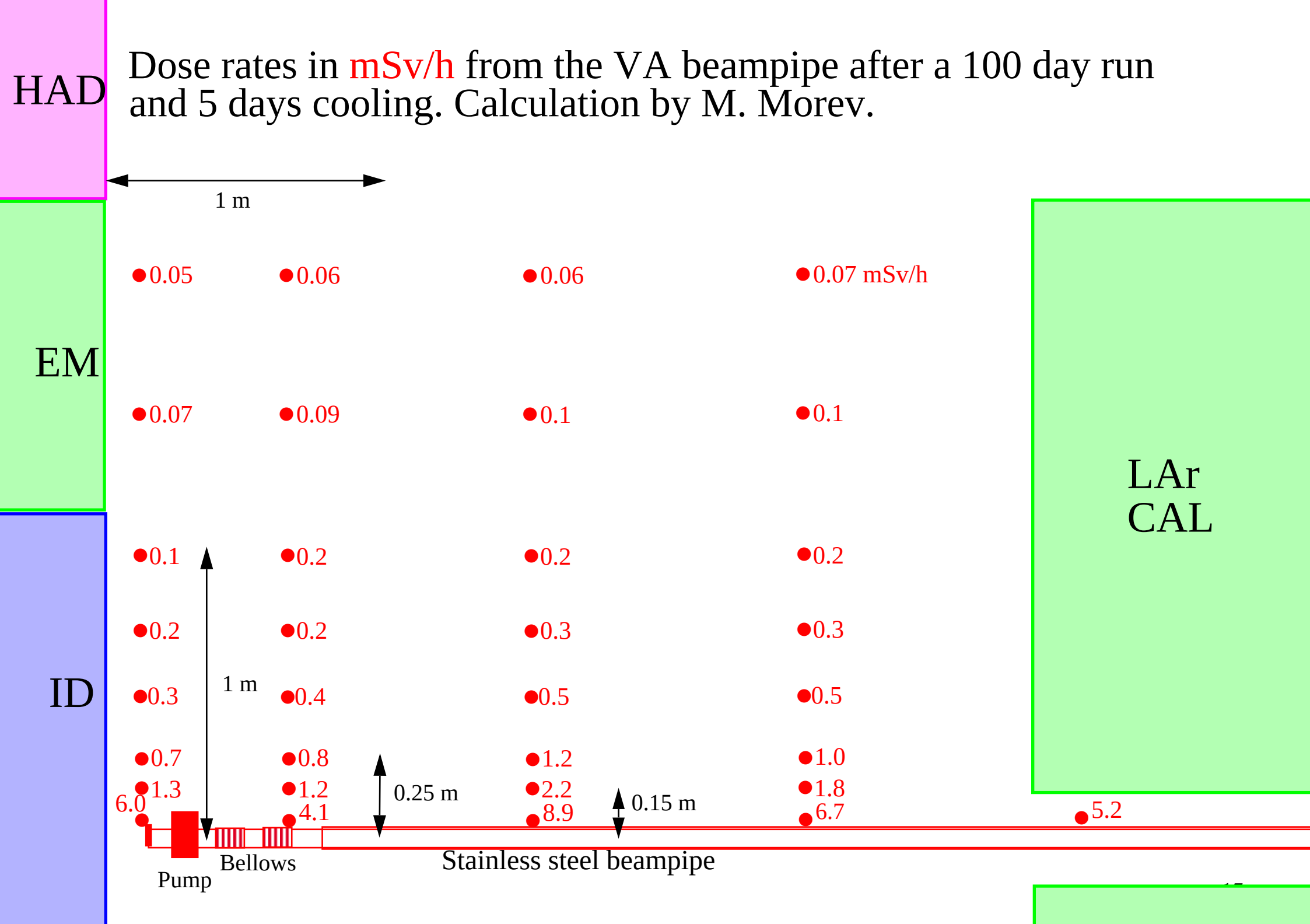
27. The scaffolding is removed.

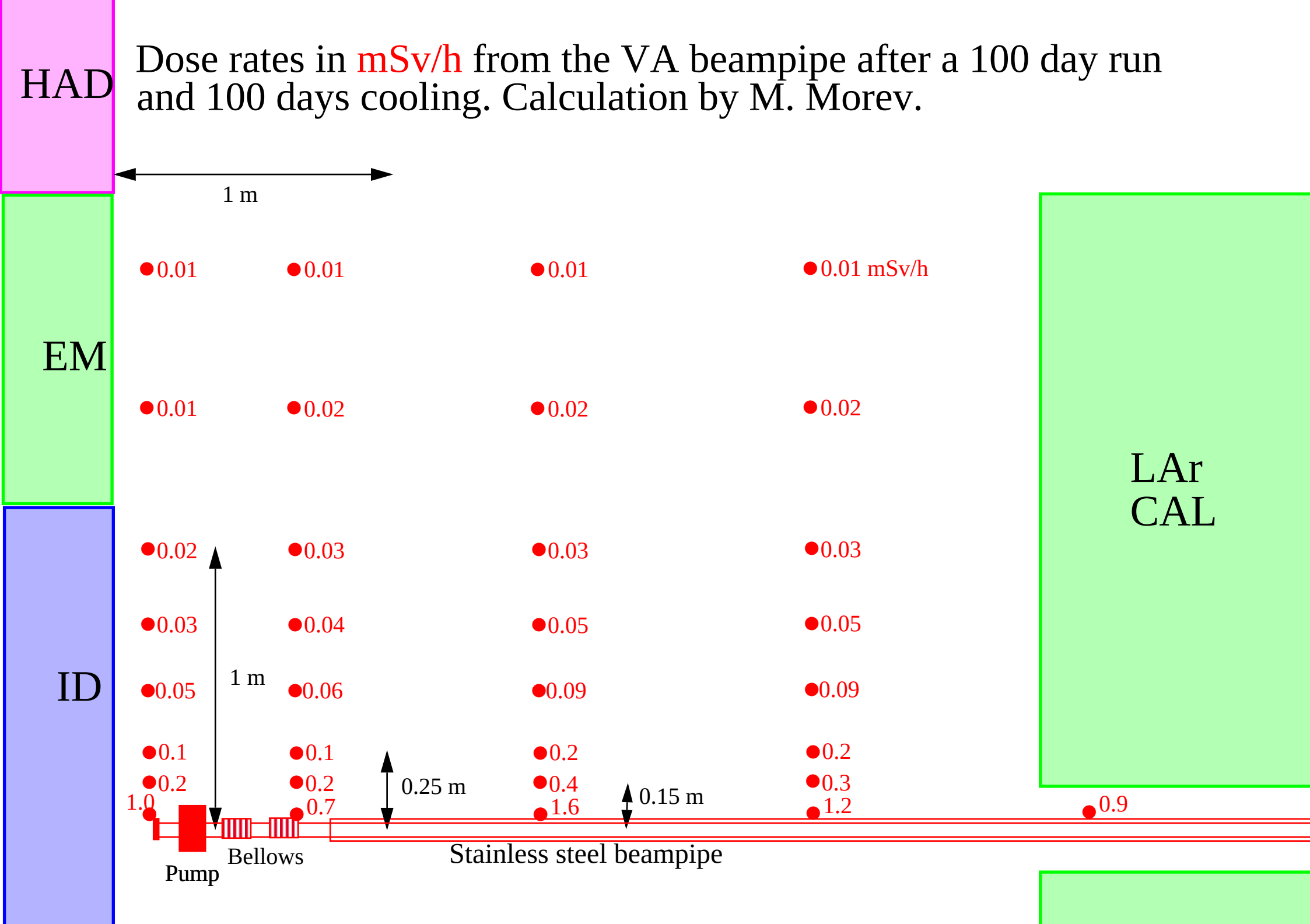
28. The disk shield is lifted to the surface.

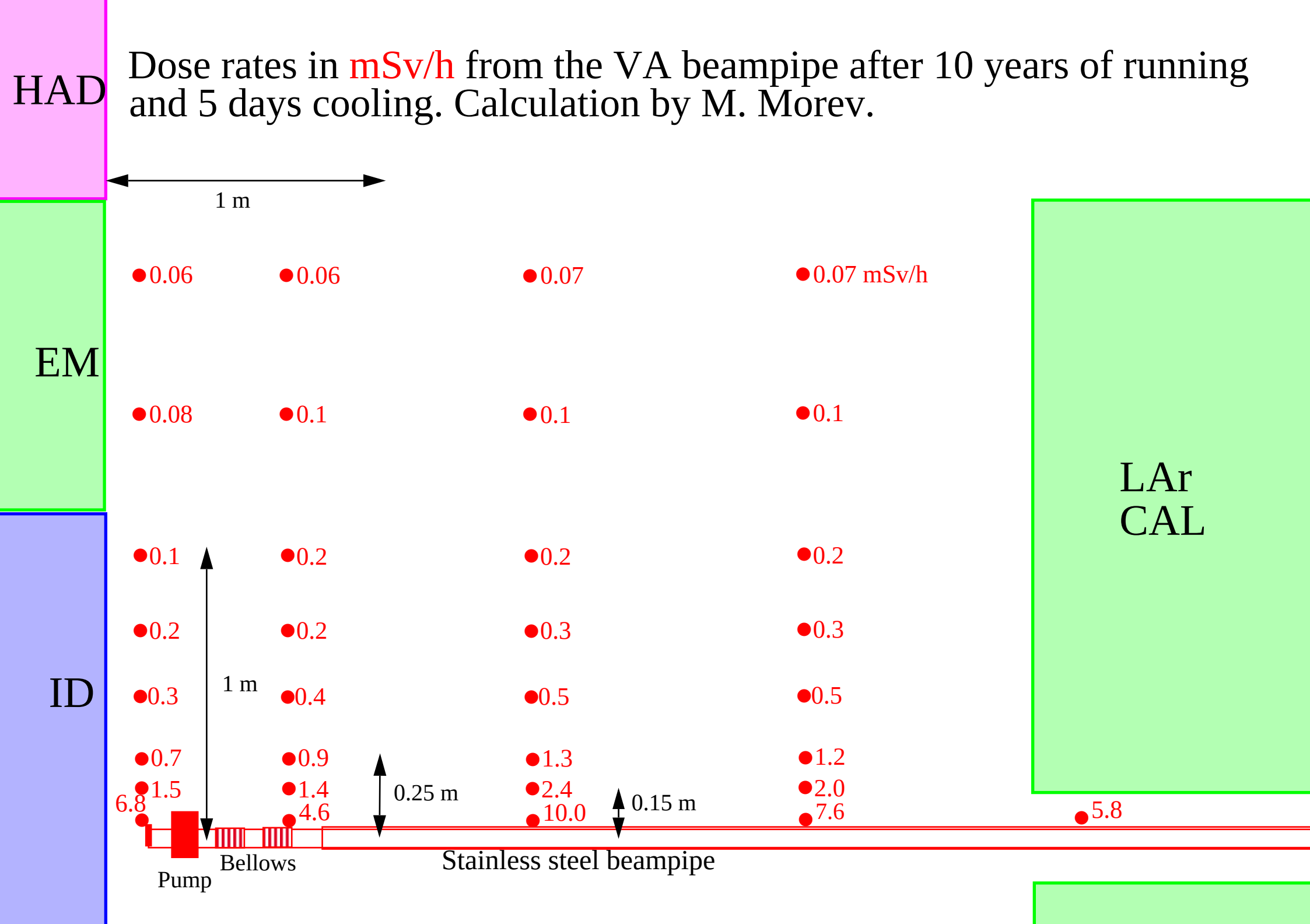


29. The calorimeter is moved back.
30. Scaffolding is built.
31. The flange is undone.
32. The VA beampipe is hold by hand.

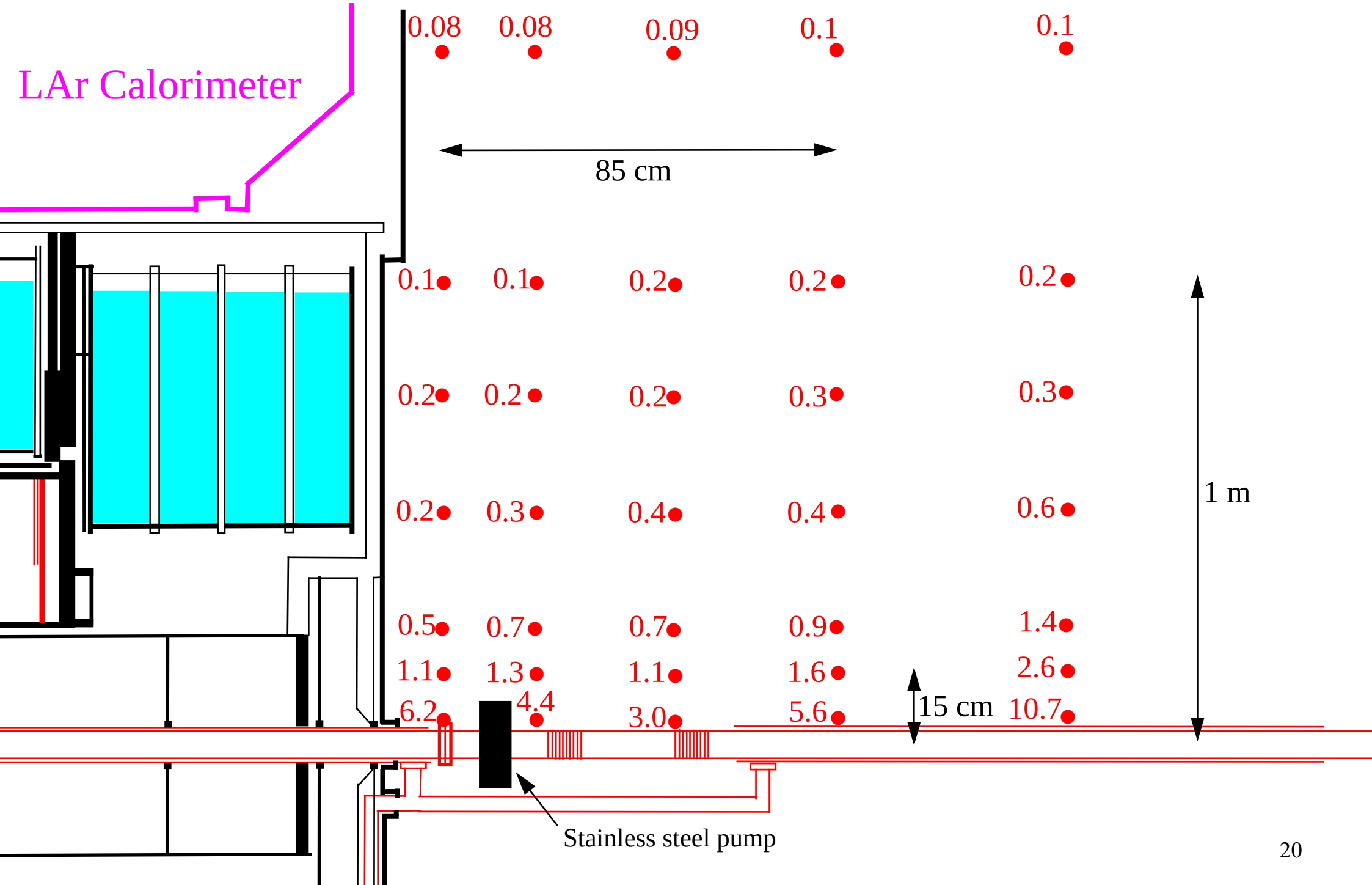



HAD
EM
ID
LAr
CAL
Dose rates in mSv/h from the VA beampipe after a 100 day run and 5 days cooling. Calculation by M. Morev.
1 m
0.05
0.06
0.06
0.07 mSv/h
0.07
0.09
0.1
0.1
0.1
0.2
0.2
0.2
0.2
0.2
0.3
0.3
0.3
1 m
0.3
0.4
0.5
0.5
0.7
0.8
1.2
1.0
1.3
1.2
2.2
1.8
0.25 m
0.15 m
6.0
4.1
8.9
6.7
5.2
Pump
Bellows
Stainless steel beampipe


Dose rates in mSv/h from the VA beampipe after a 100 day run and 100 days cooling. Calculation by M. Morev.
HAD
EM
ID
LAr CAL
1 m
0.01
0.01
0.01
0.01 mSv/h
0.01
0.02
0.02
0.02
0.02
0.03
0.03
0.03
0.03
0.04
0.05
0.05
1 m
0.05
0.06
0.09
0.09
0.1
0.1
0.2
0.2
0.2
0.2
0.4
0.3
1.0
0.7
1.6
1.2
0.9
0.25 m
0.15 m
Pump
Bellows
Stainless steel beampipe

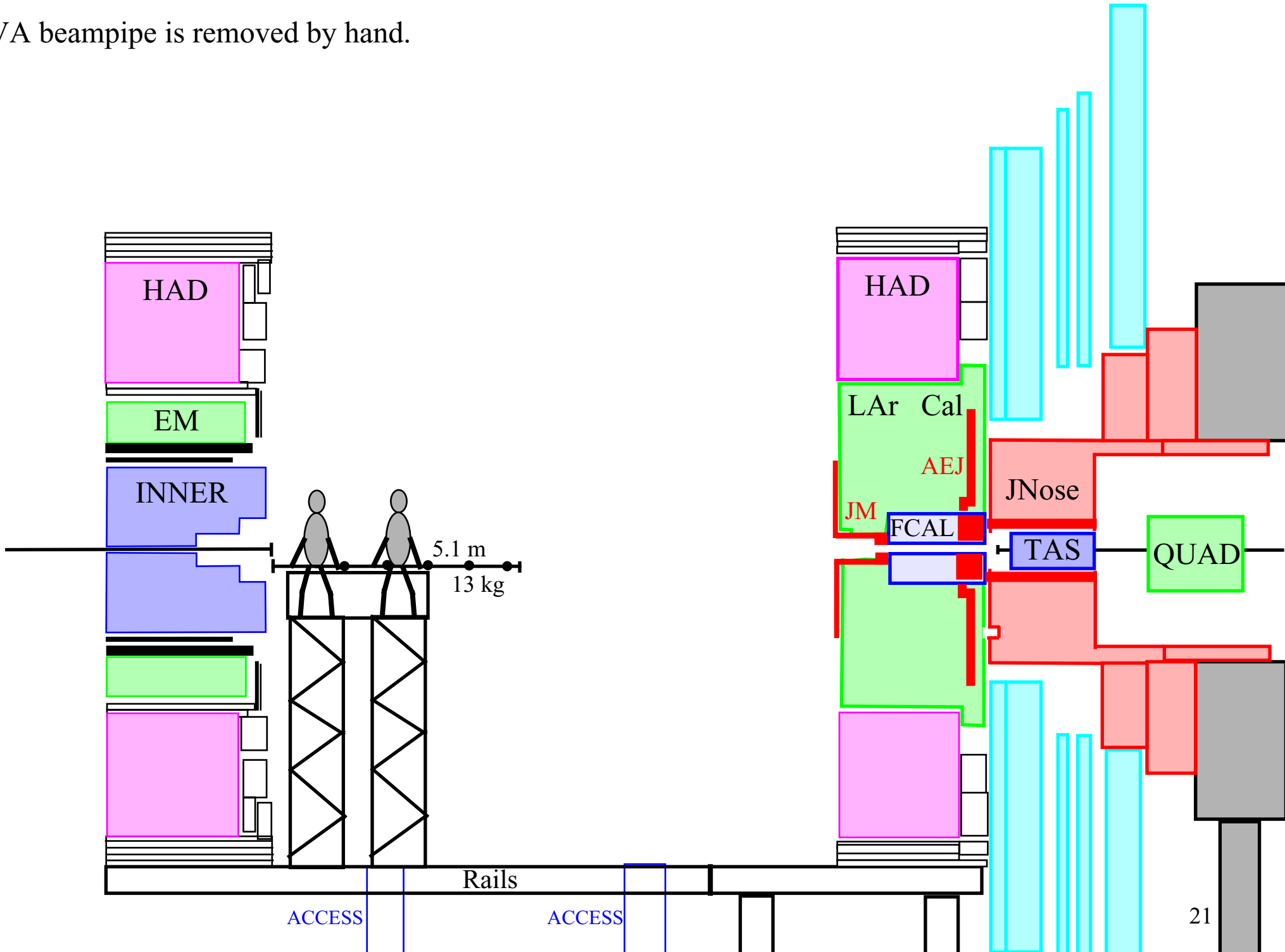

Dose rates in mSv/h from the VA beampipe after 10 years of running and 5 days cooling. Calculation by M. Morev.
HAD
EM
ID
LAr CAL
1 m
0.06
0.06
0.07
0.07 mSv/h
0.08
0.1
0.1
0.1
0.1
0.2
0.2
0.2
0.2
0.3
0.2
0.3
0.3
1 m
0.3
0.4
0.5
0.5
0.7
0.9
1.3
1.2
1.5
1.4
2.4
2.0
0.25 m
0.15 m
6.8
4.6
10.0
7.6
5.8
Pump
Bellows
Stainless steel beampipe

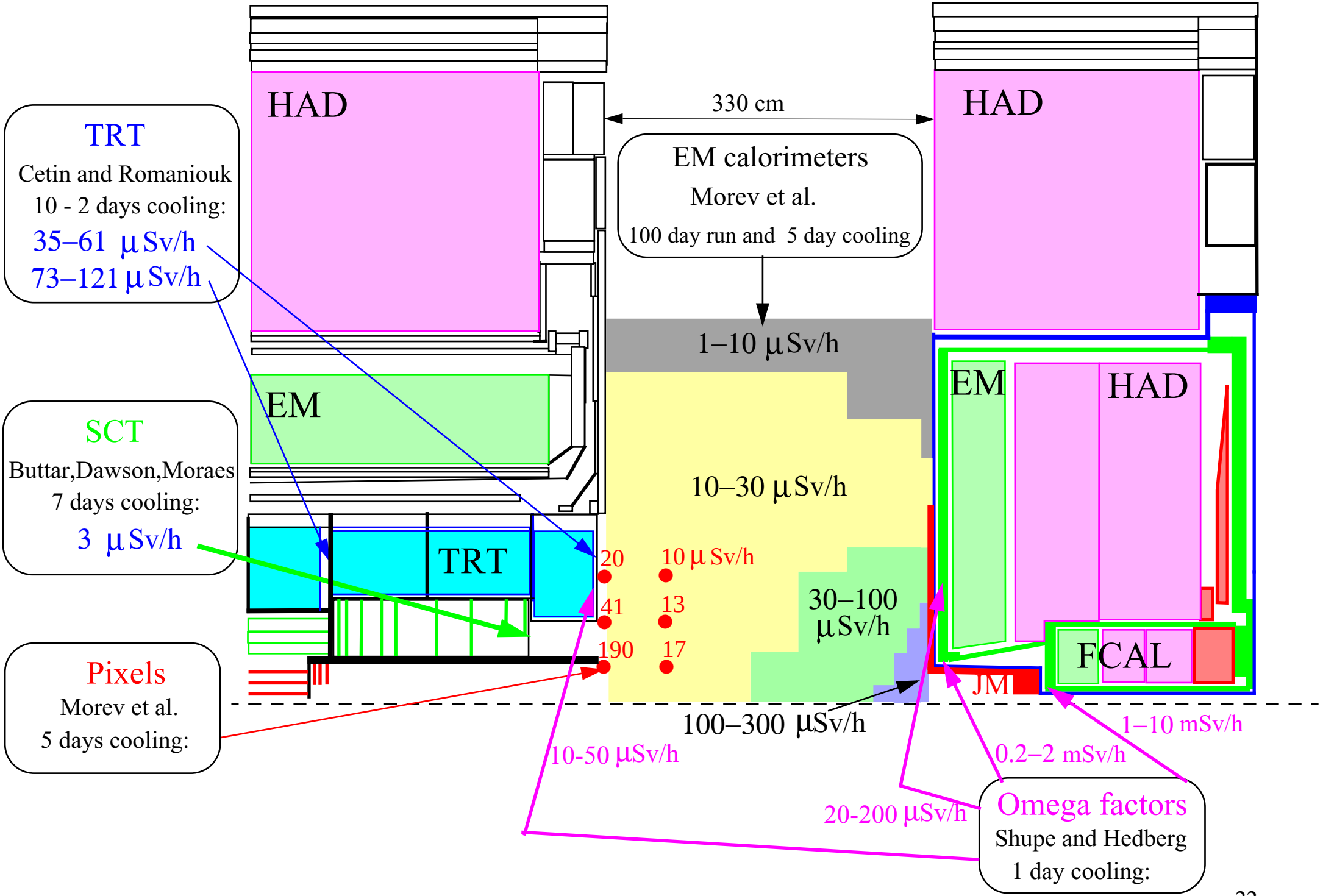
Dose rates in mSv/h from the VA beampipe after 10 years running and 5 days cooling.



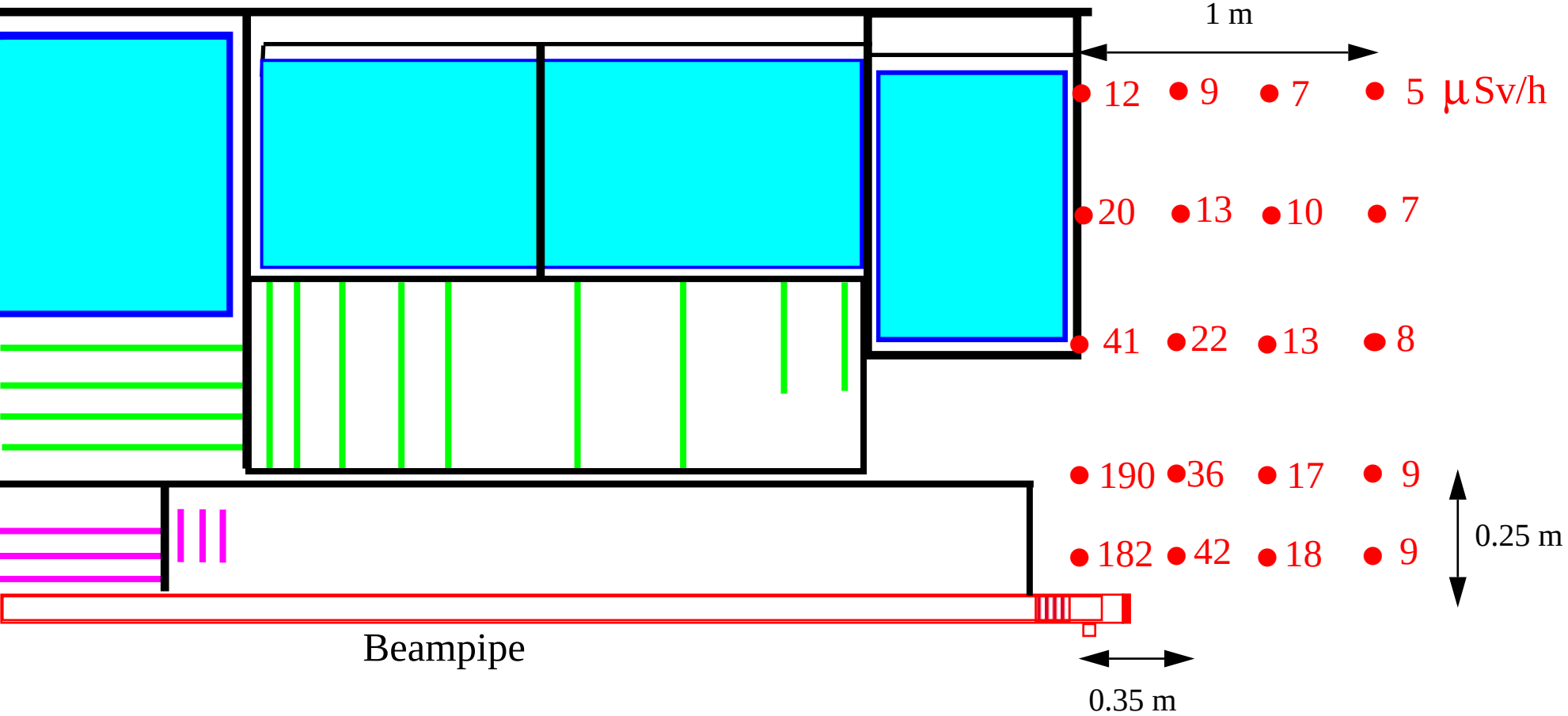
33. The calorimeter is moved furher back.

34. The VA beampipe is removed by hand.

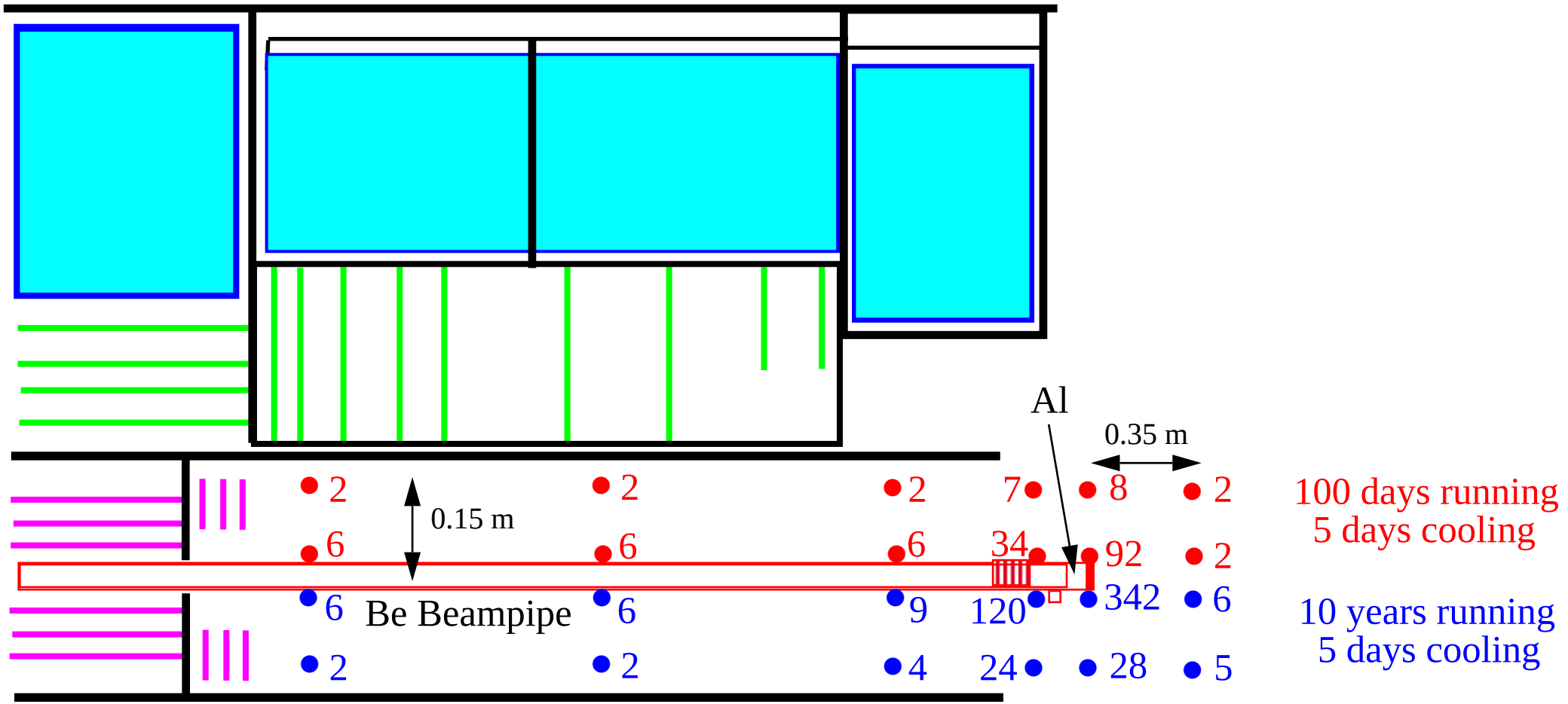



TRT
Cetin and Romaniouk
10 - 2 days cooling:
35–61 μSv/h
73–121 μSv/h
SCT
Buttar,Dawson,Moraes
7 days cooling:
3 μSv/h
Pixels
Morev et al.
5 days cooling:
HAD
EM
TRT
330 cm
EM calorimeters
Morev et al.
100 day run and 5 day cooling
1–10 μSv/h
10–30 μSv/h
30–100 μSv/h
100–300 μSv/h
20
10 μSv/h
41
13
190
17
10-50 μSv/h
HAD
EM
HAD
FCAL
JM
1–10 mSv/h
0.2–2 mSv/h
20-200 μSv/h
Omega factors
Shupe and Hedberg
1 day cooling:

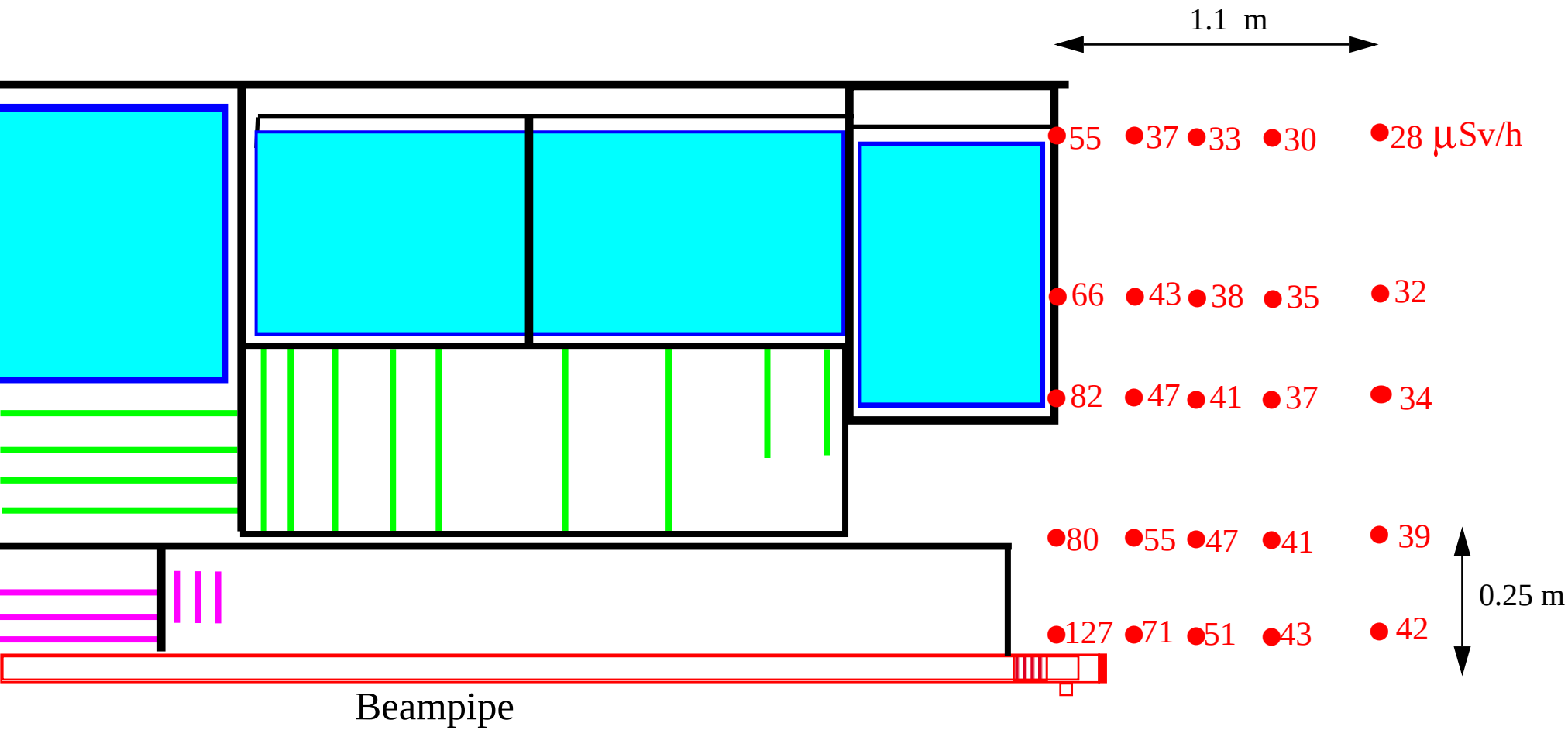
Dose rates in μSv/h from the pixel detector after a 100 day run and 5 days cooling. Calculation by M. Morev.



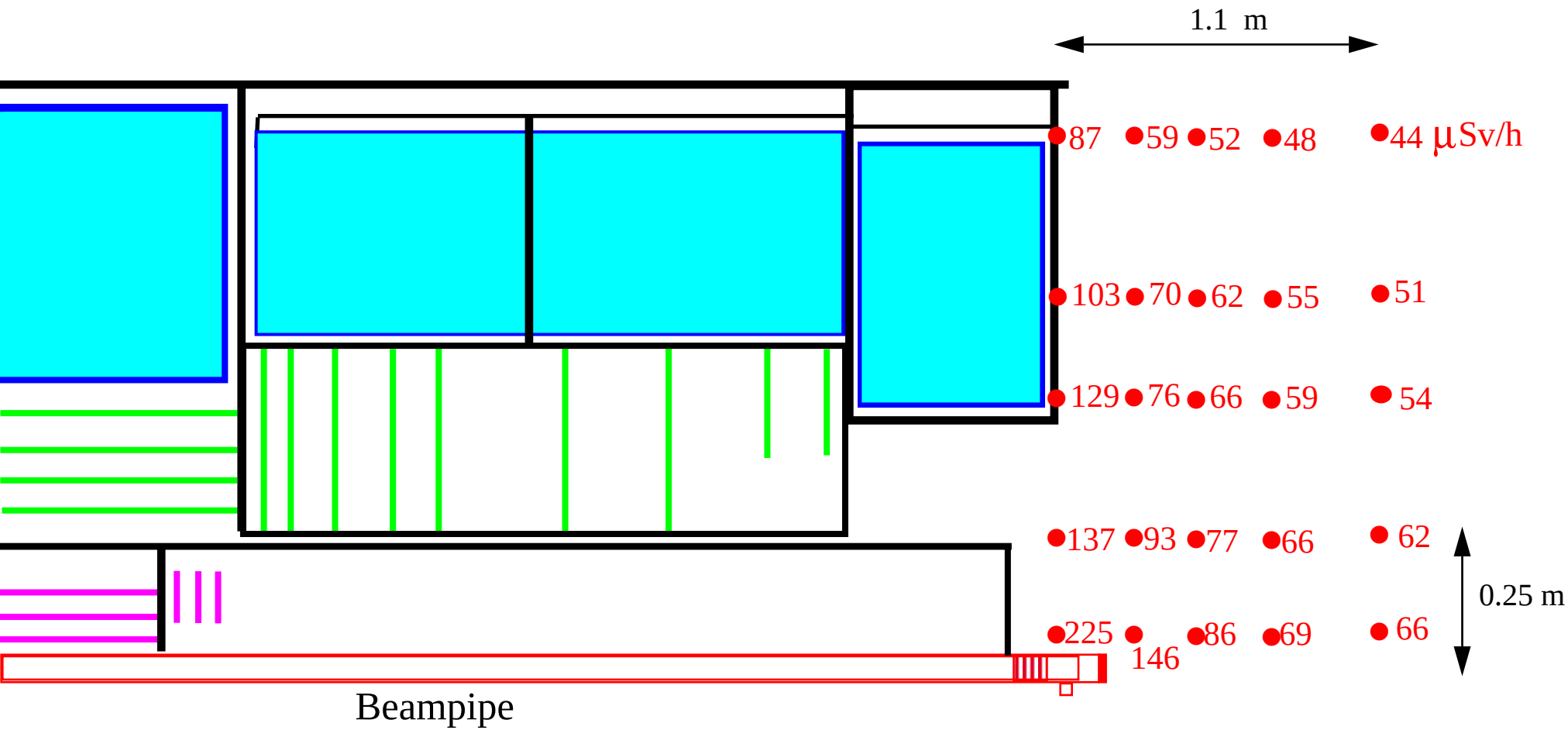
Dose rates in μSv/h from the VI beampipe.
Calculation by M. Morev.



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.



Dose rates in μSv/h from the Pixels+SCT+TRT+LAr cal.+VI beampipe after 10 years of running and 5 days cooling. Calculation by M. Morev.



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.