

Shielding Requirements for Outboard PF Coils of ARIES-ST

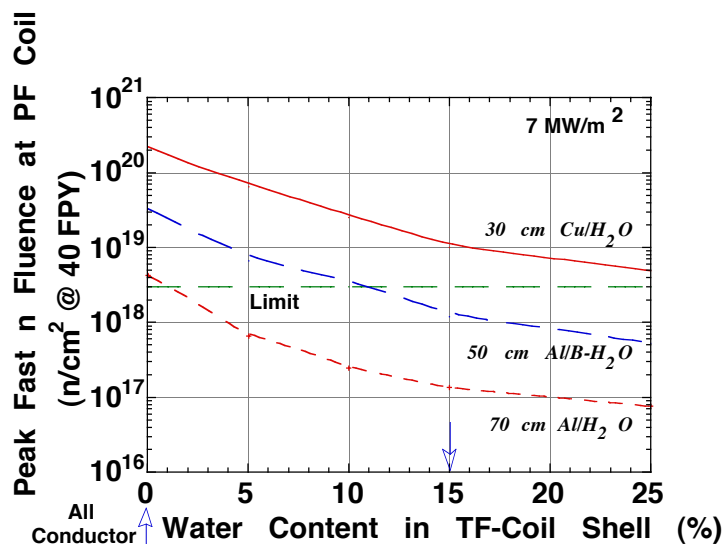
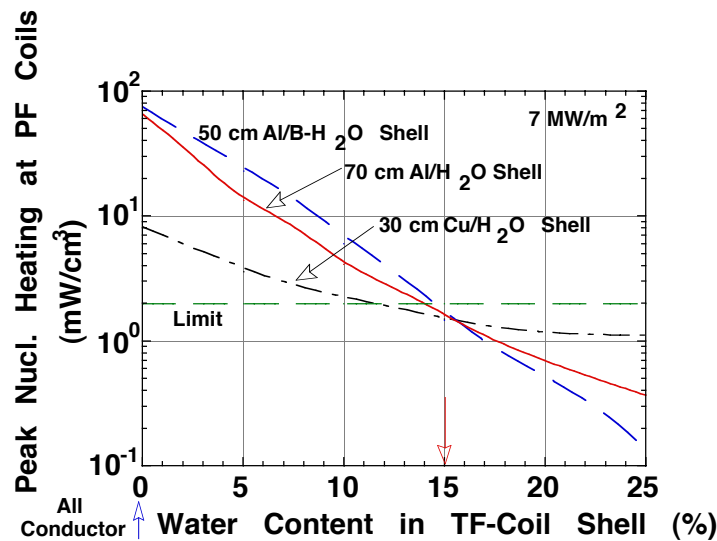
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Radiation Damage to PF Coils Located Outside TF-coil Shell (Dec. 98 Presentation)

- PF coils 1,2 are well protected by HT and LT divertor shields
- Outboard blanket and TF-coil shell protect PF coils 3,4,5. One of following options should be considered to satisfy PF magnets radiation limits:

30 cm thick Cu/H₂O (85/15) TF-coil shell
 50 cm thick Al/B-H₂O (85/15) TF-coil shell
 70 cm thick Al/H₂O (85/15) TF-coil shell (reference)



Radiation Damage to PF Coils Located Inside TF-coil Shell

- The 1 m thick LiPb blanket is not sufficient to protect PF coils
- Need additional 25 cm thick LT water-cooled FS shield to meet PF magnet radiation limits
- 55% water content in shield satisfies both fluence and heating limits (3e18 n/cm² for NbTi and 2 mW/cm³, respectively).

