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nuclear criticality safety in operations with fissionable material outside reactors

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American National Standard for Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors

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Table 6
Limits for Uniform Aqueous Solutions of Low-Enriched Uranium
(see Reference [3])

Parameter	Enrichment, wt% ^{235}U	Subcritical Limit	
		UO_2F_2	$UO_2(NO_3)_2$
Mass, kg ^{235}U	10.0	1.07	1.47
	5.0	1.64	3.30
	4.0	1.98	6.50
	3.0	2.75	--
	2.0	8.00	--
Cylinder diameter, cm	10.0	20.1	25.2
	5.0	26.6	42.7
	4.0	30.2	58.6
	3.0	37.4	--
	2.0	63.0	--
Slab thickness, cm	10.0	8.3	11.9
	5.0	12.6	23.4
	4.0	15.1	33.7
	3.0	20.0	--
	2.0	36.5	--
Volume, L	10.0	14.8	26.7
	5.0	30.6	111.0
	4.0	42.7	273.0
	3.0	77.0	--
	2.0	340.0	--
Concentration, g U/L	10.0	123.0	128.0
	5.0	261.0	283.0
	4.0	335.0	375.0
	3.0	470.0	--
	2.88	--	594.9 [a]
	2.0	770.0	--
	1.45	1190.0 [a]	--

(a) Saturated solution

Table 7
Limits for Uniform Aqueous Solutions of $Pu(NO_3)_4$ Containing ^{240}Pu
(see Reference [4])

Parameter	Subcritical Limit		
	≥5 wt% ^{240}Pu ≤1 wt% ^{241}Pu	≥15 wt% ^{240}Pu ≤6 wt% ^{241}Pu	≥25 wt% ^{240}Pu ≤15 wt% ^{241}Pu
Mass, kg Pu	0.57	0.78	1.02
Cylinder diameter, cm	17.4	19.5	21.3
Slab thickness, cm	6.7	8.0	9.2
Volume, L	10.0	13.6	17.2
Concentration, g Pu/L	7.8	8.9	10.2
H/Pu	3400	2980	2600
Areal density, g Pu/cm^2	0.28	0.34	0.4