TABLE 1 List of Freeze-Dried Candidate International Reference Materials Submitted by NIBSC to WHO and Endorsed in (**A**) 2006 and (**B**) 2007, Listing Filling Accuracy (CV) and Residual Moisture Content of Lyophilized Materials (*Continued*)

Code	Reference material	CV of fill (%)	Residual moisture content (% wt/wt)	Comments
(B) Lyophilized Materials Submitted to WHO in 2007				
04/200	1st IS parathyroid hormone 1-34 recombinant human	0.06	1.31	
05/112	2nd IS low molecular weight heparin for molecular weight calibration	0.15	0.29 (FD only not sampled)	Further desiccated over phosphorus pentoxide
06/100	3rd IS hepatitis C virus for NAT assay	0.62	ND	Vials filled and dried at external contractor, no RMD as infectious
05/132	1st IS syphilitic antibodies plasma IgG and IgM	0.17	0.69	
05/122	1st IS syphilitic antibodies plasma IgG and IgM	0.34	0.41	
04/150	2nd IS tetanus toxoid for flocculation test	0.04	0.92	
02/176	2nd International reference reagent diphtheria toxoid for flocculation test	0.06	0.28	
05/134	1st IS antibodies to HPV16	0.09	1.36	
04/252	1st IS protein C concentrate human	0.32	0.09	Further desiccated over phosphorus pentoxide
94/730	1st IS tissue plasminogen activator	0.13	0.24 (1.33% wt/wt prior to desiccation)	Further desiccated over phosphorus pentoxide
06/166	3rd IS antithrombin concentrate human	0.21	0.12	
05/106	1st IS for human platelet antigen 1a (minimum potency)	0.18	0.62	

See WHO web site at http://www.who.int/biologicals/expert_committee/en/.
Abbreviations: ND, not determined; CV, coefficient of variation; IS, international standard; NAT, nucleic acid amplification technique; RMD, residual moisture determination.

container) are agreed between Standards Processing Division and the responsible scientists for individual fills, prior to processing requests being accepted. The fundamental criterion is that data submitted to the ECBS demonstrates fitness for intended use. In addition, every container (ampoule or vial) should be identical, in terms of quantity, potency, composition, and stability.

The general criteria set by WHO have been published (5), although they are applied on a case-by-case basis. These criteria have been incorporated by Standards Processing Division into its Quality Management System (ISO 9001) and are a routine requirement for all fills undertaken. These criteria can be reduced for individual fills where they are not deemed necessary. Some examples of how these criteria are met are shown below:

WHO criteria: "the CV of the fill weights should be less than 0.25% for aqueous materials." Control of the variation of fill is important since a defined volume of typically water is normally used to reconstitute the freeze-dried