(a) declared nuclear weapons facilities that are dedicated to fissile material production for nuclear weapons,

(b) declared civilian facilities that produce weapons-grade material for non-nuclear weapons purposes and that could also produce weapons-grade material for weapons purposes if desired, and

(c) declared dual-use facilities specifically designed and operated to produce military-use weapons-grade material, as well as non-military-use weapons-grade material.

All these types of declared facilities would then, in principle, require some measure of verification, in order to confirm compliance with a fissile material production cut-off treaty if the potential diversion risk was assessed as sufficiently high. The types of facilities in these three groups are technically very similar. The verification/safeguard methods are also not as distinctly different from those needed to detect undeclared facilities, although there is a difference between the verification needs for monitoring military facilities that might be shutdown as a result of a cut-off treaty (e.g., a dedicated Pu-239 producing reactor) and an operating dual-purpose civilian facility (e.g., the Chapelcross reactors in the UK). The declared facilities are identified separately, but the relevant data is presented in the same set of analysis tables, see Tables 1.1. to 1.3.

The designation used for the declared facilities is Declared Civilian, Dual Purpose or Dedicated Nuclear Weapons Facilities (DCDPDNWF) and that used for the undeclared facilities, Undeclared Facilities (UF). The analysis tables for DCDPDNWF are Tables 1.1 to 1.3 and for UF are Tables 2.1 to 2.3. The three tables in each of these groups then correspond to the potential fissile isotope diversion routes defined in Section 4.1.1.

4.2 Facility-Specific Diversion Route or Source of Material Acquisition

The various facilities, or material acquisition sources, that may potentially contribute to the production and acquisition of the three fissile material isotopes are listed across the top of the tables and are discussed in the sections below for each isotope. The listing is generally in the order of the progression of the civilian or military fuel-cycle route needed to achieve an adequately pure fissile isotope for weapons use. [2] While some facilities may or may not be located on a separate site (e.g., uranium conversion may be at a mill or at an enrichment facility) each process is still listed separately, because the diversion signature will generally be unique to a type of production process, rather than a specific location. In this way, potential diversion during transfers of material between facilities may then be identified if transport diversion signatures (Section 4.3.3) are significant.

4.2.1 Uranium-235 Route

Tables 1.1 and 2.1 represent the various potential diversion paths relevant for the U-235 acquisition route for declared and undeclared facilities, respectively. The key to this route is enrichment of natural uranium. The main features of this route, compared to the Pu-239 route, are that facilities with minimal radioactivity concerns are involved and that the enrichment process is, in principle, technically much more difficult and expensive than

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[2] Where a number of different techniques exist that can be used for the same function (e.g., U-235 enrichment), the list moves in general from the simplest/oldest technology to the most advanced/newest technology.