

Table 1.3 Diversion Path Analysis: Generic Route: U-233, Declared Civilian, Dual Purpose and Dedicated Nuclear Weapon Facilities

POTENTIAL FACILITY / SOURCES OF MATERIALS		THORIUM MINING	THORIUM MILLING	THORIUM CONVERSION	CIVILIAN POWER REACTOR	DUAL PURPOSE REACTOR	MILITARY PRODUCTION REACTOR	RESEARCH & TEST REACTORS	THORIUM REPROCESSING	THORIUM CONVERSION	EXISTING STOCKPILES
RISK RELEVANT PARAMETERS											
LIKELIHOOD OF FACILITY	NWS	low	low	low	low, (pressure vessel); medium (channel type)	low	low	low (< 10 MW, LEU fuelled); medium (> 10MW, D20 moderated with in-core experimental facilities)	high	high	high
ANOMALY (L)	NNWSD	low	low	low	as above	low	low	as above	high	high	high
	NNWSU	low	low	low	as above	medium	medium	as above	low	low	very low
IMPORTANCE OF FACILITY ANOMALY TO FINAL MATERIAL ACQUISITION (I)		high	low	low	low	high	high	high	high	high	high
DIVERSION SIGNATURES		•Ore shipment accountancy indicators	•Accountancy anomalies in product shipments	•Accountancy anomalies in product shipments	•Modification of fuelling scheme for U-233	•Modification of fuelling scheme for U-233	•Thermal emissions indicating operation	•Fuelling scheme •Active experimental isotope production program.	•Active liquid waste tank storage •Active gaseous emissions	•Small chemical plant, not distinctive •Active emissions small	•intelligence information
VERIFICATION METHODS	Technical Means	•Same as for equivalent data for uranium, see Table 1.1			•Same as for see Table 1.2				•camera surveillance of bulk fuel shipments	•none defined	•camera surveillance of stockpiles
	Routine Inspections	•ore quantity and grade accountancy	•accountancy anomalies in product shipments	•accountancy anomalies in product shipments	•Facility camera surveillance of fuelling operations/spent fuel seals	•Facility camera surveillance of fuelling operations/spent fuel seals	•inspection seals on reactor vessel	•spent fuel accountancy/ spent fuel seals	•accountancy	•accountancy	•stockpile accountancy •seal inspection •assay verification
	Special Inspections	•Same as for equivalent data for uranium, see Table 1.1			•Same as for see Table 1.2				•Detection of thorium conclusive	•Detection of thorium conclusive	•assay verification
EFFECTIVENESS OF VERIFICATION METHODS		•Same as for see Table 1.1			•Same as for see Table 1.2				•SI conclusive	•SI conclusive	•Conclusive as stockpiles small
RISK OF DIVERSION (L x I)	Figure 3 gives risk ranking hierarchy. Relative rankings are similar to Figures 3.1.2a, b, c for equivalent declared Pu-239 facilities. Absolute risk will be much less than Pu-239.										
	NWS	7	8	9	6	3	5	4	2	2	1
	NNWSD	6	7	8	5	4	9	3	2	2	1
NNWSU	4	5	6	3	8	9	1	2	2	7	