

## **APPENDIX B: BASIS AND INTERFACES**

**Table N°1: Basis for “All road”**

**Table N°2: Basis for “Mostly rail”**

**Table N°3: Basis for “Mostly water”**

**Table N°4: Interfaces between storage and transportation for each site where the form of storage is baskets in Silo**

**Table N°5: Interfaces between storage and transportation for each site where the form of storage is baskets in Canstor**

**Table N°6: Interfaces between storage and transportation for each site where the form of storage is trays in wet bays**

**Table N°7: Interfaces between storage and transportation for each site where the form of storage is modules in wet bays**

**Table N°8: Interfaces between storage and transportation for each site where the form of storage is modules in DSC**

WASTE OWNER	CURRENT STORAGE SITE	REACTOR	STORAGE				ROAD MODE				
			Facility	Form of storage	Number of bundles	Number of DSCs	Transportation cask	Number of casks	Total Nr of casks/Site	Number of shipments/Facility Notes(3)	Number of shipments/Site
Ontario Power Generation	Pickering	Pickering A NGS (4 reactors)	Pickering A	Modules in wet bays	188936 (5) (6)	0	IFTC/BM	984		984	
			Pickering Used Fuel Dry Storage Facility	Modules in DSCs	218560 (5) (6)	580	IFTC/BM	1140		1140	
		Pickering B NGS (4 reactors)	Pickering B	Modules in wet bays	149048 (5) (6)	0	IFTC/BM	784		784	
			Pickering Used Fuel Dry Storage Facility	Modules in DSCs	373086 (5) (6)	972	IFTC/BM	1944	4852	1944	4852
Ontario Power Generation	Bruce	Bruce A NGS (4 reactors)	Bruce A	Trays in wet bays	0 (5) (7) (Note 1)	0		0		0	
			Western Used Fuel Dry Storage Facility	Modules in DSCs	625943 (5) (7) (Note 1)	1645	IFTC/BM	3290		3290	
		Bruce B NGS (4 reactors)	Bruce B	Trays in wet bays	377180 (5) (7) (Note 1)	0	IFTC/BM	1972		1972	
			Western Used Fuel Dry Storage Facility	Modules in DSCs	465588 (5) (7) (Note 1)	1224	IFTC/BM	2448		2448	
Atomic Energy of Canada Limited	Bruce	Douglas Point (1 reactor)	Douglas Point	Baskets in canisters Silo (2)	22256 (8) (9)	0	IFTC/BM	138	7848	138	7848
Ontario Power Generation	Darlington	Darlington NGS (4 reactors)	Darlington	Modules in wet bays	347088 (5) (7)	0	IFTC/BM	1811		1811	
			Darlington Used Fuel Dry Storage Facility	Modules in DSCs	529004 (5) (7)	1386	IFTC/BM	2772	4583	2772	4583
New Brunswick Power	Point Lepreau	Point Lepreau 1 (1 reactor)	Point Lepreau	Baskets in canisters Silo (1)	119500 (10) (11)	0	IFTC/BM	664	664	664	664
Atomic Energy of Canada Limited	Chalk River	Chalk River Laboratories	Nuclear Power Demonstration fuel	Baskets in canisters Silo (2)	0 (12) (Note 2)	0		0		0	
		Nuclear Power Demonstration (1 reactor) (stored at Chalk River)	Nuclear Power Demonstration fuel	Baskets in canisters Silo (2)	4853 (13) (9)	0	IFTC/BM	30	30	30	30
Atomic Energy of Canada Limited	Gentilly	Gentilly 1 (1 reactor)	Gentilly 1	Baskets in canisters Silo (4)	3213 (13) (14)	0	IFTC/BM	29		29	
Hydro Québec	Gentilly	Gentilly 2 (1 reactor)	Gentilly 2	Baskets in CANSTOR vaults (1)	132838 (15) (16)	0	IFTC/BM	738	767	738	767
Atomic Energy of Canada Limited	Whiteshell	Whiteshell Laboratories	Douglas Point Fuel	Baskets in canisters Silo (3)	360 (17) (Note 2)	0	IFTC/BM	3	3	3	3

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TABLE N° 1: BASIS FOR “ALL ROAD”

WASTE OWNER	CURRENT STORAGE SITE	REACTOR	STORAGE				RAIL MODE (POSSIBILITY OF A ROAD RAIL MODE FOR BRUCE AND POINT LEPREAU)					ROAD MODE				
			Facility	Form of storage	Number of bundles	Number of DSCs	Transportation cask	Number of casks	Total Nr of casks/Site	Number of shipments/Facility Note (3)	Number of shipments/Site	Transportation cask	Number of casks	Total Nr of casks/Site	Number of shipments/Facility Notes(3)	Number of shipments/Site
Ontario Power Generation	Pickering	Pickering A NGS (4 reactors)	Pickering A	Modules in wet bays	188936 (5) (6)	0	IFTC/ BM	984		100		IFTC/BM	984		984	
			Pickering Used Fuel Dry Storage Facility	Modules in DSCs	218560 (5) (6)	580	DSCTP	580		120		DSCTP	580		580	
		Pickering B NGS (4 reactors)	Pickering B	Modules in wet bays	149048 (5) (6)	0	IFTC/ BM	784		80		IFTC/BM	784		784	
			Pickering Used Fuel Dry Storage Facility	Modules in DSCs	373086 (5) (6)	972	DSCTP	972	3320	198	498	DSCTP	972	3320	972	3320
Ontario Power Generation	Bruce	Bruce A NGS (4 reactors)	Bruce A	Trays in wet bays	0 (5) (7) (Note 1)	0		0		0			0		0	
			Western Used Fuel Dry Storage Facility	Modules in DSCs	625943 (5) (7) (Note 1)	1645	DSCTP	1645		348		DSCTP	1645		1645	
		Bruce B NGS (4 reactors)	Bruce B	Trays in wet bays	377180 (5) (7) (Note 1)	0	IFTC/ BM	1972				IFTC/BM	1972		1972	
			Western Used Fuel Dry Storage Facility	Modules in DSCs	465588 (5) (7) (Note 1)	1224	DSCTP	1224		252		DSCTP	1224		1224	
Atomic Energy of Canada Limited	Bruce	Douglas Point (1 reactor)	Douglas Point	Baskets in canisters Silo (2)	22256 (8) (9)	0	IFTC /BM	138	4979	14	814	IFTC/BM	138	4979	138	4979
Ontario Power Generation	Darlington	Darlington NGS (4 reactors)	Darlington	Modules in wet bays	347088 (5) (7)	0	IFTC/ BM	1811		188		IFTC/BM	1811		1811	
			Darlington Used Fuel Dry Storage Facility	Modules in DSCs	529004 (5) (7)	1386	DSCTP	1386	3197	286	474	DSCTP	1386	3197	1386	3197
New Brunswick Power	Point Lepreau	Point Lepreau 1 (1 reactor)	Point Lepreau	Baskets in canisters Silo(1)	119500 (10) (11)	0	IFTC/ BM	664	664	67	67	IFTC/BM	664	664	664	664
Atomic Energy of Canada Limited	Chalk River	Chalk River Laboratories	Nuclear Power Demonstration fuel	Baskets in canisters Silo (2)	0 (12) (Note 2)	0							0		0	
		Nuclear Power Demonstration (1 reactor) (stored at Chalk River)	Nuclear Power Demonstration fuel	Baskets in canisters Silo (2)	4853 (13) (9)	0						IFTC/BM	30	30	30	30
Atomic Energy of Canada Limited	Gentilly	Gentilly 1 (1 reactor)	Gentilly 1	Baskets in canisters Silo (4)	3213 (13) (14)	0	IFTC/ BM	29	29	3		IFTC/BM	29	29	29	
Hydro Québec	Gentilly	Gentilly 2 (1 reactor)	Gentilly 2	Baskets in CANSTOR vaults (1)	132838 (15) (16)	0	IFTC/ BM	738	767	74	77	IFTC/BM	738	767	738	767
Atomic Energy of Canada Limited	Whiteshell	Whiteshell Laboratories	Douglas Point Fuel	Baskets in canisters Silo (3)	360 (17) (Note 2)	0						IFTC/BM	3	3	3	3

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TABLE N° 2: BASIS FOR “MOSTLY RAIL”

WASTE OWNER	CURRENT STORAGE SITE	REACTOR	STORAGE	Facility	Form of storage	Number of bundles	Number of DSCs	WATER MODE					ROAD MODE				
								Transportation cask	Number of casks	Total Nr of casks/Site	Number of shipments/Facility Note (3)	Number of shipments/Site	Transportation cask	Number of casks	Total Nr of casks/Site	Number of shipments/Facility Notes (3)	Number of shipments/Site
Ontario Power Generation	<b>Pickering</b>	Pickering A NGS (4 reactors)	Pickering A		Modules in wet bays	188936 (5) (6)	0	IFTC/BM	984		32		IFTC/BM	984			
			Pickering Used Fuel Dry Storage Facility		Modules in DSCs	218560 (5) (6)	580	DSCTP	580		40		DSCTP	580			
		Pickering B NGS (4 reactors)	Pickering B		Modules in wet bays	149048 (5) (6)	0	IFTC/BM	784		25		IFTC/BM	784			
			Pickering Used Fuel Dry Storage Facility		Modules in DSCs	373086 (5) (6)	972	DSCTP	972	3320	72	169	DSCTP	972	3320		3320
Ontario Power Generation	<b>Bruce</b>	Bruce A NGS (4 reactors)	Bruce A		Trays in wet bays	0 (5) (7) (Note 1)	0		0		0			0			
			Western Used Fuel Dry Storage Facility		Modules in DSCs	625943 (5) (7) (Note 1)	1645	DSCTP	1645		109		DSCTP	1645			
		Bruce B NGS (4 reactors)	Bruce B		Trays in wet bays	377180 (5) (7) (Note 1)	0	IFTC/BM	1972		66		IFTC/BM	1972			
			Western Used Fuel Dry Storage Facility		Modules in DSCs	465588 (5) (7) (Note 1)	1224	DSCTP	1224		88		DSCTP	1224			
Atomic Energy of Canada Limited	<b>Bruce</b>	Douglas Point (1 reactor)	Douglas Point		Baskets in canisters Silo (2)	22256 (8) (9)	0	IFTC/BM	138	4979	5	268	IFTC/BM	138	4979		4979
Ontario Power Generation	<b>Darlington</b>	Darlington NGS (4 reactors)	Darlington		Modules in wet bays	347088 (5) (7)	0	IFTC/BM	1811		60		IFTC/BM	1811			
			Darlington Used Fuel Dry Storage Facility		Modules in DSCs	529004 (5) (7)	1386	DSCTP	1386	3197	104	164	DSCTP	1386	3197		3197
New Brunswick Power	<b>Point Lepreau</b>	Point Lepreau 1 (1 reactor)	Point Lepreau		Baskets in canisters Silo (1)	119500 (10) (11)	0	IFTC/BM	664	664	21	21	IFTC/BM	664	664		664
Atomic Energy of Canada Limited	<b>Chalk River</b>	Chalk River Laboratories	Nuclear Power Demonstration fuel		Baskets in canisters Silo (2)	0 (12) (Note 2)	0									0	
		Nuclear Power Demonstration (1 reactor) (stored at Chalk River)	Nuclear Power Demonstration fuel		Baskets in canisters Silo (2)	4853 (13) (9)	0						IFTC/BM	30	30	30	30
Atomic Energy of Canada Limited	<b>Gentilly</b>	Gentilly 1 (1 reactor)	Gentilly 1		Baskets in canisters Silo (4)	3213 (13) (14)	0	IFTC/BM	29		1		IFTC/BM	29			
Hydro Québec	<b>Gentilly</b>	Gentilly 2 (1 reactor)	Gentilly 2		Baskets in CANSTOR vaults (1)	132838 (15) (16)	0	IFTC/BM	738	767	24	25	IFTC/BM	738	767		767
Atomic Energy of Canada Limited	<b>Whiteshell</b>	Whiteshell Laboratories	Douglas Point Fuel		Baskets in canisters Silo (3)	360 (17) (Note 2)	0						IFTC/BM	3	3	3	3
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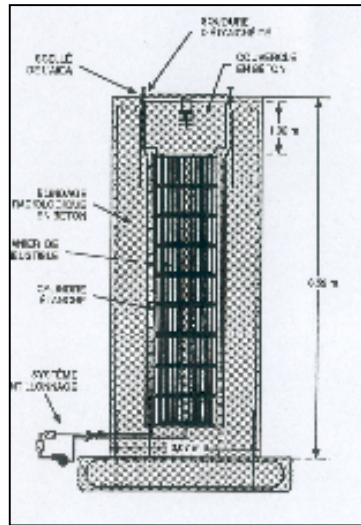
TABLE N°3: BASIS FOR « MOSTLY WATER » (WATER ROAD TRANSFER)

- (1): 60-bundle basket design
- (2): 54-bundle basket design
- (3): 40-bundle basket design
- (4): 38-bundle basket design
- (5): Reference OPG (2001a, 40 year scenario)
- (6): Fuel Bundle Dimensions (L x D in mm) and Mass (kg) 497 mm x 102 mm & 24.8 kg (Tait et al. 2000)
- (7): Fuel Bundle Dimensions (L x D in mm) and Mass (kg) 495 mm x 102.5 mm & 21.7 kg (Tait et al. 2000)
- (8): Reference AECL (1994), Dolinar 2000 (not including 360 bundles stored at Whiteshell Labs)
- (9): Fuel Bundle Dimensions (L x D in mm) and Mass (kg) 497 mm x 83 mm & 16.7 kg
- (10): Reference DeLong (2001a)
- (11): Fuel Bundle Dimensions (L x D in mm) and Mass (kg) 495 mm x 102.4 mm & 23.6 kg (DeLong 2001b)
- (12): Reference Dolinar (2000)
- (13): Reference AECL (1994), Dolinar (2000)
- (14): Fuel Bundle Dimensions (L x D in mm) and Mass (kg) 501.5 mm x 103 mm & 26.7 kg
- (15): Reference Lupien (2000)
- (16): Fuel Bundle Dimensions (L x D in mm) and Mass (kg) 495 mm x 102.5 mm & 21.7 kg (Frost 1994)
- (17): Reference Dolinar (2000) (Douglas Point bundles)

Note 1: Bruce A, Bruce B and Darlington use a small portion of "long" bundles with the following characteristics : 508 mm x 102.5 mm & 22.3 kg.

Note 2: Non-CANDU fuel materials are not included.

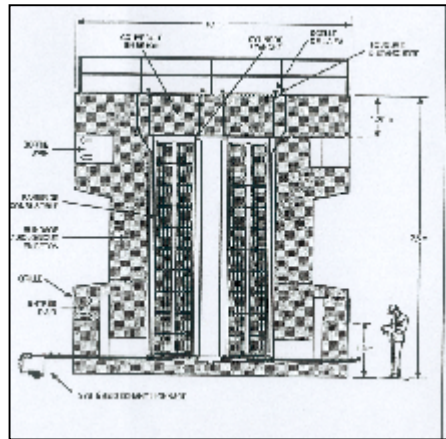
Note 3: The numbers of bundles differ slightly from those in <1> because the numbers in the tables have been calculated from the annual shipping programs given in <9>. Similarly the numbers of DSCs and IFTC/BMs are taken from the integer numbers of casks shipped each year.



**BASKETS IN SILO**

SITE	REACTOR	FACILITY	FORM OF STORAGE	INTERFACES “ALL ROAD”	INTERFACES “MOSTLY RAIL”	INTERFACES “MOSTLY WATER”
Whiteshell	Douglas Point Fuel	Douglas Point Facility	Baskets in Silo	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks
Chalk river	Nuclear Power Demonstration	NPD fuel Facility	Baskets in Silo	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks
Gentilly	Gentilly 1	Gentilly 1 Facility	Baskets in Silo	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks
Point Lepreau	Point Lepreau	Point Lepreau Facility	Baskets in Silo	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks	Transfer flask similar to the one used to load silos ready to be loaded into the transportation casks

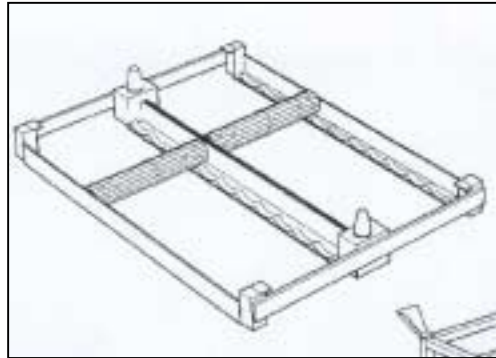
**TABLE N° 4: INTERFACES BETWEEN STORAGE AND TRANSPORTATION FOR EACH SITE WHERE THE FORM OF STORAGE IS BASKETS IN SILO**



**BASKETS IN CANSTOR**

SITE	REACTOR	FACILITY	FORM OF STORAGE	INTERFACES "ALL ROAD"	INTERFACES "MOSTLY RAIL"	INTERFACES "MOSTLY WATER"
Gentilly	Gentilly 2	Gentilly 2	Baskets in CANSTOR	Transfer flask similar to the one used to load Canstors ready to be loaded into the transportation casks	Transfer flask similar to the one used to load Canstors ready to be loaded into the transportation casks	Transfer flask similar to the one used to load Canstors ready to be loaded into the transportation casks

**TABLE N° 5: INTERFACES BETWEEN STORAGE AND TRANSPORTATION FOR EACH SITE WHERE THE FORM OF STORAGE IS BASKETS IN CANSTOR**

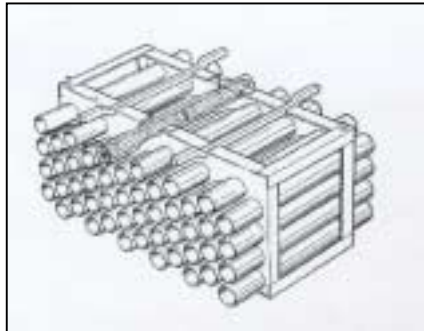


**TRAYS IN WET BAYS**

<b>SITE</b>	<b>REACTOR</b>	<b>FACILITY</b>	<b>FORM OF STORAGE</b>	<b>INTERFACES “ALL ROAD”</b>	<b>INTERFACES “MOSTLY RAIL”</b>	<b>INTERFACES “MOSTLY WATER”</b>
Bruce	Bruce B	Bruce B Facility	Trays in wet bays	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay

**TABLE N° 6: INTERFACES BETWEEN STORAGE AND TRANSPORTATION FOR EACH SITE WHERE THE FORM OF STORAGE IS TRAYS IN WET BAYS**





**MODULES IN WET BAYS**

SITE	REACTOR	FACILITY	FORM OF STORAGE	INTERFACES "ALL ROAD"	INTERFACES "MOSTLY RAIL"	INTERFACES "MOSTLY WATER"
Pickering	Pickering A	Pickering A	Modules in wet bays	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay
	Pickering B	Pickering B	Modules in wet bays	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay
Darlington	Darlington	Darlington	Modules in wet bays	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay	The Used Fuel will be in transportation modules in the bay

**TABLE N° 7: INTERFACES BETWEEN STORAGE AND TRANSPORTATION FOR EACH SITE WHERE THE FORM OF STORAGE IS MODULES IN WET BAYS**



**MODULES IN DSC**

SITE	REACTOR	FACILITY	FORM OF STORAGE	INTERFACES “ALL ROAD”	INTERFACES “MOSTLY RAIL”	INTERFACES “MOSTLY WATER”
Bruce	Bruce A	WUFDSF	Modules in DSCs	The Used Fuel will be in transportation modules in a hot cell at the facility ready for loading into the transportation cask	The Used Fuel will be in DSCs in the storage locations in the WUFDSF	The Used Fuel will be in DSCs in the storage locations in the WUFDSF
	Bruce B	WUFDSF	Modules in DSCs	The Used Fuel will be in transportation modules in a hot cell at the facility ready for loading into the transportation cask	The Used Fuel will be in DSCs in the storage locations in the WUFDSF	The Used Fuel will be in DSCs in the storage locations in the WUFDSF
Pickering	Pickering A	PUFDSF	Modules in DSCs	The Used Fuel will be in transportation modules in a hot cell at the facility ready for loading into the transportation cask	The Used Fuel will be in DSCs in the storage locations in the PUFDSF	The Used Fuel will be in DSCs in the storage locations in the PUFDSF
	Pickering B	PUFDSF	Modules in DSCs	The Used Fuel will be in transportation modules in a hot cell at the facility ready for loading into the transportation cask	The Used Fuel will be in DSCs in the storage locations in the PUFDSF	The Used Fuel will be in DSCs in the storage locations in the PUFDSF
Darlington	Darlington	DUFDSF	Modules in DSCs	The Used Fuel will be in transportation modules in a hot cell at the facility ready for loading into the transportation cask	The Used Fuel will be in DSCs in the storage locations in the DUFDSF	The Used Fuel will be in DSCs in the storage locations in the DUFDSF

**TABLE N° 8: INTERFACES BETWEEN STORAGE AND TRANSPORTATION FOR EACH SITE WHERE THE FORM OF STORAGE IS MODULES IN DSCs**