

PRESENTATION

LOCAL RADWASTE MANAGEMENT CENTRE AT FSUE SevRAO BRANCH No 1 AT ANDREEVA BAY

CEG WORKSHOP

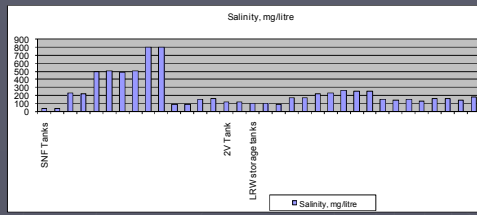
Oxford, UK, 5th – 6th March 2007

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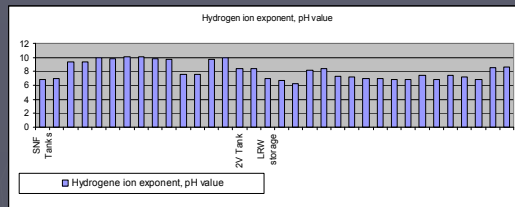
Table 1.

Facility	LRW Quantity, cub. m.	LRW Specific Activity, Bq/kg	LRW Category	Technical Characteristics
1 LRW storage facility	~1200	up to 10^7 (Cs-137) up to 10^4 (Sr-90)	Low & medium activity	Low-saline water
2 SNF Tank cells	300	up to 10^9 (Sr-90)	Medium activity	Low-saline water
3 2V Tank	~110	up to 150 (Cs-137)		Low-saline water
4 Pipeduct	~10	up to 10^6 (Sr-90)	Low activity	Low-saline water
6 SRW storage facilities,	~1730 ¹	up to 10^5 (Cs-137)	Low activity	Low-saline water
Total:	~3350			Low-saline water

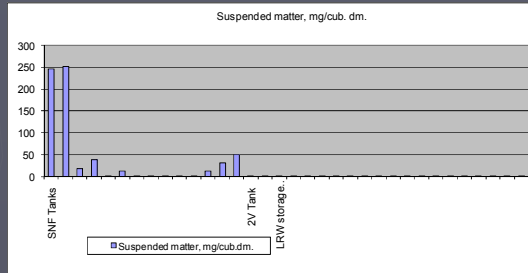
Bar chart 1.



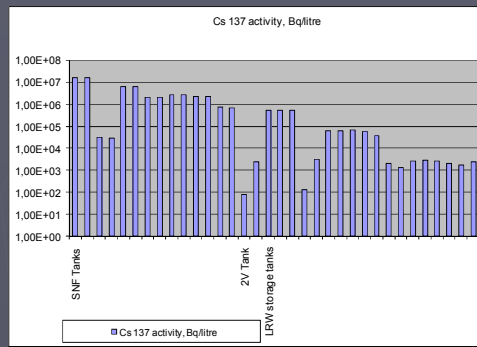
Bar chart 2



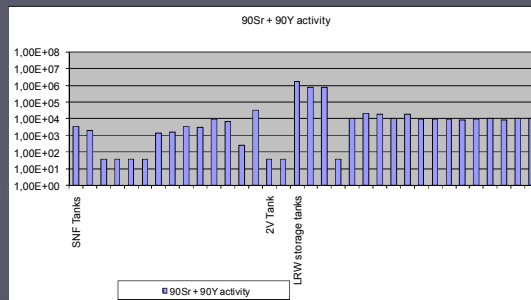
Bar chart 3.



Bar chart 4.



Bar chart 5.



CONCLUSIONS BASED ON LRW SURVEY RESULTS AT SEVRAO BRANCH 1

- Results from LRW study carried out in 2007 are generally consistent with the data accepted under OBIN development.
- An additional sampling and survey of samples from SNF Tanks are required to obtain more accurate data on the amount of LRW that contains alpha emitting radionuclides.
- Appr. 3,000 cub.m. of accumulated LRW classed as low active subalkali, low saline, containing oil products and organic substances will be delivered to the LRW management workshop.

Table 2

Facility Title	Characteristics	Function
Facility 67	A semiunderground concrete blockwork comprising over 600 cells. The flooded cells are covered with concrete plugs. A process hall is built of lightweight structures above the cells. There is a 16t overhead travelling crane in the hall. The hall is now filled with steel SRW containers; most cells are therefore inaccessible.	to store high and medium activity SRW
Facility 67A	A semiunderground concrete blockwork comprising 32 rectangular compartments and 200 cylindrical cells. The compartments and cells are covered with concrete plugs. The building is covered with a detachable gable steel roof. The cells and compartments contain water.	to store high and medium activity SRW
Facility 7	Semiunderground concrete blockworks that consist of cells of different sizes. The structures are covered with concrete blocks. SRW is stored on the ceiling cover.	to store high and medium activity SRW
Facility 7A	No accurate data on the structure. Containers with medium activity SRW are on the surface of the facilities.	to store low active SRW

Facility 7B	Four underground 8 cub.m. steel tanks. Over the tanks there are three 3.3m x 1.8m concrete cubicles 1.8m high, which house pumps, filling and discharge pipes, filters. The concrete boxes are diked with the soil from all the sides. The soil layer above the cubicles is 2m high.	to store low active combustible SRW
Facility 7B1	Underground concrete blockworks that consist of cells of different sizes. The structures are covered with concrete blocks. SRW is stored on the ceiling cover.	to store high and medium activity SRW
Facility 7V	A short-term 280 sq.m. SRW storage area covered with concrete slabs. Design documentation is not available as the facility was built without it.	to store low active SRW
Facility 7G	A short-term 220 sq.m. SRW storage area covered with concrete slabs and soil. Design documentation is not available as the facility was built without it.	to store medium activity SRW
Facility 7D	A ground concrete containment assembled of concrete slabs.	to store medium activity SRW
Facility 7E	An open area concreted to a 30cm depth.	to store bulky unpacked low activity SRW
montejus pad area between facilities 7B1 and 7G	A short-term 300 sq.m. SRW storage area covered with concrete road slabs.	short-term storage of SRW
area between facilities 7E and 7G	a non-equipped earthen area where different types of SRW is located	
area between facilities 7 and 7A	SRW covered with soil	
	a non-equipped earthen area where different types of SRW is stored in steel containers stacked on top of each other in three tiers.	

Table 3.

Group Designation	Radwaste Type	Examples of Radwaste in the Group
1	2	3
A	Containerised SRW stored in storage facilities (existing containers)	SRW containers of all types and dimensions in the open areas and inside storage facilities (except containers placed in The low and medium activity radwaste storage facility between 2001 and 2003)
B	Bulky thick-wall components	Assemblies of the 300xOK300 04MSB type, base casks etc. Mostly stainless steel thick-wall components that require specific methods to be conditioned.
C	Thin-wall components	Drums, tank equipment, cases, coaming slabs, rails, pipes.
D	Onsite containers	22, 22M, 24, 24M canisters
E	Concrete beams, slabs, blockwork	SRW generated as a result of eliminating emergency situation in Building 5
F	Concreted ion-exchange traps	Special methods need to be developed for conditioning
G	Non-concreted ion-exchange traps	Special methods need to be developed for conditioning
H	Soft combustible SRW (compressible)	PPE, bags, rubber, cables etc.
I	Hard combustible SRW (wood)	Broken wooden boxes etc.
J	Lead plates, slabs etc	SRW generated as a result of eliminating emergency situation in Building 5
K	High activity waste (control rods, ionization chambers, ion-exchange traps etc)	Special methods need to be developed for conditioning
L	Soil	Made-up ground in the open storage areas

Table 4 – SRW Types

Total Quantity of SRW, cub.m.	including:		
	combustible and non-combustible (compressible), cub.m.	non-compressible, cub.m	metal, cub.m.
17600	4280	3600	9720
100%	~24 %	~21 %	~55%

Table 5 – SRW Breakdown against Activity Categories

Total Quantity of SRW, cub.m.	including:		
	Low activity SRW	Medium activity SRW	High activity SRW
	<i>< 10³ kBq/kg or < 0.3 mSv/hr or from 5*10² to 10⁴ β-particles/(cm² min)</i>	<i>(10³ -10⁶) kBq/kg or (0.3-10) mSv/hr or from 10³ to 10⁶ β-particles/(cm² min)</i>	<i>> 10⁶ kBq/kg or > 10 mSv/hr or over 10⁶ β-particles/(cm² min)</i>
17600 cub.m. Total activity appr. 6.6x10 ¹⁴ Bq	~14020 m ³	~2980 m ³	600 m ³
100%	~80 %	~17 %	~3%

CONCLUSIONS ON RESULTS OF SRW INVESTIGATION

- All accessible SRW on the site has been surveyed.
- Non-accessible SRW does not significantly influence on the selection of design solutions for the SRW management workshop.
- Available data on SRW types and volumes are sufficient for designing.
- Twelve types of waste that differs in dimensions and activity categories can be found on the site. The variety of SRW types determines a necessity to use different containers and packages in the SRW management workshop.

LRW GENERATION SOURCES
LRW to be generated at the SNF management facilities

- LRW in the area for fuel spillage removal;
- solutions that result from decontamination of SNF management premises;
- solutions arising from the decontamination of SFRA repackaging equipment;
- LRW removed from SNF Tanks and SFRA canisters.

LRW arisings from the SRW management workshop:

- LRW to be generated when SRW is decontaminated in the SRW processing facility and Shelters 1 and 2;
- LRW from SRW dehydration at the dehydration plant in the low and medium activity waste storage;
- LRW arising from decontamination of equipment in the SRW management workshop;
- LRW from decontamination of rooms during the operation of SRW reprocessing facilities (rooms in buildings and structures of the SRW processing facilities)

LRW from LRW management workshop:

- LRW from decontamination of equipment in the LRW management workshop;
- LRW generated in the course of room decontamination during the operation of LRW processing workshop;
- LRW from the storage tanks

LRW from auxiliary buildings and structures

MODIFICATIONS TO LRW MANAGEMENT STRATEGY

- Input data on the quantity of secondary LRW to be generated at the SNF and SRW management workshops have been revised.
- A new location of the LRW processing workshop has been identified.
- Architectural and planning solutions of the LRW processing workshop have been changed.
- The building will be populated with modular equipment.
- Engineering methods to be applied have been optimised.
- A mobile plant for low saline and low active LRW treatment will be applied.
- Activity levels of LRW extracted from the SNF Tank cells will be preliminary reduced at a separate processing plant.

MODIFICATIONS TO SRW MANAGEMENT STRATEGY

- Input data on the quantity of secondary SRW to be generated at the SNF and LRW management workshops have been revised.
- Facilities within the SRW management workshop have changed.
- Units for acceptance and defrosting of SRW containers will be in the SRW management workshop;
- A new location of the interim storage for conditioned SRW has been selected. It will be closer to the pier.
- Architectural and planning solutions of the SRW management workshop have been modified.
- Equipment items in the SRW management workshop have been changed.
- The variety of container types to be used for SRW management has decreased.

SRW MANAGEMENT WORKSHOP FACILITIES

- Shelters 1 and 2 over existing SRW storage facilities;
- SRW processing workshop;
- Sanitary Pass at the entrance to the area of SRW processing facilities;
- Modular sanitary sluice 1 – a sanitary sluice for the personnel to enter the controlled access area near Shelter 1;
- Modular sanitary sluice 2 – a sanitary sluice for the personnel to enter the controlled access area near Shelter 1;
- Laboratory and service building;
- Interim storage for conditioned SRW;
- Washing facility for special- purpose vehicles, machinery and reusable casks;
- Construction waste compound;
- Fixed PMK-67 pier.

BOTTLENECKS OF SEA TRANSPORTATION

- The mooring line at Saida Bay does not allow ship moorage; to enable this the design pier needs to be elaborated;
- Difficult navigation conditions between Andreeva Bay and Saida Bay do not allow using the ship only, without tug-boats, which will considerably increase the transportation costs