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ANDRA – Centre de Stockage de l'Aube

Storage cell damaged wall

On April 22nd, 2005, the ANDRA informed the nuclear safety Authority that the wall of a storage cell fissured while concrete was added on the last layer of wastes stored in the CSA disposal site (centre de stockage de l'Aube). After the nuclear safety Authority issued an authorization dated May 23rd, 2006, the running operator was authorized to fix the damaged wall and to resume exploiting the cell.

The radioactive waste barrels are stored in successive layers, in compartments made of reinforced concrete. These compartments are divided in cells (unit dimension : 25 m x 21 m x 8 m approximately) by inner walls which reinforce the stability of the storage structures by creating links between the walls running lengthways. These links also contribute to create a resting surface for the top ceiling and a load transfer of the final cover. On each floor, the barrels are drowned in a concrete layer filling the gaps.

On April 22nd, 2005, while a cell was being covered with concrete in the last layer of waste parcels, the running operator noted the fissuring of the foot of the inner wall separating two cells, one being filled and the other empty. The origin of the fissure was a "water corner" phenomenon resulting from the hydrostatic pressure of a water column formed with the infiltration and which could lead to the breaking of the wall.

In conformity with the nuclear safety Authority demands, the ANDRA presented a file reviewing the causes of the event, the arrangements made to avoid its repetition and the fixing solutions considered so that the wall would recover its full strength. Considering these elements, and after it announced its technical support, the IRSN, the nuclear safety Authority authorized the cell to be fixed and to resume exploitation on May 23rd, 2006. The repair work consists in building a new wall resting on the one which was damaged, and to anchor it in the radier and the walls running lengthways.

This "water corner" phenomenon was under-evaluated during the conception of some cells. The nuclear safety Authority demanded that all these cells be from now on conceived to resist the most severe "water corner" phenomenon. Regarding the cells already built, the setting of a surrounding waterproof joint at each concrete layer will prevent this phenomenon from happening.

This event revealed a flaw in the conception of the storage cells of the site. It was ranked at level 0 of the INS scale which counts seven levels.