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France committed in a responsible HEU management

↳ French strong commitment for

- ↳ the responsible management of HEU
- ↳ and minimization of HEU when acceptable conditions of technical and economic feasibility are met
- ↳ in order to reconcile the imperatives of nuclear security and concerns about public health and basic research

↳ French actions

- ↳ Among 30 research reactors put in operation, 7 reactors using HEU have been shut down before 2000 and 4 between 2000 and 2007
- ↳ OSIRIS, converted to LEU in 1978

↳ Top level industrial capacities are necessary

- ↳ CERCA committed to support its customer for successful conversion: South Africa, in Poland, in Portugal, in Turkey, in Romania, etc.
- ↳ In cooperation with his costumers, CERCA qualified a manufacturing process for a reliable, safe and large scale production of LEU high density Mo99 targets (several thousand targets delivered)



Some technical challenges still to be solved

↳ Example of high performance research reactors

- ↳ Some high power reactors in Europe, Russia, USA cannot be converted to LEU
- ↳ Since 1999, significant investment in France for high density UMo fuel

↳ But this development is complex.

- ↳ Ten years ago, qualified solution expected before 2006, a milestone in the US return policy of spent fuel
- ↳ Now, community still committed to develop and demonstrate a solution

↳ In Europe,

- ↳ Ongoing tests under irradiation are on-going to qualify UMo dispersion fuel
- ↳ Silicon allows improving significantly the fuel behaviour under irradiation
- ↳ Good results obtained at intermediate burn-up, to be optimised for high burn-up

↳ After having qualified a solution

- ↳ Industrial process to be demonstrated as reliable and economically reasonable
- ↳ Full safety demonstration, a major milestone for high power reactor



production of Mo99 isotopes for medical application

- ↪ Because feasibility is demonstrated (previous presentation), France shares with some other European countries the objective to use LEU for producing Mo99 within few years
- ↪ Complex network to produce Mo99 production in Europe
 - ☞ Benefit in terms of robustness as it was demonstrated in previous crisis.
 - ☞ But related complexities contribute to the delay of conversion.
- ↪ A cautious pathway has to be implemented since the Mo99 European production allows performing 7 to 8 millions of exams per year all over Europe and the same amount of exams for USA



A necessary international collaboration

- ↪ As other countries, strong French commitment for LEU whenever it is possible
- ↪ In some cases, conversion rises challenges requiring delays
- ↪ Strong effort in the community
 - ☞ But conversion relies on technical maturity, economical performance and above all safety at the best possible level.
- ↪ International R&D cooperation is a key answer
- ↪ But international cooperation means also reliable uranium exchanges in good faith between Uranium supplier and end-users