



PATRAM 2010

ITALIAN – FRENCH EXPERIENCE IN TRANSPORT OF INF
FOR REPROCESSING

FERNANDA DI GASBARRO

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London, 7 October 2010

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Sogin SpA

- Founded in 1999 for decommissioning Italian NPP
- In 2007 contract with AREVA for transport and reprocessing of 235 tons



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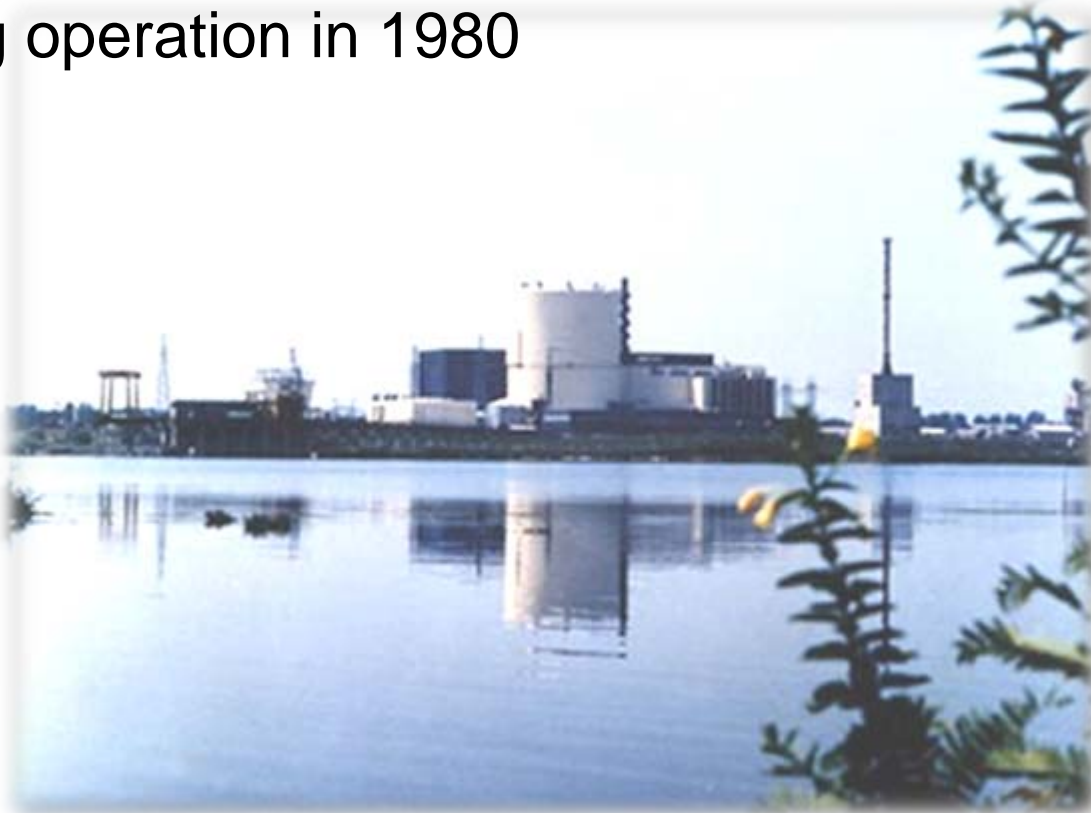
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Caorso NNP

Built by ENEL, Ansaldo Nucleare, and GETSCO in the 70's

GE BWR 4 with 875 electric MW

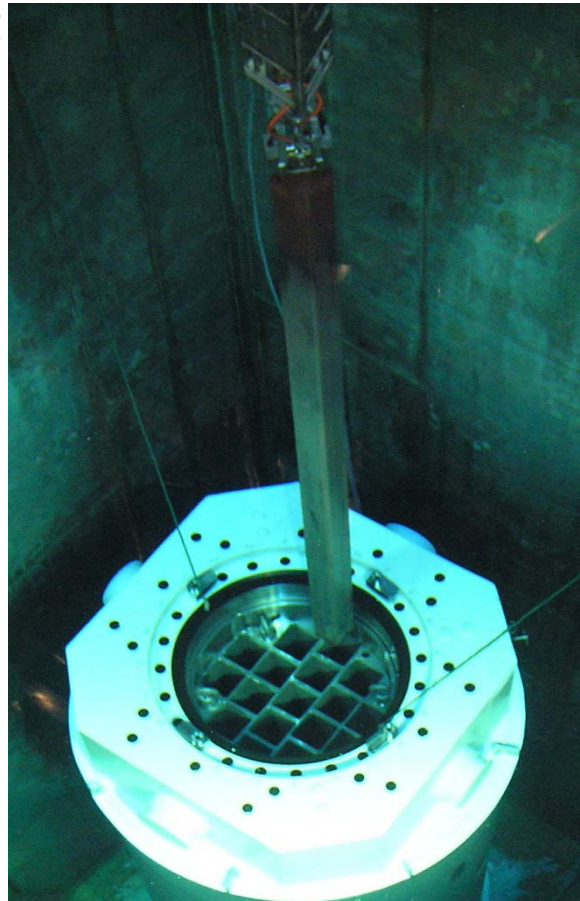
Starting operation in 1980



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BWR nuclear fuel

- In the core 560 UO₂ FAs, 8 by 8 pins
- Burned a total of 1032 FAs per 190 tons of HM
- Average burn up 19000 MWd/t




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Caorso site

NPP close to the small village of Caorso on the right side of the Po river



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Main actors involved

- Sogin, AREVA, TN International
- MIT Nucleare, Trenitalia and SNCF
- All relevant French and Italian Authorities involved in the licensing of cask, transport design and security aspects



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Caorso transport characteristics

16 transports of 61 loaded casks:

2 transports of 2 casks

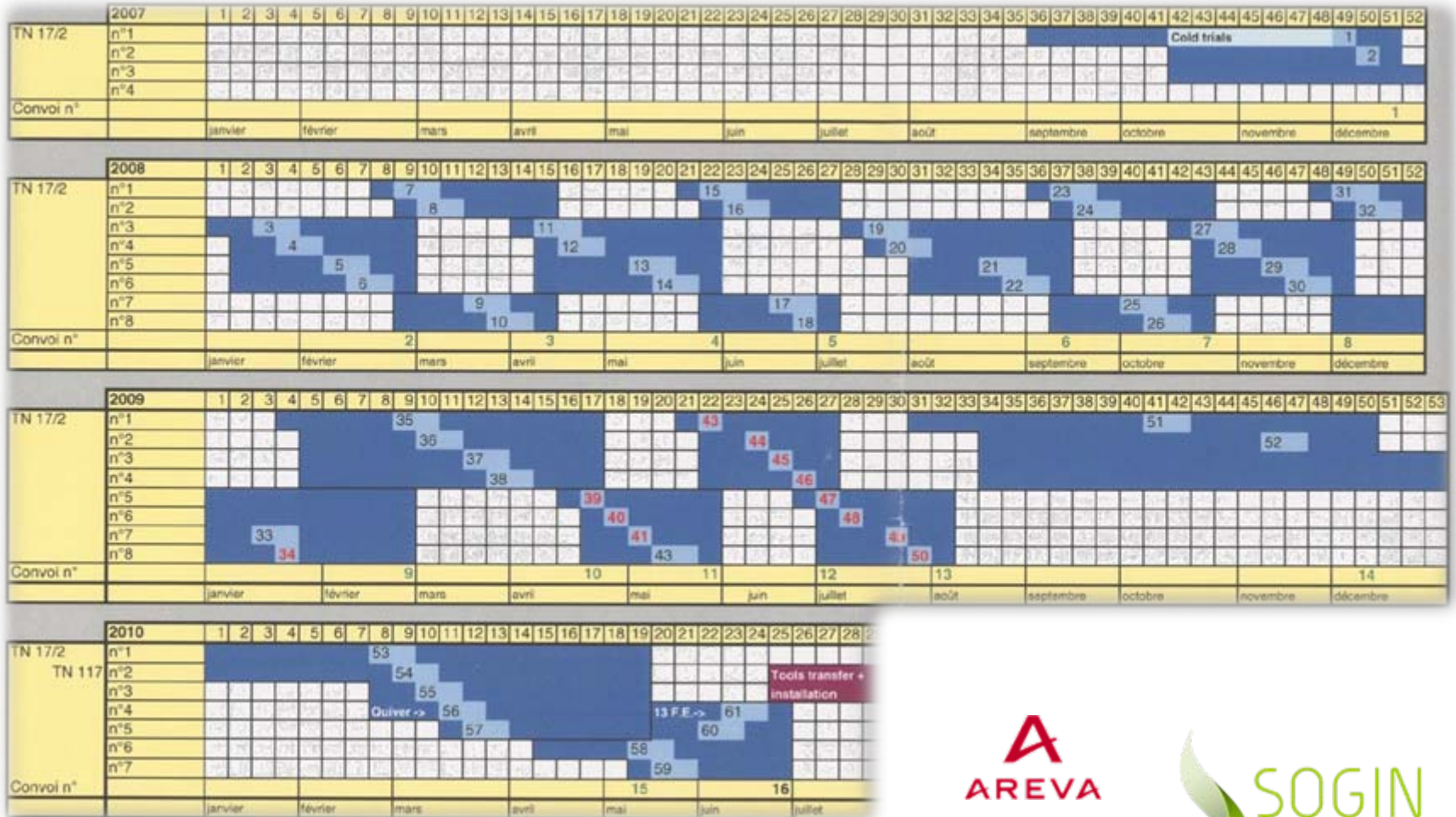
13 transports of 4 casks

1 transport of 5 casks



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Time schedule



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TN17/2 Cask

A type B package:

Empty weight of 74 tons

Loaded weight of 79.5 tons

Overall length of 6.15 meters



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The road vehicle

Eight-axle road vehicle licensed for public roads



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The rail vehicle

Q70 wagon used for the rail transport



Overall length 20.70 meters

Width 3.06 meters

Empty weight 47 tons

Max loaded weight 160 tons



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Plant modifications

Adapting the plant to TN17/2 cask and its specific tools required 12 months



Equipment pool
Decontamination cell
Fuel bridge
Polar crane


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Equipment pool

Setup of metallic skirt on the cask before putting it into the pool




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Decontamination Cell

Arrangement to the interfaces of the TN 17/2 cask




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Fuel bridge

13 cm elevation of the top beam



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POLAR CRANE

Upgrading the polar crane of the reactor building to the safety standards NUREG 0612 appendix C



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Road vehicles switch inside NPP

Transfer of the cask from the eight-axle semi-trailer to the six-axle truck trailer




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Casks storage area inside NPP

Fleet up to 8 TN17/2 casks utilised for the transport

Segregated area inside NPP to guarantee safety and security



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Transfer site - History and characteristics

Railway area near Caorso railway station purchased by Sogin



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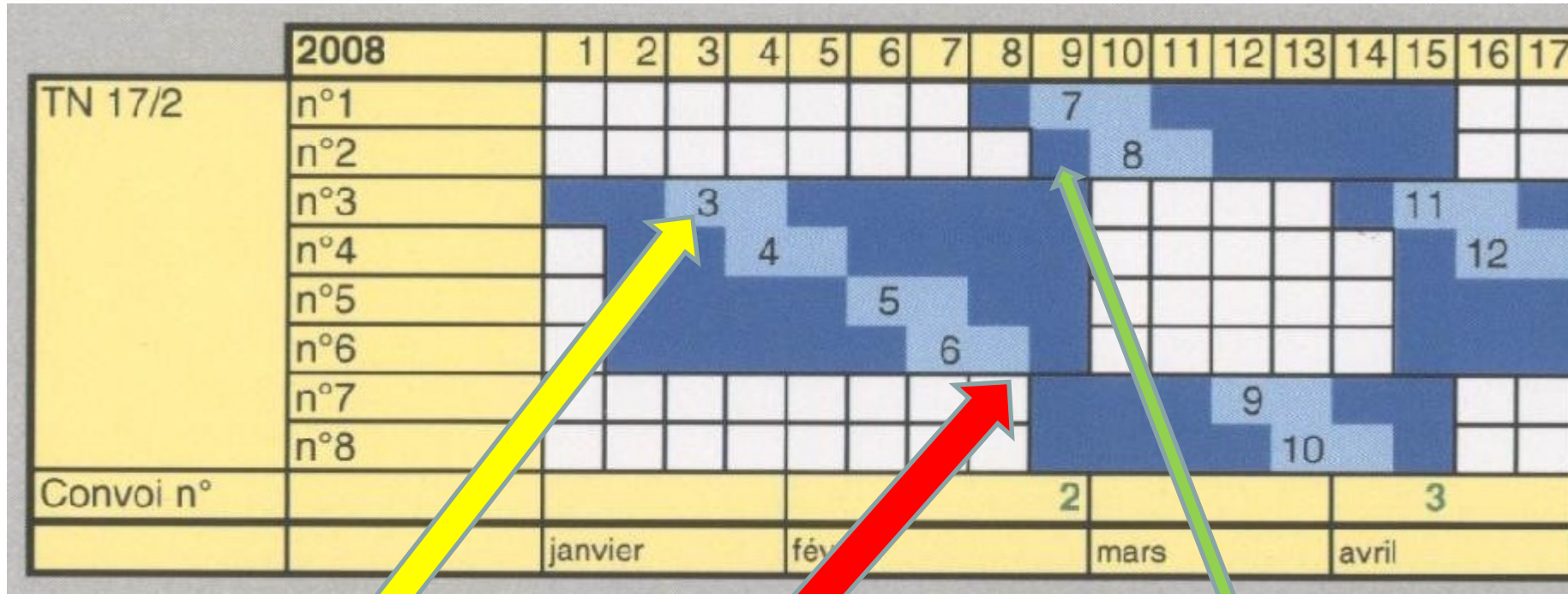
The crane

120 tons capacity frame crane



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Typical scheme of the transport



**Loading in
CAORSO NPP**

**Shipment 4 loaded
casks
-
Arrival 1 empty cask**

Arrival 3 empty casks

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Security aspects

Increased security level for the plant and transfer site by Sogin



Security aspects for transport by Prefettura and Public Security Committee




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Destination plant and recycling

190 tons shipped to La Hague:

82 tons treated in 2008

78 tons treated in 2009

30 tons treated in 2010



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Conclusion

Such an ambitious goal has been reached only thanks to the joint efforts of all the actors involved




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