WNTI and NUTRANSTOR
Workshop collaboration:

International spent fuel shipment experience: Information sharing of lessons learned and best practices.

Monday 19th July 2021
Virtual Meeting - WebEx

Agenda

Introduction

Mitch Arvidson
The Council of State Governments Midwestern Office

Presentation - Some Aspects on The Swedish Back-End System

Anna Wikmark, SKB (Sweden)

Presentation – Nuclear Material Transportation Global Acceptance

Anne Presta (France) & Mike Valenzano (USA) Orano NPS

Q&A Session

All Panelists

Workshop Presenters and Hosts

- W. Scott Edwards, WNTI, London, England
- Catherine Shelton, NUTRANSTOR, St. Croix, USVI
- Michael Snee, Ohio Dept. of Health, Columbus, Ohio
- Mitch Arvidson, The Council of State Governments Midwestern Office
- Anna Wikmark, SKB, Stockholm, Sweden
- Mike Valenzano, TN Americas, Columbia, Maryland
- Anne Presta, Orano NPS, Paris, France

What is the World Nuclear Transport Institute? What is it for?

- Founded in 1998 in London, England, by 3 Founder Members
  ORANO (ex AREVA), Nuclear Transport Solutions (ex INS), FEPC (Japan)

- 49 Members from a wide range of industry sectors: radioisotopes producers, major utilities, fuel producers, transport companies, package designers, package producers, mining companies, insurers…


orano
Giving nuclear energy its full value


NTS
Nuclear Transport Solutions


wnti


FEPC
The Federation of Electric Power Companies of Japan


Sellafield Ltd


ALARA
Logistics


BGZ
Gesellschaft für Zwischen-lagerung mbH


bhpbilliton


Cameco


cea


CMA CGM

CONVERDYN


DAHER


DIRECT RAIL SERVICES


eDF


Elini


GEODIS
wilson


GNS


Hitz
Hitachi Zosen


JNFL


АТОМСПЕЦТРАНС
РОСАТОМ


СПБ ИЗОТОП
РОСАТОМ


ТЕХСНАБЭКСПОРТ
РОСАТОМ


LLW Repository Ltd


MAERSK
LINE


Marubeni
CORPORATION


KAZATOMPROM
NATIONAL ATOMIC COMPANY


CIMC


NFI


NUCLEAR FUEL TRANSPORT CO., LTD.


nwmo
NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES


PNTL


Radioactive Waste Management


ROLLS
ROYCE


serco


sojitz


Sumitomo Corporation


TRANSRAD
RESPONSIBLE LOGISTICS


urenco


Westinghouse


axpo


TAM International LP


Assuratome


ARRC
ATLANTIC RO-RO CARRIERS


descote


NUCLEAR POOLS

Observer Status at Major International Organizations

wnti

IAEA
International Atomic Energy Agency
Atoms For Peace

IMO

UNITED NATIONS

ISO

ICAO • OACI • ИКАО
国际民航组织 • ايكاو

World Nuclear Transport Institute

- The voice of the radioactive materials transport industry
- Industry Representation at International Organisations
- Factual information – Fact Sheets, website www.wnti.co.uk
- Good Practice Guides for the industry
- Working Groups for industry members
- Organizing Regional and specific thematic workshops for our members

NUTRANSTOR

A Reactive team at Competitive Rates

- MISSION: As an open group of retired nuclear industry members, our mission is to assist in solving issues in Nuclear Field, to protect and promote Nuclear and to transmit our experience to younger generations
- NUTRANSTOR activity is split into :
  - Volunteer actions of coaching and promotion of nuclear
  - Commercial actions of problems solving or specific training for the Nuclear Industry including peer reviews and independent assessments
- Various nuclear fields can be treated due to the vast real-life experience of NUTRANSTOR members, especially:
  - Nuclear transports and logistics
  - Specific nuclear regulation topics
  - Spent fuel activities (transport, storage, disposal)
  - Nuclear D&D of all types of reactors
  - Waste management and repositories
- Subjects can be organizational, regulatory or technical.
- Value added of NUTRANSTOR is to bring our unbiased appreciation of the problems helping the teams to solve the issues in their general context. It is also to bring to the executive levels an independent global appreciation - It is never to replace the teams in charge of the problem

The Power of Shared Knowledge

email us at cshelton@nutranstor.com -

visit us at www.nutranstor.com

Scott Edwards Bio

sedwards@wnti.co.uk

Education & Certifications

B.S. Chemical Engineering, Virginia Tech, 1989

M.B.A, Xavier University, 2003

Certified Project Management Professional, 2018

Work Experience

- Staff Lieutenant, Naval Reactors Headquarters, US Navy, 1989-93
- Packaging Engineer and Project Manager, Hanford Site, 1993-98
- Project Manager, Chem-Nuclear Systems, 1998-2000
- Shipping and Storage Manager, Fernald Site, 2000-2004
- Project Manager, Yucca Mountain Project, 2004-06
- Packaging and Transportation Manager, Idaho National Lab, 2006-08
- Transportation Safety Manager, Hanford Site, 2008-12
- Project Manager, Packaging and Transport, AREVA TN Americas, 2012-15
- Director of Transportation, AREVA/Orano TN Americas, 2015-19
- Regulatory and Design Specialist, WNTI, 2019-

Catherine Shelton Bio

cshelton@nutranstor.com

Catherine has a very complementary profile with 35 years of experience with transportation of radioactive materials as well as worldwide knowledge with spent fuel management solutions.

She started her career in 1983 at La Hague Reprocessing plant in Normandy (Orano former AREVA). During her 18 years in France at La Hague and in Paris, she managed numerous types of shipments including spent fuel, vitrified waste, plutonium, research reactors, front end materials, etc.

She moved to the United States in 2001 to manage radioactive transports for commercial but also federal customers (NAC International and Orano). She also worked in the Strategy with a focus on logistics

After retiring from corporate life, she started consulting in 2019. She holds the equivalent of a Master degree in Business; she received a Lifetime Achievement Award from Packaging and Transportation of Radioactive Materials (PATRAM).

Introduction

Mitch Arvidson, The Council of State Governments Midwestern Office
On behalf of:
Michael Snee Ohio Bureau of Radiation Protection
michael.snee@odh.ohio.gov

SKB, SWEDEN

Presenter: Anna Wikmark
anna.wikmark@skb.se

Anna Wikmark is a specialist of radioactive materials transports with over 25 years of experience from the nuclear industry and 21 years in radioactive materials transport. She has been leading several international projects involving shipment of irradiated nuclear fuel and core components.

Since 2014, Anna is working at the Swedish Nuclear Fuel and Waste Management Co. As the Manager for Fuel and Waste Streams & Transports she is also responsible for the Swedish nuclear transport system including the nuclear cargo vessel M/S Sigrid.

Some Aspects on The Swedish Back-End System

Web Workshop
19 July, 2021

Anna Wikmark
SKB

Outline

1. SKB Assignment
2. Swedish Back-End System
3. KBS-3 Concept
4. Swedish Transport System
5. The journey to a Selected Site and Strong Public Relations
6. Lessons Learned
7. Safety and Security in Transportation of Spent Nuclear Fuel
8. Wrap up and Conclusions

SKB Assignment

SKB is a private company owned by the Swedish utilities

Manage and dispose of all radioactive waste from all Swedish NPP

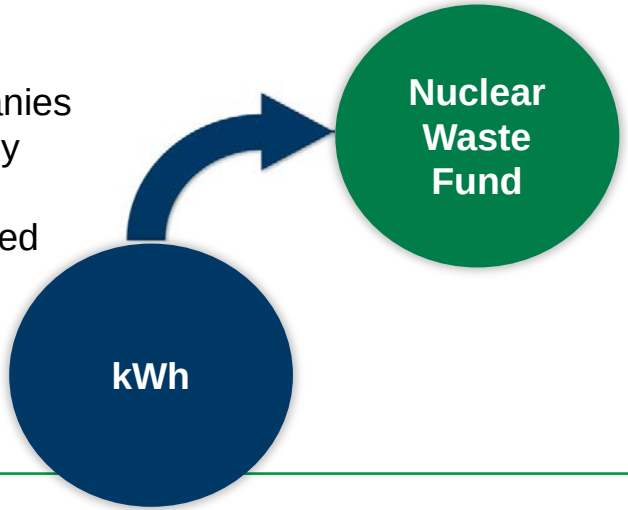
- Spent nuclear fuel
- Low- and Intermediate Level Waste

Manage waste from hospitals, industry and research

Ensure safety for human beings and the environment

Clear responsibility and sound financing

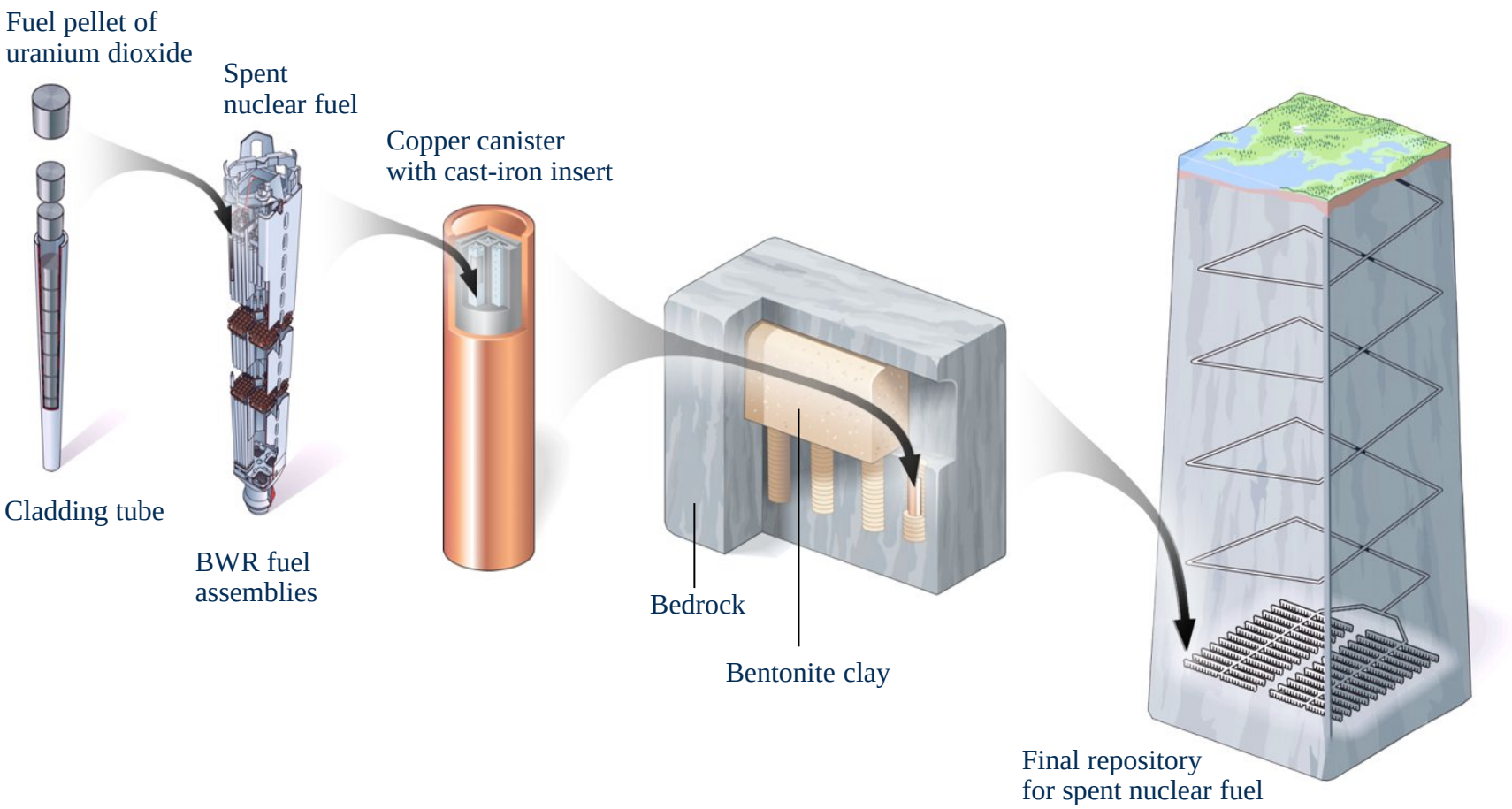
The owner companies fund approximately 5 öre per kWh electricity generated by nuclear power



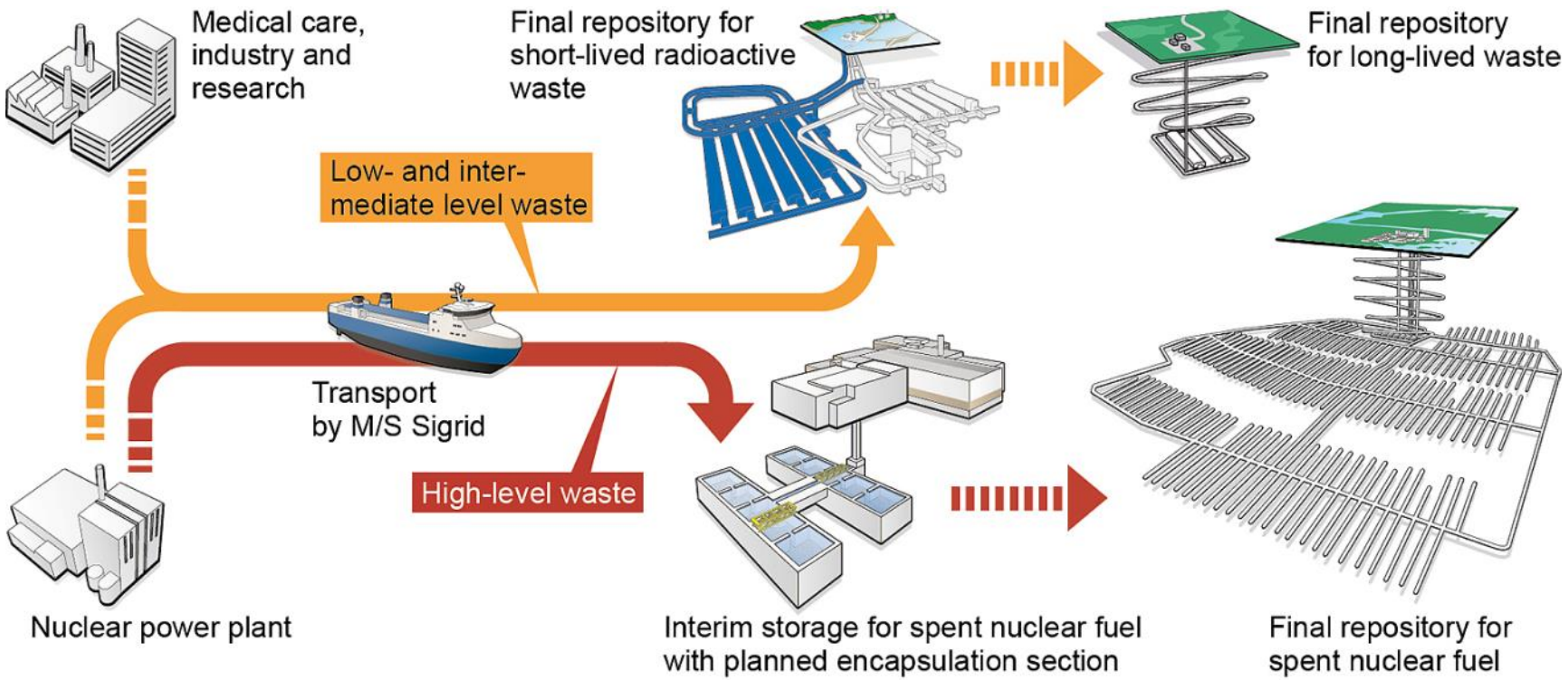
Approx:

- SEK 69 billion in the fund
- SEK 53 billion used
- Total programme estimated to SEK 147 billion

The KBS-3 concept



The Swedish System



SKB Transport System

The transport system has been in operation since 1982

- **Transport packages**
- **Transport frames**
- **Special built trucks**
- **Nuclear Cargo Vessel**
- **Administrative system**

SKB Transport Experience

Spent Nuclear Fuel (SNF)

~ 70 casks annually (50 by sea and 20 by road)

~ 800 fuel assemblies annually

~ 200 tonnes U annually

Nuclear Waste (LLW, ILW)

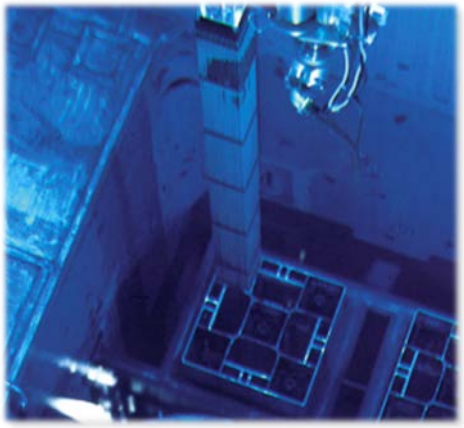
~ 70 casks or containers annually

(40 by sea and 30 by road)

The Swedish System – Facilities

Clab - Interim storage for spent fuel

- 7 300 tonnes spent fuel in interim storage



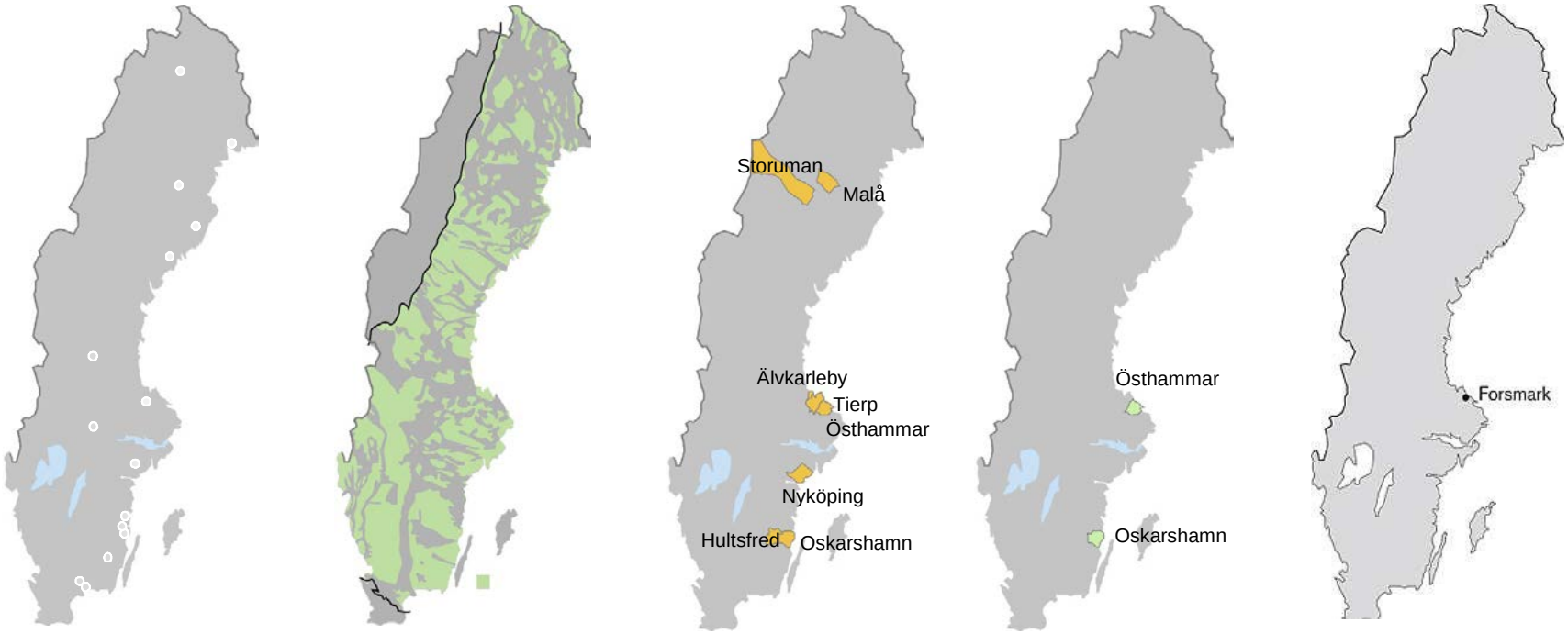
SFR - Final repository for short-lived operational radioactive waste

- 40 000 m^3 of waste in the facility

Ongoing projects for future facilities

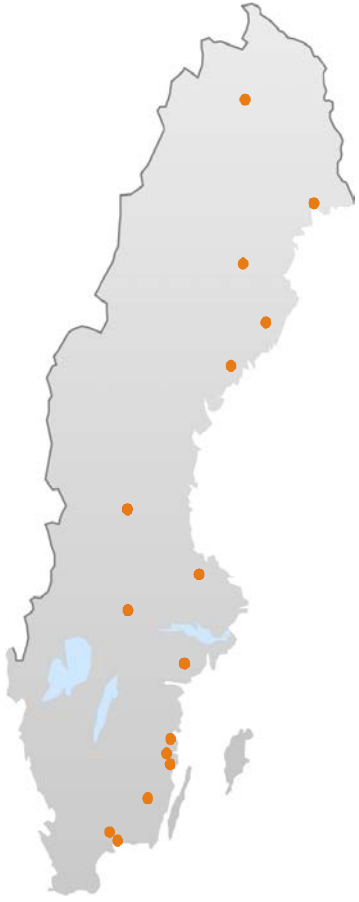
- To construct and operate a facility (Clink) for storage of spent nuclear fuel and core components and for encapsulation of spent nuclear fuel
- To construct and operate a facility (The Spent Fuel Repository) for final disposal of spent nuclear fuel and nuclear waste in accordance with the KBS method with vertical deposition of the canisters (KBS-3V)
- Final Repository for Long-lived Waste

The Journey to a Selected Site and Good Public Relations



Type areas	General siting studies	Feasibility studies	Site investigations	Siting
1977-1985	**1990s**	**1993-2002**	**2002-2008**	**2009**

Early Experiences and Implications

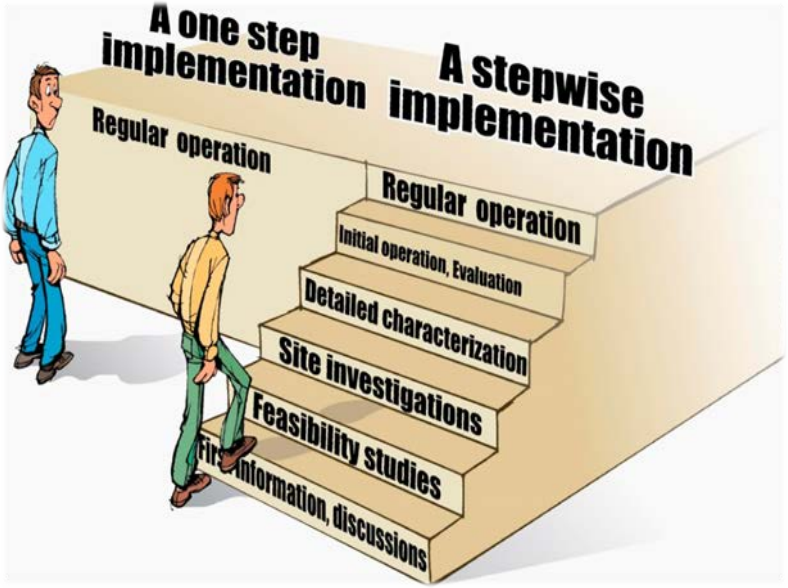


Type areas
1977-1985

© Bengt Backström, Upsala Nya Tidning

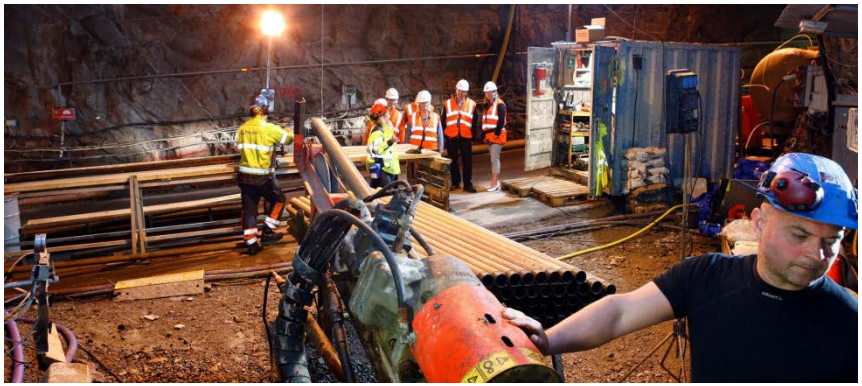
Developed Strategy for Site Selection

- Transparent process based on voluntary participation and respect for local democracy
- Step-wise implementation
- Continuous dialogue, knowledge building and stakeholder involvement
- Clear roles for state and industry
- Ability and political will, nationally and locally, to move forward and make necessary decisions



Dialogue and Openness

Facility Visits



Information in the Municipality Östhammar

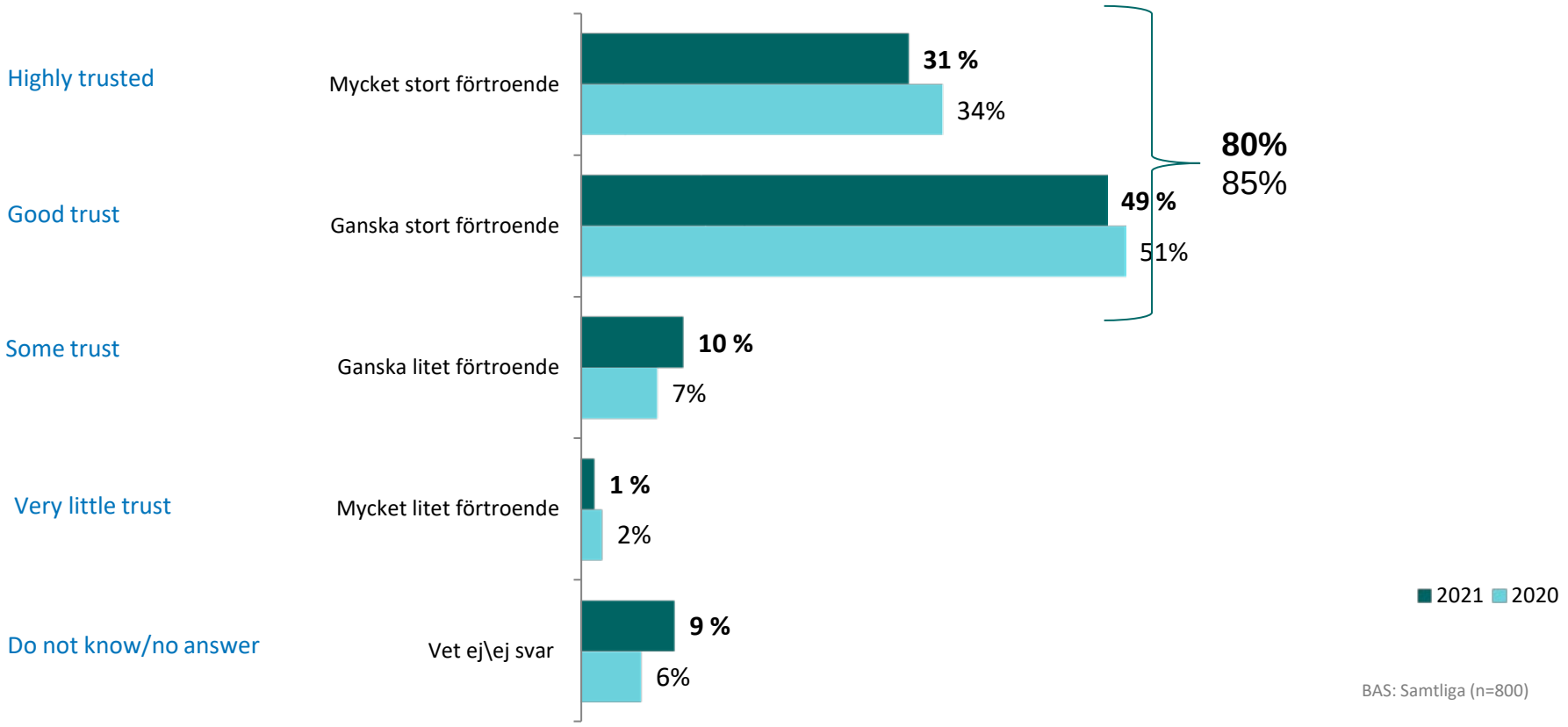
About 22 000 inhabitants

- ✓ Municipality council
- ✓ General public - small informal meetings
- ✓ Study trips to SKB's facilities in Forsmark and Oskarshamn
- ✓ Schools
- ✓ Companies, associations, workplaces

Public Opinion Poll

Vilket förtroende har du för företaget Svensk Kärnbränslehantering AB, SKB?

What confidence do you have in the company Svensk Kärnbränslehantering AB, SKB?

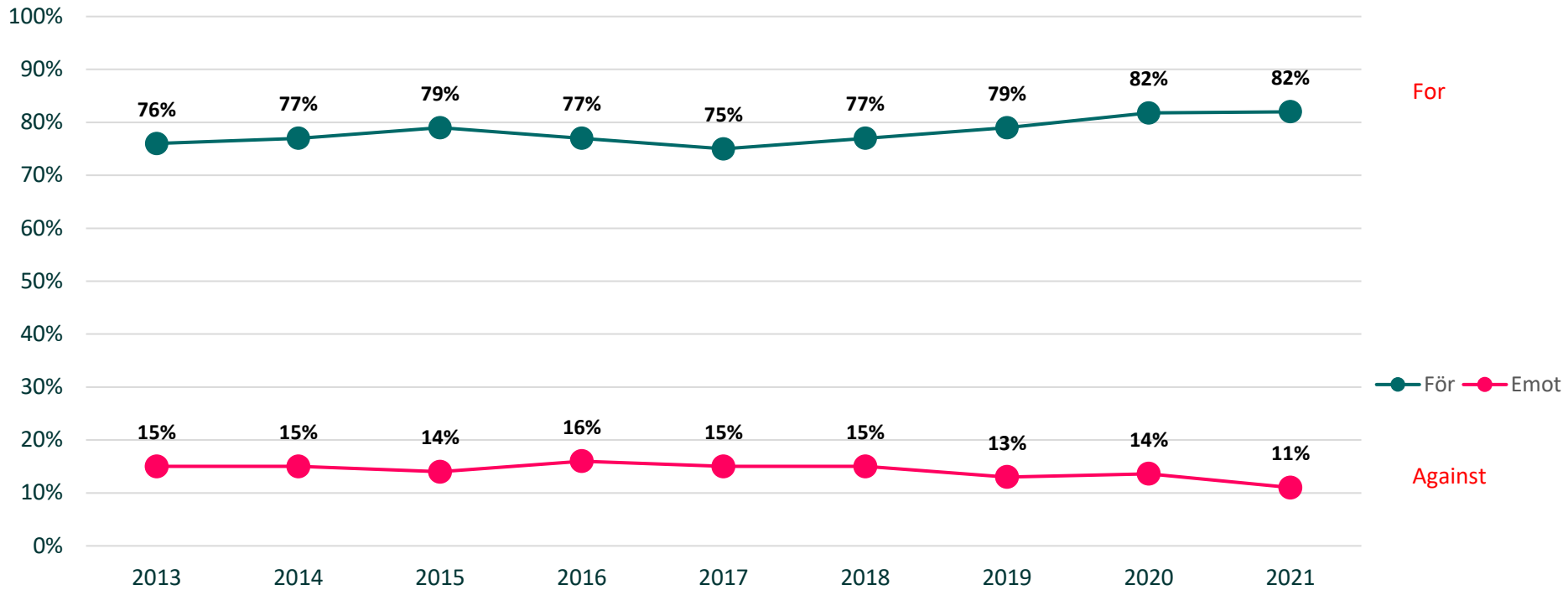


BAS: Samtliga (n=800)

Public Opinion Poll

Vilken är din inställning till att SKB planerar att bygga ett slutförvar för använt kärnbränsle i Forsmark i Östhammars kommun? Är du ...?

What is your opinion about SKB planning to build a final repository for spent nuclear fuel in Forsmark in Östhammar municipality - are you ...?



BAS: Samtliga (n=800)

Lessons Learned

- Transparent process and respect for local democracy
- It takes time to create relations and understanding
- Local staff with local relations and networks
- Be present and available – always
- Find the code

  Be creative and adapt the communication to local conditions – there is no “standard method” for building local acceptance. Strive to be integrated in the local society
  Respect that seemingly unimportant issues (from the implementer's point of view) may be crucial to others
- Keep the task separated from future nuclear power
- Trust must be earned….

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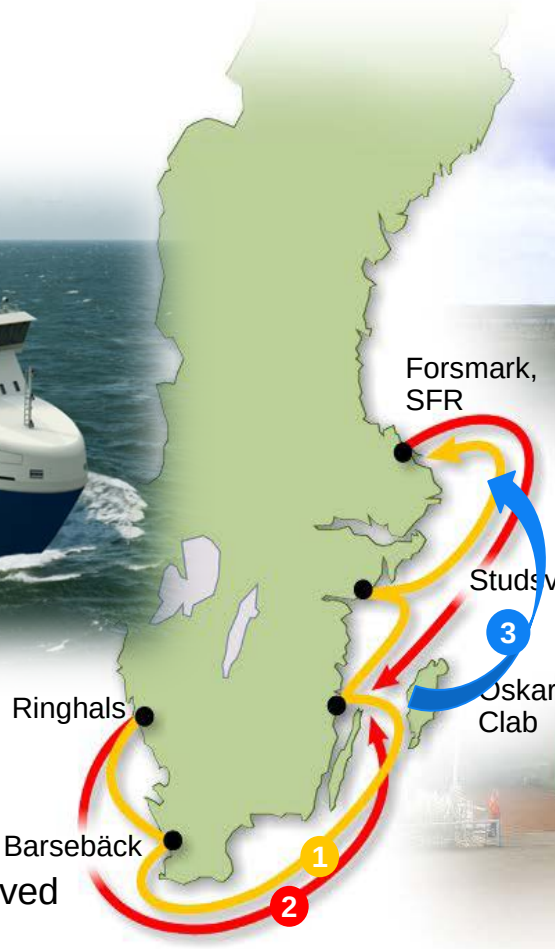
Safety and Security in Transportation of SNF



1 SFR
Operational waste – short lived

2 Clab
Spent nuclear fuel – long lived

3 Final storage for fuel
Encapsulated fuel – long lived

Safety and Security in Transportation of SNF

Transporting radioactive material requires measures to protect people and the environment from radioactive material

- Safety measures
- Security measures

Security Focus in Focus

- Rapidly elevated security focus in the years after the 9/11 attack
- Regulatory requirements on enhanced security

Safety and Security

The ultimate purpose of safety and security for nuclear activities is the same - necessary measures to protect people and the environment from radioactive material.

Two main areas of conflict

- Safety and security – transparency vs. need-to-know
- Different legislation areas

Safety

- Proper operating conditions
- Prevention of accidents
- Mitigation of accident consequences
- Sharing safety related incident information

- Knowledge
- Wide information sharing
- Transparency
- Sharing of experience to improve the safety

Security

The prevention and detection of, and response to,

- theft
- sabotage
- unauthorized access
- malicious acts

- Restricted need-to-know
- Prevention of valuable details to fall into hands of potential antagonists or terrorists
- Information security

Areas of Conflicts

Physical Protection Installations

- Access control

Confidential Information

- Transport routes
- Time schedules
- Transported goods
- Vessel and vehicle design

Vital information for successful emergency response
but also facilitating attacks by antagonists/terrorists

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Discussion

Correct information to the **right** person at the **right time**

The purpose of safety and security for nuclear activities is to protect people and the environment from radioactive material

- Regulatory bodies, competent authorities and agencies should actively work together to minimise the conflicts between the regulations
- Agreement and provision of guidelines where conflicts cannot be avoided
- International approaches and standards

Wrap Up & Conclusions

Key for a successful implementation and operation of a transport system and an effective security system

- Extensive knowledge and experience of the legislations and regulations for all areas regulating the operations. You must know what you are doing
- Constant dialogue, knowledge building and stakeholder involvement
- To be able to fulfil the “Need-to-know-basis” criteria lands at some point in ***trust***
- Take your time to create relations and understanding!
  - Local personnel with natural connections/relations and contacts
  - Be present and reachable – always
- Find the code
  Be creative and adapt the communication to local conditions – there is no “standard method” for building local acceptance. Strive to be integrated in the local society. Respect that seemingly unimportant issues (from the implementer's point of view) may be crucial to others.

Orano NPS, FRANCE & USA

Anne Presta & Mike Valenzano

Anne Presta Bio

anne.presta@orano.group

Education

Graduated from:

Paris Law University, gaining a law degree.

Kedge International Business School where she obtained a master's degree in International Business.

Work Experience

Anne PRESTA, since 2019, is Institutional Relations Unit Manager for Orano TN, the Nuclear Package and Services Business Unit of the Orano Group.
In addition to the management of Transports Physical Protection, she particularly follows the Public Acceptance activities directly linked with Nuclear Materials Transportation.

She has over fifteen years of experience in the transport of radioactive material, in charge of Project and Business Development transport activities.
In addition to that, Anne was involved in transport risk management, Emergency Preparedness and Response in charge of crisis communication.

From 2016 to 2019, Anne had been seconded by Orano to the World Nuclear Transport Institute as Specialist Advisor in charge of Transport Safety relationships with the IAEA.

Mike Valenzano Bio

michael.valenzano@orano.group

Mike Valenzano has over 20 years of experience in the handling, packaging and transportation of radioactive and nuclear materials, including used nuclear fuel. He has worked on high-profile nuclear non-proliferation projects in countries around the world and has supported transportation and storage projects for both commercial and government entities.

Currently, Mike is the Sr. Project Manager responsible for the transportation of reactor vessel segments from the decommissioning Vermont Yankee Nuclear Power Station to the Waste Control Specialists (WCS) disposal site in Texas as well as packaging of GTCC waste at the decommissioning Crystal River 3 Nuclear Plant.

SPENT FUEL TRANSPORTS IN FRANCE

The Unmatched Industrial Experience

Anne PRESTA (France) Mike VALENZANO (USA)

19 July 2021

WNTI Workshop

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OUTLINE

- ORANO NPS
- NUCLEAR CYCLE IN France
- SPENT FUEL TRANSPORT IN France
- MAJOR LESSON LEARNED

Orano Nuclear Packages & Services

Engineering

Design of Packaging systems and associated equipments
Material, shielding, criticality, mechanical and thermal behavior

Licensing

Safety Analysis Reports
Licensing process management

Supply of transport and storage solutions

Casks and associated ancillaries, Manufacturing
Supply chain management

Logistics

Transport commissioning, leasing of casks and transport means…

Services

Technical Assistance, Loading operations, Pool to Pad Services, Maintenance activities, Training…

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45

Orano NPS & Nuclear Transports

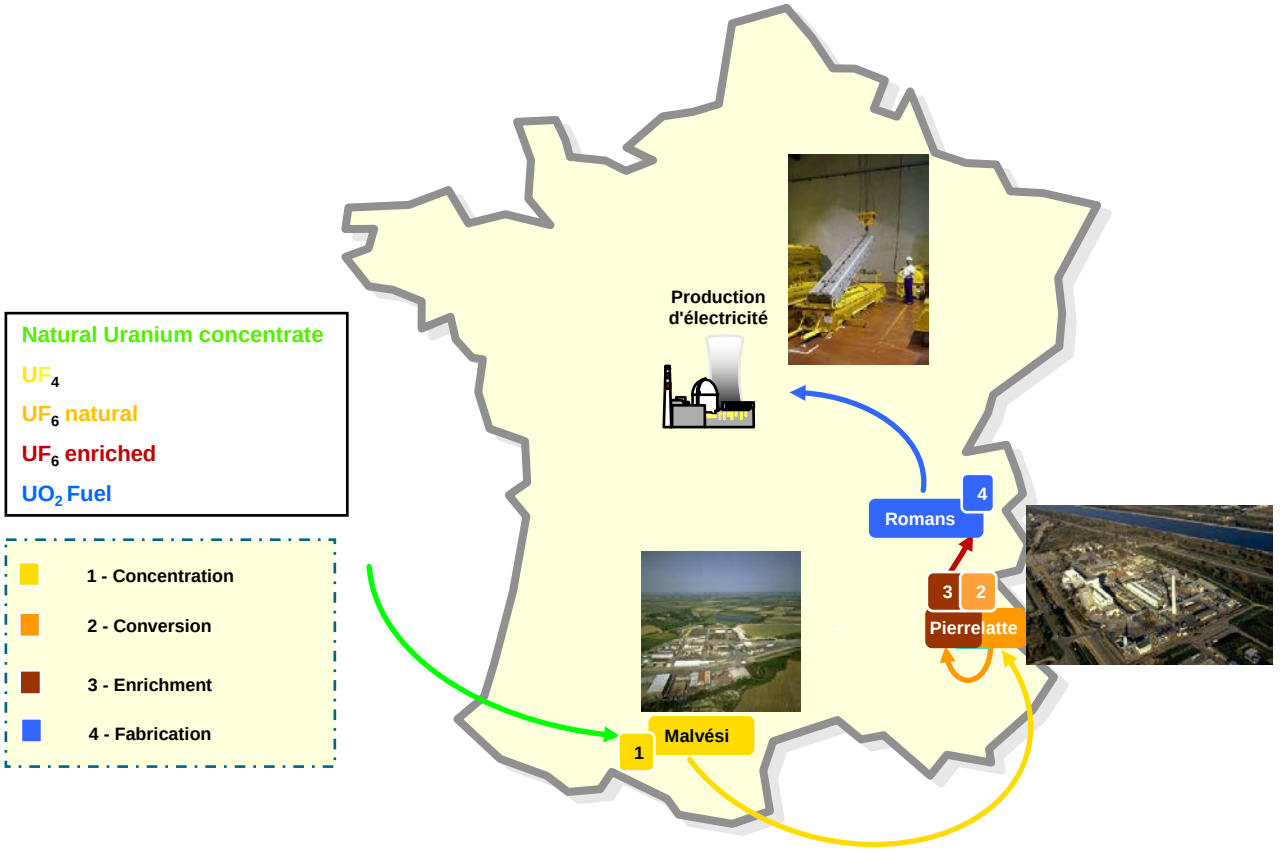
5,000 shipments per year

- **2,700 for the Front End of the cycle**
- **350 shipments for the Back End**
  - Used fuel
  - MOX fuel
  - Vitrified and compacted waste
- **150 for research reactors and laboratories**
- **2,500 for waste and contaminated tooling**

Considerable resources

- **2,200 casks from 1MT to 130 MT**
- **70 trucks designed for heavy casks,**
  50 special rail cars
- **An integrated organization of transportation-related risk management** (nuclear and industrial safety, real-time tracking, global acceptance, image / media)

Nuclear cycle in France- Front end

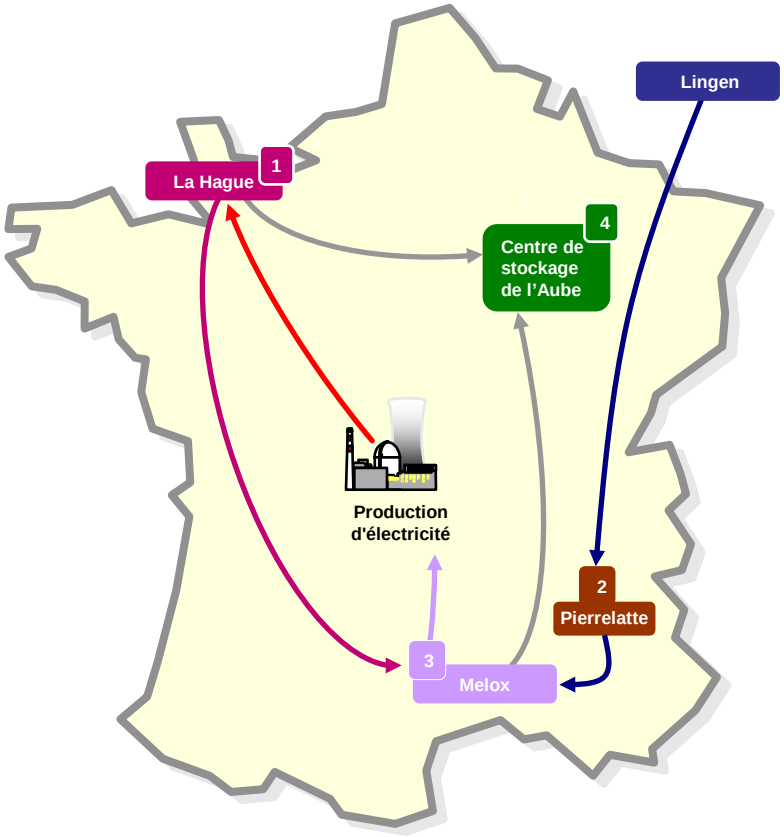


Spent Fuel Transportation in France – WNTI Workshop
Orano NPS

Nuclear cycle in France- Back-end

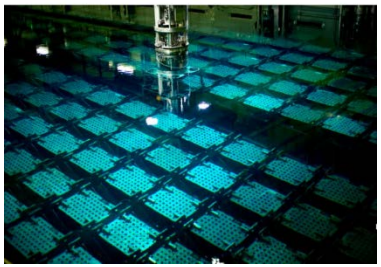
Spent fuel
PuO_2
U depleted
MOX fresh fuel
Very Low Level Waste & LLW

1 - Recycling
2 - Enrichment
3 – MOX Fabrication
4 – VLLW & LLW repository

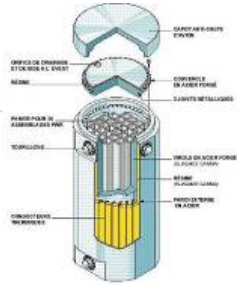


Spent Fuel Transportation in France – WNTI Workshop
Orano NPS

Spent fuel Management in France
The choice of recycling



Intermediate storage
> 40 years



RECYCLING

Final
storage

Spent Fuel Transportation in France – WNTI Workshop
Orano NPS

SPENT FUEL TRANSPORTS IN France

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SPENT FUEL TRANSPORTS in France
Overview *1/2*

- Electronuclear industry in France : a fast development to a strategic dimension
- Over 50 years of routine transports
- > 8000 spent fuel transport casks delivered to la Hague recycling facility

Orano La Hague

- **58 reactors located on 19 sites**
- **Installed power : 63,4 GW**
- **The French Nuclear Power Stations fleet is the second most important fleet in the world in power, behind that of the United States**

SPENT FUEL TRANSPORTS in France
Overview *2/2*

- Approximately 200 rail transports* per year
- Consignor : EDF NPPs
- Consignee : Orano La Hague site
- Packages used : TN®112/ TN®12/2/ TN®13/2
- Authorised transport company : Orano NPS

* 1 transport = 1 package

SPENT FUEL TRANSPORTS in France
Key data

❑ Key Transport record data:

- ✓ > 8000 spent fuel transport casks delivered to La Hague
- ✓ Approximately 200 transports yearly performed

❑ Key assets owned and operated by Orano NPS

- ✓ Transportation casks – A dedicated fleet of more than 30 casks
- ✓ A fleet of approximately 40 specialized rail cars
- ✓ Heavy-haul trucks : approximately 10 dedicated to spent fuel
- ✓ 1 dedicated rail Terminal in Valognes

❑ Transport Events

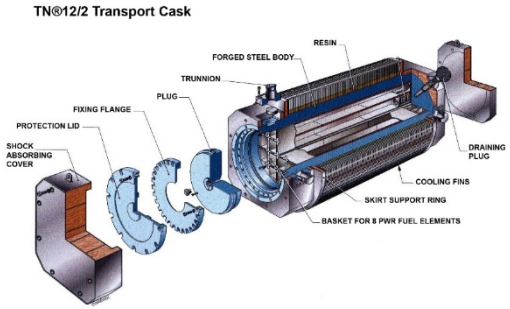
- ✓ No major event over 50 years – no cask leaking issue
- ✓ In 2020 : 1 event level 0 on INES scale
- ✓ A database of all the events for continuous impr

SPENT FUEL TRANSPORTS in France
Transport Equipments

TN®12/2 casks are type B casks.
To obtain a transport license from the competent Nuclear Safety Authority, they have to go through a series of drastic tests: 9-meter drop on an unyielding surface, one-meter drop on a punch bar, fire and immersion tests.

TN®12/2 cask main features

- Empty weight : 98 T
- Loaded weight : 110 T
- Length : 6,15 m
- Diametre : 2,5 m
- Thickness : 30 cm of iron
- Capacity : 8 fuel elements



Q70 rail car main features

- Length : 20,7 m
- Width : 3,06 m
- Maximum weight : 159 t

SPENT FUEL TRANSPORTS in France

Transport schemes

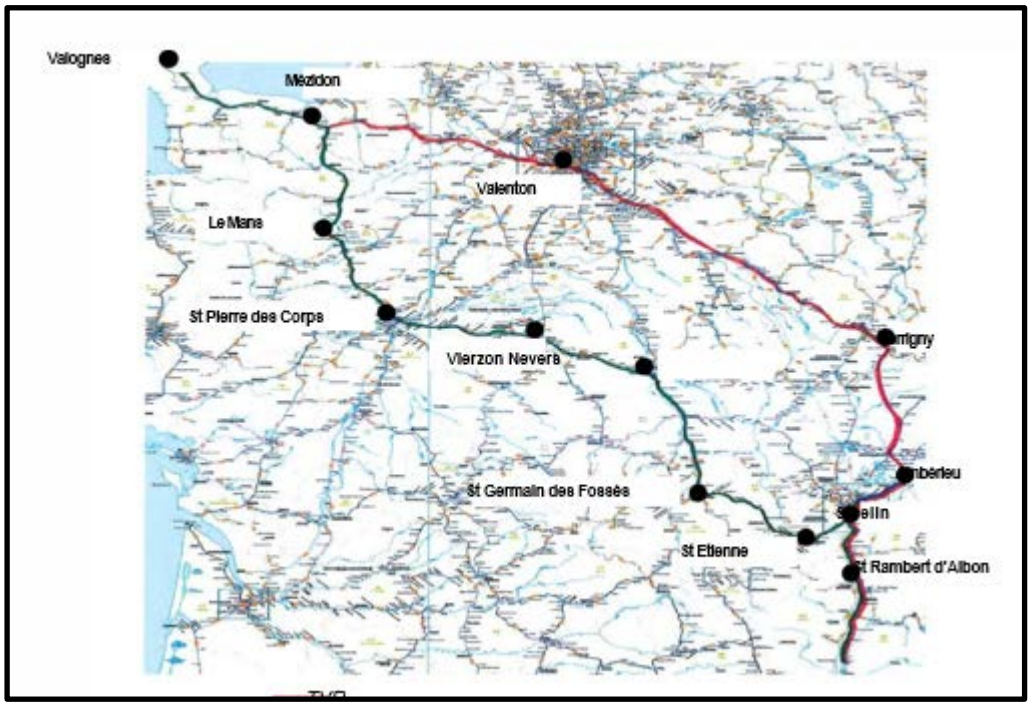
❑ **Option 1.Directly from NPPs**

❑ **Option 2. Semi directly from NPPs**

The transfer of Responsibility from the Consignor to the Authorised Carrier takes place at the exit of the NPP.

Orano NPS is responsible of the physical protection of the Nuclear Material from the NPP to Orano La Hague site.

SPENT FUEL TRANSPORTS in France
Transport schemes



- ❑ **2 rail transports schemes**
- ✓ **Classic : 1 class 7 rail car in a train with other freight.**
- ✓ **Clustering : 4 class 7 rail cars in a weekly dedicated train.**
- ❑ **Average transit time between NPP and Orano NPS Rail terminal : 30 hours**
- ❑ **➔ Surveillance during stops > 2 hours as from the 1st minute**
- ❑ **➔ Real time tracking**

SPENT FUEL *TRANSPORTS in France*

Stakeholders

Safety Competent Authority

- Package designs licensing
- Participates in the national & International regulation development
- Carriers registration
- Transport inspections/controls
- Public information
- Nuclear installations control
- Assistance to Public Authorities in case of Transport Event

Security Competent Authority

- Transport Inspections/controls
- Carriers authorisation
- Transport means certification
- Develop the national transport regulation

Nuclear Operators /NPP & Recycling Plant

- Used fuel Management
- Radiological controls before shipment/after delivery
- Assistance to Public Authorities in case of Transport Event

Authorised carrier

- Transport responsibility from door to door
- Transport means & package provision
- Radiological controls during transhipments
- Rel time tracking
- Assistance to Public Authorities in case of transport event

SPENT FUEL *TRANSPORTS in France*
Emergency Response and Crisis Management

- **Orano NPS emergency response organisation and capabilities allow to address any transport incident/accident any time through**
  - ✓ **Alert receipt and analysis**
  - ✓ **Alert transmission and setting up of crisis teams**
  - ✓ **Crisis management**

- **Aim of this organisation**
  - ✓ **Integrate quickly and efficiently any national crisis organisation for providing all appropriate support needed to the stakeholders in charge of crisis mitigation.**

SPENT FUEL *TRANSPORTS in France*
Emergency Response and Crisis Management

❑ Orano drill policy

- ✓ Approximately 6 transport drills carried out each year (all types of transport combined)
- ✓ Drill implementation is based on five steps:

❑ 1 transport drill focused on Spent Fuel transport was held early July.

- ✓ Scenario : collision between class 7 rail car and truck

SPENT FUEL *TRANSPORTS in France*

Emergency Response and Crisis Management

- **A dedicated emergency documentation for a quick and efficient answer**

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Direction de la Supervision des Transports

Fiche Réflexe Secours
Transport d'éléments combustibles UO_2 et/ou MOX irradiés REP ou REB ou RNR, ou squelettes d'assemblages, ou déchets activés en emballages TN12/1, TN12/2, TN 13/2, TN17/2 ou TN117

	Noms	Signatures	Dates
Préparé par	L. KUHN		05/09/2012
Vérifié par	B. DESNOYERS		5/09/2012
Approuvé par	O. KIMMEL		05/09/2012

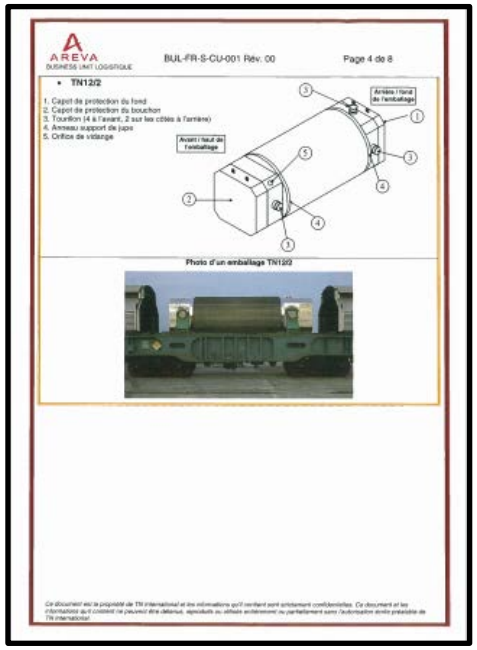
FICHE REFLEXE A L'USAGE DES SERVICES D'INTERVENTION

TN12/1	Assemblages combustibles irradiés REP ou REB ou squelettes d'assemblages ou déchets activés
TN12/2	Assemblages combustibles irradiés REP ou REB ou squelettes d'assemblages ou déchets activés
TN13/2	Assemblages combustibles irradiés REP ou squelettes d'assemblages ou déchets activés
TN17/2	Assemblages ou crayons combustibles irradiés REP, REB, RNR et autres
TN117	Assemblages combustibles irradiés ou non REP ou REB.

Classement de la matière : Classe 7

Colis chargé Type B(U) ou B(M) fissile

Placardage et signalisation du véhicule et de la remorque routière	70 3328	OU	70 3329	
Marquage et étiquetage du colis chargé	UN3328 ou UN3329			ou



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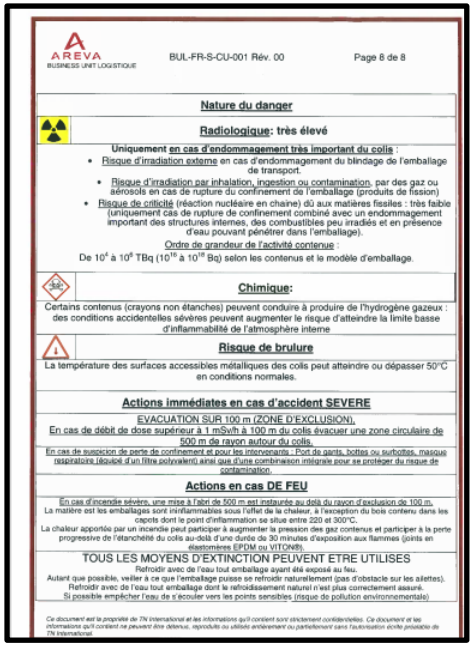
- TN12/2

1. Capot de protection du fond
2. Capot de protection du bouchon
3. Tourillon (4 à l'avant, 2 sur les côtés à l'arrière)
4. Anneau support de joint
5. Orifice de vidange

Photo d'un emballage TN12/2



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Nature du danger

Radiologique: très élevé

Uniquement en cas d'endommagement très important du colis :
- Risque d'irradiation externe en cas d'endommagement du blindage de l'emballage de transport.
- Risque d'irradiation par inhalation, ingestion ou contamination, par des gaz ou aérosols en cas de rupture du confinement de l'emballage (produits de fission)
- Risque de criticité (réaction nucléaire en chaine) dû aux matières fissiles : très faible (uniquement cas de rupture de confinement combiné avec un endommagement important des structures internes, des combustibles peu irradiés et en présence d'eau pouvant pénétrer dans l'emballage).

Ordre de grandeur de l'activité contenue :
De 10^4 à 10^6 TBq (10^{16} à 10^{18} Bq) selon les contenus et le modèle d'emballage.

Chimique:
Certains contenus (crayons non étanches) peuvent conduire à produire de l'hydrogène gazeux : des conditions accidentelles sévères peuvent augmenter le risque d'atteindre la limite basse d'inflammabilité de l'atmosphère interne

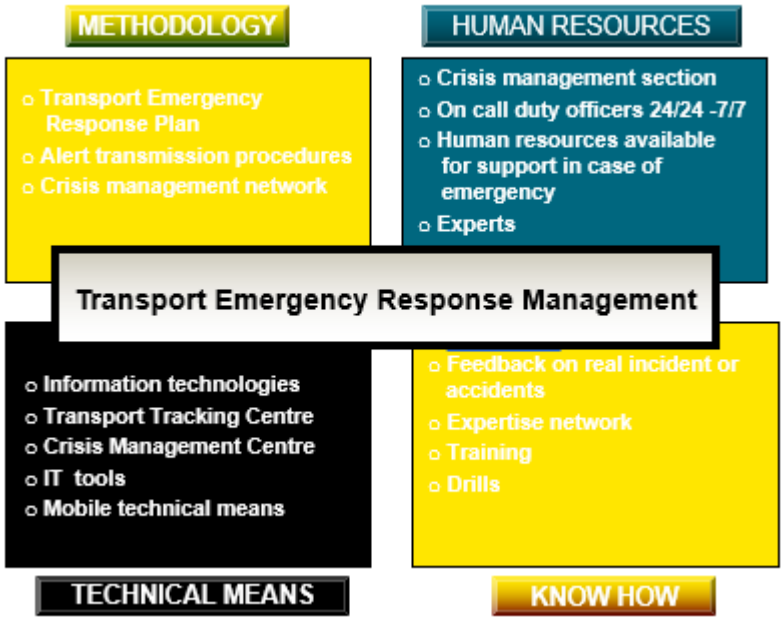
Risque de brulure
La température des surfaces accessibles métalliques des colis peut atteindre ou dépasser 50°C en conditions normales.

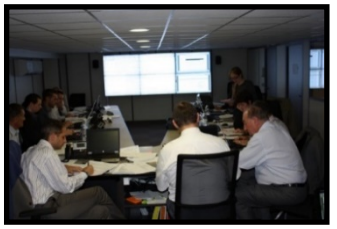
Actions immédiates en cas d'accident SEVERE
EVACUATION SUR 100 m (ZONE D'EXCLUSION).
En cas de débit de dose supérieur à 1 mSv/h à 100 m du colis évacuer une zone circulaire de 500 m de rayon autour du colis.
En cas de suspicion de perte de confinement et pour les intervenants : Port de gants, bottes ou surbottes, masque respiratoire (équipé d'un filtre polyvalent) ainsi que d'une combinaison intégrale pour se protéger du risque de contamination.

Actions en cas DE FEU
En cas d'incendie sévère, une mise à l'abri de 500 m est instaurée au delà du rayon d'exclusion de 100 m.
La matière est les emballages sont ininflammables sous l'effet de la chaleur, à l'exception du bois contenu dans les capots dont le point d'inflammation se situe entre 220 et 300°C.
La chaleur apportée par un incendie peut participer à augmenter la pression des gaz contenus et participer à la perte progressive de l'étanchéité du colis au-delà d'une durée de 30 minutes d'exposition aux flammes (joints en élastomères EPDM ou VITON®).

TOUS LES MOYENS D'EXTINCTION PEUVENT ETRE UTILISES
Refroidir avec de l'eau tout emballage ayant été exposé au feu.
Autant que possible, veiller à ce que l'emballage puisse se refroidir naturellement (pas d'obstacle sur les ailettes).
Refroidir avec de l'eau tout emballage dont le refroidissement naturel n'est plus correctement assuré.
Si possible empêcher l'eau de s'écouler vers les points sensibles (risque de pollution environnementale)

SPENT FUEL *TRANSPORTS in France*
Emergency Response and Crisis Management





SPENT FUEL *TRANSPORTS in France*
Crisis Management

❑ 23 December 2013 – Incident on Spent Fuel Transport

Incident description

- **23/12 : A freight car transporting used fuel from NPP to Orano La Hague recycling plant in Le Bourget switchyard. One of its wheels slipped slightly from the track without destabilizing the car. The shipping cask remained intact and the technical incident had no impact on the environment.**

Crisis & Recovery management

- **23/12 : Orano NPS immediately mobilized its crisis management team for 24/7 operations to manage the event, which occurred during the year-end holiday season**
- **24/12 : Orano NPS, EDF, SNCF teams, in cooperation with the French Competent Authorities, brought in a replacement freight car to conclude the delivery of the package. Orano NPS arranged the transport of the replacement car and the installation of the handling gantry crane.**
- **27/12: the technical transshipment of the TN13/2 package (< 100 tons), was completed.**

SPENT FUEL *TRANSPORTS in France*
Crisis Management

- **23 December 2013 – Incident on Spent Fuel Transport**





SPENT FUEL *TRANSPORTS in France*
Crisis Management

- **23 December 2013 – Incident on Spent Fuel Transport**

- **Media Management**
  - Tweets from Switchyard Town Mayor
  - TV 24/7 broadcast on site
  - Orano actions
    - Dedicated Communication team sent on site
    - Spokesperson message to press
    - Orano Press release on website

Very low media impact

SPENT FUEL TRANSPORTS
Major lessons learnt

- **Class 7 Transport is the only activity of the nuclear industry to be implemented on public domain .**
- **Necessity to Transport with no opposition or concern for Key stakeholders**
  - ✓ **In BUILDING a climate of dialogue and confidence**
  - ✓ **In INFORMING about safety and security of transport schemes and casks**
  - ✓ **In REASSURING on compliance of shipments with International Regulations and Governmental agreements**

❑ Key Stakeholders identification & selection

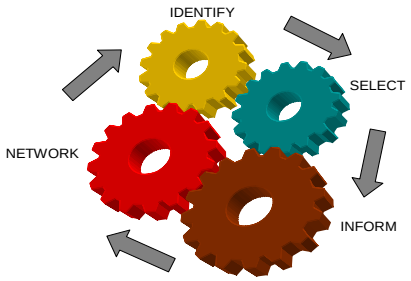
- ❑ NGOs : Make them Partners rather than opponents
- ❑ The importance of the third parties advocates

❑ Communication to the Key Stakeholders

- ❑ The message is as important as the messenger

❑ Networking

- ❑ Keep it constantly alive !



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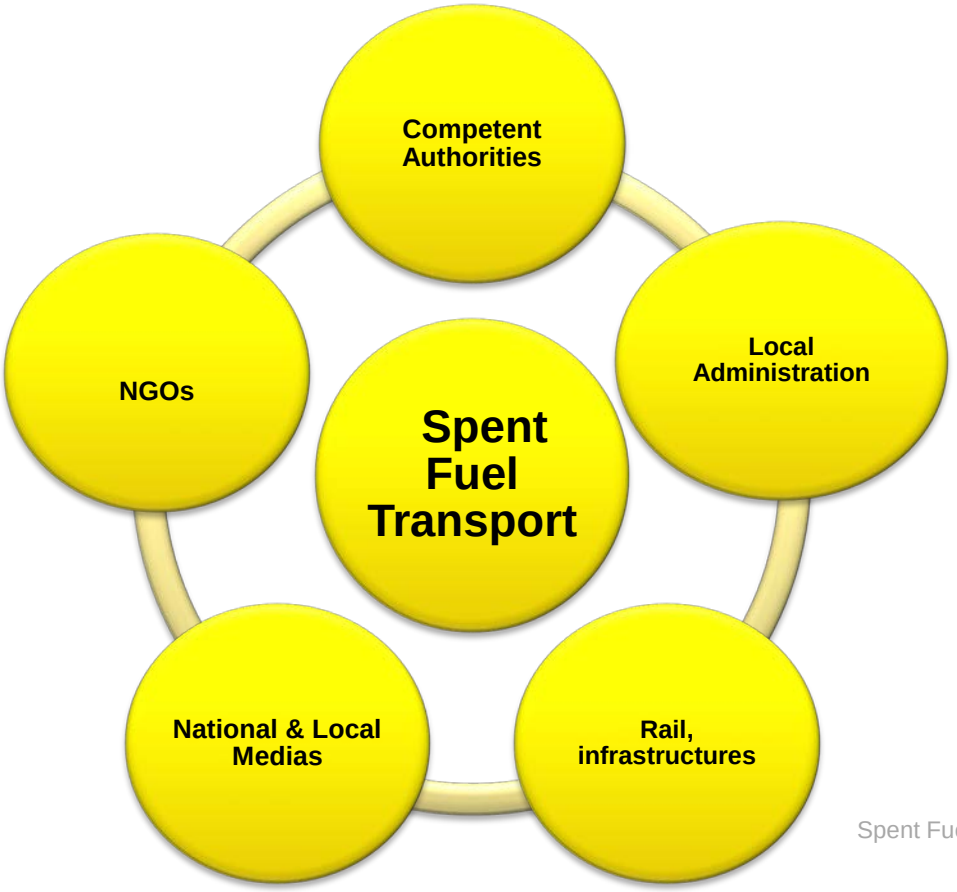
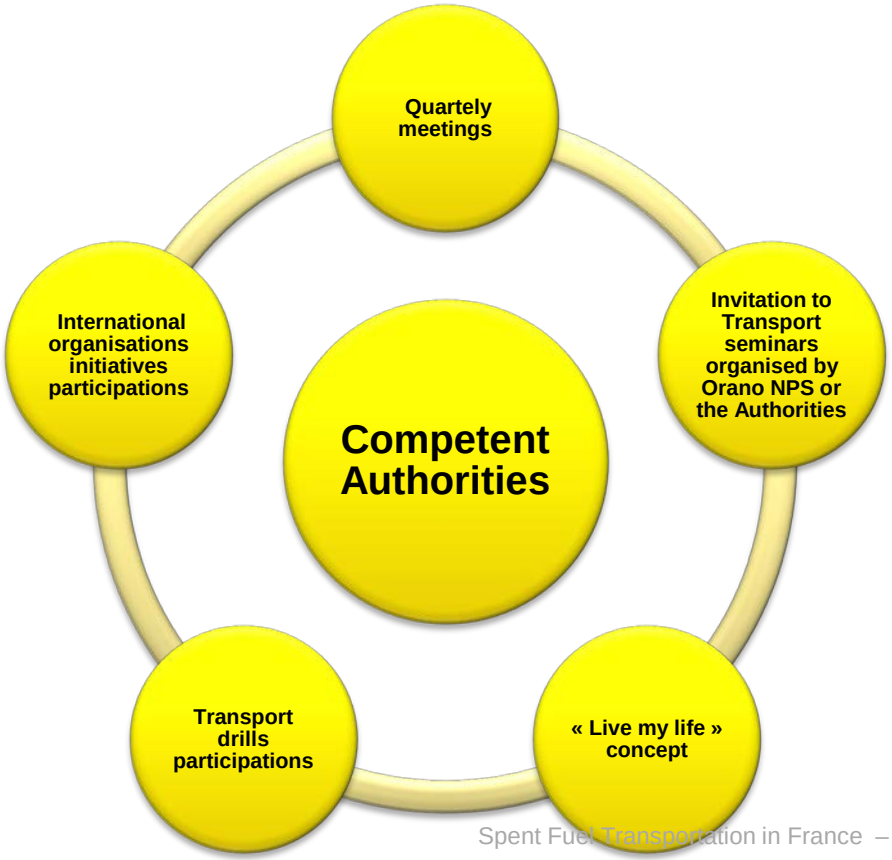
SPENT FUEL TRANSPORTS
Lessons learnt



The importance of having constant dialogue with key stakeholders !

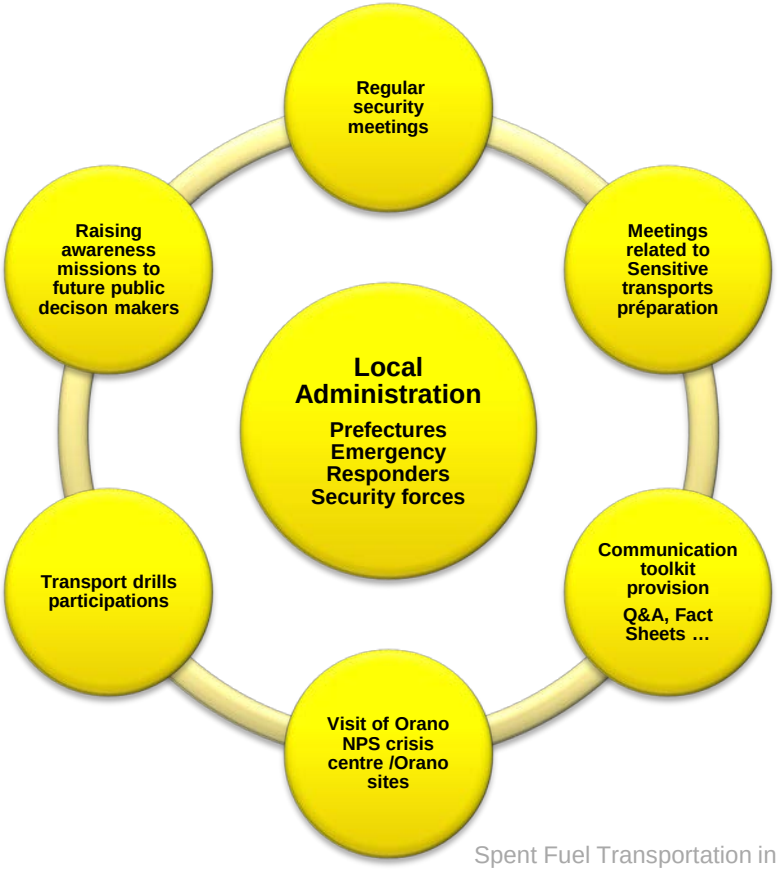
SPENT FUEL TRANSPORTS

Constant dialogue with key stakeholders - Examples



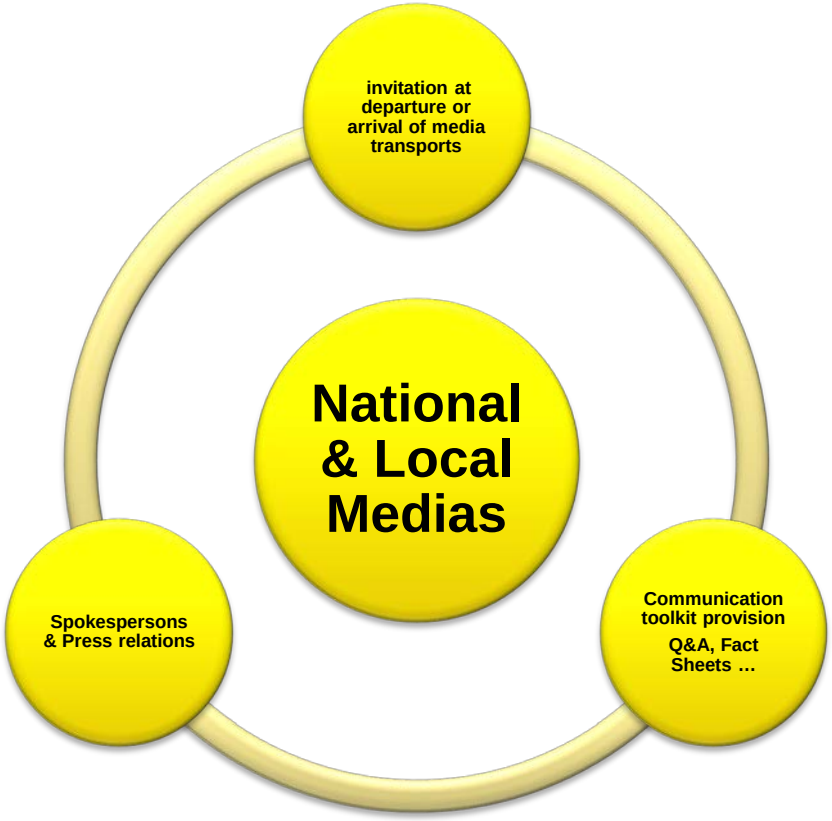
SPENT FUEL TRANSPORTS

Constant dialogue with key stakeholders - Examples



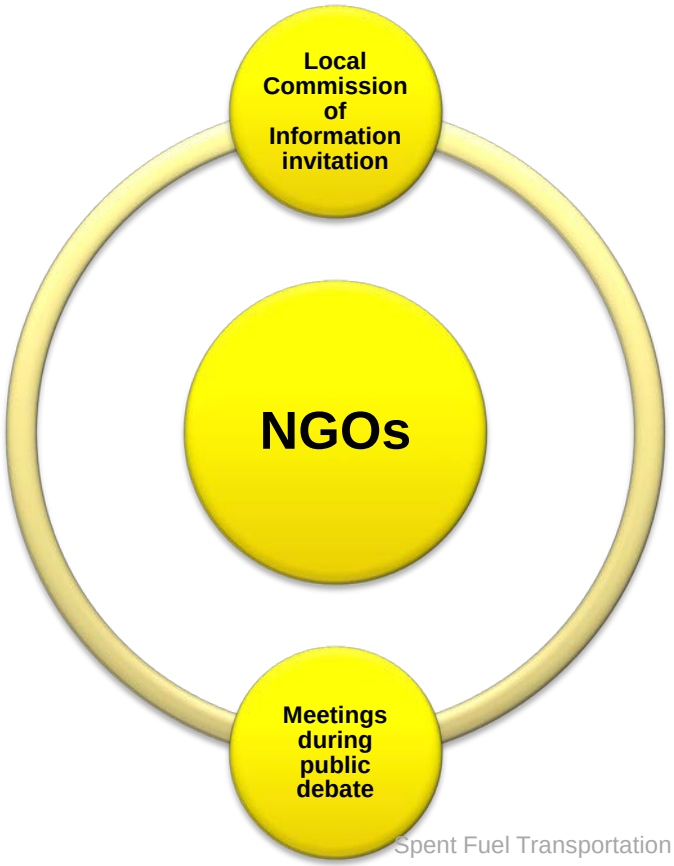
SPENT FUEL TRANSPORTS

Constant dialogue with key stakeholders - Examples



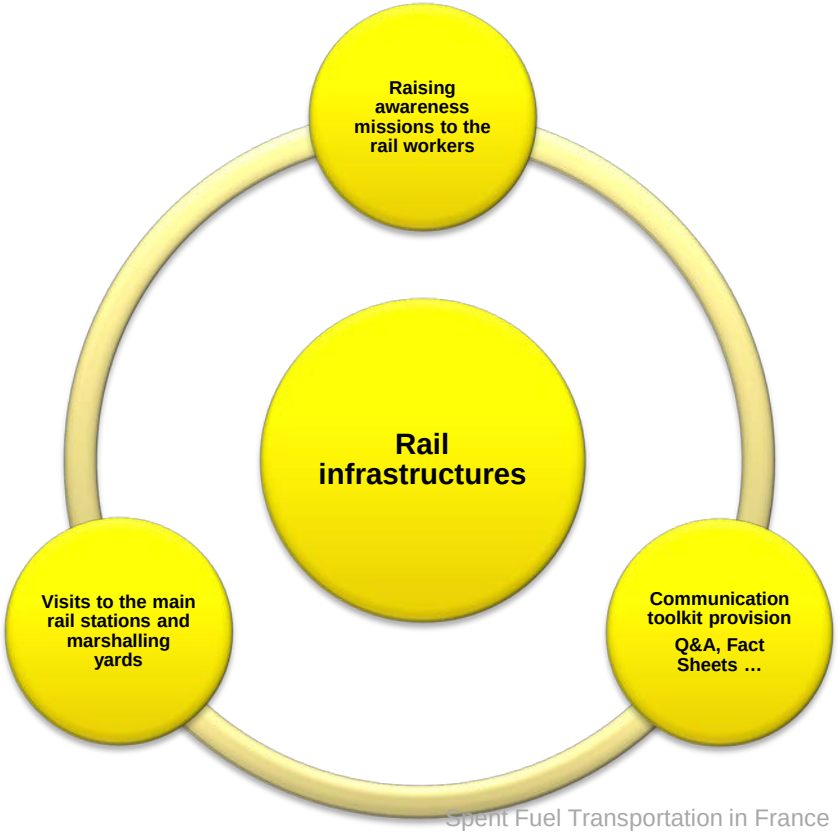
SPENT FUEL TRANSPORTS

Constant dialogue with key stakeholders - Examples



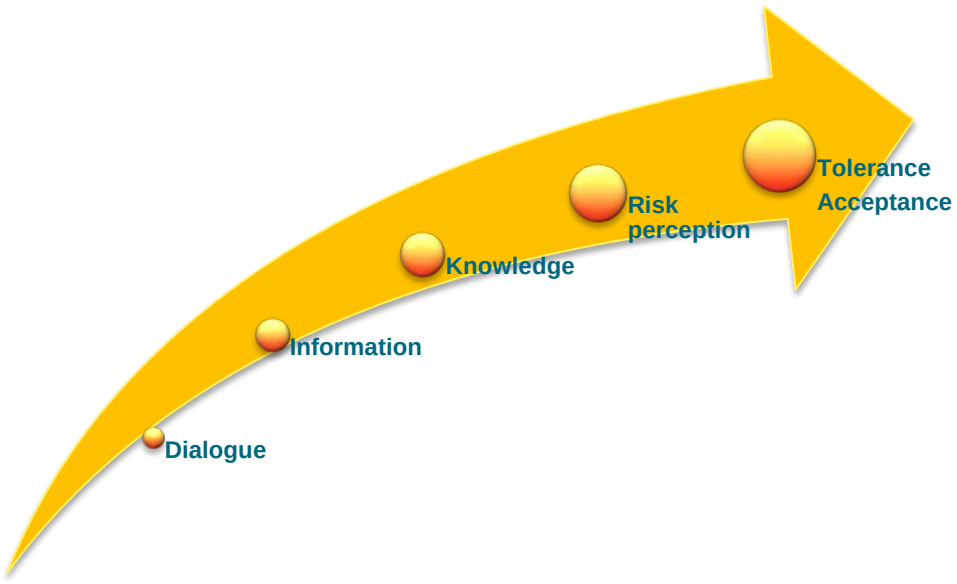
SPENT FUEL TRANSPORTS

Constant dialogue with key stakeholders - Examples



SPENT FUEL TRANSPORTS
Major lessons learnt

All starts with a dialogue …



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Donnons toute sa valeur au nucléaire

THANK YOU!!!

Any questions, please contact us.

Monday 19th July 2021
Virtual Meeting - WebEx