

Survey Requirements of Transport and Storage Casks Manufacturing for Interim Storage in Switzerland

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SVTI - Swiss Association for Technical Inspections

Nuclear Inspectorate

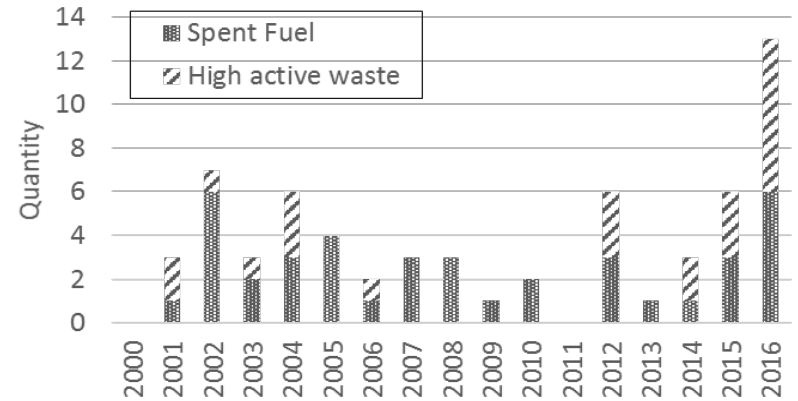


Content

- 1. Actual Situation in Switzerland**
- 2. Legitimation and Basis for SVTI Activities**
- 3. Review of Manufacturing Documents**
- 4. Inspections by Manufacturing and Testing**
- 5. Review of QA Lifetime Records**
- 6. Aspects of SVTI-N Survey**
- 7. Conclusion**

Actual Cask Situation in CH

Design/Typ		Quantity
		stored + in fabrication
TN24G/GB	PWR	7+1
TN24BH/BHL	BWR	19+22
TN97L	BWR	9
TN52L	BWR	1
TN81CH	CSD-V	9+3
HAW20/28CG	CSD-V	5
HAW28M	CSD-V	2+4
Castor I-c-Diorit	spe	1
Total		53+30

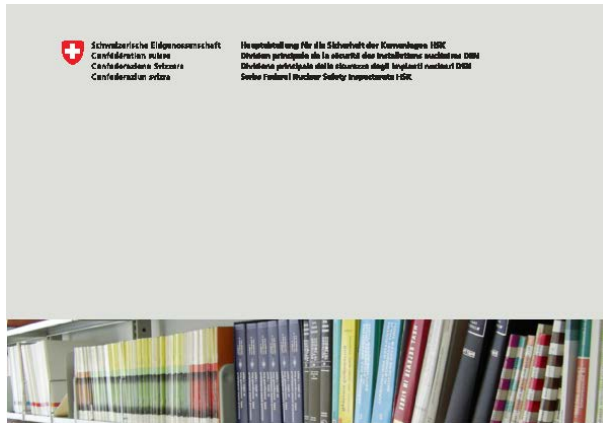


Legitimation – Legal Basis



- **Guideline ENSI-G05**: transport and storage casks for interim storage (issued 2008 replacing guideline HSK-R-52 issued 2003)
 - **Package requirements** for storage (e.g. aircraft crash, earthquake, temperature, dose, criticality, age effects)
 - **Fabrication monitoring** by future owner (NPP) and ENSI/SVTI including volume of fabrication documentation
 - **Use and control** during interim storage of the cask

Legitimation – Legal Basis



Transport- und Lagerbehälter für die Zwischenlagerung



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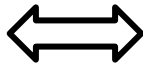
Survey of the manufacturing of the transport and storage casks for interim storage in Switzerland by a third-party organization.


Basis and Aim of Survey



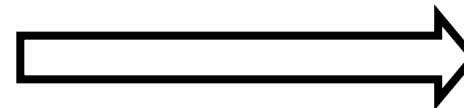
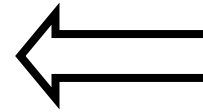
Figure: GNS

**Storage
Safety
Analysis
Report**



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**Approved by Swiss
Authority (ENSI)**



**Basis for
survey of
qualification
and
manufacturing**



**Third-party
organisation**

Basis and Aim of Survey

AIM:

*Compliance assurance
to Safety Analysis
Report of each cask
manufacturing*



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Basis for

Supervision Activities:

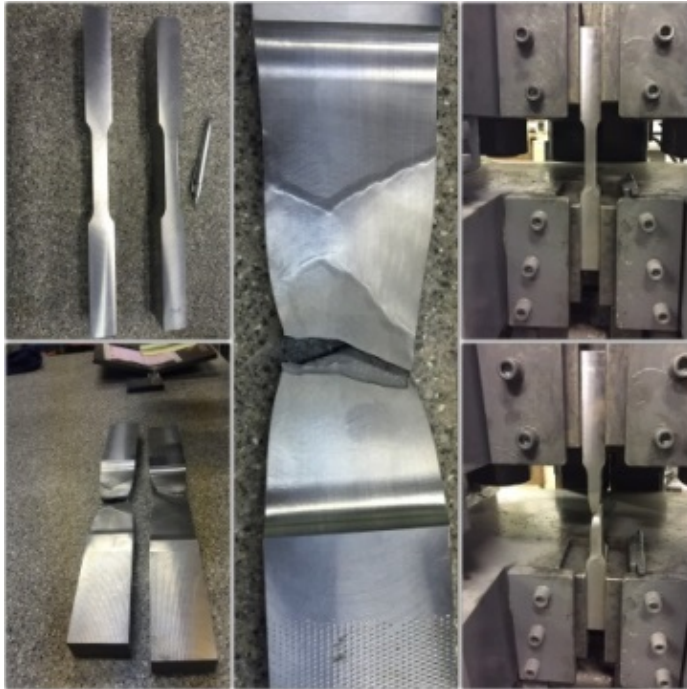
- 1) Before Manufacturing*
- 2) During Manufacturing*
- 3) After Manufacturing*



Figure: GNS

Activities - during Manufacturing

- **Inspections** by manufacturing and testing operations
(spot-check concept)

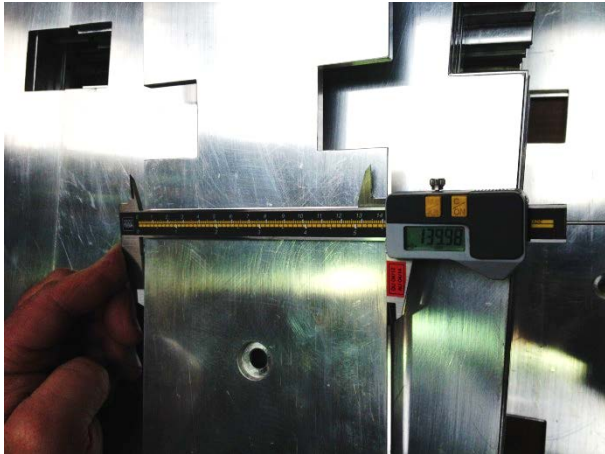


Mechanical tests (tensile, hardness and impact tests) of cask parts (related to mechanical integrity)



Control of the welding process of the welds with containment function

Activities - during Manufacturing



Dimensional and visual controls



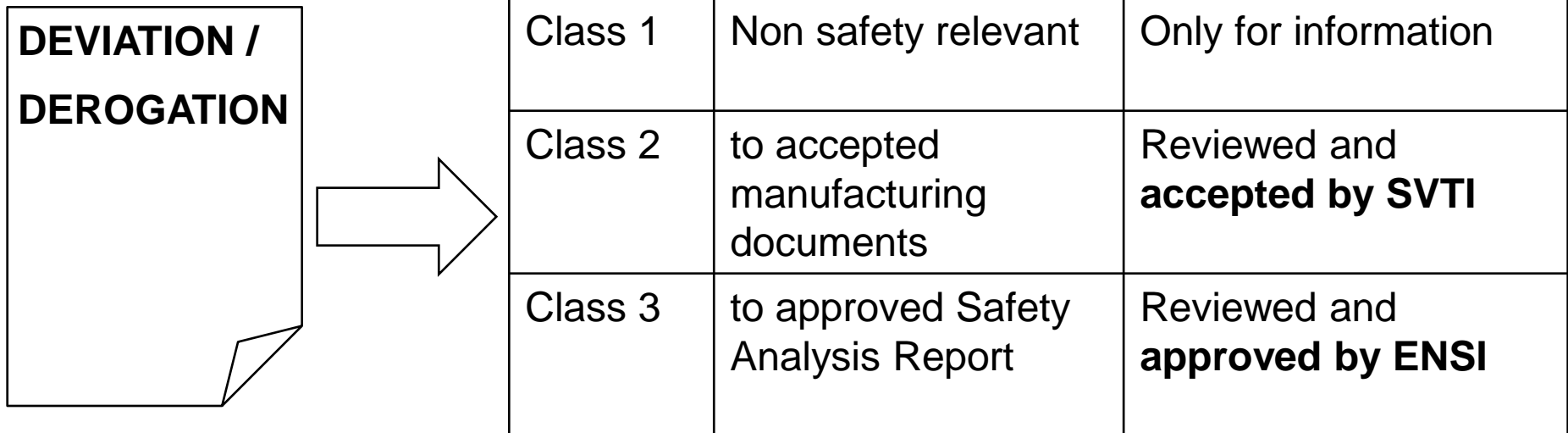
Non-destructive examinations after the heat treatment or post weld heat treatment



Resin pouring

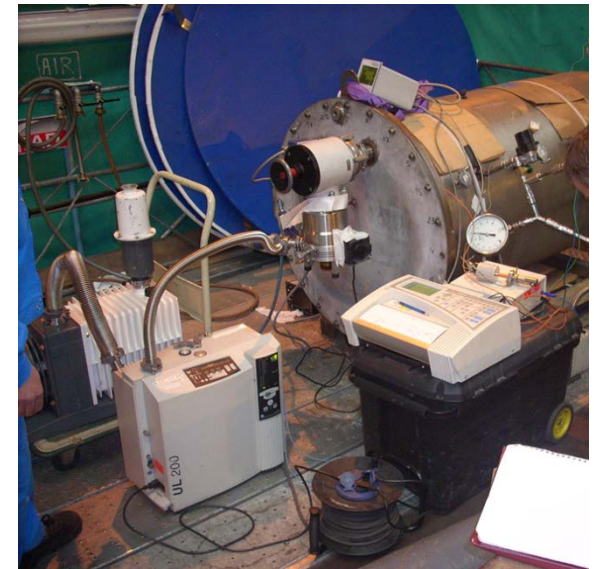
Activities - during Manufacturing

- **Review of deviation reports** related to detected non-conformances or required modifications (derogations)



Activities - during Manufacturing

→ **Final inspection** (each cask)



- **Hydrostatic test, Trunnions loading test, Leak tightness tests,**
- **Review of quality plans and final manufacturing documentation**

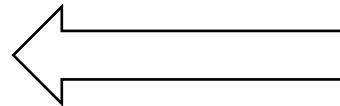
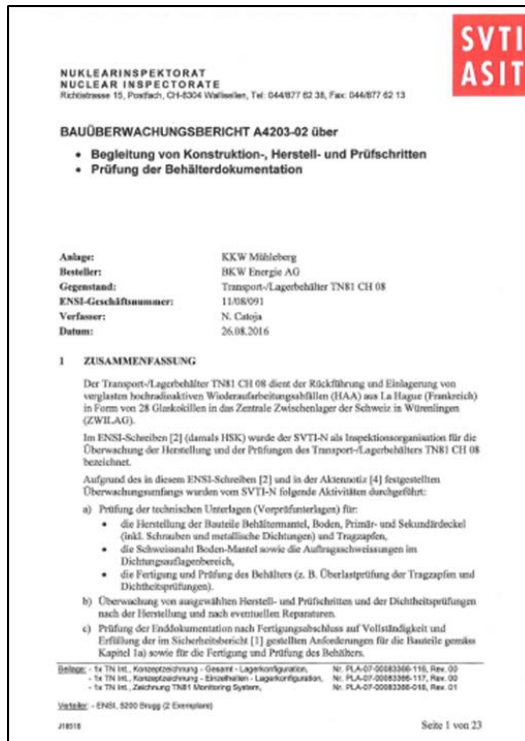
Activities - after Manufacturing

➔ **Review of QA Lifetime Records**

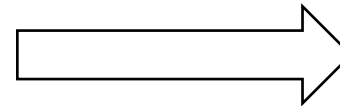
➔ **Review of the QA Lifetime Records** at the manufacturers to check

➔ compliance with SAR

➔ suitability for duplication and microfilming.



**Compliance to
Safety Analysis
Report for each
cask**





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**Approval to store
cask**

Aspects of Survey

- **Product based survey**
- Each step in **attended by SVTI qualified Inspector** based on the requirements of our type A third-party certification.
- **Each deviation and derogation is directly known and assessed.**
- **Assurance** of compliance to **SAR** of each cask

Conclusion

- Each manufacturer and associated subcontractors of Transport and Storage Casks for Switzerland shall be familiar with the survey requirements of the Swiss Authorities ENSI.
- That way, they can implement from the beginning on the measures to comply with these requirements.
- Doing so, the associated financial burden can be considered and also the delays on the delivery of the casks can be avoided.
- Because without casks for spent fuel there will be no dry storage waste management.

No cask in Switzerland is iterim stored without confirmed compliance to Safety Analysis Report by an authorized third party organisation