

Radiation protection for mobile isotope devices in public spaces

Problems and solutions

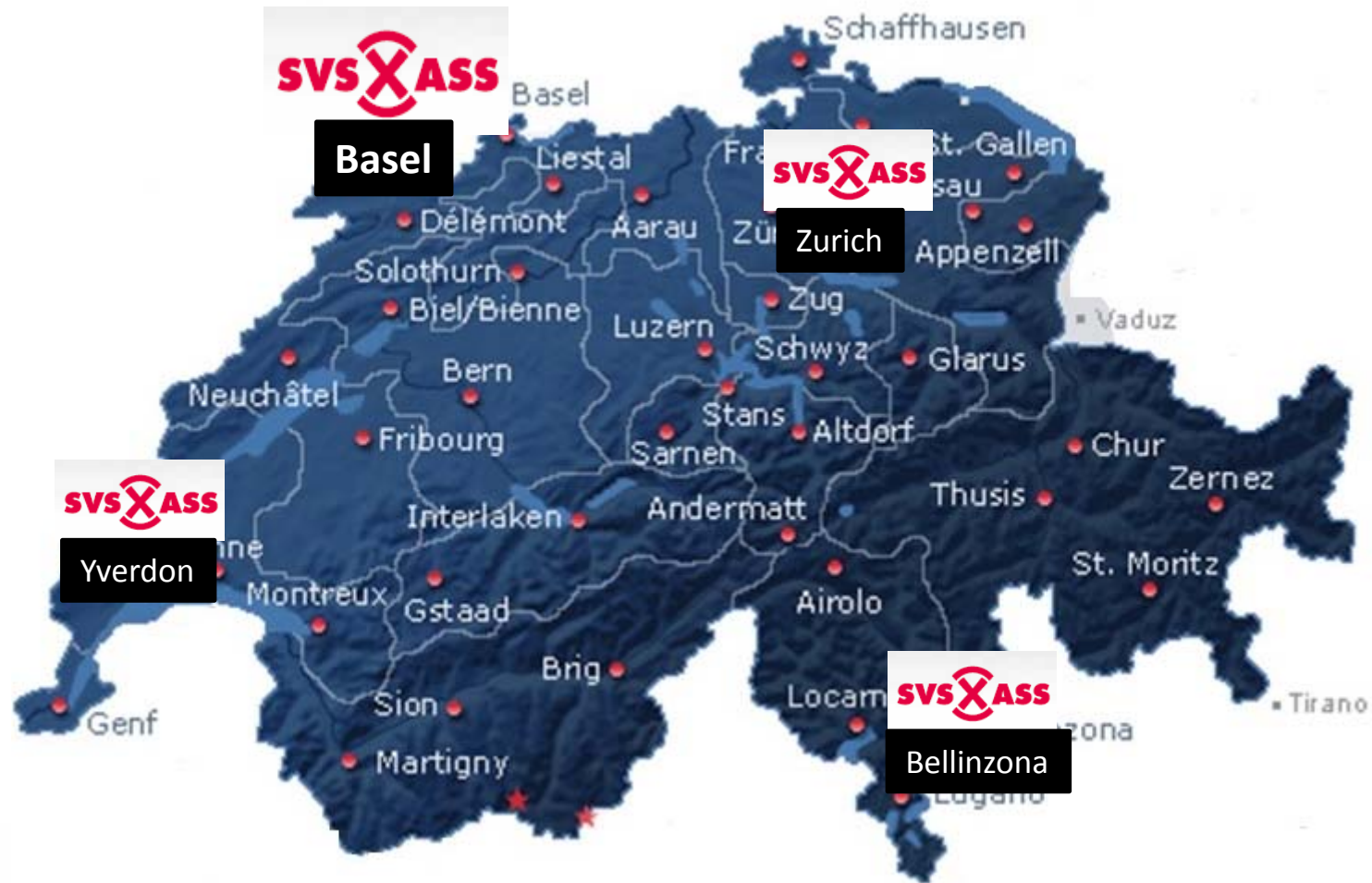
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Experts for technical radiation protection



22 Feb. 2016

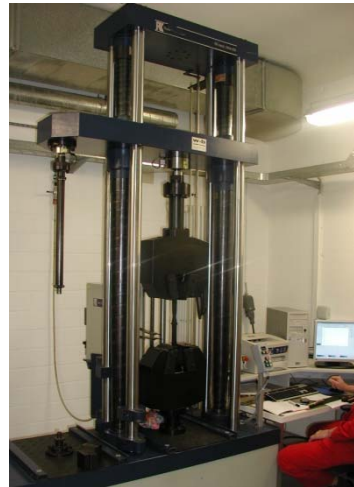
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Sites



Materials Engineering

Destructive testing (ZP)
tensile and bending tests,
notched-bar impact tests,
hardness measurements etc.



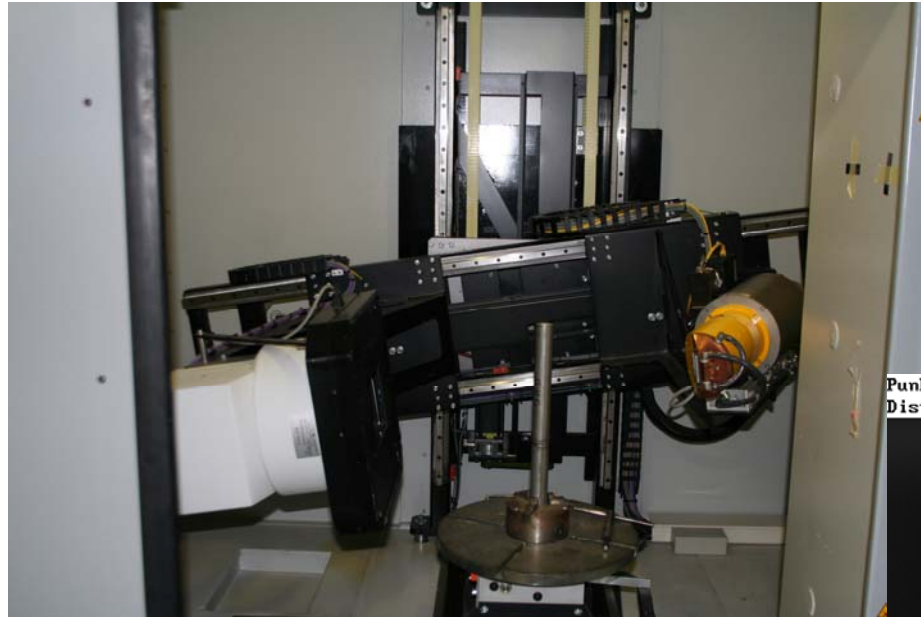
Non-destructive testing (NDT)
RT, UT, MT, PT, VT,
ferrite measurements, endoscopy,
wall thickness measurements



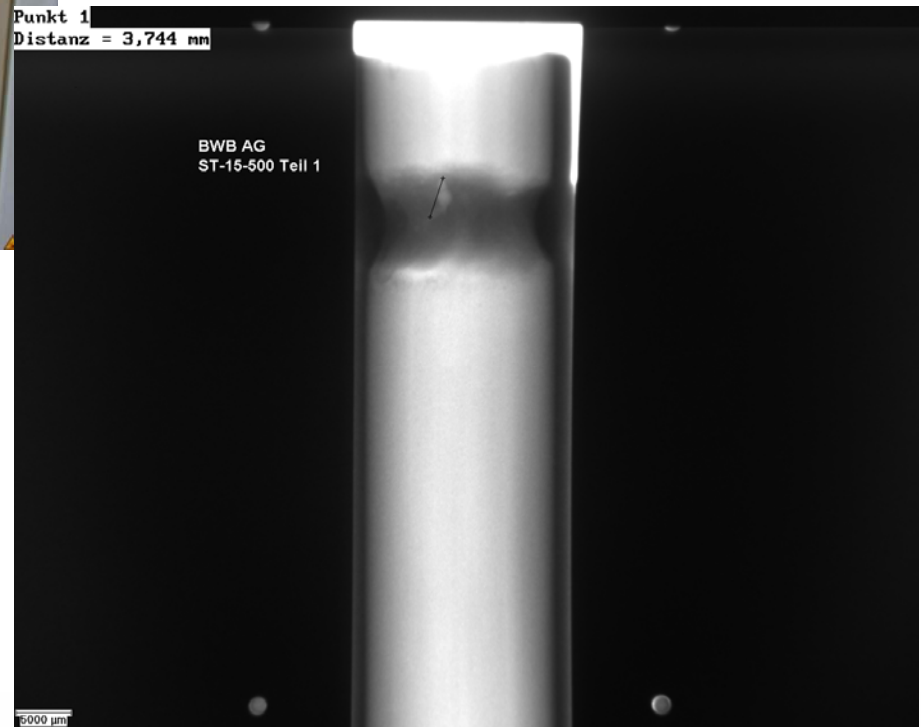


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Punkt 1
Distanz = 3,744 mm



BWB AG
ST-15-500 Teil 1



Sentinel Delta, Type B Ir-192
Sentinel Elite, Type B Se-75

max 5700 GBq
max 1900 GBq

Nordion GammaMate SE, Type A max 3040 GBq





BANK FOR INTERNATIONAL SETTLEMENTS

Several hundred employees

Many third-party companies involved

Working hours around the clock

Complex building structure

Little shielding concrete in the testing area



75 welds

150 recordings

Se-75 with 1850 GBq

Exposure time: 55 seconds

Total beam time: 138 minutes

Admissible radiation level at the barrier: 7 μ Sv/h



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Evacuation of the entire floor

Warning signs in the various elevators

**Work only after the end of business of the other companies
Involved**

Close cooperation with the building's own security staff

Measurement of dose rate, even on the lower and upper floors



District heating piping

ber of schools and nursery schools in the vicinity

h traffic to the left and right

he impending deadline, a number of foreign workers at the construction site





40 welds

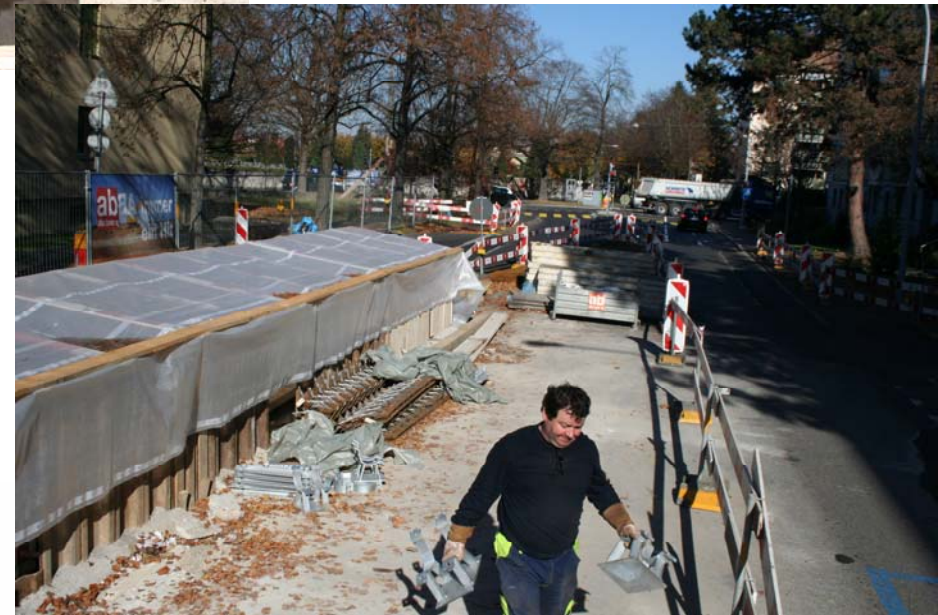
120 recordings

Se-75 with 1520 GBq

Exposure time: 45 seconds

Total beam time: 90 minutes

Admissible radiation level: 66 $\mu\text{Sv/h}$



Measuring the dose rate in all directions of the beam

Informing the third-party companies involved

Coordinating inspection time

Do not cordon off to avoid attention given the low dose rate

Estimating the passaging dose rate / Less than one 1nSv



District heating piping

Installation depth

walk

Distance to apartments in cordoned-off area



12 welds

36 recordings

Se-75 with 828 GBq

Exposure time: 1.2 minutes

Total beam time: 44 minutes

Admissible radiation level: 100 μ Sv/h





r was created although radiation level below 100 $\mu\text{Sv/h}$

n off sidewalk

n off building entrances

urement of radiation level in all directions of the beam

te the passage dose



Water pipe

low installation depth

lateral walkways must be cordoned off

the number of passers-by appear



2 welds DN100

6 recordings

Se-75 with 370 Gbq

Exposure time: 1 minute

Total beam time: 6 minutes

Admissible dose at barrier: 100 μ Sv/h



Construction tourists

Characteristics: **Male**

Retired

Can appear in groups

Has a lot of time on his hands



1- to ignored



2- to explain



3-say not quite the truth



And now we've come to the end of the road.

Thank you for accompanying us so far.