



# Bunker system fire safety

An overview for the review committee

GIUSEPPE APRIGLIANO

# Technical Overview



# Fire safety Bunker D01 and D03

## Contributors:

### **Fire alarm system**

Irina Pavelic

### **Fire Suppression mitigations**

Giuseppe Aprigliano

Tahere Rostami

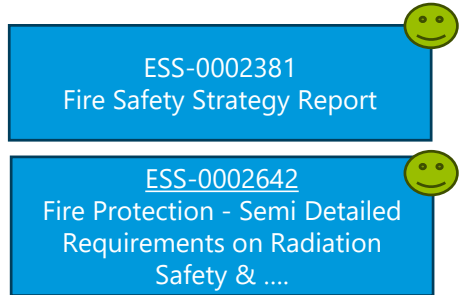
Dawid Patrzalek




Gabor Laszlo

Alejandro Tobias Quispe Mamani

# Fire safety Bunker D01 and D03

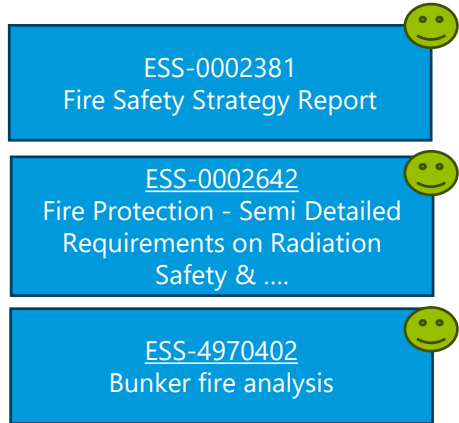
## Hierarchy of documents ruling over bunker fire suppression system






-  Released
-  Review
-  Preliminary

# Fire safety Bunker D01 and D03

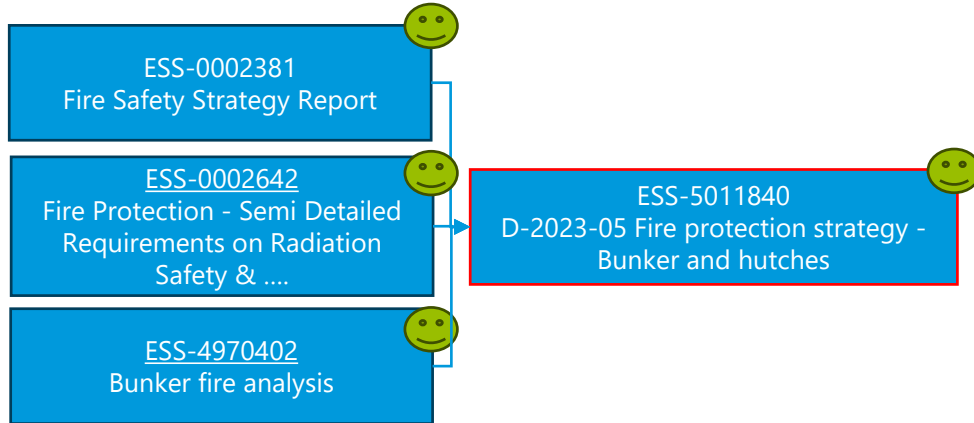
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# Fire safety Bunker D01 and D03

## Hierarchy of documents ruling over bunker fire suppression system



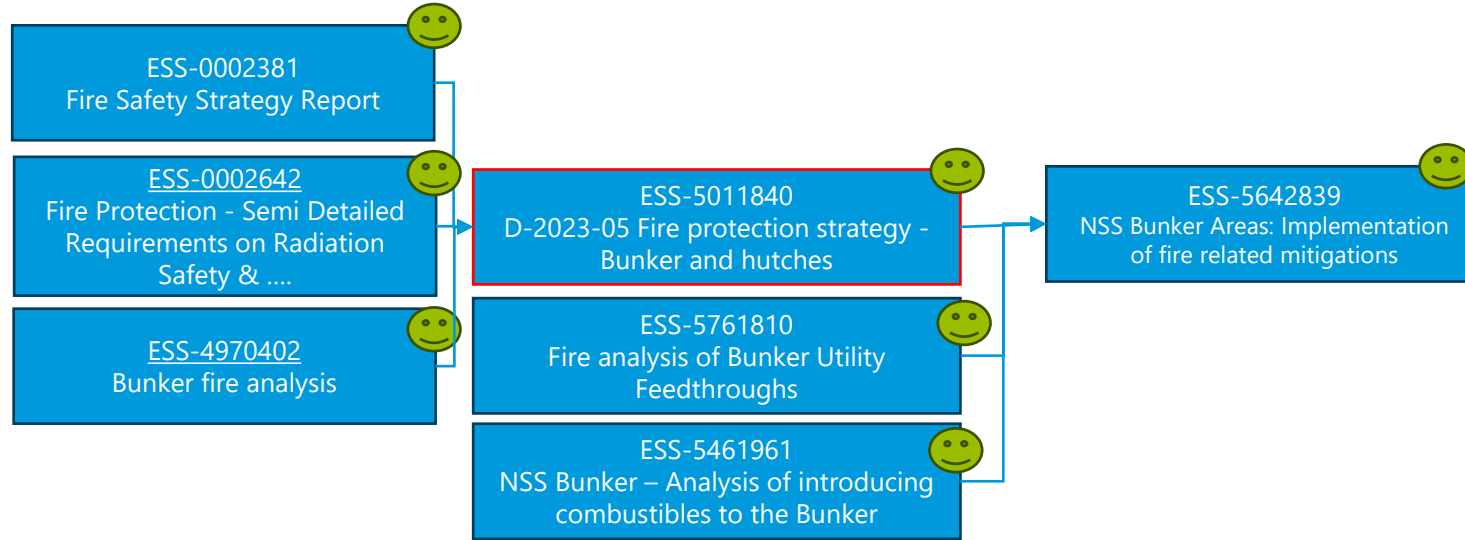
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The bunker:

- shall have fire detection system
- does not need to be equipped with a fire suppression system if mitigating actions as defined in the fire analysis are implemented

# Fire safety Bunker D01 and D03

## Hierarchy of documents ruling over bunker fire suppression system



**Requirement 1-** The lowest cable trays must be protected from fire exposure to reduce the risk of fire spread from potential transient fires placed underneath them.

**Requirement 2-** Horizontal fire spread along cable trays must be limited by using fire stops. This is crucial for the fire to self-mitigate and self-extinguish within a limited burn time.

**Requirement 3-** The amount of combustibles in the bunker should be limited so that: "no fire packages with a potential HRR larger than the one in this study is present in the Bunker"

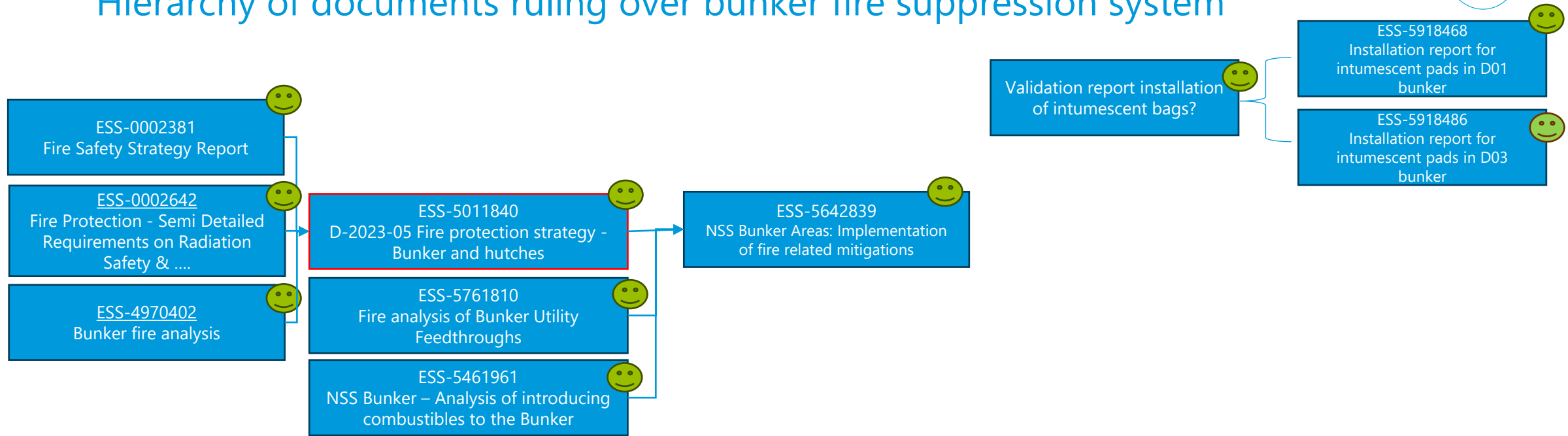
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**Requirement 4-** In the event of a fire inside or outside the bunker, the Polyethylene beads temperature shall remain below its melting temperature.



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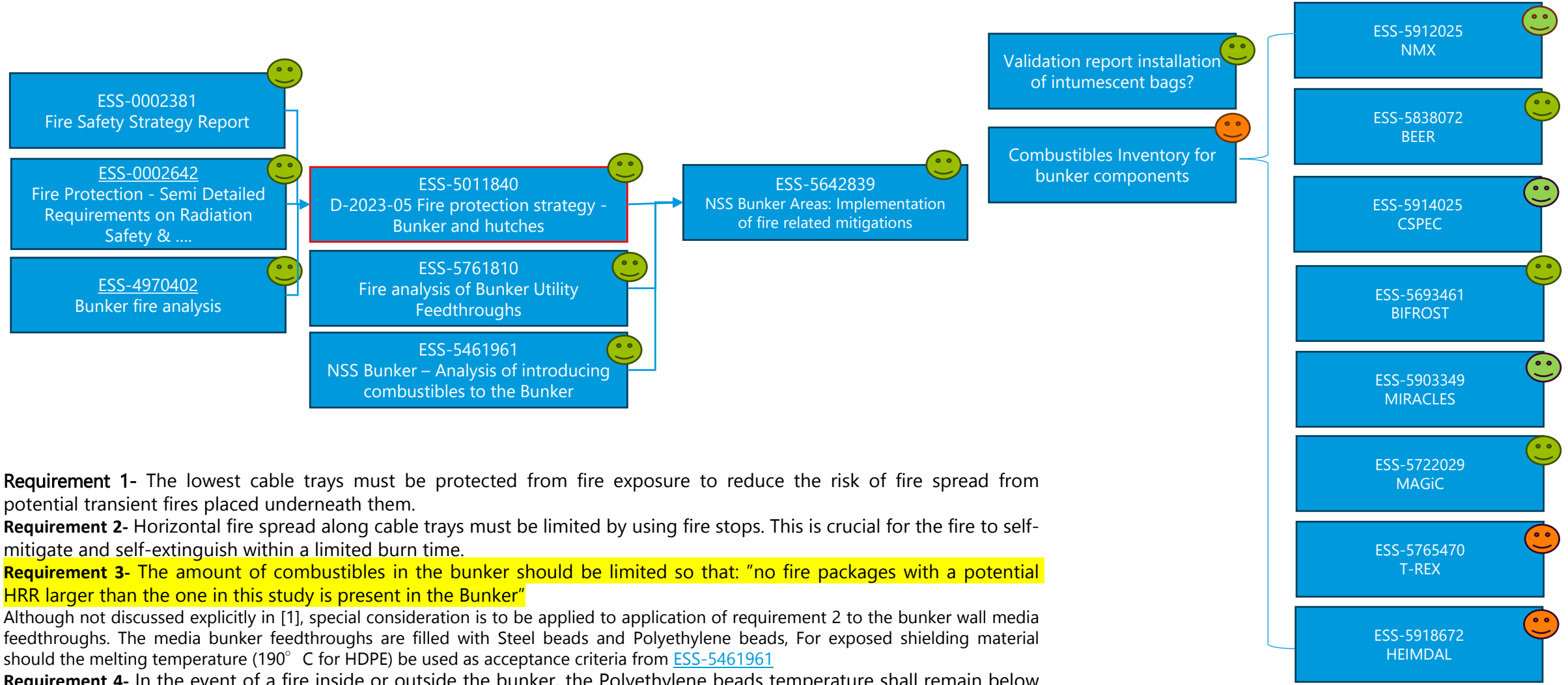
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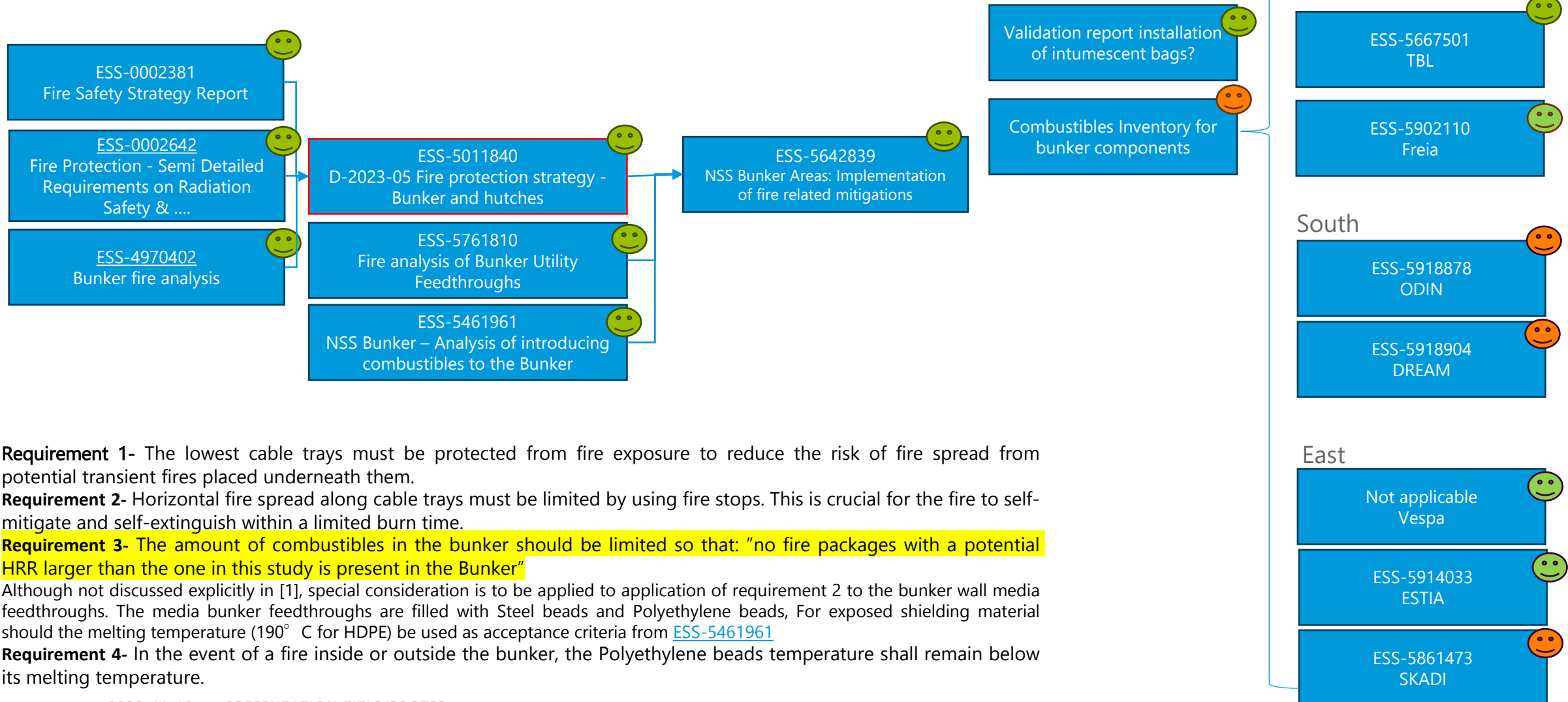
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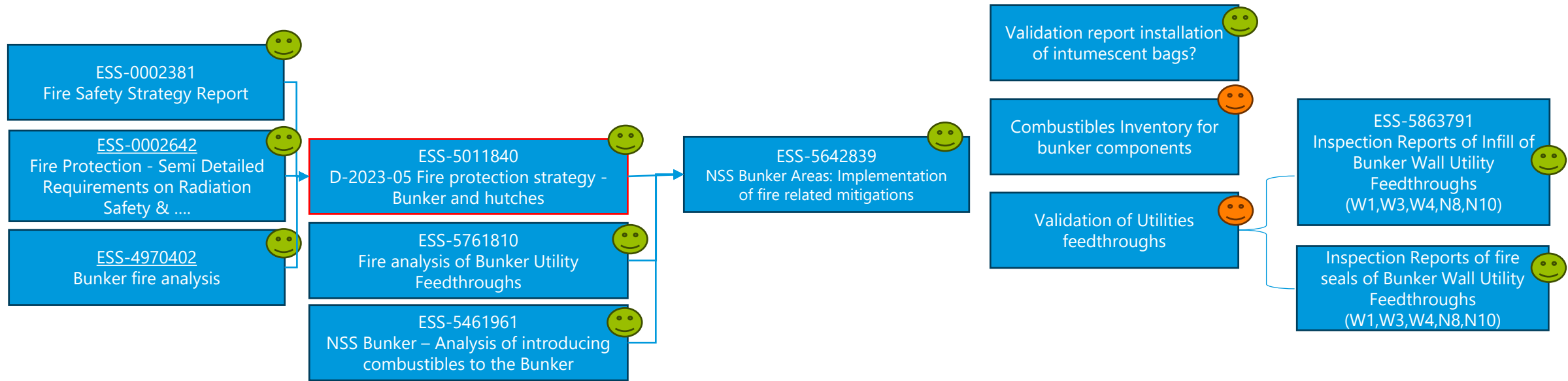
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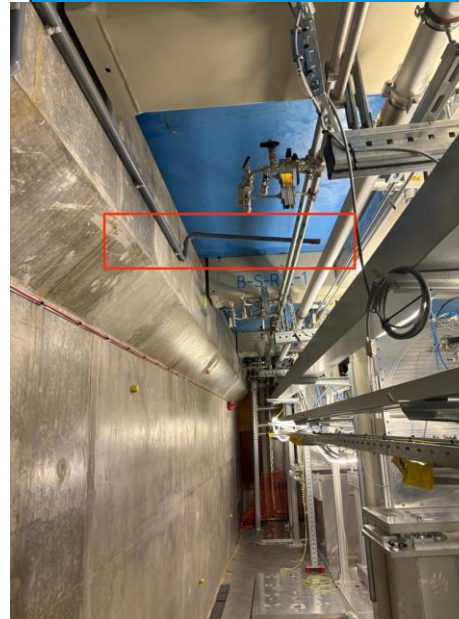
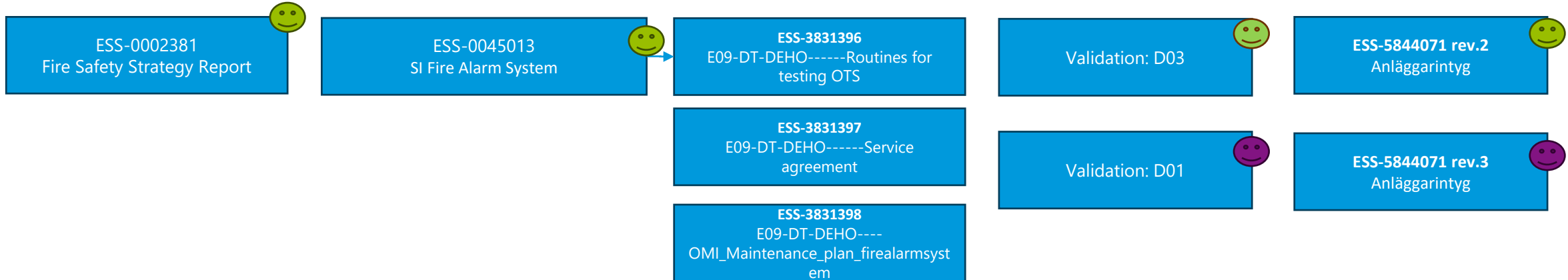
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# Fire safety Bunker D01 and D03

## Fire Alarm system



Installation and testing of fire alarm system completed in D03

In D01 last tests are planned for 13<sup>th</sup> Nov '25 new revision of ESS-5844071 will include this area.

On behalf of Irina Pavelic

# Fire safety Bunker D01 and D03



## NITs and NCRs

System	Open NIT	NIT comments	Open NCR
Fire alarm system	NIT 518	Connection of aspiration pipe to the Bunker roof block to be resolved:	NCR 10644
Bunker D01 wall	NIT 173	Feedthrough infill to be completed	---
Bunker D03 wall	NIT-468	Shielding infill of a few utility feedthroughs not installed yet	---
Bunker D01 and D03	NIT 520	Some in bunker combustibles inventories for instruments are still in review	NCR 10534
D01 and D03 bunker 220V sockets	t.b.d.	Not compliant with ESS-5642839	t.b.d.
SKADI Shutter	NIT 515	Absence of Fire Safety Verification	NCR 10492
TREX Shutter	NIT-426 NIT-427	Absence of Fire Safety Verification (NCR 10479) Installation of fire safety features	NCR 10479

# Summary

# Summary



The requirements for excluding the fire suppression systems have been satisfied

However,

- 5 combustible inventory reports are in review and will soon be released ( Vespa is NA)

- T-rex Shutter is installed but fire protection panels have not been installed yet,

- Skadi shutter fire safety evaluation is not yet completed yet either.

- Remaining infill will be completed before final closing of the bunker

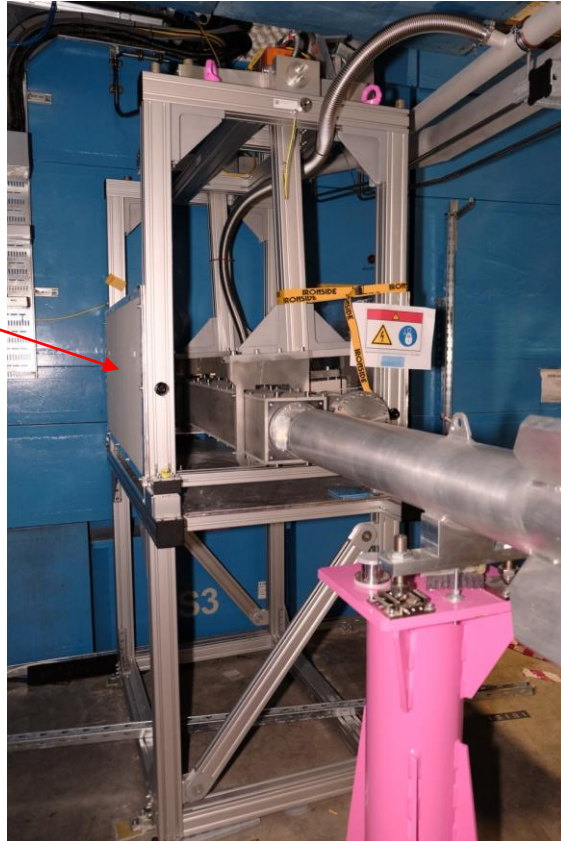
- An NCR will be created to account for the 220 V distribution system in D01 and D03.

The Fire alarm system is operational for D03 and will soon be also for D01 ( final test happening 13<sup>th</sup> Nov).



# Extra slides

Example of fire protection panels on Dream shutter



Example of fire-seal installation on external side of Bunker



# Extra slides



Example of steel bags  
infill installation on  
internal side of bunker



Example of fire-seal  
installation on external  
side of Bunker

# Extra slides

Image ref to NCR 10644



Image ref to NCR ---- sockets





# Extra slides

From : Installation report for intumescent pads in D01 and D03 Bunker

Example of positioning of intumescent bags

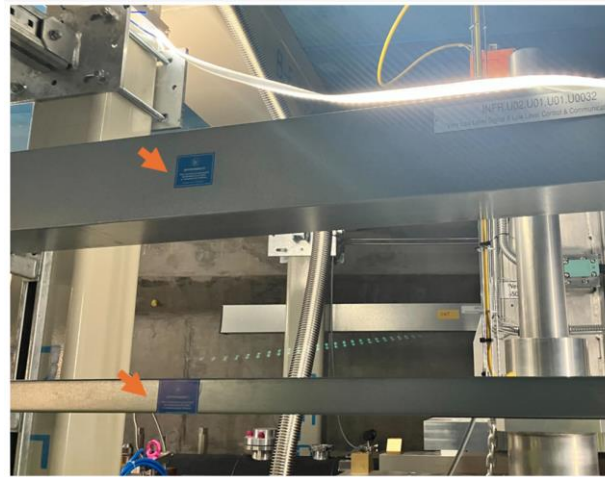


Figure 3 Example of medium chamber installed pads

## 4.3. DREAM

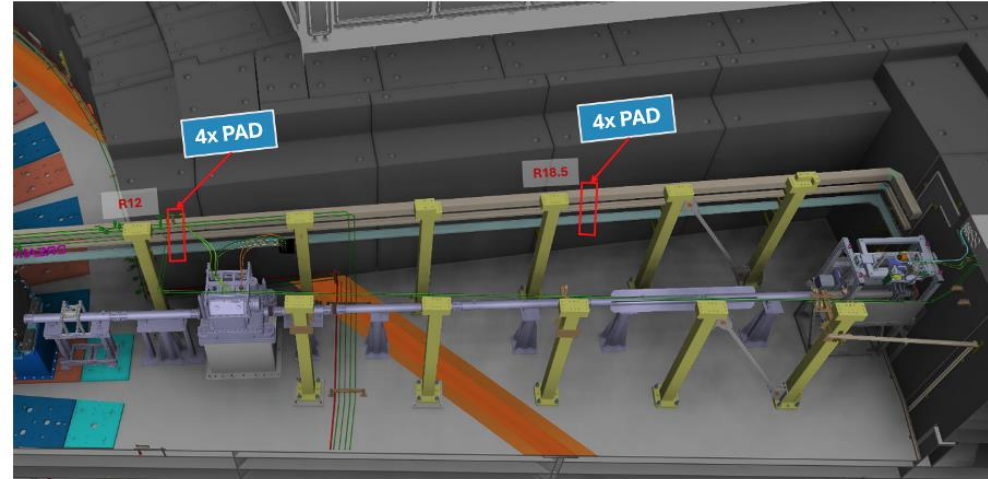


Figure 5 Location of pads for DREAM

## 4.8. HEIMDAL

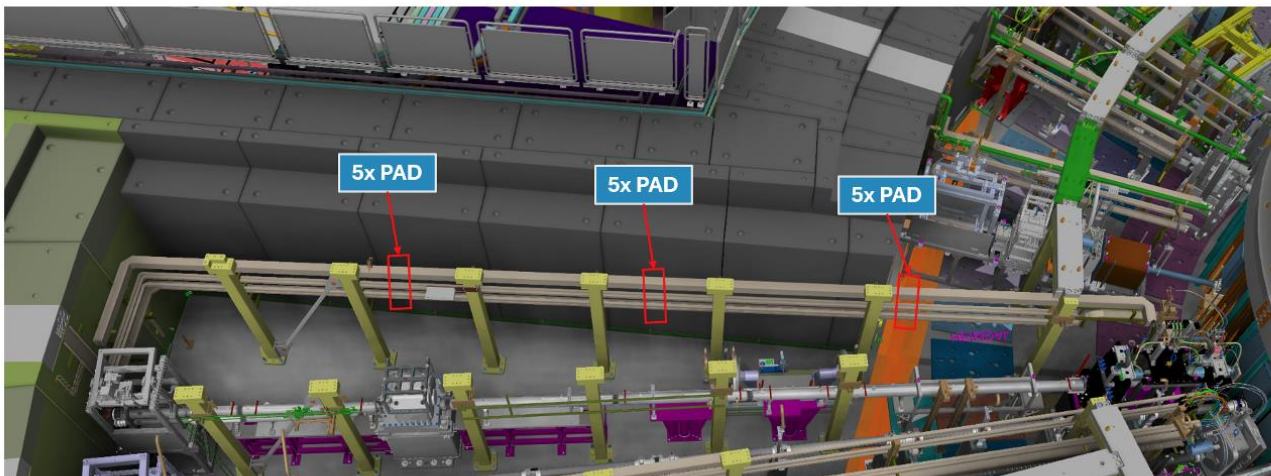


Figure 10 Location of pads for HEIMDAL

## 4.9. TBL

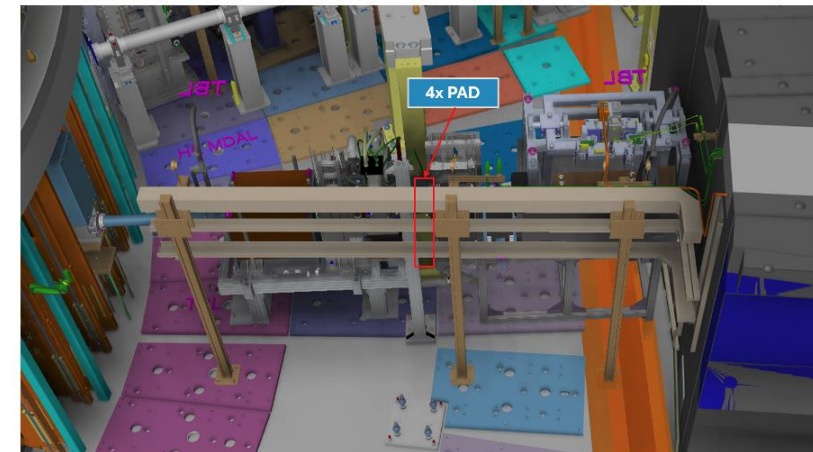


Figure 11 Location of pads TBL



# Finish presentation