

# Safe-Room Status

Intermediate 'Conclusions'

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# Quick Summary

- emergency (including ambient) **lights -> to be relocated to the surface**, patch possible if judged 'reliable' [HSE approval]
- **AUG -> possible to be relocated to the surface**, patch possible if judged 'reliable' [HSE approval]
- **EN/EL control racks** (RTU, DAU) -> relocation to the TZ76/Bypass@P5, **no requirement of fire protection** as long as alarm and evacuation systems are not concerned by failure
- **access control**: unclear but **stated as possible to be powered off during operation ???**
  - -> could thus remain in place
- **remaining equipment: remains in place** (follow-up required for equipment relying on micro-controllers -> tests required in H4IRRAD, mid/long-term solution to be determined)

# Next Steps

- Today: R2E project meeting, **summary to be discussed with HSE (additional input/comments?)**
- Early next week: **follow-up with EN/EL** (where do we need further input/proposals)
- Next Thu (14.4.): R2E committee meeting -> **agreed short-term approach and deadlines**
- May: **verification that no show-stoppers exist** (e.g., cabling passages)
- Early-June: **R2E proposal for HSE approval** (within delays for shielding purchase and civil engineering requirements)
- June/July: **H4IRRAD tests** determining the mid/long-term strategy for micro-controlled EN/EL equipment

# Details

## What equipment has to be protected (fire, power supply):

- related to the Alarm (signalization, distribution)
- required for evacuation (sirens, etc...)

(the remaining equipment might be concerned by the equipment safety itself, but does not need a formal approval by HSE)

## Strategy:

- equipment owners have to assure/justify the reliability of their equipment related to safety (based on list provided by HSE)
- this implies a clear distinction between equipment linked to alarm and evacuation (see above) and the rest
- R2E mitigation options and safety requirements:
  - lights & possibly also AUG -> surface:
    - fire proof (2h or less if justified)
    - cabling is fire resistant (2h or less if justified)
    - power supply: redundant (not necessarily by batteries)
    - usage of patches (e.g., for lights in the safe-room) is not excluded by definition -> reliability must be proven
  - control equipment:
    - alarm and evacuation related: -> above requirements must be fulfilled
  - other equipment: no direct safety constraints, safety/reliability might remain on equipment level

# Equipment 1

- Fire/ODH control: -> high risk as safety control [**already relocated**]
- Electrical equipment surveillance, full control system
  - RTU -> tested at CNRAD, VERY sensitive [**already relocated**]
  - Ethernet Switch -> tested at CNRAD, sensitive [**changed in UJ76 to IT/CS, UJ56 similar solution possible**]
  - DAU -> most likely less sensitive, but coherent if relocated together with RTU and switches (also for future upgrades if needed)
    - Relocation possible without need of fire protection as long as alarm and evacuation systems are not affected by malfunctioning (seems to be the case), **to be verified, proposal to be submitted to HSE**
    - relocation has important impact on cabling - to be compared with the risk of failure (DAU did most likely not fail in CNRAD), **to be discussed**
- 18/0.4 kV transformer protection system
  - Issue with micro-controlled parts (new types already installed) [**tests required at H4IRRAD**]
  - mitigation approach will depend on test results -> micro-controllers to be reviewed in general (see also other equipment), solution other than relocation to be envisaged
- Safety lighting source + distribution (« ambiance + anti-panique »)
  - safety requirements: fire protection (location and cabling), redundant power supply (not necessarily batteries!) -> assuring 2 hours or less if justified
  - can be relocated to the surface if above is assured -> batteries are not part of the requirement!

# Equipment 2

- AUG rack
  - safety requirements: fire protection (location and cabling), redundant power supply (not necessarily batteries!) -> assuring 2 hours or less if justified
- LV switchboards for safety equipment -> some micro-controlled?
  - Issue with micro-controlled parts (new types already installed) [**tests required at H4IRRAD**]
  - mitigation approach will depend on test results -> micro-controllers to be reviewed in general (see also other equipment), solution other than relocation to be envisaged
- 48 Vdc – chargers, batteries, commutation and distribution
  - Low risk equipment, limited power requirement once safety/ambient light is relocated to the surface
    - Open question: shall/can the remaining (other than lights) 48V distribution be done based on a supply from the surface (e.g., local redundant 230/48 [rad-tol] converter)?
- Access control rack
  - **sensitivity unclear [possible procedure: power-off during operation] -> to be confirmed/checked by GS/ASE**
- Red/general telephone rack
  - **situation unclear**
- GSM -> only monitoring, not anymore present in UJ76?

# Technical Requirements & Required Clarifications

- Cable inventory based on above strategy
  - -> passages/place for cabling
    - (main bottle-neck is the TZ76/UJ76 junction!)**
- 48V supply at new locations (TZ76 and Bypass)
  - -> **is a local 230/48V possible** (redundancy?)
- Requirements for patches (e.g., for lights and AUG)
  - -> to be classified as sufficiently reliable
- Procedure (power-off during operation) for access control rack
- Input for red/general telephone rack