



Transition to Operations

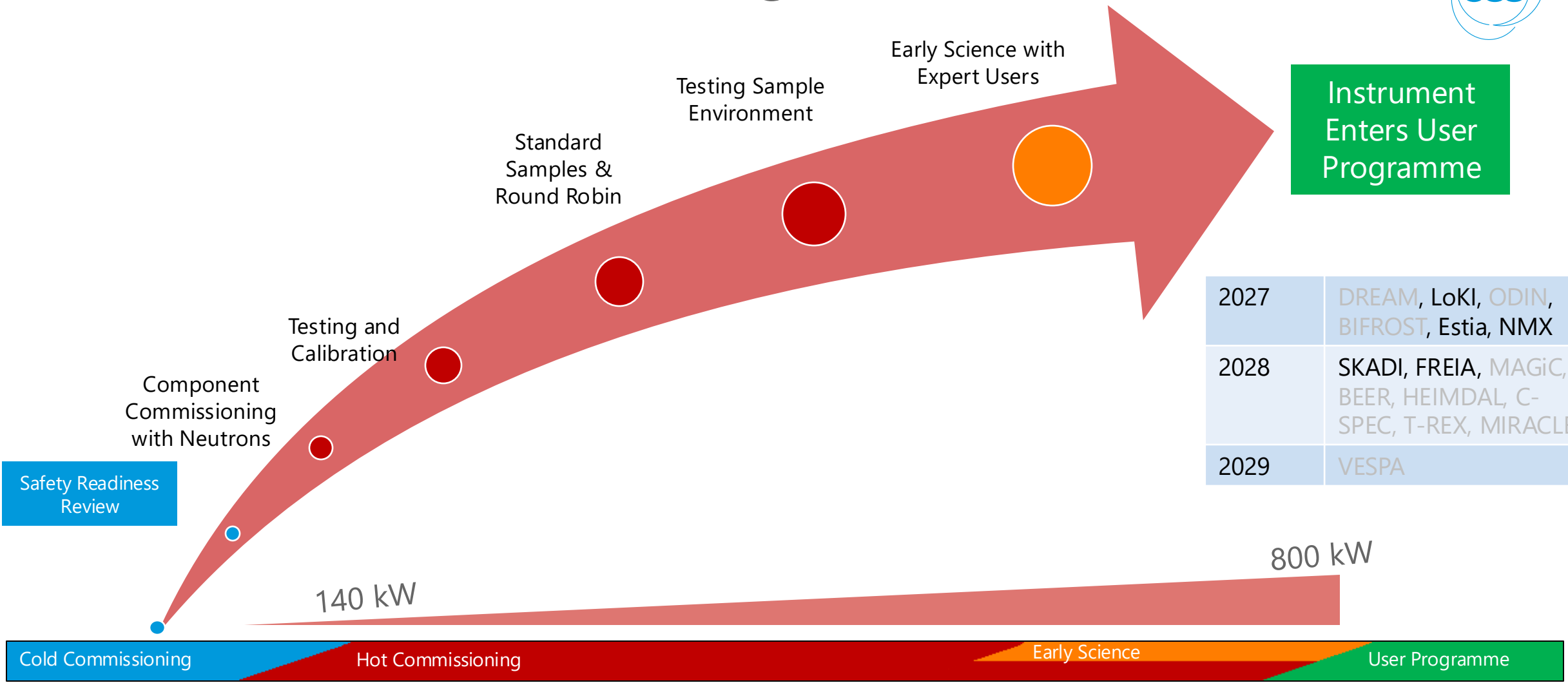
Large Scale Structures STAP, October 2025

PRESENTED BY ANDREW JACKSON

2025-10-22



Towards the User Programme



2027	DREAM, LoKI, ODIN, BIFROST, Estia, NMX
2028	SKADI, FREIA, MAGiC, BEER, HEIMDAL, C-SPEC, T-REX, MIRACLES
2029	VESPA

LoKI, Estia, NMX :
Hot Commissioning Start : mid-2026
User Programme : late-2027

SKADI, FREIA :
Hot Commissioning Start : 2027
User Programme : late-2028

ESS Ramp Up

Assuming BOT Feb 2026

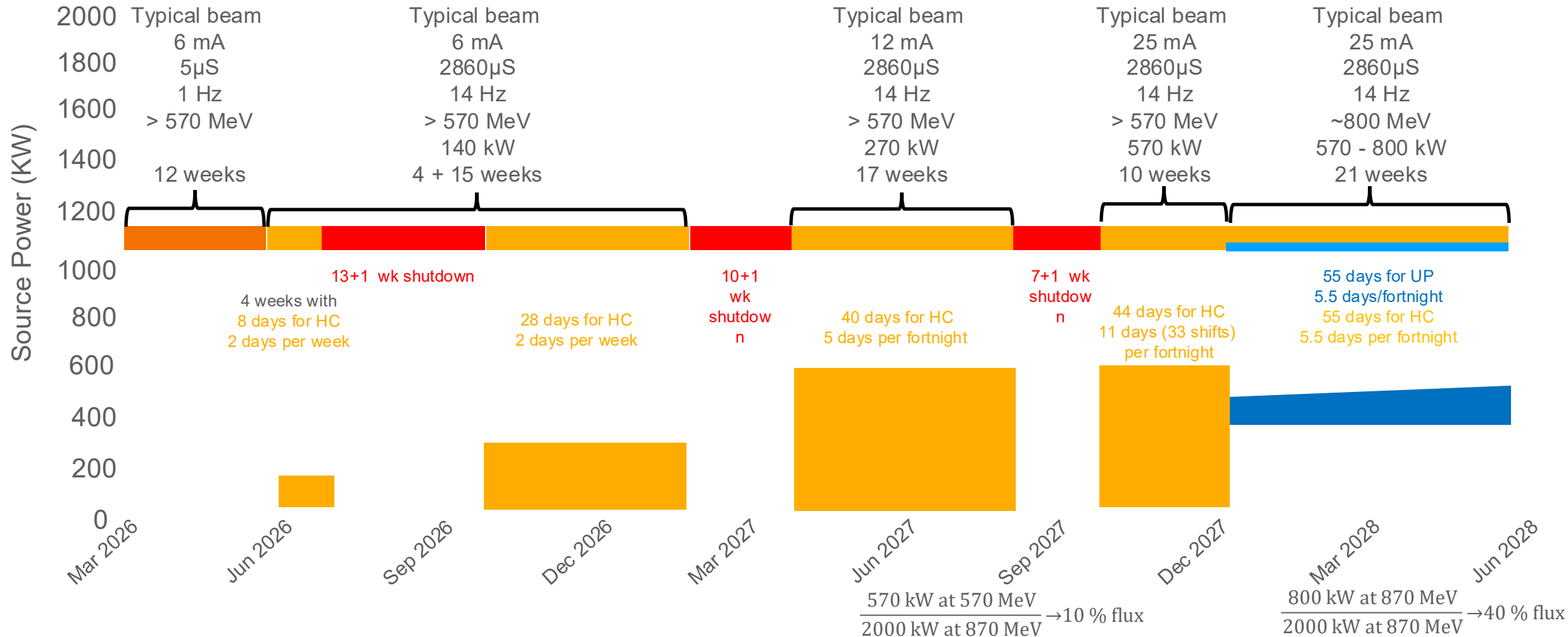
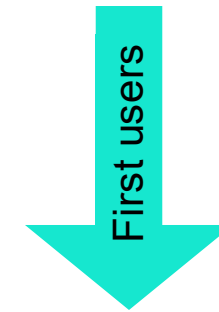
Beam parameters are indicative only, actual beam will depend on progress of commissioning

Accelerator commissioning & TBL

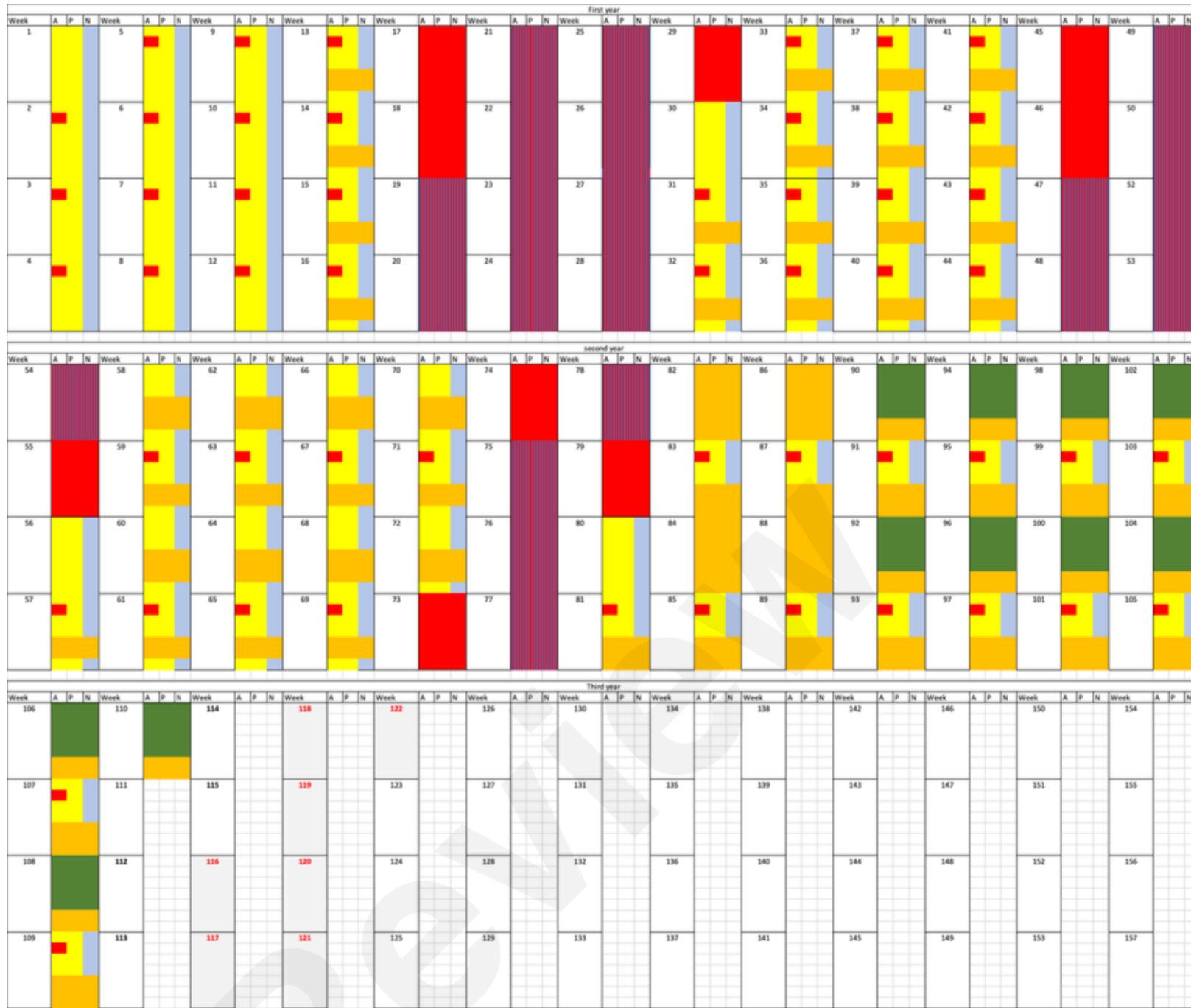
Hot commissioning

Shutdown

Users



See ESS-0420218 "Early operations of ESS and prerequisites for first scientific results" for more details



Detailed outline from ESS-0420218 “Early operations of ESS and prerequisites for first scientific results”

Tentative post-BOT weekly shift
schedule indicating the distribution
of shifts allocated to different
activities.

24/7 operation with 3 shifts/day is
assumed.

Yellow indicates accelerator and
target commissioning

Orange indicates dedicated beam
for instrument hot commissioning

Green indicates user operation

Red indicates maintenance stop or
shutdown.

Red with blue stripes (purple)
indicates bunker open.

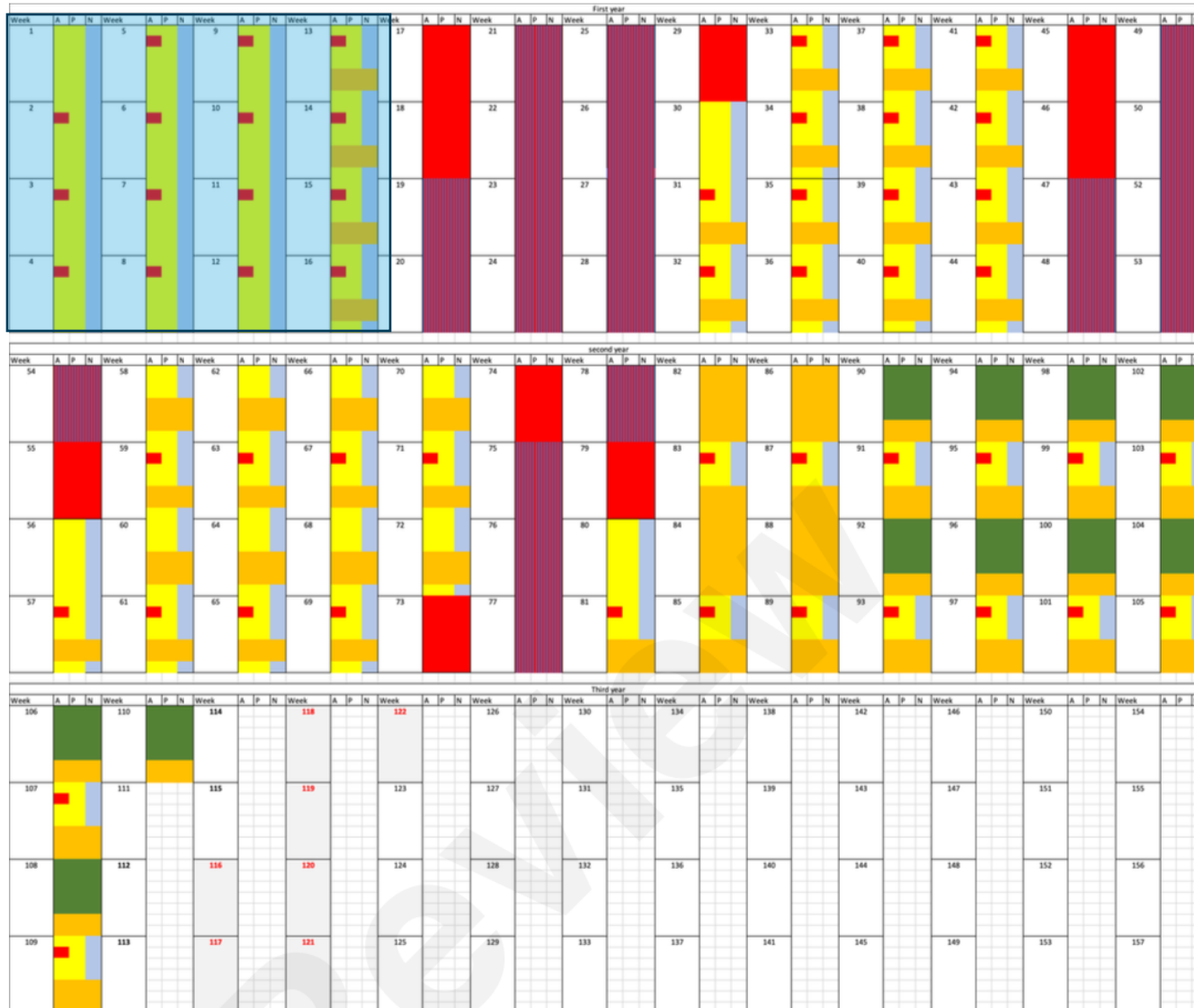
Commissioning phases



Phase	Main focus
Accelerator, Target & TBL (12 weeks)	First beam on target. Establish nominal (3ms) pulse length at low current (6mA or lower). Validation of moderator performance using TBL. (stable beam likely available overnight for instruments)
Hot commissioning #1	Power ramp up and availability improvements Target transient tests First dedicated neutron beam for instruments 2 days per week dedicated for instrument hot commissioning
Hot Commissioning #2	Power ramp up and availability improvements Target transient tests 5 days per fortnight dedicated for instrument hot commissioning
Hot Commissioning #3	Power ramp up and availability improvements 11 days per fortnight dedicated for instrument hot commissioning
First User Period	Power ramp up and availability improvements 11 days per fortnight above 500kW for instruments HC Half of the instrument time with users, rest for continued HC

Power level for instruments will be agreed based on commissioning status to provide good availability and beam stability

ESS plan: Yellow is accelerator running, orange is 'useful' beam



Period 0:

- **12 weeks:** of beam with very low power
20+ W
- **4 weeks:** with 8 (4 x 2) days of 14 Hz operation

LoKI flux at 100 W: $\sim 1.6 \times 10^4$ n/s/cm²
Not useless! Can start testing!

LoKI flux at 140 kW: $\sim 2 \times 10^7$ n/s/cm²
Enough to produce top class science
SANS2D : $\sim 5 \times 10^6$ n/s/cm²
EQSANS : $\sim 1 \times 10^7$ n/s/cm²
D22 : $\sim 1 \times 10^8$ n/s/cm²

ESS plan: Yellow is accelerator running, orange is 'useful' beam

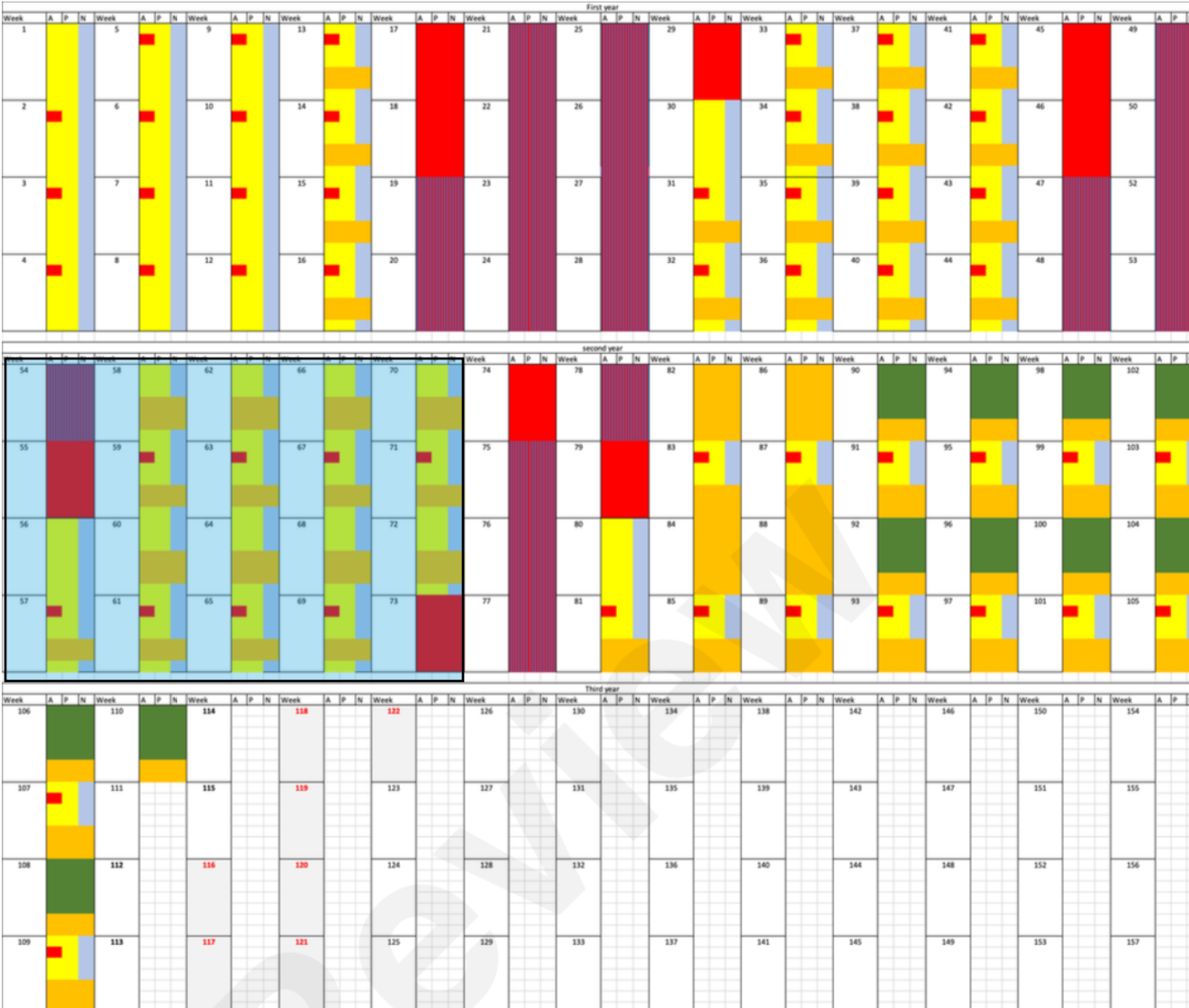


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Period 1:

- **15 weeks, yellow:** The beam power and frequency is varying – testing purposes
- **14 weeks, orange:** with 2 days of 14 Hz operation 140 kW
- **28 days** of experimental (HC) beamtime
- **Around 50 days** of beamtime to be used for non-experimental commissioning

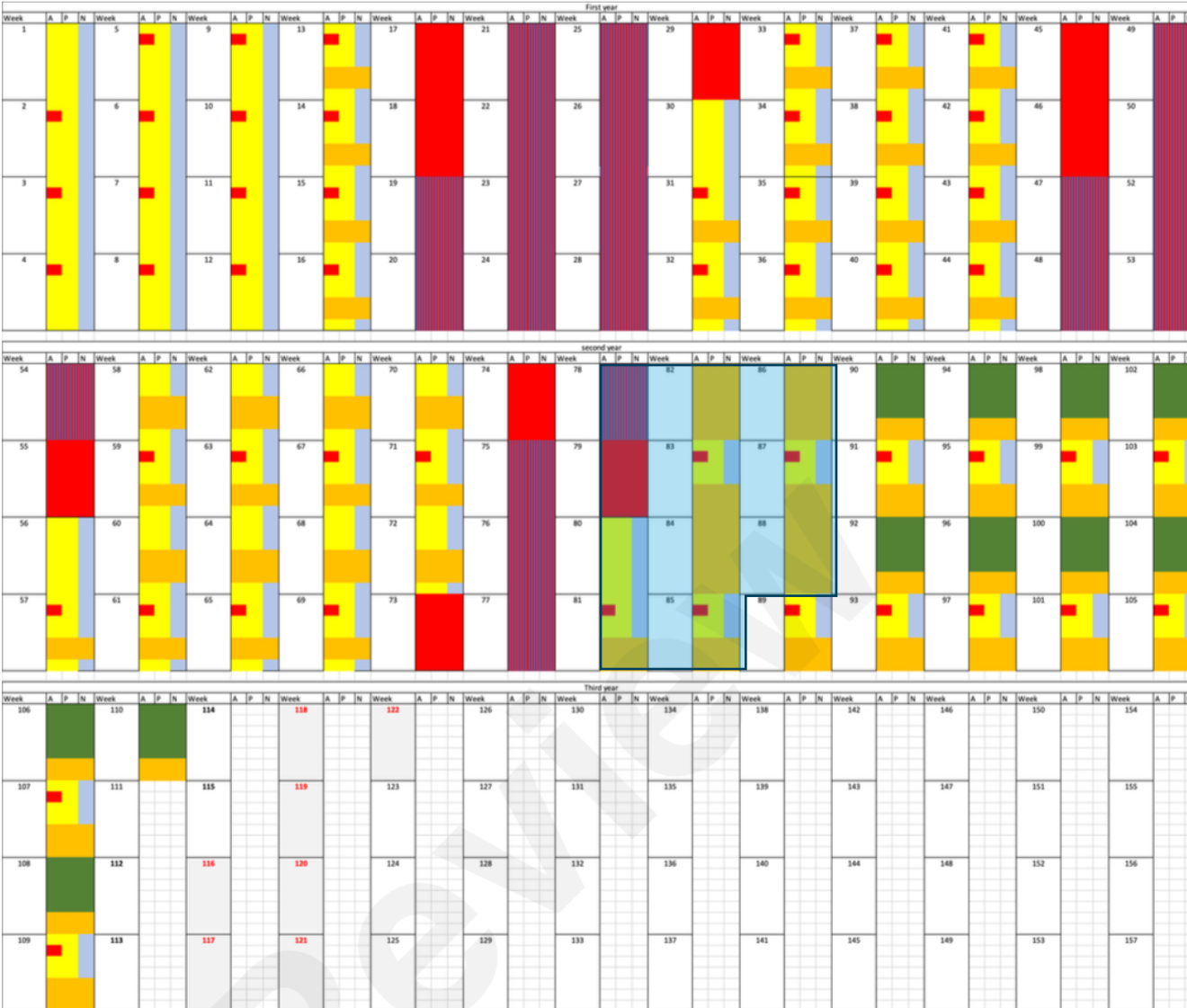
ESS plan: Yellow is accelerator running, orange is 'useful' beam



Period 2:

- **17 weeks, yellow:** The beam power and frequency is varying – testing purposes
- **16 weeks, orange:** with 2.5 days of 14 Hz operation 140 kW
- **40 days** of experimental (HC) beamtime
- **Around 50 days** of beamtime to be used for non-experimental commissioning

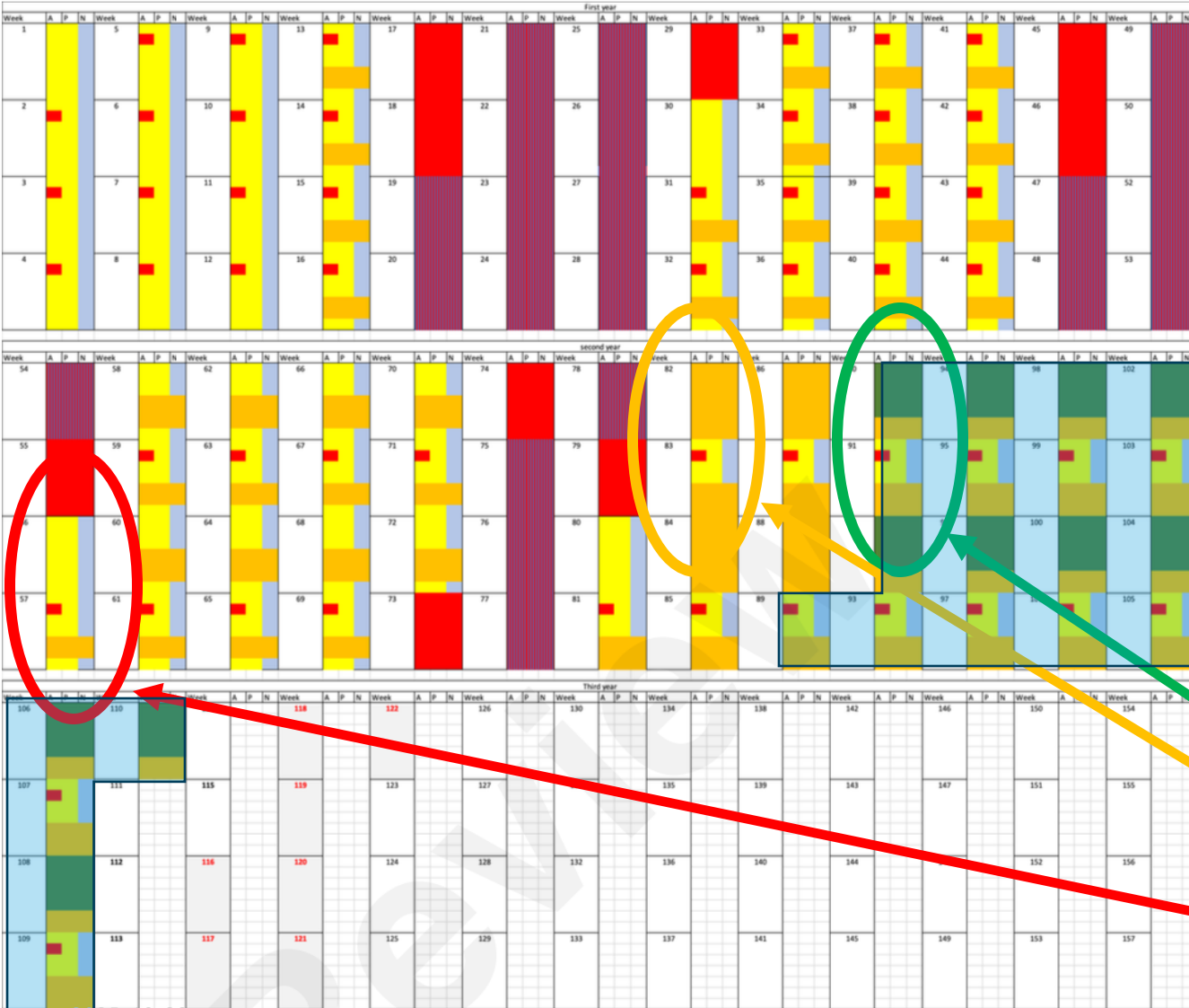
ESS plan: Yellow is accelerator running, orange is 'useful' beam



Period 3 Early Science:

- **9 weeks, yellow:** The beam power and frequency is varying – testing purposes
- **8 weeks, orange:** with 11 days of 14 Hz operation per fortnight
- **40 days** of experimental (HC) beamtime

ESS plan: Yellow is accelerator running, orange is 'useful' beam



Period 4 - User Programme

21 weeks – 11 beam days per fortnight
half for user, half for HC
500 kW

No debugging monitors, no detector calibration
No characterization measurements other than
those needed for each user experiment.

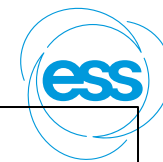
HC time focussed on SE commissioning and
more complex data collection modes

**Everything should run smoothly, or else we
arent ready for SOUP.**

If we want to ask a user to come **here**,
we must be able to perform a real
experiment **here**, and ...

... due to proposal submission and review,
we need to know **here**

Staffing for 2028 and beyond



New Positions in SSO

Team Lead SANS (ESS, Senior Instrument Scientist) – 2029/2030

Team Lead Reflectometry (ESS, Senior Instrument Scientist) – 2029/2030

3 x Instrument Scientists – 2029/2030 – Most likely 2xSANS and 1xReflectometry

Students and Postdocs

2 x ESS Postdoc, 2-5 externally funded Postdocs, 2-5 PhD Students

Instrument Data Scientists (DMSC)

SANS : Oliver Hammond

Reflectometry : Nicolo Paracini

NMX : Aaron Finke

NMX

Esko Oksanen (ESS, Instrument Scientist – Team Lead NMX)

Justin Bergmann (ESS, Instrument Scientist)

Swati Aggarwal (ESS, Support Scientist)

Zoë Fisher (ESS, Crystallisation and Biodeuteration Scientist)

LoKI

Judith Houston (ESS, Instrument Scientist)

Santiago Bordin (ESS, Instrument Scientist – Jan 2026)

Hannah Burrall (ESS, Instrument Ops Engineer)

SKADI

Sebastian Jaksch (ESS, Instrument Scientist)

Annika Stellhorn (ESS, Instrument Scientist Polarized SANS)

Tamires Gallo (ESS, Instrument Operations Engineer)

Estia

Jos Cooper (ESS, Instrument Scientist)

Grace Causer (ESS, Instrument Scientist)

Felipe Lopes (ESS, Instrument Ops Engineer)

FREIA

Tom Arnold (ESS, Instrument Scientist)

Instrument Scientist - 2028

Instrument Operations Engineer

SSO plan has 4 staff per instrument on average + crystallisation -> 21 staff in the division

Plan below assuming current staff stay in post, but positions exist in any case.

IS have a "home" instrument, but expected to work across instruments as needed

Team leads are not line managers and are expected to do local contact work



Finish presentation