**Taskforce Weekly Plenary Meeting**
***Agenda, 10 February 2025***

**Meeting time:** 14:30 – 16:00 CET

**Zoom meeting room:**

<https://cern.zoom.us/j/64071474060?pwd=ZjZSaGJwVUZJSjU0b1p3WHllU3Nudz09>

Attendees: All task force members

Chair: Fiodor Sorentino

**Key takeaways:**

* Tower categorization work ongoing to standardize and group similar suspension/vessel types
* Debate over cryostat design constraints and temperature requirements for low-frequency test masses
* Plans outlined for Pisa meeting, including parallel sessions on optical layout, detector layout, infrastructure
* Need volunteers for risk analysis and flexibility evaluation of global configurations
* **Tower categorization update**

***14:30-15:15 CET***

**Point presented by:** Romano Meijer, Nathan Holland, Max Majoor

**Point submitted for:** information

Following up on the taskforce activity “Suspensions classification”, a re-classification has been done by Nathan in collaboration with Max. In particular, the work concerns:

* A proposal for the treatment of several outstanding unclassified suspensions from the Preliminary Suspension Classification.
	+ For the preliminary classification, see TDS MEMO: https://apps.et-gw.eu/tds/ql/?c=17595
* A proposal for the classification of missing (auxiliary) suspensions from the Preliminary Suspension Classification - for which Francesca had also already done work.

Suspension experts within the taskforce are asked to review these proposals. A summary can be found in the document attached to the Sharepoint area of today’s meeting. The shared table including rationale for the proposals can be found on sheet 6, below line 30 following the link: <https://docs.google.com/spreadsheets/d/1HfSKxAzs3K-4LXtTNI81B5b8dvXn1wJsWJxy4DSRJ14/edit?usp=sharing>

**Summary of discussion and actions:**

Fiodor introduced the meeting agenda, which included an update on the tower categorization work done by Romano and the team. The goal was to standardize and group similar tower types to simplify the design process. Romano presented the work done so far, which involved classifying towers into different categories based on factors like residual motion, payload, and boundary conditions. This allowed grouping similar towers together to streamline the design. Some key points:

* The team created a shared table to centralize known interfaces and boundary conditions
* They also wrote a memo proposing a categorization system with 6-9 different tower types
* The goal was to enable hierarchical requirements flow and interface-driven requirements
* The team mapped the categorized towers onto the existing optical layout
* Some towers remained unclassified due to conflicting or unknown boundary conditions

The task force members have done some additional work since the initial categorization:

* Downselecting options where there was no clear preference (e.g. top vs bottom loaded benches)
* Identifying locations where the category 1 bench size won't fit, proposing a split into small and large benches
* Conservatively assigning category 2 vs 3 for filter cavity nodes, pending further input. The task force plans to bring the updated categorization, open questions, and proposed actions to the in-person meeting in Pisa for further discussion and input.

**Tower Categorization Update**

* Aim to standardize and group similar suspension/vessel types to reduce complexity and cost
* Classification based on residual motion, payload type, volume requirements, etc.
* 6-9 different suspension types identified so far
* Proposal to split Category 1 benches into two sub-categories (large/small) based on space constraints
* Need to clarify requirements on bench access (top vs bottom loaded)
* Suggestion to include cryopump nodes in categorization

**Low-Frequency Test Mass Design**

* Debate over cryostat size/design and temperature requirements (10K vs 40K)
* Concerns raised about cost impact of current design
* Cryogenics experts emphasized importance of ~10K operation and current access design
* Need to formally document temperature requirements
* **Configuration brainstorming continued**

***15:15-15:35 CET***

**Point presented by:** Fiodor Sorrentino

**Point submitted for:** discussion

A few global configurations should be identified to be studied in detail during the in-person meeting. The first meeting in Pisa should focus on one or two configurations for 2L, and start some preliminary work towards other configuration options with lower readiness, to be then studied in detail during the second in-person meeting in Amsterdam. We will discuss the configurations to be studied during the Pisa meeting, and the mandatory background information to produce before the meeting.

**Summary of discussion and actions:**

Fiodor shared some of the key ideas from the team's brainstorming on alternative detector configurations:

* Focus the first in-person meeting on a configuration with filter cavities in one tunnel, potentially including high frequency field activity in the other
* Consider minimizing excavation by implementing a double or multiple cavern concept
* Explore merging secondary optics or individual nodes, and coupling with field and cleanliness requirements in the arm tunnels
* Evaluate separating low and high frequency detectors. The task force coordinator plans to organize parallel sessions at the Pisa meeting to dive deeper into these concepts.

**Preparation:**

* Focus on 2L geometry with filter cavities in arm tunnels
* Consider options to minimize cavern excavation (e.g. multiple caverns)
* Parallel sessions planned on optical layout, detector layout, infrastructure, etc.
* Need to review tower access options and categorization
* Risk analysis and flexibility evaluation sessions to be organized
* **Preparation of the Pisa meeting**

***15:35-15:50 CET***

**Point presented by:** Fiodor Sorrentino

**Point submitted for:** information anddiscussion

The first in-person meeting will focus on the detailed design of the two global design options with better readiness, as well as carrying out a first analysis of risk and performance. We will discuss the detailed agenda of the meeting.

**Summary of discussion:**

Fiodor outlined the planned agenda and structure for the 3-day in-person meeting in Pisa, including parallel sessions on topics like optical layout, detector layout, infrastructure, and risk/flexibility analysis. He requested feedback on the timing and asked people to start preparing background information to bring to the meeting.

**Actions:**

* feedback on the timing is asked.
* start preparing background information to bring to the meeting.
* **A.O.B**

***15:50-16:00 CET***