Quality Assurance and Safety Conformity for the 4-metre Multi-Object Spectroscopic Telescope (4MOST) project

D. Giannone\textsuperscript{a}, G. Rupprecht\textsuperscript{b}, W. Ansorge\textsuperscript{c}, R. Haynes\textsuperscript{a}, O. Bellido\textsuperscript{a}, S. Frey\textsuperscript{a}, J. Brynne\textsuperscript{a}, R. de Jong\textsuperscript{a}, A. van Kesteren\textsuperscript{b}, J.-F. Pirard\textsuperscript{b}
\textsuperscript{a}Leibniz-Institut für Astrophysik Potsdam, Potsdam, Germany
\textsuperscript{b}ESO Headquarters, Garching bei München, Germany
\textsuperscript{c}RAMS-CON, Assling, Germany

SAFETY CONFORMITY

4MOST is conducting a comprehensive Hazard Analysis, based on the hazard analyses done by the various subsystems. Finally, 4MOST will deliver to ESO a Declaration of Conformity plus a “Safety File” that contains all safety relevant information including a demonstration of how 4MOST meets the essential safety requirements of the relevant EU Directives (e.g. Machinery, Low Voltage, EMC).

OVERVIEW

4MOST is a 2nd-generation spectroscopic instrument built for ESO’s 4.1-metre VISTA telescope.

A state-of-the-art fiber-fed spectroscopic survey facility
- 2400 simultaneous spectra
- Sky objects on hexagonal field-of-view of more than 4 square degrees.

Such challenge requires an efficient Quality Assurance (QA) and stringent safety compliance.

CONFIGURATION MANAGEMENT

Configuration Management (CM): set of activities aimed at establishing and maintaining consistent records of 4MOST performance parameters, as well as its functional and physical attributes, compared to the 4MOST Instrument and operational requirements.

Main CM Tasks
- 5% Configuration Items
- 30% Record and Control
- 20% Configuration Item Data List
- 20% Non-conformities
- 10% Configuration Baselines
- 15% Configuration Status and Audit

RELIABILITY

To guarantee the specified high performance over the design life time of 15 years, we adopted a rigorous quality control approach. A thorough Failure Mode Effect Analysis (FMEA) helped to identify critical components that need special attention and spare parts.

REFERENCES

1. ISO 10007:2017 Quality management - Guidelines for configuration management