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Ensuring Solid, Transparent and Scientifically Sound Material Balance Evaluation (MBE) Practice in the EC through Collaboration Between Regulators, Operators and the Scientific Safeguards Community

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The European Commission (COM) and the International Atomic Energy Agency (IAEA) have a long-standing and well-established cooperation based on multilateral comprehensive Verification Agreements. The two organisations' inspectorates coordinate the implementation of EURATOM and international safeguards in the territory of the European Union (EU) as well as their communication with operators and State authorities in the EU with regard to safeguards performance.

In this paper, the elements of Material Balance Evaluation (MBE) as practiced by the European Commission are presented. The use of a facility-tailored flexible approach to evaluate the main material balance evaluation parameters combined and strengthened with elements of audit methodologies are further elaborated upon. An outline on how IT (and especially the dedicated EURATOM inspection software 'VARO') can help to ensure a coherent implementation, documentation, evaluation, effective follow-up, and data input from the operators is also included.

The paper emphasizes the consultative element between EURATOM, the IAEA and nuclear operators as well as the importance of a comprehensive debriefing following independent evaluation by both regulators. A description of the legal framework, the core processes, and the interaction between EURATOM, the IAEA and operators for arriving at appropriate safeguards conclusions sets the context for the MBE.

Country or International Organization

European Commission, DG Energy, Nuclear Safeguards

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