EMPIR Reporting Guidelines
Part 2a – Writing a Technical Report (Progress)

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If you require further help or guidance after reading this document, please contact the helpline

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1 Introduction

EMPIR Reporting Guidelines Part 2a provides guidance on the technical report (progress) which is to be completed as part of interim, periodic and final reporting by Joint Research Projects (JRPs) and Support for Impact Projects (SIPs). Reporting Template 3 is linked to this part of the EMPIR Reporting Guidelines.

2 Technical Report (Progress)

Technical reports (progress) should be submitted at the times specified in your Annex 1. All sections of Reporting Template 3 should be completed for both interim and periodic reports. However, there are a few differences in how JRPs and SIPs should complete these reports. These differences are illustrated in the subsections below. The font for all sections of this report is Arial 10 with headings in bold.

2.1 Cover page

Please amend the header and footer as appropriate by adding the project number, short name, logo (if a logo is not available please delete this from the header), and the month and year of issue. Please complete the cover page as shown in the example below and paste in the completed table from your publishable summary:

Example: Cover page

14IND99 MetroShine

TECHNICAL REPORT (PROGRESS)

Grant Agreement number	14IND99
Project short name	MetroShine
Project full title	Metrological approaches for improving the cost efficiency of machine polishing processes in industry
Version numbers of the latest contracted Annex 1 and Annex 2 against which the assessment will be made	Annex 1: V1.0 Annex 2: V1.0
Technical Report (Progress)	1st ☐ 2nd ☒ 3rd ☐ 4th ☐
Period covered (dates)	From 01 October 2016 To 30 June 2017

Project start date and duration:	01 January 2016, 36 months

Coordinator: Bob Stefani, Prof. Dr. Ing, AAA, Tel: +89 652 777737777 E-mail: Bob.Stefani@aaa.com
Project website address: www.metroshine.org

Internal Funded Partners:	External Funded Partners:	Unfunded Partners:
1 AAA, UK	5 AFA, Czech Republic	9 LAA, Italy
2 BBB, Germany	6 BGB, Portugal	10 MBB, Belgium
3 CCC, France	7 CHC, Netherlands	11 NCC, Sweden
4 DDD, Spain	8 DJD, Austria	12 PDD, Finland

Report Status: CO Confidential, only for members of the consortium (including EURAMET and the European Commission Services)

Technical Report (Progress) 1 of 17 Issued: August 2017

2.2 Table of Contents

The Table of Contents should auto-generate and appear as shown in the example below:

Example: Table of Contents

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2.3 Section 1: Summary

The summary section should be a maximum of 500 words in length. It is not for publication and it should summarise all of the project's work described in this report.

In the first paragraph describe the key technical *(JRP's only)* and impact *(JRPs and SIPs)* highlights including mention of the uptake and exploitation of the project's outputs by standards organisations, industrial, metrological, scientific and other user communities.

In the second paragraph explain any delays or problems with the project's work and if there are any knock-on effects on the rest of the project. You should also comment on problems with specific deliverables / tasks.

In the third paragraph detail any items that you think could be used as news stories for promoting the work of your project and the programme (eg on the EURAMET website homepage). Examples of past news stories include; prototypes being tested in industry, best paper awards and publications in prestigious journals. This list of examples is not exhaustive so if you are in doubt about including a potential news story please do include it.

Example: Section 1: Summary

1 Summary

In WP1 the newly developed metrology for AMR sensors has been used for the first time for the characterisation of industrial AMR sensors. The results have immediately opened up new paths for the improvement of industrial AMR field sensors. In WP2 new calibration facilities have been established and improved. First calibrations of industrial sensors from stakeholders in the new facilities have been carried out successfully. Furthermore the strong interaction with stakeholders has led to a joint draft of a best practise guide for magnetic field measurements. In WP3 a first probe head for the wafer-scale inductive characterisation of magnetic thin film materials has been designed and tested. In WP4 the development of new standard problems for micromagnetic simulations is a further step towards more reliable micromagnetic simulation tools. In WP5 the realisation and simulation of graphene based nano Hall-sensors is an important step for the application of this promising new material for magnetic bead detection in bio-medical applications.

Part of Task 3.2 is delayed from November 2016 to February 2017 because the phantoms could not be produced in time. The phantoms have now been completed and the work is getting back on track. Another part of Task 3.2 is delayed from June 2016 to November 2016 because it took longer than expected to obtain the ^{90}Y-microspheres. It is expected that this task will end 3 months late. All other tasks are on schedule. The delays to Task 3.2 all relate to independent tasks within the project, therefore these delays will not have a knock-on effect on other tasks. However, these delays are resulting in a delay to deliverable

3, which is delayed from November 2016 to February 2017. Otherwise the deliverables are on schedule and there are no requests for changes to the scope of Task 3.2.

Industrial manufacturer Med Gmbh has included the measurement technique developed in this project in their ceramic hip implant manufacturing process thereby doubling their productivity. In addition the project's paper on "Infection associated with medical implants" has been published in the high impact journal *The New England Journal of Medicine*.

2.4 Section 2: Overview of progress towards the objectives of the project

Please insert the list of objectives from your JRP or SIP protocol in to the Objectives subsection. An example is provided below:

Example: Section 2: Overview of progress towards the objectives of the project

2 Overview of progress towards the objectives of the project

2.1 Objectives

The objectives of the project are to:

1. **Develop traceability to SI units for LNG flow meters** - through developing primary standards at NMIs in conditions relevant to the LNG industry and designing and testing systems for industrial scale calibration facilities (WP1 and WP2)
2. **Test and evaluate LNG quantity metering systems** – by an assessment of the uncertainties for the static and dynamic volume measurement technique supported by in-field comparisons between static (volume) and dynamic (flow) measurements and an investigation of cryogenic media and installation effects (WP1 and WP2)
3. **Improve LNG composition measurement systems** – via an assessment of different sampling systems (using industrial data) plus a comparison of sampling-based methods and a novel alternative optical method that assesses LNG composition directly (WP3)
4. **Reduce uncertainties in LNG density and calorific value calculations** – by the development of an advanced primary densitometer to measure the density of LNG with improved accuracy, validation against a pycnometer whose range will be extended and the development of improved equations of state used for density calculations (WP4)
5. **Contribute to impact** - via contributions to international standards and collaboration with, and dissemination of research outputs to, end-users (WP5)

Then use the 'deliverable status and progress towards objectives' table to show deliverable status and progress towards the objectives listed in the JRP or SIP protocol (Annex 1 of the EMPIR Grant Agreement). This table should be set up by the coordinator at the beginning of the project, and then maintained as each deliverable is delivered. Deliverables should be listed in deliverable number order as per the list of deliverables in Annex 1. Ensure the 'deliverables status and progress towards objectives' table is up to date to the end of the period:

- During the life of the project as each deliverable is delivered enter the date (month and year eg Aug 2016) in the 'Actual delivery date' column. Please note that 'Actual delivery dates' must be within the reporting period (ie do not include dates after the end of the reporting period, even if delivery occurred during the 45/60 day period allowed for the preparation of the technical reports (progress)).

- For the column titled ‘status’ enter a status statement (eg ‘inactive’, ‘on schedule’, ‘delayed to…’, ‘completed & submitted to EURAMET’) and ensure that this corresponds with the ‘Delivery date’, and with the list of deliverables in Annex 1.
- For the column titled ‘Progress towards objectives (one paragraph includes all partners)’:
    - Provide one paragraph **(maximum 250 words per deliverable)** describing the status of each active deliverable, including a statement of whether the deliverable met its target or not and describing progress towards the relevant objectives (as listed in the subsection above).
    - Describe the work undertaken by each of the partners involved in each deliverable and ensure that this is in agreement with the Annex 1. If not, explain the discrepancy and the impact of any delays (eg partners X, Y and Z will not start work on this deliverable until the next reporting period).
    - If a deliverable is delayed describe the cause of the delay and any knock-on effects this may have.
    - For those deliverables that were completed in a previous reporting period the ‘Progress towards objectives (one paragraph includes all partners)’ column should be left blank.
    - **Only include text in this column.**

If a deliverable has been amended and the amendment has been accepted by EURAMET but the approved Annex 1 (JRP / SIP protocol) has not yet been updated, amend the table accordingly and include a footnote to advise that the change was accepted, stating when this change was requested (if appropriate) and the date of acceptance. Only authorised changes to deliverables may be included.

Deliverables should be submitted to EURAMET on their due date: see EMPIR Reporting Guidelines Part 5.

Example: Section 2.2

2.2 Deliverables status and progress towards objectives

Relevant objective	Related activity number	Del. No.	Deliverable description	Partners (Lead in bold)	Delivery date as per Annex 1	Actual delivery date	Status: *inactive, on schedule, delayed to..., or completed & submitted to EURAMET*	Progress towards objectives (one paragraph includes all partners) (max 250 words per deliverable)
1	3.5.5	D1	Validation report including a statement of uncertainty for an interferometric oil micromanometer to be used as a primary absolute and gauge pressure standard for the range up to 2 kPa with target uncertainty of 1 mPa + 2 10^{-5}×*p*	**BBB,** AAA, BBB,	Jun 2016	Jun 2016	*Completed & submitted to EURAMET*	
1	2.4.3	D2	Paper on force-balanced piston gauges as primary and secondary absolute and gauge pressure standards for the range up to 15 kPa with a target uncertainty below 0.01 Pa + 1.4 10^{-5} ×*p* submitted to a peer-reviewed journal and a statement of uncertainty	**EEE**, BBB, CCC, FFF	Sep 2016	Sep 2016	*Completed & submitted to EURAMET*	

2	2.4.5	D3	Report on the uncertainty for (state of the art) ship-based tank-gauging methods based on GUM principles	**DDD**, AAA, BBB, CCC	Aug 2017		*On schedule*	The components of the uncertainty budget have been determined by DDD with input from AAA, BBB and CCC. In the next reporting period full evidence of the uncertainty for (state of the art) ship-based tank-gauging methods based on GUM principles will be determined. The first steps have been taken towards achieving the goals of Objective 2 which is to improve the performance of tank gauging and flow metering systems. Once the uncertainty budget has been determined work will be able to start on the performance testing of the tank gauging and flow metering systems (as part of D4).
2	3.3.3	D4	Calibration methods for positive and negative gauge pressure standards in the range -10^5 Pa to 10^4 Pa with an uncertainty of 3 $10^{-5}\times p$ + 1 Pa	**BBB**, all partners	Aug 2017		*Inactive*	

3	1.4.2	D5	Recommendation report for the use of pressure balances as reference standards for barometric pressure, including a statement of whether the pressure balances achieved the target uncertainty of lower than 1.5 $10^{-5}\times\|p\|$ + 0.5 Pa in the range 100 Pa and 200 kPa	**DDD**, AAA, BBB, CCC	Jan 2018		*Inactive*	
4	4.4.4	D6	Recommendations for the use of optical methods for pressure measurement in the range 1 Pa to 10^4 Pa for absolute, positive and negative pressure	**DDD**, all partners	Jun 2018		*Inactive*	

4	4.4.5	D7	Measurement capabilities report including a statement of uncertainty for a calibration service for positive and negative gauge pressures in the range -10^5 Pa to 10^4 Pa of gauge pressure with an uncertainty below 3 $10^{-5} \times \lvert p \rvert$ + 1 Pa	**FFF,** AAA, BBB, CCC	Aug 2018		*Inactive*	
4	4.5.2	D8	Validation report including a statement of uncertainty for absolute pressure transfer standards for traceability of industrial vacuum gauges below 10 Pa with an uncertainty of ≤0.5 %	**FFF,** AAA, BBB, CCC	Dec 2018		*Inactive*	

5	5.1.7	D9	Evidence of contributions to new or improved international standards with a specific focus on recommendations for negative gauge pressure calibrations and the traceability of force-balanced piston gauges, to be submitted to EURAMET TC-M, CCM WG P, COOMET TC 1.6, DIN NATG-D, IMEKO TC 16 and accreditation authorities in Europe. Examples of early uptake of project outputs by end users	**BBB**, all partners	Dec 2018		*Inactive*	
n/a	6.3.3	D10	Delivery of all technical and financial reporting documents as required by EURAMET	**AAA**, all partners	Dec 2018		*On schedule*	

Section 2.3 - Summary of exploitable results and an explanation about how they can/will be exploited

For JRPs, this subsection should summarise the work undertaken in the Uptake and Exploitation task in your JRP's 'Creating impact' WP. As well as including details of the updates that you have made to your exploitation plan in this reporting period you should describe activities undertaken to proactively encourage and facilitate the uptake and use of the project's outputs by relevant users in the industrial and public service communities. Such activities may have included the development of commercial measurement services, the marketing and selling of reference materials, software or other outputs. It may also have included the commercialisation of specific technologies developed in the project. **Note that this section relates specifically to exploitation i.e. you should not include dissemination (e.g. knowledge transfer and/or training) information in Section 2.3.** An example is given below:

Example 1: JRP

2.3 Summary of exploitable results and an explanation about how they can/will be exploited

The exploitation plan has been updated at each project meeting. In addition to the plans set out in the first version of the exploitation plan, one of the JRP's collaborators (Thermionicals Ltd) has expressed interest in commercialising the new laser-based procedure for testing Au/Pt thermocouples. Subject to the necessary IP arrangements, it is expected that Thermionicals Ltd will start using this procedure within the next six months.

The Au/Pt thermocouples reference function (Task 5.1) has been confirmed and DDD, who currently chair the subgroup, "Radiation thermometry" within the IEC technical committee and the working group "Applied radiation thermometry" within the VDI, included a point in the agenda, briefly presented these results and asked for comments from the other committee/working group members. A written report was also submitted for consideration by the committee and working group. It is anticipated that the revision of the standards VDI 3511, part 4 "Radiation Thermometry" and IEC/TS 62492-1 "Industrial process control devices – Radiation thermometers" will be completed by the end of the JRP.

The survey of end users, which was undertaken to determine potential interest in new calibration services for low dose level miniature dosemeters (based on the techniques developed in WP2), led to significant interest from 3 dosemeter manufacturers. Exactac GmbH, ProAvance S.A. and Divometer plc have subsequently joined the JRP's stakeholder committee and attended the project's workshop on the 'calibration of low dose level miniature dosemeters'. ProAvance S.A. asked AAA to undertake calibrations of their low dose level miniature dosemeters on a trial basis for the next two months. If this trial is successful, it is anticipated that AAA will be asked to continue performing these calibrations.

The sensor is not yet available from WP3 and WP4. The e-service based on dedicated software for the unfolding of the raw read-out data to derive the time and position dose distribution is still planned to be launched after the end of the project, subject to a successful patent application.

For SIPs, this subsection should summarise the exploitation work undertaken in the SIP's impact work packages. You should describe how the planned impact for the primary supporter, industry, and the metrology and standardisation communities is being realised by your SIP. An example is given below:

Example 2: SIP:

2.3 Summary of exploitable results and an explanation about how they can/will be exploited

This SIP is on track to meet its exploitation objectives:

In relation to objective 1: The literature survey and the validation of the temperature, salinity and pH measurement models that were previously used in ENG99 WP3 are complete. Three IAPSW 1111 and ISO

2222 working group meetings were attended and members were informed about the aims of 14SIP99, in readiness for the dissemination of good metrology practice later in the project. IAPSW 1111 and ISO 2222 working groups will be informed about SI traceability and measurement good practice in the next reporting period. Written contributions and presentations on temperature, salinity and pH measurement techniques have been provided for use in the forthcoming standards of CEN TC9999 and CEN TC8888 (ie pr-EN 1111 and pr-EN 2222 which are expected to be published in 2018 and 2019 respectively).

In relation to objective 2: A one day workshop was held in Finland in July 2017 on 'best practices for the measurement of temperature, salinity and pH to ensure the effective implementation of IAPSW 12345 and ISO 6789. The workshop was attended by 34 equipment manufacturers and users of climate observation stations. Training on measurement best practice was provided for the following equipment manufacturers and users of climate observation stations: Relocatic bv, Jertils SARL, and Piethly Ltd. This approach increased these organisations' capabilities in traceable measurement and it ensured the effective implementation of IAPSW 12345 and ISO 6789. The paper titled 'Traceable on-line measurement of temperature, salinity and pH' will be submitted to the trade magazine *Earth Observer* by Dec 2018. Further training will be provided in the next reporting period.

2.5 Section 3: Explanation of the work carried out

Please list all tasks (including 'creating impact' and 'management and coordination' tasks) in task number order in the Explanation of the work carried out table and ensure that this table is up to date to the end of the period:

- During the life of the project when each task is completed enter the date (month and year eg – Aug 2016) in the 'Actual task completion date' column. Please note that 'Actual task completion dates' must be within the reporting period (ie do not include dates after the end of the reporting period, even if the tasks completed during the 45/60 day period allowed for the preparation of the technical reports (progress)).
- For the column titled 'status' enter a status statement (eg 'inactive', 'on schedule', 'delayed to…', 'completed') and ensure that this corresponds with the 'Actual task completion date', and with the explanation of the work carried out in each task.
- For the columns titled 'Explanation of the work carried out in each task':

For those tasks that were completed in a previous reporting period these columns should be left blank. **Only include text in these columns**. If you need to include data, tables, histograms, or pictures to highlight the technical strength of the work please include an annex as a separate document containing this information. Inclusion of such an annex is optional.

- Summarise the highlights and progress towards the aim of each task:
  - Also include a statement of whether the task met its target or not **(maximum 700 words per task)**.
  - **Do not name individual partners in these descriptions.**
  - **Do not mention activities in these descriptions.**
- Explain any issues affecting the completion of the tasks (eg describe the cause of delays / deviations etc. and any knock-on effects):
  - **For delayed tasks**, please provide a revised task completion date, an explanation of the reason for the delay, and an explanation of how the consortium will get the task back on schedule (if possible).
  - **For deviating tasks** that will not meet their original targets please include explanations justifying the deviation from the original plan and any knock-on effects that this will have on other tasks.

If a task has changed (added, amended, deleted) including a change to the end date, and the amendment has been accepted by EURAMET but the approved Annex 1 (JRP / SIP protocol) has not yet been updated, amend the table accordingly and include a footnote to advise that the change was accepted, stating when this change was requested (if appropriate) and the date of acceptance. Only authorised changes to tasks may be included.

Please note that although this section asks for an explanation of the work carried out on a task by task basis, coordinators / project managers are advised to maintain their own reports on an activity by activity basis and it is also recommended that coordinators use a traffic light system to highlight delayed activities (ie similar to that used for EMRP reporting).

Complete the consortium performance section by either providing a statement confirming that all partners have contributed satisfactorily to the activities specified in Annex 1 for this reporting period or list any exceptions to this by naming the defaulting partner(s) and the activities that they were required to do.

An example is provided on the next pages:

Example: Section 3: Explanation of the work carried out

3 Explanation of the work carried out

Task number & title	**Task end date as per Annex 1**	**Actual task completion date**	**Status:** *inactive, on schedule, delayed to..., or completed*	**Explanation of the work carried out in each task**	
				Summarise the highlights and progress towards the aim of each task (max 700 words per task)	**Explain any issues affecting the completion of the tasks (eg describe the cause of delays / deviations etc. and any knock-on effects)** (max 300 words per task)
1.1 Development of all-gate defined tuneable-barrier pumps	Jan 2016	Mar 2016	*completed*	The first batch of 10 GaAs all-gate defined tuneable-barrier pumps (type i) were produced. The GaAs barrier pumps (type i) will now be characterised and validated in Task 1.2.	The two month delay in the completion of this task was a knock on effect of GHSD not being able to supply the GaAs materials by the time originally foreseen in the Annex 1. This delay should not have any knock-on effects on Task 1.2 as preparatory work had to be undertaken in Task 1.2 before the characterisation and validation work could commence.
2.2 Assessment of the pumping accuracy of SOI-CMOS devices	Mar 2016	Mar 2016	*completed*	The 'self-referenced' SOI-CMOS devices were provided from Task 2.1 for assessment. The pumping accuracy of the 'self-referenced' SOI-CMOS devices was assessed. The error detection investigation method proved to be a suitable method for assessing pumping accuracy. The target uncertainty of 0.1 ppm, at a current of ≥ 100 pA, was achieved.	None.
3.2	Jun 2016		*delayed to August 2016*	The model developed in Task 3.1 has been further developed and used in this task. Work has commenced on performing the sensitivity	There was a delay in the production of the phantoms. The phantoms have now been

Monte Carlo modelling				analysis of external fields to phantom characteristics using the typical MRI exposure conditions defined in Task 3.1. The Monte Carlo model of the TDCR-Cerenkov detectors has been developed and validated using the code GEANT4. This model takes into account the influence of the ^{90}Y microspheres.	completed and the work is getting back on track. However, the report on the sensitivity analysis will not be produced until August 2016. Also, work has yet to commence on the response of the TDCR detection system and on the identification and quantification of impurities in ^{90}Y microspheres because it took longer than expected to obtain the ^{90}Y-microspheres. It is expected that this report will be delivered 2 months late. These delays should not have any knock-on effects on other tasks.
4.1 IR radiation thermometry	Dec 2017		*on schedule*	Work has commenced on designing an IR radiation thermometer with a tuneable operating wavelength. The operating wavelength parameters are being investigated and the IR radiation thermometer is being designed to work within the 500 ^{O}C – 1500 ^{O}C temperature range. Three draft technical drawings have been prepared thus far and improvements continue to be made as new results become available. The final technical drawing has yet to be completed, but it is expected to be ready on time.	None.

5.2 Calibration standards	Dec 2017		*inactive*		
6.1 Knowledge Transfer	Dec 2018		*on schedule*	A paper on the primary measurement method for ^{90}Y-microspheres was submitted for publication in the journal Cancer Biotherapy and Radiopharmaceuticals. Another paper on the HT-SPRTs and thermocouple non-uniqueness study between Al and Ag fixed points was submitted for publication in the Journal of Thermophysics. IEC: TC 65 SC 65B WG5 “Temperature sensors and instruments” a partner in this project chairs the subgroup, “Radiation thermometry” within the IEC technical committee and the working group “Applied radiation thermometry” within the VDI. Meetings of the respective standardisation bodies were attended and the outputs of the project were disseminated.	None.
6.2 Training	Dec 2018		*inactive*		None.
6.3 Uptake and exploitation	Dec 2018		*on schedule*	See the description in Section 2.3.	None.
7.1 Project management	Dec 2018		*on schedule*	The project management board met during the kick-off and M9 meetings. The WP leaders were in regular communication with the coordinator.	None.
7.2 Project meetings	Dec 2018		*on schedule*	The kick-off meeting was held at AAA on 1-2 January 2016. A project meeting was held at BBB on 3-4 September 2016. Monthly work package teleconferences were held.	None.
7.3 Project reporting	Dec 2018		*on schedule*	A publishable summary was produced and submitted to EURAMET. The 1st interim report was submitted to EURAMET.	None.

Consortium performance	
EITHER provide a statement confirming that all partners have contributed satisfactorily to the activities specified in Annex 1 for this reporting period OR list any exceptions to this by naming the defaulting partner(s) and the activities that they were required to do	All partners have contributed satisfactorily to the activities specified in Annex 1 for this reporting period.

2.6 Section 4: Deviations from Annex 1 (tasks not fully implemented), the consequences and proposed corrective actions

If corrective actions are required (eg to deliverables, scheduling, finance, partners, tasks etc.) give full details in the table, of the proposed corrective actions and the reasons for the deviation from the Annex 1 (NB corrected tasks should be listed in task number order). Please also comment on the impact of these corrective actions to the critical path of the project, to its deliverables and to the overall impact on the project. Any corrective actions related to the budget workbook and Annex 2 should also be described. Ensure that the corrective actions requested match any delays stated in Sections 2 and 3. NB the whole consortium should agree to the proposed corrective actions. Please note that all corrective actions should be included in the table, however, EURAMET will make the final decision as to which of the proposed corrective actions (if any) require an amendment. As a guide, non-financial contract amendments are likely to include task level changes and changes to deliverable titles. Changes to deliverable and activity dates are unlikely to result in an amendment.

Coordinators are requested to pay special attention when reviewing deliverable progress in their penultimate report as it is the last opportunity to request an amendment.

An example is provided below:

Example: Section 4:

4 Deviations from Annex 1 (tasks not fully implemented), the consequences and proposed corrective actions

- Annex: **- Section:** **- Task:**	**Summary of proposed corrective action**	**Reason for deviation from Annex 1**
-Annex: 1 -Section: C -Task: 1.2	Task end date to be changed from Oct 2016 to Jan 2018.	The change of end date is requested as the original end date cannot be fulfilled due to delays in Task 1.2. These were caused by the supplier ABC Instruments Ltd being unable to supply the MNO Thermocouple within the required deadline. The MNO Thermocouple was eventually supplied after a 12 month delay. This deviation will not affect the completion of the project's objectives and other tasks will not be affected.
-Annex: 1 -Section: B1.c -Deliverable: 2	Deliverable title to be changed from 'Report on an advanced primary LNG densitometer system that produces reference data with an uncertainty of 0.02 %' to 'Report on an advanced primary LNG densitometer system that produces reference data with an uncertainty of 0.4 %'.	The change of deliverable title is requested as the original uncertainty of 0.02 % cannot be met. This change will allow us to focus on achieving a more realistic target uncertainty of 0.4 %. The primary LNG densitometer system will now be modelled using Monte Carlo models to help to achieve this uncertainty target. This deviation will not affect the completion of the project's objectives and other tasks and deliverables will not be affected.

2.7 Section 5: Ethical issues

The ethical issues table shown below should be completed for each report, deleting those statements that do not apply:

Ethical issues associated with this project (as specified in Annex 1)	
Third countries	Yes
Data protection	Yes
Dual use	Yes / Not applicable
Environmental and health and safety / Health and safety	Yes / Not applicable
Fair benefit-sharing	Yes / Not applicable
Export controls / Export issues	Yes / Not applicable
Use of humans/animals in research	Yes / Not applicable
Requirement to complete an Ethics report during the project	Yes / Not applicable
Overall Conformity with ethical requirements	
The coordinator confirms that this project has conformed with all of the necessary ethical requirements specified in the Annex 1 to the Grant Agreement. / The coordinator confirms that this project has not conformed with all of the necessary ethical requirements specified in the Annex 1 to the Grant Agreement. The reasons for this are specified below:	

After completing the table, if applicable, describe how any ethical issues were addressed. This might include issues relating to Third countries, Data protection, Dual use, Environmental and health and safety / Health and safety, Fair benefit-sharing, Export controls / Export issues or Use of humans/animals in research. An example of Section 5 'Ethical issues' is provided below:

Example: Section 5: Ethical issues

5 Ethical issues

Ethical issues associated with this project (as specified in Annex 1)	
Third countries	Yes
Data protection	Yes
Dual use	Not applicable
Environmental and health and safety / Health and safety	Not applicable
Fair benefit-sharing	Not applicable
Export controls / Export issues	Yes
Use of humans/animals in research	Yes
Requirement to complete an Ethics report during the project	Not applicable
Overall Conformity with ethical requirements	
The coordinator confirms that this project has conformed with all of the necessary ethical requirements specified in the Annex 1 to the Grant Agreement.	

This project received “Conditional ethics clearance” based on the EMPIR Ethics Review 2014. No ethical issues arose during this reporting period.