



CONTRACTS FOR THE INTERNATIONAL ENERGY AGENCY (IEA) HYDROGEN IMPLEMENTING AGREEMENT (HIA)

QUARTERLY PROGRESS REPORT FOR OCTOBER – DECEMBER 2010.

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Task 2. IEA Task 30: Global Hydrogen Systems Analysis

IEA HIA Task 30 began work following the September kick-off meeting. Dr. Schoenung is co-operating agent, along with Jochen Linssen of Forschungszentrum Juelich.

Dr. Schoenung is also leader of Subtask A: detailed global analyses.

Subtask B: Update and harmonization of the hydrogen database, will be led by Jochen Linssen. A major effort will be to update the database from the 2005 study: "Prospects for Hydrogen and Fuel Cells."

Subtask C: Collaboration with IEA Analysis, will be led by Kari Espegren of IFE, Norway. The major effort will be to collaborate on data input to the IEA products: World Energy Outlook and Energy Technology Perspectives. Subtask C meet with IEA analysts in Paris in December.

The following activities took place during this quarter:

Dr. Schoenung, along with subtask leaders, prepared a work plan for submittal to the Executive Committee. National participation letters have also been collected from Canada, Spain, Italy, Norway, Germany, France, Japan and Greece. Membership also includes Sweden and USA. Other interested parties include Australia and UK..

Dr. Schoenung participated in the hydrogen workshop of the Black Sea Economic Collaborative and the Fall meeting of the HIA Executive Committee in Istanbul, Turkey. She worked with co-operating agent Jochen Linssen to prepare a semi-annual report, and presentation materials for both meetings.

Dr. Schoenung participated in the kick-off meeting of HIA Task 28 on large scale delivery infrastructure, and held a Go-to-meeting progress conference call with Task 30 members on November 4.

Dr. Schoenung has also worked with the US experts to this Task, Dave Reichmuth and Katherine Guzman from Sandia National Laboratories, to build the ground work for Subtask A. The initial work will examine hydrogen resources on a regionally differentiated basis. A resource and demand template is being completed by US and other member expert countries.

A discussion about US work on Subtask A took place in December with Carole Read and Antonio Ruiz.

The Task 30 website has been established, and Task 18 materials are being archived by the HIA. Dr. Schoenung prepared the overview description of Task 30 for the HIA website.

Plans for the next quarter (January through March 2011):

- Set-up and Host web conference call with Task 30 members
- Work with Sandia personnel on Subtask A resources and demand analysis
- Work with subtask leaders to plan for Spring experts meeting in Paris
- Participate in Spring experts meeting in Paris
- Coordinate annual report writing with co-Operating agent Jochen Linssen
- Collect remaining National Participation letters
- Send abstract for Low-carbon summit in China
- Draft annex to IPHE MOU with regard to Task 30 work specific to non-HIA member countries
- Begin work on critical materials survey

Issues / problems:

There are no current problems.

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Tasks 31: Hydrogen Safety

The Goal of the Hydrogen Safety Task is to develop and conduct effective risk management techniques, testing methodologies, test data, and targeted information products that will facilitate the accelerated adoption of hydrogen systems.

The specific objectives of this task are:

- to develop testing methodologies around which collaborative testing programs can be conducted;
- to collect information on the effects of component or system failures of hydrogen systems; and
- to use the results obtained to develop targeted information packages for selected hydrogen energy stakeholder groups.

Description of the Task – Task 31 will be completed in four subtasks, as described below:

Subtask A - Physical Effects Knowledge Gaps (Subtask Leader: Pierre Bénard, UQTR)

This subtask will address knowledge gaps on the physical and chemical properties of hydrogen as a gas or a liquid in support of the work performed in the other subtasks and to increase the knowledge base on hydrogen properties relevant to safety issues. The task will tackle issues pertaining to sources, release phenomena, dispersion processes, ignition and combustion modes. Experimental, theoretical and numerical analyses are covered by this task.

Subtask B – Hydrogen Storage Systems and Materials Compatibility (Subtask Leader: John Khalil, UTRC)

During the period November 2010 through October 2013, Subtask B plans to focus on the following technical areas:

- Safety and risk mitigation measures of hydroge Safety, reactivity and risk mitigation of hydrogen storage in different forms:
- Storage systems and system interfaces for mobile and stationary applications:

- On-board vehicular storage systems materials compatibility issues:
- Enabling technologies for fire suppression systems and fire suppression agents compatible with hydride storage material:
- Safety categorization framework for hydrogen storage materials and associated life cycle impact assessment (LCIA):

Subtask C - Early markets: risk identification and hazard analysis (Subtask Leader: Andrei Tchouvelev, AVT)

Safety assessment methods, data, and use of prevention and mitigation features will be tailored to address specifics of early markets which suffer from lack of data and understanding of specific phenomena. Improvement will be made to the data, models, and risk assessment methods are needed in order to generate defensible RCS requirements.

Subtask D: Knowledge analysis, dissemination and use (Subtask Leader: Steven Weiner, PNNL)

Safety knowledge tools can take many forms and serve to help disseminate the wealth of information that already exists on the safe use and handling of hydrogen and to remove barriers to the successful commercialization of hydrogen and fuel cell technologies. This subtask will enhance databases and websites that have been integral work products and accomplishments of Task 19. New tools and collaborations will be developed to serve worldwide interest in expanded applications of hydrogen and hydrogen systems. This subtask will also take responsibility for working with Subtasks A, B and C to develop the Task 31 Information Plan which serves to capture the work products being developed by this experts working group consistent with the guidelines provided in the IEA Hydrogen Implementing Agreement Handbook. Subtask D will serve to support work product development in the other subtasks in appropriate ways to ensure that knowledge dissemination for broad use becomes an integral goal of Task 31 as a whole.

Key activities for this reporting period

This task was approved at the Essen ExCo meeting pending submission of an approved work plan and the majority of efforts during this quarter were aimed at this requirement. After the Rome Experts meeting, a final work plan was completed and submitted to the ExCo for approval at the November ExCo meeting in Istanbul. This work plan was presented by the Operating Agent and received full approval.

End-of-Task Workshop or Seminars

Hoagland presented a proposal for two Task 19 end-of-task workshops at the ExCo meeting in Istanbul. Although it was well received, the ExCo declined to commit any of the Agreement's common funds for this purpose. Some members asked to see the preliminary agenda to assist them in consideration of providing support directly to the workshops. Three countries have indicated that they would support the workshops: the U.S. DOE (10K), Natural Resources Canada (5K), and Spain (5K). The IEA secretariat is continuing efforts to identify the full \$45K to support two workshops, one in North America and one in Europe. If the full funding is identified, the workshops will be held in the Spring of 2012.

Major Accomplishments/Key Events

- 1) No expert meetings were held during this reporting period, as a workshop was held in Rome in September.

Activities to Be Conducted During the Next Quarter

During the next quarter, planning activities will be begun for a Task 31 kickoff meeting to be held in Germany in April. The Final Technical Management Report for Task 19 will be drafted for approval at the next meeting in Karlsruhe, Germany.

Issues/Problems

All tasks being performed under the Annex Work Plan are on schedule.