



**FUSION
FOR
ENERGY**

8th ILO meeting

**On-going and future CFTs
F4E Business Intelligence activities**

30th June 2010 - Cadarache



- **Joint Worksite III (JWS 3)** : keys given the 27th of May. 90 staff members from ENGAGE Consortium (Architect Engineer contract) and Apave (Health and Safety Protection Coordination and Legal Inspection Services contract) have moved into the building. Start of the detailed design of the ITER building on site.
- **Tokamak seismic isolation pit:** contract signed the 20th of May (about 36 ME, with the options of excavation+ the upper and assembly hall base mats). Work started.
- **Information day on buildings:** End-September/ Beginning October 2010.



- **Gyrotron:** meeting in the UK (with Dan) to meet “He free” technology (requested by IO) gyrotron providers. Need of 4 systems if 2 MWe gyrotron or 8 systems if 1 MWe gyrotron (reminder: Jap: 8 MWe, Russia: 8 MWe too). Prototype needed for 2011. Next possible step: Germany.
- **CODAC :** ongoing meetings for workforces; One common stand F4E-IO very probably held during SOFT (28 and 29 Sept.).
- **HCD:** High Voltage Deck and HV DC Bushing for the Neutral Beam Injectors (1 MW voltage level- 3 units in total:
 - Procurement procedure: Competitive Dialogue, issued in February 2010
 - Start of the dialogue with selected participants foreseen for May-June 2010 (High Voltage indoor/outdoor equipment for voltages above 500 kV, & High voltage Bushings including HVDC for voltages above 500 kV)



- **Diagnostics:**
 - **Port Plugs:** decision to be submitted to the next GB concerning Grants/Procurement.
 - **Other systems** (bolometers, infrared tech, optical, reflectometers, dust measurement etc): F4E and IO are discussing the administrative issues.
 - First contacts with the industry taken.



- **Cryoplant:** documents online since early June; most of European capable companies met; strategy to be defined by July-August ranging from a single contract with IO to multiple contracts for the EU part. Decisive meetings are ongoing.
- **Test Blanket module:** a first information meeting toward industry will be organised by September-October in Barcelona. BI will start the identification of competences in summer. Target of PA F4E-IO signed in December 2010.
- **Cooling Plant Spider/Mitica**
 - Request for information on potential manufacturer was addressed to ILOs in view of a pre-mapping, feedbacks received and registered.
 - Procurement to be launched within a few weeks.
- **Tritium Plant:**
 - Request for information on potential manufacturer of tanks was addressed to ILOs in view of a pre-mapping, feedback received.
 - Call for Tender planned April 2011.



- **Analysis and codes:** meeting with the Dutch industry in Amsterdam the 16th of April (PA end of 2011).
- Framework contract running until 2013. No specific need.
- Regular questions on the subject.

- **Magnets:**
 - **Pre-compression rings:** F4E communicated and spread information in order to prepare the open procedure.
 - Feedback received from ILOs. No more meeting planned until launch of CFT companies will be contacted for a briefing prior to the procedure.
 - A set of document will be published (ppt + if applicable a mapping of skills vs. company) before CFT is launched
- **In-vessel:** Blanket - information day performed (+60 participants from +30 companies). Contacts were taken for forming consortium or grouping. On-going CFT for prototype (online).
- **Vacuum Vessel:** negotiation on going, as planned.

- **Remote Handling:** seminars planned in Hungary (14th of July) and in Czech Rep. (early September); a general information meeting will be held in Barcelona by 1st quarter 2011. Strategy under discussion (related to transfer cask).
- **Divertor:**
 - **Material:** on-going CFT with qualified companies (negotiated procedure).
 - **Mock-ups:** technical specification under revision (undergoing negotiated procedure; qualification done under EFDA).

WP Ref.	Division	System	Name	Foreseen Procedure	Estimated spending	
WP09/11/03	Machine System	Magnets	Detailed design of test facility	Open	< 250k€	<p>Aim: This contract covers a nine months activity for the preliminary design of the cold test facilities of the TF and PF coils, to determine the following:</p> <ul style="list-style-type: none"> - Preliminary layout of the test facilities; - Preliminary design of the cryostat, cryoplant and auxiliaries to be used for the tests; - Preliminary cost assessment for the installation of the facilities and testing of the TF and PF coils. <p>Specific skills required: experience in the field of cryogenics and cold test equipment, or equivalent mechanical/vacuum companies.</p>
WP10/11/12	Machine System	Magnets	Procurement for Testing of TF Nb3Sn Strands	Open	> 1 M€	<p>Aim: provide a series of measurements of the standard strand characteristics (critical current, RRR, etc.) during the mass production of 95 tons of Nb3Sn wire for the ITER TF coils. Two supply contracts have been awarded and these companies are responsible for the standard testing during production, but F4E is requested to carry out independent measurements on a statistical basis to guarantee the quality of the production, for about four years duration.</p> <p>Specific skills required: laboratories in Associations or companies (including but not limited to cryotechnics experts) which are equipped with high field, small bore magnets capable to perform these measurements.</p>
WP10/11/01	Machine System	Magnets	Testing and Characterisation of PF strands	Open	250k€ < S < 1M€	<p>Aim: provide independent testings on Nb3Sn strands.</p> <p>Specific skills required: experience and equipped with necessary facility to provide the testings.</p>
WP10/11/09	Machine System	Magnets	Magnet Structures;pre-compression rings	Open	> 1 M€	<p>Aim: provide 9 pre-compression rings with about 5 metre diameter and 300x300 mm2 cross section.</p> <p>Specific skills required: provide engineering + provide high quality glass filament wound composite rings.</p>
WP10/32/04	Plant System	Tritium Plant	Procurement for detailed design of Water Detritiation System (WDS)	Open	250k€ < S < 1M€	<p>Aim: provide the detailed design of the Water Detritiation System for ITER.</p> <p>Specific skills required: experience in designing (from conceptual to detailed design level) distillation systems with tritium containing fluids (liquids, gases/vapours). Experience in the field of nuclear fusion is beneficial.</p>
WP10/32/06	Plant System	Tritium Plant	Conceptual and Detailed design of the hydrogen Isotope Separation System	Open	250k€ < S < 1M€	<p>Aim: This contract will cover specific aspects of the conceptual design of the tritiated water holding tanks for the ISS.</p> <p>Specific skills required: experience in designing (from conceptual to Detailed design level) cryo-distillation systems with tritium containing hydrogen mixtures. Experience in the field of nuclear fusion is beneficial.</p>
WP10/56/05	Plant System	Test Blanket Module	Fabrication of welded sampled for irradiation	Open	< 250k€	<p>Aim: Fabrication of EUROFER welded samples in view of their neutron irradiation for the qualification of their mechanical properties.</p> <p>Specific skills required: welding techniques such as TIG, laser, hybrid MIG/laser, mixed laser/HIP, HIP and Electron Beam.</p>
WP10/31/03	Plant System	Vacuum Pumping	Procurement of PPC and test vessel	Open	> 1 M€	<p>Aim: manufacture a 2.1x1.8 m cylindrical cryopump and an associated test vessel for acceptance tests, on a basis of build-to-print drawings.</p> <p>Specific skills required: General mechanical engineering/ manufacturing skills, while knowlegge and experience of vacuum and cryogenic technology will be a particular advantage.</p>
WP10/PO/08	Project Office	Project Office	Framework contract for project planning support	Open	250k€ < S < 1M€	<p>Aim: Framework contract for planning & scheduling specialised services for the optimization of the F4E Primavera system and the improvement of related best practices</p> <p>Specific skills required: company experienced with PRIMAVERA deployment.</p>
WP09/PO/01	Project Office	Quality Assurance	Service of inspectors for ITER project contracts follow-up	Open	> 1 M€	<p>Aim: award a framework contract for the provision of Quality and Surveillance Resident Services, Itinerant and Spot Surveillance Inspectors at the premises of several EU Suppliers selected by F4E in the procurement of services and components for the ITER Project.</p> <p>Specific skills required: Technology and metallurgy of welding processes, thermal treatment, non destructive examination methods, technology of fibre reinforced materials for high temperature application, measurement of composite material properties, quality control.</p>

WP09/53/06	HCD &PHYS	Neutral Beam System	Procurement for HVD + TL of SPIDER (Budget for NBTF)	Open	250k€ < S < 1M€	<p>Aim: Supply of the Transmission Line (TL) and the High Voltage Deck (HVD) for SPIDER (Source for Production of Ion of Deuterium Extracted from RF plasma) experiment, operating at a voltage of -100 keV. The scope includes: design, manufacture, installation and testing.</p> <p>Specific skills required: experience in project management of large complex projects; experience in the project management of High Voltage projects; proven experience in the design, fabrication and installation of HVDC indoor and/or outdoor equipments for high voltage equipment (typically around at least 100 kV).</p>
WP10/53/07	HCD &PHYS	Plasma System	Vacuum and Gas Injection Plants for PRIMA	Open	250k€ < S < 1M€	<p>Aim: Supply of part of the equipment for the test facility.</p> <p>Specific skills required: experience in vacuum systems, pumps systems, valves and gas injection.</p>
WP10/53/09	HCD &PHYS	Neutral Beam System	Contract for Cooling Plant for PRIMA	Open	> 1 M€	<p>Aim: Based on a Functional Specification, the supplier will design, manufacture, deliver, install and final test the Cooling Plant for MITICA and SPIDER Experiments. The cooling plant will water-cool the Neutral Beam components of:</p> <ul style="list-style-type: none"> - MITICA (Megavolt ITER Injector & Concept Advancement) experiment, a full scale ITER-like injector operating at full energy (1MeV). - SPIDER (Source for Production of Ion of Deuterium Extracted from Radio frequency plasma), operating at reduced energy (up to 100 keV). <p>The contract will concern the complete Cooling Plant for both experiments, but the installation on site (RFX-Padova-IT) will be done in two phases with a priority given to SPIDER.</p> <p>The total thermal power to be removed by the Cooling Plant is about 70 MW distributed in 54,5 MW for the MITICA components, 9 MW for the SPIDER components and 5 MW for the auxiliaries (Power Supplies and SF6 Plant). The main parts of the Cooling Plant are:</p> <ul style="list-style-type: none"> •The Primary Heat Transfer System (PHTS) composed of 10 circuits (2 for MITICA, 4 for SPIDER and 4 for the auxiliaries). One of the primary circuits for SPIDER is operating at high temperature up to 180°C • the Secondary Heat Transfer System (SHTS) composed of 4 circuits: 3 open circuits connected to 2 water basins and 1 closed circuit connected to a gas boiler allowing to preheat water •The Tertiary Heat Transfer System connected to water tower and air coolers •The Cooling Plant Support system composed of a Pressurisation System (PrS), a Chemical Control Systems, a Draining and Drying System (DDS), a Pressure Test System (PTS) and a Fluid Supply and Refilling System (FSRS) <p>Specific skills required: experience with similar water Cooling Plant installed (for example but not limited to: Tore Supra, Wendelstein 7-X, JET...)</p>
WP10/ES/08	Engineering Support Division		Support on Codes & Standards and review of structural design criteria	Open	250k€ < S < 1M€	<p>Aim: Scope of the contract is updating the structural design criteria for in-vessel components.</p> <p>Specific skills required: experience in RCC-MR, ASME, EN manufacturing codes & standards, PED and ESPN is required.</p>
WP10/ES/08	Engineering Support Division		Support on Codes & Standards and review of structural design criteria	Open	250k€ < S < 1M€	<p>Aim: The objectives of this study are to provide the ITER Organisation with engineering services to evaluate the proper size of hot laboratory for analyzing the Type A waste samples, by applying general practices in nuclear industries and cost-benefit analysis methods.</p> <p>Specific skills required: Experience in waste management possibly in the nuclear sector.</p>

Conclusion



- The ongoing CFTs and grants are handled as planned. One more big contract under process, to be signed by October 2010 (VV).
- F4E is respecting the schedule of the adopted Work Programme.