



FUSION FOR ENERGY

The European Joint Undertaking for ITER and the Development of Fusion Energy

THE GOVERNING BOARD

DECISION OF THE GOVERNING BOARD ADOPTING THE 3rd AMENDMENT OF THE 2012 WORK PROGRAMME OF THE EUROPEAN JOINT UNDERTAKING FOR ITER AND THE DEVELOPMENT OF FUSION ENERGY

THE GOVERNING BOARD OF FUSION FOR ENERGY

HAVING REGARD to the Statutes annexed to the Council Decision (Euratom) No 198/2007 of 27th March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy (hereinafter "Fusion for Energy") and conferring advantages upon it¹ and in particular Articles 6(3)(d) and 11 thereof;

HAVING REGARD to the Financial Regulation of Fusion for Energy² adopted by the Governing Board on 22nd October 2007, last amended on 18th December 2007³ (hereinafter "the Financial Regulation"), and in particular Article 64 thereof;

HAVING REGARD to the Implementing Rules of the Financial Regulation⁴ adopted by the Governing Board on 22nd October 2007 last amended on the 8th July 2008⁵ (hereinafter "the Implementing Rules") and in particular Article 53 thereof;

HAVING REGARD to the comments and recommendations of the, Administration and Finance Committee, Executive Committee, Technical Advisory Panel and Bureau;

WHEREAS:

- (1) The Director should, in accordance with Article 8(4)(c), draw up an annual work programme;
- (2) The Governing Board should adopt the work programme.

HAS ADOPTED THIS DECISION:

Article 1

The 3rd Amendment of the Work Programme 2012 of Fusion for Energy annexed to this Decision is hereby adopted.

¹ O.J. L 90, 30.03.2007, p. 58.

² F4E(07)-GB03-11 Adopted 22/10/2007

³ F4E(07)-GB04-06 Adopted 18/12/2007

⁴ F4E(07)-GB03-12 Adopted 22/10/2007

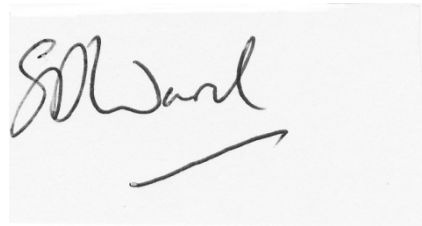
⁵ F4E(08)-GB06-06a Adopted 08/07/2008

Article 2

This Decision shall have immediate effect.

Done at Barcelona, 11 December 2012

For the Governing Board

A handwritten signature in black ink, appearing to read "Stuart Ward", with a long horizontal flourish underneath.

Stuart Ward
Chair of the Governing Board

For the Secretariat

Raymond Monk
Secretary of the Governing Board

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PART I - INTRODUCTION, ASSUMPTIONS AND OVERALL OBJECTIVES

1.1. INTRODUCTION

The European Joint Undertaking for ITER and the Development of Fusion Energy or 'Fusion for Energy' (F4E) was created under the Euratom Treaty by a decision of the Council of the European Union.

F4E was established for a period of 35 years from 19th April 2007 and its main offices are located in Barcelona, Spain. The objectives of F4E are three fold:

- Providing Europe's contribution to the ITER International Fusion Energy Organisation (IO) as the designated EU Domestic Agency (DA) for Euratom;
- Implementing the Broader Approach Agreement between Euratom and Japan as the designated Implementing Agency for Euratom;
- Preparing in the longer term for the construction of demonstration fusion reactors (DEMO).

In accordance with the Financial Regulation of F4E and its Implementing Rules, this Work Programme lays down a detailed programme of activities that are foreseen to be implemented and financed under the budgetary appropriation for 2012. This information is complemented by the Budget 2012.

1.2. ASSUMPTIONS

At the 9th ITER Council (IC-9) in November 2011 the latest developments of the ITER schedule were presented and it was noted that the estimated first plasma (FP) date of November 2020 is within the baseline approved in July 2010.

The F4E Detailed Work Schedules (DWS), on which this WP2012 amendment is based, provides the schedule for the ITER components with special emphasis on those on the critical path for the machine construction. .

The F4E schedule used for the preparation of this document is as of **September 2012**. As for the budget, this document is in agreement with the latest budget allocation agreed at EU level last December 2011.

The 2012 F4E Work Programme (WP2012) for ITER is based on the following assumptions:

- The Procurement Arrangements (PAs) between F4E and IO will be concluded on time and according to the agreed level of design. The necessary inputs from IO will be provided in time to allow the associated PAs to be signed according to the foreseen schedule.
- F4E will receive on time from IO the necessary inputs foreseen in the ITER Quality Management process deposited with the Nuclear Safety Authorities and in accordance with Build-to-Print, Detailed Design and Functional Specification status agreed in 2001.
- F4E will receive on time, from contracts and grants ongoing, the technical input needed for the preparation of the tenders.
- WP2012 is in line with the new set of guidelines for the evaluation of the ADI credit endorsed at the 8th meeting of the ITER Council (June 2011)
- The planning of the activities and the corresponding delivery of components by the other ITER Domestic Agencies will be respected.
- F4E will continue active management of and involvement in the ongoing tasks signed under EFDA, results of which are required to initiate certain F4E activities.
- Technically and commercially complex procurements will be implemented whenever appropriate through the *Competitive Dialogue* procedure or through the negotiated procedure, in order to improve the alignment of supply chain response to F4E needs and to proactively adopt cost containment measures. This will be done in compliance with F4E Implementing Rules.
- Grants related to recurring and sequential R&D activities, with a well-defined development path eventually leading to an EU procurement package, will be implemented whenever appropriate through the *Framework Partnership Agreement* (FPA) procedure, in order to streamline and channel R&D funding, improve its effectiveness and reduce administrative burden to beneficiaries and F4E alike.

- Procurements which encompass scope within the domain of both F4E and contracting authorities, or for which a very close coordination between F4E and other entities is needed, will be implemented whenever appropriate through the *Joint Procurement* procedure.
- F4E endorsement of the Japanese Procurement Arrangement that foresees an EU financial contribution will be preceded by a budgetary commitment for the entire amount of the F4E contribution.

Regarding the WP2012 for Broader Approach, the main assumptions are that this is to be coherent with the individual BA Projects' Work Programmes and Project Plans as approved by the Broader Approach Steering Committee.

1.3. ITER CREDITS FOR PREPARATORY ACTIVITIES

This WP2012 includes an extensive programme of R&D and preparatory activities that have to be carried out prior to signing the Procurement Arrangement for the Procurement Packages agreed to be at Build-to-Print level. Recognising that F4E is carrying out work that should have been completed by IO, additional credit from IO is being requested by F4E through ITER Task Agreements (ITAs). The activities indicated in this WP2012 as receiving additional (ITA) credits may be cancelled in the event that IO would not make the requested credits available.

Similarly, F4E participates to the call for proposals launched by ITER IO on a competitive basis for activities such as plasma engineering and safety. Activities to answer to forecasted calls in 2012 are also included in this document.

1.4. MAIN OBJECTIVES

1.4.1. ITER

With respect to activities related to ITER, the main objectives are:

- The negotiation and signature of the ITER Procurement Arrangements, proposed by the ITER Organisation (IO), according to the present F4E schedule.
- The signature of procurement contracts for those components on the critical path and for those foreseen in the current F4E schedule.
- The continuation of design and R&D activities in areas including Remote Handling, Heating and Current Drive, Vacuum System, Tritium System, Diagnostics and Test Blanket Modules.
- The continuation of the preparation of safety and licensing documentation for ITER in Cadarache and related safety studies.
- The investigation of manufacturing methods and non-destructive tests of critical components from the technical point of view with the objective of minimising the cost and risk of not meeting the technical requirements (divertor, blanket and first wall).
- The preparation of new facilities to test prototypes and components during the qualification process and construction respectively.
- The continuation of the activities for the preparation of the ITER site.

The most significant procurements to be initiated within WP2012 are related to:

- Magnets, for which procurement contracts for Assembly of TF winding packs into coil cases including cold test and radial plates;
- Vacuum vessel, for which additional stages and options will be released according to the progress in manufacturing.
- Tritium system, for which a procurement contract for the Water Detritiation Tanks will be signed.
- Cryoplant, for which the procurement of LN2 Plant and Auxiliary Systems is planned to be launched;
- Power Supplies, for which procurements will be launched for SSEPN and SSEN systems;
- Neutral Beam system, for which procurement contracts will be launched in support of the Neutral Beam Test Facility (NBTF), including the Back-to-back Agreement.
- Buildings for which procurement contracts for constructions and mainly the civil work of the Tokamak complex and surrounding buildings (Tender Batch 03) will be signed
- Divertor, for which a procurement contract for the Cassette bodies will be launched.

Further to provide management and follow-up of contracts signed in direct support of the ITER project, F4E continues to be responsible for the technical follow-up of a number of technology contracts previously managed by EFDA. The outcome of these contracts is an important input for many of the activities that will be initiated by F4E.

1.4.2. Broader Approach

With respect to activities related to the Broader Approach (BA), the main objectives are to implement Procurement Arrangements with the Voluntary Contributors and carry out limited direct contributions from F4E which will cover residual activities on the TF Conductor and preassembly tooling, transportation of some components, and cash contributions for the IFMIF/EVEDA and IFERC Projects.

PART II - ITER

In the following, the activities of Fusion for Energy related to ITER are described according to the proposed F4E Work Breakdown Structure. The tables provided in the text use the following abbreviations:

Abbreviation	Meaning
WP ref	Work programme reference, univocally identifying WP items WPxx/yy/zz, where xx are the last two digits of the WP/budget year in which the activity was first financed, yy is a code identifying the ITER WBS element (if available) or the F4E service in charge, zz is a sequential number for the year
G	Grant
SG	Specific Grant based on a Framework Partnership Agreement
FPA	Framework Partnership Agreement
FWC	Framework Procurement Contract
P	Procurement (service, supply or works)
Y	Credited by ITER IO through PA
Y(ITA)	Credited by ITER IO through ITA
N	Non credited

All activities indicated within WP2012 are planned to be committed under the 2012 budget. Certain activities have been moved from previous years into WP2012 due to changes in the overall planning and priorities: these items are identified by a WP ref field showing a WPxx tag different from WP12 (e.g. WP/11/03). It is understood that the inclusion of these items in WP2012 is cancelling and superseding any corresponding item in a previous year's WP, unless otherwise specified in this document for specific and motivated reasons.

WP items indicated as Framework Partnership Agreements (FPA) or Framework Procurement Contracts (FWC) are included for clarification purposes only and do not constitute a financing decision: the implementing financing decisions within such frameworks is indicated as appropriate by separate WP items.

During the implementation of the work programme activities, F4E may group more activities in a single call or split one activity in more calls. This will in any case be performed preserving the scope and objective presented in WP2012.

The foreseen time of publication of calls and invitations is indicative only and based on the present understanding of the project development. For expenditure performed through framework contracts and framework partnership agreements, the foreseen time of publication of calls is not included as the implementation will occur through specific contracts or grants. **Publication of the call for tender is intended as the date of publication on the Industry Portal (for open procedures) and the date of the Invitation Letter to be sent out to the Suppliers (for negotiated procedures). For restricted procedures and competitive dialogues this milestones refers to the date of the call for tender (second phase of the procedure).**

The foreseen duration of activities is indicative only. Modifications of durations may reflect a different phasing of the activity with respect to the initial planning, in line with the financing decision nature of the WP2012 and the change in the procurement strategy, including the adoption of instruments such as stages, options, lots.

2.1. MAGNETS

2.2.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/11/07	EU.01.02.01.	P Supply	Assembly of TFWP into Coil cases	Qualification incl. mock-up and tools and facility) , and assembly of TF Winding Packs into coil cases and TF Cold test	60	Y	11Q3
WP12/11/01	EU.01.02.04.	P Serv	Jacket material qualification & Testing for TF and PF Coils	Independent mechanical tests on the base materials and welds used by the suppliers for the qualification and series production of the conductor jacket materials Mainly specific contracts to be implemented under framework contracts ongoing: F4E-OPE-084, F4E-OPE-149 (ES-MF)	12	Y	N/A
WP12/11/03	EU.01.02.04.	Pserv	SULTAN sample manufacture & Tests	Manufacture and testing of conductors and joint samples in the Sultan facility at CRPP Villigen (CH)	12	Y	N/A
WP12/11/06	EU.01.02.01.	P supply	Procurement of Radial Plates-- Second stage	Supply of a second batch of Radial Plates	32	Y	N/A
WP12/11/07	EU.01.02.01.	P supply	Transportation of magnets components	Transportation of large and heavy TF coil components during different manufacturing phases	N/A	Y	N/A
WP12/11/08	EU.01.02.01.	P serv	Inspectors for PF and TF contracts	Provision for mechanical, UT, welds, geometrical inspection, mainly via framework contract WP11/PO/12	60	Y	N/A
WP12/11/09	EU.01.02.04.	P serv	Testing of TF Nb3Sn Strands	Provision for control on production and quality performances of strands, mainly via framework contract WP10/11/12	12	Y	N/A
WP12/11/11	EU.01.02.03	P serv	Contract for PF coils building maintenance	PF coil building adaptation to coil manufacturer necessity, mainly additional air door lock, additional HVAC and air treatment	16	Y	12Q3

2.2. VACUUM VESSEL

2.2.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/15/01	EU.01.03.01.	P Supply	Procurement of Main Vessel (phase 3)	Implementation of D shape manufacturing sectors 3D and 4D and options (including <i>inter alia</i> fabrication and installation for the intermediate manifold supports and ELM-VA coils for sectors 3 and 4) of the VV contract according to the developing of the manufacturing	51	Y	2010
WP12/15/02	EU.01.03.01.	P Serv	Engineering support for VV construction	Engineering and finite-element analysis to support the VV sectors contract activities These analyses include thermal, structural, electromagnetic and seismic.	28	Y	N/A

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
				Also CAD tasks to support, validate and/or integrate IO input data and activities to quickly answer to ANB requests to speed design approval.			
WP12/15/03	EU.01.03.01.	P Serv	Finalisation of the design of the VV instrumentation –phase I	Finalisation of the design of the VV instrumentation including interface definition, build-to-print of the instrumentation fittings and full details of the installation of the sensors	12	Y,Y(ITA)	11Q3
WP12/15/04	EU.01.03.01.	P Serv	Procurement of Inspections by F4E - Phase I	Provision for inspection (mechanical , welds, UT, geometrical,) in several suppliers manufacturing sites. Mainly to be implemented through specific contracts of WP11/PO/12	12	Y	N/A

2.3. BLANKET

2.3.1 BLANKET MANIFOLDS

2.3.1.1 List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/16/07	EU.01.04.01.	P Serv	Bibliographic review and friction testing for sliding supports	Performance of friction tests to validate the behaviour of the selected coating/ material for the BCM pipe supports. The tests will be made on representative samples	17	Y(ITA)	12Q2
WP12/16/08	EU.01.04.01.	P Serv	Manufacturing of Blanket Cooling Manifold prototype	The manufacturing and accuracy of selected representative pipe geometries will be validated by partial full scale sample manufacturing	4	Y(ITA)	12Q2

2.3.2 BLANKET FIRST WALL

2.3.2.1 List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/16/02	EU.01.04.02.	PServ	Fabrication of a 3rd NHF FW semi-prototype	Technology development and fabrication of a FW panel semi-prototype in order to increase competition for the series production.	17	Y	11Q4
WP12/16/03	EU.01.04.02.	PServ	Engineering Support for Blanket First Wall design	Electro-Magnetic, Thermal and Mechanical Analyses for the NHF FW panels design Barrel welding study	17	Y (ITA)	N/A

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/16/04	EU.01.04.02.	PServ	Quality control external support	Quality control for the manufacture of FW semi-prototypes. Mainly to be implemented through the framework contract for support inspectors WP11/PO/12	9	Y	N/A

2.4. DIVERTOR

2.4.1. Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Cassette Body and Assembly	11.2	May 2012

2.5. REMOTE HANDLING (RH)

2.5.1. Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Divertor Remote Handling	9.62	October 2012

2.5.2. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/23/01	EU.01.05.05.	PServ	Engineering Support for RH	Support activities (control system, rad-hard technologies, follow up of the DIV RH tender, preparation of the other PA for TCS, IVVS, NB RH ...) Mainly performed through specific contracts within framework WP11/ES/06	12	Y,Y(ITA)	N/A
WP12/23/03	EU.01.05.01	G ⁶	DTP2 extension & upgrades with new prototypes	Test activities on DTP2 including new hardware set-up like central cassette locking and pipe tooling	20	Y, Y(ITA)	12Q1

2.6. VACUUM PUMPING AND FUELLING

2.6.1 Vacuum Pumping and Fuelling - Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
PA 3.1.P1.EU.03 for Warm Regeneration Lines	0.2	October 2012

2.7. TRITIUM PLANT

⁶ VTT Technical Research Centre of Finland and TUT Foundation (trading as Tampere University of Technology) :Unique experimental facility (according to art.158.b of F4E Implementing Rules)

2.7.1. Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Water Detritiation System tanks	2.552	October 2012

2.7.2. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/32/01	EU.01.07.02.	P Serv	Follow-up manufacturing, installation and testing of WDS Tanks contract	Follow up of manufacturing, factory testing, transport, installation and testing at ITER site of WDS Tanks	32	Y	12Q2
WP11/32/02	EU.01.07.02.	P Supply	Procurement of WDS Tanks including installation	Main procurement for WDS tank manufacturing including transport, support in installation and final tests at ITER site of the large tanks for WDS	32	Y	12Q2

2.8. CRYOPLANT**2.8.1. List of Activities**

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call

2.9. POWER SUPPLIES**2.9.1. Procurement Arrangements to be signed in 2012**

Title	ITER Credit (kIUA)	Signature due
Assembly of the Steady-State Electrical Network (SSEN) and Pulsed Power Electrical Network (PPEN) and SSEN cables	13.30	October 2012
Material procurement for SSEN	5	October 2012
Material procurement for SSEN Emergency Power Supply	5.7	December 2012

2.9.2. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/41/03	EU.01.16.01.	P supply	Procurement and Installation of SSEN Equipments and Cables trays	TB04 Contract covers procurement and installation of Load Center Class IV equipment for PBS43 and cable trays for PBS44	66	Y	12Q4

2.10. CODAC

2.10.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/45/01	EU.01.20.06	Pserv	Support on I&C design and implementation in the frame of EU PA's	Technical support to ICC (Instrumentation, Control & CODAC). Provision of professional services in the field of instrumentation and Control System Engineering and aiming to support F4E with the preparation of technical specifications and the follow-up of in kind contributions to ITER. Mainly performed through specific contracts within framework WP11/45/02.	12	Y	N/A
WP12/45/02	EU.01.20.06	FWC	Procurement for I&C Integrator for all EU supplies	Framework contract for provision of professional services in the field of Instrumentation and Control System Engineering and aiming to support F4E in the development of interfaces to CODAC and plant control systems.	48	N/A	11Q4
WP12/45/03	EU.01.20.06	P serv	Procurement for I&C Integrator for all EU supplies	Preparation activities to start production of plant system interface to CODAC: training to IO standards and quality, efficiency improvements. Development of centralised control and monitoring for building construction. Integrate any available building to central monitoring. Mainly performed through specific contracts within framework WP12/45/02	12	Y	N/A

2.11. ION CYCLOTRON H&CD ANTENNA

2.11.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/51/01	EU.01.12.01.	P Serv	Engineering support (Antenna design and analysis)	Second part of general mechanical analyses, disruption analysis and seismic/vibration analysis of the IC antenna. Mainly performed through specific contracts within general frameworks	12	Y(ITA)	12Q2
WP12/51/03	EU.01.12.01.	P Serv	Faraday Screen design qualification	High Heat Flux testing of FS mock-ups and prototypes	16	Y(ITA)	12Q1

2.12. ELECTRON CYCLOTRON

2.12.1. EC UPPER LAUNCHER - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/52/07	EU.01.13.01.	PServ	Engineering Analyses and Support	Independent verification of analysis for SiC1 component, cost/schedule verification and additional engineering support	18	Y(ITA)	12Q2
WP12/52/10	EU.01.13.01.	PServ	Support to prototype procurement and testing	Support during manufacture and testing of prototypes	15	Y(ITA)	12Q2

2.12.2. EC POWER SOURCES AND SUPPLIES - Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Electron Cyclotron High Voltage Power Supply	11.62800	May 2012

2.12.3. EC POWER SOURCES AND SUPPLIES - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/52/01	EU.01.13.02.	P Serv	Engineering Support to the EC Power Sources and Power Supplies	Industrial support to F4E in preparation of the EU contribution to the EC power supplies and RF sources of ITER. Mainly performed through specific contracts within frameworks	N/A	Y	N/A
WP12/52/05	EU.01.13.02.	G ⁷	Design & Development of the EU Gyrotron (2nd phase – part 1)	Integrated design and development activities for the European gyrotron	17	Y	N/A
WP11/52/03	EU.01.13.02.	P Supply	Procurement of the He-free Magnet	Procurement of a He-free magnet for the European gyrotron	18	Y	12Q2
WP11/52/05	EU.01.13.02.	P Supply	Procurement of 2 nd Prototype	Procurement of an industrial 1MW, CW gyrotron prototype at 170GHz	17	Y	12Q3

2.13. NEUTRAL BEAM SYSTEM

2.13.2. Neutral Beam - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP10/53/15	EU.01.14.05.	P Supply	Ion source test facility (power supplies - ISEPS)	Supply of Essential Spares for ISEPS	25	Y	N/A

⁷ Unique beneficiary EGYC Consortium (KIT, CRPP, HELLAS, CNR): technical competencies.

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/53/02	EU.01.14.08.	PServ	Engineering support in the NB area	Activities in support of F4E design and procurement performed through specific contracts within the Engineering Framework Supporting Contracts	12	Y	N/A
WP12/53/08	EU.01.14.01.	G ^s	Neutral Beam Injector HNB1 & HNB2 Development Support for Components Outside the Scope of the Neutral Beam Injector Test Facility	Additional 1 year of activities for the completion of the Built to print design	12	Y(ITA)	12Q4

2.14. DIAGNOSTICS

2.14.2. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/55/01	EU.01.11.15.	FPA	Diagnostic Development and Design	Multiple Framework Partnership Agreements covering integrated development and design activities of the following diagnostic systems: <ul style="list-style-type: none"> - Pressure Gauges - Radial Neutron Camera / Gamma Spectrometer - Plasma Position Reflectometers - Bolometers - In-Vessel Services - 	48	Y	11Q4
WP11/55/02	EU.01.11.03.	G	Development and design of High Resolution Neutron Spectrometer	Completion of system-level design and final definition of interfaces for High Resolution Neutron Spectrometer	24	Y	12Q2
WP11/55/03	EU.01.11.08.	G	Development and design of H-phase Hard X-ray Monitor	Development and design of H-phase Hard X-ray Monitor to final design review level	36	Y	12Q2
WP12/55/07	EU.01.55.01	P Serv	Design of Instrumentation Hardware	R&D/Design from Functional Specification to Final Design level, of bespoke electronics for inductive sensors in the magnetics diagnostic. The principal component is a long-pulse integrator. Additional components include amplifiers and the interface between the analog front-end and digital back-end	36	Y	12Q3

⁸ Unique Beneficiary CCFE: Technical Competence

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/55/08	EU.01.55.01	SC	Integration of Magnetics Diagnostic Plant Controller and Off-line Software	Specific Contracts to be implemented under FwC (WP12/45/02) for provision of professional services in the field of Instrumentation and Control System Engineering. 2012 activities will mainly focus on planning for integration of the magnetics diagnostic plant controller	4	Y	N/A

2.15. BUILDINGS

2.15.1. List of Activities

WP ref	ITER WBS/PBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/62/01	EU.01.15.02.	P supply	Tokamak Complex Civil Works and Steel frame buildings	Contract (TB03) The civil work of the Tokamak complex: Tokamak, Fuel Storage, Cryoplant, Voltage distribution, etc. (building numbers 11-17, ,51-53,61,71-75 & Port Cell D)	66	Y	12Q3
WP12/62/02	EU.01.15.02.	P supply	Tokamak Complex - Cranes and Lifts	Contract for Cask Lift & Assembly Hall Cranes (Long Lead Items) (Contract TB02)	31	Y	11Q4
WP12/62/03	EU.01.15.01.	P supply	Site Infrastructure	Contract for Site Infrastructure (Contract TB08)	67	Y	12Q1
WP12/62/04	EU.01.15.01.	PServ	Contract for Guards services for work site access control	Provision of worksite access control and security -2012 activities – Jointly with IO	12	Y	N/A
WP12/62/05	EU.01.15.01.	PServ	Contract for Facility Management (work site common services)	Provision of worksite facility management -2012 activities – Jointly with IO	12	Y	N/A
WP12/62/06	EU.01.15.02.	P serv	Analysis, design optimization and cost reduction strategies for the ITER building structures	Complementary seismic studies & accidental scenarii studies. Mainly performed through specific contracts within framework F4E-2008-OPE-011. and WP12/ES/01	12	Y, Y(ITA)	N/A
WP12/62/07	EU.01.15.02.	PServ	Independent concrete testing	Mandatory control for concrete for the entire buildings	43	Y	11Q4
WP12/62/08	EU.01.15.02.	P supply	Design and Build for Blds 32,33,38,	Contract (TB05) for Design & Built Blgs 32, 33, 38,	46	Y	11Q4
WP12/62/10	EU.01.15.02.	P supply	Tokamak Complex HVAC, Elec & Fluid Netw & Hand'g s and Steel frame buildings	Contract (TB04) for HVAC, Elec & Fluid Netw & Hand'g Blgs 11-17,36,42-47,51-53,61,71-75	66	Y	11Q3
WP12/62/11	EU.01.15.02.	P supply	Contract for Architect Engineer services	Option for Architect Engineer subsequent services (5 years logistics)	60	Y	N/A

WP ref	ITER WBS/PBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/62/04	EU.01.15.02	P serv	General Safety and Health Coordination Protection for ITER Buildings Additional Activities and options	Additional activities to be performed by the supplier due to delays in the provision of IO input data	46	Y	N/A
WP12/62/12	EU.01.15.02	P Serv	General Safety and Health Coordination Protection for ITER Buildings Additional Activities and options	Set-up of an additional task in the frame of the HSPC contract to follow the maintenance and installation of the PF coils buildings	45	Y	N/A
WP11/62/09	EU.01.15.02	P Serv	Architect Engineer: additional activities (Amendment)	Additional activities to be performed by the AE supplier. Set-up of an engineering task force to support IO in determining the critical input data for buildings. Additional effort in design activities due to PCRs. Additional duration of Design activities due to revised schedule of IO input data delivery	17	Y	N/A
WP11/62/10	EU.01.15.02	P Serv	Support to the Owner: additional activities	Additional activities to be performed by the SO supplier	17	Y	N/A
WP12/62/15	EU.01.15.02.	MP	Site adaptation - Additional activities	Activity transferred from TB08 scope due to studies optimization	12	Y	N/A
WP12/62/16	EU.01.15.02.	MP	Galleries and Drainage Works	TB Alpha activity transferred from TB08 and TB03 scope due to studies optimization and critical path schedule issue following Japan event	12	Y	N/A
WP12/62/17	EU.01.15.02.	MP	Tokamak SIP - Additional activities	New Activities linked to implementation of Design changes / PCRs from IO	12	Y	N/A
WP12/62/20	EU.01.15.02.	P Serv	Agreement on Iter Site Services	Reimbursement of power and water used for F4E site including PF coils building consumptions	12	Y	12Q2

2.16 RADIOLOGICAL PROTECTION

2.16.1. Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Radiological and Environmental Monitors System	4.2	December 2012 ⁹

⁹ The Procurement Arrangement signature date not yet agreed with IO

2.16.2 RADIOLOGICAL PROTECTION - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/64/01	EU.01.08.01.	P Serv	REMS: preliminary design	Development of Preliminary Design of the REMS. Mainly specific contracts to be implemented through the F4E-OMF-298	12	Y	N/A

2.17 WASTE TREATMENT**2.18. MATERIALS DEVELOPMENT****2.19. TEST BLANKET MODULES****2.19.1. Test Blanket Module - List of Activities**

WP ref	ITER WBS/PBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/56/06	EU.01.17.01.	P Serv	Handling, preparation and transport of EUROFER semi-finish products stored in TBM-CA facilities	Handling, inventory, cutting, machining, shipping to external companies, storage	6	N	12Q1

2.20. PLASMA ENGINEERING**2.20.1. Plasma Engineering - List of Activities¹⁰**

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/PE/02	EU.01.18.01.	P Serv	SOLPS code development	Update of the SOLPS code for the simulation of the plasma scrape of layer	12	Y(ITA)	12Q2
WP11/PE/08	EU.01.18.01.	P Serv	Engineering Support and analysis for antennas	Activities and analyses in support of the design and optimisation of the ECH and ICH antennas (in support of the PA preparation)	12	Y(ITA)	12Q2
WP12/PE/04	EU.01.18.01.	G ¹¹	ITER scenario and plasma performance analysis (Phase 2)	Analysis and optimisation of the nominal ITER scenarios, including abnormal scenarios such as fast pulse termination	12	Y(ITA)	12Q1
WP12/PE/12	EU.01.18.01	G ¹²	ITER scenario and plasma performance analysis	Analysis and optimisation of the nominal ITER scenarios, including abnormal scenarios such as fast pulse termination	12	N	12Q4
WP12/PE/10	EU.01.18.01.	G	Plasma Engineering analysis	Analysis of plasma operations, plasma-machine interfaces and actuators	18	N	12Q2/Q3
WP12/PE/11	EU.01.18.01.	P serv	Plasma Engineering studies	Engineering studies of plasma systems, controls and design verification	18	N	12Q2

¹⁰ Most of the activities in the area of Plasma Engineering are going to be implemented on the basis of competitive ITAs; therefore these activities are subject to possible modifications

¹¹ Unique Beneficiary: CCFE (UK), TUV (Austria), ENEA//CREATE (Italy) AALTO (Finland), technical competence

¹² Unique Beneficiary: CCFE (UK), TUV (Austria), ENEA//CREATE (Italy) AALTO (Finland), technical competence

2.21. ENGINEERING SUPPORT

2.21.1. SAFETY - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/SF/03	EU.01.20.04.	P service	Safety Support for Components Design	Safety Analysis Support on F4E PAs	12	Y, Y(ITA)	N.A.

2.21.2. MATERIALS - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/MF/01	EU.01.20.03.	P Serv	Material characterization at cryogenic temperatures	On demand material characterisation at cryogenic temperatures in the frame of construction and R&D of components for ITER (Magnets, Cryoplant). Mainly performed through specific contracts within framework F4E OPE 084	48	Y, Y(ITA)	N/A
WP12/MF/02	EU.01.20.03.	P Serv	Materials and Joining characterization	On demand material and joining characterisation in the frame of construction and R&D of components for F4E TBM. Mainly performed through specific contracts within framework F4E OPE-149	12	N	N/A
WP12/MF/03	EU.01.20.03.	P Serv	Material characterization at room/elevated temperatures	On demand material characterisation in the frame of construction and R&D of components for ITER. Mainly performed through specific contracts within framework F4E OFC 167	48	Y, Y(ITA)	N/A
WP12/MF/05	EU.01.20.03.	P	Materials and Joining characterization	Procurement of materials for Characterization of Joins and Interfaces submitted to ITER specific conditions	12	Y, Y(ITA)	12Q2
WP12/MF/06	EU.01.20.03.	P Serv	Joining technologies and Non Destructive testing	On demand activities, like qualification, testing and "small scale" R&D tasks related to the construction and R&D of structural components of ITER. s. Mainly performed through specific contracts within framework F4E OPE 149	48	Y, Y ITA	N/A
WP12/MF/08	EU.01.20.03.	G ¹³	Materials and Joining Characterization	Characterization of Enhanced Tungsten	11	Y	12Q1
WP12/MF/09	EU.01.20.03.	G ¹⁴	Materials and Joining Characterization	Characterization of Enhanced Tungsten by High Heat Flux Tests	8	Y	12Q3
WP12/MF/10	EU.01.20.03.	P serv	Materials and Joining Characterization	Procurement of Engineering Services to Assess Corrosion Sensitivity Issues for CuCrZr	8	Y	12Q2

¹³ Unique beneficiary, Stockholm University (SE), for technical competences.

¹⁴ Unique beneficiary, FZJ (DE), for technical competence

2.21.3. ENGINEERING ANALYSES - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/ES/07	EU.01.20.02.	FWC	Engineering Support-CAD support	Support in CAD design, CAD checking and CAD exchange..	48	N/A	11Q4
WP12/ES/01	EU.01.20.02.	FWC	Dynamic Analysis	Seismic and Dynamic Analysis of ITER buildings and components	48	Y, Y(ITA)	12Q1
WP12/ES/02	EU.01.20.02.	P Serv	Dynamic Analysis	Seismic and Dynamic Analysis of ITER buildings and components mainly through specific contracts within framework contract.	12	Y, Y(ITA)	NA
WP12/ES/03	EU.01.20.02.	FWC	Electromagnetic analyses	Electromagnetic analyses in support of PAs and ITAs.	24	N/A	12Q1
WP12/ES/04	EU.01.20.02.	P Serv	Electromagnetic analyses	Electromagnetic analyses in support of PAs and ITAs. Mainly performed through specific contracts within framework (F4E-2008-OPE-06 and WP12/ES/03)	12	Y,Y(ITA)	N/A
WP12/ES/05	EU.01.20.02.	FWC	Mechanical analyses	Mechanical analyses in support of PAs and ITAs.	24	Y,Y(ITA)	N/A
WP12/ES/06	EU.01.20.02.	P Serv	Mechanical analyses	Mechanical analyses in support of PAs and ITAs. Mainly performed through specific contracts within framework F4E-2008-OPE-07 and WP12/ES/05	12	Y,Y(ITA)	N/A
WP12/ES/09	EU.01.20.02.	P Serv	Neutronic analyses	Nuclear analyses in support of PAs. Mainly performed through specific contracts within framework F4E-2008-OPE-02	12	Y,Y(ITA)	N/A
WP12/ES/11	EU.01.20.02	P Serv	Thermo-hydraulic Fluid Dynamic analyses	Fluid Dynamic analyses, including thermo hydraulics, in support of PAs and ITAs. Mainly performed through specific contracts within framework F4E-OPE-031	12	Y,Y(ITA)	N/A
WP12/ES/13	EU.01.20.02	P Serv	Engineering support - general mechanics plant system and integration	Engineering support in the area of general mechanics plant system and integration. Mainly performed through specific contracts within frameworks.	12	Y,Y(ITA)	N/A
WP12/ES/14	EU.01.20.02	P serv	Engineering Support-CAD support	Support in CAD design CAD checking and CAD exchange Mainly performed through specific contracts within framework WP11/ES/07	12	Y,Y(ITA)	NA

2.21.4. NUCLEAR DATA - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/ND/01	EU.01.20.05	FPA ¹⁵	Nuclear Data experiments and measurement techniques	Development of the experimental data base required for the validation of the nuclear data libraries and the development and testing of experimental techniques	48	N/A	12Q2

¹⁵ Unique beneficiary ENEA,CCFE, FZK NPI AGH JSI Consortium for Nuclear Data Unique Facility and technical competence

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/ND/02	EU.01.20.05	SG	Nuclear Data, and experimental activities	Definition of irradiation campaigns for fusion relevant materials and layouts. Improvement of nuclear instrumentation for the nuclear test programme in ITER	24	N	N/A

2.22. QUALITY ASSURANCE AND PROJECT MANAGEMENT

2.22.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/PO/03	EU.01.19.06.	P Serv	Global transportation of ITER components (test convoy)	Global transportation of ITER components (test convoy) and preliminary studies incl. management of transport-related topics (i.e. customs, handling, etc.).	6	Y	N/A
WP12/PO/01	EU.01.19.04.	P Serv	Support of Project Management	Outsourcing of planning activities on specific tasks and other project management activities. Mainly performed through specific contracts	12	Y,Y(ITA)	N/A
WP12/PO/15	EU.01.19.01.	P serv	Service of inspectors and auditors for ITER project contracts follow-up	Support to F4E for surveillance and auditing work at the manufacturers' premises for running contracts. Mainly performed	12	Y,Y(ITA)	N/A
WP12/PO/16	EU.01.19.01.	P serv	Service of inspectors and auditors for ITER project contracts follow-up	Support to F4E for surveillance and auditing work at the manufacturers' premises for running contracts. Mainly performed	12	N	N/A

2.23. BUDGET ALLOCATION FOR AMENDMENTS AND PRICE INDEXATION FOR ONGOING CONTRACTS AND GRANTS

F4E may exercise contractual options and amend grants and contracts covered by (a) financing decision(s) and without substantial change in such decision(s) under the following criteria:

- Total amendments to a contract or grant will not exceed 20% of the price of the initial contract or grant; and
- Aggregated value of the amendments will not exceed in 2012 3% of the 2012 ITER procurement/grant (Title III) budget.

Exercise of contractual options and amendments exceeding the thresholds under the above underlying criteria shall require a new prior financing decision.

F4E may implement price indexation referred to in the signed contracts covered by (a) financing decision(s) and without substantial change in such decision(s) under the criteria that aggregated value of the indexation cost in 2012 will not exceed to 3% of the 2012 ITER procurement/grant (Title III) budget.

Implementation of indexation exceeding the threshold under the above underlying criteria shall require a new prior financing decision. Implementation of contract amendments or indexation that leads to a change in the contract value of EUR 10 million, independently of the percentages above stated, shall require a new prior financing decision

WP ref	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/PO/08	G	Amendments of ongoing Grants	Budget allocation for amendments of ongoing Grants	N/A	Y,Y(ITA)	N/A
WP12/PO/09	G	Amendments to ongoing Grants	Budget allocation for amendments on ongoing Grants	N/A	N	N/A
WP12/PO/10	P	Amendments and price indexation ongoing Procurements	Budget allocation for amendments and price indexation of ongoing procurement Contracts	N/A	Y,Y(ITA)	N/A
WP12/PO/11	P	Amendments to ongoing Procurements	Budget allocation for amendments on ongoing procurement Contracts	N/A	N	N/A

2.24. CONTRIBUTIONS IN CASH

2.24.1. Contribution to the ITER Organisation

This corresponds to the annual EU share of the contributions in cash to the ITER Organisation for its management, to be adopted at the ITER Council meetings in 2012. This contribution is for 2013. It will be committed in the last quarter of 2012 and will be paid to ITER IO in two payments in 2013.

2.24.2. Contribution to Japan

This cash contribution to Japan corresponds to the transfer of procurement responsibility from EURATOM to Japan under the supervision of the ITER Organisation. According to the request of the Court of Auditors, this line includes the total value of the cash contributions for all the signed JA procurements for which the procurement agreements have already been signed or to be signed in 2012. The conversion rate used for the calculation takes into account the forecasted rates for the years when the contribution will have to be paid. Adjustments may be required before the last payment to take into account any change in the conversion rate happened until that time. 2012 Cash Contribution corresponds to the following Procurement Arrangements:

PA number	Procurement Arrangement title	Amount already committed (for signed PAs, kIUA) before 2012	Amount to be committed (kIUA) in 2012
1.1.P6A.JA.01	Toroidal Field Magnets Conductor	15.8071	5,6929
1.1.P6B.JA.01	Central Solenoid Magnet Conductors	11.70000	78.30000
1.1.P2B.JA.01	Toroidal Field Magnet Structures 2B	0.01780	<u>3.0827</u>
1.1.P1B.JA.01	Toroidal Field Magnet Windings	0.00	7.73620
5.3.P2.JA.01	NB Beam Source and HV Bushing	0.0000	2.0750
5.3.P6.JA.01	Neutral Beam Power Supplies (NBTF-Padoa)	0.000	22.6220

2.24.3. NBTF Agreement with Consorzio RFX

This cash contribution to the Consorzio RFX corresponds to the 2012 and 2013 NBTF¹⁶ WorkProgrammes¹⁷ implementing the agreement on the Neutral beam Test Facility on credited and not credited budget lines. Mainly following activities will be performed in 2012 and 2013:

¹⁶ Commitment for 2013 activities will be implemented only after the F4E approval of NBTF Work Programme

1. Design of SPIDER components and systems and, as applicable, support in the preparation of technical specifications
2. Design of MITICA components and systems and, as applicable, support in the preparation of technical specifications
3. R&D activities and procurements for demonstration activities finalised to the completion of build-to-print technical specifications
4. Modeling and physics studies directly related to the development of the components for the NB system
5. Support to F4E in the follow-up of procurements contract
6. Participation to technical meetings including interface meeting with IO and other Domestic Agencies
7. Provision of NBTF Host services like: preparation of on site safety and licensing documentation, provision of site specific information to IO, F4E, other DAs and contractors, preparation of site activities schedule
8. Provision of site facilities to Third Parties, as applicable

2.24.4 Contribution to CEA/AIF for ITER Site Support

F4E shall contribute through CEA/AIF to specific ITER expenditures in accordance with the Annex on Site Support attached to the ITER Agreement and the Arrangement on Site Support between F4E and CEA/AIF. The site support activities to be financed by F4E in 2012 are the fees for the rental of Temporary Offices 523/524 waiting for the handover of the ITER Headquarters.

2.25. OTHER OPERATIONAL EXPENDITURE

F4E has issued calls for expressions of interest for individual experts to provide technical assistance in a number of specific areas related to ITER and the Broader Approach. Provision is included in the budget (under title 3.4) for a total of approximately 3500 expert man-days in 2012.

In the context of organizational improvements, F4E has signed a Memorandum of Understanding with IO for the support of project management specialists for the development of harmonized project management systems and processes in F4E. An appropriate budget allocation for 2012 is foreseen (under title 3.4).

Additionally, F4E will need specialist support from economic operators (by means of service contracts) for operational needs linked to the preparatory phase of specific in-kind contributions to IO: this will include (where appropriate) legal and commercial services. Provision in this sense is included in the budget for 2012 (under title 3.4).

2.26. URGENT ACTIVITIES IN SUPPORT OF COST AND RISK ASSESSMENT

Some activities (corresponding to a total of about 5 man-years) may be necessary to be carried out in the estimation of costs and in the assessment of risk during the course of the year. Such activities could be either grants or procurements under the 3.1 and 3.2 budget lines.

WP ref	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/PO/04	G	Analysis for cost containment	On-demand, urgent analysis and engineering activities	N/A	Y,Y(ITA)	N/A
WP12/PO/05	G	Analysis for cost containment	On-demand, urgent R&D activities	N/A	N	N/A
WP12/PO/06	P	Analysis for cost containment	On-demand, urgent analysis and engineering activities	N/A	Y,Y(ITA)	N/A
WP12/PO/07	P	Analysis for cost containment	On-demand, urgent R&D activities	N/A	N	N/A

PART III - BROADER APPROACH

3.1. INTRODUCTION

The European contributions to the Broader Approach Activities are financed to a large extent by contributions in kind from the following Members of F4E: France, Germany, Italy, Spain, Switzerland and Belgium. Only in a limited number of cases, where no contribution by these Members is foreseen, the contribution will have to be financed by the F4E budget.

For the contributions to be provided by Members of F4E, a large share of the Procurement Arrangements between F4E and the Japanese Implementing Agency have been signed and entered into force in late 2010 and in 2011. A limited number of Pas are still to be signed in 2012 and 2013, subject to the conclusion of corresponding Agreements of Collaboration between F4E and the Members concerned.

In the following, the activities of Fusion for Energy related to BA are described. The tables provided in the text use the following abbreviations:

Abbreviation	Meaning
WP ref	Work programme reference, univocally identifying WP items. WPxx/yy/zz, where xx are the last two digits of the WP/budget year in which the activity was first financed, yy is a code identifying the ITER WBS element (if available) or the F4E service in charge, zz is a sequential number for the year
G	Grant
P	Procurement (service, supply or works)

All activities indicated within WP2012 are planned to be committed under the 2012 budget.

During the implementation of the work programme activities, F4E may group more activities in a single call or split one activity in more calls. This will in any case be performed preserving the scope and objective presented in WP2012.

The foreseen time of publication of calls and invitations is indicative only and based on the present understanding of the project development.

3.2. JT60SA

3.2.1. F4E Funded Activities

In general the activities for JT-60SA are following the Satellite Tokamak Programme (STP) Work Programme as approved by the 9th BA Steering Committee on 25th October 2011 and recent modifications endorsed by the BA Steering Committee.

In particular, following the decision of the 10th BA Steering Committee, on 24th April 2012, authorising, inter alia, the construction of one additional TF coil for JT-60SA as a project risk mitigation measure, EU will proceed to the procurement of the items necessary for the construction of the 19th TF coil ("spare coil"). A new sharing between JA and EU has been approved by the BA Steering committee. A specific PA or an amendment of existing PAs, is going to be agreed and signed between F4E and JAEA at the beginning of 2013, with the backing, for EU side, of a corresponding Agreement of Collaboration among the EU Voluntary Contributors.

The necessary consequential modifications to the sharing among the EU Voluntary Contributors and F4E have been already agreed and approved by written procedure by all EU Voluntary Contributors.

As a consequence of the new EU sharing, the procurement of the TF coil is taken over by Italy (ENEA) with two exceptions: the strand (procured by F4E) and the cold test of the coil (provided by France (CEA)). Therefore the spare coil casing production, in WP 2nd Amendment covered by a direct F4E contract, will now be covered by a voluntary contribution by Italy (ENEA).

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Time of Call
WP12/BA/02	EU.03.01.01.	P Serv	TF strand and conductor measurements	Measurement of superconducting strand and cable properties	12	12Q1
WP12/BA/04	EU.03.01.01.	P Serv	JT60SA Cryostat Base Transports	Transport of the Cryostat Base from factory to Japan,	3	12Q2
WP12/BA/06	EU.03.01.01	FWC	Framework Contract for General Broader Approach Transports	Transport of all conventionally-sized packages from their origins in Europe to a Japanese port of entry.	48	12Q4
WP12/BA/10	EU.03.01.01	P	Production of TF Spare Coil Strand	Production of NbTi Strand for the TF Spare Coil	12	12Q4
WP12/BA/13	EU.03.01.01	Pserv	Transport and storage	Packaging, transports and storage of strand, conductors and other materials and samples	Various	12Q4

3.2.2. Procurement Arrangements

The Procurement Arrangements to be signed in 2012, between F4E and JAEA, were originally determined, in accordance with the Workprogramme 2012 for the Satellite Tokamak Programme, recommended by the STP Project Committee on the 28th September 2011 and approved by the 9th BA Steering Committee on 25th October 2011. Following technical discussions, however, the PA for the Resistive Wall Mode Power Supplies has now been deferred until 2014, pending construction of a prototype and the determination of the number of units that can be provided by Europe in exchange of de-scoping onsite installation.

The information is provided for completeness but it is noted that the obligations associated to each of the Procurement Arrangements listed below is discharged by a corresponding Agreement of Collaboration formalising the commitment of one of the EU Voluntary Contributors, through their Designated Institutions. Therefore these PAs do not imply financial commitments of F4E, with the exception of payment or reimbursement of transport costs of the components from Europe (ex works) to the Port of Entry in Japan.

Title/Description	To be signed by	AoC with EU VC (DI)
Setup of a Cryogenic Test Facility and the Performance of Tests of the TF coils for the Satellite Tokamak Programme	12Q1 signed	France (CEA) and Belgium (SCK-CEN)
Supply of a Cryogenic System for the Satellite Tokamak Programme	12Q4	France (CEA)

3.3. IFMIF

3.3.1. F4E Funded Activities

For IFMIF/EVEDA, direct procurement activities in 2012 will be limited to the transport of the components and systems from the point of delivery in Europe to JA (Port of Entry). The activities are merged with the framework contract for the Satellite Tokamak Program (see WP12/BA/06)

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Time of Call
WP12/BA/08	EU.03.02.01.	P	Accelerator interfaces / complementary items	Procurement of injector/accelerator complementary items (chopper)	12	12Q2

In terms of direct contributions from F4E, as part of F4E contributions to the IFMIF/EVEDA BA Project, "cash contributions to the common expenses of the Project Team" were approved by the BA Steering Committee for an amount of 123 kEuro. This budget will cover the missions outside of Japan of the EU members of the Project Team as well as for regular maintenance needs for the Prototype Accelerator.

3.3.2. Procurement arrangements

In the Work Programme 2011 for IFMIF/EVEDA project, all outstanding Procurement Arrangements, forming the EU contribution, were expected to be signed between F4E and JAEA in 2011. Due to some delays in the preparation process for signing, several PA will be submitted for signing still in 2012 (a quarter later than indicated in WP Amendment 2). The information is provided for completeness but it is noted that the obligations associated to each of the Procurement Arrangements listed below is discharged by a corresponding Agreement of Collaboration formalising the commitment of one of the EU Voluntary Contributors, through their Designated Institutions. Therefore these PAs do not imply financial commitments of F4E, with the exception of payment or reimbursement of transport costs of the components from Europe (ex works) to the Port of Entry in Japan.

Title/Description	To be signed by	AoC with EU VC (DI)
Accelerator Facility – Transv. Activities	12Q3	France (CEA) / Italy (INFN) / Spain (CIEMAT)
Accelerator Facility - Diagnostics	12Q3	France (CEA)
Accelerator Facility – Cryoplant	12Q3	France (CEA)
Accelerator Facility - Installation, Check-Out, Start-Up and Commissioning	12Q3	France (CEA) / Italy (INFN) / Spain (CIEMAT)
Test Facilities - Irradiation Test in BR2 Reactor	12Q4	Belgium (SCK-CEN) / Germany (KIT)
Engineering Design - EU contr. to IFMIF plant design	12Q3	Spain (CIEMAT) / Belgium (SCK-CEN)
Engineering Design - Accelerator facility	12Q3	Spain (CIEMAT) / France (CEA) / Italy (INFN)
Engineering Design - Lithium Target Facility	12Q3	Italy (ENEA) / Belgium ((SCH-CEN)
Engineering Design - Test Facilities	12Q3	Germany (KIT) / Spain (CIEMAT)

3.4. IFERC

3.4.1. F4E Funded Activities

Direct expenditure by F4E in support of the IFERC BA project will be limited to the contribution to DEMO design activities by means of the home team and site insurance plus the transport of some DEMO materials from Europe to Japan for further analysis.

3.4.2. Procurement Arrangements

Two procurement arrangements were expected to be signed between F4E and JAEA in 2012, one PA to cover possible enhancements to the CSC equipment, and another PA to initiate Reactor Safety studies, according to the IFERC Work Programme 2012 approved by the 9th BA Steering Committee on 25th October 2011. The CSC enhancements have not been necessary in 2012 as all equipment performed as specified, so the PA was postponed for an upgrade of the system in 2013. The activities in Reactor Safety Studies by EU will be performed under the existing Demo Design Activities PA, so the specific PA has been cancelled.

3.5. BUDGET ALLOCATION FOR AMENDMENTS TO ONGOING BA CONTRACTS

The budget allocation for amendments and price indexation on ongoing procurements it is released in consideration that no such amendment or indexation is foreseen till end of 2012. The budget allocation is going to be correspondingly re-established in WP2013.

During the follow-up of the ongoing procurement contracts, F4E may be required to implement amendments in order to increase contractual effectiveness in view of overall project developments, or as risk mitigation/impact reduction measures required by the occurrence of unforeseen events. To this extent a budget allocation (is corresponding to 1.5% of the sum of:

- overall outstanding commitments to the date of issue of the 2nd amendment (about Euros 11,544,112) plus
- the commitments foreseen till the end of the year (about Euros 3,779,500)

This percentage, which covers amendments and additional budget for indexation, taking into account the available forecasted values, has been assigned to the following generic WP 2012 items.

APPENDIX I: TABLE OF ACRONYMS AND ABBREVIATIONS

A/E	Architect Engineer
AGPS	Accelerator Ground Power Supplies
ALARA	As Low As Reasonably Achievable
ANB	Authorized Notification Body
ANS	Analytical System
ASN	Autorité de Sûreté Nucléaire
AVDEs	Asymmetric Vertical Displacement Event
ATS	Air Transfer System
BA	Broader Approach
BSM	Blanket Shield Module
BtP	Build-to-Print
CD	Current Drive
CFC	Carbon Fibre Composites
CMM	Cassette Multifunctional Mover
CVB	Cold Valve Boxes
CVD	Chemical Vapour Deposition
CXRS	Core plasma charge-eXchange Recombination Spectroscopy
DA	Domestic Agency
DACS	Data Acquisition and Control System
DCLL	Dual Coolant Lithium Lead
DCR	Design Change Request
DEMO	Demonstration fusion reactor
DIV	Divertor
DNB	Diagnostic Neutral Beam
DTP	Divertor Test Platform
EAF	European Activation File
EB	Electron Beam
EBBTF	European Breeding Blanket Test Facilities
EC	Electron Cyclotron
EC UL	Electron Cyclotron Upper Launchers
ECH	Electron Cyclotron Heating
EFDA	European Fusion Development Agreement
EFF	European Fusion File
ELM	Edge Localized Mode
EPC	Engineering Procurement Contract
EUDA	EUropean Domestic Agency
EURATOM	The European Atomic Energy Community
F4E	Fusion for Energy
FS	Functional Specification
FW	First Wall
FWP	First Wall Panel
HAZOP	HAZard Operability
HCLL	Helium Cooled Lithium-Lead
HCPB	Helium Cooled Pebble Bed
H&CD	Heating & Current Drive
HHF	High Heat Flux
HIP	Hot Iso-static Pressing
HNB	Heating Neutral Beam
HV	High Voltage
HVAC	Heating Ventilation & Air Conditioning
HVD	High Voltage Deck
HW	Hardware
HXR	Hard X-Ray
IC	Ion Cyclotron
I&C	Instrumentation and Control
ICH	Ion Cyclotron Heating
IFERC	International Fusion Energy Research Center

IFMIF	International Fusion Materials Irradiation Facility
INB	Installation Nucleaire de Base
IO	ITER Organization
IR	Infra Red
ISEPS	Ion Source and Extraction Power Supplies
ISS	Isotope Separation System
ITA	ITER Task Agreement
ITER	International Thermonuclear Experimental Reactor
IVT	Inner Vertical Target
IVVS	In-Vessel Viewing System
JAEA	Japan Atomic Energy Agency
LD&L	Leak Detection and Localization
LFS-CTS	Low Field Side – Collective Thomson Scattering
MAR	Materials Assessment Report
MDR	Modified Design Reference
MHB	Material HandBook
MHD	Magneto-Hydro-Dynamic
MIG	Metal Inert Gas
MV	Medium Voltage
NB	Neutral Beam
NBI	Neutral Beam Injector
NBPS	Neutral Beam Power System
NBTF	Neutral Beam Test Facility
NHF	Nominal Heat Flux
ODS	Oxide Dispersion Strengthened
ORE	Occupational Radiation Exposure
P&ID	Process and Instrumentation Diagram
PA	Procurement Arrangement
PBS	Product Breakdown Structure
PBS 41	High Voltage and Medium Voltage distribution
PBS 43	High Voltage, Medium Voltage and Low Voltage distribution. Emergency Power Supply
PE	Plasma Engineering
PF	Poloidal Field
PFC	Plasma Facing Components
PFD	Process Flow Diagram
PIE	Post Irradiation Examination
PMU	Prototypical Mock-Up
PP	Procurement Package
PPC	Pre-Production Cryopump
PrSR	Preliminary Safety Report
PTC	Prototype Torus Cryopump
QA	Quality Assurance
R&D	Research & Development
RAFM	Reduced Activation Ferritic Martensitic
REM	Radilological Environmental Monitoring
RF	Radio Frequency
RFCU	Radio Frequency Control Unit
RH	Remote Handling
RMP	Resonant Magnetic Perturbation
RNC	Radial Neutron Camera
RWF	RadWaste Facility
RWM	Resistive Wall Mode
SC	Super Conductor
SDC	Structural Design Criteria/Code
SHPC	Safety and Health Protection Coordination
SiC-Dual	SiC/SiC composite material for electrical and thermal Insulation
SIP	Seismic Isolation Pit
S-NHF	Standard Normal Heat Flux

SOLPS	Scrape Off Layer Plasma Simulation
SS	Steady State
STP	Satellite Tokamak Programme
SW	Software
TBM	Test Blanket Module
TCS	Transfer cask System
TES	Test Extraction System
TF	Toroidal Field
TFC	Toroidal Field Coils
TFWP	Toroidal Field Winding Pack
TH	Thermal Hydraulical
TO	Technical Officer
UT	Ultrasonic
Vis	Visible
VS	Vertical Stability
VV	Vacuum Vessel
WAVS	Wide Angle Viewing System
WBS	Work Breakdown Structure
WDS	Water Detritiation System

APPENDIX II: SUMMARY OF THE 3RD AMENDMENT OF WP2012 BUDGET

Summary of the Work Programme 2012 for the financing decision	2nd Amendment of WP 2012 (as approved in June 2012)	3rd Amendment of WP 2012 (December 2012)
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TITLE III of the 2012 Budget (operational)

Budget line	Title	Commitment appropriation (EUR)	Commitment appropriation (EUR)
3.1	ITER CONSTRUCTION INCLUDING THE ITER SITE PREPARATION	1,062,040,385.88	1,075,155,885.90
3.2	TECHNOLOGY FOR ITER AND DEMO	9,289,400.00	1,702,000.00
3.3	TECHNOLOGY FOR BROADER APPROACH	4,393,057.00	1,285,000.00
3.4	OTHER EXPENDITURE	4,600,000.00	2,219,000.00
3.5	ITER CONSTRUCTION - APPROPRIATION FROM THE ITER HOST STATE CONTRIBUTION	241,200,000.00	141,200,000.00
Total Title III of the Budget 2012		1,321,522,842.88	1,221,561,885.90
3.5		38,899,366.40	38,765,508.40
Total amount available for the operational expenditure		1,360,288,350.88	1,260,461,252.30

Financing decision for the 2012 Work Programme

Budget line	Title	Grants	Procurement	Cash	Grants	Procurement	Cash
3.1+3.5	Expenditure in support of ITER, credited by ITER IO through PA	13,950,000.00	869,281,383.88	-	2,646,000.00	952,721,252.30	
3.1+3.5	Contribution in cash in support of ITER		-	106,000,000.00	-	-	80,433,000.00

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3.1+3.5	Contribution in cash for transfer of procurement to Japan	-	-	260,000,000.00	-	-	203,750,000.00
3.1+3.5	Contribution in cash on NBTF Agreement	-	-	5,980,000.00	-	-	5,970,000.00
3.1+3.5	Contribution to CEA/AIF for ITER Site Support	-	-	70,000.00	-	-	60,000.00
3.1+3.5	Design and R&D in support of ITER, credited by ITER IO through ITA	6,950,000.00	19,878,110.00	-	794,000.00	5,131,000.00	-
3.6	Expenditure budgeted against other revenue	-	-	-	-	-	-
3.1+3.5	Budget allocation (paragraph 2.23)	618,000.00	59,278,400.00	-	250,000.00	3,500,000.00	
	Subtotals	21,518,000.00	948,437,893.88	372,050,000.00	3,690,000.00	961,352,252.30	290,213,000.00
3.1+3.5+3.6	Total ITER Construction	1,342,005,893.88			1,255,255,252.30		
3.2	Design and R&D in support of ITER, not credited by ITER IO (incl. materials, TBM, nuclear data)	3,780,000.00	4,250,000.00	-	875,000.00	502,000.00	-
3.2	Contribution in cash on NBTF Agreement	-	-	1,030,000.00	-	-	325,000.00
3.2	Budget allocation (paragraph 2.23)	119,400.00	110,000.00		-	-	-
	Subtotals	3,899,400.00	4,360,000.00	1,030,000.00	875,000.00	502,000.00	325,000.00
3.2	Total Technology for ITER	9,289,400.00			1,701,216.08		
3.3	Expenditure in support of Broader Approach		3,779,500.00	260,000.00		1,161,297.00	
3.3	Contribution in cash in support of IFMIF-EVEDA Project team			123,703.00			123,703.00
3.3	Budget allocation (paragraph 3.5)		229,854.00				
	Subtotals		4,009,354.00	383,703.00		1,161,297.00	123,703.00

3.3	Total Technology for Broader Approach and DEMO	4,393,057.00			1,285,000.00		
3.4	Appointment of experts for technical assistance to F4E (including MoU with IO)	-	-	3,800,000.00			1,500,000.00
3.4	Legal and commercial services agreement for assistance to F4E	-	800,000.00	-		719,000.00	
	<i>Subtotals</i>	-	<i>800,000.00</i>	<i>3,800,000.00</i>		<i>719,000.00</i>	<i>1,500,000.00</i>
3.4	Total Other Expenditure	4,600,000.00			2,219,000.00		
	Total expenditure by type (incl. budget reserve paragraph 2.23 and 2.25)	<i>25,417,400.00</i>	<i>957,607,247.88</i>	<i>377,263,703.00</i>	<i>4,565,000.00</i>	<i>963,734,549.30</i>	<i>292,161,703.00</i>
3	Total Operational Expenditure	1,360,288,350.88			1,260,461,252.30		

Notes

A table showing the indicative budget for grants to be awarded in this Work Programme, both credited and non-credited by ITER, is provided in Appendix III.

- Figures corresponding to items to be credited by IO through ITA are provisional, and are based on the present understanding of the share of work to be assigned to F4E by IO with yearly planned ITAs (not competed) or through competitive procedures (competed ITAs).
- Following the evaluation of the proposals and updates on the cash to be paid to IO and Japan the final budget repartition may vary by up to 10% of the specified budget figures in the table above, with the exception of the budget allocation.

APPENDIX III: 3RD AMENDMENT WP2012 SUMMARY OF THE AVAILABLE BUDGETS FOR GRANTS¹⁸

WBS	2 nd Amendment of WP 2012		3 rd Amendment of WP 2012	
	CREDITED (M€)	NOT CREDITED (M€)	CREDITED (M€)	NOT CREDITED (M€)
Magnets				
Vacuum Vessel				
Blanket				
Divertor				
Remote Handling	1.4		0.34	
Vacuum Pumping & Fuelling	0			
Tritium Plant				
Cryoplant				
Power Supplies				
I&C and CODAC				
Heating & Current Drive	2.60		1.41	
Diagnostics	12.550		1.48	
Buildings				
Materials Development		1.28		
Test Blanket Modules		1.70		
Plasma Engineering	2.45	0.25	0.14	0.45
Engineering Support	1.4	0.30	0.07	0.42
Analysis for cost containment	0.50	0.25		
Budget Allocation (paragraph 2.23)	0.62	0.12	0.25	
Broader Approach				
	21.52	3.9	3.69	0.87
Total	25.42		4.56	

NB: Figures shown in this table are the currently estimated values. Modifications may occur within the budgetary constraints.

¹⁸ Includes specific grants under Partnership Agreements

APPENDIX IV - ESSENTIAL SELECTION AND AWARD CRITERIA FOR GRANTS

With regard to grant actions referred to in this work programme, the essential selection and award criteria, in accordance with Articles 165 and 166 of the Implementing Rules of the Financial Regulation, are:

Essential Selection Criteria

- The applicants' technical and operational capacity: professional, scientific and/or technological competencies, qualifications and relevant experience required to complete the action.
- The applicants' financial capacity: stable and sufficient sources of funding in order to maintain the activity throughout the action.

Essential Award Criteria

- Relevance and quality of the proposal with regard to the objectives and priorities set out in this work programme and in the relevant call for proposals.
- Effectiveness of the implementation as well as of the management structure and procedures in relation to the proposed action.
- Cost-effectiveness and sound financial management, specifically with regard to F4E's needs and objectives and the expected results.

With regard to the specific action, more details will be provided in the call for proposals. Thresholds and weighting for the essential and additional award criteria will also be given in the call for proposals.

A proposal which does not fulfil the conditions set out in the work programme or in the call for proposals shall not be selected. Such a proposal may be excluded from the evaluation procedure at any time.

The timetable and indicative aggregated amounts for the actions are defined in this Work Programme.

**APPENDIX V -
MAXIMUM REIMBURSEMENT RATES FOR GRANTS**

The upper limits for the reimbursement of eligible costs for grants are laid down in Article 153 of the Implementing Rules of the Financial Regulation of the Joint Undertaking and are summarised in the following table.

Research, technological development and demonstration activities	40%
Coordination and support actions	100%
Management, audit certificates and other specific activities	100%