

ITER Site Preparation in Cadarache

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Since the decision on 28 June 2005 to build ITER at Cadarache, south-east of France, the European Union as the host party and France as host state have intensified and structured their efforts in order to offer to the international team all the support necessary for its smooth and swift implementation. The present paper describes the organisation and details the progress of studies.

Structures

Pending the legal creation of the European Domestic Agency, EFDA (European Fusion Development Agreement) is coordinating the technical work in support to the site preparation on behalf of Euratom. European ITER Site Studies, the tool used to prepare all technical information during the candidature phase is thus continuing, with the main aims to:

- Finalise the licensing documents for the creation of the nuclear plant;
- In strong interaction with ITER team, by means of a so-called ITER Site Preparation Group, officialised at the last ITER Preparatory Committee on 13 July 2006, make the site available to ITER, with all its services.

In France, the following organisation is now operational:

- At governmental level, a small team around the former minister for research François d'Aubert is coordinating the governmental actions in strong interaction with the numerous ministries involved, and represents France at international and European levels;
- A dedicated Agency has been created inside the CEA in order to implement the French commitments with respect to the site itself, the financial ones, welcome the staff, and provide the necessary help to the ITER team in technical and licensing areas;
- A multi-administration regional team close to the Préfet (local representative of the government) in charge of the non-site French commitments: the itinerary for the transport of the large and heavy loads, the creation of an international school, mastering of the land cost and ensure an adequate industrial and social infrastructure for the future works.

Licensing procedures

On 25 June 1998, many countries signed the “Aarhus convention”, promoting the participative democracy, in complement to the representative (or direct) democracy. France has ratified this convention in February 2002, by letting the “Commission Nationale du Débat Public” (CNDP), an independent authority, organise the public debate, in particular for large infrastructures as motorways, railways, nuclear plants, etc. ITER belonging to the last category, and a strong interest for this project being sensible in the population, the Commission Nationale du Débat Public decided in July 2005 to organise itself a national debate on ITER.

18 public meetings, plus a web site (<http://www.debatpublic-iter.org/>), journals were thus organised between January and May 2006, giving the occasion to the population to be informed on the project, its challenges and impacts in the region and the neighbouring villages, to ask questions and express concerns. Were systematically present at all public meetings the international team, representatives of the European Union and Agence ITER France.

Press conferences organised by the CNDP opened and closed the debate, considered by all parties as useful, open, and fruitful: exhaustive information was indeed given, far beyond the project itself, and confirming the interest of the French population for ITER. The public debate file, written thanks to a deep involvement of the International team and European Union’s representatives, is available in French and in English on the Internet site of the Agence ITER France: <http://www.itercad.org>.

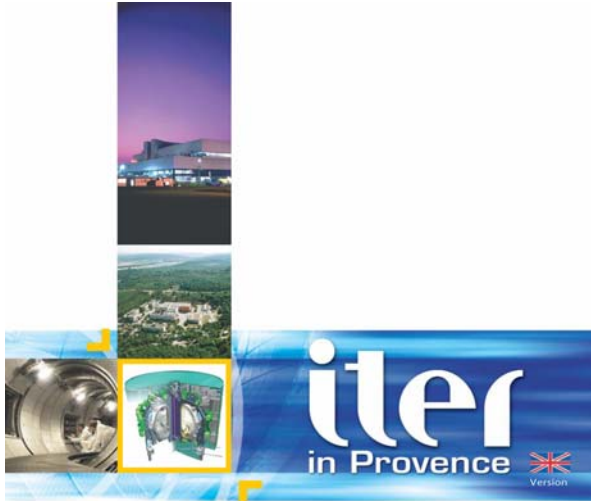


Figure 1: Cover page of the File for the Public Debate on ITER in France

The conclusions and commitments that the project team must draw from the debate are being written and will be submitted to the Parties, as agreed at the ITER Preparatory Committee on 13 July 2006. These conclusions will then be transmitted to the CNDP for publication in the Official Journal of the French Republic. At that time, the Public Debate procedure will be considered closed.

Once this initial phase closed, all other administrative and regulatory processes are progressing. The most challenging one, specific to nuclear plants, is called the Authorisation of Creation, which is a governmental decree (“Décret d’Autorisation de Création”) enabling the start of the construction of the nuclear plant.

To get this license, a double and parallel procedure is required:

- A technical instruction by the Nuclear Safety Authority (<http://www.asn.gouv.fr/>). The document in support is called the Preliminary Safety Report (“Rapport Préliminaire de Sûreté”, RPrS) in which the demonstration of the safety of the plant, in every state, is given;
- A public enquiry, tackling both following requests:
 - The Authorization Request for Creation (“Demande d’Autorisation de Création”, DAC) with the presentation of the normal and accidental releases (gaseous, liquid) and their impacts;

- The Authorization Request for Effluent Release and Intake of Water (“Demande d’Autorisation de Rejets d’Effluents et de Prélèvements d’Eau”, DARPE), which gives the justification of the source term and the associated releases during the normal operation (including maintenance phase), and the quantity of the intake of water (in particular for the cooling water systems of the tokamak).

Thanks to an ITER Task Agreement and the European ITER Site Studies, the dedicated team inside the Agence ITER France, ITER team and EFDA are working together for the preparation and the follow-up of the safety and licensing process.

The main duties of this group are:

- A technical and regulatory support to the ITER Team (e.g. definition of the safety requirements, needed to the adaptation on the Cadarache site, application of the French regulation and practices, etc.);
- The preparation of the three safety documents (see above), the associated public enquiry and the exchanges with the French Nuclear Safety Authority.

The European ITER Site Studies, under EFDA (CSU Barcelona) responsibility and coordination, involve several fusion Euratom Associations: CEA (France), CIEMAT (Spain), ENEA (Italy), and VR Studik (Sweden). Industrial contracts are also being placed to tackle the 3 main tasks:

- Writing of the Preliminary Safety Report;
- Writing of DAC/DARPE documents;
- Supporting studies to these 2 documents (experience feedback, human factor, incidental and accidental analyses, codes and standards, waste and dismantling, etc.).

In accordance with the ITER plan, presented at ITER Preparatory Committee in July 2006, the following milestones are envisaged:

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| • Completion of the Preliminary Safety Report: | December 2007 |
| • Joined public enquiry DAC/DARPE: | June – July 2008 |
| • Advice of the Safety Authority on Preliminary Safety Report: | December 2008 |
| • Agreement from the Prefect and Construction License: | December 2008 |
| • Start of the works related to the nuclear plant: | 2009 |

Site preparation

The ITER site layout is shown on Figure 2. Detailed work aims at identifying accurately the position of all building, with the wish to minimise the volume of excavations, and implement all companies that will work on the construction yard.

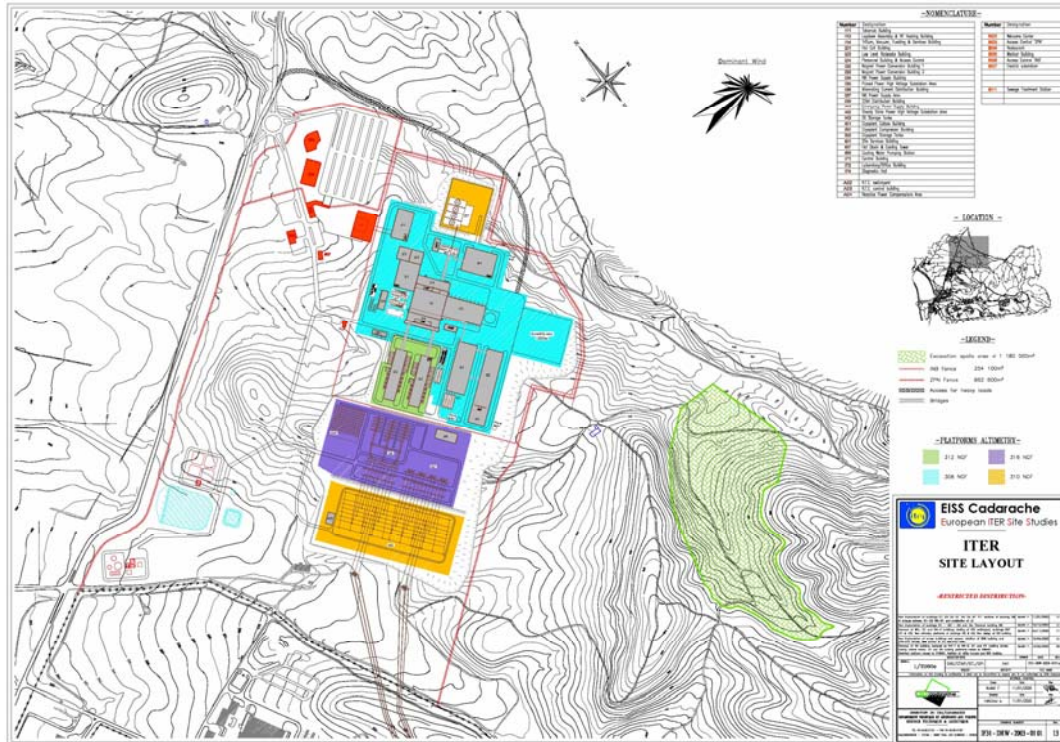


Figure 2: ITER Site Layout

The corresponding administrative procedures are ongoing, in order to be able to launch the preparatory works: site clearing, platform levelling in particular. The first phase of the corresponding works are scheduled beginning of 2007, with the aim to get the site ready for construction works end of 2008, in a coherent timing with the licensing procedure, as mentioned above.

Site servicing is also well advanced, in particular potable water supply and effluents release, electricity supply and Internet. Renater, the French Research and Education Network, interlinked with pan European GEANT will make available a multi Gbits/s optic fibre end of 2006. Other networks should be available end of 2007, in order to enable all construction works on the site. Advantage is taken from the existing infrastructure at Cadarache: this speeds-up the preparation and minimises the cost. All these files are now at a detailed level, enabling industrial contracts to be launched.

Conventional buildings are subject to an international architect competition. They regroup:

- The office building, as planned in the ITER generic site Final Design Report (2001);
- A set of buildings, offered by France to complete the site infrastructure:
 - Restaurant (6600 m²)
 - Public Relation and Welcome Centre (1550 m²)
 - Access control buildings (500 and 250 m²)
 - First aid and medical building (260 m²)

- Electrical and service building

These buildings, outside the nuclear perimeter, should be available in 2009-2010.

Outside the site, an important task deals with the preparation of the itinerary for the transport of ITER components. More than 300 large components have been identified, 200 among them requiring a dedicated itinerary. The largest are the 9 vacuum vessel sectors, the 18 toroidal field coils and the poloidal field coil n°1, and the four crane beams of the tokamak – assembly hall buildings.

After a series of public consultation meetings (“réunions de concertation”), a proposal of itinerary is now detailed and will be submitted to the public enquiry in October 2006. Works will be conducted between 2007 and mid-2009, date foreseen for the first convoys.

The itinerary uses only existing roads, with a few exceptions where local tracks could be made-up. Many runabouts or telephone and electric lines will also need some work. The resulting route is not straight, as shown in Figure 3, but minimises the investment. It is noteworthy to mention that the major works at 3 locations are of common interest for the local population.



Figure 3: Itinerary for the transport of ITER components between Fos harbour and Cadarache

ITER staff welcome

Providing the best welcome to ITER staff is an important task, devoted to the two operational missions in the region. The Welcome Office is organised as a “one stop shop”: it is the single interface for all administrative tasks for newcomers and their families. Its places of reception can be either inside the Cadarache site (near the ITER team) or at the Château in order to be able to receive the collaborators and their families.

A Welcome Booklet including the main application forms (medical coverage if necessary, the international School, French lessons or wishes for housing, this service being offered by a dedicated Agency) is at the disposal of the newcomers on the web site: <http://www.itercad.org>.

A dedicated procedure has been implemented by the Ministry of foreign affairs, and all French embassies and consulates in the participating countries. It offers a free of charge “ITER visa”, delivered more rapidly than a normal visa for foreigners working on the French territory. The Welcome Office is permanently at the applicants’ disposal to help any matter that could arise.

As far as the education of ITER staff’s children is concerned, enrolment in the existing Schools in Manosque is proposed by the ministry of education during the transitional period, from September 2006 to June 2009. Some possibility also exist in Aix-en-Provence, in the collège Mignet (lower secondary, from 11 to 15 years) and lycée international de Luynes (upper secondary, from 16 to 18 years).

In September 2009, the definitive infrastructure will begin to be available in Manosque, a city of about 20 000 inhabitants at 15 minute drive from Cadarache. It consists in a set of establishments at the same location with pupils ranging from kindergarten age to the baccalaureate. The school is dimensioned for 1 400 children, including up to 25 % of pupils from the local cities. The scholarship and its final diploma, recognised by all participating countries thanks to an intensive coordination between the French ministry for education and educational authorities of ITER countries, will integrate tuitions equally distributed in French as a foreign language and the mother tongue. Additional foreign languages are of course possible. 11 linguistic sections are envisaged: Chinese, English, French, German, Hindi, Italian, Japanese, Korean, Portuguese, Russian, and Spanish.

Conclusion

All tasks related to the site preparation are progressing in accordance with ITER schedule and needs. In spite of the complexity of the organisation, a good coordination is ensured thanks to common work, regular coordination meetings, and the officialisation of these groups.

The ITER site should be ready and serviced in order to enable the start of the construction of ITER buildings in 2009, as planned today by the international team.

Acknowledgements

The work presented in this paper directly involves more than 50 actors, among which: EFDA CSU Barcelona, European Associations, ITER International Team, the Accompanying mission ITER in Provence, the CEA and in particular its Agence ITER France.