



POINT OF VIEW

Let's Not Fight Over ITER, by Hiroshi Hirabayashi

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The press has just evoked vehemence once again with project ITER (experiment with thermonuclear fusion). That is due to the fact that the French government and the European Commission evoked the possibility of carrying out this project alone after the United States, via Spencer Abraham, secretary with energy, had announced, last 9 January, their support for the Japanese site of Rokkasho-Mura for technical reasons.

Following various French declarations (such as: *"If the site of Cadarache is not retained, Europe will launch the project ITER alone"*), I wish to raise the question: does Europe really wish to carry out this project apart from any international co-operation? So that ITER is a success, one needs not only the contribution of Europe, but also that of Japan, of the United States, of Russia, of China and South Korea, inter alia.

In addition, some comments in France imply that the support of the United States for Japan followed from the position of France against the war in Iraq, which is completely incomprehensible. Why move the problem and evoke this subject by locating it in the context of the Franco-American competition?

We are persuaded that, from a purely scientific and technical point of view, Rokkasho-Mura, in Japan, has more advantages, and we think that the United States shares the same opinion.

The "advantages" of Cadarache and the "disadvantages" of Rokkasho-Mura already were amply commented on in France. This is why I would like to present the opposite point of view to you, about which the French press did not speak until now. I would like that the people involved in France as well as the French people can discuss ITER by having a perfect knowledge of the two involved theses.

First of all, the scientific point of view. Among the Tokamak experiments with thermonuclear fusion (machine in the shape of torus using a magnet to generate the magnetic field of containment), those which most approach the ITER by their size are the Japanese JT-60, the British JET and the American TFTR. Among them, the JT-60 and the JET both reached, the essential objective that is the break-even-condition (where the nuclear reactions of fusion produce as much energy as they consume).

But experiment Torus Supra of Cadarache, whose merit France praised by saying that it succeeded in obtaining plasma discharges six minutes in duration, is smaller than the JT-60 and it did not reach the conditions of break-even. Moreover, its plasma cross-section is different from that of the JT-60 or ITER, and the plasma behavior is not the same. This is why the international specialists in nuclear fusion recognize that the scientific results of the Japanese JT-60 are much more applicable to ITER's program.

Japan envisaged to accommodate project ITER in Rokkasho-Mura by using all the results obtained with the JT-60 and the totality of the teams that worked there. If the high scientific and technical level of France in the field of nuclear "fission" is undeniable, and if Japan, which in profited, is conscious, the sum of scientific knowledge of nuclear "fusion" accumulated by our country within the framework of the JT-60 is, according to opinion's of the international experts, higher than that of France.

Then, from the technical point of view, ITER, which is a colossal project, appealed, in a simultaneous way, with a whole of fragile precision components. Consequently, the components, which will be manufactured by various countries and will be conveyed by sea, will have then to be transported with the greatest care to the site of ITER. The distance which separates the port from Berre and the site of Cadarache (Rhône delta) is 96 kilometers; Is France engaging of work and on the point of carrying out installations to widen the existing road, to double the capacity of resistance to the loads, to reinforce the piles of the bridges on 26 points, to create deviations, to bore tunnels or to modify the depressions? This work will fall on the country which will accommodate the site, and the cost necessary to their realization will have to be dealt with by the State and the local communities. But, at the present time, no advertisement was made on the concrete aspects of the project, which affects the cost of work or the estimated schedule.

Will these gigantic public works really be completed exclusively for project ITER? In addition, to suppose that they are it, it will be extremely difficult on such a complicated route to transport these components without damage; and we fear that that does not make weigh an element of uncertainty on the advance of the project.

Moreover, it is certain right now that it will be impossible to transport to Cadarache, the poloidal magnetic field coils, the most important and largest component of the project. Will France install a factory in Cadarache to manufacture only these coils?

On the other hand, at Rokkasho-Mura, located at the edge of the Pacific Ocean, there is already a seaport where it is possible to unload all kinds of components necessary for project ITER, and the site which is adjacent for them does not present any difficulty.

One often speaks about the seismic risks existing in Japan, but this question also arises for the valley of the Durance, near Cadarache. In this field, Japan has the antiseismic technologies universally recognized as best in the world, and I make a point of specifying that it is absolutely not necessary to worry.

If one includes/understands the scientific and technological aspects better, the most important elements for the project, the negotiations concerning the choice of the site will take another turning. The good comprehension of this business will at least make it possible to dissipate the illusion which tends to make believe that it is unthinkable that project ITER does not come to France. Japan does not think either that all must be built with Rokkasho-Mura, and we are ready with the following compromise: the equipment of big size which requires specific conditions for the transport would be built at Rokkasho-Mura, and "centers of data analysis and of remote control", whose construction inside the grounds does not pose particular problems, would be at Cadarache.

I wish that the countries associated with the ITER project to choose the site, in serenity, for strictly scientific and technical considerations, and that they use the scientific and technical results which they obtained until now to make a success together of them. Japan and France which are the two essential ones for project ITER, and thus persons in charge for its future, must continue to progress together in many scientific and technical fields.

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