Report on INESCO-La Jolla, California.

I went to INESCO on July 13,1981. I had wriiten to them some weeks earlier seeking employment as an Engineering Technologist to assist in the construction of their prototype reactor, and since I was coming to Los Angeles anyway on vacation, I would be able to see them for an interview.

The previous Wednesday I was in San Diego, and I arranged an interyiew the following Monady with Dr. StevennTrujillo, the senior scientist on the project.

I went to their offices at 11011 Torreyanna Road at the appointed time of 1 P.M. and after a short wait was admitted into Dr. Trujillo's office. The building is quite new and they appear to be sharing the space with another company called Jayco. The area they are in is at the northern end of greater San Diego and is an industrial park reserved for high technology companiey.

During my conversation with Dr. Trujillo, they did offer to employ me but said that they could not at this time do so due to the restrictions and excessive paperwork demanded by the U,S. Labor Department, but that they would contact me in the future if they had difficulty in finding personnel.

Concerning the reactor, he confirmed the information in the article and interyiew in OMNI magazine. He also stated that they will be doing the development part of their work at a lab in Del Mar, about twenty miles from that office. At that time, he stated that most of the basic design work was completed, but that there was still much detail to be worked out, and that those details would yet consume the better partsof the next two years before serious construction would begin. The lab, in the meantime would be mainly interested in doing materials evaluation.

The main material to be tested will be the wire for the coils that will produce the confinement field. Apparantly, while copper will conduct well enough, it is two soft and fragile under high temperatures an neutron bombardment. He stated that that very week, Anaconda was pouring the first batch of copper/beryllium alloy that they hope will stand up and have sufficient ability to conduct suffiecent amounts of current to work. They feel however, that this is just an engineering problem and will be solved by the materials lab by the time they want to start construction of prototypes.

Another thing needed, is an 800Megawatt(Mw) DC power supply to energize the coils and fire the reactor. They will need a 12 phase power source to minimize the ripple, as they will be unable to filter the output. The power supply will be in the area of 1000 to 2,000 Volts output

and may have to supply currents of up to 400,000 amps. The power supply will be built by Toshiba who have already done a fair bit of work in this power class. This large amount of power will not be needed once ignition occurs, though asthereaction itself should sustain itself with a minimal power input after ignition.

The final problem they face is the plasma itself. They are gambling that an ignited plasma will not behave radically differently than an unignited plasma at those temperatures. This is because nobody has at yet seen a properly ignited plasma, though the theories that they are working with say that they are safe, though there are no iron clad guarantees as yet. They feel 199% certain that it will work, though I would rather give it a 50 to 80% chance of success.

They originally quoted a late 84 date for first firing, and they are now quoting an early 85 date for first firing up of a prototype.
We also discussed the financing, and they stated they had sufficient private funds to do the job, and he gave no denial when I implied that the funding came from the petroleum industry. He also stated, the day after they fired it up would produce a line-up of inyestors outside their door begging to get in on it. I suggessted that the time to get in on it was now, but, while agreeing he said that they had sufficient funding for now. From a seperate letter I wrote last spring to their financial manager seeking investment opportunities, they confirmed this, though they also stated that I would be notified of any public offerings of shares if they decided to do this some day.

After speaking for an hour, we parted with a handshake, and he escorted me to the entrance so I could leave.

Impact on Alberta of the Riggatron.

While I do not have exact facts and figures, and at this time what follows is speculation and an educated guess. The Riggatron, if it is first fired up as a porototype in 1985 will probably see first commercial use in 87 or 88. This is rather quickly, but the people at INESCO appear to be real go-getters, and I feel that some utilities will try them by 1988. The environmental groups will pritest as they do towards anything new, of high technology or nuclear, but most of the fire will be taken from their arguements as the only waste products of the process are helium, which is totally inert and non radioactive, and the spent reactors themselves, which will be radioactive. The spent reactors can either be stored byconventional means, though they will only be dangerous for maybe 100 years, a fraction of the thousands needed to cool down a fission plant or they could be broken down and used to line new Riggatrons for conversion into safe material through neutron bomgardment.

Once the environmental groups can be placated to some extent, the way will be paved to have the Riggatron retrofitted into fossil fueled power plants, which will be the priority application along with installation into the entire fleet of the U.S.Navy. This will go a long way towards elimination the importation of oil and will greatly reduce the production of acid rain, hopefully in time to save most of Ontario's threatened lakes. Initially it will not reduce the demand for Alberta oil, as the reduced consumption will be at the cost of imports and the OPEC countries. This should drive the cost of oil back down a bit, which will affect Alberta. Initially, oil will still be used for the manufacture of synthetic materials and for motor fuels, but this too will start to slacken off after ten years.

By the year 2000, virtually all electricity would be either fusion or hydro generated, with further hydro development at a standstill with the possibility of some projects not yet completed being abandoned. Progress will have been made on use of methanol as a motor fuel, but at least 75% of the vehicles will still be using either gasoline or diesel fuel. Home heating, at least in Canada,will be either by electricity or natural gas though the gas may be cut with hydrogen produced by electric power plants in off peak periods.(The Hydrogen Econony-Scientific American-Jan.73)-Hydrogen may be used on high volume routes as an aviation fuel, but kerosene will still be used quite a bit, as many of todays planes will still be flying.

By this time, conventional production in Alberta will be substantially reduced, but due to lower demand, Canadian needs will be met with conventional production, the probable total of four tar sands plants, Cold Lake and Newfoundland production. The tar sands will be extracted by steam generated by the reactors as will Cold Lake's goo which will prevent the waste of much of the resource being burned through the production process. Because of growth in the economy, though, natural gas production will probably be where it is today in 1981, in spite of dilution with hydrogen.

By the year 2025, though, methanol should have displaced fossil motor and aviation fuels and petroleum will be used mainly for lubricants, plastics and paving roads. Demand will be a small fraction of the present demand and many arctic and offshore wells will be capped and likely to remain so for many years to come. The power of OPEC will be gone and no one will care about the Arab problem any more. Alberta will also be relying mainly on agriculture again as an industry along with some mineral production, and unless massive industrialization has taken place by then, will be back in 1946 economically. Alberta will be a nice place to live but will be about as influential as Manitoba is today, and will not be the economic powerhouse is is now. Ontario will again be the center of the country, as the reactors will in all likelyhood be built there by the same companies that build the fission reactors now.

With the massive drain of oil imports taken off of the backs of the industrialized countries, there will be a great recovery and eventually a boom in the entire Western world. The Third World nationswelfare will depend on how much help they get in industrialization, and this depends on a large extent to the industrialized countries. Up to this time, the Third World resources will be needed for the number of reactors built, but by this time progress will be well along on the "Fusion Torch" which will give us essentially loss free recycling of raw materials, and our current garbage dumps will become mines for our raw materials.

On a more sinister side, the reactors will give us sufficient power in a small package to make really big lasers or particle beam weapons possible, though these also have a positive side in that they could conceivably be able to completely stop a nuclear attack by destroying the missles in mid-flight. World peace, though would depend on both sides developing these at the same time, otherwise the side to get them first, may be tempted to launch a pre-emptive strike if itcan be assured of an essentially perfect defensive shield. Both the U.S.A and U.S.S.R. are mad at work on these, but if both sides can maintain parity and

get systems operational simultaneously, a very good case could be made for dismantling the entire nuclear arsenal of both sides if both sides have essentially perfect shields. They may still mistrust each other, but war will become much more unlikely.

Concerning Alberta, it will become mainly agricultural again, with its brightest young people again moving away as they used to, unles the province is able to become industrialized very soon. This does not mean industry serving the oil companies or dependent on our particular natural resources, but it instead means the type of industry that Ontario now has. The best of these, and one of the cheapest to promote is the Electronics industry which, must, however be in the larger centers. We would also be well suited for the aviation industry and maybe the automotive industry. We must however, begin soon, as once the reactors get into wide use, Ontario and the east will not need us any more and will treat us the way they did before oil was discovered here.

Please note that, the Riggatron may not be the reactor in use by then, as another company, KMS Fusion of Ann Arbor, Mich is using a different approch to the building of the reactor and may win the reactor race. A third contender is General Atomic in San Diego, while McDonnel Douglas is also looking in on the problem. In the long run though, all of these companies will probably have workable designs, and there will be a variety of reactors from different vendors that a utility can choose from when picking a reactor. One good possibility for Alberta industry would be for a tie in with at leastbone of these firms in order to build reactors,for the Canadian market at least,in Alberta.

The possibilities are endless, and though things may be depressing now, we still have a bright futureahead of us though it may be financially poor for Alberta, the Canada yet to come will be much more sound than the one we have today.