

create the "energy security fund" intended to fund the Solar Development Bank and pay for the tax incentives. By linking the politically popular solar programs to the windfall profit tax, the White House may smooth the way for the tax bill, but in so doing may prevent implementation of the solar program until Sept. 30, 1980, too late, say many solar advocates, to benefit the delicate solar market.

Meanwhile, two similar bills have been introduced in the Senate by Robert P. Morgan (D-N.C.) and by John A. Durkin (D-N.H.). A third, by Rep. Stephen L. Neal (D-N.C.), would take effect this fall if passed. □

Neutrons not neutral about PLT plasma

In thermonuclear fusion experiments neutrons are the gauge of success. If the experiment is an attempt to produce the fusion of a deuterium nucleus with another deuterium nucleus, it is the neutron left over after formation of a helium-3 nucleus that comes away bearing energy. Thus it is the neutrons from which a practical reactor will somehow have to extract the energy; but meanwhile it is the neutrons that bring evidence that fusions have occurred and that the experiments are on track toward ultimately making enough of them for practical purposes. □

In recent years one sort of fusion experiment, the kind that implodes pellets of deuterium fuel with laser light, has been having a kind of box score competition over the number of such thermonuclear neutrons it can produce. Now, in the June 14 NATURE, comes the first report of thermonuclear neutrons produced by the other kind of fusion experiment, the sort that confines a plasma (ionized gas) in a vacuum chamber with magnetic fields. The particular experiment is the Princeton Large Torus. Its success is reported by J.D. Strachan and nine others from the Princeton Plasma Physics Laboratory.

In the PLT experiment a plasma of ionized deuterium is held in a toroidal-shaped chamber. The experimental procedure is to try to heat it to the temperature at which fusions will occur between the deuterium ions. This is done first by electrical means and then by shooting beams of energetic neutral atoms, either hydrogen or deuterium, into the plasma. When the neutral beam was hydrogen, neutrons came out that showed, by their momentum characteristics, that they came from fusions by deuterium ions in the plasma. This is taken to indicate that the hydrogen neutral beam is indeed heating the bulk ions in the plasma. The neutral beam technique has been the beneficiary of much effort and money on the supposition that it would do just that, so the result is a heartening one. □

The sudden appeal of synthetic fuels

As gas lines slowly wend their way through Washington, a flurry of synfuel bills are being driven through the House and Senate in a race to beat the July 4 recess, when Congress goes home to face gas-hungry constituents. At last count there were 40 bills making the committee rounds. One has already been approved by the House.

Synfuels are produced from coal, oil shale and grain. The emphasis is being placed on coal because of its great abundance, but shale oil recovery and alcohol from grain are also being considered.

Price tags for some of these initiatives are high. The cheapest is the House-approved package sponsored by Rep. William Moorhead (D-Pa.), asking for \$2 billion to produce 500,000 barrels of synfuel a day by 1985. Higher priced is the bill sponsored by Rep. Carl D. Perkins (D-Ky.), who wants \$205 billion, almost twice the national defense budget.

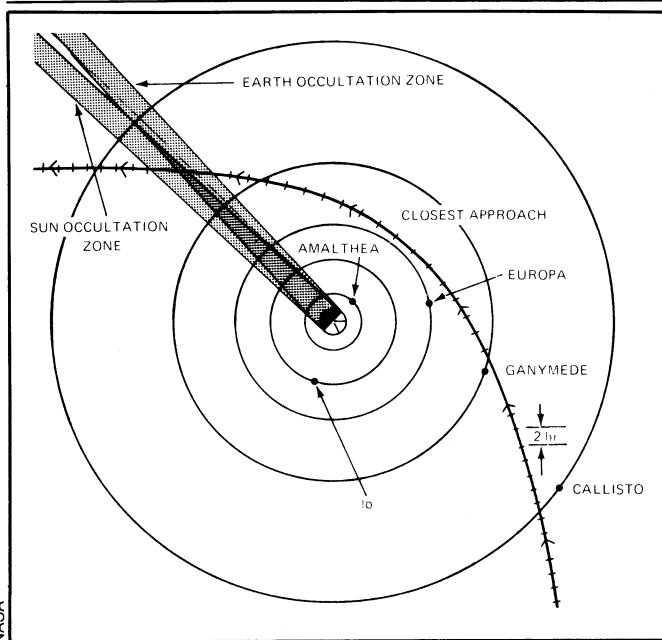
The Moorhead bill provides loan guarantees to prospective investors and price subsidies (once the synfuel is on the market) to make up the difference, should gasoline prices be less than synfuel prices. If oil prices rise as they are expected to, the price subsidy may not be necessary, so any cost-cutting on the Senate floor will involve the loan guarantees. Meanwhile, House Majority Leader Jim Wright (D-Tex.) is pushing for a more ambitious goal: two million barrels of synfuel per day in ten years, costing \$3 billion to develop.

In the Senate, Henry Jackson (D-Wash.) is backing a measure that would authorize almost \$5 billion for synthetic fuel demonstration plants. But synfuel proponents particularly like his provisions to waive some environmental laws and regulations. This "fast track" approach is drawing support from industry and could become a part of the final congressional synfuel package.

During a hearing at the House Commerce subcommittee on energy last week, committee member Albert Gore Jr. (D-Tenn.) said, "I think that we've got to move very swiftly [on synfuels]... we need nothing less than an 'Apollo project' kind of commitment to it." But testimony from witnesses who would be potential synfuel producers indicated that although the technology is not new, the soonest a new plant could begin production is in five years. S. David Freeman, director of the Tennessee Valley Authority, said synfuel is "part of the long-term answer... and in my opinion, not the most important part." Conservation would be more immediately effective, he said.

Most witnesses agreed that two of the five years needed to put the first plant on line would be taken up in satisfying environmental regulations. Committee

Voyager 2 nears Jupiter



VOYAGER 2 CLOSEST APPROACHES

Target	Date	Time (PDT @ spacecraft)	Distance (km to target center)
Callisto	July 8	0521	214,993
Ganymede	July 9	0014	62,233
Europa	July 9	1051	205,807
Amalthea	July 9	1301	558,531
JUPITER	July 9	1529	721,754
Io	July 9	1617	1,129,813

The Voyager 2 spacecraft is alive and busy as it approaches its July 9 rendezvous with Jupiter and the planet's five innermost moons. It has already taken several thousand photos, and will soon be reexamining Jupiter's ring, Io's volcanoes and other phenomena discovered during the March flyby by its predecessor, Voyager 1 (SN: 5/5/79, p. 294). In the encounter trajectory diagram at left, the satellite positions are shown as they will be at the time of the spacecraft's closest approach to Jupiter.