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BUSINESS ATOMICS REPORT

A PRIVATE SERVICE ON THE BUSINESS APPLICATIONS OF ATOMIC ENERGY

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Dear Subscriber:

Most important nuclear document since the 1954 Atomic Energy Act will be the study on the "Impact of Peaceful Uses of Atomic Energy" on our economy, which will be released in early 1956. The officially-constituted 9-man group, representing business, utilities, labor, education and the press, is headed by Santa Fe publisher-financier Robert McKinney (see your April 1 Report). It has been investigating the problem with the aid of over 100 volunteers since last March,—very quietly, so as to remain free of pressure. Report is expected to be critical of AEC and suggest legislation to implement its findings. Sen Clinton Anderson may drop hint of the report's contents in his speech at the Atomic Exposition in Cleveland, Dec 15.

The atomic structure of a surface may now be seen clearly for the first time through the newest field ion microscope developed by Penn State Univ's Dr Erwin Muller. The instrument resembles two thermos bottles, one inside the other, built entirely of glass with sealed-in wires, develops a field strength of 5 million volts per centimeter, is heavily insulated to preserve the low temperatures (minus 300°F) necessary for good microscope resolution. Within the vacuum is a fine tungsten wire whose tip, coated with the substance to be studied, is projected on a fluorescent screen.

First private sale of an atom power plant abroad has been made by Westinghouse to a Belgian syndicate of utilities and manufacturers. The 11,000 kw pressurized water reactor will provide electricity during the Brussels World's Fair in 1958. Westinghouse will manufacture all primary and some auxiliary equipment, put the plant in operation and train Belgian personnel for a rumored \$4 million. Earlier Westinghouse reactor sale to Fiat is awaiting completion of a bilateral agreement between Italy and US.

"Liquid metal as a fuel is technically feasible in the near future and gives promise of being economically attractive," reported a 17-firm study group headed by Babcock & Wilcox to AEC. If uranium-bismuth fuel were used, the report estimated that a full-scale plant with 226,000 kw capacity could be built and operated for 7.1 mills per kwh, which is less than cost of conventional power in some areas of US. Cost would be lowered to 6.5 mills if 4 reactors with 905,000 kw capacity were built at same location.

Initial financing plans for Yankee Atomic Electric Co. (12 NEngland private power firms) has SEC approval, awaits AEC okay. Authorized by SEC: issuance of \$500,000 capital stock, up to \$500,000 in unsecured, non-interest-bearing promissory notes. The money will go for plant site probably at Rowe, Mass., engineering and nuclear consulting services. Yankee plans pressurized water type reactor that will produce 134,000 kilowatts of electricity, be in operation by 1959 or early 1960. Total cost of project: \$33.4 million.

AEC proposes to meet critical US shortage of nuclear scientists by appropriating \$8.5 million to aid students and buy reactors for colleges. Future situation looks bad. General Dynamics' John Hopkins predicts that labs "may have to shut their doors in 10 years time." Navy's atomic leader Adm H.G. Rickover advocates that a task force of scientists from industry be sent into schools to train more scientists, teachers salaries be raised sharply, school year lengthened 40 days, special schools for talented kids.

Construction has begun on the \$4.3 million A-power test generating plant located at Detroit Edison's Delray Station. The experimental plant, built by Atomic Power Development Associates, will include full-sized components, permit testing of key mechanical parts of the fast breeder reactor that will ultimately be built. Commonwealth Associates will design the facility. Construction and parts contracts have gone to Borg Warner, Combustion Engineering, GE, United Engineers & Constructors, and Babcock & Wilcox.

Union Carbide's contract for operating 4 major AEC installations has been extended to 1960. Firm has operated 3 installations at Oak Ridge and the gaseous diffusion plant at Paducah, Ky, since they were established.

American Public Power Assn complains that AEC favors private industry by charging only 4% a year for the enriched fuel it lends. Because private utilities pay over 5% for money they borrow while publicly owned utilities pay less than 4%, "the effect is to establish a new govt lending agency to industry," says APPA, which wants more favorable rates for its members.

AEC will approve its still-tentative regulations for the domestic atomic industry when it has digested testimony given in closed sessions last fortnight by utilities, equipment manufacturers, the chemical industry, research organizations. Still awaited are AEC's export regulations.

AEC will not supply high purity zirconium or hafnium to private nuclear power projects since it needs all it can get and has solicited proposals for additional supplies of both. It urges private suppliers to make plans to meet forthcoming demands by private power interests.

A cheap and reliable way of producing 99% nitrogen-15 for power reactors has been made at Columbia Univ, by exchange reaction between nitric oxide gas and a solution of nitric acid. Previously, 60% was highest concentration produced in quantity. It marketed for \$175,000 per lb as compared to only \$500 per lb for the richer solution. Nitrogen-15 is useful for tracer studies in photosynthesis, biological and medical processes.

AEC Commissioner Thomas Murray's proposal to allow thousands of people representing all the world's govts and press to witness an H-bomb blast in Eniwetok was denounced by other members of the committee. Murray criticized the government's policy of secrecy as "outdated and inept," believes the demonstration would convince the world that "man now has the power to put an end to his own history," by rendering the earth uninhabitable.

20,000 secret AEC reports on non-military matters will be declassified for civilian use by February as result of simplified review procedures.

Waste heat from reactors is being used for first time in US for large scale heating of buildings at AEC's Hanford (Wash) plant, operated by GE. \$59,000 will be saved annually in fuel costs. Initial \$614,000 cost of the system is considerably larger than would be needed to construct a conventional heating plant, but savings will eventually defray the expense.

Irradiated polyethylene plastic strengthened with carbon black fillers, developed by GE, maintains its shape under temperatures and conditions where ordinary polyethylene flows, company says. It has excellent corrosion and chemical resistance, and flexibility at low temperatures.

Atomsub Nautilus completed 25,000th nautical mile without refueling. NavySec. Thomas says: nuclear power proved feasible for other naval ships.

Nuclear Corp of America will acquire Radioactive Products of Detroit, which acts as consultant to local industries on radiation applications. Nuclear Corp's NRD Instrument Div has also expanded its St Louis plant facilities to meet orders for detecting and counting instruments. Nuclear was created by merger of Reo Holding and Nuclear Consultants Inc.

New instruments and equipment:

A super-sensitive x-ray spectrometer for measuring submicroscopic damage to solids exposed to chain reaction heat and radiation, by GE engrs at Hanford. Device beams x-rays at materials made radioactive in plutonium-producing piles. Angular distribution of reflected x-rays, measured by a Geiger counter, indicates change. Object of studies: to aid in finding new atomic furnace elements that will stand up longer.

A self-contained radiation detector similar in size to a ball-point pen that provides cumulative measurement as well as simple instantaneous reading, by Electromation Co of Burbank Cal. Polystyrene beads inside a hollow ionization chamber are electrostatically charged by rubbing against each other, lose their charge when exposed to radiation and drop to the bottom of instrument giving user immediate visual warning. Instrument can be recharged simply by shaking. Retail price: \$2.95.

A liquid scintillation spectrometer for counting beta samples in solutions with liquid phosphors, by Packard Instrument, which says the instrument will efficiently count isotopes with such low beta energies as tritium and carbon-14, individually or in mixtures.

A high speed radiation detector that responds to 98% of any temperature change in less than one-half second, by Minneapolis Honeywell.

New type of radiation-shielding brick known as Raysist Shielding Logs, by Knapp Mills of Wilmington, Del. The crescent-shaped logs, stacked vertically, eliminate both horizontal and vertical radiation leakage.

A contract for 55,000 quartz fiber dosimeters for Army Signal Corps was awarded to Landsverk Electrometer Co of Glendale, Cal. No price given.

69 business and industrial leaders attended the 4th week-long course in atomics for executives conducted by National Industrial Conference Board last week at New York's Westchester Country Club. Additional sessions are scheduled for Feb 27-March 3 and April 30-May 5. For information write to NICB, 460 Park Ave., NY 22. Tuition: \$465.

Isotope tracer research will aid agriculture, says Natl Security and Research's Robert Colton, by determining which breeds of cattle have sufficiently low thyroid activity to thrive in hot climates; following spread of honeybee diseases and learning more about their feeding habits; revealing migration habits of pests like the boll weevil and wheat-stem sawfly; showing how fertilizers and sprays can be more efficiently used; tracing migration of mineral nutrients in plants. He says \$300 million annual grain loss due to insect infestation can now be controlled by irradiation.

A symposium on "Atomic Energy in Agriculture" will be held in Atlanta Dec 27-29, sponsored by Oak Ridge Inst of Nuclear Studies.

Use of gamma radiation in petroleum refining may simplify operations, cut costs and produce new and better petroleum products, reported Esso Research last week as a result of its experiments with a pilot plant. Radiation may eliminate need for costly external heating equipment in the cracking process and produce greater quantities of more valuable oil products such as gasoline and heating oil since it operates under low temperature conditions that would not permit such production by other processes.

A European plant for isotopic separation of uranium-235 for nuclear fuel may be first facility built by the 6-nation committee representing Belgium, France, West Germany, Italy, Netherlands, Luxembourg. The organization, known as Euratom, would develop continent-wide nuclear industry.

Foreign briefs:

New Zealand has been offered "unlimited funds" by overseas mining companies to develop recent uranium finds. Govt owns all uranium deposits.

Japan's Economic Planning Board has announced a 3 year atomic energy program calling for construction of no less than 6 atomic reactors. Requested budget: about \$90 million to cover 1956-58 fiscal years.

Norway and Holland have drafted plans for a joint 25,000 kw power reactor to be built into a Norwegian mountainside during the next 2 years.

Britain's Atomic Energy Authority admits that lack of skilled manpower is threatening fulfillment of her ambitious atom power program.

Russia's offer to share atomic data and experience with India is regarded largely as propaganda since she is behind US in atom technology.

Rumania plans to build a nuclear power station with help of Russia and put it into operation by 1960. Country is reported to have substantial uranium deposits which are being exploited with Soviet assistance.

New radioactive technique for determining the heart muscle's chemical activity has been developed at Tulane Univ. Animal hearts removed from the body are injected with radioactive potassium and rigged to a pipeline supplying a constant stream of salt solution allowing it to beat normally so that the released radioactive particles can be counted. Findings will lead to understanding interrelations of chemicals and electricity in the heart.

American Nuclear Society has established a permanent office at the Oak Ridge Institute of Nuclear Studies in Tennessee. Its journal, "Nuclear Science and Engineering", will begin publication in February.

Very truly yours,
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