

# F. A. S. NEWSLETTER

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## ALASKA AND OIL PRODUCTION

*The following analysis of the environmental factors to be considered in the exploitation of oil reserves in Alaska was part of a report prepared by The Wilderness Society for distribution on September 15, 1969.*

The challenge of proper utilization of such an oil reserve is tremendous, all the more so in view of the fragile environment in which it has been discovered and the realization that this area should not be plundered.

Conservationists are asking, must this oil reserve be exploited now? Is there any reason why oil development cannot be postponed until such time as comprehensive ecological studies can be completed, in order to assess what effect such development will have on this vast, unspoiled northern wilderness? Might the tragedy of Santa Barbara be repeated? If it is found that this oil is needed now, and that it can be developed without great sacrifice to the environment, what would be the least harmful means of transporting it out of the area—by special tanker ships, by rail, by truck, by pipeline, by air, by some combination of these, or by some as yet undevised method?

Exploration, extraction, and transportation of oil all present special problems in Alaska. Protection must be given the fragile wildlife and wilderness resources of the North Slope; the Brooks Range; the Koyukuk, Yukon, Tanana and Copper River valleys; the Arctic Ocean; the Bering Sea; and the Gulf of Alaska. These stand to suffer irreparable damage if there is inadequate attention given to research and planning, and if government agencies do not stringently administer protective guidelines to regulate the proposed oil exploration and development. The Arctic tundra already has suffered grave damage in the initial exploration period.

Oil companies already have proposed construction of immense pipelines (48 inches in diameter) that would cross Alaska. A mile length of this pipeline would contain approximately one-half million gallons of oil. A break would flood over thousands of acres of tundra and woodlands into miles of streams and lakes to destroy nearly all life in these pristine environments. The pipe has been ordered by the oil companies for one such pipeline that would extend nearly 800 miles from Prudhoe Bay on the Arctic Coast to Valdez on Prince William Sound, and plans for construction are in their final stages. Survey work has been authorized by Secretary of the Interior Walter J. Hickel, although a go-ahead for construction has not been given. A second such pipeline, from the Arctic Slope area east to the Mackenzie River or Northwest Territories, in Canada, extending to the United States refineries, is also under study by the industry.

A third proposal of the companies involves the utilization of ice-breaking super-tankers traveling between Prudhoe Bay and the eastern States via the famed Northwest Passage. Hazards connected with this alternative are obvious when we recall the Torrey Canyon disaster and the irresponsible destruction from spillage of oil on the coasts of Great Britain and France. Extension of the Alaska Railroad and a parallel truck highway to the oil and gas fields also are being proposed.

Private citizens, conservation groups, the Nixon Administration, the Congress, and the State of Alaska share the responsibility for developing the best long-range plan for the protection and wise use of Alaska's resources—its unspoiled wilderness and wildlife, its fisheries, and magnificent scenic

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## Conservationists and Government View Overpopulation

In his recent population message, the President avoided any suggestion that the government intends to interfere with the prerogatives of parents, particularly the middle class and the affluent, to bear as many children as they want and can afford. Like the Johnson administration, he focussed for the most part on the Federal Government's responsibility to help an estimated five million poor mothers gain information about and access to modern methods of contraception. But beyond this now widely accepted Federal family planning, Nixon's advisors have advanced far more radical reasoning. The President's resident social scientists are persuaded that the problem of U.S. population growth stems not from unwanted births among the poor, which could be curbed by contraception, but from the deliberate reproductive desires of the rest of the population.

"Providing family planning services to the poor will not solve the total population problem," asserts Mrs. Gooloo Wunderlich, a demographer with the Office of Population and Family Planning at the Department of Health, Education, and Welfare. "We've got to first create not just an alarm, but overall social pressure against large families for everyone. We've got to emphasize the acceptability of not having children, not reproducing, not marrying," said another Federal specialist. The demographers have concluded that American parents want too many children. Conservative estimates predict that there will be 300 million Americans by the year 2000, and the total could be higher.

The year ending June 1969 was the first since 1957 in which the birthrate increased. It is not known whether this is a significant change in the trend downward, or a minor fluctuation. Ups and downs in population are disturbing to the government in smaller measure than the threat of absolute overpopulation. The inundation of the school systems which the post-war babies, which has occurred over the last decade and a half, is now subsiding, and school enrollments may recede within a few years. For all these reasons, President Nixon has called on Congress to create a commission to determine desired national policy on "population growth" and make recommendations within two years. The outcome may ultimately involve imposing sanctions on the individual's right to reproduce.

A close advisor of President Nixon was told by scientists at a meeting of the John Muir Institute that the official Federal notion of limiting population by voluntary birth control was "insanity" and birth control would have to be made compulsory to avert the chaos of threatened global overpopulation. John Erlichman said that the increase from 3 to 6 billion people expected in the next 35 years will not be accompanied by a consonant increase in economic resources, and a generally lower standard of living will prevail. Many of the scientists expressed the fear that world-wide starvation would deplete U.S. resources, as a "frenzy of altruism" would result in futile efforts to alleviate the disaster. One conference suggestion was that the United States should celebrate its 200th anniversary by setting an example to the world, with a complete suspension of reproduction for the year, 1976.

David Brower said that the chief aim of the conference, which will reconvene within a year, was to exchange ideas

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## REPORT ON ENVIRONMENTAL PROBLEMS

The American Chemical Society has published a report, compiled by its Subcommittee on Environmental Improvement of the Committee on Chemistry and Public Affairs, entitled: *Cleaning Our Environment: The Chemical Basis for Action*, which presents an account of the current status of man's knowledge of the chemistry of environmental improvement. It is the result of three years of study. The contents include air and water pollution, solid waste disposal, and the role of pesticides in the environment.

The report is addressed to three classes of reader: the specialist working on environmental improvement who desires information outside his own field; the trained scientist or engineer not now working on environmental problems, and the interested layman. Most of the text can be understood by a reader with no technical background.

The nation already has approved many of the legal and administrative measures required to clean up its environment, the report asserts. What is needed now is the implementation of these measures through concentration on the use of existing science and technology. This will require the best efforts of many people from a variety of disciplines—law, sociology, politics, and economics, as well as science and technology.

Concentrating on existing knowledge, however, should not obscure the fact that extensive fundamental research is still required to give man a better working understanding of the environmental system, the report observes. This research also must be started now, if it is to provide the fundamental knowledge necessary for the technology which will be needed soon, the report emphasizes. Such research must be focused sharply on areas where it promises to be truly fruitful, and it is the intent of certain recommendations in the American Chemical Society's report to indicate those areas. Incidentally, the report emphasizes that many environmental problems are international in scope.

In the long run, the report points out, the cost of pollution and its control will be borne by the individual citizen, in taxes and in the prices he pays for the products of technology. But the citizen, in return, will gain much through his investment in managing the environment—from better health to cleaner lakes and rivers for recreation to "cleaner laundry in the back yard, longer life for the paint on houses, less corrosion and breakdown of electrical and other equipment."

Cost, the report concedes, "is probably the most powerful constraint that the nation must deal with in the near-term future." Yet the country has elected to pay, and is paying, for control systems that will gradually reduce pollution by automobiles during the next half dozen years or so.

The report hails as "significant steps in the control of automobile pollution" the emission control systems required in 1968 and later models of gasoline-powered vehicles, and the related research and development programs now under way in the Federal Government and private industry. But the report also says mandatory periodic inspection and maintenance of emission control systems are required to

insure their performance, and available procedures and equipment are not well suited for this task. Prompt development of effective procedures and equipment by government and industry is therefore urged.

Existing technology is adequate to meet the 1970 and 1971 Federal standards for automotive emissions of hydrocarbons and carbon monoxide, the report continues, but more stringent standards will be needed in later years, and they should be promulgated soon so that manufacturers will have time to develop the necessary control systems.

With regard to industrial air pollution control efforts, the report says:

"Improvements have been made and are being made in air pollution control in industry, but the general situation is growing worse because of failure to apply existing control technology, growth of industry, and lack of economic technology in some cases.

"In the absence of Federally established air quality criteria, and the consequent air quality standards, industry often finds it impractical to select and apply the necessary control methods. As of early 1969, the Federal Government had established criteria only for sulfur oxides and particles, although work is in progress on criteria for other air contaminants.

"The promulgation of air quality criteria by the Federal Government should be supported in a manner that will allow it to proceed with all possible speed."

The report urges biochemists and biologists to become more involved in research on sewage treatment, "primarily to seek radical innovations, based on fundamental understanding of microbiological processes." Emphasis should be laid, the report says, "on the use of adequate chemical tools to develop data that will allow the biochemical and biological aspects of treatment processes to be interpreted more meaningfully and that can be used in process optimization."

Other recommendations call for research on the main contaminants of the atmosphere and measurement of the movements of pollutants in urban and regional areas, development of methods for removing sulfur from fuels and utility stack gases, and a concerted research program on the ecological effects of air pollutants.

The technology is available to upgrade sharply the handling and disposal of municipal refuse in the U.S., but it is being applied only to a very limited extent, the report states, adding:

"The appropriate Federal, state, and local government agencies should press their efforts to define the nature and magnitude of the solid wastes problem both now and in the future. Education, research, and demonstration, and local and regional planning for solid wastes management, utilization, and disposal are all necessary for progress in this neglected area."

Minimum use of persistent pesticides, the development of better biological and cultural methods are recommended as ways of obtaining economic control of pests on crops and animals "with minimal environmental and ecological impact."

The report is available to the public at \$2.75 a copy from Special Issues Sales, American Chemical Society, 1155 16th Street, N.W., Washington, D.C. 20036.

### FAS NEWSLETTER

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### OIL PRODUCTION—Continued from Page One

assets that are rapidly making it one of the greatest tourist centers of the world. The challenge now is to see that the best available talent is effectively used to develop a long-range "master plan" for all of Alaska. Such a plan should take into account the need for preservation as well as "wise use" of all of the State's resources. The urgent need for such a master plan, which may require a minimum of five years to complete, is made obvious by the growing pressure for growth and the great push for immediate development by the oil industry. Indeed, while development of Alaska's valuable oil reserves may, with proper planning, prove to be an important asset to the State, if it is not properly controlled it will result in the devastation of much of Alaska's beauty and fragile environment.

## MIRV TESTING AND BEYOND

by Leonard S. Rodberg  
Institute for Policy Studies  
July 2, 1969

### The Threat to Deterrence

The United States is now testing multiple individually targetable reentry vehicles (MIRV's) for its Poseidon and Minuteman III missiles. The Soviet Union is testing multiple warheads for its SS-9, but they do not yet appear to be individually targetable.

That primary rationale for the U.S. program has been to insure penetration of possible Soviet ABM systems and thus to maintain the continued effectiveness of our deterrent. However, if MIRV's attain sufficient accuracy, they may also be highly effective against hardened ICBMs. Secretary of Defense Laird has repeatedly expressed his concern that Soviet MIRV's could threaten our Minuteman force, but ours can also threaten the Soviet force. A Defense Department statement issued in January, 1968, said that "each new MIRV warhead will be aimed individually and will be far more accurate than any previous or existing warhead. They will be far better suited for destruction of hardened enemy missile sites than any existing missile warheads." Their development thus raises the possibility that one MIRVed ICBM could destroy, by preemptive attack, several of the other side's land-based missiles.

It is unlikely that first-generation MIRV's will be sufficiently reliable or accurate to be effective in this role. The Pentagon has indicated that it plans to install three 200-kiloton warheads on Minuteman III and ten 50-kiloton weapons on the Poseidon missile. Because of the reduced yield of each warhead, this loading would not appreciably increase our ability to destroy Soviet ICBMs, as compared with our present capacity using a single warhead on each missile. However, as guidance accuracies continue to improve, MIRV warheads will greatly increase our ability to destroy ICBM sites.

Two years ago the Defense Department was already claiming that two 50-kiloton warheads, such as those being placed on each Poseidon missile, would be capable of destroying between 1.2 and 1.7 hard missile silos. This is already a significant gain over the destructive capacity of a single missile which, of course, can destroy no more than one silo. However, the Defense Department this year announced its intention to improve the accuracy of the Poseidon missile, "enhancing its effectiveness against hard targets," and future advances in guidance accuracy will further increase the number of enemy ICBMs which a single MIRVed missile can destroy. For instance, a 30% improvement in accuracy will double the number of missile sites capable of being destroyed by a single missile. Thus if MIRV's are deployed, each side will have to assume that they will become effective against hardened missiles. To the extent that either side relies on land-based missiles, the presence of MIRV's on the other side will threaten the continued viability of his deterrent.

### MIRV Testing

Once MIRV's are tested and deployed it will be impossible, barring unacceptably intrusive inspection, for either side to know the number of MIRV warheads carried on the other's missiles. If the nuclear arms race is to be controlled, either by mutual agreement or by each superpower exercising restraint on its own forces, it is necessary that MIRV programs be stopped before the systems become operational. *In particular, testing should be discontinued as a matter of the highest priority.* Even a few additional tests by this country, the Soviet Union may conclude that we have already reached the point where we might deploy MIRV's without further testing.

Our test program has been scheduled in two phases, the first completed in July, 1969, and the second commencing in December, 1969, and ending in January, 1971. However, the testing conducted during the past year has gone very well, with 8 successes out of 12 shots, and some officials in the program believe that only three to six months additional testing will be required. Indeed, some participants in the pro-

gram would be prepared to deploy MIRV's at this point without further testing, if that should be necessary because a mutual limitation on testing is reached with the Soviet Union.

A moratorium on MIRV testing at this time might not then, by itself, be able to forestall the installation of MIRV warheads on our ICBMs, and it would certainly not eliminate Soviet concern that we might install them. On the other hand, because of the limited testing we have yet carried out, we would probably not be prepared at this point to rely on MIRV's to destroy Soviet missile sites. While they might be sufficiently effective to ensure penetration of a Russian ABM system, they would not have the high accuracy and reliability which are essential if they are to serve in the counterforce role. At least another year of additional testing, with several dozen test flights, would be required before they would be ready to fill this role. Of course, while we might not have confidence in them without this testing, the Soviet Union could not be sure of this, and they might conservatively estimate that we were prepared to use them against their missile sites. Indeed, we would almost certainly make this judgment if our positions were reversed!

There would almost certainly be little risk in a MIRV test moratorium at this time. The U.S. program is already so far along that MIRV's effective for penetrating ABM defenses (though not for counterforce purposes) could be deployed in twelve to eighteen months, with little additional testing, as compared with the five to seven years required for deployment of significant ABM defenses. Indeed, each side could well afford to discontinue MIRV testing until such time as clear evidence became available that its adversary was proceeding with a large ABM program.

If such an agreement were reached, how could either side know that the other had stopped MIRV testing? Each country would probably want to continue periodic "confidence firings" of the missiles already in its inventory, to ensure that these systems were still functioning properly. However, they could agree to conduct such test firings only into areas, such as the open ocean, where they could be observed by the other side. This is the general practice of each side already, and so it would not involve any substantial constraint on existing programs.

Using radar and other sensors, each could then watch the other's missile tests to determine whether a MIRV system was being tested. We could also observe the Soviets watching their own test flights, and from noting the kinds of measurements they were making during these flights, could determine with high confidence whether they were testing independently targetable warheads.

### Beyond a Moratorium on Testing

U.S. testing has proceeded so far that, even if a moratorium on MIRV testing is agreed upon, this might not be sufficient to foreclose the next phase in the arms race. We must move beyond a moratorium on MIRV testing to consider limits on the procurement and deployment of the missile systems that will carry multiple warheads.

These missile systems, the Minuteman III and Poseidon, are now in production, but the funds for the full program have not yet been appropriated by Congress. This year's budget includes \$886.3 million to procure Minuteman III missiles, and \$1,288.6 million to purchase Poseidon missiles and enlarge the missile tubes on six Polaris submarines, so that they can carry the larger Poseidon missiles. The Defense Department has not revealed the production rate for Minuteman IIIs, but this year's appropriation for Poseidon, if passed, would complete funding for 10 of the eventual 31 submarine conversions.

The Soviet Union would be able to tell quite easily if we halted the submarine conversions so that, even if testing had been completed, she could know that we were not proceeding with the installation of MIRV's on our sea-based missiles. (The submarines cannot carry the Poseidon missile without conversion—which requires eighteen months in a drydock—and the Polaris missile cannot carry MIRV's.) It would be more difficult for them to ensure, by unilateral means alone,

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## CUTS IN MEDICAL RESEARCH FUNDS

The following is a letter, published on September 17 in the *New York Times*, from Robert A. Moss, Associate Professor of Chemistry, at Rutgers University.

The public should clearly understand the consequences of the drastic cut in funding of the Institute of General Medical Sciences of the National Institutes of Health.

General Medical Sciences has been supporting a large part of the best basic organic chemistry research carried out at American universities. All grants funded by G.M. have to pass stringent tests of "health-relatedness." Thus this funding cut means that precisely that part of basic organic chemical research most important to "applied" (in this case medical or biological) problems will be hardest hit.

Not only will established scientists have to look elsewhere (in what will soon be a financial desert) for funds to purchase chemicals and equipment, but graduate students will decrease in number for lack of research assistantship lines in the now-defunct grants.

Thus, with one blow of the ax, the Government cuts down on present medically oriented research and on the training of those graduate students who would have soon been doing such research. (Of course, the Government's policy has already removed promising researchers from the laboratory.)

The N.I.H.'s lame statement that there has been increased spending for health manpower and health services notwithstanding, there will be little work for this increased manpower and service if we castrate the research responsible for the drugs they dispense.

The situation is little better in the National Science Foundation, the other major source of support for advanced organic chemistry at American universities. N.S.F. cannot convince a Congress concerned with a \$30-billion yearly war bill to spend \$500-million a year for research. The current \$8-billion naval aircraft carrier boondoggle alone constitutes twice as much public money as is needed to stay these crippling attacks on scientific research and education.

We are selling our scientific birthright for something as impermanent as a Vietnamese monsoon.

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from widely divergent sources. Dr. Garrett Hardin, professor of biology at the University of California at Santa Barbara, said that although, "We have to take children in their earliest years and start implanting some different ideas about the good life simply constituting getting married and multiplying," that in the long run the voluntary approach is limited. "Voluntarism is insanity. The result will be continued uncontrolled population growth. It looks like a probability that in 10 to 20 years there will be a perfectly dreadful catastrophe in the world of people starving—50 or 100 million people in a single year." (*Wall Street Journal*, 15 September 1969; *N.Y. Times*, 22 September 1969.)

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that we had halted the Minuteman III program. This missile differs from its predecessor, the Minuteman II, only in its third stage, which is the well-known "space bus" and is slightly fatter and heavier than the third stage of Minuteman II. The Soviets probably could not use satellite reconnaissance alone to determine that the new third stage had not been installed, but would have to rely on their espionage network for this assurance. If this were not sufficient, we could offer to escort one of their diplomatic representatives through the plant where these are currently being produced, allowing them to determine that this production had been halted. If we do halt production, such visits can probably be carried out without significant disclosure of classified information. We, of course, would have no difficulty in discerning that the Soviet Union had halted the installation of the large SS-9 missiles.

It is essential to emphasize the importance of halting these procurement programs. Secretary Laird is reported to favor agreement allowing us to replace Polaris with Poseidon and Minuteman II with Minuteman III, but we cannot expect the Soviet Union to halt the deployment of their SS-9 missiles, which are capable of carrying MIRVs, while we proceed to install missiles having the same capability. Indeed, they would have to expand their missile force in some way to preserve their deterrent in the face of the improving accuracy of MIRVed U.S. missiles.

## Conclusion

The Soviet Union is not proceeding with deployment of the large ABM system we were expecting. Since our next-generation missiles have been justified by the prospect of such a system, this country should now halt the testing, procurement, and deployment of these weapons, pending a serious attempt to reach an agreement with the Soviet Union that would prevent this next stage in the arms race.

## NEWS ITEMS

Seymour M. Hersh's book *Chemical and Biological Warfare*, first published in 1968, has been reissued in paperback by Doubleday Anchor Books. It is basic background material for anyone interested in the role played by the United States in chemical and biological warfare research and development.

A ban on the use of several pesticides was urged by Jerome Gordon, President of Delphic Systems and Research, Inc., which has government research contracts, on evidence that the chemicals, which he said were related to nerve gas, were spreading death and injury among farmers and suburban gardeners. The organic phosphors to which he referred are distributed under such names as Parathion, Methyl Parathion, Tepp, and Malathion. The pesticides, he said, are chemically related to the nerve agents GB and VX, involved in the current chemical and biological warfare controversy. (*N.Y. Times*, 2 October 1969.)

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