Semitic policies. They are particularly anxious to hasten the fall of Pontryagin because the two mathematicians vying to succeed him, Nicolai N. Bogolyubov and Juri V. Procharov, are not considered anti-Semitic. It was in order to bring about such pressure that the émigrés wrote their white paper.

Of course, Russian anti-Semitism is nothing new. It dates back to the days before the Russian revolution and in fact was taught by the old Russian church Prava Slava. But anti-Semitism did not greatly affect the Soviet mathematical community until World War II. Anti-Semitism peaked in the last years of Stalin's life and then diminished somewhat under Khrushchev. Then, in the 1960's, anti-Semitism in mathematics began to increase again as a small group of mathematicians gained positions of power. The émigrés explain that the activities of this small group "permitted the spread of anti-Semitism into areas where purely bureaucratic control is insufficient and where the implementation of such policies requires an act of collusion by qualified mathematicians."

Such charges of anti-Semitism are often countered by observers who note that the Jews are a suspect community in the Soviet Union. Since so many have emigrated, those remaining behind are said to share guilt by association, an image of a group of people whose allegiance is elsewhere. Thus a number of Russians are in favor of denying Jews entrance into universities not because they are Jews per se but because they may eventually leave Russia. (In the Soviet Union, education is viewed as a state investment in individuals.) However, the discrimination against Jewish mathematicians predates the large-scale Jewish emigration from Russia which a number of observers feel is being used to rationalize anti-Semitism.

One of the most tragic aspects of the discrimination against Soviet Jewish mathematicians is its effect on Russian mathematics. Many scientists contend that there is no field of knowledge or culture to which Russians have contributed as much as mathematics. But the incredible respect paid to Russian mathematics is dissipating as it becomes apparent that Russians can rise in the mathematical community not because of their talent but because of their political beliefs.

As a promulgator of these discriminatory policies, Pontryagin himself is a tragic figure, one mathematician says. He was a truly great mathematician, and it is always tragic when a great mathematician becomes known not for his work but for his bigotry.—GINA BARI KOLATA

Briefing

Utility Industry Is Cool to Voltage Reduction Project

Some of the more expansive advocates of energy conservation hold that conservation opportunities can be found almost everywhere and that some are very easy pickings indeed. The California Public Utilities Commission (PUC) believes that it is making the most of one such opportunity through its program of conservation voltage reduction (CVR).

But utilities outside of California and the utility commissions of other states have been slow to embrace CVR. In fact, the utility industry tends to throw cold water on voltage reduction as a conservation measure.

The California CVR program, now nearing the end of its second year, is expected to achieve savings in 1978 of more than 2.8 billion kilowatt-hours of electricity, or the equivalent of 4 million barrels of low-sulfur oil worth about $60 million. By 1985, the savings are expected to total more than 3.5 billion kilowatt-hours, equivalent to 5.3 million barrels of oil.

Moreover, according to the commission, CVR is being applied in a selective fashion which requires no capital investments that are not cost-effective. Also, properly applied, it does not degrade the quality of electric service, unlike the system-wide voltage reductions or "brown outs" sometimes resorted to by utilities in power emergencies. In fact, a PUC report issued last January said the program "has been highly successful both in conserving energy and allowing longer, cooler, and more dependable motor, lamp, and appliance service."

California utilities seem by and large to be embracing the program in good spirit even though it means a reduction in their potential electricity sales and revenues. In a letter to the head of the PUC early this year, Jack R. Horton, board chairman of the Southern California Edison Company, said that the system-wide savings from voltage reduction appeared to be twice what had been expected and that the company was in the process of "further increasing this significant energy savings [program]." For a general rule of thumb, PUC engineer George A. Amaroli says that there is a 1 percent energy saving for every 1 percent of voltage reduction.

What the CVR program involves is lowering the top of the voltage range in which lights, motors, and appliances operate efficiently. For many years, the utility industry has voluntarily observed as its standard the range of 114 to 126 volts prescribed by the American National Standard Institute, Inc. Under the CVR program, substation voltage regulators are recalibrated to reduce the maximum to 120 volts, at least for those distribution feeder lines where this can be done economically and without lowering the voltage for customers at the end of the line below 114.

In light of all the talk over the past 5 years about energy conservation, why has the CVR concept not been widely adopted? The fact is, many utility engineers believe that CVR is not cost-effective and does not actually produce a conservation effect as great as the one claimed by the PUC (a study made in 1974 by the American Electric Power Service Corporation showed relatively small energy savings). The utility industry trade group, the Edison Electric Institute, itself seems to dismiss CVR as having little promise. Some state utility commissions have indicated an interest in the California CVR project, but at least one such body, the Public Utility Commission of Pennsylvania, has rejected CVR as a conservation measure, doing so partly on the advice of the seven utilities which it regulates. "They [the California PUC] have not demonstrated any appreciable energy savings," says Richard E. Fuhrman, a supervisor of energy planning with the Pennsylvania agency. "Amaroli has an axe to grind. He is already on record as saying [CVR] is a good thing, and he is trying to back it up," Fuhrman adds.

The apparent acceptance of CVR by large, representative utilities in California and its apparent rejection by most of the rest of the industry is mystifying. But, for his part, the PUC hearing examiner who a few years ago brought the CVR concept to the fore during a rate case has an explanation for the common industry attitude. This official, Carol T. Coffey, observed in an opinion: "The sales pitch that raising voltages will increase revenues which can be used to purchase voltage regulation equipment has been made by electric industry manufacturers for many years, so that utility personnel are now well indoctrinated." Coffey cited in support of this assessment a General Electric Company data book which says, "When the average voltage on a feeder

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is increased, the kilowatt-hour consumption is also increased."

What seems to be needed is for the Department of Energy and its Economic Regulatory Administration (ERA) to make its own study of the potential of CVR and then try to clear up the confusion by advising the state utility commissions what to believe.

Nader Queries Handler on Status of CONAES Study

The long-awaited report of the National Academy of Sciences' Committee on Nuclear and Alternative Energy Systems (CONAES) is drawing critical fire even before its issuance, which is now scheduled for late February or early March. Commissioned in late 1975, the report has been in preparation since then under a $3.6 million contract between the Academy and the Energy Research and Development Administration (ERDA) and its successor, the Department of Energy. Ralph Nader, in a recent letter to Academy president Philip Handler, deplores what he terms the committee's "inexcusable" and "deplorable" delay in contributing to the ongoing national debate on energy policy.

The letter, cosigned by Nader and Richard Pollack of the Critical Mass Energy Project, criticizes the Academy's approach to the study as well as the time being taken for its completion. Calling on Handler for a full and "straightforward" accounting, Nader and Pollack speak of "the Academy's attempt to secure some kind of 'consensus' whereby differences among [CONAES] members are stifled," and also refer vaguely to "suggestions from some quarters" that quantitative analysis has been emphasized in the study at the expense of "qualitative analysis involving differing value judgments."

Handler chose not to comment on the letter, but Micah H. Naftalin, executive director of the National Research Council's Assembly of Engineering, told *Science* that "it is nonsense for them to attack a report that they haven't read."

Naftalin said, moreover, that the demand for an accounting as to the status of the CONAES report is surprising inasmuch as only a few weeks ago he had responded fully to all of the questions which Pollack had put to him on the subject.

The study contract first called for delivery of the report by 30 June 1977 but was later amended to postpone the time of delivery to the end of 1978. According to Naftalin, the study has taken longer than was first expected because the "subject was damn hard" and "we traded schedules for quality." The initial organizing of the study was itself quite time-consuming, he said, because it involved setting up four assessment panels and more than a score of subpanels (including one chaired by Laura Nader, a sister of Ralph Nader's); all told, some 250 persons were selected to participate.

At present, Naftalin said, 8 of the report's 11 chapters have been completed and approved by CONAES. The other three chapters have been approved "in principle" and are now undergoing final editing. These chapters and the report as a whole are expected to be approved by the committee in January and delivered to an Academy panel for final peer review, a process expected to take only a few weeks. Then, after CONAES has had a few days or weeks to respond to the peer review comments, the report should be issued by early March, Naftalin said.

Although saying he would not try to indicate to what degree a consensus has or has not been achieved, Naftalin suggested that there will be enough agreement among the members of CONAES for the report to contribute substantially to the nuclear debate and "reduce the range of controversial issues." Where the CONAES members remain in disagreement, as they do on a number of issues, this will be set out in the body of the report, he added.

There is an irony in Nader's suggestion that individual viewpoints are being suppressed in the study, for he was one of several leaders of the antinuclear movement who, 3 years ago, suggested that the Academy had prejudiced the study by stacking CONAES with a heavily pronuclear membership. Among the members are several nuclear scientists and engineers, including Harvey Brooks of Harvard University (a former dean of engineering and applied physics), but, according to Naftalin, there has been no imbalance whatever between members who came to the study well disposed toward nuclear development and those who questioned or opposed such development.

Energy Facility Siting Seen in Need of Reform

Confusion still attends the siting of major energy facilities. This was pointed up again on 28 November when the chief of the U.S. Army Corps of Engineers, Lieutenant General John W. Morris, announced his decision in favor of construction of a large independent oil refinery at Portsmouth, Virginia, near Hampton Roads and the lower end of Chesapeake Bay (*Science*, 10 February).

The chief's decision, which Secretary of the Army Clifford Alexander could overrule, flies in the face of a site survey commissioned by the general himself. When issued last August, the survey report indicated that, of the 20 East Coast sites considered, the Portsmouth site was one of the worst from an environmental standpoint. Tankers and petroleum product barges traveling to and from the proposed refinery would pass within several miles of the lower James River seed oyster beds, a mainstay of the Chesapeake Bay's $50-million-a-year oyster fishery.

The Department of the Interior, of which the Fish and Wildlife Service is a part, is likely to urge that the permit be denied and to raise the generic issue of whether refinery siting should not be reformed. Robert L. Herbst, assistant secretary of the Interior for fish, wildlife, and parks, is convinced on the basis of the Virginia project and the refinery proposed for Eastport, Maine (another site deemed to be among the worst), that this issue calls for a comprehensive study. ". . . it is a mistake for the federal government to consider permits for refineries on a one-by-one basis," Herbst said in a recent letter to Charles Warren, chairman of the Council on Environmental Qualiy (CEQ).

Warren told *Science* that he expects to take part in interagency discussions over the Portsmouth case and the possibility of energy facility siting reform. He noted that an approach now used in the siting of power plants in California (where Warren was formerly an influential state legislator) is to require that utilities, in applying to state permitting authorities, submit at least three sites for every plant proposed. Although still open-minded on the siting issue, Warren favors the California approach to a federally approved "site bank."

Luther J. Carter