

United Nations resolution last month, and that may well appeal to donor countries which want to see the locust threat ended as quickly and economically as possible. Nevertheless, it is far from clear how such a force would be formed and would operate.

The task of locust surveillance and international coordination of the campaign is performed by the United Nations Food and Agriculture Organization (FAO) in Rome. U.N. agencies carry heavy political impedimenta but FAO's emergency center for locust operations continues to get good marks for its performance. The center is making use of information provided by FAO's Remote Sensing Center from its new Artemis system that has been operational since August. The system provides rainfall estimates for regions where desert locusts are active by automated analysis of data indicating rain-cloud cover from the European meteorological satellite Meteosat. Soil moisture is an essential factor in the hatching of locust eggs and determines population development.

Vegetation in so-called locust recession areas provides food and shelter for immature locusts until they grow wings. The system also uses data from the U.S. National Oceanic and Atmospheric Administration's weather satellites processed by National Aeronautics and Space Administration scientists into a vegetation index for the relevant areas to help identify danger spots.

Actually stopping the locust remains a formidable task. If warfare and the weakness of national antilocus forces are the main negative factors, another is summed up as "dieltrin." The organochloride pesticide is effective against locusts but is persistent and residues have turned up in alarming concentrations in humans and animals in Africa. Its use has been effectively banned by donors, while African governments, sensitized by recent horror stories about dumping of toxic wastes in Africa, are taking a tougher line than ever against environmental hazards.

The current gap in the armamentarium against locusts is written up by many to neglect of research on the insect between outbreaks. "The biggest shortcoming is in research," says Wilson. "In off years, nobody funds research, they're not interested." When there is a plague, then money becomes available, but even then it's "infinite," he says.

"Environmentally acceptable controls are needed." Many areas of research, notably biological controls, hold great potential, says Wilson, "but we're not doing it at a level that offers a promise of real progress." Except for remote sensing and better electronic guidance systems in the field, "we're operating with 20-year-old technology."

■ JOHN WALSH

Test Ban Talks Reach Impasse

U.S. and Soviet negotiators have failed to reach agreement on a method for ensuring compliance with a 1974 treaty that limits underground nuclear explosions to a maximum of 150 kilotons. Talks between the two countries ended on 15 December at an impasse over a U.S. demand that an intrusive on-site technique known as CORRTEX be used to measure blasts above 50 kilotons.

The Reagan Administration has long argued that seismometers cannot measure the size of explosions accurately enough to guard against Soviet cheating, and it has repeatedly charged that some past Soviet tests constitute "a likely violation" of the 1974 treaty, formally known as the Threshold Test Ban Treaty. The treaty has never been ratified by the United States, and the Administration has insisted that a protocol permitting CORRTEX monitoring be added before the Senate approves the measure. It has also said that it would not consider any further testing restrictions until the threshold treaty is ratified. In the meantime, however, both sides have pledged to keep their testing programs within the 150-kiloton limit.

The Soviet government has argued that seismic methods are adequate to monitor compliance with the treaty, and until recently it has resisted the notion of using CORRTEX, which involves placing an electronic cable in a borehole very close to the shaft containing the nuclear explosive.

Last year, however, both sides agreed to undertake a remarkable experiment in which the two techniques would be compared. Blasts were set off at the U.S. test site in Nevada in August and at the Soviet test site in Kazakhstan in September, and both Soviet and U.S. scientists conducted on-site measurements with CORRTEX for each explosion. It was the first time that officials from either country had witnessed a blast on the other's home turf. In addition, both sides exchanged data on the geology of their test sites and the yields of ten previous tests.

The results of the experiment are classified, but they apparently did not demonstrate the superiority of the CORRTEX method, as the Administration had hoped. According to a report in the *Washington Post*, which has been confirmed by Administration officials, the CORRTEX method put the blast at the U.S. test site above the 150-kiloton threshold, while seismic methods measured it at close to the predicted yield of 145 kilotons. Both methods were well within the 30% margin of error claimed for CORRTEX.

The experiment evidently changed neither side's mind. In negotiations in Geneva, U.S. representatives continued to argue for the right to monitor any blast above 50 kilotons with the CORRTEX method. The Soviets, according to an Administration official, insisted that CORRTEX be used only for a limited number of shots in order to calibrate each test site.

Because of differences in the geology of the two test sites, explosions of the same magnitude at each site will give different seismic signals at remote locations. The Soviets apparently argued that by setting off a few blasts measured both by CORRTEX and seismic techniques, the so-called "bias factor" resulting from the different geology could be calculated. After that, seismic techniques should be used for all tests, the Soviets said.

Both sides were sticking to their positions when the talks ended last week. They are not scheduled to resume until after the Reagan Administration leaves office.

Many U.S. seismologists have argued that seismic techniques are adequate for treaty verification. Last year, an influential study by the Office of Technology Assessment (OTA) concluded that, with adequate calibration of the test sites, seismic monitoring would be just as accurate as CORRTEX. Moreover, some weapons scientists have expressed nervousness at the prospect of having Soviet officials in almost constant residence at the Nevada Test Site. Milo Nordyke of the Lawrence Livermore National Laboratory testified in October before the House Committee on Foreign Affairs that sensitive information on U.S. weapons tests could be revealed if the Soviets monitored U.S. tests with CORRTEX.

As for the charge that some Soviet tests constitute a likely violation of the threshold treaty, the OTA study concluded that the evidence does not support it. A team of experts at the Livermore laboratory and many independent seismologists have reached a similar conclusion. The Administration, however, repeated the charge in a report earlier this month.

■ COLIN NORMAN