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May 1987

INTERNATIONAL ENERGY AGENCY

Assessment of U.S. Participation in the Fifth Allocation System Test



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The Honorable Mike Synar, Chairman
Subcommittee on Environment, Energy
and Natural Resources
Committee on Government Operations
House of Representatives

The Honorable J. Bennett Johnston, Chairman
The Honorable James A. McClure,
Ranking Minority Member
Committee on Energy and Natural Resources
United States Senate

The possibility of a serious oil supply disruption led to creation of the International Energy Agency (IEA) by the major oil consuming nations. One of IEA's objectives is to reduce the consequences of serious supply disruptions by sharing shortfalls. This briefing report responds to your requests that we review U.S. participation in the most recent test of IEA's emergency oil sharing system (AST-5). As you asked, we

--examined how the test was designed and how well its objectives were met;

--assessed U.S. participation and performance; and

--evaluated the extent to which AST-5 and U.S. participation in it meaningfully exercised U.S. energy emergency preparedness plans and provided useful training.

DESIGNING THE TEST
AND MEETING ITS OBJECTIVES

AST-5 was designed by the IEA Secretariat, member countries, and an industry advisory board. The Secretariat proposed a basic test design. Some members suggested alternatives and/or modifications, and the industry presented its views and comments. Participants analyzed and debated the proposals during a 1-1/2 year period and member countries ultimately decided the design.

In defining the test's scope and objectives, some of the more important issues included:

- whether realistic data on oil supplies should be used;
- the role of oil pricing (i.e., should oil prices and/or company price negotiations be simulated?); and
- whether members should simulate restraining demand, drawing down stocks, and issuing mandatory supply orders to their domestic suppliers.

The final AST-5 design focused on training personnel in the system's essential international procedures. To simplify the test, historical oil supply data was used rather than more realistic current data that would be available in an actual emergency. A price scenario was not employed, but countries could individually simulate prices to carry out optional tests of domestic programs and procedures, such as demand restraint, stock drawdowns, or mandatory supply orders. Companies did not simulate price negotiations for oil they volunteered to share with other companies and countries.

AST-5, conducted in the fall of 1985, was considered a success, with nearly all participants concluding that the test met its training objective. The IEA reallocated more oil than in any previous test and more than might be required in a real emergency. At the same time, though, a number of problems were identified. For example, large, unexplained discrepancies remained in supply data submitted by the individual trading partners. Also, some companies offered oil which, because of its characteristics, was unusable by the intended recipient. On the basis of test results, several areas requiring improvement were identified. More details on test implementation and evaluation are provided in appendices IV and V.

U.S. PARTICIPATION AND PERFORMANCE

U.S. planners considered proposing that AST-5 largely duplicate or expand upon the previous test. However, the administration decided that it was not possible to realistically test policies and programs and the effectiveness of its market-based policy because the psychological behavior of individuals could not be adequately simulated. Consequently, the United States decided to seek a significant reduction in AST-5's objectives and scope and successfully advocated that the

sole purpose of AST-5 should be to train participants in essential international procedures and in the mechanical aspects of the system.

The U.S. decision to oppose policy and program reviews in AST-5 was in part a reaction to IEA criticism in regard to U.S. performance of simulated activities in AST-4. The United States wanted to perform well in AST-5 and show that it could be a credible partner. In addition, the administration was concerned that controversy in AST-5 might hurt its initiative to persuade other IEA countries to put more emphasis on oil stocks and less on allocation as methods for coping with oil supply disruptions. In advocating a limited objective for AST-5, the United States proposed, and IEA agreed, that the test need not include (1) national emergency procedures, (2) measures used to reduce consumer consumption, (3) fair-sharing approaches, and (4) participation of non-reporting oil companies (NRCs).

The United States and others also successfully opposed proposals to simulate

- uniform prices to test demand restraint and price controls;
- price negotiations to test the effect that delays or disagreements would have on the voluntary offers;
- mandatory supply orders to determine whether members are prepared to execute them and to obtain experience in problems arising from their use; and
- two full monthly cycles of the allocation system as opposed to one full cycle and an abridged second cycle.

On the other hand, the United States joined other IEA members in approving proposals to extend the scope in two areas and it tried to have IEA realistically test its data reporting capabilities for the first time. The positions taken by the United States and other participants on these and other design issues are discussed in appendices II and III, and the U.S. design proposals and their disposition by IEA are summarized in table III.2.

The United States generally performed well during the test but some of its actions caused problems. For example, the United States required oil companies to "volunteer" an enormous volume of oil for redistribution. This simplified IEA's reallocation task

but did not realistically reflect the conditions that would be present in an emergency. Unlike previous tests, companies did not constantly have to be asked to volunteer sufficient oil supplies. In fact, IEA ended up with too much oil to allocate and a substantial portion of U.S. oil had to be returned.

In addition, IEA oil reallocation was impeded because the United States applied a more restrictive stock-building rule on oil companies than the IEA-wide standard. Further, some voluntary offers of NRC oil cargoes, which were simulated by the Department of Energy, had unrealistic shipping times, which required extra effort to secure corrections. U.S. performance is discussed in more detail in appendices IV and V.

U.S. PLANS NOT FULLY EXERCISED

AST-5 did not fully exercise key elements of U.S. energy emergency plans. For example, the United States did not simulate economic response measures, mandatory supply orders, or public information programs and only partly simulated using the Strategic Petroleum Reserve. It assumed that some demand restraint occurred, but did not simulate the U.S. approach to demand restraint. In addition, NRCs and state governments were not actively involved nor were a number of federal agencies that would play roles in a real crisis.

The United States decided that it was impractical to test domestic policies and programs. Although we recognize that it was not practical to incorporate all aspects of emergency response policies and programs into the test, some could have been included in order to follow up on problems identified in AST-4, expand and improve the training provided, and improve understanding about the adequacy of emergency plans. For example, the United States could have allowed the involvement of the larger NRCs. (U.S. NRCs have never been trained in the IEA system although they account for about 50 percent of U.S. domestic oil production and 45 percent of U.S. crude oil and product imports.)

As another example, the Department of Energy could have devised and tested a mandatory supply order system in AST-5. If companies do not make sufficient voluntary offers of oil, the U.S. fallback position rests on issuing mandatory supply orders, yet the United States has no standby, tested system. Additional examples are discussed in appendix V.

On the other hand, U.S. government and oil company personnel who participated received training in IEA

administrative and operational procedures and communications. U.S. government personnel were also trained in handling oil supply data and in providing guidance to and interacting with U.S. reporting company personnel. Additional information on the exercise of the U.S. energy emergency plan and the training aspects of AST-5 is included in appendices IV and V.

We discussed the issues presented in this briefing report with agency officials and have incorporated their views where appropriate. As you requested, we did not obtain official agency comments on this report.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this briefing report until 30 days from the date of issue. At that time, we will send copies to the concerned congressional committees and other interested parties and make copies available to others upon request.

If you need further information, I can be reached on 275-5889.

A handwritten signature in black ink that reads "Allan I. Mendelowitz". The signature is written in a cursive, slightly slanted style.

Allan I. Mendelowitz
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ABBREVIATIONS

AST	Allocation System Test
DOE	Department of Energy
ESS	Emergency Sharing System
IAB	Industry Advisory Board
IEA	International Energy Agency
IEP	International Energy Program
ISAG	Industry Supply Advisory Group
MMBD	Million barrels per day
MSO	Mandatory Supply Order
NESO	National Emergency Sharing Organization
NPD	No Present Destination
NRC	Non-Reporting Company
SEQ	Standing Group on Emergency Questions
SPR	Strategic Petroleum Reserve

BACKGROUND

The International Energy Agency (IEA) was established following the 1973-74 Arab oil embargo to facilitate responses to short-term oil supply disruptions and long-term supply problems. The International Energy Program (IEP) Agreement authorizes the establishment of IEA and industry consulting groups and sets forth IEA's basic goals and objectives.

The Agreement provides for emergency sharing of oil supplies, development of an information system, establishment of a long-term cooperative effort to reduce import dependence and develop alternative energy sources, coordination of national energy policies, and establishment of consumer-producer dialogues.

Main IEA organizational units are the Governing Board, composed of representatives of 21 major oil consuming nations,¹ which makes all final decisions; the Standing Group on Emergency Questions (SEQ), composed of member country representatives, which advises the Governing Board on emergency matters; the Secretariat, composed of an Executive Director and a professional staff; and industry advisory and reporting groups. A voluntary group of about 45 oil companies (17 from the United States) provides data on the oil market and helps to implement emergency allocation decisions. A smaller group of these oil companies--about 15 (6 from the United States)--forms the Industry Advisory Board (IAB), which advises the Secretariat and Governing Board. Although the Governing Board makes final decisions, industry's influence is significant.

IEA's Emergency Sharing System (ESS) is designed to reduce the adverse consequences of serious oil supply disruptions and to promote balanced sharing of shortfalls among members. Under ESS, member countries agree to maintain emergency reserves equal to 90 days of net oil imports; to establish measures for reducing demand by at least 7 to 10 percent during a serious supply disruption equal to or in excess of 7 percent; and in the event of the latter to subject their oil supplies to an international allocation system using a formula to calculate each country's right to receive or obligation to provide oil.

¹Australia, Austria, Belgium, Canada, Denmark, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States, and West Germany.

Under the system, emergency reserves are theoretically used to make up any oil shortfall that remains after countries have implemented required demand restraint. IEA does not specify when or how much oil reserves are to be drawn down by members. While the IEP implicitly assumes that countries will draw on oil reserves (stockdraw) in an emergency, countries can substitute additional demand restraint for use of emergency reserves if they desire. Conversely, stock drawdown can be used as a substitute for demand restraint if the stocks are in excess of the 90-day emergency reserves commitment.

IEA tested the ESS on a limited basis in 1976. More comprehensive tests were conducted in 1978, 1980, and 1983, and each simulation built upon the experience gained in prior exercises.

We previously assessed U.S. involvement in the 1983 test (AST-4) and reported on overall U.S. participation in the ESS.²

OBJECTIVES, SCOPE, AND METHODOLOGY

We reviewed U.S. participation in IEA's fifth test of ESS (AST-5) to

- examine how the test was designed and how well test objectives were met;
- assess U.S. participation and performance; and
- evaluate the extent to which AST-5 and U.S. participation exercised U.S. energy emergency preparedness plans and provided useful training.

We examined the U.S. role in designing AST-5; compared U.S. plans for AST-5 and AST-4; reviewed the involvement of

²For a list of GAO reports on the IEA, see app. VI.

U.S. reporting and non-reporting companies³ and state governments; and identified the role played by oil stocks, demand restraint, oil prices, fair-sharing,⁴ mandatory supply orders, emergency economic response programs, information programs, and antitrust and breach of contract defense protections.

We attended meetings of the IAB, SEQ, and the AST-5 Technical Subgroup which developed the design and reviewed the conduct of the test and assessed the results. We also attended IEA and Department of Energy (DOE) briefings on the test. We monitored several key test phases at IEA headquarters, including the entire voluntary offer process, and reviewed the Industry Supply Advisory Group's (ISAG) evaluation of how the test ran.

We reviewed and analyzed IEA, DOE, and Department of State reports and documents on the design, conduct, and evaluation of AST-5. We interviewed IEA, DOE, and Department of State and industry officials and surveyed energy officials of 49 states and the District of Columbia for their views on AST-5.

Many of the documents prepared for U.S. policymakers were drafts that were never finalized. Our review considered them because they related how the United States participated in the test design and because they contained analyses and recommendations for U.S. policymakers.

AST-5 included one full cycle of the monthly allocation system and a curtailed test of a second cycle. We focused our review on the full cycle. Our work was done in accordance with generally accepted government auditing standards.

³Reporting companies are major oil companies invited by the IEA and approved by their respective governments to actively participate in IEA activities. Non-reporting companies are those companies in IEA countries that engage in producing, importing, or exporting oil or hold oil inventories but do not regularly participate in IEA activities or report directly to the IEA during an emergency.

⁴Fair sharing refers to a domestic system to ensure that the burden of sharing oil to meet an IEA supply obligation is borne proportionately or fairly by all oil companies.

HOW AST-5 WAS DESIGNED: U.S.
OBJECTIVES AND INFLUENCE

AST-5 took 1-1/2 years to design, ending with approval by the SEQ in May 1985. Key participants were the Secretariat, the SEQ, IAB, and member countries. A technical subgroup composed of larger member country and major oil company representatives examined a number of difficult issues and provided recommendations and advice on the design.

MAJOR DESIGN ISSUES

- Key AST-5 design issues included how or whether
- the test scope and objectives should be defined;
 - national energy emergency programs should be included;
 - more realistic data on member oil supplies should be generated and used;
 - oil prices should be simulated for members' use in assessing their demand restraint or price control programs;
 - mock company price negotiations should be used to assess possible impacts on the voluntary offer process;
 - mandatory supply orders should be used and a detailed description of each member's procedures be given to the Secretariat;
 - early coordinated stockdraw and the economic impacts of higher prices should be tested prior to simulating activation of the emergency sharing system;
 - members' individual demand restraint and stock drawdown approaches should be simulated;
 - non-reporting oil companies (NRCs) should be involved; and
 - the test should involve 2 full monthly cycles of the allocation system or be limited to 1-1/2 cycles (in the latter case, companies would not submit voluntary offers in the second cycle).

U.S. APPROACH TO THE DESIGN OF AST-5
SIGNIFICANTLY INFLUENCED BY AST-4

The United States considered whether AST-5's design should be similar to AST-4's, expanded in areas, reduced, or structured differently.

The U.S. approach to AST-4

The United States incorporated a free market approach¹ to energy emergency preparedness in AST-4 by estimating how high prices would rise, their economic impacts, and how U.S. consumers would respond. At the same time state government participation was expanded and NRCs were involved for the first time. The effort was an attempt to enhance training and to test whether the market approach could handle a major supply disruption within the IEA context. Some of the U.S. actions were criticized.

In 1983-1984 the Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, concluded that the IEA tests provide an excellent opportunity to review and test U.S. emergency preparedness policies. It also found, however, that DOE's performance in AST-4 caused other IEA countries concern about the willingness and ability of the United States to fulfill its obligations and called into question the system's potential effectiveness. In H. Rep. 98-786, (May 17, 1984), the Committee recommended, among other things, that in preparing for AST-5, DOE should take the following steps.

- Resolve policy disputes within the administration before the test begins.
- Ensure that DOE officials are versed in test procedures.
- Establish realistic test parameters for comprehensively reviewing its emergency preparedness policies and procedures.
- Involve appropriate federal, state, congressional, and other affected groups to the extent possible.
- Expand the test to include the domestic effect of a serious disruption.

¹Under a free market approach oil prices are allowed to rise to whatever level is necessary to eliminate excess demand. The government does not control oil prices or try to allocate oil supplies to specific sectors of the economy.

- Establish and test a workable fair-sharing system or be prepared to issue mandatory allocation orders to ensure that U.S. obligations will be fulfilled.
- Establish and test a public information campaign to help consumers cope with disruptions.
- Achieve IEA agreement to use the most timely, accurate data possible, including surge production estimates.

The U.S. approach to AST-5 was influenced by the criticism. Certain DOE and State Department discussion papers addressing the design of AST-5 concluded that the previous exercise had strained relationships and turned the exercise into a politicized examination of participants' policies for responding to an energy emergency.

U.S. DESIGN OBJECTIVES

U.S. objectives for AST-5 evolved over several months. Some initial proposals were to train personnel, identify and correct problems in participants' national emergency programs; reassure the IEA of the willingness and ability of the United States to meet its commitments; and demonstrate that the U.S. approach to energy emergencies was superior.

DOE and State Department representatives debated whether policies and programs should be tested. Also debated was whether members' decisions on simulated responses should be predetermined to exercise selected programs or response measures or deferred until the test itself when the AST-5 scenario would be known. Policies, program, and response measures selected would then depend on the scenario. DOE questioned the extent to which a test could simulate domestic and world conditions during an oil supply disruption and test the participants' policies.

U.S. planners also considered simulating demand restraint measures, stock drawdowns, implementing mandatory supply orders, and direct NRC and state participation. Eventually the administration decided it would be unrealistic to test such measures in an artificial environment, and particularly those concerning market operations. In September 1984 the U.S. government told the IEA Secretariat that:

"We . . . doubt the feasibility of designing AST-5 as to 'test' the efficacy of governments' and companies' emergency response policies and the effects of such policies on the market. We are concerned that a test

design would not be able to simulate adequately all international and domestic market conditions that would be encountered in an actual supply disruption, including, but not limited to, psychological behavior of market participants in response to the disruption scenario and to government actions. For example, while it may be useful to train government or company personnel in the procedures associated with demand restraint programs, we have reservations as to whether it is possible to measure objectively in a test the effectiveness of such programs on consumption levels and patterns. We believe that the IEA's current approach to reviewing governments' energy emergency response programs and policies through such means as the annual SLT [Standing Group on Long-term Cooperation²] reviews and the recently conducted special country reviews, may yield far more meaningful results."

In January 1985, the Deputy Assistant Secretary for Energy Emergencies told IEA that the United States wanted policy issues eliminated from AST-5 because misleading and incorrect conclusions were drawn from AST-4.

The United States finally decided that AST-5 should focus on training Secretariat, member governments, and industry personnel in data submissions, supply calculations, and the voluntary offer process. Domestic programs, such as demand restraint and stock use, would be excluded.

U.S. planners believed attempts to make AST-5 more comprehensive or realistic might raise sensitive questions about U.S. energy emergency policies or programs. They were concerned that wrong conclusions could again be drawn and relationships could be strained. Although several DOE officials told us that avoiding controversy was not an objective of the U.S. position, a briefing memorandum prepared for the Deputy Secretary of Energy said that U.S. objectives included, among others, to "minimize AST-4 controversy that could threaten policies on SPR [Strategic Petroleum Reserve], free market, or [the] July 11 [1984] stocks agreement." Under the latter agreement, members decided they would coordinate early drawdown of emergency oil reserves or comparable actions for any oil disruption, regardless of size, which threatens to cause severe economic damage.

²The Standing Group on Long-term Cooperation is composed of member country representatives who examine, and report to the Governing Board on, national and cooperative programs to reduce, over the longer term, dependence on oil for meeting total energy requirements.

A State Department official told us the United States wanted to maintain solidarity and promote its policy that countries should rely more on stocks in an emergency. He acknowledged that the AST-4 criticism affected the U.S. approach. The decision to oppose policy and program reviews in AST-5 was partly a reaction to criticism. The United States wanted to perform well in AST-5 and to show that it could meet its obligations and be a credible partner. He said there were other objectives as well, principally training.

A DOE official also said that gaining acceptance of U.S. stocks policy was an important consideration. He said the United States wanted other IEA countries to put more emphasis on oil stocks and less on allocations and that if stocks were used in a disruption, it would not be necessary to redirect supplies. He observed that the United States has made some progress in getting others to alter their views, and is still trying to promote the policy.

Our observations

We believe that the administration's position that it is not feasible to realistically review policies and programs in an artificial test setting was an oversimplification. We agree it would be difficult to review all aspects of emergency response policies and programs in a test setting and it would be particularly difficult to fully simulate the effectiveness of a market-based approach to energy emergency preparedness. IEA tests do not involve the actual redirection of oil supplies or the actual implementation of government policies or programs. The tests restrict considerably the extent to which companies can simulate normal commercial transactions. In all tests conducted to date, oil prices have not been officially involved for all members. Oil prices could be simulated in a future test but, if they were, a test would not incorporate the actual response of millions of consumers. For test participants, such as oil company and government representatives, in the absence of real price increases that have real consequences, it would not be possible to know with certainty whether the participants' test behavior would accurately reflect their behavior in the real world.

Although psychological reactions of people are evaluated all the time in artificial situations, ranging from market surveys to war games, DOE officials believe that to test psychological reactions requires very careful preparations, time, and money. They do not believe other countries would be willing to take the time or spend the money necessary to properly develop such a research game.

It is also possible to test mechanics and procedural aspects. Incorporating such elements into a test may provide useful training. And, depending on how well the mechanics and procedures work, it may be possible to draw some conclusions about whether a policy can be effectively implemented. In addition, it is possible to use econometric modeling to assess some of the possible economic consequences of hypothetical oil supply disruptions and to consider possible policy alternatives. For example, in AST-4 the administration estimated the macroeconomic effects on the United States of relying solely on rising oil prices to offset a major oil supply disruption. The states which participated were virtually unanimous in stating that if oil prices rose to the level simulated by the administration, policies would have to be devised to cope with the economic effects on low-income groups and the unemployed.

U.S. INFLUENCE ON AST-5's DESIGN

The United States tried to focus the scope and objectives of AST-5 on training and away from policy. It also tried to get the IEA to agree that the test would have little relation to how ESS would operate during a real disruption. In contrast, an objective of AST-4 was to emphasize and involve fully all elements of a member's national emergency sharing organization essential to the efficient and successful operation of the ESS.

The United States proposed that there be only one objective in AST-5, namely, training Secretariat, member country, and industry personnel in the essential international procedures and mechanics of the ESS, including

- compiling and transmitting data on the detailed flows of oil supplies for countries and companies;
- communicating requirements to enable data transmission and other message traffic;
- calculating supply rights for countries as well as allocation rights and obligations; and
- transmitting and matching voluntary offers for redistributing oil.

The U.S. proposal was largely adopted. However, an objective to emphasize and fully involve essential elements of the members' domestic emergency sharing organizations was partly retained. (See discussion of Domestic Emergency Programs in the next section.)

Another issue was how to characterize the test's realism. The United States proposed saying that AST-5

--"will be a paper simulation,"

--"is specifically designed to incorporate a number of artificialities to facilitate concentration on these essential procedures and mechanical aspects of the emergency oil sharing system, and, thus to enhance training in their use," and

--is not intended to simulate "the psychological behavior of participants in response to the disruption scenario and to government and industry policies. Therefore, actions taken by participants during the test are unlikely to be indicative of their decisions during an actual supply disruption when they will be motivated by actual market conditions, which cannot be adequately simulated in a test." (Underscoring added.)

Other members acknowledged that the tests are artificial but were not willing to characterize AST-5 in such a limited way, believing it could detract from the oil companies' willingness to participate. Language was added to address these concerns.

Several design issues, including the role of domestic emergency programs, the use of realistic supply data, and whether simulated oil prices should be included in the test are discussed in the next section. Appendix III examines other major design issues.

DOMESTIC EMERGENCY PROGRAMS

One AST-4 objective was for each member to involve, through its national emergency sharing organization, all its elements essential to the successful operation of the ESS, including domestic emergency procedures. Emphasizing this objective, DOE involved other federal offices (the White House; Departments of State, Defense, Transportation, and Agriculture; and the Federal Emergency Management Agency), 10 state governments, the National Governors Association, 19 reporting and 27 non-reporting companies, and such private sector groups as environmental and oil industry associations.

DOE concluded that even though some problems arose, the broad-based domestic participation provided substantial benefits. For instance, DOE obtained a better sense of the

internal and external coordination required to address a disruption and a better perspective on how the states and the private sector would behave in dealing with an energy emergency in an unregulated environment (previous tests were conducted while federal price and allocation controls were in effect). It also helped to identify problems in the IEA system, the AST-4 test design, and the preparedness of the national emergency sharing organizations.

In debating how to incorporate domestic emergency programs in AST-5, DOE's options ranged from severely restricting domestic participation (excluding, for example, NRCs and states), to maintaining the AST-4 level of involvement, to expanding it. A DOE analysis indicated that active domestic participation would focus attention on domestic problems and issues, might generate adverse reactions from the states and the Congress, possibly detract from testing the system's international aspects, and cost more to plan and train participants. Besides, DOE believed domestic actions could not be addressed adequately in the IEA test environment. However, the analysis also indicated such participation would help to integrate domestic and international emergency responses; train personnel; and test communications, coordination, and the decisionmaking process of the participants.

Position advanced by the United States in IEA

The United States sought to limit participation by recommending that the Secretariat delete the AST-4 objective to involve essential national emergency sharing procedures. In addition, the United States recommended deleting language that the test "offers a unique opportunity for participating countries to gain valuable experience by simultaneously testing the elements of their complementary national (domestic) emergency oil program." The United States also suggested that participating countries be free but not required to simulate domestic emergency program implementation. The suggestions were adopted. Therefore, the importance of domestic programs was reduced in AST-5.

U.S. non-reporting company involvement

NRCs are responsible for about one-half of domestic production and close to one-half of net oil imports. Thus, their willingness and ability to volunteer oil in an emergency could determine whether a U.S. obligation to supply oil is met. U.S. reporting companies have stated that their willingness depends on U.S. oil companies proportionately sharing the burden.

DOE invited about 70 NRCs to participate in AST-4. Some were large, integrated oil companies comparable to U.S. reporting companies; others were large industrial users of petroleum. All produced, refined, or consumed petroleum. Although 27 volunteered oil, only a few accounted for most of the NRC-offered oil. Significant problems with many offers raised questions about their validity.

DOE considered inviting NRCs to participate in AST-5. An internal DOE analysis acknowledged their key role and the problems identified from their participation in AST-4. An August 1984 DOE analysis said that national emergency sharing organizations (NESOs)³ needed training in coordinating voluntary offer development with NRCs. Another analysis said that NRC involvement could help to resolve technical issues, familiarize NRCs with the IEA system, and demonstrate they could help to satisfy a U.S. oil allocation obligation. A third analysis outlined two options for involving NRCs. One would include both petroleum importers and industrial users, and the other would involve only petroleum importers because IEA preferred to match ocean-bound crude oil because costs would be lower.

DOE drafted a letter in September 1984 urging NRCs to participate in AST-5. The letter stated that AST-5 would train industry personnel, as well as others, in the operation of the ESS and that NRC participation could add another basis for evaluating whether the sharing system needed to be improved. However, the letter was never sent.

Previously, in mid-1984, the IEA Secretariat had suggested to member countries that, as a follow up to AST-4, AST-5 should test securing additional information from NRCs. However, in December 1984, the United States recommended reducing the NRC role. One recommendation was to delete test guide language that NESOs request voluntary offers from NRCs and that major NRCs report to NESOs. The Secretariat did so. The United States also recommended adding language allowing the NESOs to simulate or solicit voluntary offers from NRCs. The Secretariat did not adopt this change. However, the United States pursued it in the technical subgroup, where the change was accepted. All of the changes became final when the member countries approved the test guide.

As late as May 1985, the role of U.S. NRCs in AST-5 remained unsettled. A DOE analysis questioned whether to fully simulate NRC voluntary offers or let some companies make unsolicited offers. Concerns were raised that allowing

³A NESO is a country's liaison between IEA and the members' emergency energy structures. The U.S. NESO is DOE.

unsolicited offers could be improperly perceived as pressuring NRC involvement or that a low participation level could be viewed as a lack of NRC support for the ESS.

The analysis suggested asking NRCs to be technical advisors, with DOE training them in the IEA process. This would allow some NRCs to become familiar with IEA mechanics, data analysis, and testing procedures. Also, DOE would benefit from industry expertise in determining whether the simulated NRC voluntary offers were appropriate as to ship size, crude type, and other technical criteria.

DOE decided to invite NRC representatives as observers, explaining it would be burdensome to the NRCs to train them in making voluntary offers. Also, DOE said that it was unable to define the universe of NRCs and that their number was so large that contacting only some of the NRCs would be unfair because all would not be given an equal opportunity to participate.

Conclusions

We believe that DOE could have determined from the NRCs themselves whether participation in AST-5 would be burdensome. Even if it were, some might have participated anyway. NRCs participated in AST-4 and, according to DOE, played a key role. DOE could have explored NRC willingness to participate in AST-5 by sending its September 1984 draft letter. If NRCs had been willing to participate, DOE would have had time to plan their participation and to provide any needed training. Further, the problems associated with the NRC role in AST-4 could have been addressed.

Whether DOE would submit NRC offers to the IEA in a real emergency is not relevant, because the NRCs first would have to originate them. The offers have to be correct or problems similar to those identified in AST-4 could occur at IEA, endangering the oil redirection process. Finally, an NRC will not make an offer unless it believes there is good reason for making it. DOE could encourage NRC offers by helping them to understand the sharing system's purpose, the value of making offers, and the possible consequences of not making offers. In addition, DOE needs to instruct companies on how to make correct offers and needs to be able to verify that offers submitted are valid. If an offer contains errors, DOE needs to get the company to correct it. Because DOE did not allow NRCs to participate in AST-5, the NRC offers it simulated might not realistically reflect all NRC offers.

DOE stated that it did not directly involve NRCs because of an inability to define the universe and the number of NRCs was so large it could overwhelm the system. We analyzed available data for companies engaged in producing, importing, and refining petroleum in the United States, as shown in table II.1.

Table II.1: U.S. Reporting and Non-Reporting Companies' Share of Oil Imports, Refining, and Production

- - - - (Oct. 1985 - Mar. 1986) - - - -

	<u>Crude oil imports</u>	<u>Product imports</u>	<u>Crude and product imports</u>	<u>Petroleum received for refining</u>	<u>Domestic oil production^a</u>
- - - - - (million barrels) - - - - -					
All 17 reporting companies	411	118	529	1,574	1,857
28 NRCs	<u>192</u>	<u>76</u>	<u>268</u>	<u>449</u>	<u>150</u>
Subtotal	603	194	797	2,023	2,007
Total - United States	615	332	947	2,253	3,863 ^b
Percent of total	98	58	84	90	52

^aProduction covers calendar year 1984, as obtained from the Oil and Gas Journal, Sept. 1985.

^bDOE data.

As table II.1 shows, 28 NRCs and the 17 reporting companies accounted for 98 percent of U.S. crude oil imports, 84 percent of crude and product imports, and 90 percent of refinery receipts of crude oil for the period. We believe that DOE could have secured substantial NRC coverage in AST-5 had it sought and secured the direct involvement of a relatively small number of companies.

DOE would have had a difficult time had it tried to define NRCs in terms of domestic oil producers. There are thousands of NRC producers in the United States, and they account for a substantial portion of U.S. oil production. In 1984, the top 400 companies (reporting and non-reporting companies) produced only 60 percent of U.S. oil, and the 400th company on this list produced less than a thousand barrels. Moreover, the Energy

Information Administration does not collect production data on a company-by-company basis⁴ but receives aggregate figures from each of the 50 states.

However, less than 150 refineries processed all crude oil produced or imported into the United States during October 1985 to March 1986. By focusing only on refiners and petroleum product importers, DOE could cover nearly all oil sold for consumption in the United States.

AST-4 demonstrated that both DOE and NRC personnel need better training in the operation of ESS and how to process timely and accurate offers. The importance of NRC training was raised by the IEA's ISAG in AST-5. During ISAG's evaluation of the test, its managers discussed the difficulty of understanding the IEA allocation system. The head of the ISAG said that in a crisis NRCs will need to know all about the system and that it is very difficult to acquire the necessary understanding if NRCs are not normally involved in a test.

DOE officials told us that all NRCs had been invited to a pre-test briefing via a notice in the Federal Register. However, briefing attendees were told that NRCs would not be allowed to participate directly in the test.

State participation

In AST-4, ten states actively simulated responses to the hypothetical supply crisis. In addition, all states monitored test activities. DOE and the states cited numerous benefits from this involvement, and several states testified before Congress that the test also revealed some problems with the electronic mail system which DOE would use in an emergency.

DOE planners expressed concern whether states should be allowed to participate in AST-5. An August 1984 DOE analysis said state participation would substantially increase its planning burden. Further, until they fully comprehend the ESS process, the states would focus attention on domestic policy issues, not on training. The greater the state participation, the greater the potential for federal/state policy conflicts, which could overshadow the test's international objectives.

In March 1985, the Commissioner and Presiding Member of the California Energy Commission expressed California's interest in being an active AST-5 participant. The Commissioner wrote DOE on March 8, 1985, that:

⁴When the emergency sharing system is activated, the government does get company data from U.S. reporting companies.

"California's participation in AST-3 and AST-4 provided valuable experience for state officials charged with the responsibility of managing government response to oil supply emergencies. These simulations have improved California's energy emergency preparedness by giving the state a better understanding of where physical supply shortages are likely to occur, how economic effects will be distributed and the availability of critical data. They allow the state to assess the efficacy of its current energy emergency plans. Furthermore, the AST exercises clarify for the states the probable effects of government and private sector actions during a supply crisis."

DOE responded by stating that AST-5's approved objective was to train Secretariat, member government, and industry personnel in essential ESS procedures and mechanisms. But the test design had not been completed and once the final parameters for participating countries were decided, DOE would be better able to evaluate domestic participation.

DOE eventually adopted a recommendation limiting the states' role to training through pre-test and post-test briefings and weekly status reports. DOE justified its recommendation, saying that "the nature of State participation in AST-5 is governed by the international objectives of AST-5, i.e., to test mechanics, process and data." DOE announced that the states would be only passive observers and could not interact with DOE because DOE staff was busy with other test aspects. However, states could express their views at a post-test evaluation meeting.

Conclusions

Although important to U.S. domestic energy emergency programs, state participation may not play a direct role in a test whose particular objective is to train essential personnel in the international aspects of the ESS. However, we believe that how well the states carry out their domestic role in an oil disruption could affect the success of the ESS. So too could their attitudes and understanding about the purpose and value of U.S. participation in the IEA. The AST-5 design did not prohibit simulating domestic program implementation; in fact it encouraged it when the training objective could be met. DOE could have actively involved the states in a simulated implementation of domestic programs, enhancing their training opportunity. Such a simulation could have focused on the mechanics, process, and information and data exchanges which would occur in domestic program operations.

Responding to economic consequences

An issue closely related to state participation was whether the economic consequences of an oil shortage should be included as an issue in AST-5. States that actively participated in AST-4 unanimously concluded there was such a need in that test. They felt that the federal government could best deal with problems, such as unemployment, declining state revenues, and other costs of high energy prices, since federal taxes from crude oil windfall profits would increase significantly due to higher oil prices.

DOE briefly considered whether to include federal economic response measures in AST-5. One analysis stated that including economic response measures in AST-5 could result in criticism of the federal government's free market philosophy.

"Some states will agree to accept greater direct responsibilities with respect to economic response measures, while others of differing political and economic suasion will attempt to shift apparent responsibilities to the Federal sector through criticism of its policies."

However, DOE did not prepare any option paper analyses on whether economic response measures should be included in AST-5. Consistent with its decision not to involve domestic programs in AST-5, it excluded economic response measures.

Federal agency and congressional participation in AST-5 and public information programs

DOE involved other federal agencies and also sought to enlist congressional staff as observers in AST-4 and considered doing so again in AST-5. DOE also considered restricting participation to a small group which would represent other federal agencies and exclude congressional participation in the test. According to DOE, maximum participation by both groups would provide better training but would require a greater planning effort. Providing only minimum support, however, might be construed as showing a lack of interest. Restricting participation would centralize coordination, allowing for quick responses to issues that arose, but it would minimize training opportunities.

DOE decided to exclude congressional participation and restricted federal participation to four principal agencies--the Departments of Energy, State, and Justice, and the Federal Trade Commission.

DOE did not consider simulating a public information program in AST-5.

DATA REALISM

Timely, accurate data on participants' supplies is important to the success of the ESS. The Secretariat uses data on both current and planned supplies to assess when to activate the ESS. Once activated, IEA analyzes continuing data submissions to help resolve supply imbalances among members.

Monthly data is collected on each member's oil production, imports, exports, and inventories. Each report contains information on the current month, the two preceding months, and the two subsequent months. The second preceding month's data is final; the next, preliminary; the current, estimated; and the two subsequent, planned. Consequently, for each month, data are collected or revised 5 times before they are considered final. (Although final data is based upon actual events and has been subject to two revisions, it may still contain errors.) Both estimated and planned data for any month may change considerably before becoming final, since they are based on plans subject to change.

In deciding what data to use in the test, the IEA had several options. On the one hand, it could employ historical data in which all the figures were final. On the other hand, it could use current reports as received, including planned data for two future months; this type information has been characterized as "real time" data. An in-between option would be to use historical data that included planned figures. For example, a test held in October 1985 could use the original data submission for October 1984 that included estimated/planned data for October through December 1984.

Previous AST tests used final data, because some members, including the United States, feared the effect that real time data could have on industry competition. Since some oil company representatives would have access to other companies' and countries' real time data, they might be able to use the information to harm competitor companies. Also, historical data enabled IEA to measure participants' performance by evaluating whether tasks were being correctly performed and whether inter-country transactions were being properly reported during tests. Not only were the data final, but before the tests the Secretariat and member countries reviewed the data for errors and made corrections.

In preparing for AST-5, DOE recognized that use of corrected, historical data would assure a high-quality information base for training participants in ESS mechanics and

procedures but would give no experience in using the type of data which would be available during an emergency. The latter will be less reliable and more limited. Untimely, inaccurate data could impede ESS effectiveness. Consequently, DOE favored using real time data to assess its impact on the operational effectiveness of ESS.

Should real time data be used?

At the November 1983 SEQ meeting, the Secretariat proposed that the IEA use data that would be about 1 year old but that would include planned data. The Secretariat saw no training value in again using all final data; it said the test should simulate crisis conditions. The United States supported the Secretariat, but some countries opposed using planning data. The SEQ finally recommended that final data be used, but the United States reserved its position.

At the March 1984 SEQ meeting, the United States suggested that real time data be used but did not offer a specific plan. The SEQ decided to discuss the issue in June but the previous decision to use final data would proceed.

Subsequently, DOE concluded that real time data benefits did not outweigh the anticompetitive risks of using them. However, the Deputy Administrator of the U.S. Energy Information Administration and the DOE Deputy Assistant Secretary for Energy Emergencies believed that it was still important to more realistically test AST-5 data aspects. They decided to seek an approach for using at least some real time data while avoiding anticompetitive complications.

The United States reported to the June SEQ that real time data use was not possible for anticompetitive reasons. While the United States indicated it had considered other alternatives, it did not detail them or seek approval of them. The United States indicated it was amenable to the planned collection effort provided it was free to make additional suggestions. The SEQ decided to maintain its agreed plan and that future discussion would focus on what to do with that data base.

Should the data base be corrected?

The Secretariat then identified three options for using final data.

1. Correct the data base before the test, as was done in previous tests.

2. Do not correct the data base, except for obvious errors, e.g., incomplete data submissions.
3. Arbitrarily introduce errors into the data base or otherwise inject surprise by not announcing the test's base period in advance.

The Secretariat recognized that a cleaned-up data base would enable the cause of data problems experienced in the test to be more easily identified and would give countries an opportunity to develop procedures to prevent or resolve trade data discrepancies (i.e., conflicting oil import/export data reported to IEA by IEA member trading partners) before the test. The third option was rejected because the additional gains were judged likely to be rather small against the added costs and might even make the test less realistic. The Secretariat concluded that the test should use uncorrected data.

DOE devises new proposal
for more realistic data

By August 1984, the Energy Information Administration had developed a new proposal to have the AST-5 data base prepared under time constraints and data limitations similar to those of an actual emergency by having companies submit data over an 11-month period. Companies would submit data to their governments during each current month and thus it would be real time data. The governments would hold the data until just before AST-5 was to begin and then submit it to IEA. The Energy Information Administration believed that the data, prepared on a real time basis, would have become historic by the time the governments submitted it, thus losing its competitive sensitivity and avoiding antitrust concerns. The proposal also provided for surprise implementation (countries would not know in advance which month of the 11-month period would be designated as the initial month of the simulated disruption) and for using a disruption period closer to the test's beginning.

DOE recognized that the proposal would place a greater burden on participants but believed the approach could

- exercise participants' estimating and forecasting procedures needed in a real emergency;
- familiarize participants with the more limited amount and lesser quality data that would be available to make decisions in a real emergency;

- identify data problems associated with emergency data development, analysis, and communication and possible corrective measures; and
- exercise participants' ability to rapidly implement and carry out the emergency data system.

A State Department analysis opposed the new proposal because, although the goal of introducing more realistic data was commendable, it believed DOE had waited too long to develop it and it was unlikely to be approved at such a late date. However, the State Department believed a compromise between the Energy Information Administration and IEA proposals was possible. By supporting the IEA option to not clean up the data base, AST-5 would incorporate an element of realism not previously tested. This view was finally agreed to by DOE and State, apparently at the end of August or early in September 1984. The two agencies further decided that the United States would request a review outside AST-5 of the operational difficulties that real time data would cause. AST-5 experiences would be used to gain insight into operational issues and as a basis for a future ESS exercise.

At the October 1984 SEQ, the IAB, United States, and most other members favored not correcting the data base. The SEQ approved that option. The United States also proposed creating a technical data working group but did not identify the specific issues that the group would address. Discussion was deferred at the Secretariat's suggestion.

PRICE ISSUES

Oil prices are one of the factors which determine whether the ESS will function effectively. The ESS guarantees members access to essential oil, but not necessarily at equal prices. Thus, price influences the availability of oil and how it will be distributed.

In designing AST-5, price was considered in two contexts:
(1) should all countries use a common set of simulated oil

prices (i.e., a common price scenario) for assessing impacts on demand restraint⁵ and/or price controls? and (2) should oil companies engage in mock price negotiations in order to assess any impact such negotiations might have on the voluntary offer process? In addition, the United States raised the possibility of simulating oil price increases during a period prior to the ESS activation.

The AST-4 price experience

The price at which oil would be exchanged was the dominant issue in the design of AST-4. The United States and several others opposed using it, believing it would provide no useful information or experience applicable to an actual energy emergency. However, it was decided that countries wishing to conduct internal tests could do so. Four countries, including the United States notwithstanding its previous objections, elected to use price.

During AST-4, the United States relied solely on simulated price increases to restrain demand for oil over alternatives such as price controls, consumption-curbing regulations, or use of the Strategic Petroleum Reserve. To achieve this, the United States assumed oil prices would rise to \$98 a barrel. Other participants who simulated oil price changes projected considerably lower prices. The projected U.S. price caused concern because of the severe economic consequences it would cause--lower gross national product and higher unemployment and consumer prices.

Many members supported including price as an element of the AST-5 exercise. The Secretariat proposed including it to

⁵Under the emergency sharing system, various approaches to reducing demand (i.e., demand restraint) are permissible. These include government communications designed to influence the voluntary behavior of market participants (e.g., public information and media programs and consultations with companies to encourage reduced oil consumption and fuel switching); direct government intervention via compulsory orders (e.g., emergency building-temperature restrictions, restrictions on gasoline sales/purchases and vehicle use); and government mandated fuel switching, allocation, and rationing. To the extent such approaches lead to reduced demand for non-price reasons, they are sometimes referred to as non-price-induced demand restraint measures. The IEP also allows oil stocks held in excess of each member country's emergency reserve commitment to be drawn down as a demand restraint substitute. Finally, the IEA has recognized reliance on market forces or rising prices as a legitimate measure for helping to reduce demand.

- allow members to evaluate the effect that price changes would have on their internal markets and emergency response programs,
- test the voluntary offer system operation,
- provide more realistic, comprehensive training, and
- enhance the credibility of the ESS.

The Secretariat proposed two options.

1. Simulate common prices to test demand restraint and price controls and act as a starting point for mock company negotiations.
2. Arbitrary non-implementation of voluntary offers in lieu of mock negotiations whereby an arbitrary procedure would be used to declare certain matched offers delayed or not implemented. This would train the ISAG, Secretariat, companies, and governments in seeking additional offers and provide insight into how the delays and non-implemented offers affected the overall system.

The United States, recalling criticism about its actions during AST-4, opposed a common price scenario, fearing the price selected would not sufficiently restrain demand. Oil companies strongly objected to the mock negotiations option, which was dropped. Compromises were achieved whereby the possible impact of failed negotiations could be approximated by arbitrarily canceling some matched voluntary offers and countries could individually estimate prices for demand restraint and price control purposes.

U.S. position on price

DOE and the State Department developed the U.S. price position during the spring and summer of 1984, considering the following options.

- Include a common price scenario or price projection.
- Include mock company price negotiations but no common price scenario.
- Include a price scenario and some company price negotiations.

--Analyze the price issue outside AST-5.

The United States knew that if it opposed a common price scenario and if IEA did not allow members to independently develop their own price projections, some other method would be needed to explain the U.S. demand restraint in AST-5.

The United States recognized that price was important in the sharing system and its use could bring training benefits, but saw little advantage in a common price scenario other than to help members' avoid the controversy associated with uncoordinated price projections. And, using a common price scenario had distinct shortcomings. Planners cited that projecting world oil prices was an imperfect art with many complexities. The model used for common pricing must be agreed upon as well as the price elasticities and other variables to be included. Political sensitivities would be involved. They believed therefore that consensus could be difficult, perhaps impossible, to achieve. A realistic price estimate should not be an estimate of a single price but rather a range of prices. But a range of prices would not be useful for test purposes. Finally, a realistic price scenario should account for IEA's collective stock capability and how stocks would be used. But that was not considered technically possible since the necessary follow-up work on the July 1984 Governing Board stock decision was not complete. The planners feared that an unrealistically low price scenario might be developed, which would be insufficient to reduce U.S. demand to what they considered a desirable level.

Techniques to counter the latter were cited, including simulating drawdown of the Strategic Petroleum Reserve, but the United States preferred not to simulate any stock drawdown. Allowing each country to develop its own price scenario was suggested but the State Department opposed that because observers could misconstrue a U.S. projection as representing an estimate of actual prices during a real crisis.

During the planning phase, the administration considered whether to support a common price scenario. A DOE analysis in May 1984 said there was a clear need for members to address the complex issues involved in projecting price and any discussions would most likely result in a better understanding of members' differing perspectives. However, it suggested the discussions might be addressed more thoroughly and objectively outside AST-5. A DOE August 1984 analysis took a different view. It recommended that the United States support the IEA's development of a common price projection for use in providing demand restraint guidance. However, in late September a decision was made to oppose a common price projection.

U.S. planners believed that developing test conditions sufficient to exercise company-to-company mock negotiations would be difficult. Although a price scenario could be established, it would not provide participants with conditions to cause them to decide to buy or sell at that price. In effect, the scenario selected would establish the price that the market would bear and companies would have no reason to buy or sell at anything other than the simulated price. In addition, company negotiations would require oil companies to involve their traders, with little or no real benefits. Further, the oil companies opposed mock negotiations.

Consequently, the United States also opposed them. However, it supported a variation--arbitrary non-implementation of certain matched offers--because it would introduce uncertainty into the voluntary offer process, mirroring emergency situations where some voluntary offer negotiations would fail. That would be useful because it would necessitate additional ISAG action to balance allocation rights and obligations, test procedures for doing so, and expand the test's scope beyond that of AST-4.

Pricing outcome

The October 1984 SEQ rejected a common price scenario as an official part of AST-5, but it did agree that the Secretariat would assist those countries who wished to develop generally comparable price scenarios for testing their internal demand restraint or price control programs. Countries not seeking Secretariat assistance would not develop their own unique price scenario.

The SEQ also rejected mock company price negotiations; however, it did approve the arbitrary non-implementation procedure.

OTHER MAJOR AST-5 DESIGN ISSUES AND SUMMARY OVERVIEW

This appendix addresses other major AST-5 design issues mentioned briefly in appendix II. These include how or whether

- a fair-sharing program should be included;
- mandatory supply orders should be used and a detailed description of each member's procedures be given to the Secretariat;
- members' individual demand restraint and stock drawdown approaches should be simulated;
- a lead-in scenario should be used to test early coordinated stock drawdown and the economic impacts of higher oil prices; and
- the test should involve 2 full monthly cycles of the allocation system or be limited to 1-1/2 cycles (in the latter case, companies would not submit voluntary offers in the second cycle).

This appendix also includes an overview of how AST-5 was designed, including a comparison of the AST-4 and AST-5 requirements, features sought by the United States and what IEA decided, and to what extent DOE implemented recommendations made by the House Committee on Government Operations.

FAIR SHARING

The Secretariat activates the ESS when members are or could be short of oil by 7 percent or more relative to a base period or historical level of consumption. Once triggered, the Secretariat determines which members are obligated to provide oil and which are entitled to receive oil.

The ESS is balanced by using three distribution schemes designed to be implemented sequentially, but which can operate simultaneously once activated.

1. Oil companies rearrange their supplies as they choose to meet the crisis (type 1 transactions).
2. Oil companies make voluntary offers to the IEA to provide or receive oil to help satisfy countries' allocation obligations or rights, with IEA matching those offers judged most useful to resolving the supply imbalances (type 2 transactions).

3. IEA directs a member country that has not met its obligation to order its companies to ship oil to countries still short of oil--mandatory supply orders (type 3 transactions).

A type 3 transaction would occur only if a country continues not to meet its oil obligations despite efforts to secure cooperation through type 1 and type 2 transactions. Although integral to the sharing system, type 3 transactions have never been simulated in a sharing system test. AST-3 and AST-4 allowed for that possibility but did not require countries to simulate them.

The significance of fair sharing

To increase the likelihood that the system will be balanced without using mandatory supply orders (MSOs), the IEA encourages members to establish fair-sharing systems whereby all companies in a country with an obligation to provide oil would proportionately share the burden through a reallocation of oil supplies. International oil companies have indicated they would not volunteer oil without assurance that the burden would be fairly shared with their domestic competitors. In our June 1985 report (see app. VI) we noted that nearly all IEA members, except the United States, had or were establishing fair-sharing programs.

The AST-4 test guide said that oil companies should not be disadvantaged in making voluntary offers and asked countries to inform their companies and the IEA about the fair-sharing system to be used in the test. While other members used fair sharing, the United States did not. Nonetheless, U.S. oil companies volunteered more than enough oil to satisfy the U.S. obligation to IEA. DOE concluded therefore that a fair-sharing system was unnecessary. In August 1983 it advised the IEA, however, that absent sufficient voluntary offers, it was prepared to use MSOs.

DOE subsequently re-examined the issue. In early 1984, the Secretary of Energy told Congress that a fair-sharing program was not needed. He stated his belief that oil companies would provide sufficient voluntary offers to meet any U.S. oil obligations to IEA because (1) oil companies could bid on oil from the Strategic Petroleum Reserve (SPR) to replace voluntary offers, (2) oil companies could volunteer oil at spot prices and then seek to replace that oil in the open market at spot prices, (3) the government would strongly encourage the companies to make voluntary offers, and (4) the government could issue MSOs to specific companies to make them meet their obligations if they did not make sufficient voluntary offers. Companies would prefer making voluntary offers to government intervention.

MANDATORY SUPPLY ORDERS

Following AST-4, the group of experts, in its July 22, 1983, report, suggested that training be provided in invoking MSO procedures. It believed that some matched voluntary offers would be promptly rejected in a real disruption because company price negotiations would fail and IEA would have to either find alternative matches for the offered oil in the next cycle or invoke MSO's. The group believed this would seriously complicate the IEA's task, particularly the ISAG's, and therefore training should be given to handle the situation.

Design of AST-5

At the June 1984 SEQ meeting, the Secretariat suggested including MSOs in AST-5 to make it more realistic and provide additional training. Two options were presented: (1) arbitrarily require some or all members to mandate type 3 actions even if significant voluntary offer problems did not occur and (2) require MSOs only if countries needed them to resolve significant supply imbalances.

The Secretariat noted that implementing MSOs would (1) determine whether members were prepared to execute them, (2) provide experience in problems arising from MSO use, and (3) determine whether IEA communication procedures were effective. The Secretariat recognized that significant supply imbalances remaining after completing the test's initial oil sharing process (its first cycle) would not necessarily require using MSOs because countries would wait to see if imbalances continued in future cycles. But, because ESS tests are short, it thought such simulations should occur within the test cycle in which a need for them arose.

The Secretariat also proposed that countries should provide it with descriptions detailing their MSO implementing procedures, including laws, regulations, and policies, before the test. The Secretariat would analyze them and report the results in its test appraisal report.

U.S. position

U.S. planners initially reacted positively to including MSOs in AST-5. DOE analyses showed that using MSOs would give DOE personnel needed training in issuing implementing instructions to companies, help to resolve technical issues, and allow relevant procedures to be practiced. A State Department analysis said that congressional testimony by the Secretary of Energy clearly showed the United States contemplates using MSOs to meet its IEA obligations. Therefore, including them would test procedures for accomplishing that

policy; give companies notice that the U.S. government is serious about their use, thus encouraging voluntary offers; and serve as the ultimate backstop should the market reliance policy and reluctance to institute fair sharing not allow the United States to satisfy its IEA obligations during an actual emergency.

DOE's Office of General Counsel, however, opposed using MSOs because the United States had clearly expressed its dislike for them and believed they would not be necessary anyway. The Office objected to the Secretariat's proposal to accelerate use of type 3 actions in AST-5 because that would give the issue unwarranted prominence and could distort perceptions about the effectiveness of the ESS. It was amenable to a routine submission to IEA of laws, regulations, and policy governing MSOs but opposed any detailed description of implementing instructions to companies because that raised several problems. First, under existing DOE regulations, an ordered firm could escape compliance by not agreeing on price or on a procedure for resolving price disputes. Second, instructions to all companies might not be the same; the situation's particulars would need to be considered. Third, a detailed examination of the issue could lead to an undesired discussion of domestic fair sharing to equalize the effects of mandatory actions.

The General Counsel recommended that the United States object to any required MSO use in AST-5 and resist any requirement to detail how countries would instruct companies to take allocation actions. The United States adopted the recommendation.

IEA decision

At an October 1984 meeting, the SEQ decided not to require the use of MSOs in AST-5 but to allow countries to use them if the need arose. The Secretariat expressed interest in surveying members on their legal authorities and regulations for implementing MSOs. The SEQ decided that this would be done but independently from AST-5.

U.S. lacks standby, tested capability to implement MSOs

DOE officials told us that the United States has the ability to issue MSOs, but we found it does not have the standby capability to implement them immediately much less a demonstrated ability to do so effectively.

DOE officials told us DOE had not seriously considered MSOs since AST-4, when DOE had quickly prepared a draft order and identified methods for resolving problems in equitably selecting

recipients, including a pro rata apportionment of a U.S. allocation obligation on the basis of market share, refinery utilization rate, import share, or available supplies versus total U.S. supplies during a historical base period. A DOE analysis of the possible use of MSOs during AST-4 found that "the determination of which companies are 'most capable' on any kind of equitable basis is difficult and could be subject to challenge and extensive litigation."

Should MSOs become necessary, the Energy Information Administration would be responsible for collecting and analyzing the data needed to assess company supply positions and determining which companies would be issued orders and for what volumes. According to an Energy Information Administration official, DOE has not requested a standby system be prepared or provided guidance on the methods that should be used to assess company supply positions. This official said that some methods would require only a few days to become operational because of data already being collected but others would require new data and would take up to 2 months to become operational.

Both DOE and Energy Information Administration officials said that further work on establishing a standby capability was not needed now because MSOs would probably not be needed for at least 2 to 3 months after the ESS was activated; during that time DOE could see how the market was reacting and determine whether MSOs were necessary. In the meantime, SPR drawdown would provide adequate oil for U.S. companies to voluntarily divert oil imports to other IEA countries. Any remaining problems might be resolved by DOE requesting a few companies' assistance.

Since DOE has not decided what standard(s) it will employ for issuing MSOs, it has not initiated a rule-making process whereby industry could express its views on the proposed measures. DOE acknowledged that obtaining company comments on MSOs now has advantages but the cost of doing so must be considered, particularly when the country's mood is to reduce the budget deficit and when it is not likely the ESS would be activated.

U.S. takes additional actions to avoid fair sharing and MSOs

Consistent with its position on fair sharing and/or MSOs the United States suggested deleting the fair-sharing language that had been used in the AST-4 Test Guide and substituting "Consistent with the training objectives of the test, as well as national policy, participating countries may elect to simulate the implementation of domestic emergency programs." The suggestion was adopted.

The United States also proposed rules which virtually assured that it would not need to use either fair sharing or MSOs in AST-5. The rules, or acceptable modifications, were adopted.

MSO testing would
be advantageous

MSOs are an element in U.S. contingency plans which could significantly affect the operation of the ESS if, during a major oil supply interruption, the United States had to divert a substantial amount of oil to other IEA countries.

Most other IEA countries have fair-sharing systems designed to ensure that particular oil companies operating within their borders are not disadvantaged by diverting oil and making voluntary oil offers to other IEA countries. If some companies do not meet their fair-sharing responsibilities, MSOs are a fallback option. The United States, however, has no fair-sharing system; therefore, its main recourse if companies do not voluntarily do enough would be to issue MSOs. A secondary recourse to satisfy an allocation obligation would be through directed sales of SPR oil. However, the amount of oil available for such sales would likely be insufficient for a major disruption, and the Administration's policy envisions all SPR sales to be competitive, i.e., sold to the highest bidder. This secondary recourse is discussed in our report, "Evaluation of the Department of Energy's Plan to Sell Oil From The Strategic Petroleum Reserve," (GAO/RCED-85-80; June 5, 1980).

The pre-test planning phase of AST-5 gave DOE an opportunity to devise measures for implementing MSOs, educate the oil industry about how they would work, and solicit industry suggestions and criticisms of the measures. The test itself provided an opportunity to expose unexpected consequences and problems in their operational use.

U.S. test objectives, however, were to minimize controversy that could threaten free market policies and to generate sufficient voluntary offers without resort to MSOs. The voluntary element was removed from the test, since DOE effectively required companies to make offers of all excess oil supplies. However, contrary to DOE's views, we believe MSOs may be needed within the first 2 months in an actual disruption if

--U.S. oil consumers do not rapidly reduce consumption in response to rising prices and government appeals, or they hoard supplies, thus increasing rather than reducing demand.

- Oil companies engage in substantial stockbuilding in response to rapidly rising oil prices or uncertainty about future supply availability.
- NRCs are reluctant to divert oil and make voluntary offers (1) in the absence of a government fair-sharing system or established MSO procedures because they lack antitrust and breach of contract defenses which reporting companies can obtain when they make voluntary offers, or (2) they are unable to obtain oil from the SPR.
- Some reporting companies are unwilling to divert oil overseas (1) in the absence of fair sharing or established MSO procedures, or (2) they are unable to obtain oil from the SPR.
- A U.S. government decision to draw down the SPR quickly and in substantial amounts is delayed because of the magnitude of the disruption and uncertainty about how long it will last or because other IEA countries are slow in implementing the IEA's stock drawdown policy.

We believe MSOs should be tested because (1) MSOs could be critical to U.S. ability to meet an allocation obligation, and (2) questions exist about whether and how soon MSOs may be needed.

DEMAND RESTRAINT, STOCK USE,
VOLUNTARY OFFERS, AND ALLOCATION
RIGHTS AND OBLIGATIONS

IEA decisions against a common price scenario and against requiring the use of MSOs partially satisfied U.S. test objectives. However, demand restraint, SPR drawdown, and assuring that sufficient oil company voluntary offers would be made to meet any U.S. sharing obligation had to be addressed to ensure that policy questions did not arise. U.S. planners were also concerned that a test which permitted members to simulate emergency oil stock drawdown might adversely affect future implementation of the IEA's July 1984 decision on early coordinated stock drawdown.

Previous ESS tests allowed members to simulate and test the effectiveness of national approaches to demand restraint, stock use, fair sharing, and other emergency programs. The tests further permitted the Secretariat and members to question a particular country's approach, if appropriate. Since the U.S.

approach in AST-4 was subject to much criticism, the Secretariat proposed that IEA review member countries' programs. During the IEA review, the United States clarified its policy to provide for early and substantial SPR drawdown in a major oil supply disruption and for using the drawdown to meet demand restraint requirements. These changes helped to resolve the IEA and other members' concerns.

U.S. approach to AST-5

In assessing how to design AST-5 so that the United States could meet its sharing obligations without controversy or policy questions, U.S. planners opposed a common price scenario and rejected simulating mandatory conservation programs because their use would be contrary to the administration's free market approach to emergency preparedness. They acknowledged that it might be useful to train government or company personnel in the procedures associated with demand restraint programs but questioned the ability to objectively measure the effectiveness of such programs on consumption levels and patterns. They also preferred not to use SPR stocks in AST-5 because:

--It would call attention to SPR use policy and invite interpretation regarding SPR drawdown rates and distribution of SPR oil as expressions of U.S. policy.

--It was premature to test the July 1984 coordinated stock draw decision since the necessary followup technical work on that decision had not yet been completed. Also, if only the United States simulated drawdown, observers might conclude that the IEA policy was ineffective. Further it might contribute to false perceptions about a U.S. willingness to employ stocks even if other IEA countries did not.

--With a substantial SPR drawdown rate, the United States might have an allocation right (as discussed in app. IV), directing criticism at the United States for fixing the test to avoid the need for fair sharing or MSOs.

U.S. planners opposed both demand restraint and SPR drawdown simulations because the government would be dependent on U.S. companies' willingness to make voluntary offers, which in turn might depend partly on how much demand restraint and SPR drawdown DOE simulated. Moreover, without simulating high oil prices, as DOE did in AST-4, companies might make fewer voluntary offers and MSOs might have to be used.

DOE and the State Department eventually decided that the United States should seek IEA agreement to significantly revise the AST-5 approach. The United States, among other things, wanted to

- minimize AST-4 type controversy that could threaten free market policies, SPR use, or the IEA coordinated stock drawdown decision;
- achieve the required demand restraint without using a projected price or mandatory conservation programs; and
- generate sufficient voluntary offers without resorting to MSOs.

To achieve its goals, in December 1984 U.S. planners proposed several test rules to the Secretariat for technical subgroup consideration. First, each country would simply assume that it had reduced consumption to its supply right level.¹ No country would need to explain the measures used to achieve the reduction.

Second, stock use would be prohibited. Each country's stock level would not change from the pre-disruption level; thus, stock building and stock drawdown would be precluded.

Third, the "No Present Destination" (NPD) category would be artificially expanded. NPD is a category which can be used by oil companies in reporting to the IEA on their current and forecast oil supply. Normally this category is used when a company does not know the final destination for a cargo at the time it submits its supply data report. For AST-5, however, the United States proposed that companies use it to report all excess supply. Under the U.S. proposal, each company would reduce its supplies by a percent equal to that needed by the country to meet its supply right. Any company supplies in excess of that amount would be reduced by diverting oil imports to other IEA countries via type 1 transactions or by reporting them in the NPD category for subsequent use in making type 2 voluntary offers. The ISAG would solicit voluntary offers of NPD oil directly from the companies.

Because excess supply would be diverted through type 1 transactions or transferred to the NPD category, there would be no allocation obligations. Thus fair sharing would be

¹Under the ESS each country is entitled to a certain amount of oil. The formula used to calculate this takes account of its pre-disruption level of oil consumption, demand restraint obligation, and other factors.

irrelevant and MSOs would probably not be needed. Countries with shortfalls would have their needs met through ISAG from the NPD category.

The United States suggested that the Secretariat incorporate the proposals in its draft test guide for technical subgroup consideration, but the Secretariat did not accept the demand restraint, stock use, and NPD proposals. Rather, it provided subgroup members with both the approach used in AST-4 and U.S. proposed changes for AST-5.

The technical subgroup addressed these proposals in January 1985.² At that meeting, the United States explained that its proposals were an attempt to structure test rules and assumptions that would allow the exercise to proceed smoothly, avoid implications that test problems indicated real world problems in the ESS, and provide the members with a good training exercise. U.S. officials said they were trying to break a belief held by some that past ASTs had tested what would happen in the real world. To do this, the United States proposed structuring a test that was obviously artificial but would still accomplish the test's training objective. If the test were artificial, it was thought policy conclusions could not be drawn from the results.

However, all other governments and most companies opposed the U.S. proposals, objecting that they

- were contrary to the IEP Agreement on demand restraint and stock use and could embarrass governments that had taken the time and money to build emergency reserves;
- were so mechanical and artificial they would affect companies' willingness to participate in the test and would prevent them from making realistic voluntary offers;
- precluded fair-sharing program simulations;
- transferred responsibility to the ISAG and reduced the NESO's role; and
- were against efforts to improve successive tests.

²One modification was made. The United States said companies could draw stocks during a given month of the test cycle, as long as their opening and closing stock position were the same as in the undisrupted data.

Two governments said that they could not carry out their planned internal tests if the proposals were adopted.

The technical subgroup met again in February 1985 and reached a compromise. As in AST-4, each NESO would determine the extent to which its country's demand was reduced. However, at the U.S. suggestion, it was agreed that AST-5 was not designed to test or justify demand restraint programs since IEA is reviewing countries' emergency response programs, including demand restraint, outside AST-5. Thus, members did not need to describe the programs used to achieve demand reduction if they did not wish to. However, as suggested by Switzerland, members had the option to test and report on their individual demand restraint programs.

The United States suggested, and with some minor changes, it was agreed that every effort would be made to avoid excessive stock building and that both government strategic and company stock drawdown could be simulated. Moreover, AST-5 would not test the July 1984 coordinated stock drawdown decision.

Finally, the U.S. proposal on NPD use was partially approved. If reduced demand levels and/or government stockdraw resulted in some companies building excessive stocks, taking into account a country's overall supply situation, these excess supplies would be reported as NPD rather than as additional stocks. This rule allowed individual companies to build stocks and individual countries to employ fair-sharing systems. NPD would define a pool of oil from which voluntary offers could, but did not have to, be made.

These compromises allowed the United States to get most, but not all, of what it wanted. Its demand restraint approach did not need to be justified and it could structure its participation within the rules--no excessive stock building, artificial NPD use--to virtually assure that fair sharing and MSOs would not be needed by assuming demand restraint and/or stockdraw sufficient to match its allocation obligation, instructing companies not to build stocks, and requiring them to put their excess oil into the NPD category.

The United States substantially got what it wanted concerning stockdraw. Companies could not build stocks--a rule useful to the United States, since no U.S. law prevents companies from hoarding stocks in an emergency. (Moreover the administration has no interest in seeking such authority.) And, although companies and countries could draw stocks, AST-5 would not test the July 1984 agreement. However, stock use did risk bringing U.S. SPR use policy into question.

The SEQ approved the test rules in May 1985.

LEAD-IN SCENARIO TO SIMULATE PRE-TRIGGER
DECISIONMAKING AND EARLY COORDINATED STOCKDRAW

Past tests concentrated on actions taken after the ESS was activated. But important actions need to be taken before triggering the system. As set out in the December 1981 and July 1984 Governing Board decisions, these actions include

- evaluating the extent of and an appropriate response to the disruption;
- deciding on a coordinated stockdraw and other measures; and
- implementing agreed measures.

These actions have never been tested. Past tests assumed the pre-trigger actions were taken primarily to reduce stock levels.

Following the June 1984 SEQ meeting, the United States raised with the Secretariat the possibility of a pre-trigger phase in which stockdraw and price impacts would be simulated. The United States encouraged the Secretariat to incorporate these features in AST-5 design proposals.

Secretariat proposal

In July 1984, the Secretariat drafted a lead-in period simulation proposal. Any pre-trigger response measures adopted would not be considered indicative of measures IEA or members would adopt in a real disruption.

The Secretariat believed a lead-in simulation would

- test participants' ability to implement effectively prescribed pre-trigger procedures;
- train Secretariat and NESO personnel to analyze and consider policy issues related to implementing these procedures; and
- make more credible IEA's procedures for responding quickly to any significant supply disruption.

No specific disadvantages were cited. However, the Secretariat believed that member governments would incur additional costs to carry out the simulation. Members would also have to decide whether to participate in coordinated

stockdraw consultations and the extent to which they would want to simulate stockdraw and/or other response measures in a pre-trigger period.

DOE and State Department views on the proposal differed. DOE planners considered the Secretariat proposal a good beginning but felt it focused too much on simulating policy-sensitive discussions and decisions in a test setting rather than on procedures and communications which should be developed for high-level consultations. Conversely, State Department planners believed the proposal would complicate AST-5 planning and do little to further test goals. Testing a lead-in scenario was inappropriate for a test serving as a training exercise for the ESS after it is triggered. State planners feared that testing stocks at a time when the United States held most of the government-owned stocks and before it had a chance to convince other members to increase their reserves could create a situation where other nations would not participate, setting a bad precedent for times of real crisis. Further, SPR use before the AST-5 trigger might adversely affect the U.S. demand restraint program during the post-trigger phase, leading to another perceived U.S. energy emergency program failure.

State planners believed that early coordinated stockdraw would be better tested separately from AST-5, after better statistical data had been developed, members had agreed on various technical aspects, and the United States had further encouraged other members to increase their stocks. A separate exercise would keep alive the momentum generated by the July 1984 stock drawdown agreement, the United States might better influence any price or disruption scenario than was possible in AST-5, and if such an exercise were low-key it might avoid the onus that AST-4 gave the AST process.

In late August 1984, the United States informed the Secretariat that it opposed a lead-in scenario. The Secretariat did not further develop the proposal or present it to the IEA members for action. However, the Secretariat did invite the technical subgroup at its November 1984 meeting to comment on how to handle the period before the test, including the trigger, demand restraint, and stockdraw. The Secretariat proposed that guidance be issued to ensure that everyone understood the events preceding the test's start. The pre-test assumptions reduced opening stocks to reflect the effect of lost supplies and any government and company actions taken between the disruption's beginning and the test's start.

Discussion at the November meeting centered on how to handle demand restraint and use stockdraw. The United States position was that testing the July coordinated stockdraw decision was not appropriate. It opposed any concept requiring

SPR drawdown during the pre-test period. Other subgroup members went along with the United States and suggested that stocks be drawn down on October 1 with no attempt made to disrupt prior months. They further suggested that any stockdraws be specified on a percentage basis only and that each country decide how to allocate stockdraws between crude and products and between company and government stocks. IEA adopted the suggestions.

DURATION OF TEST

A final issue that IEA members confronted was whether AST-5 should be 1 cycle, 1-1/2 cycles, or 2 cycles.

AST-3 was two full cycles and lasted 2 months, expending considerable time and money, particularly by reporting companies. AST-4 was 1-1/2 cycles. The first cycle was a 5-week exercise involving all parties in the simulated oil-sharing process, while the second was an abridged 3-week exercise that did not include company voluntary offers. AST-4 was abridged largely to reduce the burden on participating oil companies. The second cycle was also curtailed as far as centrally directed IEA activities were concerned. However, countries could, and some did, continue to test their national programs throughout the second cycle.

The Secretariat believed that AST-5 should be 2 full cycles, particularly if pricing elements were included. U.S. planners initially recognized that 2 full cycles would provide additional training and suggested the United States support a 2-cycle test as long as industry opposition was not adamant. However, U.S. planners subsequently leaned toward a shorter test, doubting that the longer test would help to resolve complex issues which might arise in an emergency. They concluded that a longer test would be considered if a compelling case could be made that it materially enhanced training or was acceptable to industry.

At its October 1984 meeting, the SEQ noted that 2 full cycles would provide substantial benefits, but it could not agree on the test's length because of the cost. To help resolve the issue, the Secretariat agreed to prepare estimates of costs and benefits of a full 2-cycle test. It prepared two issue papers on the results. One it presented to the technical subgroup in November 1984, the other it prepared in December 1984 for the January 1985 SEQ meeting.

DOE did not believe the papers helped to resolve the matter because they did not

--compare the benefits of 1-1/2 versus 2-cycle tests;

- make a compelling case that a 2-cycle test materially enhanced training benefits over a 1-1/2 cycle test; or
- provide adequate information to compare the costs of 1-1/2 and 2 cycles.

DOE concluded that, based on U.S. government costs alone, it could be more or less indifferent as to the number of test cycles. A deciding factor would be the burden on the oil companies, several of which doubted that the additional training benefits could be justified by the added expense.

At the January 1985 SEQ meeting, governments remained split on the issue; however, the IAB overwhelmingly favored 1-1/2 cycles, and the SEQ agreed to it.

SUMMARY OF AST-5 DESIGN

Table III.1 compares AST-4 and AST-5 test guide requirements for major test elements, including objectives, scope, participants, specific programs and functions, and significant test rules and assumptions agreed to by all IEA members.

Table III.2 summarizes the major design features sought by the United States in AST-5, including whether or not the features were adopted by the IEA.

Table III.3 summarizes the extent to which DOE followed recommendations made by the House Committee on Government Operations concerning preparations for AST-5 and a discussion of reasons provided by DOE for not implementing most of the recommendations.

Table III.1: Comparison of Major Test Elements
As Agreed by IEA Members

<u>Test elements</u>	<u>AST-4 Test Guide</u>	<u>AST-5 Test Guide</u>
Stated objectives	Train personnel in system, involve essential NESO elements, and test system modifications/improvements.	Train personnel in system; functions are specifically defined.
Scope	Planning exercise not involving actual oil redirection, demand restraint or any other effect on consumers. Actions taken will not necessarily indicate decisions or policies during an actual emergency.	Exercise does not involve actual oil redirection or implementation of government policies or programs affecting consumers. Actions not intended to simulate actual market conditions but should be as realistic as possible. Stockdraw is allowed but not intended to test IEA's 1984 coordinated stock drawdown decision. New elements include dirty data and cancellation of some matched voluntary offers.
Domestic programs	Each country expected to involve elements essential to efficient and successful ESS operation, including national emergency procedures, and keep IEA apprised of any problems. Seen as opportunity for members to gain experience in testing their domestic emergency oil programs.	Simulation of domestic programs optional; not required, but countries could do if they so chose.
Fair sharing	Companies should see no disadvantage to offering oil. Each country to advise companies, Secretariat, and ISAG what their fair-sharing approach is.	Fair sharing not mentioned, but countries could simulate as domestic programs.
NESOs	Optional.	Optional.
Economic response package	Not discussed—domestic programs.	Not discussed—domestic programs.
State participation	Not discussed—domestic programs.	Not discussed—domestic programs.
NRC participation	Direct involvement of large NRCs expected, and NESOs should solicit voluntary offers from them.	Optional involvement of NRCs; NESOs could simulate activity of all NRCs if they wished.
Demand restraint	Each member decides how much demand restraint it achieves and explains what policies and programs were simulated to achieve it.	Each member decides how much demand restraint it achieves. Members do not have to simulate programs or explain how they achieved their demand restraint.
Stock use	Not discussed in test guide, but various members drew stocks during the test.	Allowed, but purpose not to test IEA 1984 coordinated stock drawdown decision.
Company inventories	Adjusted to reflect revised demand levels; negative or excessive levels to be avoided.	Adjusted to reflect revised demand levels. Excessive stockdraw/build to be avoided. If reduced demand/stockdraw would create company excess stocks, after considering the whole country position, then excess to be put in NPD for use as voluntary offers.
NPD reporting category	Minor category used by companies to report occasional cargo for which they have no present destination.	Major category. Oil companies' excess oil put into NPD.
Price	No common or official price scenario; countries could simulate prices for testing domestic programs and procedures.	No common or official price scenario; countries could simulate prices for testing domestic programs and procedures if they consulted Secretariat in developing their scenarios.
Data discrepancies	Data cleaned up before test began.	Data left dirty. Discrepancies to be resolved during the test using revised procedures.
Product imbalance analysis	Expected, with results reported to IEA.	Optional; countries could simulate if they chose to do so.
Non-implementation of voluntary offers	Not included.	Certain voluntary offers arbitrarily declared not implemented by IEA to determine effect on ESS and provide training in rematching offers.
NESO decisionmaking	Decisionmaking speed and, if possible, quality to be evaluated.	Technical relevance of decisions to be evaluated.

Table III.2: Design Features Sought by the United States and IEA Actions on Them

<u>Test element</u>	<u>Features sought by the United States</u>	<u>IEA action</u>	<u>Comments</u>
Stated objectives	Make training in essential system procedures and mechanics the only test objective.	Accepted	
Scope	Place more emphasis on the test's artificiality and limitations, e.g., cannot test participants' psychological behavior.	Partially accepted	Some of U.S. proposed scope language was judged too negative, while other language was adopted in part or whole.
Domestic program testing	Make optional.	Accepted	
Fair sharing	Eliminate AST-4 requirement to explain fair-sharing approach.	Accepted	
MSOs	Make optional.	Accepted	
NRCs	Allow NESOs to either solicit or simulate NRC voluntary offers rather than requiring major NRCs to participate.	Accepted	
	Delete requirement that NESOs be evaluated on the success of their communications with NRCs.	Accepted	
Demand restraint	Simply assume that each country reduces demand to a level equal to its supply right.	Rejected	
	Each country decides how much demand restraint it achieves but does not have to simulate its programs or describe or justify how it achieved the demand restraint.	Basically accepted	Members allowed to simulate their programs if they want to.
Stock use	Stocks not to be used.	Rejected	
	Exercise is not a test of IEA coordinated stock drawdown decision.	Accepted	
Inventories	Company stockbuilding prohibited.	Partially accepted	Excessive stockbuilding to be avoided. Companies can build stocks provided that stockbuild for the country as a whole does not exceed the rate reflected in the country's undisrupted data base; otherwise excess company stocks to be reported as NPD.
NPD	Use to report all oil excess to any company's needs which could not be diverted through intra-company redirection and would result in stock additions. NPD oil to be used for voluntary offers by companies.	Largely accepted	See above.
Price	No company mock price negotiations.	Accepted	
	No common price scenario for all members.	Accepted	Individual countries could use price scenarios to test their internal demand restraint or price control approach, provided the Secretariat assisted in developing the scenario
Duration	Limit test to 1-1/2 cycles, per industry desire.	Accepted	

Table III.3: DOE Actions on Recommendations for AST-5 Preparations
by House Committee on Government Operations

<u>Committee recommendation</u>	<u>Implemented</u>	<u>Reasons provided by DOE for not implementing^a</u>
1. Resolve any emergency preparedness policy disputes within the administration before the test begins.	Yes	
2. Ensure that appropriate departmental officials are thoroughly familiar with test procedures.	Yes	
3. Establish realistic test parameters which will allow DOE to comprehensively review its emergency preparedness policies and procedures.	No	DOE believed policy and program review was not possible in an artificial test setting because any feasible design could not simulate emergency conditions so as to test participants' responses to judge policy/program effectiveness. Further, domestic or economic impacts developed during such a test would have limited value. It was agreed that test parameters would be set not to test policy but rather to provide training to essential personnel in procedures directly involved in ESS international operations.
4. Involve to the maximum extent possible other appropriate agencies within the federal government.	No	Test focused on entities with a direct role in ESS international operations. Necessary participants were involved; i.e., Departments of Energy, State, and Justice and the Federal Trade Commission. Under test parameters, participation of other federal agencies was not required.
5. Expand involvement of individual states, congressional representatives, and other affected outside groups.	No	Participants with direct roles in the ESS operation were involved. States, NRCs, and other groups did not have direct roles. DOE believed it would be burdensome for NRCs to be trained in IEA activities; therefore it simulated their activities. States and NRCs were given observer status.
6. Expand scope of test to thoroughly and objectively review domestic impact of a serious oil supply disruption.	No	DOE did not believe this could be adequately exercised in a test setting. Also it believed nothing meaningful about the domestic impact of the disruption would be learned, e.g., the test was not an appropriate environment to test price and it would not be possible to simulate the effect of a postulated disruption on a particular state or region since adequate data were not available.
7a. Promulgate and test a workable fair-sharing system whereby companies making voluntary crude oil offers proportionally share the burden of supplies made available to IEA.	No	DOE testified before Congress that a fair-sharing system was not needed. Reliance on market forces coupled with SPR drawdown should provide sufficient company offers. Further, DOE believed the United States would remain within its IEA-calculated supply right by pursuing the above policy and therefore would not incur an allocation obligation; hence U.S. companies would not be required to sell oil for international reallocation by IEA.
7b. Absent such a program, DOE should be prepared to issue MSOs if necessary to assure fulfillment of U.S. IEA oil-sharing obligations.	No	DOE believed that if needed it can quickly develop a mechanism during early phases of a disruption. However, DOE sees no scenario where the United States would have an IEA allocation obligation and therefore would have no need to use MSOs.
8. Promulgate and test a public information campaign to help consumers cope with the effects of the disruption.	No	DOE recognized such a program as important and it is constantly under review, but public information activities cannot be tested because artificial test conditions will not elicit a true response from involved participants to adequately test such activities. DOE believes it is sufficient for DOE to recognize it has an obligation in this area.
9. Reach agreement with other IEA countries on use of the most timely and accurate data possible, including estimates for surge production.	Attempted	The United States supported a Secretariat proposal to use more realistic data, but antitrust complications did not make such use feasible. The United States did develop an alternative to offset antitrust concerns but not in time to be considered by IEA. A compromise was reached not to clean up errors from data reported by companies and NESOM before the test began.

^aSee apps. II and III for a discussion of DOE's reasons.

AST-5 IMPLEMENTATION

AST-5 began on September 20, 1985, and ended on November 16. Before it began, DOE prepared manuals for U.S. participants and conducted a training session for U.S. reporting and non-reporting companies and states.

The test's principal phases were initiating the disruption; calculating supplies and submitting the data to IEA; analyzing the supply data for errors; calculating allocation rights and obligations; submitting voluntary offers; matching voluntary supply and receive offers; and arbitrarily canceling some voluntary offers then matching new offers to offset canceled matches.

Two important aspects about the U.S. implementation were how DOE simulated U.S. NRC voluntary offers and how the United States secured an allocation right instead of an obligation.

MAJOR PARTICIPANTS

The major participants in AST-5 were the Secretariat, ISAG, NESOs, and reporting and non-reporting companies (as previously discussed, NRC participation was optional).

The Secretariat served as the overall catalyst, overseeing the test operation. It also prepared the disruption telex; calculated each member's right to receive oil or obligation to provide oil under the oil sharing system, identified and resolved data discrepancies; and provided advice and consultation, as needed, to the reporting companies and NESO's.

The ISAG assisted the Secretariat in operating the sharing system, particularly by matching voluntary offers to supply oil with requests to receive oil to balance members' allocation rights and obligations.

DOE provided U.S. supply data to the Secretariat, simulated NRC data collection and voluntary offer functions, provided advice and assistance to U.S. emergency energy organizations, kept U.S. NRCs and states that were observing the test apprised of developments, and provided guidance to U.S. reporting companies on government actions, including SPR drawdown and domestic demand restraint assumptions.

The reporting companies submitted their supply position data to IEA and appropriate NESOs and made voluntary offers of excess supply. DOE simulated U.S. NRC activities, so U.S. NRCs were not directly involved.

DOE TEST PREPARATIONS

DOE prepared a training manual for reporting companies and an exercise manual for its personnel. Its staff attended training sessions and organized briefing sessions for participants and observers. DOE established a NESO organizational structure for the test and senior personnel were briefed.

The training manual for U.S. reporting companies defined responsibilities of the companies and their affiliates. It explained the information and guidance that companies would receive from IEA and DOE, provided guidance on completing company data questionnaires, and laid out U.S. test assumptions on demand restraint, company stock behavior, and use of the NPD category.

The exercise manual specified, among other things, U.S. objectives and scope, NESO organization and functions, and procedures to handle and transmit data, simulate NRC voluntary offers, and issue status reports to domestic observers.

Participant and observer
training session

DOE held a one-day training session for U.S. reporting and non-reporting companies, state governments, and other observers. A notice in the July 12, 1985, Federal Register publicizing the session indicated that DOE planned to simulate NRC activities but did not say whether NRCs would be involved in the process. The notice said that attending reporting companies and their affiliates would be provided with training in their data submission, communication, and voluntary offer responsibilities. It did not comment on what role the states would play.

The notice also said that according to the AST-5 Test Guide, the test would not attempt to simulate emergency market conditions, government policies or programs, or actual oil redirection. This statement did not disclose that the test guide permitted members to simulate domestic program implementation if they desired.

The session was not well attended; only 5 reporting companies attended; one NRC attended directly, others were represented by law firms; and only 12 states were represented.

DOE advised that NRCs and states would only be observers because AST-5 was concentrating on the international allocation system. The test would allow NRCs and states to observe and learn how the system works. In addition, DOE would provide

state observers with periodic summaries. However, because of insufficient staff DOE would not interact with the states.

DOE also explained that under the test guide, NESO's were expected to simulate NRC voluntary offers. The test guide actually specified that countries could simulate NRC activities if they wished, and several countries did directly involve their NRCs in the test.

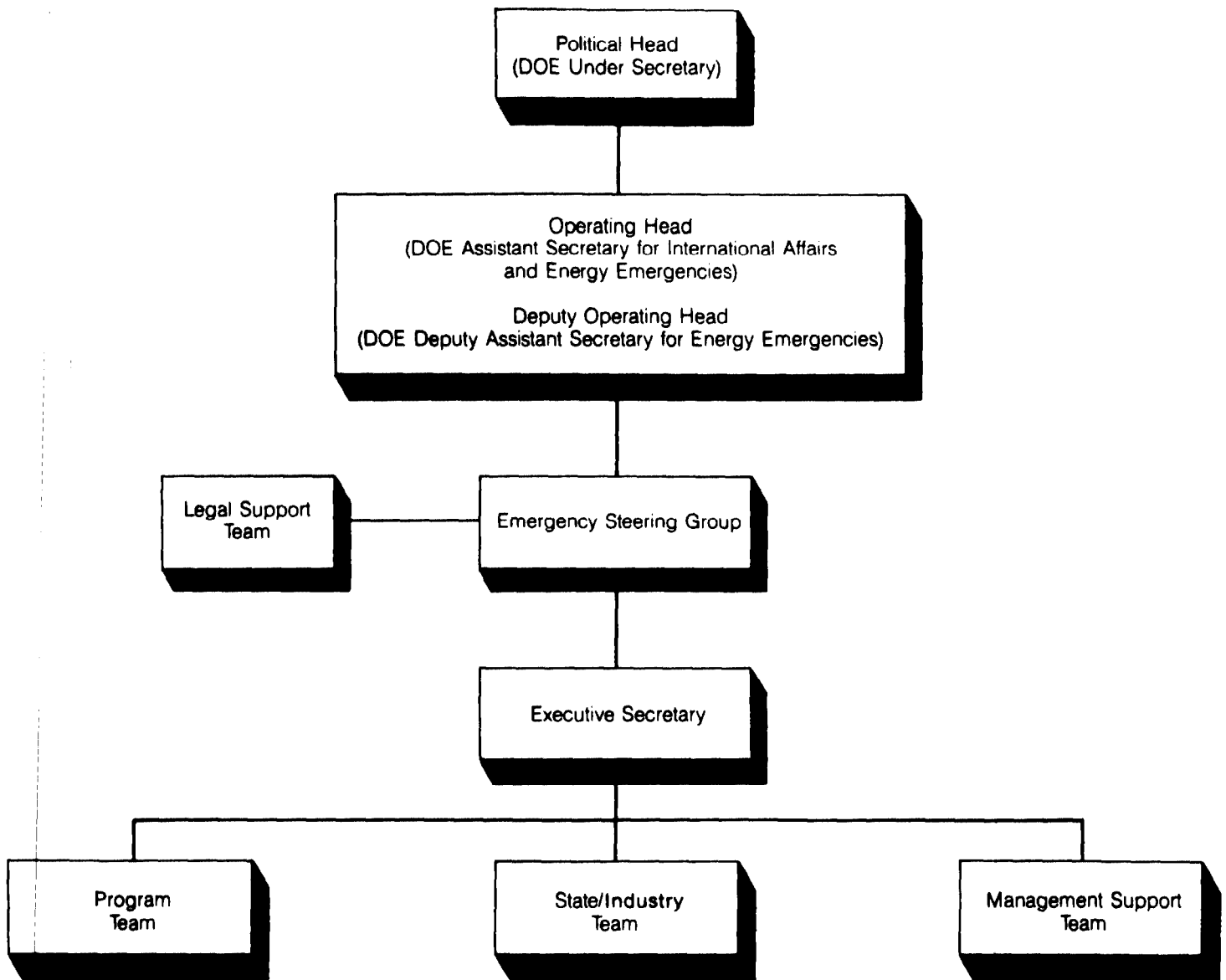
DOE officials told us that the Federal Register notification had been a request for NRCs to participate but that none of the NRCs expressed any interest. They did not contact any NRCs individually because there are so many and because they could not determine which are the most significant--to single out some for contact would not have given all an equal opportunity to participate. Also they could not think of a good reason for not simulating NRCs. Further, they believed participation would place too great a burden on many small NRCs because of the recordkeeping requirements needed for NRCs to determine their supply position. They believed that burden would be too great even if only those NRCs that accounted for a substantial part of NRC oil were involved. Moreover, DOE would be submitting NRC voluntary offers to the IEA in the event of an actual disruption, not the NRCs.

The price issue was also discussed at the training session. DOE officials said IEA decided the test was not an appropriate environment for price, and neither the United States nor IEA would use price. As discussed in appendix II, members agreed not to use a common price scenario; however individual members could use price, provided they consulted with the Secretariat. Three members did.

U.S. NESO structure

DOE's organizational structure for AST-5 is summarized in figure IV.1. The Under Secretary of DOE was responsible for the operation and policy direction of the U.S. NESO during the test (in a real emergency the Secretary of Energy would probably head the NESO), while the Acting Assistant Secretary for International Affairs and Energy Emergencies was assigned the lead responsibility for the NESO's operation. The Deputy Assistant Secretary for Energy Emergencies was delegated the responsibility for the NESO's day-to-day operations and chaired an emergency steering group of representatives from various DOE offices. The group was charged, in part, with achieving DOE concurrence on key actions, making recommendations to senior NESO management on all important test policy and direction matters, and reviewing U.S. test actions for consistency.

Figure IV.1: U.S. NESO AST-5 Organization



The Program Team was generally responsible for all NESO analytical and data operations except for the submission and tracking of voluntary offers. It was also responsible for maintaining liaison with the IEA Secretariat, other countries' NESOs and U.S. agencies and reporting companies (except for contacts involving voluntary offers).

The State and Industry Team was responsible for analytical and data operations concerning simulating U.S. NRC voluntary offers, tracking reporting and non-reporting company voluntary offers, and preparing, coordinating, and issuing periodic information packages to designated observers.

The Management Support Team was responsible for setting up and operating an operations center and telecommunications capability, providing logistical and administrative support to the other NESO operations, and developing/operating a message control system, action tracking system, and an official file.

TEST IMPLEMENTATION

The first cycle disruption telex advised that certain crude and product supplies had been decreasing since early 1984. By September 1984, company stocks had been depleted by 25 percent, or to minimum operating levels. The ESS was activated and demand restraint and other measures were in effect in all IEA countries by October 1, 1984. Unless individual NESOs advised otherwise, a 10-percent demand restraint level was to be used.

The disruption scenario specified a 45-percent production cut in crude oil, natural gas liquids, and products in 14 countries between August and December 1984. It also specified that no additional production occurred in countries that were neither IEA members nor whose production was disrupted. This scenario reduced IEA's average oil supply about 15 percent, or 4.5 million barrels per day (MMBD).

The second cycle began October 24 and ended on November 16. The disruption telex postulated a 25-percent loss of imports coupled with a loss of Alaskan North Slope crude. The scenario gave the United States substantial allocation rights in November, December, and January. Voluntary offers were not made.

Guidance provided by NESOs

The NESOs then provided guidance on, among other things, stock drawdown, demand restraint, and product imbalances.

Stock drawdown

Many countries assumed that government-owned or controlled company stocks were drawn down. The United States

was one of these countries. It assumed substantial drawdown of the SPR.

Test guidance on U.S. SPR drawdown was based on assumptions that do not reflect current emergency drawdown procedures. The U.S. guidance stipulated that each reporting company assume SPR purchases in October, November, and December. DOE stipulated the volume each company purchased, based on its share of U.S. pre-disruption imports. (Actual SPR emergency drawdown procedures call for most if not all SPR oil to be sold at auction to the highest bidders.) The quality and quantity of each type of oil in the SPR that a company purchased was also stipulated. Companies could assume custody of the SPR oil at the beginning of each month.

The United States drew on stocks in excess of emergency reserve requirements to help meet its demand restraint commitments. Australia, Japan, the Netherlands, and United Kingdom did likewise.

Japan, heavily oil import dependent, lowered company stockholding requirements from 90 to 50 days of supply and specified that companies draw down stocks to help meet demand. Japan also assumed drawdown of its government-owned stocks, as necessary, to ensure that no company's stock level dropped below 50 days of 1983 sales.

Greece drew down government stocks, not private stocks, to meet the 25-percent stock reduction imposed by the disruption scenario. West Germany assumed a drawdown of its industry stockholding entity's reserves. The Netherlands, Denmark, Switzerland, and the United Kingdom assumed drawdown of government-controlled stocks. Altogether, 14 countries drew down stocks in cycle 1 and 9 countries in cycle 2.

In the aggregate, the test started with 331 million tons of oil in public and private stocks. During the first cycle, countries reported drawing down 28 million metric tons.

Demand restraint

AST-5 was not intended to evaluate the effectiveness of countries' demand restraint programs, but the countries were expected to act as realistically as possible. According to the Secretariat, programs simulated during AST-5 might somewhat indicate how the countries would react in a real disruption of similar magnitude.

DOE's guidance stipulated that each company reduce its net product sales by 7 percent in October but imposed no reductions in November and December. The companies could apply different reductions to individual products, provided the weighted average reduction met the limit.

Seventeen countries assumed demand restraint equal to or greater than 10 percent for cycle 1. Most countries reported on the demand restraint measures they adopted to IEA, but the United States did not. Many countries adopted public persuasion campaigns and compulsory orders, such as speed limits, weekend driving bans, and temperature limits; 15 simulated allocation systems; West Germany and Sweden simulated rationing. Four others considered rationing. Seven assumed fuel switching measures. Three simulated price increases. As stated previously, 5, including the United States, used stock drawdown to meet part of their demand restraint commitments. Increased domestic production which results from standby oil production can be used in meeting a country's emergency reserve drawdown obligation, and if the country has more than 90 days of emergency reserves, it can substitute the increased production for demand restraint. Standby oil production is defined as potential oil production which is in excess of normal oil production, subject to government control, and can be brought into use during an emergency.

Canada simulated a substantial increase in domestic production, part of which was due to a decision to allow a production increase in certain crudes. The Canadian NESO requested that this part be excluded from calculations of Canada's available supply. The IEA Secretariat official responsible for coordinating the IEA allocation agreed. Australia also simulated a substantial increase of domestic production via technical optimization of its production facilities. Since it did not take extraordinary government actions to allow or encourage the production increase, it did not request that the increase be excluded from its available supplies.

Product imbalances

Some nations might also experience product shortages. Product imbalance was an optional part of AST-5. The United States did not participate, assuming its domestic market and refining industries were large and flexible enough to adjust to any product imbalance. Other nations did not enjoy this advantage, requiring the ISAG to work with NESOs to reduce product imbalances. In its appraisal report, the Secretariat commented that a difficulty in the matching process was that ISAG did not receive sufficient product supply offers to match requests. ISAG, therefore, matched light crude to light and middle distillate product requests and heavy crude to fuel oil requirements.

U.S. data submissions

The U.S. reporting companies adjusted their undisrupted oil supply and reported the new supply data to IEA and DOE. Before determining their supply positions, the companies were

encouraged to enter into type 1 transactions with their affiliates to transfer excess oil to countries which needed it.

The United States submitted its adjusted national supply data to the Secretariat, reflecting domestic production, SPR withdrawals, imports, exports, and oil company stock behavior. U.S. reporting company data were reported individually and NRC data in aggregate. DOE simulated the NRC supply position.

IEA action on data

The Secretariat calculated countries' allocation rights and obligations and notified the NESOs and reporting companies. They were recalculated after the voluntary offer process and again after the test's arbitrary non-implementation of matched voluntary offers was completed.

Five of 21 members had obligations to provide oil during cycle 1. The United States had an allocation right primarily because of how it used the NPD category. Nevertheless, it provided 1.2 MMBD to other countries during cycle 1. (See section on why the United States had an allocation right in AST-5.) Another 6 countries had allocation obligations during one or two months of the first cycle.

To satisfy allocation rights, oil flowed principally from the United States to Europe and Japan; from Canada to the United States, Europe, and Japan; from Australia to Japan; and from Denmark to the United Kingdom, Sweden, and Norway.

Voluntary offer process

U.S. reporting companies made 149 voluntary supply offers of about 70 million barrels of oil. U.S. offers were timely, although some came near the deadline. The Secretariat urged companies that it thought might be late in making offers to reallocate sufficient oil by the deadline.

ISAG matched offers with requests for oil. This process also involved mitigating product imbalances where a country had neither crude oil nor the product needed. The voluntary offer process resolved about half the supply shortfall.

ISAG received 757 voluntary offers. Altogether, about 195 million barrels of crude and product were matched and redirected over a 3-month period, about 2.1 MMBD. This quantity was much larger than in AST-4 and that would be expected in an actual supply disruption, where type 1 activities would be expected to make a greater contribution.

To increase the test's realism and determine the impact that failure to implement matched offers would have, 24 matches

were arbitrarily canceled, requiring rematching of about 11 million barrels of oil over approximately 2-1/2 days.

U.S. SIMULATION OF NRC PARTICIPATION

During an emergency, DOE would expect NRCs to submit their respective supply positions and divert excess supplies to other countries through voluntary offers.

During AST-5, DOE created a "cargo file" to simulate NRC activities. Rather than simulating all NRC supply data, however, DOE simulated only NRC oil imports on a cargo by cargo basis--hence, the name cargo file. The file was used to identify the shipments from which voluntary offers would be drawn. DOE assumed that all voluntary offers would be made from NRC oil scheduled for U.S. import.

DOE and Energy Information Administration officials said that the file was created from historical data on individual company shipments disguised to protect against improper disclosure. Some small shipments were aggregated to meet voluntary offer requirements. Company ownership was not considered when selecting specific cargoes for use as voluntary offers.

We found, however, that the file was actually derived from aggregated monthly NRC imports, separated by type and volume. DOE subdivided these into individual cargoes. Ship sizes, cargo volumes, loading ports, departure and arrival dates, and U.S. destination ports were made up by the Energy Information Administration.

The Energy Information Administration attempted to develop representative cargoes. For example, if 20 percent of a country's crude oil exports to the United States in a given month was shipped from a specific port, then 20 percent of that country's oil in the cargo file for that month was assigned that loading port. Ships that were larger than a particular port could handle were not assigned to that port.

The Energy Information Administration referred to some historical data in constructing the file but it was not systematically compared to actual data. Thus, it is not clear how realistically the cargo file reflected NRC activity.

The file's data was questioned during the test. Some voluntary offer loading dates did not seem consistent with estimated arrival times, with a cargo taking too much time to transit. The ISAG questioned the accuracy, since it did not feel confident in matching some shipments with requests to receive oil. Energy Information Administration officials explained that the problem arose because DOE selected a few samples of actual shipments from each country during the

historical period and computed the actual travel times. Test travel times were based on these examples. However, some ships in the sample data had steamed slowly to reduce transportation costs; others became floating storage depots in the Caribbean before entering the United States.

The cargo file was artificial and would not be used in an actual disruption, but it simplified DOE's task of ensuring that the United States made sufficient voluntary offers during AST-5. DOE assumed that the NRCs as a group received a share of the SPR oil drawn down proportionate to their historical share of U.S. oil imports. The test rule against building stocks was applied to NRC supplies as a group, as was the assumed 7-percent demand restraint assumption for October. Therefore NRCs had substantial excess supplies, which DOE used to back-out NRC oil imports (i.e., scheduled NRC oil imports were diverted to other IEA countries).

Certain import cargoes were placed in the NPD category, which DOE used to make NRC voluntary offers. Because cargoes in the file were not established on an individual company-by-company basis, DOE could choose which cargoes to earmark for the NPD category without being concerned whether an individual NRC was placed in too low a supply position because too many of its cargoes were diverted. DOE officials told us that in making the selections, priority was given to cargoes easiest to transport to Japan and Europe; however, they did try to spread out the selection proportionally between original U.S. destination ports.

DOE converted all NRC excess supplies into voluntary offers and 1 MMBD of NRC oil was matched to offers to receive oil, exceeding the reporting companies 747,000 barrels a day, over the October to December period. However, in a real disruption, NRCs would be expected to partially balance their own systems, like the reporting companies, by entering into type 1 transactions. Thus, fewer NRC voluntary offers would be required.

WHY THE UNITED STATES HAD AN ALLOCATION RIGHT IN AST-5

During AST-5's first cycle, the United States was credited with an allocation right of about 0.5 MMBD. However, it still allocated about 1.2 MMBD to other members. Several factors account for the U.S. allocation right

1. To meet its supply right, the United States had to reduce oil demand and/or draw oil stocks by about 2 MMBD. It simulated drawdown of 2.3 MMBD for the October-December period and assumed 1 MMBD demand restraint in October, with no demand increases or decreases in November or December. The combination provided added supplies of 2.7 MMBD, more than enough

to offset imports lost from the disruption--i.e., 1.0 MMBD. DOE officials told us there was no rationale for why demand was reduced in October and not in subsequent months. A DOE analysis made at the start of the test showed that the demand restraint assumption gave the United States a substantial allocation right as compared to a very small one with SPR drawdown only.

2. DOE instructed companies that oil could not be put into their oil stocks at a rate exceeding their undisrupted level, even temporarily, e.g. for only one month. (The IEA test rule was not so strict; it said countries should assure that stock buildup did not occur for a country as a whole over the full 3-month 1st cycle period.) Therefore, U.S. companies with excess supply were required to back out or divert U.S. oil imports of an equivalent amount, either using type 1 transactions or designating the oil as NPD and subsequently making it available as type 2 voluntary offers.
3. The volume that U.S. reporting companies could back out using type 1 transactions was limited. U.S. government guidelines for their participation effectively restricted them from making type 1 transactions with other companies; they could simulate type 1s with their foreign affiliates. U.S. NRCs could not simulate type 1s because they were not allowed to participate in the test and the DOE simulation of NRCs did not include data on individual company positions. As a result, a substantial volume of U.S. oil was designated in the NPD category--possibly as much as 1.5 MMBD.
4. In calculating members' allocation rights and obligations, the Secretariat did not categorize U.S. oil reported in the NPD category as being U.S. oil. The NPD category was treated as a "22nd country" whose oil had to be reallocated to IEA countries with allocation rights. However, all or nearly all the NPD oil was oil originally bound for the United States.
5. DOE estimated early in the test that only 1.2 MMBD of oil destined for U.S. import would need to be diverted overseas. However, the United States diverted 1.7 MMBD of oil to other IEA countries; therefore, it had an allocation right equal to the difference--about 0.5 MMBD.

Given U.S. government test guidelines for U.S. oil companies and given how the AST-5 disruption scenario affected

U.S. oil companies, DOE knew that maximum SPR drawdown coupled with an assumed 7-percent demand restraint for October would give the United States an allocation right, provided that the reporting companies correctly followed its guidance. If that guidance had been modified, letting U.S. companies build stocks beyond undisrupted additions, even temporarily, then companies could have avoided putting excess oil imports into the NPD category. If that had occurred on a large scale, the United States would have had an allocation obligation, not an allocation right.

Was DOE's guidance realistic?

DOE's guidance to companies not to build stocks and to put all excess oil into NPD was unrealistic in that the government cannot legally prevent companies from building stocks during a severe energy supply interruption. A more realistic simulation would have been for DOE to request that companies not build stocks beyond levels needed to meet normal demand, except temporarily, and then let each company decide on its stock levels. This would be more like what would happen in a real disruption. Of course, companies might make fewer voluntary offers in such circumstances.

The Secretariat's evaluation noted that in an emergency it would be highly unlikely to have such a large pool of NPD oil for allocation. The oil would either have been allocated among countries through type 1 activities or would remain part of the available supply of the countries for which it was originally destined.

DOE officials believe it was appropriate to have a large pool of NPD oil in the test since U.S. test guidance severely restricted redirecting oil through type 1 transactions. They believe U.S. companies would back out excess oil supplies in a real disruption and find willing buyers in other IEA countries. U.S. guidance effectively limited such transactions to company affiliates only. Consequently, DOE officials believe it was more realistic in the test to designate excess oil which they believe would normally be redirected abroad as being NPD. To do otherwise would show the United States receiving more oil, thus inflating a U.S. allocation obligation or understating a U.S. allocation right.

We agree that U.S. guidance unrealistically limited oil redirection through type 1 transactions. However, we do not believe that companies would necessarily regard oil supplies above predistruption stock levels as "excess" that should be diverted overseas or that they would necessarily voluntarily back out sufficient supplies so that the United States would not exceed its supply right. If the United States had not required companies to use the NPD category in an artificial way, it could have had an unrealistically high allocation obligation, which

might suggest a need for fair-sharing arrangements. At the same time, the prohibition against building stocks and the requirement to put excess oil into NPD resulted in the United States having a large allocation supply right, which may have been equally unrealistic.

Whether the United States would incur an allocation right or an obligation in a disruption similar to that postulated by AST-5 will depend on several, difficult to predict, interdependent factors.

- How long the disruption is expected to last and whether companies perceive a need to build stocks to protect themselves against future shortages or increasing prices.
- How quickly oil prices rise and consumers reduce consumption, both here and in other IEA countries.
- Whether certain other IEA countries use price controls to hold internal oil product prices below world market prices.
- Whether the U.S. government can convince companies to voluntarily divert supplies absent a fair sharing program or demonstrated ability and willingness to use MSOs, if market reliance does not sufficiently reduce U.S. demand.

EVALUATIONS

The Secretariat, ISAG, and U.S. and foreign reporting companies, and NESOs believed they benefited from the test and were provided with adequate training. Problems cited were primarily technical. Areas were identified for future study, and recommendations were made for improving the system.

Twenty states and the District of Columbia, however, expressed displeasure at their passive role, believing an active role would have benefited them more. Nineteen other states that did not participate cited the lack of a significant state role as a reason for not participating.

We believe that the test went well and that the United States generally performed well within the test's designed structure and objectives. However, U.S. performance caused several problems in IEA, primarily because of the U.S. test rule restricting U.S. oil companies from building stocks, DOE's simulation of NRC voluntary offers, and the heavy use of the NPD category by U.S. reporting companies as instructed by DOE.

IEA

SEQ's appraisal report said the test again demonstrated that ESS can effectively and equitably handle a large supply disruption. The Secretariat's appraisal report concluded that the objectives were met and certain ESS technical features were more fully tested than in the past. The following overall points were made.

- Data transmission and processing were relatively problem free.
- Most members simulated their emergency response programs as realistically as possible; a number of them simulated using government-owned or controlled stocks.
- ISAG efficiently redirected more oil than in previous tests and more than might be required in a real emergency.
- Virtually all members fulfilled their allocation rights and obligations; one country which did not do so had internal data problems.

The Secretariat also identified the following areas as requiring future work.

- Surge oil production: The IEA rules should be revised so that members which increase domestic oil production during an emergency can be compensated.

- Oil quality problems: ISAG could more quickly and efficiently match offers if companies offering oil described any unusual characteristics (e.g. high metal content), and companies seeking oil requested general rather than specific crude grades.

- Short haul supplies: Members now depend more on "short haul" crude imports (i.e., imports of oil from nearby areas; for example, U.S. oil imports from Mexico) which made monthly balancing of country allocation rights and obligations impossible during the test; data collection and reallocation procedures may need to be modified to handle this situation.

- Shipping: The IEA members' increasing dependence on short haul crudes may complicate the allocation process because it could require increased tonnage to divert cargoes. The IEA should consider the feasibility of including this aspect in future tests.

- Data handling: A high-speed data communication network would speed up the ESS operation.

- Data improvements: Data quality needs to be improved to resolve or explain trade discrepancies; and allocation rights/obligations calculation procedures need to be reexamined and revised if necessary.

The Secretariat, as in previous tests, found corresponding import and export data submitted by individual trading partners had caused large, unexplained (trade) discrepancies. (The United States accounted for some of the largest discrepancies in the test, and use of the NPD category by U.S. companies made the analysis of U.S. discrepancies more complex.) The potential impacts were somewhat smaller than in previous tests. Even so, the Secretariat concluded that depending on which data was accepted, allocation rights and obligations would be higher or lower for many members, and some members would have moved from an allocation right to an obligation or vice versa.

Some trade discrepancies resulted, they believed, from inaccurate and incomparable data. Others are the consequence of shipping time lags, which cancel out over time and do not cumulatively affect allocation rights and obligations. Some errors are easily corrected; others can significantly affect allocation right and obligation calculations, with inequitable effects; this, in turn, may affect the system's smooth operation during a real emergency as members seek causes for the differences and may affect members' confidence and support for the system.

AST-5 included a new procedure for resolving trade discrepancies. In its test appraisal, the Secretariat commented that although there was little opportunity for the new procedure to be tested, it appeared to be a marginal improvement over the previous procedure.

The Secretariat recommended that the IEA consider making future tests more comprehensive by introducing additional elements for use in developing national and company responses and/or for use in simulating company-to-company negotiations on voluntary offers.

ISAG

ISAG evaluated only the first cycle, during which it redirected oil cargoes to match allocation rights and obligations. Its broad conclusions were favorable.

An AST-5 objective was to train ISAG members. For the first time, a pre-test training session was held solely for ISAG members; veteran members found it a good refresher and new members found it a good overview of the IEA allocation system. The ISAG concluded that successfully handling the large volume of voluntary offers, including canceled or delayed offers, during the one full allocation cycle provided adequate training. It also found that the computerized voluntary offer system allowed it to successfully handle a larger work load with fewer persons than in previous tests. However, noting the extra hours and weekends worked, ISAG expressed a need in future tests for a supply analyst/computer terminal operator and a substantial number of members with prior ISAG experience.

As discussed earlier, two new elements, using data which had not been purged of errors and the arbitrary non-implementation of matched voluntary offers, were added in AST-5. ISAG was supposed to help resolve data discrepancies; however, during the test the Secretariat assumed the function. ISAG recommended that the Secretariat keep that function in future tests, because companies and NESOs are now better trained in data submissions and the IEA computer facilitates identifying conflicting data. With regard to the matches arbitrarily declared not consummated, ISAG reallocated 24 offers totaling 1.5 million tons over 2-1/2 days.

Two ISAG report comments were directed at the United States. First, as in past tests, the U.S. antitrust monitoring requirements were burdensome. Second, ISAG's most time-consuming task was reallocating NPD oil, nearly all of which was originally bound for the United States. The task was lightened a bit when, after consultations, the United States relaxed its restrictions on U.S. companies' temporarily building stocks.

ISAG made the following recommendations to improve its performance, should the ESS be activated.

- Common language: ISAG members and NESO and reporting company contacts should be fluent in English.
- Experienced personnel: Some ISAG members must be experienced; reporting companies should be encouraged to provide ISAG staffing continuity.
- Computerization: Computer system should be improved to facilitate the voluntary offer matching task.
- Requests to receive oil: IEA should study the possibility that companies should request general rather than specific crudes to facilitate matching offers.
- Data discrepancies: Resolution of discrepancies should be left to the Secretariat.
- Antitrust issues: Several changes should be made in U.S. antitrust monitoring requirements to reduce the burden on ISAG members.

COMPANY

Most reporting companies were satisfied with the training they received and considered the related material clear and useful. Some commented that 1-1/2 cycles was long enough and that there should be a longer interval between tests because the tests are expensive. Companies were generally pleased with relations with IEA and NESOs and with improved communications and data handling.

Minor technical problems were noted. Some problems, however, did lead to data discrepancies, which required reconciliation.

Some comments were more critical. One U.S. reporting company was doubtful whether the IEA allocation system could work in such an excellent manner should an actual crisis occur since prices would be involved. Another believed the DOE method for distributing SPR oil in AST-5 was fine; however, in a real world situation this method would leave much to be desired. A third commented that national fair sharing is probably the major NESO activity which will affect companies in a real emergency because it is the keystone for their voluntary participation in sharing of disrupted supplies. However, national fair-sharing programs either were not implemented or not given much emphasis by some of the NESOs.

DOE

DOE concluded that "all of the IEA test objectives for AST-5 were met." Its evaluation acknowledged difficulties in reconciling data discrepancies and in communications but stated that these were largely overcome by highly cooperative work. Some problems remained, and they represent areas for possible improvement before the next test. For example, DOE, like other participants, suggested that the solution to some communication problems might lie in arranging computer-to-computer communications.

With regard to the observers, such as NRC, states, and congressional representatives, DOE commented, "Ultimately, we believe that our activities have allowed numerous domestic groups to increase their understanding of the test and to develop a better appreciation of the ESS."

COMMENTS BY OTHER NESOs

Other NESOs' evaluation were largely positive. In addition to the United States, 17 countries provided written assessments to the Secretariat, and a number of members commented further when the SEQ discussed AST-5 results. Most of the countries explicitly said that AST-5 was a useful exercise. Many commented favorably on the training benefits. Several reported that they tested various domestic emergency procedures and drew conclusions about the results.

Only Italy expressed general dissatisfaction with AST-5; it believed the test lacked realism because it omitted price. Seven countries complained about continuing trade discrepancy problems and said this subject requires more attention.

STANDING GROUP ON EMERGENCY
QUESTIONS

The SEQ essentially restated the Secretariat's principal findings and conclusions and stated that the SEQ would work on issues the Secretariat had identified.

STATES' COMMENTS

We surveyed the views of energy officials in 49 states (Alaska did not respond) and the District of Columbia on their role in AST-5, their reasons for taking part (or not), and the possible benefits an active role would have provided them.

Twenty-three states and the District of Columbia chose to participate. Of these, 12 attended the pre-test briefing. We asked these 12 state representatives whether the information obtained justified their attending; 6 said definitely yes, 2 probably yes, and 4 probably no.

None of the participants had an active role or simulated state emergency measures. Twenty-one participants believed an active role would have benefited them more, three did not.

Only four participants attended DOE's post-test debriefing session. Kansas commented that before the test DOE had told the states they would not have the input they had had in previous exercises. Kansas added "you kept your word; our input was zero."

Connecticut said that it thought the AST-5 scope was realistic and dealt with the most important matters. DOE did an adequate job, and it was a good time for states to be onlookers. At the same time, Connecticut said its emergency planning is contingent on others, and it will not know what to do in an emergency until it knows the plans of the federal government and of its neighboring states.

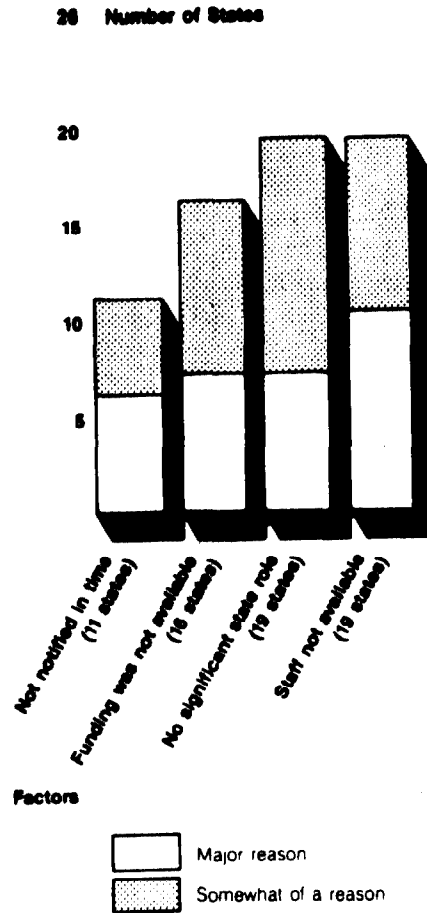
New Hampshire said it was glad to hear that the test went well and that DOE's status reports were fine. It added that it would welcome an opportunity to participate in a national or regional exercise; such an exercise would help it get over its lethargy with respect to emergency planning.

New York State was very critical. It said it is important that all essential elements be included in an allocation system test, including states. New York has plans and programs and could have learned a lot from the experience of direct participation. Inclusion of states in AST-5 would have been a natural follow-up to problems which arose in AST-4, such as the overloading of DOE's electronic message system. New York recommended that states be included in the planning of future allocation system tests.

Twenty-seven states did not participate in AST-5. We spoke with officials of 26; 1 state chose not to respond to our survey. We presented them with 4 possible factors for not participating: (1) they were not notified in time, (2) funding was not available, (3) staff was not available, and (4) there was no significant state role. We asked them to what extent each factor influenced their decision not to become involved in AST-5. Their responses are shown in figure V.1.

All 26 states cited that at least 1 of the 4 factors as influencing their decision not to participate in the test. Lack of staff and the insignificant state role were each cited by 19 states and lack of funding by 16. Seventeen state representatives responded that they had no additional reasons for their state's decision, and 9 states gave varied reasons which did not present a common pattern, e.g., emergency planning was not a priority.

Figure V.1: Main Reasons Why 26 States Did Not Participate In AST-5

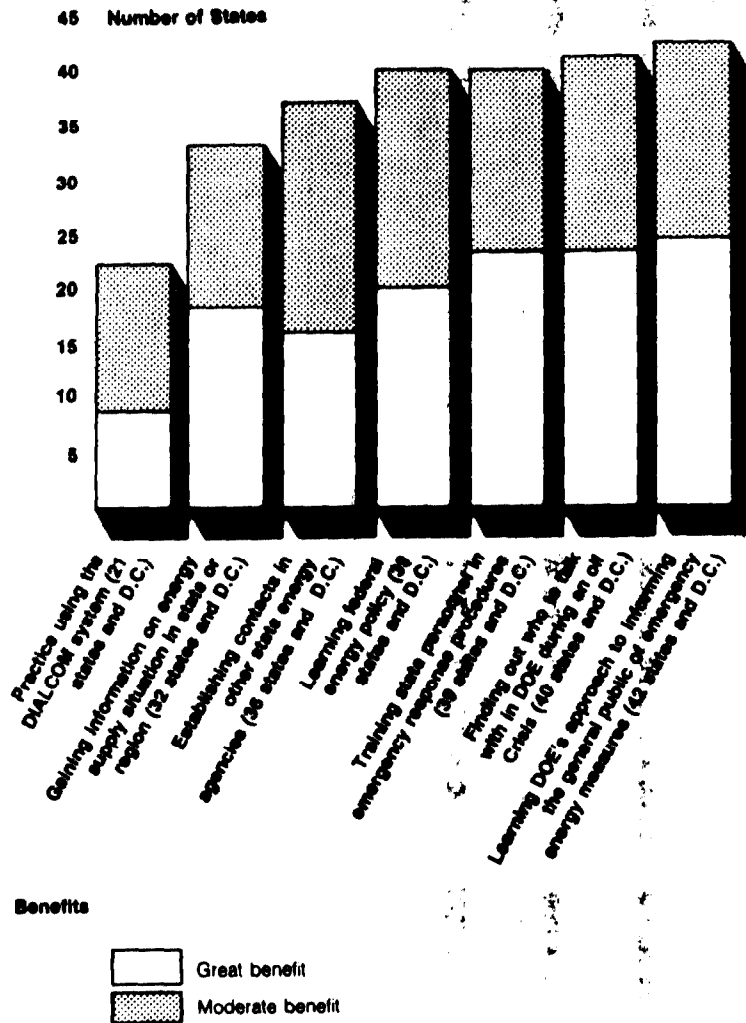


Benefits of active state involvement

We asked all 49 states and the District of Columbia about the extent to which an active role in AST-5 or a domestic emergency allocation test would have benefited them in each of seven areas shown in figure V.2.

Three quarters or more believed they would have benefited to a moderate or great extent in 5 of 7 areas. These included establishing contacts in other state energy agencies, learning federal energy policy, training state personnel in emergency energy response procedures, finding out who to talk with in DOE during an oil crisis, and learning DOE's approach to informing the general public of emergency energy measures.

Figure V.2: Benefits States¹ Representatives Believe They Would Have Obtained From An Active Role In AST-5 Or A Domestic Oil Supply Disruption Test



¹Includes District of Columbia responses.

In analyzing the responses of participants versus non-participants, we found that the two groups perceived they would have received great or moderate benefit from active participation to about the same degree.

Forty-five states told us that they believed the allocation system tests should simulate domestic energy policies; 4 states and the District of Columbia expressed no opinion on the issue. Forty-seven states said that the tests should project the economic impact of a disruption; one state did not agree; and one state and the District expressed no opinion on this issue.

U.S. TEST PERFORMANCE

The United States generally performed well within the AST-5's designed structure and objectives. The test design was primarily directed at ESS international functions; many domestic aspects were optional and members could simulate them if they so chose.

AST-5 provided useful training for the Departments of Energy, State, and Justice and the Federal Trade Commission and U.S. reporting companies in certain procedures and mechanics of the ESS including data handling, communications, Secretariat calculations, and the voluntary offer process.

AST-5 did not comprehensively assess U.S. emergency preparedness policies and procedures, because the U.S. government chose not to simulate implementation of several policies and programs that would be involved in responding to a real energy emergency. Economic response measures, mandatory supply orders, and public information programs were not simulated. Also, SPR and demand restraint approaches were only partly simulated and NRCs and state governments were not actively involved nor were other federal agencies or congressional participants that would be involved in a real crisis. Consequently, useful training was not provided in these activities or to those interested parties that were excluded from direct involvement in the test.

DOE's performance in the international aspects of the test

No apparent conflict existed among the federal agencies (DOE, the State Department, the Justice Department, and the Federal Trade Commission) over how the test should be conducted. DOE and Secretariat communication and data reconciliation went well. No serious communication problems were evident between DOE and the U.S. reporting companies. The DOE-simulated NRC and actual reporting company voluntary offers provided the United States with sufficient oil to meet its IEA sharing commitment and helped ISAG to balance the sharing system.

However, there were several problems. First, the U.S. rule restricting U.S. oil companies from temporarily holding any excess stocks was more stringent than allowed under the test design, which permitted companies to temporarily build stocks if a country's inventory did not exceed the predisruption level.

The U.S. position caused ISAG difficulty. Because U.S. companies had excess oil as a result of the assumed SPR drawdown and demand restraint and could not stock much of that oil, they reported it in the NPD category, as instructed. Subsequently, the oil was made into voluntary offers. The U.S. use of the NPD was within the test rules. However, an unusually large oil volume was placed in NPD (about 2.5 times greater than the total

oil volume IEA allocated in AST-4), and most NPD oil was originally bound for the United States. Further, volumes were heavily skewed to October, the first month of cycle one. The ISAG could not quickly arrange new destinations for the NPD oil, since companies could not begin offering the oil to ISAG until the voluntary offer process began on October 17. By then, much oil had reached or almost reached its U.S. destination, and the ISAG could not efficiently reallocate the oil (in or close to the United States) to Japan or Europe because (1) transportation costs would be excessive (essentially for 2 voyages) and (2) it could not be quickly diverted to far away destinations, such as Japan. Logically, companies should have put that October oil temporarily in their stocks to meet their November or December U.S. demand needs and offered scheduled November or December imports for diversion to other IEA members. According to ISAG, that is a basic ESS expectation. However, the U.S. inventory rules prevented U.S. companies from doing it.

Reallocating NPD oil was ISAG's most time-consuming task, particularly in October. Time was spent conferring with the U.S. reporting companies and DOE resolving the October NPD problem. Considerable time was expended because DOE wanted IEA to resolve the situation by directing that the U.S. inventory rule be relaxed but did not want to approach the IEA directly for guidance. The Secretariat was reluctant to take the initiative. Some relief was provided when the United States partially relaxed the October end-of-the-month inventory constraint.

The large NPD volume also caused another problem in the sense that it made ISAG's job of securing sufficient voluntary offers easier. According to the head of ISAG's Supply Coordination Group, in past tests ISAG had to badger companies to get them to volunteer sufficient oil volumes. This was not the case in AST-5. In fact the ISAG found itself with too much oil to allocate; a substantial portion of the amount volunteered by the United States had to be sent back.

DOE officials justified the large NPD use. In a real disruption, companies would not be prevented from engaging in inter-company transactions so most supply balancing would occur before ISAG became involved. U.S. companies would reduce their excess supplies by diverting their U.S. oil imports to other IEA countries by using type 1 transactions. But, since U.S. guidance precluded inter-company transactions, it was appropriate to label the oil NPD. Thus, the United States had a more realistic oil import level than it otherwise would have had. Moreover, the Secretariat and ISAG appraisal reports commented that the large amount of NPD oil provided useful training by challenging ISAG to match far more oil than it would likely have to during an actual disruption.

A third problem concerned DOE's NRC voluntary offer simulation. As discussed elsewhere, steaming time for some ships was not accurate. For example, a cargo on a ship which

normally would take 10 to 14 days to move between ports was offered with a discharge date as much as 6 weeks after its loading date. ISAG could not determine where the vessel was during the added 4 weeks transit time and redirection could not proceed until DOE had been contacted for clarification. The procedure delayed some allocations. The problem occurred so often that ISAG adopted a procedure to estimate its own loading dates based on average voyage times and stated discharge dates.

DOE's performance in testing
domestic emergency programs

Domestically, few activities were simulated or tested. DOE explained that the test was designed to exercise and provide training in international ESS aspects, thereby excluding domestic programs. Although the test guide did not require members to simulate domestic programs, it allowed them to do so if they wished.

As previously discussed, the administration concluded that it was not possible to realistically review policies and programs in an artificial test setting. U.S. officials said that one cannot assess the effectiveness of market-based policy which will depend on the psychological behavior of individuals under stress conditions. Planners were also concerned that U.S. policies might be criticized and observers might draw wrong conclusions about the efficacy of U.S. policies and programs. Consequently, during the test design they tried to focus the test on the international aspects of the ESS.

During the design process, U.S. representatives strove to exclude a common price scenario, simulated company oil price negotiations, domestic demand restraint programs, and stock drawdown; and to make fair sharing, mandatory supply orders, and direct NRC participation optional. They were successful to the extent that the use of these elements was made optional. As a result, during the test the United States was able to exclude most domestic elements while remaining within the IEA design guidelines.

United States did less in AST-5 than
a number of other IEA countries

The United States did less domestic simulation in AST-5 than the test design allowed and less than some other countries did. For example, the United States did not directly involve NRCs, whereas many members did. The United States did not fully simulate its demand restraint approach or report to IEA on what its approach was; most members did. Although in a crisis, the United States would rely primarily on price increases to meet its demand restraint, it chose not to simulate oil prices in

AST-5; three countries did.¹ The United States also did not simulate use of its public information program to restrain demand; at least 13 other members did.

The United States assumed emergency oil reserves drawdown, e.g., the SPR, like many members, but did not simulate the auction process which would be used in a real emergency or the various administrative procedures and mechanisms integral to that process. However, DOE simulated administrative and management drawdown procedures before AST-5; and, shortly after AST-5 concluded, it conducted an SPR test sale which involved the auction process. About 1.1 million barrels were put up for auction, and contracts were awarded for 1 million barrels.

As in previous tests, the United States could have directly involved state governments, but it did not. Australia, which also has a federal government system, involved its state and territory officials in planning and coordinating its emergency response in AST-5.

Simulating fair-sharing programs or MSOs was optional for members. At least five IEA countries simulated fair sharing. The United States no longer maintains a fair-sharing program, preferring instead to rely on the threat of using MSOs. Because of U.S. assumptions, it was quite unlikely it would need to issue MSOs during AST-5. Sweden did simulate an MSO.

Effect of U.S. exclusions

As a result of U.S. exclusions, AST-5 did not generally assess U.S. energy emergency plans for responding to a major oil supply disruption and training opportunities in various areas were foregone. For example, the United States did not

--train U.S. NRCs in making voluntary offers and did not train DOE personnel in interacting with NRC personnel to secure sufficient and reliable offers;

--devise a system for and simulate issuing MSOs to train DOE, Energy Information Administration, and oil company

¹Drawdown of emergency oil reserves in excess of 90 days of net oil imports can substitute for demand restraint. During the test, the United States drew down SPR oil in excess of its demand restraint commitment and also assumed 7-percent demand restraint in October. However, these actions were taken to ensure that oil was available for U.S. companies to make voluntary offers; they were not described as a simulation of U.S. demand restraint policy or programs. DOE and State Department officials said the 7-percent demand restraint assumption was not related to any programs. They primarily made the assumption to ensure that U.S. oil companies had enough excess oil to meet a U.S. oil allocation obligation to the IEA.

personnel in their use and to explore possible problems that might arise in employing such a system;

- train state personnel in current federal policy for responding to a serious oil supply disruption or in implementing state emergency response procedures in coordination with federal and other state government actions;
- simulate some of the elements of a public information program that would be employed, convey the results to state government participants, and determine their reaction to the usefulness of the information; and
- simulate the possible price and economic impacts of the AST-5 disruption scenario, and convey the results to interested parties.

On the other hand, important training was provided and U.S. reporting companies received guidance and training in IEA forms, data, and procedures and in communications with IEA, ISAG, and DOE personnel. However, this training was primarily mechanical. For example, the U.S. arbitrary use of the NPD category virtually insured that voluntary offers were not in fact voluntary and removed judgment from the test. When we discussed the latter point with DOE officials, they questioned whether one could realistically assess companies' willingness to make voluntary offers in a test. For one thing, they said, tests do not provide a reliable indication of how many voluntary offers will be needed, since companies are restricted in how many type 1 transactions they can make and since price is not included in the test. In addition, they said, company decisions about whether and how much oil to make available as voluntary offers are likely to be made by high-level company officials, but these officials do not participate in the tests.

DOE personnel were trained in receiving reporting company supply data transmissions, combining them with their simulated NRC supply data and transmitting the results to the Secretariat. They also were trained in providing guidance to and interacting with U.S. reporting company personnel in applying test rules, simulating NRC voluntary offers and transmitting them to the Secretariat, and interacting with U.S. reporting company, Secretariat, and ISAG personnel in developing, matching, and unmatching voluntary offers.

LIST OF GAO REPORTS ON
THE INTERNATIONAL ENERGY AGENCY

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