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FAA Appropriation Issues

Statement of
Kenneth M. Mead,
Director, Transportation Issues
Resources, Community, and Economic
Development Division

Before the
Subcommittee on Transportation
House Committee on Appropriations

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to comment on Federal Aviation Administration (FAA) appropriation issues. GAO's work continues to focus on how well FAA is ensuring aviation safety and its efforts to modernize the air traffic control (ATC) system. We testified last year that FAA faced major challenges in integrating and deploying numerous projects within budget and on schedule and in hiring adequate staff for its safety work forces. These challenges are more pronounced in fiscal year 1989, and are likely to be even greater in fiscal year 1990.

After providing an overview of where ATC modernization stands, our testimony today will discuss three main points:

-- Much larger Facilities and Equipment (F&E) funding needs are projected for upcoming years, well above authorization levels. This suggests an urgent need for FAA to establish priorities, and determine when the most important projects will be required.

-- FAA needs to take prompt action to solve problems which, if unattended, will delay NAS implementation. Specifically, the agency needs to determine its needs for resources to install projects in the field, make more effective use of support contractors, and improve planning and scheduling of implementation activities.

-- FAA's establishment of a broad range of human resource initiatives is encouraging and must be sustained. We will be issuing reports later this spring concerning the air traffic controller work force views on numerous issues, including their reaction to these initiatives. We do want to make the point today that while FAA continues to make progress rebuilding the controller work force, staffing goals for Full Performance Level (FPL) controllers are extremely optimistic and, in our view, not likely to be met in the time frames established. Further, maintenance technician staffing shortages may require FAA to contract out for maintenance.

PROGRESS MADE, BUT BULK OF MODERNIZATION LIES AHEAD

In order to gauge FAA's progress in modernizing the ATC system, we will provide two perspectives. The first addresses what has been designed, built, and made operational. The second indicates where the modernization effort stands from an overall funding perspective.

Project Status

As you know, the National Airspace System (NAS) Plan is among the largest civilian procurements this nation has undertaken. Established in 1981, the NAS Plan was envisioned to result in the wholesale modernization of air traffic computers, radars, and

communication systems. Many projects have since been identified as needed to complete this modernization.

Seven years into the NAS Plan, virtually all initial projects are under contract. However, this must be viewed in context. Twenty-three percent of the 89 NAS projects are complete, but 28 percent are still in the design or development phase. The remaining projects are in the process of having equipment built or installed in the field. Of FAA's 12 major systems acquisitions[1], one--the Host Computer--is complete.

Attachment I shows that, with the exception of the Microwave Landing System (MLS), there has been no appreciable schedule change in FAA's major systems between the 1987 and 1988 versions of the NAS Plan. As you know, FAA has experienced significant problems with the MLS production contractor with the result that first site implementation has been delayed for another year. (Attachment II illustrates the variance in milestones for major systems when comparing the 1983 and 1988 versions of the NAS Plan)

While FAA indicates no other significant schedule slippage, the risk of future delays is still a matter of concern because of two factors. First, most major systems have yet to be produced and delivered to the field. Problems with the development of major systems with extremely challenging schedules, such as the $730 million Voice Switching and Control System (VSCS), can have an

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[1]The Department of Transportation, which has final acquisition authority for the NAS Plan, has designated 12 of the plan's projects as major systems because they either exceed $150 million or are critical components of the plan.

impact on schedules for other systems, such as the Advanced Automation System. My colleague from our Information Management and Technology Division will testify on the implication of VSCS development problems after I conclude my statement. The second factor that could delay schedules is insufficient personnel to install delivered systems. We will address that point in greater detail later in our testimony.

Funding

Funding information provides another frame of reference for measuring the progress of modernization. Although completed projects represent 23 percent of the total number in the NAS Plan, they account for only 3 percent of FAA's estimated $15.8 billion cost for the NAS Plan. Additionally, FAA estimates that, by the end of fiscal year 1989, it will have obligated about $6.2 billion of the $7.2 billion appropriated for ATC modernization since 1982. However, this does not mean that half of ATC modernization has been funded. We testified last year that FAA's $15.8 billion estimate did not reflect all projects needed to meet original NAS Plan goals and objectives, and that the total cost of modernization was estimated at $24 billion through the year 2000. A comparison of funds already appropriated and spent with what will be needed clearly shows that the great bulk of modernization funding lies ahead.

PRIORITIES NEEDED TO CONTROL

ANNUAL MODERNIZATION GROWTH

The total cost of ATC modernization was estimated last year at about $24 billion. In a November 1988 report to the Chairman,[2] we provided a revised estimate of almost $25 billion by the year 2000. Today, the Systems Engineering and Integration Contractor (SEIC) estimates even greater costs--about $27 billion for that same period. The increased cost estimates are due largely to continued growth in requirements, for both projects initially identified in the NAS Plan and projects identified later but not incorporated as part of the NAS Plan. For example, an additional $423 million was identified this past year to modify and expand air route traffic control center facilities.

Last year, we described a "bow wave" of imminent F&E funding requirements. The fiscal year 1990 F&E request is an indication that this bow wave has started. FAA's request of almost $2 billion represents a 41-percent increase over the fiscal year 1989 F&E appropriation. According to FAA officials, the request would have been even greater had it not changed its funding philosophy on some major projects.

As you know, FAA has followed a philosophy of budgeting for F&E projects under the full-funding concept[3]. For the fiscal year

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[2]Air Traffic Control: Continued Improvements Needed in FAA's Management of the NAS Plan (GAO/RCED-89-7, November 10,1988).

[3]Full funding means that initial budget requests include all funds necessary to procure, install, and commission a specific number of systems.

1990 budget request, the agency has taken several projects off of full-funding. Consequently, the budget requests for these projects do not include all the funds needed to procure, install and commission systems. FAA budget officials believe this will enable them to decrease the time between when appropriations are received and when money is spent. Specifically, FAA officials estimate that the agency will be able to obligate 77 percent of its fiscal year 1990 budget in the first year of the appropriation, a spending rate significantly higher than achieved in prior years.

In our opinion, this changed approach to funding will require special vigilance on the part of FAA to ensure that each funding request is accompanied by a complete cost picture. This will enable the Congress to readily establish, by project, what has already been appropriated, what is being requested, and what will be needed in the future. It also underscores the need for FAA to disclose the total scope and cost of ATC modernization, and to do so in one place. This has not been done to date.

Our concern is heightened by indications that next year's F&E request will be substantially higher. Indeed, in order to meet current modernization schedules, the SEIC estimates that FAA would need to request $4.5 billion for F&E in fiscal year 1991. This constitutes nearly a doubling of the amount authorized for that year.

In our November 1988 report, we recommended that FAA revise its modernization plan to identify all needed projects and their

associated benefits, costs, and schedules so that relative priorities could be set. Until this is done, it will not be possible to assess the budget impact of ATC modernization. While FAA and the Department of Transportation have not formally responded to this recommendation, we view the formation of Secretary Skinner's Task Force reviewing the NAS Plan as a promising initiative. We believe the Task Force can serve a vital role in ensuring that FAA (1) provide the Congress with realistic funding projections for the cost of ATC modernization and (2) recognize that funding requests must be commensurate with the agency's ability to spend requested funds prudently. We have discussed these points with both the Acting FAA Administrator and the Secretary's Task Force.

ATTENTION NEEDED TO FACILITATE NAS FIELD IMPLEMENTATION

To this point, our testimony has emphasized the need for priority setting to establish future ATC modernization needs, because this is central to future funding decisions and ensuring that expectations about projected schedules are attained. However, we found indications that more immediate problems concerning the implementation of systems being delivered also require prompt management attention.

About half of the identified cost of the NAS Plan is represented by projects currently in the implementation phase--meaning that at least one system has been delivered to a field site or stored. At your request, we monitored three issues critical to

the success of the implementation process: (1) regional staffing, (2) use of support contractors, and (3) planning and scheduling NAS installation activities. As part of our work, we had planned to review FAA's NAS Field Implementation Plan. FAA was directed by the House Committee on Appropriations to prepare a plan depicting, among other things, the necessary staffing resources and costs for timely implementation and a description of the planned allocation and cost of contracted responsibilities.[4] Although we have seen a draft of the plan, we are not in a position to conclude whether the final version will be responsive to the Committee's request. This plan was not finalized as of one week ago.

Regional Staffing Needs Not Established

We found that FAA has not formally established the staffing necessary to implement modernization projects to meet existing schedules, nor has the agency identified schedule implications of keeping staffing at current levels. FAA's draft NAS Field Implementation Plan provided few details on this point beyond a statement that new management information systems capable of estimating required resources will not be available until the third quarter of calendar year 1989. In light of the initial staffing estimates and analyses at one air route traffic control center, we believe the agency will either require substantial staffing

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[4]Department of Transportation and Related Agencies Appropriations Bill, 1989 (H. Report No.100-691).

increases for all its centers or incur delays implementing the modernization program.

FAA's Northwest Mountain Region developed an estimate of additional staffing resources needed to implement NAS projects at its Seattle air route traffic control center. According to this estimate, the center would need about 450 additional staff years of effort over the next 10 years to implement projects on schedule. Staffing levels would peak as early as fiscal year 1992. However, agency officials stated that no decision has been made about how current regional staffing and project scheduling might be altered.

Because of the potentially large numbers of staff needed at all of FAA's 20 centers, and the current delivery schedules driving development of center-related systems, we believe that it is critical that FAA identify its implementation staffing needs as soon as possible.

Use of Technical Support Services

Contractor Off to A Slow Start

According to FAA analyses, about 60 percent of the additional center staffing needs could be contracted out. The Technical Support Services Contractor (TSSC) is not a likely candidate as FAA officials do not expect the TSSC to perform installation work at the centers. Furthermore, early indications are that FAA's use of the TSSC is off to a slow start in meeting expected responsibilities.

The purpose of the $368 million TSSC contract, awarded in August 1988, is to help with the field installation of NAS systems,

which present a minimum amount of engineering complexity. Last summer, we established that there was a large backlog of equipment stored at the FAA supply depot in Oklahoma City, manufacturers' plants, and FAA regional facilities. As of June 1988, 14 of 24 delivered NAS projects we reviewed were partially stored. These 14 projects accounted for the delivery of over 5,000 systems, of which about 1,700 were stored at one of the three locations mentioned. For example, about 250 Flight Data Input/Output systems were stored, as were over 100 Non-Directional Beacons. Some systems had been stored as far back as calendar year 1986. According to agency officials, one of the reasons that systems were stored was because of insufficient installation staff. Therefore, substantial work was waiting to be done when the TSSC contract was awarded.

Despite this, we found that the TSSC only recently began to install equipment. As of January 19, six of the nine FAA regions had not issued any work authorizations to the TSSC. The contractor has only 4 to 7 staff in each of the regions--primarily for administrative purposes.

FAA and the TSSC have different perspectives on the cause for the contractor's slow start. FAA regional officials attributed low TSSC staffing levels to the fact that the low wage rates negotiated in the TSSC contract are precluding the contractor from effectively recruiting labor in high cost areas. TSSC officials, on the other hand, stated that the nature of its contract does not allow them to hire general labor until FAA authorizes the performance of specific tasks. As previously stated, such

authorizations were only recently issued. In our opinion, there is yet another factor that may have contributed to the TSSC's initial difficulties. How and when the TSSC is to be used was not well understood by regional personnel. One SEIC regional manager noted that he had already been in touch with the local TSSC representative and that they planned to work out the responsibilities between themselves. In our opinion, delay in making full use of the TSSC will prolong the need for system storage.

Another related development warrants discussion. FAA recently issued a request for proposals for a system engineering and technical assistance contractor for its automation program. The type of work being sought is almost identical to that being performed by the SEIC. While the SEIC is not precluded from bidding on this contract, the possibility of involving yet another contractor with implementation duties underlines the need for FAA to clearly specify TSSC, SEIC and this new contractor's responsibilities. While this specification was not provided in the draft of the Implementation Plan we examined, we will review the final version to ascertain whether corrective action has been taken.

Planning and Scheduling
Activities Need Improvement

On the basis of our review of nine NAS projects being implemented in five FAA regions in 1988, we found that tasks and scheduling needed to complete implementation were not well defined

and the guidance provided was not adequate. For example, plans developed by FAA headquarters for implementing airport surface detection equipment (ASDE) were not adequate. FAA knew that this new equipment, as designed, was too heavy for many of the existing towers on which it was to be installed. Nonetheless, additional plans needed by the regions for reinforcing existing towers, building new towers, or installing ASDE on remote towers were not ready in time for originally scheduled equipment deliveries in four of the five regions we reviewed.

According to FAA officials responsible for ATC modernization, however, delivery delays provided the time needed for regions to initiate additional work. Had equipment been delivered on time, FAA headquarters officials acknowledged that the regions would not have been ready to install it. In at least four of the nine projects we reviewed, delays provided regions more time to prepare facilities and increase staff availability.

Time frames for determining what regions are supposed to do and when tasks are to be completed have also been inadequately specified. For example, Headquarters scheduling information for 1988 system deliveries was out of date and did not match the time frames used by the regions. Regional information systems did not include all the tasks to be performed in either their schedule tracking or estimates of staffing needs. Consequently, the tracking systems could not reflect regional progress in relation to headquarters' milestone objectives and the resource estimating system could not provide reliable estimates.

FAA officials acknowledged these weaknesses and told us that the agency will make progress this year resolving these problems.

WORK FORCE ISSUES

We have reported over the last several years that FAA's overall management of its critical safety work forces needs improvement in several areas, including recruiting, training, and staffing. We are encouraged that FAA has recently launched a host of initiatives to address long-standing problems in these areas. However, these initiatives are long-term in nature, and will require continued management support if they are to be brought to fruition. Even with these initiatives and the progress it made this year in hiring and certifying new controllers (see Attachment III), FAA may not be able to meet full performance level controller staffing goals in the time frames established. The agency also faces a major policy decision on whether it will maintain equipment in-house or rely on the private sector.

Streamlined Recruiting and Hiring Process

To improve its recruitment of personnel, FAA has announced major efforts to identify, attract, and hire the most talented individuals available. FAA plans to establish a national recruitment team and is upgrading its advertising and recruitment materials. As we reported in September 1988, FAA has not had a national recruitment program in the past, relying instead on individual regions to meet the agency's needs.[5]

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[5]FAA Staffing: Recruitment, Hiring, and Initial Training of Safety-Related Personnel (GAO/RCED-88-189).

FAA has also instituted a streamlined hiring process for air traffic controllers which it plans to expand to other safety-related occupations. This process allows FAA to offer jobs to promising controller candidates almost immediately after they have taken the aptitude exam. It also expedites some preemployment checks formerly done by the Office of Personnel Management. Under this program, the hiring process can be reduced to about 45 days from an average of about 1 year. Under its previous approach, FAA was losing candidates to other employers. FAA has hired 150 controller candidates through this "fast track" program since its implementation in September 1988.

To attract personnel to difficult-to-staff locations, FAA plans to implement a 5-year pay demonstration project in June 1989 that will provide up to 20-percent bonus pay for FAA employees at selected locations in the Chicago, Los Angeles, San Francisco, and New York areas. The objective of this project is to improve employment, attract more experienced employees to these facilities, and reduce overtime. Apparently in anticipation of the project's implementation, FAA has already received applications from 41 controllers to transfer to Chicago O'Hare Terminal Radar Approach Control (TRACON), a major increase for the same period last year. FAA also has a study underway of its pay and classification system. It is expected to result in proposals for a new compensation system later this year.

Training

Inadequate training can lead to tragic events, and FAA has made a commitment to quality education and training for all its controllers. FAA plans to modernize its training programs by upgrading both its training curricula and technology. This modernization is expected to last through 1994 and is long overdue. The agency also is studying the role of the FAA Academy in providing training and how best to provide that training. The agency's budget speaks to this increased awareness through greater use of training simulators and automation.

Our work on controller training substantiates the need for FAA to upgrade its training equipment and reduce the labor-intensiveness of its current training. FAA headquarters also needs to develop an adequate management information system to ensure that employees are receiving quality training.

Congressional FPL Goals Not Being Met

As you know, FAA has sought waivers from meeting congressionally mandated goals for FPLs during each of the past 2 years and it is unlikely that current year goals will be met. By the end of this fiscal year, FAA must increase its FPL level by 1,244 to meet its goal of 10,832 FPLs. Only once since the 1981 strike has the agency added this many FPLs in one year. Furthermore, between now and the end of fiscal year 1990, FAA must increase the overall number of FPLs by 3,100. Providing quality training for such an unprecedented increase within such a short time is a major challenge for FAA.

Staffing Shortages May Force FAA to Contract Out for Maintenance

Although we support the administration's request for increased funding for the controller work force and aviation safety inspectors, we are concerned that FAA's field maintenance work force faces reduced staffing in fiscal year 1990 in order to stay within the administration's proposed funding (see Attachment IV). Because FAA has yet to develop an adequate pipeline of new hires to replace its existing maintenance work force, the agency faces a growing shortage of maintenance technicians. The problem is becoming acute since NAS Plan delays will require existing equipment to be used longer. As a result, if FAA is to provide adequate maintenance for the ATC system in the future, the agency will need more maintenance technicians soon. This need will be particularly urgent in the coming years. Over 50 percent of this work force is eligible to retire by 1995. Therefore, FAA may be required to contract for maintenance services rather than do them in-house.

As we previously reported to you,[6] FAA's planned pilot test program to contract out for maintenance at selected facilities to determine whether the private sector can provide these services was suspended after Congress denied funds for the test. We note, however, that FAA is again requesting funds for this pilot test. In this year's budget it is requesting $5 million for this purpose.

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[6] Air Traffic System: Pilot Program to Contract Out Maintenance at Selected Facilities (GAO/RCED-87-104BR, April 17, 1987).

To summarize, although FAA has made progress toward modernizing the ATC system, we are concerned that the scope and cost of this undertaking is still not fully appreciated. We believe this is primarily due to the absence of an overall agency plan that identifies all projects, costs, and schedules associated with ATC modernization and sets relative priorities. Furthermore, FAA must act promptly to remove obstacles that might otherwise delay field implementation. Central to this issue is the identification of how much staff is needed and the effective use of support contractors.

Finally, FAA needs to sustain senior management commitment to human resource initiatives started under the previous administration. The maintenance of a high level of air safety requires that this be done in conjunction with FAA's assurance that increased funding for the controller work force and aviation safety inspectors will be available. We are concerned that the maintenance technician work force will need to be reduced to stay within the administration's proposed funding for 1990. This action may require FAA to begin contracting out maintenance services even though the agency has not yet determined whether the private sector can adequately provide such services.

We have shared our concerns with senior officials at the Department of Transportation and at FAA. Their receptivity to discussing these concerns and acknowledgment of the areas needing attention is encouraging. We look forward to working with them this coming year on modernization, work force, and related issues.

ATTACHMENT I

ATTACHMENT I

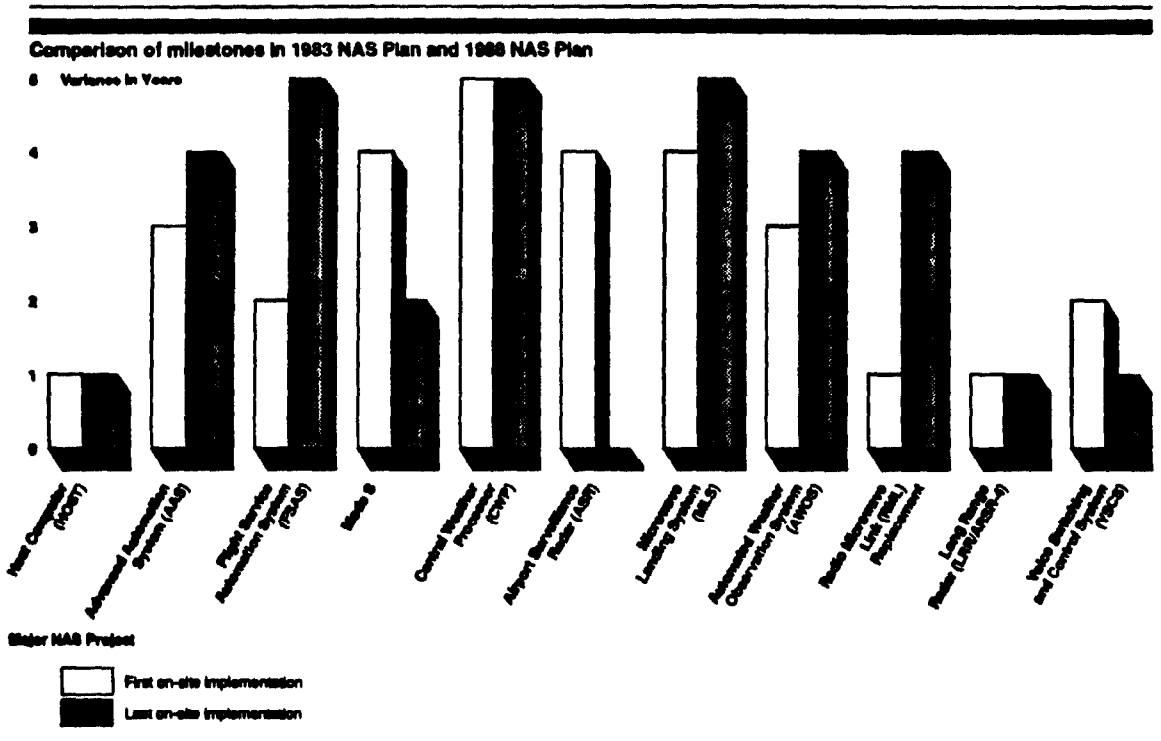
STATUS OF MAJOR SYSTEM ACQUISITIONS

SYSTEM NAME	Estimated Total Program Cost	Month/Year of First Implementation		Month/Year of Last Implementation	
		1987 Plan	1988 Plan	1987 Plan	1988 Plan
Voice Switching and Control System (VSCS)	$730M	10/1991	10/1991	12/1993	12/1993
Flight Service Automation System (FSAS)	$366M	7/1990	7/1990	6/1994	6/1994
MODE S	$467M	9/1990	9/1990	5/1995	5/1995
Microwave Landing System (MLS)	$1.1B	4/1988	4/1989	7/2001	7/2004
Long Range Radar (LRR/ARSR-4)	$349M	12/1992	12/1992	1/1996	1/1996
Airport Surveillance Radar (ASR-9)	$87M	7/1988	11/1988[a]	8/1991	8/1991
Terminal Doppler Weather Radar (TDWR)	$323M	6/1993	6/1993	6/1996	6/1996
Central Weather Processor (CWP)	$123M	-	9/1995	-	12/1996
Radio Microwave Link (RML)	$284M	Completed		6/1992	6/1992
Automated Weather Observing System (AWOS)	$120M	1/1991	1/1991	9/1994	9/1994
Advanced Automation System (AAS)	$4.3B	9/1993	9/1993	9/2000	9/2000

[a] Milestone not met; 4 month delay estimated as of 12/88.

Sources: FAA FY 1990 Budget Justification and Project Master Baseline Schedule

ATTACHMENT II



Note 1: ASR first on-site implementation milestone in 1986 NAS Plan was not met. Variance reflects revised working date established on 12/86.

Note 2: CWP milestones pertain to Real-time Weather Processor (RWP) component.

ATTACHMENT III

Controller Staffing
FPL
FY 1981-1989

FY	On-Board (EOY)[1]/	Congressional Goal[2]/	Shortfall
1981	4,904[3]/		
1982	5,612		
1983	6,724		
1984	7,580		
1985	8,315		
1986	9,528		
1987	9,798	10,500	702
1988	9,858	10,350	492
1989	9,588[4]/	10,832	

1/End-of-year estimates.

2/Congress did not set FPL goals prior to 1987.

3/1981-1987 figures are based on old FPL definition; subsequent year figures based on new FPL definition and includes Traffic Management Unit FPLs.

4/As of February 28, 1989.

SOURCE: FAA

ATTACHMENT IV

Field Maintenance and Safety Inspector Staffing FY 1982-1990

FY	Field Maintenance	Safety Inspectors
1982	1/	1,423
1983		1,331
1984		1,394
1985	8,905	1,475
1986	8,533	1,813
1987	8,331	1,939
1988	8,543	2,093
1989 2/	8,798	2,092
1990 3/	8,654	2,658

1/Comparable data not available prior to 1985.

2/Field Maintenance figures are end-of year estimates; safety inspector figures are on-board as of March 27, 1989.

3/End-of-year estimates.