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Fact Sheet for Congressional Requesters

September 1989

AVIATION SAFETY

Chicago Center Work Force Views of the Air Traffic Control System

GAO/RCED-89-205FS

GAO

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Resources, Community, and
Economic Development Division

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The Honorable Guy V. Molinari
Ranking Minority Member
Subcommittee on Investigations and Oversight
Committee on Public Works and Transportation
House of Representatives

The Honorable Glenn M. Anderson
Chairman, Committee on Public Works
and Transportation
House of Representatives

This fact sheet supplements the work contained in our two reports concerning conditions within the air traffic control work force.[1] The information responds to your request that we highlight the controller and supervisor survey differences between Chicago center and all centers. This fact sheet also shows how air traffic controllers at the Chicago air route traffic control center and their supervisors feel about their working conditions and other aspects of the air traffic control system, including morale.

In summary, Chicago center controllers and supervisors, overall, are more concerned than those at other centers about the extent and quality of developmental controllers'[2] skills and training. At the same time they are less concerned than their counterparts at all centers about meeting the need for controllers in the future because of the number of developmental controllers that they currently have.

As with other center controllers, Chicago center controllers expressed their concerns about various working conditions, including too few full performance level controllers; too much work; too little overtime to cover training, leave, and

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[1]Aviation Safety: Serious Problems Continue to Trouble the Air Traffic Control Work Force (GAO/RCED-89-112, Apr. 21, 1989) and Aviation Safety: Conditions Within the Air Traffic Control Work Force (GAO/RCED-89-113FS, Apr. 24, 1989).

[2]A developmental controller is one who is undergoing training. Developmentals control traffic as they become proficient in a defined area.

other duties; inadequate quality of developmental training; and low morale. Additionally, they viewed airlines and pilots as contributing to controller difficulty and, from an air traffic system perspective, rated factors that made it difficult to keep the air traffic system safe. Supervisors shared many of these concerns.

For this analysis, we compared the 1988 Chicago center questionnaire responses with those of all 20 traffic centers (including Chicago), which control flights between airports and over oceanic routes. Section 1 illustrates some of the more striking comparisons of Chicago center controllers with all controllers and of Chicago center supervisors with all supervisors. Section 2 is a complete comparison of controller responses to all survey questions, and section 3 is a complete comparison of supervisor responses.

In addition, section 4 shows how controllers who answered a question on their morale responded to certain other survey questions. The morale data are arrayed to examine relationships between controllers whose morale was "very high," "high," "neither high nor low," "low," and "very low" and their background and working environment. For example, all controllers with "very high" morale were post-strike controllers--those with 1- to 6-years experience controlling traffic with the Federal Aviation Administration (FAA) at the time of our survey.

Overall, on the basis of survey samples of controllers and supervisors, we estimate that 3,635 center controllers and 614 center supervisors would have responded had we sent questionnaires to all controllers and supervisors. Similarly, we estimate that 202 Chicago center controllers and 33 Chicago center supervisors would have responded to our questionnaire.

Section 5 contains our overall survey objective, scope, and methodology, including our questionnaire procedures and sampling methods. Appendix I lists the 20 air route traffic control centers included in our 1988 survey. We plan to issue a more comprehensive report later this year comparing how specific facilities ranked relative to each other for selected survey questions.

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FAA provided comments on the development of our questionnaire. However, as you requested, we did not obtain its official comments on a draft of this fact sheet. As

arranged, unless you publicly announce its contents earlier, we plan no further distribution of this fact sheet until 30 days from the date of this letter. At that time we will send copies to the Secretary of Transportation; the Administrator, FAA; and other interested parties.

If you have any questions about this fact sheet, please call me on (202) 275-1000. Major contributors to this fact sheet are listed in appendix II.

Kenneth M. Mead
Director, Transportation Issues

CONTENTS

ABBREVIATIONS

ARTCC	air route (enroute) traffic control center
ATA	air traffic assistant
ATC	air traffic control
DARC	Direct Access Radar Channel
DYSIM/ETG	Dynamic Simulation/Electronic Target Generation
FAA	Federal Aviation Administration
FAB	Facility Advisory Board
FPL	full performance level (controller)
GAO	General Accounting Office
OJT	on-the-job training
TMU	Traffic Management Unit

SECTION 1

SELECTED COMPARISONS OF CONTROLLERS' AND SUPERVISORS' VIEWS

The views presented below are based on survey samples of controllers and supervisors at all centers, including Chicago. Overall, the views of Chicago center controllers differed somewhat from those of all center controllers in the general areas of work load, staffing, overtime, training, safety, and morale. The views of Chicago center supervisors also differed somewhat from those of all center supervisors.

CONTROLLERS' VIEWS

Work Load

Chicago controllers were less likely to work excessively during peak periods than all center controllers.

-- 14 percent of Chicago controllers (compared with 37 percent of all center controllers) said they typically worked over 2 hours on position continuously during daily peak periods.

Staffing

Chicago center controllers were more concerned than were all centers that they had too many developmental controllers to train but were less concerned than all centers about their ability to meet the future need for controllers.

-- 84 percent of Chicago controllers (compared with 32 percent of all center controllers) said they had more developmentals than could be trained.

-- 38 percent of Chicago controllers (compared with 65 percent of all center controllers) said they had too few developmental controllers to meet future controller needs.

Overtime

About three of every five Chicago controllers believed more overtime was warranted at their facility, but about one of every four controllers responded that they were working less overtime than they wanted, somewhat higher rates than at all centers.

-- 61 percent of Chicago controllers (compared with 50 percent of all center controllers) said they had too little overtime to cover training, leave, and other duties.

-- 98 percent of Chicago controllers had worked overtime in the past 12 months (compared with 76 percent of all center controllers). Of those working overtime, 28 percent of Chicago controllers said it was less than they wanted (compared with 22 percent of all center controllers).

Training

Chicago controllers expressed greater concern than did all center controllers about (1) the skill level of developmentals and (2) developmentals' not receiving sufficient training involving live traffic.

-- 47 percent of Chicago controllers (compared with 35 percent of all center controllers) said developmental controllers were "probably not" or "definitely not" provided with sufficient training involving live traffic before being certified on position.

-- 62 percent of Chicago controllers (compared with 47 percent of all center controllers) said the overall skill of developmental controllers when arriving on the floor for on-the-job training was worse than 3 years previously.

Safety

Chicago center controllers rated the overall safety of the traffic system about the same as did all center controllers. However, Chicago controllers expressed greater concern about their ability to maintain that safety in three specific areas: developmentals' skill level and hardware and software reliability.

-- 69 percent of Chicago controllers (compared with 52 percent of all center controllers) said the current skill level of developmental controllers was hindering the maintenance of system safety.

-- 71 percent and 59 percent, respectively, of Chicago controllers (compared with 58 percent and 46 percent, respectively, of all center controllers) said current hardware and software reliability was hindering the maintenance of system safety.

Morale

Chicago center controllers' morale was not as high as morale at all centers.

-- 24 percent of Chicago controllers said their morale was "high" or "very high" compared with 30 percent of all center controllers.

-- 43 percent of Chicago controllers said their morale was "low" or "very low," the same as all center controllers, although there were differences between those who said "low" and "very low."

SUPERVISORS' VIEWS

Work Load

Chicago supervisors spent too much of their time working traffic, rather than supervising, and recognized it. A higher percentage of Chicago supervisors than all center supervisors believed full performance and developmental controllers did not spend enough time on radar position during peak traffic periods.

-- Chicago center supervisors typically spent 46 percent of their duty time per pay period working traffic (compared with supervisors at all centers who spent 19 percent of their time). Further, 52 percent of Chicago supervisors (compared with 23 percent of all center supervisors) felt they spent too much of their time working traffic.

-- 24 percent of Chicago supervisors (compared with 10 percent of all center supervisors) said full performance level controllers did not spend enough time on radar positions during peak traffic periods. Similarly, 32 percent of Chicago supervisors (compared with 10 percent of all center supervisors) expressed similar views about developmental controllers.

Staffing

Chicago supervisors were much more likely to believe than were all center supervisors that the number of developmental controllers was appropriate to meet future needs and that their center had more developmentals than could be trained.

-- 72 percent of Chicago supervisors (compared with 34 percent of all center supervisors) said the number of developmental controllers was appropriate to meet future controller needs.

-- 88 percent of Chicago supervisors (compared with 28 percent of all center supervisors) said they had more developmentals than they could train.

Overtime

Chicago supervisors were more likely than all center supervisors to believe that too little overtime was allowed at their facility to cover training, leave, and other duties.

-- 57 percent of Chicago supervisors (compared with 44 percent of all center supervisors) said too little overtime was allowed so that they could not cover training, leave, and other duties.

Training

Chicago supervisors rated the (1) quality of developmental training, (2) the number of experienced controllers providing training, and (3) the evaluation of instructor performance as worse than the evaluation given by supervisors at all centers.

-- 24 percent of Chicago supervisors (compared with 14 percent of all center supervisors) rated the quality of developmental on-the-job training as "poor." The views on some aspects of training that Chicago supervisors rated as "less than adequate" also differed from those of all center supervisors: emergency procedures--76 percent versus 45 percent, handling heavy traffic--36 percent versus 21 percent, phraseology--48 percent versus 20 percent, and flow control procedures--72 percent versus 40 percent.

-- 64 percent of Chicago supervisors (compared with 27 percent of all center supervisors) did not believe that enough full performance level (FPL) controllers were available to provide on-the-job training (OJT) to developmentals.

-- 75 percent of Chicago supervisors (compared with 34 percent of all center supervisors) said that the OJT instructor performance was not being properly evaluated.

Safety

Chicago supervisors were less likely than supervisors at all centers to rate system safety as "good" or "excellent" and more likely to cite traffic work load as "hindering" their ability to maintain safety.

-- 32 percent of Chicago supervisors (compared with 63 percent of all center supervisors) rated system safety as "good" or "excellent."

-- 92 percent of Chicago supervisors (compared with 74 percent of all center supervisors) said the current amount of traffic work load was "hindering" their ability to maintain safety.

Morale

Chicago center supervisors' morale was not as low as morale at all centers.

-- 28 percent of Chicago supervisors said their morale was "low" or "very low" compared with 37 percent of all center supervisors.

SECTION 2

1988 SURVEY RESULTS FOR ALL CENTERS COMPARED WITH CHICAGO CENTER AIR TRAFFIC CONTROL--CONTROLLERS

Responses in percent

Question	All centers	Chicago center
1. According to FAA records you are employed either as a full performance level (FPL) or developmental level controller certified on at least one radar position. Is this correct?		
1. Correct - I am an FPL--certified as FPL at this facility.	91	71
2. Correct - I am a developmental certified on at least one radar position at this facility.	9	29
3. Incorrect - I am ...	*	*
Total	**100**	**100**
Estimated respondents	3,635	202

*Respondents checking incorrect were instructed to not complete the questionnaire and were not included in the results.

NOTES: (1) "Estimated respondents" is our estimate of the number of center controllers who would have responded had all center controllers received questionnaires. Center controllers were sampled and results calculated using appropriate projections.

(2) Percentages may not add to 100 because of rounding.

(3) The terms "center," "enroute center," and "air route traffic control center" have the same meaning in this report. "All centers" means the 20 centers in the contiguous United States.

(4) Respondents were instructed to "check one" response for each question or part of a question whenever response categories were presented.

(5) Responses to some questions or parts of questions are not reported because of the low number of responses.

Responses in percent

Question	All centers	Chicago center
WORK LOAD		
2. Consider the complexity of the sectors you work and your capabilities as a controller. While working radar during typical daily peak periods, do you believe you are typically required to handle more traffic than you should be handling, less traffic than you should be handling, or an appropriate amount of traffic?		
1. Much more than I should be handling	12	12
2. Somewhat more than I should be handling	53	53
3. Appropriate level of traffic*	33	31
4. Somewhat less than I should be handling*	3	4
5. Much less than I should be handling*	0	0
Total	**100**	**100**
Estimated respondents	3,618	200
*SKIP TO QUESTION 4		
3. In your opinion, how much, if any, does each of the following factors represent a reason for your being required to handle more traffic than you feel you should during daily peak periods?		
a. Sector configuration (complexity)		
1. Major reason	41	33
2. Somewhat of a reason	44	52
3. Not a reason	15	15
Total	**100**	**100**
Estimated respondents	2,239	127

Responses in percent

Question	All centers	Chicago center
b. Shortage of radar controllers		
1. Major reason	38	31
2. Somewhat of a reason	38	40
3. Not a reason	25	29
Total	**100**	**100**
Estimated respondents	2,234	129
c. Shortage of non-radar controllers		
1. Major reason	8	0
2. Somewhat of a reason	28	26
3. Not a reason	63	74
Total	**100**	**100**
Estimated respondents	2,133	127
d. Shortage of other staff qualified to assist radar controllers		
1. Major reason	8	7
2. Somewhat of a reason	28	25
3. Not a reason	64	68
Total	**100**	**100**
Estimated respondents	2,150	125
e. Inadequate flow control procedures		
1. Major reason	42	53
2. Somewhat of a reason	47	40
3. Not a reason	12	7
Total	**100**	**100**
Estimated respondents	2,214	129
f. Airline schedules		
1. Major reason	65	71
2. Somewhat of a reason	29	26
3. Not a reason	6	3
Total	**100**	**100**
Estimated respondents	2,271	132

Responses in percent

Question	All centers	Chicago center
4. Have any of the sectors you work been reconfigured (procedural and/or boundary changes) during the past 18 months?		
1. Yes	84	83
2. No*	16	17
Total	**100**	**100**
Estimated respondents	3,599	200
*SKIP TO QUESTION 7		
5. Did reconfiguration of the sector(s) you work increase, decrease, or have no effect on your work load?		
1. Increased work load	35	37
2. No effect on work load	16	17
3. Decreased work load	18	17
4. Increased some and decreased some - more than one sector affected	31	30
Total	**100**	**100**
Estimated respondents	3,030	165
6. How satisfied or dissatisfied are you with the amount of say you had in the reconfiguration(s) that took place during the past 18 months?		
1. Very satisfied	3	6
2. Generally satisfied	20	23
3. Neither satisfied nor dissatisfied	21	23
4. Generally dissatisfied	29	28
5. Very dissatisfied	26	20
Total	**100**	**100**
Estimated respondents	3,025	165

Responses in percent

Question	All centers	Chicago center
7. While working daily peak traffic periods, how often, if ever, are you taking each of the following actions?		
a. Provide another aircraft with instructions without waiting for first aircraft to acknowledge receipt of its instructions		
1. Very often	3	2
2. Often	10	11
3. Occasionally	37	44
4. Seldom, if ever	50	43
Total	**100**	**100**
Estimated respondents	3,589	200
b. Drop track before target leaves area of jurisdiction		
1. Very often	5	15
2. Often	13	20
3. Occasionally	27	21
4. Seldom, if ever	55	44
Total	**100**	**100**
Estimated respondents	3,584	200
c. Use inefficient vector patterns		
1. Very often	2	4
2. Often	6	6
3. Occasionally	31	41
4. Seldom, if ever	62	50
Total	**100**	**100**
Estimated respondents	3,496	199
d. Decline to provide weather advisories		
1. Very often	7	7
2. Often	15	9
3. Occasionally	35	47
4. Seldom, if ever	43	37
Total	**100**	**100**
Estimated respondents	3,586	200

Responses in percent

Question	All centers	Chicago center
e. Declines to provide traffic advisories		
1. Very often	8	7
2. Often	22	18
3. Occasionally	43	46
4. Seldom, if ever	27	29
Total	**100**	**100**
Estimated respondents	3,584	200
f. Decline user requests for services (direct routes, altitude changes, etc.)		
1. Very often	20	17
2. Often	32	38
3. Occasionally	35	32
4. Seldom, if ever	13	14
Total	**100**	**100**
Estimated respondents	3,580	200
g. Other(s)		
1. Very often	48	55
2. Often	34	36
3. Occasionally	12	9
4. Seldom, if ever	5	0
Total	**100**	**100**
Estimated respondents	480	20
8. During typical daily peak periods how long are you required to work on position continuously without a break?		
1. 1 hour or less	3	4
2. Over 1 hour to 1-1/2 hours	20	40
3. Over 1-1/2 hours to 2 hours	40	42
4. Over 2 hours to 2-1/2 hours	30	11
5. Over 2-1/2 hours to 3 hours	6	2
6. Over 3 hours to 3-1/2 hours	1	1
7. Over 3-1/2 hours to 4 hours	0	0
8. More than 4 hours	0	0
Total	**100**	**100**
Estimated respondents	3,598	200

Responses in percent

Question	All centers	Chicago center
9. Do you believe the amount of time you are typically required to continuously work a position without a break during peak periods is too long, too short, or appropriate?		
1. Much too long	14	6
2. Somewhat too long	46	50
3. Appropriate	40	43
4. Somewhat too short	1	1
5. Much too short	0	0
Total	**100**	**100**
Estimated respondents	3,601	200
10. Considering peak periods in the last month, what was the longest period you had to work continuously on position without a break?		
1. 2 hours or less	11	19
2. Over 2 hours to 2-1/2 hours	31	41
3. Over 2-1/2 hours to 3 hours	31	28
4. Over 3 hours to 3-1/2 hours	20	10
5. Over 3-1/2 hours to 4 hours	5	0
6. More than 4 hours	2	2
Total	**100**	**100**
Estimated respondents	3,612	200

Responses in percent

Question	All centers	Chicago center
STAFFING		
11. In your opinion, is the current number of staff available for each of the following types of positions higher than needed, lower than needed, or at the appropriate level? If you work at a center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
a. First-line supervisors		
1. Much higher than needed	18	16
2. Somewhat higher than needed	20	18
3. Appropriate number	52	58
4. Somewhat lower than needed	10	7
5. Much lower than needed	1	0
Total	**100**	**100**
Estimated respondents	3,595	202
b. FPLs		
1. Much higher than needed	0	0
2. Somewhat higher than needed	2	0
3. Appropriate number	15	9
4. Somewhat lower than needed	50	47
5. Much lower than needed	34	44
Total	**100**	**100**
Estimated respondents	3,613	200
c. Air traffic assistants (ATAs)		
1. Much higher than needed	2	1
2. Somewhat higher than needed	2	6
3. Appropriate number	15	59
4. Somewhat lower than needed	37	32
5. Much lower than needed	45	3
Total	**100**	**100**
Estimated respondents	3,577	200
d. Other(s)		
1. Much higher than needed	43	48
2. Somewhat higher than needed	10	4
3. Appropriate number	3	4
4. Somewhat lower than needed	18	16
5. Much lower than needed	26	28
Total	**100**	**100**
Estimated respondents	703	46

Responses in percent

Question	All centers	Chicago center
12. In your opinion, do you currently have too many, too few, or an appropriate number of developmental controllers to meet future controller needs? If you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
1. Much too many	1	3
2. Somewhat too many	4	7
3. Appropriate number	31	52
4. Somewhat too few	44	28
5. Much too few	21	10
Total	**100**	**100**
Estimated respondents	3,601	199
13. Which of the following best describes the current situation for developmentals in regard to the ability to provide them with quality training now? Again, if you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
1. We have a lot more developmentals than we can train now.	9	37
2. We have somewhat more developmentals than we can train now.	23	47
3. We have about the right number of developmentals to train now.	30	11
4. We could train somewhat more developmentals than we do now.	32	5
5. We could train a lot more developmentals than we do now.	7	0
Total	**100**	**100**
Estimated respondents	3,606	202

Responses in percent

Question	All centers	Chicago center
14. In the last 12 months, to what extent, if at all, have shortages of controllers limited you personally in each of the following areas?		
a. Your ability to take your first 2 weeks of annual leave each year		
1. Very great extent	3	8
2. Great extent	5	10
3. Moderate extent	10	15
4. Some extent	18	23
5. Little, no extent	63	44
Total	**100**	**100**
Estimated respondents	3,599	199
b. Your ability to take the rest of your annual leave each year		
1. Very great extent	11	23
2. Great extent	13	18
3. Moderate extent	17	16
4. Some extent	25	15
5. Little, no extent	34	29
Total	**100**	**100**
Estimated respondents	3,605	202
c. Your ability to take annual leave on short notice (2 weeks or less)		
1. Very great extent	39	45
2. Great extent	22	20
3. Moderate extent	17	18
4. Some extent	14	11
5. Little, no extent	7	6
Total	**100**	**100**
Estimated respondents	3,613	202
d. Your ability to take needed sick leave		
1. Very great extent	4	4
2. Great extent	6	5
3. Moderate extent	11	19
4. Some extent	19	12
5. Little, no extent	60	60
Total	**100**	**100**
Estimated respondents	3,590	202

Responses in percent

Question	All centers	Chicago center
e. Your ability to refuse scheduled overtime		
1. Very great extent	14	7
2. Great extent	9	6
3. Moderate extent	11	11
4. Some extent	16	27
5. Little, no extent	50	48
Total	**100**	**100**
Estimated respondents	3,586	199
f. Your ability to get required training		
1. Very great extent	11	15
2. Great extent	12	14
3. Moderate extent	15	17
4. Some extent	21	19
5. Little, no extent	42	34
Total	**100**	**100**
Estimated respondents	3,529	191
g. Your ability to get or provide team briefings		
1. Very great extent	8	8
2. Great extent	9	9
3. Moderate extent	13	16
4. Some extent	22	26
5. Little, no extent	47	41
Total	**100**	**100**
Estimated respondents	3,596	200
h. Your ability to take needed personal breaks		
1. Very great extent	11	10
2. Great extent	12	14
3. Moderate extent	23	27
4. Some extent	32	26
5. Little, no extent	23	24
Total	**100**	**100**
Estimated respondents	3,598	200

Responses in percent

Question	All centers	Chicago center
i. Your ability to take duty FAM (familiarization) airline trips		
1. Very great extent	31	19
2. Great extent	14	13
3. Moderate extent	13	13
4. Some extent	16	21
5. Little, no extent	27	33
Total	**100**	**100**
Estimated respondents	3,570	199

OVERTIME

15. In the last 12 months, how many total days of overtime, if any, have you worked?

1. None*	24	2
2. 1-5 days	30	22
3. 6-10 days	15	24
4. 11-20 days	15	27
5. 21-30 days	10	20
6. 31-50 days	5	5
7. Over 50 days	0	0
Total	**100**	**100**
Estimated respondents	3,610	200

*SKIP TO QUESTION 17

Responses in percent

Question	All centers	Chicago center
16. Are you generally working more, less, or about as much overtime as you would want to work?		
1. Much more than I want	15	5
2. Somewhat more than I want	21	23
3. About as much as I want	42	44
4. Somewhat less than I want	16	22
5. Much less than I want	6	6
Total	**100**	**100**
Estimated respondents	2,738	199
17. Which of the following best describes the current situation in regard to overtime at your facility?		
1. Too much overtime is assigned so that our personnel are overworked	15	8
2. Too little overtime is allowed so that we cannot cover training, leave, and other duties	50	61
3. Overtime assignments are appropriate at this time	23	23
4. No overtime assigned here; no overtime needed	5	0
5. Other	7	9
Total	**100**	**100**
6. No basis to judge[a]	6	2
Estimated respondents	3,375	195

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
TRAINING		
18. In your opinion, how adequate or inadequate is the training developmental controllers get before beginning on-the-job training?		
1. Much more than adequate	1	0
2. Somewhat more than adequate	2	3
3. Generally adequate	28	17
4. Somewhat less than adequate	38	35
5. Much less than adequate	31	45
Total	**100**	**100**
6. No basis to judge[a]	5	3
Estimated respondents	3,401	195
19. How do you rate the quality of the on-the-job training developmental controllers currently receive at your facility in each of the following areas?		
a. Using backup systems		
1. Excellent	1	0
2. Good	7	4
3. Adequate	28	28
4. Less than adequate	40	41
5. Poor	24	28
Total	**100**	**100**
6. No basis to judge[a]	2	0
Estimated respondents	3,478	200
b. Controlling traffic in bad weather		
1. Excellent	2	1
2. Good	11	8
3. Adequate	25	18
4. Less than adequate	42	44
5. Poor	20	28
Total	**100**	**100**
6. No basis to judge[a]	3	0
Estimated respondents	3,484	200

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
c. Emergency procedures		
1. Excellent	1	1
2. Good	8	5
3. Adequate	32	32
4. Less than adequate	40	36
5. Poor	20	26
Total	**100**	**100**
6. No basis to judge[a]	3	2
Estimated respondents	3,456	195
d. Handling heavy traffic		
1. Excellent	7	12
2. Good	22	25
3. Adequate	34	19
4. Less than adequate	25	25
5. Poor	13	19
Total	**100**	**100**
6. No basis to judge[a]	2	0
Estimated respondents	3,495	199
e. Holding patterns		
1. Excellent	3	7
2. Good	10	14
3. Adequate	35	36
4. Less than adequate	34	28
5. Poor	18	16
Total	**100**	**100**
6. No basis to judge[a]	4	1
Estimated respondents	3,425	199
f. Operational characteristics of types of aircraft		
1. Excellent	4	7
2. Good	14	15
3. Adequate	34	32
4. Less than adequate	29	28
5. Poor	20	19
Total	**100**	**100**
6. No basis to judge[a]	2	0
Estimated respondents	3,496	200

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
g. Direct routings (expediting traffic)		
1. Excellent	5	7
2. Good	22	28
3. Adequate	45	38
4. Less than adequate	17	14
5. Poor	11	13
Total	**100**	**100**
6. No basis to judge[a]	3	1
Estimated respondents	3,456	193
h. Control techniques		
1. Excellent	6	6
2. Good	28	28
3. Adequate	38	34
4. Less than adequate	20	23
5. Poor	9	9
Total	**100**	**100**
6. No basis to judge[a]	2	0
Estimated respondents	3,490	199
i. Phraseology		
1. Excellent	8	4
2. Good	33	31
3. Adequate	40	40
4. Less than adequate	13	17
5. Poor	6	8
Total	**100**	**100**
6. No basis to judge[a]	2	0
Estimated respondents	3,503	200
j. Flow control procedures		
1. Excellent	3	1
2. Good	15	6
3. Adequate	40	37
4. Less than adequate	26	29
5. Poor	16	27
Total	**100**	**100**
6. No basis to judge[a]	4	2
Estimated respondents	3,405	195

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
k. Other		
1. Excellent	5	7
2. Good	3	0
3. Adequate	2	0
4. Less than adequate	21	14
5. Poor	69	79
Total	**100**	**100**
6. No basis to judge[a]	11	7
Estimated respondents	232	26
20. Overall, how do you rate the quality of on-the-job training (OJT) that developmentals currently receive at your facility?		
1. Excellent	2	1
2. Good	24	22
3. Adequate	43	38
4. Poor	25	29
5. Very poor	5	9
Total	**100**	**100**
6. No basis to judge[a]	1	0
Estimated respondents	3,518	200
21. Do you believe developmental controllers are provided with sufficient training involving live traffic before being certified on a position?		
1. Definitely yes	16	16
2. Probably yes	40	26
3. Uncertain	9	11
4. Probably not	22	27
5. Definitely not	13	20
Total	**100**	**100**
6. No basis to judge[a]	1	0
Estimated respondents	3,517	199

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
22. Have you provided OJT at this facility within the last 6 months to developmental controllers (either to new developmentals or those from other facilities)?		
1. Yes	81	96
2. No*	19	4
Total	**100**	**100**
Estimated respondents	3,612	199
*SKIP TO QUESTION 24		
23. Do you feel that you have sufficient ATC experience and teaching skills to provide OJT to developmentals?		
a. ATC Experience		
1. Definitely yes	72	62
2. Probably yes	21	26
3. Uncertain	3	4
4. Probably not	3	6
5. Definitely not	1	3
Total	**100**	**100**
Estimated respondents	2,928	193
b. Teaching Skills		
1. Definitely yes	53	48
2. Probably yes	33	33
3. Uncertain	8	10
4. Probably not	5	7
5. Definitely not	1	3
Total	**100**	**100**
Estimated respondents	2,905	193
24. Were you an FPL 3 years ago (in May 1985)?		
1. Yes	62	57
2. No*	38	43
Total	**100**	**100**
Estimated respondents	3,560	191
*SKIP TO QUESTION 26		

Responses in percent

Question	All centers	Chicago center
25. Do you believe developmental controllers today are better, worse, or about the same as developmental controllers were in each of the following areas 3 years ago? If you feel that you do not have enough knowledge to compare the two groups for any of the items, please check "No Basis to Judge" for those items.		
a. Overall skill level when arriving on floor for on-the-job training		
1. Much better	1	2
2. Somewhat better	7	2
3. About the same	46	34
4. Somewhat worse	31	42
5. Much worse	16	20
Total	**100**	**100**
6. No basis to judge[a]	4	8
Estimated respondents	2,156	108
b. Aptitude or ability to learn controller duties		
1. Much better	1	0
2. Somewhat better	7	3
3. About the same	57	68
4. Somewhat worse	27	15
5. Much worse	8	13
Total	**100**	**100**
6. No basis to judge[a]	4	6
Estimated respondents	2,154	110
c. Work attitude		
1. Much better	1	2
2. Somewhat better	6	2
3. About the same	43	43
4. Somewhat worse	33	33
5. Much worse	17	20
Total	**100**	**100**
6. No basis to judge[a]	3	6
Estimated respondents	2,161	110

aThe categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
SYSTEM SAFETY AND ATC OPERATIONS		
26. How would you rate the overall safety of the ATC system today?		
1. Excellent	14	12
2. Good	34	35
3. Adequate	36	41
4. Poor	14	11
5. Very poor	2	1
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	3,616	199
27. Please consider your own observations and experience for each of the factors listed below. Then indicate your opinion as to whether that factor is currently helping, is currently hindering, or currently has no impact on the maintenance of ATC system safety today.		
a. Current skill level of developmental controllers		
1. Strongly helps	4	2
2. Helps somewhat	17	14
3. No impact	28	16
4. Hinders somewhat	45	57
5. Strongly hinders	7	12
Total	**100**	**100**
Estimated respondents	3,598	200
b. Current number of developmental controllers available		
1. Strongly helps	1	2
2. Helps somewhat	16	17
3. No impact	39	38
4. Hinders somewhat	38	38
5. Strongly hinders	6	7
Total	**100**	**100**
Estimated respondents	3,609	200

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
c. Current number of FPL controllers available		
1. Strongly helps	7	7
2. Helps somewhat	16	17
3. No impact	13	5
4. Hinders somewhat	43	45
5. Strongly hinders	21	27
Total	**100**	**100**
Estimated respondents	3,607	200
d. Current amount of traffic work load		
1. Strongly helps	1	0
2. Helps somewhat	5	1
3. No impact	18	18
4. Hinders somewhat	51	55
5. Strongly hinders	25	26
Total	**100**	**100**
Estimated respondents	3,592	200
e. Current amount of overtime being worked		
1. Strongly helps	1	0
2. Helps somewhat	6	7
3. No impact	50	49
4. Hinders somewhat	34	35
5. Strongly hinders	10	8
Total	**100**	**100**
Estimated respondents	3,576	199
f. Current hardware reliability		
1. Strongly helps	8	1
2. Helps somewhat	18	13
3. No impact	16	16
4. Hinders somewhat	36	40
5. Strongly hinders	22	31
Total	**100**	**100**
Estimated respondents	3,608	199
g. Current software reliability		
1. Strongly helps	8	1
2. Helps somewhat	25	18
3. No impact	21	23
4. Hinders somewhat	33	43
5. Strongly hinders	13	16
Total	**100**	**100**
Estimated respondents	3,606	199

Responses in percent

Question	All centers	Chicago center
h. Current controller morale		
1. Strongly helps	2	3
2. Helps somewhat	11	7
3. No impact	14	15
4. Hinders somewhat	45	49
5. Strongly hinders	28	27
Total	**100**	**100**
Estimated respondents	3,611	199
i. Other		
1. Strongly helps	2	0
2. Helps somewhat	1	0
3. No impact	1	0
4. Hinders somewhat	22	13
5. Strongly hinders	73	87
Total	**100**	**100**
Estimated respondents	562	29
28. In general, how would you describe <u>your</u> morale as a controller at this facility?		
1. Very high	7	6
2. High	23	18
3. Neither high nor low	28	33
4. Low	29	35
5. Very low	14	8
Total	**100**	**100**
6. Uncertain[a]	1	2
Estimated respondents	3,564	199

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
29. How do you rate the typical "performance" of each of the following types of pilots with whom you communicate? By "performance," we mean following control instructions, using correct phraseology, and keeping unnecessary communication to a minimum.		
a. Major airlines		
1. Excellent	26	23
2. Good	45	41
3. Adequate	19	22
4. Less than adequate	8	11
5. Poor	2	4
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	3,612	202
b. Commuters and taxis		
1. Excellent	17	16
2. Good	45	49
3. Adequate	29	23
4. Less than adequate	7	10
5. Poor	2	2
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	3,600	202
c. General aviation		
1. Excellent	2	0
2. Good	16	19
3. Adequate	42	42
4. Less than adequate	30	26
5. Poor	9	13
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	3,601	202

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
d. Military		
1. Excellent	19	15
2. Good	38	35
3. Adequate	29	37
4. Less than adequate	10	9
5. Poor	4	4
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	3,598	202
30. What effect, if any, do you think the following have on the flow of traffic in the ATC system?		
a. Airlines' use of hubs		
1. Strongly helps	1	0
2. Helps somewhat	6	4
3. Neither helps nor hinders	14	23
4. Hinders somewhat	39	39
5. Strongly hinders	39	35
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	4	2
Estimated respondents	3,470	195
b. Airlines' scheduling practices		
1. Strongly helps	1	0
2. Helps somewhat	1	1
3. Neither helps nor hinders	4	6
4. Hinders somewhat	35	34
5. Strongly hinders	59	59
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	1	0
Estimated respondents	3,574	200

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
31. What contribution, if any, has each of the following made in helping you perform your duties as an air traffic controller?		
a. Recommendations from FAB (Facility Advisory Board)		
1. Strongly helps	5	5
2. Helps somewhat	48	47
3. Neither helps nor hinders	41	40
4. Hinders somewhat	5	8
5. Strongly hinders	2	1
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	3	5
Estimated respondents	3,477	189
b. New controller chairs		
1. Strongly helps	3	4
2. Helps somewhat	24	30
3. Neither helps nor hinders	58	62
4. Hinders somewhat	10	4
5. Strongly hinders	5	0
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	2	6
Estimated respondents	3,531	189
c. New strip printer		
1. Strongly helps	5	7
2. Helps somewhat	30	27
3. Neither helps nor hinders	43	55
4. Hinders somewhat	17	9
5. Strongly hinders	5	2
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	1	2
Estimated respondents	3,567	199

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
d. Revised traffic flows		
1. Strongly helps	3	1
2. Helps somewhat	36	32
3. Neither helps nor hinders	21	23
4. Hinders somewhat	28	35
5. Strongly hinders	12	10
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	2	4
Estimated respondents	3,505	191
e. Resectorization		
1. Strongly helps	3	1
2. Helps somewhat	31	18
3. Neither helps nor hinders	30	32
4. Hinders somewhat	25	16
5. Strongly hinders	11	33
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	7	8
Estimated respondents	3,347	184
f. TMU (Traffic Management Unit)		
1. Strongly helps	4	3
2. Helps somewhat	36	25
3. Neither helps nor hinders	20	19
4. Hinders somewhat	26	38
5. Strongly hinders	14	15
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	1	2
Estimated respondents	3,556	197
g. Host computer		
1. Strongly helps	20	6
2. Helps somewhat	45	35
3. Neither helps nor hinders	31	55
4. Hinders somewhat	3	3
5. Strongly hinders	0	2
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	6	3
Estimated respondents	3,359	195

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
h. Other		
1. Strongly helps	8	0
2. Helps somewhat	4	2
3. Neither helps nor hinders	1	0
4. Hinders somewhat	22	10
5. Strongly hinders	66	88
Total	**100**	**100**
6. No basis to judge/ Doesn't apply[a]	0	0
Estimated respondents	1,714	108

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question		All centers	Chicago center
32.	Of the factors listed below, which do you think are the three most serious problems facing the air traffic control system today? Write the letters of the three problems in the boxes below. You need not use all three boxes. Use letter "A" if you see no serious problems. (The order is not important.)		
A.	No serious problems	2	1
	One or more serious problems	98	99
	Total	**100**	**100**
	Estimated respondents	3,616	202
		Percent of controllers citing serious problems	
B.	Too much air traffic	30	31
C.	Morale of the work force	43	34
D.	Too few FPLs	40	33
E.	Too few developmentals	4	2
F.	Poor pilot performance	5	6
G.	Skill level of developmentals	14	20
H.	Too much scheduled or unscheduled overtime	3	1
I.	Out-of-date hardware/equipment	43	48
J.	Limited software capabilities	7	2
K.	Inadequate training for developmentals	17	35
L.	Airlines' use of hubs	17	10
M.	Current airline scheduling practices	45	48
N.	Other	19	17
	Missing choices[a]	13	13
	Total[b]	**300**	**300**
	Estimated respondents	3,555	200

[a]Respondents selected only one or two serious problems.
[b]Because respondents could select up to 3 choices, percentages add to 300; rounding may affect that total.

Responses in percent

Question	All centers	Chicago center
33. Where minimum standards for maintaining separation of aircraft exist (3 miles for terminals; 5 miles for centers), what distance do you typically try to maintain?		
1. 3 - 3.9 miles	0	0
2. 4 - 4.9 miles	0	0
3. 5 - 5.9 miles	9	15
4. 6 - 6.9 miles	18	27
5. 7 - 7.9 miles	36	37
6. 8 - 8.9 miles	19	10
7. 9 - 9.9 miles	9	4
8. 10 - 15 miles	11	8
9. Over 15 miles	0	0
Total	**100**	**100**
Estimated respondents	3,586	199

AUTOMATED OPERATIONAL ERROR DETECTION PROGRAM

34. Do you work at an enroute center?		
1. Yes	100	100
2. No*	0	0
Total	**100**	**100**
Estimated respondents	3,609	202

*SKIP TO QUESTION 38

Responses in percent

Question	All centers	Chicago center
35. How much positive or negative impact, if any, does the automated operational error detection program have in each of the following areas at your facility?		
a. Identifying operational errors		
1. Significant positive impact	29	36
2. Some positive impact	34	31
3. No impact	8	9
4. Some negative impact	20	17
5. Significant negative impact	10	7
Total	**100**	**100**
Estimated respondents	3,554	200
b. Helping management identify system problems (e.g., airspace configuration)		
1. Significant positive impact	4	4
2. Some positive impact	21	32
3. No impact	56	50
4. Some negative impact	10	5
5. Significant negative impact	9	10
Total	**100**	**100**
Estimated respondents	3,575	202
c. Ensuring adequate separation of aircraft		
1. Significant positive impact	17	20
2. Some positive impact	42	44
3. No impact	26	21
4. Some negative impact	9	10
5. Significant negative impact	6	5
Total	**100**	**100**
Estimated respondents	3,583	202
d. Efficient controller performance		
1. Significant positive impact	3	2
2. Some positive impact	20	19
3. No impact	20	14
4. Some negative impact	31	37
5. Significant negative impact	26	29
Total	**100**	**100**
Estimated respondents	3,585	200

Responses in percent

Question	All centers	Chicago center
e. Controller morale		
1. Significant positive impact	0	0
2. Some positive impact	1	2
3. No impact	7	6
4. Some negative impact	44	51
5. Significant negative impact	48	42
Total	**100**	**100**
Estimated respondents	3,612	202
f. ATC system capacity		
1. Significant positive impact	1	0
2. Some positive impact	4	7
3. No impact	31	32
4. Some negative impact	37	31
5. Significant negative impact	27	31
Total	**100**	**100**
Estimated respondents	3,582	199
g. Pilot/controller relationships		
1. Significant positive impact	0	0
2. Some positive impact	3	5
3. No impact	36	36
4. Some negative impact	43	42
5. Significant negative impact	19	17
Total	**100**	**100**
Estimated respondents	3,601	202
h. Other		
1. Significant positive impact	12	9
2. Some positive impact	0	0
3. No impact	3	9
4. Some negative impact	19	27
5. Significant negative impact	66	55
Total	**100**	**100**
Estimated respondents	250	20
36. Have you personally had an operational error detected by the automated operational error detection program during the past 18 months?		
1. Yes	19	30
2. No	81	70
Total	**100**	**100**
Estimated respondents	3,607	202

Responses in percent

Question		All centers	Chicago center
37. Overall, how satisfied or dissatisfied are you with the approach management currently uses to confirm whether or not an event detected by the automated operational error program is an actual operational error on the part of the controller?			
	1. Very satisfied	4	2
	2. Generally satisfied	22	25
	3. Neither satisfied nor dissatisfied	23	29
	4. Generally dissatisfied	26	28
	5. Very dissatisfied	24	16
	Total	**100**	**100**
	6. No basis to judge[a]	5	9
	Estimated respondents	3,406	184

RETIREMENT

38. Are you now or will you be eligible to retire within the next 2 years?			
	1. Yes	12	8
	2. No*	89	92
	Total	**100**	**100**
	Estimated respondents	3,618	200

*SKIP TO QUESTION 41

Responses to questions 39 and 40 are not being reported because of the low number of Chicago center responses.

[a]The categories totaling 100 percent do not include these responses.

Responses in percent (unless indicated otherwise)

Question	All centers	Chicago center
BACKGROUND QUESTIONS		
	Mean years	
41. What is your age?	35.3	34.1
Estimated respondents	3,608	202
42. What is your grade?		
GS-11	1	1
GS-12	5	12
GS-13	14	15
GS-14	80	72
Total	**100**	**100**
Estimated respondents	3,615	202
43. (FPLs ONLY:) Which of the following comes closest to describing your current duties?		
1. Working control positions full-time (including providing OJT)	91	93
2. TMU/Traffic management coordinator	5	7
3. Working other duties (e.g., staff detail, special projects) but also maintaining currency on at least one position	3	0
4. Working other duties, but not maintaining currency on any control position	0	0
5. Other	2	0
Total	**100**	**100**
Estimated respondents	3,281	139

Responses in percent (unless indicated otherwise)

Question	All centers	Chicago center
44. Have you been an FPL at another FAA facility?		
1. Yes	19	15
2. No	81	85
Total	**100**	**100**
Estimated respondents	3,538	193
45. How many total years of experience do you have for each of the following? (Round to the nearest year. If none for military, enter 0.)		
	Mean years	
a. Total years with FAA	10.0	9.0
Estimated respondents	3,600	200
b. Years controlling traffic with FAA (Developmental and FPL)	9.3	8.0
Estimated respondents	3,545	193
c. Years controlling traffic for the military[a]	4.6	4.5
Estimated respondents	967	42
46. Thank you for your help with this study. If you have any other comments, please write them in the space below.		
Written comments provided	43	40
No comments provided	57	60
Total	**100**	**100**
Estimated respondents	3,635	202

[a]The mean shown is for all controllers with 1 or more years' military experience.

1988 SURVEY RESULTS FOR ALL CENTERS COMPARED WITH CHICAGO CENTER AIR TRAFFIC CONTROL--FIRST-LINE SUPERVISORS

Responses in percent

Question	All centers	Chicago center
1. According to FAA records you are a first-line supervisor. Is this correct?		
1. Correct (%)	100	100
2. Incorrect - I am ...	*	*
Total	**100**	**100**
Estimated respondents	614	33

*Respondents checking incorrect were instructed to not complete the questionnaire and were not included in the results.

NOTES: (1) "Estimated respondents" is our estimate of the number of center supervisors who would have responded had all center supervisors received questionnaires. Center supervisors were sampled and results calculated using appropriate projections.

(2) Percentages may not add to 100 because of rounding.

(3) The terms "center," "enroute center," and "air route traffic control center" have the same meaning in this report. "All centers" means the 20 centers in the contiguous United States.

(4) Respondents were instructed to "check one" response for each question or part of a question whenever response categories were presented.

(5) Responses to some questions or parts of questions are not reported because of the low number of responses.

Responses in percent (unless indicated otherwise)

Question	All centers	Chicago center
WORK LOAD		
2. Consider the complexity of the sectors and the capabilities of controllers under your supervision as a first-line supervisor. During typical daily peak periods, how many radar controllers under your supervision, if any, are handling more traffic than you feel they should?	Total radar controllers	
Number of radar controllers handling too much traffic*	1,338	89
Estimated respondents	614	33
*IF NONE SKIP TO QUESTION 4		
3. For those controllers you were referring to in question 2, how much, if any, does each of the following factors represent a reason for their handling more traffic than they should?		
a. Sector configuration (complexity)		
1. Major reason	48	33
2. Somewhat of a reason	38	27
3. Not a reason	15	40
Total	**100**	**100**
Estimated respondents	356	20
b. Controller capability		
1. Major reason	20	27
2. Somewhat of a reason	40	27
3. Not a reason	41	47
Total	**100**	**100**
Estimated respondents	348	20
c. Shortage of radar controllers		
1. Major reason	27	27
2. Somewhat of a reason	34	27
3. Not a reason	39	47
Total	**100**	**100**
Estimated respondents	349	20

Responses in percent

Question	All centers	Chicago center
d. Shortage of non-radar controllers		
1. Major reason	6	8
2. Somewhat of a reason	24	0
3. Not a reason	70	92
Total	**100**	**100**
Estimated respondents	331	17
e. Shortage of other staff qualified to assist radar controllers		
1. Major reason	5	0
2. Somewhat of a reason	19	8
3. Not a reason	76	92
Total	**100**	**100**
Estimated respondents	330	17
f. Inadequate flow control procedures		
1. Major reason	28	38
2. Somewhat of a reason	52	63
3. Not a reason	20	0
Total	**100**	**100**
Estimated respondents	351	21
g. Airline schedules		
1. Major reason	64	69
2. Somewhat of a reason	30	25
3. Not a reason	6	6
Total	**100**	**100**
Estimated respondents	363	21

Responses in percent

Question	All centers	Chicago center
4. Have any of the sectors in your area of responsibility been reconfigured (procedural and/or boundary changes) during the past 18 months?		
1. Yes	76	68
2. No*	24	32
Total	**100**	**100**
Estimated respondents	611	33
*SKIP TO QUESTION 7		
5. Did reconfiguration of your sector(s) increase, decrease, or have no effect on the work load of the radar controllers you supervise?		
1. Increased work load	29	25
2. No effect on work load	9	13
3. Decreased work load	31	25
4. Increased some and decreased some - more than one sector affected	32	38
Total	**100**	**100**
Estimated respondents	463	21
6. How satisfied or dissatisfied are you with the amount of say you had in the reconfiguration(s) that took place during the past 18 months?		
1. Very satisfied	15	18
2. Generally satisfied	31	47
3. Neither satisfied nor dissatisfied	22	24
4. Generally dissatisfied	19	12
5. Very dissatisfied	13	0
Total	**100**	**100**
Estimated respondents	463	22

Responses in percent

Question	All centers	Chicago center
7. Do you feel any of your current sectors should be reconfigured?		
1. Definitely yes	47	52
2. Probably yes	28	8
3. Uncertain	5	16
4. Probably not	17	20
5. Definitely not	3	4
Total	**100**	**100**
Estimated respondents	613	33
8. FAA has established TMUs (Traffic Management Units) at ARTCCs (Centers) to assist in controlling the flow of traffic. Over the last 12 months, do you believe these TMUs have helped you manage the volume of traffic that controllers you supervise are required to handle?		
1. Definitely yes	40	16
2. Probably yes	34	40
3. Uncertain	5	4
4. Probably not	13	20
5. Definitely not	9	20
Total	**100**	**100**
Estimated respondents	609	33
9. During daily peak periods, how often, if ever, are radar controllers under your supervision taking each of the following actions?		
a. Provide another aircraft with instructions without waiting for first aircraft to acknowledge receipt of its instructions		
1. Very often	4	12
2. Often	9	28
3. Occasionally	40	48
4. Seldom, if ever	47	12
Total	**100**	**100**
Estimated respondents	607	33

Responses in percent

Question	All centers	Chicago center
b. Drop track before target leaves area of jurisdiction		
1. Very often	2	8
2. Often	7	8
3. Occasionally	40	44
4. Seldom, if ever	52	40
Total	**100**	**100**
Estimated respondents	612	33
c. Use inefficient vector patterns		
1. Very often	1	0
2. Often	9	12
3. Occasionally	53	60
4. Seldom, if ever	37	28
Total	**100**	**100**
Estimated respondents	597	33
d. Decline to provide weather advisories		
1. Very often	3	4
2. Often	7	28
3. Occasionally	29	16
4. Seldom, if ever	61	52
Total	**100**	**100**
Estimated respondents	607	33
e. Decline to provide traffic advisories		
1. Very often	3	4
2. Often	10	24
3. Occasionally	47	40
4. Seldom, if ever	41	32
Total	**100**	**100**
Estimated respondents	609	33
f. Decline user requests for services (direct routes, altitude changes, etc.)		
1. Very often	9	12
2. Often	23	20
3. Occasionally	45	40
4. Seldom, if ever	23	28
Total	**100**	**100**
Estimated respondents	610	33

Responses in percent

Question	All centers	Chicago center
10. During daily peak traffic periods, do you believe radar-certified developmental and FPL controllers under your supervision are typically required to spend too much, too little, or about the right amount of time continuously on radar positions between breaks?		
FPLs		
1. Much too much	5	4
2. Somewhat too much	27	24
3. Appropriate amount	58	48
4. Somewhat too little	9	20
5. Much too little	1	4
Total	**100**	**100**
Estimated respondents	615	33
Developmentals		
1. Much too much	3	0
2. Somewhat too much	20	16
3. Appropriate amount	67	52
4. Somewhat too little	9	24
5. Much too little	1	8
Total	**100**	**100**
Estimated respondents	613	33
11. Approximately what percentage of your duty time do you typically spend working traffic per pay period?		
	Mean percent	
Percent of time working traffic	19	46
Estimated respondents	596	33

Responses in percent

Question	All centers	Chicago center
12. Do you feel you spend too much, too little, or an appropriate amount of time working traffic?		
1. Much too much	6	24
2. Somewhat too much	17	28
3. Appropriate amount	42	28
4. Somewhat too little	26	20
5. Much too little	8	0
Total	**100**	**100**
Estimated respondents	602	33
STAFFING		
13. In your opinion, is the current number of staff available for each of the following types of positions higher than needed, lower than needed, or at the appropriate level? If you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
a. First-line supervisors		
1. Much higher than needed	1	4
2. Somewhat higher than needed	4	4
3. Appropriate number	78	76
4. Somewhat lower than needed	15	12
5. Much lower than needed	2	4
Total	**100**	**100**
Estimated respondents	614	33
b. FPLs		
1. Much higher than needed	1	0
2. Somewhat higher than needed	4	4
3. Appropriate number	21	12
4. Somewhat lower than needed	52	56
5. Much lower than needed	22	28
Total	**100**	**100**
Estimated respondents	615	33

Responses in percent

Question	All centers	Chicago center
c. Air traffic assistants (ATAs)		
1. Much higher than needed	3	0
2. Somewhat higher than needed	2	8
3. Appropriate number	10	54
4. Somewhat lower than needed	36	25
5. Much lower than needed	49	13
Total	**100**	**100**
Estimated respondents	610	31
d. Staff specialists (training, quality assurance, planning and procedures, etc.)		
1. Much higher than needed	4	4
2. Somewhat higher than needed	16	12
3. Appropriate number	44	36
4. Somewhat lower than needed	26	40
5. Much lower than needed	11	8
Total	**100**	**100**
Estimated respondents	611	33
14. In your opinion, do you currently have too many, too few, or an appropriate number of developmental controllers to meet future controller needs? If you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
1. Much too many	1	8
2. Somewhat too many	4	8
3. Appropriate number	34	72
4. Somewhat too few	46	12
5. Much too few	15	0
Total	**100**	**100**
Estimated respondents	614	33

Responses in percent

Question	All centers	Chicago center
15. Which of the following best describes the current situation for developmentals in regard to the ability to provide them with quality training now? Again, if you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
1. We have a lot more developmentals than we can train now.	7	24
2. We have somewhat more developmentals than we can train now.	21	64
3. We have about the right number of developmentals to train now.	32	12
4. We could train somewhat more developmentals than we do now.	34	0
5. We could train a lot more developmentals than we do now.	6	0
Total	**100**	**100**
Estimated respondents	614	33
16. (FOR CENTERS ONLY:) In your opinion, is the current number of FPLs on board in your TMU higher than needed, lower than needed, or at the appropriate level?		
1. Much higher than needed	8	9
2. Somewhat higher than needed	26	23
3. Appropriate number	42	55
4. Somewhat lower than needed	20	9
5. Much lower than needed	4	5
Total	**100**	**100**
6. Unsure[a]	4	8
Estimated respondents	585	29

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
17. In the last 12 months, to what extent, if at all, have shortages of controllers or first-line supervisors limited you personally in each of the following areas?		
a. Your ability to take your first 2 weeks of annual leave each year		
1. Very great extent	1	4
2. Great extent	3	0
3. Moderate extent	6	8
4. Some extent	14	8
5. Little, no extent	76	79
Total	**100**	**100**
Estimated respondents	609	31
b. Your ability to take the rest of your annual leave each year		
1. Very great extent	4	4
2. Great extent	6	17
3. Moderate extent	13	21
4. Some extent	25	25
5. Little, no extent	53	33
Total	**100**	**100**
Estimated respondents	610	31
c. Your ability to take annual leave on short notice (2 weeks or less)		
1. Very great extent	15	17
2. Great extent	17	29
3. Moderate extent	19	21
4. Some extent	23	21
5. Little, no extent	26	13
Total	**100**	**100**
Estimated respondents	610	31
d. Your ability to take needed sick leave		
1. Very great extent	3	9
2. Great extent	5	13
3. Moderate extent	8	9
4. Some extent	15	9
5. Little, no extent	70	61
Total	**100**	**100**
Estimated respondents	603	30

Responses in percent

Question	All centers	Chicago center
e. Your ability to refuse scheduled overtime		
1. Very great extent	6	13
2. Great extent	6	8
3. Moderate extent	8	21
4. Some extent	10	8
5. Little, no extent	71	50
Total	**100**	**100**
Estimated respondents	581	31
f. Your ability to get required training		
1. Very great extent	9	9
2. Great extent	13	22
3. Moderate extent	19	4
4. Some extent	25	30
5. Little, no extent	35	35
Total	**100**	**100**
Estimated respondents	605	30
g. Your ability to get or provide team briefings		
1. Very great extent	10	21
2. Great extent	12	21
3. Moderate extent	15	13
4. Some extent	26	29
5. Little, no extent	37	17
Total	**100**	**100**
Estimated respondents	611	31
h. Your ability to take needed personal breaks		
1. Very great extent	12	25
2. Great extent	12	13
3. Moderate extent	17	13
4. Some extent	26	25
5. Little, no extent	33	25
Total	**100**	**100**
Estimated respondents	611	31

Responses in percent

Question	All centers	Chicago center
i. Your ability to take duty FAM (familiarization) airline trips		
1. Very great extent	17	25
2. Great extent	13	17
3. Moderate extent	11	8
4. Some extent	22	21
5. Little, no extent	38	29
Total	**100**	**100**
Estimated respondents	607	31

COMPENSATORY TIME/OVERTIME

18. In the last 12 months, how many days of compensatory time have you accumulated?		
1. None*	19	38
2. 1-5 days	41	38
3. 6-10 days	25	21
4. 11-20 days	11	4
5. 21-30 days	3	0
6. 31-50 days	1	0
7. Over 50 days	0	0
Total	**100**	**100**
Estimated respondents	610	31

*SKIP TO QUESTION 20

19. Are you generally working more compensatory time than you think you should?		
1. Definitely yes	10	0
2. Probably yes	22	20
3. Uncertain	12	13
4. Probably not	40	60
5. Definitely not	16	7
Total	**100**	**100**
Estimated respondents	493	20

Responses in percent

Question	All centers	Chicago center
20. Which of the following best describes the current situation in regard to overtime at your facility?		
1. Too much overtime is assigned so that our personnel are overworked	10	9
2. Too little overtime is allowed so that we can't cover training, leave, and other duties	44	57
3. Overtime assignments are appropriate at this time	35	26
4. No overtime assigned here; no overtime needed	6	4
5. Other	6	4
Total	**100**	**100**
6. No basis to judge[a]	1	4
Estimated respondents	603	30
TRAINING		
21. In your opinion, how adequate or inadequate is the training developmental controllers get before beginning on-the-job training?		
1. Much more than adequate	1	0
2. Somewhat more than adequate	5	0
3. Generally adequate	39	8
4. Somewhat less than adequate	33	50
5. Much less than adequate	20	42
Total	**100**	**100**
6. No basis to judge[a]	1	0
Estimated respondents	606	31

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
22. How do you rate the quality of the on-the-job training developmental controllers currently receive at your facility in each of the following areas?		
a. Using backup systems		
1. Excellent	2	0
2. Good	11	0
3. Adequate	34	44
4. Less than adequate	37	40
5. Poor	17	16
Total	**100**	**100**
6. No basis to judge[a]	1	0
Estimated respondents	608	33
b. Controlling traffic in bad weather		
1. Excellent	5	0
2. Good	17	8
3. Adequate	35	36
4. Less than adequate	32	40
5. Poor	12	16
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	612	33
c. Emergency procedures		
1. Excellent	2	0
2. Good	12	4
3. Adequate	42	20
4. Less than adequate	35	48
5. Poor	10	28
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	608	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
d. Handling heavy traffic		
1. Excellent	13	8
2. Good	31	20
3. Adequate	35	36
4. Less than adequate	17	28
5. Poor	4	8
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	613	33
e. Holding patterns		
1. Excellent	4	8
2. Good	15	8
3. Adequate	38	36
4. Less than adequate	32	32
5. Poor	11	16
Total	**100**	**100**
6. No basis to judge[a]	3	0
Estimated respondents	596	33
f. Operational characteristics of types of aircraft		
1. Excellent	4	4
2. Good	16	8
3. Adequate	38	44
4. Less than adequate	31	40
5. Poor	12	4
Total	**100**	**100**
6. No basis to judge[a]	1	0
Estimated respondents	611	33
g. Direct routings (expediting traffic)		
1. Excellent	8	4
2. Good	24	32
3. Adequate	50	44
4. Less than adequate	13	20
5. Poor	5	0
Total	**100**	**100**
6. No basis to judge[a]	1	0
Estimated respondents	604	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
h. Control techniques		
1. Excellent	10	0
2. Good	34	24
3. Adequate	39	48
4. Less than adequate	15	28
5. Poor	2	0
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	607	33
i. Phraseology		
1. Excellent	10	0
2. Good	35	4
3. Adequate	36	48
4. Less than adequate	17	44
5. Poor	3	4
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	612	33
j. Flow control procedures		
1. Excellent	5	0
2. Good	14	0
3. Adequate	41	28
4. Less than adequate	30	40
5. Poor	10	32
Total	**100**	**100**
6. No basis to judge[a]	2	0
Estimated respondents	597	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
23. Overall, how do you rate the quality of on-the-job training (OJT) that developmentals currently receive at your facility?		
1. Excellent	7	0
2. Good	40	20
3. Adequate	39	56
4. Poor	13	24
5. Very poor	1	0
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	613	33
24. Do you believe developmental controllers are provided with sufficient training involving live traffic before being certified on a position?		
1. Definitely yes	39	24
2. Probably yes	40	52
3. Uncertain	4	0
4. Probably not	13	16
5. Definitely not	4	8
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	610	33
25. Does your facility have an adequate amount of simulator equipment?		
1. Definitely yes	18	4
2. Probably yes	45	56
3. Uncertain	10	8
4. Probably not	18	16
5. Definitely not	10	16
Total	**100**	**100**
Estimated respondents	608	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
26. To what extent, if at all, is your facility's simulator equipment used by developmental controllers?		
1. Very great extent	13	4
2. Great extent	35	36
3. Moderate extent	27	32
4. Some extent	21	20
5. Little, or no extent	4	8
Total	**100**	**100**
6. Don't know; uncertain[a]	3	0
Estimated respondents	587	33
27. Are there currently enough FPLs available to provide OJT to all developmentals (either to new developmentals or those from other facilities)? If you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
1. Definitely yes	34	12
2. Probably yes	36	12
3. Uncertain	3	12
4. Probably not	14	32
5. Definitely not	13	32
Total	**100**	**100**
Estimated respondents	608	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
28. What portion of the OJT instructors you supervise have sufficient ATC experience and teaching skills to provide OJT to developmentals?		
ATC Experience		
1. All/Almost all	28	4
2. Most	35	40
3. About half	22	44
4. Some	13	12
5. Few/None	3	0
Total	**100**	**100**
Estimated respondents	608	33
Teaching Skills		
1. All/Almost all	10	0
2. Most	28	17
3. About half	26	33
4. Some	29	38
5. Few/None	7	13
Total	**100**	**100**
Estimated respondents	593	31
29. In the last 12 months, to what extent, if any, have the following groups of employees provided OJT? If you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.		
a. FPLs fully qualified 5 or more years at your facility		
1. Very great extent	37	56
2. Great extent	29	20
3. Moderate extent	17	16
4. Some extent	13	8
5. Little, no extent	5	0
Total	**100**	**100**
Estimated respondents	602	33

Responses in percent

Question	All centers	Chicago center
b. FPLs fully qualified less than 5 years at your facility		
1. Very great extent	27	40
2. Great extent	38	48
3. Moderate extent	21	12
4. Some extent	14	0
5. Little, no extent	1	0
Total	**100**	**100**
Estimated respondents	605	33
c. Developmentals at your facility 2 or more years		
1. Very great extent	5	12
2. Great extent	8	36
3. Moderate extent	16	32
4. Some extent	29	16
5. Little, no extent	42	4
Total	**100**	**100**
Estimated respondents	596	33
d. Developmentals at your facility less than 2 years		
1. Very great extent	3	4
2. Great extent	5	24
3. Moderate extent	9	32
4. Some extent	24	28
5. Little, no extent	60	12
Total	**100**	**100**
Estimated respondents	602	33
e. First-line supervisors		
1. Very great extent	1	8
2. Great extent	4	25
3. Moderate extent	14	21
4. Some extent	37	38
5. Little, no extent	44	8
Total	**100**	**100**
Estimated respondents	603	31

Responses in percent

Question	All centers	Chicago center
30. Do you believe developmental controllers today are better, worse, or about the same as developmental controllers were in each of the following areas 3 years ago? If you feel that you do not have enough knowledge to compare the two groups for any of the items, please check "No Basis to Judge" for those items.		
a. Overall skill level when arriving on floor for on-the-job training		
1. Much better	2	4
2. Somewhat better	12	17
3. About the same	51	38
4. Somewhat worse	28	29
5. Much worse	6	13
Total	**100**	**100**
6. No basis to judge[a]	3	4
Estimated respondents	590	31
b. Aptitude or ability to learn controller duties		
1. Much better	3	0
2. Somewhat better	13	13
3. About the same	64	71
4. Somewhat worse	16	8
5. Much worse	4	8
Total	**100**	**100**
6. No basis to judge[a]	3	4
Estimated respondents	593	31

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
c. Work attitude		
1. Much better	4	4
2. Somewhat better	12	8
3. About the same	46	46
4. Somewhat worse	29	29
5. Much worse	10	13
Total	**100**	**100**
6. No basis to judge[a]	2	4
Estimated respondents	594	31

31. For each of the following types of FPL proficiency training that FPLs have received, is the amount of training more or less than needed, or is it about the right amount? If you work at an enroute center, answer for your area of specialization; if you work at a terminal, answer for your schedule.

a. Tape monitor review		
1. Much more than needed	5	4
2. Somewhat more than needed	9	8
3. About the right amount	66	52
4. Somewhat less than needed	16	28
5. Much less than needed	4	8
Total	**100**	**100**
6. No basis to judge/Don't know[a]	1	0
Estimated respondents	606	33
b. Over-the-shoulder evaluations		
1. Much more than needed	5	0
2. Somewhat more than needed	9	8
3. About the right amount	74	60
4. Somewhat less than needed	10	28
5. Much less than needed	2	4
Total	**100**	**100**
6. No basis to judge/Don't know[a]	0	0
Estimated respondents	609	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
c. Annual specialized training (map, operating procedures, letters of agreement, etc.)		
1. Much more than needed	2	4
2. Somewhat more than needed	4	25
3. About the right amount	39	29
4. Somewhat less than needed	34	0
5. Much less than needed	22	42
Total	**100**	**100**
6. No basis to judge/Don't know[a]	2	4
Estimated respondents	599	31
d. DARC/Other backup systems		
1. Much more than needed	1	4
2. Somewhat more than needed	1	4
3. About the right amount	32	28
4. Somewhat less than needed	37	44
5. Much less than needed	28	20
Total	**100**	**100**
6. No basis to judge/Don't know[a]	0	0
Estimated respondents	608	33
e. OJT instructor performance evaluation		
1. Much more than needed	4	4
2. Somewhat more than needed	8	0
3. About the right amount	54	21
4. Somewhat less than needed	23	54
5. Much less than needed	11	21
Total	**100**	**100**
6. No basis to judge/Don't know[a]	1	4
Estimated respondents	606	31
f. Computer-based instruction		
1. Much more than needed	9	0
2. Somewhat more than needed	10	13
3. About the right amount	44	29
4. Somewhat less than needed	21	25
5. Much less than needed	16	33
Total	**100**	**100**
6. No basis to judge/Don't know[a]	3	4
Estimated respondents	591	31

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
g. Simulation (DYSIM/ETG) lab		
1. Much more than needed	3	4
2. Somewhat more than needed	4	4
3. About the right amount	34	26
4. Somewhat less than needed	30	35
5. Much less than needed	29	30
Total	**100**	**100**
6. No basis to judge/Don't know[a]	5	8
Estimated respondents	578	30
32. In the last 12 months, have you received any formal training (classroom or individual instruction) in recognizing substance abuse (drugs and alcohol)?		
1. Yes	34	44
2. No	66	56
Total	**100**	**100**
Estimated respondents	610	33
33. Do you feel that you have received sufficient training in recognizing substance abuse (drugs and alcohol)?		
1. Definitely yes	4	4
2. Probably yes	15	24
3. Uncertain	13	16
4. Probably not	37	28
5. Definitely not	32	28
Total	**100**	**100**
Estimated respondents	610	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
SYSTEM SAFETY AND ATC OPERATIONS		
34. How would you rate the overall safety of the ATC system today?		
1. Excellent	20	8
2. Good	43	24
3. Adequate	29	56
4. Poor	7	12
5. Very poor	1	0
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	596	33
35. Please consider your own observations and experience for each of the factors listed below. Then indicate your opinion as to whether that factor is currently helping, is currently hindering, or currently has no impact on the maintenance of ATC system safety today.		
a. Current skill level of developmental controllers		
1. Strongly helps	5	0
2. Helps somewhat	24	32
3. No impact	29	20
4. Hinders somewhat	40	44
5. Strongly hinders	3	4
Total	**100**	**100**
Estimated respondents	596	33
b. Current number of developmental controllers available		
1. Strongly helps	1	4
2. Helps somewhat	22	8
3. No impact	32	40
4. Hinders somewhat	40	44
5. Strongly hinders	4	4
Total	**100**	**100**
Estimated respondents	596	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
c. Current number of FPL controllers available		
1. Strongly helps	12	4
2. Helps somewhat	20	24
3. No impact	15	8
4. Hinders somewhat	37	44
5. Strongly hinders	16	20
Total	**100**	**100**
Estimated respondents	598	33
d. Current amount of traffic work load		
1. Strongly helps	1	0
2. Helps somewhat	5	0
3. No impact	20	8
4. Hinders somewhat	51	56
5. Strongly hinders	23	36
Total	**100**	**100**
Estimated respondents	597	33
e. Current amount of overtime being worked		
1. Strongly helps	1	4
2. Helps somewhat	6	0
3. No impact	55	52
4. Hinders somewhat	28	32
5. Strongly hinders	10	12
Total	**100**	**100**
Estimated respondents	595	33
f. Current hardware reliability		
1. Strongly helps	14	17
2. Helps somewhat	25	17
3. No impact	25	35
4. Hinders somewhat	26	17
5. Strongly hinders	10	13
Total	**100**	**100**
Estimated respondents	593	30
g. Current software reliability		
1. Strongly helps	14	20
2. Helps somewhat	26	12
3. No impact	28	36
4. Hinders somewhat	26	28
5. Strongly hinders	6	4
Total	**100**	**100**
Estimated respondents	598	33

Responses in percent

Question	All centers	Chicago center
h. Current controller morale		
1. Strongly helps	4	0
2. Helps somewhat	20	20
3. No impact	17	12
4. Hinders somewhat	43	60
5. Strongly hinders	16	8
Total	**100**	**100**
Estimated respondents	596	33
36. In general, how would you describe your morale as a first-line supervisor at this facility?		
1. Very high	8	4
2. High	30	32
3. Neither high nor low	25	36
4. Low	29	16
5. Very low	8	12
Total	**100**	**100**
6. Uncertain[a]	1	0
Estimated respondents	603	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
37. How do you rate the typical "performance" of each of the following types of pilots with whom you communicate? By "performance," we mean following control instructions, using correct phraseology, and keeping unnecessary communication to a minimum.		
a. Major airlines		
1. Excellent	23	32
2. Good	43	32
3. Adequate	22	24
4. Less than adequate	11	12
5. Poor	2	0
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	610	33
b. Commuters and taxis		
1. Excellent	8	12
2. Good	42	40
3. Adequate	36	44
4. Less than adequate	12	0
5. Poor	3	4
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	608	33
c. General aviation		
1. Excellent	2	4
2. Good	16	8
3. Adequate	46	60
4. Less than adequate	28	20
5. Poor	8	8
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	608	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
d. Military		
1. Excellent	12	13
2. Good	37	29
3. Adequate	34	46
4. Less than adequate	14	4
5. Poor	3	8
Total	**100**	**100**
6. Don't know/No basis to judge[a]	0	0
Estimated respondents	609	31
38. What effect, if any, do you think the following have on the flow of traffic in the ATC system?		
a. Airlines' use of hubs		
1. Strongly helps	1	0
2. Helps somewhat	6	4
3. Neither helps nor hinders	8	8
4. Hinders somewhat	34	42
5. Strongly hinders	51	46
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	4	4
Estimated respondents	588	31
b. Current airline scheduling practices		
1. Strongly helps	0	0
2. Helps somewhat	2	4
3. Neither helps nor hinders	2	4
4. Hinders somewhat	26	28
5. Strongly hinders	69	64
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	1	0
Estimated respondents	606	33

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
39. What contribution, if any, has each of the following made in helping the controllers you supervise perform their duties as air traffic controllers?		
a. Recommendations from FAB (Facility Advisory Board)		
1. Strongly helps	9	8
2. Helps somewhat	63	40
3. Neither helps nor hinders	25	44
4. Hinders somewhat	3	8
5. Strongly hinders	0	0
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	1	0
Estimated respondents	602	33
b. New controller chairs		
1. Strongly helps	3	4
2. Helps somewhat	31	33
3. Neither helps nor hinders	56	63
4. Hinders somewhat	7	0
5. Strongly hinders	3	0
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	2	4
Estimated respondents	595	31
c. New strip printer		
1. Strongly helps	7	4
2. Helps somewhat	39	39
3. Neither helps nor hinders	36	48
4. Hinders somewhat	14	9
5. Strongly hinders	5	0
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	1	4
Estimated respondents	602	30

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question	All centers	Chicago center
d. Revised traffic flows		
1. Strongly helps	5	8
2. Helps somewhat	46	42
3. Neither helps nor hinders	13	8
4. Hinders somewhat	26	25
5. Strongly hinders	9	17
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	1	4
Estimated respondents	600	31
e. Resectorization		
1. Strongly helps	8	4
2. Helps somewhat	41	26
3. Neither helps nor hinders	19	26
4. Hinders somewhat	20	22
5. Strongly hinders	12	22
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	7	8
Estimated respondents	562	30
f. TMU (Traffic Management Unit)		
1. Strongly helps	13	4
2. Helps somewhat	58	52
3. Neither helps nor hinders	14	12
4. Hinders somewhat	10	16
5. Strongly hinders	5	16
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	0	0
Estimated respondents	606	33
g. Host computer		
1. Strongly helps	29	33
2. Helps somewhat	48	38
3. Neither helps nor hinders	22	29
4. Hinders somewhat	1	0
5. Strongly hinders	0	0
Total	**100**	**100**
6. No basis to judge/Doesn't apply[a]	6	4
Estimated respondents	571	31

[a]The categories totaling 100 percent do not include these responses.

Responses in percent

Question		All centers	Chicago center
40.	Of the factors listed below, which do you think are the three most serious problems facing the air traffic control system today? Write the letters of the three problems in the boxes below. You need not use all three boxes. Use letter "A" if you see no serious problems. (The order is not important.)		
A.	No serious problems	4	4
	One or more serious problems	96	96
	Total	**100**	**100**
	Estimated respondents	613	33
		Percent of supervisors citing serious problems	
B.	Too much air traffic	35	58
C.	Morale of the work force	30	17
D.	Too few FPLs	37	29
E.	Too few developmentals	8	4
F.	Poor pilot performance	6	0
G.	Skill level of developmentals	10	17
H.	Too much scheduled or unscheduled overtime	5	8
I.	Out-of-date hardware/equipment	31	25
J.	Limited software capabilities	7	4
K.	Inadequate training for developmentals	16	25
L.	Airlines' use of hubs	26	17
M.	Current airline scheduling practices	56	58
N.	Other	21	25
	Missing choices[a]	12	13
	Total[b]	**300**	**300**
	Estimated respondents	588	31

[a]Respondents selected only one or two serious problems.
[b]Because respondents could select up to three choices, percentages add to 300.

Responses in percent

Question	All centers	Chicago center
41. Where minimum standards for maintaining separation of aircraft exist (3 miles for terminals; 5 miles for centers), what distance do the controllers you supervise typically try to maintain?		
1. 3 - 3.9 miles	0	0
2. 4 - 4.9 miles	0	0
3. 5 - 5.9 miles	8	28
4. 6 - 6.9 miles	23	24
5. 7 - 7.9 miles	37	28
6. 8 - 8.9 miles	15	16
7. 9 - 9.9 miles	6	0
8. 10 - 15 miles	11	4
9. Over 15 miles	0	0
Total	**100**	**100**
Estimated respondents	605	33

AUTOMATED OPERATIONAL ERROR DETECTION PROGRAM

42. Do you work at an enroute center?		
1. Yes	100	100
2. No*	0	0
Total	**100**	**100**
Estimated respondents	613	33

*SKIP TO QUESTION 46

Responses in percent

Question	All centers	Chicago center
43. Based on your experience, how much positive or negative impact, if any, does the automated operational error detection program have in each of the following areas?		
a. Identifying operational errors		
1. Significant positive impact	42	38
2. Some positive impact	32	42
3. No impact	4	0
4. Some negative impact	14	13
5. Significant negative impact	8	8
Total	**100**	**100**
Estimated respondents	605	31
b. Helping management identify system problems (e.g., airspace configuration)		
1. Significant positive impact	5	4
2. Some positive impact	34	67
3. No impact	51	21
4. Some negative impact	6	0
5. Significant negative impact	5	8
Total	**100**	**100**
Estimated respondents	610	31
c. Ensuring adequate separation of aircraft		
1. Significant positive impact	27	42
2. Some positive impact	46	46
3. No impact	17	13
4. Some negative impact	7	0
5. Significant negative impact	3	0
Total	**100**	**100**
Estimated respondents	605	31
d. Efficient controller performance		
1. Significant positive impact	6	4
2. Some positive impact	31	25
3. No impact	24	17
4. Some negative impact	28	54
5. Significant negative impact	11	0
Total	**100**	**100**
Estimated respondents	605	31

Responses in percent

Question	All centers	Chicago center
e. Controller morale		
1. Significant positive impact	1	0
2. Some positive impact	3	8
3. No impact	6	0
4. Some negative impact	60	71
5. Significant negative impact	31	21
Total	**100**	**100**
Estimated respondents	611	31
f. ATC system capacity		
1. Significant positive impact	1	0
2. Some positive impact	5	13
3. No impact	36	21
4. Some negative impact	40	38
5. Significant negative impact	18	29
Total	**100**	**100**
Estimated respondents	603	31
g. Pilot/Controller relationships		
1. Significant positive impact	0	0
2. Some positive impact	3	8
3. No impact	34	46
4. Some negative impact	47	33
5. Significant negative impact	16	13
Total	**100**	**100**
Estimated respondents	611	31
44. Have you personally had an operational error detected by the automated operational error detection program during the past 18 months?		
1. Yes	8	4
2. No	92	96
Total	**100**	**100**
Estimated respondents	610	31

Responses in percent

Question	All centers	Chicago center
45. Overall, how satisfied or dissatisfied are you with the approach management currently uses to confirm whether or not an event detected by the automated operational error program is an actual operational error on the part of the controller?		
1. Very satisfied	14	8
2. Generally satisfied	46	42
3. Neither satisfied nor dissatisfied	16	25
4. Generally dissatisfied	16	17
5. Very dissatisfied	8	8
Total	**100**	**100**
6. No basis to judge[a]	0	0
Estimated respondents	612	31

RETIREMENT

46. Are you now or will you be eligible to retire within the next 2 years?		
1. Yes	38	60
2. No*	62	40
Total	**100**	**100**
Estimated respondents	616	33
*SKIP TO QUESTION 49		

47. Do you plan to retire within the next 2 years?		
1. Definitely yes	35	40
2. Probably yes	42	40
3. Probably not*	18	20
4. Definitely not*	5	0
Total	**100**	**100**
Estimated respondents	232	20
*SKIP TO QUESTION 49		

[a]The categories totaling 100 percent do not include these responses.

Responses in percent (unless indicated otherwise)

Question	All centers	Chicago center

Responses to question 48 are not being reported because of the low number of Chicago center responses.

BACKGROUND QUESTIONS

	Mean years	
49. What is your age?	46.5	48.7
Estimated respondents	615	33

50. What is your grade?

	Responses in percent	
GS/GM 14	13	0
GS/GM 15	87	100
Total	**100**	**100**
Estimated respondents	614	33

51. How many years experience do you have for each of the following?

	Mean years	
A. Total years with FAA	21.3	24.5
Estimated respondents	616	33
B. Years controlling traffic with FAA (only as a developmental and FPL)	15.5	19.0
Estimated respondents	613	33
C. Years experience as first-line supervisor	6.1	7.8
Estimated respondents	616	33

Responses in percent

Question	All centers	Chicago center
52. Thank you for your help with this study. If you have any other comments, please write them in the space below.		
	Responses in percent	
Written comments provided	50	36
No comments provided	50	64
Total	**100**	**100**
Estimated respondents	616	33

SECTION 4

HOW CHICAGO CENTER AIR TRAFFIC CONTROLLERS WHO RESPONDED TO THE QUESTION ON THEIR MORALE ANSWERED SEVEN OTHER SURVEY QUESTIONS

INTRODUCTION

The following sets of data show how Chicago Center controllers who responded to the morale question answered other selected questions. To illustrate, questions 28 and 2 are shown on the following page. The left two columns show the percentage of controllers who responded to each of the five possible answers to question 28 on the level of their morale. For example, 5.6 percent of the estimated 197 controllers who responded to both questions said their morale was "very high."

The right of the page shows how the controllers who responded to each of question 28's five answers also responded to question 2 about how much traffic they handle during typical daily peak periods. For example, of the 5.6 percent of Chicago center controllers who said their morale was "very high," 16.5 percent said they handled "somewhat more" traffic than they should be during typical daily peak periods.

Because of rounding or omitting a negligible number of responses, the total of the five responses to question 2 may not equal 100 percent.

Two other items should be noted:

(1) The "estimated respondents" is our estimate of the number of controllers at Chicago center who would have responded to both questions had all center controllers received questionnaires. Chicago center controllers were sampled and results calculated using appropriate projections.

(2) Percentages may not add to 100 because of rounding.

Question 28

In general, how would you describe your morale as a controller at this facility?

Question 2

Consider the complexity of the sectors you work and your capabilities as a controller. While working radar during typical daily peak periods, do you believe you are typically required to handle more traffic than you should be handling, less traffic than you should be handling, or an appropriate amount of traffic?

Question 28	Percent of response	Question 2 -- percent of question 28 responses: Much more than I should be handling	Somewhat more than I should be handling	Appropriate level of traffic	Somewhat less than I should be handling	Much less than I should be handling
1. Very high	5.6	a	16.5	83.5	a	a
2. High	17.8	a	57.9	36.9	5.2	a
3. Neither high nor low	32.7	11.4	57.2	28.5	2.8	a
4. Low	35.5	18.4	55.3	23.7	2.7	a
5. Very low	8.4	22.1	44.6	33.3	a	a
Total	100.0	12.1	53.3	31.8	2.8	a
Estimated respondents	197					

[a]No controller responded.

Question 28

Chicago center controller morale.

Question 9

Do you believe the amount of time you are typically required to continuously work a position without a break during peak periods is too long, too short, or appropriate?

Question 9--
percent of question 28 responses

Question 28	Percent of response	Much too long	Somewhat too long	Appro-priate	Somewhat too short	Much too short
1. Very high	5.6	16.5	33.0	33.7	16.8	[a]
2. High	16.9	5.5	44.6	49.9	[a]	[a]
3. Neither high nor low	33.6	2.8	55.7	41.6	[a]	[a]
4. Low	35.5	5.3	57.9	36.8	[a]	[a]
5. Very low	8.4	22.1	11.3	66.7	[a]	[a]
Total	100.0	6.5	49.6	43.0	.9	[a]
Estimated respondents	197					

[a]No controller responded

Question 28

Chicago center controller morale.

Question 11

In your opinion, is the current number of staff available for each of the following types of positions higher than needed, lower than needed, or at the appropriate level?

b. FPLs

Question 28	Percent of response	Question 11.b-- percent of question 28 responses: Much higher than needed	Somewhat higher than needed	Appropriate number	Somewhat lower than needed	Much lower than needed
1. Very high	5.6	a	a	16.8	83.2	a
2. High	17.8	a	a	10.5	47.6	41.9
3. Neither high nor low	33.6	a	a	5.6	50.0	44.5
4. Low	34.6	a	a	8.1	40.5	51.4
5. Very low	8.4	a	a	11.3	44.6	44.1
Total	100.0	a	a	8.4	47.7	43.9
Estimated respondents	197					

[a]No controller responded

Question 28

Chicago center controller morale.

Question 12

In your opinion, do you currently have too many, too few, or an appropriate number of developmental controllers to meet future controller needs?

Question 28	Percent of response	Question 12 -- percent of question 28 responses: Much too many	Somewhat too many	Appropriate number	Somewhat too few	Much too few
1. Very high	5.7	16.5	a	67.0	16.5	a
2. High	17.0	a	11.1	55.7	22.2	11.1
3. Neither high nor low	33.0	a	8.6	65.7	25.6	a
4. Low	35.9	5.3	7.9	39.4	34.2	13.2
5. Very low	8.5	a	a	33.3	22.3	44.4
Total	100.0	2.8	7.6	51.9	27.3	10.4
Estimated respondents	195					

[a]No controller responded

Question 28

Chicago center controller morale.

Question 13

Which of the following best describes the current situation for developmentals in regard to the ability to provide them with quality training now?

Question 28	Percent of response	Question 13-- percent of question 28 responses: Have more than can train now	Have somewhat more than can train now	About right number to train now	Could train somewhat more now	Could train a lot more now
1. Very high	5.6	33.3	50.2	[a]	16.5	[a]
2. High	17.6	31.4	47.6	15.7	5.3	[a]
3. Neither high nor low	33.3	39.1	44.3	11.1	5.6	[a]
4. Low	35.2	34.3	52.6	10.5	2.6	[a]
5. Very low	8.3	66.7	33.3	[a]	[a]	[a]
Total	100.0	38.0	47.2	10.2	4.6	[a]
Estimated respondents	199					

[a]No controller responded

Question 28

Chicago center controller morale.

Question 45

How many total years experience do you have for each of the following?

a. Total years with FAA

Question 28	Percent of response	Question 45.a-- percent of question 28 responses: 1 to 6	7 to 12	13 to 18	19 or more
1. Very high	5.6	83.4	16.5	a	a
2. High	17.8	84.2	10.5	5.3	a
3. Neither high nor low	32.7	71.4	14.2	a	14.3
4. Low	35.5	42.2	13.1	23.6	21.2
5. Very low	8.4	55.4	22.3	11.3	11.0
Total	100.0	62.7	14.0	10.2	12.9
Estimated respondents	197				

Question 28

Chicago center controller morale.

Question 45.b

b. Years controlling traffic with FAA

Question 28	Percent of response	Question 45.b-- percent of question 28 responses: 1 to 6	7 to 12	13 to 18	19 or more
1. Very high	5.8	99.9	a	a	a
2. High	18.5	84.1	10.5	5.3	a
3. Neither high nor low	31.0	74.9	15.7	a	9.4
4. Low	35.9	43.3	16.2	21.6	18.9
5. Very low	8.7	55.4	22.3	22.3	a
Total	100.0	65.1	14.6	10.7	9.8
Estimated respondents	189				

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[a]No controller responded

SECTION 5

OBJECTIVE, SCOPE, AND METHODOLOGY

The Ranking Minority Member, Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, and the Chairman, House Committee on Public Works and Transportation, requested that we update and replicate our previous evaluation of the air traffic control system.[1] To accomplish this, we mailed separate questionnaires to air traffic controllers, first-line supervisors of controllers, and facility managers at the 84 largest air traffic control facilities. Subsequently, the congressional requesters asked that we provide the survey results for the Chicago center. Thus, this report focuses on the survey responses of Chicago center controllers and supervisors compared with similar responses at all centers.

The following sections provide details on our scope and methodology in designing and administering the questionnaires and estimating the overall results.

SCOPE

Our 1988 survey included the 84 largest air traffic control facilities, consisting of all 20 air route traffic control centers in the continental United States and all 64 of the largest terminal facilities (level 4 and 5) in March 1988, the survey selection period. This report focuses on the 20 centers, particularly Chicago. Appendix I shows the specific centers included in the 1988 survey.

We summarized the problems concerning the air traffic control work force in our report, Aviation Safety: Serious Problems Continue to Trouble the Air Traffic Control Work Force (GAO/RCED-89-112, Apr. 21, 1989). The complete responses to all survey questions are contained in our fact sheet, Aviation Safety: Conditions Within the Air Traffic Control Work Force (GAO/RCED-89-113FS, Apr. 24, 1989). We performed our review from November 1987 to December 1988, in accordance with generally accepted government auditing standards.

METHODOLOGY

Between May 2 and August 5, 1988, we surveyed the air traffic control work force. Specifically, we mailed similar, but not identical, questionnaires to (1) full performance level controllers and developmental level controllers certified on at least one radar

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[1]Aviation Safety: Serious Problems Concerning the Air Traffic Control Work Force (GAO/RCED-86-121, Mar. 6, 1986).

position, (2) first-line supervisors of controllers, and (3) facility managers. The topics of the survey included work load, staffing, overtime, training, system safety and air traffic control operations, operational error detection, and retirement.

To meet our objectives, we replicated questions from the 1985 survey. To gain further insight into a variety of issues--such as working conditions, safety, and morale--we added questions to the 1988 survey. In developing the questionnaires, suggested changes were provided by the Ranking Minority Member, FAA, the National Transportation Safety Board, and the controllers' union. Individual controller, supervisor, and manager comments were considered during our questionnaire pretesting at nine specific FAA facilities.

We designed three separate questionnaires for each of the three work force components for both the 1988 and 1985 surveys. Each questionnaire was designed to gain a unique perspective of the air traffic work force: controllers directly work and control air traffic primarily using radar; first-line supervisors represent a manager's view and also reflect personal observations from directly working and controlling traffic; facility managers represent the perspective of FAA field management. This report does not contain facility managers' views, particularly Chicago center's facility manager, because we pledged confidentiality.

Research Design

To establish the universe of controllers, we used an FAA computer file, containing names and home addresses, of all controllers (GS-2152 series) employed at the 84 largest facilities as of March 23, 1988. Since some of the controllers on this file were not radar qualified, we developed criteria in consultation with FAA to identify qualified controllers. This procedure identified 7,742 air traffic controllers; however, the criteria to screen FAA's file for radar-certified controllers were inexact. Therefore, we included a screening question in the questionnaire to more precisely identify full performance level controllers and developmental controllers who were certified on at least one radar position.

We used a similar selection and screening process for first-line supervisors and identified 1,196.

We sent all facility managers at the 84 largest facilities questionnaires. FAA provided a list of the facility managers' names and addresses. At four terminals (Chicago, Dallas-Fort Worth, Denver, and St. Louis), FAA has one manager overseeing two facilities, or organizational components--the control tower and the terminal radar approach control, or TRACON, facility. Thus, questionnaires were sent to 80 facility managers.

Sample, Universe, and Return-Related Data

The largest FAA facilities in the air traffic control system consist of air route traffic control centers, which control flights between airports, and terminal facilities. Because a center has a considerably greater number of controllers and supervisors than does a terminal, we used a stratified sample at centers for selection; at terminals, all controllers and supervisors were sent questionnaires. Table 5.1 shows universe, sample, and return-related data for the 1988 survey.

Table 5.1: Universe, Sample, and Return-Related Data for the Three Questionnaires Used in the 1988 Survey

Return rate in percent

Questionnaire and location	Size		Responses		Not returned		Return rate[b]
	Universe	Sample	Eligible	Ineligible[a]	Incorrect address	No response	
Controllers							
Terminals	2,451	2,451	1,699	152	32	568	75.5
Centers	5,291	2,824	1,859	333	25	607	77.6
Total	7,742	5,275	3,558	485	57	1,175	76.6
Supervisors							
Terminals	478	478	393	16	3	66	85.6
Centers	718	636	546	24	2	64	89.6
Total	1,196	1,114	939	40	5	130	87.9
Managers							
Terminals	60	60	57	0	0	3	95.0
Centers	20	20	19	0	0	1	95.0
Total	80	80	76	0	0	4	95.0

[a]Ineligibles represent respondents who were (1) either not full performance level controllers or developmentals certified on at least one radar position or (2) were not first-line supervisors.

[b]Return rates were calculated by dividing the total of all responses by the applicable sample size.

Table 5.2 shows universe, sample, and return-related data for the Chicago center and the 19 other centers.

Table 5.2: Universe, Sample, and Return-Related Data for the Chicago Center, the 19 Other Centers, and All Centers

	Size		Responses		Not returned		
	Universe	Sample	Eligible	Ineligible	Incorrect address	No response	Return rate
Controllers							
Chicago center	313	170	110	17	1	42	74.7
19 other centers	4,978	2,654	1,749	316	24	565	77.8
All centers	5,291	2,824	1,859	333	25	607	77.6
Supervisors							
Chicago center	43	33	25	1	0	7	78.8
19 other centers	675	603	521	23	2	57	90.2
All centers	718	636	546	24	2	64	89.6

Survey Results

We used stratified sampling at centers and assigned appropriate weights to sampled cases prior to analyzing the survey results. Thus, responses shown for centers represent weighted estimates. We estimate that 3,635 center controllers and 614 center supervisors would have responded had we sent questionnaires to all controllers and supervisors. Similarly, we estimate that 202 Chicago center controllers and 33 Chicago center supervisors would have responded to our questionnaire.

Sample estimates are subject to a certain amount of sampling error (the possible error that arises because of taking a sample rather than surveying the entire population). Sampling error is also referred to as a precision of the estimate and is typically given as a plus and minus percentage around the estimated percent.

We computed sampling errors for the survey questions discussed in section 1 of this report. The sampling errors ranged as follows: for Chicago center controllers, 1.7 percent to 8.2 percent; for Chicago center supervisors, 4.7 percent to 9.9 percent; for all center controllers, 1.2 to 2.2 percent; and for all center supervsiors, 0.4 percent to 1.5 percent.

To ensure that it was appropriate to compare "Chicago center" responses to "all centers" responses, which include Chicago, we

compared the controller and supervisor responses for the 19 centers (other than Chicago) to all 20 centers. The results of our comparison show little change (3 percent or less) between responses to survey questions.

Questionnaire Procedures

The 1988 questionnaires were developed using the 1985 questionnaires as our starting point. We added and deleted questions based on suggestions provided by the Ranking Minority Member, FAA officials, the National Transportation Safety Board, union officials, and members of the air traffic control work force. We conducted pretests with a total of 36 individuals at 9 facilities: 4 centers (Cleveland, Jacksonville, Oakland, and Seattle) and 5 terminal facilities (Cleveland, Jacksonville, Oakland TRACON, Orlando, and Seattle TRACON).

During each session, an individual respondent filled out a questionnaire in the presence of two GAO observers. The GAO observers timed the respondent and observed reactions to questions and question flow. Afterwards, the observers debriefed the respondent to identify ambiguities, incorrect use of technical language, potential bias, or other problems in question wording or questionnaire format.

Questionnaires for controllers and supervisors were mailed to the respondents' home address. If a home address was not available, questionnaires were mailed to controllers at the facilities where they worked. Questionnaires for the facility managers were also mailed to each facility.

Because of the sensitive nature of some questions, respondents were promised confidentiality to encourage a reply. The only exception to this pledge was one section of staffing questions on the 1988 facility manager questionnaire. The facility managers were informed that information in this section could be specifically identified to their facilities.

In order to maintain confidentiality, a control number was written on each questionnaire to identify the respondents without using their names and to facilitate follow-up mailings. The nonconfidential section of the managers' questionnaire was detached and processed separately so that no identification remained on the confidential questions.

On June 6, 1988, we sent follow-up letters to all nonrespondents. The letters also included a second copy of the questionnaire in case the respondent could not locate the original. We subsequently phoned some facility managers to clarify facility staffing information.

THE 20 AIR ROUTE TRAFFIC CONTROL CENTERS INCLUDED IN GAO'S SURVEY

1. Albuquerque
2. Atlanta
3. Boston
4. Chicago
5. Cleveland
6. Denver
7. Fort Worth
8. Houston
9. Indianapolis
10. Jacksonville
11. Kansas City
12. Los Angeles
13. Memphis
14. Miami
15. Minneapolis
16. New York
17. Oakland
18. Salt Lake City
19. Seattle
20. Washington, D.C.

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