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Audio Teleconferencing Services
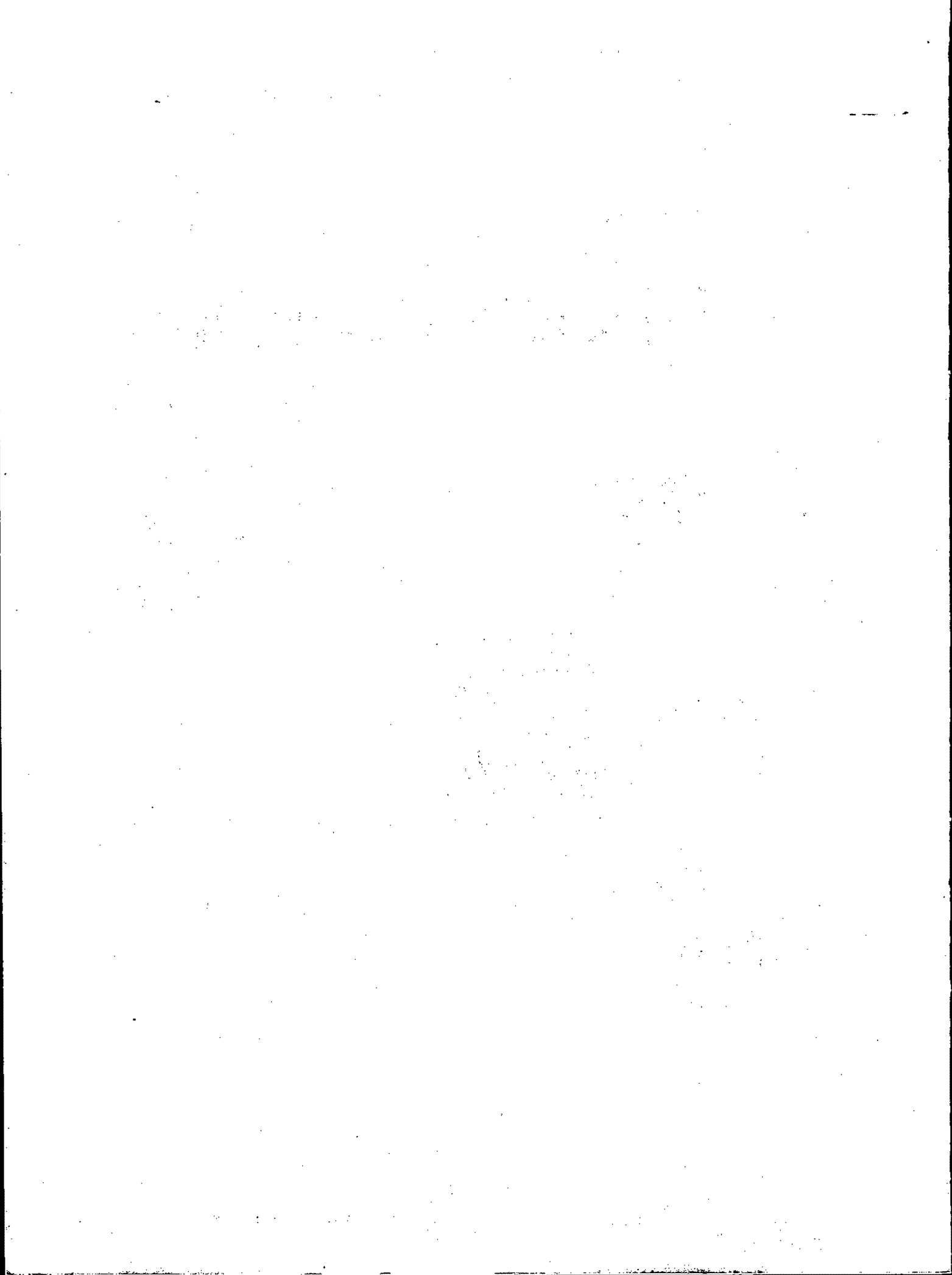
Quick Reference Guide

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TABLE OF CONTENTS

INTRODUCTION

Meetings are an important part of our work at the U.S. Environmental Protection Agency (EPA). The quality of our work is directly related to the effectiveness with which we use meetings to assemble project teams, share information, generate ideas, make decisions, coordinate efforts, and track progress.

EPA provides employees with state-of-the-art audio teleconferencing capabilities to make meetings more convenient, productive, and cost-effective. Audio teleconferencing is both a substitute for and supplement to face-to-face meetings. Agency personnel can use office telephones or specialized speakerphones to participate in voice-only conferences involving dozens of widely dispersed individuals simultaneously, linked by audio teleconferencing systems installed at EPA Headquarters. This growing service supported over 6,000 conferences in 1990.
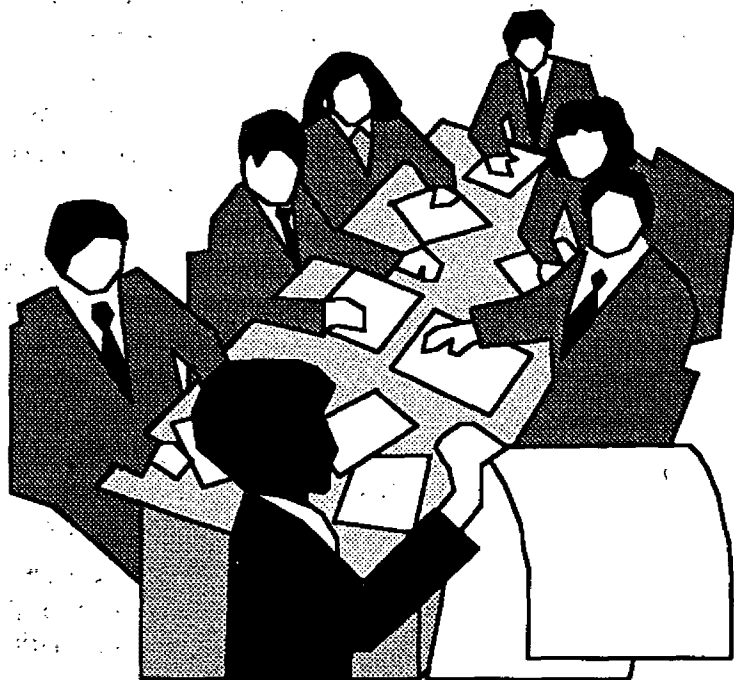
This guide describes audio teleconferencing facilities, systems, services, and capabilities available to EPA personnel through the Agency's National Data Processing Division (NDPD). It explains how to use audio teleconferencing in your job; how to obtain conferencing facilities, equipment, and services; how to conduct an audio teleconference; and how to resolve technical problems during a conference call.

NDPD's Telecommunications Branch manages Agency audio teleconferencing systems for the benefit of all EPA personnel nationwide. The full cost of operating the Agency bridges, as well as FTS2000 usage, is paid by NDPD. Telecommunications staff is committed to providing Agency personnel with the best possible audio teleconferencing systems, services, and capabilities available. The Agency also has a dedicated video teleconference network that allows conferees to see each other and share graphics, as well as speak to one another. (See the EPA Video Teleconferencing Services Quick Reference Guide for further details).

EPA personnel should read this guide prior to scheduling or participating in an audio teleconference. Conference calls may be scheduled—or technical assistance obtained—by calling NDPD Telecommunications staff at FTS 260-CONF (260-2663). Please let us know how EPA audio teleconferencing services can best support the way you work.
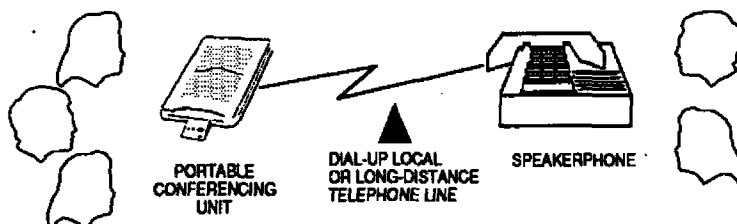
WHAT IS AUDIO TELECONFERENCING?

Audio teleconferencing—also known as conference calling—is the ability of three or more people to participate in a telephone conversation.
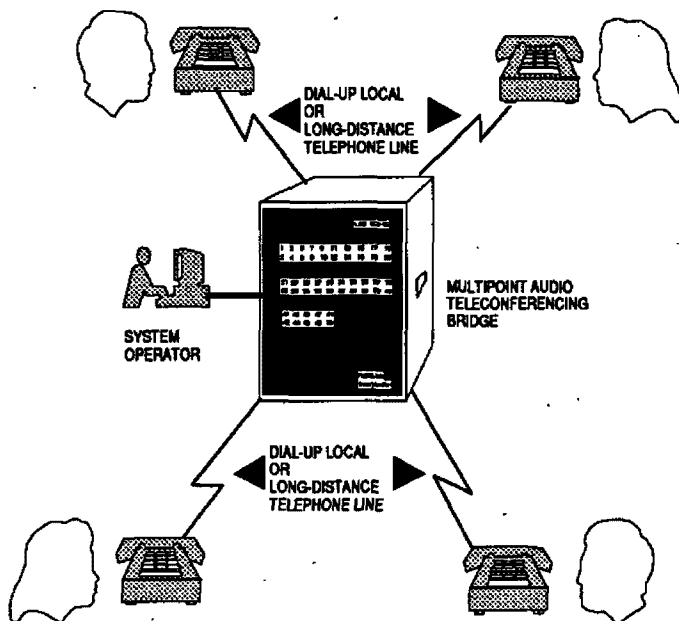
A conference call may be of multipoint or point-to-point configuration, depending on the number of voice terminals participating in the call. Multipoint conference calls connect three or more telephone lines simultaneously, either through customer-owned or carrier-provided telephone switches, or by means of specialized electronic devices known as "teleconferencing bridges." Point-to-point calls connect two voice terminals, one or both of which must be a speakerphone or specialized conferencing unit that allows many people in the same room to listen and speak to the other party. See Exhibit 1 for a typical point-to-point conference configuration.

POINT-TO-POINT CONFERENCE CALL WITH SPEAKERPHONES AND PORTABLE CONFERENCING UNITS

PORTABLE CONFERENCING UNIT

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

SPEAKERPHONE

EXHIBIT 1

Different conference calls require different configurations, depending on the number of sites participating, the number of participants at each site, and whether information flows will be interactive or one-way. Exhibit 2 shows a typical multipoint configuration, in which people at four sites confer by means of office telephones connected through a multipoint bridge managed by specially trained system operators. The participants may be located in different cities, different buildings, or simply different offices in the same building.
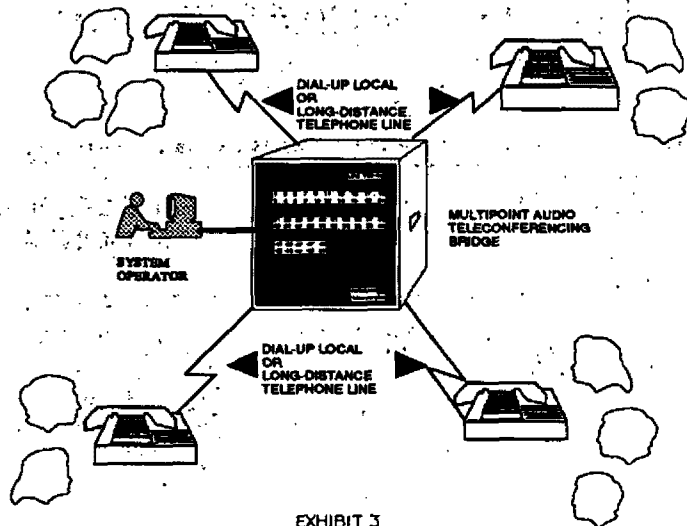
MULTIPOINT BRIDGED CONFERENCE CALL WITH OFFICE TELEPHONES

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

SYSTEM OPERATOR

MULTIPOINT AUDIO TELECONFERENCING BRIDGE

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

EXHIBIT 2

2

MULTIPOINT BRIDGED CONFERENCE CALL WITH SPEAKERPHONES

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

MULTIPOINT AUDIO TELECONFERENCING BRIDGE

SYSTEM OPERATOR

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

EXHIBIT 3

THREE-WAY CONFERENCE THROUGH OFFICE PHONE SYSTEM

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

CARRIER- OR CUSTOMER- OWNED TELEPHONE SWITCH

USER #1 CALLS USER #2.

THROUGH KEY COMMANDS FROM THEIR TELEPHONES, USER #1 OR USER #2 BRINGS USER #3 INTO THE CALL.

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE
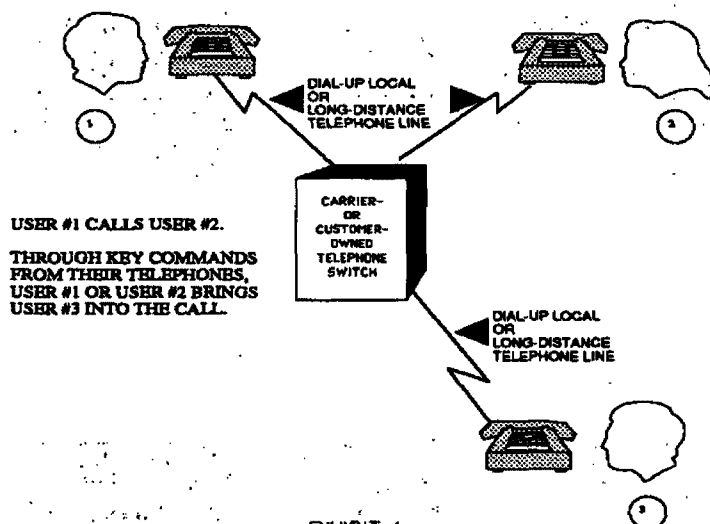
EXHIBIT 4

MULTIPOINT TELELECTURE WITH SPEAKERPHONES

SPEAKER

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

LISTENERS

MULTIPOINT AUDIO TELECONFERENCING BRIDGE

SYSTEM OPERATOR

DIAL-UP LOCAL OR LONG-DISTANCE TELEPHONE LINE

LISTENERS

EXHIBIT 5

LISTENERS
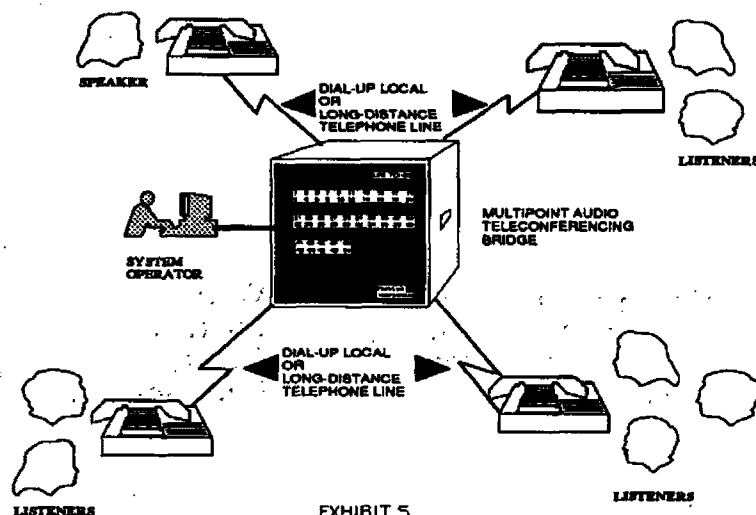
For users, accessing a multipoint conference can be as simple as dialing into the teleconferencing bridge at a designated time—a method known as "meet me"—or waiting for the system operator to call them up and make the connection manually. On the typical interactive multipoint call, the meeting organizer is the first person on line and greets other participants as they join the conference. Once a user is connected into the conference, he' or she can begin to talk to other participants.
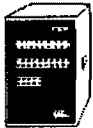
Additional users can be added to a multipoint conference by utilizing speakerphones or portable conference units at one or more of the sites, so long as they are on one of the scheduled call-in lines. See Exhibit 3 for this configuration.

The most elementary form of multipoint conference—the three-way call—is supported by many office telephone systems. Refer to Exhibit 4. Users are able to bring a third party into an existing telephone conversation through key commands dialed from their office phone sets. The capability is supported by premises telephone switches or by common carrier switches, such as the Washington Interagency Telecommunications System (WITS), which also supports six-way calling.

A specialized multipoint call—the telelecture (see Exhibit 5)—enables participants to hear the conference leader but not speak to the leader or to each other. The telelecture is best suited to information broadcast applications.

WHAT AUDIO TELECONFERENCING FACILITIES AND SERVICES ARE AVAILABLE TO EPA PERSONNEL?

FACILITY	DESCRIPTION	AVAILABILITY	HOURS	ORDER POINT OF CONTACT
Teleconferencing bridges	Specialized digital devices that enable 4 or more voice callers to confer at the same time; installed at HQ	Available to all EPA employees	Mon.-Fri., 8 a.m.-6 p.m.	Audio conferencing center scheduler, FTS 260-CONF (260-2663)
Portable conferencing units (PCUs)	Specialized speakerphones that enable a group of people in a single room to participate in a phone conversation over normal phone lines; available at HQ	Available only to HQ personnel for short-term loan	Mon.-Fri., 8 a.m.-6 p.m.	Audio conferencing center scheduler, FTS 260-CONF (260-2663)
Teleconference rooms	Conference rooms with audio teleconferencing equipment installed	Available to HQ personnel only	Mon.-Fri., 8 a.m.-6 p.m.	Audio conferencing center scheduler, FTS 260-CONF (260-2663)
Speakerphones	Telephones with built-in speakers that enable more than one person to speak and listen at a time	Available to any user (requires program office purchase)	Not applicable	Voice Customer Service Representative

WHEN SHOULD YOU USE AUDIO TELECONFERENCING?

EPA personnel should consider using audio teleconferencing for most meetings in which it is not possible, practical, or cost-effective for participants to meet face to face. Teleconference participants may be located in different cities, or they may simply be people in the same office who for whatever reason cannot be in the same room at the same time. The most important applications are as a substitute for business travel and for coordination among dispersed project team members.

The following matrix describes the particular audio teleconferencing configuration most appropriate to various applications. To determine the configuration most appropriate to your next conference call, identify the questions under "Proposed Application" that you would answer "yes." Checkmarks in those rows indicate the teleconferencing configurations that might be suitable to your application. Absence of a checkmark means that the corresponding configuration would not be appropriate.

PROPOSED APPLICATION / POSSIBLE TELECONFERENCING CONFIGURATIONS	Point-to-point with speakerphones, portable conferencing units (PCUs), and/or special conference rooms	Interactive multipoint with office telephones	Interactive multipoint with speakerphones, PCUs, and/or special conference rooms	Three-way conferencing through office telephone systems	Multipoint telelecture
Two locations?	✓				
Three or more locations?		✓	✓	✓	✓
More than one person at each location?	✓		✓		✓
Interactive discussions?	✓	✓	✓	✓	
One-way broadcast presentation?					✓
Using speakerphones, portable conferencing units (PCUs), or special conference rooms?	✓		✓		✓

5

HOW DO YOU ARRANGE, ACCESS, AND CONDUCT AN AUDIO TELECONFERENCE?

Successful audio teleconferences require well-prepared leaders who find time in participants' schedules, reserve teleconferencing facilities, and moderate on-line discussions. This section provides practical guidelines for audio teleconferencing leaders in four areas:

o   Finding time in participants' schedules;

o   Scheduling use of audio teleconferencing facilities;

o   Accessing and conducting the audio teleconference; and

o   Closing the conference.

FINDING TIME IN PARTICIPANTS' SCHEDULES
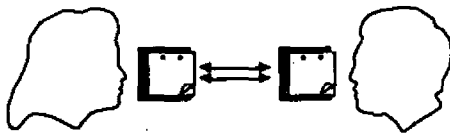
The principal responsibility of the conference leader is to find a date and time acceptable to all participants and for which Agency tele-conferencing facilities are available. These steps should be followed:

o   Choose a tentative and a contingency conference date, time, and duration. The contingency time will be used in case teleconferencing facilities are unavailable at the preferred date and time. The maximum suggested conference duration is two hours, since participant attention spans are often shorter than in face-to-face meetings.

o   Designate site leaders and other participants for each location.

o   Check with participants to make sure the tentative dates and times fit into their schedules.

o   Work out any scheduling conflicts among participants.

SCHEDULING USE OF AUDIO TELECONFERENCING FACILITIES
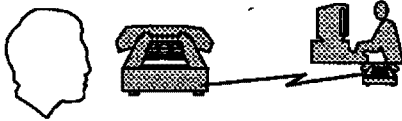
Conference leaders must contact EPA Telecommunications staff at FTS 260-CONF (2663) to reserve use of the multipoint teleconferencing bridge, portable conferencing units, and/or teleconferencing rooms for the preferred dates and times. To reserve facilities for your next conference call, follow these steps:

o Schedule the conference as far in advance as possible and at least 24 hours prior to the planned date and time. Teleconference operators are responsible for enforcing scheduling policies and maintaining the checkout list for portable conferencing units and the teleconferencing room. Special arrangements can be made for conferences needed on a frequent or recurring basis by contacting the Teleconferencing Manager at FTS 260-CONF (2663). You may have difficulty reserving teleconferencing facilities on Tuesdays, Wednesdays, and Thursdays, because these are the busiest days for conferencing calling at EPA.

o Call the Headquarters teleconference scheduler to determine whether the facilities required are available at the preferred or contingency date and time. All facilities are scheduled on a first-come first-served basis, Monday-Friday, 8 a.m.- 6 p.m. (Eastern Time Zone), or at other times by special arrangement. Audio teleconferencing service is available to any EPA employee in the U.S., including Puerto Rico and the Virgin Islands, for official Agency business only. You will need special authorization from the EPA telecommunications staff to use outside teleconference facilities, based upon the telecommunications staff's determination that EPA teleconferencing facilities cannot support the time slots and/or number of lines required for a particular conference. EPA facilities should satisfy most audio teleconferencing requirements for Headquarters, regional, and field site personnel, at the least cost to the Government.

o Provide the following information to the Headquarters teleconference scheduler:

--Conference leader's name, telephone number, and location;

--Number of lines required. Two people calling from different rooms at EPA Headquarters will use two lines, while three people on one speakerphone use only one line.

--Starting and ending times of the conference (Eastern Time Zone). Reservations are made in 30-minute increments. Scheduling a few extra minutes is advisable. However, scheduling two hours for a 45-minute conference prevents someone else from using the teleconferencing bridge for at least one hour.

--Whether a conference room or a portable conferencing unit is needed for Headquarters participants.

o   Notify participants of the date and time for which audio teleconferencing facilities have been reserved. The meeting notice should include the following:

--Beginning and ending time of the conference (including the time zone);

--Locations, names, and titles of all participants;

--Procedures for accessing the teleconference, as well as the teleconference hotline number to call the Headquarters Teleconferencing Center Operator at 260-2001 if participants encounter technical troubles. Federal participants can dial a seven-digit FTS2000 number. Nonfederal participants must usually dial the 202 area code plus the seven-digit access number. Parties calling on commercial lines will pay the cost of their call. Under no circumstances can the teleconference scheduler accept collect calls. Under special circumstances, the teleconference operator can dial participants to place them into a conference. However, operator-initiated connections add to the length of the teleconference due to the time it takes to reach these parties.

--Agenda containing specific goals and objectives, supplementary documents, and visual materials.

o   Provide participants with the telephone number—furnished by the Headquarters teleconference scheduler—to call at the scheduled time to join the audio teleconference. Please notify the teleconference scheduler and all participants promptly if a conference has been cancelled.

ACCESSING AND CONDUCTING THE
AUDIO TELECONFERENCE
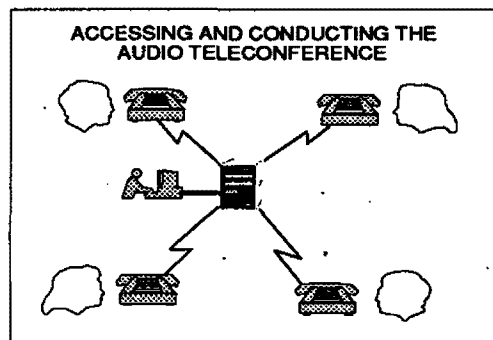
Conference leaders can ensure that multipoint conferences run smoothly by following these steps, some of which are technical in nature, while others are simply common-sense rules that apply equally well to face-to-face meetings:

o   If a portable conferencing unit (PCU) has been reserved, Headquarters staff should pick up the unit from the Headquarters audio teleconferencing center at least one half hour prior to the scheduled conference, when this is possible. Teleconferencing staff will provide users with installation instructions at pickup time. Portable conferencing units can be installed in conference rooms in the Waterside Mall complex or other facilities.

o   Dial the teleconferencing bridge at the appointed date and time, in order to be the first party and to greet other participants as they join. Allow a few rings for

8

the system to answer the call. Dial FTS 260-2001 for assistance in accessing the teleconferencing bridge, if necessary. Never dial the teleconferencing bridge before the scheduled starting time or without prior confirmation, since misuse of this line could interrupt ongoing meetings or delay previously scheduled conference calls.

o   Encourage small talk among participants before the main portion of the conference. Small talk dispels nervousness among participants who feel uncomfortable talking or are not experienced with audio teleconferencing technology. It also establishes name/voice recognition among participants and provides the leader with an opportunity to coach participants in proper conference call techniques and etiquette. Participants should be instructed to emphasize verbal interaction, speak slightly louder than normal, speak into the microphone, and use clear diction.

o   Start the conference on time and follow these tips to maximize the productivity of discussions:

   --Conduct a formal roll call and ask participants to introduce themselves.

   --Review the conference agenda.

   --Address participants by name.

   --Ensure that participants identify themselves before speaking.

   --Keep the conference moving toward fulfillment of concrete goals in accordance with the meeting agenda.

CLOSING THE CONFERENCE

Conference leaders can bring the on-line discussions to a graceful, orderly close by following these steps:

o   Begin to close the discussion early enough so that the conference can come to an orderly finish.

o   At the end of the conference, summarize the discussion and clarify decisions or conclusions reached. Set up issues for the next conference, if applicable. Allow a few minutes for general conversation before participants hang up. Thank participants and close the meeting. End the conference promptly to ensure that it does not exceed its allotted duration.

o   Make sure that the teleconference room is left neat for the next meeting.

o   If portable conferencing units were used, repack and return them promptly.

9

HOW DO YOU RESOLVE TECHNICAL PROBLEMS DURING AN AUDIO TELECONFERENCE?

The best way to avoid technical problems during an audio teleconference is to follow these guidelines:

Make sure that the conferencing area is free from foreign noise such as heating/air conditioning exhaust and corridor traffic.

Conduct audio conferences in EPA-designated conference rooms when possible. Designated conference rooms are less likely than office space to have acoustical problems that may interfere with conference calls.

Avoid using portable conferencing units (PCUs) in large conference areas such as auditoriums, in conjunction with a public address system, near heating/air conditioning exhaust, or near other noise sources. PCUs are designed for use by 6-10 conferees seated around a 4' x 8' conference table.

The following technical problems are common to most audio teleconferencing systems and may be encountered by EPA personnel using Agency facilities. The source of each problem is presented along with some simple solutions. If these solutions do not resolve the problem, call the audio conferencing hotline at FTS 260-2001 during your conference for further assistance:

Speech clipped off

Source: Audio teleconferencing bridges have internal circuitry that switches from one speaker or location to another, selecting the loudest source of sound. When speakers interrupt one another, the system microphone may not be able to switch fast enough to catch an entire phrase, resulting in speech that is "clipped" off or only partially heard by teleconference listeners. Speech clipping also occurs with speakerphones. New audio teleconferencing technology—such as that incorporated into EPA's Multilink bridges—has reduced but not completely eliminated clipping.

Solution: Participants should speak in turns and pause momentarily after speaking, providing others with a cue to begin speaking.

Background noise

Source: Background noise degrades the overall sound quality of the audio conference. If excessive, it can interrupt the conference by locking on a location where no one is speaking.

Solution: Participants should maintain a quiet conference environment by eliminating extraneous

noises, such as side conversations, paper shuffling, table tapping, excessive coughing, operation of typewriters and printers, and telephones.

Poor quality telecommunications circuits

Source: Multipoint audio teleconferences tie together many telecommunications circuits and even one bad circuit can seriously degrade the sound quality of an entire conference. Some of the line problems commonly encountered include crosstalk, static, and fading.

Solution: Participants encountering a poor connection should hang up immediately and redial the bridge until an acceptable connection is made. When using speakerphones, participants should dial the bridge using the handset and not the speakerphone. Line noise is more apparent if the handset is used to dial the bridge initially. After an adequate connection is made, the participant may then switch to the speakerphone. Participants should report FTS2000 troubles on their lines to FTS 629-1088 or 260-2267.

If line problems occur during a conference call, notify the teleconference operator by dialing zero on your touchtone phone. Be sure that the telephone's handset is not in its cradle and that you hold the zero button down for one or two full seconds. Dialing zero alerts the teleconferencing operator that there is a technical problem. The operator will access the conference to ask who needs assistance. The operator can place the affected participants on hold and consult privately with them to help identify the problem and implement a solution.

Disconnections

Source: Longer phone conversations have a greater chance of being disconnected, for a variety of reasons.

Solution: If disconnection occurs during a conference call, participants should simply redial the bridge to be reconnected. If you are unable to re-establish the connection, call the teleconference hotline at FTS 260-2001.

HOW DO YOU DETERMINE THE MOST APPROPRIATE CONFERENCING TERMINAL OR FACILITY?

Voice terminal equipment is the EPA user's access point to audio teleconferencing services, so program offices should consider their conferencing requirements when acquiring or upgrading their telephone systems. Many users require nothing more elaborate than standard office telephones to access multipoint conferences on the Agency's bridges. Headquarters program office staff can check out the Agency's portable conferencing units on an as-needed basis.

However, program offices and personnel that are frequent users of audio teleconferencing should consider acquiring their own specialized terminal equipment and conferencing facilities. Program offices should base their conferencing terminal and facilities acquisitions on the size of groups involved in conference calls:

Very small groups (2-3 people per site): The most appropriate conferencing terminals for very small groups are voice sets with built-in speakerphones, such as those available with Merlin systems. However, speakerphones can deliver booming sounds, echo-chamber voices, and occasionally shrill feedback tones. They can also stifle spontaneity by permitting only one person at a time to speak. The microphone in most speakerphones requires speakers to sit very close to the unit.
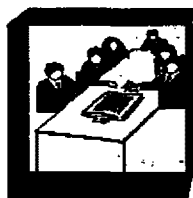
Small groups (4-8 people per site): Small groups require 12 x 18 foot conference rooms that have been equipped with portable conferencing units (PCUs) and have low ambient noise levels. PCUs should have digital signal processing technology that cancels out conflicting echo/feedback signals and provides two-way, interactive audio teleconferencing. The Heaquarters Audio Teleconferencing Center has several NEC VoicePoint PCUs for loan to conference participants.

Medium groups (9-12 people per site): Medium groups require 18 x 24 foot conference rooms with PCUs, as well as special acoustical treatment. For best sound quality, conference participants should be close to the conferencing unit.
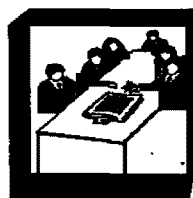
Large groups (13-30 per site): Large groups require 24 x 40 foot conference rooms with permanently installed teleconferencing units and special acoustical treatment. Such rooms require individual design, which should be coordinated with the Washington Telecommunications staff.

Very large groups (31 and above per site): Very large groups require use of an auditorium that has been custom-designed for audio teleconferencing. PCUs such as the VoicePoint and NT2000 should not be used in auditoriums in conjunction with public address systems.

Please contact the Washington Telecommunications staff (260-2663) or the Headquarters Customer Service Supervisor (260-7478) for further information and for assistance in identifying the teleconferencing equipment that best meets your needs.

GLOSSARY OF AUDIO TELECONFERENCING TERMS

Audio teleconferencing bridge	A specialized, digital electronic device that enables four or more voice telephone callers to confer simultaneously
Audio teleconferencing	Telephonic communications between multiple groups (two or more), multiple people (three or more)
Clipping	An audio teleconference problem in which spoken phrases are cut off or only partially heard by conference participants
Conference leader	The person who directs a teleconference and is equivalent to a chairperson in a face-to-face meeting
Conference scheduler	The telecommunications staff member who reserves uses of EPA's audio conferencing bridges, portable conferencing units, and teleconference room for authorized EPA uses
Meet me	An audio teleconferencing system feature that allows conference participants to dial directly into a teleconference without operator assistance
Multipoint	The capability of four or more separately located people or groups of people to carry on a voice telephone conversation by means of an electronic audio teleconferencing bridge
Point-to-point	The capability of two groups of people in different locations to communicate with a speakerphone or portable conferencing unit
Portable conferencing unit (PCU)	A specialized speakerphone that may be installed in any room with a standard touchtone single-line phone and an electrical outlet
Speakerphone	A voice terminal that amplifies telephone conversations through a loudspeaker and picks up conversations with a microphone
Three-way conference calling	The capability of an individual or group to bring a third party or group into an existing telephone conversation
Telelecture	A one-way multipoint conference call that places conference participants except the leader in receive-only mode