

**NATIONAL TRANSPORTATION SAFETY BOARD**  
**AVIATION INVESTIGATION MANUAL**  
**VOLUME II - MAJOR TEAM INVESTIGATIONS**

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## FOREWORD

The procedures in this volume of the Aviation Investigation Manual apply to "Go Team" investigations of major aviation accidents. These investigations often generate extensive coverage by the media and considerable interest by local and national political figures. An investigation of this type could involve over 100 technical specialists, representing as many as a dozen parties and multiple federal and local government agencies.

This volume provides general information to assist the investigator-in-charge (IIC), group chairmen, and others who may participate in a major aviation accident investigation. It is intended to provide guidance on the process of conducting a major investigation, from initial notification to adoption of the final report, probable cause, and recommendations by the Members of the Safety Board.

Although this publication includes technical information related to investigative activities in major aviation accidents, it is primarily intended to provide guidance of a procedural or administrative nature. Investigators should refer to the International Civil Aviation Organization (ICAO) "Manual of Aircraft Accident Investigation" for additional technical information and examples of investigative techniques. Other sources such as military investigation manuals should also be used to supplement information in the NTSB Aviation Investigation Manual.

The Major Investigations Division will be responsible for maintaining currency of this volume. The "Record of Revisions" on the preceding page should be used to acknowledge receipt of new or amended pages. The volume's original printing date will be indicated in the lower, left corner of the cover page. The effective date of any page change will be indicated by the date in the lower, left corner of the page as well as the entry on the revision sheet. All recipients of this publication are encouraged to submit recommendations for consideration for incorporation.

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## **1. PRE-INVESTIGATION PREPARATION**

### **1.1 Go Team List**

The Go Team list shows the names and telephone and pager numbers of all Board personnel assigned current standby duty for major accident investigations. The Go Team list also identifies the names and numbers of all Members, the Public Affairs Officer, the Managing and Deputy Managing Directors, the Director of Government and Public Affairs, and the Directors of the Regional Offices. A new list is prepared once each week or when necessary after a change of duty officers or a launch of previous Go Team members.

Copies of the Go Team sheet are distributed to all Board Members; the Offices of Aviation Safety (OAS), Research and Engineering, General Counsel, Safety Recommendations, Public Affairs, and Government and Public Affairs; and each Division Chief and investigator in the OAS headquarters office. Copies are also faxed to each OAS Regional/Field Office, the Federal Aviation Administration (FAA)'s command center and accident investigation office, and the aviation liaison for the State Department.

All personnel on call should arrange their personal affairs to enable them to depart for the scene of an accident with a minimum of delay. Regardless of when notification of an accident is received, Go Team members should be able to respond within approximately two hours of their notification. For launches that occur during duty hours, Go Team members who live too far to travel home and return to the airport within this timeframe should bring clothing and other essentials to the office. Go Team members should always assure that the information listed on the Go Team sheet concerning their phone/pager numbers is correct. In addition, personnel should always assure that they can be reached when on call. This includes "testing" the pager for proper operation, forwarding alternate phone numbers to the IIC and supervisors in advance of expected travel, or maintaining contact with the FAA communications center. When changes to Go Team assignments are made, the persons involved shall notify the IIC/duty officer promptly and provide updated phone and pager numbers.

### **1.2 The Go Team**

The Go Team consists of investigators on standby for immediate assignment to major accident investigations. The Major Investigations Division provides the IIC for the Go Team. Specialists and laboratory support are provided by divisions of the OAS and the Office of Research and Engineering. Field staff members may be used on the Go Team when headquarters investigators are unavailable and as the needs of the investigation dictate.

A full Go Team would consist of the following specialists: air traffic control, operations, meteorology, human performance, structures, systems, powerplants, maintenance records, survival factors, aircraft performance, cockpit voice recorder, flight data recorder, and material factors. Additional groups may be formed to interview witnesses, examine the response of aircraft rescue and fire fighting (ARFF) personnel, or other duties as required to support the investigation. Each of the NTSB specialists would normally be the chairman of the respective investigative group. Specialists who

are in training would normally be assigned as members of investigative groups, under the supervision of another NTSB employee.

### **1.3 Regional/Field Offices**

NTSB Regional/Field Offices are responsible for implementing notification procedures in their geographic area of jurisdiction. These offices will assure that specific personnel are designated to be on call. The Regional/Field Office with geographic jurisdiction for the accident will normally provide at least one investigator to travel immediately to the site and perform initial public affairs and coordination duties of the IIC. The field investigator will continue to function in this role until relieved by the IIC. After briefing the Member, IIC, and Go Team, the field investigator may be assigned as a chairman of one of the working groups, provide support as necessary, or be released from the investigation. NTSB Regional/Field Office personnel who travel to a major investigation site will be considered to be part of the investigation team until released from their duties by the IIC.

## **2. NOTIFICATION AND INITIAL RESPONSE**

The essential value of early notification of an accident or incident is to issue prompt instructions for initiating and organizing the investigation. Initial information concerning the facts and circumstances of the occurrence will often be incomplete and erroneous. For this reason, development of early factual information for alert purposes is to be handled with considerable discretion. Parties notified are to be cautioned about the preliminary nature of the data.

### **2.1 Headquarters Responsibilities and Procedures**

During duty hours, initial notification of a major aviation accident will be received in the OAS. During nonduty hours initial notification will usually be received by the duty officer in the Major Investigations Division. In either case, the recipient of the call will advise the Chief of the Major Investigations Division, who will inform the Director of OAS or, in his absence, the Deputy Director. The Director or Deputy Director of OAS, with input from OAS Division Chiefs, will decide whether to launch a Go Team. If neither can be reached, the Chairman of NTSB will make the decision.

Upon reaching a decision to dispatch the Go Team, the Chief of the Major Investigations Division or the Director or Deputy Director of OAS will:

- (1) notify the Chairman and Go Team Member of the preliminary circumstances of the accident;
- (2) obtain the Board Member's decision regarding travel; ascertain if he/she will accompany the team, and notify the IIC accordingly;
- (3) notify the Managing Director;
- (4) notify the other Board Members;
- (5) notify the Office of Government and Public Affairs;
- (6) notify the Regional/Field Office(s) involved of plans (i.e., travel, arrival, number of personnel, etc.)

The Chief of the Major Investigations Division or the Director or Deputy Director of OAS will advise the Chairman and Managing Director of any accident outside the United States or its territories involving a U.S. manufactured or operated aircraft. If the Board is sending a U.S. Accredited Representative, the Office of Government and Public Affairs is also notified. Section 5 contains details of NTSB policies and procedures for international accidents. The Chief of the Major Investigations Division (or his designee) will notify the FAA, interested parties, and the State Department of an intended NTSB launch to a foreign country.

### **2.2 Regional/Field Office Responsibilities and Procedures**

During duty hours, Regional and Field Offices will notify headquarters whenever an accident (or incident with serious implications) occurs involving the following:

- air carrier, commuter, or air taxi operations,
- public figures or officials with widespread recognition or prominence,

- fatal midair collisions or collisions involving ATC, or
- possible matters of high public interest.

During nonduty hours, the designated Field Office duty officer shall notify the headquarters duty officer by the most expeditious means if receiving notification of an accident or incident of the type described above. Following a decision to launch, travel to the accident scene will be initiated without delay.

### **2.2.1 Stakedown Guidelines**

Field Office personnel assigned to the initial stakedown of a major accident have important duties that contribute to the overall success of the investigation; this includes investigators dispatched to the scene and as well as those handling administrative affairs (see Appendix A). Personnel assigned to accident scene response are obligated to reach the scene as quickly as possible and then remain at the scene until properly relieved. NTSB representation at this time is highly essential to convey to the news media, local authorities, and the public that the investigation is under NTSB jurisdiction. Any release of information to the media should be guarded because of the preliminary nature of the information, but should mention that the Go Team is en route. Initial activities, in addition to those listed herein, should be aimed at gathering as much pertinent information as possible to brief the Board Member and Go Team upon their arrival.

Remoteness of the crash site or difficult accessibility does not diminish the need to establish NTSB jurisdiction. Every effort should be made in getting to the crash site, even if environmental conditions preclude remaining at the site for any appreciable length of time.

### **2.3 Notification and Assignment of Go Team Specialists**

Once the initial notification of an accident has been received and the decision to launch Go Team members has been made, the composition of the Go Team must be determined. This decision will be based on the probable scope of the investigation and the magnitude of the tasks, but will also include the following factors: the number of injuries/fatalities, type of aircraft, previous accidents of this type, location of the accident, extent of aircraft or ground damage, weather, and public interest.

Because information about the nature of the accident is often incomplete and frequently erroneous at the time of the launch, there may not be sufficient information with which to make a final decision about the composition of the Go Team. If questions persist about requesting a particular specialty, the specialist should be requested to accompany the Go Team. If his or her expertise is later considered to be unnecessary, he or she should be released by the IIC at that time. Regardless of the circumstances, accidents involving large air transport or "new generation" aircraft will normally be staffed with a large Go Team.

Some accidents may not require full Go Teams. For example, under most circumstances, a runway collision would require that air traffic control (ATC) and operations specialists participate in the investigations, with possibly a human performance specialist assisting in examining human performance factors. An accident that occurred during potentially restricted visual conditions,

icing conditions, or convective activity would require the participation of a weather specialist. Evidence of a probable aircraft malfunction might dictate the participation of structures, systems, powerplants, and/or maintenance records specialists.

For partial Go Team launches, the participating specialists (and maybe even the IIC) might be responsible for multiple areas of the investigation. Such a launch might result in the assignment of an airworthiness group chairman responsible for any of the structures, systems, powerplants, and maintenance records investigative areas. Likewise, an operations group chairman might be assigned to do any of the operations, air traffic control, meteorology, or human performance areas.

## **2.4 Party Notification**

The Safety Board may extend status as parties to the investigation to those organizations that can provide necessary technical assistance. The IIC typically confers such status on the operator, aircraft and powerplant manufacturers, and labor organizations involved by the accident circumstances. Most aviation-related organizations that the NTSB might work with are familiar with NTSB procedures and will have their own sources to notify them of an accident. However, this may not be the case with some parties. The IIC should ensure that the appropriate parties are informed of the accident, the location of the command post, and the time and location of the organizational meeting. The IIC should attend to the contribution of the parties during the investigation.

The FAA, by statute, is automatically a party to Safety Board investigations. FAA personnel have worked closely with Board investigators over the years and are typically familiar with major investigation procedures.

## **2.5 Travel Arrangements**

Typically, the IIC will have sufficient support from other personnel for much of the initial coordination and effort necessary to make arrangements for the Go Team launch. During off-duty hours, when available personnel are not as accessible, the IIC should solicit assistance from the back-up IIC, other IICs, and management personnel to arrange such important items as travel arrangements, hotels, rental cars, and administrative support on-site.

Whenever possible, it is desirable to have the entire Go Team (except maintenance records, meteorology, or human performance investigators, who might not travel to the accident site) travel together to the accident site. In addition to the positive perception this creates, it is important that all Go Team members begin the investigative process as soon as possible and with the most current and accurate information. Investigators who travel separately will promptly rejoin the Go Team upon their arrival.

### **2.5.1 FAA Aircraft**

An FAA airplane is usually the most efficient and convenient way to get to or near the accident site. The Chief of the Major Investigations Division or the Director/Deputy Director of OAS should forward the request for an FAA airplane through the FAA's Accident Investigation Division

(AAI-100) at (202) 267-8190. After hours, the AAI-100 duty officer can be reached through the FAA's communication center at (202) 267-3333 or 863-5100.

If an FAA airplane is available, the FAA representative will require an accurate list of the names of the Safety Board individuals who will comprise the team. Seating on the airplane should be provided for the Board Member on duty, his or her special assistant, and the Public Affairs representative. As of this writing, the FAA uses three aircraft for transporting accident investigators to an accident site: a Lear 31A and Gulfstream models I and IV. The Lear can hold 6 passengers, the G-I can hold 18 and the G-IV can hold 16 passengers comfortably. The G-IV has intercontinental range, but passenger capacity may have to be reduced to obtain long range capability.

If space on an FAA airplane is limited, team members should be selected according to the importance of their duties during the first few hours of the investigation (after providing space for the Board Member and Public Affairs representative). Give priority to group chairmen whose initial presence on-site with the IIC is critical. Typically, the structures group chairman is needed to ensure oversight of on-site activities, the operations group chairman is needed to interact with air carrier and labor association personnel on site, and the survival factors group chairman is needed to coordinate interaction with survivors and ARFF personnel. Other team members should be given priority on FAA aircraft according to the needs of the accident. In all cases, if space is limited, Safety Board personnel who are in an on-the-job-training status should not be transported on the FAA airplane. Assure that all passengers on the FAA airplane are given the proper reporting time to appear at Hangar 6 at DCA, not the time that the airplane will depart. The reporting time is generally 30 minutes before departure time.

Those who will not be transported on the FAA airplane may be required to make their own transportation arrangements, with the understanding that they should arrive at the site on the first available flight. All Go Team members must be informed of the location of the command post and the approximate time of the organizational meeting. If the location and time of the organizational meeting have not been provided, Go Team members should have an established point of contact at headquarters or in the accident site area to obtain the information. Go Team members will be expected to report to the command post in sufficient time to participate in the organizational meeting. A late arrival or an unexplained absence from the organizational meeting or other official on-site duties may result in disciplinary action.

### **2.5.2 Commercial Aircraft**

If an FAA aircraft is unavailable and the distance to the site is beyond reasonable driving distance, commercial aircraft will be used to transport the team. Arrange airline tickets and rental cars through the current NTSB travel agency. Give the itinerary and the names of those who will travel to the agent. Because return flights may vary among the team members, open returns should be requested for travel back to Washington. Normally, prepaid tickets should be requested for pickup by team members at the airport. This will allow everyone to obtain their tickets, particularly during off hours, with relative ease. Investigators traveling via jumpseat should check "Must Fly" on their jumpseat authorization forms (NTSB Form 7000-5) and assure that the carrier understands the urgency of their travel.

When travel arrangements are arranged for the entire group, one 24-digit authorization code might be used. AS-10 is responsible for assigning numbers to DCA accidents and incidents under investigation. If this information is unavailable, use the accident number listed in the current Go Team notification list. Individuals should correct any errors in the 24-digit authorization code (accident number, organizational codes, fund control numbers, etc.) upon completion of the travel.

### **2.5.3 Rental Cars**

Rental cars should be reserved for NTSB personnel when initial travel arrangements are made. The number of required rental cars may vary, but a good rule of thumb is to initially reserve one car for the IIC, one for the Board Member, one for the on-site chairmen (i.e., survival factors, systems, structures and powerplants), one for the operations/human performance, and one to be shared by the witness, weather and ATC group chairmen. Because additional cars can be rented and returned if they are not needed, reserve more rather than fewer cars if in doubt. In some cases, vans will provide greater comfort for personnel and more capacity for parts, equipment, etc.

### **2.5.4 Hotels**

The Chief of the Major Investigations Division, or his/her designee, will coordinate arrangements for accommodation and meeting rooms for the Go Team. NTSB Regional/Field Office personnel, FAA FSDO staff, NTSB's travel agency, or local law enforcement or military officials should be used to assist in obtaining hotel accommodations and facilities for the command post. If involved in the hotel selection, the following factors should be considered:

- Proximity to the accident site,
- Availability and adequacy of guest rooms for Safety Board personnel,
- Availability of a meeting room of sufficient size, and
- Cost of accommodations and meeting room.

When communicating with hotel personnel, NTSB personnel should identify themselves and the purpose of the visit. A sufficient number of rooms to accommodate the entire team should be requested, with people assigned the following priority: 1) the Safety Board, 2) other federal agencies, and 3) other organizations. The Safety Board cannot "guarantee" rooms for other agencies or organizations.

### **3. ON-SCENE ACTIVITIES**

#### **3.1 Command Post/Meeting Room**

The size of the meeting room required will be dictated by the number of people expected to participate in the investigation. This will depend on the expected number of groups established, parties designated, and personnel from each party. In general, regardless of how small the team dispatched, on most Go-Team led investigations, the meeting room should accommodate at least 30 people. On major air transport accident investigations, the room should have a capacity of 100 to 150 people. Remember to account for the space required by support personnel, furniture, phone and power lines and the like when considering the desired capacity of the meeting room.

For large investigations, instruct the hotel personnel to set up the room theater style, with tables and chairs set up in rows. If possible, an aisle should bisect the room, with aisles on either side of the rows of tables and chairs. The hotel should set up a head table at the front of the room to accommodate the IIC, the Board Member, and his/her assistant. The hotel should be requested to provide a chalkboard and/or whiteboard. A table should be placed at the rear of the room where reports, documents, and other material to be distributed to the parties can be placed. Another table should be provided for Public Affairs' use and telephones, but should be located away from the head table.

##### **3.1.1 Telephones & Communications**

Ask the hotel to request the telephone company to install, on an emergency basis, outside telephone lines in the meeting room. For a full Go Team investigation, request six to eight outside lines; for a partial Go Team launch, request four outside lines. The telephones are for investigative team members to communicate with their home offices. All calls will be billed to the Safety Board. Instruct team members that the phones are for official use only.

Reserve at least one outside line for exclusive use by the public affairs officer and for incoming media calls. Because this line will likely receive extensive use, it should be placed away from the other lines so it will not disturb the work of others in the command post. In addition, reserve one line for the IIC's use only, to receive calls from headquarters, and do not release this phone number to team members. The use of this line will facilitate communications between headquarters and investigative personnel on site.

Rent mobile phones for the on-site commander and for the IIC (if his/her issued phone is not available). These may be obtained from the telephone company, from local car rental agencies, or from local telecommunication specialists.

##### **3.1.2 Equipment/Supplies**

The meeting room will serve as the command post for managing the investigation. At the same time, it will also serve as the office and central meeting place for investigation participants. Consequently, the command post should be equipped with many of the tools of the modern office. These include the following:

- two photocopy machines (with sorters),
- IBM compatible portable computers,
- printers,
- a telephone message board, and
- mail boxes and a table to place mail and materials for each of the parties.

Because it may be unreasonable to ask the hotel to acquire this equipment on short notice, the IIC should be prepared to arrange with local vendors to rent the equipment and the needed supplies. These supplies include toner and paper for the copiers and printers. Find potential vendors in the yellow pages or through recommendations or suggestions of the hotel staff or others familiar with office supplies. If possible, survey several sources to determine prevailing rates and confirm that the rental costs are in accordance with prevailing rates.

The IIC should assure that these items are available in the command post (see Volume IV of Investigation Manual):

- Preliminary accident/incident form (NTSB Form 6120.19A)
- Accident/incident report form (NTSB Form 6120.4 and supplements as required)
- Pilot/operator accident report form (NTSB Form 6120.1/2)
- Attendance rosters,
- Subpoena forms,
- Witness Statements,
- Wreckage Release forms,
- Party Coordinator Signature form,
- On-Scene Organizational chart (see Appendix B),
- NTSB telephone directory, and
- Telephone messages pads.

### **3.1.3 Administrative Support**

Depending on the size of the team, the scope of the investigation, and the availability of administrative support personnel from the Board, clerical/secretarial assistance may be hired for the command post. On a major investigation, a secretary or other command post assistant will be needed to answer the multitude of phone calls and take and distribute telephone messages. Toward the end of the on-scene phase, when field notes will be prepared, photocopied, and distributed, secretarial services will also usually be needed. Safety Board headquarters, Regional/Field Offices, or the FAA may be able to provide administrative support. If such support is unavailable, arrangements for such services can usually be made through a temporary employment service. When arranging for secretarial services, ensure that the employment service or individual(s) is aware that the services will be needed at the NTSB command post and that unusual and long working hours, outside traditional office working

hours, should be expected.

### **3.1.4 Contracting for Services or Supplies**

The IIC will enter into any necessary agreement with vendors and will be responsible for insuring payment after the command post is closed. Accordingly, the IIC must fully understand the details of the agreement made to obtain services or supplies and obtain accurate estimates of the charges incurred for those services or supplies.

Before leaving the site, arrangements should be made to settle vendor accounts. Use Rapidrafts to pay accounts that are less than \$2,500 and retain all receipts and copies of rental or purchase agreements.

### **3.1.5 AS-10 Support Equipment**

AS-10 has two "flyaway" suitcases available for use during the investigation. The two kits contain such things as a video camera and tape, laptop computer, printer, various charging devices, film, administrative supplies, and volumes of the investigator's manual. Mailing labels attached to the kits allow them to be mailed quickly upon direction by the IIC. The kits are intended to be used for large accident investigations, where a considerable amount of supplies or equipment might be needed. The IIC is responsible for the equipment in the kits and for mailing them back to Washington after the on-scene phase of the investigation has been completed. The kits, or at least the electronic equipment, should be secured each evening.

Each suitcase is equipped with a programmable combination lock that should be set by the IIC prior to departure, if possible. Otherwise, AS-10 will set the combinations and inform the IIC of the combinations while the kits are en route.

## **3.2 Organizational Meeting**

The manner in which the IIC conducts the organizational meeting will establish the tone of the investigation. The importance of being organized, articulate, assertive, composed, and understanding cannot be overstated.

As the formal opening of the investigation into an aviation accident, the organizational meeting serves several purposes. It will:

- Provide the opportunity to share preliminary information on the accident,
- Introduce the participants of the investigation and identify those eligible to participate,
- Organize participants into investigative groups, and
- Establish rules for the conduct of the investigation.

The organizational meeting should be held as soon as practicable upon arrival at the accident site, according to the time of day and the number of parties that have arrived. For example, if the Go Team members arrived at the site during the night, key personnel from the parties may not arrive

until the next morning. Therefore, the meeting should not be held until after the key parties have arrived. If the team has arrived in mid-afternoon and most of the parties will be expected to arrive in late afternoon, the meeting should be in the early evening.

The IIC should identify himself/herself and, after calling the meeting to order, distribute the attendance roster for each person to sign. Then, according to which of the following are present, the IIC will introduce the Board Member, the Board Member's assistant, and the Public Affairs representative and provide the Board Member the opportunity to address the group. Following the introductions, personnel in the room should stand up and identify themselves, their organizations, and their positions within their particular organizations. The IIC will ask reporters, attorneys, and others not technically qualified or needed for the investigation (e.g., an accountant with the airline) to leave the room. Potential parties or individuals should understand that, with the exception of the FAA, participation in the Board's investigation is a privilege, not a "right".

After introductions, the IIC should explain that the primary purpose of the meeting is to assign specialists to the investigative groups. The facts of the investigation will be reviewed and should include the following:

- Operator,
- Aircraft type and registration number,
- Type of flight, origin and intended destination,
- Number of fatalities (or best information presently known),
- Condition of crewmembers,
- Extent of aircraft damage, and
- Other information considered relevant.

After preliminary information about the accident has been given, the IIC will read the "Opening Statement of Investigator-in-Charge at the Organizational Meeting" (Appendix C). This statement advises the participants of Board policies relevant to the investigation. The introductory remarks should address the following points:

- Safety Board authority to conduct the investigation,
- Role of parties to the investigation,
- Organization of the team into groups of specialists,
- Qualifications to participate in the investigation,
- Expected participation of participants for the duration of on-site activities,
- Dissemination of information among investigation participants,
- Public release of information about the investigation,
- Site safety,
- Role of party coordinators and group chairmen, and
- Identification of the appointed Safety Board group chairmen.

The IIC should bring along handouts that explain such things as the NTSB's authority and investigation process and the role of parties in the investigation (see Appendix D). These handouts should be distributed to the parties after the organizational meeting.

### **3.2.1 Safety Precautions**

Aircraft wreckage sites can be hazardous for many reasons other than possible adverse terrain and adverse climatic conditions. Personnel involved in the recovery, examination, and documentation of wreckage may be exposed to physical hazards from such things as hazardous cargo, flammable or toxic materials and vapors, sharp or heavy objects, pressurized equipment, and disease. The IIC and/or a designated NTSB safety officer will be responsible for assessing the hazards at the accident site (see Appendix E), briefing the investigative group on the hazards, and ensuring that proper safety precautions and practices are followed. Throughout the on-scene phase of the investigation, the IIC and the group chairmen should urge everyone to exercise good judgment, utilize available protective devices and clothing, and use extreme caution when working in and around the wreckage.

In the event hazardous materials were identified on the flight manifest, the type of material must be determined and decisions to either remove the material or reduce the risk of contamination or injury must be made. Once such actions have been made, work at the site will be permitted.

The Safety Board will not assume responsibility for any personal injuries incurred during the course of an investigation by representatives of organizations participating in the investigation as a party, or by an authorized observer, nor can the Board provide protective equipment to team members. Safety Board investigators should remind all participants to use extreme care and provide for their own needs on site. Any safety concerns should be promptly expressed to the group chairmen or the IIC.

All Safety Board personnel who might travel to an area with certain known or suspected diseases should take adequate precautions by receiving inoculations against such risks in advance of investigative travel, time permitting. The State Department health clinic can be an excellent source of information on the risks associated with certain countries or areas. Inoculations can typically be arranged with an individual's personal medical care or from government agencies with whom the NTSB has agreements.

The wreckage of an airplane involved in an accident may contain bloodborne pathogens. Bloodborne pathogens are viruses, bacterial, and parasites that are present in the blood or other body fluids of infected persons. They could include, but are not limited to, hepatitis B virus (HBV) and the human immunodeficiency virus (HIV), which causes AIDS. These viruses do not die upon contact with oxygen or when the fluids dry out. Studies, in fact, show that certain climatic conditions may prolong the infectiousness of HIV. Those who work in or around the wreckage must use extreme caution to minimize direct contact with bloodborne viruses. At a minimum, heavy leather work gloves over nonpermeable rubber gloves are recommended when touching the wreckage. Under certain conditions, such as enclosed spaces within the wreckage where investigators may come into contact with blood or human remains, particulate or full face masks, protective goggles, and disposable overalls and booties should be worn. Occupational Safety and Health Administration (OSHA) requirements concerning training and on-scene protection procedures and equipment are included in Board Order [*not issued when this manual was published*].

### **3.2.2 Badges and Forms**

The IIC will usually distribute identification badges to the group chairmen for the investigative participants. The group chairmen will be responsible for keeping track of their respective badges. The badges provide a good method of restricting accident site (and command post) access to only those individuals approved by the group chairmen or the IIC. Other arrangements can be made depending on the level of security desired and the location of the accident site.

The coordinator, or spokesperson, for each party to the investigation will sign the "Statement of Party Representatives to NTSB Investigation". This form contains pertinent excerpts from 49 CFR Part 831 and explains that, by signing the form, party coordinators are indicating their understanding of the rules and their organization's willingness to abide by them. The FAA coordinator is not required to sign the form. In subsequent phases of the investigation (CVR, FDR, component testing, etc.), all participants will normally be required to sign the form as a condition of their participation.

Prior to adjourning the organizational meeting, the IIC should ask each participant to leave a business card (or equivalent information). By collecting the business cards, photocopying them, and distributing copies to investigation participants, it will be easier for all participants to maintain contact with each other after the on-scene phase has been completed.

### **3.2.3 Observers**

The Safety Board IIC may allow properly accredited members of aeronautical organizations, designated military personnel, or representatives of foreign governments to be observers to the investigation. The sole purpose of the observer status is for training and familiarization with the investigative process. Observers should not have any self-interest in the investigation, and they will be permitted access to only those portions of the investigation deemed necessary by the IIC. Observer status must be coordinated and approved in advance. Although observers will sometimes work with one of the investigative groups, they will be under the overall control of the IIC and will be given factual information on a "need to know basis." The restrictions concerning dissemination of accident information apply to all observers.

### **3.2.4 Identification and Assignment of Personnel**

Each party and its coordinator will be identified. A party coordinator is the main spokesperson for a party and is the IIC's main point of contact within a party during the investigation. This individual should be of high enough stature within the party to be able to make decisions without a great deal of consultation with his/her superiors.

For parties that are unfamiliar with Board procedures, such as small airlines, it is advisable to fully explain the methods used to conduct the investigation. Outline the major tasks that will be expected to be accomplished during the subsequent days on site. It may be necessary for the group chairmen to discuss the areas that their particular group will be focusing on and the type of expertise needed by members of that particular group.

As each of the investigative groups is formed, the party coordinators will be given the opportunity to assign their personnel to the group. An organizational chart may assist the IIC in identifying the investigative members and their group assignments or party affiliation (see Appendix B). Only technically qualified individuals with the necessary expertise will be permitted to participate in the investigation. Specialists typically include representatives of the operator, manufacturers of the aircraft, powerplant, and accessories, labor associations, and other parties who can contribute knowledge and expertise. The group chairmen and the IIC will assess the qualifications of proposed group members when assigning them to the working groups. The size of the groups should be limited to only those personnel with the expertise necessary for documentation of the particular discipline. The final decision regarding assignment of specialists will be made by the IIC, in coordination with the respective group chairmen.

Participants will be asked to report to their group chairman after the organizational meeting for further instructions. The IIC should adjourn the organizational meeting by stating the time of the first progress meeting.

### **3.2.5 Lines of Authority**

Any difficulties that arise among the team members during the on-scene investigation will be handled in the following manner. Group members will first attempt to resolve differences directly with their respective group chairman. If a resolution is not reached, the group members should bring the issue to the attention of their respective party coordinator. Concurrently, the group chairman will notify the IIC. The IIC and the party coordinator will discuss the issue and attempt to resolve it, informing the group member and group chairman of the decision.

The IIC has the overall authority and responsibility to resolve any difficulties that may arise on scene. However, if resolution of an issue cannot be reached by the IIC and party coordinator, they will then discuss the issue with the Chief of the Major Investigations Division. If the issue cannot be resolved at that level, it will be elevated to other senior NTSB management for final resolution.

### **3.3 Group Chairmen Responsibilities**

Immediately following the organizational meeting, each group chairman should meet with his/her group members. Since most group members will not be familiar with the procedures of an NTSB accident investigation, several things should be discussed with the group, including the scope of the group's investigation, assignment of duties, and NTSB protocol concerning field notes. It should be explained that the primary responsibility of the members is to their working group and respective group chairman--not to their respective organization--and that they must commit to staying with the group until released by the IIC and the group chairman.

#### **3.3.1 Field Notes**

Each group chairman is required to compile field notes documenting his/her on-site activities. Field notes represent the summation of factual material gathered and information obtained by each investigative group participating in the investigation. There will be one official set of field notes for

each group. The field notes will contain such information as that outlined in the checklists, as well as information collected or documented by the group. Appendix F contains information on the responsibilities of each working group and a checklist of documentation items.

At the end of each day of the on-site investigation, each group should discuss their efforts and review the progress of their field notes. This is most conveniently accomplished prior to the daily progress meeting, which all group members should also attend. Field notes should be signed by each member of the respective working group. These signatures indicate, and should clearly convey, that each member of the group has read all of the field notes and either agrees with the information included in the notes or agrees with most of the information and has indicated, in writing, specific areas of disagreement and the reasons for that disagreement. If group members do not attach written statements of disagreement to the field notes, it will be assumed that they agree with the content and completeness of the information contained in the field notes.

At the conclusion of the on-scene investigation, the group chairman will present the group's field notes to the IIC for review and approval. After the IIC's approval, the group chairman should provide a copy of the field notes to his/her group members and to each party to the investigation. The group chairman and, therefore, the group members will not be released until the field notes have been approved. The IIC should be aware of future plans of the group and provide direction, as required, to obtain information that has not been included in the field notes.

Following the on-scene phase of the investigation, it may be necessary for the group to reconvene for such follow-up work as witness/crew interviews, maintenance records reviews, flight testing/simulations, or testing/teardowns of such things as powerplants, instruments, and system components. These activities might be scheduled while the group is still on-scene or after investigative staff have returned to their home offices. Field notes will also be necessary for documenting any such additional investigative work.

### **3.4 Progress Meetings**

Progress meetings are held daily to disseminate information obtained during the day's activities and to discuss plans for subsequent investigative activities. The meetings also provide factual information to the Board member for dissemination to the media at press briefings.

Progress meetings should be scheduled to begin late enough for participants to clean up after spending time on site, but early enough for everyone to have dinner afterwards and get sufficient rest for the next day's activities. Generally, 1800 is a good time to start the first progress meeting.

The IIC will begin the meeting by calling the group to order and asking those who are new to the investigation to rise and identify themselves, their organizations, and their roles in the organizations. Any new persons, acceptable to the IIC and the group chairmen, will be assigned to investigative groups. Each group chairman will then present the prominent facts obtained that day and the investigative activities planned for the next day (see Appendix G). The group chairman should be prepared to respond to any questions about his/her area of responsibility. Questions or discussions on group chairmen's presentations should be limited to factual material only. Analytical questions to the

group chairmen on the implications of their findings will not be allowed. The progress meetings should not be used for a discussion of accident causation.

The IIC should take notes of the group chairman's presentations, since they will constitute the primary record of what was learned during the on-scene phase of the investigation. The notes will be beneficial during discussions with the Board member and briefings to headquarters personnel and the press.

After all group chairmen have completed their presentations, the next evening's progress meeting should be scheduled. Depending on the workload of investigative activities, progress meetings may start earlier after the first one or two days on scene. Allow time after the meeting to discuss NTSB business or ask questions of group chairmen. Remind participants not to discuss the investigation in public areas or in places where their conversations can be overheard. It is advisable to also remind participants to remove their personal belongings and notes from the command post overnight or at other times when the room is unattended.

### **3.5 Press Briefing**

If a Board Member is present, the press briefing will be his or her responsibility. If no Board Member is present, the IIC or the public affairs officer (and, in some cases, headquarters staff) will be responsible for briefing the press. Press briefings are normally conducted after the progress meetings, when information concerning the facts of the investigation is fresh. Multiple press briefings during the day are discouraged. Members of the press are not allowed in any progress meeting and should not be allowed in the command post.

#### **3.5.1 Board Member Present**

The Board Member will, most likely, brief the press after the progress meetings. It is the IIC's responsibility, with the public affairs officer, to help prepare the Board Member for the briefing. Before the briefing, the IIC should review the high points of the progress meeting with the Board Member and the public affairs officer. The IIC should be alert for information that is unconfirmed or unsubstantiated and assure that the Board Member is aware of any such information and the advisability of not releasing information unless it is confirmed. Any information that might inhibit the Safety Board's ability to gather other needed factual information (i.e., witness observations) should not be released.

The Member, IIC, and public affairs officer should attempt to anticipate potential press questions that could be expected to follow the release of certain information. Reporters want to know the cause of the accident and are unfamiliar with Board procedures regarding the determination of probable cause. For example, a discussion of alcohol or drug testing could lead reporters to ask if the Board suspects that the pilots were under the influence of drugs or alcohol at the time. Information about a failed check ride some years before the accident could lead to questions about the competency of the pilots involved in the accident. Questions about the cause of the accident should be anticipated. A reference to the pilot will often lead to a question about "pilot error." Similarly, a reference to a

mechanical malfunction or Minimum Equipment List (MEL) item often leads to a question about the quality of the airplane or its maintenance and whether either one caused the accident. When reviewing the notes of the progress meeting with the Board Member, the IIC should ensure that the Member is aware of potential follow-on questions.

The IIC should attend the press briefing and let the Member know where he/she will be located. The IIC should be aware that reporters will be looking to him/her for body language or facial expressions during the Member's briefing and should, therefore, maintain as neutral an expression as possible during the briefing. Assistance to the Member should not be provided during the briefing unless requested. The IIC should determine in advance what action the Member would want if he/she has misstated a fact or omitted information. NTSB investigators should not interrupt the briefing under any circumstances unless specifically directed to by the Member.

### **3.5.2 Board Member Not Present**

If no Board Member is present, the IIC or the public affairs representative may brief the press. The same guidelines for Member-conducted briefings apply to IIC briefings as well.

The IIC shall not speculate on the accident cause and shall limit the briefing to only a presentation of facts obtained during the day. Rely on tried and true phrases such as: "That is one of the many things we will be looking at"; "It is much too early to tell at this point"; "Right now we are not ruling anything out"; "At this stage we are only gathering evidence"; "We will consider all potential causes after we have reviewed the evidence." The IIC should be prepared to answer questions following the briefing and expect to be photographed and videotaped during the briefing.

If material gathered during the day is highly technical, the particular group chairmen should be requested to attend the briefing and be prepared to assist, if necessary. This won't usually be necessary due to the relatively nontechnical nature of the briefings and the preliminary stage of the investigation.

### **3.6 IIC Site Visit**

The IIC should visit the site regularly to get a good understanding of the nature of the accident. The visits enable the IIC to learn about the progress of the investigation and any particular problems, observe working conditions of the team, and provide supervision, as necessary, to assure that the investigation is making satisfactory progress.

The structures group chairman or another experienced airworthiness investigator will serve as the on-site commander during the on-scene phase. The on-site commander will maintain regular contact with the IIC during the investigation, with a mobile phone if necessary, to keep the IIC informed of the progress of the investigation and any difficulties encountered on-scene.

### **3.7 Daily Activities of IIC**

As part of the responsibility for the oversight of the investigation, the IIC will serve as a liaison between Safety Board headquarters and the investigative team, and between the command post and the site. Liaison with headquarters is primarily carried out through the daily briefing; however, the IIC should always be available for further headquarters inquiries.

### **3.7.1 Headquarters Briefing**

The IIC is expected to brief headquarters personnel on a daily basis. These briefings provide headquarters staff with the opportunity to 1) oversee and assess the progress of the investigation, 2) communicate relevant technical information to the on-site team, and 3) provide assistance to the IIC as needed. The daily briefings with headquarters are independent of any briefings between group chairmen and their respective supervisors. The Chief of the Major Investigations Division will provide notice to other Division Chiefs and directors to allow for their participation in the briefings. OAS supervisors should be informed of any details reported during after-hours briefings.

The briefing should be scheduled for a time that is mutually convenient for the IIC and headquarters personnel. The IIC should allow at least one hour for the briefing and assure that he/she will not be needed at the command post or other location during that time. The briefing should be held in a location where there will be no disturbances and where sensitive material may be discussed. A hotel room or an office with complete privacy is recommended.

The IIC should review notes carefully before the briefing and be prepared to discuss, in detail, the activities and findings of each group. If any of the reported findings are unclear, contact the appropriate group chairmen before the briefing for clarification.

The IIC should note during the briefing suggestions or questions by the headquarters staff for which answers must be researched. The IIC may be asked to convey messages or specific requests from headquarters staff to group chairmen. This information should be conveyed to group chairmen at the progress meeting or some other appropriate time.

### **3.7.2 Safety Board Staff Meeting**

Meetings should be held daily, or as needed, with all Safety Board staff during the investigation. These meetings provide an open forum for Board staff to raise issues that they may be reluctant to raise during the progress meetings. This can also provide the IIC with a relaxed setting to provide guidance to the group chairmen or convey messages from headquarters. These meetings should be convened before the progress meetings or first thing in the morning to avoid potential conflicts with the group chairmen's plans. Often, the first thing in the morning or right after breakfast is a convenient time. More frequent meetings may be necessary depending on the size of the investigative staff, their need for guidance, and the complexities of the issues. The meetings should be used as a way of preventing problems from becoming potentially disruptive to the investigation.

### **3.7.3 Party Coordinator Meeting**

It is also a good idea to meet daily, or as needed, just with the party coordinators to explain rules and procedures that coordinators may be unfamiliar with and to review and discuss issues that may come up during the on-scene phase. In any investigation there will be a potential for parties to

come into conflict and for that conflict to require the IIC's attention. These meetings should be used as a way of determining the parties' progress with the investigation and their ability to cooperate with each other and with Safety Board group chairmen. Guidance and input should be provided to them, as needed, to prevent potential problems from getting out of hand.

### **3.8 Final Progress Meeting**

After a number of days, the groups will begin to present less information and some groups will complete their activities. When the IIC determines that little new information remains to be obtained from the remaining groups, it is appropriate to end the progress meetings and wrap up the on-site activities. The final progress meeting should update the participants on the status of the investigation, advise them of any proposed follow-on activities, and provide for approval and distribution of field notes.

### **3.9 Release of Wreckage**

When the IIC and the group chairmen have determined that the wreckage is no longer needed for investigative purposes, the IIC (or a group chairman so designated) will be responsible for preparing and signing Part I of the wreckage release form (NTSB form 6120.15). The form shall be executed by the NTSB representative and signed by someone acknowledging his/her receipt of the wreckage (usually, but not necessarily, the aircraft owner or the owner's representative). A copy of the form shall accompany the released wreckage, with the original retained by the NTSB.

Part II of the wreckage release form will include a list of any parts or components of the wreckage that will be retained by the NTSB for further examination. After the NTSB has completed any subsequent examination of retained parts, the NTSB designee will sign Part II of the wreckage release form, send the form and the parts to the owner or person responsible for receiving the parts, and have him/her sign the form acknowledging receipt of the parts and return the form to NTSB. In the event that portions of the wreckage are returned at different times or to different individuals, it will be necessary to send copies of Part II of the form for the appropriate signatures.

The signed wreckage release form constitutes transfer of the wreckage from the NTSB to the owner or representative. The wreckage release form(s) and any related correspondence will be placed in the NTSB public docket for the accident.

### **3.10 Materials Laboratory Examinations**

In the event that a material failure is suspected or that detailed examinations of a part are desired, group chairmen should enlist the assistance of the NTSB Materials Laboratory. Even if an outside laboratory or manufacturer's facility is used for an examination, the Materials Lab should be consulted. Appendix H contains recommended procedures to submit parts, as well as certain steps to preserve their condition.

### **3.11 Closing the Command Post**

After collecting the field notes from the group chairmen, the IIC is responsible for closing the command post. Arrangements should be made to return rented supplies and equipment and to settle vendor accounts. The IIC should expect to pay or arrange to pay for such things as telephones, photocopy machines, computers and accessories, meeting room, and supplies. Bills should reflect that all charges have been levied at the prearranged rate and only for the services that had been agreed to beforehand. The IIC should settle accounts for \$2,500 or less with a Rapidraft before leaving the site and retain copies of all bills and payment receipts for processing upon your return to the office.

### **3.12 Initial Notification and Status Reports**

While the Go Team is conducting the on-scene phase of the investigation, an initial notification memo and subsequent status reports will be distributed to the Board Members and OAS management. An initial notification memo is provided by the AS-10 chief and is usually distributed within a day of the launch of the Go Team. The initial notification briefly describes the circumstances of the accident and lists the members of the Go Team and the parties. Status reports on the progress of the investigation are issued to notify the Board when significant new information is obtained about an accident under investigation. A status report might be issued upon the return of the investigative team from the site, but only if new information was obtained following the distribution of the initial notification and subsequent status reports. If potentially significant findings are obtained, status reports will be issued to disseminate the results of teardowns, records examinations, interviews, etc.

## **4. POST-ON-SCENE ACTIVITIES**

Following the on-scene phase of an investigation, a tentative schedule of activities will be established by the IIC, based on guidance provided in Board Order 70. These items include meetings to discuss the progress of the investigation, group chairmen factual and analysis reports, preparation of the final report, and the possibility of a public hearing. Throughout this phase of the investigation process, deadlines for the certain work efforts will be registered on NTSB Form 70.1, Major Report Preparation Schedule (see Board Order 70).

### **4.1 Work Planning Meeting**

The work planning meeting allows investigators and their supervisors to discuss activities that will follow the on-scene phase (component teardowns, follow-on interviews, etc.). It also allows everyone to agree on realistic schedules to complete required work products.

Board Order 70, which presents the requirements for completing the major steps of the investigation, directs that a work planning meeting be held within 20 workdays after the accident. The scheduling of due dates for group chairmen reports should follow the directives of OAS management and Board Order 70.

The IIC shall prepare a memo announcing the meeting and its location, date, and time. The memo should be accompanied by a summary outlining the major issues of the investigation and distributed to each group chairman, his/her supervisor, and the respective Office Directors and Deputy Directors several days prior to the meeting.

The IIC should anticipate the investigative activities that each group chairman should pursue and suggest avenues for follow-up investigation, if necessary. By the end of the meeting, the group chairmen and managers should agree to the accident-related issues, the general activities that remain, the type of report to be generated, the recommendation on whether to convene a public hearing, and the deadlines for the factual reports. Report completion deadlines may need to be negotiated with the group chairmen and their supervisors, depending on their workloads and priorities. Any conflicts regarding deadlines will be resolved by the Office Directors or their Deputies.

The IIC will typically prepare a memo for the signature of the chief of AS-10 briefly summarizing items of agreement achieved during the meeting, a revised issue outline, and any unresolved issues. All deadlines for report submissions and anticipated milestones should be included. The memo should be distributed to each group chairman, his/her supervisor, the respective Office Directors and Deputy Directors, and the Managing Director.

The IIC should maintain contact with the group chairmen during the course of the investigation and be aware of the progress of their follow-up activities. He/she should integrate the activities of related investigative groups if it is determined that they are proceeding in similar directions. For example, if maintenance training becomes an issue, both systems and structures groups might examine maintenance practices together. Likewise, the human performance and the operations groups may work together in carrying out interviews and records examinations. If two group chairmen are

working together, assure that each will cover a specific area to avoid overlap among the groups. The IIC should assure that he/she is informed of all group activities and group findings.

#### **4.2 Action Memo**

After the work planning meeting, the IIC shall draft an action memo to the Board (through the Managing Director) for the signature of the OAS Director recommending whether or not to convene a public hearing. A signature sheet for the signatures of the General Counsel and the Office Directors of Research and Engineering, Safety Recommendations, and Public Affairs shall accompany the memo. The memo should present logic supporting the hearing recommendation based on previous accidents and subsequent follow-up actions, Board action on these issues, public interest, local and national media attention, and Congressional and local government interest. A summary of the major issues and the key findings of the investigation should be included. The action memo should be prepared within a week of the work planning meeting.

#### **4.3 Group Chairman Factual and Analysis Reports**

Upon completion of the group's factual documentation, the group chairman will prepare a factual report based on the field notes. A draft of the factual report should be made available to the group members for comments that can be incorporated into the group chairman's factual report. Incorporation of group member comments is at the discretion of the group chairman; concurrence of the working group is desired, but not required. The group chairman should assure the objectivity and accuracy of information in the factual report, with input from the IIC and approval and sign-off by his/her supervisor. Each group chairman will submit his/her final factual report to the IIC, who will place it in the public docket at the appropriate time. The IIC will mail copies of all finalized factual reports directly to the party coordinators after the docket is opened. Subsequent factual reports will be mailed to the parties in time for their use for the public hearing, if held.

After the fact-finding portion of the investigation (including any public hearing or depositions and the Technical Review), each group chairman shall submit an analysis report based on the information contained in his or her factual report. Group chairmen should begin writing their analysis reports as soon as appropriate, and should not wait until the entire factual portion of the investigation is complete before doing so unless certain information has not yet been obtained. The analysis report should review and evaluate all important facts documented by the group as to their relevancy to the accident and state the principal findings and their relevance to a probable cause of the accident. Analysis reports (and any drafts) are solely NTSB internal products and are not to be released to the group members or party coordinators for any reason. The reports should be marked "For Official Use Only." The group chairmen analysis reports will be submitted to the IIC, after approval and sign-off by their respective supervisors, for use in the production of the Board final report. Appendix I contains guidance on the format and general content for group chairman factual and analysis reports.

After the final report has gone on Notation, the IIC shall place the group chairmen analysis reports into a folder marked, "For Official Use Only." This will provide easy access of the analysis reports by the Board Members in consideration of the final report or others who might be involved in a petition for reconsideration. The "For Official Use Only" folder might also contain such things as

autopsy results or interoffice correspondence concerning the accident. Although this folder will be placed in the accident docket, it is restricted to NTSB's internal use and is protected against Freedom of Information Act (FOIA) requests.

#### **4.4 The Public Docket**

NTSB rule 49 CFR 845.50 states that all factual information, proposed findings that parties have submitted, petitions for reconsideration, and the Board's rulings will be placed in the public docket, which will be made available to the public. The IIC is responsible for assembling the public docket. If it is unclear whether to place material into the docket, the Office of the General Counsel will make a determination. The manner in which material is entered into the docket is the same regardless of the circumstances; however, the timeframe for opening the docket is determined by whether a public hearing is convened on the accident.

##### **4.4.1 No Public Hearing**

If the Board has voted not to hold a public hearing and a cockpit voice recorder (CVR) tape has been transcribed, the docket will be opened when a majority of the factual material has been obtained. The CVR transcript will not be placed in the public docket until a majority of the factual reports can be placed in the docket simultaneously.

To open the public docket, the IIC will prepare a memo listing the factual reports and information to be entered into the docket. The memo will provide notice that factual material is about to be made available to the public. Subsequent material that is introduced to the docket does not require such a memo. The memo will be distributed to the Board Members and applicable Office Directors and Division Chiefs.

A completed NTSB form 6120.3 shall be included with the material in the docket each time such material is introduced. Each item is numbered in consecutive order, beginning with "1". Subsequent material entered into the docket should be numbered on form 6120.3 beginning with the number that follows the last item on the material entered previously.

The pages of each item should be carefully counted and provided as required on the form. The area titled "Identification of the Accident" should contain the accident number. The material should be inserted in a folder in the order in which it is numbered on the form and, with the completed form 6120.3 in the front of the material, given to Public Inquiries. The IIC should obtain a receipt for the package that lists the items submitted and the date in which they were introduced into the docket. A copy of a signed form 6120.3 that accompanied the material will suffice.

Original copies of the following shall be entered into the docket: factual reports, addenda to the factual reports, errata sheets, relevant photographs, and all correspondence from the parties (other than routine requests for information). Photographs should not be submitted loosely, but attached, properly labeled, to sheets of paper.

After the accident report has been adopted and all work required to prepare the recommendation letters and ready the report for printing has been completed, any material not needed

for the public docket should be discarded. This will assure that the public docket will contain all pertinent data and that the docket material will not subsequently be contradicted by unverified or preliminary data which might otherwise be retained unknowingly. Another concern is that the contents of all files, including personal notes, may be requested and released in response to a request submitted under the provisions of the FOIA.

#### **4.4.2 Public Hearing**

If a public hearing is held, material should be entered into the docket (at Public Inquiries) when the hearing begins. This will assure that all reports are made available to the public at the same time that they are distributed to the press at the public hearing. The CVR transcript will be among the reports entered into the docket to coincide with the opening of the hearing.

#### **4.5 Public Hearings**

The Board's procedures for conducting a public hearing are covered in 49 CFR Part 845. Public hearings allow the Safety Board to gather more facts about an accident and put on record a substantial amount of information about circumstances relating to the accident. The hearings also allow the public to observe the Safety Board's investigation of an accident in which there is substantial interest. For this reason, hearings are generally held near the location of the accident.

The first official step after it has been decided to hold a public hearing is the issuance of the Order of Hearing signed by the Chairman of the NTSB. Thereafter, the Director of OAS designates a hearing officer, who then prepares the Notice of Hearing, which designates the date, time, and location of the hearing. Designation of the hearing officer is done formally because it is also an official act necessary to give the hearing officer the power of subpoena and to issue the Notice of Hearing. These powers are not continuing powers vested in the hearing officer, but rather they are conferred from hearing to hearing.

##### **4.5.1 Preparation**

Public hearings require extensive preparation to ensure that all necessary details have been addressed and to ensure their success (see Board Order 71A). Inadequate preparation in either administrative matters or technical details can be detrimental to the success of the hearing and create unnecessary work later.

The hearing officer will be appointed to be responsible for overseeing all preparations for the hearing, both administrative and technical. Often, many of the administrative details, such as hearing site selection, material preparation, supply, equipment and material acquisition, and transportation can be assigned to a hearing assistant. Technical details must be addressed by the hearing officer and/or the IIC.

#### 4.5.1.1 Administrative

Administrative items include selecting the hearing date and location, acquiring necessary supplies and equipment, fulfilling Safety Board documentary requirements, assembling the exhibits from the factual reports and addenda, reproducing exhibits, distributing materials to parties and organizations, and arranging for court reporter services (see Appendix J).

The hearing officer will select the date for the hearing according to the requirements of Board Order 70, while considering workload requirements of the hearing participants, the Board meeting schedule, and the schedule of the Chairman of the Board of Inquiry (i.e., the presiding Board Member). These things considered, hearings are typically held 2-3 months after the date of the accident, but they may be held at any time during the investigation. Once the hearing date has been established, the hearing officer and the group chairmen must strictly adhere to the schedules in Board Order 70 to assure that exhibits will be made available to the parties in time to allow their preparation for the hearing.

The hearing site is typically located near the accident site. However, if the accident site is located away from a major city, or if the site is remote from the continental United States, another site may be more appropriate.

The hearing will usually be held in a large hotel meeting room. It should accommodate the hearing participants, media personnel and equipment, and public seating. While this will typically require accommodations for around 100 people, the room size requirement will vary according to the public interest in the accident. The room should have a raised platform with a table to accommodate about 8 people, table(s) for NTSB technical panel members, and tables to accommodate around 10 people for each of the parties to the hearing (see Appendix J).

The requirements for public address and electronic support systems must be provided to the hotel. The Office of Public Affairs can provide information on audio and video electronics needs. The hearing officer should follow up as necessary with the hotel to assure that the microphones and electronic support equipment will be in place and operational for the hearing. It may be necessary to indicate where microphones will be needed and how the hearing will be conducted to assure proper preparation.

Supplies and services for the hearing room, including a fax machine and photocopy machine, will need to be arranged (as they would for the command post). The hearing officer should be aware of pertinent details regarding their acquisition, use, and cost. All agreements should be in writing. At the close of the hearing, all bills will be collected, and those \$2,500 or less should be paid with Rapidrafts.

Safety Board supplies will require transport to the hearing site. These include the Safety Board seal and banner and a gavel and gavel striker. Office supplies will also be necessary.

The hearing officer should obtain sufficient copies of factual reports from the group chairmen and ensure that Board procedures are followed in their assembly. Public Inquiries assigns the

docket number for the hearing. Every factual report and attachment must also be given a distinct exhibit identification number. Each exhibit must be identified with these numbers on the cover sheet (Appendix K). The hearing officer will resolve any conflicts regarding exhibit numbers.

The group chairman's factual report is assigned the letter suffix "A" and will be the first exhibit in each group of exhibits. Each additional exhibit follows the group chairman's report and is assigned a letter suffix, beginning with "B" and proceeding through the alphabet, until all attachments have been identified. If the number of attachments exceeds the available letters of the alphabet, use double letters, beginning with "AA".

The first group of exhibits (and the corresponding exhibit identification number "1") is reserved for documents that establish and designate the following:

- Order of Hearing (Exhibit 1A)
- Notice of Designation of Chairman of Board of Inquiry (Exhibit 1B)
- Designation of Hearing Officer (Exhibit 1C)
- Designation of Parties to the Hearing (Exhibit 1D)
- Notice of Hearing (Exhibit 1E)

Poster-sized charts and photographs considerably enhance the quality of witness testimony during the hearing. Generally, photographs of the overall wreckage documentation, instrument approach charts, and plots of radar tracks of the accident airplane are appropriate. Exhibit requirements will be coordinated by the group chairmen, the hearing officer, and the Board of Inquiry.

Allow sufficient time for reproducing materials and shipping them to the site of the hearing. Do not wait until overnight mail is the only alternative. Typically, sufficient copies of each exhibit are made and prepared for distribution to the parties. Coordinate with the Office of Public Affairs to determine the number of copies of each exhibit they will need.

All parties should be informed of the details of the hearing and the prehearing conference well before both are held. Contact party coordinators first by telephone and follow with written confirmation. Because of the importance of their notification, parties should be provided written notice of the hearing and prehearing conference through air express or registered or certified mail so that confirmation of the package's receipt by the intended party is received by the Board.

Allow sufficient time before the prehearing conference for the parties to receive and review the items critical to the hearing. These include exhibits, issue list, areas of questioning, and relevant exhibits for each witness. This material should be sent to the parties in sufficient time for them to review it (at least a week before the prehearing conference). Provide any exhibits, corrections, amendments to exhibits, or other relevant material not previously forwarded to parties at the conference.

Arrange for a court reporter to transcribe the proceedings. The Safety Board maintains a court reporter service on contract for transcribing testimony at public hearings. After the request has been forwarded to the service, contact the reporter assigned to the hearing to confirm all details. Ensure

that the court reporter is aware of the importance of his/her arrival in advance of the start of the hearing (to allow for set-up and pre-briefing of expectations).

#### **4.5.1.2 Technical**

The following must be accomplished to coordinate the technical aspects of a hearing: determine the issues of interest, identify and request witnesses to address the issues, review areas of inquiry with the technical panel, ensure that parties are designated, and notify parties.

All major decisions regarding the technical aspects of the hearing will be approved by the Chairman of the Board of Inquiry. Generally, two or more meetings will be held with the Chairman of the Board of Inquiry to review issues, witnesses, and general staff preparation.

The staff and management of OAS, in consultation with the staff and management of other Safety Board offices with interest in the investigation, will draft the issues to be raised in the hearing. Generally, an "average" hearing will address around five issues, although some hearings have addressed as many as twelve.

After the issues have been identified, obtain the necessary witness expertise to address the issues at the hearing. Usually, Board management or the group chairman involved with the hearing issues will be able to identify witnesses whose testimony is appropriate. The witnesses may be from the parties to the investigation or can be suggested by one or more of the parties. For example, if an issue such as flightcrew training and preparation for the accident flight has been identified, individuals responsible for flightcrew training at the airline or airframe manufacturer may be found to address this issue. Additionally, witnesses from the FAA, with responsibility for approving training in that type aircraft, could be located, according to the desired depth of exploration of the issue at the hearing. Depending on the issues to be covered at the public hearing, NTSB personnel may even be called to testify. When NTSB staff are called, their testimony will normally be limited to factual findings relating to the accident under investigation.

If a witness with the desired expertise cannot be located or is not available through the parties to the investigation, attempt to locate either an individual with the same expertise from a different organization or an individual with similar expertise from the parties. For example, if the chief pilot of the airline is unavailable to address training on that aircraft type, the airline's Director of Training may be available and may be qualified to address the issue.

Once witnesses have been identified, arrange with them or with their party coordinators for their appearance and testimony at the hearing. If necessary, the Board can issue invitational travel orders and fund travel expenses for witnesses to appear at the hearing.

After witnesses and issues have been identified, witnesses will be "assigned" to members of the technical panel. Technical panel members, usually group chairmen assigned to the investigation, are responsible for asking the witness the questions necessary to address a particular issue. The hearing officer is responsible for reviewing issues with the members of the technical panel and insuring that each understands the issues and the witnesses identified to address specific issues. The IIC and the hearing officer should also be prepared to question witnesses to balance the workload among the technical

panel.

The hearing officer should meet regularly with technical panel members to ensure that the technical panel is appropriately prepared for the hearing. The technical panel members will be expected to be thoroughly familiar with the relevant exhibits and their relationship to the areas of questioning of the witnesses.

Technical panel members should, before the hearing, contact the witnesses they have been assigned and review the general areas of inquiry with them. It is neither necessary nor advisable to review specific questions with them. However, each should be advised of the general areas that they will be questioned on to enable them to be well prepared before the hearing.

#### **4.5.2 Prehearing Conference**

The prehearing conference allows the parties to review plans for the hearing and to present them with a final opportunity to make suggestions on its conduct. Typically, the prehearing conference is held about 1 week before the hearing, at the Safety Board's Washington headquarters. In unusual circumstances, this meeting may be held at the hearing site, preceding the public hearing. Although the meeting should not last all day, the room should be reserved for the entire day.

The hearing officer will review with the parties the items to be distributed and allow each the opportunity to offer comments on the exhibits, hearing objectives, and witnesses and their areas of questioning (Appendix L). The parties will be given the opportunity to suggest additional witnesses or exhibits.

The hearing officer should describe any administrative procedures that need explanation. The Board Member serving as the Chairman of the Board of Inquiry makes the final decisions regarding the conduct of the hearing. Questions or concerns of the parties not expressed at the prehearing conference will not be entertained at the hearing.

#### **4.5.3 The Public Hearing**

The public hearing usually begins with opening remarks by the Chairman of the Board of Inquiry, which are followed by introduction of the Board of Inquiry, the technical panel, and parties and their coordinators (see Appendix M). The IIC will usually be the first witness, and he/she will make an opening statement summarizing the progress of the investigation. The IIC will not be questioned by the parties to the hearing. Each subsequent witness is called, sworn in, and qualified in the order he/she appears on the witness list and is then questioned by the member of the technical panel identified on the list, according to the predetermined areas of inquiry. The Board's technical panel should refer all of its questions for a witness to the panelist assigned to that witness. Other panelists will not typically ask follow-up questions.

Each party coordinator is then given the opportunity to ask questions, with the members of the Board of Inquiry asking any remaining questions. There will normally be only one round of questioning for each witness. After all witnesses have been called, the Chairman of the Board of Inquiry

reads the closing comments and adjourns the hearing.

#### **4.5.3.1 Techniques for Questioning Witnesses**

Asking proper questions at a public hearing requires that the investigator: 1) become thoroughly familiar with the relevant exhibits, 2) demonstrate mastery of the subject matter the witness will be questioned about, 3) ask brief questions that require the witness to effectively address the issues, and 4) listen to the answers and ask follow-up questions when warranted.

To prepare for these tasks, the investigator should thoroughly read each appropriate exhibit to gain the requisite familiarity and underline or note sections of the exhibits that could generate comments from the witness. Become familiar with the actual or expected expertise of the witness.

There are two ways to prepare and conduct questioning of a witness: 1) write the questions you wish to ask in advance, in the order you expect to ask them, or 2) write out the areas of questioning you expect the witness to address. Each method has its advantages and disadvantages. The major advantage of the first method is that you will not overlook any one question. On the other hand, this method may limit your ability to ask follow-up questions in response to a particular answer from the witness. The latter method provides the most flexibility in tailoring questions to the responses of the witness, but it may allow some questions to be overlooked. Prehearing discussions with the assigned witnesses will allow the panelist to more completely outline the questions needed or testimony desired at the hearing.

Questioning of each witness should begin by establishing the identity and business address of the witness (if this has not already been done), the expertise of the witness, and his/her relationship to the issues of the accident. This will typically be performed by the hearing officer. Then, the panelist will direct specific questions about issues relevant to the expertise of that witness.

In addition to the wording of the questions, many factors can affect the quality of the hearing. Tone of voice, mannerisms, attitude, and demeanor of the questioner can be communicated to the witness and affect the nature of his or her answers. Because of the public nature of the hearing, it is of utmost importance to be professional at a public hearing. At all times, strive to be fully prepared, ask questions in an objective manner, and treat the witness with respect.

#### **4.6 Subpoenas/Sworn Testimony**

Section 304(b)(1) of the National Transportation Safety Board Act of 1974 grants authority to issue subpoenas to Board Members, Administrative Law Judges, and any officer or employee duly designated by the Chairman. The law authorizes any duly designated member of the Board to hold hearings, sign and issue subpoenas, administer oaths, examine witnesses, and to receive evidence at any place in the United States.

Subpoenas shall be issued under the signature of the Chairman, or his/her delegate, and may be served by any person designated by the Chairman or delegate. The power of subpoena must be used judiciously. The information or testimony being sought must be advisable and necessary. There

are two basic types of subpoenas: one for the appearance of a person to testify and produce records, and one for the production of records only.

The procedure for issuing subpoenas is as follows:

- (1) Each investigator who is likely to serve as an NTSB IIC of accident investigations conducted by the Board, or any officer or employee of the NTSB who is likely to have need for issuing a subpoena, should carry or otherwise have available a supply of blank subpoenas (NTSB forms 6100.1 and 6100.8)
- (2) When there is a clear need to issue and serve a subpoena, the NTSB investigator, officer, or employee should contact his/her Division Chief and indicate the need. If the Division Chief agrees, he/she will seek approval of the Director of OAS, who will obtain written authority from the Chairman. Any questions should be directed to the Office of General Counsel.
- (3) A form to authorize the issuance and service of subpoenas will require only the:
  - (a) identification of the accident
  - (b) Docket No., if available or applicable
  - (c) name and title of the authorized issuing official
  - (d) signature of the Chairman and date
- (4) When such authorization is executed, the authorized issuing official should fill out, sign, and serve the subpoena(s).

While the use of subpoenas is often related to public hearings, there occasionally are situations during the field phase of investigations when sworn testimony is required from selected individuals. Such situations include those in which there is conflicting evidence from different sources, reluctant or uncooperative witnesses, or highly controversial and critical information that requires transcribed sworn testimony.

When a situation arises that suggests the need for taking sworn testimony, the IIC shall inform his/her supervisor of the reasons and plans for taking the testimony and obtain the necessary authority to administer the oath. Generally, the IIC would be the person authorized to administer the oath; however, in some cases, the applicable group chairman or other NTSB investigator could be authorized. The IIC would also request the services of a court reporter under contract to the NTSB.

In most cases in which sworn testimony would be taken during the field phase of the investigation, the specific group chairman and party group members would participate, along with the IIC, who would oversee the proceeding. For example, if the testimony involved a pilot or flight operations manager, the Operations Group and the IIC would conduct the proceeding, with the procedures being very similar to the procedures followed during an informal interview. If the proceeding pertained to an aircraft maintenance issue, the Maintenance Records Group or relevant airworthiness group (Structures, Systems, or Powerplants) would take the testimony.

The provisions of 49 CFR 831.7 for witness representation apply when sworn testimony is taken. The representative may advise the witness, if necessary, when questions are posed; however, the representative may not disrupt the proceeding or address the other members of the group. Any conflicts or problems that might arise during the proceeding will be dealt with by the senior NTSB official present.

#### **4.7 Technical Review**

The Technical Review, one of the final steps in the factual phase of the investigation, provides the parties the opportunity for a final review of factual material obtained during the investigation. It allows the parties to raise any investigation problem areas so the issues can be resolved or at least addressed in the report preparation process. In addition, the Technical Review provides a formal review of the accuracy of information contained in the group chairmen's factual reports.

Board Order 70 specifies that the Technical Review be held as soon as possible after completion of the public hearing or fact-gathering, usually 60 to 123 working days from the day of the accident. The Technical Review should be held after group chairmen have completed their investigative activities, written their factual reports, and collected the documents that will complete the public docket of the Board's investigation.

Group chairmen and their Division and Office managers should be present at the Technical Review. All factual reports should be provided to the party coordinators with sufficient time to allow their thorough review before the date of the Technical Review. The IIC should begin the Technical Review by calling upon each group chairman, as necessary, to discuss the work of his/her group(s) during the investigation. Next, each party coordinator will be asked whether he or she has questions concerning the material presented in the particular factual report. Finally, party coordinators will be given the opportunity to suggest additional avenues of investigation or to submit additional factual information for inclusion into the public docket to ensure that the information is considered by the Board. If necessary, Division or Office managers should advise the group chairmen on how to address questions or suggestions from the parties. Discussions that are not substantive, such as wording and grammatical changes, or that don't deal with factual material should be avoided. The party coordinators should also be encouraged to submit their analysis, conclusions, and/or recommendations that they believe are justified by the facts of the investigation (see Section 5.8).

On some investigations a formal Technical Review meeting may not be held. In these cases, parties may be given the opportunity to comment, in writing, on the group chairmen's factual reports or a draft of the Board's factual report in lieu of attending a Technical Review. Under these circumstances, the parties should be asked to comment on the accuracy of the information and whether they believe additional avenues of inquiry should be taken in the investigation. Regardless of whether a formal Technical Review meeting is held, all formal correspondence between the parties and the Board staff should be retained for inclusion in the public docket.

#### **4.8 Party Submissions**

While the Technical Review provides parties with the opportunity to offer comments on the factual material, parties are encouraged to submit their proposed conclusions, recommendations, and probable cause under the provisions of 49 CFR 831.14, or, if a hearing has been convened, 49 CFR 845.27. If a hearing is held, closing comments by the Chairman of the Board of Inquiry will contain instructions on submitting proposed findings and conclusions. If a hearing is not held, the IIC will write each party coordinator after the Technical Review, and before the expected notation date, and inform him or her of the opportunity to present party submissions. It should be explained that the submissions should contain their conclusions, probable cause, and recommendations relating to the accident. The coordinators should be given a reasonable deadline for the submissions and reminded of the requirement to send a copy of their submission to each of the parties.

Submissions should be received by the Board in advance of the final report going on Notation for consideration by the Board Members. Parties should submit at least 10 copies of their submissions: one for each Board Member, the IIC, the Offices of Aviation Safety and Research & Engineering, the public docket, and one unbound/unstapled copy. Submissions may be addressed to the Chairman of NTSB but will receive more prompt distribution if sent directly to the IIC.

The IIC should distribute submissions to the Board Members, in association with the Executive Secretariat's distribution of the Notation Draft of the final report. In the event that insufficient copies of submissions are available and full distribution is not practical, the IIC may elect to distribute summaries of the major points of the submissions and retain copies for review by Board Members should they request one. The party submissions will be considered during development of the final report.

#### **4.9 Report Planning Meeting**

As stated in Board Order 70, a report planning meeting will be convened to discuss the report outline. All group chairmen, their supervisors, and Office Directors should attend. The IIC shall draft a memo announcing the date, time, and location of the meeting for the signature of the AS-10 chief and distribute it, with a planned outline of the report, to the group chairmen, their supervisors, and relevant Office Directors. The report outline should contain titles of the sections of the analysis, major conclusions, and areas of recommendations. At the conclusion of the meeting, all participants should agree on the major issues to be discussed in the report, recommendation topics, the thrust of the probable cause, and remaining deadlines. The IIC shall draft a memo after the meeting that summarizes the major points agreed to during the meeting for the signature of the AS-10 chief.

#### **4.10 Preparation of Final Report**

The format of the final report will follow the outline in Annex 13 to the International Civil Aviation Organization (ICAO). Sections 1.1 through 1.16 vary little from one accident to another, although certain sections will contain more material depending on the circumstances of the investigation.

Section 1.17, Additional Information, and the analysis sections will be drafted to reflect the major investigative activities of the groups critical to the issues of the particular investigation. For example, if extensive metallurgical documentation was performed, the issue to which the activities were performed may be appropriately described in a separate subsection of 1.17. If the airline's procedures were

extensively examined, they may be appropriately addressed in Section 1.17. In addition, certain issues will only be placed in that section; for example, a description of FAA surveillance of the carrier would belong in that section. Section 1.18 is reserved to highlight new, useful, or effective investigative techniques that were applied during the investigation. This section should briefly indicate the reason for using the techniques and the benefits derived, while presenting the results in the appropriate sections 1.1 to 1.17.

#### **4.10.1 Drafting the Report**

The final report will be based on information in the group chairmen's factual and analysis reports and will typically be drafted using one of two methods: 1) insert sections of group chairmen's factual and analysis reports, with little modification, as appropriate, or 2) draft the entire report to reflect the views of the group chairmen. Although either method is appropriate, the IIC/report writer should understand that, due to various individual writing styles, the "cut-and-paste" method can interrupt the continuity of the report and may require considerable revision.

Regardless of which method is used to write the final report, all factual material in the report must be supported by material in the docket and new factual material must not be introduced in the analysis. In addition, all calculations should be checked for accuracy and all figures, tables, and photographs should be checked for quality of reproduction. (Permission from Jeppesen-Sanderson should be obtained if their charts are used in the report.)

The analysis should begin with a presentation of the issues raised in the accident and the reasons for discarding possible factors from consideration as causal or contributory to the accident. An outline of the issues related directly to the probable cause should follow. Include conclusions about the operation, the airworthiness of the aircraft, and the certification of the airmen, followed by conclusions in the order in which the issues are presented. All conclusions, the probable cause, and recommendations should be supported by textual material in the analysis, and all factual foundation for the conclusions or discussions in the analysis should be presented in the factual portion of the report.

Each major section of the analysis should address one of the major issues, usually beginning with that of the probable cause itself. Each issue that is addressed subsequently in the analysis should relate less directly to the probable cause, with the final issues addressed perhaps unrelated to the probable cause itself, but related to important safety items nevertheless. For example, in a survivable accident believed caused by an operational factor, the first section of the analysis, following the presentation of issues, should address the direct cause of the accident. Contributing factors should follow, followed by other matters such as survivability issues. In addressing each of the major issues, the report should consider previous Board positions on the issues, previous and pending safety studies and recommendations, Board comments on FAA proposed rulemaking, and information contained in submissions.

#### **4.10.2 Report Drafts**

Board Order 70 states that a major report will be circulated three times before it is signed off by the Managing Director and forwarded to the Members of the Board as a Notation Draft.

(The notation process is the process by which items are sent to the Members of the Safety Board for their consideration and is fully explained in Board Order 2B.) The three drafts are referred to as the Initial draft, Editor's draft, and Directors' draft. At each level of review, reviewers are encouraged to correct any known discrepancies and make any substantive textual improvements. This process continually "adds value" to the draft report.

For a "compressed" report-writing schedule, there might only be Initial and Directors' drafts, in which case the OAS editor would get a copy of the draft report around the time the initial draft is distributed. In any event, the editor will maintain an integral role in the editing and writing of the report throughout the draft phase.

The IIC will internally distribute the Initial draft of the report to the Division Chiefs and the group chairmen assigned to the investigation. In some cases, statements of probable cause may not be included.

After comments and corrections from the group chairmen and Division Chiefs (and parties' submissions) have been incorporated into the initial draft, it becomes the Directors' draft. This internal draft is then distributed to the Managing Director, the Executive Secretariat, and the Directors of the Offices of Aviation Safety, Research and Engineering, Safety Recommendations, and General Counsel for their comments and corrections. (Copies of this draft are typically distributed to the Division Chiefs as well.) Once their review is complete, a Directors Review meeting will be scheduled to discuss the report. The OAS editor will also attend this meeting.

The internal Notation draft is the final version of the report and is transmitted, via the Managing Director, to the Board Members with a Notation memo, which summarizes the principal issues of the investigation and the final report. This package should be received by the Members for review approximately three weeks prior to the Board Meeting.

#### **4.11 Board Meeting**

The Board Meeting to consider the draft report, probable cause, and recommendations brings to completion most of the work of the investigation. Because the meeting is held in public, and because of the importance of the meeting to the investigative process, the necessity of adequate preparation for the meeting cannot be overstated.

The IIC will typically draft and distribute an agenda of the meeting and a chronology of events to the Board about five days before the date of the meeting to assist the Members in their preparation. The agenda should list the major issues of the investigation and cite the pages of the report that address those issues.

Board Meetings are called to order by the Chairman. He or she then describes the agenda items (the particular report or Board items being considered). The Managing Director will be asked to identify the personnel sitting at the staff table. After these actions, the IIC should read an opening statement into the record (see Appendix N). The statement should summarize the following facts of the investigation: the launch activities, parties to the investigation, investigative groups, key

findings, and major issues.

Graphics may be useful in presenting details of the accident and may include videos of the wreckage scene, poster-sized approach charts, site photos, mechanical parts illustrations, maps, and computer simulations. Effective opening statements and staff presentations will demonstrate the depth of the investigation and assist the Board Members and the audience in understanding the issues of the accident.

Board staff should prepare for the meeting by thoroughly reviewing material critical to the key issues of the investigation. It is not necessary to memorize the report or trivial information concerning the investigation (e.g., the distance between the takeoff point and main wreckage location). However, good preparation calls for anticipating questions that could arise during the meeting and including written notes or other documents to quickly locate key factual material during the Board Meeting. For example, the IIC should note such information as the flight times of the crew and their times in type, since these questions are often raised during the meeting. If any questions persist during preparation for the meeting, the IIC should locate the person responsible for that area and review the material with him or her. Know where key information is in the report for easy reference during the meeting. The IIC should assume that all questions will be directed at him/her and that he/she will be expected to answer them. Likewise, the group chairmen should fully understand all information relevant to their portion of the investigation.

Answer questions from the Board in a succinct and direct manner. If the IIC does not know the answer and cannot direct the question to someone on the staff, he/she should say so. Staff should avoid sounding defensive in their answers. Facts should be referred to as such, provided that they are addressed in the report. References to conclusions or causes of the accident should be avoided, as these become finalized only after the Board has voted on them.

The Board may adopt the report in its entirety, adopt the report with changes discussed during the meeting, or require further investigation or rewriting before approving the report. After considering the accident report, the Members will discuss and vote on the findings, recommendations, and the probable cause(s) of the accident. Dissenting Members may state their disagreements and include a written dissent for incorporation in the final report. Staff should make note of any questions or requests by the Members during the Board Meeting to ensure that they are properly addressed in the final report.

#### **4.12 Petition for Reconsideration**

After the Members of the Board have adopted the report, recommendations, and probable cause, the parties or other interested persons can, under the provisions of 49 CFR 845.41, formally petition the Safety Board to reconsider all or part of the analysis, conclusions, or probable cause. When petitions for reconsideration are received, they must be promptly acknowledged, then assigned to staff for research of the issues raised. The assignment will normally be made to staff who were not initially involved in the investigation (if staffing and workloads permit).

To respond to a petition for reconsideration, determine first whether the petition has met the requirements for consideration by the Board, i.e., whether the petitioner has presented new factual material or has demonstrated that the logic of the Board's analysis was faulty. If this has been established, draft a formal response by the Board to the petition (see Appendix O). If the petition has met the criteria for consideration by the Board, recommend in the draft of the Board's response that the Members either grant a petition in its entirety, grant a petition in part, deny a petition in its entirety, or deny a petition in part.

The Board's response to a petition consists of three basic parts: a discussion of the original Board logic, a summary of the arguments or evidence of the petitioner, and the response of the Board to the petition.

Staff specialists should be involved in the response to a petition, according to the emphasis and content of the petition. Establish deadlines for reports, as needed. Incorporate their reports into the response. Begin the petition response with a brief summation of the accident, the relevant initial Board conclusions, the probable cause, and the areas in which the petitioner has focused the petition. Limit the response to a point-by-point discussion of the merits of the petitioner's argument and/or the quality of the evidence he or she has presented. The response to the petitioner should be designed to bring closure to the issues raised in the petition.

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## **5. OTHER INVESTIGATIONS**

### **5.1 International Investigations**

The Safety Board represents the United States in accident investigations involving overseas interests, under the provisions of ICAO Annex 13. This will typically occur in one of two situations: 1) an overseas manufactured, registered, or operated aircraft is involved in an accident or incident in the United States or its possessions, or 2) a U. S. manufactured, registered, or operated aircraft is involved in an accident or incident in the territories of another country.

#### **5.1.1 Domestic Accident**

If a foreign manufactured, operated, or registered aircraft is involved in an accident in the United States, the state (country) of manufacture, operations, or registry may send an Accredited Representative and advisors to participate in the investigation. The Accredited Representative is the leader of any officials from another country, such as airline and manufacturer advisors. Usually, the investigation will have already begun by the time the Accredited Representative arrives. On occasion, an advisor to the Accredited Representative, such as a representative of the airline or the aircraft manufacturer, will arrive before the Accredited Representative. Regardless, provide the Accredited Representative with all information given to party coordinators and thoroughly brief him or her on the progress of the investigation.

If necessary, explain NTSB rules and procedures to the foreign representative if he or she is unfamiliar with the NTSB's "open" style of conducting investigations and daily release of information to the press. In addition, explain to the advisors to the Accredited Representative, if present, the protocol of Annex 13 establishing official interactions between the NTSB and their organizations through the Accredited Representative.

#### **5.1.2 Foreign Accident**

Safety Board personnel sent overseas on an accident as an Accredited Representative or technical advisor represent the U. S. Government in the investigation. Be aware of the fact that Safety Board investigators are the guests of another country and have been sent to serve as the liaison between their investigation and the U.S. government and its advisors to the investigation. Do not attempt to direct the investigation.

Some Safety Board investigators, when working on an overseas investigation, may have difficulty adjusting to the pace of the investigative activities. Be patient and tolerant of an investigation that may appear to be conducted differently than a Safety Board investigation. Most countries to which you would be sent are signatories to Annex 13 and have personnel who should be familiar with its provisions.

Offer suggestions when asked or when diplomacy would permit. Offer technical assistance, such as in flight recorder readouts or metallurgical laboratory analysis, from the outset. Be sensitive to local customs and be aware of customs, expressions, or gestures that could cause offense.

The U. S. Accredited Representative should contact the U. S. embassy upon arrival in the host country and maintain contact with embassy representatives during the investigation to facilitate the interaction with the host government. Embassy personnel are knowledgeable of local customs and practices and can assist Safety Board personnel overseas.

As in a domestic investigation, communicate regularly with headquarters. However, because communications are sometimes more difficult, there may be no alternative but to telephone when the opportunity presents itself, rather than at a prearranged time. If possible, establish a time for the call in and obtain a private area to make the call. In some situations, the most effective method to place a call to headquarters is through the FAA communications center.

If the host country requests a report on the results of the work of the team, reports should be limited to factual documentation only. The host country may be advised as to appropriate conclusions observed by U.S. representatives, but should be encouraged to write the report. If asked for conclusions, seek the advice of technical advisors and NTSB management before advising foreign authorities.

If asked to transport material to the United States, explain to the foreign Investigator-in-Charge the implications of the FOIA, which precludes protecting information on most material that a U.S. government agency has gathered and brought into the United States. If a request for information on the material has been received, the NTSB is usually obligated to provide the information. If releasing the material will violate the rules of the host country, inform the host country's IIC of the rule. Consider taking possession of the material for the time that it will be needed in the United States and then returning it to the host country. In any event, written material, DFDRs, CVRs, and other recordings can be returned to the embassy of the country that is conducting the investigation as soon as it has been examined. At that time, the NTSB would no longer be subject to FOIA requirements.

ICAO Annex 13 urges the host country to supply participating governments with drafts of the final accident reports for their review and comment. Expect to comment on the draft after it has been received. Responses to the draft reports of major foreign investigations must be carefully coordinated with Office managers before release, as these comments may be included as an appendix to the final report. After the final report has been released, enter the report into the public docket.

Often the government conducting the investigation will issue recommendations on a U.S. manufactured or operated aircraft. The Accredited Representative should maintain contact with the host country's IIC and be prepared to act as liaison with U.S. government agencies or industry corporations as the final report or recommendations are being drafted. This will allow the Accredited Representative to collect information that the IIC or report writer will need during the preparation process. Similarly, the Accredited Representative should forward to U.S. government agencies or corporations the findings of the agency conducting the investigation when the release of the report has been authorized.

## **5.2 Accidents Involving Known or Suspected Criminal Acts**

Aircraft accidents in which criminal activity is suspected may involve the participation of

law enforcement officials in the investigation. In such cases, the Board should provide the law enforcement agencies with necessary access to evidence. In obvious cases of sabotage, murder, or other crimes, the criminal investigation will take precedence over the NTSB's investigation. If evidence indicates that a criminal activity was involved, the NTSB investigation will be conducted to the extent necessary to determine probable cause, address any safety concerns, and, where appropriate, to furnish requested assistance to law enforcement agencies. In the absence of any such evidence, the NTSB investigation will continue in its normal scope.

In any event, the importance of cooperation and communication cannot be overstated. Since the criminal investigation may overlap the Board's investigation, the IIC should explain NTSB procedures and the criticality of preserving and documenting certain forms of evidence. If any problems are encountered in this type of accident investigation, the NTSB's Office of General Counsel should be consulted.

### **5.3 Commercial Space Launch Accidents**

On June 5, 1989, a Memorandum of Agreement (MOA) between the NTSB and the Department of Transportation's Office of Commercial Space Transportation was signed. The MOA states that the Safety Board would be the lead investigative agency for any commercial space launch accidents that result in 1) certain levels of damage or loss of life or 2) the impact of expendable launch vehicle debris outside the impact limit lines of a launch range facility. The NTSB would then produce a report on the investigation and include findings, recommendations, and, if required, a probable cause.

Previous NTSB participation in commercial space launch accident investigations has centered more on the "human" elements involved than possible technical reasons for the accident or incident. Nevertheless, the NTSB will commit all necessary resources to investigate such an accident, and the same investigative and organizational approach, i.e., party participation and working groups, will be utilized.

### **5.4 Underwater Recovery of Wreckage**

Locating and recovering aircraft wreckage in the water will require a well-coordinated plan. Depending on the circumstances of the accident, locating the wreckage might require that the NTSB obtain such things as witness statements, weather data, and radar tracking data for the accident aircraft. Trajectory analyses may also be necessary to aid in locating the wreckage.

To assist in quickly and effectively locating and recovering aircraft wreckage in the water, the NTSB has an MOA with the Navy Office of the Supervisor of Salvage (SUPSALV), which will provide assistance in both the search and recovery of aircraft in the water. The MOA contains the names and contacts for the SUPSALV personnel.

SUPSALV personnel should be contacted immediately to initiate search and recovery planning. They will provide considerable assistance free of charge. For example, they will conduct an initial feasibility and practicality assessment for a potential search and recovery mission. Once they receive the probable coordinates of the accident, they can provide water depth and current information,

as well as bottom conditions. They will advise of the best contractors with which to work, and they will provide cost estimates for the mission. The NTSB should avoid direct contracting with the various companies that perform such work. SUPSALV functions as our contract office, which negotiates the best equipment for the best cost to perform the job.

SUPSALV will not initiate a contract without funding. Once the plan is approved and a contract is agreed upon, the MOA is activated by a letter from the Chairman to the Chief of Naval Operations (CNO). Once the CNO approves, a transfer of funds must take place so that work can begin. SUPSALV personnel will oversee the operation; appropriate NTSB and party specialists will also participate.

For aircraft accidents in which a CVR and/or FDR is installed, the recorders will probably have an ultrasonic underwater locator beacon (ULB) installed. The ULB automatically activates when submerged and operates on a frequency of 37.5 khz. The ULB battery is designed to last about 30 days; consequently, a search for the ULB signal must be initiated immediately. SUPSALV personnel can provide advice and on-scene assistance in locating the recorder ULBs. Procedures for handling recorders that have been submerged are contained in Appendix F of this manual under the FDR/CVR checklist.

Prior to the actual recovery of the aircraft, the respective personnel should be thoroughly briefed on the recommended locations for attaching cables, straps, hooks, etc. to ensure that the structure is properly raised with minimal damage. Use of specialists from the operator or the airframe/engine manufacturer for this task is essential.

Once wreckage is raised to the surface, immediate treatment with the appropriate solvents is necessary to prevent rapid corrosion of parts. Planning for such treatment must be done in advance.