U.S. DEPARTMENT OF HOMELAND SECURITY

U.S. COAST GUARD

MISHAP ANALYSIS BOARD (MAB) HANDBOOK

U.S. COAST GUARD MAB HANDBOOK (MABH)

PREPARED BY U.S. COAST GUARD WASHINGTON, D.C. 20593
2014 EDITION

Please provide comments on this manual to:

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Introduction

Consider the guidance and advice provided by CG-1131 at the time of the mishap the most up-to-date information. COMDTINST M5100.47 and other manuals may not have been revised with the latest requirements and guidance. Please question CG-1131 if you have concerns about conflicting advice.

Supporting mishap analysis documents and tools such as the Medical Officer CD/website, the VFDR User Guide, HFACS and the MAR format should be downloaded from the Aviation Safety website for the latest versions. The CG-1131 Advisor can also provide the latest versions.

The term MAB will always refer to the COMDT-appointed mishap analysis board, while the term PMB refers to the unit's mishap board, usually headed by the unit XO.

The PMB's main function is preserving, protecting and securing the evidence not investigating or "solving" the mishap. The PMB president is primarily a manager of those actions necessary to gather and preserve evidence, much of which is not at the mishap scene.

Executing the Unit Mishap Response Plan

What happens on the first day amounts to people and agencies executing planned responses to a disaster. Think of it as the memory steps for an emergency procedure. The mishap unit has three immediate duties; all have precedence over evidence collection and other activities.

1. Get medical attention for survivors;
2. Notify the operational chain of command;
3. Inform next-of-kin of those injured, missing or dead.

Initially the Unit PMB President will be in charge until relieved by the Commandant MAB President. The PMB President is not a seat-warmer, but has authority and responsibility to direct the unit's response and the Unit PMB until replaced by the MAB President.

NOTE: The sole purpose of the PMB is to gather, preserve, and protect evidence. Investigative action is normally limited to determining what evidence exists. The PMB should not be attempting to analyze evidence or determine the causes.

Initial Notification of Board Appointment

- The Unit PMB will commence and finish many of the initial actions while waiting the arrival of the Commandant's MAB. The MAB President and other Members are not expected to be on scene for at least **72 hours**.
- A mishap has occurred. An aircraft is down. You have been appointed to the MAB. Tell Schedules you are out until further notice. Pass your work to someone. Delegate and transfer your responsibilities/work. You will not be responsible for your primary duties while the MAB is convened. This applies to all MAB Members.
- Explain to your family your new responsibilities.
- You don't have to have orders to travel, time is important, not paperwork.
- CG-1131 will provide the names and contact information for the other MAB Members.
- MAB President should try to call the PMB President or unit FSO to get an overview of the mishap and pass travel plans if known. They will be busy, but you are their relief. It is good to be kept in the loop on what is being done and any problem areas. If you must discuss privileged information, keep it private.
- The Unit PMB can give some idea of the local and mishap site conditions; this will help with packing.
- A CG-1131 Advisor will be appointed for Class A and B mishaps where a COMDT MAB is assigned. The CG-1131 Advisor is not a member of the MAB but there for advice and to help the unit and the MAB get the analysis going.
- CG-1131 will schedule a conference call with the MAB Members, the mishap unit, and the 1131 staff to discuss the process, what is known and what is expected. Take notes, but remember the CG-1131 staff is just a call away and are ready to support the MAB.
- Mishap analysis duties for all MAB Members shall take precedence over all other duties. You now work for CG-1131 (the appointing authority) and the Commandant Safety Board (CSB/Tri-P).

First 24 Hours After Arrival at the Mishap/ Unit PMB Passdown

MAB Members should not go to the mishap site UNTIL directed by the President. MAB Members should gather either at the lodging site or the work site before going to the mishap scene. The CG-1131 advisor can provide an initial brief of the MAB process. This provides an opportunity to delineate tasking, establish the MABs purpose and avoid wasting time due to duplication of efforts. It also gives the President an opportunity to assess members' qualifications. The first meeting permits the MAB to collectively examine itself for gaps in expertise. The Unit PMB will be prepared to provide a hand-off or passdown. Have a representative present for each MRP checklist and department. Pool information and take notes.

Information quickly exceeds memory. Evaluate information. Is it authoritative, first-hand, without speculation? (The passdown is not a deliberation or discussion of what may have happened or why.) All members of PMB and the MAB will attend. Grasp the following information:

- What has been done and where the evidence collection process stands and who was responsible for certain aspects.
- Lay out what they have done, noting what has and hasn't been accomplished per the unit MRP and why.
- Establish who played what role, who was where, who has been to the mishap site.
- Mishap Context (mission, equipment, route, location, weather).
- Damage to aircraft and surroundings.
- Survivors and causalities (crew, passengers, ground personnel).
- Agencies responding or on-scene.
- All rescue, salvage, and recovery activities that may have changed the condition of wreckage or position of fatalities. However, do not pass judgment on these actions.
  - Have a set of photos of the mishap site and maybe others on a contact sheet. Do not waste resources on enlargements, other than general overviews (preferably aerial) of the site.
  - Provide contact information for all PMB members, key unit personnel and anyone who worked on the initial response.
  - **After the brief**, the members will meet with their counterparts for more detailed discussion and to account for/collect all the evidence (i.e. impounded pilot/aircraft records, weather, initial interviews, maintenance training records, tool boxes, aircrew medical records, etc.). Have the PMB show the MAB the wreckage and lead an initial walk through of the mishap site, **then cut the ties**. The PMB members should still be available if needed but will not be actively involved in the mishap analysis from this point.

What Are My Priorities / What Has Been Completed?

1. Survivors.

- Where are they?
- What is their condition?
- Have they had medical exams?
- Have toxicological test/samples been taken?

- Who's talked to them?
- When will they be released by medical?
- When will they be available for CISD? CISD debriefing shall not take place until after the MAB has conducted their interviews. Survivors must have a medical exam and toxicological samples taken. Survivors should be interviewed and asked to write a statement.

2. Wreckage.

- Where is it?
- Who owns the property?
- What is the general layout?
- Who is guarding it? How long will they stay?
- What is the local authority structure?
- Was there any civilian property damage?
- Will the wreckage have to be moved immediately?
- Who wants the wreckage moved/held in place?
- Was there any classified material or crypto equipment on the aircraft?
- Are munitions (including initiators/CAD/squibs) involved? What is the status?
- Are there any composite materials involved?
- Is special handling (parts protection) required?
- What is the best way to get there?

3. Deceased/Remains.

- Have remains/personal property been located?
- Have the remains been recovered?
- Have toxicological samples been taken?
- Has a FS/MO examined the scene?
- Positive identification?
- Has JPC been requested? Contact CG-1121.
- Are autopsies planned?
- Jurisdiction (military coroner/medical examiner)?
- Civilian casualties?

4. Site Security/Scene Jurisdiction.

- On Federal property - our wreckage and property.
- On state property - our wreckage, but not our property.
- On private property - our wreckage, but not our property.
- Local authorities.
- Police.
- Private guards.

On base, crash/fire/rescue and medical squads respond to evacuate survivors and suppress fire, security responds to cordon the aircraft and restrict bystanders' access.

Off base, the civilian equivalents will arrive first (proximity) and probably have jurisdiction. Military units will assist and possibly relieve. A municipal fire department will do its best with

available equipment, but may or may not to be familiar with military aircraft. The local police or sheriff will normally provide initial security off-base. They will expect you to provide your own security ASAP and not later than 12 to 24 hours. If the mishap site is located away from home unit, the nearest military facility may assist with security. Work with that base's safety officer and CG-1131. The mishap unit should request local police or the nearest military installation security force stand guard pending the MAB's arrival. Consider the possibility of using USCG MSST, PSU, or Strike Team unit. The unit FSO should have a pre-planned brief for security personnel addressing:

- Identification of personnel with authorized access to the site.
- Limits of their authority.
- Not disturbing wreckage or ground scars.
- If they should be locating and flagging far-flung debris and photographing.
- Responses to press inquiries.
- Souvenir collectors.
- Anticipate a crowd. A disaster site is a magnet for the curious. Anyone on site who is not part of a solution is a hindrance, and a risk to both their safety and yours.

Requests will come from press, government and military personnel who drop by. The site is yours to conduct an analysis; you are not obligated to run tours. Refer press to the unit PAO. Ask government officials and military personnel their jurisdiction/capacity and "What can you do for me?" This includes the mishap unit CO. If the visit has merit, provide escort, keep it short and do not disclose privileged information. Do not feel obligated to grant access just because of rank or organization, this includes the mishap unit CO. Personnel conducting concurrent investigations have a legitimate need for access to the site to view the wreckage. They should not disturb evidence without prior consultation and consent.

If the aircraft is located on private property, cultivate the owner's cooperation.
A landowner can alleviate some security and crowd-control burden by making trespassers unwelcome. He can authorize cutting a fence or blazing a trail through his crops or he can tell you to hike around a quarter mile section for a less advantageous access. It pays to be nice to the landowner. The same applies when working with state/national agencies, Bureau of Land Management, and so forth.

Off base, be mindful of the nuisance created to land owners and their neighbors. Bring in a portable toilet. Don't litter, trample crops or bother livestock.

5. Initial Messages and Reports. See Chapter 3 of the SEH Manual and Message section of this handbook (The PMB is responsible for these reports until relieved by the MAB.)

- Telephone call to CG-1131 or NCC (NATIONAL COMMAND CENTER).
- Preliminary (12-hour) message.
- Progress (72-hour) message. Done by the mishap unit if the MAB has not arrived.
- MAB Arrival Message. Can be combined with the 72-hour message.
- Subsequent Progress reports as required or directed by CG-1131.

6. Witnesses/Statements. See Enclosure 10 of the SEH Manual and Witness/Statement section of this handbook.

- Were there witnesses?
- Who are they (names, addresses, and telephone numbers)?
- Will they be available?
- Who has talked with them?
- Do you need a translator?
- Are "Witness Statement Promise of Confidentiality Advisory Form" needed and signed?
- Locate and interview witnesses ASAP. This will be a primary job for several MAB Members for the first couple of days.
- Promises of Confidentiality will be granted individually (on a witness by witness basis) and are not given automatically or on a blanket basis to all witnesses interviewed.
- Promises of Confidentiality should not be implied from the interviewer's status or function. See Enclosure 10 of the SEH Manual.
- A "Witness Statement Promise of Confidentiality Advisory Form" (See Enclosure (2) of the SEH Manual) shall be attached to each witness statement.
- Witness Statement Confidentiality. A "Promise of Confidentiality" may not be given until such time as Commandant (CG-1131) convenes a MAB. Only the MAB President may grant a promise of confidentiality. A promise of confidentiality may be given to any USCG personnel who the MAB President, in their discretion, determines should be extended such a promise. These promises should be given only as needed to assure forthright cooperation of a witness. A promise of confidentiality may be granted to any Coast Guard personnel who provide the MAB information, if it is believed the individual will not provide a candid statement without the offer of confidentiality.

NOTE: Promises of Confidentiality only apply to USCG employees (active duty, civilian and sometimes contractors). Do not offer confidentiality to bystanders or others. A list of all witnesses interviewed shall be included in the MAR annotating whether the individual was offered and/or accepted the promise of confidentiality. This is just a list of names and contact information and not the statements.

7. Logistics

- What transportation do we have/need?
- Communications with mishap site.
- Nearest phone/work area/fax machine at mishap site.
- Local base support?
- Have crash site security, shelter, sleeping, clothing and food problems been arranged?
- Local maps, phone numbers and area listings (welcome aboard packets work good).
- The PMB should provide contact information for all PMB members, key unit personnel and anyone who worked on the initial response.
- On base work area for MAB.
- Take food, water and clothing sufficient to RON and to endure unexpected precipitation.
- Have communication from the site to base or some other command post (sheriff, police, fire, and ambulance). You might in some cases establish a command post off-site.
- If the mishap site is remote from a base, the MAB will probably be in commercial lodging; adjacent rooms make musters and passing the word easier. Obtain a meeting room in the hotel or

reserve a room with a suite for daily meetings. Contact CG-1131.

8. News Media/PAO. See Chapter on News Media and Public Affairs.

- The USCG Public Affairs Officer (PAO) is the point man for the media, NOT the MAB or FSO. Remember: Nothing is "off the record."
- Has the local PAO been briefed to clear releases through the MAB President?
- What news releases have been made? The MAB President is NOT a press spokesman. He is the final release authority for information (including electronic/digital media, photographs, etc.) from the MAB. But he/she will not communicate directly with the news media or others outside the MAB chain. CG-1131 should be consulted regarding release of any mishap information. Be prepared to provide the following factual information for the Initial News Release:
    1. A general description of the type of mishap (crash, mid-air collision, and so forth).
    2. The time and location.
    3. The aircraft's departure point.
    4. Destination (unless information is classified or other sensitivity precludes release).
    5. The number of crewmembers and passengers.
    6. The type of aircraft.
    7. Unclassified facts about the mission when the mishap occurred.
    8. The fact a MAB will investigate the mishap and this can take several months to compete. When possible, a simple photograph or two of the mishap site can be used to "de-fuse" the media frenzy for pictures. The MAB can release these; consult with CG-1131.
- Avoid nondescript phrases, such as "on a routine training flight." Instead, describe the purpose of the flight, such as, "an instrument training flight", and give as many facts about the route, altitude and mission as security permits.
- In order to do a proper job, the MAB President will need to work with the PAO.
- It is very important accurate information is released to the public after a mishap, as soon as information is available. Such action demonstrates concern for the public and its right to unclassified facts.
- Even more important, the speedy release of information will prevent and dispel rumors that could cause panic or promote misinformation in media reports.
- CG-1131 will attempt to serve as a central source for mishap information for CG requestors. The MAB or mishap unit shall provide non-privileged digital pictures of the mishap scene to CG-1131.

9. Miscellaneous Reports.

A mishap involves the entire unit; this is evidenced by the sheer volume of reports required following a mishap. Sometimes the FSO or the MAB President is looked upon as the source of "what to do next." Mishap units should refer to the current edition of Directives, Publications and Reports Index (COMDTNOTE 5600) and current editions of specific directives to ensure they are meeting all requirements. Knowledge of the various reports in existence is helpful, **BUT** MAB Members need not get involved in the preparation. The MAB may need to provide information, but the reporting requirements belong to someone else.

The Administrative Investigations Manual, COMDTINST M5830.1 (series) contains a comprehensive summary of USCG investigations and reports.

Legal Investigations. Instructions, requirements, and procedures for legal investigations are contained in the Administrative Investigations Manual, COMDTINST M5830.1 (series) and the Claims and Litigation's Manual, COMDTINST M5890.9 (series).

***Procedures for claims against or in favor of the Governmen*t** are contained in COMDTINST M5890.9 (series).

Procedures for property loss claims by USCG personnel are contained in COMDTINST M5890.9 (series). See the Property Management Manual COMDTINST M4500.5 (series) for loss of government property.

Investigations involving the National Transportation Safety Board and/or Federal Aviation Administration are covered in the joint instruction, Participation in a Military or Civil Aircraft Accident Safety Investigation (AFI 91-206(I), OPNAVINST 3750.16C, COMDTINST 5100.28A, and AR 95-30).

Fatalities and Critical Injuries Notifications. Procedures for notification of next of kin are contained in the Personnel Manual, COMDTINST M1000.6 (series).

Procedures for notifying the Commandant are in COMDTINST M1000.6 (series).

Procedures for release of names to the public are contained in the COMDTINST M1000.6 (series) and the Public Affairs Manual, COMDTINST M5728.2 (series).

Funerals, survivor benefits, and other information are contained in COMDTINST M1000.6 (series).

Procedures for critical incident notifications and communications are in Critical Incident Communications, COMDINST 3100.8A (series).

NOTE: In the case of casualty reports and NOK notification, 24-hour time limits apply. These reports are NOT the responsibility of the MAB President.

MAB Management

The CG-1131 Advisor should give an overview to the MAB on the mishap analysis process, HFACS, the analysis process and the MAR format. Also, the CG-1131 Advisor will explain what the MAB is expected to accomplish and the functions of each member. Most are doing a MAB for the first time and only have a vague idea of their responsibilities. Remember the CG-1131 advisor IS the expert at this point.

As MAB President, after these briefings, let the MAB know what is expected and what you (the President/CO) expect from them. If you're there, they may assume they have to be there and if you like to work until 2300 every night that can lead to serious fatigue.

Do introductions and have each member list their background and experience. MAB duties or tasks should be distributed to each member to accomplish separately, but in as a coordinated effort. Prioritize or redistribute tasks as needed. **Organization will be key to the analysis.**

Encourage teamwork, but consider and allow people to work their own schedule. Also discuss the value of going to the gym/running, proper eating, etc. Strongly encourage maintaining personal exercise schedules. Establish your bag rules and crew rest.

Determine what needs to be done immediately, what has already been done, what can be done, how and by whom. Review the known circumstances, review the material received from the PMB and develop a game plan.

Do not dwell on the difficult or impossible; take this as a cue you need (external) help. Ask if you need assistance or aren't sure how to get things done, this is where HQ does their thing.
HQ knows how things work and has the big picture. Don't hesitate to call, they are the experts and can help locate/identify subject matter experts or institutions.

Have tasks pre-planned to ensure important items get accomplished. Do not rush into things; take time to consider downstream consequences of actions particularly pertaining to evidence.

Admin or YN support.

It is best to get someone TAD vice using unit or local personnel for Admin support. (Personal life, connections to mishap unit or crew can, and will, interfere).

The MAB's initial attention should be on obtaining or recording the evidence that is most perishable by human activity, frailty, or forces of nature. A safety analysis has precedence over other analyses for access to evidence, but the MAB has a duty to preserve evidence and account for changes resulting from handling and examination of the evidence.

Task Groups are one way of ensuring all areas are investigated. Assign one member as leader of each task group plus as many other members as necessary to provide good coverage. Individuals will also have specific tasks assigned according to their special training or experience. Members may be part of more than one group. Some examples are as follows:

- *Operational Task Group.* Ensures the proper clearances, procedures, risk assessments and techniques were used and overall supervisory involvement was adequate.
- *Interviewing Group.* Organize and conduct witness interviews.
- *Personnel Task Group.* Evaluate unit's training and match-up of personnel and mission.
- *Maintenance Task Group.* Responsible for analysis efforts at the mishap site, ALC or laboratory. Responsible for screening maintenance records and procedures; wreckage movement and shipment.
- *Aeromedical Task Group.* Analysis of crew injuries, aviation life support equipment and overall analysis of the human involvement.

The MAB must share access to real/factual evidence (non-privileged), whenever possible.
Most evidence is not privileged. Know the difference and treat the different types with appropriate care. See Enclosure 10 of the SEH Manual.

A continuing concern for activities surrounding MAB activities is personnel safety.
Think outside the box. View problems from various angles. This applies to wreckage recovery, exploring the evidence, how things work, the order, and consequence of procedures...anything.
The President sets the tone for the MAB. If the President applies himself/herself diligently, the other MAB Members will follow by example. If the President allows himself/herself to be distracted by their 'real job', MAB members will do the same.

Personnel on the periphery look to the MAB for guidance and example; they will presume you know what you're doing. If a MAB Member handles evidence roughly or fails to take precautions for hazards, others will emulate.

The MAB and their activities are the focus of considerable interest and attention. The MAB should not add to such activity, nor spend time chasing or refuting others' speculations.

The MAB owns everything, unless NTSB or CGIS takes over the analysis/investigation. The MAB works for CG-1131.

Try hard to route calls and inquiries to HQ. Use CG-1131 as a clearinghouse. Those with a true NEED to know will know and use the proper protocol. Do not worry about offending anyone.
Beware of a lack of objectivity. Many analyses commit to a particular point of view too early and spend the rest of the analysis ignoring facts that conflict with that point of view. Good investigators share at least three attributes:

1. They are not afraid to be wrong, they accept facts contrary to their present theory.
2. They readily admit they don't know everything. When they need help, they seek help.
3. They listen to the others. They don't necessarily believe them, but they listen to them.

Coordinating with the AIM.

The MAB President coordinates with the AIM President regarding the initial view of the mishap site and provides factual information to the AIM as soon as possible.

- **DO NOT** release analysis, findings, causes, recommendations or witness statements.

- **DO NOT** release videotapes of simulated, computer-generated animation or re-enacted portions of the mishap flight if they involve analysis or deliberations.
- **DO NOT** release the Medical Member's analyses.
- Whenever an AIM investigation is convened, provide all non-privileged evidence to the AIM. Evidence transfer should be in writing. The AIM board will be responsible for final disposition of all material released to them, unless other arrangements are required.
- The MAB President shall provide factual (non-privileged) information to the AIM as it becomes available, but not to the detriment of the safety analysis. This information includes logs, directives, non-staged photographs, and pre-mishap medical records. Also provide recordings/transcripts of air-to-air, air-to-ground, ground-to-air voice transmissions, as well as cockpit voice recorder (CVR) and flight data recorder (FDR) tapes from the time of the mishap.
- Tapes of aircrew conversations are not protected by the military safety privilege, but under USCG policy and the Privacy Act, they are not released to the public. Transcripts can be releasable. Only those individuals with a need to know will be allowed to hear the actual CVR recording.

    - **NOTE:** IAW the Privacy Act, all USCG analyses/investigations are bound to protect privacy information. If the CVR tapes will be transcribed, limit the transcript to portions relevant to the mishap sequence. Deletions should be indicated. Videotapes of simulated, computer-generated animation or re-enacted portions of a mishap flight are always privileged if they were made with the involvement of MAB Members or personnel with knowledge of privileged mishap information. Do not release to the AIM. An animation, simulation, or reenactment, with crew voices, not otherwise privileged, speculation or pre-decisional, can be provided to the AIM or other USCG investigation. For fatal mishaps, under USCG policy, audio recordings of the mishap crew are not releasable outside the USCG due to the privacy interests of the surviving family members. Provide original films and videotapes depicting the actual mishap sequence to the AIM. This includes videotape recordings of the heads-up display (HUD). For non-official videotapes or films made by individuals, make copies for both the AIM and the MAB and return tapes to original owners.

The PMB does represent corporate knowledge and must remain available to the MAB. They generally do not need to remain readily available more than a week or so after the MAB convenes. They should not assume they are no longer needed until excused by the MAB President. Do not forget to remove PMB members from the crash site and wreckage storage access rosters. There will be other investigations conducted concurrently, wanting to use the same body of evidence, same witnesses and technical resources. The MAB must not spoil evidence and must afford other boards access to crash site, wreckage, evidence (logs, records, ATC tapes), and a list of witnesses. This does not extend to MAB work product such as privileged statements, tapes or notes of interviews, drawings, etc.

It will be necessary to communicate with those in charge of the other boards to arrange their access to evidence and factual information.

If the MAB discovers a hazard, posing an imminent threat to flight safety, requiring notification to the aviation (military and nonmilitary) community, the MAB President shall notify CG-1131 immediately. A follow-on CGMS message is recommended, working in collaboration with CG-1131. CG-1131 will notify the appropriate USCG offices, programs and

other agencies to ensure proper action is taken. The President is the focal point for communication concerning the board's progress and the only conduit for external release of information, unless he approves otherwise.

Try hard to route calls and inquiries to CG-1131, use them as a clearinghouse. We try to protect the MAB and unit---let us. Usually if you tell callers to contact CG-1131, they go away. Those with a true NEED to know will know and use proper protocol. It is usually those without a need to know who come directly to you. Do not worry about offending them. Our goal is to protect the MAB from outsiders and outside pressure.

Not every inquiry merits an immediate or personal reply. It is sufficient to inform CG-1131 of your progress and needs for assistance. Everyone else can read the mishap message.

Work Spaces.

CG-1131 will work with the mishap unit or facility nearest the mishap to provide the MAB a secure space to work and conduct business. The room must be for the exclusive use of the MAB, isolated or removed from the mishap unit, where possible. The mishap/host unit should set up these accommodations before the MAB arrives. Until the MAB space is established, use the unit safety office. In general, they will need two rooms minimum, one to conduct interviews and later for private discussion and one room for writing and working as a group. The MAB is going to need more office accommodations than initially thought and likely more than the unit may be able to offer. Check the MAB room, can people see in, can a passerby hear discussions? Ensure the locks are changed and issue everybody on the MAB a key. Post signs on the doors that an MAB is in progress and entry is restricted and by escort or approval only. If the workspace offered isn't adequate, ask to be relocated and do it as soon as possible.

Don't take no for an answer unless you are convinced no is the answer. Persist long enough to determine whether denial is based on lack of resources, incapacity, lack of authority, or unfamiliarity with what you want. For a mishap remote from a USCG unit, CG-1131 may authorize renting a meeting room or occupying a hotel suite. Equipment can be rented.

Assigning Responsibilities.

- See MAB Member Duties of this Handbook
- Use MAR table of contents.
- Outline report and designate writers.
- Meet daily and reassess assignments.

Start by outlining the Narrative and posting it in the MAB room where all can see and discuss. This outline will take shape as the analysis progresses and you begin determining the issues. The outline will help the MAB determine who will write each section. To avoid confusion and headaches later, the MAB President should assign sections/Tabs during one of the early meetings. Assigning completion milestones is also helpful.
Do not wait until the last minute to start working on the MAR. Some sections can be built, copied, and set aside early in the analysis. You might feel manpower-limited. Cover more territory simultaneously by tasking members according to their topical expertise and availability.

Daily Activities.

- Meet daily to share information, discuss progress and direct efforts.
- Keep a running log/diary of what has been done and what needs to be done.
- Update progress.
- Cross-tell information.
- Review schedule, workload, etc.
- Plan future activities.
- Organize the data collected each day.

Meet frequently but briefly in the beginning; 30 to 60 minutes per session is sufficient. Until the analysis is well advanced, most of the information you seek will be outside the MAB room. Avoid deliberating at this time, what little is known will be insufficient to support deliberations. Pool information, have each member present the information they found since the last meeting and estimate time to conclude unfinished tasks. Note progress made and difficulties needing intervention. Close out finished business and make a record of findings to avoid duplicating efforts. Determine topics needing further development or additional personnel. Reassign as necessary. Determine if additional resources or personnel are needed.

Key Points.

- Fit the MAB to the mishap; keep it as small as possible, but as big as needed.
- Everyone supporting the MAB works for the MAB President, NOT their parent organization or the mishap unit. If this is a problem, it may be time to request a replacement.
- The MAB President works for CG-1131 and the CSB/Tri-P.
- Keep the lines of authority clear.
- Be flexible.
- Remember you are dealing with limited-use, privileged information; be cautious of discussions outside the MAB workspaces.
- Keep track of ALL documents and evidence.
- Keep track of who owns evidence and where it needs to go once the MAB is finished.
- Do NOT retain documents that are not needed; this includes extra copies, working papers, notes, drafts, tape recordings, photos, and other documents.

Managing the MAB Expectations.

- Set standards early.
- Provide breaks/time off (remember and enforce the 8 day bag rule).
- Work hours (avoid long day burn out).
- Need for discretion.
- Objectivity.
- Scope of responsibility.
- Efficient use of resources.

Remember to keep an open mind during the first few days of the analysis. Impress upon them the importance of just collecting factual information and not developing theories until you are ready for that phase.

It is going to take close supervision on the part of MAB to ensure damaged components are not lost or mishandled during movement and shipment.

Avoid the temptation to concentrate on any one area too early or to the exclusion of other areas. Lastly, be sure the conclusions fit the facts and not the other way around. Don't be afraid to dig into areas of command business to find causes. Supervisory error can occur in any chain of command.

Don't be put off by the statements "it's always been done this way" or "the procedures are...". In many cases, people making those statements do not know what is really going on.

***Technical Experts/Observers*:** Use them to the fullest extent possible, but be careful not to let them become too deeply involved in other aspects of the analysis.

Guidelines for Effective Analysis Management.

While conducting the safety analysis, time will invariably prove to be the most precious commodity. You and all MAB Members must use it judiciously. Post a sign-out chart somewhere convenient to the main door to the work area. Have each MAB Member fill their departure time, estimated return time, destination, and remarks. This will become very obvious if you ever need to track someone down.

Post a progress log in the MAB meeting/conference room. The basic information may be amplified with columns indicating the MAR sections, responsible individual, draft complete, Tab complete, and comments. This will provide a progress report at the start and/or end of day meetings.

Only collect, only interview, only document what is needed. This applies to wreckage photos, audio, videos, and statements (e.g. you don't need the tail section if you know fuel wasn't flowing). Shred useless documents, return or destroy items not needed. Do not retain anything that is not useful. If it isn't going in the MAR, get rid of it!

Set up a filing system and a master index as soon as possible; consider the following minimum steps.

- Maintain an electronic and hard copy folder of messages.
- Establish separate folders for MAB and PMB messages.
- Remember to print messages out in "full view".
- Create folders for each MAB Member's drafts or "working" documents.
- Create a labeled folder for PAO public releases.
- Create a witness log. List all witnesses. Differentiate between those who were interviewed and those who were not. List their home and work telephone numbers, location at time of mishap and other contact info. This list will be given to the AIM during the handover.
- Create an inventory of items that will be handed over to the AIM. Include aircraft wreckage and its disposition, factual documents, photographs, maps, witness lists, original records, results of JPC reports, autopsies, and any other non-privileged information. Both the MAB and AIM Presidents should endorse this inventory and a copy kept by the MAB to show physical transfer of evidence.

Quit while you're ahead. Do not work a mishap site without light. Doing so increases risk of personnel injury and evidence loss. Post security and retire from the site before sunset to allow all to find their way back to familiar surroundings before dark.

If high daytime temperatures compel working in the area from sunset to dawn, thoroughly evaluate the site and wreckage by daylight to determine what can be done by artificial light. Stage generators well clear to reduce impediment to people and machinery moving about the wreckage, and to reduce nuisance noise and fire hazard. Obtain abundant mobile lighting before commencing operations by dark; move it as needed to aid work.

Encourage everyone's input, even non MAB Members. The MAB does not have the corner on solving the mystery. The MAB will not see everything; you may not recognize what you do see. Anyone working at the unit or working on an aircraft has some area of expertise. Anyone can provide important information.

Watch for possible signs of psychological trauma. A mishap can have a disruptive effect on everyone, regardless of experience, but can greatly affect those who have never been exposed to the confusion and emotions of a major mishap. MAB Members should also be honest with themselves when evaluating how they might have been affected by a mishap.

As the analysis progresses, stress and fatigue will increase. The flight surgeon/medical officer should keep an eye on folk's physical and mental health. Respect the 8-day bag rule and avoid long days as much as possible. Your team needs to be rested to do a good job.

Personalities on a MAB will vary. Typically there is one person who doesn't think like the rest of the group and may be a bit of an outsider. There is nothing wrong with this and having someone to challenge the group views is good. However, if somebody is having serious problems getting along or isn't pulling their weight, have them replaced. This also applies for your CG-1131 Advisor, if they are just not "fitting" in with the MAB or if there are other issues, do not feel like you are stuck.

Down the Road/When MAB is Recessed.

It is often necessary to recess and reconvene at a later time. This often happens when the wreckage is underwater or in a hard to access location or while waiting on teardown and lab analysis. Set up a schedule where all the members call in for a phone conference around 1100 (good medium for east and west coast).

MAB Member Description of Duties

MAB President.

- Commanding Officer of MAB.
- Organize first day meeting.
- Introductions and background.
- Review MAB Members abilities and strengths.
- Organize and oversee MAB tasking.
- Overall supervision of the analysis.
- The FSO and the MAB President must blend the separate perspectives of the MAB Members into a unified, complete portrayal of the mishap.
- The MAB President will establish that all initial interviews with USCG personnel and witnesses are under the MAB's domain. The President will release personnel to talk to other investigators (i.e. Admin Investigation Board) when no longer needed.

Flight Safety Officer.

The FSO or the PMB/Unit FSO (until the MAB FSO arrives) will work with other Members to:

- Ensure site security is being maintained.
- Ensure proper care of survivors and/or remains.
- Ensure wreckage is not moved, until authorized by the MAB President.
- Perform initial walk through. Make rough sketch or wreckage diagram.
- Identify hazards - mark them or make them safe.
- As time permits, begin second phase of walk through taking notes.
- Assist in identifying, locating witnesses and taking statements.
- Get weather observation from nearest weather facility.
- Provide MAB training as needed. CG-1131 Advisor can assist.
- Assess crash site security/logistic needs. Coordinate with appropriate local personnel.

As the mishap analysis proceeds, the FSO will:

- Coordinate the investigation at the mishap site.
- Assist Engineering Member, as needed.
- Supervise photography, may assist or actually do the photographing.
- Coordinate collection and compiling evidence and testing of theories.
- Prepare messages for President to release.
- Coordinate/oversee preparation of the mishap analysis report.

Advise MAB President on privileged nature of mishap data, statements, evidence, etc. FSO will assist with collection or determination of the following information:

- Weather.
- Impact point.
- Explosive and fire patterns.
- Design deficiencies.

- Violations.
- Airfield facilities and lighting.
- Communications and navigational aids.
- Copies of Recorded Communications.
- Oversees the diagraming, photographing and documenting of the mishap site.
- The FSO assists the President and coordinates the efforts of other MAB Members, technical experts and support personnel within the scope and parameters set forth by the President.
- Works with the CG-1131 Advisor to ensure proper investigative procedures are used, and the MAR is prepared in accordance with COMDTINST 5100.47.

To succeed at these diverse tasks, the FSO must not devote too much attention to a single aspect of the investigation. Other Members may be experts in their fields, but their expertise generally does not extend to the process of investigating.

Engineering Member.

Most of these tasks should already be accomplished by the PMB Engineer. MAB Engineering Member will relieve the PMB and continue the tasks. The FSO can help.

- Ensure wreckage is not moved.
- When the time comes, supervise wreckage recovery.
- Supervise wreckage recovery and shipment to ALC or laboratory, as directed.
- Supervise shipment of parts and components for teardown or analysis.
- Ensure constant chain of custody is maintained for all components shipped for analysis.
- Collect and impound all related maintenance records (paper and electronic).
- Supervise review of engineering records.
- Technical orders (status).
- Aircraft Engineering and Materiel Report.
- Product Quality Deficiency Reports.
- Technical and Engineering Evaluations of Materiel.
- Weight and Balance.
- Evaluate training, experience and supervision of unit maintenance personnel.
- Obtain samples (fuel, oil, hydraulic, oxygen) from mishap aircraft and ground servicing equipment. Label and mark (indelibly) samples with the source of the sample (Engine #2, Tail #XXX, etc.).
- Impound GSE, toolboxes and other maintenance equipment used on the mishap aircraft.
- Protect essential parts from the elements.
- Direct removal, re-assembly, teardown report, etc., of suspected components upon completion of photographic documentation.
- If required, request maintainers qualified on the mishap aircraft assist in locating/identifying aircraft parts.
- Document and gather evidence regarding flight controls, structures, power plants, fuel and oil systems, electrical, electronics, and instruments, hydraulics, pneumatics, etc.
- Collect and review other appropriate publications and directives.
- Assist President and FSO.
- Prepare engineering associated messages and reports.

The Engineering Member is normally a maintenance officer with experience in the mishap aircraft. Your chief function is to assemble as much information as possible regarding the history of the mishap aircraft, its most recent servicing, as well as the qualifications of the individuals who most recently worked on it.

The role of the Engineering Member in every mishap investigation cannot be overstated. You have the daunting task of completely recreating the mishap aircraft maintenance and servicing records and helping to inventory the wreckage itself.

The Engineering Member evaluates the mechanical condition of the mishap aircraft. You may also be called on to comment on depot quality assurance, possible design deficiencies, depot management, as well as overhaul, acquisition, or modification philosophies. Further, you will work with the Medical Member to consider human performance factors affecting maintenance personnel. You will be expected to objectively assess all factors, both human and mechanical that may have affected the mishap. Topics considered may include:

- Issues of training, perception, attention, perceived stress, fatigue, excessive heat or cold, possible drug use, and life styles.
- Issues like supervisory concerns, communication, peer influences, and various personal and community factors.
- Ergonomic concerns may be identified as possible factors in the mishap. Inadequate strength or inappropriate tool design to properly accomplish a task are examples.

In coordination with Stan Member and technical experts, record and take lots of photos of cockpit switch and circuit breaker positions and instrument indications. Ensure none were intentionally or inadvertently changed. Read through maintenance records, ask about the personality of the aircraft, any quirks, nuances. It is important not to get caught up in a complicated sequence of events or malfunctions that don't matter (does it matter if the brakes were working when the aircraft is upside down?) The MAB's tasking is to uncover all the factors contributed to this mishap in order to prevent similar mishaps. All GSE, toolboxes and equipment used to service the mishap aircraft should be impounded as soon as possible. If mission requirements dictate their early return to operational status, the PMB Engineering Member is responsible for ensuring they are fully inspected and all discrepancies documented for the MAB.

GSE or other maintenance equipment found with significant deficiencies that would normally result in their removal from service will be physically impounded and not examined further until after the MAB arrives.

Flight Surgeon/Medical Member.

Most of these actions should already be accomplished by the PMB.

- Supervise care of survivors.
- Ensure all mishap crew receive a medical examination and provide fluid samples.
- Written statements taken from all personnel regarding survival equip and egress.
- Document all injuries of crewmembers, passengers and others involved in the mishap.
- Determine who has jurisdiction over the fatalities.
- If no survivors: proceed to location of remains, take samples, prepare for autopsy.

- Once remains have been located and transported to a specific location, contact CG-1121 to coordinate JPC participation.
- Assist the AST/ALSE Member in investigating life support systems and survival gear.
- Prepare 72-hour history of mishap crews.
- Obtain medical/dental records of mishap crew.
- Complete Medical Officer Report (MOR). See Enclosure 3 of the SEH Manual. Many of your tasks are done in coordination with other MAB Members.
- The Medical Member is responsibility for the post-mishap medical history, examination, care and toxicological testing of mishap crewmembers.
- Ensure human remains are photographed, preserved and documented.
- You will act as liaison between local medical authorities, coroners and military investigators, including JPC personnel, if assigned.

Standardization Pilot/Aircrew Member.

The Unit PMB should have started many of these tasks.

- Assist FSO with security.
- Assist FSO and President in identifying and interviewing witnesses.
- Investigate crew qualifications, currency, proficiency and training.
- Obtain and screen training records.
- Assist with the administrative details of the MAB.

The Stan Members will be responsible for looking at the following issues:

- Crew rest.
- Mission.
- Mission planning.
- Required publications.
- Crew briefings.
- Preflight.
- Flight and personnel records.
- Flight Plan.
- Weather.
- Flight violations.
- Airfield facilities and lighting.
- Communications and navigational aids.
- Assist MAB President and FSO with review of supervision issues.
- Assist FSO in obtaining copies of recorded communications.
- Determine and draft statement of damage to private property.
- Assist the Engineering Member by recording and photographing cockpit switch and circuit breaker positions and instrument indications.
- Assist other members in identifying, photographing, and tagging significant parts, especially cockpit controls, warning and caution displays, and instrument panels.
- Collect and impound training records for mishap crew and others that played significant roles with the mishap aircraft, crew or flight.

The Stan (pilot and enlisted) Members should be qualified in the mishap aircraft type. The Stan Member's main function is to assemble as much factual information as possible regarding the history of the mishap flight and the qualifications of the mishap crew or others with significant involvement in the mishap.

Unit FSO/Admin Support.

Many of these items should be completed by the Unit FSO or other unit personnel. If admin support is assigned to the MAB they will perform these tasks. Otherwise, once the MAB has convened, these duties fall to the MAB FSO. Delegate when you can.

- Establish necessary contacts with unit personnel for support and assistance.
- Create a list of important POCs and other key telephone numbers.
- Ensure the availability of office supplies and other equipment.
- Identify local POCs for office equipment and supplies, communications and computer support, transportation, etc.
- Arrange for items such as foul weather clothing through the local supply department.
- Maintain a log of documents and evidence.
- Maintain a filing system to account for all evidence, statements and MAB proceedings (electronically and physically) to ensure security and prevent loss.
- Set up a system/method to log in and out all documents and evidence.
- Ensure administrative and logistical support is provided to the MAB.
- Act as control point for all incoming telephone calls and message traffic.
- Assist with the compilation, reproduction, assembly, and distribution of the formal report. Facilitate a smooth hand-off of factual material and evidence to the AIM.

NOTE: Work with the unit supply department or CG-1131 when acquiring or purchasing supplies and items to support the MAB. **DO NOT** charge expenses to a personal government travel card or claim on travel orders. This is in violation of USCG regulations.

If the mishap site's location is inaccessible, it may be necessary to arrange a regular or on-demand shuttle service. The CG-1131 Advisor can help. Work with the MAB President to obtain release of all such "reserved" transportation assets at the earliest opportunity.

AST/Aviation Life Support Equipment Member.

An ALSE member will be assigned to a MAB any time there is a death or a mishap involving aircrew equipment, egress, or survival. The AST/ALSE Member works closely with the Medical Member in many areas.

Your expertise in identifying malfunctions in egress, survival, or rescue equipment is invaluable. If any such deficiencies found, regardless of their ultimate contribution to the mishap sequence, contact CG-1131 and CG-41 immediately.

You are the expert and are responsible for investigating personal equipment, egress, survival, and rescue issues. This includes aircrew training in subjects such as physiological issues, personal equipment use, survival, egress procedures, and rescue.

Additional Primary Members.

- Aviation Engineering CWO or CPO.
- Additional FSO (with previous MAB experience).
- Surface Operations member for ship helo or boat ops mishap.
- Weapons/Aviation Gunner/Explosive Specialist.
- Air Traffic Control Officer.
- CG-1131 may appoint or the MAB President may request additional assistance.

These members can be designated as primary members or non-primary depending upon the circumstances and needs of the MAB. As primary members, at the MAB President's discretion, they may be included in MAB deliberations and if deemed necessary by the MAB President, they may sign the MAR. They should not be retained on site for longer than needed.

HFACS Specialists.

CG-113 has HFACS specialists who will be available to provide training and walk the MAB through the HFACS process. This can be done on-site or via teleconference. Schedule this early in the investigation.

Additional Support/ Non-Primary Members.

Administrative (SK, YN) assistance. Subject Matter/Technical Experts.

Individuals with special areas of expertise can be assigned to the MAB, when required.

The MAB President may request additional assistance through CG-1131. These are support personnel working for the MAB and while invaluable and important to the mishap investigation, they will not be involved in deliberations or interviews and will not sign the MAR. These personnel will only be on site while needed and not for the entire duration of the MAB.

MAB Messages

Current MAB message formats can be found in COMDTINST 5100.47. Initial notifications and Preliminary Messages should be completed by the unit PMB before the MAB arrives.

Arrival Message.

The MAB President shall send an arrival message notifying headquarters all MAB Members have arrived and the MAB has taken over the investigation. This information may be included as part of the 72-Hour message or as a Progress Message.

Either the **eAVIATRS** Mishap Message system or the Progress Message Format in Enclosure (14) of the SEH Manual shall be used.

72-Hour Message/Progress Message.

To the greatest extent possible, a Progress Message should be sent within 72 hours of a Class A or Class B mishap to the aviation fleet (use AIG 4907). See Chapter 3 of the SEH Manual for requirements. The unit will send if the MAB has not convened.

The MAB President may combine the MAB Arrival Message and the 72-Hour Progress Message. Progress Messages shall be sent thereafter at the MAB President's discretion or as directed. Use the eAVIATRS Mishap Message format when possible or the MAB Progress Message format in Enclosure (14) of the SEH Manual.

When new information or corrected information is added to the mishap message, the information is preceded and followed by XXX's. This alerts the reader to a change/addition. Changed information is substituted for the old or missing information in the text of the message.

- Addressees. COMDT COGARD WASHINGTON DC//CG-113/CG-41/CG-711// will always be the action addee.
- The originator will be the mishap unit noting the MAB President as the releaser (COGARD AIRSTA HADAMISHAP//CG TAIL # MAB).
- If the MAB is not located at the mishap unit, the messages shall be forwarded to the mishap unit for release.
- Specific Addressees may be added to the message. Before adding additional addees, ask "Do I need that organization/activity's assistance or does that activity have an interest?" Confer with CG-1131 if there is a question about who should receive the messages.
- Progress Messages should go to **AIG 4907** and any other appropriate AIGs (e.g., if need to expand to cutters, boat stations, etc). Confer with CG-1131.

NOTE: If the MAB discovers information seriously impacting USCG operations or needing immediate attention, the MAB President shall immediately notify CG-1131 by telephone. A message shall also be sent regardless of whether such information is associated with the mishap under investigation. CG-1131 will notify the appropriate USCG offices/program and other agencies to ensure proper action is taken.

MAB Recess and Reconvening Messages.

The MAB President shall send a message whenever the MAB recesses or reconvenes. In general, these messages only go to CG-1131/CG-41/CG-711 and other appropriate addressees and NOT the AIG.

Update Messages to the Field.

Update messages to the field are strongly encouraged depending on the mishap and the information available. These should be released anytime during the investigation that the MAB or CG-1131 determines it to be necessary.

The MAB will draft the message and CG-1131 will review and release.

These messages will go to the **AIG 4907** and other appropriate addressees.

Final MAB Message/MAB Adjournment Message.

A Final MAB or MAB Adjournment Message shall be sent when the investigation, analysis and MAR are complete.

The MAB process is not complete at this point; CG-1131 shall be the releasing authority for the message. The MAB President shall confer with CG-1131 prior to release.

The Final MAB Message shall contain:

- A short factual synopsis of the event.
- Date the MAB adjourned.
- Description of damage.
- Disposition of wreckage and/or status of recovery operations.
- Specific recommendations CG-1131 and the MAB feel needs immediate attention.
- The message shall not contain opinions or speculation regarding the mishap.

CG-1131/CG-41/CG-711 may release other immediate action messages such as one-time inspections, groundings, urgent information or other restrictions, etc., as necessary.

Aviation Mishap Message Tips and Reminders.

When printing CGMS messages for inclusion in the MAR, be sure and print in full view.

NOTE: PRELIMINARY, PROGRESS, AND FINAL MAB MESSAGES BECOME PART OF THE MISHAP ANALYSIS REPORT (MAR) BUT ARE **NOT** PRIVILEGED DOCUMENTS. THEY **SHALL NOT** CONTAIN, OR BE BASED ON, ORAL OR WRITTEN STATEMENTS OBTAINED UNDER ASSURANCES OF PRIVILEGE OR CONFIDENTIALITY. DO NOT INCLUDE INFORMATION PERTAINING TO CAUSES, MAB DELIBERATIONS, SPECULATIONS OR ANY INDICATION OF RESPONSIBILITY.

All messages sent by the MAB should be **For Official Use Only (FOUO).** Messages should be tailored to fit the circumstances of the mishap. Addressees will be determined by CG-1131. **DO NOT** include the names or social security numbers of anyone involved in the mishap in any mishap message. Use crew position to identify crewmembers.

Messages going to the AIG should not contain privileged or deliberative information.

Keep the text short and don't include any indications of possible causes. Rather than "…the pilot lost control of aircraft and was unable to recover...", use "…the aircraft departed controlled flight and impacted the water…"

Location of Mishap. If the location of the mishap cannot be readily identified with a recognized place name, include the latitude and longitude, and radial or DME from nearest Navaid.

The message should contain pertinent information about the progress of the investigation, not discoveries made by the investigation or results of the investigation.

Message requests for assistance with recovery, investigative expertise, evidence (PLAT tape, FAA tapes, tower tapes, etc.) and extension of reporting deadlines, shall be handled by separate correspondence and NOT sent to the AIG.

Where information is unknown or if it would defeat the purpose of privilege, use UNKNOWN, TBD or XXXXXX as a placeholder for the information. When the information is known or becomes releasable, it can be inserted in a Progress Message.

Use Progress Messages as needed to advise the chain of command of progress, new information or significant events.

eAVIATRS.

Contact CG-1131, if MAB Members need login accounts for **eAVIATRS.**

DO NOT submit the mishap report to the database, the CG-1131 Advisor will finish up the report after the Final Mishap Message is released.

Second Day and Beyond

The MAB will be drawn in different directions by simultaneous efforts to examine evidence at the mishap site and to pursue compelling aspects of the investigation at other locations. Each can go on concurrently...and should. Make and carry a grocery list. Tasks, questions, and observations come at a rush. Your attention will be saturated, keep track of the big picture. Note progress. Assess what needs doing now as well as what can be done with the assets on hand, how it should be done, and by whom. Do not dwell on the difficult or impossible. This is a clue you need additional assistance.

Review Previous Day's Activity. Consider what was done, what was initiated but incomplete, and what was deferred. This is where those notes and lists come in handy. Aside from the wreckage, candidates for the MAB's continuing attention include further site assessment, photography, augmentation/assistance requests, interviews, documents and other evidence gathered but not yet digested. Meet daily and keep records/notes of days activities and progress.

Site-and-wreckage assessment. Access and stability are initial concerns. Determining the extent of wreckage scatter and documenting it might occupy the second day. Reading the site and wreckage for clues come next. Excavation, disassembly, pickup and removal come later.

Photography. If a complete set of "as-found" photographs were not taken on day one, do it at the next opportunity.

Assistance. Acknowledge the limits of the MAB's collective capability and reach out for the help you need. Make the system work. Make your requests/needs known to headquarters as soon as you "think" you might need assistance; it is easier to turn off a request than accommodate specialized needs on short notice.

Witnesses. Yesterday you found them and requested a statement or held a hasty interview. Today, read their statements and prioritize. Begin interviewing, starting at top of a prioritized list.

Documents and Records. Review impounded documents and records. These were sequestered at your request and will be available for review. Determine if there is information of use and if further processing or analysis will be required. Return documents and records to the record holder once no longer needed, or pass to the AIM.

Some MAB's will go days without sifting through and appreciating pivotal information already in hand. The first day's impounded records will yield a substantial collection of data. Mine these resources. Go back to the sources promptly with questions while memories are fresh.

Evidence in hand has three potential consequences: it can verify or refute what has been offered or presumed thus far; it can indicate a new course of investigation; or permit closing an area of the investigation. Some inquiries simply affirm situation normal. Detail a group to review the cockpit voice recording and the flight data printouts to determine whether there is useful information and if further processing or analysis will be required.

Work Details. Working parties are a necessity. Tasks vary with mishap circumstances and condition of the aircraft, so the qualifications needed to complete mishap tasks will vary. Personnel can be drawn from the mishap unit, other units or contracted.
When exploiting wreckage for evidence, maintenance personnel are a great aid in identifying parts and how they function.

Be wary of over tasking. Reserve risky jobs for professionals capable of handling them--a logger fells trees; an equipment operator runs machinery, and so forth.

It is possible to muster too much help before it can be used. Some activities depend on preceding work: coordinate accordingly. If an aircraft sits in a crater in a forest, little investigating can be done until the hole is excavated.

Take care of the troops. People need guidance at unfamiliar employment; tell them what to look for, what to avoid, how to conduct themselves on the site. Invite their input. Everyone who works on aircraft has some kind of expertise. Expand your grasp and view by asking the working party to look for and call to your attention distinctive signatures or unusual damage on the wreckage as they come across it.

If eating on site, stage more water to permit washing before eating. Position food, water and utensils upwind, at a distance from wreckage or excavation. Call everyone off the mishap site and let them rest while they eat. If rain threatens, set up service and eating areas under a tent.

Safety at the Site.

- Environmental Hazards (will vary with the mishap location).
- Clothing. Protect everyone against the environment and from onsite hazards.
- Composites. See appropriate aircraft manuals and Naval Flight Surgeon Pocket Guide.
- Safe all munitions and explosive sources (initiators, carts, squibs, etc.). Document position and condition and get them removed.
- Pressure vessels. De-energize all tires, reservoirs, pneumatics, etc.
- Flammables, fumes and toxins.
- Digging in the hole. Properly shore sides to avoid cave in.

Remember, sometimes the biggest hazard is the lack of experience of those assisting. The first step in protecting the MAB and others at the mishap site begins BEFORE actually going to the site. A risk assessment should be prepared and discussed before going to the site. Proper planning requires everyone at the mishap site to be aware of the potential hazards and take proper precautions.

Ensure all compressed gas, fuels, composites and potentially explosive materials are properly secured. DO NOT become a secondary casualty. Do not touch or approach aircraft parts or equipment without proper personal protective equipment (PPE). Be aware of potentially toxic materials, such as composite fibers that can become airborne.

A proper risk assessment should be done each time the MAB goes to the mishap site or anytime hazards change. PPE requirements should be determined by the FSO and MO/FS with appropriate consultation.

Biological Hazards/Bloodborne Pathogens. Proper PPE must be worn to protect against bloodborne pathogens, composite materials and other potentially hazardous materials. See COMDTINST M6220.8 and The Naval Flight Surgeon's Pocket Guide.

Everyone on site will be doing hard, dirty work and will perform better if dressed appropriately, comfortably, and if adequately equipped for the job. A standard uniform might not be appropriate for the climate or for the work performed; augment or modify it. Obtain and issue foul weather gear, protective clothing and accessories as needed.

A spirit of volunteerism underlies public and internal response to a mishap. Can-do runs high on a crash site; enthusiasm will overrun caution if permitted. Have a corpsman at the site as long as the potential exits for injury during work details. Have communication from site to base (base crash fire rescue/sheriff/forest service, etc.) and transportation to the nearest emergency medical facility.

Plots, Diagrams, Surveys, Site Documentation.

A representation of the mishap site is not a required enclosure to the MAR. If you forego the opportunity to diagram early, it will be difficult to recapture. This is a one-stop opportunity. Ground scars disappear under vehicle and foot traffic or precipitation; parts' original locations are lost when they are picked up.

Regardless of whether one goes into the MAR, it can be an aid to the MAB. A record will show how and where things were found (when you sit down to write); it can be an analytical tool to figure aspects of ground collision and breakup. Method, formality and level of precision are not important, do what best suits your needs and purpose. Each member may have different reasons for plotting the mishap site. The Flight Surgeon may find it useful to diagram the mishap site showing the relative position of mishap items in relation to other items, especially body parts, position of the victims, life support equipment, etc. The EO will want to show how the aircraft came apart.

For wide scatter (high speed/low angle impact, inflight breakup, midair collision) consider using GPS to plot wreckage.

For more confined distribution (vertical entry, flat spin, slow speed) a simple grid or heading/distance-from-center may do.

For a site of a few acres with extremities in the hundreds of feet, a long tape and a compass will suffice; record observations on graph paper or in a notebook.

- A map scale 1:50,000 is marginal; 1:25,000 or lower is better. Infantry units have them. Federal and State agencies overseeing public land have limited stock. Sporting goods stores stock maps for hunters and hikers. Base civil engineers can print custom-scaled maps for facilities they manage (helpful for mishaps on or near a runway).
- Computer software maps programs. Try before you buy or read the description carefully to ensure the level of topographic detail is what you desire. These maps might be of national scope and short of detail when pushed to close views.
- Polar Diagrams. Best suited for mishaps where the primary velocity vector is vertical. Wreckage debris is typically scattered concentrically around the primary impact site and dispersed in a

relatively smaller area. Using the primary impact site as the center reference point, trace outward by referencing a heading from a compass and a distance with a tape measure or walking wheel.

- Tear Drop Diagram. Use when the primary direction of travel is not vertical but has varying amounts of horizontal movement. The aircraft debris and human remains will be found along the main flight path. Draw using the same technique as with the polar diagram but be aware the dispersion pattern will be skewed along the line of horizontal travel.
- Grid Diagram. Best for when the debris is dispersed in a wide, random fashion. Establish a line along the flight path vector, and a baseline perpendicular to this line prior to the first impact point, than trace out reference marks (hash marks) from the flight path line, parallel to the baseline, at 25-50-foot intervals.

Site Security.

People who were respectful to the emergency response the first day may be bolder today. Day Two crowds will be the unrelenting curious including idle military personnel. Supervise those admitted inside the perimeter. Manufacturers' representatives should travel with a MAB Member or designated unit personnel competent on the system of interest. Support and technical assistance should work under supervision of a MAB Member at all times.

Uniforms make your presence separable from onlookers and diminish crowd control problems by distinguishing players from spectators. Armbands or badges help identify who has access and are a part of most unit mishap kits.

Support and Technical Assistance.

MAB Members are well trained in their respective fields but most have never participated in a mishap investigation. The typical MAB is capable of successfully investigating the majority of the aircraft mishaps with only a small amount of technical and engineering assistance.

Assistance is available from other Services, agencies and organizations on an as-need/as available basis. Requests should be made through CG-1131.

The key is knowing when you reach the limits of your expertise and when to ask for help. Don't waste your time trying to determine who to call—this is a job for CG-1131. CG-41, CG-1131 or CG-711 support is available for coordinating assistance from other services or agencies, technical assistance, laboratory analysis, exceptional funding requirements, etc. Get the support you need/want. If you decide you need assistance, ask for it. A telephone call is usually sufficient to bring subject matter experts to your location. Requests for equipment, materials or personnel should be conveyed in a supplemental mishap message.

What is needed will depend on circumstances of the mishap. Most mishaps require people at the site to assist the MAB with reading the wreckage and, later, to accomplish a recovery. Some mishaps justify bringing subject matter experts for detailed examination before evidence is disturbed or to guide removal for examination elsewhere.

Every mishap raises questions or issues where the MAB's aggregate knowledge is not enough. If you, collectively, do not know how to do something or how to interpret what you found --- STOP! Get Technical assistance/knowledgeable help. The MAB President determines what technical

assistance should be requested and when they should arrive. Coordinate technical assistance through CG-1131.

NOTE: Personnel from the other services, government agencies or foreign military may request, or be requested, to observe the investigation as non-MAB Members (they are not a part of the deliberations or construction of the MAR). An observer or tech rep from another service is not a member of the MAB. The MAB President controls the extent of an observer's access to an investigation, and observers from other U.S. military services or other government agencies are seldom a part of interviews or board deliberations. Contact CG-1131 for guidance on using or obtaining observers.

Use technical assistants appropriately, but observe the limits of their expertise or qualifications. Avoid the appearance of impropriety in evidence access, handling or custody. No contractor or corporate representative should have unescorted access to the mishap exhibits. Manufacturer representatives on a mishap site or admitted to a wreckage layout should travel in the company of a MAB Member or a unit member competent on the system of interest.

Information Requests

Not all inquiries to the MAB merit a personal reply; some merit none. It is sufficient to keep the CG-1131 and the Tri-P/CSB informed of the investigation's progress and of assistance required. A few others may require select information to provide the assistance you want of them. The rest can read of the investigation's progress in a progress message.

Focus on these three aspects:

- The MAB President answers to CG-113 -- not the unit, district, area, etc.
- The MAB Members work at the direction of the MAB President.
- The investigation takes precedence over other duties.

Middlemen and staffers do not wear the boss's rank. MAB Members approached by interested outsiders should tactfully decline intrusions into MAB proceedings or requests for disclosure. Should the requestor be persistent, refer them to the MAB President, CO, or CG-1131.

It is necessary to communicate with the AIM. The AIM may observe wreckage and its handling at the site or layout, as well as component disassembly. The AIM needs access to documents, records and other factual evidence (logs, records, ATC tapes); this does not extend to MAB work product. Access should be arranged for mutual convenience. The MAB is obliged to disclose witnesses' names; however, statements or interviews may not be shared.

It is the PAO's job to represent the USCG to the press. Leave press commentary to the pros. If approached, MAB Members should refer inquiries to the PAO by name and telephone number.

Timelines.

A mishap investigation is an unfamiliar job, and you will not be master of all resources. Some tasks, outcomes, and completions are hard to predict because they are ill-defined, layered or infrequently practiced. For example, a backhoe operator tries to please when he estimates the time it will take to

excavate the crater where your wreckage rests; however, craters are not a standard commodity and no one can know how deep one is until the bucket stops scooping parts. Keep estimates conservative and plans flexible.

Reconvene at the End of Each Day.

Quit before dark and convene at the day's end. Close down the site and post security. Finish business with your working party(s) and technical assistants. With working party supervisors and technical assistants, summarize the activities and plans for tomorrow. When this is finished, excuse all who are not part of the MAB. Have MAB Members summarize their findings and work started or done, one by one. Unless guided, meetings can digress to speculation on cause. The temptation goes with the territory. Until the investigation is well underway, discipline yourself and MAB Members to remain at the task of discovering evidence. The MAB may entertain possibilities at any point to help stimulate/encourage investigation and looking at evidence, but the MAB must make judgments only in light of sufficient evidence.

Mishap Site Visit

Mishap Site.

- Control access. Establish a control point and limit access to those who have a need.
- Identify, evaluate and control mishap site hazards.
- Locate major components.
- Identify and mark major pieces of wreckage.
- Check to see if anything major came off the aircraft upstream.
- Document the site.
- Photograph major components before moving.
- Protect and preserve the evidence and ground scars until analyzed or photographed.
- Keep vehicles and people away so ground scars are left intact.
- Don't scrape, rub, clean, or put together (mate) pieces of wreckage.
- If fluid samples are necessary, get them right away.
- Personnel safety is a priority.
- Do not stick your hands into dark places.
- Don't move wreckage unless necessary.
- If required to move wreckage, first: identify, diagram, tag and photograph.
- Bridle your curiosity to open or test components unless competent personnel are present.

Initial On-Site Examination.

- Did anything leave the aircraft prior to impact?
- Scratches and scrapes are important in establishing impact angle.
- Engines. Were they running?
- Systems. Were they operating? Electrical, hydraulic, etc.
- Instruments. Photograph before moving.
- Use an expert if instrument readings are important to investigation.
- Voice and Data Recorders. Do not tamper with or try to open voice and data recorder case, damage will occur. If voice and data recorder is separate from aircraft, document location.
- Avoid further damage to wreckage or unnecessary exposure to elements.
- Fire patterns. In-flight or ground fire.

MAB Members benefit from a first-hand visit to mishap site. Seeing accelerates and enhances comprehension and is essential to the mishap. Evaluate the surroundings, distribution and condition of wreckage. Determine whether wreckage is safe to begin work; fire out, ordnance and pressurized vessels made safe, fuel siphoned off. A risk assessment should be prepared and discussed before going to the site. Proper planning requires everyone at the mishap site be aware of the potential hazards and take proper precautions.

On sloping or forested sites, be wary of deadfalls: parts in trees; tree trunks/limbs severed but not fallen to ground; rocks precariously ready to tumble, etc. Ensure all compressed gas equipment and potentially explosive materials are properly secured. DO NOT become a secondary casualty. If possible bring an experience maintainer or other technical experts on the walk-thru. Their expertise is invaluable when trying to figure out which end is which.

No MAB Member should presume to make decisions involving the mishap site unless such actions have been discussed and previously cleared by the MAB President, the FSO and the EO. The FSO and the EO, are often the only ones trained in proper handling and recovery of evidence available at the mishap site. The FSO and EO will control this phase.

Consider your first visit a reconnaissance. Withhold hasty judgments: understanding will take time and evidence not at the mishap site. For the present, the concern is to exploit the wreckage as it lies. Information will be lost when you begin to disturb it. When the wreckage site has been exhausted, concerns will turn to removing the wreckage to accomplish what could not be done in the wild or what is better done under controlled conditions.

Sifting through the wreckage will keep until the MAB has a coherent plan to examine it by layers, like peeling an onion. Your initial focus is the large view, a reconnaissance.

Determine what will be needed to guard the site. Plot the scattered wreckage. Consider equipment and working parties needed to work the site and how to get both to the site.

Exercise caution and restraint. The site and wreckage will have hazards unfamiliar to visitors, and visitors are inherently a hazard to evidence. Don't have another mishap while investigating this one.

DO NOT TOUCH or approach aircraft parts/equipment without proper PPE! Be aware of potentially toxic materials such as composite fibers that could be airborne.

Proper personal protective equipment (PPE) must be worn to protect against bloodborne pathogens, composite materials and other potentially hazardous aerospace materials.

Patience! There is no hurry. Approach the mishap area from upwind. Enter only if cleared to do so by the on-scene command authority Look before you step. Walk wide around the wreckage and ground scars, observing the mishap site from every angle. Look for indications of flight direction and descent angle and then imagine the cockpit view. Take in the BIG picture and have the photographer do likewise. Do not charge into the wreckage to open panels, flip controls or try switches. Do not touch anything on first walk through. Avoid trampling over evidence or disturbing the area near the mishap site. Do not move parts or the aircraft wreckage without permission. Avoid moving or altering any aircraft parts, life support equipment, personal items or other major components without first consulting designated technical personnel.

DO NOT TOUCH or **PIECE** together any broken parts, this can alter the fracture surface, preventing adequate analysis of the part(s) in question.

Record the position of all switches and instrument gauges. Tag and identify all parts before moving.

Satisfy yourself that the entire aircraft is present and/or accounted for, missing parts may be a good reason for you to expand the search back along the flight path. If the four corners (nose, tail, wingtips) and the structure between are on site, bits and pieces (aileron, stores, turbine wheel, etc.) could have departed before impact.

Helicopters have more than four corners, so the process is more difficult: blades usually fragment on contacting ground and can hurl hundreds of feet.

If mishap is in salt water, make provisions to remove ASAP and apply anti-corrosion measures.

Disorganized, undisciplined handling of the wreckage disturbs evidence and leaves no record of condition as found.

The safety investigation has precedence over other concurrent investigations; HOWEVER, the MAB must take care not to spoil evidence that others will also need to view.

After the Initial Site Visit.

The whole MAB need not stay at the mishap site longer than is required to appreciate the big picture, make initial assessments and post security.

Once all have had a look, get down to business. Only one or two members need remain at the site to continue working and supervise the site. Consider who is better employed on the site and who has more urgent tasks elsewhere.

Post security and leave the site before dusk or make provisions for abundant artificial lighting.

Do not work a mishap site without light. Doing so poses high risk to personnel and evidence with a low prospect for reward.

Allow time for departing personnel to pick their way back to a road head before light fails. After touring the site, on the ride back, exploit your captive audience and what they found/saw.
Have someone take notes; this forms a list of things to do, things wanted but deferred, and future tasking. Pose questions.

- What can be determined (speed, flight path, attitude, configuration) from the lay of the wreckage, ground scars and degree/location of aircraft deformation?
- To what extent can the wreckage be examined from where it lies?
- What are the local engineering capabilities?
- What assistance is needed on site?
- What personnel, equipment or items will facilitate the following days' activities?

Photography.

Aside from documenting conditions as found, photographs can record the MAB's manipulation of the wreckage. It is not enough to tell someone, "Shoot this," and walk on. The photographer's product will be better if everyone who requests a shot also explains what the picture is supposed to show.

Specify as appropriate: close-up or wide angle, background (in-focus or not), light (more, less), viewing angle, other object in view for scale, anything to make a better exhibit. Obtain shots of anything peaking the team's interest, but ensure you have a before view of everything likely to be disturbed by manipulation (yours or others').

Shots of the cockpit (switches, levers, gauges) and engine control linkages (input and feedback mechanism) are essential. Photographs should show damage, impact areas, metal fractures, flight path, etc.

Shoot liberally. No one knows which photographs will be the best exhibits for a report, but the opportunity to capture may have passed. You cannot take too many photographs. With digital photograph, there is no reason to limit the number of photos or fear over photographing. Just make sure you have enough portable hard drives to store the data.

NOTE: "Staged" photographs indicate MAB deliberations and are considered privileged. Maintain an adequate chronology/log of all the pictures, where and when they were taken, and relationship to other visual references, location and direction. Place a North marker on the pictures to show direction.

- Adequately mark/label each roll, disc and electronic file folder so others will be able to easily find photos without having to open and shift thru all of the photos.
- Have an external flash unit available, especially if not using a professional photographer. "Fill in flash" may uncover details not seen in poor lighting or in shadow effects.
- If faced with different lighting or shadows, bracket the exposure by shooting 2f/stops over and 2f/stops under the known correct exposure.
- If taking digital photos, review each image as it is being taken. NEVER delete any incorrect exposure photos at the scene. Editing and organizing can take place later.
- When photographing the mishap scene, always start at a distance and move toward closer objects to obtain desired details. Once at the center of the scene take photographs looking out from the center in a 360-degree view.
- Provide a common reference point (person, pencil, ruler) on all pictures and show enough detail to provide orientation. This may require taking several pictures in sequential order.
- Placing an object in a photograph for reference, perspective or measurements does not make a photo staged and does NOT make the photograph privileged.
- Re assembling or reconstructing damaged parts or aligning parts to show fire patterns or impact marks are examples of staged photographs and possible privilege.
- Depiction of cockpit indications for a given set of assumptions made by the MAB or described in witness statements are staged photographs.
- Take pictures of any impact points (obstacles/objects) the aircraft or occupants may have struck before coming to the final resting point.
- Take several views of the major wreckage, aircraft parts, and other components, such as switches, gauges, circuit breakers, flight controls, fuselage skin and any equipment with unusual markings or damage.
- Photograph any charred or burnt areas, impact points, fuel stains and soiled gauges.
- Capture witness position or location from where the mishap was observed, preferably at the same time of day as the mishap. This may provide the best evidence of sunlight patterns, shadows and other potential contributing environmental factors.
- Photograph all ALSE before removal from mishap crew (if possible) or wreckage.

Wrap-up of Crash Site Visit.

- After visiting the site, bring everyone together to discuss as a group what each member saw or found. Confine discussion to what was observed or found at the site. Do not deliberate.

- Determine what will be needed for the continuing field investigation. As discussed previously, you first exploit the wreckage where and as it is. Excavation, lifting, relocation and disassembly follow in due course...later.
- Confine discussion of the mishap to observations and facts and how to get more. Without a substantial body of evidence, deliberations are premature.
- Make assignments. Do not count on everyone going to the site daily. Once all members have seen it and have a common foundation, employ each according to his/her talents and availability.
- Consider whether the MAB needs to be augmented with additional members or whether you need technical specialists. Initiate requests.
- Preview tomorrow's activities.
- Diagram/survey/plot the site and wreckage, as appropriate.

Witnesses

For the purposes of the USCG safety investigations, the term “witness” is a general term referring to persons who may be connected, even remotely, with the mishap. A witness may be a participant in the mishap, such as surviving crew, personnel who maintained/serviced the aircraft, and personnel who scheduled the mission or controlled the aircraft on the ground or in flight. A witness can be someone not directly connected with the operation, but saw or heard some portion of the events leading up to and including the actual mishap. Finally, recognized experts in a given field, providing technical data, theory, and postulations or giving opinions are also considered witnesses.

Interview.

For the purposes of the USCG safety investigation, the term “interview” is used to characterize the setting and tone considered most useful for eliciting information. Interviews are cooperative, informal meetings where the interviewer approaches the witness as an equal and encourages their cooperation, allowing them to relate observations without interruption or intimidation.

Interrogation.

By contrast, “interrogation" implies questioning on a formal or authoritative level, such as lawyer-to-witness, police officer-to-suspect, or parent-to-child encounters. Witness interviews conducted as part of the USCG safety investigation must never have the appearance of being interrogations. When the interviewers explain the safety and mishap prevention value of their statement, most witnesses willingly give their observations.

Types of Witnesses.

- Pilots, crew and passengers.
- Air traffic controllers, plane captains, maintenance personnel, schedules, etc.
- Others directly involved with the mishap.
- Anyone who may have seen or heard events leading up to, during, or after the mishap.
- Peers, friends and families of the mishap crew.
- Observer--a matter of chance.
- Anyone who might shed light on the mishap and the damage or injuries.
- Expert--called to speak on a narrow issue.
- Law enforcement.
- Salvage and recovery workers.
- Rescuers, first responders and those who first made contact with the mishap crew. Local authorities will often have names of witnesses.

Local police and news media can often be helpful in locating witnesses and it is possible they will find some witnesses with valuable information before the MAB does. In some cases, it may be worthwhile to advertise for witnesses or have the news media advertise for them, but the MAB should pursue these avenues only with the assistance from CG-1131.

One witness may lead to another. Find out whether the witness was with anyone. All potential witnesses must be identified, logged, and given an opportunity to provide at least a written statement as quickly as possible after the mishap.

Why Interview.

- Find out what the witness knows or observed.
- Establish a preliminary direction for the investigation.
- Complement other evidence or phases of the investigation.

When to Interview.

- Interview as soon as possible, before memories start to fade or significant conferring occurs.
- Witnesses should be isolated from one another, especially the mishap crew.
- If they can't be interviewed right away, have them write a statement.
- Witnesses tend to fill in blanks or voids in their observations after they have had time to apply logic and reason.
- Exaggeration (unknowingly/unintentionally) tends to creep into the interview after a repeating the observations several times or after having time to reflect on the events.
- Statements/observations will (unknowingly/unintentionally) be tempered as time passes.

NOTE: Additional or follow-on interviews are always needed of some witnesses to confirm, clarify and elaborate as the investigation matures.

Where to Interview.

- To stimulate memory, preferably at the spot where the witness was at the time of the mishap.
- If not there, then in a quiet and private place.

Value of Witness Statement.

- Relative value based on type of witness -- participant, expert, or observer.
- Perishable--details fade/mutate with time. Interview as soon as possible.
- Participants are the first priority, observers next.
- Location at the time of the mishap.

When mishaps occur, there can be situations ranging from either no witnesses, to mishaps observed by hundreds. When faced with an abundance of witnesses and limited time, it is imperative to develop a plan to sort out the key witnesses needed for in-depth interviews.

NOTE: Be cautious of those with an aviation background; they may be more interested in letting you know what they think caused the mishap than telling you what they actually observed. Hold them to just the facts.

Some witnesses warrant interviews regardless: crew, best vantage point, pivotal position in the mishap's background, aviation-acquainted witness. Not all witnesses need to be interviewed. Weigh the merit of spending time with a witness.

- Read the statements. A written statement aids in determining the witnesses without much detail to offer, but it is not foolproof.
- Writing is difficult for some. Some witnesses know more, but write little. If you suspect a witness knows (or ought to know) more than he wrote, interview.
- You will have to evaluate each witness and set interview priorities.
- Using maps or photos of the mishap area, try to select witnesses from strategic points along the ground track or around the mishap area. Establish each potential witness' physical position relative to the mishap.
- Make an assessment of their quality, credibility, and reliability before committing significant time to an individual interview.
- Characterize the contribution each potential witness could make to the investigation; some may have seen the aircraft prior to impact, others may have seen in-flight malfunctions, and still others may have seen or assisted in post-mishap recovery.
- Each may have made useful observations, and all should be followed up based on their relevance to the mishap sequence and its aftermath.
- Three principles associated with the gathering of useful witness statements *are timeliness, proximity to the mishap, and unrecognized relevance.* Investigators must consider all three factors when evaluating the witness and the statements.

Timeliness. Witness information depends on recall and perception; both are affected by the passage of time. To maximize the likelihood of obtaining useful statements, it is advisable to interview all available witnesses and to do so as quickly as possible. The human mind has a tendency to fill in the gaps in recollection through logic or past experiences.

The longer witnesses have to reconsider events, the more they subconsciously tend to do this. Witnesses can be re-interviewed if the MAB needs additional information or clarification. Keep in mind the possibility that the description of what they saw may change once they have had time to reflect, and second interviews probably will not be as useful as the first.

Proximity. A witness may be close to the mishap (e.g. participants) or removed (e.g. observers, experts, designers, etc.). Take statements of the mishap crew as soon as possible, being considerate of their physical condition. Consult with medical personnel to determine when and for how long the MAB may question injured crew.

NOTE: Be sure to note if they are under any medication when they were interviewed or when they made a written statement.

NOTE: Under no circumstances are investigators to interfere with the medical treatment of an injured party in an effort to obtain statements.

Identify the last personnel to perform maintenance or servicing on the mishap aircraft and interview as soon as possible. If personnel from other units or organizations were involved in servicing, cargo or other operations associated with the mishap aircraft, contact other units to conduct interviews or contact CG-1131 for assistance.

Identify air traffic control facilities along the mishap aircraft's route of flight and ensure they impound their tapes for analysis.

Other flight crews or aviation personnel in the vicinity at the time of the mishap may be particularly helpful in establishing local weather conditions, or in relating relevant radio transmissions from the mishap aircraft that may not have been recorded (calls on local unit frequencies, self-announcing on UNICOM, etc.).

Spectators and bystanders frequently heard or saw something that attracted their attention and brought them to the scene. Talking to these people immediately upon arrival at the mishap site may provide information regarding the flight path, actions, and sounds of the mishap.

Persons many miles from the point of impact may have useful information as well; this is especially applicable in cases of suspected engine or structural failure, weather mishaps, and in-flight fire. It is possible to obtain evidence of smoke, fire, low flying, unusual maneuvers, erratic engine operation, structural failure, and loss of control from observers along the flight path who were not necessarily witnesses to the actual mishap. Be prepared to retrace the mishap aircraft's route of flight to identify potential witnesses, as necessary.

Unrecognized Relevance. During the course of an investigation, witnesses sometimes emerge that were not immediately identified as having useful information to offer. This is why it is critical to keep careful records of all potential witnesses, even if resources are not available to immediately pursue all of them. Gathering written statements from a large group of observers is a good idea. Everyone has a slightly different vantage point and experience base; a meaningless detail to one person may be a glaring discrepancy to another.

If the number of witnesses exceeds the number of MAB Members, do not use security police or civilian law enforcement personnel to expand your information collection effort. Instead, get witness' names, telephone numbers, and addresses so a more detailed follow-up can be done later. Ask observers to briefly write down what they saw and use the statements for follow-up calls.

The first impressions and initial assessments of the potential usefulness of witnesses are important. If a witness appears credible and reliable, or if they have a unique vantage point not shared by others, their value to the investigation may be significant. If it initially appears a witness at the scene is unlikely to contribute significant information or corroborate another's observations, they should still be asked to provide a written statement and be added to the witness log.

Self-Identified Witnesses. Post-mishap publicity frequently attracts calls from previously unidentified witnesses. While some of these may be "crank calls," the vast majority are from people who are genuinely concerned and wish to help. Such callers may provide key information, have found a critical part or observed something unusual in flight.

Every unsolicited call must be followed up; however, depending on the investigation direction, the follow-up may require nothing more than a simple call and brief telephone interview. All such callers should be thanked for making the effort to call and asked to summarize what they saw, heard or found. Depending on the thoroughness and possible usefulness of their statements, proceed accordingly.

Rules of Engagement/Advising the Witness. Witness statements provided to a MAB are not given under oath nor are they sworn, BUT they are to be truthful to the best of the member's knowledge. USCG members who deliberately fail to present a true accounting of the mishap facts are

committing an act of professional dereliction. In cases where truthfulness is suspect, the MAB should contact CG-1131 for advice on how to proceed. Often a simple appeal to the individual's sense of duty will elicit the truth. Ensure witnesses understand they are obliged to give honest, good faith statements.

During all privileged safety investigations, advise witnesses of the purpose and privileged nature of the investigation before they are interviewed. Do not advise witnesses of their Article 31, UCMJ, or 5th Amendment rights. The sole purpose of a USCG safety investigation is mishap prevention.

NOTE: If the MAB suspects possible criminal intent in the mishap, the witness should not be interviewed and CG-1131 should be notified immediately. If, at any time during a witness interview, the interviewer concludes the witness may have committed an offense under UCMJ, the interviewer should terminate the interview and have the MAB President contact CG-1131.

The Challenge of Interviewing.

Interviewing is one of the most time and labor-intensive aspects of an investigation. It must be managed efficiently to minimize its impact on other parts of the investigative effort, but it must also be as broad an effort as necessary to ensure all relevant information is gathered. Keeping these two priorities properly balanced requires a systematic process, matching the best interviewers with the witnesses, and then scheduling interviews as soon as possible.

NOTE: PMBs should not try to find any answers or ask questions, they should simply get witnesses or mishap crews to write out or record their statements. The MAB will review the statements and determine which witnesses need to be interviewed.

Interviewing a witness is one of the most difficult tasks of a MAB. Witnesses can provide valuable information, but if the interview is improperly handled, the information may be lost or incorrectly presented.

The importance of witness statements varies with the type of mishap and location. Therefore, all statements must be received and examined. Witness statements and physical evidence go hand-in-hand in determining the cause of a mishap; they may complement and clarify or contradict and refute each other.

The MAB may not realize the importance of seemingly innocuous statements for days or even weeks after it is taken. Therefore, the evidence obtained from witnesses should be as complete and detailed as possible. Remember, sharing various aspects of the investigation or the information gathered from other witness statements with another witness is in direct violation of the privileged nature of the information and may also taint the witness' recollection.

The FSO will do most of interviews with help from the other members depending on the individual being interview. The Pilot/Stan Member should be present when interviewing flight crew and air traffic control witnesses, etc. The Engineering or Enlisted Member should lead maintenance personnel interviews. The Enlisted Member(s) should help interviewing enlisted personnel. The MAB President should do any interviews of high-ranking witnesses.

"Prompting" and leading questions are easy traps to fall into.

The MAB is required to provide a complete list of witnesses to the AIM investigation. This means keeping accurate records of all witnesses, regardless of whether they were interviewed or if their statements were considered relevant. It also means the MAB must treat all witnesses courteously and correctly to ensure they accord a similar degree of cooperation to the legal investigators who may follow. Remember, this is a list of witnesses and contact information, NOT the statements. Provide the complete list of all witnesses to the AIM only after the MAB has completed its interviews. This list should include the witnesses' name, rank or title, work and home telephone numbers, and work and home addresses.

Privilege and Confidentiality.

Privileged information is information provided under a promise of confidentiality. This includes information that may not have been discovered without a promise of confidentiality (statements, deliberative analyses, conclusions, and recommendations). Privileged information is also information directly calculated by the MAB or developed specifically by/for the MAB.

- Privileged information will only be used for safety purposes.
- Promises of confidentiality will be granted individually (on a witness by witness basis) and may not be given automatically or on a blanket basis to all witnesses interviewed.
- Just because you are conducting a Commandant MAB does **NOT** mean you **NEED** to offer confidentiality.
- Not every witness will be granted confidentiality; it may not be needed.
- Not everyone can be offered or granted a promise of confidentiality. The concept only applies to CG/DOD employees (active duty, reservist, civilian) and USCG contractors (with prior arrangements).
- When confidentiality is offered or requested, it is important to have a signed copy of the "Witness Statement Promise of Confidentiality Advisory Form" attached to the statement.
- If a witness desires to make a non-privileged statement, the form will be marked accordingly.
- If a statement is taken by telephone or other means where the witness cannot sign the advice form, the interviewing officer should note this and state that the privileged nature of statements was explained and either accepted or declined.
- Not all safety investigations can grant promises of confidentiality. Only Commandant convened investigation are given the authority to grant confidentiality to witnesses.

Unit investigations and other investigations conducting witness interviews as a part of general-use investigations CANNOT offer or grant confidentiality. However, it is appropriate to restate the sole purpose of USCG aviation safety investigation is to prevent recurrence of future mishaps.

Be prepared with the correct forms by assuming all witness statements will be privileged. A list of all witnesses interviewed shall be included in the Mishap Analysis Report (MAR) annotating whether a promise of confidentiality was offered and accepted. The USCG, like the DOD, does *not* use privileged safety reports, their attachments nor information extracted from them as evidence for punitive, disciplinary or administrative actions; for determining misconduct or line-of-duty status; in aviation evaluation boards or reviews or to determine pecuniary liability, or liability in claims for or against the United States government.

The witness can tell anyone anything; however, the MAB does not release or share witness statements. Do not give the witness a copy of their statement to share or use for another interview. They will have to re-tell their story.

Managing the Interviews and Statements.

- It is critical to track interviews and witness statements from the very beginning (starting from the first statement taken by the PMB).
- The "Witness Log" must be continuously updated and the status of the interviews must be known at all times (i.e. in draft form, initial review, second review, third review, etc.).
- Build interview folders. Place interview summaries or statements in separate folders. Label the front of each folder as Privileged Witness Statement or Non-Privileged Witness Statement.
- All witness statements, both privileged and non-privileged, **MUST** be accompanied with either a Privileged or Non-Privileged Witness Advisory Statement.
- For recorded interviews, be conscious of how much space you have on the drive and have a good plan for managing the recordings. DON'T risk running out of disk/drive space during an interview!
- Interview tapes must be labeled and put in interview folders.
- Use duct tape to prevent overwriting. Destroy all tapes once the MAR is completed.
- If a digital voice recorder is used for the interview, ensure that the recordings are properly downloaded and labeled at the end of the day to ensure the information is not lost.
- Interview tapes, digital recordings and notes should be destroyed once the MAR is signed. These are no longer needed and should be treated like all other evidence and working documents not included in the final MAR. Do not retain, ship to headquarters or leave at the unit.

The Interview.

- Use a recorder - Better than taking notes; accurate, less distracting.
- Put the witness at ease - Use a quiet, undisturbed location; avoid interruptions.
- Know and test your equipment - Have a backup recorder, if possible.
- Witnesses may be traumatized - Be considerate of their mental state.
- Remember cell phones off during the interview.
- Eliminate as many distractions as possible - No interruptions!

Select a location for the interview that is conducive to eliciting information. Normally, the best place is where the witness was during the mishap. However, it is sometimes helpful to offer to first meet in a "neutral" location (e.g., their home or workplace, a public location) in order to build trust. This is particularly useful with potentially wary witnesses.

Introduce yourself, restate your mission, and answer any questions the witness may ask before starting the interview. Make it clear they are not testifying under oath and that the purpose of the interview is solely for the prevention of future mishaps. Ensure they understand the difference between the MAB and the AIM.

State your function, the purpose of the interview and who will get to hear or use the information as well as the information's confidentiality (if applicable). Establish rapport, put the witness at ease, and reconfirm what you know about the witness' experience and background. Witness information should include full name, rank or title, and home installation (if in the military service); home

address (if civilian); and current duties or jobs. Telephone numbers are important for follow-up discussions. Include any aeronautical or other experience that can establish the witness' credibility. Identify the location from which the witness viewed the events.

Avoid questioning potentially hostile witnesses on their home ground; sacrifice their comfort for more positive control of the interview, but do not intimidate them with multiple interviewers or a severely formal setting, etc., unless absolutely necessary.

Do everything possible to prevent intimidating the witness. Junior military personnel frequently are more open with lower-ranking MAB Members; consider arranging interview assignments accordingly. Using the appropriate MAB Members facilitates in-depth interviewing of witnesses.

Avoid interviewing witnesses before the full MAB. With few exceptions, unless your intent is to intimidate, DO NOT have all the MAB Members sit in on the interview. It can intimidate the witness or give the appearance of the "Long Green Table."

It is not generally a good idea to have more than three people present and asking questions. The presence of multiple interviewers arrayed in front of a single witness can be both intimidating and chilling. Nevertheless, it is sometimes warranted.

Ideally, interviews should be one-on-one. This does not mean the entire MAB may not want to interview some witnesses. This is meant as a general rule. When a witness has vital information, it is sometimes best to have them repeat their statements before the entire MAB or to at least playback their recorded interview.

An eyewitness whose account begins with, "I heard an explosion, turned and saw a fireball...," can only vouch for time and weather. The rest likely will be borrowed or speculative. The best question for such a witness is, "Can you provide me the names of any others who saw the mishap?"

When interviewing by telephone, plan on having the witness do most of the talking.

Focus initial questioning on what happened and general information. Start with open-ended questions (those beginning with who, what, when, how long…) rather than closed-ended questions that can be answered by a "Yes" or "No."

The best way to do this is to invite them to tell you their entire story, beginning to end, without interrupting them with questions. Take brief notes, but don't speak unless absolutely necessary.

Maintain friendly eye contact as much as possible.

Start with what the witness knows first. Let the witness talk, and when finished, ask questions. Talk as little as possible; they will tell you what is most important to them first; you can get to areas that are of interest to you later in the interview.

Don't interrupt or lead the interview. Periods of silence while the witness collects his or her thoughts can encourage the witness to expound more fully and avoid omissions. The interviewer's ability to be a good listener and let the witness talk is essential in this phase.

When the witness finishes the story, have them start all over again. They may be bothered by this, but tell them you recognize the difficulties of human memory, and he or she will be surprised at the ability to recall new things. When they've finished, go over your notes silently for about a minute, then ask them a few general questions based on what they've told you before moving on to prepared questions.

Let the witness elaborate on any pertinent details your planned list of questions doesn't address. Consider playing the tape recording back to the witness to stimulate recall.

After the narratives and tape playback, specific questions may be asked. Try to ask questions by repeating the witness' exact statement and ending it with a question mark.

Questions naturally become more specific as the interview progresses, but be careful not to get ahead of the witness. A very specific question can be leading and can contaminate the memory of the witness. It should be avoided and held until the very last. General questions are not very leading and the information revealed by them is more likely to be accurate. With the specific question, the witness may feel pressure to remember "something", and may report details he or she did not observe.

Have a model of the aircraft and marking boards available; this helps the witness describe maneuvers or helps them remember more details by "jogging" their memory. Allow a witness to manipulate a model or use a picture or map to show what they can't convey with words. Classic example: "spin" has specific meaning to a flyer, but a witness without aviation background might apply the term to movement about any axis. In like fashion, "It went straight down" has been offered for every angle on a protractor, not just vertical entry.

A model allows the witness to represent what they saw, even though unfamiliar with aviation terms. The same applies to taking a witness to the location where they observed the mishap. Be particularly sensitive to the schedule of the individual you need to interview. If they must make funeral arrangements or frequent trips to the hospital to see a person involved in a mishap, work around these constraints. Do not intrude on grief unless the people you intend to interview will be unavailable later.

In highly charged situations, it may be best to have the interviewer introduced by the person's commander or a trusted friend. However, under no circumstances should the person who helps establish contact be permitted to remain for the interview unless absolutely essential for emotional support.

Access to Mishap Crew and Others.

The MAB may need frequent access to participants in a mishap. Commanding Officers will make all participants available to the MAB upon request. The MAB President will advise the CO when participants are no longer needed. The MAB shall have priority access to all witnesses over all other investigation boards. This priority access will ensure the MAB hears the initial recollections and impressions. The MAB makes no determinations regarding the fitness of participants to return to duty.

Instructions to Witness for Written Statements.

Modify the following instructions to fit the mishap.

- Please describe the sequence of events, including all details you recall.
- Try to keep the statements in chronological order, but feel free to add any significant information you may recall even if out of sequence.
- Include your best estimate of all times and time intervals.
- Make special effort to describe the exact details of your observations.
- Describe anything you feel was significant:
    1. Smoke and fire (source or location, color).
    2. Abnormal engine noises or other sounds.
    3. All details of observed parts falling off aircraft.
- Describe the flight path or attitude of aircraft.
- When finished please provide:
    1. Name, rank, title, occupation, address, flight experience, contact number, email.
    2. Your location and activity when mishap was observed.
    2. Time of day and weather conditions when your observations were made.

Evaluation of Witness Statements.

Determine *quality, reliability* and *credibility* of each statement and then *reconcile* conflicting or multiple versions of the sequence of events.

Quality. The human mind does not work like a camera. Recall is never 100 percent (less than 100 percent of the information is stored in memory in the first place) and, because of selective attention, different people see different things. Thus it is a twofold problem. What affects the information going into eyewitnesses' minds and what affects the process of trying to find out what they remembered.

A number of factors affect witnesses' abilities to get a clear picture of what happened:

- Environmental factors (ambient light, time of day, rain or shine, etc.).
- Recognition/understanding of what they're seeing.
- Stress or trauma experienced (more stress equates to less clear memory).
- Personal significance (more personal involvement equates to better memory).
- Length of observation.
- Time elapsed since observation.
- Physical condition of the witness (age, health, fatigue state, use of alcohol, etc.).
- Attitude toward the USCG; negative attitudes taint recall, while positive attitudes may result in "filling in the gaps" to be helpful.
- Pride (if quality of observation is believed to be suspect, recall may be selective).

Reliability. Various factors tend to influence witness observations. It is advisable for the interviewers to have some knowledge of these factors to better understand why witnesses report as they do as well as to ascertain the reliability and validity of the information:

- Intelligence is not as much a factor in observing as it is in the ability to recall and in the organization of thoughts. The less intelligent witness or one with little aviation background tends to have difficulty recalling a specific detail simply because it wasn't of interest. This witness may also have difficulty organizing thoughts and presenting observations in a coherent manner.
- Emotions tend to produce distortion and exaggeration, especially in the verbal description of an occurrence. The degree of accuracy depends partly on the observer's mental state at the time and partly on the complexity of the situation (we tend to see and retain what we need to see or understand).
- Repetition affects witnesses who have spoken to many people about their observation or experience and frequently begin to exaggerate or "fill in gaps" with each retelling.
- Transposition comes in to play when witnesses may report all facts accurately, but place them out of sequence with the actual occurrence. Be aware of this possibility and attempt to verify the sequence of events independently.
- Omission is common in witness statements, frequently because the witness does not consider certain information important. Omissions concerning details of an observation are most common when a witness is asked to prepare a statement of observation without the benefit of reminders in specific areas, such as speed, engine sound, weather, etc.
- Repression of memory is enhanced by personal involvement, but degraded by stress or trauma. Participants in a mishap sequence who sustain a frightening or traumatic experience often have difficulty recalling even the most vivid events despite their personal presence at the scene. This may be a result of the natural tendency of the mind to dispel or push unpleasant thoughts back into the subconscious as a protection from uncomfortable and upsetting memories.
- Preconceptions can also influence what a witness remembers (i.e., if they hear an explosion, they expect to see fire and will remember seeing it). Children have more open minds and are often more reliable than adults.
- Gender is not a factor in assessing reliability. No significant variation seems to exist in comparing the accuracy of adult female and male observers.

Credibility. Certain aspects of human nature come into play when a person witnesses or is part of a dramatic event. Bear in mind, witness statements are sensitive to how they are interpreted; a witness' ambiguous answers are interpreted by interviewer in accordance with the investigators' own beliefs, opinions, or preconceptions. Be sure to differentiate between what the witnesses says and how you interpret their interview.

- Witnesses rarely observe all of an occurrence, and even if they do, the tendency is to report the events that were most vivid.
- When questioned in detail, witnesses often become aware of gaps in their observations and in hope of saving face, they apply logic, answer in generalities, and add to their statements to make their observations seem more plausible.
- Witnesses who offer very specific information about altitude, airspeeds, or maneuvers must be viewed with caution since even eyewitnesses with aeronautical experience have difficulty with these estimates.

Reconciliation and Corroboration. Multiple, mutually corroborating witnesses greatly aid in resolving ambiguities. When witness statements are numerous, complex, or contradictory, they can be more objectively examined by preparing a matrix, with witnesses listed on one axis and information provided on the other.

Associating multiple witnesses with the information provided allows a check on credibility against others providing similar or conflicting information. This method has the added virtue of allowing investigators to examine the frequency an item of information occurs.

Spouse/Friend interview.

One of the most difficult tasks for the MAB Member may be interviewing a family member or close friend of someone involved in a major mishap. It is doubly difficult when the person involved in the mishap did not survive or was gravely injured. However, information about lifestyle and habits is essential to building a complete picture of the mishap, even if only to rule out human performance as a factor to the overall sequence. In cases where mechanical failure is likely to be ruled out or not immediately obvious, interviews with survivors and friends dramatically increase in importance.

Interviewing Injured (inpatient or outpatient) Witnesses.

The techniques for interviewing injured or hospitalized witnesses are not unlike those previously discussed; however, there are some differences.

Statements by witnesses who were injured or involved in a mishap may contain inaccuracies due to confusion, disorientation or medications. It is not unusual for an injured survivor of a severe or fatal mishap to be unable to initially recall details of the mishap. The cause of this condition is usually temporary and medically valid; do not interpret the inability of the witness to recall details as a lack of cooperation.

The medical facility treating the injured survivors is responsible for their well-being. Interviewing injured survivors in an inpatient status must be coordinated with the medical facility and attending physicians so as not to conflict with medical treatment and patient needs.

Questions should be limited to essential information and the number of interviewers held to a minimum. The FS/MO member should be present at such interviews. In cases where the person being interviewed is under the influence of medications, it is the FS/MO member's responsibility to qualify the credibility of information obtained. All statements obtained from witnesses under medication must be identified.

Two or three short interviews with injured survivors may be more beneficial and have less negative effects than one lengthy session; handle each on the basis of its own circumstances. The well-being of the witness is paramount at all times and governs the conduct of interviews. Patience and empathy on the part of the interviewer may eventually result in obtaining the desired information, whereas persistence and impatience may not.

Bear in mind personnel under a physician’s care may tire easily or be subject to abrupt changes in demeanor as a result of medication or post-traumatic reaction. Respond appropriately and professionally, just as you would wish to be treated under similar circumstances.

Audio and Video Recording Tips.

- Videotaping is a valid method for conducting interviews.

- Videotaping makes it much easier to capture a witness's intent, particularly through gestures and body language.
- A camera may make the witness nervous; videotaping can intimidate a witness. Explain that the camera is being used to capture explanations requiring hand motions or manipulating a model aircraft or other piece of equipment.
- Although the first few minutes of a taped interview may make the person being interviewed feel "on the spot" or awkward, this is usually a transient condition and the remainder of the interview will be as candid as if unrecorded.
- Videotaping also makes it easier to reduce the number of people present for the interview.
- Running a television located in another room off of the video camera allows other MAB Members to watch the interview, take notes and formulate questions. Prior to the end of the interview, these questions can be delivered to the interviewer(s). This method of conducting interviews also reduces the number of times a witness needs to be interviewed.
- It is a good technique to let the witness know they control the use of the recorder, and they may ask for it to be turned off at any time. In practice, they rarely exercise this option; however, it helps the witness feel a modest sense of control and also allows emotional witnesses the courtesy of collecting themselves periodically. The interviewer should immediately comply with such a request to turn off the camera and then diplomatically attempt to restart the tape at the first opportunity.
- When recording outdoors, environmental noise such as aircraft operating nearby or windy conditions may seriously impair the clarity of the recording. Conduct interviews at locations free of this kind of distraction, if possible.
- When using an audio recorder, determine if the recorder has an end-of-tape warning device. Otherwise, the tape can run out unnoticed and not record essential information.
- Avoid constantly checking the recorder to see if the tape as run out, this can be very distracting and may even rush the witness.
- Begin the recording by always giving a brief introduction with the names of the interviewers, witness and the date. Then read the witness advisory and ask if the witness understands.

NOTE: This must be accomplished at the beginning of each privileged interview even if the witness has already been interviewed and heard the advisory.

- A good technique is to let the interviewee read the statement and explain it to him/her before starting the official interview.
- This not only allows the witness time to relax in the presence of the tape or video recorder, but it also ensures their proper identification.
- If a tape recorder is the sole means of recording a witness statement, take precautions to guarantee an intelligible and complete recording.
- Read the following statement directly onto any taped interviews:

  "You are hereby advised that, as a witness to this investigation, your statement will be used solely for mishap prevention purposes. Your statement will not be made available to anyone other than Coast Guard officials responsible for conducting this investigation. The only exceptions to this would be to act on an allegation of a false statement, misconduct, or to comply with a valid court order on behalf of a defendant in a criminal trial.

  Your statement may not be used as evidence by the Government in punitive actions or adverse administrative actions, such as a flight evaluation board, a determination of line of duty status or pecuniary liability, or elimination from military service. Further, you are advised the chain of command will review the final mishap report, to include your statement, but the chain

of command may only use your statement for safety and mishap prevention purposes. Do you understand how your statement will be used, and are you willing to proceed with this interview?"

- Witnesses acknowledge they understand the concepts by verbally stating so and signing a "Privileged Witness Advisory Statement" containing the prescribed language.
- Interview tapes, digital recordings and notes should be destroyed once the MAR is signed. These are no longer needed and should be treated like all other evidence and working documents not included in the final MAR. Do not retain, ship to headquarters or leave at the unit.

Interview Tips.

- Assemble an interview kit before starting the interviews.
- Tape recorder with counter, microphone, tapes, and extra batteries.
- Supply of witness advisory forms.
- Model aircraft (one of a small, toy store variety will suffice for general purposes, but a model of the actual mishap aircraft is better).
- Appropriate charts and maps to plot witness locations (if available).
- Paper, pens, pencils (for the interviewer and interviewee).
- Tissue.
- Drinking water and glasses (for the interviewer and interviewee).
- Don't forget to introduce yourself and other interviewers.
- Maintain control of the interview process. Many MABs try to interview everyone or re-interview too many people. Is it necessary? What is value added?
- Summarize or paraphrase the interview, do not make verbatim transcriptions; this is seldom needed for the analysis and almost **NEVER** needed in the MAR.
- Only include summaries of interviews adding value or support the investigation. Just because the MAB interviewed someone, does **NOT** mean the interview should to be included in the MAR.
- Don't make the mistake of offering privilege to all witnesses since it's usually not required. The MAB President determines the extent of privilege offered to witnesses.
- Transcribing interviews is seldom necessary. Remember, for every hour of interview it takes seven hours to transcribe and correct. Seldom is this kind of effort (expense) justifiable. In almost all cases, interviewer's notes or summaries are **ENOUGH**.
- **DO NOT** including all of the interviews in the MAR. If an interview adds nothing, don't keep it and certainly do not include it in the MAR.
- Prepare a list of questions prior to the interview.
- Know what you want to ask – write out your questions before starting the interview. "Winging it" never works, it leads to repetition, close-ended questions and prompting.
- Make a list of known facts, identifying missing facts the witness could potentially shed light on; build a list of questions needing asking based on this list.
- Make sure the tape recorder works and has a fresh tape in it ahead of time. Use it unobtrusively, but tell the witness it will be used. Use an omni-directional microphone.
- Use a separate tape for each witness. Note at the beginning of each interview if the interview is privileged or non-privileged and that the witness understands the concept of privilege.
- Duct tape is useful for wrapping tapes when finished, to prevent accidently taping over.
- Use a tape or video recorder; taking copious notes during an interview can intimidate a witness and distract or interfere with the flow of information.

- Associates of the witness should be kept away from the interview location unless they will also be interviewed and in those cases, interview associates one by one, privately.
- A witness is a frail source of information; neither right nor wrong. A witness will take cues if you are unwise enough to give them. Audible cues and body language can indicate validation or disagreement and subtly cause them to alter their account. The best technique to cultivate a witness' candor is to pay full attention, but maintain a benign poker face.
- Allay any discomfort, embarrassment, anxiety or shyness on the part of the interviewee. Try to put the witness at ease; offer coffee, water or other refreshments and a comfortable interview area. Giving something instills trust and prompts the witness to talk more freely.
- Your uniform may not be the appropriate attire. It may be more appropriate to dress as you expect the witness to be dressed.
- Approach the interviewee as an equal; make friendly eye contact, shake hands, etc. Never try to assume a position taller than the interviewee.
- Make sure you will not be interrupted. No phone calls, no knocks on the door. Cell phones **OFF**!
- The witness should be in control, doing the work and be the central person during the interview. You are after what they can provide, not what you want. The best way to do this is to invite them to tell you their entire story, beginning to end, without interrupting them to ask questions. Take brief notes, but don't speak unless absolutely necessary.
- Maintain friendly eye contact as much as possible.
- One method for keeping a witness talking without a direct question is the pause. Periods of silence while the witness collects his or her thoughts can encourage the witness to expound more fully and avoid omissions. The interviewer's ability to be a good listener and keep the witness talking is essential in this phase.
- Pauses as long as 10 to 40 seconds are effective.
- Consider playing the tape recording back to the witness to stimulate recall.
- The interviewer unknowingly controls how the witness responds. The interviewer is the listener. Rambling and babbling is good, allow it.
- Questions should only be used to get the witness talking. Asking lots of questions sends the message the witness is not doing well, not providing the right information. This can lead to the witness trying to provide what they think the interviewer wants and not what they actually know.
- It may be necessary to give the witness increasing amounts of information to help evoke details. Recognition memory always exceeds recall memory and recall may be enhanced if the proper recognition cues are provided. These cues should be surrendered grudgingly, little by little from general to specific information.
- Beware of jargon and terminology, as it can be confusing or intimidating. Use simple, non-technical, non-aviation terms during the interview. Add explanatory notes that put the witness' description into standard terminology after the interview is concluded.
- Do not assist the witness with terminology. The statement should be in the words and terms the witness understands.
- Talk directly to the witness at his level. Phrase questions in the witness' words; if he/she calls a drop tank a "big gray thing", that's what you call it.
- Successfully interviewing witnesses is primarily an application of common sense. Show each witness the same courtesy and consideration you would appreciate if the situation were reversed.
- If possible, do not interview more than one witness at a time. Do not let one witness hear the statement of another since this will influence the witness.

- Avoid contaminating the witness with information he or she has not offered. For example, if they didn't mention a fire, do not imply there was one by asking, "Where was the fire?" Instead ask, "Did you see smoke or flame?"
- Plan the interview so it flows. This does not mean a prepared list of questions should be used, but rather all areas of concern should be addressed.
- Avoid arguing with the witness concerning moral or legal responsibility of the crew, the USCG or the government. Attempt to keep the witness confined to observations related to the mishap. Witnesses have been known to regard the interview as a medium for voicing their opinions on operations, noise and other activities annoying them.
- Avoid writing as much as possible. This may lead or distract the witness. Observe non-verbal communication.
- Tolerate silence.
- Use open-ended questions as much as possible. Focus initial questioning on what happened and general areas. Avoid questions that can be answered by a "Yes" or "No."
- Start with a prompting question like, "Please tell me what first directed your attention to the aircraft and everything from that point on?" Do not interrupt this narrative. Sit back and let the witness talk.
- Reward the witness when he signifies his narrative is complete by expressing appreciation of his time and effort.
- Once you're ready to ask questions, keep them short and to the point, but do not lead the witness. Ask one question, and allow the witness to respond fully before asking a second question; that may mean waiting before moving on.
- Arrange and ask your questions in a logical sequence. Progress from one question to another in a given area and from one area to another area.
- It is perfectly appropriate to go from general to specific in your questioning, as long as you do so without leading. For example, if you have physical evidence suggesting a left engine in-flight fire, attempt to confirm it with an eyewitness by gradually asking more specific questions (i.e., "Did you notice anything unusual about the aircraft?"; "Did you notice flashing, glowing, or smoke?"; and "Where on the aircraft did it look like smoke was coming from?").
- Allow witnesses the freedom to discuss answers rather than restricting them to short responses. Keep the witness focused on their personal observations. If they report that someone else described the occurrence, get the name and contact the person at a later time; then get back to their observations/narrative by saying "Finish telling me what **YOU** observed".
- Do not assume you know what the witness means when describing what they saw; go for the maximum amount of detail.
- If they are using aeronautical terminology, ensure they are using them correctly before accepting specific assertions about maneuvers or structures. Have them use the model to demonstrate.
- On second interviews, play the critical segment of the tape back for the witness and then ask if they remember any more details. If so, tape the new information.
- Encourage the witness to clarify their statement by sketching or referencing a map or photographs. Include these sketches, photos, or maps with their statements, if needed. Have the witness talk you through the sketch or diagram; identify locations mentioned in the statement.
- If after further thought they are able to furnish additional information, encourage witnesses to supplement their original statements,. Record these additions without modifying the original statement. Allow witnesses complete freedom in describing events pertinent to a mishap.
- Maintain a polite but professional rapport with the witness; do not show disbelief, disrespect, or anger toward the witness or their responses.

- The very last question of the interview should be, "What do you think caused this mishap?" This question, when the witness is most comfortable and least guarded, can give clues to their biases.
- Formal interview sessions are not usually needed if the objective is simply to gather additional information from a witness. There's nothing wrong with asking a witnesses to make a follow on statement on specific issues, nor is there anything wrong with one MAB Member interviewing an individual informally and providing a summary statement.
- At the end of the interview, remind witnesses who accepted privilege that safety privilege only applies to the information provided the MAB, even if they provide the same information to another board.
- Courtesy is important in concluding the witness interview. Thank witnesses for their cooperation and time in providing their statements. Leave a phone number and address where you can be reached should the witnesses recall additional information.
- Respond carefully to witness questions. Be truthful but do not reveal any information obtained during the investigation. During the last part of the interview, the witness may look to you for support, validation, or feedback. "I don't know," "We don't know yet", or "We're trying to find out", may be appropriate responses.
- Make sure the witness understands the AIM may also interview them at a later date. Explain the differences in the two processes, if appropriate.
- Educating witnesses on the distinct differences between the MAB and AIM is often important and helps get useful statements for both boards; it helps to build rapport and trust as well.
- Remember, the MAB and AIM are **NOT** allowed to conduct simultaneous interviews.
- Give precedence to the first version. You may re-interview some witnesses, but these witnesses will have had opportunity to reflect or absorb information from other sources and rationalize what occurred. Stories change. As witnesses confer, there is a tendency to form a "consensus account" of the mishap as each witness adopts details from the others and loses or suppresses what had been a distinctly individual perspective. This is not necessarily devious, just a natural tendency to "fill-in" the blanks and cope with a sensational event.
- Immediately after the interview, write down your initial impressions, thoughts and concerns.
- Some interviewing can only be handled through written statements; however, be aware many people are limited by their writing ability. In general, extemporaneous interviews are better.
- If a USCG witness refuses to be interviewed, contact CG-1131. **NEVER** threaten to punish or create negative consequences for someone that is unwilling to cooperate or speak truthfully.
- Do not have witnesses testify under oath.
- Ensure witnesses understand they are obliged to give honest, good faith statements.
- If the MAB believes USCG personnel interviewed may be guilty of criminal misconduct or that criminal activity may play a role in the mishap, stop the interview and contact CG-1131 immediately.

Transcripts/Verbatim Statements.

The USCG does **NOT** do transcripts of interviews. Summary notes are sufficient. Transcripts are seldom needed and strongly discouraged. If a verbatim transcript is considered necessary, it should be used judiciously. Keep it focused and limited to **ONLY** those sections needed and **NOT** the entire interview. Statements appearing in the report as a transcript of questions and answers are not useful and are almost always better presented as a summary of the interview.

Verbatim statements simply repeating information provided in an interview add **NO** value to the MAR. It's much easier to conduct an interview than it is to transcribe the results. A rule-of-thumb, expect 7 hours of transcribing, proofreading and typing for each hour of interviewing. This is a "best case" estimate assuming the transcriber understands the jargon and the recording is clear.

Transcription from a transcriber not knowing the jargon can take over 12 hours of work per hour of interview before it is accurate. In reality, it is usually more meaningful and useful to summarize the interview than include a lengthy transcript of back and forth conversation.
If you must transcribe, only transcript the relevant portions…**NEVER** transcript the entire interview. Identify the interviewer(s) and the witness in the order they speak. The first time a person speaks, list them by full name and assign acronym titles (i.e., Mishap Pilot – MP, Board President – BP, Investigating Officer – IO).

Put the last name of the witness and the page number at the bottom of each page. Double-space the drafts for easier proof reading and corrections.

Read transcripts carefully. Garbles in transcription often result from transcribers/typists being unfamiliar with the terminology used during the interview. In recent times, this may be the result of "auto-correction" and spell-checking associated with word processing programs.

The person conducting the interview must be the first to proof the transcription. This is done while listening to the tape of the interview. Mark corrections and have the entire transcript corrected and reprinted prior to the next proofreading. The transcript should be proofed by a minimum of three different MAB Members. Edit out verbal pauses, repeats, and non-applicable comments; identify edited portions clearly, noting all omissions (irrelevant, unintelligible, etc.) and placing substitutions in brackets. Correct grammar and syntax, but do not change the original meaning or intent of the statement.

Investigation and Analysis Phase

Basic Investigation/Data Collection.

- Documenting the mishap site and wreckage.
- Collecting factual information and evidence (history, personnel, unit, mission, aircraft).
- Paper Records.
- Toxicology and medical exams.
- Collecting and examining wreckage.
- Initial Analysis of Evidence.
- Mishap Site/Hangar Investigation.
- Flight and Survival Equipment.
- Autopsy.
- HFACS.
- ALC/Laboratory Analysis, tear down of components or equipment.
- Medical evaluation of personnel.
- HFACS.
- Analysis of the facts and evidence relevant to the determination of conclusions.
- Testing of Theories.
- MAB reasoning/deliberations.
- Review of "in-depth investigation results.
- HFACS.
- Final Analysis.
- Conclusions.
- List of findings and recommendations.
- Report Writing.

A mishap investigation can be divided into phases. Each phase can be broken down depending on the mishap. The phases are not distinct, but overlap and will be worked concurrently.

Evidence/Data/Information Gathering.

The initial investigative work involves collecting information and evidence from the unit, witnesses, the mishap crew, records, documentation, medical exams, toxicology, autopsy, etc.

This stage of the investigation and evidence collection is important because the information available is fragile, perishable, and easily destroyed.

This also covers the examination of management and supervisory processes. Any information or documentation regarding the mishap aircraft, crew, unit or mission should be considered.

Keep an open mind; do not start developing theories, this will come later.

Initial Analysis of the Evidence.

This phase involves the sorting of information to determine the circumstance of the mishap. Start with the mishap event and create a timeline documenting each step leading up to the mishap. Probe backwards determining what event(s) or action(s) resulted in the outcome. List the possible scenarios (theories) supported by the facts.

Crash Site Examination/Investigation.

Examination/investigation of aircraft wreckage will take place at several sites and several stages. This stage of the investigation and evidence collection is important because the information available is fragile, perishable, and easily destroyed. Generally this information cannot be determined or recreated elsewhere.

No MAB Member should presume to make decisions involving the mishap site unless discussed and cleared by the MAB President. The FSO and the Engineering Member are often the only ones trained in proper handling and recovery of evidence at the mishap site. The FSO and Engineering Member control this phase.

Examination/analysis of the mishap site, damage and distribution of the wreckage will determine:

- The type of mishap (i.e., spin, stall, flight into the ground, uncontrolled flight).
- Angle of impact.
- Airspeed and attitude at impact.
- Evidence of inflight fire/ground fire.
- Evidence of inflight structural failure.
- Aircraft configuration.
- Whether the power plant was developing power.

Flight and Survival Equipment.

Aviation Life Support Equipment (ALSE) support should be requested for mishaps involving fatalities, major injury or inadequate performance of ALSE (known or suspected). All MAB Members may have a part in this phase.

NOTE: Survival equipment is intended for one-time use. Even for a successful egress or survival situation (no apparent equipment problem), recovered ALSE equipment shall be shipped to ALC for examined and eventual disposal.

Examination of Paper Records.

This is a time-consuming job similar to any review, audit or inspection of records.

- Maintenance and QA records for the mishap aircraft.
- Maintenance and QA records for the mishap unit and any PDM or overhaul facilities.
- Compile a list of deficiency reports; determine if any may have contributed to the mishap.
- List all technical order non-compliances against the aircraft.
- List all required training for mishap crew (current and overdue).

- Flight Schedule (snivels, crew pairing, etc.).
- Review check rides and upgrade write ups.
- Review the mishap crew and the unit's overall proficiency.
- List aircraft discrepancies from previous flights.
- Medical records (up chits).
- Determine if deficiency reports were prepared on failed parts.

Human Factors Analysis and Classification System (HFACS).

HFACS directions can be found at http://www.uscg.mil/hq/cg1/cg113/docs/ergo_hfacs/hfacs.pdf.

The Department of Defense (DOD) Human Factors Analysis and Classification System (HFACS) shall be used by all Commandant MABs to determine the mishap causal factors. HFACS begins as soon as the data collection begins and will continue until the MAR is finished. This is not a onetime exercise; the MAB should sit down regularly as a group and review HFACS. HFACS must be incorporated at the onset of the investigation and analysis process, beginning with the data collection phase and continuing until the final report is written.

If done properly and early on, HFACs will provide the foundation for writing the MAR. HFACS will do more than list the causal factors of the mishap, it will identify the hazards to be corrected or eliminated to prevent future mishaps.

Do not assume a nanocode does not apply; read thru all of them and discuss as a group. Everyone has different a knowledgebase and seen different evidence and as a result, will view the nanocodes differently. Discussions of different viewpoints will help with the investigation.

It is not unusual for the MAB to revisit nanocodes several times as the investigation progresses. A nanocode that does not apply today might apply tomorrow after more evidence has been collected or as MAB discussions progress.

This is not a task to save for the last minute; it must be started early and developed continuously as the investigation and analysis progresses.

The HFACS analysis shall be done as a team. Traditionally, the human factors analysis was passed to the flight surgeon and often accomplished separate from the work of the MAB. This practice sometimes produced human factors analyses that differed considerable from the MAB findings. Integrating HFACS into the investigation will result in a more coherent final product.

In-depth Investigation.

As the investigation progresses, there will be a need for information obtainable only by detailed analysis of components by ALC, the manufacturer or other tear down facility.

This phase also includes the in-depth look into the personnel involved. This includes autopsy, toxicology, 24-hour history, psychology, and pathology testing of survivors and deceased.

This phase is important in helping validate the MAB's deliberations. It provides a detailed view of the origin of failure and USCG-wide impact of malfunctioning components.

Test theories developed earlier; if further evidence is needed to prove or disprove a theory, then obtain the evidence.

Engineering Analysis (Hangar, ALC, and Laboratory Investigation).

Laboratory examination can help determine such things as:

- Position of flight controls at impact.
- Instrument readings.
- Cause of contamination.
- Whether a component was operating at impact.
- Electrical sources of ignition for an inflight fire.
- Identification of illuminated light bulbs.
- Trim settings.
- Power plant malfunctions.
- Propeller or Rotor RPM at impact.

Aircraft systems and components are complex. Post mishap analysis will require technical expertise beyond that of the MAB. Technical experts, specialized investigative facilities or laboratories are available. Contact CG-41 or CG-1131, they can locate and request assistance (this will help the MAB avoid contractual obligations as well as conflicts of interest).

Don't forget ATTC as a source of assistance; they can be very helpful with mock-ups of systems and cutaway parts. Their instructors are knowledgeable on both theory and specific hardware.

An engineering investigation (EI) is focused on components or parts the MAB submits for examination, not the whole aircraft. Depending on the components, they may go to separate facilities, resulting in several EI reports.

ALC can help identify components and determine whether they merit further examination or if their condition is unremarkable except for damage explained by impact or post-crash fire. ALC can also accomplish some detailed tests, measurement or examination of components.

NOTE: When ALC sends personnel to support the MAB, they work for the MAB President. They will provide a summary report of observations or determinations made on the wreckage to the MAB President.

Not everything merits an engineering investigation. An article known or suspected to have failed or malfunctioned warrants investigation **ONLY** if the question “why?” has not already been answered. Remember, the rationale for in-depth analyses or teardowns should be to answer questions the MAB cannot answer by other means.

The Engineering Member or any Member the MAB President thinks is appropriate should travel to the lab and be present for critical EIs. The MAB presence guarantees positive custody of the part/evidence; the right answers are received to the right questions; and the facility has access to amplifying information that could make a difference in the findings.

An EI is limited to what can be determined with confidence from the material evidence, component history cards and maintenance records---hard evidence. In the absence of a solid determination from the evidence (it happens), it may be frustrating when the engineers won't speculate, but as scientists, they are bound to rely on hard evidence, which may be too limited or obscured by damage. Don't be tempted to "sweeten the pot" by offering information you can substantiate only from privileged sources. It remains the MAB's job to determine mishap cause by synthesizing an explanation from a combination of all the evidence.

Reconstructions/Reenactments.

Reconstruction of events and circumstances leading up to the mishap is often the only way to make sense of the physical evidence.

Flight simulators are an excellent means of reconstructing the mishap sequence of events. In the most common form of reenactment the mishap crewman is asked to "tell us exactly what happened." Sometimes, the crewman is placed back in the aircraft and asked to explain.

In cases where the desired conditions cannot be adequately simulated, an actual aircraft may be needed to recreate the mishap-producing situation. Should the MAB deem this necessary, duplicate all known factors as accurately as possible, including airspeed, altitude, weather, sunlight or shadow display, and other details important to the event.

WARNING: A perfect recreation of the mishap can easily result in another mishap! Before any recreation flight is conducted, carry out a risk analysis for the flight. The MAB President **MUST** advise CG-1131 and CG-711 of the MAB's intent to perform an actual inflight recreation.

Final Analysis/Determining Causal Factors.

Once all the evidence has been gathered, the MAB must use the results of the EI, the medical exams/tests, HFACS, etc. to determine the causal factors or the most probable causal factors.

While you may have formed some tentative conclusions, you must now show how all the facts fit together. Some facts are not going to support your conclusion and may even oppose them. You can't ignore them, you will have to adjust your conclusions or admit there are other possible alternatives. The nature of the business is there are almost always other possible alternatives.

There will be anomalies that cannot be explained. Go with the preponderance of evidence. This is not a court of law where everything must be proven beyond a shadow of a doubt. Mishaps are rarely attributed to a single cause but are often the end result of a series of errors. There are many ways to analyze what happened, but it always comes down to first asking why something occurred. Start with the problem, asking what happen in the first place. Then keep taking it further and further until you can pinpoint specific processes, policies, or procedures that didn't work. It all comes down to asking "why?" until you see a pattern in the problem.

There is no hard and fast method of analysis for mishap investigations. Each MAB must determine a logical method and use what is comfortable. The logic of the analysis and the conclusions reached by the MAB are more important than the method used.

NOTE: If a causal factor is not identified in the engineering, medical or HFACS analysis, the causal factor is either not a part of the mishap **OR** the analysis is not complete. Causal factors should not include or address new material not identified in the analysis section.

NOTE: If the investigation uncovers causal factors or findings requiring immediate corrective action, the MAB President shall notify the unit CO. If action is required beyond the unit level, notify CG-1131 immediately. The CSB/Tri-P will follow up and take appropriate action.

Wreckage Recovery/Storage

- Avoid further injuries.
- Avoid further damage.
- Be sure everyone going to the mishap site understands the dangers and hazards.
- The FSO should be prepared to give a safety briefing to the recovery crew.
- Preserve wreckage and mishap site for MAB and AIM.
- Document the site.
- Reconstruction may be necessary; however, wreckage reconstruction is time consuming and expensive.
- Store wreckage indoors if further investigation is necessary and weather is a factor.
- Store wreckage away from unit, to avoid being a "reminder" to unit or a sideshow for the curious.
- Release wreckage to AIM investigators, back to unit or ALC, as appropriate.

NOTE: Salvage and wreckage recovery will occur at different levels and various stages during the MAB process and will differ from mishap to mishap. These efforts will take place in increments and stop from time to time to allow the other stages to proceed. A mishap at the unit will proceed much differently than a mishap in the mountains or at sea.

Wreckage should be treated like a crime scene. Leave it in place until documented and the MAB President has given the okay to move or disturb.

The AIM should be given the opportunity to visit and view the mishap site before wreckage is moved or disturbed when possible.

Not on Day One, rarely on Day Two, but sometime...the MAB will end working with the wreckage at the mishap site.

Plan the recovery and then stay engaged (directly or with a proxy) at the site to supervise the execution. Remember, supervision is important since some of the work to be performed made be completed by personnel whose only qualifications are availability and their fitness for heavy lifting.

The MAB President, FSO and EO will coordinate and work with HQ, the Unit and ALC.

Consider where to relocate the wreckage. This depends on the MAB's future intentions. A full layout (reconstruction) might occupy four times the floor space of an intact aircraft. A partial reconstruction or removal of engines or components for examination takes less space. Storage for packed boxes and chunks of aircraft takes the least space. A crane or forklift requires room to lift and space at the sides to maneuver. Once decided, arrange a secure space accordingly.

It is preferable to have an area isolated from the unit to store and examine the aircraft wreckage. This avoids the mishap aircraft from becoming a source of frustration or regret for unit personnel or curiosity for senior leadership and the community.

Recovery of damaged components whether from land or water should be attempted anytime the material is needed for a complete investigation. If you need the material, ask for recovery. When

asking, use the term “wreckage recovery for investigation purposes,” rather than “salvage.”

Wreckage recovery, whether from a swamp, ice floe, desert, or from 10,000 feet of water requires close supervision by the MAB to minimize and document component damage.

Let HQ decide if recovery is not feasible because of cost or technology.

Consider videotaping any movement of wreckage to document damage from recovery efforts. The wreckage often gets moved several times.

Make sure you have updated photos of your aircraft; specifically, the location of VFDR and how to remove it. This is important for in-house recovery help as well as divers or commercial salvage help.

Remember that everyone assisting needs to know all the hazards on the aircraft or at the mishap site.

Take Your Time. The key to any wreckage recovery is not rushing off half-cocked. Do things at a measured, deliberate pace with adequate planning to assure a successful recovery.

The recovery phase can be the most dangerous part of the investigation. Take care that recovery actions do not cause another mishap. Too often in the past, over-enthusiastic recovery attempts have endangered personnel and caused further airframe damage.

Decide how to collect wreckage. Wreckage, including small parts, should be flagged or marked to make their locations more noticeable. The pickup process usually involves people for small parts and machines for heavy lifting. Boxes on pallets staged throughout the site facilitate pick up by hand and deposit without a long trot.

Whether you fill boxes according to location (crater, secondary impact site, periphery) or by types of parts (airframe, engine, controls, etc.) is a matter of choice. Objects too big for boxes can be palletized or lifted directly. Laden pallets and big objects may have to be lifted by rough terrain forklift, crane or by helicopter.

Transportation. Flatbeds for long, wide or tall pieces; stake beds suffice for the rest. If some disassembly is required, consider the decision carefully since doing so might separate items whose association must be noted before evidence is lost.

Avoid rush hour traffic.

Remember to photograph and document before, during and after disassembly.

It is helpful to line a flatbed with a big, throwaway tarpaulin and wrap it up-and-over the load before tightening the straps; this prevents small parts (it’s all evidence) from becoming highway litter. The tarp will be junk when the job is done due to tears and leaking fluids.

Offload and place boxes and objects to facilitate access for further work. For example, make room to maneuver, locate and stage hoists, toolboxes, engine stands and so forth.

Think things out. Do not try to move wreckage or perform other recovery ops on the fly—no

matter how much you are being pressured. Once the evidence is moved or destroyed--it is gone.

Hopefully, sources of flatbeds and cranes were thought of when developing the unit Salvage Plan or MRP, not after the mishap.

Recovery is usually a long and frustrating process. Be prepared to spend more time with recovery efforts than you thought possible. Expect delays and setbacks.

Beware of people (especially your contemporaries) offering to help. Everyone wants to help, but this doesn't mean they have the authority to obligate their organizations or personnel to help. Find a supervisor. Ask permission from the right people.

The MAB is not authorized to issue contracts for the USCG, use proper procedures; this is where HQ can help.

The fuel samples, should be treated like other evidence and kept locked up in a lockable, flammable storage locker.

Stay in contact with CG-1131/CG-41; keep them updated on recovery efforts and other activities.

HAZMAT: Have a marine pollution response team or HAZMAT cleanup crew on standby. Be aware of fuel and water mixture if pulling the aircraft out of the water. Where will the aircraft drain? How will you contain it? Be prepared to take care of any fluids leaking out of the aircraft. It must all be contained and cleaned up.

Wreckage Control and Diagramming the Wreckage.

Approach wreckage control in much the same manner as other evidence collected by the MAB. A simple Excel spreadsheet, maintained throughout the MAB, can eliminate confusion and misplacing of wreckage.

It may be necessary to move some or all of the wreckage expeditiously from locations such as highways, runways, or populated areas.

A detailed diagram is required to capture where aircraft pieces came to rest and is useful for displaying the boundaries of scorching and debris scatter.

A wreckage diagram may be as simple or complicated as the situation dictates.

In all cases where the wreckage must be moved before the MAB arrives, try to obtain immediate aerial photography as close in as possible before the wreckage is moved. This may be the only documentation of the actual condition of the mishap scene and collateral damage.

Take Notes--Don't Trust Important Facts to Memory.

For mishaps where structural integrity is in question or where the crash pattern strongly suggests that it is a possible cause of the mishap and/or crash-related injuries, the diagram requires more detail.

If diagrams are being used simply for orientation purposes, the diagram just needs to show the relationship of the aircraft to the surrounding terrain. Include topographic or structural features if their positions have a strong relationship to the mishap.

Keep tabs on the location and status of all wreckage/parts sent out for analysis; always obtain an estimated time of return. Use a "Disposition of Parts for Analysis" log to track all parts, equipment, etc. sent for evaluation.

Convey to the organizations and individuals doing the analysis that all parts sent **MUST** be returned to the MAB. This should be included in writing in the letter sent with the wreckage. Don't forget to include in the letter who and where the analysis should be sent.

Provide a written inventory of components sent for analysis or tear down to the AIM President. The written inventory should include the exact location, a primary contact and a phone number.

It is not necessary to return wreckage or evidence disassembled for analysis to its original state. However, labels, markings, rulers and other identifying or quantifying information must be removed from the wreckage/evidence prior to transfer to the AIM. Labels denoting location of pieces in the debris field in reference to a grid map can remain.

Recovery/Salvage of Submerged Wreckage.

Much of the following can be applied to any recovery/salvage operation.

The following discussion presumes underwater recovery has merit for mishap investigation purposes and is approved. There are instances where, despite the absence of wreckage, enough is known from other evidence to form with high confidence the Findings and Cause(s) and forego recovery. Examples of such evidence are crew/eyewitness statements, radar data, taped communications, flight data recorders, facility condition, or known defective equipment (NAVAID malfunctions, fuel sample from delivery point).

Keep in mind not every aircraft will be recovered even for a MAB. Sometimes the depth of the wreckage will prelude recovery, other times cost is prohibitive, and still others the equipment will not be available. But rest assured, CG-1131 and CG-41 will have started working with the other services or agencies to coordinate the recovery operations. The process can be slow.

Search and recovery operations are not cheap and not without risk to personnel and equipment. Whether recovery ops are undertaken starts with the MAB.

A perfunctory request that fails to present a persuasive case that the aircraft (or selected portion) is essential for the investigation may be denied. The MAB must sift through all available evidence and decide whether it has sufficient evidence to explain the mishap or if it needs more.

Finally, ask if it is likely the wreckage will provide answers to the questions the MAB has not yet resolved? If yes, continue.

There must be a successful search before there can be a recovery attempt. Wind, current, bottom

conditions, impact angle, velocity, or aircraft fragmentation can complicate a search.

Location, accessibility and water depth determine what will be required for recovery and who can do it as well as if it can even be accomplished.

Recovery/Salvage Request.

As MAB President, submit your request, justification and amplifying information to CG-1131. A telephone call will get this discussion started, but the actual request should be in a separate message or a mishap progress message.

Reasonable effort will be made to recover crew/passenger remains incidental to wreckage recovery, but the basis for wreckage recovery is not recovery of remains, it is to recover the wreckage. There must be a solid, valid need to have the wreckage recovered.

The following four questions are the exclusive basis for justifying recovery/salvage.

- Is wreckage necessary to determine cause?
- Is wreckage a hazard to navigation?
- Is an item of national security interest at risk?
- Is there an environmental concern?

Since an MAB opens the discussion by its request and is closest to the sources of information, be prepared to address factors that others will need to consider before mounting a recovery operation.

- Wreckage position (pinger, sightings, floating debris).
- Site conditions/accessibility (depth, bottom topography).
- Aircraft's entry aspect (incident speed/angle, breakup).
- Water temperature/date of immersion (corrosion).
- Equipment/ordnance requiring special handling.
- Remains presumed to be in aircraft.

Remember, the USCG is a seagoing service and burial at sea is appropriate.

Since aviation units lack the equipment or personnel trained to accomplish water recovery, the MAB will be asking for assistance outside normal USCG operations. The MAB must justify the merit of the wreckage recovery. Others responding to the request will attempt to determine the following: the difficulty, likelihood of success, assets available/required, expense, funding sources, etc.

COMDT (CG-1131 and CG-41) will weigh the merit and expense.

If your request is approved, count on participating in the wreckage recovery. Do not presume the wreckage will just show up at your hangar door. You must now begin to plan for the operation.

You have collected a list of names, numbers and office codes in the course of requesting and rationalizing the recovery op. These are your new pen pals. Keep them informed. Coordination is essential in preparing for recovery and the ultimate offload and shipment of wreckage.

Planning For Recovery.

Recovery planning and operations require knowledge that the MAB is best suited to provide either directly or by consultation with various aviation resources (ALC systems/structural engineers, MAB Members, airframe/component manufacturers, etc.).

The FSO and EO can handle issues that arise. One or both should be present during the operation and bring reference materials (manuals, pictures, diagrams, parts lists). Be prepared to work closely with the SME or organization tasked; this may be contractors, military, other federal agencies, civilian, etc.

The following is list of details that will need to be resolved. It is not all-inclusive, but helps to give you an idea of the scope of recovery ops.

- Recovery vessel port location.
- Probable sailing date.
- Berthing available for MAB, engineers, tech reps.
- Message release authority for MAB Member.
- Alternate communications (E-mail, INMARSAT phone).
- Provision to store/evacuate remains, if recovered.
- Decontamination/wet storage for components with nonvolatile memory.
- Ship's crane capacity if handling intact, heavy aircraft.
- Drawings to show lifting points and equipment location.
- Offload location for recovered wreckage.
- Critical parts diagram or description; use nomenclature listed on the component's label.

If there is an airfield nearby, divers will benefit from a brief familiarization with a static aircraft. Show them what parts of high interest look like, where they are located, hazards to avoid, etc.

If divers will use aviation-peculiar parts (lift fittings or straps) and tools (specialty fasteners, torque busters), make them available in time to hold school on their installation and use.

If the aircraft has fragmented, a diver will see many loose "black boxes." A rudder actuator may look like a gear actuator. A TACAN box may not be marked "TACAN", it might be labeled "ABC-1234." Be prepared to add color, dimension or other descriptors to help discriminate trash from treasure, plot the wreckage and fetch the prize you want.

Underwater camera equipment. Know where to get the equipment as well as the personnel who know how to operate (check with the divers). Having the ability to look at the underwater pictures during the evaluation dives may be essential to making decisions.

Remember, divers and commercial recovery personnel will need to know all the hazards on the aircraft or at the mishap site. Be prepared to give divers and any other personnel taking part in the recovery a brief on the aircraft and hazards (both site and airframe specific).

Have photos of all compressed gases and flammable materials on the aircraft, flares, float bottle, fire extinguisher, engine extinguishers, and/or blow down bottle. The Salvage Plan should contain this information.

The MAB ashore or its representative afloat will be asked again and again how much of the aircraft is needed for the investigation. Until there has been a significant development, the answer is the same as originally requested and approved: all of it. In most cases, the reason for undertaking recovery is the need for as much wreckage (evidence) as can be found **BUT** be reasonable, you don't need every single piece; you are looking for what caused this event and what will prevent future mishaps. Don't waste time on "nice to have" or other components you know you don't need.

If investigators already have clues as to possible mishap causal factors, this will allow for a recovery focused on select components (an engine, a transmission, a fire location). When this is possible, the MAB should build a prioritized list of items it wants and another list of items it considers of little use for investigation. This is high-stakes poker. If hypothesis A does not pan out, it may be hard to develop an alternate hypothesis with parts on the ocean floor.

Return engagements are rare. Therefore, be wary of yielding the wreckage opportunity; prioritize what you need. In general, only collect, only interview, and only document what is needed. This applies to wreckage photos, videos, and statements. You don't need the tail section if you know fuel wasn't flowing.

Divers in the Water.

The vessel arrives and puts divers or a drone in the water to relocate and survey the wreckage. Having a notion of wreckage distribution will help locate parts not yet found, but should belong in proximity to others whose position is known. Plot the topography and wreckage seen through an underwater camera; refine it as dives continue.

At intervals, have the diver or drone operator pan all around, stopping in cardinal directions to show wreckage and bottom contour. The plot may be crude; direction-and-distance is vaguely appreciated through a remote camera. Without a camera, try to do the same by debriefing divers.

The pickup may proceed slowly and at a rate that may exceed the resources (time/money) allotted. If this occurs, inventory the parts recovered to know what high-value pieces you have or have not yet recovered. Reprioritize.

The MAB representative should work with the on-scene commander in drafting daily SITREPS. The same group should make consecutive assessments of the likelihood of completing wreckage recovery when constrained by funding or future commitment of assets.

Before ending the operation, determine whether you have the desired aircraft components.

No later than breaking moor to sail back to port, make plans to receive the wreckage at pier side and pass those plans to a coordinator ashore. The ship's captain knows that once they crane the wreck off of their deck, their problem will have ended; however, yours will enter a new phase.

Got boxes? Got trucks and a forklift? Got hangar space, tools, and work details? If the offload port is remote, arrange travel to the wreckage or to bring the wreckage to your location. If ALC or factory engineers did not accompany the wreckage ops but are needed for component examination, notify them of the place and time you will commence activities ashore.

Beyond layout and external examinations, consider what components may be candidates for engineering investigation (EI). Consider how they will be removed from the wreckage (people and tools), preserved, packaged and freighted to appropriate engineering facilities.

Plan, plan, plan and then schedule.

Pingers – Underwater Acoustic Locator Beacon.

Pingers are off-the-shelf items originally used in civil aviation to mark flight data recorders. In the 1980s, pingers appeared in military aircraft to mark submerged wreckage.

Current installations in military aircraft use a lithium-based battery with 6-year shelf life. Signal duration is 30 days. Signal activation may have a delay of several hours or days to preserve battery life and allow time for the recovery vehicle to get on scene.

It is crucial to know when the pinger will sound off and when the signal will cease. Refer to the aircraft manuals for pinger model, delay setting, and battery expiration.

Most pingers emit a sub-audible click 20 times per minute. The signal strength is low and the range may be as short as one mile. Not all ships are equipped to receive the signal, but towable equipment is available and easily used. Contact CG-41 or CG-1131.

HFACS Process

Basic Intro to the DOD Human Factors Analysis Classifications System.

The Human Factors Analysis and Classification System (HFACS) provides a guide for mishap investigators and provides a hierarchical approach to link each act to a precondition, to supervisory influences and then organizational roles.

HFACS is just one of many tools available to the MAB. HFACS was developed as a tool to guide causal analysis and can also be used to develop interview questions, determine potential ORM hazards and detect human error trends.

Start with the problem, asking what happened in the first place and then keep taking it further and further until you can pinpoint specific processes, policies or procedures that didn't work. It all comes down to asking "why?" until you start to see a pattern in the problem.

HFACS is required for all Class A and B Aviation mishap investigations. The MAB is free to use other analysis methods, but the HFACS results will be incorporated as part of the MAR.

HFACS is used by the entire MAB to pull together all the evidence and analyses to determine the causes of the mishap.

One person or a small group cannot do HFACS alone. HFACS must involve the entire MAB to allow for overlapping interest and knowledge to take place and bring everything together.

The mishap did not occur in a vacuum and neither will the investigation; HFACS is a group effort and requires teamwork, everyone's training brings a different perspective to the human factors analysis and the MAB Members have collected different information.

Every MAB Member is expected to read the HFACS guide before starting MAB deliberations. The first 12 pages of that guide are essential in understanding and using the HFACS process.

MABs have not always performed the HF analysis as a team and often left the Medical Member to analyze human factors on their own. This practice led to a human factors analysis considerably different from the MAB's analysis and conclusions and did not always fit with the rest of the investigation and findings.

HFACS is different from the Medical Officer's Human Factors Questionnaire, which deals with personal and medical aspects of the mishap crew. HFACS deals with this and everything else.

To work, each Member must do their part in conducting the HFACS portion of the investigation:

- FS/MO addresses the human performance areas from the medical, physiological, psychological, psychosocial and biomechanical point of view.
- Pilot Member comments on cockpit design issues, operations, training and proficiency.
- Aviation Life Support Equipment Member (if present) comments on life support equipment,

survival equipment and egress issues, especially training issues.
- FSO comments on safety, ORM, CRM and facilities/services, etc.
- EO comments on equipment, design, maintenance issues as well as facilities and services.
- The President's expertise varies but is especially valuable in management and organizational influences.

HFACS should be started as soon as the data collection begins and continue until report writing.

HFACS is not a onetime exercise nor should it be saved for the end of the investigation. The MAB should sit down as a group regularly and review HFACS nanocodes.

HFACS will do more than list the causal factors of the mishap. If started early, there may be indications of data needed or evidence to be examined that might not be thought of until much later. HFACS will help determine what needs to be analyzed and will assist the MAB in writing the MAR.

HFACS can help identify the hazards needing to be corrected or eliminated to prevent future mishaps and help determine the corrective actions needed.

The HFACS Process.

The MAB should go thru the entire list of nanocodes, selecting those that apply. For each nanocode selected, the MAB should write a short narrative discussing how/why the nanocode applies. Conducting an evaluation of each item in the timeline gives the MAB a thorough human factors picture of all the events leading up to the mishap.

Begin by determining what specific action(s) were directly contributable to the crash/mishap. Start at the lowest level and ask, "What did the person do, or not do, to cause the mishap (e.g., pushed the wrong button, made a bad decision, or violated regulations)?" This is called the ACT level. Using the HFACS model, look at the various ACTs along with the most common types of errors and pick those applying to your situation.

Once the MAB has identified the ACT nanocodes as well as who committed the act, the next step is to evaluate the PRECONDITIONS supporting or leading to the unsafe ACT.

A method that may help evaluating PRECONDITIONS is to review each of the categories and subcategories in this tier and select the PRECONDITIONS that could have led to the act.

There may be more than one PRECONDITION for each ACT; be prepared to explain each PRECONDITIONS selected. Ask, "Why did the person do this unsafe act?" Just like before, look at all the PRECONDITIONS along with the most common types and pick those that apply.

Once all PRECONDITIONS for each ACT have been identified, move to the SUPERVISORY level and subsequent ORGANIZATIONAL issues contributing to the PRECONDITIONS.

Look at the command's role in this event. Many times we find someone in the command knew about the PRECONDITIONS but didn't take appropriate steps, or perhaps there were SOPs in place but they were unclear or not enforced. This level helps the command know where they need improvements.

Lastly, look at the organization as a whole. Perhaps the procedures given are unclear or the training inadequate, or items are known to be faulty but don't get fixed.

PRECONDITIONS, SUPERVISION and ORGANIZATIONAL Influences may be listed under different ACTS.

List in chronological order, the ACTS and associated PRECONDITIONS, SUPERVISION and ORGANIZATIONAL Influences contributing to the mishap.

NOTE: Do not assume a nanocode does not apply; read thru all of them and discuss as a group. Everyone has different knowledge, seen or heard different evidence and may view a nanocode differently. Discussions of different viewpoints will help with the investigation.

Concept of Privilege

Definition – Privilege.

Privilege is the protection of mishap analysis information from uses other than mishap prevention or safety training.

Definition – Promise of Confidentiality.

The promise to protect an individual's statement from use outside the mishap analysis process. This promise is given on a limited basis to witnesses that are/may be reluctant to give their statement for fear of reprisal.

The Concept.

Certain witness statements, investigation material and information obtained, using the promise of confidentiality during a mishap investigation, is considered privileged and can only be used for purposes of mishap prevention.

The actual causal factors in some mishaps may never be discovered unless witnesses are assured their statement/information will be used for mishap prevention only. Individuals may be reluctant to reveal information pertinent to a mishap because they believe certain uses of the information could be embarrassing or detrimental to themselves, their fellow service members, their command or others.

In addition, Mishap Analysis Board (MAB) members and endorsers might be reluctant to include their opinions and recommendations if they believe the information could be used for other than safety purposes.

What is Safety Privilege?

- See Enclosure 10 of the SEH Manual.
- Privileged information shall be used for safety purposes only.

Privileged information is information that is exempt from disclosure outside the Coast Guard and can only be used for safety purposes. The USCG treats safety information confidentially to ensure the MAB obtains accurate mishap information. Privileged information is information that may not have been given, discovered or provided without a promise of confidentiality. It also includes MAB deliberations, conclusions and recommendations.

NOTE: For purposes of this section, the terms "control" and "access" include both control and access obtained in the normal course of one's duties and control and access obtained by any other means--whether incident to normal duties and whether such access was authorized.

Promise of Confidentiality.

Because critical information related to a mishap is often available only from persons directly or indirectly involved in the mishap, it is necessary to establish a means of providing a frank and open exchange of such information without fear of incrimination or otherwise adverse action.

The USCG may give a promise of confidentiality to encourage frank and open communications to individuals who provide witness statements to a MAB and to government contractors who built, designed or maintained the equipment and are participating in the investigation.

Mishap participants may be offered privilege in exchange for a truthful and forthright statement on what transpired before, during or after the mishap. However, this is not a given; not everyone will need or be offered privilege.

The promise of confidentiality also encourages MABs and endorsers of aviation MARs to provide complete, open, candid and forthright information, opinions and recommendations.

Using privileged information for any purpose other than safety will compromise the credibility of future assurances of confidentiality.

Privileged Safety Information Shall Not Be Used.

- As evidence or to obtain evidence in determining misconduct or line-of-duty status.
- As evidence to determine responsibility from the standpoint of discipline.
- As evidence to assert affirmative claims on behalf of the government.
- As evidence to determine government liability for mishap related property damage.
- As evidence before administrative bodies.
- In any other punitive or administrative action taken by the USCG.
- In any other investigation or report of the mishap.

It should be noted:

- Witnesses shall not provide statements to the MAB under oath. Doing so is prohibited.
- Witnesses shall be advised, in writing, the purpose of providing their statement and the limited use to be made of the statement.
- Witnesses will read and sign the Witness Statement Promise of Confidentiality Advisory Form. See Enclosure 2 of the SEH Manual.
- MAB Members shall not, nor may they be requested to, divulge their opinion and/or any information they arrived at or were privy to while in their capacity as a MAB Member.
- Any individual having knowledge of the content of an aviation MAR is prohibited from releasing that information. Any individual contacted either formally or informally for such information shall immediately contact CG-1131 for guidance. This includes requests made under the Freedom of Information Act (FOIA).

NOTE: Unauthorized disclosure of privileged information is a criminal offense punishable under Article 92, Uniform Code of Military Justice (UCMJ) and Civilian Personnel Regulations.

All questions concerning privilege should be directed to CG-1131. In consultation with USCG legal, CG-1131 determines the privileged or non-privileged status of all information in the MAR.

Safety Privileged Can Applied To:

- The MAB's deliberative analyses, findings, conclusions, and recommendations.
- Any information that, if disclosed, would reveal the MAB's deliberative process.
- Witness statements made pursuant to a promise of confidentiality.

NOTE: Toxicology test results and autopsy protocols are not privileged; however, each investigation should request and obtain them independently of the MAB. These results are protected by the Privacy Act.

- 72-hour and 14-day history if privilege was granted.
- Life sciences report containing analysis by a MAB Member.
- Information, diagrams and exhibits calculated or developed by or for the MAB.
- Drafts and working notes of the MAB Members.
- Endorsements of the MAR.
- Any information obtained from a contractor who built, designed, or maintained equipment involved in a mishap when the information was provided pursuant to a promise of confidentiality.
- Photographs, imagery, simulations or animations developed by the MAB revealing the deliberative process.
- The "raw" flight data is factual data and can be released in its unaltered tabular or graph format. Reconstruction, simulation, data smoothing or manipulations of the "raw" flight data produces a privileged product.
- Photographs of a sensitive nature such as an autopsy or other photographs of the deceased are not privileged but are handled as such due to a sensitive nature.

NOTE: The Privacy Act does not protect deceased persons, but information sensitive in nature may be withheld to protect the privacy interests of surviving family members.

- Staged photographs are privileged.
- Unstaged photographs are not; however, captions and markings placed on photographs that are speculative or indicative of the MAB's deliberative process make the photograph privileged. If captions and markings can be removed, the photograph can be released.
- Videotapes documenting or depicting the mishap scene or wreckage, including flight deck videos and videotapes and films made by individuals are not privileged.

How is Privileged Protected?

- See Enclosure 10 of the SEH Manual.
- Prudence on the part of the MAB.
- Control of MAB paperwork.
- Proper separation of privileged/non-privileged information in the MAR.
- Attitude of MAB Members.
- UCMJ Article 92/Civilian Personnel Regulations.

A "Promise of Confidentiality" may not be given until such time as CG-1131 convenes a MAB. Only the MAB President may grant a promise of confidentiality. A promise of confidentiality may be given to any USCG personnel who the MAB President determines should be extended such a promise. A promise of confidentiality may be granted to any USCG personnel if it is believed the

individual will not provide a candid statement without the offer.

Controlling and Handling Privileged Information and the MAR.

Any USCG personnel having access to privileged safety reports or information or materials derived from them has a duty to control those documents in a manner preventing their use in any way other than their authorized purpose, which is mishap prevention.

The USCG does *not* use privileged safety reports, their attachments or information extracted from them as evidence for punitive, disciplinary or adverse administrative actions; for determining the misconduct or line-of-duty status of any person; in aviation evaluation boards or review; to determine pecuniary liability or liability in claims for or against the United States.

Any release outside the USCG, even to members of Congress or officials of the Department of Justice (including offices of US Attorneys), is governed by COMDTINST M5100.47 (series) and must be approved by CG-1131.

Handling Non-privileged Information.

Non-privileged information is releasable outside the USCG once privacy information is removed.

NOTE: CG-1131 is the release authority for all USCG aviation safety reports and safety information (privileged or non-privileged).

Contractors, contractor representatives and other technical assistants may not retain copies of any privileged reports they prepare for inclusion in the MAB or the MAR. Any report they may be required to prepare for their employers regarding the mishap investigation must be produced as a totally separate and different entity. Such reports shall use only factual information gathered during examination of physical evidence. These company reports must not contain any privileged information or conclusions derived from MAB discussions or analyses.

Not everyone can be offered or granted a promise of confidentiality. The concept applies only to USCG employees (active duty, reservist, civilian), DOD military and USCG contractors (with prior arrangements).

Not all safety investigations can grant confidentiality. Only Commandant convened investigations are given the authority to grant confidentiality to the witnesses.

When confidentiality is offered or requested, it is important to have a signed copy of the "Witness Statement Promise of Confidentiality Advisory Form." The form shall be attached to each witness statement.

If a witness desires to make a non-privileged statement, the form will be marked accordingly.

If a statement is taken by telephone or other means where the witness cannot sign the form, the interviewing officer should note this and that the privileged nature of the statement was explained.

A list of all witnesses interviewed shall be included in the MAR annotating whether the individual

was offered and accepted the promise of confidentiality.

A witness can tell anyone anything; however, the MAB does not release or share witness statements. Do not give the witness a copy of their statement to share or use for another interview. They will have to re-tell the story.

Sharing Mishap Information with Other Investigations

The safety investigation has priority and shall initially control access to the scene, witnesses and evidence per COMDTINST M5100.47 (series). All other investigations are done independently and apart from the safety investigation. Despite this separation, the safety investigation shall provide factual information to the other investigations as soon as possible.

Other investigations will be given access to factual information and documents not derived from privileged safety information or witness interviews.

Factual information includes all non-privileged materials; logs, directives, un-staged photographs; recordings of air-to-air, air-to-ground and ground-to-air voice transmissions at the time of the mishap; flight data recordings; and all pre-mishap medical records.

NOTE: Where possible, other boards should provide the MAB with a list of documents needed. Do not release analysis, findings, recommendations, comments or references to witness statements or other materials prepared by or for the MAB.

It may be helpful to document materials and information given to the other investigations.

Provide a list of witness names/addresses/phone numbers, but not statements or comments.

Mishap crewmembers should not receive CISM as a group until after released by the MAB.

NOTE: Witnesses shall not be interviewed by other boards or receive CISM until released by the MAB.

NOTE: In those cases where a mishap member requests or needs CISM, help should not be withheld. An attempt should be made to have the individual write or record a statement first.

Provide original films and videotapes depicting the actual mishap sequence to the AIM. This includes videotape recordings (VTR) of the heads-up display (HUD).

Do not sanitize or otherwise edit copies of film and videotape depicting the mishap sequence. Provide "as is." Include written instructions on disposition of film or videotape when the investigation is complete.

Tape or video of simulated, computer-generated, or reenactments made by or for the MAB are privileged and cannot be shared.

Factual photographs containing human remains are turned over to other investigations in a separate envelope and appropriately marked. These are not privileged but are sensitive in nature and handled/protected as such.

NOTE: CG-1131 handles all FOIA requests for the MAR or material associated with the safety

investigation.

Any photograph with arrows, markings, other speculation or deliberative information will be considered privileged and are not shared.

PAO Support---Provide PAO with a "small bag" of non-privileged, unvarnished facts: Who (unit, **NOT** individuals), What, Where, When. When possible, a simple photograph or two of the mishap site can be used to "de-fuse" the media frenzy for pictures.

CVR tapes and transcripts are not privileged. The actual tapes are protected by the Privacy Act. Videotapes of simulated, computer-generated, animated or re-enacted portions of a mishap flight are always privileged if they were made with the involvement of the MAB or personnel with knowledge of privileged mishap information. Do not release or share.

If the recorded voices of the mishap crew are incorporated into an otherwise non-privileged animation, simulation, or reenactment video, the video can be provided to the AIM.

NOTE: Cockpit voice recordings of mishap aircrew conversations are not protected by the military safety privilege, but under USCG policy, they are not released to the public.

For fatal mishaps, under USCG policy, a video with recorded voices of the mishap crew is not releasable outside the USCG due to the privacy interests of the crewmembers and the surviving family members.

NOTE: In all cases, **ONLY** those with a need to know will be allowed to hear the actual voice recording of the CVR. Transcripts, however, are releasable.

Factual, Non-Privileged, Medical Information.

Medical information is treated the same as any other information. It can be shared with other USCG investigations unless it is privileged. Medical information is protected from release outside the USCG HIPAA and Privacy Act restrictions.

Information is not privileged merely because it is medical information. Non-privileged examples include:

- Toxicological reports.
- Coroner's reports.
- Autopsy protocols (but not photographs).
- X-Rays.
- Laboratory reports.
- Death certificates.
- Photographs not sensitive in nature and not revealing the deliberative process.

NOTE: Factual photographs where human remains are evident are turned over to other investigations in a separate envelope and appropriately marked. These are not privileged but are sensitive in nature and handled/protected as such.

- Opinions and conclusions of the cause of death by persons outside the MAB (coroner, hospital, doctor, etc.).
- Descriptions of injuries.
- Physical exams including those conducted before and after the mishap.

NOTE: The FS/MO controls all copies of prints and negatives of human remains. The MAB President should be aware the Medical Member might have reporting requirements beyond those imposed by the safety investigation. Such reports are not privileged but carry with them their own handling caveats. The Medical Member shall personally provide copies of post-mortem photographs to the AIM.

NOTE: Statements made to an MAB during the physical exam pursuant to a promise of confidentiality are privileged.

Privileged Medical Information.

Findings, conclusions, opinions, analyses, and recommendations of the MAB Medical Member.

NOTE: Opinions and conclusions as to the cause of death by persons other than MAB Members (coroner, hospital, doctor, etc.) are not considered privileged.

Statements given to the FS/MO pursuant to a promise of confidentiality. Includes a "Witness Statement Promise of Confidentiality Advisory Form".

Information protected by the Privacy Act is anything constituting an unreasonable invasion of privacy. The Privacy Act does not protect deceased persons, but their next of kin may be protected.

72-hour and 14-day aircrew medical histories are privileged. The AIM will gather their own 72-hour and 14-day medical histories from the aircrew and/or mishap participants involved.

Privileged Information Stored In Automated Systems.

Computers, word processors, electronic mail, etc., create problems concerning the protection of privileged safety information.

If privileged information is stored electronically, ensure only persons authorized to have such data are able to gain access. Password protection is **NOT** adequate if persons outside the safety community have or can obtain the password.

Electronic mail creates other problems and this must be controlled from the beginning. MAB documents are FOUO and should not be emailed to personal or private email accounts.

Examine practices and procedures regarding use of electronic/automation equipment. IT support personnel can help and can provide the MAB with approved procedures and workarounds.

Remember, letters and e-mails containing references to the findings, conclusions, or recommendations of the MAB, constitutes the creation of a privileged document (request for analysis,

preparation of command endorsement, etc.) Leaving such privileged documents in a system where unauthorized persons can see them may be subject to the criminal penalties set forth in COMDTINST M5100.47.

All working notes, copies of personal notes, drafts and documents (electronic and paper) must be properly destroyed when the MAB adjourns.

Technical Assistance

MAB Members are well trained in their respective fields; the typical MAB is capable of successfully investigating the majority of the aircraft mishaps with only a small amount of technical and engineering assistance.

Assistance is available from other military services, agencies and organizations on an as need/as available basis. Requests should be made through CG-1131.

What Technical Assistance Is.

Modern aircraft are extraordinarily complex systems. In the past, a course in crash dynamics, structures and failure mode analysis was enough to analyze wreckage and failed components without further assistance. Today, time-tested "tin-kicking" skills are still essential to the investigation, but frequently expert help is also required.

Circumstances surrounding a mishap may require the services of professionals or specialists to interpret damaged instruments or fire patterns, evaluate egress and life support equipment, assess breakage patterns in composite materials, and so forth.

Technical expertise can be provided in virtually any technical discipline imaginable. This expertise may reside within the USCG, within DOD, another government agency, or a contractor.

Prime contractors and subcontractors who supply aircraft and specialized components to the USCG are often well equipped to analyze the failure of their equipment. It is often in the USCG's interest to solicit this type of assistance during an investigation.

Consider asking for help when:

- Technical expertise or teardown facilities are not available within the USCG.
- Teardown or analysis will require the use of trade secrets or proprietary information.
- Contractor participation will ensure prompt correction of deficiencies or materiel defects (e.g., through promulgation of an immediate change document or other process that has mishap prevention or operational enhancement value).

When to Ask for It.

The key is knowing when you have reached the limits of your expertise and when to ask for help. Get the support you need/want. If you decide you need assistance, ask for it pronto. A telephone call is usually sufficient to bring subject matter experts to your location. Requests for equipment, materials or personnel should be conveyed in a supplemental mishap message.

What is needed will depend on circumstances of the mishap. Most mishaps require people at the mishap site to assist the MAB with reading the wreckage and to accomplish the recovery.

Don't waste your time trying to determine whom to call—this is a job for CG-1131.

Use as much generic help as you can from the mishap or host unit, when practical, and then determine what specialized knowledge you're likely to need and go ask for it. Virtually all major mishaps need some sort of technical assistance so requests are expected.

However, moderate your desire to bring in hordes of "hired guns." Calls for assistance should be just that--a request for technical specialists to *assist* the MAB with the investigation of a mishap, not conduct it.

MAB Members who have received formal safety training have all of the basic tools needed to successfully carry out much of the investigation.

As a general rule, identify problem areas and request assistance in these areas.

Do not immediately request assistance for areas having a low probability of being factors. For these areas, allow things to settle down and see if they still appear to be areas needing investigation or if they can be ruled out.

It is not necessary to bring an engine specialist to the scene if it is obvious the aircraft crashed because of an unrelated system. Similarly, detailed examination of wreckage and crash-damaged components may be completely unnecessary if it can reasonably be concluded crew performance caused the mishap and their performance was not degraded by malfunctions or defective equipment.

However, be aware that systems may have to be analyzed to prove they were in fact functioning properly.

The bottom line -- use good judgment in asking for help, but don't hesitate to do so if you're faced with conditions or circumstances exceeding the MAB's corporate expertise.

Generally, it's appropriate to bring in technical assistance at any point in an investigation, but considering the reasons stated prior, the sooner the better. Contractors, particularly those in the military sales business, are usually more than eager to participate the moment they're asked. Make sure they will represent the best possible solution to your investigative challenges before requesting their assistance.

How to Get It.

Get the support you want. If a task requires professional or specialty equipment, do not make do with amateurs and inadequate tools. Assess the risk of injury to personnel or damage to evidence before settling for less.

Make the system work for you. The Commandant has appointed you to find the cause(s) and is willing to help. Also, the chain of command and aviation community want you to find the causes and are willing to help. They cannot, however, read your mind. Make your needs known to the people who can deliver assistance.

CG-1131 has probably encountered a similar problem and has sources for solutions.

Ask early before evidence is disturbed. It may take time to muster travelers to the site. Technical

consultants may want or need to see evidence as found, if possible.

Requests for technical assistance should be made to CG-1131 and CG-41. The CG-1131 Advisor is the MAB liaison to request technical assistance.

The quality of help obtained varies directly with the amount of information relayed. Be as specific and informative as possible when making a request for technical assistance.

MAB Presidents and Members must refrain from unilaterally involving experts or others they might be familiar with regardless of the source (DOD, FAA, NTSB, other government, etc.).

Check with CG-1131 before involving **ANY** outside help. It is never good idea to try this on your own; HQ is there for support. This will avoid duplicate efforts and make sure proper protocol, contracting procedures and channels are used. Serious legal problems and financial claims can result due to possible infringement on existing USCG contractual obligations.

Technical assistance may be on the way whether you asked for it or not. ALC and HQ work closely with major contractors/manufacturers. It is likely the manufacturer(s) found out about a mishap and assembled an appropriate response team before most of the MAB were even notified an accident had taken place.

Remember: The MAB is in **NO WAY** obliged to grant contractors (or other uninvited "visitors") access to the mishap site or wreckage/components.

Normally, contractor representatives will not respond to a mishap unless their participation has been requested through USCG HQ and HQ will notify the MAB President of anyone they have sent to the site.

How to Use It.

The MAB President sets the basic guidelines for the outside expert's participation in the mishap.

- They are expected to share all information developed.
- The FSO is in complete charge of the mishap site.
- Only that portion of privileged information necessary for them to assist will be divulged.
- The MAB President is in control of the investigation and can send anyone home not playing by the rules.
- The MAB, and only the MAB, is responsible for determining the causes of the mishap and for making recommendations.
- Technical experts may be knowledgeable in their field, but they may not have accident investigation experience nor will they have a complete picture of the mishap.

All you normally want from these experts is a factual listing of their findings, nothing more. Remember, this will be considered non-privileged information (no conclusions, opinions, etc.).

The MAB analyzes the facts and make conclusions. The MAB may discount the experts' findings/reports if not supported by other information.

Immediately upon arrival, technical experts must be briefed on how their contribution to the investigation will be used. Regardless of whether or not the experts are government (military or civilian) or non-government employees participating under technical engineering contracts, their ***releasable*** reports must be limited to observations and determinations based upon those observations and other generally accepted engineering data/analyses.

For ***non-releasable*** reports, additional information such as proprietary data and opinion may be included as well. Regardless of the type of report written, technical experts should interact with MAB Members because their information is ultimately integrated into the overall report.

Technical experts have a pronounced "halo effect." Most have participated in more investigations than the average MAB Member. The MAB President needs to stay in control and be aware of the tendency to defer to technical experts, particularly when they stray away from their area of expertise (e.g., an expert in intra-cockpit communications suddenly begins to offer up theories on spatial disorientation or operational procedures).

Technical experts can offer insight into the specifics of material or human behavior, but it's up to the MAB to take the information and apply it to the mishap.

Use technical assistants appropriately, but respect the limits of their expertise or qualifications. Avoid the appearance of impropriety in evidence access, handling or custody. No contractor or corporate representative should have unescorted access to the mishap site or wreckage. Always have an escort for technical experts/manufacturer representatives admitted to the mishap site or wreckage layout. This can be a MAB Member or unit member.

Do not leave technical experts or anyone not assigned to the MAB or recover/salvage team to putter among wreckage or evidence while the MAB is elsewhere.

Technical assistants are not permitted access to privileged information. This does not mean you must stay in a separate hotel, travel separately or sit apart at dinner. It simply means: Be discrete! The content of the MAB's privileged interviews or discussions may not be shared in wholesale or piecemeal; the MAB's speculations on causes should not be shared beyond what is needed to explain to the technical rep what is wanted of his or her expertise.

To Wrap Up.

CG-41, CG-1131 or CG-711 support is available for coordinating assistance from other services or agencies, technical assistance, laboratory analysis, exceptional funding requirements, etc.

Technical Experts and others assisting the MAB are not members of the MAB and not a part of the deliberations. They do still work for the MAB President and not CG-1131, the CSB or their parent organization. This applies to USCG/DOD military and civilians as well as contractor and manufacturer representatives.

The MAB President will decide if a technical expert should be included in deliberations. It may be necessary in order to formulate findings and viable recommendations.

The MAB President must ensure a "non-disclosure statement" for protection of privileged data is

prepared and signed by all non-Coast Guard help and technical assistance personnel that were offered a promise of confidentially or provided access to privileged information. This is not required of USCG civilian employees since they are already covered by USCG privilege.

The MAB President sets the pace and tone of the investigation, but not how the experts do their jobs; however, they can keep the experts on schedule and require regular updates.

Remember, the assistance provided may only be as good as the guidance provided; there is still a requirement to have MAB participation.

If the MAB President is not satisfied with an expert's report, return it. Do not release experts until all MAB Members have reviewed the report and all questions satisfactorily addressed.

Once the expert's report is accepted by the MAB and signed by the author, no part of an expert's report can be changed. It is up to the MAB to make the contents and findings a coherent part of the MAR.

The MAB may reject an expert's conclusions if they can defend doing so; however, a rejected report should still be included in the appropriate section of the MAR with a detailed explanation as to why the report or conclusions were dismissed.

Technical reports can be written for any part of the MAR. Technical experts must provide a written report (signed paper copy and electronic copy) detailing the results of their work. They should summarize their observations, analysis and calculations based solely on physical evidence and other factual information. No specific report format is required.

The MAB President will thoroughly review all technical reports to ensure they do not contain privileged information.

Technical experts can be asked to provide analyses and conclusions regarding privileged information. Conclusions may address causes of observed or documented conditions, but will **NOT** address the mishap causes. This does not preclude stating opinions based on observations.

Recommendations relating to preventing the observed conditions may be included, but they will **NOT** address preventing the mishap.

If technical experts or laboratories provide conflicting reports, both must be included in the MAR. The MAB must provide rational explanations as to why one report was determined to be applicable while the opposing views were discounted.

Contractors, contractor representatives and other technical assistants may not retain copies of any privileged reports they prepare for inclusion in the MAR. Any report they may be required to prepare for their employers regarding the mishap investigation must be produced as a totally separate and different entity. Such reports shall use only factual information gathered during examination of physical evidence. These company reports must not contain any privileged information or conclusions derived from MAB discussions or analysis.

NOTE: Government or military personnel from the USCG, other services, agencies or foreign

military may request or be requested to observe the investigation as non-MAB Members (they are not a part of the deliberations nor a part of drafting the MAR).

An observer or technical representative is not a member of the MAB. The MAB President controls the extent of an observer's access to an investigation; they are seldom included in interviews or deliberations.

Contact CG-1131 for guidance on using or obtaining observers.

Use of Employee Assistance Program (EAP): CG-111 (Office of Work-Life) manages EAP for the Coast Guard, including the recordkeeping process, which is private from the Command and part of the HIPAA. Should a MAB have a question regarding medical treatment, *the flight surgeon or other representative may NOT reach out directly to the EAP provider*. Instead, the MAB shall provide specific questions to CG-111, who MAY engage with an EAP provider. The provider and CG-111 would balance the request and MAY provide specific information to the MAB for the intended purpose of safety prevention only, not blame or administrative action. Records themselves shall remain protected for only CG-111 and EAP use, and shall NOT be given to a MAB for analysis. **Bottom line: CG-111 is arbiter to balance privacy and safety learning. The MAB can't go direct to EAP for information.**

Hazards at the Mishap Site

Aircraft mishap sites expose investigators, rescuers and recovery crews to many risks including biohazards, airborne hazards, hazardous materials (HAZMAT), critters, adverse terrain and adverse climatic conditions.

Coordinate with the Incident Commander and other locals (police, National Guard, HAZMAT teams, fire services, etc.) to determine hazards at the accident site, necessary precautions for entering and working the site and what safety resources are available.

MAB Members and others should not go to the wreckage site until a site assessment has been conducted and everyone entering the site is briefed on hazards and the required precautions. This will require daily risk assessments of the mishap site as things change and wreckage is moved and daily briefings with all individuals who are working at the accident site.

As the investigation progresses and the MAB Members become more familiar with the hazards at the mishap site, it is easy to overlook the lack of experience or site knowledge of those assisting. A formal risk assessment and brief should be performed by the MAB for all personnel going to the mishap site. The brief should cover all known and potential hazards and established safety practices to be followed.

Always evaluate the situation. What are the real and potential hazards? What expert assistance is needed to minimize risks or neutralize hazards? Remember, your job is to investigate the accident, not fight fires or remove hazardous materials.

The following is just some of the hazards found at a mishap site. Each mishap is different and will come with its own hazards, risk assessments are important. The list of hazards can be endless.

Wreckage Hazards.

Most wreckage hazards are "mechanical" in nature. They can injure through lacerations, fire, crushing, explosion, and asphyxiation. Wreckage hazards also include those posed by composites and fiberglass.

When wreckage is handled, moved or disassembled, there is always a hazard from sharp edges. Always wear gloves when working around the wreckage.

When checking for splintering or frayed cables, use gloves and a rag or cotton balls instead of your bare hand.

Wreckage removal is inherently dangerous; cables and chains can break and parts can shift. When moving wreckage, always use trained USCG personnel or other professionals and keep the MAB and others completely away until the wreckage has been properly secured.

Stay upwind during moving of wreckage to limit exposure to soot, dust and airborne materials. Do not allow anyone to work under partially suspended wreckage.

Heavy lifting equipment should be operated and managed by qualified operators.

Only authorized MAB Members, wreckage removal teams and fire fighters should be near the wreckage during removal or movement.

Some specific wreckage hazards include flares, pressure bottles, tires and accumulators. These items should be rendered safe and removed from the site since they can explode when handled or become projectiles.

Pressurized containers include such things as propane bottles, oxygen bottles, fire extinguishers, liquid oxygen (LOX) bottles and breathing equipment.

NOTE: Smoking can magnify the harmful effects of many of the hazardous at a mishap site.

NOTE: Many normally benign items such as tires, batteries, counterweights (depleted uranium), life rafts, oxygen bottles, hydraulic accumulators, etc., are potentially lethal in a post mishap environment.

THINGS THAT GO BANG. Cartridge-actuated devices (CADs), tires, and fire and oxygen bottles are major concerns, though unexpended ordnance normally constitutes an investigator's first thought. All potential "explosive" components should be considered unstable and in need of expert attention until rendered safe.

Tire rims. Rims and tires can be damaged during a hard landing and tires may explode anytime. Approach tires from the front or rear, never from the sides. Deflate tires as soon as possible.

Propellers. Some have spring-loaded hubs. If the hub is cracked, it can depart violently. Do not attempt to probe inside a prop assembly. Call an expert and use a properly equipped facility.

Batteries. Remove batteries from the wreckage; don't merely disconnect them. Sparks from a battery can ignite spilled fuel and other flammable materials. Use caution--disconnecting and removing batteries can cause sparks.

Firearms/Ammunition. Have experts remove all firearms and ammunition from the site. Explosive ordnance disposal (EOD) personnel must make the wreckage safe before anyone starts to sift. Pressurized (fire extinguisher or oxygen) bottles and hydraulic reservoirs included.

STUFF THAT GOES "WOOSH". We're talking about fuel and oils; just because you don't smell them, don't think they're not around. (e.g., "...there was no fuel spilled when the aircraft impacted the ground or while in the inverted position. The fuel cell was not de-fueled and when the aircraft was righted, nearly 30 gallons of fuel spilled out of a tear.").

Flammable liquids and gases. These can ignite, cause skin irritation or be harmful if vapors are inhaled. Have the aircraft defueled before going near it and record the amount removed.

Instruct personnel smoking **IS NOT** permitted at the mishap site or around wreckage.

Use absorbent pads as soon as possible to soak up what you can. The area may be extremely

volatile with fumes and standing fuel. Forget most everything else for the moment; the possible negative consequences of allowing smoking, torches, or spark producing saws near flammable liquid and gases should have your immediate attention.

Confined spaces. In addition to the usual hazards of a confined space, both soot and insulation material are hazardous if you are working inside a confined space such as a cabin or a cargo space, especially after a fire. Use respiratory and eye protection.

Depleted Uranium. This material may be used as counterbalance weights in larger aircraft and older rotor blades. These can be hazardous if the outer protective coating is breached.

DIRT, DUST AND AIRPLANE PIECES. There's nothing like being immersed in a cloud of charred aircraft remains, especially if composite fibers are part of the deal. Be smart around aircraft wreckage. Long sleeve shirts, surgical masks, respirators and goggles will prevent particles in the eyes, particles in the lungs and annoying fibers on the back of your neck.

Composites and Fiberglass. Composite materials and fiberglass are a nuisance at a mishap and can be hazardous to eyes, skin and respiratory system, especially if wreckage is fire damaged.

Composite materials typically consist of carbon/graphite or boron/tungsten and are found in many parts of an aircraft including structural skin, control surfaces, access panels, cabin materials, cabin seats and rotor and propeller blades. Small micron-sized filaments from composites are similar to other objects in the air we breathe. Most are expelled in sputum.

Although studies indicate composite fibers pose no more danger than fiberglass particles, they can cause short-term skin, eye and respiratory irritation.

Fiberglass is found in soundproofing blankets, instrument panels, access panels, cargo bin liners and other aircraft furnishings.

When dealing with wreckage containing composites or fiberglass, the following precautions apply:

- Stay upwind when handling the materials.
- Disposable coveralls may be needed.
- Wash contaminated clothing separately.
- Beware of splinters from fractured fiberglass panels and composites.
- Wet the materials if they have been damaged by fire (spray materials onsite and again in the hangar or lab if necessary).
- A 50/50 solution of acrylic floor wax and water works well and is readily available.

See The Naval Flight Surgeon's Pocket Guide for Aircraft Mishap Investigation.
http://www.safetycenter.navy.mil/aviation/AirMed/FSGuide.htm.

A little trick for those who must work with charred composites: talcum powder and a nylon stocking will remove fibers. Just sprinkle the powder on the affected skin and rub gently with the nylon until the fiber is snagged. It's as simple as that, but it needn't get that far if proper precautions are followed.

A good preventative measure against fiber annoyance is a wet rag around the neck. The benefits of this technique will be immediately obvious.

Communicable Diseases/Bloodborne Pathogens.

Communicable diseases and bloodborne pathogens may be present at an aircraft mishap scene such as viruses, bacteria and parasites that are present in the blood, tissue or other body fluids of infected persons. The concern here is with non-USCG personnel or rescue victims who may have been on board the mishap aircraft.

Some of these viruses do not die upon contact with oxygen or when the fluids dry out. In fact, studies show 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 non-permeable rubber gloves should be used and in some cases, will be required when working with the wreckage.

Under certain conditions such as within the wreckage where investigators may come into contact with blood or human remains, full-face masks, protective goggles and disposable overalls and booties shall be worn.

Hazardous Materials.

Rest assured that all of the appropriate hazardous material agencies will visit your site to assess environmental damage and suggest cleanup methods. Value and use their expertise.

When defueling, securing or removing HAZMAT, get the right people.

Most mishaps involve hazardous materials and can produce an injury in many ways:

- Toxicological injury--the substance is ingested, inhaled or comes in contact with skin.
- Thermal injury--the substance freezes or burns.
- Asphyxiation--the substance displaces oxygen needed to breathe.
- Radiation injury--radioactive material emits ionizing energy or particles.
- Disease--from microbiological agents.
- Mechanical injury--from explosive fragments, rocketing containers, explosive overpressures, etc.

Prior to departure for the mishap scene, determine whether the aircraft carried any hazardous materials and what type (chemical, biological, radioactive, explosive, corrosive, etc.).

If hazardous materials are suspected or reported to be onboard the aircraft, immediate steps to identify the hazards posed by the materials must be taken before **ANYONE** enters the site. Determine the current status of the materials and when the accident site will be safe to enter. Prior to entering the mishap site, all MAB Members and all others authorized to enter the site **WILL** be briefed on the type and status of hazardous materials, precautions and necessary PPE.

At the scene, confirm information about the materials. If any new information is received, pass

along any new information to local officials and HAZMAT specialists.

If other hazardous materials are found during the investigation, order everyone away from the site immediately and contact HAZMAT specialists. No one returns to the site until it is safe.

There should be records/documentation available of any hazardous material cargo onboard USCG aircraft. However, undeclared hazardous materials may be hidden in personal luggage or improperly packaged or loaded cargo. The possibility should always be considered.

The following persons or organizations can provide assistance and information on the physical, chemical and hazardous properties of the materials:

- Local emergency response personnel.
- Shipper or manufacturer of the materials.
- CHEMTREC (Chemical Transportation Emergency Center) at 1-800-424-9300 or 703-527-3887, 24 hours a day.
- Department of Energy (radioactive materials).
- State Health Department.

The need for preserving evidence should be explained to personnel directing any HAZMAT activities or cleanup.

Special Precautions.

In addition to the standard safety precautions that should be taken at any mishap site, certain mishaps will require special safety precautions because of things like location, extreme weather, indigenous plants/animals/insects or operations supporting the investigation.

Dress for the location and the job. Tennis shoes and sweat pants won't work.

Keep in mind a site's remoteness will increase the time required to transport injured site workers to a medical facility. Therefore, outfit your working party for the environment.

LOCATION, LOCATION, LOCATION. There's no good location for a mishap, but some are worse than others. Mountainous terrain, bogs, swamps and deserts have their own distinctive hazards. Weather, terrain, accessibility, indigenous critters, poisonous plants and insects are but a few more. When working in hostile environments such as these, always use a buddy system and carry survival and medical kits.

When mishaps occur, the natural tendency is to rush to the scene to either help or observe. While this attitude may appear commendable, it actually creates its own safety hazard. Aircraft mishaps contain numerous hazards that can turn investigators into casualties. The best way to protect personnel during the initial phases of a mishap is to be aware of potential hazards, stay upwind of mishaps and remain well clear of the mishap until the site has been assessed and rendered safe.

Heat and Cold. Investigators may be faced with heat and cold extremes depending on the terrain and time of year. Check current and forecast local conditions before departing for the mishap site and plan accordingly.

This is just a short list of reminders:

- Be aware of the dangers of frostbite and hypothermia.
- Wear perspiration absorbing layers and clothing to protect against the danger of wind chill.
- Use sunglasses and sunblock--even in the winter, a sunburn/windburn is possible.
- Prevent dehydration even in cold weather. Provide personal drinking water.
- Don't wait to get thirsty; by the time you feel thirsty you are already dehydrated.
- Drink at least 1 quart of water or fruit juice per hour in situations of high humidity and exertion.
- Know the symptoms of heat stress and heat exhaustion. Pace yourself to compensate for heat and humidity. Wear a wide brim hat and loose fitting clothing.
- Pace your activities and conserve energy.

Mountainous and High Terrain. The following safety precautions are recommended for working in mountainous terrain and high elevations:

- Limit exertion above 8,000 feet.
- Keep your hands free for steep climbing.
- Rest frequently.
- Drink plenty of water or fruit juice--dehydration can happen quickly.
- Protect your skin from the sun with sunblock, sunglasses, and a hat.
- You can sunburn quickly at higher elevations.
- Seek advice from local mountain climbing experts and local rescue teams.
- Be aware of the danger of altitude sickness and be alert to its symptoms. If altitude sickness is suspected, have the person sit or lie down. In severe cases, the individual will have to immediately descend to improve their condition. If the individual feels better and remains on scene, assign a buddy to the person. Consider removing them from the scene.

Deserts or Desert like Environments.

- Wear a wide brim hat, loose fitting clothing, sunglasses, sunblock and goggles, if needed.
- Drink plenty of water. Carry several (6 to 8) quarts of water per person per day.
- Limit activity during the heat of the day.
- Arrange for shelters from the sun, preferably open-sided with protection from blowing sand.
- If working at night, have appropriate clothes and shelter for nighttime temperatures.

Swamps, Marshes and Bogs.

- Do not allow swamp water to contact open cuts and sores. Swamp water can be highly contaminated.
- Watch for tree roots and deep holes when walking in water.
- Use a tall walking stick to find level footing and water depth.
- Keep your hands free except for the walking stick.
- Chest waders may be necessary even though they are hot and awkward to use.
- Never enter water higher than your waders.
- Swamp boats may be the only means of transportation. Wear life jackets and earplugs.
- Don't travel or work at night unless absolutely necessary.
- Beware of mud ponds with a few inches of water on the surface; they can be deceptive.

- Keep your sleeves rolled down and shirt collars buttoned.
- You may need a wide brimmed hat with mosquito netting.
- Prepare for dealing with insects, leeches and snakes.
- Beware of alligators and crocodiles.

Poisonous Plants, Dangerous Animals and Insects. The level of danger from plants, animals and insects depends on several factors--terrain, weather, elevation, time of year, etc.

Locals can advise you on what to expect and on particular preventive actions you should take.

Poisonous plants vary with location. Learn to identify poison ivy, poison oak and poison sumac. In the winter, poisonous plants may lose their leaves but remain dangerous and even harder to spot. Stay away from smoke that may contain residue of poisonous plants.

Dangerous animals include anything from poisonous snakes to rabid raccoons, alligators and bears. Poisonous snakes can be found in all states. Listen to precautions from local authorities. Learn to recognize poisonous snakes. A snakebite kit should be part of the mishap kit.

Even relatively domesticated animals can present certain hazards. Horses can bite and buck, cats scratch and dogs can attack.

Know what allergies you have to trees, grasses, plants and insects. Carry appropriate medication with you. It may be difficult or impossible to obtain medication at or near a mishap site.

An "Epi-Pen" containing epinephrine or ephedrine is available by prescription and can counteract many allergic reactions.

Fire ants, wasps, bees and spiders can all cause painful bites and, in some, allergic reactions. With the exception of mosquitoes and certain ticks, insects are more of a nuisance than a danger.

Repellents such as "Deep Woods Off" are useful items to carry. Some people swear by Avon's "Skin So Soft" as an effective repellent against chiggers, ticks and mosquitoes (although scientific studies have not proved or disproved this).

Two cautionary notes: first, concentrations of "DEET" higher than 30 percent can irritate skin; second, mosquito repellents of this type contain a solvent that may melt or scar plastics found on cameras, watches, small tools, etc.

A commercially available product called "Permanone Tick Repellent" has been shown to be very effective. A 6 oz. spray can protect two sets of clothing for two weeks including two washings. Eating garlic may also repel mosquitoes (from odors emitted through the skin).

Mosquitoes and ticks present special problems because both can carry infectious diseases. Mosquitoes have been the mode of transmission for malaria and yellow fever. Any product containing "DEET" in a 25 to 30 percent solution should be effective.

In the United States, the highest concentrations of ticks are along the East Coast and in Southeastern, South Central, North Central and Midwestern states. The lowest concentrations are

in the extreme West and in the Plains states. Ticks can carry Lyme disease and Rocky Mountain spotted fever.

Lyme disease is a bacterial infection caused by the bites of certain, very small, infected ticks. The two most likely carriers of Lyme disease are the deer tick in northeast and north central states and the western-blacklegged tick in western states. The deer tick is usually a suburban creature. It likes transition zones--the edges of roads, fields and forests. It is not frequently found in deep forests or in open fields.

Deer ticks can be smaller than the head of a pin and are therefore, difficult to find. Finding the tick is important since the longer the tick stays attached, the more likely the disease will develop and the more serious it can be.

If you get a fever, headaches, body aches, rash or nausea soon after a possible tick bite or exposure, see your doctor immediately. Since there is presently no vaccine available for Lyme disease and Rocky Mountain spotted fever, prevention is important.

The following advice is offered when working in areas that may be infested with ticks:

- Wear long pants and sleeves.
- Tuck pant legs into long socks or seal pant legs with duct tape or rubber bands.
- Spray a permethrin-type tick repellent on clothes, if available.
- Use a repellent containing DEET on exposed skin except for the face. Follow label directions carefully.
- Check your entire body carefully for ticks twice a day, including inspection of the neck and scalp. If alone, use a fine-tooth comb to help locate adult ticks in your hair.
- Remove attached ticks from your skin immediately with tweezers by grasping the tick's head parts as close to skin as possible and applying slow steady traction.
- Do not attempt to get ticks out of your skin by burning them or coating them with anything such as nail polish remover or petroleum jelly.

Water Operations.

The actual operation of water recovery equipment and the supervision of respective personnel should be left to the equipment operator. Only properly trained and fully qualified personnel should be assigned special missions such as underwater recovery.

Salvage barges can be dangerous places. The hazards include large machinery, hoists, cables, nets and rigging equipment. If may be necessary to provide advice on how to attach cables, hooks, etc. to wreckage to ensure the wreckage is not damaged during recovery.

Factory representatives should be able to provide guidance on lift points.

Insist on a safety briefing for everyone from the vessel captain. This briefing should include discussions of evacuation stations, safety precautions and other critical information.

Stay clear of sling loads.

Remember, even if secured on the deck, wreckage can shift due to motion of the vessel.

Inoculations.

If going overseas, check with the State Department to find out what health warnings have been issued for areas being traveling to and what shots are required or recommended.

The Centers for Disease Control is another excellent source for such information. http://www.cdc.gov.

Methods of Analysis and Examples

There is no hard and fast method of analysis for mishap investigations. Each MAB must determine a logical method and use what is comfortable to them. The logic of the analysis and the conclusions reached by the MAB are more important than the method used.

The analysis should be easy to follow by those who read and endorse the report.

Mishaps are rarely attributed to a single cause but are often the end result of a series of errors. There are many ways to analyze what happened, but it always comes down to first asking why something occurred. Start with the problem; ask what happened in the first place and then keep taking it further and further until you can pinpoint specific processes, policies or procedures that didn't work. It all comes down to asking "why?" until you see a pattern in the problem.

To assist the MAB, several common methods are described. All of the analytical techniques have one thing in common--none are perfect.

Keep in mind, all USCG aviation MABs must use HFACS to analyze and determine the causal factors. HFACS is just one of many tools available to the MAB. The MAB is free to use other analysis methods in their investigation, but the HFACS results will be incorporated in the MAR.

As you read through the following methods, you will see that to some extent they are all incorporated into HFACS.

Sequence of Events Method.

The following is an example of a findings and determinations listing of causal factors. This method of analysis determines a cause-and-effect relationship between circumstances, actions, or events and the mishap. By using this method, you can then determine the findings that were a causal factor in the identified sequence.

Example #1.

- Finding 1. En route winds were forecast to have a 50-knot headwind component.
- Finding 2. En route the pilot encountered 100-knot headwinds.
- Finding 3. The pilot decided to continue his cross-country flight, over flying several alternative landing sites. (CAUSE).
- Finding 4. Five miles short of destination, the aircraft flamed out due to fuel exhaustion.
- Finding 5. The pilot unsuccessfully autorotated.
- Finding 6. The aircraft was destroyed.

Comment: In this sequence, a weather problem existed, but it did not cause the pilot to continue his flight until flameout; the pilot made the decision to continue flying.

Example #2.

- Finding 1. Procedures were not established by the overhaul facility to ensure adequate FOD inspections were accomplished as part of maintenance procedures (CAUSE).
- Finding 2. At overhaul, a pair of pliers was left in in the vicinity of the stabilator (CAUSE).
- Finding 3. During inspection/QA of procedures, the pliers were not discovered (CAUSE).
- Finding 4. In flight, 45 hours after overhaul, the pliers jammed the stabilator control preventing stabilator movement.
- Finding 5. The aircraft departed controlled flight, and the crew lost control of the aircraft.
- Finding 6. The aircraft was destroyed upon ground impact.

(Reason's) Swiss Cheese Model or Domino Theory Model.

A common approach used to analyze and subsequently explain the cause of a mishap is the Swiss Cheese/Domino Theory Model. Using the analogy of holes in slices of Swiss Cheese or dominoes stacked in sequence, this concept sees mishaps as the end result of a series of errors. As described in this model, mishaps are caused by a series of actions or inactions, described as ***active failures.*** Traditionally referred to as "errors", they are the last "acts" committed by individuals, often with immediate and tragic consequences. In contrast, ***latent failures*** or ***conditions*** are errors that exist within the organization or in the supervisory chain of command that affect the sequence of events. From this perspective, the actions of individuals are the end result of a chain of events originating in other parts (often the upper echelons) of the organization. Reason's model is particularly useful in mishap investigation because it forces investigators to address latent failures and conditions within the sequence.

Review by Area Method.

This method uses a list of areas reviewed and findings presented for each area. A determination is made whether the finding is a cause, or simply an event or condition leading to the mishap. The investigation should look at all areas listed, omitting or adding areas as needed.

Airfield facilities	Airfield lighting	Clearances
Crash response	Crew briefings	Crew quals
Crew rest	Cockpit design	Communications
Controls	Design	Electrical
Electronics/Avionics	Engineering	Engineering personnel
Explosives and fire pattern	Flight	Fuel
Hydraulics, pneumatics	Impact	Life Support Equip/PPE
Lube/oil	Maintenance	Manning/Crew selection
Medical	Mission/Mission planning	Navigational aids
Organization	Peer influence	Post flight
Power plant	Preflight	Publications/Directives
Rescue/Egress	Stress/Task saturation	Structures
Survival	Supervision	Technical order
Violations	Weather	Workload/Collaterals

National Transportation Safety Board (NTSB)

The NTSB uses an analysis method consisting of the reasoning of the investigator with respect to the meaning of each factual finding relevant to the mishap and culminating into the generation of conclusions either substantiating or eliminating the finding's effect on the probable causes of the mishap or contributing factors. The steps in this process are:

- Review and evaluate the facts and determine their relevancy to the accident.
- Develop various theories based on these facts that explain the causes of the accident.
- Eliminate theories not supported by evidence.
- Provide conclusions relevant to the findings. The conclusions should support the probable cause of the accident and its contributing factors.

Known Precedent Method.

Based on the concept that there are "no new causes," the known precedent application means looking at similar mishaps for clues to causal factors. The danger in this method is that the MAB may jump to conclusions and fail to find the real cause. This method also leads to violation of Rule Number One of mishap analysis - do not come to the investigation with preconceived ideas.

Codes, Standards and Regulations Method.

This method looks at codes, standards and regulations that may have been violated and assumes this is the area where causal factors can be found. At best, this method provides information about existing problems and their nature. It does little to aid in preventing future mishaps.

The Five M's Method.

This technique is based on the Venn diagram where overlapping circles symbolize the relationships between man, machine, medium (or environment), mission (or operation), and management. By systematically considering the man, the machine, the media and management, most of the issues being investigated are covered. The depth of consideration of the items under the five M's is the key to success of this approach. (Google "5M model" for more info.)

Inferential Conclusions Method.

While the emphasis in investigations is to find the facts, it is important to consider information that cannot be fully documented. The investigation must not only be able to gather facts but must also be able to draw inferences and deal with assumptions in order to place the facts in perspective. It is proper to gather negative as well as positive evidence and continually assume something happened that interrupted the routine operation. This continual gathering and weighing of factual and non-factual evidence is an inductive process involving continually drawing provisional conclusions. Each is then objectively appraised and tested for validity.

Care must be taken that inferences do not, by continual consideration, become accepted as fact. It is important to combine facts, theories, speculation and conjectures in sequence to form hypotheses for evaluation. They must then be either proven or refuted based on the best available information. An orderly handling of theories through the prove/refute stage is necessary.

Reenactment Methods.

Reenactment is not so much a valid investigative technique as it is an intuitive reaction. In the most common form, the mishap crewman is told to "tell me exactly what happened."

In a slightly more sophisticated version, the operator is placed at the controls and told to "show me exactly what happened."

The most sophisticated and certainly safest version of reenactment calls for duplication of the operation in a simulator. Reenactment has limitations but can be used as an investigative tool.

WARNING: A perfect recreation of the mishap could easily result in another mishap! Before any recreation flight is conducted, carry out a risk analysis for the flight. The MAB President **MUST** advise CG-1131 and CG-711 of the MAB's intentions.

Mishap Analysis Report (MAR)

While you may have formed some tentative conclusions, you must now show how all the facts fit together. Some facts are not going to support your conclusion and may even oppose them. You can't ignore them; you will have to adjust your conclusions or admit there are other possible alternatives. The nature of our business is that there are almost always other alternatives.

Remember, the investigation is no better than the report. Nothing will come of the investigation unless the report convinces someone, somewhere that something ought to be done.

The basic outline of the MAR reflects a pattern of deductive reasoning:

- Mishap Information/Evidence--What the MAB knows (Facts/Evidence).
- Analysis--HFACS, engineering invesitgation, medical exams, toxicology and deliberations.
- Conclusions--MAB's deductions (Findings and Causal Factors).
- Recommendations--The MAB's recommendations to prevent recurrence (Proposed solutions and proposed corrective actions).

HFACS is required of all USCG aviation MABs.

In addition to providing a standardize method of determining causal factors, HFACS provides a guide for the MAB's deliberations and will help guide the MAR writing.

WARNING: Writing the report and developing the Findings, Conclusions and Recommendations section is where the gnashing of teeth really starts.

Start by outlining the Narrative and posting it in the MAB room where all can see and discuss. This outline will take shape as the investigation progresses and you begin to determine the issues.

The outline will help the MAB determine who will write each section.

To avoid confusion and headaches later, the MAB President should assign sections/TABS to members during one of the early meetings. Assignment of completion milestones is also helpful.

Do not wait until the last minute to start working on the MAR. Some sections can be built, copied and set-aside early in the investigation. You will appreciate this effort during the last week or so of the investigation.

Create a different word and PDF file for each major section of the MAR.

Establish Rules of Engagement (ROE) before starting to write. It may seem minor but with several people writing different sections, things can get real difficult while finalizing the report.

Don't be afraid to use too much detail. The MAB is very intimate with the mishap; others have been excluded and don't have all the details. Look for "gaps" in your logic, continuity and timing. MAB's often do not include enough information in the narrative. Instead, the MAB writes at their

level of understanding or knowledge, making it difficult for other readers to follow. Avoid words like "felt", "considered", "believed", and other noncommittal words. Better terms are "determined", "accepted", and "deemed".

It may take in upwards of 5-8 drafts (5 days to a week of writing) and lots of discussing to get the report right.

The Investigation and the Analysis.

The MAR documents the investigation and the evidence collected from witness statements, technical evaluations, medical data and other information. The MAR should describe each area investigated and discuss the significance of the facts and evidence collected. The analysis should consider all facts relevant to the mishap.

Areas important in explaining the mishap warrant extensive analysis or explanation. Evidence having little or no significance may be discussed briefly. Evidence not pertaining to the mishap investigation should **NOT** be included.

The analysis section presents the MAB's reasoning; it is the MAB's review and evaluation of the evidence and factual information. This section should discuss all the avenues the MAB took to analyze the evidence and develop causal factors.

All causal factors identified must be addressed in this section. The MAB must logically present the possible causal factors supported by evidence and then accept or reject each factor.

There are usually three parts to the analysis section:

1. The Engineering Officer's Report (EOR): summarizes the results/conclusions of the traditional engineering investigations. Describes the nature of any engineering tests, analysis or evaluation undertaken in connection with the mishap.
2. The Medical Officer's Report (MOR): the traditional medical and human factors investigation evaluating and summarizing the aircrew both medically and physically.
3. The HFACS results: pulls everything together to include personnel, organizational, material, etc. See http://www.uscg.mil/hq/cg1/cg113/docs/ergo_hfacs/hfacs.pdf.

NOTE: While these three parts could be stand-alone documents, they are also an integral part of the MAR and are needed to present the MAB's full in-depth analysis of the evidence. They should represent the consensus of the MAB and not solely the views of individual MAB Members.

Conclusions/Findings (Deductions of the MAB).

Findings are based on evidence, the MAB's professional knowledge and best judgment. They are statements of events or conditions leading to the accident.

The following should be considered by the MAB when writing what contributed to the mishap:

- Isolate each event/condition that sustained the mishap sequence.

- Each finding is an essential step in the mishap sequence; each is not necessarily a cause.
- Each event, sustaining the cause and effect sequence, is a finding.
- Each finding must be a clear statement of a single event or condition.
- Each finding must have a logical connection to the other findings.
- Each finding should contain a reasonable measure of probability based on evidence, professional knowledge, good judgment and be supported in the MAR.
- Arranged in chronological sequence--when it occurred, not when it was discovered.
- Beginning--Answer the "why" early enough to explain what happened.
- Ending--Continue through to where all damage/injury has occurred.
- Publications or objects should almost never be found causal. Rather, the party responsible for ensuring the publications are correct or the object does not fail with catastrophic consequences is causal. Appropriate parties should be identified as responsible for these failures, not the pub or object.
- Do not include any other information; only include what is necessary to explain the event.

It is just as important to include factors ruled out and why. If an issue could reasonably be a factor in the mishap sequence but wasn't, explain in the appropriate section how it was determined not to be a factor. Use common sense, not every non-factor needs to be discussed.

Each finding must have a logical connection to the preceding finding. If no logical relationship exists, the sequence of events is not correct; something is missing or the finding does not belong.

Findings should be listed first to last as they occurred, not when they were discovered. Remember, some events began long before the actual mishap sequence (e.g., design problems, training deficiencies or poorly written directives).

Do not include names or Personally Identifiable Information (PII).

Don't confuse the number of Findings required with the mishap severity. As a rule of thumb, you should have 8-15 Findings or Conclusions. If you have more (typically MAB's start with more), it is likely they can be combined.

For example:

- Finding One: Briefing was uneventful. Finding Two: Preflight was uneventful. Finding Three: Engine start was uneventful. Finding Four: Taxi was uneventful.

Could be written as:

- Finding One: Briefing, start, taxi and takeoff were all uneventful.

Do not include supporting evidence in Findings; this will be documented in the Narrative, Conclusions or other sections of the MAR.

Ensure that critical events required to sustain the mishap sequence have not been omitted.

Conversely, **DO NOT** include events that are merely interesting to read or support hidden agendas and are not necessary to sustain the mishap sequence.

There will be cases where the MAB cannot pinpoint a particular event in a sequence. Even when knowing the event in detail, the MAB sometimes cannot define each step. Some latitude in stating sequential findings is permissible.

List as much of the sequence as you can support, then state what is undetermined. Where there are supportable alternatives, identify them as such and list them in sequence.

Remember, Findings should contain a reasonable measure of probability based on evidence, professional knowledge and solid judgment.

Findings represent the MAB's conclusions after examining and analyzing the facts. They represent the "major events"/essential steps in the mishap sequence.

After developing the findings, apply the following 7-step "Finding Test" to validate each finding:

- Is it related to the specific event?
- Is it a correctable event in the sequence?
- Is it a single event or condition?
- Is it specific enough without including supporting evidence?
- Does it logically connect to the preceding finding?
- Is it really relevant or simply interesting?
- Is it simply a possible alternative existing merely because it can't be eliminated?

Include in each finding only those things related to the specific, brief event. The goal is to identify correctable events/steps in the sequence.

Ensure the sequence continues to the point where all damage or injury occurred and the event ends. Include injuries at the appropriate chronological point in the mishap sequence.

Causal Factors--The Why.

- A cause is a deficiency that if corrected, eliminated, mitigated or avoided, could have prevented or mitigated the mishap damage or injuries.
- A cause may also be an act, an omission, a condition or a circumstance either starting or sustaining the mishap sequence.
- A cause may be human, organizational or mechanical.
- In most cases, mishaps will have multiple causes.

After listing the findings, the MAB should choose those findings that are causes. Not every event in a properly developed sequence is a causal factor.

If done properly and started early, HFACS will write this section.

Causes are those findings, alone or in combination with others, resulting in the damage or injury. List all factors contributing to the mishap and needing to be corrected to keep similar mishaps from occurring. Evaluate causes under consideration by asking, "if the hazard had been eliminated prior to the mishap, would the mishap been prevented?"

Findings that sustain the mishap sequence but are normal to the situation are **NOT** causal factors. Some findings are really effects or results even though their inclusion in the sequence is material to the mishap. If, for example, an engine flames out because a fuel pump fails, concern is with the fuel pump not the engine. If the fuel pump failed, the engine failure is a normal result and not a causal factor. They are often the unavoidable consequences of a proceeding cause.

NOTE: Causal factors or hazards requiring immediate corrective action beyond the unit level should be addressed to CG-1131 as soon as possible.

The MAB should consider all possible causal factors. In considering all possible causal factors, many will be rejected. Those remaining as reasonably possible should be thoroughly analyzed.

The wording of a causal factor should be in the form of a clear and simple statement outlining a condition or event.

Each of the "possible causal factors" is discussed separately and either accepted or rejected. The MAB must logically determine the possible causal factors supported by evidence and those that must be rejected for lack of supporting evidence. When completed, there should be no doubt to the reader as to the conclusions reached by the MAB and how they were reached.

In those cases where there is insufficient evidence to support any set of causal factors, the MAB must build a case for the most probable causal scenarios.

After determining the causal factors, apply the following "Cause Test" to check the validity:

- Most are correctable by commanders, supervisors or individuals.
- Is a clear and simple statement of a single condition or event.
- Is in the active voice and following format: *Who did what to who/what and why?*

It is not a causal factor if it is an effect or expected result of a previously identified cause even though its inclusion sustains the mishap sequence. Apply the reasonable person test:

- If the performance or judgment was reasonable considering the circumstances or training, it is not a cause (although training, supervision or procedures may be).
- Human limitations (physiological or psychological) can be causal factors even if they are reasonably expected reactions.
- An environmental condition may be a causal factor if it was not reasonably avoidable.

NOTE: Environmental conditions such as a bird strike, lightning, high wind, meteorites or flood may be listed as causal factors only if all reasonable avoidance and damage/injury mitigation actions were taken. Otherwise, they should only be included as findings or facts.

All deficiencies, errors, material failures/malfunctions or equipment causing the mishap, damage or injury during the time exposed to adverse environmental conditions should be addressed.

Recommendations.

- The goal is to determine the best actions to preclude future mishaps.
- Recommendations are feasible suggestions, solutions or actions related to a cause that will prevent a similar mishap or reduce the consequences.
- A recommendation says something was wrong and must be corrected.
- Each recommendation should be specific and definitive.
- Each recommendation is a single thought/statement--no subgrouping.
- Recommendations must be related to causal factors.
- Every cause does not require a recommendation.
- "Brief personnel" is not a valid recommendation nor is "disseminate this information."
- Other useless terms are all pilots, all aircraft or all air stations. In addressing everyone, you reach no one.

Recommendations are proposed actions intended to prevent reoccurrence of similar mishaps or reduce the loss of future mishaps.

Recommendations are solutions to eliminate identified hazards or if the hazard cannot be eliminated, to mitigate the hazard's potential consequences.

Recommendations need to be reasonable and feasible. It is someone else's job to research and determine how to accomplish and develop the corrective action.

Do not write recommendations requiring a study or evaluation. The process already implies evaluating, studying and researching (e.g., POOR write-up: Evaluate changes to the anti-lock system. BETTER write-up: Implement changes to the anti-lock system to prevent inadvertent activation).

Write the recommendation so the closing action is obvious and sufficient.

Recommendations should first and foremost prevent future mishaps. Recommendations not eliminating or mitigating the hazards identified should not be included.

Recommendations should be self-explanatory, practical and most importantly, related to the mishap being investigated.

Recommendations should require no explanation but follow in a natural sequence after the analysis, conclusion and findings.

The acid test: would the mishap have been prevented or the outcome less severe if the recommended action was in effect prior to the mishap? Treat each recommendation separately.

The MAB should not let presumptions about the budget or organizational bureaucracy influence its recommendations. That is someone else's job.

Each recommendation should simply state what needs to be done. No justification or analysis is required. Simply state what should be done.

Supporting evidence/rationale should not be included in the recommendations; this is already or should already be documented in the analyses.

DO NOT make recommendations for the sole purpose of having recommendations. Recommendations should correct the hazards identified, not just treat the symptoms.

Do not recommend briefing personnel on the mishap or widest dissemination be made of lessons learned. This is implied as part of the mishap investigation and mishap prevention process. Such briefings are basic commander responsibility and a normal FSO function.

Do not recommend reminding personnel of the importance of simply doing their jobs properly; however, it may be appropriate to make recommendations to place CAUTIONS and WARNINGS in manuals stating the adverse consequences of not doing one's job properly. Recommendations to change publications, technical orders, flight manuals or checklists are also acceptable.

Recommendations for specific actions such as refresher training, implementing in-process inspections, etc., to ensure duties are being properly performed may also be appropriate if they are specific and can be closed.

The following are generally bad "buzz" words: "review", "comply", "ensure", "reemphasize". These words don't lead to measurable change. The same goes for such recommendations as: "all units review SOP' and "all pilots adhere to Dash-One".

In some cases, the causal factors will be identified and no corrective action is deemed necessary. In other cases, two recommendations may be made concerning a single causal factor (e.g., a short-term fix reducing or eliminating the risk until the permanent fix can be incorporated).

The MAB should resist being too specific. For example, a "Jones-built" part may be the needed replacement for the broken "Smith-built" part; however, the MAB should not recommend the "Jones-built" part. The MAB should only recommend installation of a part with suitable characteristics to solve the problem and possibly refer to the "Jones-built" part as an example. In the past, the MAB has spent valuable time trying to develop explicit and concise corrective actions. The MAB is expected to identify the facts and hazards to be corrected/eliminated and to suggest possible ways to prevent future mishaps.

The following illustrates the point of not making a recommendation too specific:
POOR recommendation--Move the right engine fire button to the right side of cockpit.
BETTER recommendation--Engineering changes to the engine fire buttons to preclude inadvertent engine shutdowns.

The CSB is tasked with determining and developing the actual corrective actions needed to prevent future mishaps. The CSB will task the appropriate program/organizations to develop and implement the actions. This usually cannot be accomplished until the investigation, analysis and endorsement process are completed.

Developing sound recommendations requires recognition of the "order of precedence" concept; recognizing that not all risk mitigation alternatives are equal and may in fact vary in scope.

- Design fixes are the most preferable solution because they can often completely eliminate the hazard, but these types of fixes often have the highest upfront costs.

- Recommendations may require unacceptable operational constraints so additional alternatives must be considered.
- Potential fixes incorporating safety and warning devices should also be considered as well as changes to procedures and training.
- Some actions can be taken at the unit level, but most require actions at a higher level.

A great deal of debate usually surrounds what is feasible and effective. Sometimes a risk mitigation alternative is technically feasible and effective, but it is clearly not economically feasible or has unacceptable mission consequences. Finding the correct solution takes a "big picture" view that the MAB just may not have.

"Other Findings of Significance"/Additional Findings.

Findings or hazards discovered during the investigation but determined not be a factor or cause of the mishap shall not be included in the MAR.

Regarding documentation of these additional findings:

- Should be covered separately in separate correspondence.
- No prescribed format or content.
- Prerogative of MAB President.
- Sent to convening authority for forwarding to the appropriate program.
- Including them in the MAR will only cloud the issues pertinent to a specific mishap.
- Including them in the MAR may result in them being lost or delayed in the MAB process.

During the course of an investigation, the MAB frequently detects hazards that require action but are determined to not be causal factors in the mishap being investigated. These findings or hazards could contribute to future mishaps or warrant command attention but are not part of this mishap.

Reporting them separately will ensure that the finding or hazard receives proper/timely attention. They will not become a distractor or get lost in the MAB process and it avoids the risk of the finding or hazard being put aside, delayed or forgotten.

NOTE: Observations made about the mishap unit by the MAB unrelated to the mishap are best handled by the MAB President during the out brief with the Commanding Officer.

MAR Format

Contact CG-1131 Advisor or CG-1131 for the latest Mishap Analysis Report (MAR) format and guidance.

Mishap Analysis Report (MAR) Preparation.

- Formatted in accordance with the last edition of SEH Manual.
- Use standard Coast Guard word processing software (Microsoft Word©).
- Times New Roman, size 12 font.
- Margins shall be normal one inch margins on top/bottom and both sides.
- Center page numbers at the bottom of each page.
- Header should contain the mishap unit, acft tail #, Mishap Class and date of the mishap.
- Footer should contain the appropriate administrative safeguards per the SEH Manual.
- Prepared on letter-size paper, 8.5 X 11 inch format.
- Assemble in a folding pressboard folder fastened at the top with two-hole fasteners.

NOTE: DO NOT use loose-leaf binders or notebooks.

Privileged vs. Non-Privileged.

Place all privileged information on the RIGHT side of the folder. This includes the analysis, conclusions, recommendations, privileged witness statements, and all other info known only to the MAB due to its privileged status. List contents of the RIGHT side on the cover sheet.

Place all factual, non-privileged information on the LEFT side of the folder. This includes synopsis, diagrams, photographs, lab reports, all other non-privileged appendices, etc. List the contents of the LEFT side on the cover sheet.

The Table of Contents should list the sections and appendices contained on each side of the MAR. Each TAB (section, appendix, enclosure) should have a cover sheet with the title of the TAB followed by a table of contents for that TAB.

- Arrange TABs in alphabetical order with “Tab A” on top.
- Number all pages within the TAB (e.g., Tab A would have page numbers: A-1; A-2, etc.). The first page of each Tab needs the title of the Tab followed by a table of contents.
- Number pages even if there is only one page in the Tab or enclosure.

NOTE: Verbatim transcripts of statements or interviews shall **not** be made. Interviewers’ notes or summaries are sufficient.

NOTE: After the final review and release of the Final Action Message or Final Summary Message, the MAB President shall destroy all data, working papers, notes and any other documents held by MAB Members that cannot be returned to the rightful owner.
Securely attach all captions to the photographs. The captions should be placed so the caption and the photograph can be examined simultaneously. Consider embedding photographs within the related text.

NOTE: Attaching captions that include speculations, conclusions, or opinions directly to the photograph

renders the photograph a privileged document. In addition to the hard copy original, an electronic file (e.g., compact disc or encrypted file sent via uscg.mil email) shall be forwarded directly to CG-1131 by the MAB President after the MAB adjourns. The electronic files should include:

- The final MAR prepared in standard USCG word processing software (Microsoft Word©).
- The final MAR as an Adobe©.pdf file with all Attachments, Tabs and Enclosures.
- Attachments, Tabs and Enclosures should be separate .pdf files and labeled.

Signatures are required on the original MAR. If individuals are not available to sign the original documents, the MAB can authenticate the document.

MAR Format.

Any questions concerning the MAR format, contact CG-1131 or your CG-1131 Advisor.

- Folder Front and Cover Sheet.
- Mishap Unit Name
- Mishap Class and Date
- Aircraft Model/Tail No.
- Mishap Pilot-in Command
- Mishap Unit Commanding Officer
- MAR Table of Contents. List titles & page numbers of major paragraphs & enclosures.

Synopsis.

The synopsis page presents a brief factual summary of the mishap, property damage, injuries, occupational illnesses, deaths, and sequence of events. The synopsis should lead the reader through the sequence of events involved in the mishap. It should be a chronological summary of the facts, conditions, and circumstances without reference to attachments. Only give the facts; do not discuss the importance of facts or how they relate to the conclusions.

NOTE: In the synopsis, do not identify personnel by name or call sign. Instead, use such terms as "the flight lead," "the tow tractor operator" or "involved personnel."

The synopsis is releasable under the Freedom of Information Act (FOIA). Therefore, it should be a factual, complete recount of the mishap. No analysis should be included. Many FOIA requests are for a summary of the mishap not the MAR; in these cases, only the synopsis is released.

Mishap Information. Only information and data relating to the mishap and the personnel involved shall be presented.

NOTE: The paragraph titles listed may not all apply to your mishap. Whenever a paragraph is deleted, the paragraph numbering should be adjusted by adding/deleting paragraphs.

Narrative.

Describe in chronological order the significant sequence of events preceding the mishap. Use a timeline to develop. In some cases this can be achieved by using the radio log(s)/transcripts as a timeline. Any relevant evidence, regardless of the source, may be added as long as it relates to established fact. A convenient introduction is to give a description of the mission, the departure point, the departure time

and the destination.

- A description of the events could commence with the crew briefing and mission planning and proceed to departure, weather, navigational details, significant communications, and the sequence of events culminating in the mishap.
- It is important to give a description of the pertinent events and scenarios as they occur and what personnel involved in the mishap knew.
- The mishap site (latitude/longitude), local time, the elevation (if applicable), weather, visibility, etc. should be included in this section.

Analysis.

This is the most important part of the MAR. It draws on all portions of the investigation and provides a complete picture of what happened. This section records the opinions and deliberations of the MAB as they reviewed the findings, lab reports and HFACS to determine the causes of the mishap.

It is not necessary to repeat any description of the evidence. However, the MAB should review and evaluate the evidence and develop the various patterns, conditions and events that may have existed. This will lead to the formulation of hypotheses to be tested against the evidence.

- Eliminate and explain theories not supported by evidence.
- State the justification for sustaining the validity of the remaining hypotheses. Follow with a description of the pattern or series of conditions and events determined to be causal factors in the mishap.
- Reference should be made to the relevant supporting evidence as it is developed. Evidence with little or no significance may be discussed briefly.
- Describe each area investigated and discuss its significance.
- Areas important in explaining the mishap warrant extensive discussion and analysis.
- The analysis should be written in a manner clearly illustrating how the findings and causes were determined. Include discussions concerning the logic and how recommendations were chosen.

Human Factors Analysis and Classification System (HFACS).

- HFACS nanocodes will be used to determine the cause factors. http://www.uscg.mil/hq/cg1/cg113/docs/ergo_hfacs/hfacs.pdf
- HFACS will also help organize and write the MAR.
- List all cause factors (in chronological order) contributing to the mishap.
- Designate cause factors needing to be corrected to keep similar mishaps from occurring. Causal factors should be described in a concise statement rather than an abbreviated description of the circumstances of the mishap.
- If causal factors are not identifiable in the History or Narrative, the causal factor is not a part of the mishap or those sections have not been developed completely.
- Causal factors should not include or address new material not in the history or narrative.
- e-AVIATRS contains an HFACS module which can be used for any mishap. Fields exist to allow the investigator to add comments on why a nanocode was selected. Contact CG-1131 to have HFACS permission added to user account.

NOTE: If the investigation uncovers causal factors or findings requiring immediate corrective action beyond the unit level, Commandant (CG-113) shall be notified immediately. The Commandant Safety Board (CSB) will follow up on this initial report and take appropriate action as soon as practical.

Conclusions.

Conclusions describe how and why the mishap occurred and how the MAB arrived at that conclusion. Conclusions should indicate those aspects of the evolution that contributed to the mishap and those that did not.

Recommendations.

Recommendations should be solutions related to the causes of the damage, fatalities, or injuries in the mishap sequence of events. While recommendations are normally associated with causal factors, not every causal factor needs or will have a recommendation. Well thought out recommendations are necessary for proper corrective action. Recommendations should be short, concise statements requiring no explanation and follow in a natural sequence after the analysis, conclusion, findings, etc.

Recommendations should not be "corrective actions," these are developed by the Commandant Aviation Safety Board. Recommendations not related to the mishap should not be included as part of the MAR but directed to CG-1131 separately for referral to the appropriate program managers.

Signature Page.

- The names and rank/rate of all MAB Members will be typed on a separate signature page. Each MAB Member will sign and date immediately above the typed name.
- Number of Investigation and Report Preparation Work-Hours.
- On the signature page, list the estimated work-hours required for the mishap investigation, analysis and preparation of the MAR.

NOTE: Minority opinions—Primary MAB Members disagreeing with the results of the investigation may submit a minority report. Minority reports must include reasons for disagreeing and the findings and causes not made a part of the MAR. This is a very uncommon occurrence and is usually an indication the MAB is not working as a group or giving all members a voice in discussions and deliberations.

Appendices. Include the appropriate appendices. See Enclosure (2) of M5100.47.

NOTE: Do not include any "graphic" photos of mishap crew (deceased or alive) unless needed to understand the MAR.

The MAB's conclusion that a particular paragraph of a document was or was not a mishap factor is privileged. This also applies to comments or conclusion made by the MAB of documents such as training and personnel records.

NOTE: Do not include legal opinions.

Number of Copies.

Because the MAR contains sensitive and privileged material, it is imperative the reports be controlled. Only a limited number of copies and copyholders are authorized. Under no circumstances shall additional copies of mishap reports be made without the express written permission of CG-1131

- The MAB President is the only MAB Member authorized to keep a MAR copy.
- Reviewers in the chain are not authorized to hold a copy, and shall not reproduce or be provided a

copy, unless requested of and authorized by CG-1131.
- CG-1131 maintains the original copy of the MARs.
- The original MAR and all copies (including the MAB President's) are to be returned to CG-1131 for destruction after the Final Action Message or Final Summary Message is released or upon the direction of CG-1131.

NOTE: Mishap Reports contain sensitive, privileged material. Under no circumstances shall additional copies of mishap reports be made without the written permission of CG-1131.

Essential Documents.

The MAR is not a legal document, and it is not necessary to enclose documents unless they reveal unusual circumstances are essential to understanding the MAR or mishap. It is enough to show a listing of documents or records reviewed by the MAB and their effective dates. Nonessential documents should be left out. The MAB only needs to comment; for example, the crew member(s) was current/not current regarding training requirements, the crew filed a proper flight plan and received a weather brief.

- Do not extract, mark or highlight a particular page to show the exact area of interest.
- Do not include copies of related paperwork (flight plans, log entries, personnel qualification records, weather briefing, crew members' training records, maintenance records and/or diagrams, etc.) unless they show significant problems or irregularities.

DO NOT include additional info & issues not contributing to the mishap in the MAR. If they warrant attention and could prevent another mishap, they shall be handled separately via appropriate correspondence (e.g., e-mail, phone or mishap report). This will ensure proper handling by the responsible HQ program manager or Commandant (CG-113).

MAR Labeling / Markings.

The original MAR and copies shall be labeled in the center of the cover:

COAST GUARD (Unit Name) (Aircraft Type / Tail No.) CLASS and MISHAP DATE ORIGINAL or COPY(*) of (*) Mishap PIC and Commanding Officer

The following shall appear on the MAR immediately after the initial heading identifying mishap:

MISHAP ANALYSIS REPORT FOR OFFICIAL USE ONLY. SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH COMDTINST M5100.47

The following notice shall appear immediately after the initial heading identifying the mishap and on each page containing privileged information:

// **FOR OFFICIAL USE ONLY**
WHAT FOLLOWS MAY CONTAIN PRIVILEGED SAFETY INFORMATION. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT IS PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE AND MAY ALSO BE GROUNDS FOR DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL REGULATIONS. //

The following shall appear immediately before the subject line of all mishap messages and all

endorsements:

UNCLAS FOUO //N05100// or //N03750//
WHAT FOLLOWS MAY CONTAIN PRIVILEGED SAFETY INFORMATION. USE FOR MISHAP PREVENTION PURPOSES ONLY.

Mailings and Mishap Analysis Report Covers should be stamped:

FOR OFFICIAL USE ONLY. SPECIAL HANDLING REQUIRED IN ACCORDANCE WITH COMDTINST M5100.47

Distribution.

Distribute copies as directed by CG-1131. All copies of the MAR will be returned to CG-1131 after the Final Decision (Safety) Message (FDM) is released or upon direction of CG-113.

Delivery of Mishap Analysis Reports.

When the MAB has completed its analysis and prepared the MAR, the MAB President shall deliver the original and a CD plus all copies, less the MAB President's copy, to CG-1131 for initial review (or as directed by CG-1131). The MAB President will debrief the CO regarding results of the analysis. The MAB President will notify CG-1131 to coordinate and release the MAB's final message and make arrangements for the release of wreckage, as appropriate.

Mailing the MAR and Other MAR Materials.

Mishap Analysis Reports. A double envelope system shall be used to mail MARs. Mark the inner envelope with the address of the receiving person/office, along with the following:

FOR OFFICIAL USE ONLY. SPECIAL HANDLING IN ACCORDANCE WITH COMDTINST M5100.47

Mailing Recorded Media. Audio tape/cassette recordings and videotapes may be included in the MAR. Protectively package the materials to avoid breakage by handling. Mark outside of package, "MAGNETIC TAPE, DO NOT X-RAY."

Handling and Mailing Mishap Animation Tapes. If mishap animations are created from the CVR/FDR data or other mishap data, the original shall be forwarded to CG-1131.

Formal MAR

The Mishap Analysis Report (MAR) is designed for several USCG entities to read and each person should be able to extract certain info quickly from the MAR. For that reason certain portions of the MAR use a definite format. This section assists in constructing the MAR.

Deadlines. See Chapter 3 of the SEH Manual.

Format. See Enclosure 2 of the SEH Manual.

Table of Contents should list sections and appendices contained on each side of the MAR.

Each TAB (section, appendix, enclosure) should have a cover sheet with the title of the TAB followed by table of contents for that TAB. Arrange TABs in alphabetical order with "Tab A" on top. Number all pages within the TAB (Tab A would have numbers: A-1; A-2, etc.).

Include a copy of the Initial/Preliminary, Progress and Final MAB messages in chronological order. Remember to print in "full view".

To avoid confusion and headaches later, the MAB President should assign sections/TABS to members during one of the early meetings. Assigning completion milestones is also helpful.

Do not wait until the last minute to start working on the MAR. Some sections can be built, copied, and set aside early in the investigation. You will appreciate this effort during the last week or so of the investigation.

DO NOT ALLOW members depart before the MAR is completely done.

Photographs.

Place or embed photographs near the related text for easy reviewing. This takes up less space and the photo can be adjusted in size to fit the text.

NOTE: DO NOT include photographs of deceased personnel in the MAR.

DO NOT unnecessarily show evidence of human injury (i.e., bloody aircraft parts). Include only photographs aiding in understanding the mishap. Well-defined photographs help in understanding the mishap analysis. Use photos to show damage, impact areas, metal fractures, flight path, vehicle travel, etc. Use electronic copies of photos for reproduction. If absolutely necessary to include an injury photo to illustrate the mishap, consider using a black and white photo. Most mishap photographs, with the exception of those contained in the Medical Officer's Report, autopsy report, and staged photographs, are considered factual and non-privileged. All non-privileged photographs, devoid of privilege markings and captions, will be placed on the left side. Autopsy photographs and other photographs of human remains, helpful in understanding the MOR, shall be submitted in a separate envelope, sealed and very plainly marked "PASS DIRECTLY TO COMDT (CG-1121)."

DO NOT include x-rays in the MAR; a summary statement of the x-rays is sufficient.

General Tips and Reminders.

Beware of and take care of, "pet" issues, especially those not a factor or tied to the mishap. Avoid emotional statements and "flag" waving.

Recommendations not eliminating a causal factor **DO NOT BELONG IN THE MAR!** Only include those issues/items needed to explain the mishap in the MAR. All causal factors should be considered "under human control" and therefore can be eliminated. All causal factors should be considered equally responsible for the mishap; do not label as primary, secondary or contributing. List them in the order they occurred in the mishap sequence.

Sketches and diagrams should be included if helpful in conveying circumstances or events in the text of the report. Diagrams showing wreckage distribution, flight path, mishap aircraft location relative to other aircraft, ground obstacles, runways, taxiways, etc., are helpful.

Engineering investigations, technical, laboratory and contractor reports must contain only factual information. Speculation, opinions and mishap causal factors shall not be included.

If the MAB desires speculation or the opinion of an expert, and the MAB provided that expert a grant of confidentiality in providing such speculation or opinion, the information provided shall be separated from factual evidence and submitted as a privileged statement.

DO NOT include autopsy reports in the MAR. Autopsy reports should be submitted separate from the MAR. Autopsy reports shall be properly marked and sealed in a separate envelope very plainly marked "PASS DIRECTLY TO COMDT (CG-1121)."

Psychological questionnaires, aero medical conclusions from psycho-sociological interviews, analysis of psychopathological findings and other detailed discussion and analysis of potentially sensitive information dealing with the personal life of mishap crewmembers should be summarized in the appropriate sections of the report as needed.

Appendices.

Add as many appendices as are needed and relevant to support the investigation and analysis. List in the order referred to in the MAR. Do not include information collected or found not part of determining the cause of the mishap.

Establish ROE before starting to write:

- Font, Type, Paragraph spacing.
- File naming.
- Tense.
- Labels for mishap aircraft, crew and other key personnel discussed in the MAR.
- Terms and abbreviations used, especially for things like distance, altitude, heading, weight, fuel, and speed.
- Nomenclature for major components (engine # 1, MLG, etc.).

To avoid any association with disciplinary action, do not reference any Admin Investigation, Aviator Evaluation Board or other disciplinary reports associated with the mishap.

As far as the safety investigation is concerned, a witness' signature doesn't contribute anything and is not necessary.

Fill in the details. Remember few readers will be as familiar with the evidence as the MAB. Include enough details so the reader can follow alone. Explain "how the MAB knows". Can the reader follow the sequence and conclusions logically? Here is where CG-1113 can help and why it is **STRONGLY** recommended you let us review your final draft.

If it doesn't contribute to the MAR, leave it out!

All MAB Members should review **ALL** sections of the MAR for accuracy and consistency prior to printing the final version.

After the final review and release of the Final Action Message or Final Summary Message, **the MAB President shall destroy** all data working papers, notes and any other documents held by MAB Members that cannot be returned to the rightful owner.

Developing Findings/Conclusions/Recommendations.

Avoid self-imposed frustration; give the process time when developing Findings, Conclusions and Recommendations. **DO NOT** expect to get them 100% correct/finished during the first session. This will take several sessions/attempts.

Once you get the basic Findings, Conclusions and Recommendations down, subsequent sessions will be needed to get the wordsmithing right. You will change, reword, delete and add back many times before reaching the final product.

Make sure Findings flow chronologically. Design issues come before failed parts and inadequate training comes before messing up the landing. The last Finding should be the injury or damage.

Do not copy Findings from another mishap.

DO NOT include events or Findings that are interesting, but do not sustain the mishap sequences. Be sure all Findings are covered in the mishap Narrative. A good way to check this is to print out the Findings, and re-read the Narrative, checking off the Findings as you locate them in the Narrative. The President has the final say in any discussions where a consensus can't be reached.

Interview Summaries.

It is not necessary to include every statement taken from every individual interviewed. Include witness statements only if the content is pertinent to the mishap investigation and helpful in understanding the report. Summary notes are sufficient. Use only meaningful statements. If several witness statements say the same thing, use a summary statement. Remember, only include interviews or interview summaries adding value or supporting the investigation.

Summarize or paraphrase interviews. Telephone conversations to gather information should be summarized and submitted as statements.

Witness statements (written or oral) must have a Witness Advisory Form attached indicating whether a Promise of Confidentiality was granted, accepted or declined.

Questions and Answers for MAB Members

1. I am a MAB member analyzing an aircraft mishap under COMDTINST M5100.47 and both the pilot (blue-suiter) and the mechanic (USCG civilian) refuse to talk to the MAB under any circumstances. What do I do?

ANSWER: It's true that privilege does not extend to civilians, so contact CG-1131 for these circumstances. Privilege certainly does apply to the pilot. Explain the importance of preventing future mishaps and the importance of hearing their story and ensure they understand what privilege does and doesn't offer. You can order the USCG active duty member to talk or face Uniform Code of Military Justice (UCMJ) charges for disobedience of a lawful order. Civilians cannot be forced to comply.

2. I was involved in a USCG aircraft mishap. A lawyer wants to talk to me. What do I tell them?

ANSWER: Do not talk to the lawyer. Refer the lawyer to USCG Headquarters Legal. Immediately contact your local legal office or Headquarters legal; inform them of your relationship to the mishap and that you were contacted by an attorney. Never talk to an attorney without a USCG lawyer present. This does not mean you cannot talk to a lawyer if you were injured in a mishap and are considering legal action against the manufacturer of the equipment.

3. I investigated a USCG aviation mishap. A lawyer wants to talk to me. What do I tell them?

ANSWER: Same as number 2. In addition, MAB Members and other with access to privilege information may not reveal privileged information. To do so is punishable under the UCMJ.

4. What is a deposition?

ANSWER: The taking of statements under oath. It is done in an office or conference room. Counsel for all the parties are present as is a court reporter. The judge is not present. Everything is taken down verbatim. The person being deposed is asked questions by counsel for each side.

5. If I am subpoenaed to be deposed as a result of a mishap I investigated, what do I do? Will the USCG represent me at the deposition?

ANSWER: Take the subpoena to the USCG Legal. If you are required to appear, a USCG attorney will accompany you. It is possible the subpoena is invalid; therefore, you should have it reviewed by USCG legal. **DO NOT ATTEND A DEPOSITION WITHOUT COAST GUARD COUNSEL.**

6. What should I do with working papers or photographs after the mishap report has been prepared?

ANSWER: MAB Members should not keep anything from the investigation. Destroy all working documents and notes revealing the thoughts and deliberations of the MAB. Destroy any documents, photographs, drawing or other documents not used in the MAR.

NOTE: CG-1131 does not want what you did not include in the MAR.

7. The AIM is asking for the results of the TOX testing. Can the MAB share the results?

ANSWER: It is factual information. However, you should refer them to the same source you obtained the information.

8. As a MAB Member, can I give the AIM a description of the crew's injuries or the cause of death?

ANSWER: You may release the description of the injuries but may not be able to release the cause of death. The description of injuries is factual information and may be given to the AIM. The cause of death, if it is an opinion of a member of the MAB, should not be released. If an autopsy protocol is available, it may be released to the AIM as it is not privileged and will contain the cause of death. It is not released outside the USCG except to the next of kin upon their request or upon court order. This practice is followed in respect to the survivors. If the only available statement regarding the cause of death is the opinion and conclusion of the MAB, it is privileged and the AIM Investigator should obtain his or her own medical expert for this opinion. All requests for the autopsy protocol by persons other than the AIM should be referred to CG-1121.

9. About a year and a half ago, I was a witness to a mishap and gave a statement to the MAB, and now I have to go to court. I want to see a copy of my statement, so I can refresh my memory on what I said. May I do so?

ANSWER: No. The statement is privileged and is to be used for mishap prevention purposes only. Testimony in a judicial proceeding does not qualify as mishap prevention.

REFER LEGAL QUESTIONS TO CG-1131 or USCG Legal (CG-146)

NTSB and FAA

The National Transportation Safety Board.

The NTSB is an independent agency with statutory authority to investigate air, rail, highway, pipeline and maritime accidents. The NTSB's charter in aviation applies to any aircraft accident (major damage or severe injury) in U.S. jurisdiction, but in practice is reserved for civil registry aircraft operating under the FARs. Accidents involving only military aircraft (operated by the federal government) are investigated by the respective service.

The Federal Aviation Administration.

The FAA, under the Department of Transportation, controls the national airspace system, certificates aircraft and licenses airmen. The FAA has no investigative authority in its own right, but is likely to be involved in military mishaps because it provided services or had radar coverage of the mishap locale. An agreement between NTSB and FAA permits NTSB to delegate certain mishaps to the FAA for investigation. NTSB does so where there is possible risk to flyers and passengers in commercial and general aviation.

Civil and Military Aviation Mishap.

For a mishap involving civil and military aircraft, it is conceivable there could be three concurrent government investigations: NTSB, Commandant's MAB and AIM Manual. The NTSB investigation would have precedence over the military safety investigation for access to evidence. CG-1131 will coordinate the safety investigation efforts IAW with USCG, NTSB and FAA regulations governing mishap investigations.

NTSB/FAA Involvement In A Mishap.

By law, military authorities must provide for participation by the Secretary of Transportation and NTSB in a military mishap investigation that may involve a duty of the Secretary. In practice this can mean FAA attendance in a mishap investigation involving any FAA service or function. The NTSB will have an interest if the circumstances can apply to civil aviation. Participation may be extended to the NTSB whenever military authority considers it could contribute to aviation safety. See joint instruction Participation in a Military or Civil Aircraft Accident Safety Investigation. (COMDTINST 5100.28A, AFI 91-206I, OPNAVINST 3750.16C and AR 95-30).

- Coast Guard retains jurisdiction in USCG aviation mishaps with FAA/NTSB involvement.
- Circumstances where the NTSB or the FAA participation may be appropriate include:
  1. Mishap involving a military aircraft, component or equipment with civilian equivalent, or an operation applicable in civil aviation.
  2. An FAA function is involved. Consider the FAA involved if any of the following apply:
     - Performance of an FAA employee or designee.
     - FAA certification of a civilian crewmember.
     - FAA design or airworthiness certification.
     - Navigation or airport facility established, operated or maintained by FAA or another agency for FAA.
     - FAA rule, regulation or order applicable to airspace use.

- FAA air traffic service (clearance, instruction, advisory); air-ground or point-to-point message transmission; weather observations and reports.
- Notices to Airmen; airport advisory and flight service.
- FAA approach control function delegated to a military facility.
- Operation under an FAA waiver or exemption.
- FAA regulation and nonmilitary publications.
- FAA standards for obstruction clearance, flight inspection, lighting or markings at airports and along airways.

FAA Assistance.

In most mishaps, the FAA is simply a resource for information. If the aircraft was or could have been visible on radar, the FAA is a potential source of information regardless of filing, flight rules or squawk. If the crew attempted contact or was handled by the FAA, additional information is possible: taped radio/telephone communication, pilot reports, and more.

NAVAID status and area weather are also available.

The involved ATC facility can provide radar and audio/voice recordings/tapes, their own set of standard operating procedures, etc. This material may all be useful to your investigation, but the logistics of obtaining it can be cumbersome. Assistance in obtaining such evidence can be provided by CG-1131. But **YOU** must get the ball rolling. Request tapes immediately; recording media are recycled after 15 days and temporary notes (aircraft routing slips, PIREPs) are discarded.

FAA personnel may provide statements and interviews; follow protocol for such requests. The following is a list of items obtainable from FAA:

- Taped communications of:
  1. Airman-to-FSS telephone weather brief and filing via radio
  2. ATIS, clearance, ground, tower, approach, departure, en route.
  3. Internal/external communications of controllers/supervisors.
- Facility status (runways, taxiways, NAVAIDS).
- NOTAMs.
- Statements by controllers/supervisors on duty during mishap.
- Weather observations (hourly/special).
- Replay radar tape (visual).
- Tabulation of radar file (on paper) for analysis/simulation.
- Depiction of control sector (airspace) boundaries/altitudes.

A request for the above information does not require FAA participation. However, if the MAB is thinking an FAA service or function may be a possible cause, the MAB President should make appropriate notifications to initiate FAA participation.

The concept of privileged safety information is not practiced in NTSB investigations or in FAA proceedings. However, when personnel of these agencies are admitted to a military safety investigation, they and their agencies are bound to observe and comply with the confidentiality of information obtained under promise of nondisclosure. In practice, NTSB/FAA participation differs little from the use of engineers, technicians or manufacturers' representatives. Personnel other than those appointed to the MAB are not included in witness interviews, deliberations on privileged info, or creation of the MAR.

Interagency Mishap Investigation.

See joint instruction Participation in a Military or Civil Aircraft Accident Investigation (COMDTINST 5100.28A, AFI 91-206I, OPNAVINST 3750.16C and AR 95-30).

As soon as the MAB determines there may have been an FAA function involved in the mishap, the President should notify CG-1131. The Aviation Safety Division will consult with the NTSB and FAA to determine whether they may have interest in the investigation.

CG-1131 will provide the NTSB and the FAA opportunity to participate according to each agency's involvement or interest. The agencies will indicate their intentions (decline or participate) and, if appropriate, identify personnel assigned to the investigation.

In a mishap involving classified matters, USCG authorities must identify access levels so NTSB and FAA headquarters can assign personnel with appropriate clearance. Official notification from the NTSB and the FAA of agency personnel clearances and presentation of agency credentials will constitute evidence of clearance.

Message from the MAB President should include the NTSB and FAA Headquarters as INFO addresses.

The MAB President will supervise and direct NTSB or FAA participants and their activities during the course of the investigation. NTSB and FAA representatives may be expected to support the MAB with access to agency personnel for interviews, information, and records.

NTSB and FAA representatives may be expected to pass to their agencies information applying to civil aviation. An FAA participant in a military safety investigation may not take part in an FAA enforcement action in connection with the mishap. This does not preclude the agency from taking action on violations of Federal Aviation Regulations. Other agency personnel would be appointed to conduct such actions.

Privileged documents (witness statements, MAB analysis, deliberations, conclusions or recommendations) may not be provided to NTSB or FAA participants. Copies of non-privileged documents used by the MAB may be provided to NTSB and FAA participants as the President sees fit.

NTSB or FAA personnel who assist a MAB are not entitled to a copy of the MAR, nor should the MAB include their agencies as addressees. Only CG-1131 can authorize release of a MAR or portions of the MAR.

If during an investigation, the MAB identifies a hazard requiring immediate action on the part of civil aviation, the MAB President shall contact CG-1131 immediately for proper handling and coordination with NTSB/FAA.

A conclusion in a MAR attributing cause to another agency or recommendation of corrective action by another agency may be released externally only by CG-1131.

Tips and Reminders on Concluding

Disposal of Evidence.

Carefully control privileged documents and evidence once the MAB has adjourned, this generally means destroy or dispose. Overall, if it isn't going into the MAR, get rid of it. This includes:

- Witness statements and interviews (written or recorded).
- Diagrams and other exhibits developed for or by the MAB.
- Anything acquired from contractor representatives under a promise of confidentiality.
- Drafts of the report or papers indicating MAB analysis, deliberations, or conclusions. These are MAB working documents and should be disposed or destroyed and not retained.
- Shred all notes, working copies, drafts, audio and video tapes, unused photographs, etc. **DO NOT** leave left over/unused documents, tapes, photographs or other materials with the mishap unit or send to CG-1131, unless requested.
- Privileged photographs, films, and videotapes (including annotated, staged, reconstructed, or simulated reenactments of possible or probable scenarios developed by or for the MAB).

NOTE: Captions and markings that are speculative or indicative of the deliberative process are privileged but not the photograph. Photographs annotated with arrows, circles, rulers or other markings may or may not be considered privileged.

NOTE: Audio and video recording of witness interviews are considered MAB working documents and should be disposed or destroyed when the MAR is finished and the MAB adjourns. DO NOT ship to HQ or leave with mishap unit.

Disposition of Other Evidence.

Disposition of autopsy reports/photographs and TOX results shall be handled IAW the Medical Manual COMDTINST M6000.1 (series) or other governing document. Contact CG-1121.

Other MAB Members, mishap crewmembers or unit personnel shall not retain any material.

Aircraft logs and records should be passed with custody of the wreckage.

Service, health and training records and logbooks for missing or deceased personnel should be returned to the record holder for proper disposition and handling.

Return all original documents and records to their proper custodian for proper disposition.

NOTE: If there is a need to retain any document for briefing purposes, place such documents in a folder marked *"MAB investigation materials"*. The MAB President shall retain and safeguard the material until the Final Action Message is released and then it shall all be destroyed.

Disposal of Wreckage and Equipment.

Turn wreckage and other (factual) evidence over to the legal investigation when no longer needed.

Ensure that the legal investigation or other boards know the wreckage is available and acknowledges custodial responsibility. Notify CG-1131 and the mishap CO of the transfer.

If the legal investigation does not need the wreckage, notify CG-1131 and CG-41 for disposition.

Keep USCG equipment damaged beyond repair until all investigations indicate it is no longer needed. Contact CG-41 or ALC for disposition.

Return usable personal equipment or protective gear from the mishap crew to the issuing authority as soon as possible after all investigations have completed their examinations. Clearly mark the item to indicate involvement in a mishap to ensure necessary inspections are accomplished prior to reissue. Government issued clothing and flight equipment worn by deceased crewmen is not to be stored with wreckage nor released as personal effects and shall be destroyed after all investigators have completed their examination.

NOTE: Survival equipment is intended for one-time use. Even after a successful egress or survival situation (no apparent equipment problem), recovered ALSE equipment shall be shipped to ALC for examination and disposal.

Site Release.

When the MAB is finished with the wreckage at the mishap site, the site will normally be released to the AIM President or other board. If the AIM has no need to view the mishap site, the site may be released to the mishap unit or other authority for cleanup, restoration, and recovery.

Computers, Laptops and Electronic Storage Devices.

Remove all files and investigation information/data stored on computers, laptops and hard drives.

Consider reformatting “loaner” computers and laptops used by the MAB to prevent the inadvertent compromise of privileged safety information residing on the hard drives.

Consider destroying portable electronic storage device.

Delete all emails.

A Few Last Words.

Do not let members start leaving until the MAR is truly complete.

Immediately notify CG-1131 if any MAB Members receives a subpoena or request to produce any information, documents, or witness information regarding the MAB or mishap for any purpose.

Don’t rush to get home. Once the investigation is complete and the MAR is signed, don’t travel tired. Stay an extra night and get some rest!

Ensure that all MAB Members understand they should not discuss the results of the mishap investigation outside the MAB proceedings. Remember, privileged safety information can be used only for mishap prevention purposes.

Feedback and Questions.

Please let us know if you find any deficiencies in the MABH or associated documents. To improve the product, we need your feedback. Please email your comments or suggestions to CG-1131.

Mishap Cockpit Voice and Flight Data Recorders

See the Aircraft Flight Data User's Guide (PG-85-00-1560-A) as well as Chapter 2 and Enclosure 10 of the SEH Manual.

CG-1131 coordinates analysis and animation of flight data and voice recorders. Contact CG-1131 for download and animations from the cockpit voice and flight data recorder data.

The terms VFDR (Voice Flight Data Recorder), VADR, CVR, and FDR are often used interchangeably to include any mishap recording device on a USCG aircraft. The policies and handling procedures are basically the same:

VFDR Data Privacy and Privilege Concerns.

NOTE: Raw flight data and animations made solely from flight recorder data are not exempt from public release, provided they do not contain privileged safety information (e.g., MAB opinions, speculation or conclusions).

NOTE: Cockpit voice recordings of mishap aircrew are not protected by safety privilege, but under USCG policy, they are not released to the public. Only those individuals with a need to know will be allowed to hear the actual cockpit voice recordings. Transcripts, however, are releasable.

Flight data retrieved from recording devices is factual information when presented in tabular or graph format (aircraft position information, engine stats, flight info, time data, heading info, etc.). Raw data downloaded from any recording device may be shared with other investigations.

Any animation produced purely from raw data is considered non-privileged; however, if the animation uses speculation or information derived from privilege safety material (i.e. crew statements, MAB deliberations), it becomes privileged.

If the animation also includes voice recordings, it may be protected by the Privacy Act. The sound of person's voice can be safeguarded.

The Privacy Act safeguards the sound of the travail of a dying crewmember; this applies to the privacy of next of kin.

Transcripts of the **relevant portions** of the cockpit voice recorder are considered non-privileged and can be released (emphasis on the relevant portions only).

Portions of the recording not related to the mishap sequence (i.e. comments about the CO's daughter or the XO's management skills) are not released due to the lack of relevance, nor should they be transcribed.

While relevant portions of the cockpit voice recorders/transcripts are not exempt from public release, the actual cockpit voice recordings and the names of the individuals whose voices are captured may be safeguarded due to privacy concerns.

Relevant portions also means only the segment of the flight pertinent to the mishap. The entire flight

from start to finish does not or may not need to be transcribed.
Inappropriate use of the cockpit voice and flight data recorder downloads will be handled in accordance with Article 92 of the Uniform Code of Military Justice.

VFDR Download and Removal.

See the Flight Data User's Process Guide for information on requesting downloads, shipping the recording unit, pulling the data cards and other guidance.

If the cockpit voice and flight data recorders are removed for download, a replacement recorder will be required to keep the aircraft in a Bravo Status. Only the Commanding Officer can authorize a flight without a mishap recorder.

When transporting the VFDR via commercial airlines, contact CG-1131 for authorization letters and POC for bypassing airport screening. CG-1131 will work with the TSA to get the VFDR through all the security checkpoints and onto the commercial flight. This usually requires multiple contacts along the intended route.

Figure 2-1 of the SEH Manual is only used for requesting the download of recorders by any investigation other than a Commandant appointed MAB.

Tips and Tidbits.

The VFDR data is not the "cure all"; it is just another set of data. It seldom provides anything remotely like a "smoking gun", but it does provide lots of data. If looked at too early, it can complicate things and stop the MAB from looking at available evidence. It may be useful to withhold the VFDR data from the MAB until after the evidence is collected, so the investigation efforts do not get sidetracked or tarnished by any preconceived notions from viewing the data.

VFDR data can help validate or dispute other evidence such as witness statements, switch settings, etc. Audio downloads can be used to check for ambient noises or to conduct frequency analysis.

MAB Members are reminded that quotes and statements from the voice recordings shall not be discussed outside the MAB.

DO NOT tamper or try to open the VFDR unit as this can cause damage.

The VFDR shall not be read out loud or downloaded on scene.

If the VFDR is recovered in water, immediately pack it in water and do not allow it to dry out. Packaging may be accomplished by sealing the recorder (in water) inside a plastic beverage cooler. Rubbermaid® orange water coolers work great. See the Aircraft Flight Data User's Process Guide for additional information.

It is best to schedule a boardroom at the hotel or other space to listen to the VFDR as a group. Expect this to be a very emotional event; therefore, best to conduct it in a sterile environment where MAB Members can egress and handle the mental download however they want/need. If audio is played back at the air station and it is full of terrible stuff, there is the potential for MAB Member reactions to be seen by air station members. Listening to the VFDR tapes is both time consuming and draining. Plan on it taking time and allow time for breaks.

CG-1131 Advisor

A CG-1131 staff member will be sent to assist during the initial setup of the MAB and provide technical assistance during the first few days of the investigation.

- As the CG-1131 Advisor, you are on site to provide assistance to the unit and the MAB. You are not to assume control of the MAB, conduct the investigation or participate as a member.
- The CG-1131 Advisor will report mishap information back to HQ, and may be asked to provide a Flag briefing upon return. Only non-privileged, factual information will be presented during this brief.
- The CG-1131 Advisor does not sign the MAR and shall not be involved in MAB deliberations.
- The Advisor will be on scene for approximately 1-3 days and should be considered the MAB President's focal point for any required Headquarters assistance.
- You won't have all the answers, but as the CG-1131 Advisor, if you don't know the answer, you know who to call to get the answers. **DO NOT** try to "wing it". Rely on the wealth of knowledge back in the office. There is nothing wrong with saying you don't know, just don't stop there—go find the answer.
- Remember, most MAB Members have never been a part of a MAB or stationed at a unit where a major mishap occurred. They will behave accordingly and will need your advice and guidance.
- The CG-1131 Advisor is available to give "refresher training" in investigation processes and MAB procedures.
- The Advisor has ready access to technical assistance the MAB may need and can advise the MAB President on the most suitable types of assistance and sources of outside help.
- The MAB's charge is a daunting one. Individual MAB Members will be looking for direction and they will expect the CG-1131 Advisor to have the answer or know where to get it.
- The following are items to be discussed with the MAB Members. This should be considered a starting point, not all inconclusive. Each mishap will involve different topics and areas.
- Much of this checklist will be discussed on the phone as the MAB is being assembled, however, expect to reiterate.
- Consider reviewing the MABH Checklists with the MAB Members.

General Introduction to the MAB.

Qualities of a successful MAB Member:

- An open mind.
- A capacity for hard work.

- Team member/worker.
- Common sense.
- Integrity.
- Faith that the cause can be determined.
- Curiosity.
- Perseverance.
- Knowledge.
- Tact.

There is no rush to complete the investigation. The field is anxiously awaiting the final results, but a thorough investigation is more important. There is time to do the investigation carefully and correctly.

Expect a long, hard effort. Major accidents will take about two weeks of concentrated investigative effort, plus the time to analyze and produce the MAR. It is not a vacation. It may be some of the most intensive yet most important work you do in the USCG. Be prepared for long days and hard work.

Impress on the MAB their importance as mishap investigators. Their past performance identifies them as top performers and why they were selected.

Do not let personal prejudices influence the MAR. Keep an open mind. You might think you know what happened, but guard against this mindset; it might prevent the MAB from investigating all possibilities.

Do not deliberate until the information gathering stage is complete.

Advise MAB Members to keep the prime objective in sight – to prevent a future mishap.

Explain the Coast Guard concept of privilege. See Enclosure 10 of the SEH.

NOTE: The Promise of Confidentiality is granted on an individual basis. It is not automatically offered to all witnesses. There is no "blanket privilege".

Impress on them the importance of the Progress Messages for getting the word out and keeping others informed. See SEH Manual Chapter 3.

The role of the CG-1131 Advisor is supportive in nature and not part of the MAB's investigation, deliberations or witness interviews. The CG-1131 Advisor is a conduit for HQ assist in a variety of ways.

Safety, especially at the mishap site, is a must.

Refer all press inquiries to the assigned Public Affairs staff/member. MAB Members are not to act as official USCG spokesmen. EVER!

HFACS—explain what it is and how to use it. HFACS is not just the Doc's job; it takes the entire MAB. Review and discuss often.
Use the five M's to look for causal factors: Man, Machine, Management, Mission, and Media (Environment).

Take sufficient breaks to remain mentally fresh. Encourage Members to maintain a regular workout routine. The decision to convene a legal investigation rests with the Command and the District. Such a decision is not based on the contents of the MAR. It is not the job of the MAB President to conduct or request a legal investigation.

Go over the MAR format with the FSO and MAB President (admin support, if provided). Use one of the sanitized training MARs. Bring copies (disc) of the sample format. See SEH Manual, Enclosure 2.

Info for MAB President.

He or she is in charge of the MAB.

Review strength of each MAB Member and assign tasks accordingly.

Divide and assign tasks quickly to get maximum coverage early in the MAB process.

The FSO member may be the only trained interviewer.

Meet at the end of every day to go over the day's work and discuss the next day's plans.

Log the hours the MAB works daily.

Become the main MAB interface with mishap unit, CG-711, CG-41 and CG-1131.

It will be a long, intensive work effort. Don't feel pressured to "solve" the mishap quickly. It is not unusual to be on scene for two weeks or longer.

Encourage breaks. The Members chosen will not be people you have to monitor for being idle. Set and observe crew rest and "eight day bag" rules.

Arrange off-unit storage and protection of wreckage. CG-41 will help with funding for recovery and security. This may already be in progress as a normal result of the unit's Salvage Plan or Mishap Response Plan.

As an outside observer, notice whether mishap unit personnel and dependents are receiving required attention.

Ensure command understands the Critical Incident Stress Management (CISM) assistance options. The mishap unit CO is normally the one to request this assistance. CISM assistance is available through the mishap unit's District Work-Life staff in accordance with COMDTINST 1754.3.

Witness interviewing takes priority over CISM/CISD (Critical Incident Stress Debriefing) counseling procedures, whenever possible.

Following the initial collection of data and while waiting for lab reports, tear down analysis, etc., **DO NOT** wait around the mishap unit for information to arrive. There is little that can be accomplished. Consider recessing and reconvening when appropriate.

Have the MAB plan to reconvene at a mutually beneficial, low-cost area (ATC Mobile or Elizabeth City are preferred site; do not use Headquarters or MAB Member's unit).

Ensure witnesses are informed and understand the "Witness Statement Promise of Confidentiality Advisory Form". See SEH Manual Enclosure 2.

Maintain tight control of MAR and associated documents. MAB Members, with the exception of the MAB President, are not authorized copies of the MAR. This is not negotiable.

NOTE: All messages sent to the AIG will need to be reviewed by CG-113 before release.

Additional messages will be released if warranted or requested by CG-1131.

Each message should indicate whether procedural, maintenance, or mechanical changes are needed.

Safety of flight information should be released ASAP. Confer with CG-711/41/1131.

Watch emotional fatigue in MAB Members. Especially in mishaps with serious injuries or fatalities, be aware of the strain that can occur and address with CISD, if needed.

An accident can have a disruptive effect on everyone, regardless of experience, but can greatly affect those who have never been exposed to the confusion and emotions of a major mishap.

MAB Members may not realize how physically, mentally, and emotionally draining an investigation can be. Some may have problems coping. Be alert for warning signs such as alcohol or smoking in excess, lack of sleep, loss of appetite, absences for long periods of time for no apparent reason, obsessive behavior, forgetfulness and other signs of sensory overload.

You may need to remove a person from the investigation. Make it clear there is no stigma associated with removal, but is in the best interests of the individual and the investigation.

MAB Members should also be honest with themselves when evaluating how they might have been affected by a mishap.

USCG Employee Assistance Program (EAP) and Work Life staffs are available and offer counseling and assistance as a result of work-related stress.

Consider whole days off after several long stressful days.

The MAB President "owns" the wreckage until the analysis is completed. When finished, the MAB President releases the wreckage to the admin board or the mishap unit. CG-41 and CG-1131 will arrange for disposition of the wreckage.

Salvage is not the MAB's responsibility, but ensure photographic/video documentation takes place. CG-41 will provide funding and/or personnel as required.

The MAB President does not ship the wreckage anywhere following analysis; this is CG-711/CG-1131's responsibility.

The mishap unit is responsible for the legal investigation and recovery message.

If purchases or expenses are incurred that cannot be handled by the mishap unit's supply and procurement, contact CG-1131. Miscellaneous expenses cannot be charged to individual travel cards or claimed on MAB Member's travel claims.

Work with the legal or fact-finding investigation to share access to non-privileged material. Share both collection and duplication efforts.

The MAB is essentially your air station with only department heads and generally only one aircraft. You own the aircraft and set the tone for the MAB.

Encourage MAB Members to take part in the memorial service; avoid giving the perception of an "us against them" mentality.

Use of Employee Assistance Program (EAP) for mishap analysis: CG-111 (Office of Work-Life) manages EAP for the Coast Guard, including the recordkeeping process, which is private from the Command and part of the HIPAA. Should a MAB have a question regarding medical treatment, the flight surgeon or other representative may NOT reach out directly to the EAP provider. Instead, the MAB shall provide specific questions to CG-111, who MAY engage with an EAP provider. The provider and CG-111 would balance the request and MAY provide specific information to the MAB for the intended purpose of safety prevention only, not blame or administrative action. Records themselves shall remain protected for only CG-111 and EAP use, and shall NOT be given to a MAB for analysis. **Bottom line: CG-111 is arbiter to balance privacy and safety learning. The MAB can't go direct to EAP for information.**

Tips for the FSO Member.

The FSO may be the only trained "investigator" on the MAB.

Assist the MAB President by suggesting courses of action, member responsibilities, and initial organizational efforts, if appropriate.

Ensure MAB Members follow proper interviewing techniques. Let the witnesses talk; try to put them at ease. Do not "lead" the witnesses with slanted questions.

Consider recording interviews to reduce note taking. This also allows other MAB Members to listen to interviews later.

DO NOT make verbatim transcripts of interviews, summary notes are sufficient in all but a very few cases. Destroy tapes once the MAR is signed by the MAB Members.

Expect to draft all the required messages.

When complete with the MAR, make two electronic word files and two PDF files of the MAR. One set to be forwarded to CG-1131 and one kept as backup until CG-1131 confirms receipt.

Make sure MAB Members destroy ALL working documents once the MAR is complete.

There is no need to retain anything not included in the MAR.

Expenses incurred during the investigation such as miscellaneous office supplies **CANNOT** be charged on the government credit card or claimed on a travel claim.

Act as the cheerleader and coach of MAB when necessary.

"Naval Flight Surgeon's Pocket Reference to Aircraft Investigation" is a useful reference.

Tips For the Engineering Member.

Assume a mechanical failure caused the mishap. Eliminate all mechanical causes by inspection and/or analysis of appropriate parts.

To the extent possible, prove each system was operational at the time of impact.

Ensure fuel, oil, and hydraulic samples are examined.

Discuss with MAB President the need for additional CWO/CPO maintenance expertise.

Coordinate parts analyses through CG-41 using existing contracts to the greatest extent possible.

Critical parts when shipped to contractors should be accompanied, as appropriate. This can be a MAB Member or an ALC representative.

An extensive salvage report is not required for the MAR. A simple description of damages and associated costs is sufficient. CG-41's required Salvage Report is a separate document and not part of the MAR. **DO NOT** duplicate the effort.

Assist the Flight Surgeon/Medical Officer as appropriate.

Examine aircraft records in detail.

Produce an itemized list of destroyed parts and dollar values. ALC can assist.

Remember to stay engaged with the MAB throughout the investigation. The mishap did not occur in a

vacuum and neither should any part of the investigation process. The Engineering Officer's report is not a stand-alone document.

Tips for the Standardization/Operations Member.

Ensure aircrew logbooks and training jackets are up to date.

Ensure mishap aircrew was current in mission assigned.

Look at the Unit as a whole in regards to training and currency.

Be observant for trends in record review.

Analyze aircrew use of proper procedures and appropriate maneuvers.

Assist other members with MAB activities as needed or directed

Tips for the Flight Surgeon.

Ensure aircrew and dependents receive required care and/or counseling (keeping in mind MAB interviewing requirements take precedence).

Assume custody of body fluid samples.

Work with the ALSE member to thoroughly examine all life support equipment. Lessons can be learned even if the equipment was not critical to the mishap.

HFACS—Work with the MAB as a team.

Joint Pathology Center (JPC) assistance is preferred for all autopsies. CG-1121 will help coordinate JPC assistance (1-855-393-3904).

YN/Admin Support.

If assigned, work with this person to get the MAB up and rolling.

MAR Format.

Keep the MAR accurate, bold, and concise.

Remember, it is not a legal document. The MAB can note the yellow sheet was properly filled out. The yellow sheet or a copy does not need to be included.

Do not include every witness statement. Include only those statements that are pertinent or add value.

Paraphrase long statements to cull out critical information.

DO NOT make transcripts of witness statements. Summary notes of the interviews are sufficient, if needed at all.

Actual photographs are not required. With digital photographs, it is now possible to embed the photographs in the word document, completely eliminating actual photographs.

An electronic copy of the MAR, in MS Word and PDF, is required. Forward to HQ with advanced MAR copies.

MAB Members are **NOT** authorized to make or keep their own copies (electronic or paper) of the MAR—**EVER!**

Shred all notes, working papers, excess copies, drawings, drafts, unused photographs, video and audiotapes, etc.

Unless CG-1131 requests these be saved, **DO NOT** send left over/unused documents, tapes, photographs to CG-1131 or leave at the unit. If it was not made a part of the MAR, destroy or return to owner.

Helpful/Sample Forms

Sample Privileged Information Agreements

(Note: Sample only, see CG-113 for the latest to conform with DHS and USCG requirements)

MEMORANDUM FOR {Contractor's Name}, {Company}
FROM: {MAB President}
SUBJECT: Protection of USCG Privileged Safety Information for {Mishap Unit/Aircraft Tail#/Date}

1. In response to my request for technical assistance, the US Coast Guard and your employer have agreed you will serve as a technical expert for the USCG Mishap Analysis Board (MAB) I presided. Unless you specifically identify information provided in your technical report as proprietary data, confidential analysis or opinion, it will be included in the releasable portion (Part I) of the MAB's final report as factual material. If you want us to treat any part of your report as privileged information and be protected from disclosure outside the US Coast Guard, you must specifically request such protection. In such case it will be included in the privileged portion (Part II) of the final MAB report and will be used solely for mishap prevention purposes.

2. The military safety privilege protects confidentially provided evidence and the MAB deliberative process. It has been claimed by USCG and DOD many times and upheld by the Courts. It enhances the MAB's ability to quickly and accurately identify potential causes and prevent future mishaps. This process must have the highest degree of reliability to maintain military readiness, national security, and safety.

3. In accepting to serve as technical expert, you must agree to safeguard Coast Guard safety privilege. You must not disclose to anyone, including your employer, any privileged information derived from this investigation. You will prepare only one copy of your technical report for the MAB. You must destroy or surrender to me any notes, documents, computer files, or other materials, produced or obtained during this investigation if they contain privileged information. You must not make copies of any privileged documents (including analytical products, confidential tape recordings, and staged photographs) for use outside this MAB's proceedings. You may not have a copy of Part II of the MAB's final report or any draft. You must report to me, or after the MAB adjourns, to COMDT (CG-1131) any attempt by anyone, other than a duly authorized person, to obtain any confidential or deliberative information from you about this investigation.

4. Before beginning your service to this MAB, please sign and date the endorsement below.

{MAB President Name and Rank}
MAB President

1st Endorsement
To: {MAB President's Name Here}
I acknowledge understanding of the contents of this letter and receipt a copy thereof, and I agree to comply with the duties and responsibilities stated therein.

{Contractor Name}
{Company}

(Note: Sample only, see CG-113 for the latest to conform with DHS and USCG requirements)

Cover Sheet Documenting Promises of Confidentiality to Contractors.

(Name of contractor) requests the USCG MAB investigating the mishap involving (aircraft tail no.) on (mishap date) to handle the attached report and any supplemental information provided by our technical experts confidentially.

(Contractor's signature block) / (Date)

I hereby extend (name of contractor) a promise of confidentiality for the attached report and any supplemental information provided by your technical experts.

(MAB President’s signature block) / (Date)

Sample Non Disclosure Agreement/Memo.

MEMORANDUM FOR {Contractor's Name}, {Company}

FROM: {MAB President}

SUBJECT: Non Disclosure Agreement for {Mishap Unit/Aircraft Tail#/Date}

1. Protection of privileged safety information acquired during a US Coast Guard aviation mishap investigation is important in order to prevent future mishaps. I am performing services in support of a USCG mishap investigation/Mishap Analysis Board (MAB).

2. As a result, I have access to privileged safety information. Access is solely for the purpose of mishap prevention and no other use of privileged information by me or my sponsoring organization (company or organization) is authorized access to this information. I understand I am not to make copies or photographs of any information or disseminate any information to anyone or organization not directly providing services to the safety investigation. I am expressly prohibited from providing any privileged safety information to my organization's legal staff, general counsel or any personnel involved in litigation.

3. After I am finished with any information provided on any media, I am required to return it to the MAB President. Retaining copies is not authorized. I am not to discuss privileged safety information with anyone other than personnel directly involved with the USCG mishap investigation.

4. I understand the above terms and agree to abide by the conditions set forth.

AGREED TO:

Signature _____
Company _____
Printed Name _____
Date: _____

AGREED TO:
Signature _____
MAB President / Mishap Date and Aircraft Tail #_____
Printed Name _____
Date: _____

Sample Logs.

Sample of logs a MAB might use to track information during a mishap investigation. Have the mishap/host unit develop as many of these as possible in advance. Create these forms as spreadsheets and save on a shared folder for use by all members. Modify as needed. Available at CG-1131 website.

WITNESS LOG (Written Statement provided or MAB Interviewed)

Name (Title/Rank, Last, First, MI) Position/Significance to Mishap	Address (Work & Home)	Phone (Work & Home)	Privilege Offered/ Accepted	Re-interview/ Value

WITNESS CONTACT INFORMATION

NAME (Last, First, MI)	OCCUPATION/TITLE/RANK	DATE
ADDRESS (Work/Home)		TELEPHONE
BACKGROUND/EXPERIENCE	LOCATION AT TIME OF MISHAP	INTERVIEWER
AGE/OTHER INFO		PRIVILEGE (offered/ accepted)

LOCKER/OVERSIZED OBJECT LOG/INVENTORY

File	Description/Owner (as appropriate)	Date Stored	Storage Location
1			Building xxx
2			File Drawer xx
3			Locker Drawer xx
4			File Drawer xx
5			File Drawer xx
6			Conference Rm
7			

CONTRACTOR/MANUFACTURER CONTACT/POCs

COMPANY/PERSON	ADDRESS	TELEPHONE (Work/Cell/Home)	EMAIL ADDRESS

Use to record contact information as it is collected or provided. ALC and HQ can provide many of the initial contacts.

THREE COLUMN STATUS CHART

WHAT WE KNOW	WHAT WE THINK/BELIEVE	WHAT WE NEED TO KNOW
		This is where most analysis efforts will focus

A chart similar to this can be useful at the daily meetings to keep things organized and focused.

HOST BASE CONTACTS/POCs

OFFICE/PERSON	BLDG	TELEPHONE (Work/Cell/Home)	EMAIL ADDRESS
COMMANDING OFFICER (CO)			
EXECUTIVE OFFICER (XO)			
DUTY OFFICER / WATCH DESK			
OPERATIONS			
ENGINEERING			
SAFETY OFFICERS			
MEDICAL / CLINIC			
LOCAL HOSPITAL / ER			
UNIT PMB MEMBERS (contact info for all PMB members or others significant in unit response)			
SUPPLY			
SWIMMER / ALSE SHOP			
COMPUTER SUPPORT			
MOTOR POOL			
SECURITY			
FIRE DEPARTMENT			
TOWER / ATC			
AIR FIELD MANAGER			
FAC ENG / PUBLIC WORKS			
LEGAL (UNIT / DISTRICT / HQ)			
JANITORIAL / CUSTODIAL			
HAZMAT OFFICERS			
BILLETING/MAB HOTEL			
GRAPHICS / AUDIOVISUAL			
PHOTOGRAPHY			
MAINTENANCE CHIEF			
MAINTENANCE SHOPS			
LOCAL MEDICAL EXAMINER			
ALC			
HAZMAT			

EVIDENCE INVENTORY/LOG

ITEM	OWNER/RETURN TO	DESCRIPTION/COMMENTS	DATE RECEIVED

DOCUMENTS/RECORDS

DOCUMENT/RECORD	LOCATION/WHERE TO RETURN	POC/KEEPER	COPY or ORIGINAL	NOTES/COMMENTS

FILE DRAWER

To be developed as an index and log of documents created along with drafter

Contents	Electronic File Location	Drafter	Draft/Final
Preliminary Mishap Message(s)			
eAVIATRS report			
EAL reports			
Product Quality Deficiency Report			
Flight Plan			
Weight and Balance Clearance			
Statement of Damage to Private Property			
MAB Appointing Orders			
Diagrams (Fallout-impact areas, etc.)			
Photographs			
Statement Witnesses			

PARTS OUT FOR ANALYSIS LOG

PART (nomenclature/NSN) Tracking #	POC (MAB/ Company)	TELEPHONE (Work/Cell/Other)	WHERE	WHEN	RETURN DATE (expected)	NOTES/COMMENTS

SAMPLE DOCUMENT/EVIDENCE LOG

Date Received	Item	Priv/ Nonpriv	Reviewed by BOARD PRES/FSO/EO/DOC/STAN
	Weather reports		
	Maps / Charts		
	Briefing Guides / Paperwork		
	Flight Orders		
	PAX Manifest		
	Flight Plan		
	Ops Logs		
	NOTAMS		
	ORM Worksheet		
	Tower tapes		
	HUD tapes		
	Medical Records / Dental - MP 1		
	Medical Records / Dental - MP 2		
	Training Records		
	30-60-90 Day Summaries		
	Flying History / Flt Records		
	Pilot Currencies / Events		
	Weight & Balance		
	Weapons Malfunction Log		
	Fuel Truck Log		
	Oil Cart Servicing Record - 2 Carts		
	LOX Servicing Record - 2 Carts		
	Survival Equipment Log		
	Life Support Equipment Inspection Data		
	Fuel Truck Sample Reports		
	JOAP Test Results		
	Instrument Analysis Report		
	Engineering Analysis of Failed Part		
	Digital Mishap Site Photos - PMB		
	Mishap Site Photos - Initial Walk-through (Hard Copies)		
	Mishap Site Photos - Initial Walk-through (Digital)		
	8mm Video of PMB Walk-through		
	Media (CNN) Mishap Coverage		
	Media (BBC) Mishap Coverage		
	Media Report Clippings		
	INTERVIEWS -		
	12-Hour History		
	72-Hour History		
	14-Day History		

MAR CHECKLIST

This form can be used to track the sections of the MAB needs to build for the MAR

Left/ Right Side	TAB	Item	Factual/ Privileged	Draft/ Complete	POC
		Staged Photos			
		MAB Conclusions, Deliberations			
		Analysis (Engineering, HFACS, Medical, etc.)			
		Causal Factors / Conclusions			
		Recommendations			
		Synopsis			
		Injuries to Mishap Crew			
		History/General Information			
		Damage to Aircraft			
		Other Damage			
		Personal Information			
		Aircraft Information			
		Meteorological Information			
		Blue Sheet			
		Weight and Balance			
		Duty Schedule / Mission Information			
		Aids to Navigation			
		Communications			
		Airdrome & Ground Facilities			
		Flight / Voice Recorder Information (not data)			
		Fire			
		Classified Material / Crypto Issues			
		Unit Response			
		Survival Aspects			
		Additional Findings			
		Signatures and Work Hours			
		APPENDICES			
	A	Mishap Messages (Initial, Progress, etc.)			
	B	Convening/Appointing Messages			
	C	Non-Mishap Personnel Information			
	D	Damage Summary			
	E	Aircraft Performance Information			
	F	Communications Transcripts / Summaries			
	G	Mishap Site Diagrams			
	H	Interview Summaries / Statements / Notes			
	I	Witness List (not statements)			
	J	Photographs			
	K	Animation, simulations, computer animations			

	I	Weather and Environment Information			
	J	Summary of Duty Logs			
	K	Engineering Officers Report			
	L	TBD			
	M	Medical Officers Report			
	N	Tear Down, Lab Reports, etc.			
		SUBSEQUENT APPENDIX –such as:			
		Documents and Logs			
		Manuals / SOPs			
		Training Jackets / Qualifications / Currency			
		Flt Schedule			
		Flt Planning Documents			
		Radar Printouts			
		Radio / Tower Tapes or transcripts			
		Aircrew Logbooks			
		Aircraft Logbooks/Maintenance Records			
		Aircraft Fluid Samples			
		Biological Sample Analysis			
		Autopsy			
		Medical Records			
		Death Certificate			
		Flight Orders / Cross county			
		30-60-90 day reports			
		Weapons log			
		Fuel truck logs			
		Deployment work up paperwork			
		ORM matrix			
		Video tapes from by standers, networks, etc.			
		Issues with Classified / Crypto Material			

Media and Public Affairs

The USCG Public Affairs Officer (PAO) is the POC for the media —NOT MAB Members.

Check if the local PAO has been briefed to clear releases through the MAB President.

See what news releases have been made & what news representatives are present.

NOTE: Nothing is "off the record."

The MAB President is **NOT** a press spokesman.

- He is the final release authority for information (including electronic/digital media, photographs, etc.) from the MAB. He will not communicate directly with the news media or others outside the Commandant MAB chain.

The MAB President and the CO should consult with CG-1131 before releasing any info.

The Initial News Release should include:

- A general description of the type of mishap (crash, mid-air collision, and so forth).
- The time and location.
- The aircraft's departure point.
- Destination (unless information is classified or other sensitivity precludes release).
- The number of crewmembers and passengers, but not names.
- The type of aircraft.
- Unclassified facts about the mission when the mishap occurred.
- The fact a MAB will investigate the mishap.

Avoid nondescript phrases, such as "on a routine training flight." Describe the purpose of the flight (such as, "on an instrument training flight") and give as many facts about the route, altitude and mission as security permits. Do not give out the names of the MAB Members and do not offer them up for interviews. The PAO (usually the unit/district) will represent the USCG to the press. They can get by with non-privileged facts: Who (unit, **NOT** individuals), What, Where, When. To do a proper job, the MAB President will need to work with the PAO.

Likely news questions:

- When will names of crewmembers be released?
- When can we interview the crewmembers?
- What caused the accident?
- How long will investigation take?
- Where can I get a copy of the report?

It is important accurate information is released to the public after a mishap as soon as it is available. This

demonstrates concern for the public and its right to the facts. The speedy release of information will prevent or dispel rumors that could promote misinformation or cause panic in media reports.

A simple photograph or two of the mishap site can be used to "de-fuse" the media frenzy for pictures. The MAB can release these; consult with CG-1131.

CG-1131 will try to serve as a central source for mishap information for USCG requestors. MAB or mishap unit shall provide non-privilege photos of the mishap scene to CG-1131.

The PAO might approach you for information when they cannot find it elsewhere.

- If you have reliable information, provide the following: aircraft model, mission, number of crew/passengers, damage and casualties. Any reliable information that will alleviate concerns is helpful. Make no attempt to explain why or how; these are still unknown, difficult to determine, and under investigation.

NOTE: Explaining privilege (through PAO and the public) is too hard and too easily misconstrued. Don't! This is not something needing explanation to the public.

PAO should emphasize: (1) an investigation is underway, and (2) it is a detailed process taking several months to complete. If a reporter succeeds in approaching a MAB Member directly, the Member should refer the reporter to the PAO prepared to handle the press.

Release of Names. The PAO releases the names of people involved in USCG mishaps.

Public Affairs Officer.

The PAO duties are performed in close cooperation with the mishap unit CO, the designated on-scene commander, and the MAB and AIM Presidents.

The PAO's objectives are to:

- Coordinate news releases with the mishap/host unit CO, the MAB and the AIM.
- Help control news media access to the mishap site.
- Coordinate with media personnel to help identify witnesses or individuals with film, photographs, knowledge, wreckage parts, etc.

The MAB President will ensure any information provided for public release does not contain privileged safety information or documents. Information released to the press, public or next of kin will not contain:

- Information speculating or purporting to represent the cause of the mishap.
- Any statement suggesting responsibility or culpability on the part of any person.
- Assertions or denials with respect to the proper operation of equipment or facilities.
- Statements tending to indicate legal liability of the government or mishap personnel.
- Classified information.
- Photographs of casualties.
- Information of a personal nature about any person involved in the mishap.

Media personnel requesting any of the above information should be referred to CG-1131.

Media Access to the Mishap Site.

At an off base mishap, security police or other law enforcement officials often rope off or stake out the mishap site to protect the public from injury, to protect government property from further damage, or to protect classified information against compromise.

- If requested by the news media and approved by MAB President, news media can be escorted into the cordoned area. Lack of escort personnel should not be absolute grounds for denying media access. However, if classified information is exposed, the on-scene commander should explain the situation and ask the news media to stay back until it can be covered or removed.
- Photographs of bodies or remains should be discouraged. The media shall be briefed on hazards in the area and the need for preserving the mishap site. If they refuse to cooperate, military members shall not physically restrict or restrain media at an off-base site.

Authority Over News Media.

The authority of public affairs personnel, on-scene commanders, MAB Members, and military security police is limited when dealing with news media, particularly at an off-base mishap site.

Off-Base Mishap with Civil Authorities Present.

If classified material is not exposed, is covered or removed, the MAB President or senior military representative can authorize photography.

If it can't be determined whether classified material is exposed, explain the fact to any media at the scene and tell them photography cannot be authorized. Warn that taking pictures without permission may violate Federal law, but don't stop them if they persist.

If classified information is exposed and it cannot be covered or removed, the senior military representative must:

- Explain the situation and ask the news media to cooperate.
- Explain Federal law prohibits photography when official permission is expressly withheld (18 U.S.C. 795 and 797).
- It is a criminal offense for anyone to photograph, publish, or refuse to surrender classified information to the proper military authorities.
- Avoid using force if media refuse to agree.
- If someone takes photographs after being warned, Coast Guard officials must ask civil law officers to stop further photography of the exposed classified information, and to collect all photographs (including exposed or unprocessed film).

Off-Base Mishap Without Civil Authorities Present.

If no civil law officers are on the scene and unauthorized pictures are taken, do not try to seize the film or detain the photographer. Instead, the senior USCG official at the scene or the responsible on-scene commander must:

- Immediately contact the managing editor or news director of the publication, news service or television station employing the photographer.
- Explain the situation.
- Request the return of film having suspected classified information.
- Explain failure to return the material to military authorities violates Federal law (18 U.S.C. 793(e), 795, 797).

On-Base Mishap.

The Commanding Officer has much greater control of the news media with an on-base mishap.

- If classified material is not exposed, the CO will usually allow media access to the site.
- If classified material is exposed, the CO can bar media from the site. Exposed film can be confiscated, developed, and examined.

NOTE: The photographer should be given a receipt for any confiscated film. There is no reason to detain the photographer. All portions of the film not containing classified material should be returned to the photographer.

NOTE: Special media identification may smooth USCG and media relations at a mishap site. The PAO may prepare and hand out badges, armbands, or other devices for identification.

Photography

Who Should Photograph?

- Professionals.
- FSOs; they have been trained in mishap photography.
  - If using amateurs, the quality of results may suffer (best to use MAB Members).
  - Don't forget to manage the photographer.

If possible or necessary, have a photographer detailed to the MAB for the first day or so. If one is not available, take your own photographs.

It is not enough to tell someone, "Shoot this," and walk on. The photographer's product will be better if whoever requests it also tells the shooter what the picture is supposed to show.

Specify as appropriate: close-up or wide angle, background (in-focus or not), light (more, less), viewing angle, other object in view for scale; anything to make a picture a better exhibit.

Obtain shots of anything of interest, but ensure you have a before view of everything likely to be disturbed by anyone's manipulation. Cockpit (switches, levers, gauges) and engine control linkage (input and feedback mechanism) are essential.

Photographs should show damage, impact areas, metal fractures, flight path, etc.

Shoot liberally, until the investigation is far advanced. You cannot take too many photos.

Have an external flash unit available when taking pictures. "Fill in flash" may uncover details not seen in poor lighting or in shadow effects.

Make sure to maintain an adequate log or chronology of all pictures (where, why, what and when they were taken, relationship to other visual references, location and direction). Place a North marker in the pictures to show direction.

If faced with different lighting or shadows, bracket the exposure by shooting 2f/stops over and 2f/stops under the known correct exposure.

NOTE: "Staged" photographs indicate MAB deliberations, and therefore are privileged.

The Scene.

Always start at a distance and move toward closer objects to obtain desired details. Once at the center of the scene, take photographs looking out from the center in a 360-degree view.

Provide a common reference point (person, pencil, ruler) on all pictures and show enough detail to provide orientation. This may require taking several pictures in sequential order.

Take pictures of any charred/burnt areas, damaged/soiled gauges or impact points (obstacles or objects)

the aircraft or occupants may have struck before coming to final resting point.
Photograph any human remains before removal from the mishap site and life support equipment before removal.

Take several views of major wreckage, aircraft parts, and components, such as gauges, switches, circuit breakers, flight controls, fuselage skin and anything with unusual damage.

- Wreckage/Mishap Scene (aerial).
- Overall area (may help with diagramming).
- Consider flying and videoing the flight path (same time of day with similar weather).
- Overhead shots to show general mishap site.
- Take shots of main wreckage along flight path.
- Take shots of main wreckage from aircraft cardinal headings.
- Include a pointer to indicate north.

Capture the witness position or location from where the mishap was witnessed, preferably at the same time of day as the mishap. This may provide the best evidence of sunlight patterns, shadows and other potential contributing environmental factors. Video photography can be useful, especially during salvage and recovery. Use a tripod when taking static pictures.

Using Film.

Color film is cheap; prints are clear. When using film, request a proof sheet vice making prints of every shot. Making prints of every shot is wasteful and you will be inundated with excess photographs and expense. Select the views you want from the proof sheet.

For developing and printing, use a contract or on-base developing/copy service and ensure all material is received or destroyed and not left at the facility. New copiers make excellent reproductions, so obtaining multiple prints of photographs for MAR enclosures is possible from one master.

Label and adequately mark each photograph. Make sure first picture of each roll is of a color scale. This will help define the different color hues and provide a reference for shade tones within a photograph.

Going Digital.

When placing photos in the MAR, it is best to embed the photos using digital media. This allows the photos to be placed into the report with the corresponding text.

- Digital media allows you to adjust the color, contrast, etc. to achieve desired result.
- Digital photos can be adjusted in size to fit in the report easily and can be inserted into a power point slide to add analysis symbols.
- Using digital photography allows for quicker, instant review of image. This is useful to both the MAB and those not at the mishap site, since digital photos can be easily transmitted.

The Equipment.

Purchase or have available good photographic equipment in the event a photographer is not available or cannot access the mishap site. Be familiar with the equipment. Camera equipment can be borrowed from the PAO locker or a personal camera.

Use a digital camera of at least 6 megapixels for sufficient quality and clarity. Make sure the camera has a macro function for close functions. Avoid pocket sized or compact cameras in lieu of a full size model. Procure a wide-angle telephoto lens with a 35-70 mm range and a macro lens if using a film camera for close up shots. For digital cameras, use 28 or 35 mm to 3X or more optical lens. Ensure the availability of additional fresh batteries, electronic flash equipment, memory sticks and color print ASA 100 or 200 film rolls (minimum 10 rolls).

More Tips.

Proof sheets make it easier to share non-privileged photographs with other investigation boards. Cut out or cover privileged photographs on proof sheet. This works for digital and film photos. If any single picture or image is marked as "classified," the entire CD/DVD is classified.

NOTE: DO NOT include photographs of deceased personnel in MAR.

NOTE: Include only photographs aiding in understanding the mishap in the MAR.

- Computer printed images in the MAR are preferred over the use of actual prints.
- Label or keep a log of shots taken, to avoid "why did we take this?"
- Use a ruler for size comparison or perspective.
- Shoot good and bad components for comparison.
- Use color photos to show discoloration, paint smears, etc. & black & white to show detail.
- Take shots of curious, unknown damage.
- Consider using camcorder as refresher for MAB viewing. Use with dialogue to keep memories fresh. Destroy after use, **DO NOT** send to CG-1131 or leave at mishap units.
- MAR photographs--include only those needed to tell the story.
- Crop to highlight area of concern.
- Frequently back up pictures onto permanent storage media.

Privilege and Photography.

Factual (things as they are)—Non-privileged (releasable). Most mishap photos are factual.
Analytical (staged/deliberative)—Privileged (not releasable).

- Most mishap photographs, with the exception of staged photographs and those representing speculation or deliberations, are considered factual and non-privileged and are real evidence and may be shared with investigations and labs or technical representatives used by the MAB.
- Photographs of injuries, fatalities and autopsy photographs are considered sensitive information and are not for general distribution.
- Photographs contained in the Medical Officer's Report are considered privileged.
- The placement of captions and markings on a photograph may show MAB deliberative process and thus, may make the photograph privileged.
- Factual captions simply indicating what is in the photo will not make the photo privileged.

NOTE: The FS/MO controls copies of all prints and negatives of human remains.

The MAB President should be aware the Medical Member may have reporting requirements beyond those imposed by the safety investigation. For these reports, photographs of deceased crewmembers may be required. Such reports are not privileged but carry with them their own handling/protection caveats.

Control film negatives or electronic files. The MAB owns all negatives.

Reassembling or reconstructing damaged parts or aligning parts to show fire patterns or impacts marks are examples of staged photographs.

Depiction of cockpit indications for a given set of assumptions made by the MAB or described in witness statements are staged photographs.

MAB Workspace and Setup

The majority of these items are part of the unit Mishap Response Plan (MRP) and will be accomplished by the mishap/host unit prior to the MABs arrival.

This chapter provides tips on preparing a work area and other logistics for the MAB.

If the MAB will be working in an area with no Internet access, download all files listed below as well as others you need to a portable medium, hard drive or laptop.

References.

Make sure you have latest version!

- MABH: CG-1131's Mishap Analysis Board Handbook.
- MAR A template: Mishap Analysis Report, part 'A' – found on CG-1131's website.
- MAR B template: Mishap Analysis Report, part 'B' – found on CG-1131's website.
- Human Factors Guide – found on CG-1131's website.
- COMDTINST M5100.47, Safety & Environmental Health Manual.

Other Important Documents and Useful References:

- COMDTINST M3710.1, Coast Guard Air Operations Manual.
- Dash-1 for the mishap aircraft.
- Blue Book for mishap aircraft.
- Red Book for mishap aircraft.
- COMDTINST M13020.1 Aeronautical Engineering Maintenance Management Manual.
- COMDTINST M13520.1 Aviation Life Support Equipment Manual.
- COMDTINST M10470.10 Rescue and Survival Systems Manual.
- COMDTINST M3710.4 Coast Guard Helicopter Rescue Swimmer Manual.
- COMDTINST M3710.2 Shipboard--Helicopter Operational Procedures Manual.
- COMDTINST 3500.3: Operational Risk Management.
- COMDTINST 3500.2: Crew Endurance Management.

Facility Set-Up.

CG-1131 will work with the mishap unit or facility nearest the mishap to provide the MAB a secure area to work and conduct business. For remote mishap sites, CG-1131 may authorize renting a meeting room or occupying a hotel suite. Equipment can be rented.

- The space must be for the exclusive use of the MAB, isolated or removed from the mishap unit, and must be secure. Until the MAB space is established, use the unit's safety office or a unit conference room with telephone.

The MAB will need two rooms minimum.

- One to conduct interviews/working/writing and one large conference style room for discussions,

group sessions and assembling the Mishap Analysis Report (MAR). The larger room should provide desk/computer space and will function as the main work area.

- If the facilities offered aren't adequate, ask to be relocated early in the process. Once the MAB is up and running, they will need more office accommodations than initially thought, and likely more than the unit is able to offer. Cramped office space will only get more cramped as the MAB moves along, so insist on adequate space. This cannot be emphasized enough!
- Establish positive control over who enters MAB space. The first day or so, there will be regular traffic (i.e. all the support people helping you to set up). Once the MAB arrives and begins to use the space or evidence is brought in, establish a sign-in sheet and make sure all non-MAB individuals are escorted at all times—a waiting area is recommended.
- Have a MAB sign-in/out board posted in a prominent location.
- Post signs on the doors letting personnel know a MAB is in progress and entry is restricted (personnel must be approved by the MAB). Rooms must be located reasonably close to one another.
- All rooms must have locks with keys for the MAB Members only. No one outside the MAB should have keys. Change the locks on the doors if required.

If the MAB has requested admin support, space should be provided for an admin work center. This does not have to be a separate room, just an area off from the MAB work area.

- A refrigerator and microwave are nice (or at least nearby).
- **A coffeepot with accessories is a must.** If allowing the MAB to use the "local" coffee mess, take into account the need for extra supplies.
- Designated parking should be used only if parking at unit is a premium. "Front door" parking is **NOT** required; just make sure parking is available when needed.

If possible, locate the MAB work area away from the unit or away from the main flow of unit activities. Contact CG-1131 for assistance and suggestions.

Return all equipment and items used by the MAB to unit/owner when no longer need.

Evidence Filing System.

Set up a filing system and a master index as soon as possible.

- Clearly label each folder as to contents and add title and folder numbers to the index.
- Create a new file/ folder for each piece of evidence.
- Use a folder labeling system corresponding to the MAR Tabs for drafts.
- Consider assembling a second set of folders in a separate drawer for completed sections.
- Create folders for each MAB Member's drafts or "working" documents.
- Keep draft and final typed sections in their respective folders.
- Establish separate folders (electronic and paper) for copies of MAB and PMB messages. Remember to print messages out in "full view".
- Create a folder for PAO public releases.

Filing method suggestions:

- Use one drawer for original material and one for final drafts. This material is never removed from the office. It is copied and the copies are used when needed by the MAB Members. The third drawer is for the use of the MAB Members to keep their papers.

- Use one to two drawers for non-privileged evidence and one drawer for privileged evidence. Ensure the privileged drawer is well marked with privileged warning statements. The MAB may develop its own process.

Establish an evidence filing and logging system as soon as the MAB convenes.

As evidence is collected, log and file it—**this is a priority.**

Brief the MAB on the filing system set-up being used and ensure they understand filed evidence must be initialed.

- This ensures all MAB Members have seen all the evidence.

Evidence should **ALWAYS** be logged in and out. Positive control of evidence must be emphasized and can become a real problem without a plan.

Privilege Warning Labels.

Print out several sheets of the privilege warning labels for each Member. Labels should be put on anything that might contain privileged information (i.e. notes, folders, boxes, etc.).

FOR OFFICIAL USE ONLY.
WHAT FOLLOWS MAY CONTAIN PRIVILEGED SAFETY INFORMATION. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT IS PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE AND MAY ALSO BE GROUNDS FOR DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL REGULATIONS.

Shred Box.

Place an empty box in a prominent location in the work area for shredding privileged documents that are no longer needed. Make sure the box is marked as privileged safety information and has privileged warning statements in clear view. See above for label verbiage.

Destroy extra or unneeded papers. **DO NOT** send leftovers and extras to HQ.

Electronic Document Control.

On the MAB shared/common drive, establish a "Draft/Working Documents" and a "Finalized/Completed Documents" folder.

- Establish a file naming process, to keep track of version or draft.
- Instruct members to use the "Draft" folder exclusively while working on documents. Once documents are completed, they can be moved to the "Finalized" folder.
- After documents have been moved to the "Finalized" folder, they should **NOT** be touched by anyone except the MAB President or Admin to preserve integrity and maintain accountability of what is being updated.

Key Contact Information.

It is vital for the MAB to have contact info for key units, local agencies, etc. that they will use regularly

during the investigations.

- Continuously add to and update the "Contacts List". Maintain a log of pertinent contacts to make it easy for other MAB Members to get in-touch with the appropriate support personnel.

Computers.

The MAB can get up and running immediately if computer requirements are met before arrival. One computer for each member is preferred, but have at least one computer for each 2 or 3 members. MAB Members may bring their own laptops. Arrangements shall be made so they can connect to the "MAB network". Contact CG-1131 if this is an issue.

- Computer/IT support will make every effort to ensure everything works before the MAB arrives.
- **VERY** important to establish IT support early on! Insist ALL computer, email, and common drive support is up to speed and sufficient for the MAB. **DO NOT** take **NO** for an answer.
- All computers must be loaded with the standard USCG software and connected to the USCG Intranet and Internet. Software should include: Word, Excel, Power Point, Outlook, Adobe Acrobat Reader, WinZip, a graphics manipulation program and virus scanning software.
- Use of USB/Plug-in devices must be allowed. Contact CG-1131 if this is an issue.
- In addition to hardware requirements, the MAB will need a secure common/shared drive. Allocate the MAB a temporary "Shared Drive", configured such that **only MAB Members have access.** The capacity of the shared drive must be at least 10 GB. Another option is to network all the MAB computers to each other such that any hard drive can be accessed by any of the computers. If this option is used, computers must be connected to the Intranet and Internet.
- A computer printer (color & black & white) capable of duplex printing, if possible.
- Spare ink cartridges and a supply of paper.
- 24 / 7 computer support is a must!
- If MAB Members are not able to access their USCG accounts, local profiles and e-mail accounts should be set up. At least one monitor should be 19"; others can be 17".
- High quality scanner with optical character recognition (OCR) software should be connected to at least one computer or be accessible when needed and privacy must be provided.

Telephones/Fax Machines.

At least 3 telephone lines and one plain paper fax, all with long distance service. Access to land line is essential. Number should be limited to MAB use only.

- At least one telephone should be a speakerphone; all telephones should have mute and hold. Phones must have commercial and long distance access (without having to go through an operator) and Overseas/International capabilities when required.
- Cellular phones may be necessary, but connectivity may be a problem. This depends on the mishap and location.
- Conference calling capability.
- Telephones should be interconnected to allow call pick-up or call forward to another line. Voice mail on all phones or answering machine on at least one phone.

DO NOT give out all numbers. Keep at least one line "private". If the MAB President wants to give out their number, they can.

Copy Machines.

One black and white photocopier capable of two-sided (duplex) printing/collating/stapling.

Don't take "No" or "you can share the existing copier" for an answer - it never works!!! The MAB absolutely needs sole use of a B&W copier and one color copier capable of two-sided (duplex) printing and collating. Does not need to be a dedicated copier as long as MAB can take over and use with privacy and without interruptions.

Audio-Visual.

- High quality, tape recorders with headphones. Blank tapes for tape recorders.
- Tape recorders need time counters.
- Video camera and tripod for interviewing witnesses. Blank videotapes for video camera. VCR dubbing equipment to make backup tapes.
- Video players and monitors compatible with any videotape that may be used.
- Portable computer projector and screen for presentations (e.g., an In-focus® machine).

Transportation.

MAB orders issued by CG-1131 will approve rental cars for the MAB Members.

Depending on location, and special requirements, GVs (small trucks or vans) may be required. Be prepared to provide at least some vehicles; discuss with MAB President.

NOTE: Vehicles will be returned as the need declines, usually around day seven.

Office Equipment/Supplies.

- Chalkboard/eraser board and paper pads, easels, corkboard or other device where facts and evidence can be listed and photographs displayed. Butcher paper on the walls can be useful.
- Worktable and chairs. Desks are okay, but tables work better for laying out work.
- Shredder. Don't keep anything not needed or going into the MAR.
- Two hole punch. The MAR is put in 2-hole folders.
- Staplers and staples; at least one regular desk-type and one heavy duty.
- Paper cutter.
- Hanging file folders & holders.
- File folders.
- Label maker and tape.
- Waste baskets.
- Various office supplies such as, pencils, pens (various colors), markers, erasers, tape, scissors, rulers, note pads, paper clips, rubber bands, pencil sharpener, printer/copier paper, CD/DVD, etc.

Photography Support.

MAB Members may have the resources and abilities, if needed. A PAO officer from the district can be used, preferably not the unit PAO for obvious reasons and definitely not any PAO working the Public Affairs portion of the mishap.

Miscellaneous.

Circumstances of the mishap and the mishap site will dictate additional supplies and resources.

Depending upon the mishap site location, terrain and environmental conditions, “personal comfort” items will be required. The unit MRP kit should have the items needed for the unit’s AOR and the unit will provide these to the MAB. Extra supplies will be needed depending on duration of investigations and size of MAB. Some of these items will/can be brought with the MAB Members, if advised in advance.

Lodging.

CG-1131 will work with unit to set up lodging for the MAB.

Tips for MAB FSO and Other MAB Members

The Call From CG-1131.

CG-1131 will provide up to date general info including location of mishap site and the location the MAB will convene. CG-1131 is the POC for updates.

A CG-1131 Advisor will be assigned to assist the MAB; the advisor may or may not accompany the MAB to the mishap locations. .

CG-1131 will provide a consolidated listing of members travel info and contact info for MAB Members and CG-1131 (cell #, work & personal email addresses).

CG-1131 will provide the TONOS.

- Orders are not a priority; you can travel without them. If the mishap is not at or near the unit, CG-1131 will coordinate working space in the mishap locality (hotel, DOD, other USCG unit, etc.).

After all the MAB Members have been selected, CG-1131 and the MAB President will hold a conference call with the MAB, CG-1131 and the mishap PMB.

- This will be mostly travel and lodging info and marching orders. CG-1131 will discuss in general the expectations of the MAB. Detailed questions can wait until the MAB is on scene and the Unit PMB passdown brief.

Typically the MAB forms up at the mishap site or unit around 72 hours after the event.

Bring critical attire for first few days as carry-on.

Re-read MABH and review HFACS guide on flight.

Actions After MAB Arrival.

Coordinate where and when Commandant MAB Members will meet up as a group.

The MAB FSO is the go-to person. The CG-1131 Advisor will be there to help, but the MAB President will rely on the MAB FSO to make sure things get done, as well as to explain things like “privilege”, the MAR format and “HFACS” to the rest of the MAB.

Early on, have the MAB President define workday expectations and discuss using the “eight day bag” rule. Expect long hours (12-14 hrs+/day) the first several days.

DO NOT rush to the mishap site. The MAB needs to meet first, get a brief from the Unit PMB or whoever is running the mishap scene **AND** determine as a group what the priorities are, and who needs to do what and when.

Until the MAB officially relieves the PMB, the PMB will continue to conduct the collection of evidence and preservation of the mishap site. The PMB FSO is the MAB’s direct link.

The Unit's Salvage Officer will continue to control the aircraft /wreckage until released to the MAB. Eventually the wreckage will be released back to the unit.

Meet daily. The MAB usually splits up to maximize data collection; it is recommended the final hour of the workday be set aside each day for an overview and review. Everyone should share any/all pertinent information uncovered.

Use the first 15-30 min of each workday to outline desired group/individual objectives for the day. This can be before heading out for the day, since not everyone will be going to the same location each day, especially in the beginning.

Contact Info.

During your first meeting, have Members provide general and contact information (SSN, full name, home/unit mailing address, home organization, supervisor and phone numbers (local, cell, home and work, hotel room numbers, etc.).

Do introductions during your first meeting. Knowing each other's background is helpful.

Post Members cell numbers near the phones in the MAB room. Print out a list of contact information for each MAB Member to carry. As support and technical personnel join the team, add their contact info as well.

Interviews.

Interview witnesses as soon as you can. Utilize the MAB President to help manage competing priorities to allow interviews to take priority.

- In addition to interviews by the MAB, the mishap crew must complete 72-hour histories with the MAB flight surgeon/medical officer. The 72-hour history will take a couple of hours to complete. Both interviews will be draining to the person being interviewed, so try not to "pile on."
- Written or taped interviews, done immediately after mishap, are strongest. Memories fade and can be "over-written" as time passes. When able, try to find 'hard' evidence to confirm/validate.

As early as possible, review written or recorded statements. Being able to read the witness statements first will give the MAB an idea on what happened in the mishap, determine who to interview and what type of information might be possible to get during each interview.

- Interviews take much longer than anticipated. Be prepared and they will go smoothly. Anticipate that interviews may be hard (emotionally) for survivors and first responders.
- The interview should be conducted before witnesses have had CISM, if possible.
- Have two or three MAB Members conduct each interview; try to pick members closest in peer group or someone whom the interviewee is most likely to relate to or those most knowledgeable of the interviewee's function/role on the aircraft or during the mishap sequence.

Common Witness Issues:

- Regardless of the physical evidence to the contrary, at least one credible witness will state the aircraft was on fire prior to impact.
- For every witness statement, there will be an equal and opposite witness statement.

Voice and Data Recorders.

Listening to VFDR recordings is time consuming; allow time for breaks.

VFDR data can help validate or dispute other evidence and is another piece of evidence.

Hold the VFDR data from the MAB until after the majority of evidence is collected, so research efforts are not sidetracked or tainted by VFDR data. Reviewing VFDR data too early creates complications and can stop the MAB from looking for all available information.

If VFDR evidence is recoverable, request an animation of the portion of the flight leading up to mishap. This helps to paint a visual picture for the MAB.

Consider other extractable data storage locations in aircraft.

HFACS. (http://www.uscg.mil/hq/cg1/cg113/docs/ergo_hfacs/hfacs.pdf)

Shortly after convening, the MAB should review the Mishap Analysis Report (MAR) format and the HFACS Guide. This will help focus the MAB efforts and make sure you are evaluating and collecting the right evidence.

- Do not save this task for the end. If you are working on the MAR before you start looking at HFACS, you are already behind.

HFACS should be reviewed periodically as the investigation progresses; it will help focus efforts and help with writing the MAR.

- The actual HFACS analysis is time consuming but even more so if put off until the very end of the process.
- Keep notes on why nanocodes were or were not selected. You will revisit the list as evidence accumulates.

Use CG-113 HFACS personnel. They are experts and are available to assist.

Miscellaneous.

Print CGMS messages in full view in order to capture the entire header, DTG, etc.

FSO (MAB or unit) – be prepared to give a safety briefing to the recovery and salvage crews. Stay in contact with CG-1131 to update them on the recovery process and other activities.

Make sure your cell phone is charged or carry your charger. Carry a small pocket size or slightly larger notepad. Consider waterproof "Rite in the Rain".

Take pictures to capture the evidence and tell a story. If using a non-MAB Member, explain what is needed and what you are trying to accomplish with the photo.

When requesting admin assistance, this person should be TAD like everyone else. Using local personnel or a member of the mishap unit comes with competing issues.

The determination to return a pilot involved in a Class A mishap to the cockpit is not made by the MAB. In accordance with COMDTINST M3710, the MAB makes no determinations regarding the fitness of participants to return to duties. The CO makes this determination.

MAB Members should avoid contact with members involved in the mishap along with any family members except when conducting interviews and other investigation proceedings.

In some cases it is helpful for the MAB President to meet with the mishap crew and other unit members to explain how the investigation process works.

- Specific information regarding the investigation must not be presented during informational briefings to participants, colleagues, or others.

Designate one member to keep track of media coverage and periodically brief the MAB.

DO NOT TALK TO THE PRESS! Let PAO handle the media.

Begin a running account or log of anyone assisting the MAB from the beginning.

- This will be useful during the MAB & will be helpful for writing thank-you letters later. The entire MAB needs to help with this task and provide contact info of personnel who assist. Do not leave this to the end when everyone is wrapping up.

Members must stay until the MAR is complete!

Claims.

Any questions received by the MAB regarding claims against the Coast Guard should be referred to District Legal. The MAB will not address the merits of any claim with anyone.

Mishap Analysis Report (MAR).

All MAB Members should proofread the entire MAR, not just their respective sections.

Mishaps on Foreign Soil

Defer all incidents occurring outside the US to Commandant (CG-113) for disposition due to the differences in agreements and operational orders.

- Applicable treaties, international law, or Letter of Agreement (LOA) will determine how the mishap is handled and investigated.
- USCG mishaps occurring outside the US must be handled on a case-by-case basis to avoid legal, diplomatic or other complications. This includes USCG mishaps with possible involvement of a foreign national (air traffic controller, marshaler, etc.).

The mishap unit must be cognizant of, and prepared to follow, any International Civil Aviation Organization (ICAO), Department of Defense (DOD), Department of State, North Atlantic Treaty Organization (NATO), NTSB, other agreements, documents or host nation requirements in effect.

Mishaps in countries who are not a current member of any major treaty organizations may fall under the purview of the ICAO, depending upon the requirements of the country involved.

- For investigations conducted under ICAO rules, the NTSB is the authorized US representative to the investigation, and the USCG may seek access through their sponsorship.
- One or more observers from the host nation (military or government agency) will likely be assigned to the MAB, but will not have access to privileged information or MAB deliberations.

Mishap Investigation Tips

Every mishap hot wash lists several suggestions already in this Guide. READ the MABH!

Always keep an open mind. Remain objective.

One of the most common faults of accident investigators is "tunnel vision" or jumping to conclusions at an early stage in the investigation. Hence, the search for clues and evidence to support a preconceived notion overlooks other evidence that may lead in a different direction. All MAB Members must be on their guard; this can happen unnoticed.

Every mishap is different and rushing to conclusions can only lead to incorrect conclusions.

Do not attempt to reach one single conclusion or focus on one cause. Mishaps are the culmination of a number of apparently unrelated events lining up to create an environment.

State and analyze all the factors of the mishap and use them as part of subsequent or final analysis.

The investigation should follow a careful and systematic plan intent on determining the chronological order of events and circumstances leading to the mishap. Do not attempt to affix blame.

Take notes! Information and observations will quickly exceed short-term memory. Start immediately and continue until the MAR is finished.

A pocket-sized notepad and pencil are the most essential tools a member can carry.

- Do not dismantle or try to analyze equipment, parts or remains without first labeling, appropriately tagging and noting the relationship to other components and points.
- Do not attempt to piece fractured parts together; this can alter the microscopic appearance and damage further analysis.
- Do not touch settings on control, dials, switches or anything that can be changed. Record and photograph them immediately.
- Do not wash, clean or brush off dirty items before examination.
- Do not clean any parts or place them in dirty or contaminated areas during examination.
- Do not allow unauthorized personnel into the mishap sites. Do not take souvenirs.
- Do not discuss mishap findings or show copies of any part of the MAR to anyone outside the MAB without explicit permission from the MAB President.

When reviewing video, don’t forget to reposition tape to the end to avoid recording over footage. Remember to save or copy everything for the AIM, if one has been convened.

Often the unit will ask for certain records to be returned so they can start to work issues (i.e., put an aircraft back in service or return a pilot to the cockpit). If they require records or data the MAB and AIM are not ready to release, make the unit copies and retain the originals.

Before turning anything back to the unit, contact the AIM President and get consent/agreement. Follow up with a memorandum for record (MFR) in the files to document the transaction.

Think things out; do not try to perform aircraft movement or recovery on the fly.
Hopefully the unit thought about sources of flatbeds and cranes while developing the unit MRP; if not get the unit (read locals) and HQ involved. Do not try this on you own.

Beware of people (especially your contemporaries) offering to help. Everyone wants to help; this does not mean they have the authority to obligate their organizations or personnel to help. Find a supervisor or someone who does have the authority.

Get permission; you are not authorized to issue a contract for the USCG. Use proper procedures. This is where HQ can help.

Actual weight of the aircraft IS important!

Remember the Internet; there are a multitude of helpful websites and applications. Just be aware of the source.

Remember once you start "accommodating" outsiders, it is really hard to stop. Best advice is **DON'T** start. Defer all outside requests to CG-1131.

Know when to give up or ask for help.

Don't waste time on people or equipment not giving you what you want.

Call CG-1131 if you need help. They are standing by to help and assist.

It is very likely someone on the MAB will know members of the AIM; there may be a temptation to mutually help each other with the best intentions. You have to hold the line and remember the goal of each investigation. There is information that can be shared and information that **CANNOT** be shared. The two boards should not be working together.

The MAB should route all messages thru CG-1131 for review.

Attend the memorials; spend a small amount of time visiting with air station personnel. You want to avoid an "us/them" atmosphere; at the same time you should not "socialize" with the unit. It is recommended members not have dinner or lunch with old buddies. You really won't have time; you are here to get a job done. Trying to visit with old friends and keep the investigation out of the evening will be hard and awkward.

Avoid taking a scrap of information and attaching a theory to it.

Learn as much as possible from the wreckage at the mishap site before moving anything.

Don't rely on your memory. Make notes, take photographs, and use a tape recorder.

Don't take shortcuts; you may unknowingly destroy clues.

In general, only collect, only interview, only document what is needed. This applies to wreckage photos, audio, videos, and statements. The tail section isn't needed if you know the fuel wasn't flowing.

You can never take too many pictures. Nuts and fittings come loose on impact or after a fire due to the

heat and deterioration of seating.

The location of witnesses is significant. The exact spot a witness makes an observation from may explain differences in the accounts of other witnesses in the mishap vicinity.

- A witness downwind of mishap may hear sounds not audible to the upwind observer.
- Sound is deflected by walls, terrain or buildings and may cause the witness to erroneously report direction, sound origin, or dynamic level.
- Background noise level at the point of observation may account for a witness missing significant sounds noted by other observers.
- Peers and the power of suggestion may influence a witness located in a group.
- The witness looking toward the sun sees only a silhouette, while the witness whose back is toward the sun may note color and other details.

Witnesses often confuse the sensory inputs of seeing the fireball and hearing the explosion of the crash. This confusion may make them think there was an inflight fire when there was not.

Another common witness failing is "transposition." The witness reports all the facts, but places them out of sequence with the actual occurrence.

Angle of impact may be determined by the flight path through obstacles prior to ground contact or by geometry of the crater. Do not confuse this angle with the aircraft attitude at impact.

Create a roster of all the important numbers. Cell phone, pagers, fax machine, long distance access, long distance calling procedures, hotel room numbers, billeting, etc.

From the moment the investigation starts, record every telephone number used by the MAB; create a “living phone book” and keep it updated. Post frequently called numbers beside each phone. Keep a log of all personnel who worked for the MAB. Collect full names, ranks, titles, organizations represented, home and work addresses, telephone numbers, e-mail addresses and cell or pager numbers.

Keep a similar log of everyone who provides help or assistance. In all cases, acquire the name, rank and office symbol of the person’s supervisor. The MAB President may want to issue thank you letters and it is easier to collect the information as you go than try to track it down later.

Don't skimp on workspace! What’s acceptable early in the investigation is easily outgrown. Completed MAR sections, evidence, working space and other items require plenty of sorting, organizing, and storage space; it pays to arrange for it up front.

The need for clerical assistance at the beginning of the investigation is normally light.

Transcribing statements is extremely labor-intensive and time-consuming. Therefore, it is strongly discouraged since verbatim transcripts **ARE NOT** needed or required for the MAR.

Don’t wait until the last minute to start working on the MAR. Some sections can be built, copied, and set aside the first week of the investigation.

Preplanning and advance copying can greatly reduce the burden during the endgame of MAR.

The last-minute rule also applies to photographic and visual/audio graphic visual aid support. Decide

early which photographs are needed.

Animation is time consuming and is not always necessary. Decide as soon as possible if animation will be required and find out where it will be made, when the animation lab is available, and who is required to assist the animator.

Guidelines to help avoid problems typical of committees:

- Encourage "brainstorming" to generate as many ideas as possible.
- No idea should be considered too far out.
- No idea is considered personal property. Building on other's ideas is encouraged.
- There should be only constructive criticism.

Have a MAB Member play "devil's advocate." This encourages evaluating all angles.

Hangar layout of wreckage can be essential to a thorough investigation.

If at all possible, **DO NOT** store the wreckage at the mishap unit.

Test your equipment before going to the mishap site or starting interviews. Be familiar with your equipment.

If molten metal deposits are found on the hot section components, a minimum operating temperature can be determined based on the melting point of the metal deposits.

The heaviest items (e.g., generators, batteries, engines, etc.) often travel the greatest distances and will indicate the direction of flight.

Never put broken parts back together! This cannot be said enough; even the best and brightest will do it (and so will senior people).

Don't hesitate to call the Aviation Safety Division/CG-1131 with questions. Mishap factors are like dominoes. Your goal is to identify all the dominoes and make recommendations to prevent the cascade of mishap events from recurring.

There will always be hazards around mishap sites. They will not always be obvious and can sneak up and bite you when you're least prepared.

Beware of transmitting information on cell phones and radios at mishap scene. Cellular telephones have three major vulnerabilities.

1. Conversations can be monitored while using the phone.
2. Phones can be turned into a microphone and monitor conversation in the vicinity of the phone while it is inactive.
3. The phone can be cloned and the number used by others.

Avoid contact with mishap unit personnel, except in investigative settings. MAB Members should have no contact with family members, except for interviews and other investigation proceedings.

In some cases it is helpful for the MAB President to meet with the mishap crew and/or unit members to explain how the investigation process works. Specific information regarding the investigation in progress must not be presented during informational briefings to participants, colleagues, or others.

Designate one Member to keep track of media coverage and to periodically brief the MAB.

DO NOT TALK TO THE PRESS! Let PAO personnel handle the media.

Don't wait on paper orders to travel to the mishap site. You will get your TONO and you will get paid. Time is important, not paperwork. You can travel without a TONO.

Flight Restrictions Following Aircraft Mishaps.

- Aircrews shall be temporarily grounded following any aircraft mishap where the aircraft sustained Class A or Class B damage or serious injury to the crew.
- Flight personnel must be evaluated by a flight surgeon and found physically qualified and aeronautically adaptable for aviation duties prior to resuming flight status. Waiver of this requirement may only be obtained from CG-711. This is not the MAB's call or the MAB flight surgeon's; this is up to the unit CO, unit FS and CG-711
- Critical Incident Stress Management intervention may be warranted and are at the discretion of the Commanding Officer.
- Temporary grounding of aircrews following Class C, D or E mishaps may be advisable in certain situations and shall be at the discretion of the Commanding Officer or his designated representative.

Anyone authorized to work in and around a mishap scene must constantly be alert to indications of the possible presence of HAZMAT in any mishap.

These materials may be indicated by warning placards or signs, labels on packages, shipping papers, or verbal information from people at the scene. They may not be marked at all.

HAZMAT may be dangerous even if it's seemingly contained, i.e. either packaged or in its usual containment vessel (fuel tank, pressurized system, etc.).

Look for HAZMAT such as freight cargo, ejection seats, ordnance, fluids, and propellants. Also look for the presence of fuels, propellants, etc.

HAZMAT can be emitted in many ways for many reasons. Even worse, it is almost impossible to tell precisely when they will activate and envelope the danger zone with the investigator in it.

Wait until potential energy transfers (such as fires, explosions, vapors, breached radioactive materials containers, etc.) are eliminated if HAZMAT is present.

Consider the tradeoff between data acquired immediately from the wreckage site and safety risks.

DO NOT follow fire fighters or other emergency or rescue personnel into the wreckage area. Stay at least 2,000 feet upwind from any fires burning in wreckage where HAZMAT are present and stay out of any plume of smoke from the site.

Watch for potential hazards. If uncertain about whether HAZMAT in a mishap area exists, don't take chances by entering the mishap site. There is very little to be gained, and much to be lost, by risking

personal safety. Remember, the investigator's role is to determine what happened, not to be a part of what is happening.

Print CGMS messages in full view in order to capture the entire header, addresses, DTG, etc.
FSOs – be prepared to give a safety briefing to the recovery and salvage crew.

Stay in contact with CG-1131, keeping them updated on the recovery process and other activities.

Make sure your cell phone is charged or carry your charger.

Large notepads/legal pads are cumbersome. A small pocket size or a little larger would have been more appropriate. Waterproof notebooks (Rite in the Rain – All Weather Notebooks).

First responders can provide good info about where bodies were actually recovered and how they were situated within the airframe.

Keep in mind, if you interview first responders, this can be a real emotional event. Your interview can end up being a form of CISM.

Work with CG-1131 when it comes to Flags and senior personnel. 1131 knows the politics and can handle the “higher ups”. The MAB should not try and handle these people.

Remember once you start accommodating them, you won’t be able to turn it off, **SO DON’T START**.

The MAB President is your voice. As a MAB Member, you don’t say “no comment”; you say “please check with the MAB President for any updates”.

References, Abbreviations and Other Notations

AFIP	Armed Forces Institute of Pathology (see JPC)
AFME	Armed Forces Medical Examiner http://www.afmes.mil/assets/docs/toxguidelines.pdf
AIM/Admin/Legal/JAG investigation	Any investigation required by the Administrative Investigations Manual
AIM Manual, Admin Manual	Administrative Investigations Manual, COMDTINST M5830.1 (series)
AIROPS Manual/3710	Aviation Operations Manual, COMDINST M3710.1 (series)
ALC	USCG Aviation Logistics Center Elizabeth City, NC
ALSE	Aviation Life Support Equipment
ARFF/CFR	Aircraft Rescue and Fire Fighting/Crash Fire Rescue
ATC	Air Traffic Control
ATC Mobile	USCG Aviation Training Center Mobile, AL
ATTC	USCG Aviation Technical Training Center Elizabeth City, NC
AUXAIR Op Policy Manual	Auxiliary Operations Policy Manual, COMDTINST M16798.3 (series)
Aviation Life Support Equip Manual	COMDTINST M13520.1 (series)
Aviation Medicine Manual	COMDTINST M6410.3
BBP	Prevention of Bloodborne Pathogens Transmission, COMDTINST M6220.8
BAL	Blood Alcohol Level
CAD	Cartridge Activated Device
CAMI	Civil Aeromedical Institute
CSB	Commandant Safety Board
CFR	Code of Federal Regulations or Crash Fire Rescue
CG-111	Office of Work-Life, CG HQ
CG-112	Office of Health Services, CG HQ
CG-1121	Operational Medicine, CG HQ
CG-113	Office of Safety and Environmental Health, CG HQ
CG-1131	Aviation Safety Division, CG HQ
CG-41	Office of Aeronautical Engineering, CG HQ
CG-711	Office of Aviation Forces, CG HQ
CG	Center of Gravity
CGIS	Coast Guard Investigative Service
Chapter 2	Aviation Safety Program Chapter of M5100.47 (series)
Chapter 3	Mishap Response and Investigation Chapter of M5100.47 (series)
CISD	Critical Incident Stress Debriefing, see COMDTINST 1754.3 (series).
CO	Commanding Officer
Confined Space Entry	See USCG Safety and Environmental Health Manual, COMDTINST M5100.47 (series)
CVR	Cockpit Voice Recorder
CY	Calendar Year
DCS	Decompression Sickness
DOD	Department of Defense
EAL	Electronic Aircraft Logbook
EAP	Employee Assistance Program
eAVIATRS	e-**AV**iation **I**ncident and **A**ccident **TR**acking **S**ystem, electronic Aviation Database
EI	Engineering Investigation
E-MISHAPS	USCG mishap database for non-aviation mishaps
EMS	Emergency Medical System (Service)
Enclosure 2	Mishap Analysis Report (MAR) Format enclosure to M5100.47 (series)
Enclosure 3	Medical Officer's Report enclosure to M5100.47 (series)
Enclosure 4	Mishap Analysis Board (MAB) enclosure to M5100.47 (series)
Enclosure 10	Limitations on the Use and Disclosure of Mishap Investigations and Reports enclosure to SEH Manual.

Engineering Manual/13020	Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series).
EO	Engineering Officer
EOD	Explosive Ordnance Disposal
EOR	Engineering Officers Report.
FAA	Federal Aviation Administration.
FAM	Final Action Message
FAR	Federal Aviation Regulations
FDR	Flight Data Recorder
FE	Flight Engineer or Flight Examiner
Flight Surgeon's Guide	Naval Flight Surgeon's Pocket Guide for Aircraft Mishap Investigation http://www.safetycenter.navy.mil/aviation/AirMed/FSGuide.htm
Flight Surgeon's Website	Flight Surgeon/Medical Officer Mishap Investigation Guide http://www.uscg.mil/hq/cg1/cg113/docs/aviation_general/mishap_investigation/mor/Medical Officer's Mishap Guide.pdf
FLIR	Forward Looking Infrared Radar
FMS	Flight Management System
FOIA	Freedom of Information Act
FS/MO	Flight Surgeon or Medical Member
FSM	Final Summary Message
FSO	Flight Safety Officer
FSS	Flight Service Station
FY	Fiscal Year
GMT	Greenwich Mean Time (also known as Zulu, Z, or UCT time)
HAZMAT	Hazardous Material
Helicopter Rescue Swimmer Manual	COMDTINST M3710.4 (series)
HFACS	Human Factors Analysis and Classification System http://www.uscg.mil/hq/cg1/cg113/docs/ergo_hfacs/hfacs.pdf
HIPAA	Health Insurance Portability and Accountability Act of 1996
HQ	Headquarters
HUD	Heads Up Display
IAW	In Accordance With
Joint Mishap Investigation Instruction	Participation in a Military or Civil Aircraft Accident Safety Investigation (AFI 91-206(I), OPNAVINST 3750.16C, COMDTINST 5100.28A, and AR 95-30)
JOAP	Joint Oil Analysis Program
JPC	Joint Pathology Center. Replaced AFIP http://www.uscg.mil/hq/cg1/cg112/cg1121/docs/pdf/Mishap_Toxicology_Guidlines.pdf
ICAO	International Civil Aviation Organization
ICD	International Classification of Diseases
LASER	Light Amplification by Stimulated Emission of Radiation
Laser Hazard Control Policy (USCG)	COMDTINST 5100.27 (series)
LOA	Letter of Agreement
LOX	Liquid Oxygen
MAB	Mishap Analysis Board
MAR	Mishap Analysis Report
Medical Manual (USCG)	COMDTINST M6000.1 (series)
MFR	Memorandum for Record
MOR	Medical Officer's Report
MOA	Military Operations Area
MOU/MOA	Memorandum of Understanding/Memorandum of Agreement
MRP	Unit's Mishap Response Plan
NAS	National Airspace System or Naval Air Station
NATO	North Atlantic Treaty Organization
NAVAID	Navigational Aid
NBC	Nuclear, Biological, and Chemical

NIOSH	National Institute for Occupational Safety and Health
NOTAM	Notice to Airmen
NSN	National Stock Number
NTSB	National Transportation Safety Board http://www.NTSB.gov
NTSB INVESTIGATION HANDBOOK	Appendix G; On-site Safety http://www.NTSB.gov/doclib/manuals/MajorInvestigationsManualApp.pdf
OCR	Optical Character Recognition
Operational Risk Management	COMDTINST 3500.3 (series)
ORM	Operational Risk Management
OSHA	Occupational Safety and Health Administration
PAO	Public Affairs Officer
PAX	Passenger
PII	Personally Identifiable Information
PLAT	Pilot Landing Aid Television
PMB	Unit's Permanent Mishap Board
POC	Point of Contact
ROE	Rules of Engagement
SME	Subject Matter Expert
SOP	Standard Operating Procedures
Survival Equipment Manual	Rescue and Survival Systems Manual, COMDTINST M10470.10
SEH Manual, CIM 5100.47	USCG Safety and Environmental Health Manual, COMDTINST M5100.47 (series)
Ship/Helicopter Operations Manual	COMDTINST M3710.2 (series)
TAD	Temporary Assigned Duty
TBD	To Be Determined
TOX	Toxicology
UCMJ	Uniformed Code of Military Justice
VFDR	Voice Flight Data Recorder
VFDR User's Process Guide	Aircraft Flight Data User's Process Guide (PG-85-00-1560-A)
VTR	Videotape Recording
WGBT	Wet-Bulb Globe Temperature
Witness Advisory Form	Witness Statement Promise of Confidentiality Advisory Form, Figure 2-1 COMDTINST 5100.47 (series), Enclosure (2)
WSO	Weapons System Officer
XO	Executive Officer

Telephone Numbers and Websites

Phone numbers and websites change; this checklist is updated often but may not have the latest numbers. Check the websites and don't hesitate to contact CG-1131 for assistance. CG-1131 may have POCs that are not listed.

USCG FLAG PLOT/Command Center	1-800-372-2100
CG Critical Incident Number	1-800-DAD-SAFE
Aviation Safety COMDT (CG-1131)	202-475-5200//5197/5198/5199
U.S. Air Force Safety Center (AFB Kirkland, NM)	505-846-0550 http://www.afsec.af.mil/
U.S. Army Safety Center (FT Rucker, AL)	334-255-2660/9552 https://safety.army.mil/
U.S. Navy Safety Center (Norfolk, VA) (24 Hours)	757-444-3520 (follow instructions) http://www.safetycenter.navy.mil
U.S. Marine Corp Safety Center (Washington, DC)	703-604-4362/4169/4168/4221/4147 http://www.safety.marines.mil/
Environmental Protection Agency (EPA)	See HOTLINE website http://www.epa.gov/epapages/epahome/hotline.htm
FAA Operations Center	202-267-3333 (24-hour)
NTSB Communications Center	202-314-6000
NTSB HQ—2190 L'Enfant Plaza SW, DC	http://www.NTSB.GOV
NTSB Electronic Phone Book	http://www.ntsb.gov/about/contact.html
Army Aeromedical Research Lab (USAARL)	1-888-386-7635/334-255-6920 http://www.usaarl.army.mil
Armed Forced Institute of Pathology (AFIP)	See Joint Pathology Center
Armed Forces Medical Examiner	302-346-8648
CHEMTREC (Chemical Transportation Emergency Center)	1-800-424-9300, or 703-527-3887 (24-hour)
Civil Aeromedical Institute (CAMI)	405-954-6826 (Human Factors Research) http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/cami/
EOD East Coast Watch Center	757-462-8452
EOD West Coast Watch Center	619-437-0720
Hammer Adaptive Comms Element (ACE), Langley VA	Coordinate thru CG-1131; not always free. hammerace@robins.af.mil 478-222-5785 (0630-2359 EST) 478-327-2612 (after hours)
Joint Pathology Center (JPC)	855-393-3904 http://www.jpc.capmed.mil/
National Response Center (HAZMAT only)	1-800-424-8802 (24-hour)
Naval Aerospace Medical Institute (NAMI)	850-452-2741 See NMOTC website for NAMI contact directory. http://www.med.navy.mil/sites/nmotc/Documents/NMOTC Contact Directory.pdf
Naval Medicine Operational Training Center (NMOTC)	850-452-4554 850-450-1366 (Command Duty Officer) See NMOTC website for Navy Medicine Operational Training Center contact directory. http://www.med.navy.mil/sites/nmotc/Documents/NMOTC Contact Directory.pdf
Naval Medical Research Unit-Dayton (NAMRU-D)	937-938-3931/3872 NAMRUDInfo@wpafb.af.mil
Occupational Safety & Health Administration (OSHA)	http://osha.gov/ http://osha.gov/html/oshdir.html

E-AVIATRS website	https://hswl.uscg.mil/aviatrs/
CG-113 website	http://www.uscg.mil/safety/cg1131/default.asp
USN Flight Surgeon Pocket Guide	http://www.public.navy.mil/navsafecen/Documents/aviation/aeromedical/duties/Pocket_Ref.pdf
Navy Salvage Operations (mostly helos)	202-781-1731 202-781-3889 (24 hour) NAVSEASYSCOM (Mike Herb) Code 00C Main POC, works w/ CINCPAC & CNO to mobilize resources or initiate commercial salvage contract.
USAF Salvage Operations (C130/Fixed Wing)	Kirtland AFB, NM (POC: Randy Rushworth) 505-853-2615
84th Radar Evaluation Squadron (84thRADES)	Hill AFB, UT 801-777-3712 84RADESworkflow@hill.af.mil
NORAD Air Defense Sectors	Western: 253-982-5611 Eastern: 315-334-6311
Air Marine Ops Center (AMOC)	1-866-247-2878
Video Enhancements	Defense Computer Forensics Lab Linthicum, MD 410-981-0100 (410-925-2010 - 24 Hour) http://www.dc3.mil/digital-forensics/about-dcfl National Air & Space Intelligence Center Wright-Patterson AFB, Dayton, OH 937-656-2742
MAAF (USAF Mishap Aircraft Animation Facility)	Call CG-1131 before contacting Kirtland AFB, NM (POC: Dale Carter) 505-846-3746
Underwater Recovery (ROVS)	Contact CG-1131 or CG41.

NOTE: For Radar Tracking--Local unit should have AOR contact info or contact CG-1131.