

# **Leadership / Followership**

## **Recurrent Training**

### **Instructor Manual**



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## **PARTICIPANTS AND ACKNOWLEDGMENTS**

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## INTRODUCTION

This project was supported by the Office of the Chief Scientific and Technical Advisor to the Federal Aviation Administration for Human Factors. The purpose is to provide practical application of the research conducted relating to identification of leadership and followership skills that are used in Crew Resource Management. The products of this project include

- Two manuals—one for the student that provides basic precepts of leadership and followership in the context of the cockpit and an instructor manual that provides tools for classroom instruction and facilitation
- A videotape comprised of three video vignettes, each with three to four outcomes
- A leadership/followership web site that includes these materials plus links to other sites relating to leadership and followership
- A CD-ROM that includes the manuals and video.

These products are designed to support a three-hour block of recurrent training conducted at the awareness level. Skills development training integrated into the Advanced Qualification Program (AQP) will be part of a follow-on project.

Although we have attempted to provide a comprehensive package it is intentionally generic in nature. You will need to customize elements that are unique to your airline. For example you may wish to determine if your company has a policy statement regarding the scope of crew member's authority—do you need one and/or is it appropriate? Guidance on how to prepare your own company policy is provided on page 5 of the Student Manual. Another area that would be helpful in customizing your curriculum is to compare your company policies and operating norms to the FARs relating to crew member duties and responsibilities. A table provided on page 7 of the Student Manual is provided for that purpose. In addition, your company may have developed a list of skills and/or behaviors relating to leadership and followership that are specific to your environment. You may want to relate your skills to those described in the manuals. The material contained herein is not provided as a definitive answer to leadership/followership training with the intent of replacing your existing skill sets but rather to provide information and a framework for adaptation. Procedures for relating your carrier's skills to those described in the manuals are provided on page 25 of the Student Manual.

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## **LEARNING OBJECTIVES FOR RECURRENT CRM TRAINING**

At the completion of this block of instruction the student should:

1. Understand the regulatory environment influencing authority and leadership.
2. Understand the corporate philosophy pertaining to authority.
3. Know the relationship between leadership and authority as part of a larger system.
4. Know the impact of Captain's performance on overall crew effectiveness.
5. Understand the importance of setting the structure and setting the climate for efficient and effective flight operations.
6. Be able to select appropriate leadership behaviors for a given situation.
7. Understand the use of supporting behaviors for leadership and authority skills.
8. Understand the skills needed for effective cockpit leadership and followership.
9. Understand the need to clarify roles and expectations for followers.



## **VIDEO VIGNETTES**

The video tape provided with these training materials contains three vignettes each with a variety of outcomes and behaviors. The purpose is to illustrate the use or lack thereof leadership and followership skills. The vignettes are intentionally short to allow ample time for discussion and learning. They are appropriate for classroom skills awareness training and/or instructor standardization.

Each of the vignettes is supported by descriptive materials that explain the purpose of the vignette and include sample facilitator questions that encourage students to apply the six Leadership/Followership skills to resolve each vignette situation. Also, a flow chart has been prepared for each vignette that specifies appropriate points within the video when you may wish to stop the video in order to discuss application of skills. Each flow chart specifies a range of outcomes for each situation to stimulate discussion.

Additionally, an evaluation table, similar in design to behavioral markers used on the LOS/LINE Checklist, is provided and may be appropriate for instructor evaluator training when used in conjunction with the vignettes. These markers may also be appropriate for inclusion in LOFT evaluations.

## Vignette #1

### WEATHER OR NOT TO HOLD

**Approximate run-time-** 3:20 minutes

**Scenario-** The crew has been notified by ATC to hold and are given an expect further clearance time. Considering existing weather and fuel status the first officer suggests to the captain he may want to consider alternative plans.

#### **Solution 1-**

Envisioning—Did the CA have a clear picture of what needed to be done? Was it conveyed to the FO?

Receptiveness—What was the CA's response? Was it appropriate for the situation?

Initiative—Did the FO provide the appropriate input? Did he exercise initiative or was he 'just doing his job'?

Adaptability—Did the crew effectively handle the situation? Why?

#### **Solution 2-**

Envisioning—Did the CA have a clear picture of what needed to be done? Was it conveyed to the FO?

Initiative—What actions did the FO take? Was the level appropriate?

Receptiveness—Was the CA willing to listen to the FO? Why not?

Influence—Should the FO have exercised more influence? How?

#### **Solution 3-**

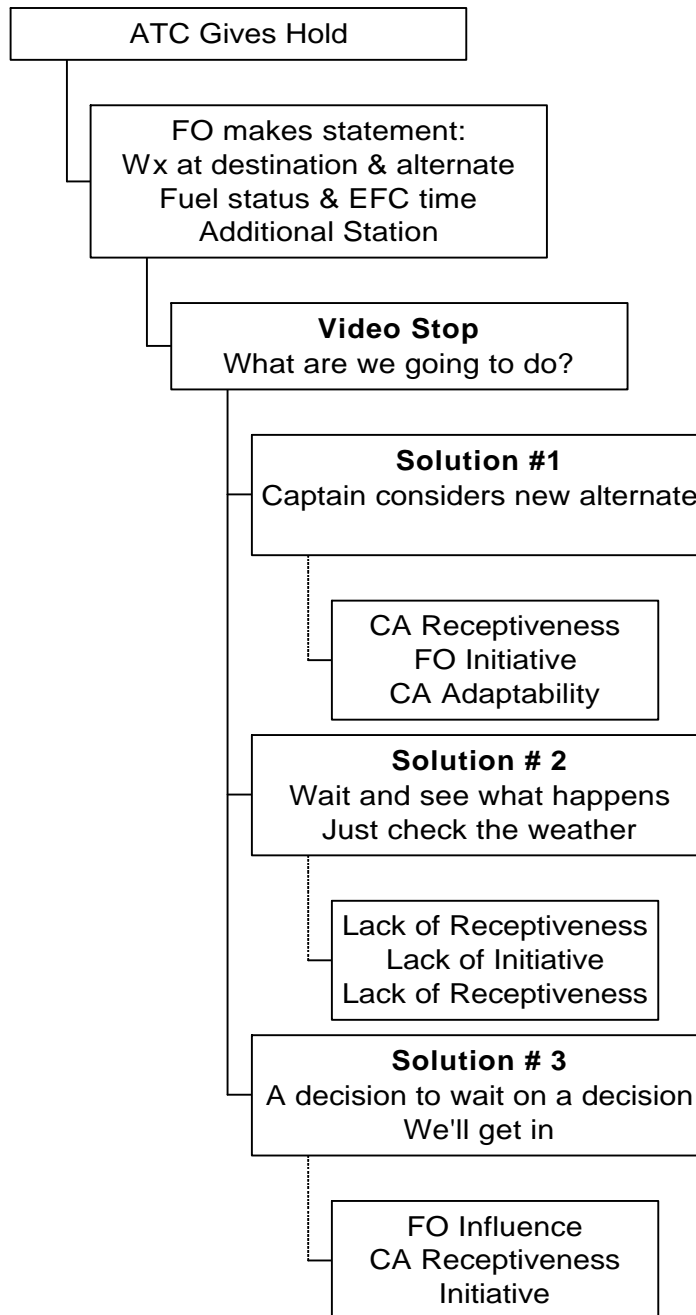
Receptiveness—What was the CA's response to suggestions? Was he receptive? Did he need to be?

Adaptable—The FO suggests checking on a closer alternate--what are the ramifications of going to an alternate that is further away?

Envisioning—Did the CA have a contingency plan other than going to the alternate?



**Leadership / Followership Vignette #1**  
**Weather or not to hold**



## Vignette #2

### STYLES OF INFLUENCE

**Approximate run-time-** 4:25 minutes

**Scenario-** The crew is awaiting push back and the First Officer takes it upon himself to make the initial call to the passengers. The Captain considers confronting the FO on proper procedures in the cockpit.

#### **Solution 1-**

Initiative—Did the FO exercise proper initiative? Was the level of initiative appropriate?

Modeling—Was the behavior of the CA comparable to other captains at your airline? Do you agree with him? Why?

Adaptability—How well did the CA respond to the call of the FO? Support your answer.

#### **Solution 2-**

Modeling—Were the CA's actions consistent with company policy? Does your airline have a policy supporting this?

Envisioning—Did the CA let the FO know of future plans in the cockpit? Were his actions appropriate?

Initiative—Did the CA demonstrate initiative? Was it an appropriate level? Was he responsive to the initiative of the FO?

Influence—Did the CA's actions have a positive influence on the crew's activities? Why or why not?

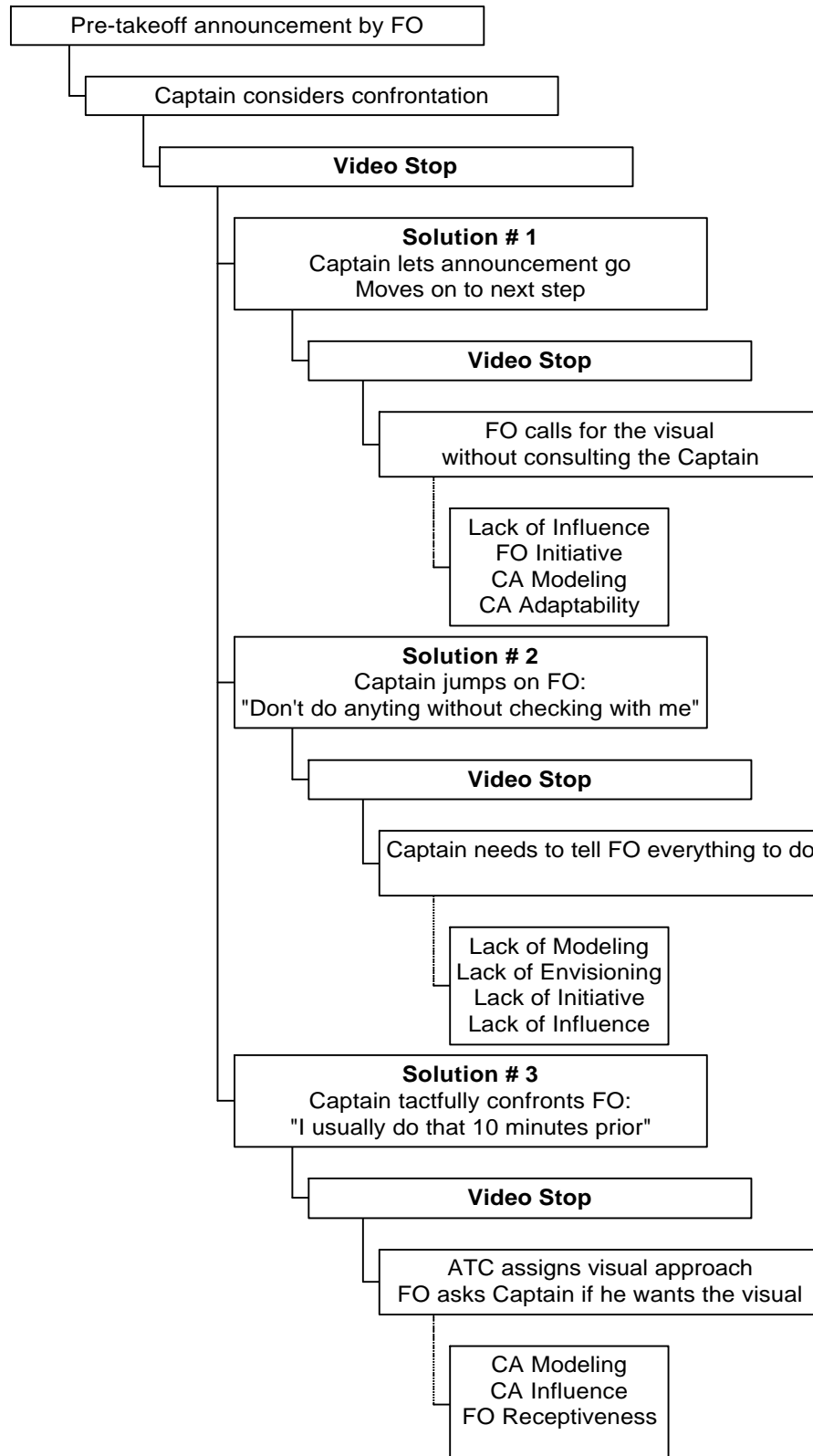
#### **Solution 3-**

Modeling—How well did the CA uphold the policies of your airline?

Influence—Did the CA have a positive influence on the FO? Could he have done anything else?

Receptiveness—Was the FO receptive to the comments of the CA? How did he react to the comments?

## Leadership / Followership Vignette #2 Styles of Influence



## Vignette #3

### DISORDERLY CONDUCT

**Approximate run time-** 5:25 minutes

**Scenario-** A distressed Flight Attendant calls up the Captain and claims a passenger has been harassing her and struck her. The Captain needs to decide on the best course of action, if any.

#### **Solution 1-**

Modeling—Did the response of the CA live up to the standards and policies of your airline? What are the policies of your airline?

Adaptability—Was the CA able to handle the disturbance in the cabin?

Influence—What type of influence did the CA have on the situation?

#### **Solution 2-**

Initiative—What actions did the CA take? Were his actions appropriate?

Influence—Was the level of influence adequate? Why or why not?

Adaptability—The FA was obviously upset by the occurrence. Did the CA take appropriate actions?

#### **Solution 3-**

Initiative—Did the CA address the problem? Did his inquiries satisfy the FA? Why?

Receptiveness—Was the CA receptive to the FA's situation? What did he do to help or hinder this problem? What could he have done?

Receptiveness—Was the FA receptive to the comments and actions of the CA? Did she act satisfied with the results? Should she have been?

#### **Solution 4-**

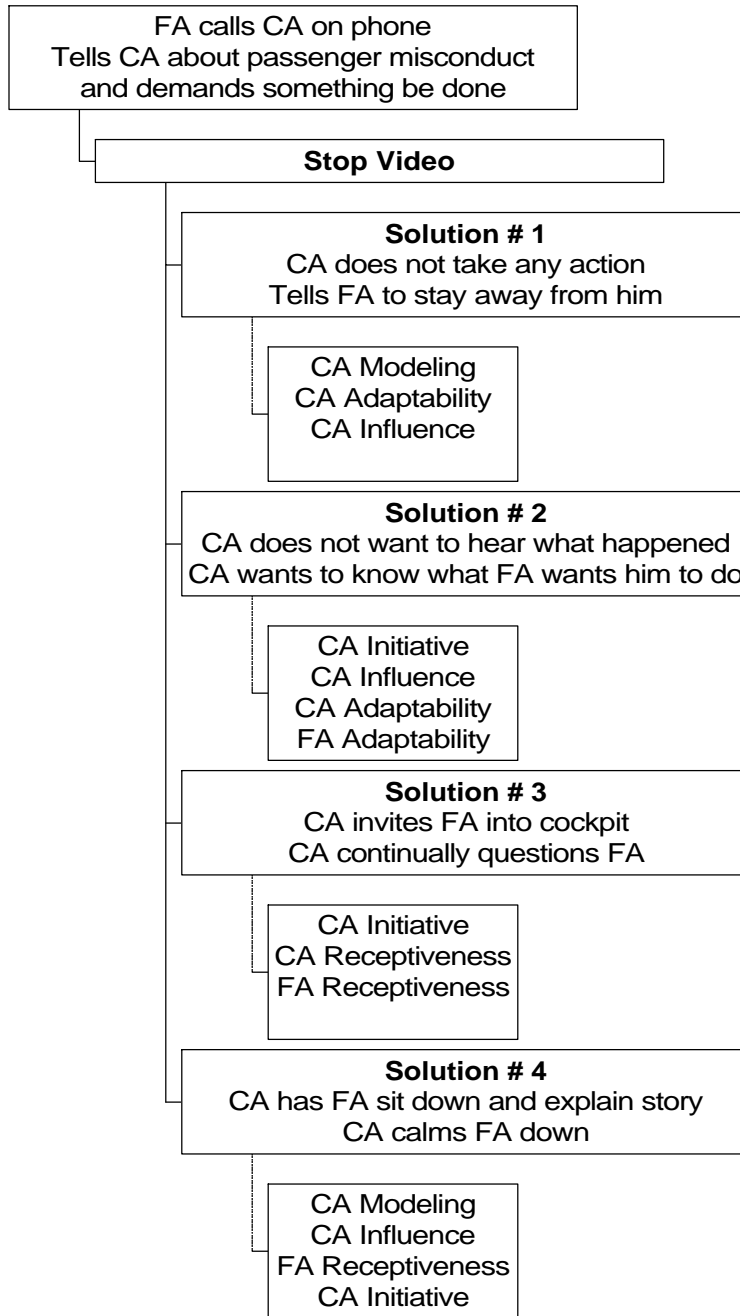
Modeling—Did the CA's actions reflect the standards of your airline? Explain.

Influence—Did the CA have a positive or negative influence on this situation?

Receptiveness—What was the CA's response to the problem? Did he help calm the FA down?

Initiative—What did the CA do right or wrong? Did he handle the problem professionally?

### Leadership / Followership Vignette # 3 Disorderly Conduct



## **INTRODUCTION TO CREW LEADERSHIP AND FOLLOWERSHIP SKILLS ASSESSMENT**

An assessment tool, similar to the one found on the following page, was used with the LINE/LOS check list developed by University of Texas, to augment safety line audits conducted at a number of air carriers. The data was used to validate the leadership/followership model. This assessment tool may be used in conjunction with the LOFT Facilitator Guide found at Attachment B to debrief leadership/followership skills training. It is also suitable for instructional purposes when used with videos for student and instructor standardization training, and should be used with the video vignettes provided with these materials.

## CREW LEADERSHIP AND FOLLOWERSHIP SKILLS ASSESSMENT

Rate individual crewmembers on specific behaviors. If behaviors are not observed during this flight segment, leave spaces blank.

**Duty Position:**  
(Check One)

Captain	1 <sup>st</sup> Off.	Engr.	Relief 1	Relief 2	Cabin Crew

<b>Leadership &amp; Followership Skills</b>	Pre-Depart	T/O & Climb	Cruise	Des/App Ldg.	Specific Comments
1. Crewmember develops and articulates a picture of the future or of a desired state.					
2. Crewmember's conduct with other employees and passengers is consistent with the company's highest standards.					
3. Crewmember gives attention to other crewmembers' ideas, comments or questions without being overly critical.					
4. Crewmember obtains a commitment from others to ideas or actions using a variety of effective interpersonal skills.					
5. Crewmember states need to make adjustments to changing environments and abnormal situations.					
6. Crewmember begins an action, without external direction, to respond to an operational deficiency.					

### Crew Performance Rating

<p style="text-align: center;"><b>1</b></p> <p><b>Poor</b> - Observed performance is significantly below expectations. This includes instances where necessary behavior was not present, and examples of inappropriate behavior that was detrimental to mission effectiveness.</p>	<p style="text-align: center;"><b>2</b></p> <p><b>Minimum Expectations</b> - Observed performance meets minimum requirements but there is ample room for improvement. This level of performance is less than desired for effective crew operations.</p>
<p style="text-align: center;"><b>3</b></p> <p><b>Standard</b> - The demonstrated behavior promotes and maintains crew effectiveness. This is the level of performance that should normally occur in flight operations.</p>	<p style="text-align: center;"><b>4</b></p> <p><b>Outstanding</b> - Performance represents exceptional skill in the application of specific behaviors, and serves as a model for teamwork - truly noteworthy and effective.</p>





**VERBAL VIGNETTES  
and  
SAMPLE FACILITATOR QUESTIONS**

Four vignettes have been provided to serve as discussion pieces concerning authority, leadership, and followership among crew members. These vignettes can be used as homework assignments, classroom discussion tools, or in other forums to support identification and use of effective leadership/followership skills. Two vignettes focus on Captain's issues, while the remaining two address First Officer issues.

## First Officer Scenario #1 (First Officer behavior focus)

*General Theme:* The purpose of this scenario is to investigate authority relationships and boundaries across cockpit roles. The facilitator should encourage the Captain and First Officer to discuss the balance between situational leadership, authority boundaries, and role-specific duties.

*Scenario Theme:* First Officer initiative when the Captain will be late for the flight.

The scheduled Captain for your flight calls in sick. The reserve Captain will be arriving at the plane only at the last minute prior to scheduled departure time.

*First Officer question:* What tasks would you complete in preparation for the flight while waiting for the Captain?

*Captain question:* What tasks would you wish the First Officer to complete in preparation for the flight while waiting for you?

- A. Pull the weather information packet
  - B. Have the release waiting for the Captain in the cockpit
  - C. Greet and brief the Flight Attendants
  - D. Perform First Officer preflight duties
  - E. Perform Captain preflight duties
  - F. Make a preliminary fuel load decision based on release and weather
  - G. Make a final fuel load decision
  - H. Greet the passengers through the initial P/A call
  - I. Discuss a potential maintenance discrepancy with a mechanic (e.g., questionable tire)
  - J. Write up and have addressed a maintenance discrepancy
  - K. Receive the ATC clearance, having it available for when the Captain arrives
  - L. Greet gate agent, be certain they are informed and discuss potential delay
  - M. List any other steps you would likely take/like to see taken
- 
- 

N. List any other steps you would likely not take/not want to be taken

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## Sample Facilitator Questions

- A. In response to items the First Officer chooses not to do, ask the First Officer why not?

If the Captain wishes the First Officer had performed the task, ask why?

- B. In response to items the First Officer chooses to do that the Captain would prefer not be done

To the First Officer: Why do you feel comfortable performing x, y, z?  
Are you surprised that the Captain doesn't agree?  
Given this actual scenario, would you change some of these behaviors?

To the Captain: Why would you prefer the First Officer not perform these activities?  
How would you convey your critique of these steps taken by the First Officer?  
Do you think this First Officer's behaviors are typical of other First Officers?

- C. What factors might influence whether the First Officer chooses to perform a task (e.g., familiarity with the Captain, previous similar experience, etc.)?

- D. Are there "rules" that define what is appropriate for the First Officer to do? Are these "written," "unwritten," "cultural" or otherwise?

- E. What if the First Officer were the late-arriving crewmember?

Would you, as Captain, get the ship totally set to go (including the First Officer's tasks)?

Would you, as the First Officer, expect the Captain to perform some of the First-Officer, role-specific duties?

A primary goal of this discussion will be for the crew to "get on the same page" regarding how First-Officer initiative is viewed by each crewmember. The discussion of this scenario should develop a common understanding of each crewmember as well as the team as a whole. By developing this cohesion, the crew will be better prepared to understand their collective approach to the roles, responsibilities and expectations as they apply to Captain/First Officer boundaries.

## **Captain Scenario #1 (Captain's behavior focus)**

*General Theme:* This scenario has two goals. First, the scenario addresses issues pertaining to authority. In particular, who should make decisions pertaining to handling a passenger problem? In addition, the scenario looks at the process by which information is gathered that can be used as a foundation for making a decision.

*Scenario Theme:* Handling individual passenger dignity and comfort as well as passenger health. Secondly, providing a reasonable passenger environment.

A passenger becomes very sick, including vomiting and severe diarrhea. The flight is totally full. There is a physician on board who, after examining the passenger in question, volunteers that the situation is not critical and the passenger is stable enough to travel to the final destination, which is two hours ahead. However, the immediate environment surrounding the passenger is filthy.

*Captain's question:* Which of the following group of behaviors is closest to how you would want the Captain to respond?

- A. The Captain verifies through the Flight Attendant that the physician feels the condition is not life threatening, and chooses to press on. The Flight Attendants are requested to do the best they can to clean up the cabin and the passenger.
- B. The Captain asks the Flight Attendant to describe how bad the situation is. The Flight Attendant, intimidated by the magnitude of the mess, recommends an immediate landing. The Captain takes the recommendation and complies.
- C. The Captain asks the Flight Attendant to describe how bad the situation is. The Flight Attendant believes that it is a bad situation and recommends the cockpit crew check it out. The Captain can't quite visualize the situation being that bad, sends the First Officer back to look and awaits the First Officer's recommendation.
- D. The Captain asks the Flight Attendant to describe how bad the situation is. The Flight Attendant believes that it is a bad situation and recommends the cockpit crew check it out. The Captain can't quite visualize the situation being that bad and decides to check it out firsthand.

### **Sample Facilitator Questions**

- A. Who should make the decision as to the severity of the problem:
  - The physician
  - The Flight Attendants
  - The First Officer

- The Captain
- B. Which of the following issues should be considered in determining how to handle the problem:
- The sick passenger's health status
  - Health hazard to other passengers and crew
  - The sick passenger's needs
  - Surrounding passenger comfort
  - Inconvenience to passengers if the aircraft is diverted
  - Flight attendant convenience
  - Other operational requirements (specify)
- C. Who should contribute to making the decision as to how to resolve the problem:
- The Captain
  - The First Officer
  - The Flight Attendants
  - The physician
  - The sick passenger
  - Other passengers
  - Dispatch
- D. What would you tend to want to do (Captain):
- Proceed to destination
  - Land sooner
- E. What would you likely choose to do (Captain):
- The same as D above
  - Consensus of all others' input (dispatch, cabin crew, etc.)
  - Rely on dispatch's recommendation
  - Not rely on dispatch's recommendation if other than what you prefer
- F. If the Captain chooses an answer that is different than the one that you prefer, how might you influence the Captain towards the method that you prefer (First Officer)?
- For example, if the Captain answers "B," the First Officer might offer to contact dispatch to discuss the plan to divert.
- G. What decision do you think the company (via dispatch) would want you to make (Captain and First Officer):

- Divert
  - Press on
- H. If the situation were different in some respects (e.g., no doctor on board, uncertainty of doctor's analysis, etc.), how would that affect your decision?
- I. Do you think that the level of experience of the crew would influence their desires, their problem solving processes, their confidence in their decisions, etc.?

### **Additional Facilitator Hints**

Depending on which course of action is taken, the facilitator assumes that role. For example, if the Captain asks the flight Attendant as to "how bad," the facilitator, acting as the Flight Attendant, could respond in several ways:

- "It's messy back here." This illustrates a Flight Attendant who is somewhat less assertive, articulate, sure of his/her role, etc.
- "The passenger's clothes are soiled, the seat is soaked, and the surrounding rug is soaked all the way across and forward and aft several rows. The mess is overpowering! I don't see any way that we can continue like this." Here the Flight Attendant is much more self-confident, more descriptive, more assertive and has a proposed solution in mind.

The intent is for the facilitator to work with the Captain and First Officer on information seeking and decision-making processes. During the discussion of this scenario, each crewmember will articulate his/her individual and collective beliefs about the boundaries of their roles when dealing with an ill-defined problem. This should pave the way for the crew to deal effectively with the issues of leadership, followership, and authority.

## First Officer Scenario #2 (First Officer behavior focus)

*General Theme:* This scenario is intended to examine what constitutes appropriate First Officer influence.

*Scenario Theme:* What type of issue is an appropriate reason for the First Officer to attempt to convince the Captain that the First Officer has the right answer (influence)?

During taxi out, the First Officer notices a minor mechanical discrepancy that is an MEL issue. The First Officer calls the Captain's attention to this.

*Captain's Question:* You judge this to clearly be non-safety related. You have seen this exact situation on this tail number very recently. Last time, the "problem" corrected itself shortly after takeoff. Would you:

- A. Stop the taxi, contact maintenance/dispatch and get an enroute MEL
- B. Decide that this is not a big deal and propose to depart as is
- C. Taxi back to the gate for repair

*First Officer's Question:* What actions would you want and expect the Captain to take:

- A. Stop the taxi, contact maintenance/dispatch and get an enroute MEL
- B. Decide that this is not a big deal and propose to depart as is
- C. Taxi back to the gate for repair

### Sample Facilitator Questions

- A. What would your input be if the Captain asked, "What do you think?"
- B. If your desire were to take the conservative course, even though the Captain was willing to "let this one go," what would you say or do to sell the Captain on your course of action?
- C. What if, in your judgment, the issue was more critical (safety related)? Would you be more likely to try to influence the Captain if, for example:

On a low weather (CAT II or CAT III) approach, the failure of a required airborne component is noticed (e.g., autothrottle), but the Captain responds, "We're looking good, all stabilized. Let's just press on here for a bit and see if we can get the throttles back soon. Would you say:

- a. I'm sure this is a mandated go-around. Let's break this off.
- b. Sounds OK. I'll run the power manually, just back me up.
- c. What say, if we don't get 'em back by 500 feet, we're out of here.
- d. Something else.

- D. Would your approach have more resolve if, say, on this same low-weather approach, ATC called while you were outside the final fix and reported the RVR below minimums and the Captain acknowledged but took no action or falsely reported “XXX inside final fix” and said “Let’s press on.”
- E. As First Officer, how do you feel about exercising influence upon the Captain when you are flying pilot but the Captain, in your judgment, is “flying the plane” for you?

The First Officer is PF. ATC has issued a visual approach clearance and asked that the airplane turn base immediately for traffic. The First Officer judges the aircraft to be too high and calls for gear down. The Captain says, “Naw, you don’t need the gear yet.” What do you do?

- a. “You’re probably right. We’ll wait on the gear.”
- b. “You may be right but I would feel better if you would go ahead and drop the gear.”
- c. “You obviously have a better plan. You’ve got the airplane.”
- d. “I really think we’re high. Why don’t you go ahead and give me the gear.”
- e. Some other step showing either more or less influence. Specify.

### **Discussion Items**

- Are you, as First Officer, more comfortable as a participating team member (likely to influence) with some Captains more than others? What have those Captains done to foster this comfort?
- Do you, as Captain, feel that some First Officers are too assertive when it isn’t appropriate? Are some, from your experience, too reluctant to be heard on these issues?
- Does a fully participating co-pilot enhance the crew’s collective situational awareness by practicing influence when it is called for?

How do you, as Captain, feel: Is this idea of influence skill strictly or primarily a First Officer trait? How is the influence that you impart different (e.g., with the First Officer, mechanic, dispatcher, etc.)?



## Captain Scenario #2 (Captain behavior focus)

*General Theme:* This scenario is intended to investigate how a Captain views his or her role in determining the suitability of a crewmember for duty. In this instance, the boundary of authority crosses over to the cabin crew.

*Scenario Theme:* What is an appropriate reason to ask a crewmember to remove him-/herself from a flight, or have the individual removed.

While greeting the cabin crew on an originating flight, the Captain and First Officer notice immediately that one of the flight attendants has laryngitis and an inaudible voice.

*Captain's Question:* Which of the following group of behaviors best represents your reaction to this situation?

*First Officer's Question:* Which of the following group of behaviors best represents how you think the Captain should react to the situation?

- A. This does not cause any specific concern. Don't believe any action is appropriate or would be taken.
- B. This is a potential compromise to safety as well as customer service, and needs attention and a resolution. The Captain verbalizes this to the crew and encourages the Flight Attendant to call in sick and remove him-/herself from the trip.
- C. The Captain takes no immediate action. Instead, she/he discusses the issue with the First Officer in private, then consults the Lead Flight Attendant and leaves the final decision to the latter.
- D. This situation gives the Captain some concern but decides to not address the issue in any way.

### Sample Facilitator Questions

- A. In the final analysis, who is responsible for determining the physical suitability of the Flight Attendant:
  - The Flight Attendant him-/herself
  - The Flight Attendant Supervisor
  - The Lead Flight Attendant
  - The Captain
  - The crew's general consensus
  - Other (specify)

- B. How would your decision, or input to the decision, be altered, if at all, with these additional factors:
- The sick Flight Attendant assures you that the voice seems to come back after being awake for “a while.”
  - The sick Flight Attendant confides that he/she has used quite a bit of sick leave, and can’t afford any more points or attention from the supervisory personnel.
  - Even though the Captain has some concerns that need addressing, none of the three Flight Attendants feels that this is a big deal at all.
  - The flight Attendants minimize the importance since they’re only flying one leg prior to crew rest today.
- C. Would you, as Captain, enlist others’ input if you wanted the crewmember removed but the Flight Attendant resisted:
- No
  - Yes—If yes, who would be your allies
- D. How do you see the First Officer contributing to the resolution of this conflict?
- E. Would your willingness (Captain) to provide input on this matter be affected by any other factors:
- You have never met this Flight Attendant before
  - You are close friends with this Flight Attendant
  - This Flight Attendant is very senior and experienced
  - You have worked with this Flight Attendant before and
    1. Have had an outstanding working relationship
    2. Have had some testing times on prior flights
  - If this were not an originating flight at a crew base, without a ready replacement available, would your decision-making process or resolve change?
  - There is a deadheading cabin crew on “this one leg day” for your crew. Would you consider asking one of these Flight Attendants to be an unofficial “standby” so that you may deal with this with minimal conflict and tension?
- F. What if the suitability question was rooted in a different issue such as:
1. When meeting the crew, the Lead Flight Attendant says, “I was up with my sick infant son nearly all night. I just hope I can somehow make it through this grueling day.”

2. When meeting the crew, the Lead Flight Attendant says, “I’m fed up with this job. I just feel as though I’ve been working constantly. I pity the passenger who so much as looks at me.
3. The third Flight Attendant calls the cockpit enroute and reports that they are having “difficulty” working with the Lead Flight Attendant and wants you, as Captain, to intervene:
  - a. The Captain should not get involved.
  - b. The Captain should quiz the Flight Attendant as to the nature of the “difficulties.” Such as, it’s a personality conflict, it’s a question of improper handling of duties or poor treatment of passengers, or a combination of these.
  - c. The Captain should encourage the Flight Attendant to work on the situation further and report back if not resolvable.
  - d. The Captain should deal with the Lead Flight Attendant as soon as possible—or perhaps diffuse the situation and save the confrontation until landing.
4. When meeting the crew, the First Officer says, “I’ve been on reserve all day, and was just called for this all-nighter three hours ago. I’m going to be raw meat by the top of climb, I’m afraid. This is the second time this month that I’ve been shafted by crew scheduling!”
  - a. The Captain should intervene to find a resolution, somehow. What steps, with whom, HOW?
  - b. The Captain should not intervene.



## FEEDBACK

We are interested in hearing feedback so that we may continue to improve upon this manual. Please take time out to complete this form and mail/fax or email to:

Mail:	Joseph H. Dunlap WMU, School of Aviation Sciences 237 Helmer Rd. Battle Creek, MI 49009	Susan Mangold Battelle Memorial Institute 505 King Ave Columbus, OH 43201
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1. In what capacity was this manual used?
  - a. To support recurrent training
  - b. To support other training—specify \_\_\_\_\_
  - c. Just happened to pick-up and peruse

2. Check all that apply

Section	Did not use this section	Used this section			
		Very Helpful	Somewhat Helpful	Not very Helpful	Not Helpful
Learning Objectives		1	2	3	4
L/F Video Vignette Outlines		1	2	3	4
Crew L/F Assessment		1	2	3	4
L/F Verbal Vignettes		1	2	3	4
Attach. A: View Graphs		1	2	3	4
Attach. B: Facilitating LOS		1	2	3	4
Attach. C: Cognitive Skills		1	2	3	4
Student Workbook		1	2	3	4

**Additional Comments:**

## **ATTACHMENT A**

### **INSTRUCTIONAL VIEWGRAPHS**

The following viewgraphs are provided to support classroom instruction for recurrent training that addresses leadership/followership skills. Concepts, definitions, and descriptions of skills are included in these viewgraphs. As is the case with the materials in this workbook, some of the viewgraphs are incomplete and must be supplemented with information unique to your carrier.

*Leadership/  
Followership  
and Authority*

# *Acknowledgements*

This presentation was produced by Western Michigan University's School of Aviation Sciences, Battelle Memorial Institute and Alaska Airlines CRM Department with assistance from the office of the Chief Scientific and Technical Advisor for Human Factors to the Federal Aviation Administration.



# *Overview of Manual*

## **Section I - Student Materials**

- What leaders must know and do, and their relationship to followers
  - Leadership/Authority structure (FARs/Company policy)
  - Definitions
  - Leadership/followership model
  - Verbal vignettes
- Examples of using skills
  - Summaries of pertinent research
  - Self-assessment
  - Reference/resource list
  - Forceful enabling matrix

# *Overview of Manual*

## **Section II - Instructor Materials**

- Course outline
- Learning objectives for recurrent training
- Skills and behaviors for verbal vignettes
- Facilitation for video vignettes
- Sample discussion questions for vignettes
- Leadership/followership research
- Facilitation guidelines

*Authority*

## *Authority Definition*

The power that is legitimized by virtue of an individual's formal role in a social organization. The effectiveness of that authority is influenced by peers' and coworkers' respect for that authority.

# *Components of Authority*

- Where do we get authority
- Who has authority
- What are the limits of authority
- What is the scope of authority

# *Authority Matrix*

Comparison of

- FARs
- Your Airline Flight Operations Manual
- Your Airline Flight Attendant Manual

# *FARs and Your Airline SOPs*

## **1.1 General definitions**

**”Operational control”**, with respect to a flight, means the exercise of authority over initiating, conducting or terminating a flight.

**”Pilot in command”** means the pilot responsible for the operation and safety of an aircraft during flight time.

**“Second in Command”** means a pilot who is designated to be second in command of an aircraft during flight time.

**Your  
Airline’s  
SOP**

# *FARs and Your Airline SOPs*

## **91.3 Responsibility and Authority of the Pilot in Command**

(a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the **operation** of that aircraft.

**Your  
Airline's  
SOP**



*Leadership*

# *Aspects of Leadership*

- Is it the same as authority
- How might it differ
- Who acts as a leader
- What are the responsibilities associated with leadership
- Expectations of leadership

# *Leadership Threads*

- Task or goal accomplishment
- Influence
- Group Process
- Systematic
- Proactive
- Use of effective interpersonal skills

# *Leadership Defined*

A general systematic and relational process that emphasizes the ability to exercise skill in the movement toward goal attainment. From this perspective, leadership is proactive rather than reactive, and necessarily takes into account other members of the group.

*Followership*

# *Aspects of Followership*

- Who acts as a follower
- What are the responsibilities associated with followership
- Expectations of followership
- How is followership related to leadership

# *Followership Threads*

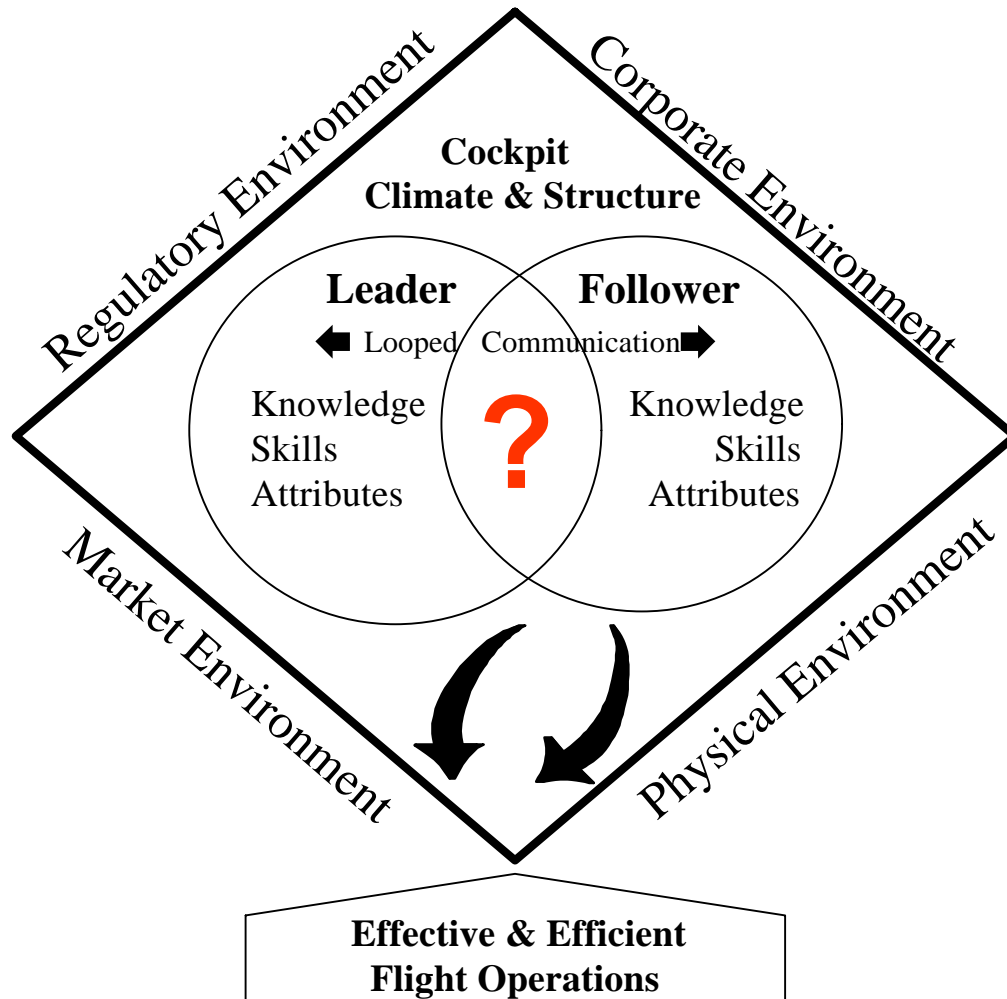
- Supportive
- Task or goal accomplishment
- Commitment to a cause

# *Followership Defined*

The ability to contribute to task and goal accomplishment through supportive technical, interpersonal, and cognitive skills. Followership is not a challenge to the captain's authority, but neither is it unthinking compliance with directives. Good followership is proactive without diminishing the authority of the captain.



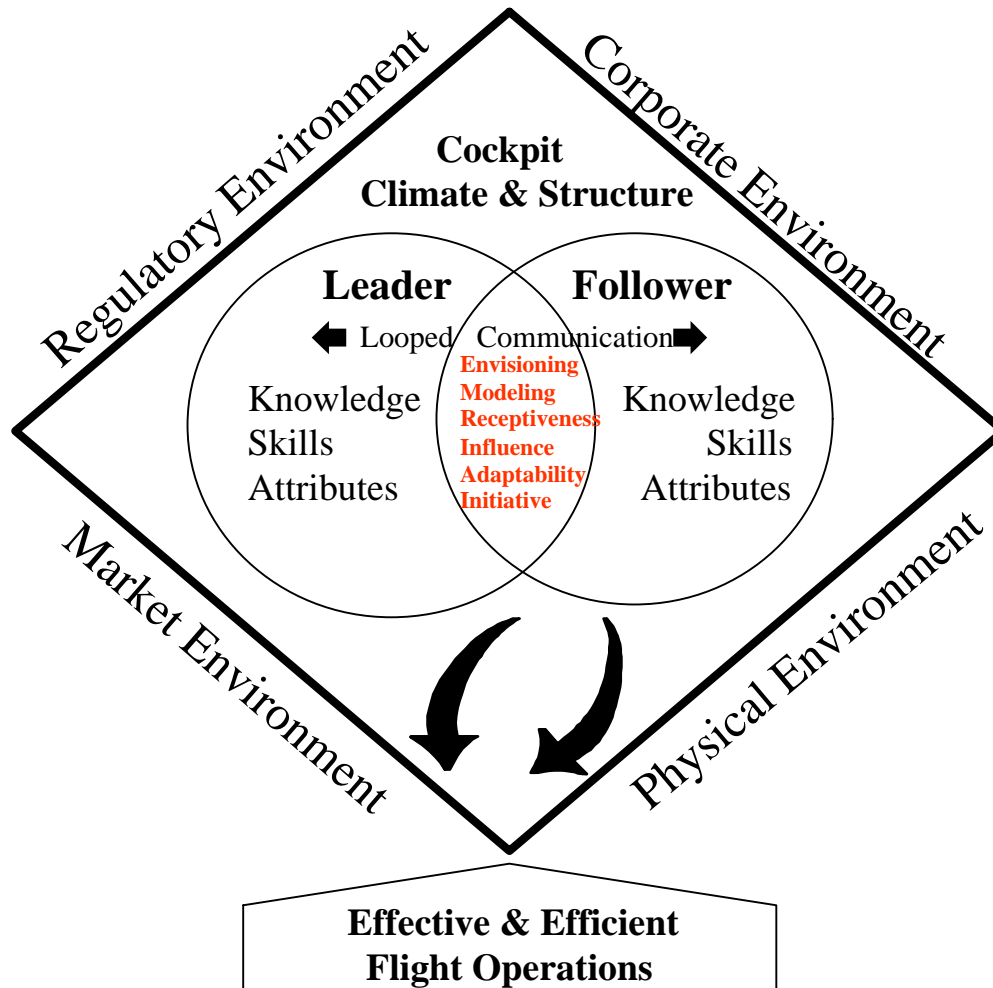
# *Leadership / Followership Model*



*Leadership /  
Followership Exercise*

What skills do effective  
Leaders/Followers use?

# *Leadership / Followership Model*



*Leadership / Followership Skill*  
*Definitions*

# Envisioning

Creates and articulates a picture of the future or a desired state.

*Leadership / Followership Skill  
Definitions*

## Modeling

Exhibits behavior consistent with the industry's highest technical and ethical standards.

*Leadership / Followership Skill*  
*Definitions*

## Receptiveness

Encourages, pays attention to, and conveys understanding of another's ideas, comments or questions.

*Leadership / Followership Skill*  
*Definitions*

**Influence**

Obtains commitment from others to ideas or actions using effective interpersonal skills, styles, and methods.

*Leadership / Followership Skill*  
*Definitions*

**Adaptability**

Adjusts to changing environments,  
ambiguity, and abnormal situations.



*Leadership / Followership Skill*  
*Definitions*

**Initiative**

Begins an action, without external direction,  
to overcome a perceived deficiency.

# *Leadership / Followership Skills*

- Envisioning
- Influence
- Modeling
- Adaptability
- Receptiveness
- Initiative



# **Facilitating LOS Debriefings:**

## **A Training Manual**

Lori K. McDonnell, Kimberly K. Jobe,  
and R. Key Dismukes

March 1997

National Aeronautics and Space Administration

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Ames Research Center, Moffett Field, California

March 1997

National Aeronautics and Space Administration

Ames Research Center

Moffett Field, California 94035-1000

## Preface

This manual is based on our study of LOFT debriefings at several U.S. airlines. The suggestions in this manual are derived from the data from that study, our subjective impressions, the experiences the LOFT instructors shared, and general literature on facilitation. Data and references to relevant literature from the study are available in the published report: *LOFT Debriefings: An Analysis of Instructor Techniques and Crew Participation*, by R.K. Dismukes, K.K. Jobe, and L.K. McDonnell (NASA Technical Memorandum 110442; March 1997).

This material is presented as suggestions rather than rules because facilitation is very much a personal skill and each instructor must develop an approach with which he or she is comfortable. These suggestions provide a tool kit of techniques instructors may draw upon to develop their own style.

This study was funded by the FAA's Office of the Chief Scientist and Technical Advisor for Human Factors (AAR- I 00). Eleana Edens was the program manager.

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# Facilitating LOS Debriefings: A Training Manual

Lori K. McDonnell<sup>1</sup>, Kimberly K. Jobe<sup>1</sup>, R. Key Dismukes<sup>2</sup>

**Ames Research Center**

## ***SUMMARY***

*This manual is a practical guide to help airline instructors effectively facilitate debriefings of Line Oriented Simulations (LOS). It is based on a recently completed study of Line Oriented Flight Training (LOFT) debriefings at several U.S. airlines. As a companion piece to the published report of that study (LOFT Debriefings: An Analysis of Instructor Techniques and Crew Participation, by R.K. Dismukes, K.K. Jobe, and L.K. McDonnell, NASA Technical Memorandum 110442, March 1997), this manual presents specific facilitation tools instructors can use to achieve debriefing objectives. The approach of the manual is to be flexible so it can be tailored to the individual needs of each airline. Part One clarifies the purpose and objectives of facilitation in the LOS setting. Part Two provides recommendations for clarifying roles and expectations and presents a model for organizing discussion. Part Three suggests techniques for eliciting active crew participation and in-depth analysis and evaluation. Finally, in Part Four, these techniques are organized according to the facilitation model. Examples of how to effectively use the techniques are provided throughout, including strategies to try when the debriefing objectives are not being fully achieved.*

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<sup>2</sup>NASA Ames Research Center

## **Part 1 - An Introduction to Facilitation**

Keep the discussion crew-centered.

How much crews learn in Line Oriented Simulations (LOS) and take back to the line hinges on the effectiveness of the LOS debriefing. The simulation itself is a busy and intense experience; thoughtful discussion afterwards is necessary so the crew can sort out and interpret what happened and why. As the instructor, you are expected to encourage the crewmembers to analyze their LOS performance on their own, rather than lecturing to them about what they did right and wrong. This "crew-centered" approach emphasizes self-discovery and self-critique. The crew-centered approach also draws upon the crew's professional experience and motivation to perform well to enhance learning.

Encourage crewmembers to participate actively.

The rationale for crew-centered debriefings is that adults learn and remember more when they participate actively and make their own analyses rather than when they listen passively to someone else's. Active participation in the debriefing requires the crewmembers to process the information more deeply, enabling them to draw upon that information more readily and more effectively in a wide range of line situations.

Promote transfer of learning to the line.

Another advantage of the crew-centered approach is that crewmembers who actively discuss Crew Resource Management (CRM) concepts and company procedures tend to "buy-in" more deeply than those who are only given lectures on proper procedures. Therefore, crewmembers who participate actively may be more likely to transfer learning from the LOS to the line. The goal is for crewmembers to develop the habit of analyzing their own CRM and technical performance following line operations, a practice which is still rare in civil operations. The LOS debriefing provides an opportunity for showing crews how to debrief and for illustrating the benefits of self-debriefing.

Facilitation does have one distinct disadvantage: it is considerably slower than lecturing so less material can be covered in a short time. Some types of material, such as teaching the mechanics of a hydraulic system, are better suited to lecturing than facilitation. However, this type of instruction is not the primary purpose of the LOS debriefing; the primary purpose is to help crews analyze their performance and identify how they used CRM to manage all aspects of the LOS. (CRM is a method of managing all aspects of flight operations. Thus, discussion of CRM includes flight management issues such as teamwork, workload management, task management, and communication, as well as associated technical issues.)

The facilitation techniques presented in this manual are intended to provide you, the instructor, with a set of tools you can use to effectively facilitate crew-centered debriefings. These tools supplement, rather than replace, the skills you already possess. Becoming skillful at facilitation requires practice, but once mastered it enables you to increase what crewmembers learn and take back to the line.

Use facilitation to meet debriefing objectives.

Effective facilitation enables you to meet the following objectives of crew-centered debriefings:

- Crewmembers discuss issues directly with each other (rather than interacting solely with you, the instructor) and discover as much on their own as possible.
- The crew thoroughly analyzes and evaluates what happened in the LOS, how they handled the situation, what went well, what could be improved, and how to improve it.

- The crew recognizes how CRM techniques helped them manage or could have helped them manage the situations they encountered in the LOS.
- Crewmembers leave the session with a better understanding of how they can use CRM on the line to enhance safety and efficiency.
- The crew is encouraged to develop the habit of self-debriefing following line operations.

## *Instruction vs. Facilitation*

Ensure crewmembers do most of the talking.

In a crew-centered debriefing, the objective is for you, as the instructor, to facilitate crew discussion so that the crewmembers do most of the talking, participate proactively, discuss issues with each other, and thoroughly analyze the situations that confronted them as well as how they managed those situations. Some of the CRM literature espouses the ideal that crews debrief themselves and use the instructor as a resource. Realistically, most crews lack sufficient experience in analyzing the CRM aspects of cockpit operations to be able to conduct their own debriefings without assistance. Thus, as the instructor, you need to facilitate the crew's analysis of their LOS performance and avoid centering the debriefing on your own perceptions. Crews vary considerably in how well they analyze what happened in the LOS and how well they respond to encouragement to participate actively; thus, you must adapt the level of facilitation to the capabilities of each crew. (The levels of facilitation are discussed in detail later in this section.)

Adapt the level of facilitation you use to the capabilities of each crew.

The concept of facilitation was originally derived from settings outside of aviation. In some of those settings the facilitator would act only as a moderator of discussion and lacked the technical expertise held by the group members. In the LOS setting, however, you play the dual role of facilitator and instructor. Through facilitation you enable the crew to figure things out for themselves; your expertise as an instructor enhances the crew's understanding of the points they missed on their own.

Exercise your dual role as instructor and facilitator.

Reinforce good crew performance following crew analysis.

Facilitation does not require that you withhold your own perspectives. From 'the back of the cab' you often see things the crew does not notice and you can share your experience in how CRM can be used to manage the specific events that occurred in the LOS scenario. Since crews learn better when guided to self discovery, you should use facilitation to promote that self discovery in the crew and encourage the crewmembers to analyze their performance to the fullest extent possible. Once crewmembers have completed their analysis, you can reinforce the things the crew did well. For the points crewmembers miss, you can provide the instruction necessary to ensure the training objectives are met.

Additionally, at times you may need to correct erroneous statements made by the crew and/or provide specific information the crewmembers lack. This is better done by direct instruction than through facilitation. You can either integrate brief instructional comments into the crew's discussion or provide instruction as needed after crewmembers have finished their analysis.

When guiding the crew's analysis, you should avoid creating the impression of leading the crew to predetermined answers. The crew will not be motivated to participate unless you convey that the topics, issues, and perceptions they raise are important.

### ***What You Should Do to Facilitate the Debriefing***

- Set expectations for crew participation.
- Guide the session to the extent necessary to achieve the debriefing objectives.
- Adjust facilitation to the level needed to engage the crew to the maximum extent possible.
- Draw out quiet crewmembers.
- Ensure that all critical topics are covered.
- Integrate instructional points as needed into the crew's discussion.
- Reinforce positive aspects of the crew's behavior.

### ***What You Should Avoid Doing***

- **Avoid lecturing and having the debriefing become an instructor-centered session.**

Long monologues or giving your own analysis and evaluation before allowing the crew to work issues out for themselves preempts the crew's own analysis and participation. Avoiding lecturing does not mean you cannot teach, but you should teach through facilitation by integrating your own perspectives into the crew's discussion. Rather than telling the crew what they did wrong during the LOS and how they can improve, try to get the crew to figure it out for themselves. If they discover what they need to work on by themselves, then they are much more likely to learn from their mistakes and carry that learning over to the line.

- **Avoid giving your own analysis and evaluation before the crew has completed their analysis.**

Crews learn the most from their LOS experience when they make their own analyses. It is important that crewmembers learn to analyze and evaluate their own performance so that they can develop the habit of debriefing their performance following line operations. If you give your analysis before the crew does, the crew will feel less responsible for making their own analysis. When a second instructor is playing the role of a crewmember, he or she should participate as a crewmember but should wait and give his or her

analysis after the 'real' crewmembers have had the opportunity to analyze their performance as a crew.

- **Avoid giving the impression that only your perceptions are important.**

You need to make it clear to the crew that you are interested in what they have to say in order to encourage them to participate actively and analyze and evaluate their performance in depth.

- **Avoid interrupting crew discussion.**

Interrupting shows a lack of interest in the crew's views and may disrupt their train of thought and hinder their process of self discovery. Interruptions also undermine the crew's sense of responsibility for making their own analysis and evaluation. Rather than interrupting a crewmember, try writing a note to yourself and then bring up your issue after the crewmember has completed his or her comment. (Interrupting may be necessary if a crewmember makes a statement contrary to your company's SOP or the FARS.)

- **Avoid interrogation; be positive when discussing problems.**

In order for the crew to be able to take responsibility for initiating topics and discussing issues interactively, you must work to keep the discussion crew-centered. Asking questions in a manner that resembles interrogation rather than guidance can hinder crew discussion, forcing the crew into a reactive, rather than a proactive, role.

- **Avoid having a rigid agenda**

Have the crew help develop the agenda to encourage them to identify areas in the LOS where they did well and/or need improvement. Keep the focus of the debriefing on topics introduced by the crew, but introduce your own points as necessary to expand on crew-initiated topics and to cover important issues not initiated by the crew.

- **Avoid shortchanging high-performing crews by cutting their sessions short.**

Do not assume that because a crew did well there is nothing to talk about so a shorter session will suffice. Crews that perform well may not know why the LOS went well. Make sure that these crews recognize and discuss which CRM techniques resulted in their positive outcomes so the crewmembers can transfer this knowledge to other situations and when pairing with other crewmembers on the line. Good crews can learn from analyzing what they did well and *why* it worked. By analyzing their performance the crew can learn what strategies were effective and how to use those strategies on the line. Crewmembers are more likely to transfer effective performance to the line if it has been reinforced by discussion.

## **Levels of Facilitation**

Your role as the instructor in the debriefing session will vary as a function of the level of facilitation needed for each crew. Ideally, the crew will be able to analyze and evaluate their own performance and you will need to give only minimal guidance, thus utilizing high-level facilitation. Unfortunately, this rarely happens in the current training environment. Most crews lack the experience to participate at this level. Thus, you must adapt to the capabilities of each crew. Currently, most debriefing sessions are conducted at an intermediate level of facilitation. These sessions are largely driven by the instructor, who leads the crew to important topics and utilizes questions to evoke in-depth analysis and evaluation by the crew.

Use the highest level of facilitation possible.

The level at which facilitation is conducted is a broad continuum from high (most desirable) to low (least desirable). To illustrate this, we will discuss the high, intermediate, and low ranges in detail. Be aware that you may need to adjust the level of facilitation to whatever level is appropriate throughout the session. You should always strive to work at the highest level of facilitation (i.e., the least interference on your part) at which each crew is able to respond. If you facilitate at too low of a level (i.e. more interference from you), the crew will be prevented from participating to their full capability. A sign of skillful facilitation is being able to recognize what level is appropriate for each crew, as well as being able to adapt to the varying needs of individual crewmembers as the debriefing discussion shifts from one topic to another.

Adapt the level to accommodate varying needs throughout the session.

If you consistently use facilitation to generate crew-centered debriefings, crews will gain experience as they go through recurrent LOS and they will participate at increasingly higher levels each year.

## ***High-Level Facilitation***

High-level facilitation is possible when the crew discovers and discusses important issues on their own with little guidance. Debriefing at this level provides the deepest and most enduring learning because the crewmembers guide their own self-discovery. For facilitating at this level, the crewmembers must be able to identify important topics and issues that arose during the LOS, set an agenda for discussing these issues, and critically analyze the situation they faced and evaluate how well they performed.

At this level of facilitation, your role as the instructor is to inform the crew of the objectives for the debriefing, outline the debriefing process, and assist in guiding the discussion only when necessary. As the instructor, from your advantaged position as an experienced observer, you serve as a resource for the crew to help reinforce crew observations and supplement their perceptions. Although you retain responsibility for ensuring that the debriefing

objectives are met, you achieve this through general guidance rather than leading the discussion moment-to-moment.

### ***Intermediate-Level Facilitation***

When crewmembers are not as adept at conducting their own analysis and evaluation of the LOS, you must lead the discussion more directly. At the intermediate level of facilitation you may have to help the crew discover important issues and lessons by asking questions which lead them to specific issues and topics. You may also need to encourage the crew to analyze the situation and their performance in greater detail. At this level, crewmembers are able to achieve self-discovery through analysis and evaluation of their performance with your guidance. You may need to supplement crew analyses substantially, but should do so only after the crewmembers have completed their own analysis.

### ***Low-Level Facilitation***

Low-level facilitation does not imply inadequate facilitation on your part as the instructor; rather, it is the necessary and appropriate level to use when crews do not respond to higher levels. When crewmembers show little initiative and respond only superficially to your efforts to get them to analyze the LOS situations and evaluate their own performance, you may be forced to be more direct and to lead the discussion step by step. However, few crews are truly incapable of participating at a higher level. (Before retreating to this level of facilitation, be sure that you are not unwittingly discouraging crew participation by conveying the tone of an interrogation or by showing a lack of interest in what the crewmembers say.) At this level, self-discovery by the crew is limited but you should still use facilitation techniques to lead the crew to critical issues, appropriate solutions, and correct evaluation. At the end of the discussion of each topic you may have to explicitly summarize the nature of the problem encountered in the LOS and describe how it should be handled. When low-level facilitation is necessary, continue trying to elicit crew participation at a higher level. If it becomes necessary to instruct the crew on important points, confirm that they understand and agree, and continue to encourage them to initiate further discussion on the own.

## **Criteria for Effective Crew Participation**

In order to determine the appropriate level of facilitation to use, you need to be aware of how capable the crewmembers are of participating. The following criteria can be used to determine what level is appropriate for each crew at various times during the debriefing. If the crewmembers meet all of these criteria, high-level facilitation is best. If not, intermediate- or low-level facilitation may need to be used.

- Crewmembers analyze in depth their LOS performance,
- discussing the situations they confronted, what they did to manage the situations, and why they made the decisions and performed the actions they did.
- Crewmembers *evaluate* in depth their LOS performance, discussing what went well, what did not go well, and how their performance could have been improved.
- Crewmembers discuss how CRM techniques helped them manage or could have helped them manage the situations they encountered in the LOS.
- Crewmembers address each other directly and interactively discuss the LOS rather than merely respond to your direction.

## **Criteria for Effective Instructor Facilitation**

Your effectiveness in facilitating the debriefing can be measured according to the following criteria:

- You facilitate the crew discussion at the highest level possible, guiding the discussion only to the extent necessary to help the crew accomplish the objectives of the debriefing.
- You modify the level of your facilitation to accommodate the crew's needs throughout the debriefing. If the crew does not need guidance, you refrain from interfering with crew discussion. If the crew needs guidance, you use intermediate level strategies to elicit continued and/or deeper discussion and revert to low-level facilitation only if necessary to ensure important lessons are learned.
- You ensure that the crewmembers analyze their performance in depth, identify CRM techniques that played or should have played a role in the LOS, and discuss the LOS with each other in an interactive way.
- You ensure that all critical topics are covered.



# *Part 2. Getting Started*

## **Clarifying Roles and Expectations: The Introduction**

### ***The Purpose of the Introduction***

- To explicitly state how the crew should participate in the debriefing and how you, the instructor, will participate.
- To provide a persuasive rationale for crew-centered debriefing.

### ***Why Introductions are Important***

- The crew can't be expected to participate in a certain way if they are not told *how* they are expected to participate. Individuals want and need to know what is expected of them.
- A good introduction encourages the crew to take responsibility for the debriefing session.
- Introductions have been shown to increase the amount and depth of crew participation.

### ***Important Points to Include in the Introduction***

Effective introductions should address all of the issues in the following four categories.

Clarify your role as instructor.

#### ***The Instructor's Role***

- Outline the process for the debriefing and help establish an agenda.
- Help the crew identify topics and facilitate crew discussion as necessary.
- Act as a resource for CRM and technical issues.
- Keep discussion crew-centered rather than instructor-centered.
- Ensure that the training objectives are met.

#### ***The Crew's Responsibilities***

Detail your expectations for crew participation.

- Raise issues and initiate discussion.
- Discuss issues directly with each other rather than only with the instructor.
- Discuss CRM techniques used during the LOS and other techniques which could have been used profitably.
- Critically analyze the situations that were encountered and how they attempted to manage those situations.
- Evaluate how things turned out and why.
- Discuss what, if anything, they would do differently in the future.

## ***The Rationale for Using Crew-Centered Debriefing***

Provide a persuasive rationale for the debriefing being crew-centered.

- Crews learn better through self-discovery and self-analysis than by lecture.
- It draws upon crews' professional expertise and motivation to perform well.
- It helps the instructor, understand the crew's performance.

## ***The Expected Length and Format of the Debriefing***

Tell the crew how long the session will last.

- Tell the crew how long the session will last (so they will not be motivated to keep quiet in hopes of a short session). A thorough crew-centered debriefing can usually be accomplished in an hour.

Explain the format the debriefing will follow.

- Tell crews explicitly what format will be used for the debriefing (e.g., setting an agenda of topics to discuss, using videos to introduce and supplement discussion, using the model presented in this manual to keep focused on important topics).

### ***A Sample Introduction***

*"How much you learn from the LOS depends on discussing it afterwards: Analyzing the situations that confronted you; analyzing what you did to manage those situations, evaluating how well it worked out, and identifying anything you might want to do differently. It is very important that you make this analysis on your own. We all know how much more we learn when we work something out ourselves than when we listen to a lecture about it, especially if it concerns our own performance. So, if you are expecting a lecture from me, forget it!*

*I realize that debriefing yourselves may be new to you, so I will act as a guide and help you get started. I encourage you, however, to take the initiative instead of waiting for me to raise issues. When you see the video, please analyze what happened, what you did to manage the situation, and why you did it that way. What was the most difficult aspect and why? What CRM issues were involved and what CRM techniques did you use? We are not looking for a scripted solution here, because every situation on the line is a little different. The point of this exercise is for you to develop the habit of analyzing line situations and determining for yourselves how to best use all of your resources to manage those situations.*

*I expect you to do most of the talking, raise questions about what was going on, identify issues, and volunteer your perspectives. You can use the agenda of topics we develop to structure your discussion. For each topic you need to go beyond just describing what happened and what you did. You need to dig deep, to analyze why it happened that way, what management techniques seem to work best, and what you might have done differently. This works best when you discuss the issues with each other and reach your own conclusions about the factors that contribute to successful operations.*

*This session will last about (x) minutes. I have marked several places on the video that illustrate interesting aspects of the flight. But, before we start looking at those video segments, what portions of the flight do you feel are most important to discuss? "*

## Debriefing Format

### *Developing an Agenda for the Discussion*

Help the crew develop an agenda and identify issues for discussion.

A primary debriefing objective is for discussion to be crew centered. As the instructor, you play a critical role in helping the crew develop a structure for their discussion and in ensuring that all important issues that arose during the LOS are covered. It is important to get the crewmembers to actively participate in developing the agenda so they can develop the skill of identifying issues that arise in line operations.

Ask the crew to identify any topics, situations, or performance issues they would like to discuss. Remind them to include aspects of their performance that worked well, not just aspects that might be improved.

Ensure that all critical issues are covered.

The issues you noted during the LOS are also an important part of the debriefing agenda. As the instructor, you need to ensure that all critical issues are covered. You can introduce issues not identified by the crew at an appropriate point during the debriefing. (A good way to improve the ability of crews to identify issues for discussion is to suggest during the pre-LOS briefing that they make note of issues they want to discuss in the debriefing.)

Typically, it is easiest to discuss phases of the flight in chronological order so videotaped segments of the LOS performance can be incorporated into the discussion without requiring extensive searching on the VCR. However, this is largely a matter of personal preference and some instructors prefer to start the discussion immediately when crewmembers suggest a topic in order to reinforce the crew's initiative. One advantage of showing video segments related to each topic is that after viewing their performance objectively, crewmembers may be better able to analyze and evaluate their performance in depth.

## ***Organizing the Discussion: The C-A-L Model***

Use the C-A-L Model as a framework for discussion.

The C-A-L Model incorporates three main concepts: CRM (C), Analysis and evaluation of LOS performance (A), and application to Line operations (L). This model provides a simple framework for crew discussion of each LOS situation or topic. Posting a copy of the model (Appendix A) on the wallboard will help remind the crew of each aspect of their performance they should address. Part 4 of this manual addresses in detail how to put this model to work.

### **C-A-L Model for LOS Debriefings**

#### **CRM - Applying the company model**

Use wallboards with list of CRM concepts.

- Tie CRM concepts and techniques to operational issues.

Put CRM into practice.

- Crew discussion of the LOS should be interactive.

#### **Analysis and Evaluation of LOS performance**

Explicitly evaluate performance during the LOS.

- How effective was management of the situation?
  - What went well, and why?
  - What could be improved, and how?

Interactively analyze the situation confronted.

- What happened?
- How was it managed (include CRM techniques utilized)?
- Why it was managed that way?

#### **Line Operations - Applying lessons from LOS**

Discuss how the LOS performance and associated CRM issues relate to line operations.

- Discuss related line incidents that illustrate CRM issues.
- Discuss how to apply LOS success to line operations.

Discuss how things could have been done differently.

- What could have been done differently to improve the outcome in the LOS?
  - What CRM techniques could have helped?
  - How could you turn *areas for improvement into strengths*?
- What can be done to prevent or manage similar situations on the line?

## *Part 3. Facilitation Techniques*

Part of your role as the instructor is to ensure that the crewmembers analyze and evaluate LOS situations and their performance in depth. One of the greatest difficulties you may encounter is getting the crew to go beyond a superficial description of LOS events. The objective is to encourage crewmembers to not just discuss what happened- they should discuss why. they did what they did to manage the situation and *why* the situation turned out the way it did. Discussing why helps crewmembers better understand what knowledge and information played a role in their decision-making process, which in turn can help them learn to make better decisions in the future.

This section will demonstrate how to effectively use the techniques that are-essential to successful facilitation. The next section (Part 4) will show how to integrate these techniques utilizing the C-A-L model.

### *Questions*

Use questions to promote in-depth crew participation.

Questions are useful to guide the crew to important topics and encourage them to analyze and evaluate their LOS performance in-depth. Although questions are one of your most useful tools, you should be wary of dominating the discussion with your own questions. To the extent necessary, you can use questions to help the crewmembers identify issues and follow up on topics, and to encourage them to thoroughly analyze their performance through direct discussion with each other. Ideally, questions should be phrased to require more than a simple "yes" or "no" answer; questions should push the crew to analyze their performance at a deeper level.

*Note: The examples used in this section were taken from actual debriefings. The participants' titles have been substituted for names:*

*IP = Instructor Pilot      FE = Flight Engineer*  
*CA = Captain              FEI = Instructor acting as Flight Engineer*  
*FO = First Officer*

## ***Set the Scene and Ask for Crew Reaction***

A good way to start a discussion of a LOS event is to show the video segment and/or describe the situation and then ask an open ended question: "What went well (or not so well) there?" or "What lessons can be learned from this?"

If the crew does not respond, try again with a more focused' question: "Is there anything you would do differently if you had it to do over?" or "Did you see anything in the video that was not SOP?"

## ***Lead the Crew to Topics***

If the crewmembers seem unsure of what to discuss next, or if they overlook an important aspect of a situation, you may need to ask a question to focus their attention on some topic or aspect. However, be careful to phrase the question so it is not easy to answer with a simple yes or no and so it does not leave the crew with nothing to say.

### **Effective:**

IP: What else about how you handled that emergency situation can you discuss?

CA: Well now that you mention it I guess we did get a little bit rushed there and we didn't communicate as well as we could have.

### **Ineffective:**

IP: Did you get a little rushed at that point, making communication a little more difficult?

CA: Yeah, we did.

## ***Deepen the Discussion***

Once the crew has begun to discuss a topic, you may need to encourage them to explore in more depth what happened. Ask questions that require the crewmembers to explore their thoughts and actions in the LOS. Avoid asking questions that give the answer or leave little for them to say.

### **Effective:**

IP: Was there anything that made you uncomfortable during that first leg?

FO: Well, yeah, I guess the R-Nav approach did. I wasn't comfortable with it because I didn't know we could shoot an R-Nav approach in there; I thought we were supposed to shoot a VOR.

-or-

(continued on next page)

IP: Was there anything that made you uncomfortable during that first leg?  
FO: Uh ... not that I can think of  
IP: What about the R-NAV approach?  
FO: Well, yeah, I guess the R-Nav approach did. I wasn't comfortable with it because I didn't know we could shoot an R-Nav approach in there; I thought we were supposed to shoot a VOR.

**Ineffective:**

IP: You seemed a little uncomfortable with that R-NAV approach. Were you?  
FO: Well, yeah, I guess I was.

### ***Follow-Up on Crew Topics***

Ask questions that begin with *what, how, or why* to encourage deeper discussion.

It is important to follow-up on topics initiated by the crewmembers and to encourage the crew to explore their topics fully. Following up on crew topics demonstrates to the crew that their thoughts and ideas are important and reinforces their initiative. To obtain greater depth and detail on topics initiated by the crewmembers, ask questions that begin with *what, how, and to why*. For instance, in the first example below, the more-skillful instructor follows up and gets the CA to continue on the FE's observation while the less-effective instructor moves on to another topic. In the second example, a more in-depth answer is elicited by the more-effective instructor.

**Effective:**

FE: I think I should have just taken care of that for CA; tried to get that system back.  
IP: Let's talk about that. How did you feel about it, CA?  
CA: Well, at that particular point I knew we had to stay away from the rocks, we had isolated the hydraulic system, and I was just not comfortable giving up control of the airplane to FO. I just wanted to fly out of there. I had B system, and it's a lot more powerful than the standby A system, so I really didn't need that system back.

**Ineffective:**

FE: I think I should have just taken care of that for CA; tried to get that system back.  
IP: I agree. Now, what's next on the list?

**Effective:**

FO: I felt pretty comfortable on the single engine approach.

IP: Yeah? Why? What made you feel comfortable?

FO: *[describes in detail why he thought he did so well]*

**Ineffective:**

FO: I felt pretty comfortable -on the single engine approach.

IP: Yeah, I thought you handled it well, too.

***Turn Crew Questions and Comments Back to Them***

Encourage the crew to discover their own answers.

If a crewmember makes a comment or asks a question, avoid using this as a springboard for presenting your own perspectives. Instead, turn the topic back to the crew for discussion. Continue to redirect their questions and comments to encourage the crew to work out answers for themselves. Your questions are a powerful tool for blending your observations into the discussion without dominating. After the crewmembers have addressed everything they can, you can add teaching points they have not yet discovered.

**Effective:**

FO: I don't know what happened **there**. Did I overrotate?

IP: Did you overrotate?

FO: Well 'I started going through it at about twenty degrees.

CA: Well, we may have gone over twenty just a little bit.

IP: Why don't you talk about that?

**Effective:**

CA: How did you think we reacted as a crew to that compound emergency?

IP: I'll save my remarks for the end. Each of you tell us how you think you reacted as a crew to the emergency.

***Get Crewmembers to Actively Participate***

Make sure that all crewmembers are fully drawn into the discussion.

It is important to ensure that all members of the crew actively participate in the debriefing so they can all experience the higher level of learning that results from taking an active role in the learning process. Also, the crew cannot fully analyze and understand their performance as a team without each member's perspective. The following techniques can be used to promote active participation by all crewmembers.



## *Drawing Out a Quiet Crewmember*

If one crewmember does not volunteer comments and responds only minimally to questions, you can use several techniques to encourage his or her participation:

- **Ask the quiet crewmember to discuss how effectively the crew performed in the LOS.**  
It is relatively easy to respond to this type of question because there is no right or wrong answer and all crewmembers are likely to have an opinion,.

### **Effective:**

- "FE, how effectively do you think you performed as a crew in resolving the TCAS alert incident?"

- **Re-direct a question to the quiet crewmember.**

If your questions are predominantly answered by the same crewmember, repeat the question after the dominant crewmember has responded so that the quiet crewmember will be required to participate and communicate his or her opinions and ideas.

### **Effective:**

IP: How did you like that first leg? What did you like about it?

FO: *[describes what he feels went well on the first leg]*

IP: CA, what did you like about the first leg?

CA: *[describes the things she thinks went well]*

- **Ask the quiet crewmember to expand on what another crewmember said.**

If a crewmember sits silently while another does all of the talking, it may be helpful to ask the silent one to expand on what was said by discussing a new aspect of the topic. This technique will make it easier for the quiet member to find something to say.

### **Effective:**

- "FO, how do you think, as a crew, you could have handled the situation the CA was discussing?"

## ***Drawing Out an Entire Crew***

Avoid unwittingly hindering crew participation.

Sometimes all or most of the crewmembers are unresponsive and getting them to participate seems like pulling teeth. When happens, you should first review your own participation to ensure that you are not unwittingly sending covert messages that discourage crew participation. To instigate crew participation, it may be helpful to start with the more junior members so they will not be put in the position of potentially disagreeing with the CA early in the session. The next section suggests specific ways to stimulate participation when crews do not immediately respond.

### ***Troubleshooting: When the Crew Does Not Respond to Questions.***

If crewmembers do not immediately respond to questions, the following techniques may be helpful in eliciting responses. Start with the highest level of facilitation and progressively work down only through the levels necessary so that facilitation stays at the highest level possible.

#### ***High-Level Facilitation***

Don't answer for the crew when they don't immediately respond

- Use silence/pauses to elicit crew responses.  
Pause at least three to four seconds after asking a question rather than immediately answering for the crew. Most crewmembers will feel motivated to say something to end the uncomfortable silence (see the following section: Use of Silence).

##### **Effective:**

IP: Has there ever been a flight where errors didn't occur?

CA: No.

IP: And what do we want to have happen when errors do occur?

*[IP waits 8 seconds]*

CA: We want somebody to say something and correct the error.

IP: Exactly.

##### **Ineffective:**

IP: Has there ever been a flight where errors didn't occur?

CA: No.

IP: And what do we want to have happen when errors do occur?

*[IP becomes uncomfortable when crew doesn't answer right away and answers for them.]*

IP: We want someone to notice that error, don't we?

## *Intermediate-Level Facilitation*

- **Reword questions rather than give answers.**

When crewmembers do not answer a question after five to ten seconds of silence, it may be necessary to rephrase the question to make the intent of the question clearer or to ask a more specific question. If they still do not answer, again pause to allow them time to formulate a thoughtful response. Rephrasing the question may give the crewmembers the cue they need to spark a response, as demonstrated in the examples which follow. By being persistent and patient, you reinforce that the crewmembers are responsible for their own learning and that they are not going to get away with passively sitting by and waiting to be told the answers. When you answer for the crew or rephrase questions in a way that leaves little for the crew to say, you inhibit in-depth crew participation and hinder crew learning.

**Effective:**

IP: How did you manage the situation that arose? *[The crew does not respond, so the IP asks a more specific question.]*

IP: What CRM techniques did you use to resolve the situation?

CA: I created time by letting the FO fly the plane while I ran the emergency checklist.

**Ineffective:**

IP: How did you manage the situation that arose? *[The crew does not respond, so the IP answers for them.]* IP: You created time, didn't you?

**Effective:**

FO: I don't like the idea of having to roll the trim all the way down and then forgetting about it.

IP: I agree. What do you think they could do to make that better?

FO: Uh... *[trails off]*

*[Rather than answering for the crew, the IP rephrases the question to clarify what was not understood.]*

IP: What could you do to take care of that if you were redesigning the, checklist?

FO: I would reorganize the section on de-icing and have another after-start checklist again because that's where the confusion is. That's where the flow is broken up.

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**Ineffective:**

FO: I don't like the idea of having to roll the trim all the way down and then forgetting about it.

IP: . I agree. What do you think they could do to make that better?

FO: Uh... *[trails off]*

*[IP rephrases the question, but new question leaves little for crew to say.]*

IP: Couldn't they reorganize the checklist so that item appeared sooner?

FO: Uh, yeah, I guess so.

**Effective:**

If the crew does not respond to the question "What was the weak part of your V 1 cut?" and the problem was that they were trying to do a checklist and struggle with the airplane when they could have had the autopilot on, rather than pointing that out for them, ask a more specific question. - "What other resource could you have been utilizing at the time to help in that situation?"

**Effective:**

If the crew does not respond to the question "Why didn't you finish the checklist?" and the reason they didn't finish was that they were distracted by a warning light, rather than saying it for them, ask a more specific question.

- "Was there something that distracted you during the checklist"

## ***Low-Level Facilitation***

- **Answer for the crew, but confirm that they understand and agree.**

If the above facilitation techniques still do not elicit a response from the crew, or if the response given lacks depth, it may be necessary to briefly instruct the crew to ensure that they learn from the situation so they can apply the lesson on the line. If it becomes necessary to instruct the crew on certain issues, be sure to verify that they understand and agree because if they don't the opportunity for learning may be lost. It is important to continue trying to involve the crew as much as possible. Once you have shared your knowledge with the crew and elicited their agreement, try to return to a higher level of facilitation by asking for the crew's opinion, asking them to expand on the issue, or asking them to give an example of what you discussed from their line experience.

## *Use of Silence*

Use silence to elicit thoughtful crew responses.

Silence can be a very useful tool to elicit thoughtful crew responses. Most people are uncomfortable with silence in a group setting and are more likely to make some kind of response the longer the silence lasts. Without realizing it, instructors often allow only a second or two for a response to their question before either calling on someone else or giving the answer. However, a second is generally not long enough to formulate a thoughtful response, especially to complex questions.

## *Benefits of Using Silence*

Studies show that waiting three to four seconds after asking a question greatly improves the number and quality of responses. The specific benefits of pausing at least three seconds include:

- crewmembers produce longer and more confident responses.
- crewmembers are more likely to volunteer unsolicited responses.
- crewmembers interact more with each other.
- crewmembers ask more questions.
- less articulate crewmembers participate more.

## *What to Do during Silence*

In order to minimize the discomfort often associated with even brief periods of silence, it is important to behave in a way that makes the crew feel at ease.

- **Look relaxed, not anxious or impatient.**  
For the crew to feel comfortable with silence, it is important that you appear at ease. Appearing tense and anxious will give the crew clear non-verbal cues that silence is not appreciated.
- **Sit back.**  
Sitting on the edge of your seat may be interpreted by the crew as a sign of impatience. Sitting back in your seat, however, helps demonstrate that you are comfortable allowing periods of silence for the crew to think before they respond.
- **Smile.**  
Smiling conveys reassurance and acceptance, which can help put the crew at ease.

## *Strategies for Using Silence*

Silence can be used throughout the session to encourage crew participation, not only after asking a question but also after crew comments. Using silence is a high-level facilitation strategy-if silence alone does not elicit crew discussion, try the next level of facilitation.

### *High-Level Facilitation*

- **Pause after asking questions to allow crewmembers to formulate thoughtful responses.**

When crewmembers do not immediately respond, be patient; remain silent rather than answer for them.

#### **Effective:**

IP: How did you feel things were going on the first leg overall, FO?

FO: Uh... *[trails off]*

*[IP waits 6 seconds,]*

FO: I felt a little disorganized pushing off of twenty-three and taxiing out, and doing all of that and then having to de-ice. That breaks your flow because you don't put the flaps down. So it just seemed backwards to me.

#### **Ineffective:**

IP: How did you feel things were going on the first leg overall, FO?

FO: Uh... *[trails off]*

*[IP answers for him.]*

IP: You felt a little uncomfortable, didn't you?

- **Pause after crew comments to allow crewmembers to resume discussion.**

When there is a lull in crew discussion, be patient and wait for the crew to say more rather than immediately adding your own input.

#### **Effective:**

IP: FO, what do you think about what CA just said?

FO: I think we all agreed it was a thousand. I was flying and still listening to what they were saying and it sounded okay to me.

*[IP pauses 8 seconds]*

FE: I think that things worked out pretty well because when FO was flying he was doing a good job and we didn't have to worry about that part.

CA: Yeah, I agree with you FE. I was comfortable with FO's flying the airplane even when I was out of the loop because he was always ahead of the airplane.

## ***Intermediate-Level Facilitation***

(Also see Troubleshooting in the previous section.)

- **Ask crew to comment or elaborate on what was just said.** If the crew does not resume discussion after a period of silence, encourage further discussion by asking them to elaborate on their previous discussion

### **Effective:**

IP: FO, what do you think about what CA just said?

FO: I think we all agreed it was a thousand. I was flying and still listening to what they were saying and it sounded okay to me.

*[IP pauses 8 seconds, then asks crew to elaborate.*

IP: FE, how do you think this situation turned out?

FE: I think that things worked out pretty well because when [FO] was flying he was doing a good job and we didn't have to worry about that part.

## ***Low-Level Facilitation***

(Also see Troubleshooting in the previous section.)

- **Reinforce what the crew said.**  
If the crew does not resume discussion after a lengthy silence and cannot elaborate further, use the opportunity to provide the crew with positive feedback on the issue they were discussing. Not only will the feedback reinforce the issue at hand, it will also reinforce crew discussion in general.

## **Active Listen**

Good listening skills are as important to an instructor as good speaking skills. Active listening is one of the most useful tools you can use to encourage continued participation; it shows the crew that you are listening and paying attention to them and that you understand what they are saying, which in turn encourages them to keep talking. Active listening ranges from simple non-verbal gestures to expanding on crew comments. In all cases, the objective is to encourage the crew to keep talking and, in the more complex forms, to encourage deeper discussion of the issues. The following are examples of the various levels of active listening, in order from the simplest to the most complex.

- **Non-verbal.**

Nod, smile, make eye contact, sit forward in your chair, or otherwise indicate that you are interested in what is being said.

- **Short interjections.**

Interject with "Yes?", "Uh-huh...", "I see...", etc., to indicate that you are following what they are saying and to encourage them to say more.

- **Echoing.**

Repeat part of what the speaker said as a question directed back to the crew (e.g., "So you weren't sure if you were cleared for takeoff?").

- **Reflecting.**

Repeat what the speaker said in different words while retaining the same meaning (e.g., if speaker says "We didn't use good communication" you might respond with "You didn't let each other know what you were doing?").

- **Expanding.**

Expand on what the speaker said by implying more than the speaker intended (e.g., if speaker says "We didn't use good communication" you might respond with "So if you had communicated better you could have avoided getting overloaded?").

With all of these active listening techniques, the most important aspect is the tone you convey to the crew. It must be apparent from your tone that you are genuinely interested in what they have to say. Furthermore, you must convey that you are interested in their perspectives, not just in leading them to predetermined answers.

## ***Use of Video***

The videotape of the LOS session is a useful tool for enhancing the debriefing. Relevant events need to be marked on the tape during the LOS session so you can draw the crew's attention to important points for discussion.

## ***Benefits of Using Video***

An important contribution of videos may be to remind crews what transpired at critical segments during the LOS because it is often difficult for participants to remember specific details of the typically long and stressful sessions. Videos enable crews to review their actions and then examine and gain insight into their behavior with the detachment of observers. Videos can also encourage self assessment by helping crewmembers identify behaviors that were either helpful or harmful to the outcome. The realistic feedback that videos provide can make it easier for you to involve the entire crew



in a discussion of team performance, thus enhancing the overall potential of the training session.

### ***Techniques for Using Video***

- **Index important events.**

From your experience with the LOS scenario you will be aware of critical events that will challenge the crew. Index those events on the videotape during the LOS and make notes to remind yourself of important points to discuss. Also, index noteworthy examples of good and poor crew performance.

- **Do not show a video segment unless you intend to discuss it.**

The purpose of showing the video is to enhance crew analysis by refreshing their memories and giving them the opportunity to objectively evaluate their performance. If you show a video segment without discussing it, you waste both time and the opportunity for discussion.

- **Avoid showing a large number of segments or very long segments.**

In a one-hour session, 3-6 segments are usually all you will have time to adequately discuss. Try to select these 3-6 short segments to illustrate some major aspects of crew performance (good or bad) rather than showing an entire phase of flight (e.g., from top of descent to touchdown). For aspects of a crew's performance that cannot be clearly illustrated by the video, it is best to steer the discussion to these topics without introducing them with a video segment.

- **Be proficient in the use of the video equipment.**

Be very familiar with the video equipment so you can quickly find the events marked on the tape. Use the automatic index marker to find events—playing the video in fast forward while searching for segments wastes time and distracts the crew.

- **Introduce each video segment.**

Set the scene by describing the situation and where in the flight the segment to be discussed occurs. You may also find it useful to remind the crew that they will be expected to analyze what they see.

#### **Effective:**

"This segment starts just as you were lifting off from LAX. I want you to watch what happens—think about your performance and what you were thinking as you began to realize something was not right so after the video you that can analyze what happened."

#### **Ineffective:**

"Okay, here's something I wanted you to see."

- **Pause for comments.**

Pause the video when you or a crewmember makes a comment so the comment can be heard and understood. Crewmembers will feel that you are genuinely interested in what they have to say if you pause to give them your undivided attention.

**Effective:**

FO: You know, another thing that concerned me [*IP stops video so FO's comment can be heard*] was how we turned directly in to intercept the localizer and it happened quicker than I expected.

**Ineffective:**

FO: You know, another thing that concerned me was how we... [*IP does not stop video, so remainder of FO's statement can't be heard over the VCR*]

- **Pause to discuss important issues.**

Pause the video to call attention to and elicit crew discussion of a specific aspect of crew performance shown on the video. For example, rather than talking during the video and forcing the crew to compete with the noise, stop the video and encourage crew discussion.

**Effective:**

- "Okay, let's just stop here. How did you communicate to ATC what you needed from them with regard to the hydraulic problem?"
- "All right, let's just pause it right here for a second. What did you just do there?"

## *Part 4. The C-A-L Model in Action*

The C-A-L Model provides a way to structure the debriefing. The first section, CRM, suggests strategies for helping the crew focus on CRM techniques that played a role in the LOS. The second section, Analysis and Evaluation, shows how to guide crews to identify and evaluate aspects of their performance that went well or could use improvement, including analysis of why the crew did what they did and why things turned out the way they did. The third section, Line Operations, provides a structure for helping the crew explore how they can apply what they learned from their analysis of the LOS to line operations.

A good way to organize debriefing each segment of the LOS is to show the appropriate video segment and then use the components of the C-A-L Model to guide the discussion.

### *C.- CRM - Applying the Company Model*

The major purpose of LOS is to give crews a chance to practice using CRM concepts and techniques in realistic flight scenarios. Typically, crewmembers are much better prepared to talk about the purely technical aspects of a flight situation than the CRM aspects so they may need to be guided toward discussion of CRM issues pertinent to their performance in the LOS. Rather than discussing CRM as a set of abstractions, you can help crews the most by guiding them to consider how specific CRM techniques can be used to manage various flight situations.

## ***Focusing on CRM***

You can use several techniques to bring CRM into the crew's discussion in a concrete, relevant way.

- **Refer to the posted CRM concepts.**

Each company teaches a specific framework for CRM concepts that reflects the company's philosophy. Posting this conceptual framework on wallboards and referring to it during the discussion can help the crew relate CRM concepts and techniques to specific operational situations.

### **Effective:**

IP: Which of these crew effectiveness markers do you think you used to resolve that de-icing report problem?

FO: We used 'Inquiry and assertiveness' and 'Vigilance' making sure everything was okay.

### **Effective:**

IP: What CRM technique do you wish you might have used a little better?

CA: 'Anticipate required actions and workload distribution.' That was a tough one for us because we were both very busy and there's not much he can do except fly the airplane if he's flying. We're supposed to each follow along on these checklists, and I think that's something we could have been better at.

IP: What techniques can you use to manage workload better in the future?

### **Effective:**

*[The CA tells the FO to ask ATC for a holding pattern in order to have time to do a manual gear and flap extension during a video segment. The instructor stops the video, points to the posted CRM markers and asks questions.]*

IP: What CRM principle is that an example of?

CA: Create time.

IP: And how did you create time?

- Use **CRM-specific questions.**

Get the crew to explore specific CRM issues and techniques that presented themselves during the LOS.

**Effective:**

- \* "What CRM techniques might have helped in this particular situation?"
- \* "What specific CRM techniques did you use that resulted in your successful outcome?"
- \* "What kinds of challenges did the LOS present in terms of how to manage your time?"
- \* "Looking at your workload management, what CRM techniques did you use in this LOS that you learned in ground school?"

- Use **guiding questions.**

Guiding questions can be used to lead the crew to more specific and in-depth aspects of their LOS performance. In the following example the instructor encourages the crew to discuss specific aspects of teamwork that occurred during the LOS.

**Effective:**

IP: Did you feel included?

FO: Yes.

IP: What did the CA do to make you feel included?

*-or-*

IP: Did you feel included?

FO: Not really.

IP: What could the CA have done to make you feel included?

In the next example, the instructor facilitates crew discussion of specific aspects of workload management that occurred during the LOS.

**Effective:**

IP: Did you feel rushed or overworked or distracted perhaps?

FO: Yeah, I felt like I wasn't ready to turn in.

IP: But you turned in anyway?

CA: Yeah, I was ready. I didn't ask you [FO] if you were ready though.

IP: You weren't ready, FO? And could you have said something to the CA about that?

FO: I could have, but I usually don't say anything as a co-pilot unless I think I'm in dire danger.

IP: What would you have said if the FO had said "I don't feel ready 99?"

CA: I would have said "Let's take another turn in holding" then.

## ***Reinforcing the Utilization of CRM through Crew Interaction***

Encourage crewmembers to address each other directly.

Instructors and crews too often fall into a pattern of discussion that centers entirely on the instructor: The instructor asks a question, a crewmember responds, the instructor comments, and the cycle repeats. The crew will benefit in several ways, however, if you can get them to discuss their performance in the LOS directly with each other. Interactive discussion between crew members during the debriefing allows them to practice CRM skills such as communication and problem solving. It also leads them toward the ultimate goal of being able to debrief themselves in line operations. You can counter the crewmembers' natural tendency to direct their comments to you by using the following techniques.

- **Ask crewmembers to discuss how they were affected by each other's actions.**

It is important that crewmembers understand how their actions effect each other. By openly discussing these issues, crewmembers may become more aware of the impact of their actions and the importance of communicating what they are doing and why.

### **Effective:**

IP: When he was going through the checklist he said "It's in the other checklist." Did you know what he meant? Talk about that.

CA: I knew what you meant, but I just kept thinking "Are we on the right checklist?"

FE: I knew we were on the right checklist, it's just that the two are somewhat redundant. But I figured as long as we got all of the items done. But I should have said something to you.

CA: Okay. I guess I know that now, but I didn't at the time.

### **Effective:**

IP: You guys were very supportive in there. What did the Captain do to help create that environment?

FO: Well, he set the tone right off the bat during the briefing, telling us that if we had anything at all to say, we should speak up. So that made it a lot easier to say what was on my mind when I needed to.

- **Ask crewmembers to discuss what they were each thinking.**

Encouraging crewmembers to openly articulate and discuss what they were thinking may help them understand each other's point of view and thereby enhance communication.

**Effective:**

IP: CA, what did you do after you called for the engine fire checklist?

CA: I got on the radio to talk to ATC.

IP: And what did you think about that, FO?

FO: I couldn't believe you were talking to them. I thought we should have at least had the first couple of items on the checklist attacked by then.

CA: And see, my initial gut feeling was "Get this thing headed for Boston now, whether you get the fire out or not, we need to be heading that way."

IP: Why do you think that CA?

## **A: Analysis and Evaluation of LOS Performance**

Don't give your analysis or evaluation before the crew have completed theirs

For crewmembers to learn from their LOS experience, it is essential that they analyze and evaluate what happened. Crews should analyze both what went well during their LOS and what did not work as well. The analysis must go beyond simply naming the strong and weak points of their performance. Crews can gain powerful insight by analyzing why things turned out the way they did, including factors that either enabled or hindered their success. Remember to refrain from giving your analysis until the crew have completed theirs.

### ***Getting Crews to Evaluate their Performance***

It is important for crews to learn to critically evaluate their own performance in the LOS so they can carry this skill over into line operations. As the crew discusses the LOS, you may find it helpful to use a wallboard to list "strengths" and "areas for improvement" as they are identified by the crew. The following techniques may be useful in encouraging crews to evaluate their performance in depth.

- **Get the crew to talk about what went well.**

Discussing what they did well helps the crew to recognize what strategies were effective in managing the LOS challenges and how these strategies might be used in line situations. This is also a good strategy to use when crews say everything went great during the LOS, so they can actively identify exactly what went well and why.

**Effective:**

IP: FO, talk about one thing that went really well for you on that first leg.

FO: I think the fact that I didn't get overloaded at any time, that I was able to stay ahead of the airplane and because of that the rest of the leg went pretty smoothly.

**Ineffective:**

IP: You did a good job on that. Did you know you did a good job on that?

FO: No.

IP: Well, you did.

**Effective:**

- "What aspects of your performance were particularly strong on the first leg of your LOS flight?"
- "What did you like about your performance on this trip?"

- **Get the crew to talk about what could be improved, and how.**

Discussing what did not go well helps the crew identify problems that occurred, examine why they occurred, and determine how to resolve or avoid similar problems in the future.

**Effective:**

IP: What happened on your preparation for the approach; would you have done anything differently?

FO: Well, I dropped the ball by not putting the approach in there. I don't know where I was when that was happening.

CA: Well, yeah, and I didn't pick up on that either. We both missed it.

**Effective:**

IP: What did you think about your go around?

CA: I was coming down and I just hit vertical speed and then max power and then flaps 15. I was trying to be smooth, but I thought it was really poor, actually.

**Effective:**

- "Are you satisfied with how you handled the generator failure? Why or why not?"
- "Discuss one thing that you would like to have handled better during your climb out?"
- "Why did the miscue occur, and what situation led to both of you missing it?"
- "What events led to SOPs not being adhered to?"



- **Troubleshooting: When the crew says everything went great.**

Encourage crew to discuss how to handle things that don't go well.

If, when asked to evaluate their performance, the crewmembers say everything went great, facilitation may be required to encourage the crew to analyze and evaluate in more depth. If everything did go well in the LOS, encourage the crewmembers to discuss specific instances of good performance and analyze why they went as well as they did. Also, encourage them to discuss how they could have handled situations if they had not gone so well. If there were, in fact, situations that were not handled effectively, draw the crew's attention to a specific situation and ask if there is another way it could have been handled. Regardless of whether or not everything went smoothly in the LOS, it is important that the crewmembers understand both the factors that led to their successes and the factors that led to weaker aspects of their performance.

### ***Eliciting Deep Analysis***

Push the crew to go beyond just describing what happened.

To learn deeply from the LOS experience and take the lessons learned back to the line, crewmembers need insight into why events in the LOS turned out the way they did. Crewmembers can gain this insight through in-depth analysis of their LOS performance. You can help the crew analyze in depth by asking questions that require careful thought and detailed responses.

- **Ask questions that require description and analysis of LOS events.**

Open questions that require descriptive or analytical responses lead crewmembers to explore issues more thoroughly, which opens the door for deeper learning.

#### **Effective:**

"Describe what happened there and why it happened the way it did."

"What did you notice while watching that video segment of your LOS session?"

"Tell me what you did to handle that situation."

"If you had to report to the safety people about this incident, how would you describe the situation and how you handled it?"

#### **Ineffective:**

Questions beginning with "Did you" or "Do you think" enable simple responses, and thus do not promote in-depth analysis.

"Did you follow the correct checklist for that problem?"

"Do you think you handled that situation effectively?"

- **Get the crew to analyze why they made the decisions they made.**

Articulating why they did what they did helps crewmembers gain insight into their decision-making processes, as well as the factors that influenced or should have influenced their decision making.

**Effective:**

IP: The RVR was down below twenty-four hundred, but you asked for two-twenty on the speed, and I was wondering why.

CA: Well, the jet stream was real low, and there was all kinds of weather, with a warm front coming through, so I'm thinking that if we're going to be hanging close we need to be clean maneuvering, so let's add a couple initially to make it smooth but still slow it down.

**Effective:**

IP: Why did you turn off the pitot heat?

CA: Because I looked at the outside air temperature and it was plus fifteen C, so I figured we were good with that.

**Effective:**

IP: Why did you decide to go back to Minneapolis instead of continuing on to Chicago? What was your thought process?

CA: Well, I was thinking that we were still a lot closer to Minneapolis than Chicago. Then again I also knew the weather was not as good in Minneapolis as it was in Chicago, so if that sick passenger was stable in the back, I was all for going on to Chicago. But as he started to deteriorate rapidly, I thought the best course of action would be to turn around and go back because I thought the guy might die if I didn't get him back pretty quick.

**Effective:**

- "Why did you feel it was necessary to disregard ATC until you completed your checklist?"
- "What made you decide to verify the information you received from ATC?"

When you analyze for the crew it leaves little for them to say. It also gives them the message that you are teaching them so they are not expected to analyze for themselves.

**Ineffective:**

"The reason you got into trouble during the approach is that you didn't communicate to the CA that you were unsure of the clearance."

- **Get crewmembers to discuss what they were thinking.**

Getting the crew to discuss what they were thinking during the LOS can help them discover what information and events influenced their actions.

**Effective:**

IP: What was going through your mind at that moment?

CA: Well, I was thinking about the sick lady in the back and that we had to get down and get her to a doctor, but you can't rush the approach because we might have to make a missed approach and then it would take even longer.

**Effective:**

"What were you thinking when you received the traffic alert?"

- **Encourage the crew to discuss the factors that enabled or impeded their success.**

Identifying underlying factors that enabled or impeded their success in the LOS can help the crewmembers recognize similar factors when they occur on the line.

**Effective:**

IP: CA, was there something that helped make that windshear recovery go so well?

CA: Yes, FO was very assertively making speed callouts all the way that helped me stay on target.

**Effective:**

IP: CA, can you think of any factors that contributed to your getting rushed on that approach?

CA: Well, in hindsight, I should never have accepted the turn onto base leg before we had finished the abnormal checklist.

FO: I wasn't sure if you realized we had not finished it. I wish I had queried you on that.

## **L: Line Operations - Applying Lessons from LOS**

To help crewmembers transfer the lessons they learn in the LOS to the line, encourage them to discuss how LOS performance and associated CRM issues relate to effective line operations.

### ***Get the Crew to Discuss Related Line Incidents***

Getting the crewmembers to discuss actual line incidents and accidents related to CRM issues that arose during the LOS can help them to appreciate the role of CRM in line operations. For example, if a crew communicated well during the LOS which resulted in a positive outcome, the importance of their effective communication can be reinforced by having them discuss a line accident that resulted from poor communication.

#### **Effective:**

- IP: Looking back on the [XXX] accident we had where the guys taxied onto the wrong runway, what was the major problem there?
- CA: Lack of communication. And not paying attention. When you're taxiing under conditions like that both guys better keep their heads where they should be. They should be thinking about nothing but taxiing.

### ***Get the Crew to Discuss How to Apply Their Success to Line Operations***

The next step in getting the crewmembers to transfer what they learn in the LOS to line operations is to get them to explore how they can apply techniques they utilized successfully in the LOS to overcome obstacles on the line. Getting crewmembers to talk about how they would handle difficult situations enables them to develop effective, pre-planned strategies for dealing with real situations when they occur on the line. For example, one crew's success in a particular LOS might have been aided by the fact that both crewmembers were good at explicit sharing of appropriate information. In the debriefing, you might find it useful to facilitate a discussion of how to deal with crewmembers on the line who are not as good at sharing information.

#### **Effective:**

- "What would you do if you ran into one of those guys on the line?"
- "How would you handle the same situation if the CA/FO/FE was completely non-communicative?"
- "In what other situations could you use that technique?"

## *Get Crew to Discuss What They Would do Differently*

Discussing what they would do differently enables crewmembers to develop strategies they can use to make more effective decisions and avoid similar incidents in line operations. Ideally, crewmembers should discuss the strategies they can use to turn each item in their *areas for Improvement* list into *strengths*. It is often useful to frame this discussion in terms of how the crewmembers can handle similar situations if they occur on the line.

### **Effective:**

IP: CA, tell me what you could have done to make the approach onto runway three-two work out better than it did.

CA: I could have just immediately gone to the approach page and put in runway three-two, brought it up and it would have probably had Grunds. Even if it hadn't, it would have had everything else we needed, and things would have gone a lot more smoothly.

### **Ineffective:**

IP: **You** could have avoided that by using your FO more effectively.

*[Telling the crew what they should have done differently denies them the opportunity to figure it out for themselves.]*

### **Effective:**

- "What CRM techniques can you use to keep from getting overloaded in the future?"
- "How will you manage that situation if it comes up tomorrow on the line?"

## *Get the Crew to Discuss How They Will Do Things Differently on the Line based on Their Experience in the LOS*

This **final** step requires crews to specifically tie what they have learned in the debriefing to the line. Having crews discuss how they will perform differently based on what they have learned can help them make the connection necessary to transfer thoughts into actions.

### **Effective:**

- "What would you do differently back on the line to avoid the problems that occurred during the second leg?"
- "Let's say you're flying into LAX tomorrow, and ATC switches the runway on you at the last minute. What CRM techniques can you use to manage the situation?"

# Appendix A

## Organizing the Discussion: The **C-A-L** Model

Appendix A *Facilitating LOS Debriefings: A Training Manual*, L.K. McDonnell, K.K. Jobe, R.K. Dismukes. NASA Technical Memorandum, Ames Research Center, March 1997.

# Organizing the Discussion: The C-A-L Model

The C-A-L Model incorporates three main concepts: CRM (C), Analysis and evaluation of LOS performance (A), and application to Line operations (L). This model provides a simple framework for crew discussion of each LOS situation or topic.

## **C-A-L Model for LOS Debriefings**

### **CRM - Applying the company model**

Use wallboards with list of CRM concepts.

- Tie CRM concepts and techniques to operational issues.

Put CRM into practice.

- Crew discussion of the LOS should be interactive.

### **Analysis and Evaluation of LOS performance**

Explicitly evaluate performance during the LOS.

- How effective was management of the situation?
  - What went well, and why?
  - What could be improved, and how?

Interactively analyze the situation confronted.

- What happened?
- How was it managed (include CRM techniques utilized)?
- Why it was managed that way?

### **Line Operations - Applying lessons from LOS**

Discuss how the LOS performance and associated CRM issues relate to line operations.

- Discuss related line incidents that illustrate CRM issues.
- Discuss how to apply LOS success to line operations.

Discuss how things could have been done differently.

- What could have been done differently to improve the outcome in the LOS?
  - What CRM techniques could have helped?
  - How could you turn *areas for improvement into strengths*?
- What can be done to prevent or manage similar situations on the line?

Appendix A *Facilitating LOS Debriefings: A Training Manual*, L.K. McDonnell, K.K. Jobe, R.K. Dismukes. NASA Technical Memorandum, Ames Research Center, March 1997.

# Appendix B

## Guidelines for Facilitating **LOS** Debriefings

Appendix B *Facilitating LOS Debriefings: A Training Manual*, **L.K. McDonnell, K.K. Jobe, R.K. Dismukes**. NASA Technical Memorandum, Ames Research Center, March **1997**.



# Guidelines for Facilitating LOS Debriefings

## Facilitation Basics

- Keep the discussion crew-centered.
- Encourage crewmembers to participate actively and do most of the talking.
- Adapt the level of facilitation you use to the capabilities of each crew.
- Balance your dual role as instructor and facilitator.
- Reinforce good crew performance following crew analysis.
- I Show by your attitude that you are interested in what the crewmembers have to say.
- Don't lecture or make long speeches.
- Don't interrupt or leave a topic while the crew still has something to say.
- Use the highest level of facilitation possible to maximize crew self-discovery.
- Adapt the level of facilitation to accommodate varying crew needs thought the session.

## The Introduction

- Clarify your role as the instructor and detail your expectations for crew participation.
- Provide a persuasive rationale for why the debriefing should be crew-centered.
- Tell the crew how long the session will last.
- Don't cut sessions short for high-performing crews.

## Agenda and Format

- Explain the format the debriefing will follow.
- Help the crew develop an agenda.
- Ensure that all critical issues are covered
- Use the C-A-L Model as a framework for discussion of each topic.

## Facilitation Techniques

- Use questions to promote in-depth crew participation.
- Follow up on crew topics and redirect crew questions and comments back to them.
- Ask questions that begin with *what, how, and why* to encourage deeper discussion.
- Encourage crewmembers to discover their own answers.
- Make sure all crewmembers are fully drawn into the discussion.
- Direct questions to quiet crewmembers.
- Ask quiet crewmembers to comment on what other crewmembers said.
- Avoid unwittingly hindering crew participation.
- Don't answer for the crew when they don't immediately respond to your question.
- Re-word questions rather than giving the answer.
- Use active listening to encourage continued participation.
- Use silence/pauses to elicit thoughtful crew responses.

Appendix B *Facilitating LOS Debriefings: A Training Manual*, L.K. McDonnell, K.K. Jobe, R.K. Dismukes. NASA Technical Memorandum, Ames Research Center, March 1997.

## **Use of video**

- Index important events during the LOS.
- Don't show video segments you don't intend to discuss.
- Learn how to use the video equipment efficiently.
- Introduce each video segment and remind the crew that they will analyze what they see.
- Pause the video for comments and to discuss important aspects of crew performance.

## **Reinforcing CRM through crew interaction**

- Encourage crewmembers to address each other directly.
- Ask crewmembers to discuss how they were affected by each other's actions.
- Encourage crew to discuss what they were each thinking.

## **Eliciting in-depth analysis and evaluation**

- Don't give your analysis or evaluation before crew have completed theirs.
- Get crew to talk about what went well.
- Get crew to talk about what could be improved, and how.
- Encourage crew to discuss how they might have handled things if they had not gone so well.
- Push the crew to go beyond just describing what happened.
- Ask follow-up questions that require in-depth analysis.
- Ask crew to analyze why they made the decisions they made.
- Get crew to discuss what they were thinking.
- Encourage the crew to discuss the factors that enabled or impeded their success.
- Have the crew discuss how they can apply what they learned in the LOS during line operations.

## **Summary**

- Briefly summarize the debrief. Reiterate important issues and tie LOS events to line operations.

Appendix B *Facilitating LOS Debriefings: A Training Manual*, L.K. McDonnell, K.K. Jobe, R.K. Dismukes. NASA Technical Memorandum, Ames Research Center, March 1997.



**ATTACHMENT C**  
**BLOOM'S CLASSIFICATION OF COGNITIVE SKILLS**

Bloom's classification of cognitive skills (Bloom, 1956) is widely used in instructional design. The six levels found in the table below are arranged by level of complexity and include questions associated with each cognitive skill level. Sample questions are provided that will assist in determining the level of skill acquired.

<b>Category</b>	<b>Definition</b>	<b>Questions</b>
<b>Knowledge</b>	Recalling or identifying something without necessarily understanding, using, or changing it	Who, what, when, where, how _____? Describe _____.
<b>Comprehension</b>	Organizing and selecting facts or ideas, without necessarily relating them to anything else	Retell _____.
<b>Application</b>	Using facts, rules or principles to solve problems in a particular situation; using learned material in new situations	How is _____ an example of _____? How is _____ related to _____? Why is _____ significant?
<b>Analysis</b>	Breaking something down into its parts; may focus on identifying the parts, analysis of relationship between parts, or organizational principles	What are the parts or features of _____? Classify _____ according to _____. Outline/diagram _____. How does _____ compare/contrast with _____?
<b>Synthesis</b>	Creating something new by combining parts of different ideas together to form a new whole	What would you predict/infer from _____? What would happen if you combined _____? What solutions/new design would you suggest for _____?
<b>Evaluation</b>	Judging the value of material or methods; judging with the use of defined criteria; developing opinions; making decisions	Do you agree _____? How would you prioritize _____? How would you decide _____? What criteria would you use to assess _____?