This publication has been reviewed and approved by competent personnel of the preparing command in accordance with current directives on doctrine, policy, essentially, propriety, and quality.

The exercises in this handbook are provided to allow cadets the opportunity to practice problem solving techniques and to work effectively within a group as team members, The COC should use these exercises in LLAB. If the cadets or cadre develop or use any other leadership exercises, they must be approved by HQ AFROTC /DOE before being presented to the cadets.

Publication prepared by

Air Force ROTC Curriculum Branch

AFROTC/ DOE
551 East Maxwell Blvd
Maxwell AFB, Alabama 36112-6106

This 1995 version of the AFROTC Cadet Group Leadership Problems (T-502) replaces the 1993 version (T-2636). Previous version may be used.

Exercise 1
MOONBASE ALPHA

Goals/Purpose:

Team members must share information with each other. Members must gather and consolidate critical information and act on it, under limitations of time and communication. All members must know the plan and understand the group goals to succeed. Tests individual and group problem-solving and communication skills.

Group size:

11-30 members (must have at least 11 participants)

Time:

1 - 1.5 hours

Material:

Clue ships
Notepad
Participant handout
Markers to identify "bubble areas"
Stopwatch or watch to keep time with

Process:

Planning period -- approx. 45 minutes

Pass out the handouts (have enough copies so all can see, or make overhead projector transparencies and project the handout)

Observe how the students make their plan for the execution phase. Note key players and key points of the proposed plan (s).

At the end of the allotted time (or when the students say they're finished) collect the handouts.

Execution phase -- approx. 15 - 35 minutes
Explain the layout to the participants. Point out where each numbered 'bubble" area is.

Hand out the clues, one per cadet. There are eleven critical clues, each having a serial number ending in "II." All eleven of these clues must be given out to solve the exercise. Have the participants go to their appropriate "bubble. They may not show their clue to anyone since it represents "head' knowledge. Also explain that the time begins when you say 'begin."

When the participants are in their 'bubble' areas, give the start signal and start the timer.

Observe the cadets' execution of their plan. Wander the area and observe their activity.
Solution - Seven students should report to you and read the following numbers in any sequence. Make a checkmark after each number read. If the number isn't on the sheet, make a checkmark motion anyhow. After the last student has finished, if they don't have the correct answer, just tell

them 'The shuttle doesn't respond' and let them go back for another try. You might want to amble along with one of the incorrect cadets to see what's going on in that subgroup of cadets.

Sequence:

211 - 311 - 411 - 611 - 711 - 811 - 91 1. 'These represent the docking expert, microbiologist, pilot, nav, life support expert, science officer, and mission specialist.

When time is up, stop them (or let them continue until they come up with a solution), collect the clues and start the critique. Let the cadets carry it as much as possible.

MOONBASE ALPHA
Scenario Layout

Bubble 4: capacity 3	Bubble 5: capacity 5
Bubble 3: capacity 3	Bubble 6: capacity 3
Bubble 2: capacity 3	Bubble 7: capacity 3
Bubble 1: capacity 5	Bubble 8: capacity 5

MOONBASE ALPHA
Cadet Handout

Purpose: This exercise requires you to determine and consolidate critical information and act on it, under limitations of time and communication. All participants must know the plan and understand the group goal if you are to succeed. This will be a test of your individual and group problem-solving and communicating skills.

Objective: You are the survivors of MOONBASE ALPHA who must get a critical bio-processing unit delivered to L-5 colony Grissom Station. You must hurry because the part is necessary to prevent total collapse of the life support system, which was sabotaged. Sabotage also damaged your base and you are the only ones left. There is only one shuttle craft left operational in the hangar bay. You must decide on the crew, decipher the access code, and deliver that part. One of you knows the secret to the shuttle code. None of you know each other well; you worked in different parts of the base. The shuttle can only hold a maximum crew of seven. The bio unit needs special care. You all have different pieces of information. Your time is running out. The L-5 colonists are dying.

The Task: Cadet _____ will act as the shuttle. When you're ready to blast off, your shuttle crew should report to "the shuttle" and state the access code. After you've stated the entire code, "the shuttle" will indicate whether or not you are on your way. Don't waste time with guesses; there are millions of possible combinations and the colonists are dying.

The information slips you receive give your starting bubble location. Damage to the base has isolated you from each other and there is no surviving meeting area that can hold more than five at a time. Most areas can hold only three at a time.

You have bio-suits enough for unlimited trips between areas, but you must quickly enter each bubble to avoid the ambient radiation outside the shelters. You may not give or show your info slips to anyone else; the knowledge is supposedly in your heads and must therefore be passed by word of mouth. Talk low enough that you cannot be heard in adjacent areas; after all, there's a vacuum between you.

As you start, only one of you even knows the form the access code will take.

Each of you will have an info slip of the following type:

Example: You are Moreau
Serial number 875
You are the codes expert
You've given the pilot all the codes needed for approach clearance

Example: You are Falkenburg
Serial number 837

You are a plumber
Bubble 5 has a slow leak and will be out of air in 2 days.

Example: You are VanRijn
Serial number 419
You are a neurologist
The code specialist is needed for approach verification at Grissom.

MOONBASE ALPHA Info Slips

You are Solo Bubble 1
Serial number 1011
You are the cargo master
Docking with Grissom will require an expert at docking

You are VanRijn Bubble 2
Serial number 1111
You are the cryogenics expert
To stay healthy the bio unit will need constant care by the microbiologist

You are Scott Bubble 3
Serial number 511
You are the flight engineer
The pilot must be on the crew

You are Kinneson Bubble 4
Serial number 411
You are the pilot
The science officer will be needed to install the unit at Grissom Station

You are Dumarest Bubble 5
Serial number 611
You are the astronavigator
You have family at Grissom Station

You are Rogers Bubble 6
Serial number 211
You are the docking expert
The mission specialist must help you during the complex docking procedures at Grissom Station

You are Thoris Bubble 7
Serial number 311
You are the microbiologist
Grissom Station says they have to have another life support expert

You are Spock Bubble 8
Serial number 811
You are the science officer
You are also qualified as a copilot

You are McCoy Bubble 1
Serial number 236

You are the medical doctor
The science officer also has an M.D.

You are Moreau Bubble 2
Serial number 875
You are the codes expert
You've given the pilot all the codes needed for approach clearance

You are Falkenburg Bubble 3
Serial number 627
You are the plumber
MOONBASE ALPHA only has water for 2 weeks

You are Cabot Bubble 4
Serial number 911
You are the mission specialist
You've done simulator training of just such a mission

You are Kanobi Bubble 5
Serial number 111
You are the fuels specialist
The access code consists of the serial numbers of the crew -- in any sequence.

You are Carter Bubble 6
Serial number 711
You are the life support expert
The crew must have a navigator for the in-flight corrections
The auto systems are on the fritz

You are O'Leary Bubble 7
Serial number 999
You are the entertainer
The USO return ship will be here in one week

You are Hollander Bubble 8
Serial number 36
You are the physical therapist
You also are a computer specialist

You are Flandry Bubble 1
Serial number 435
You are the security guard
The saboteur was killed in the blast

You are Talbot Bubble 2
Serial number 23
You are the archaeologist
There are no monoliths on the moon

You are di Griz Bubble 3
Serial number 123
You are the astrophysicist
The next meteor shower will occur in 3 weeks

You are Forbin Bubble 4
Serial number 566
You are the computer specialist
You already programmed the shuttle for the flight

You are Atreides Bubble 5
Serial number 47
You are the visiting VIP
You do not want to stay behind on the moon

You are Prescott Bubble 6
Serial number 666
You are the chaplain
You also have been trained in fuels and plumbing

You are Cook Bubble 7
Serial number 57
You are the cook
There is nothing to cook, only high vitamin pastes remain

You are Samms Bubble 8
Serial number 678
You are the radiologist
No refueling will be needed en route

You are Xiang Bubble 1
Serial number 900
You are the Chinese exchange officer
You want to find the language expert to find out what is going on here

You are Glenn Bubble 1
Serial number 849
You are the psychologist
The pilot was suffering from shock but appears to have recovered

You are Carpenter Bubble 5
Serial number 573
You are the language expert
All **MOONBASE ALPHA** personnel understand English even though they come from eight different countries

You are Gordon Bubble 8
Serial number 25
You are the dietitian
Bubble 5 has cracks and is slowly leaking

You are Retief Bubble 5
Serial number 943
You are the intel officer
You believe the Iraqis are behind the bombing

You are Piaget Bubble 8
Serial number 58
You are the education specialist
People learn 37 percent faster in lunar gravity

CRITIQUE/OBSERVATION GUIDE

Planning:

Who was the first to ask the question "What's the task/problem here?'

Who did organizing functions in the group?

Who served as mediator in arguments?

Who sketched the problem out so all could see or who centrally posted the ideas?

Who pointed out some of the info is unneeded?

Who served as recorder for the group?

Who spoke first? Was what said pertinent?

Who started or joined subgroups on the side during planning? What effect did it have on group progress?

Who had the look of "I've got it" and either didn't say anything, wasn't listened to, or tried inappropriately to enter the conversation?

Who served as gate-keeper, getting other people listened to and involved?

Who kept the group on track?

Who was time conscious?

Who forced the group to make decisions and come up with a plan?

Who realized/proposed a travel plan for getting the information around to the different "bubbles?"

Who proposed they select the best brains to gather the data and meet at the larger "Bubble" to consolidate it?

Who proposed they have backup plans?

Execution:

Who served as field general, keeping the plan going?

Who did what during crises (such as needing a new plan on the spot)?

Who served as helper to explain to those who are not in the know?

Who blew up at self, group, you, or other individual?

Who served as primary problem solver(s) on the field?

Who goofed and how did others react?

After action Q & A:

Whose participation was most helpful?

What did they do that was helpful?

Who helped most in the planning phase?

Who helped most in the execution phase?

What actions by whom helped solve the problem?

Who helped you most to understand what was going on? How?

If you could do the task over:

- What would you personally do differently?

- What would you have others do differently?

Exercise 2
Lutts and Mipps

Goals:

To study the sharing of information within a team.

To focus on cooperation in team problem solving.

To offer the team members an opportunity to observe the emergence of leadership behavior in team problem solving.

Group size:

5 - 13 cadets

Time:

1 - 1.5 hours

Material:

A copy of the Lutts and Mipps Instruction Sheet for the team.
Lutts and Mipps Information Cards (26 cards)
A copy of the Lutts and Mipps Reaction Sheet for each team member.

Process:

Distribute a copy of the Lutts and Mipps Instruction Sheet to the team and tell them to read it. (5 minutes)

Distribute the Lutts and Mipps Information Cards to the members, evenly distributing them. All of the cards must be distributed.

Tell the team to begin its work.

After 20 minutes, give each member a copy of the Lutts and Mipps Reaction Sheet and tell them to complete the sheet individually. Give the members 15 minutes to complete the sheet.

Announce the solution (23/30 wors) and then lead a discussion based on the Reaction Sheet. Encourage the team members to share information from their completed forms. Use the remaining time for the discussion.

This activity is based on a problem by Rimoldi, **Training in Problem-Solving,** Publication No. 21, Loyola University Psychometrics Laboratory. The activity is adapted from A **Handbook of Structured Experiences for Human Relations Training** (Vol. If, Rev.), edited by J.W. Pfeiffer and J.E. Jones, 1974, San Diego, CA: University Associates.

Submitted by the cadre and cadets of AFROTC Det 390, University of Michigan.

Lutts and Mipps Instruction Sheet

Pretend lutts and mipps represent a new way of measuring distance and that dars, wors, and mirs represent a new way of measuring time. A man drives from Town A, through Town B and Town C, to Town D.

Your team's task is to determine how may wors the entire trip took. You have 20 minutes to complete this task. Do not choose a formal leader.

You will be given cards containing information related to the task. You may share this information orally, but you must keep your cards in your hands throughout the activity.

Lutts and Mipps Information
(Type one line each on 26 3 x 5 cards)

How far is it from A to B?

It is 4 lutts from A to B.

How far is it from B to C?

It is 8 lutts from B to C.

How far is it from C to D?

It is 10 lutts from C to D.

What is a lutt?

A lutt is 10 mipps.

What is a mipp?

A mipp is a way of measuring distance.

How many mipps are there in a mile?

There are two mipps in a mile.

What is a dar?

A dar is 10 wors.

What is a wor?

A wor is five mirs.

What is a mir?

A mir is a way of measuring time.

How many mirs are there in an hour?

There are two mirs in an hour.

How fast does the man drive from A to B?

The man drives from A to B at the rate of 24 lutts per wor.

How fast does the man drive from B to C?

The man drives from B to C at the rate of 30 lutts per wor.

How fast does the man drive from C to D?

The man drives from C to D at the rate of 30 lutts per wor.

Lutts and Mipps Reaction Sheet

1. How did the team approach the sharing of information? (What techniques were, used?)

2. a. Whose participation was most helpful in the accomplishment of the task?

   b. What particular behaviors were helpful?

3. a. Whose participation seemed to hinder the accomplishment of the task?

   b. What particular behaviors seemed to be a hindrance?

4. What feelings did you experience while the team was working on the problem?

5. What role(s) did you play in the team?

6. a. Who assumed leadership roles during the problem-solving task?

   b. How would you describe the leadership behaviors that emerged?

   c. What were the effects of these behaviors on the completion of the task?

   d. How would you characterize the team members' response to the leadership behaviors that emerged?

7. a. What have you learned about your personal approach to problem solving?

   b. What have you learned about the team's approach?

   c. How can you use what you have learned when the team works on real problems?

Exercise 3
Baseball Trivia

Goals:

Cadets gain insight into how they're perceived by the other members of their team.

Members have the opportunity to study a variety of team-member functions.

Group Size:

5 - 10 cadets per team.

Time:

Approximately two hours.

Material:

Baseball Trivia Role-Description Sheet for each team.
Baseball Trivia Problem Sheet for each team.
Baseball Trivia Answer Sheet for each team.
Baseball Trivia Impression Sheet for each team member.
Scratch paper and pencil for each team member.

Process:

The COC or cadet in charge introduces the activity and explains the goals.

The COC or cadet in charge distributes a copy of the Baseball Trivia Role-Description Sheet to the team and asks the members to read the role descriptions on the sheet (approx. 10 minutes).

The COC or cadet in charge distributes a copy of the Baseball Trivia Problem Sheet to each teal-n and scratch paper/pencils to each team member. After announcing that the team members have 45 minutes in which to complete the problem-solving task, they are told to begin.

At the end of 45 minutes or when the team has completed the task, the COC or cadet in charge distributes a copy of the Baseball Trivia Answer Sheet to the team. The team compares its answers with the correct answers.

The COC or cadet in charge distributes copies of the Baseball Trivia Impression Sheet and instructs the team members to spend ten minutes completing the sheet on the basis of their perceptions about one another's behavior during the problem-solving task.

For the rest of the time, the COC or cadet in charge leads a group discussion on the following areas: Team members' impressions of one another based on their responses to the sheet. The importance of various team-member functions in the problem-solving process.
Questions to ask:

What have you learned about team problem solving?

What have you learned about yourself as a team member?

What have you learned about your fellow team members?

How can you use what you have learned as you work with this team?

What would you like to say to the other team members at this time?

By Robert W. Rasberry. Adapted from **The 1980 Annual Handbook for Group Facilitators,** edited by J.W. Pfeiffer and J.E. Jones, 1980, San Diego, CA: University Associates.

Submitted by **the** cadre and cadets of Det 390, University of Michigan.

Baseball Trivia Role-Description Sheet

Umpire

A good umpire helps the team members to work and participate peacefully. He or she often serves as both a mediator and an expeditor. As a mediator the umpire conciliates differences in points of view and seeks compromise solutions. As an expeditor the umpire keeps communication channels open by facilitating the continents of the two opposing sides. If the umpire is a --designated leader he or she has the authority to administer all rules and to enforce penalties. Thus the umpire is cognizant of the procedures and rules by which the team functions.

Pitcher

The pitcher is the person who does the talking and often can determine the task outcome and direction of the team's movement. There are many different types of pitchers, and any member of the team can serve in this role. The pitcher's first job is to make sure that all other members are attentive and working on the task. 'The pitcher also serves as a diagnoser and information or opinion giver. As a diagnoser the pitcher determines the problem's source and both the supporting and resisting factors. In giving information or an opinion, the pitcher helps produce data that is pertinent to the team's problem-solving processes.

Catcher

The catcher listens to all members, elicits pertinent ideas, classifies the relationships between ideas and suggestions, and draws together the efforts of members or subgroups. In a task role the catcher is a coordinator-integrator. 'The catcher is in charge of maintenance and strategy. He or she also serves occasionally as an information or opinion seeker by asking other members for additional facts. Thus the catcher calls forth ideas and keeps the rest of the team informed about the team's progress.

Fielder

This player fields the ideas made by other team members, helps cover their positions, and supports their ideas. The fielder quickly assesses situations, pulls together all ideas and suggestions, and restates and clarifies these for the team. From a task standpoint, the fielder is an energizer, known for prodding the team to a higher quality of participation. The fielder is alert and always ready to participate--sensitive to the atmosphere and climate of the team, to the direction of the flow of ideas.

Batter

A good batter observes the team in process, watching others and consciously determining how to influence the process in the most advantageous way. The best batters have a sense for the flow of discussion. They have a good mental attitude; accurate timing on the question-answer sequence; and confidence that their statements will be instructional, correct, and accepted.

Coach

The coach expedites the team process by performing needed routine tasks, such as distributing equipment and materials, arranging the physical environment (for example, tables and chairs), and keeping time. the coach serves as an advisor, not as an authority or disciplinarian. The coach offers positive feedback and praise; attempts to create a feeling of trust and respect; and

efficiency. The coach's role in building and maintaining the team is to keep the team focused on evaluating alternatives and reaching final decisions.

Scorekeeper

The scorekeeper serves as recorder, taking minutes, writing down suggestions, and noting decisions.

Team Clown

The team clown serves a nonfunctional role. He or she is apt to joke, mimic, or engage in other disruptive acts at inopportune times. Some people resent the clown's display of non involvement in the team's processes.

Hothead

The hothead interferes with straight thinking and tends to throw fellow players off balance. He or she plays a nonfunctional role and becomes aggressive, criticizes or blames others, shows hostility against individuals or the team, is envious of the credit that other members receive, and often deflates the ego of other members.

Baseball Trivia Problem Sheet

Instructions: Nine members play the positions on the baseball team involved in this problem: Duncan, Winters, Perry, Banks, Dixon, Billings, Woods, Johnson, and Lynch. You and your fellow team members are to work together to determine from the following data the position played by each. Record your team answers at the bottom of the page.

1. The second baseman beat Johnson, Duncan, Billings, and the catcher at golf.

2. Lynch and Duncan each won $50 playing cards with the pitcher.

3. Johnson has an apartment across the hall from the third baseman.

4. The outfielders bowl with Banks in their spare time.

5. Winters is taller than Billings; Woods is shorter than Billings. Each of them weighs more than the third baseman.

6. Duncan, Perry, and the shortstop lost $300 each betting on the horses.

7. The catcher has three daughters; the third baseman has two sons; Dixon is being sued for divorce.

8. Perry dislikes the catcher and lives with his sister.

9. One of the outfield positions is played by either Perry or Woods.

10. The center fielder is taller than the right fielder.

11. The pitcher's wife is the third baseman's sister.

12. Dixon is taller than the infielders and the battery with the exception of Johnson, Lynch, and Perry.

13. Bank's sister is engaged to the second baseman.

14. The third baseman, the shortstop, and Billings made $150 speculating on commodities.

15. Four members of the team are married. Winters, Banks, Duncan, the right fielder, and the center fielder are bachelors.

Catcher _____ Pitcher _____

First Baseman _____ Second Baseman _____

Third Baseman _____ Shortstop _____

Left Fielder __________________________ Center Fielder _____________________________

Right Fielder __________________________

Baseball Trivia Answer Sheet

Catcher	Lynch
Pitcher	Johnson
First Baseman	Duncan
Second Baseman	Winters
Third Baseman	Perry
Shortstop	Banks
Left Fielder	Dixon
Center Fielder	Billings
Right Fielder	Woods

Baseball Trivia impression Sheet

Instructions: Write the names of the members of your team in the spaces that correspond to the roles you think they played in your team. Any team member may be listed in more than one position. You should also list yourself.

Umpire _____

Pitcher _____

Catcher _____

Fielder _____

Batter _____

Coach _____

Scorekeeper _____

Team Clown _____

Hothead _____

Unscrambling the Secret Codes

Goals:

1. To enable the team members to experience team problem-solving processes.

2. To give the team members an opportunity to observe and identify behaviors and methods that facilitate or hinder effective teamwork.

3. To highlight the consequences of conflicts between individual objectives and team objectives.

4. To provide a basis for exploring means to make teamwork more effective.

Group Size:

8 - 16 members per subgroup.

Time:

Approximately one hour.

Material:

A copy of the Unscrambling the Secret Codes Fact Sheet for each team.

A set of Unscrambling the Secret Codes Data Cards for each subgroup of the team.

Blank paper and a pencil for each team member.

A timing device.

A copy of the Unscrambling the Secret Codes Answer Sheet.

Process:

Divide the team into two subgroups of approximately equal size.

Each team member is given blank paper and a pencil.

Each subgroup is given a copy of the fact sheet and one set of the data cards; the cards are distributed as evenly as possible among the subgroup members. The subgroup members are told not to reveal the information on their cards to anyone else at this time.

The COC or cadet in charge instructs the teams to study the fact sheet and each member should study each of the cards assigned to them. (Five minutes)

The COC or cadet in charge explains that the subgroups will be timed as they unscramble the secret codes and match the munitions with the appropriate base, secret code. Field. and aircraft. The members of each subgroup are told that during the activity they may discuss the information on the cards that were assigned to them, but they may not pass the cards around for others to see. The COC or cadet in charge also explains the scoring system, tells the subgroup members that no more questions will be answered, and instructs the subgroup members to raise their hands when they arrive at a solution.

The COC or cadet in charge starts the timing device and tells the teams to begin.

When a hand is raised, the COC or cadet in charge makes a note of the time and then checks the answer for accuracy. If any part of the answer is wrong, the COC or cadet in charge merely tells the subgroup member or the subgroup to continue working on the problem because the answer is not correct. (Twenty-five minutes)

After both subgroups have found the correct solution, the COC or cadet in charge leads a discussion based on the following questions:

- What individual behaviors and problem-solving methods facilitated your subgroup in solving the problem? What individual behaviors and problem-solving methods hindered it?

- At what points were you tempted to leave the subgroup and try to solve the problem on your own? What choice did you make? How do you account for your choice?

- When an individual dropped out of your subgroup, how did you feel? How did you feel when the individual rejoined your subgroup?

- What did you learn about conflict between individual objectives and team objectives and its effect on teamwork?

- In what ways could you make the teamwork more effective in this team?

By John E. Hebden. Adapted from **The 1987 Annual: Developing Human Resources,** edited by J.W. Pfeiffer, 1987, San Diego, CA: University Associates.

Scenario adapted by Major Dave Lauderback, HQ AFROTC/DOT'C.

Submitted by **the** cadre and cadets of Det 390, University of Michigan.

Unscrambling the Secret Codes Fart Sheet

Five nuclear munitions:

blue bomb; green bomb; purple missile; red missile; yellow rocket

Five bases where one each of the nuclear munitions are located:

Alpha AFB; Bravo AFB; Charlie AFB; Delta AFB; Echo AFB

Five secret codes to use one each of the nuclear munitions:

727253; 1799351; 4219530; 10429538; 42911786

The yields of the five nuclear munitions (not in order):

1OK; 15K; 2OK; 25K; 30K

The aircraft that delivers one each of the rive nuclear munitions (not in order):

B-99; FB-50; B-5; FB-12; A-25

Instructions

Your subgroup's task is to match each of the nuclear munitions with its base, secret code, yield, and the aircraft used to deliver it.

Scoring

If your subgroup has solved the problem correctly in every aspect the first time it submits an answer, it will receive a score of 100 minus the number of minutes it took to find the solution.

Each time a subgroup submits an answer that is not correct in every aspect, five points will be deducted from its score as it continues to try to solve the problem.

At any time, you--as an individual--may drop out of the subgroup effort and propose your individual solution. If the first individual answer that you submit is correct in every aspect, your score will be 100 minus half the number of minutes that were taken to solve the problem. You may then share the correct answer with your subgroup, and your individual score will become your subgroup's score. If your solution is not correct in every aspect, you may rejoin the subgroup and deduct ten points from the subgroup's score (that is, 100 minus the number of minutes required to solve the problem minus an additional ten points). This will be your only opportunity to rejoin the subgroup. If you choose to continue to work on your own, deduct 15 points from your individual score. For each additional time that you submit an incorrect answer, deduct five points from your individual score.

Unscrambling the Secret Codes Data Cards

Prior to conducting the activity, the COC or cadet in charge must cut these statements into individual cards or strips. There must be one set per subgroup.

1. The yellow rocket's secret code and the green bomb's code contain the same number of digits.

2. The red missile is delivered by the A-25.

3. The green bomb is not delivered by the B-5.

4. The yield of the nuclear munitions that's delivered by the B-99 is 15K.

5. The secret code used at Charlie. AFB has six digits.

6. The yellow rocket is not located at Delta AFB.

7. The yield of the nuclear munitions located at Alpha AFB is 15K.

8. The blue bomb is not located at Delta AFB.

9. The nuclear munitions's secret code delivered by the B-99 is 42911786.

10. The yield of the nuclear munitions with the secret code 4219530 is 20K.

11. The yield of the nuclear munitions that's delivered by the B-5 is less than 15K.

12. The yellow rocket is delivered by the FB-12.

13. The yield of the nuclear munitions located at Charlie AFB is more than 1 OK.

14. The yield of the green bomb is 25K.

15. The FB-12 is in an underground hanger at Echo AFB.

16. The blue bomb's secret code is 10429538.

Unscrambling the Secret Codes Answer Sheet

Nuclear Munitions	Aircraft	Base	Secret Codes	Yield
Blue Bomb	B-5	Bravo AFB	10429538	10K
Green Bomb	FB-50	Delta AFB	1799351	25K
Purple Missile	B-99	Alpha AFB	42911786	15K
Red Missile	A-25	Charlie AFB	727253	30K
Yellow Rocket	FB-12	Echo AFB	4219530	20K

Exercise 5
IG VISIT

Goals:

The task should bring out aspects of sharing information in a task-oriented situation.

Observe cooperation and the emergence of leadership behavior in group problem solving.

Group Size:

10 + cadets

Time:

Approximately one hour

2. Details of Instruction: IG Visit

Material:

Information cards.

Process:

This is an indoor exercise.

The task of the group is to tell you which wing is ready for the IG visit. The only rule for this task is that the cadets must share all the information orally. They cannot show or give the information cards to other members of the group. The nature of the task and the rules of the task are contained on the information cards. You should not give them any information. You should not appoint a leader for this task. At the end of the exercise you should have the cadets discuss the problems they faced in solving the task.

At the start of the period hand out the task cards to each member of the group. Some cadets will have more than one card.

Simply state: "You have a problem" and sit down.

Observe how the cadets go about solving the problem.

When the cadets solve the problem, have them discuss the information processing, problem solving, and the sharing of leadership in the task situation. You should encourage all cadets to share and participate.

At the end of the period, collect the information cards and save them to use in the future.

COC INFORMATION AND SOLUTION FOR THE IG VISIT

HINTS:

Each critical information piece has a vowel at the right side.

Giving critical items to quiet and/or unlistened-to individuals leads to situations that often highlight the fact that the group doesn't properly use all its resources.

Giving non-critical items to “Motor Mouths” shows that volume/frequency of input achieving a solution.

Look for those who realize that logical inferences can quickly lead to a solution. Some groups may solve in two minutes or less.

With fast solutions, have the section discuss the general situation and look for parallels at school or in the corps.

Don't accept cop-outs from groups that can't solve it and/or complain about clarity of information. They could discuss how clear real-world situations are.

SOLUTION.,

2nd wing is ready. Voweled data points out lst wing can't be, yet one of the two is:

When/If the students tell you the above, pause, then ask them if that is all they wish to tell you. Give them time to reconsider before you tell them they have solved it.

CRITIQUE ITEMS: (Study in advance and use to take notes)

- Who was the first to ask the question, "What's the problem/task?" Did that person have the critical information?

- During the discussion, who recognizes the problem involves the sharing of information (communication)?

- Who recognizes that not all the information is needed to solve the problem? (Some information serves as a distractor. Only a few questions and a few answers are needed to solve the problem.)

- Who goes to-the board to record information? Who records information at his seat?

- Who offers a plan for organizing the information?

- Who speaks first? Are they questioning, directing, or offering solutions?

- Who begins talking-first during the discussion period following the task?
- Who best answers the task reaction/form questions?

- Who recognizes the individual that contributed most to the accomplishment of the task?

- Which individuals recognized they didn't help the group and admitted it during discussion?

- Who's enthusiastic and encouraging?

- When an individual speaks, are others paying attention and watching and listening to that individual?

- Is someone trying to "get into" the discussion/task and no one listens? What is his/her physical position, volume, timing?

- Who changes his/her behavior/approach to the others when they do not respond to his/her suggestions/actions?

- Who seems to be enthusiastic during the task and discussion which follows?

- Whose comments/suggestions/questions (during the discussion which followed the task) were constructive and positive?

- Who leaves a positive ' impression o n you?

- Who answers the question, "If the section had to accomplish this task or a similar task again, what would you do differently?" What answer did he/she give?

- Is the discussion organized?

- How do students share information?

- Do they all talk at once?

- Do they try to problem solve without all available information.

- Do they use a logical problem solving process?

- Do they identify the problem?

- How do they deal with the unknowns?

- Do they waste time going from the unknown to known and vice-versa?

- At what point in the discussion do they shift from content orientation to process orientation?

- How soon are they able to relocate the two?

IG VISIT INFORMATION CARDS

Cut on dotted fines and bundle strips for handing out.

.....

You must tell the COC or cadet in charge which wing will be ready for the IG visit. A

Today is Tuesday, 22 June I

Your base has two wings. U

lst Rece Wing has only one automatic-failure item left to fix (safety file). A

1st Rece Wing needs only 11 days to fix their safety file write-ups. E

2nd Weather Wing has 23 automatic-failure item left to fix from last IG. B

IG criteria for maintenance turnaround is 2 1/2 hrs. 2 hours by COB this Thurs. C

lst RW commander is going on leave 10 July. F

1st RW just got delivery of 2 new maintenance trucks. G

2nd Wing comm shop expects to have their 7 write-ups corrected on 28 June. H

2nd WW maintenance shop can't fix their write-ups without another truck. J

1st RW can give WW a maintenance truck within 4 days. K

2nd WW ops needs a new digitizer to finish clearing their 3 write-ups. L

Air Force Now film crews will be on hand for the Flower Show in Hanger 6. P

2nd WW Must be able to show 70 percent accurate forecasts for at least a 15 day period Q

Counting today 2nd WW has been accurate in forecasts 16 days this inonth. R

You already figured out one wing will be completely ready for the IG. E

2nd WW admin says that when Dotty gets back on Friday she'll finish 4 write-ups. Y

2nd WW must have their FILO validated to clear up two or more write-ups. S

A message from General Whim says he'll bring FILO validation with him Sat. Z

Polk and Crawford can fix the remote sensor by Monday if they have a validated FILO and another maintenance truck by Sunday morning. T

The IG will be here 30 June. O

Hunnicut said she could fix the hazardous waste drain-off if the other bldgs on the life could be closed for a day . V

Hazardous waste, chow hall, 1st RW digitizer lab, and 2 WW commander's house all share a drainage line. J

1st RW had a recent session changes they no longer need newly installed digitizer. M

Sachez says the new plotter will be ready one day after the flow table. W

Burnowski says she can't finish the flow table unless the hazardous waste drain problem is solved. X

Bullock won't be back until the 29th. P

lst RW is having their computer camp for kids the 28th in Hangar 3. D

Henway expects to have the security write-ups corrected by Saturday night. Q

O'Hara says he can't replace the cyclemen at Hangar 5 until next Thursday. G
.....

How many write-ups does each wing have? D
.....

When does Bullock get back? F
.....

How many trucks does lst RW expect to arrive? K
.....

Who is going on leave next week? P
.....

Who is in charge of the plumbing shop? J
.....

Which wing relies on FILO use? L
.....

How accurate are the 2nd WW forecasts? R
.....

What eating facilities will be closed this weekend? V
.....

What sex is Burnowski? M
.....

Which wing has a higher priority on this base? R
...I.....

Which wing recently had a mission change? B
.....

Exercise 6
ENERGY INTERNATIONAL

Goals:

The cadets use the six-step problem solving process to solve a problem.

Cadets then discuss their experiences in using the techniques and working as a group.

Group size:

Five cadets per team

Time:

Approximately 1.5 hours

Material:

Outline Sheet for the Instructor (with solution)

Energy International Briefing Sheet

Energy International Data Sheet #1 - *5*

Candidate Summary Sheet

Process:

Introduce the lesson using the outline sheet and divide the cadets as desired into teams of five members each.

Provide each team with a copy of the exercise (the Briefing Sheet and Candidate Summary Sheet for the team and the Energy International Data Sheet [different one to each of the five cadets]).

Announce the time allotted to do the problem and signal work to begin. *NOTE.* The exercise contains all the necessary information to work the problem so that there is no need to overview the problem in advance.

Energy International Outline Sheet

OPEN ENDED QUESTION : What are the six steps in the problem solving process?

WRITE ON THE BOARD:

1. Recognize the problem.
2. Gather data relative to the problem.
3. List possible solutions to the problem.
4. Test possible solutions to the problem.
5. Select the best solution to the problem.
6. Implement the solution.

Your ability to solve problems is essential, and problems are solved best when a method or process is used. Studies consistently show that people who approach problems systematically are typically the most successful. You too can have that success--you'll get the opportunity to solve problems using this process throughout your time in ROTC and in the future as an AF officer.

Continue with the guided discussion.

SOLUTION:

The key to solving this problem lies in the quality of the communication, which occurs within each group, as members analyze the information provided. Although the data sheets appear, at first glance, to be identical, small variances do exist, which provide information critical to the solution. There is only one candidate who meets all of the criteria outlined in the data sheet, as the following discussion explains:

The New Mexico Institute of Earth Sciences and St. Francis University require three special subjects for graduation, and are therefore smaller than the Massachusetts Institute of Sciences, or the New York School of Mines. St. Francis is not the smallest, therefore the New Mexico Institute of Earth Sciences must be. This makes N.M.I.E.S. a women's university. Brazilians hold a feudal attitude toward women.

Seismology and paleontology are essential for General Membership. St. Francis does not offer seismology; therefore no graduate of St. Francis can qualify for general manager. None of the Brazilian staff understands English, nor do the government inspectors; therefore, before the General Manager can countersign the inspectors report, he must be able to read Portuguese.

Each candidate except **Gadolin** is disqualified because he/she lacks the qualifications outlined.

Guided Discussion (about 15 min)

LOQ: which of the problem-solving steps were used in solving this problems?	ANTICIPATED RESPONSE: 1. Recognize the problem. 2. Gather data. 3. List possible solutions. 4. Test possible solutions. 5. Select the best solution. 6. Implement.
FUQ: How Effective was Your method?	Solicit
FUQ: Who emerged as the most effective member of your group?	Solicit
FUQ: Describe the role played by third person.	ANTICIPATED RESPONSE: 1. Dominant/directive. 2. Informal group leader. 3. Worker or leader, or a combination of both.
FUQ: When did your group first realize that the data sheets were different?	How long: immediate, never discovered, or about half way
FUQ: How effectively did your group communicates organize, and classify the data.	ANTICIPATED RESPONSE: Assess each group on it's individual merits. 1. Did they use one-way or two-way communication? 2. Was the group open or closed to solving the problem? 3. Did they organize quickly? 4. Did they sort the data by topic, school, person, etc.?
FUQ: How might skills you used in the exercise make you a more effective manager?	This exercise shows that a systematic method to problem solving; a skill needed is by managers.
FUQ: Name some situations in the military environment where you might use the problem solving process?	Solicit responses and then use your personal experience to give examples.

ENERGY INTERNATIONAL BRIEFING SHEET

Instructions to the Group:

You are a committee made up of the General Managers of Energy International (E. I.).

You have just flown into town.

This is the first meeting of the group.

You have just learned that E. I. will open a new Brazilian plant, and your first job is to select a General Manager from among the seven applicants.

Basically, the information you bring with you is in your head, do NOT show your E. I. data sheet to anyone else.

Assumptions Which Need to be Made Explicit:

Assume that there is one solution.

Assume that all data are correct.

You have 1/2 hour to work the exercise.

Assume that today's date is April 1, 1992.

There must be substantial agreement when the problem has been solved.

You must work the problem as a team.

ENERGY INTERNATIONAL CANDIDATE SUMMARY SHEET

NAME:	R. Illin
DATE OF BIRTH:	March 2, 1957
PASSPORT:	L3452 - USA
EDUCATION:	NY School of Mines - degree in mineralogy - 1977
EMPLOYMENT:	Research Assistant - NY School of Mines - 1978-1986 Lectures-Mineralogy - Univ. of Bonn - 1986-1990 Manager - Utah Copper Mining Co. Plant - 1990 to date
LANG COMMAND:	English, French, German, Portuguese

NAME:	S. Hule
DATE OF BIRTH:	May 4, 1949
PASSPORT:	H4567 - USA
EDUCATION:	New Mexico Inst. of Earth Sciences-degree in mineralogy - 1975
EMPLOYMENT:	Uranium Unlimited - management trainee - 1975-1977 Anaconda Copper Co., Montana area-geology officer - 1978-1985
LANG COMMAND:	English, French, Portuguese

NAME:	T. Gadolin
DATE OF BIRTH:	June 5, 1950
PASSPORT:	L7239 - USA
EDUCATION:	NY School of Mines - degree in mineralogy - 1975
EMPLOYMENT:	United Kingdom Mining b card - management trainee - 1975-1977 Assistant Manager - NDA Cheshire plant - 1978-1986 Manager - Idaho Cobalt Mining Co. - 1986 to date
LANG COMMAND:	English, Portuguese

NAME:	U. Samar
DATE OF BIRTH:	April 6. 1958
PASSPORT:	H6259 - USA
EDUCATION:	Mass Institute of Sciences - degree in mineralogy - 1979
EMPLOYMENT:	Jr. Engineer - W. Virginia Mining Research Station - 1979-1988 General Manager - Loberian State Mining Plant - 1988 to date
LANG COMMAND:	English, German, Swahili, Portuguese

NAME:	V. Lute
DATE OF BIRTH:	April 16, 1955
PASSPORT:	K62371 - USA
EDUCATION:	NY School of Miners - degree in mineralogy - 1976
EMPLOYMENT:	Jr. Development Mineralogist - Ontario Mining Constr. Ltd. - 1976-1970 Asst. Chief Mineralogy Officer - Canadian Dev. Board - 1980-1983. Plant Manager - Welsh Mining Co., Ltd. - 1984 to date
LANG COMMAND:	English, French,)Welsh, Pekingese

NAME:	W. Neddy

DATE OF BIRTH:	August 7, 1948
PASSPORT:	H63241 - USA
EDUCATION:	St. Francis University - degree in mineralogy - 1973
EMPLOYMENT:	Asst. Manager - Societe Debunquant D'Algeria - 1973-1977 Manager - Kemehatka Mning Co. - 1978 to present
LANG COMMAND:	English, Portuguese, Russian, Arabic

NAME:	X. Lanta
DATE OF BIRTH:	September 8, 1955
PASSPORT:	Q123YB - Canada
EDUCATION:	University of Quebec - Diploma in English - 1975 Mass. Institute of Sciences - degree in mineralogy - 1978
EMPLOYMENT:	Tech Officer, Sardinia Mining Corp. - 1980-1988 Manager - Maob Valley Mining Plant - 1988 to date
LANG COMMAND:	Spanish, English, Portuguese

ENERGY INTERNATIONAL DATA SHEET #1

Your group is a committee made up of the General Managers of Energy International, a young, medium-sized, growing organization. The mission of E.I. is to locate and develop mineral claims (copper, uranium, cobalt, etc.) ...

The company's business has grown very rapidly especially in South America, where your organization has been Made welcome by the governments. In a recent meeting, the board of directors decided to develop a new property near Fortaleza, in northeastern Brazil. This operation will include both mining and milling production.

The date is April 1, 1992. You have come from your respective plants in different locations. This is the initial session of your annual meeting. Your first order of business today is to select a new General Manager for the Brazilian plant from among the candidates on the attached list.

Fortaleza, Brazil, has a hot climate, one railroad, a scheduled airline, a favorable balance of trade, a feudal attitude toward women, considerable unemployment, a low educational level, a low literacy rate, and a strongly nationalistic regime.

The government has ruled that the company must employ Brazilians in all posts except that of Manager. It has also installed an official inspector, who will take a monthly report which must be countersigned by the company's representative. None of the company's employees or staff can read or write any language but Portuguese.

There are a number of schools offering degrees in mineralogy, and a passing grade in seismology is essential to qualify for General Membership in the Institute of Mineralogy. The Massachusetts Institute of Sciences requires the following special subjects for graduations: geology, seismology, oceanography, and paleontology.

ENERGY INTERNATIONAL DATA SHEET #2

Your group is a committee made up of the General Managers of Energy International, a young, medium-sized growing organization. The prime mission of E.I. is to locate and develop mineral claims (copper, uranium, cobalt, etc.)...

The company's business has grown very rapidly especially in South America, where your organization has been made welcome by the governments. In a recent meeting, the board of directors decided to develop a new property near Fortaleza, in north-eastern Brazil. This operation will include both mining and milling production.

The date is April 1, 1992. You have come from your respective plants in different locations. This is the initial session of your annual meeting. Your first order of business today is to select a new General Manager for the Brazilian plant from among the candidates on die attached list.

Fortaleza, Brazil, has a hot climate, one railroad, a scheduled airline, a favorable balance of trade, a feudal attitude toward women, considerable unemployment a low educational level, a low literacy rate, and a strongly nationalistic regime.

The government has ruled that the company must employ Brazilians in all posts except that of Manager. It has also installed an official inspector, who will take a monthly report which must be countersigned by the company's representative, who must be an American citizen.

Fellowship in the Institute of Mineralogy can be obtained by men over 35 years of age who have otherwise qualified for General Membership in the Institute. St. Francis University, which is not the smallest school, requires the following special courses for graduation: paleontology, geophysics, and oceanography.

ENERGY INTERNATIONAL DATA SHEET #3

Your group is a committee made up of the General Managers of Energy International, a young, medium-sized, growing organization. The prime mission of E.I. is to locate and develop mineral claims (copper, uranium, cobalt, etc.) ...

The company's business has grown very rapidly especially in South America, where your organization has been made welcome by the governments. In a recent meeting, the board of directors decided to develop a new property near Fortaleza, in north-eastern Brazil. This operation will include both mining and milling production.

The date is April 1. 1992. You have come from your respective plants iii different locations. This is the initial session of your annual meeting. Your first order of business today is to select a new General Manager for the Brazilian plant from among the candidates on the attached list.

Fortaleza, Brazil, has a hot climate**,** one railroad, a scheduled airline, a favorable balance of trade, a feudal attitude toward women, considerable unemployment a low educational level, a low literacy rate, and a strongly nationalistic regime.

The government has ruled that the company must employ Brazilians in all posts except that of Manager. It has also installed an official inspector, who will make a monthly report which must be countersigned by the company's General Manager. By law, the General Manager must have had at least diree years experience as a manager in charge of a mining operation.

There are a number of schools offering degrees in mineralogy, a degree is essential to qualify for General Membership in the Institute of Mineralogy. The smaller universities require three, the larger four, of the following special subjects as a part of their graduation requirements: geology, geophysics, oceanography, paleontology, seismology. The smallest is a women's university.

ENERGY INTERNATIONAL DATA SHEET #4

Your group is a committee made up of the General Managers of Energy International, a young, medium-sized, growing organization. The prime mission of E.I. is to locate and develop mineral claims (copper, uranium, cobalt, etc.) ...

The company's business has grown very rapidly especially in South America, where your organization has been made welcome by the governments. In a recent meeting, the board of directors decided to develop a new property near Fortaleza, in north-eastern Brazil. This operation will include both mining and milling production.

The date is April 1, 1992. You have come from your respective plants in different locations. This is the initial session of your annual meeting. Your first order of business today is to select a new General Manager for die Brazilian plant from among the candidates on the attached list.

Fortaleza, Brazil, has a hot climate, one railroad, a scheduled airline, a favorable balance of trade, a feudal attitude toward women, considerable unemployment a low educational level, a low literacy rate, and a strongly nationalistic regime.

The government has ruled that the company must employ Brazilians in all posts except that of General Manager. The government has also installed an official inspector, who will make a monthly reports to the government This report must be signed by the company's representative, who must be a Fellow of the Institute of Mineralogy.

There are a number of schools offering degrees in mineralogy, the most recently founded is the New Mexico Institute of Earth Sciences. This Institute was established under a special grant and opened in 1965.

In order to earn a bachelor's degree in mineralogy, this school requires geology, seismology, and paleontology in addition to the usual courses.

ENERGY INTERNATIONAL DATA SHEET #5

Your group is a committee made up of the General Managers of Energy International, a young, medium-sized, growing organization. The prime mission of E.I. is to locate and develop mineral claims (copper, uranium, cobalt, etc.) ...

The company's business has grown very rapidly especially in South America, where your organization has been made welcome by the governments. In a recent meeting, the board of directors decided to develop a new property near Fortaleza, in northeastern Brazil. This operation will include both mining and milling production.

The date is April 1. 1992. You have come from your respective plants in different locations. This is the initial session of your annual meeting. Your first order of business today is to select a new General manager for the Brazilian plant from among the candidates on the attached list.

Fortaleza, Brazil, has a hot climate, one railroad, a scheduled airline, a favorable balance of trade, a feudal attitude toward women, considerable unemployment, a low educational level, a low literacy rate, and a strongly nationalistic regime.

The government has ruled that the company must employ Brazilians in all posts except that of manager. It has also installed an official inspector, who will make a monthly report which must be countersigned by the company's representative. None of die government inspectors can read or write any language but his own.

There are a number of schools offering degrees in mineralogy, but a passing grade in paleontology is essential to qualify for General Membership in the Institute of Mineralogy. The largest university is the New York School of Mines, which requires the following special subjects for graduations: geology, paleontology, geophysics, and seismology.