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CONTINGENCY SCENARIO GENERATOR
USER'S MANUAL

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This paper has been reviewed and is approved for publication.

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SUMMARY

The Contingency Task Training (CTT) Scenario Generator User's Manual is written to accompany the CTT scenario generator developed by the Air Force Human Resources Laboratory (AFHRL) at the request of the Headquarters Air Training Command (HQ ATC) and the USAF Occupational Measurement Center (USAFOMC). The intent of the scenario generator is to develop simple contingency scenarios which, when attached to standard task surveys, could be used in determining critical wartime tasks for all enlisted Air Force Specialties (AFSSs).

The manual provides step-by-step instruction on loading and running the program. Following that, specific instruction on creating a scenario is given. The generator can create three types of conflict situations; high, mid, and low-intensity conflicts. High and mid-intensity scenarios are the easiest to create. The first section dealing with scenario creation therefore builds a high-intensity conflict scenario. Each scenario category and variable are displayed and discussed to make building a scenario easier. Once a high-intensity scenario has been created the manual will then discuss building a low-intensity conflict (LIC). Building a LIC requires more variables as the situations are much more specific.

The scenario generator is designed to be easy to use and maintain. The program consists of two parts, the scenario generator and the help file. The help file contains definitions of all variables listed in the scenario and can be directly accessed from the scenario program by pressing the F1 key at any time. The program fits easily onto a floppy disk and runs from any DOS compatible computer. Scenarios can be printed out once completed or saved on disk.

Appendix A contains a listing of all variables and their definitions. Appendix B describes in detail the workings of the on-line help program and how to use its features. Finally, Appendix C tells how to maintain or gain access to the program for modification for those with the expertise and desire to do so.

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PREFACE

The Contingency Task Training (CTT) scenario generator was developed under Work Unit 77191911, "Measurement and Analysis of Job and Mission Requirements." It was initiated in response to Request for Personnel Research 84-02, "Contingency Task Training Requirements," to provide a valid methodology for determining critical contingency or wartime tasks. The User's Manual was written to make the scenario generator easy and simple to use. The use of scenarios coupled with task surveys is not a new concept, yet it is relatively unused. The scenario generator provides a consistent means of producing simple and effective scenarios. All the research associated with creating a scenario has been worked out and placed in the generator. The manual further eases the discomfort of creating a scenario from scratch by guiding the user through building a contingency situation. The authors would like to thank the following AFHRL personnel for their professional assistance: the Information Sciences Division for providing components used in the scenario generator, and Amns Chris Lennon and Robert Zook for their help with some of the programing details.

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CONTINGENCY SCENARIO GENERATOR USER'S MANUAL

I. THE PROGRAM

The Contingency Task Training (CTT) scenario generator is a Pascal program designed to produce simple wartime scenarios. The scenarios are intended for use with task surveys at the USAF Occupational Measurement Center (USAFOMC) at Randolph AFB, TX to determine which enlisted Air Force Specialty (AFS) tasks are critical during a particular wartime contingency. Subject Matter Experts (SMEs) would be given a survey and asked to rate training emphasis for each task required for the given scenario. Results would then be used in assessing training requirements for enlisted specialties.

The program was written using Turbo Pascal version 4.0 and consists of two parts. The first, CTT.EXE, is the main scenario generator program. The on-line help is stored as CTT_REV.HLP and must be on the same disk as the main program to access the help function. Appendix A contains a list of all variables and their definitions as found in the on-line help. Refer to Appendix B for more information on using the help file. Both programs are easily stored on one 5 1/4" floppy disk.

The program will run on any IBM (DOS) compatible machine with a minimum of 512K RAM. A color monitor is recommended but the program will work with a monochrome screen. The program should be run from a hard disk or preferably a RAM disk (also called a virtual disk) as this will greatly increase the on-line help access time. The program is a compiled version and as such it is not readily accessible for program modification. Refer to Appendix C for information on program maintenance.

II. LOADING THE PROGRAM

The Contingency Task Training scenario generator is very easy to use. Advanced computer users should skip down to the paragraph entitled "Running the Program".

Initial Set-Up

After turning the computer on wait for it to finish booting up, after which the following prompt will appear on the screen:

C>

[NOTE: This is assuming the computer has a hard disk drive. If it does not then consult the DOS manual for appropriate loading requirements.]

Next, place the floppy disk containing the scenario generator program into the floppy drive designated as the A: drive. For systems with two floppy drives this is usually the one on the left or on top, depending on how the machine is configured. Now, enter the following at the C> prompt:

```
COPY A:*. * <press ENTER>
```

This will copy the entire floppy disk contents onto the C: or hard drive.

It may be beneficial to place the program into a separate directory (a directory is like a file in a filing cabinet). To do so, before copying the program onto the hard disk a directory must be created. The directory may be given any name up to 8 characters long, but for now call it CTT. To make the directory enter:

```
MD CTT <press ENTER>
```

A directory entitled CTT has now been created. To enter the new directory type:

```
CD\CTT <press ENTER>
```

The following will appear on the screen:

```
C:\CTT>
```

The computer is now in the directory CTT. Now copy the contents from the floppy disk using the command already given.

The computer's memory may also be used as a disk drive. This is called the RAM drive or virtual drive. However, all information stored here is only temporary and will be lost when the computer is turned off. The advantage of using the RAM drive is its speed. The computer has instant access to all the necessary information. The RAM drive is usually designated as the D: drive or sometimes the E: drive if the computer has two hard drives. Copying to the RAM drive is a simple matter of entering:

```
D:(or E:) <ENTER>
```

and then copying the floppy as before.

Be sure the computer has a RAM drive installed before attempting to copy into one. The command for creating a RAM drive is contained in the CONFIG.SYS file of the root directory. Consult the DOS manual or someone more knowledgeable in this area if unsure how to create one.

Running the program

Once the program is loaded and the appropriate drive and directory are selected simply type in:

CTT <ENTER>

and the program is off and running.

III. STARTING THE PROGRAM

Creating a scenario may appear difficult at first. Once all the terms and definitions become familiar creating simple scenarios can be done with speed and ease. Before running the program it is a good idea to read all the scenario variables and their definitions provided in Appendix A. This will help in creating a viable scenario from the start. The definitions are also stored within the program and may be accessed at any time by pressing the F1 key. The help window will allow direct selection of variable definitions should any assistance be needed during scenario creation. Now that the program is up and running and all definitions have been read the next step is to create a scenario. The first screen of the program will describe the intent of the Contingency Task Training project:

CONTINGENCY SCENARIO GENERATOR

This program will provide you with a simple method of generating contingency scenarios. It was designed to be used with Job Inventories and provides a scenario where tasks are measured with chosen situations in mind. It may also be used for other occupational and research needs.

PRESS ENTER TO CONTINUE

Pressing ENTER switches to the next screen which will display a warning about using the help file:

HELP: Procedures for creating the situations are simple; however, should you encounter any difficulties, you can access the on-line help by pressing the function key F1. The on-line help provides definitions for various scenario choices. (WARNING: The CTT_REV.HLP file must be installed on the same disk as the scenario generator to access the on-line help.)

EXIT: To exit the program press Ctrl Break.

PRESS ENTER TO CONTINUE

Refer to Appendix B for more information on using the help file. The last introduction screen gives general instructions for running the program:

The following screens will present various contingency alternatives. Make your choice and press ENTER.

PRESS ENTER TO CONTINUE

The main program itself is nothing more than a series of 14 categories each with a number of variables. Depending on the type of conflict selected, not all categories will be displayed. The program does not actually build the scenario, the user does. The computer simply provides a thought out list of variables considered important for any scenario. For the novice scenario generator the program allows logical decisions to be made in building the scenario. The computer will guide the user through each scenario category, only displaying those variables pertinent to the conflict selected. The first screen of the actual scenario generator will allow a choice between three levels of conflict intensity: high, mid, and low.

The conflict level selected will determine which variables the computer will choose to ask. The only difference between high and mid-intensity conflicts is the inclusion of nuclear, biological and chemical (NBC) weapons defense for high-intensity conflicts. Recent changes to conflict intensity definitions have included NBC weapons in mid-intensity conflicts. The Iran-Iraq war is cited as an example of a mid-intensity conflict in which chemical weapons were used. The low-intensity conflict (LIC) options contains the most variables. This is due to the large number of possibilities which constitute a LIC situation. In

addition to being asked to determine initial conflict intensity there are an additional 9 factors for high-intensity conflicts, 8 for mid-intensity conflicts and 12 for LIC.

To enter a selection simply type in the number desired and press ENTER. If a letter or a number not available is selected the user will be prompted to enter a correct number. A flaw in the program allows selection of a large number providing all digits in the number are the same as the numbers available for selection. For example, if there are 4 variables, numbered 1 to 4, the computer will accept a number of "124" or any combination of numbers as long as the numbers are those available for selection. If a 1 is entered followed by a 5 the computer will give an invalid number prompt for the 5 but will recognize the 1. If more than one acceptable number is entered the computer will ignore all inputs and give a blank readout in the final scenario. If no number is entered and the user simply presses ENTER the final output will display ASCII "garbage" for that variable. It is therefore recommended some value be input for a particular variable, even if there is no intention to use that variable in the final product. To start over hit Ctrl Break to exit the program. Once the scenario has been developed it may be printed out or stored on disk.

IV. THE HIGH AND MID-INTENSITY CONFLICT

The creation of a high or mid-intensity conflict is a fairly straightforward situation. The first screen presents a choice of conflict levels:

CONFLICT INTENSITY

1. HIGH INTENSITY
2. MID INTENSITY
3. LOW INTENSITY CONFLICT

(For brevity, the help and enter screen prompts will not be displayed here but will appear on the computer screen.)

For now, type 1 and ENTER. This will select the high-intensity conflict mode. As stated, the high-intensity conflict mode is identical to the mid-intensity mode except for the inclusion of NBC protection.

The next screen related to NBC threat will then appear:

HIGHEST NBC THREAT LEVEL

1. MISSION ORIENTED PROTECTIVE POSTURE (MOPP) 0
2. MOPP 1
3. MOPP 2
4. MOPP 3
5. MOPP 4

The Mission Oriented Protective Posture (MOPP) level is simply a description of the amount of NBC defense clothing worn for a given situation. Appendix A contains a complete definition for each MOPP level. MOPP level 0 is simply standard duty uniform while MOPP 4 is full gear; boots, charcoal activated pants and shirt, mask with hood and rubber gloves. MOPP level was chosen as an NBC criteria as each MOPP level can be used as an indication of the NBC threat level. For those Air Force Specialties (AFSS) which must perform tasks in MOPP gear the level is extremely important for determining task time and training requirements. For this demonstration select the MOPP 4 option by entering selection number 5.

The attrition screen will appear next.

ATTRITION

1. LOW (0% - 10%)
2. MODERATE (10% - 25%)
3. HIGH (25% or greater)

As it is now defined, attrition is determined to be the amount of critical personnel and equipment damage/wounded and destroyed/killed per month. Evaluation of this definition by experts has shown that attrition of about 2% per day is more realistic and a 25% loss would mean losing the war. Users who do not feel comfortable with this definition you may change it using a word processor (more on this later). For this scenario enter 3 for high attrition.

The next screen will be logistics.

LOGISTICS

1. EXCELLENT
2. GOOD
3. FAIR
4. POOR

Logistics is the amount of critical supplies required to perform the mission which actually reach the combat area. While listed as excellent to poor, logistics is actually expressed in the scenario as 25% increments. Excellent is 75% to 100% of critical supplies delivered down to 0% to 25% for poor. Attrition and logistics go hand-in-hand as each directly affects the other. A high attrition rate and poor logistics would certainly affect tasks performed and the outcome of the conflict while high attrition and excellent logistics would have less of an impact. For now, select 2 for GOOD logistics and hit ENTER.

The computer will next ask for an input on the area and size of the environment the scenario is to take place. Area and size is the first of 4 categories designed to "paint" the environment of the scenario.

ENVIRONMENTAL
AREA AND SIZE

1. MICRO (less than 10 sq km)
2. SMALL (10 to 3000 sq km)
3. MEDIUM (3000 to 10,000 sq km)
4. LARGE (10,000 sq km or greater)

Area and size are the first of many variables taken from work done by an Army intelligence group at Fort Huachuca, AZ. A great deal of gratitude is owed for allowing the use of their scenario variables. The work done at Fort Huachuca was done solely for use in determining LIC situations, from which all the LIC variables were obtained and many of the common variables. The area and size designators cover anything from a small town to a full size country. In this scenario, select option 4 for LARGE area.

The next screen concerns sub-terrain. This is slightly out of order as the following screen covers terrain. However, this does not cause any problems. The sub-terrain lets the person reading the scenario know if they are dealing in a natural or man-made environment.

ENVIRONMENTAL
SUB-TERRAIN

1. URBAN
2. SUBURBAN
3. RURAL
4. COMBINED: SUB/URBAN/RURAL

These variables allow the choice of the three main areas of the man-made environment. The combined selection was added for those operations or working environments which may cover all areas. The sub-terrain options are especially important for LIC situations as this is the only situation which deals primarily in one sub-terrain area. For high and mid-intensity situations the COMBINED option is the most realistic. Here, select option 4 and ENTER.

The next environmental option is, as mentioned, terrain. The terrain screen presents a list of the 8 most common terrain types:

ENVIRONMENTAL
TERRAIN

1. RAIN FOREST/JUNGLE
2. WOODLAND
3. SWAMPS/DELTA
4. MOUNTAINOUS
5. DESERT
6. REMOTE/ISLAND
7. ARCTIC/TUNDRA
8. PRAIRIE/GRASSLAND

The terrain category is unique in that the final scenario will not simply regurgitate the terrain selected but will also present a short synopsis of the climate. The terrain selection, combined with the next screen covering season presents a detailed climatic description. While some AFSSs are not concerned with climate, others are very concerned. Maintenance personnel must know what conditions they are expected to work under in order to give accurate training recommendations and work completion times. Select the WOODLAND option 2 for the example scenario.

The next screen, as mentioned before, covers the season in which the scenario takes place. It is also the last of the ENVIRONMENT category.

ENVIRONMENT
SEASON

1. FALL
2. WINTER
3. SPRING
4. SUMMER

This option is intricately tied to the terrain category. The computer will take the TERRAIN and SEASON inputs and present a temperature range for each specific selection. That is, the temperature range for the WOODLAND (or any other terrain) selection will vary depending on the season chosen. An average temperature range can greatly influence tasks performed, depending on the AFS. Temperature, combined with climate, plays an important role when considering NBC protection. Even mild temperatures can become uncomfortable in full MOPP gear. Select WINTER (option 2) for the sample scenario.

The next screen covers mission duration:

MISSION DURATION

1. SHORT (less than 24 hours)
2. MEDIUM (2 to 30 days)
3. LONG (30 to 90 days)
4. EXTENDED (longer than 90 days)

This screen simply asks how long the contingency scenario will last. For high to mid-intensity conflicts the duration will generally be longer than 90 days, although a 30 to 90 war is possible. The option exists for making a high-intensity conflict less than 30 days duration but, barring a nuclear war, this is highly unlikely. Most LIC situations are of fairly short duration, lasting less than 30 days. Select option 4 (EXTENDED) for the example scenario.

The final screen for high-intensity conflict covers command and control of U.S. forces:

COMMAND AND CONTROL

1. AIR FORCE
2. JOINT (JCS)
3. COMBINED
4. CIVILIAN

Command and control is included as a means of painting a more complete scenario. Tasks may also vary due to requirements of the controlling command. Air Force command and control (C2) is self explanatory. JOINT C2 is Joint Chiefs of Staff (JCS) control which is the most typical C2 situation for high and mid-intensity conflicts. COMBINED C2 is U.S. and NATO or other allied forces under control of a multi-national military command. The CIVILIAN option is one which is strictly for a LIC. Civilian C2 is control of military forces by a non-military government agency such as the Central Intelligence Agency (CIA) or the Drug Enforcement Agency (DEA). This selection can also be used to

indicate United Nation (UN) control and can therefore be used in a mid to high-intensity conflict. However, actual military C2 in a UN sponsored campaign will most likely be under a combined command structure. Select option 2 (JOINT) for the last of the high-intensity options.

V. THE HIGH INTENSITY CONFLICT SCENARIO

After having selected all pertinent variables, the computer will take all inputs and put them into a standard scenario format. The scenario generator does not simply regurgitate all information provided. As mentioned, it will also take all information on terrain and season and provide a climatic description. At present this is the only interactive feature of the program. The scenario just created will appear as a set of two screen with a bright red background. The scenario is presented here in its entirety:

CONTINGENCY SCENARIO

The U.S. is faced with a high intensity conflict situation. U.S. forces will be involved in an operation expected to last longer than 90 days. The entire operation will be under joint (JCS) control.

Main operations will be conducted in a large area (range >10,000 sq km). The majority of operations will be conducted in a combined (sub/urban/rural) area in a woodland region. The general climate for this region is as follows:

Precipitation during all seasons with maximum in summer. Warm or hot summers and cold winters.

It is winter with temperatures ranging from 25 - 40 degrees F.

50% to 75% of critical supplies and materials will be delivered in this operation. 25% or greater of critical equipment/personnel are expected to be damaged/destroyed or wounded/killed per month.

The highest level of Nuclear, Biological and Chemical (NBC) mission oriented protective posture (MOPP) will be MOPP 4.

Unfortunately, in its present state, the computer does not allow backing up once a screen has been passed. Fortunately, after the scenario has been presented, the next screen will present a printout option so the scenario can be viewed in its entirety. After accepting or declining the print option a second option to save the scenario on disk will appear. Scenarios saved on disk are stored in ASCII and can therefore be called up on any word processor program and modified to suit particular needs. If selected, the scenario is automatically copied to the primary floppy drive (A: drive). A formatted disk must already be in the drive, otherwise an error message will be displayed. The last prompt will ask if another scenario generation session is desired. If accepted, the computer goes directly to the first scenario variable screen, CONFLICT INTENSITY.

VI. THE LOW INTENSITY CONFLICT

The creation of a LIC scenario is a more complex undertaking than a high-intensity conflict scenario because there are more factors to consider. For example, in war the level of conflict is assumed to be very high with the use of standard tactics. In LIC there may be no actual combat, low or sporadic combat, all the way to full use of all forces, yet still be in a LIC situation. Standard or unconventional tactics may or may not be used. The end result is a situation which is unpredictable and uncontrollable, which is why it is so important to determine which skills are needed to handle a LIC situation.

The creation of a low-intensity conflict (LIC) scenario is initially identical to building a mid-intensity conflict scenario. MOPP level is not displayed. To begin building a LIC scenario select Low-Intensity Conflict, option 3, on the conflict intensity screen.

CONFLICT INTENSITY

1. HIGH INTENSITY
2. MID INTENSITY
3. LOW INTENSITY CONFLICT

In addition to the standard scenario screens, 4 more LIC specific screens are displayed immediately following the COMMAND AND CONTROL screen. Because the definitions of all LIC variables are generally long and complex, each individual variable will not be discussed as previously done. Refer to Appendix A for complete definitions of all variables. Following is a display of each category with a general description following. Because of the complexity of LIC situations, creating this type of scenario will take longer than creating a high or mid-intensity conflict.

The first LIC screen deals with the 8 most common types of situations:

LIC SITUATIONS

1. POPULAR REVOLT
2. POWER GROUP STRUGGLE
3. STATE OPPRESSION
4. INTER-GROUP WARFARE
5. TERRORISM
6. UNSTABLE TRUCE
7. ILLICIT NARCOTICS ACTIVITY
8. MISCELLANEOUS CRISIS EVENTS

While there are most certainly many more types of situations which may constitute a LIC, these variables cover the majority. The variables are generally quite straight forward but some, such as POPULAR REVOLT, contain a large number of differing sub-variables. LIC SITUATIONS provide only broad situation categories associated with LIC. Specific situations listed in Appendix A can only be added to the scenario using the word processor option. Situations not covered in the first seven variables can be included in the MISCELLANEOUS CRISIS EVENTS option.

The second LIC screen divides the types of operations into 5 general categories:

OPERATIONAL CATEGORY

1. SUPPORT TO INSURGENCY
2. SUPPORT TO COUNTER INSURGENCY
3. COMBATING TERRORISM
4. PEACEKEEPING OPERATIONS
5. PEACETIME CONTINGENCIES

OPERATIONAL CATEGORY describes the general intent of the military operation undertaken to either combat or facilitate the LIC situation. For example, a LIC situation of POPULAR REVOLT can have an operational category of either SUPPORT TO INSURGENCY or SUPPORT TO COUNTER INSURGENCY, depending on national needs. Obviously, an operational category of COMBATING TERRORISM only applies to a terrorism situation. The option exists to mix and match situations to categories which are unrelated. Care must be taken, however, to maintain a sense of realism in a scenario. The program does not discriminate between situational and operational descriptions. It is up to the individual designing the scenario to distinguish which situations are appropriate for each operational category.

The next screen is a description of the threat type. That is, the type of threat U.S. forces are expected to face during the LIC situation:

LIC
THREAT TYPE

1. TERRORIST
2. INSURGENCY PHASE I
3. INSURGENCY PHASE II
4. INSURGENCY PHASE III
5. PROFIT MOTIVATED GROUPS
6. NATIONAL MILITARY OBSOLETE
7. NATIONAL MILITARY MODERN
8. NATIONAL MILITARY SOPHISTICATED

For this category it is very necessary to read and review the full description of each in Appendix A or from the program help option. The definitions for the insurgency phases are especially complex. Their definitions should be read thoroughly before utilizing them in any scenario. The NATIONAL MILITARY options simply describe the level of military technology used by the enemy forces. The level of technology is described as World War II, post World War II, and NATO and Warsaw Pact forces for OBSOLETE, MODERN and SOPHISTICATED, respectively. The TERRORIST option is self explanatory.

The last LIC screen deals with the type of support the enemy threat will receive:

LIC
THREAT SUPPORT

1. POPULAR SUPPORT LIMITED
2. POPULAR SUPPORT MODERATE
3. POPULAR SUPPORT SUBSTANTIAL
4. EXTERNAL RESOURCE SUPPORT
5. CROSS-BORDER SANCTUARY

The POPULAR SUPPORT selections simply describe the amount of support the enemy will receive from the populace in percentages. Limited support is less than 5%, moderate 15% to 33% and substantial greater than 33%. External support is support by a third party. Cross-border sanctuary are bases outside country of conflict which aid the enemy.

VII. THE LOW-INTENSITY CONFLICT SCENARIO

The LIC scenario looks identical to a high or mid-intensity conflict scenario except for the addition of LIC specific paragraphs. At present, the program simply restates the selection entered without any further description. It is hoped that in the future short definitions for each category will also be displayed. Until such time, any further descriptions must be added using the word processor option.

For the example shown below, the invasion of Panama in December of 1989 was used as a model. This is how the scenario generator will describe the Panama situation:

CONTINGENCY SCENARIO

The U.S. is faced with a low intensity conflict situation. U.S. forces will be involved in an operation expected to last 2 to 30 days. The entire operation will be under Joint (JCS) control.

Main operations will be conducted in a small area (range 10 to 3000 sq km). The majority of operations will be conducted in an urban area in a rain forest/jungle region. The general climate for this region is as follows:

At most, one or two dry months. All months warm or hot. Some areas may receive less precipitation.

It is Winter with temperatures ranging from 70 - 80+ degrees F.

75% to 100% of critical supplies and materials will be delivered in this operation. 0 to 10% of critical equipment/personnel are expected to be damage/destroyed or wounded/killed per month.

The U.S. is reacting to a miscellaneous crisis event situation. The operational category will be peacekeeping operations. The type of threat faced is: National military modern.

The support the threat will receive is: Limited popular support.

This scenario, like the others, can be saved on disk or printed out once completed. The option to return to the beginning to create another scenario or to quit will also be presented.

APPENDIX A

CONTINGENCY DEFINITIONS

I. CONFLICT INTENSITY [Army FM 100-20, JUL 88]

HIGH INTENSITY CONFLICT War between two or more nations and their respective allies, if any, in which the belligerents employ the most modern technology and all resources in intelligence; mobility; firepower (including nuclear, chemical, and biological weapons); command, control, and communications; and service support.

MID-INTENSITY CONFLICT War between two or more nations and their respective allies, if any, in which belligerents employ the most modern technology and all resources in intelligence; mobility; firepower (excluding nuclear, chemical, and biological weapons); command, control, and communications; and service support for limited objective under definitive policy limitations as to the extent of destructive power that can be employed or the extent of geographic area that might be involved.

LOW INTENSITY CONFLICT (TYPE A) Internal defense and development assistance operations involving actions by U.S. combat forces to establish, regain, or maintain control of specific land areas threatened by guerrilla warfare, revolution, subversion, or other tactics aimed at internal seizure of power.

II. CHEMICAL MISSION ORIENTED PROTECTIVE POSTURE (MOPP)

Mopp Level	Overgarment	Boots	Mask/Hood	Gloves
0	carried	carried	carried	carried
1	worn, open or closed	carried	carried	carried
2	worn, open or closed	worn	carried	carried
3	worn, open or closed	worn	worn, hood up or down	carried
4	worn, closed	worn	worn, hood down	worn

When considering chemical agents one may, on occasion, have to consider the type of agent used. Most chemicals will fit into one of the five following categories:

Nerve Inhibits the enzyme cholinesterase, causing general collapse of central nervous system. Usually lethal. Long uncertain recovery period for survivors.

Blister Damages body tissues, causing various types of lesions on skin, damage to lungs and eyes from vapor: Usually not lethal, but long recovery required.

Blood Prohibits absorption of oxygen by blood, causing suffocation. Usually lethal.

Choking Damages lungs causing fluid build-up, "dry land drowning." Usually lethal.

Incapacitating Various mechanisms, reducing ability to perform normally. Not lethal.

(1) Van Arsdale, Layne A. "A chemical warfare module for the Airland Advanced Research Model (ALARM)," Naval Post graduate School, Masters Thesis, December 1987, p. 79.

Common tasks associated with NBC attack (Army STP 21-1-SMCT):

- A. Donning, wearing, and storage of protective mask and hood.
- B. Replacing filters of protective mask.
- C. Decontamination of skin and personal equipment.
- D. Donning and wear of MOPP gear.
- E. Drinking, using latrine, and checking sleeping personnel in MOPP4.
- F. Recognition and reaction to chemical or biological hazard.
- G. Reaction to nuclear hazard.
- H. Use of detector paper to identify chemical agent.
- I. Exchange of MOPP gear
- J. Administer nerve agent antidote to self or buddy.

III. ATTRITION

LOW ATTRITION 0 to 33% critical equipment and/or personnel damaged, wounded, destroyed, or killed per month.

MODERATE ATTRITION 33% to 66% critical equipment and/or personnel damaged, wounded, destroyed, or killed per month.

HIGH ATTRITION 66% to all critical equipment and/or personnel damaged, wounded, destroyed, or killed per month.

IV. LOGISTICS

EXCELLENT 0 to 25% of critical supplies and material not delivered -- 75% to 100% of logistics demands met.

GOOD 25% to 50% of critical supplies and material not delivered -- 50% to 75% of logistic demands met.

FAIR 50% to 75% of critical supplies and material not delivered
-- 25% to 50% of logistic demands met.

POOR 75% to 100% of critical supplies and material not delivered
-- 0% to 25% of logistic demands met.

V. ENVIRONMENT

A. SIZE OF AREA OF OPERATIONS

MICRO Less than 10 square kilometers. Primarily represents a terrorist target such as an airport or military installation.

SMALL 10 to 3,000 square kilometers. Represents a region of a country, anything from a valley to a department.

MEDIUM 3,000 to 10,000 square kilometers. Basically represents several departments or a small country.

LARGE Greater than 10,000 square kilometers. Represents a large country or a region encompassing two or more countries.

B. SUB-TERRAIN

URBAN AREAS High density population, densely packed buildings, easy access on city streets but restricted freedom of movement about terrain. Large number of sanctuaries for enemy forces. For low intensity conflict: characterized by close coordination between the armed forces, police forces, paramilitary forces, and other security forces for the protection of critical installations and control of subversive activities. [FM 100-20, JUL 88; see pp. E-18 - E-21 for operational requirements.]

SUBURBAN AREAS Population sparse, few to moderate number of buildings, easy to fair access on streets, good to poor freedom of movement about terrain. Moderate number of sanctuaries for enemy forces. For low intensity conflict: characterized by loose to close coordination between armed forces, police forces, paramilitary forces, and other security forces for the protection of critical installations and control of subversive activities.

RURAL Sparsely populated, no to few buildings, roads, etc. Freedom of movement limited by natural barriers. No man made sanctuaries for enemy forces. For low intensity conflict: loose to no coordination and control by armed, police or paramilitary forces for protection of critical installations and control of subversive activities.

C. TERRAIN/SEASON

Seasonal temperatures and climate vary from one geographical location to the next. Seasonal responses will automatically produce a temperature range, while terrain responses will produce a general weather description for that region.

RAIN FOREST/JUNGLE At most, one or two dry months; All months warm or hot. Some areas receive less precipitation.

ALL SEASONS 70 - 80+ deg F

WOODLAND Precipitation in all seasons with maximum in summer; warm or hot summers, cold winters .

FALL 40 - 60 deg F

WINTER 25 - 40 deg F

SPRING 40 - 65 deg F

SUMMER 65 - 75 deg F

INUNDATED/SWAMPS/DELTAs Precipitation in all seasons with maximum in summer; long warm summers, cool winters.

FALL 50 - 70 deg F

WINTER 35 - 50 deg F

SPRING 50 - 70 deg F

SUMMER 70 - 80+ deg F

MOUNTAINOUS Climate varies with elevation, latitude and exposure. Higher altitude tends to be colder and weather harsher during all seasons.

DESERT Light precipitation, warm or hot summers cool or cold winters.

FALL 55 - 80 deg F

WINTER 30 - 55 deg F

SPRING 55 - 80 deg F

SUMMER 80+ deg F

REMOTE/ISLANDS Climate varies with latitude, generally high precipitation during all seasons. Note that these areas may be populated by ethnic, religious, or other isolated minority groups; however, remote area operations may be conducted in areas devoid of civilian population in which insurgent forces have established training areas, rest areas, logistical facilities, or command posts. The remote area tactical force should be composed of personnel indigenous to the operational area. [FM 100-20, JUL 88; see p. E-17 for operational requirements.]

ARTIC/TUNDRA Light precipitation; Short cooler or cold summers. Long very cold winters;

FALL -20 - -40 deg F

WINTER -50 - -20 deg F

SPRING -20 - -40 deg F

SUMMER 40 - 65 deg F

PRAIRIE/GRASSLANDS Semi-arid with light precipitation in all seasons. Warm to hot summers cool to cold winters;

FALL	50 - 70	deg F
WINTER	0 - 50	deg F
SPRING	50 - 70	deg F
SUMMER	70 - 80	deg F

VI. MISSION DURATION

SHORT A U.S. forces operation lasting less than 24 hours. This applies mainly to LIC situations as any full-scale war will generally be greater than 90 days from declaration to outcome.

MEDIUM A U.S. forces operation lasting 2 to 30 days.

LONG A U.S. forces operation lasting 30 to 90 days.

EXTENDED A U.S. forces operation lasting longer than 90 days.

VII. COMMAND AND CONTROL

AIR FORCE The U.S. Air Force is the lead agency for conducting a particular operation.

JOINT Multi-service (U.S.) command and control of an operation.

COMBINED U.S. and foreign forces operating under the unified control of a U.S. host nation military command.

CIVILIAN U.S. forces operating under the control of civilian agencies such as the Drug Enforcement Administration or the Central Intelligence Agency.

VIII. LOW INTENSITY CONFLICT SITUATIONS

C. DEFINITIONS

POPULAR REVOLT A rebellion of a segment or segments of the population against national or local institutions, which aims to change the law or unseat the government through unconstitutional means. Violence is usually, although not always, employed by the rebels to achieve their goals. The size of the rebellion can vary from very small groups to a majority of the population.

POWER GROUP STRUGGLE An attack by one national or local institution on another, with the object of divesting it of its political or economic power. Although force is always used, either by the threat of or actual employment of violence, death and destruction are limited or even absent altogether. The conflict is usually brief but, if successful for the instigator, results in highly significant changes in the distribution of political and economic power.

STATE OPPRESSION The employment of state institutions and security apparatus to subjugate the population or segments thereof, in order to secure, enhance, or maintain political or economic power. The government as aggressor denies basic rights and freedoms to its citizens or employs violence against the population in order to increase its control.

INTER-GROUP WARFARE A politically, religiously, or ethnically inspired attack by one segment or element of the population on another, or an economically motivated condition of widespread lawlessness. The object of the instigator is to establish dominance by subjugating the opposing group. The government may support one group or attempt to establish peace between the belligerent domestic forces.

TERRORISM The unlawful use or threat of force or violence against people or property to coerce or intimidate governments or societies. The goal of terrorism may be to achieve political, social, or religious concessions, or conversely, to maintain the status quo through intimidation.

UNSTABLE TRUCE OR CEASE FIRE A mutually agreed upon, but ineffective or doubtful, cessation of armed hostilities between two belligerent forces.

ILLICIT NARCOTICS ACTIVITY The cultivation, processing, shipment, and sale of illegal narcotics and associated adverse impacts on foreign governments and societies or U.S. interests.

MISCELLANEOUS CRISIS EVENT Any crisis situation, short of war and not covered under previous categories, which occurs on short notice and requires some immediate action by somebody to restore the peace, maintain stability, or preclude future loss of life or destruction of property.

B. EXAMPLES

Popular Revolt (People against Institution)

1. Insurgency (1)
2. War of Independence (decolonization) (2)
3. Separatist Uprising (2)
4. Localized Revolt
5. Agrarian Land Seizures

Power Group Struggle (Institution against Institution)

1. Coup d'Etat (not always carried out by military)
2. Barracks Revolt
3. Expropriation of Resources or Property
4. Disenfranchisement of a Legitimate Power Group

State Oppression (Institution against People)

1. Violation of Civil Rights (freedom of speech, freedom of assemble, open honest elections, etc.)
2. Violation of Human Rights (imprisonment or execution without trial, destruction of dwellings and crops, kidnapings and disappearances, rape, torture, mutilation, and murder sanctioned, tolerated, or ordered by the state)
3. State of Siege (temporary suspension of civil rights and constitutional guarantees in the interest of national security)
4. Genocide (systematic massacres of an entire segment of the population targeted as a threat to national security)

Inter-group Warfare (People against People)

1. Civil War (2) (religiously, politically, or ethnically motivated)
2. Inter-tribal Warfare
3. Banditry (condition of widespread lawlessness)

Terrorism

1. State Directed Groups
 - a. Death Squads
 - b. Transnational Hit Teams
2. State Supported Groups
3. Independent/Autonomous Groups

Unstable Truce or Cease Fire

Illicit Narcotics Activity

1. Narco-trafficking
2. Narco-terrorism
3. Narco-insurgent Alliance
4. Narco-extortionism (Government held at siege)

Miscellaneous Crisis Events

1. Hostage-taking
2. Natural or Man-made Disasters
3. Cross-border COIN Operations (2)
4. Population Dislocation (Refugees)

NOTES (1) Can escalate to Mid-Intensity in final phase.
(2) Some will be Mid-Intensity Conflicts.

C. OPERATIONAL CATEGORIES OF LOW INTENSITY CONFLICT
[FM 100-20, JUL 88]

U.S. MILITARY SUPPORT TO INSURGENCY The United States supports selected insurgencies opposing oppressive regimes who work against U.S. interests. **INSURGENCY:** An organized movement aimed at the overthrow of a constituted government through use of subversion and armed conflict. Insurgency focuses on radical change in political control and requires extensive use of covert instruments and methods.

U.S. MILITARY SUPPORT to COUNTERINSURGENCY The United States will use its military resources to provide support to a host nation government's counterinsurgency (COIN) operations in the context of Foreign Internal Defense (FID). FID is the participation by U.S. civilian and military agencies in any of the action programs taken by another government to free and protect its society from subversion, lawlessness, and insurgency. **COUNTERINSURGENCY:** Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency. Counterinsurgency uses principally overt methods and promises orderly change within the existing system.

COMBATING TERRORISM (CT) Air Force programs to reduce the vulnerability of installations, units, and personnel to terrorism, during peacetime, mobilization, and war; includes antiterrorism (defensive) and counterterrorism (offensive) actions.

PEACEKEEPING OPERATIONS (PKO) Military operations conducted with the consent of the belligerent parties to a conflict, to maintain a negotiated truce and to facilitate diplomatic resolution of a conflict between the belligerents.

PEACETIME CONTINGENCIES (PTC) Politically sensitive military operations normally characterized by the short-term rapid projection or employment of forces in conditions short of war. They are often undertaken in crisis avoidance or crisis management situations requiring the use of military instruments to enforce or support diplomatic initiatives.

D. TYPE OF THREAT [FM 100-20, JUL 88]

TERRORISM The unlawful use of, or threat of, force or violence against people or property to coerce or intimidate governments or societies, often to achieve political, religious, or ideological goals.

INSURGENCY, PHASE I The latent or incipient phase of a Maoist (1) or mass-oriented insurgency. This phase involves no major outbreak of violence or uncontrolled insurgent activity. Typical activities include organization, recruitment, infiltration of

government and other organizations, creation of local cells, training, and open political activity, such as: labor organization, political front organization, and strikes. Bank robberies and kidnappings may be carried out to obtain initial funding.

INSURGENCY, PHASE II The guerrilla warfare phase of a Maoist insurgency. Violent acts, ranging from sabotage and terrorism through large-scale guerrilla attacks occur in the phase. Base areas are created and expanded. In the political arena, the masses are mobilized and a parallel insurgent government is established.

INSURGENCY, PHASE III The war of movement or conventional phase of a Maoist insurgency. Insurgents openly operate in battalion-size or larger forces, begin to hold territory as "liberated zones," and attempt to establish a national government. When the insurgents abandon guerrilla tactics and adopt conventional war fighting techniques at some point during this phase, the conflict shifts from low-to mid-intensity.

PROFIT MOTIVATED GROUPS Drug traffickers, mercenary armies, bandits, and pirates. Most will possess state-of-the-art small arms, communications, and transportation. No political goal, unless it serves to further profit-making activities. Terrorism and murder are common tactics.

NATIONAL MILITARY, OBSOLETE (2) Conventional forces equipped with WW II technology, weaponry, and equipment. Typically, armies of under-developed third world nations. Very limited navy and air force.

NATIONAL MILITARY, MODERN (2) Post WW II technology, weaponry, and equipment. Typically, armed forces of developing nations (Argentina, Brazil, Chile) and world power surrogate nations (Cuba, Nicaragua).

NATIONAL MILITARY, SOPHISTICATED NATO and Warsaw Pact forces. State-of-the-art equipment and highly trained forces.

NOTES (1) INSURGENCY, MAOIST: It is the Maoist strategy, also known as mass-oriented, that more than any other strategy employs the three phases of insurgency: incipient, guerrilla warfare, and war of movement. The Maoist strategy aims to achieve the political and armed mobilization of a large popular movement. Great emphasis is placed on gaining popular support through an extensive organizational network and on creating a political and armed legitimacy outside the existing system. A large armed guerrilla force, an administrative and political arm, an extensive base of active and passive political supporters, overt mass organizations, and a parallel government are typical features of the Maoist insurgency. This strategy mobilizes popular forces for a direct military and political challenge to the government through a protracted campaign of increasing violence to destroy the government and its institutions.

STRENGTHS: Mass organization and support enables the insurgent to absorb government tactical successes; extremely resilient due to its great depth of organization; mobilizes the whole population so that it requires integrated action by all branches of government to defeat it; may shift gears through its three phases at will in order to adapt to government offensives or capitalize on its own successes.

WEAKNESSES: Requires a favorable environment; external support is sometimes required; subject to infiltration through its political and mass organizations; the number of prisoners, detainees, and defectors with exploitable information will be significant. Examples: El Salvador insurgency (FMLN); Viet Cong insurgency; Peruvian insurgency (Sendero Luminoso); Chinese communist revolution.

(2) **NATIONAL MILITARY:** Conventional forces deployed against U.S.-supported insurgents or resistance movements. Although U.S. forces will not engage conventional military forces in low intensity conflict, they may support insurgents against conventional, national military forces.

E. SUPPORT OF THREAT

LIMITED POPULAR SUPPORT Less than 15 percent of the population supports the threat.

MODERATE POPULAR SUPPORT 15 to 33 percent of the population supports the threat.

SUBSTANTIAL POPULAR SUPPORT More than 33 percent of the population supports the threat.

EXTERNAL RESOURCE SUPPORT Money, weapons, food, advisors, and training provided by a third party.

CROSS-BORDER SANCTUARY Secure training, operational, and logistical bases outside the country of conflict.

APPENDIX B

THE ON-LINE HELP FILE

Variables contained in the scenario may sometimes require explanation. To deal with these questions, an on-line help file was created providing definitions for the variables. This information is contained in the CTT_REV.HLP file. Additionally, it can answer any questions on operating the scenario generator. Some features of the on-line help are on-line help for running the scenario generator, a dictionary containing definitions for each variable, multi-page help screens for each topic, and direct linkage of several help screens from topic to topic. Also, with the source code, the user can define window attributes and highlighting capabilities. Below is a diagram of the information contained in the on-line help.

MAIN MENU

DICTIONARY MENU

HELP WITH GENERATOR

- CONFLICT INTENSITY
- NBC THREAT LEVEL
- ATTRITION
- LOGISTICS
- ENVIRONMENT MENU
 - AREA AND SIZE
 - SUB-TERRAIN
 - TERRAIN/SEASON
- MISSION DURATION
- COMMAND AND CONTROL
- LOW INTENSITY CONFLICT MENU
 - LIC DEFINITIONS OF SITUATIONS
 - EXAMPLES OF LIC SITUATIONS
 - OPERATIONAL CATEGORIES OF LIC
 - TYPE OF THREAT
 - SUPPORT OF THREAT

In any screen of the scenario generator to access the on-line help press the F1 key. Press ESC at any time to return to the scenario generator. The help window will be displayed in the center of the screen covering the topic and variable choices. Because the topic and variable choices are covered, it is advisable to remember which topic and variables are of interest.

The first window is the Main Menu which will look exactly like the diagram on the following page. The help file is menu driven and to move from menu to menu the letter that is highlighted must be selected. From the Main Menu either Help With Generator or the Dictionary Menu can be accessed. The "H"

selection, Help With Generator, will display several screens explaining the use of the generator which can be viewed using the PgDn and PgUp keys. Select "D" to display the Dictionary Menu for questions pertaining to variable definitions. Select "HOME" to return to the Main Menu from any help screen.

MAIN MENU	
The on-line help provides variable definitions and help in operating the contingency scenario generator program. To access either of these enter the highlighted letter of your choice. NOTE: The + and - features are inoperative in this help file.	
Help With Generator Dictionary	
ESC-Exit	F1-Help

The Dictionary Menu, below, contains several topic choices. To select one of the choices press the highlighted letter. This letter is usually the first letter of the topic; however, in the case of a duplicated letter, another letter contained in the topic will be highlighted. The selected choice will give further information on the variables of the topic selected. In some cases, the definition presented is very extensive and the PgUp and PgDn keys must be used to view the entire definition. To return to the Dictionary Menu from any screen, press "D".

DICTIONARY MENU		
Press the letter of your choice to display information contained on that topic. To return to this menu at any time, press D.		
Conflict intensity Nbc threat level Attrition Logistics Environment Menu Mission Duration Command and Control Low Intensity Conflict Menu		
HOME-Main Menu	F1-Help	Esc-Exit

There are two topics that contain sub areas of interest. They are ENVIRONMENT and LOW INTENSITY CONFLICT. When one of these areas is chosen a different menu will be presented.

ENVIRONMENT
The following areas are part of the environment. Enter the highlighted letter of your choice for additional information. Area and Size Sub-Terrain Terrain/Season D-Dictionary Menu HOME-Main Menu Esc-EXIT

LOW INTENSITY CONFLICT (LIC)
For more information on any topic below, please enter the highlighted letter of your choice. LIC Definitions of Situations Examples of LIC Situations Operational Categories of LIC Type of Threat Support to Threat D-Dictionary Menu HOME-Main Menu

These menus operate in the same way as the Main Menu and the Dictionary Menu. Select the letter of the topic for which information is desired. Again, the selected choice will give further information on the variables of the topic selected. Because there is extensive information in these two areas, it is especially important to remember the topic and variables for which you want information. To return to the Dictionary Menu press "D" at any time. To return to the Environment or Low Intensity Conflict Menus, from any of their sub screens, press "E" or "I" respectively.

It is easy to maneuver within the on-line help. If you need help with using the on-line help, press F1 at any time and a help screen will be displayed. The two types of commands used in the on-line help are 1) general and 2) special commands.

General commands are displayed at the bottom of the screen (not at the bottom of the on-line help window). They include:

- + - To view the next the next screen
- - To see the previous help screen
- HOME - To return you to the main menu
- F1 - To see the help screen for on line help procedures
- F2 - To search the entire help file to locate a word or group of words
- ESC - To exit the help module and return to the generator

Because the HELP software was designed to be used in other software, the + and - may be confusing. If they are used, several definitions may be inadvertently skipped. To avoid this problem, do not use these commands.

Special commands are displayed on the bottom line of the on-line help window. These commands are peculiar to a specific topic since some topics in the dictionary contain too much information for one help screen. Special commands include:

- PgUp - To view the previous page
- PgDn - To view the next page

It is easy to get the two types of commands confused. If you are not able to read an entire file on one topic you are probably using the + and - general commands instead of the special commands.

In addition to the general and special commands for moving through the on-line help, dictionary screens are "linked" to other dictionary screens directly. To access other screens press the highlighted key to view the help screen for the item associated with that key. The Dictionary Menu and the Main Menu can be reached from any screen by pressing "D" and "HOME" respectively. Press "BackSpace" after selecting a topic to return to the Menu for that topic.

To return to the generator press the Esc Key. When the procedure ends, the screen is restored to its original appearance before the on-line help was accessed.

To change the on-line help file refer to Appendix C.

APPENDIX C

MAINTENANCE AND MODIFYING THE CONTINGENCY SCENARIO GENERATOR

The Contingency Scenario Generator was first designed in 1989 by 2Lt Jody Guthals and 1Lt Todd Dart of AFHRL/MOD, Brooks AFB, to provide a simple method of generating contingency scenarios. It was designed to be used in conjunction with USAF Occupational Measurement Center Job Inventories and provides a scenario where tasks are measured with chosen scenario in mind. It could also be used for occupational and research needs. Since it was created, there have been no major changes made.

All of the information contained in the Contingency Scenario Generator and in the related programs and products are unclassified and contain no privacy act information.

The Contingency Scenario Generator is written in Pascal using Turbo Pascal 4.0, a Borland software package. The scenario generator can be compiled and run on any IBM compatible computer with 512k of Random Access Memory and Turbo Pascal 4.0 software. To compile the program in TURBO, the linker options should be set to disk. A color monitor is preferable to a monochrome. Any printer can be used in conjunction with this program. Support software is not required to run the scenario generator.

Maintenance is not required to keep the generator in top operating condition, however, it is highly recommended to make backup copies on either floppy or hard disk in case the original programs are damaged. Additionally, the program will run much quicker on a hard drive. Accessing the on-line help (help files) will be slower if the program is not loaded on the hard drive.

Modifications to the Scenario Generator are easily accomplished by any person familiar with Pascal. There are 24 files used for the current scenario generator. Two files are used to run the program, 11 files contain the source code for the program, 9 are mini users manuals for some of the UNITS, and finally, 2 files support the software.

The files are broken up into four groups, each of which is on a separate floppy disk. The first group contains the files necessary to run the program. The second contains source code files that pertain specifically to the scenario generator. The third group contains files that are used for the on-line help. They are more generic, and can be used in different programs to provide on-line help. The fourth group contains files that create .HLP files to be used in other programs or to alter the help file used by the generator.

PRTDOC.EXE is a program that will print out .DOC files. To execute this program enter PRTDOC.

File Name	Length (in bytes)
1. CTT.EXE	81616
CTT_REV.HLP	69760
2. CTT.PAS	5890
CONTUNIT.PAS	49388
VARUNIT.PAS	15036
CTT_REV.TXT	15036
3. HELPUNIT.PAS	33459
HELPUNIT.DOC	7794
INPUT.PAS	24441
INPUT.DOC	20801
MISC.PAS	34147
MISC.DOC	21391
SCREEN.PAS	18075
SCREEN.DOC	15076
STRINGS.PAS	30595
STRINGS.DOC	27733
STQ.PAS	8537
STQ.DOC	19430
WINDOWS.PAS	23580
WINDOWS.DOC	20703
4. GENHELP.DOC	13080
GENHELP.EXE	76112
GENHELP.TXT (example)	2147
PRTDOC.DOC	7389
PRTDOC.EXE	39904

The third and fourth group of files above were developed and are maintained by AFHRL Information Sciences Division, Software and Data Base Development Branch. They will accomplish all updated versions of this software.

The CTT.EXE program, the Contingency Scenario Generator, is an executable program. This means that no other software is required to run this program; however, you will not be able to access the on-line help if the CTT_REV.HLP file is not loaded on the same drive as the generator. Both files should be kept on the same floppy or the same drive so that the option to use the on-line help remains open.

The .PAS files in groups two and three contain the necessary code to create CTT.EXE. They must be compiled to disk separately prior to compiling CTT.PAS. When these files are compiled, .TPU files will be created to be used by CTT.PAS during it's compilation.

The code that drives the program is contained in the CTT.PAS file. It also contains a listing of all of the variable names and their description. It contains a description of the units called in the program. Finally, it contains the code for setting the colors in the help screen. To change the colors, refer to the HELPUNIT.DOC file for code instructions. After changing the colors, the program must be recompiled to disk with all of the software on one drive (to ensure ease of compilation). When CTT.PAS is compiled to disk, a new executable file will be created.

The CTT.PAS file calls several *UNIT.PAS files and each in turn calls several others. On the following page is a list of those called (note, the .PAS has been left off).

Units Called

<u>CONT</u>	<u>HELPUNIT</u>	<u>MISC</u>
CRT	CRT	DOS
CONTUNIT	INPUT	STRINGS
HELPUNIT	SCREEN	CRT
	STQ	WINDOWS
<u>CONTUNIT</u>	STRINGS	
	WINDOWS	<u>SCREEN</u>
CRT	<u>INPUT</u>	CRT
HELPUNIT		DOS
INPUT	CRT	MISC
PRINTER	STRINGS	STRINGS
VARUNIT	MISC	
<u>VARUNIT</u>	<u>WINDOWS</u>	<u>STQ</u>
none	CRT	CRT
<u>STRINGS</u>	INPUT	STRINGS
	SCREEN	
none	STRINGS	
	STQ	
	MISC	

All of the files are completely documented and should be easy to understand. The CONTUNIT.PAS and VARUNIT.PAS files contain the bulk of the code for the scenario generator. All other *UNIT.PAS files are used to provide on line help through the scenario on-line help. Files in group three and four use more intricate programming techniques and may be slightly more difficult to understand.

CONTUNIT.PAS contains the screen format for the program. It contains the variable definitions that are used in creating the scenario. These definitions may be changed if needed, however, screen format will be altered if the length of the variable definitions is changed. Additionally, the content of the scenario may be disjoint if the definitions are changed. To avoid these problems, the text for the scenario in the Fill_In, Print_Out, Put_In_Data, and the Temperature procedures must also be changed. Each of these procedures are identical in content, the difference is in their execution. The first procedure prints the scenario to the screen, the second to a printer, and the third to a file contained in drive A. If drive A does not have a formatted disk, there will be a run time error and you will be put back in DOS.

Note that the definitions for the climate are listed differently than all other definitions. This was done so more than one line of text could be printed out at once. The definitions are consistent in that they each occupy two lines on information and each line is listed one below the other. An additional line may be added with only a minor modification to the program.

The VARUNIT.PAS contains the information sent to the screen that presents the user with variable options. If any variable options are added, deleted, or changed, this unit would require modification to the procedures containing the topic of desired change. Additionally, the Choice procedure in CONTUNIT.PAS will require minor numeric changes if variables are added or deleted. Minor changes in the array types contained in CONTUNIT.PAS may be needed if the variables options or the variable definitions are changed.

The CTT_REV.HLP file contains the information used in the on-line help. This file can be modified to enhance any of the help screens. To do this, the CTT_REV.TXT file must first be edited by the turbo editor. There is a special format for the file so it will compile properly in the GENHELP program. To change this special file, refer to the HELPUNIT.DOC and the GENHELP.DOC file. GENHELP.EXE is an executable program that will take any .TXT file in the format specified in HELPUNIT.DOC and will create the .HLP file to be used in the scenario generator. Directions for operating GENHELP are also located in the HELPUNIT.DOC file.