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ARMY TANK LIVE-FIRE
AUTOMATED SCORING TOOL (ATLAST)

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    This document serves as a user's guide to the Army Tank Live-Fire Automated Scoring Tool (ATLAST). ATLAST is a PC compatible computer application that automates tank gunnery scoring and analysis for all U.S. Army main battle tanks and the Sheridan Armored Reconnaissance Vehicle. This user's guide describes ATLAST's installation and operation and provides precise explanations of the analysis reports.

    A breakdown of the raw relational database is included in Appendix A (for those wishing to export data to other database management systems for further analysis). In Appendix B the configuration (input file) is described. This provides the necessary information needed to modify gunnery scenarios, scoring matrices, and many other parameters.

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1. INTRODUCTION

U.S. Army tank crews are required to regularly participate and qualify in a battery of gunnery certification tests known as the Tank Gunnery Tables. Manual methods for scoring tank crews' performances, and for performing subsequent data analysis (summarizing a unit's performance) are tedious, error-prone, manpower intensive, and time consuming.

The **Army Tank Live-Fire Automated Scoring Tool (ATLAST)** described in this Users' Guide automates the scoring and unit summary process for all U.S. Army main battle tanks and the Sheridan Armored Reconnaissance Vehicle. This includes Tank Gunnery Tables 4 through 8 as described in U.S. Army Field Manual (FM) 17-12-1, FM 17-12-2, FM 17-12-3, and FM 17-12-5.

The goal of this effort was to create a software program that would expedite the scoring process and provide real-time feedback to commanders on their unit's performance. It was a natural follow-on to the completion of a similar program for scoring and analysing Bradley Fighting Vehicle Gunnery Tables.

ATLAST eliminates score calculation errors, permits immediate feed-back of gunnery crew performances, instantaneously provides a legible, easy to understand printout for review and debriefing, and significantly reduces the man-hours required for scoring and summarizing a unit's performance. ATLAST can also be used during Home Station Gunnery Training as described in the FM 17-12 series manuals to further enhance Live-Fire Gunnery Performance.

ATLAST is an interactive system with an emphasis on providing a user-friendly environment so that even the computer beginner can become a proficient user. The system is designed to work with most IBM PC compatible computers.

1.1 PREREQUISITES

Due to the user-friendly nature of the ATLAST software system, this user's guide will focus on general system operations. It is not intended to be a complete tutorial or a lesson in basic IBM PC compatible computer operations. Therefore a basic familiarity with IBM PC compatibles and MS-DOS is assumed.

The operator should also be familiar with the rules and procedures outlined in the tank gunnery field manuals.

2. SYSTEM REQUIREMENTS

The minimum computer system requirements to run ATLAST are:

- IBM PC compatible computer using MS-DOS 2.0 or higher with 512KB memory and at least one floppy disk drive installed. (640KB memory and a hard disk is recommended).

- A printer.

3. SYSTEM INSTALLATION

It is strongly suggested that the ATLAST distribution disk be kept in a safe place following installation.
- Place the ATLAST distribution disk into a floppy disk drive **A:** or **B:** and close the drive door.
- If you placed the ATLAST distribution disk into floppy disk drive, make this your working disk drive by typing:

A:

(*If you placed the floppy disk drive into drive* **B:** *then make the* **B** *drive your working disk by typing* **B:**).

- Next type:

INSTALL

and follow the instructions. Note that if you are installing ATLAST onto a 360KB (Double Density) floppy disk drive, then there is room for only one vehicle on the disk. (i.e., you cannot install all vehicles, (*M1, M60A3, M48A5 and M551*), you may only select one.).

- Start the ATLAST program by typing:

ATLAST

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4. SYSTEM OVERVIEW

General operating steps for ATLAST are illustrated in Figure 1 on the opposite page. Section 4.1 below describes this flow chart. More detailed instructions on ATLAST operation are outlined in Section 4.2.

4.1 GENERAL OPERATING STEPS.

> **Begin Gunnery Density**

1. Run ATLAST (*see page 2*). Verify the correct time, date, and working disk.
2. Before starting a new gunnery density, delete all crew data remaining on the working disk. (See *"DELETE ALL CREW DATA"* in Section 4.2). This will ensure that all analysis reports include only the current gunnery density's data.

> **Score Gunnery Tables**

3. Select *"SCORE GUNNERY TABLES (enter crew data)"* from the ATLAST function menu (Figure 2).
4. Select the tank and the gunnery density to be used (see Tank and Table Menu Screen in Figure 3).
5. Select the NEW CREW (F3) function key to start scoring a crew.
6. Enter the crew's performance results one task (gunnery engagement) at a time.
7. Save **and** print the score sheet after completing each set of gunnery engagements (such as Day, Night, or ALIBI engagements). (Use the SAVE (F4) and PRINT (F5) function keys).
8. Repeat steps 5 to 7 for all crews in the unit until the ⌐.. ɩery table is completed, then exit ATLAST (F10) function key).
9. Repeat steps 3 though 9 for all gunnery tables in the gunnery density.
- **Score and/or Unit Summary Analysis Reports** may be generated, as needed, after saving a score sheet. But the program must be exited and *Analyse Gunnery Tables (roll-up reports)* selected upon re-entry. (Figure 2).
- **Backing-up crew data** can be accomplished by selecting the *Back-up Crew Data* box from the ATLAST Function Menu (in step 3) prior to selecting a gunnery table for scoring. It is recommended to back-up crew data at least once a day. (See *"BACK-UP CREW DATA"* in Section 4.2).

> **End Gunnery Density**

- After completing a gunnery density, the unit's data may be added to the disk of the next higher level of command for a larger unit performance analysis by selecting the *Transfer Crew Data* box from the ATLAST Function Menu in step 3. (See *"TRANSFER CREW DATA"* in Section 4.2).

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ATLAST OPERATING PROCEDURES

Begin Gunnery Density

- Delete old crew data from last gunnery density

Score Gunnery Tables

- Select gunnery table
- Score Crews
  Conduct unit analysis'
- Back-up crew data

Repeat for all

Gunnery Tables

in Density...

End Gunnery Density

- Transfer crew data
- Return to home station
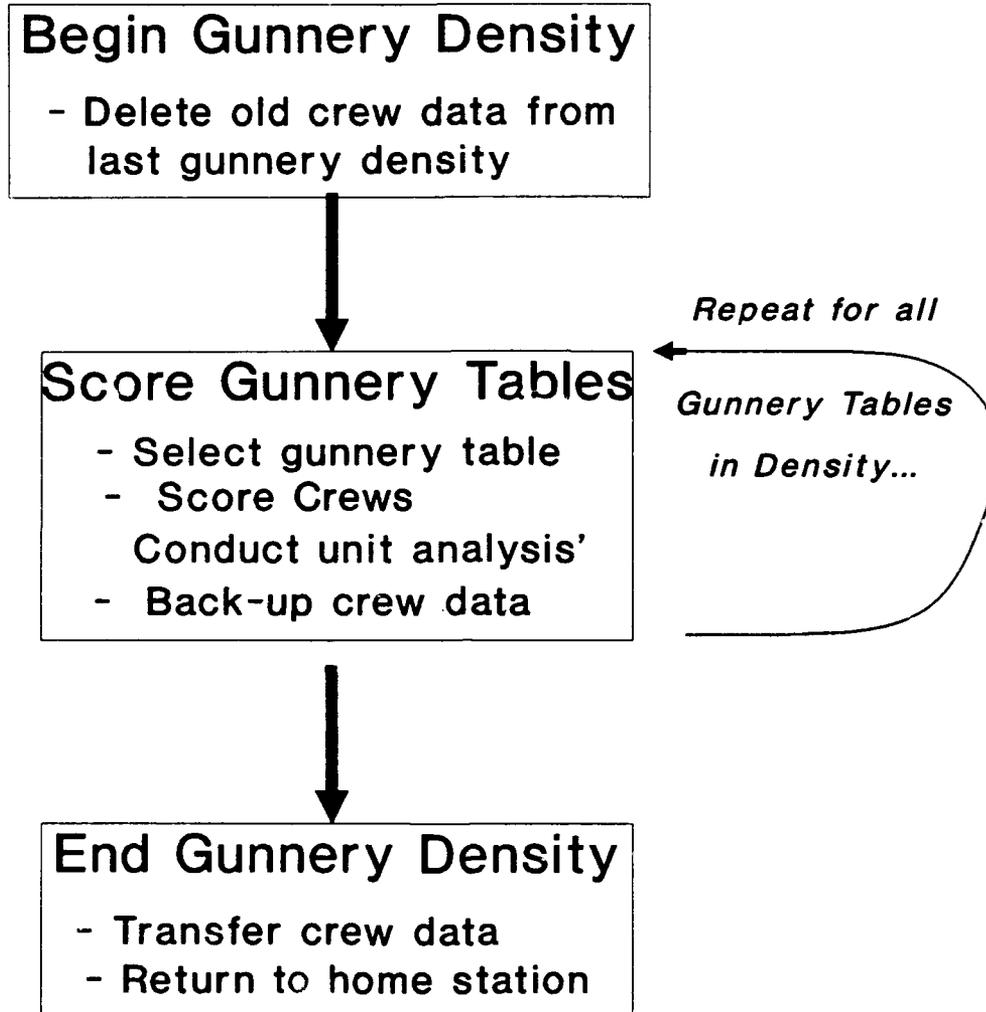
Figure 1. ATLAST Operational Flowchart.

4.2. ATLAST FUNCTION MENU SCREEN.

Figure 2 on the opposite page illustrates the Function Menu screen. Options available are displayed in boxes on the screen. To chose an option, move the cursor to it by using the arrow keys ⬇⬆. This will high-light a box on the display. The high-lighted option is then selected by pressing the RETURN (or ENTER) key.

4.2.1. GUNNERY FUNCTIONS (enter or summarize data)

SCORE GUNNERY TABLES (enter crew data)

Select this gunnery function to fill-out crew score sheets.

ANALYSE GUNNERY DATA (roll-up reports)

After entering crew data, select this gunnery function to run data analysis (unit performance summary) reports.

4.2.2. MAINTENANCE FUNCTIONS

BACK-UP CREW DATA

Selecting this option from the main menu allows back-up disks to be created from a previously formated disk; it also provides the option of making the backed-up disk an ATLAST executable disk. Crew data from one or all gunnery tables may be backed-up. If ATLAST data already exists on the destination disk it is **replaced** with the gunnery tables being backed-up.

TRANSFER CREW DATA

This option transfers (merges) crew data onto another disk. If ATLAST data already exists on the destination disk, the two data files are merged. Example: Company level data can be transferred to a battalion level disk, battalion level to brigade level, and so on.

DELETE ALL CREW DATA

This option deletes all crew data from the ATLAST data disk. This must be done prior to starting a new gunnery density to ensure that all analysis reports include only the current density's performance data.

```
+--------------------------------------------------------------------+
| +----------------------------------------------------------------+ |
| |                                                                | |
| |                                                                | |
| |          +------------------------------------------+          | |
| |          |  SCORE GUNNERY TABLES (enter crew data)   |          | |
| |          +------------------------------------------+          | |
| |                                                                | |
| |          +------------------------------------------+          | |
| |          |  ANALYSE GUNNERY TABLES (roll-up reports) |          | |
| |          +------------------------------------------+          | |
| |                                                                | |
| |                                                                | |
| |                                                                | |
| |                                                                | |
| | +---------------------+ +--------------------+ +--------------+ | |
| | |  BACK-UP  CREW DATA  | | TRANSFER CREW DATA | | DELETE CREW  | | |
| | |                     | |                    | |    DATA      | | |
| | +---------------------+ +--------------------+ +--------------+ | |
| +----------------------------------------------------------------+ |
| Use arrow keys (←↕→) followed by Enter◄─┘ to select an option. (ESC cancels) |
+--------------------------------------------------------------------+
```

Figure 2. ATLAST Function Menu Screen.

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Once ATLAST knows the function it is to perform (from Figure 2), a vehicle and gunnery density (table) on which to perform that function must be selected. The vehicle and gunnery table are selected by using the arrow and Enter keys.

```
Correct?   (Answer Y or N)Y
```

M1 / M1A1 Abrams	Table 4
M60A3	Table 5
M48A5 Patton / M60	Table 6
M551 Sheridan (A1)	Table 7
	Table 8

```
M1/M1A1 Table VIII FM-12-1  3-Nov-86, (includes change 3, July 90):
```

```
                          Reading 12 MATRICES
1..... 2..... 3..... 4..... 5.....
```

```
Use arrow keys (←↓→) followed by Enter←┘ to select an option. (ESC cancels)
```

Figure 3. ATLAST Tank and Table Menu screen.

(Tank and Table selected... shown reading in scoring matrices)

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4.3 DETAILED OPERATING PROCEDURES.

On-Line Help: The F1 function key displays a terse description of the Function Keys (F1, F2, ...etc.) that are available. Typing the **?** key after **F1** will reveal useful information such as starting, scoring, and saving crews, movement about the score sheet, how to redraw the screen, and other items.

Use the **NEW CREW** function key (F3) to start entering the performance for any crew.

ATLAST will then display the administrative data section. If desired, you may choose to by-pass most of these entries by pressing the RETURN key. There are however, certain fields that must be entered such as: first run/alibi run/re-run, unit designation, etc.. ATLAST will not allow you to by-pass these key entries.

After entering the administrative data, begin scoring a crew by entering the selected task name (as per FM 17-12-1, FM 17-12-2, FM 17-12-3, and FM 17-12-5), and pressing the RETURN key. The task name and type of engagement will appear in the TASK column of the score sheet.

Target descriptions appear in the score sheet's "Target Type" column of the score sheet. **For example:** *A moving T72 is shown as (M-T72). The letters (NA) will also appear under the second target for those tasks which have only one target.*

After entering a task, the cursor will move to the **Eff** (*Target Effect*) column for the first target. Enter the effect the round had on the target (T - Target destroyed, M - target Missed, X Task halted - crew disqualified).

[Note: if the crew fires on the 2nd (*least dangerous*) target first use the ↓ cursor key to move down to the 2nd target and enter the results in the 2nd target's effect cell. (This would also be cause for a crew penalty deduction.)]

After entering the target effect, the cursor will move to the **Time** column for that target. Enter the time (in seconds) that the target effect occurred. As per the tank gunnery field manuals, this is the elapsed time from the start of the engagement until target effect took place.

After the tasks, target effects, and times are entered, the cursor will move to the score sheet's crew cut area. At this time crew penalty point deductions (*crew cuts*) may be levied against the crew by entering the crew cut number corresponding to the error committed. (For a list of crew cuts, type the F1 key followed by **?**. Then press space bar until Crew Cuts appear on the screen. Crew cuts are entered in any of the score sheet crew cut columns. The "Total Cuts" column of the score sheet will display the total point deductions for crew cut penalties.)

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4.3 DETAILED OPERATING PROCEDURES (continued)

When the cursor is positioned within the last crew cut column and the RETURN key is pressed, a Tank Crew Evaluator (TCE) Remarks Menu will appear on the screen. Entering remarks can enhance after-action reviews and "lessons learned" for the crew. Moreover, all remarks from the Remarks Menu are stored in ATLAST's data base and are incorporated into the Unit Summary Analysis Reports. The most commonly used TCE Remarks are presented in the menu. Pressing the RETURN key will select the remark that is currently displayed in reverse. Typing the cursor keys ↑ and ↓ will move up or down the list of remarks. Up to three remarks per task may be placed this way. If you cannot find a desired remark in the menu, typing the ESC key will exit the remarks menu and allow you to manually type your own remark - but this remark will not appear in the Unit Summary Analysis Report.

After the last entry has been made for a given task, press the F2 function key. This temporarily saves the score sheet up to that point (in the event of a power failure) and moves the cursor to the start of the next task to be scored.

All of the crew's remaining tasks, within a gunnery phase, can be scored in the same manner. When all tasks within a phase have been entered, the user must save the score sheet using the SAVE CREW function key (F4).

After entering a crew's day, or night phase engagements, the crew's score sheet is printed and saved using the appropriate function keys. If alibis are to be run, they must be completed and saved on a separate score sheet. If re-runs are to be run, they also must be completed and saved on a separate score sheet.

The PRINT SCORE SHEET function key (F5) should now be used to have a hard copy of the score sheet available for debriefing the crew. It is recommended that enough copies be printed so as to allow the crew to retain one for their own instruction and the Tank Crew Evaluator to have one for unit records.

After saving and printing the score sheet, start scoring a new crew in the same manner using the NEW CREW function key (F3).

Exit ATLAST by pressing the QUIT ATLAST function key (F10).

Special Note: ERRORS ENTERING DATA: *An engagement can be saved once and only once!.* If a crew is incorrectly entered, it may not be deleted; the suggested solution is to re-enter that crew's incorrectly entered gunnery engagements as an alibi run. This will effectively overwrite the original tasks. The crew's run will be noted as an "ALIBI" when in fact it is not, otherwise there will be no ill effects.

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5. THE SCORE SHEET

A typical night phase score sheet is shown on the following page (Figure 4). The score sheet is based on the "clipboard-and-pencil" score sheets used by the United States Army in Europe to manually record crew performance data during gunnery exercises. Thus, soldiers familiar with the manual layout will find the transition to ATLAST transparent and painless. The score sheet is self-explanatory, but to eliminate any ambiguities, explanations for some of the fields are offered:

SCORE SHEET FIELD	EXPLANATION
TYPE	Vehicle type (M1, M48A5, etc...).
UNIT	The crew's unit designation follows on this row.
VEHICLE	Bumper no. crew's normally used vehicle lies above this column.
COMPANY	Crew's company (for CAVALRY units: Crew's TROOP).
BATTALION	Crew's battalion (for CAVALRY units: Crew's SQUADRON).
BRIGADE	Crew's brigade (for CAVALRY units: Crew's REGIMENT).
DIVISION	Crew's division (for CAVALRY units: Crew's REGIMENT *except for the 1CAV division*).
CORPS	Crew's army corps.
RANGE	Firing Range where gunnery exercise is taking place.
TYPE RUN	Is this a first run? a re-run? or an alibi run?
Temp.	Abbreviation for "Temperature".
Months this Vehicle	(*Months this vehicle*) how long has member been part of this crew?
Seq	This column shows the order tasks were performed relative to the phase.
Tgt/Type	This column shows the targets for the task. (NA means no target).
Time/Effect[†]	These 5 columns show the target effect and time it occurred for each round fired in the task (up to 5 rounds).
Crew Cuts	This column shows crew penalty deductions levied against the crew. (See "Crew Cut Descriptions" of Figure 4 for an explanation of the crew cut number.)
Go1 or No0	If the crew's final score for a task is a qualifying score then this column displays a 1 (*meaning this task is a "GO"*). Otherwise a 0 is displayed (*meaning "NO-GO"*).

Table 1. Score Sheet Field Explanations

[†] Engagement time is the elapsed time to the event. For example: *Figure 4 (task B4) displays the crew engaging the first target (and missing) after 2 seconds. From 2 to 8 seconds they switch targets and score a hit on target two. Then, seeing that target one is not yet "killed", they re-engage it from 8 to 13 seconds, killing it at 13 seconds. For purposes of scoring this results in:*

"Hit 1" at 8 seconds.
"Hit 2" at 13 seconds.

The score is calculated as prescribed in the Gunnery Field Manuals, by looking up the score corresponding to the "Hit 1" row and "Hit 2" columns in the appropriate scoring matrix. (In this case, the matrix from FM 12-1, Gunnery Table 4, task B4 is used).

TANK Table 4 SCORESHEET

TYPE: MIA1

UNIT: 22   3   C   264   1   8ID   7

     VEHICLE PLATOON COMPANY BATTALION BRIGADE DIVISION CORPS   RANGE: DELTA   DATE COMPLETED: 15-JAN-92

       (CAV UNITS: TROOP   SQUADRON   REGIMENT)

                DAY PHASE   DD-MM-YY   NIGHT PHASE   15-JAN-92

| Type Run :   Weather: START TIME: | Type Run :   1st Run   Weather: Clear Clear   START TIME: 0232 |
| Temp.:   Visibility: END TIME: | Temp.:   21F-50F Visibility: < 1Km   END TIME: 0255 |

POSITION	SSN	GRADE	LAST NAME	Months this Vehicle	Certified by:
COMMANDER	132-33-3231	O2	SAMUALS	6	DAY TCE sign:
GUNNER	231-33-2321	E6	MORRISON	12	Night TCE sign: JONES
DRIVER	123-32-1231	E5	JENNINGS	0	TCEIT NCOIC: SMITH
LOADER	320-23-3123	E4	ROBINSON	0	

Seq	Task	Tgt Type	EFFect/Time 1 EFF Time	2 EFF Time	3 EFF Time	4 EFF Time	5 EFF Time	Crew Cuts (Enter crew cuts 1 Per space)	Total Crew Cuts	Matrx Score	Final Score	Go1 or No0	Remarks
1	B1 Defense	S-T72 NA	M 4	T 15				1	30	64	34	0	Fired Into Berm!
2	B3 OFFense	BMP RPG	T 8	T 14					0	82	82	1	
3	B2 Defense	BMP BMP	T 12					21	5	18	13	0	Fail to Acquire Target 2 Incorrect Scanning Techniqu
4	B4 OFFense	S-T72 M-T72	M 2	T 8	T 13				0	100	100	1	
5	B5 Defense	S-T72 NA	T 4						0	100	100	1	Good Crew Interaction Good Engagement!
6													
7													
8													
9													
10													

KEY: EFF:(M=Miss, T=Kill, X=Task Ended)

Tasks Qualifying =   3
Day Score =   0
Night Score =   329
TOTAL =   329

Figure 4. ATLAST Example Score Sheet.

* **Printing Note:** the scoresheet prints in a 132 column format. If you do not have a wide carriage printer, change the printer's pitch setting to "17 pitch". Consult your printer's user manual for instructions.

6. CREW DUTY PENALTY POINTS (CREW CUTS)

There are four categories of crew cuts shown in the table below:

CREWCUTS: Per: FM 17-12-1 (w/ change 3, July 90):

M1/M1A1 Gunnery Tables Crew Duties Penalty Points (CREW CUTS)

Crew Cut Category	Score Sheet Crew Cut Entry Range	Penalty Points Levied
I. Loading Procedure Failure	Enter 'X' for Tgt EFFect	IMMEDIATE DISQUALIFICATION
II. Not Meeting Required Conditions	1 - 11	30 Point Penalty
III. Basic Safety Failure	12 - 16	10 Point Penalty
IV. Incorrect Engagement Technique	17 - 21	5 Point Penalty

Table 2. The Four Crew Cut Categories.

CATEGORY I.

Category I crew cuts are levied for major safety violations and will result in an immediate disqualification. Category I violations are recorded by entering an X in any of the target effects columns of the task where the violation occurred.

CATEGORIES II - IV.

Within each of the remaining 3 categories the crew's offending action is associated with a number (*the crew cut no.*). The crew cut number is entered under the "Crew Cuts" column of the score sheet. Tables 2 - 4 list the crew cut numbers.

Crew Cut #	SPECIFIC EXAMPLES OF CATEGORY II Failure to adhere to required conditions of the task * 30 Point Penalty *
1	Firing into berm. (Crew not ensuring main gun clear of berm.)
2	Not masked or buttoned during NBC engagement.
3	Crew members not wearing proper uniform.
4	Using TIS if other sight specified.
5	Using components of the fire control system when disallowed.
6	Guards/shields not in place or improperly installed.
7	TC not firing his main gun when task calls for him to do so.
8	Using ammunition incapable of killing target.
9	Using wrong weapon for target effect.
10	Failure to fire suppressive burst (machine gun) after kill.
11	Firing at a friendly target array.

Table 3. Category II Crew Cuts.

(Failure to adhere to required conditions of the task).

Crew Cut #	SPECIFIC EXAMPLES OF CATEGORY III Failure to adhere to basic safety precepts * 10 Point Penalty *
12	Failure to follow instructions of TCE, control, or safety officer.
13	Laser-protective filters not mounted.
14	Main gun left ARMED, or GUN SELECT left on "MAIN" or "COAX", when loading.
15	Firing HEAT at a tank target.
16	Firing before receiving "FIRE" command or announcing "ON THE WAY".

Table 4. Category III Crew Cuts.

(Failure to adhere to basic safety precepts)

Crew Cut #	SPECIFIC EXAMPLES OF CATEGORY IV Failure to use correct engagement technique or method * 5 Point Penalty *
17	Incorrect initial or subsequent fire command. (Any word or phrase the TC may use that accurately describes the location or action of the target is adequate. e.g. near, close, moving, stationary, distant, far, etc.)
18	Gunner not searching for targets between engagements.
19	Loader not searching for targets between engagements or during TC .50 cal engagements (when not loading main gun).
20	Incorrect response to a fire command.
21	Incorrect engagement sequence. (Firing at least dangerous target 1st).

Table 5. Category IV Crew Cuts.

(Failure to use correct engagement technique or method)

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7. REPORTS

Two type of reports are provided by ATLAST. The first, the **SCORE CALCULATION REPORT** is based on crew scores. It is described in section 7.1. The second report, described in section 7.2, is the **UNIT SUMMARY ANALYSIS REPORT**. The UNIT SUMMARY report provides diagnostic data on unit performance. It incorporates basic information on unit performance to include the number of targets hit or killed, engagement times, etc.. Only FIRST RUN TASKS and ALIBI RUN TASKS, are used in the summary analysis report. (*i.e., re-run tasks are not included*).

Together these two reports can be used to summarize the performance and identify strengths and weaknesses of selected sets of crews. A crew will only be included in a Score Calculation or Unit Summary Analysis if it is a sub-component of the unit selected for analysis.

Commanders may wish to run these reports during gunnery exercises to gain valuable intermediate results. For example, these reports could be run after the first platoon has complete its day phase. Weak tasks and trouble targets could be identified even before the second platoon approaches the firing line.

* **Printing Note:** the **UNIT SUMMARY ANALYSIS REPORT's** Crew Cuts Report section prints in a 132 column format. If you do not have a wide carriage printer, change the printer's pitch setting to "17 pitch". Consult your printer's user manual for instructions.

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7.1 SCORE CALCULATION REPORT

The SCORE CALCULATION REPORT is divided into three sections. These are the TOTAL SCORE RATINGS, GUNNERY SCORES, and TOP GUNNERY TASKS sections.

7.1.1 TOTAL SCORE RATINGS

This section shows the total number of crews who have fired a given gunnery table and lists them by their score ratings and score ranges. The number of Distinguished, Superior, Qualified, Qualified-Rerun, Unqualified, and Unqualified-Rerun crews are identified. The Score Range contains a special "maximum score", and a "below 20% of the maximum score" sub-division. Otherwise, score ranges are sub-divided into 10 percent increments of the maximum possible score. (*For a gunnery table with 10 tasks, this results in one hundred point increments as seen below in Figure 5. A gunnery table with 9 tasks would have score ranges of 900 to 900, 899 to 810, 809 to 720, ... etc..*)

```
UNITS SHOWN:              Abrams Table 4          PRINTED:27-NOV-91 1509
    7/2AD/      1 /     266  /    A  /  ANY  /ANY      FIRINGS OCCURRED:
  Corps/Div/Brigade/Battalion/Company/Platoon/Bumper  27-OCT-91 to 25-NOV-91
        (Regiment/Squadron/Troop)
                        TOTAL  SCORE RATINGS
```

RATING	SCORE RANGE	1st Run CREWS	ReRun CREWS	Alibi CREWS	TOTAL CREWS
1 Distinguished	1000 to 1000	0	0	0	0
8 Superior	999 to 900	1	0	0	1
5 Qualified	899 to 800	8	0	0	8
0 Qualified-ReRun	799 to 700	5	0	0	5
0 Unqualified	699 to 600	0	0	0	0
0 Unqualified-ReRun	599 to 500	0	0	0	0
	499 to 400	0	0	0	0
	399 to 300	0	0	0	0
14 = TOTAL QUALIFIED	299 to 200	0	0	0	0
0 = TOTAL UNQUALIFIED	199 to 0	0	0	0	0
		14	0	0	14

Figure 5. ATLAST Example TOTAL SCORE RATINGS output.[†]

[†] Crews having completed at least one re-run task can only achieve a maximum rating of "QUALIFIED".

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7.1.2 GUNNERY SCORES

This section identifies the crews that have fired any engagement of the Gunnery Table. Each crew's total score, individual task scores, and crew rating is calculated. Also identified are crews that had re-run or alibi runs (*if any*). Figure 6 below illustrates the GUNNERY SCORES report for a company.

```
UNITS SHOWN:              Abrams Table 4        PRINTED:27-NOV-91 1509
   7/2AD/      1 /    266  /   A  /  ANY  /ANY      FIRINGS OCCURRED:
Corps/Div/Brigade/Battalion/Company/Platoon/Bumper     27-OCT-91 to 25-NOV-91
        (Regiment/Squadron/Troop)
                         Abrams-Table 4 Gunnery Scores
                         TOTAL           TASK - SCORES
        CREW DESIGNATION SCORE A1 A2 A3 A4 A5 B1 B2 B3 B4 B5
```

CREW DESIGNATION	TOTAL SCORE	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	
7/ 2AD/ 1/ 266/A/3/31	914	100	100	100	100	100	72	100	83	72	87	DISTINGUISHED
7/ 2AD/ 1/ 266/A/H/12	862	100	89	100	89	59	82	100	66	77	100	SUPERIOR
7/ 2AD/ 1/ 266/A/H/11	844	100	39	100	100	59	74	100	100	72	100	SUPERIOR
7/ 2AD/ 1/ 266/A/H/65	836	100	72	100	31	59	100	78	96	100	100	SUPERIOR
7/ 2AD/ 1/ 266/A/3/32	835	100	72	59	90	90	72	78	100	74	100	SUPERIOR
7/ 2AD/ 1/ 266/A/H/13	831	100	0	100	100	100	74	100	78	79	100	SUPERIOR
7/ 2AD/ 1/ 266/A/3/34	820	70	100	68	71	100	44	100	86	81	100	SUPERIOR
7/ 2AD/ 1/ 266/A/2/24	816	100	100	80	100	13	82	92	78	71	100	SUPERIOR
7/ 2AD/ 1/ 266/A/2/23	814	100	44	100	100	59	37	100	100	100	74	SUPERIOR
7/ 2AD/ 1/ 266/A/2/22	794	100	39	100	5	100	93	100	68	89	100	QUALIFIED
7/ 2AD/ 1/ 266/A/2/21	781	100	82	29	100	100	83	100	40	75	72	QUALIFIED
7/ 2AD/ 1/ 266/A/H/66	758	90	39	100	10	77	100	78	93	71	100	QUALIFIED
7/ 2AD/ 1/ 266/A/H/14	743	0	39	80	100	100	46	78	100	100	100	QUALIFIED
7/ 2AD/ 1/ 266/A/3/33	710	90	83	74	41	13	72	100	74	77	86	QUALIFIED

Figure 6. ATLAST Example GUNNERY SCORES output.

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7.1.3 TOP GUNNERY TASKS

The purpose of this section is to quickly identify those tasks which might need special attention. Tasks are listed according to the unit's average score in each. Furthermore, for each task a rough crew score distribution is provided to help a commander determine if the unit as a whole is struggling, or only a few crews scored poorly.

Figure 7 on the following page shows an example of the TOP GUNNERY TASKS section for a company level unit. Tasks are listed one per row. TOP GUNNERY TASKS entries have the following meanings:

Vehicles Firing: Under this column are the number of crews that fired each individual task.

Average Score: This column contains the average scores per task for all crews that fired. The unit's average task score for all tasks combined is shown at the very bottom of this column (*the Mean of Average Scores*).

Crew Score   (*Crew Score Distribution per Task*). The columns under this section give the number of crews whose score fell within a point range for each task. For example, crews who scored in the seventies (those scoring from 70 to 79 points) are numbered under the "70" column. The "100" column differs from this example in that the "100" column shows the number of crews that scored exactly 100 points.

Task	Vehs. Fired	Avg. Score	Crew Score Distribution per Task									
			100	90	80	70	60	50	40	30	20	19-0
B5	14	94	10			2	2						
B2	14	93	9	1			4						
A1	14	89	10	2			1						1
A3	14	85	8			2	1	1	1			1	
B3	14	83	4	2		2	3	2			1		
B4	14	81	3			2	9						
A4	14	74	7	1		1	1			1	1		2
A5	14	73	6	1			1		4				2
B1	14	73	2	1		3	5			2	1		
A2	13	69	3			3	2			1	4		

                    | 81 |= Mean of Average scores.

Figure 7. ATLAST Example TOP GUNNERY TASKS output.

7.2 UNIT SUMMARY ANALYSIS REPORT

The UNIT SUMMARY ANALYSIS REPORT is divided into three sections: the UNIT PERFORMANCE SUMMARY, the CREW CUT SUMMARY, and the INITIAL PERFORMANCE SHORT COMINGS. Only "first runs" or "alibi runs" are included in the UNIT SUMMARY ANALYSIS. (*i.e., re-run tasks are not included in the data*).

7.2.1 UNIT PERFORMANCE SUMMARY

Figure 8, on the opposite page illustrates the UNIT PERFORMANCE SUMMARY. Tasks are entered one per row. Explanations for column entries follow:

Task   This column identifies the task name from the gunnery field manual.

Scenario   The "Scenario" column shows the targets and type of engagement (offensive or defensive). S-T72 and M-T72 are moving and stationary T72 targets.

Vehs Fire   Summarizes the total number of vehicles (crews) that fired a given task (*Recall that alibi runs will replace first runs and that re-runs are not included*).

Vehs Qual   The number of vehicles (crews) achieving a "qualifying" score for the task.

% Qual   This column shows the percentage of vehicles (crews) that "qualified".

Hit %   "Hit %" data are obtained from: $(\dfrac{targets\ hit}{rounds\ fired})$ for the unit.

Kill %   The "Kill %" columns indicate the percentage of targets killed. These data are obtained from: $(\dfrac{number\ of\ targets\ killed\ (i.e.,\ that\ received\ a\ T\ (target\ killed))}{number\ of\ targets\ presented})$.

Avg. Time   Entries in these columns are the average engagement times for the targets.

Total Time   This column displays the unit's average time to complete the task.

Aprx Time to Score 70 pts   The Matrix Reference Guide (*the last two columns*) helps to interpret the significance of the "Time" columns. The first line in these columns names the point calculation matrix used to score the task. (e.g. In Figure 8 "IVA-1" is the scoring matrix for task A1). The middle and last lines contain bounds for qualifying. The middle line assumes the fastest possible time to kill target 1 (Hit 1 *time*) and calculates the longest "Hit 2" time that will still result in a qualifying score. (For task A1 in Figure 8 this results in a Hit 1 of 2 and Hit 2 of 34). The last line shows the slowest target 1 hit time wherein it is still possible to qualify. For example, using the scoring matrix for task A1, it is still possible to qualify if the first target is hit in 20 seconds (Hit 1 in 20), provided that target 2 is hit within the next two seconds (Hit 2 in 22).

These data can be used as a terse "scoring matrix reference guide". In general, if the unit is engaging its targets "fast enough" to qualify, then the average engagement time for target 1 will fall within the bounds of the reference guide's "Hit 1" column. Likewise, the total engagement time (*the* "TASK TOTL TIME" *column*) will generally fall within the bounds under the reference guide's "Hit 2" column. For example, in task A1 of Figure 8 (where a high percentage of the unit qualified) we see the "*Tgt 1 Avg. TIME*" of 10 seconds falls within the bounds of 2 to 20 in the "Hit 1" column. Also notice that the 27 second "TASK TOTL TIME" falls within the 34 to 22 second bound of the "Hit 2" column. For single target tasks, the "Hit 2" column shows the longest qualifying engagement time; and can be compared to the "TASK TOTL TIME".

                                                                    Matrix
                          UNIT PERFORMANCE SUMMARY   Reference Guide

Task	Scenario	Vehs Fire	Vehs Qual +70	(%) Qual	Hit (%) TGT1	Hit (%) TGT2	Kill (%) TGT1	Kill (%) TGT2	Tgt1 Avg. TIME	Tgt2 Avg. TIME	TASK TOTL TIME	Aprx Time to Score 70 pts — Hit 1	Hit 2
A1	S-T72 S-T72 OFF-NBC	15	14	93%	100%	100%	100%	100%	10	17	27	IVA-1 — 2 / 20	34 / 22
A2	S-T72 M-T72 Defense	14	8	57%	93%	100%	100%	100%	8	14	22	IVA-2 — 2 / 10	18 / 10
A3	M-T72 M-T72 Defense	15	12	80%	100%	100%	100%	100%	10	15	25	IVA-3 — 2 / 14	22 / 14
A4	S-T72 OFFense	15	11	73%	88%		100%		11		11	IVA-4 — 2	12
A5	S-T72 Defense	15	8	53%	75%		100%		13		13	IVA-5 — 2	12
B1	S-T72 M-T72 Defense	14	11	79%	78%	100%	100%	100%	6	17	24	IVB-1 — 2 / 12	18 / 12
B2	S-T72 OFF-NBC	14	14	100%	70%		100%		12		12	IVB-2 — 2	20
B3	S-T72 S-T72 Defense	14	11	79%	100%	93%	100%	100%	7	18	25	IVB-3 — 2 / 12	22 / 14
B4	S-T72 S-T72 OFFense	14	14	100%	93%	100%	100%	100%	6	15	21	IVB-4 — 2 / 10	24 / 12
B5	S-T72 M-T72 OFFense	14	14	100%	78%	93%	100%	100%	7	17	24	IVB-5 — 2 / 16	32 / 16

Figure 8. ATLAST Example UNIT PERFORMANCE SUMMARY.

7.2.2 CREW CUT SUMMARY

Figure 9 shows crew cuts received by the unit. Totals are calculated by crew cut number down the columns, and by tasks across the rows. Listed under the "Would Qualify if" column are the number of crews that would have qualified - if they had not received any crew cuts in that task. The summary concludes with a point deduction reference and description of each crew cut number.

```
UNITS SHOWN:              Abrams Table 4        PRINTED: 27-NOV-91  1509
     7/2AD/        1 /    266  /   A  /  ANY  /ANY      FIRINGS OCCURRED:
Corps/Div/Brigade/Battalion/Company/Platoon/Bumper      27-OCT-91  to  25-NOV-91
          (Regiment/Squadron/Troop)
```

TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTALS BY TASK	Would Qualify if No Crew Cuts
A1										1		1				1						3	
A2																	1					1	
A3																							
A4	1											1										2	1
A5														1								1	
B1																							
B2																							
B3																							1
B4																							
B5																							
TOTALS	1									1		1	1	1		1	1					7	2

```
+------+----------------------------------------------------------------+
|      |              Crew Cut Point Deduction Reference                |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
| CUT  | 1| 2| 3| 4| 5| 6| 7| 8| 9|10|11|12|13|14|15|16|17|18|19|20|21|
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|Points|30|30|30|30|30|30|30|30|30|30|30|10|10|10|10|10| 5| 5| 5| 5| 5|
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
```

```
+------+----------------------------------------------------------------+
|Cut # |           Crew    Cut    Description                           |
+------+---30--Point----------------------------------------------------+
|  1   | Firing into berm. (Crew not ensuring main gun clear of berm.)  |
|  2   | Not masked or buttoned during NBC engagement.                  |
|  3   | Crew members not wearing proper uniform.                       |
|  4   | Using TIS if other sight than that one speciPied.              |
|  5   | Using components of the Fire control system when disallowed.    |
|  6   | Guards/shields not in place or improperly installed.           |
|  7   | TC not Firing his main gun when task calls for him to do so.    |
|  8   | Using ammunition incapable of killing target.                  |
|  9   | Using wrong weapon for target eFFect.                          |
| 10   | Failure to Fire suppressive burst (machine gun) after kill.    |
| 11   | Firing at a Friendly target array.                            |
+------+---10--Point----------------------------------------------------
| 12   | Failure to follow instructions of TCE, control, or safety oFFicer. |
| 13   | Laser-protective Filters not mounted.                          |
| 14   | Main gun left ARMED or GUN SELECT left on MAIN or COAX when loading. |
| 15   | Firing HEAT at a tank target.                                 |
| 16   | Firing before receiving "FIRE" command or announcing "ON THE WAY". |
+------+---5--Point-----------------------------------------------------
| 17   | Incorrect initial or subsequent Fire command.                  |
| 18   | Gunner not searching for targets between engagements.          |
| 19   | Loader not searching for targets between engagements or during |
| 20   | Incorrect response to a Fire command.                          |
| 21   | Incorrect engagement sequence.(Firing at least dangerous target 1st) |
+------+----------------------------------------------------------------+
```

Figure 9. ATLAST Example CREW CUT SUMMARY.

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7.2.3 INITIAL PERFORMANCE SHORTCOMINGS

An example of the **INITIAL PERFORMANCE SHORT COMINGS** section is illustrated on the following page in Figure 10. This section provides diagnostic information on deficiencies identified in the unit's performance. Only tasks wherein 25% of the crews failed to score 70 points will appear in this section.[t]

An **X** marked under "slow engagement time" indicates that 25% or more of the unit failed to engage the target in the time needed to score at least 70 points. For two target engagements, the required time is divided evenly among the targets. (*e.g. if 20 seconds is required to score 70 points in a task with two targets, then the Initial Performance Shortcomings section allows 10 seconds to engage each target. If 25% of the unit fails to achieve this 10 second criterion against a target, then the performance of the unit against that target is flagged by marking an X under the* **Slow Engt Time** *column.*)

Poor Kill % is marked by an X if 25% or more of the unit failed to kill a target.[t]

The **High Crew Cuts** column is marked by an X when 25% or more of the unit received a crew cut (of any kind) in this task.[t] i.e.,

$$(\frac{crew\ that\ received\ cuts\ in\ this\ task}{total\ crews\ firing\ this\ task}) \geq 25\%.$$

Similarly the **Excessive Remarks** portion of this report indicates excessive repetition of the same remarks throughout the gunnery tasks. For example, remark "B" would appears here if:[t]

$$(\frac{occurrences\ of\ remark\ B\ in\ all\ tasks}{number\ of\ tasks\ fired\ by\ all\ crews}) \geq 25\%.$$

---

[t]

Experts Only: *Each of the five 25% thresholds as indicated above may be changed as your personal unit analysis needs dictate. Specifically, this means the "25%"'s listed below may be changed.*

- *Reporting tasks where 25% of the crews failed to achieve a score of 70.*
- *The 25% threshold for "slow engagement time".*
- *The 25% threshold for "poor kill percent".*
- *The 25% threshold for "high Crew Cuts".*
- *The 25% threshold for "excessive remarks".*

Even the 70 point scoring criterion may be modified. See Appendix B (especially pages B-8 and B-9).

```
UNITS SHOWN:                 Abrams Table 4        PRINTED:27-NOV-91 1509
    7/2AD/     1 /     266 /     A /  ANY  /ANY       FIRINGS OCCURRED:
 Corps/Div/Brigade/Battalion/Company/Platoon/Bumper   27-OCT-91 to 25-NOV-91
         (Regiment/Squadron/Troop)

                    * * * INITIAL PERFORMANCE SHORTCOMINGS * * *
A Task is shown in the table below if 25% of the unit scored < 70 points.
An X indicates over 25% of the unit experienced difficulty in that area.
              +====+=========+=========+=========+
              |    |Slow Engt|Poor Kill|High Crew|
              |Task|  Time   | Percent |  Cuts   |
              |    |Tgt1|Tgt2|Tgt1|Tgt2|  > 24%  |
              +====+====+====+====+====+=========+
              | A2 | X  | X  |    |    |         |
              +----+----+----+----+----+---------+
              | A5 | X  |    |    |    |         |
              +----+----+----+----+----+---------+

EXCESSIVE REMARKS:(A remark shown if it occurs more than 25% of the time)
+======+=======================================+===========+========+
|REMARK|           REMARK MEANING              |OCCURRENCES|CRITERIA|
+======+=======================================+===========+========+
|  A   |           Slow ID Time                |    38%    |  25%   |
|  G   |       Poor Crew Interaction           |    31%    |  25%   |
+======+=======================================+===========+========+
```

Figure 10. INITIAL PERFORMANCE SHORTCOMINGS REPORT example.

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7.2.4 SUGGESTED AREAS FOR ADDITIONAL TRAINING

If the "Initial Performance Shortcomings Report" (section 7.2.3) identified SLOW ENGAGEMENT TIME, POOR KILL PERCENT, or SLOW ID TIME as a shortcoming, then ATLAST will suggest training to correct the shortcoming.

Figure 11 shows training areas that are suggested when "SLOW ENGAGEMENT TIME" is identified in the Initial Performance Shortcomings Report. Similarly, the training areas of Figure 12 and 13 are offered when SLOW ENGAGEMENT and POOR KILL PERCENT are identified respectively.

```
UNITS SHOWN:              Abrams Table 4       PRINTED:27-NOV-91 1509
      7/2AD/      1 /     266  /    A  /  ANY  /ANY       FIRINGS OCCURRED:
  Corps/Div/Brigade/Battalion/Company/Platoon/Bumper     27-OCT-91 to 25-NOV-91
            (Regiment/Squadron/Troop)

  . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  . . .                 SLOW ID TIME                . . .
  . . .              OBSERVED IN ANALYSIS           . . .
  . . . . . . . . . . . . . . . . . . . . . . . . . . . .

  SUGGESTED  AREAS  FOR  ADDITIONAL  TRAINING:

          - Target acquisition
          - Target identification
          - Scanning techniques (day,night,NBC,aux)
          - Thermal sight employment
          - Fire commands
```

Figure 11. Suggested Training When SLOW ID TIME Identified.

```
UNITS SHOWN:               Abrams Tabl. '        PRINTED:27-NOV-91  1509
    7/2AD/        1 /    266  /   A  /  ANY  /ANY      FIRINGS OCCURRED:
Corps/Div/Brigade/Battalion/Company/Platoon/Bumper      27-OCT-91  to  25-NOV-91
        (Regiment/Squadron/Troop)
    • • • • • • • • • • • • • • • • • • • • • • • • • • • •
    • • •              SLOW ENGAGEMENT TIME              • • •
    • • •              OBSERVED  IN ANALYSIS             • • •
    • • • • • • • • • • • • • • • • • • • • • • • • • • • •


    SUGGESTED  AREAS  FOR  ADDITIONAL  TRAINING:

          - Prepare-to-fire-checks
          - Target priorities
          - Manipulation training
          - Crew hand-off
          - Weapons system skills
          - Methods of engagement (battle-sight/precision)
          - Misfire procedures
          - Thermal sight employment
          - Gun lay
          - Aux sight employment
```

Figure 12. Suggested Training When SLOW ENGAGEMENT Identified.

```
UNITS SHOWN:               Abrams Table 4          PRINTED:27-NOV-91  1509
    7/2AD/        1 /    266  /   A  /  ANY  /ANY      FIRINGS OCCURRED:
Corps/Div/Brigade/Battalion/Company/Platoon/Bumper      27-OCT-91  to  25-NOV-91
        (Regiment/Squadron/Troop)
    • • • • • • • • • • • • • • • • • • • • • • • • • • • •
    • • •                SLOW ID TIME                   • • •
    • • •              OBSERVED  IN ANALYSIS            • • •
    • • • • • • • • • • • • • • • • • • • • • • • • • • • •


    SUGGESTED  AREAS  FOR  ADDITIONAL  TRAINING:

          - Target acquisition
          - Target identification
          - Scanning techniques (day,night,NBC,aux)
          - Thermal sight employment
          - Fire commands
```

Figure 13. Suggested Training When POOR KILL % Identified.

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8. SOFTWARE CONFIGURATION MANAGEMENT

The United States Army Armor School (USAARMS) will maintain and update ATLAST software configuration as well as serve as the focal point for software distribution. As new user needs are defined periodic relevant changes will be considered and made to the software configuration.

COMMENTS OR SUGGESTIONS

If you have comments or suggestions concerning ATLAST or this USER GUIDE please send them to:

Commandant
U.S. Army Armor School
Weapons Department
ATTN: ATSB-WP-F/ORSA
FT. KNOX, KY   40121-5000

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APPENDIX A - DATABASE FIELD DESCRIPTION

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A-2

APPENDIX A - DATABASE FIELD DESCRIPTION

ATLAST saves crew and score information into database files. When a unit summary or unit score calculation is executed, ATLAST creates reports using the data read from these files.

Two database files are maintained for each gunnery table. They are the "fire record" file and the "general record" file. The file names for these two databases end with the extension ".FIR" and ".GEN" respectively. (i.e., the last 3 letters of a fire record database file is FIR). Some examples are:

M1T8.FIR   M1T8.GEN   M48A5.FIR   M48A5.GEN

These are the fire and general record database files for **Abrams Table 8**, and **Patton Table 5**, respectively.

A summary of the information contained in each field of the two database files is presented in Tables A1 and A2. One record (line) is written into the fire record database for each gunnery task executed by a crew. One record (line) is written into the general record database for each gunnery phase. For example if a crew fires 7 day and 3 night tasks, two records will be saved in the general record file (one for the day plus one for night phase), and 10 records will be saved in the fire record database (7 for the day tasks plus 3 for night).

Note in tables A1 and A2, a "C" in the "Data Type" column indicates the data for that field are characters; an "N" implies data are numeric.

FIRE RECORD DATA BASE				
Field Name	Data Type	Field Length	Field Description	Allowable Range
CORPS	N	2	Corps of crew	0-99
DVSN	C	5	Division of crew. (i.e. "3ID ","8ID ",)	
BRIGADE	N	3	Brigade (or Regiment) of crew	0-999
BATTALION	N	5	Battalion (or Squadron) of crew	0-99999
COMPANY	C	1	Company (or Troop) of crew	Any one Character
PLATOON	C	1	Platoon of crew (S = Scout,H = Headquarters)	Any one Character
BUMPER	N	2	Vehicle bumper number	0-99
TYPE	N	5	Vehicle Type	see note A.
CCODE	N	2	Tasks Crew Code. (Signifys Run Type). = 0 means a 1st run. = 1 to 65 is the rerun number. = 66 an alibi replaced by another alibi. = 77 or 88 means an alibi run. = 99 crew disqualified during run.	0-99
TABLE	C	1	Table A for day phase, B for night.	A-B
TASK	C	3	Task ID.	Up to 3 Charaters
ORDER	N	2	Order of fire for day or night phase.	1-10
TGT1	N	2	First Target Type	0-99
TGT2	N	2	First Target Type	see note B.
EFT1TG1	C	1	Effect of 1st round if fired at Target 1 M = Miss T = Target Killed X = Task Stopped.	M,T,X
EFT2TG1	C	1	Effect of 2nd round if fired at Target 1	M,T,X
EFT3TG1	C	1	Effect of 3rd round if fired at Target 1	M,T,X
EFT4TG1	C	1	Effect of 4th round if fired at Target 1	M,T,X
EFT5TG1	C	1	Effect of 5th round if fired at Target 1	M,T,X
TIM1TG1	N	2	Time of 1st round firing if fired at Target 1 (This is ellapsed time from task start). (See Also: TG1KLTIM,TG2KLTIM)	0-99
TIM2TG1	N	2	Time of 2nd round firing if fired at Target 1	0-99
TIM3TG1	N	2	Time of 3rd round firing if fired at Target 1	0-99
TIM4TG1	N	2	Time of 4th round firing if fired at Target 1	0-99
TIM5TG1	N	2	Time of 5th round firing if fired at Target 1	0-99
EFT1TG2	C	1	Effect of 1st round if fired at Target 2	M,T,X
EFT2TG2	C	1	Effect of 2nd round if fired at Target 2	M,T,X

Table A1. Fire Record Data Base - Field Descriptions.
(Data types of C indicate the data for that field are characters.)
(An N implies data are numeric.)

A-4

			FIRE RECORD DATA BASE *(continued...)*	
Field Name	Data Type	Field Length	Field Description	Allowable Range
EFT3TG2	C	1	Effect of 3rd round if fired at Target 2	M,T,X
EFT4TG2	C	1	Effect of 4th round if fired at Target 2	M,T,X
EFT5TG2	C	1	Effect of 5th round if fired at Target 2	M,T,X
TIM1TG2	N	2	Time of 1st round firing if fired at Target 2	0-99
TIM2TG2	N	2	Time of 2nd round firing if fired at Target 2	0-99
TIM3TG2	N	2	Time of 3rd round firing if fired at Target 2	0-99
TIM4TG2	N	2	Time of 4th round firing if fired at Target 2	0-99
TIM5TG2	N	2	Time of 5th round firing if fired at Target 2	0-99
CC01	N	2	1st Crew Cut penalized. (The No. of the crew cut is entered here). *(see line 3 on page B-4)*.	0,1-N
CC02	N	2	2nd Crew Cut penalized.	0,1-N
CC03	N	2	3rd Crew Cut penalized.	0,1-N
CC04	N	2	4th Crew Cut penalized.	0,1-N
CC05	N	2	5th Crew Cut penalized.	0,1-N
CC06	N	2	6th Crew Cut penalized.	0,1-N
CC07	N	2	7th Crew Cut penalized.	0,1-N
CC08	N	2	8th Crew Cut penalized.	0,1-N
PMATRIX	N	3	Crew Score *(points)* before crew cuts assessed.	0-100
PCCUTS	N	3	Total crew points cuts assessed.	0-30
PTOTAL	N	3	Final crew score after crew cuts assessed.	0-100
RNDS1	N	2	Number of Rounds Fired at Target 1.†	0-5
RNDS2	N	2	Number of Rounds Fired at Target 2	0-5
KILLED1	N	2	1 if first target killed, else 0.	0-1
KILLED2	N	2	1 if second target killed, else 0.	0-1
TG1KLTIM	N	2	Time taken to kill Target 1.	0-99
TG2KLTIM	N	2	Time taken to kill Target 2.	0-99
XRNDS	N	2	If this a re-reun then XRNDS is the "rounds" fired.†	0-5
REM1	C	1	Auto Remark 1 (Value read at run time)	Any Character
REM2	C	1	*(same as above)*	"
REM3	C	1	*(same as above)*	"
YEAR	N	4	Year Record was saved. *(i.e. 1991)*	
MONTH	N	2	Month Record was saved.	1-12
DAY	N	2	Day of month Record was saved.	1-31
TIME	N	4	(24hr) Time of day Record was saved.	0000-2359

Table A1. Fire Record Data Base - Field Descriptions. (continued).

† - *(NOTE: "Rounds" here is the total number of M's + T's the target recieved during this engagement - even for COAX and 50 cal engagements)*.

General Information Data Base Record				
Field Name	Data Type	Field Length	Field Description	Allowable Range
CORPS	N	2	Corps of crew	0-99
DVSN	C	5	Division of crew. (i.e. "3ID ","8ID ",)	
BRIGADE	N	3	Brigade (or Regiment) of crew	0-999
BATTALION	N	5	Battalion (or Squadron) of crew	0-99999
COMPANY	C	1	Company (or Troop) of crew	Any one Character
PLATOON	C	1	Platoon of crew (S=Scout,H=Headquarters)	Any one Character
BUMPER	N	2	Vehicle bumper number	0-99
TYPE	N	5	Vehicle Type	see note A.
CCODE	N	2	Tasks Crew Code. (See CCODE Table A1, line).	0-99
TABLE	C	1	Table A for day phase, B for night.	A-B
DDATEYR	N	4	Year of gunnery (if day phase).	0-9999
DDATEMO	N	2	Month of gunnery (if day phase).	0-99
DDATEDAY	N	2	Day of the month (if day phase).	0-99
DSTART	N	4	Start time in 24 hour clock (if day phase).	0-9999
DSTOP	N	4	End time (if day phase).	0-9999
CSSN	N	9	Commander's SS Number.	
CRANK	C	2	Commander's Grade. (O1,E4, etc.)	
CNAME	C	3	Commander's last name (first 3 Letters).	
CTPOS	N	2	Commander's time assigned to this vehicle. (in months)	0-99
GSSN	N	9	Gunner's SS Number.	
GRANK	C	2	Gunner's Grade. (O1,E4, etc.)	
GNAME	C	3	Gunner's last name (first 3 Letters).	
GTPOS	N	2	Gunner's time assigned to this vehicle. (in months)	0-99
DSSN	N	9	Driver's SS Number.	
DRANK	C	2	Driver's Grade. (O1,E4, etc.)	
DNAME	C	3	Driver's last name (first 3 Letters).	
DTPOS	N	2	Driver's time assigned to this vehicle. (in months)	0-99
LSSN	N	9	Loader's SS Number.	
LRANK	C	2	Loader's Grade. (O1,E4, etc.)	
LNAME	C	3	Loader's last name (first 3 Letters).	
LTPOS	N	2	Loader's time assigned to this vehicle. (in months)	0-99
DEV	C	3	Last name of day phase evaluator (first 3 Letters).	
DRNG	C	3	Day gunnery range.	Up to 3 Characters.

Table A2. General Record Data Base - Field Descriptions.

(Data types of C indicate the data for that field are characters.)

(An N implies data are numeric.)

A-6

General Information Data Base Record (continued)				
Field Name	Data Type	Field Length	Field Description	Allowable Range
NDATEYR	N	4	Year of gunnery (if night phase).	0-9999
NDATEMO	N	2	Month of gunnery (if night phase).	0-99
NDATEDAY	N	2	Day of the month (if night phase).	0-99
NSTART	N	4	Start time in 24 hour clock (if night phase).	0-9999
NSTOP	N	4	End time (if night phase).	0-9999
NEV	C	3	Last name of night phase evaluator (first 3 Letters).	Up to 3 Characters.
NCOIC	C	3	Noncommissioned officer in charge at range. (first 3 Letters).	Up to 3 Characters.
WEATHERA1	N	1	Weather code at start of day phase.	0-4
WEATHERA2	N	1	Weather code at end of day phase.	0-4
WEATHERB1	N	1	Weather code at start of night phase.	0-4
WEATHERB2	N	1	Weather code at end of night phase. valid values for weather code are: 0 for: Not entered. 1 for: Clear. 2 for: Rain. 3 for: Fog. 4 for: Snow.	0-4
TEMPA	N	1	Temperature code at start of day phase.	0-4
TEMPB	N	1	Temperature code at start of night phase. valid values for Temperature code are: 0 for: Not entered. 1 for: temperature $(^{o}F) \leq 21$ 2 for: $21 <$ temperature $(^{o}F) \leq 51$ 3 for: $51 <$ temperature $(^{o}F) \leq 90$ 4 for: $91 <$ temperature $(^{o}F) < 105$ 5 for: $\geq 105^{o}F$	0-5
VISA	N	1	Visibility code at start of day phase.	0-5
VISB	N	1	Visibility code at start of night phase. valid values are: 0 for: Not entered. 1 for: $0.0 <$ visibility ≤ 1.0 Km. 2 for: $1.0 <$ visibility ≤ 1.5 Km. 3 for: $1.5 <$ visibility ≤ 2.0 Km. 4 for: $2.0 <$ visibility ≤ 2.5 Km. 5 for: > 2.5 Km.	0-5
YEAR	N	4	Year Record was saved. (*i.e. 1991*)	
MONTH	N	2	Month Record was saved.	1-12
DAY	N	2	Day of month Record was saved.	1-31
TIME	N	4	(24hr) Time of day Record was saved.	0000-2359

Table A2 (continued). General Record Data Base - Field Descriptions.

Special Notes for Tables A1 and A2:

Note A.

Vehicle type. An internal vehicle code with up to five digits. The code is calculated using the vehicle model designation and its block number. For example, the M48A5 has the following block and model:

$$48 = \text{vehicle model designation}$$
$$5 = \text{vehicle block number}$$

Vehicle code formula is:

$$\text{code} = (\text{model number}) + 4096 * (\text{block number}).$$

Motivation for this seemingly odd scheme lies in the computer's internal representation of numbers and is not explained here. Suffice it to say that this allows a range of 1 to 4095 vehicle models and 1 to 11 block numbers. That is legal vehicle codes are calculated when the vehicle is designated as follows:

$$\text{M\#\#\#\# or, M\#\#\#\#A\%\%}$$

where   #### is a number from 1 to 4095 and %% runs from 1 to 11.

Some example vehicle codes are:

M1	=	1	M60	=	60
M1A1	=	4097	M48A5	=	20528
M60A3	=	112348	M551A1	=	4647

Note B.

Target codes are specified in the .MTX data file - see the descriptions of lines 9-15 the .MTX file on pages B-4 and B-5 of this manual.

APPENDIX B - GUNNERY TABLE CONFIGURATION FILE

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APPENDIX B - GUNNERY TABLE CONFIGURATION FILE

This appendix describes the data file used to configure a gunnery table. These files contain vital information about a specific table such as task configurations, target types, scoring matrices to be used, etc. If there is a change to be made in a gunnery table, it probably can be achieved by modifying the configuration file for that table. *We do not recommend that any local command modify an ATLAST configuration file.* Changes and updates should be acquired through the Armor School. However, if this is impossible, this appendix is provided to assist in changing a gunnery density configuration. Under no circumstances should the configuration file be modified without *thoroughly* reading and *understanding* this section in its entirety. (*And always keep the* **original ATLAST diskette** *in a safe dry place*).

The configuration file is read by ATLAST when a gunnery table is selected for score calculation or summary analysis. Configuration file names end with the extension ".MTX". (i.e., the last 3 letters of a table input file are MTX). Some example are:

<p style="text-align:center">M1T8.MTX   M1T4.MTX   M48A5T7.MTX</p>

These are gunnery configuration files for M1 tables 8 and 4, and M48A5 table 7, respectively.

Configuration File Description

The following is a line-by-line description of one such configuration file: M1T8.MTX. Any modification to a configuration file must be done with an editor that saves files in standard ASCII format, such as "edlin.exe" (an editor distributed with MSDOS).

Figure B-1 displays a listing of M1T8.MTX as distributed to conform to FM 12-1. For convenience, each line is numbered in these figures. The actual data file contains no line numbers.

line 1.   The first line of the configuration file contains a description of the gunnery table and its latest update.

line 2-4.   These lines contain information about crew cuts. Line 2 contains the total number of crew cuts. Line 3 is skipped by ATLAST, but must remain there as a place holder. Line 4 contains the point deductions for each crew cut sequenced in order.

```
 1  M1/M1A1 Table VIII FM-12-1  3-Nov-86, (includes change 3, July 90):
 2  20      <=== No. of Crew cuts. Next line skpd, Below is pnts in order 1 to N
 3  #1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 (MAX)
 4  30 30 30 30 30 30 30 30 10 10 10 10 10 10  5  5  5  5  5  5  100
 5  14 14 2 10 #<=== Number of Tasks & matrices, max Targets per task, Tasks used to score.
 6  1    Logical Value
 7  8 1 3  <=== Number of tgt types ( 0 through 6 ), index of KE, HEAT, & COAX
 8  ???      0 0    unknown target!
 9  S-T72    1 1    name of  tgt 1
10  M-T72    2 1    name of  tgt 2
11  BMP      3 1      •    •    •   .
12  BRDM     4 1      •    •    •   .
13  RPG      5 1      •    •    •   .
14  Trps     6 1    name of  tgt 7
15  NA       7 1    name of  tgt 8 (Not applicable).
16  VIIIA-1 30 20 (Task A1 Matrix is 30 by 20. Targets types 0 (S-T72) & 1 (M-T72)).
```

#		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
17		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
18	2	100	100	100	100	100	100	100	90	81	74	69	61	55	50	46	42	39	37	35	33
19		50	50	50	50	50	44	38	33	27	24	21	19	17	16	15	14	13	13	12	12
20	4		100	100	100	100	100	100	88	80	74	68	60	54	49	45	42	39	37	34	33
21			50	50	50	50	43	37	32	27	23	20	18	17	16	15	14	13	13	12	12
22	6			100	100	100	100	90	81	74	69	60	54	49	45	41	38	36	34	32	30
23				50	50	43	37	32	26	23	20	18	16	15	14	13	13	12	12	11	11
24	8				100	93	83	75	70	61	54	48	44	40	37	35	32	31	29	28	26
25					37	32	26	22	19	17	16	14	13	12	12	11	11	10	10	10	9
26	10					72	65	57	50	45	41	37	34	32	30	28	26	25	24	23	22
27						19	17	15	14	12	12	11	10	10	9	9	8	8	8	8	8
28	12						45	40	37	34	31	28	26	25	23	22	21	20	19	18	18
29							11	10	10	9	9	8	8	7	7	7	7	7	6	6	6
30	14							30	28	26	24	22	21	20	19	18	17	16	16	15	14
31								7	7	7	6	6	6	6	6	5	5	5	5	5	5
32	16								21	20	19	18	17	16	15	14	14	13	13	12	12
33									5	5	5	5	5	4	4	4	4	4	4	4	4
34	18								16	15	14	13	13	12	12	11	11	10	10	10	10
35									4	4	4	4	4	4	3	3	3	3	3	3	3
36	20									12	11	11	10	10	10	9	9	9	8	8	
37										3	3	3	3	3	3	3	3	3	3	3	3
38	22									9	9	8	8	8	8	7	7	7	7		
39										2	2	2	2	2	2	2	2	2	2	2	
40	24									7	7	7	6	6	6	6	6	5			
41										2	2	2	2	2	2	2	2	2			
42	26										6	6	5	5	5	5	5	5			
43											1	1	1	1	1	1	1	1			
44	28										5	4	4	4	4	4	4				
45											1	1	1	1	1	1	1				
46	30										4	4	4	3	3	3					
47											1	1	1	1	1	1					

```
48  VIIIA-2 26 20
```

#		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
49		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
50	2	100	100	100	100	100	100	100	93	88	83	79	76	73	70	66	62	58	55	52	50
51		50	50	50	48	42	39	36	35	31	29	26	24	23	21	20	19	18	17	17	16
52	4		100	100	100	100	100	99	93	87	82	78	75	72	70	65	61	58	54	52	49
53			50	50	47	41	38	36	34	31	28	26	24	22	21	20	19	18	17	16	16
54	6			100	100	100	100	96	90	85	81	77	74	71	67	63	59	55	52	50	47
55				50	45	40	37	35	32	29	26	24	22	21	20	18	18	17	16	15	15
56	8				88	82	78	75	72	70	65	60	56	53	50	47	44	42	40	39	37
57					28	25	23	21	20	19	17	16	16	15	14	14	13	12	12	12	11
58	10					43	41	39	37	35	34	32	31	30	28	27	26	25	25	24	23
59						11	10	10	10	9	9	9	8	8	8	8	8	7	7	7	7
60	12						21	20	19	19	18	18	17	17	16	16	15	15	15	14	14

```
            .                        .                        .
            .                        .                        .
        etc...                   etc...                   etc...
            .                        .                        .
            .                        .                        .
            .                        .                        .
            .                        .                        .
```

Figure B-1. ATLAST Configuration File M1T8.MTX

```
              etc...                    etc...                      etc...
                .                         .                           .
                .                         .                           .
                .                         .                           .
295        20                        44   41   39   36   34   32   30   28   27   25   24
296                                  11   11   10   10    9    9    9    8    8    8
297        22                             32   30   28   27   25   24   23   22   20   19
298                                        8    8    8    7    7    7    7    6    6    6
299        24                                  23   22   21   20   19   18   17   16   16
300                                             6    6    6    5    5    5    5    5    5
301        26                                       17   17   16   15   14   14   13   13
302                                                  4    4    4    4    4    4    4    4
303        28                                            13   12   12   11   11   11   10
304                                                       3    3    3    3    3    3    3
305        30                                                 10   10    9    9    8    8
306                                                            2    2    2    2    2    2
307  VIIIB-5   1 20
308           2    4    6    8   10   12   14   16   18   20   22   24   26   28   30   32   34   36   38   40
309           0  100  100  100  100   87   67   46   35   27   22   18   15   13   11   10    9    8    7    6    6
310  VIIIB-5A 1 20
311           2    4    6    8   10   12   14   16   18   20   22   24   26   28   30   32   34   36   38   40
312           0  100  100  100  100  100  100   91   78   70   57   48   41   36   31   28   25   23   21   19   18
```

#	Task	descrip	Matrix used	Ntgts	tgt1	tgt2	Pnts	Qual	Time	Kill%	CCut
313	Task	descrip	Matrix used	Ntgts	tgt1	tgt2	Pnts	Qual	Time	Kill%	CCut
314	A1	Defense	VIIIA-1	2	S-T72	M-T72	70	25	25	25	24
315	A2	Defense	VIIIA-2	1	BMP		70	25	25	25	24
316	A3	OFFense	VIIIA-3	2	Trps	Trps	70	25	25	25	24
317	A4	OFF-NBC	VIIIA-4	2	S-T72	S-T72	70	25	25	25	24
318	A5	OFFense	VIIIA-5	2	M-T72	M-T72	70	25	25	25	24
319	A5S	OFFense	VIIIA-5S	2	M-T72	M-T72	70	25	25	25	24
320	A5A	OFFense	VIIIA-5A	2	S-T72	M-T72	70	25	25	25	24
321	B1	Defense	VIIIB-1	1	S-T72		70	25	25	25	24
322	B1S	Defense	VIIIB-1	1	S-T72		70	25	25	25	24
323	B2	Defense	VIIIB-2	2	BMP	BMP	70	25	25	25	24
324	B3	OFFense	VIIIB-3	2	BMP	RPG	70	25	25	25	24
325	B4	OFFense	VIIIB-4	2	S-T72	M-T72	70	25	25	25	24
326	B5	Defense	VIIIB-5	1	S-T72		70	25	25	25	24
327	B5A	Defense	VIIIB-5A	1	M-T72		70	25	25	25	24

```
328  20 3 (20=AutoRemarks, 3=remarks/task); Rem id, %Remarks for AOC, an Remark
329  A      25        Slow ID Time
330  B      25        Slow Fire Command
331  C      25        Slow Engagment Time
332  D      25        Fail to Acquire Target 1
333  E      25        Fail to Acquire Target 2
334  F      25        NBC Crew Errors
335  G      25        Poor Crew Interaction
336  H      25        Crew Induced Equipment Malfunction
337  I      25        Exceeded Target Exposure Time
338  J      25        Excessive Crew Cuts
339  K      25        Poor/Slow Hand-OFF
340  L      25        Incorrect Scanning Techniques
341  M      25        Disqualified!!!
342  N      25        Alibi - Weather Conditions
343  O      25        Alibi - Target 1 Malfunction
344  P      25        Alibi - Target 2 Malfunction
345  Q      25        Alibi - Both Targets Malfunction
346  R      25        Alibi - Unsafe Firing Conditions
347  S      25        Alibi - Weapon/Equipment Malfunction
348  T      25        Alibi - Range/Computer Malfunction
349  # FIELD      TYPE              ALLOWABLE ENTRIES
350  #======      =====    =============================================================
351  BUMPER       NUM      11 12 13 14 21 22 25   24 31 32 33 34 41 42 43 44 65 66
352  PLATOON      CHARS    1 2 3 S H
353  COMPANY      CHARS    A B C D H S
354  BATTALION    NUM
355  BRIGADE      NUM      1 2 3
356  DIVISION     CHARS    1AD 2AD 3AD 1CAV 1ID 3ID 4ID 5ID 8ID 24ID 82AB 101AA
357  CORPS        CHARS    1 3 5 7 9 18
358
```

Figure B-1. ATLAST Configuration File M1T8.MTX (...*continued*)

lines 2-4.	The first number on line 4 is the points deducted for crew cut number 1. The second number is the points for crew cut 2, and so on.... The last number on line 4, (the 100 under the "(MAX)"), tells ATLAST the maximum crew cut points that may be deducted from any one task. 30 points is the default. *(i.e., If no number is entered in under the "(MAX)", then ATLAST assumes 30 points as the maximum crew cut point deduction per task).*
line 5.	This line gives the number of tasks, matrices, and maximum targets per task, and number of tasks used to score. The maximum targets per task cannot be changed. The other three numbers can. The last number on the line is the number of tasks that a crew must perform to complete the gunnery table; hence the number of tasks used in calculating a score. Note that this not necessarily the same as the first number on the line *(the number of tasks)*. The *number of matrices*, (the second number on line 5), is the set of possible sources that any task may be scored from. It is the number of scoring matrices that will follow later in the file. Thus even if two different tasks use the same scoring matrix, they are counted as each having their own matrix.
line 6.	This line contains a 1 if the table is one in which a crew may achieve a rating of "DISTINGUISHED", "SUPERIOR", "QUALIFIED", or "UNQUALIFIED". If the table does not rate crews, a 0 appears on this line.
line 7.	The first on number on this line is the number of target types that follow on lines 8-15. The other numbers are ignored.
lines 8-15.	Each of these lines describe target types that are allowed to appear in the gunnery table. The first and last targets must not be changed. They must remain the "unknown" target *(target 0)*, and the Not Applicable "NA" target. The first field of the target description is the target name. Next is the target number, (starting with 0 for the 1st target). Following the target number is the number of hits required to kill that target. This is the number of times a T must appear in the score sheet in order to kill the target. Hence, this number is probably always going to be 1.
lines 16-47.	These lines describe the first of the score calculation sources *(the scoring matrices)* as mention in the description of line 5. The first element of Line 16 gives the source name *(scoring matrix)* as it will appear in the unit summary analysis. Following this are two numbers (30 and 20). These give the dimension (the number of rows and columns) that follow.

Notice how the shape of the scoring matrices matches the pattern found in the gunnery field manuals. ATLAST expects each of the numbers in the scoring matrix to fall in a four (4) space field. Therefore, if you change a matrix, maintain the proper fields.

lines 48-312.   These lines contain the 13 other score calculation sources (*scoring matrices*).

lines 313-327   These lines contain descriptions of the gunnery table tasks. Line 313 is ignored by ATLAST, it is for the benefit of the user who is reading the data file. However, its presence must be maintained as a place holder. Lines 314 through 327 describe the 14 tasks that · .ight appear in Table VIII. (*Note that each crew will engage and be scored on only 10 of these 14 tasks - according to the number 10 on line 5*).

      col 1   The first element for each of these lines is the task name. (Here we see the task described on line 314 is task "A1", while task "B5A" is described on line 327.

      col 2   This column is an abbreviated description of the task scenario as it will appear on the score sheet. Task A2 on line 315 is described as "Defense" while task A4 on line 317 is "Off-NBC" (short for Offensive in an NBC environment).

      col 3   The third element on these lines is the scoring matrix name used for that task. The matrix is designated by using the *exact* score source name previously designated in this file. We see that task A2 is scored by the matrix starting on line 48 of Figure B-1 since "VIIIA-2" is the *exact* name of the score calculation source seen on line 315.

      col 4   The forth element specifies the number of targets in the task. The number of targets may not exceed 2. Task A2 has one target, task A4 has 2 targets.

      cols 5,6   Following the number of targets, the targets are specified. These target names must be an *exact* match to one of the targets listed in the target section starting on line 7 of Figure B-1. If the targets do not match any of those named in the target section, then "???" will appear on the score sheet for that task's targets. Task A4 has two stationary T72 targets. Task A2 has a single BMP for its target.

cols 7-11   Following target designations are the performance criteria that are used in the evaluation process. (*See the Initial Performance Shortcomings portion of the Unit Summary Analysis report - section 7.2.3*). We observe in columns 7-11:

<div align="center">70 25 25 25   24</div>

These are interpreted as follows.

col 7   Minimum Qualifying Points Criteria. The "70" under the "Pnts" header is the minimum number of points needed to qualify. This is used to determine the number of qualified crews for both the Unit Summary Analysis and the Initial Performance Shortcomings report. Crews scoring below the number found here are considered unqualified in that task.

col 8   Critical Qualifying Percentage. The 25 following the 70 is the critical percentage of unqualified crews. In this case if 25% or more crews fail to qualify in this task, then that task appears in the Initial Performance Shortcomings section of Unit Summary Analysis. (Note that the percentage of qualifying crews depends on the point criteria given in column 7 [70 points in this case]).

col 9   Critical Engagement Time Percentage. The second 25 is the percentage of crews with slow engagement times. If 25% of the crews fail to kill a target in the time needed for a qualifying score, then this task will have an "X" marked under the target that was slowly engaged in the Initial Performance Shortcomings section. For double target tasks, the enagement time for each target is set for half the time needed to qualify. Note however, that a task appears in the Initial Performance Shortcomings only when the Critical Qualifying Percentage (*as above specified in column 8*) is exceeded.

col 10   Kill Percentage Criteria. This is the criteria for reporting poor hit/kill percentage. If 25% of the crews fail to kill a target, then that target is marked by an "X" in the Initial Performance Shortcomings

<div align="center">B-8</div>

section. Note however, a task appears in the Initial Performance Shortcomings only when the Critical Qualifying Percentage (*as above specified in column 8*) is exceeded.

col 11 <u>High Crew Cuts Percentage.</u> This is the criteria for reporting a high number of crew cuts. If a task receives any combination of crew cuts in 25% or more of the runs (i.e. in more than 24% *as indicated by the 24 in column 11*) then that task is marked by an "X" in the High Crew Cuts portion in the Initial Performance Shortcomings section of the Unit Summary Analysis. Note however, a task appears in the Initial Performance Shortcomings only when the Critical Qualifying Percentage (*as above specified in column 8*) is exceeded.

Special Note:

Only the first task's criteria will be reflected in the Unit Summary and Initial Performance Shortcomings section. For example, the Initial Performance Shortcomings section header (Figure 10 of this user's guide) begins with:

<div align="center">

* * * INITIAL PERFORMANCE SHORTCOMINGS * * *

A Task is shown in the table below if 25% of the unit scored < 70 points.
An X indicates over 25% of the unit experienced difficulty in that area.

</div>

Only the criteria for the first task listed in the configuration file is reflected in this header (i.e., *the 25% and 70 on the second header line refer to the "Critical Qualifying Percentage" and "Minimum Qualifying Points Criteria" found for the first task described in the configuration file).* If different criterions are given to other tasks, these criterions will be used in creating the report summaries, however only the first task's criteria appears in the header above.

Likewise, in the Unit Summary header (as seen in Figure 8 of this user's guide):

```
                                                          Matrix
                    UNIT PERFORMANCE SUMMARY           Reference Guide
+----+--------+----+----+----+----+----+----+----+----+----+------+-----+
|    |        |Vehs|Vehs|(%) | Hit| Hit|Kill|Kill|Tgt1|Tgt2|TASK|Aprx Time to|
|Task|Scenario|    |Qual|Qual|(%) |(%) |(%) |(%) |Avg.|Avg.|TOTL|Score 70 pts|
|    |        |Fire|+ 70|    |TGT1|TGT2|TGT1|TGT2|TIME|TIME|TIME| Hit 1|Hit 2|
+----+--------+----+----+----+----+----+----+----+----+----+------+-----+
```

The two times 70 appears reflects the "70" found in the "Minimum Qualifying Points Criteria" field of the first task found in the configuration file. (*In the case of our example configuration file (Figure B-1), the Minimum Qualifying Points Criteria is used from Task "A1" and column 7 on line 314 - since "A1" is the first task listed.*)

<div align="center">

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</div>

line 328 This line specifies the number of Auto Remarks and the maximum number that may be assigned to any one task. We see that there are 20 Auto Remarks and no more than 3 may be assigned to any one task.

lines 329-348 These lines delineate the auto remarks. The first column contains the unique identifier for the remark; this identifier is used to select the remark (place it on the score sheet).
Excessive Remarks Percentage Criteria. The next column (the 25) is the *Excessive Remarks Percentage Criteria*. This determines whether the remark will appear in the Excessive Remarks section of the Summary Analysis (Section 7.2.3). The remark will appear when the percentage of times the remark was entered exceeds the *Excessive Remarks Percentage Criteria*. i.e., when:

$$\left(\frac{\textit{occurances of a particular remark in all tasks}}{\textit{number of tasks fired by all crews}}\right) > \frac{\textit{Excessive Remarks Percentage Criteria.}}{100} \quad \left(\frac{25}{100} \textit{ in this case}\right).$$

The rest of the line, (after the Excessive Remarks Percentage Criteria), contains the actual remark.

lines 349-350 Following the auto-remarks, any line starting with a pound symbol (#) is skipped-over (ignored by ATLAST). Lines 349 through 350 are ignored.

lines 351-357 These lines define what may be entered for the unit designation when scoring crews. Each of these lines is divided into 3 sections: the FIELD, TYPE, and ALLOWABLE ENTRIES. The first two sections (FIELD and TYPE) are ignored by ATLAST but must remain as place holders. The FIELD indicators name specific parts of the unit designation. (BUMPER, stands for vehicle bumper number, PLATOON the crew's platoon, etc.). The TYPE indicators (NUM, CHAR, CHARS) indicate the allowable type of entries for that part of unit designation.

> NUM, stands for numbers;
> CHAR, stands for single letters or digits;
> CHARS, stands for a string of letters or digits (i.e., continuous set of letters and/or digits separated by one or more blanks between them.)

The ALLOWABLE ENTRIES define what ATLAST will accept as the legal unit designation of that FIELD. Leaving this area blank (as is the case with the BATTALION FIELD below) means that *any* input will be accepted. (Provided of coarse it is of the allowable TYPE for that FIELD - i.e., a NUM, CHAR, or CHARS).

```
# FIELD      TYPE                    ALLOWABLE ENTRIES
#======      =====    ========================================================
BUMPER       NUM      11 12 13 14 21 22 23 24 31 32 33 34 41 42 43 44 65 66
PLATOON      CHAR     1 2 3 S H
COMPANY      CHAR     A B C D E F G H I J K L S
BATTALION    NUM
BRIGADE      NUM      1 2 3 11
DIVISION     CHARS    1AD 2AD 3AD 1CAV 1ID 3ID 4ID 5ID 8ID 24ID 82AB 101AA 1AD 2ACR 11ACR
CORPS        NUM      1 3 5 7 9 18
```

See the first seven fields of the **Tables A1** and **A2** on pages **A-4** and **A-6** for more information on allowable entries.

This concludes the configuration file description.

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