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# A Prediction of Soldier Retention of Tactical Unmanned Vehicle (TUV) Tasks

Patricia M. Burcham

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# **Army Research Laboratory**

Aberdeen Proving Ground, MD 21005-5425

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Human Research & Engineering Directorate

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## Abstract

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An analysis was performed to predict soldiers' task performance retention (a method for predicting how rapidly individual tasks, once learned, are forgotten over intervals of no practice) of individual tactical unmanned vehicle (TUV) tasks. If retention is low, then periodic sustainment training is necessary to keep soldier task performance high. The more frequently sustainment training is required, the more costly system operations and support become. The User's Manual for Predicting Military Task Retention (ARI, 1985) was used as a guide for rating the individual tasks. Each task was rated for various characteristics known to influence retention. A numerical score was applied to each of ten task characteristics for each individual task. These scores were then totaled and compared to performance prediction tables. The tables revealed the expected proportion of soldiers in a unit able to perform the task correctly in 2 weeks, 12 weeks, and 6 months.

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# A PREDICTION OF TASK RETENTION OF THE TACTICAL UNMANNED VEHICLE (TUV)

## INTRODUCTION

The Soldier Systems Control Branch (SSCB) of the Human Research & Engineering Directorate (HRED), U.S. Army Research Laboratory (ARL) was tasked by the Program Manager for Unmanned Ground Vehicles/Systems (PMUGV/S) to conduct an analysis of soldier-marine training retention of tactical unmanned vehicle (TUV) tasks. The analysis was conducted during the risk assessment and reduction phase of the program.

## OBJECTIVE

The objectives of this analysis were to predict soldier performance retention of individual tasks of the TUV and to help field trainers and system decision makers make appropriate choices about sustainment training more easily and accurately.

## BACKGROUND

The Unmanned Ground Vehicles/Systems Joint Project Office (UGV/S JPO) was formed as a focal point aimed at consolidating the separate efforts of the Department of Defense (DoD), the U.S. Army, and the Marine Corps in developing battlefield robotic ground vehicles.

There is a requirement for the Army and Marine Corps to have an unmanned system serve as a force multiplier to increase effectiveness and survivability of combined arms forces. Unmanned systems operation in hazardous environments reduces force attrition and expands the commander's influence over the battlefield. The TUV provides greatly enhanced soldier-marine combat effectiveness and provides service users with a force multiplier when assets are reduced or eliminated.

The TUV is a joint (USMC and US Army) program. The TUV is scheduled to be fielded in 2004. The U.S. Army Infantry School is the lead proponent. The Marine Corps Combat Development Command (MCCDC) adopted the Army's TUV requirement in May 1996.

The TUV is envisioned to be a relatively small, lightweight, and unmanned mobile ground reconnaissance system. While the vehicle itself is unmanned, there is a control station that is manned. Infantry scouts, forward observers, and reconnaissance teams are planned to

tactically employ the TUV. The intended users are military occupational specialties (MOS) 11B, 19D, and Marine Corps 03 rifleman. The Armed Services Vocational Aptitude Battery (ASVAB) composite rating is combat (CO) with a mental category of IIIB and a cut-off of 90.

The initial mission payload package will be optimized for surveillance, target acquisition, reconnaissance, and advanced warning of nuclear, biological, and chemical (NBC) contaminants on tomorrow's battlefields. The TUV's modular design will facilitate the development of mission payload packages to satisfy emerging future requirements for unmanned systems employment.

The TUV mission planning capability will be taken from the SARGE (not an acronym) system. SARGE is a small teleoperational all-terrain vehicle controlled with an operator control unit (OCU), which is used to perform the basic functions of driving, reconnaissance, navigation, and mission planning.

The SARGE mission planner and navigational displays include a map display, pull-down menus, and a mouse control that exists on a small laptop computer that uses a PC-based computer operating system.

The navigational display (see Appendix A, Figure A-1) exhibits the locations of the mobile base unit (MBU) or teleoperated vehicle in relation to the OCU and friendly or enemy units. The mission planning display allows the operator to plan OCU positioning, final MBU positioning, and waypoint placements. Mission planning also includes the use of radio frequency (RF) and line-of-sight (LOS) analysis.

This report describes the analysis that was performed to predict soldiers' task performance retention (a method for predicting how rapidly individual tasks, once learned, are forgotten over intervals of no practice) of 117 individual TUV tasks. Periodic sustainment training is necessary since soldier task performance deteriorates over time if not practiced on a routine basis. No validated method had been available to help the trainer plan sustainment training based on predetermined levels of proficiency until the American Institutes for Research, under contract to the Army Research Institute (ARI), developed a method that was used to compile this report. The User's Manual for Predicting Military Task Retention was used as a guide for rating the individual tasks. This manual provides information and procedural guidance to predict how rapidly individual tasks, once learned, are forgotten when there is no practice for as long as a year. It guides the user through a method of rating each task in characteristics known to influence retention. These scores were then totaled and compared to performance

prediction tables. The tables revealed the expected proportion of soldiers in a unit able to perform the task correctly in 2 weeks, 12 weeks, and 6 months.

## METHODOLOGY

The task performance retention method was performed using TUV task data from two sources, interviews and a function-task breakdown. PMUGV/S support personnel conducted interviews of the Armored Battalion Scouts (19D) of the 2-69th Armored Battalion at Fort Benning, Georgia, to identify TUV mission planning tasks. The interviews focused on the TUV mission plan development, the most complex of all the TUV functions, based on an operations order (OpOrder) from a battalion-level commander. The mission plan included several legs of a route for the TUV MBU and a vehicle-mounted OCU. ARL formulated the navigational tasks that were approved by PMUGV/S (see Appendix B) (Scribner, to be published).

The improved performance research integration tool (IMPRINT), a Windows™-based software package, often used to conduct front end analyses (FEAs) for materiel acquisition programs, was used to develop a complex TUV function and task network. The TUV system functions were derived from a systems engineering functional flow block diagram that was developed at PMUGV/S. The TUV operations and maintenance function and task network were developed in collaboration with ARL and PMUGV/S. This network aided in the understanding of work functions and task breakdown structures. Next, the function and task information was moved from IMPRINT into an Excel™ spreadsheet where task retention ratings could be applied and evaluated (see Appendix B) (ARL, 1998).

The User's Manual for Predicting Military Task Retention recommends the following:

- a. Proponent school personnel should rate their proponent tasks since they usually have a detailed knowledge about the tasks.
- b. More than one person within a school should rate each task in order to obtain accurate readings.
- c. A current, complete, and explicit task summary should be used as the primary reference for rating a given task. It should list conditions under which the task will be performed, standards to be achieved, and performance measures.

The TUV task retention prediction is based on one rater. However, the ratings were reviewed by a TUV task subject matter expert who has performed other work related to TUV tasks. No task summaries were available at the time of this analysis. To date, no prior work has addressed the retention of TUV tasks. This initial analysis was performed using all the available resources.

The method for predicting military task retention requires that each task be rated on its ease of remembrance. The rating is based on characteristics known to influence retention (e.g., memory aids or number of performance steps). One question about each of 10 task characteristics is answered and given a numerical scale value for each task rated. These 10 values are added to yield a task's retention score. The lower the score, the faster the task will be forgotten.

A numerical score was applied to each of the 10 task characteristics that are summarized as follows:

Question 1. Are job or memory aids used by the soldier in performing (and in the performance evaluation of) this task?

Yes	1
No	0

Note: If you selected a "no" answer to this question, go to Question 3.

Question 2. How would you rate the quality of the job or memory aid?

Excellent	56
Very Good	25
Marginally Good	2
Poor	1

Note: If you selected "excellent" for this question, go to Question 6.

Question 3. Into how many steps has the task been divided?

One step	25
Two to five steps	14
Six to ten steps	12
More than ten steps	0

Note: If the task has only one step, go to Question 6.

Question 4. Are the steps in the task required to be performed in a definite sequence?

None are	10
All are	5
Some are and some are not	0

Question 5. Does the task provide built-in feedback so that you can tell if you are doing each step correctly?

Has built-in feedback for all steps	22
Has built-in feedback for most steps (50% and above)	19
Has built-in feedback for only a few steps (as much as 50%)	11
Has no built-in feedback	0

Question 6. Does the task or part of the task have a time limit for its completion?

There is no time limit	40
There is a time limit, but it is fairly easy to meet under test conditions	35
There is a time limit and it is difficult to meet under test conditions	0

Question 7. How difficult are the mental processing requirements of this task?

Almost no mental processing requirements	37
Simple mental processing requirements	28
Complex mental processing requirements	3
Very complex mental processing requirements	0

Question 8. How many facts, terms, names, rules, or ideas must a soldier memorize in order to do the task?

None (or the job/memory aid provides all necessary information)	20
A few (1 to 3)	18
Some (4 to 8)	13
Very many (more than 8)	0

Question 9. How difficult are the facts and terms that must be remembered?

Not applicable - there are none to remember or the job or memory aid provides all the needed information	34
Not difficult at all - the information is simple	31
Somewhat difficult - some of the information is complex	12
Very difficult - the facts, rules, terms, etc., are technical or specific to the task and must be remembered in exact detail	0

Question 10. What are the motor control demands of the task?

Considerable degree of motor control needed	16
Very large degree of motor control needed	3
None	2
Small but noticeable degree of motor control required	0

These scores were totaled for each TUV task and compared to performance prediction tables. The tables revealed the expected proportion (percentage) of soldiers in a unit able to perform the task in a period of weeks or months. These predictions pertain to groups, not to individual soldiers.

Each individual task retention score was then converted into an estimate of unit proficiency in a task after a period of no practice. To convert the retention score to retention prediction, the rater referred to the performance prediction tables in the User's Manual for Predicting Military Task Retention (ARI, 1985). The numbers within the table body represent the expected proportion (expressed in percentage) of soldiers in a unit able to perform a task correctly after a given interval of no practice.

The task rating process does not address the difficulty of learning a task, only the difficulty in retaining it. This process also does not address how to conduct the training.

## RESULTS

The TUV individual task retention results are provided in Appendix A of this report. The total score for each TUV task was compared to the performance prediction tables of the User's Manual for Predicting Military Task Retention to obtain an estimate of the percentage of soldiers in a unit able to perform the task correctly in 2 weeks, 12 weeks, and 6 months. These time increments were chosen to demonstrate performance deterioration over time. The most severe degradation for a single TUV task retention prediction was 66% (percentage of soldiers in a unit who would retain the task) for 2 weeks, 8% for 12 weeks, and 0% for 6 months. These severe degradations were all mission planning tasks. Statistical data for TUV training retention are provided in Table 1.

The mean total score for training retention prediction was 156. Comparing this mean with the performance prediction tables, sustainment training should be offered in accordance with Table 2, depending on the proficiency level to be maintained.

Table 1  
Statistics for Retention of TUV Tasks

	Total score	Soldiers proficient (percent)		
		2 weeks	8 weeks	6 months
Median	158	94	71	51
Mean	156	92	67	53
Standard deviation	25			
Range	115			

Table 2  
Sustainment Training Estimates  
(based on the mean total score)

Training frequency (weeks)	Soldiers proficient (percent)
19	50
8	75
4	85

A line graph depicting skill retention (mean) over time is provided in Appendix A, Figure A-2. A frequency histogram of the total scores delineated by function is provided in Appendix A, Figure A-3.

## CONCLUSIONS

A total of 177 TUV tasks were analyzed for training retention. Presently, there are no specific requirements for when sustainment training should take place: at 50%, 75%, or 85% performance after an interval of no practice. TUV skill retention shows a rapid decline from 2 to 12 weeks.

Overall, the mission planning tasks appear to be the most difficult, requiring the most training. The tasks involved with system shut-down appear to be the easiest. In comparison of

the mission planning to the system shut-down tasks, memory aids and mental processing requirements seem to be the determining factors for the low and high scores, respectively. Memory aids (e.g., manuals, labels, instructions, checklists, and flow charts) guide or facilitate the soldier in on-the-job performance and in minimizing the need for recall. Mental processing requirements include processes described by terms such as thinking, reasoning, analyzing, and problem solving.

## RECOMMENDATIONS

Periodic sustainment training is needed to ensure that soldiers remain proficient in previously learned tasks. However, resources are often limited. The goal is to best employ limited resources to obtain the optimum training reward.

Ideally, training resources should focus only on those tasks that have dropped or are about to drop below the desired level of proficiency.

Choices must be made because it is impossible to continually sustain every soldier on every task. The ratings produced by this method help trainers make choices with greater ease and accuracy. The results produced by this method will be useful to those who must identify which individual tasks to teach and how often to schedule training. This method for predicting military task retention is an efficient way to provide information to the trainers. It is adaptable whereby one can identify tasks and time period of interest to make predictions or set a proficiency criteria level and identify when tasks need to be retrained in order to maintain a certain level of soldier readiness.

Based on the sustainment training estimates, PMUGV/S should emphasize to the TUV proponent (Infantry School, Fort Benning, Georgia) to train the operators no less often than every 19 weeks—optimally, every 4 weeks. The tasks can be reviewed individually for retraining. These data are provided in Appendix A, Table A-1.

## REFERENCES

Scribner, D. (to be published). Skill level 10 operations and unit maintenance skills: an examination of tactical unmanned vehicle (TUV) soldier-marine capabilities. Aberdeen Proving Ground, MD: U.S. Army Research Laboratory.

U.S. Army Research Institute (August 1985). User's manual for predicting military task retention. Orlando, FL: Author.

APPENDIX A  
FIGURES AND TABLES

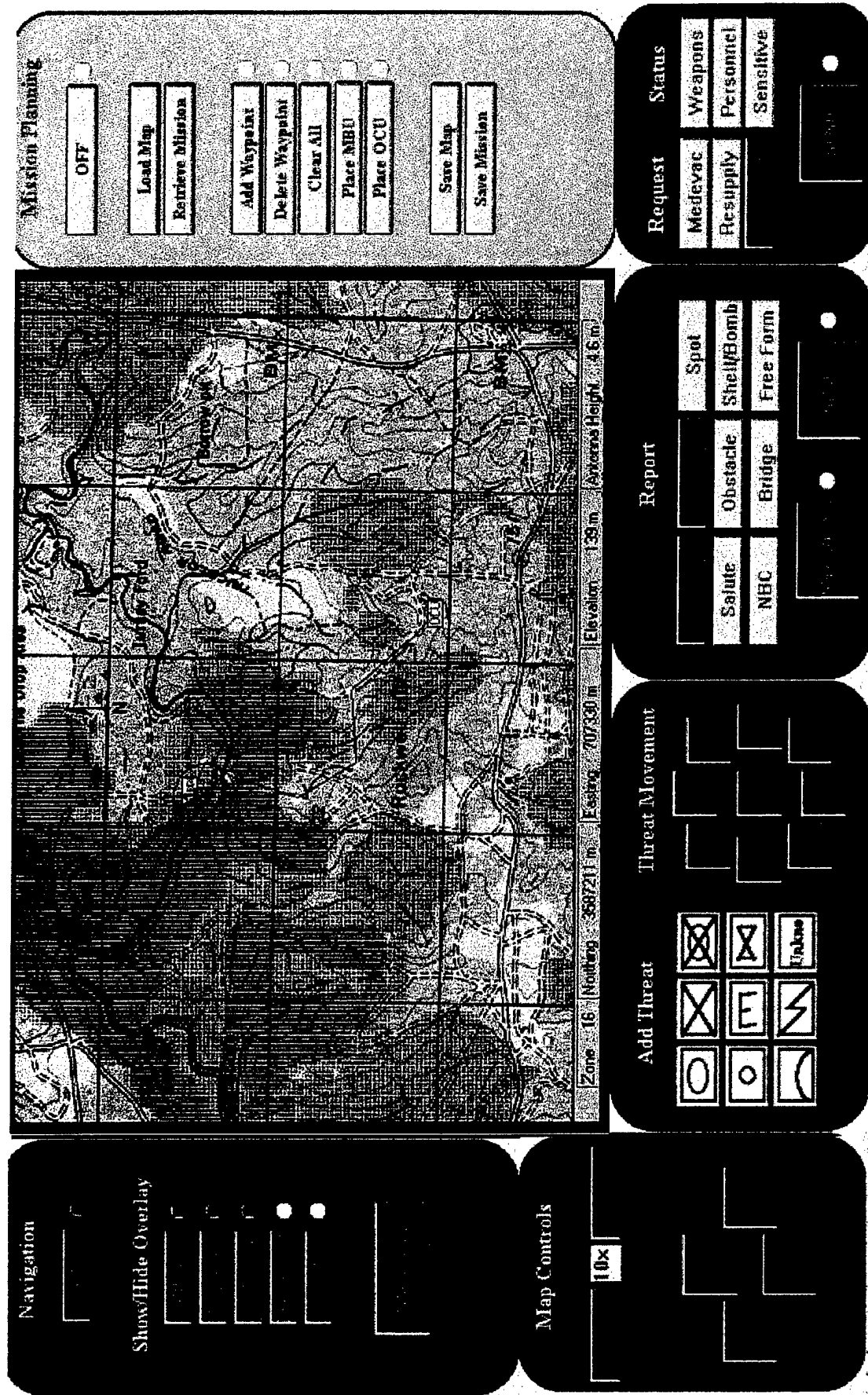


Figure A-1. Navigation interface.

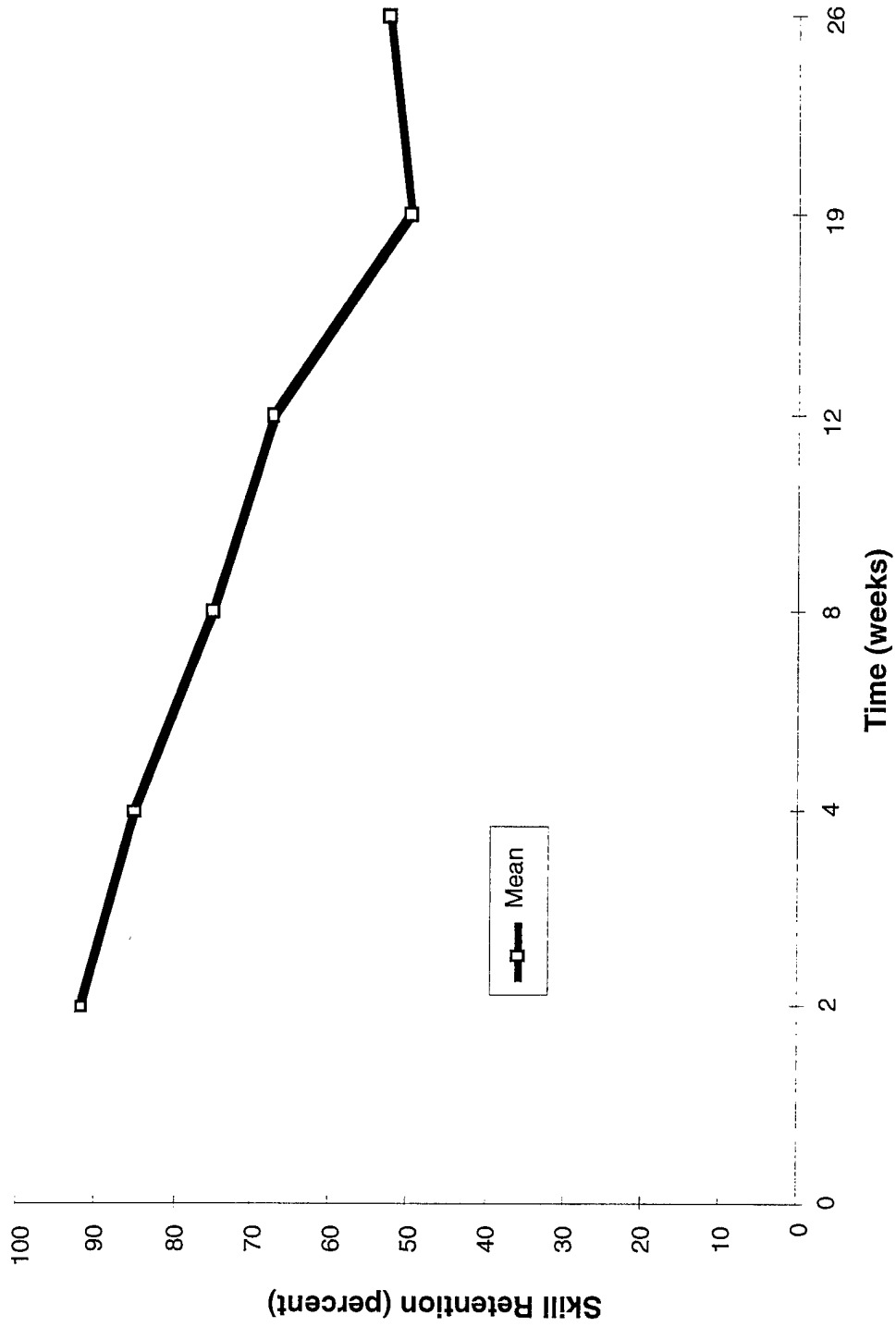


Figure A-2. Training retention for tactical unmanned vehicle.

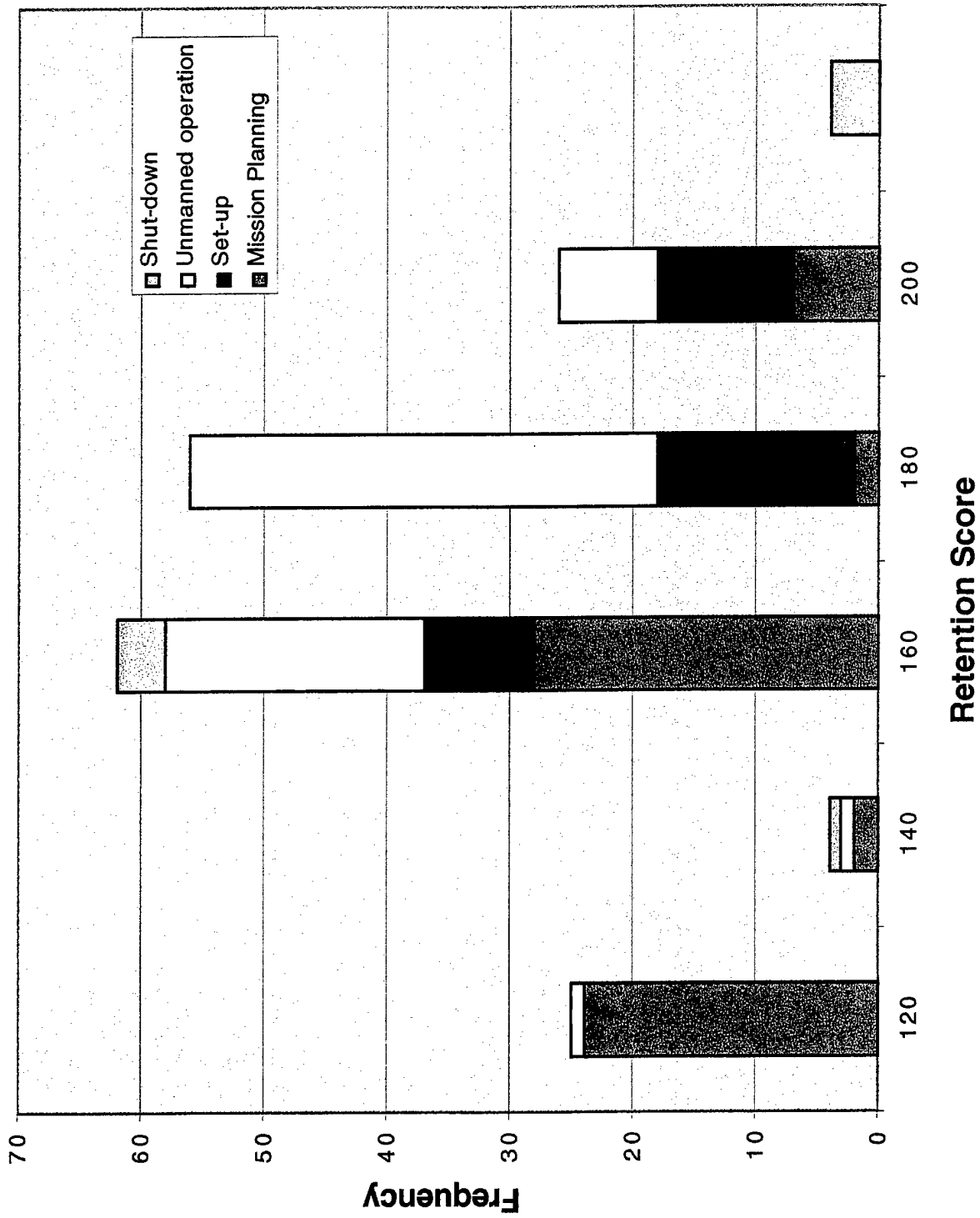


Figure A-3. Retention of tactical unmanned vehicle (TUV) tasks by functions.

APPENDIX A

Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Task	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Ratings		% Proficiency		
													Total	2 wks	12 wks	6 mos	
7.4 Mission Planning																	
7.4.1	Receive Orders*																
7.4.2	Conduct Battle Drills*																
7.4.3	Develop RS/NBC Survey Plan*																
7.4.4	Perform Mission Rehearsals*																
7.4.5	Prepare for Transport*																
7.4.6	Final Checks*																
7.4.7	Assemble Mission Payload*																
	7.4.1.1 Receive Orders from Battalion*																
	7.4.1.2 Acknowledge Receipt of Orders*																
	7.4.2.1 Conduct Battle Drills*																
	7.4.3.1 Select Final RSTA Point(s)*																
	7.4.3.1.1 Assess Named Areas of Interest (NAI) from OpOrders		1	25	14	5	0	40	3	18	31	0	137	86	40	16	
	7.4.3.1.2 Place MBU Icon in Final RSTA Area of OCU Map Display		1	25	25	n/a	n/a	40	37	20	34	0	182	100	100	100	
	7.4.3.1.3 Does MBU LOS & Range Fan Cover NAI?		0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34	
	7.4.3.1.6 Reposition MBU to Modify LOS and Range Fan Coverage		0	n/a	25	n/a	n/a	40	28	20	34	0	147	89	52	27	
	7.4.3.1.7 Final RSTA Position Established*																
	7.4.3.2.1 Is Fibre Optic Only A Mission Requirement?		1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85	
	7.4.3.2.4 Place OCU Icon on OCU Map Display		1	25	25	n/a	n/a	40	37	20	34	0	182	100	100	100	
	7.4.3.2.5 Concealment OK for LOS RF?		0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6	
	7.4.3.2.6 Is Distance to MBU OK for LOS RF?		0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6	
	7.4.3.2.7 Is Terrain OK for LOS RF?		0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6	
	7.4.3.2.8 Is Enemy Situation OK for LOS RF?		1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27	
	7.4.3.2.9 Is Friendly Situation OK for LOS RF?		1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27	
	7.4.3.2.14 Is Concealment OK for Fibre Optic?		0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6	
	7.4.3.2.15 Is Distance to MBU OK for Fibre Optic?		0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6	
	7.4.3.2.16 Is Terrain OK for Fibre Optic?		0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6	
	7.4.3.2.17 Is Enemy Situation OK for Fibre Optic?		1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27	
	7.4.3.2.18 Is Friendly Situation OK for Fibre Optic?		1	n/a	25	n/a	n/a	40	3	18	31	2	120	79	25	6	
	7.4.3.2.24 Re-evaluate Position and Try Again*																
	7.4.3.2.21 RF Position Established*																
	7.4.3.2.22 Fibre Optic Position Established*																
	7.4.3.2.23 Final Teleoperation Point Established*																
	7.4.3.2.12 OCU Fibre Optic Positioning*																
	7.4.3.2 Determine Final Teleoperation Point*																
	7.4.3.2.1 Is Fibre Optic Only A Mission Requirement?		1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27	
	7.4.3.2.2 Yes*																
	7.4.3.2.3 No*																
	7.4.3.2.4 Place OCU Icon on OCU Map Display		1	25	25	n/a	n/a	40	37	20	34	0	182	100	100	100	
	7.4.3.2.5 Concealment OK for LOS RF?		0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6	

\* Denotes that the task, function, or rating is not applicable to the analysis.

Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Ratings										% Proficiency					
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	2 wks	12 wks	6 mos		
Top	Low																
	7.4.3.2.6 Is Distance to MBU OK for LOS RF?	1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27		
	7.4.3.2.7 Is Terrain OK for LOS RF?	0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6		
	7.4.3.2.8 Is Enemy Situation OK for LOS RF?	1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27		
	7.4.3.2.9 Is Friendly Situation OK for LOS RF?	1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27		
	7.4.3.2.10 Yes*																
	7.4.3.2.11 No*																
	7.4.3.2.14 Is Concealment OK for Fibre Optic?	0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6		
	7.4.3.2.15 Is Distance to MBU OK for Fibre Optic?	0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6		
	7.4.3.2.16 Is Terrain OK for Fibre Optic?	0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6		
	7.4.3.2.17 Is Enemy Situation OK for Fibre Optic?	1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27		
	7.4.3.2.18 Is Friendly Situation OK for Fibre Optic?	1	25	25	n/a	n/a	40	3	18	31	2	145	89	52	27		
	7.4.3.2.19 Yes*																
	7.4.3.2.20 No*																
	7.4.3.2.24 Re-evaluate Position and Try Again	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27		
	7.4.3.2.21 RF Position Established*																
	7.4.3.2.22 Fibre Optic Position Established*																
	7.4.3.2.23 Final Teleoperation Point Established*																
	7.4.3.2.12 OCU Fibre Optic Positioning*																
7.4.3.3	Determine Final Teleoperation Route*																
	7.4.3.3.1 Step MBU Back from Present Position	1	25	25	n/a	n/a	40	37	20	34	0	182	100	100	100		
	7.4.3.3.2 Have LOS of Previous MBU Location?	0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6		
	7.4.3.3.6 Reposition MBU for Proper LOS	1	25	25	n/a	n/a	40	28	18	31	0	168	97	85	72		
	7.4.3.3.9 Step OCU Back Behind MBU	1	25	25	n/a	n/a	40	37	20	34	0	182	100	100	100		
	7.4.3.3.4 Yes*																
	7.4.3.3.5 No*																
	7.4.3.3.7 Teleoperation Route Leg Completed*																
	7.4.3.3.8 Teleoperation Route Established*																
7.4.3.4	Establish TUV Section Traveling Formations*																
	7.4.3.4.1 Coordinate MBU Movement Forward 1 Leg	1	25	25	n/a	n/a	40	37	20	34	0	182	100	100	100		
	7.4.3.4.2 Coordinate OCU Movement to MBU	1	25	25	n/a	n/a	40	37	20	34	0	182	100	100	100		
	7.4.3.4.5 Add Another Mission Leg*																
	7.4.3.4.3 Coordinated Mission Travel Leg Complete*																
	7.4.3.4.4 Coordinated Mission Route Complete*																
7.4.3.5	Coordinate with Additional Systems*																
	7.4.3.5.1 Establish Secondary Support Mission(s) to other Sections	1	2	14	10	0	40	3	18	12	0	100	66	8	0		
	7.4.3.5.2 Create Alternative Route Plan for Alternative Mission	1	2	14	10	0	40	3	18	12	0	100	66	8	0		
7.4.3.6	Prepare Travel Time Estimate*																
	7.4.3.6.1 Begin Travel Time Estimate*																
	7.4.3.6.2 Evaluate Mission	1	2	14	10	0	40	3	18	12	0	100	66	8	0		
	7.4.3.6.3 Evaluate Enemy	1	2	14	10	0	40	3	18	12	0	100	66	8	0		

\* Denotes that the task, function, or rating is not applicable to the analysis.

APPENDIX A

Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	% Proficiency			
												Total	2 wks	12 wks	6 mos
Top	Low														
	7.4.3.6.4 Evaluate Troops	1	2	14	10	0	40	3	18	12	0	100	66	8	0
	7.4.3.6.5 Evaluate Time Available	1	2	14	10	0	40	28	18	12	0	125	81	30	9
	7.4.3.6.6 Evaluate Terrain	1	2	14	10	0	40	3	18	31	0	119	79	25	6
	7.4.3.6.7 Evaluate natural and Intentional Obstacles	1	2	14	10	0	40	3	18	31	0	119	79	25	6
	7.4.3.6.8 Evaluate Terrain Elevations & Slopes	1	2	14	10	0	40	3	18	12	0	100	66	8	0
	7.4.3.6.9 Evaluate Possible Roads, Paths & Trails	1	2	14	10	0	40	3	18	12	0	100	66	8	0
	7.4.3.6.10 Evaluate Ground Surface (Dirt, Mud, Grass, Snow)	1	2	14	10	0	40	3	18	12	0	100	66	8	0
	7.4.3.6.11 Evaluate Foliage (LOS & RF Distances per leg)	1	2	14	10	0	40	3	18	12	0	100	66	8	0
	7.4.3.6.12 Terrain Evaluated*														
	7.4.3.6.13 METT Evaluated*														
	7.4.3.6.14 Estimate Average Speed Over Route	1	2	14	10	0	40	3	18	12	0	100	66	8	0
	7.4.3.6.15 Travel Time Estimate Complete*														
	7.4.3.7 Deliver Brief Back*														
	7.4.3.7.1 Collect Coordinated Mission Plans from Sections	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51
	7.4.3.7.2 Send Platoon Mission Plan to Battalion	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51
	7.4.4 Perform Mission Rehearsals*														
	7.4.4.1 Perform Mission Rehearsals*														
	7.4.5 Prepare for Transport*														
	7.4.5.1 Prepare System for Transport*														
	7.4.6 Fin/ai Checks														
	7.4.6.1 RS/NBC Survey Plan Completed?														
	7.4.6.2 Mission Payload Correctly Configured for Mission?														
	7.4.6.3 System Ready for Transport?														
	7.4.6.4 Yes*														
	7.4.6.5 Yes*														
	7.4.6.6 Yes*														
	7.4.6.7 No*														
	7.4.6.8 No*														
	7.4.6.9 No*														
	7.4.6.10 Redo Missing Element(s)														
	7.4.7 Assemble Mission Payload*														
	7.4.7.2 A Rangefinder?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27
	7.4.7.7 Yes*														
	7.4.7.8 No*														
	7.4.7.9 Mission Package Have the Unit?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27
	7.4.7.10 Yes*														
	7.4.7.11 No*														
	7.4.7.12 Leave Unit On Mission Package	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34
	7.4.7.13 Put Unit on Mission Package	0	n/a	25	n/a	n/a	40	37	20	34	0	156	93	64	42
	7.4.7.23 Rangefinder Done*														

\* Denotes that the task, function, or rating is not applicable to the analysis.

Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Q1	Ratings										% Proficiency							
			Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	2 wks	12 wks	6 mos					
Top	Mid																			
	7.4.7.14 Mission Package Have the Unit?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27					
	7.4.7.15 Yes*																			
	7.4.7.16 No*																			
	7.4.6.17 Remove Unit	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34					
	7.4.7.24 NBC Detection Device Done*																			
	7.4.7.25 Day Cameras Done*																			
	7.4.7.27 Acoustic Package Done*																			
	7.4.7.1 Does the Mission Package Require...	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27					
	7.4.7.26 Night Camera(s) Done*																			
	7.4.7.3 An NBC Detection Package?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27					
	7.4.7.4 Day Camera(s)?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27					
	7.4.7.5 Night Camera(s)?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27					
	7.4.7.6 An Acoustic Sensor Package?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27					
	7.4.7.28 Mission Package Assembled*																			
	7.4.7.18 Leave Unit Off Mission Package	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34					
	7.4.7.19 Unit Added or Removed?																			
	7.4.7.20 Yes*																			
	7.4.7.21 No*																			
	7.4.7.22 Add Unit Work Time*																			
7.5	Conduct Mission																			
	7.5.1 Move*																			
	7.5.1.1 Airdrop*																			
	7.5.1.1.1 Rig For Airdrop																			
	7.5.1.1.2 LVAD capable																			
	7.5.1.1.3 Pack Energy Dissipating Material for LVAD																			
	7.5.1.1.4 Provide Secure Points for LVAD Platform																			
	7.5.1.1.5 Allow Malfunction Condition Drops																			
	7.5.1.1.6 Load on Transport																			
	7.5.1.1.7 Transport to Drop Point																			
	7.5.1.1.8 Execute Airdrop																			
	7.5.1.1.9 De-rig/Assemble																			
	7.5.1.2 Air Assault*																			
	7.5.1.2.1 Rig for Air Assault																			
	7.5.1.2.2 Load on Transport																			
	7.5.1.2.3 Transport																			
	7.5.1.2.4 Air Insertion																			
	7.5.1.2.5 De-rig/Assemble																			
	7.5.1.3 Roll-on/Roll-off*																			
	7.5.1.3.1 Rig																			
	7.5.1.3.2 Load on Transport																			

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Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Ratings										% Proficiency				
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	2 wks	6 mos		
Top	Mid															
	Low															
	Task															
	7.5.1.3.3 Transport															
	7.5.1.3.4 Off-load															
	7.5.1.3.5 De-rig/Assemble															
	7.5.1.4 Amphibious Assault*															
	7.5.1.4.1 Rig (amphibious)															
	7.5.1.4.2 Load															
	7.5.1.4.3 Load on Amphibious Ship															
	7.5.1.4.4 Load on Amphibious Landing Craft															
	7.5.1.4.5 Transport															
	7.5.1.4.6 Off-load (amphibious)															
	7.5.1.4.7 De-rig/Assemble															
	7.5.1.5 Transport (tow, carry, drive) to Teleop Point*															
	7.5.1.5.1 Provide Own Power	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51	
	7.5.1.5.2 Provide Transport by HMMWV	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27	
	7.5.2 System Set-up*															
	7.5.2.1 Prepare MBU*															
	7.5.2.1.1 Power Up MBU Main Switch	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100	
	7.5.2.1.2 BIT/BITE Test OK?	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85	
	7.5.2.1.3 Yes*															
	7.5.2.1.4 No*															
	7.5.2.1.5 Check Status of Driving Cameras	0	n/a	14	10	19	40	28	20	34	2	167	96	78	61	
	7.5.2.1.6 Check All MBU Status Functions	0	n/a	14	10	19	40	28	18	31	0	160	94	71	51	
	7.5.2.1.7 Power Down for Another System Check	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51	
	7.5.2.2 Ground Mount OCU*															
	7.5.2.2.1 Remove OCU from Carrier	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51	
	7.5.2.2.2 Carry OCU to Desired Location	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51	
	7.5.2.2.3 Set OCU on Ground	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51	
	7.5.2.2.4 Open OCU for Use	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51	
	7.5.2.3 Prepare OCU*															
	7.5.2.3.1 Camouflage OCU	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51	
	7.5.2.3.2 Power Up OCU	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100	
	7.5.2.3.3 Check BIT/BITE Status	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34	
	7.5.2.3.4 BIT/BITE OK?	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85	
	7.5.2.3.5 Yes*															
	7.5.2.3.6 No*															
	7.5.2.3.7 Power Down for Another Check	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100	
	7.5.2.3.9 OCU Preparation Complete*															
	7.5.2.3.8 Check Battery Level	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72	
	7.5.2.4 Prepare Mission Payload*															
	7.5.2.4.1 Power Up Payload Suite	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100	

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APPENDIX A

Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Ratings												% Proficiency			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	2 wks	12 wks	6 mos		
Top	Low																
	7.5.2.4.2 Check BIT/BITE Status of Each Payload Module	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.2.4.3 BIT/BITE Status OK?	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.2.4.4 Yes*																
	7.5.2.4.5 No*																
	7.5.2.4.6 Power Down for Another Check	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100		
	7.5.2.4.7 Payload Prepared*																
	7.5.2.5 Pre-Operation/PMCS Checks*																
	7.5.2.5.1 Check MBU (Dummy)																
	7.5.2.5.2 Check MBU Fuel Level	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.2.5.3 Check MBU Battery Level	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.2.5.4 Check MBU Oil Level	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.2.5.5 Check MBU Tire Pressure	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.2.5.6 Check MBU Hydraulic Fluid	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.2.5.7 Check RSTA/NBC Package	0	n/a	14	5	19	40	28	20	34	2	162	94	71	51		
	7.5.2.5.8 Check Day Camera Operation	0	n/a	14	5	19	40	28	20	34	2	162	94	71	51		
	7.5.2.5.9 Check Night Camera Operation	0	n/a	14	5	19	40	28	20	34	2	162	94	71	51		
	7.5.2.5.10 Check Acoustic Package Operation	0	n/a	14	5	19	40	28	20	34	2	162	94	71	51		
	7.5.2.5.11 Check Range Finder Operation	0	n/a	14	5	19	40	28	20	34	2	162	94	71	51		
	7.5.2.5.12 Check NBC System Operation	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.2.5.13 Check OCU (Dummy)																
	7.5.2.5.14 Check Data Link Steering	1	25	14	5	19	40	28	20	34	2	188	100	100	100		
	7.5.2.5.15 Check Data Link Throttle	1	25	14	5	19	40	28	20	34	2	188	100	100	100		
	7.5.2.5.16 Check Data Link Brake	1	25	14	5	19	40	28	20	34	2	188	100	100	100		
	7.5.2.5.17 Check OCU Map Display	1	25	14	5	19	40	28	20	34	2	188	100	100	100		
	7.5.2.5.18 Check Data Link GPS/UTM Reference System	1	25	14	5	19	40	28	20	34	2	188	100	100	100		
	7.5.2.5.19 Check Voice Radio System	1	25	14	5	19	40	28	20	34	2	188	100	100	100		
	7.5.2.5.21 Preoperation & PMCS Complete*																
	7.5.3 Unmanned Operation*																
	7.5.3.1 Teleoperate to AO (and Moving NBC Detection)*																
	7.5.3.1.1 Teleoperate to AO (Moving NBC Detection)*																
	7.5.3.1.2 Navigate*																
	7.5.3.1.3 Visually on Course (terrain navigation)?	0	n/a	25	n/a	n/a	40	28	20	34	0	147	89	52	27		
	7.5.3.1.6 Yes*																
	7.5.3.1.8 Hold Course	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61		
	7.5.3.1.11 dummy3*																
	7.5.3.1.12 dummy4*																
	7.5.3.1.13 Communicate/Report System Status	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.1.4 Navigation Position Correct (GPS/UTM/Waypoint)?	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.1.9 Steer Left	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61		
	7.5.3.1.10 Steer Right	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61		

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APPENDIX A

Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Q1	Ratings										% Proficiency							
			Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	2 wks	12 wks	6 mos					
Top	Task																			
	7.5.3.1.7 No*																			
	7.5.3.1.5 Immediate Path Obstacle Free?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34					
	7.5.3.1.11 Stop MBU	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51					
	7.5.3.1.12 Reverse Until Obstacle Passable	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.14 Power Vehicle	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51					
	7.5.3.1.15 Too Fast?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34					
	7.3.5.1.17 Yes*																			
	7.3.5.1.18 Decrease Throttle	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.21 dummy2*																			
	7.5.3.1.19 Increase Brake	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.20 Hold Brake	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.18 No*																			
	7.5.3.1.22 Too Slow?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34					
	7.5.3.1.23 Yes*																			
	7.5.3.1.25 Increase Throttle	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.28 dummy1*																			
	7.5.3.1.24 No*																			
	7.5.3.1.26 Decrease Throttle	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.27 Hold Throttle	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.29 Conduct NBC Monitoring*																			
	7.5.3.1.30 Detect NBC Contaminants?*																			
	7.5.3.1.31 Yes*																			
	7.5.3.1.33 Report NBC Information*																			
	7.5.3.1.32 No*																			
	7.5.3.1.34 Monitor Vehicle Status	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.35 Monitor Fuel Level	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.36 Monitor MBU/OCU Battery Levels	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.37 Monitor Distance Traveled	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.38 Monitor Date	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.39 Monitor Time	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.40 dummy5*																			
	7.5.3.1.41 Monitor Vehicle Orientation	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.42 Monitor Vehicle Pitch Angle	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.43 Monitor Vehicle Roll Angle	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85					
	7.5.3.1.44 Pitch and Roll Angles Acceptable?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34					
	7.5.3.1.45 Yes*																			
	7.5.3.1.46 No*																			
	7.5.3.1.51 Hold Course	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.47 Steer Right	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					
	7.5.3.1.48 Steer Left	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61					

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Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Q1	Ratings										% Proficiency				
			Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	2 wks	6 mos			
Top	Low																
	7.5.3.1.49 Stop MBU	0	n/a	25	n/a	n/a	40	37	20	34	2	158	94	71	51		
	7.5.3.1.50 Reverse Until Pitch and Roll is Acceptable	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61		
	7.5.3.1.52 dummy*																
	7.5.3.3 RSTA Mission*																
	7.5.3.3.1 RSTA Mission (dummy)*																
	7.5.3.3.2 Power Up all RSTA Systems	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100		
	7.5.3.3.4 Select Day RSTA Camera	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100		
	7.5.3.3.5 Night RSTA Camera	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100		
	7.5.3.3.3 Visual RSTA Systems	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.3.3.6 Scan Horizontally	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.3.7 Tilt RSTA Camera to Change Elevation	0	n/a	25	n/a	n/a	40	37	20	34	16	172	97	85	72		
	7.5.3.3.8 Detect Target?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.3.9 Yes*																
	7.5.3.3.10 No*																
	7.5.3.3.11 Need Wider or Tighter View?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.3.12 Yes*																
	7.5.3.3.13 No*																
	7.5.3.3.14 Zoom In/Zoom Out	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100		
	7.5.3.3.15 Need Clearer Image?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.3.16 Yes*																
	7.5.3.3.17 No*																
	7.5.3.3.18 Focus Near/Far	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100		
	7.5.3.3.19 Identify Target?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.3.20 Yes*																
	7.5.3.3.21 No*																
	7.5.3.3.22 Communicate/Report Target Contact	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.3.23 Range Target	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.3.24 Put Targeting Reticle on Target	1	25	25	n/a	n/a	40	37	20	34	16	198	100	100	100		
	7.5.3.3.25 Activate Rangefinder	1	25	25	n/a	n/a	40	37	20	34	2	184	100	100	100		
	7.5.3.3.26 Verify Position of Target Data	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27		
	7.5.3.3.27 Transmit Still Image w/GPS/UTM Position Info	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		
	7.5.3.3.28 Call for Fire Needed?	0	n/a	25	n/a	n/a	40	3	18	31	2	119	79	25	6		
	7.5.3.3.29 Yes*																
	7.5.3.3.30 No*																
	7.5.3.3.31 Initiate Call for Fire	1	25	25	n/a	n/a	40	3	20	34	2	150	91	58	34		
	7.5.3.3.32 Mission Complete?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.3.35 Mission Completed*																
	7.5.3.3.33 Yes*																
	7.5.3.3.34 No*																
	7.5.3.3.35 Acoustic System	1	25	25	n/a	n/a	40	28	20	34	2	175	98	92	85		

\* Denotes that the task, function, or rating is not applicable to the analysis.

APPENDIX A

Table A-1. TUV Training Retention Ratings

FUNCTIONS	TASKS	Ratings										% Proficiency					
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total	2 wks	12 wks	6 mos		
Top	Low																
	7.5.3.3.36 Detect Target?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.3.37 Yes*																
	7.5.3.3.38 No*																
	7.5.3.3.39 Determine Azimuth to Target	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.3.40 Orient Acoustics to Sound Source	1	25	25	n/a	n/a	40	28	20	34	16	189	100	100	100		
	7.5.3.4 NBC Survey Mission*																
	7.5.3.4.1 NBC Survey Mission (dummy)*																
	7.5.3.4.2 Passive Search*																
	7.5.3.4.3 Detect NBC Agents?	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27		
	7.5.3.4.4 Yes*																
	7.5.3.4.5 No*																
	7.5.3.4.6 Classify Contaminant	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.4.7 Nuclear Contaminant	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.4.8 Biological Contaminant	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.4.9 Chemical Contaminant	1	25	25	n/a	n/a	40	28	18	31	2	170	97	85	72		
	7.5.3.4.10 Report NBC Information	0	n/a	25	n/a	n/a	40	28	18	31	2	144	89	52	27		
	7.5.3.4.10 Active Search*																
	7.5.3.4.12 Mission Complete?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.4.12 Visual Search*																
	7.5.3.4.13 Scan Horizontally for Round Bursts	0	n/a	25	n/a	n/a	40	28	20	34	16	163	96	78	61		
	7.5.3.4.14 Tilt Camera to Change Elevation	0	n/a	25	n/a	n/a	40	37	20	34	16	172	97	85	72		
	7.5.3.4.15 Detect Round Burst or Cloud?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.3.4.16 Yes*																
	7.5.3.4.17 No*																
	7.5.3.4.18 Note Direction of Burst, Size, Direction of Attack	0	n/a	25	n/a	n/a	40	3	20	34	2	124	81	30	9		
	7.5.3.4.19 Yes*																
	7.5.3.4.20 No*																
	7.5.3.4.22 RSTA Mission Complete*																
	7.5.3.5 Teleoperate Back to OCU*																
	7.5.3.6 Drive Forward to MBU*																
	7.5.3.7 Mission Complete (dummy)*																
	7.5.4 System Shutdown*																
	7.5.4.1 Post Operation Checks/PMCS*																
	7.5.4.1.1 All Systems Functional?	0	n/a	25	n/a	n/a	40	28	20	34	2	149	91	58	34		
	7.5.4.1.2 Yes*																
	7.5.4.1.3 No*																
	7.5.4.1.4 Repair as Needed	0	n/a	25	n/a	n/a	40	3	20	34	2	124	81	30	9		
	7.5.4.1.5 Add Fuel to MBU	1	56	25	n/a	n/a	40	37	20	34	2	215	100	100	100		
	7.5.4.1.6 Add Oil to MBU	1	56	25	n/a	n/a	40	37	20	34	2	215	100	100	100		
	7.5.4.1.7 Charge MBU Batteries	1	56	25	n/a	n/a	40	37	20	34	2	215	100	100	100		

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