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Interim Report

PRELIMINARY OUTLINE OF TANK COMMANDER DUTIES
AND TASKS FOR US/FRG MBT-70

by

Gary
G. G. Boycan
R. E. Kraemer

January 1967
(Revised May 1967)

11/61

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by
G. G. Boycan
R. E. Kramer
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This Interim Report has been prepared to provide preliminary information on the results of a research effort. It does not necessarily represent official opinion or policy of either the Human Resources Research Office or the Department of the Army.

HumRRO Division No. 2 (Armor)

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) In Project MBT, HumRRO was involved in the development of training guidelines for a proposed new Army tank, MBT-70. As part of that project, HumRRO prepared this preliminary collation of Tank Commander duties as envisioned for this new tank. The collation was prepared on the basis of an analysis of available documents and interviews with contractor development personnel. Purpose of the report was to provide a basis for further analysis; it was not considered complete in the present form.		

INTRODUCTION

This report represents a preliminary collation of available task analysis information pertinent to the US/FRG MBT-70. It is based on an analysis of available documents and interviews with contractor development personnel. The purpose of the report is to provide a basis for further analysis. As such it is not considered to be complete or accurate in its present form.

The report is divided into two major sections: MAINTENANCE and OPERATIONS. Each section first lists the tasks and duties for which the MBT-70 crew member will be responsible. Those tasks for which procedural descriptions have been obtained are designated by asterisks. These procedural descriptions are presented as a second part of the section. All procedures are numbered so as to cross-reference with the designated task.

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MAINTENANCE CHECKS AND SERVICES

DUTIES AND TASKS
(Maintenance Checks and Services)

1.0 SERVICING BEFORE OPERATION

- 1.1 Checking Operation of Seat
- 1.2 Checking Operation of Hatch
- 1.3 Performing Fire Control Response Check
- 1.4 Inspecting and Cleaning Panoramic Sight
- 1.5 Inspecting and Cleaning Night Sight
- 1.6 Inspecting and Cleaning Vision Blocks
- 1.7 Checking Main Gun Firing Circuits
- 1.8 Checking Secondary Gun Firing Circuits
- 1.9 Checking Machine Gun Firing Circuits
- 1.10 Performing Lamp Test
- 1.11 Checking Driving Controls

2.0 SERVICING DURING OPERATION

- 2.1 Checking Operation of Turret/Gun Controls
- 2.2 Checking Operation of Secondary Weapon
- 2.3 Checking Operation of Main Gun
- 2.4 Checking Operation of Target Designate Mechanism
- 2.5 Checking Operation of Gunner Monitor

3.0 SERVICING AFTER OPERATION

- 3.1 Inspecting and Cleaning Secondary Weapon
- 3.2 Checking Secondary Weapon Feed Mechanism
- 3.3 Checking Completeness of OEM
- 3.4 Performing Optical Alignment of Panoramic Sight
- 3.5 Checking Operation of Loader

4.0 SERVICING AS REQUIRED

- 4.1 Removing the Secondary Weapon
- 4.2 Disassembling the Secondary Weapon
- 4.3 Assembling the Secondary Weapon
- 4.4 Mounting the Secondary Weapon
- 4.5 Adjusting the Solenoid
- 4.6 Performing System Check on Stabilization System Displays-Controls
- 4.7 Boresighting the Tank Weapons
- 4.7.1* Aligning Panoramic Sight on Boresight Point
- 4.7.2 Aligning Night Sight on Boresight Point
- 4.7.3 Performing Boresight Calibration
- 4.8 Replacing Fire Control Lamps

TASK DESCRIPTIONS

(Maintenance Checks and Services)

JOB ELEMENTS

4.6 DUTY SERVICING AS REQUIRED POSITION TC

4.7 TASK Boresighting the Tank Weapons TANK MBT-70

4.7.1 SUBTASK Aligning Panoramic Sight on Boresight Point DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Mode selector on main panel	Place on <u>MG</u> (machine gun) position	Mode selector lamp illuminates	If sight is not aligned, proceed as follows
2	Panoramic sight	Observe elevation mark on <u>MG</u> reticle in relation-ship to the target		
3	Elev. gunner's periscope on panoramic sight section of commander's alignment panel	Adjust until elevation mark on <u>MG</u> reticle is on target		
4	Azim gunner's periscope on panoramic sight section of commander's alignment panel	Adjust until elevation mark on <u>MG</u> reticle is on target		

OPERATIONS

DUTIES AND TASKS

(Operations)

1.0 ACQUIRING TARGETS

- 1.1* Placing Turret Into Power Operation
- 1.2* Placing Panoramic Sight Into Operation
- 1.3* Adjusting Hand Controller
- 1.4* Searching for Targets
- 1.5* Magnifying Targets (Panoramic Sight)
- 1.6* Designating Target to the Gunner
- 1.7* Monitoring the Gunner
- 1.8* Overriding the Gunner

2.0 LOADING AND UNLOADING TANK WEAPONS

- 2.1* Loading Main Gun Electrically
- 2.2* Unloading Main Gun Electrically
- 2.3* Replenishing the Automatic Loader
- 2.4* Counting Rounds in the Loader
- 2.5 Loading Secondary Weapon
- 2.6 Unloading Secondary Weapon
- 2.7 Loading the Grenade Launcher
- 2.8 Unloading the Grenade Launcher

3.0 RANGING ON TARGETS

- 3.1 Ranging (Stadiometric Rangefinder)
- 3.2 Ranging (Laser Rangefinder)
- 3.3 Determining Accuracy in Case of Multiple Range Returns

4.0 ENGAGING TARGETS

- 4.1 Issuing Fire Commands
- 4.2* Firing A Conventional Round
- 4.3* Firing A Missile
- 4.4* Recycling Missile Guidance and Control System
- 4.5* Firing the Secondary Weapon
- 4.6* Firing the Coaxial Machine Gun
- 4.7* Firing the Grenade Launchers

5.0 ENGAGING TARGETS DURING PERIOD OF REDUCED VISIBILITY

- 5.1* Selecting Panoramic Sight Filters
- 5.2* Placing Night Sight Into Operation
- 5.3 Selecting Night Sight Blenders
- 5.4 Magnifying Targets (Night Sight)

6.0 DRIVING THE TANK

- 6.1* Overriding the Driver
- 6.2* Changing the Transmission Drive
- 6.3* Accelerating
- 6.4* Braking
- 6.5* Steering

7.0 NAVIGATING THE TANK

- 7.1 Placing the Navigation System Into Operation
- 7.2 Determining Present Position
- 7.3 Determining Steering Corrections
- 7.4 Determining Present Heading
- 7.5 Determining Desired Course

8.0 OPERATING MISCELLANEOUS EQUIPMENT

- 8.1* Opening and Closing Hatch
- 8.2* Adjusting Seat
- 8.3* Operating Panoramic Sight Wiper and Deicer
- 8.4* Operating Night Sight Wiper and Deicer
- 8.5 Positioning Hand Controller
- 8.6* Operating Laser/IR Indicator
- 8.7* Testing Fire Control Lamps

TASK DESCRIPTIONS

(Operations)

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS

POSITION TC

1.1 TASK Placing Turret Into Power Operation

TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Fire control toggle switch on main panel	Switch to the ON position		The driving rotary switch must be in the ACCY or DRIVE position
2	Mode selector rotary switch on main panel	Switch to position desired	Corresponding mode control lamp illuminates	Placing the mode selector in the MAIN GUN or MG position slaves the hand controller to the turret and the panoramic sight Placing the mode selector in the SECOND GUN position slaves the hand controller to the secondary weapon and the panoramic sight Placing the mode selector in SURV or SILENT WATCH slaves the hand controller to panoramic sight only

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS

POSITION TC

1.2 TASK Placing the Panoramic Sight Into Operation

TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Caging lock	Unlock		Driving rotary switch must be in <u>ACCY</u> or <u>DRIVE</u> position
2	Visor toggle switch on panoramic sight panel	Switch to <u>UP</u> position	Panoramic sight reticle is illuminated	Fire control switch must be in <u>ON</u> position
3	Reticle rotary knob on panoramic sight panel	Rotate	Armored visor raises	Type of reticle illuminated in the panoramic sight is dependent upon the position of mode selector rotary switch
			Brightness of the reticle changes	

(Continued)

Placing the Panoramic Sight Into Operation, Continued

Skill Elements				
No.	Equipment	Activity	Indication	Remarks
4	Range SK rotary knob on panoramic sight panel	Rotate	Brightness of the range scale changes	
5	Stadialines rotary knob on panoramic sight panel	Rotate	Brightness of the stadialmetric marks changes	
6	Diopter control ring around the panoramic sight eyepiece	Rotate	Focus changes	The diopter will adjust + .4 -
7	Brow pad rotary knob, above panoramic sight eyepiece	Rotate		The brow pad is adjustable for use of either the right or left eye
8	Panoramic sight filter selector knob on panoramic sight	Rotate to desired position		(Refer to 5.1)

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS POSITION TC

1.3 TASK Adjusting Hand Controller TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Palm switch on hand controller	Press		The driving rotary switch in the driver's station must be in <u>ACCY</u> or <u>DRIVE</u> position
				The fire control switch in the TC station must be in <u>ON</u> position
				When the palm switch is released, the control handle system is de-activated
2	Hand controller	Rotate forward or rearward as desired	Panoramic sight and selected weapon depress or elevate	
3	Hand controller	Rotate right or left as desired	Panoramic sight and selected weapon traverse right or left	

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS POSITION TC

1.4 TASK Searching for Targets TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Mode selector rotary switch	Rotate to <u>SURV</u>		Driving rotary switch must be in <u>ACCY</u> or <u>DRIVE</u> position Selector switch can also be rotated to <u>SILENT WATCH</u> . In <u>SILENT WATCH</u> position, fire control power supply is deenergized and direct current is supplied only to commander's night sight, panoramic sight and emergency driving controls.
2	Fire control distribution box switches	Deactivate switches for equipment not essential to the tactical situation		

(Continued)

Searching for Targets. Continued

Skill Elements			
No.	Equipment	Activity	Indication
3	Magnification toggle switch on panoramic sight	Switch to the <u>~X</u> position	
4	Panoramic sight and hand controller	Adjust hand controller to scan terrain	(Refer to 1.3)
5	Optics zoom switch on hand controller	Magnify suspected target to identify	(Refer to 1.2) If suspected target is identified as friendly return sight magnification to power appropriate for scanning
6		Alert crew and/or issue fire command	

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS POSITION TC

1.5 TASK Magnifying Targets (Panoramic Sight) TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Magnification switch on panoramic sight	Switch to <u>~ X</u> position	Sight picture enlarges	Pressing one side of zoom switch enables rapid magnification. Pressing opposite side of switch enables slow magnification.
2	Optics zoom switch on hand controller	Press until desired magnification is obtained		Amount of magnification that can be obtained varies from <u> </u> to <u> </u> power Targets may be magnified manually using the zoom knob on the panoramic sight. Rotating the knob clockwise increases the amount of magnification. Rotating the knob counter-clockwise decreases the amount of magnification

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS POSITION TC

1.6 TASK Designating Target to the Gunner TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Palm switch	Squeeze		The primary sight and the main weapon align with the line of sight of the panoramic sight and remain slaved as long as the switch is depressed
2	Target assignment switch on hand controller	Depress		

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS POSITION TC

1.7 TASK Monitoring the Gunner TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Gunner monitor pushbutton on the main panel	Press		The panoramic sight aligns with the primary sight and remains slaved as long as pushbutton is depressed

JOB ELEMENTS

1.0 DUTY ACQUIRING TARGETS POSITION TC

1.8 TASK Overriding the Gunner TANK MBT-70

DATE 15 May 1967

Skill Elements			
No.	Equipment	Activity	Indication
1	Mode selectory rotary switch on the main panel	Rotate to <u>MAIN GUN</u> or <u>MG</u> position	Corresponding mode control lamp illuminates
2	Palm switch	Squeeze	Main weapon or coaxial machine gun is slaved to the TC hand controller in elevation and azimuth

JOB ELEMENTS

2.0 DUTY LOADING AND UNLOADING TANK WEAPONS POSITION TC

2.1 TASK Loading Main Gun Electrically TANK MBT-70

DATE 15 May 1967

Skill Elements			
No.	Equipment	Activity	Indication
1	Ammo selector rotary switch on main panel	Rotate to <u>WP</u> , <u>BH</u> , <u>KE</u> , <u>HE</u> or <u>MISSILE</u> position	MAIN GUN lamp is illuminated Breech opens to right, auto loader inserts round into breech, breech closes Corresponding ammunition lamp illuminates Ammo counter subtracts one from the selected ammunition digit counter readout
2	Palm switch	Squeeze	
3	Load thumb switch on hand controller	Press and release	
			Ready to Load toggle switch on main panel must be energized Mode selector rotary switch on main panel must be in <u>MAIN GUN</u> position

JOB ELEMENTS

2.0 DUTY LOADING AND UNLOADING TANK WEAPONS

POSITION TC

2.2 TASK Unloading the Main Gun Electrically

TANK MBT-70

DATE 15 May 1967

Skill Elements			
No.	Equipment	Activity	Indication
I	<u>Ready to Load toggle switch on the main panel</u>	<u>Switch to the UNLOAD position</u>	Corresponding ammunition lamp extinguishes Auto loader extracts round from the breech and positions it in the auto loader The ammo counter adds <u>1</u> to the appropriate 2-digit counter readout
			Remarks

JOB ELEMENTS

2.0 DUTY LOADING AND UNLOADING TANK WEAPONS

POSITION TC

2.3 TASK Replenishing the Automatic Loader

TANK MBT-70

DATE 15 May 1967

Skill Elements				Remarks
No.	Equipment	Activity	Indication	
1		Set brake, place transmission in <u>NEUTRAL</u> and range selector in <u>PARK</u> position	Engine idles	TC should view exterior while turret traverses to assure safety of ground personnel and equipment
2.	Suspension controls	Adjust until vehicle settles to lowest position	Vehicle contacts bump stops	
3	Turret lock handle	Place in <u>UNLOCK</u> position		
4	Hand controller	Adjust until turret is in 3 or 9 o'clock position		
5	Turret lock handle	Place in <u>LOCK</u> position		
6		Retrieve open-end wrench and flashlight from stowage		

(Continued)

Replenishing the Automatic Loader, Cont'd.

Skill Elements				
No.	Equipment	Activity	Indication	Remarks
7		Exit from turret (2 crew members)		One man must occupy vehicle when engine is idling
8		Assume surveillance position (one crew member on turret)		Surveillance is required when in a forward area
9		Remove stowage from bustle rack behind loading hatch		
10	Stowage rack bolts and stowage rack	Loosen using open-end wrench and remove stowage rack		
11	Loading hatch retainers	Rotate counter clockwise using open-end wrench		
12	Hatch bail handle	Rotate to the right and open loading hatch until flat against bustle		

(Continued)

Replenishing the Automatic Loader, Cont'd.

Skill Elements				
No.	Equipment	Activity	Indication	Remarks
13	Bustle magazine	Using flashlight, view interior of magazine through loader opening to assure the belt position is empty		If the belt contains a round at that position the base will be visible and the driver should perform step #19
14		Remove round from ammunition box and inspect it for dents, cracks or other damage		If round is damaged, do not load it
15		Record round types as they are loaded		
16	Loading hatch opening	Insert round through opening		Nose of round can be dented at opening or at far end of bustle
17		Push on round until it passes through opening and meets the resistance of slip rings at a certain distance inside		
(Continued)				

Replenishing the Automatic Loader, Cont'd.

Skill Elements			
No.	Equipment	Activity	Indication
18		Assure round is seated by feeling with hand or viewing belt and round	
19	Belt control within loading hatch opening	Operate to advance belt one position	
20	Loading hatch bail handle	Rotate to the left and close hatch	
21	Loading hatch retainers	Rotate clockwise using open-end wrench	Hatch closes flush with bustle wall
22	Count pushbutton on main panel	Press and release	Number of rounds of each type of ammunition appears in ammo counter windows

Repeat steps 3 through 19 until loading is completed

The lot numbers of the various types of ammunition fed into the magazine should be recorded for use in zeroing gun and identifying reasons for stoppage. The lot numbers are easily seen on the ammunition boxes

(Continued)

Replenishing the Automatic Loader, Cont'd.

Skill Elements			
No.	Equipment	Activity	Remarks
23		Compare digital readout with recorded inventory	If tallies do not agree, either round sensors are not functioning properly or record of rounds loaded is incorrect
24	Stowage rack bolts and stowage rack	Replace stowage rack and tighten bolts	
25		Replace stowage in rack	
26	Turret lock handle	Place in unlocked position	
27	Hand controllers	Adjust until turret is at 12 o'clock position	
28	Turret lock handle	Place in locked position	
29	NWL suspension system	Adjust suspension height	
			Height indicated by F & H display or NWL lever positions

JOB ELEMENTS

2.0 DUTY LOADING AND UNLOADING TANK WEAPONS POSITION TC

2.4 TASK Counting Rounds In the Loader TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Count pushbutton on main panel	Press and release	Number of rounds of each type of ammunition remaining in the loader appears in ammo counter windows	Counting operation is interrupted when order to load is given Ammo counters automatically reset to zero and count rounds when count button is depressed

JOB ELEMENTS

4.0 DUTY ENGAGING TARGETS POSITION TC

4.2 TASK Firing A. Conventional Round TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Mode selector rotary switch on main panel	Rotate to the <u>MAIN GUN</u> position	<u>MAIN GUN</u> lamp (green) illuminates	Driving rotary switch in driver's station must be in <u>ACCY</u> or <u>DRIVE</u> .
2	Ammo selector rotary switch on main panel	Rotate to the <u>WP</u> , <u>BH</u> , <u>KE</u> , or <u>HE</u> position	Conventional reticle appears in sight picture with stadia lines superimposed Auto loader positions round for loading	Fire control switch in TC station must be in the <u>ON</u> position

(Continued)

Firing A Conventional Round, Cont'd.

Skill Elements			
No.	Equipment	Activity	Indication
3	Palm switch on hand controller	Squeeze	Breech opens to right, auto loader inserts round into breech, breech closes WP, BH, KE, or HE lamp illuminates
4	Load thumb switch on hand controller	Press and release	
5	Hand controller and panoramic sight	Simultaneously view through sight eyepiece and adjust hand controller until target appears in field of view	(Refer to 1.5)
6	Optics zoom thumb switch on hand controller	Press and release until desired target magnification is obtained	
7	Hand controller	Adjust until sight aiming cross is aligned to target center of mass	
			Sight aiming cross must be maintained on target center of mass before, during, and after firing
(Continued)			

Ready to Load toggle switch must be energized

Firing A Conventional Round. Cont'd.

Skill Elements			
No.	Equipment	Activity	Indication
8	Range finder switch on hand controller	Press and release	
9		Announce: <u>"ON THE WAY"</u>	
10	Firing trigger on hand controller	Press and release	WP, BH, KE, or HE lamp (green) extinguishes
11		Observe where round strikes	
			Wait one (1) second before firing
			Sight aiming point must be maintained on target center of mass

JOB ELEMENTS

4.0 DUTY ENGAGING TARGETS POSITION TC

4.3 TASK Firing A Missile TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Mode selector rotary switch on main panel	Rotate to the <u>MAIN GUN</u> position	<u>MAIN GUN</u> lamp (green) illuminates	Driving rotary switch in driver's station must be in <u>ACCY</u> or <u>DRIVE</u>
2	Ammo selector rotary switch on main panel	Rotate to the <u>MISSILE</u> position	Missile reticle appears in panoramic sight. Auto loader positions <u>MISSILE</u> for loading	Fire control switch on main panel must be in <u>ON</u> position
3	Palm switch on hand controller	Squeeze		

(Continued)

Firing A Missile, Continued

Skill Elements			
No.	Equipment	Activity	Indication
4	Load thumb switch on hand controller	Press and release	Breech opens to the right, auto loader inserts round into breech, breech closes
5	Hand controller and panoramic sight	Simultaneously view through panoramic sight eyepiece and adjust hand controller until target appears in field of view	<u>MISSILE</u> lamp (green) illuminates
6	Optics zoom thumb switch on hand controller	Press and release until desired target magnification is obtained	(Refer to 1.5)
7	Hand controller and panoramic sight	Adjust hand controller until sight aiming point is aligned to target center of mass	Sight aiming point must be maintained on target center of mass before, during, and after firing
8		Announce: <u>"ON THE WAY"</u>	Wait one (1) second before firing
(Continued)			

Firing A Missile, Cont'd.

No.	Skill Elements			Remarks
	Equipment	Activity	Indication	
9	Firing trigger on hand controller	Press and release	MISSILE lamp (green) extinguishes	Sight aiming point must be maintained on target center of mass
10		Observe where round strikes		

JOB ELEMENTS

4.0 DUTY ENGAGING TARGETS

POSITION TC

4.4 TASK Recycling Missile Guidance and Control System

TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Missile recycle push-button on hand controller	Press and release		When firing a number of missiles consecutively, recycle each time to assure G & C system is functioning properly

JOB ELEMENTS

4.0 DUTY ENGAGING TARGETS POSITION TC

4.5 TASK Firing the Secondary Weapon TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Mode selector rotary switch on main panel	Rotate to the <u>SECOND GUN</u> position	SECOND GUN lamp (green) illuminates Missile reticle appears in the panoramic sight Secondary gun elevates from closed position and aligns with the main gun	Driving rotary switch in driver's station must be in <u>ACCY</u> or <u>DRIVE</u> position Fire control switch in TC station must be in the <u>ON</u> position

(Continued)

Firing the Secondary Weapon, Cont'd.

Skill Elements			
No.	Equipment	Activity	Indication
2	Ammo selector toggle switch on main panel	Switch to the <u>HE</u> or <u>AP</u> position	HE or AP ammunition is "positioned" into secondary gun
3	Firing rate toggle switch on main panel	Switch to the <u>CONTIN.</u> , <u>SINGLE</u> , or <u>BURST</u> position	
4	Palm switch on hand controller	Squeeze	
5	Hand controller and the panoramic sight	Simultaneously view through sight eyepiece and adjust hand controller until target appears in field of view	
6	Range finder thumb switch on the hand controller	Press and release	
7	Hand controller and the panoramic sight	Adjust until sight aiming point is aligned to target center of mass	

(Refer to 3.0)

(Continued)

Firing the Secondary Weapon, Cont'd.

Skill Elements				
No.	Equipment	Activity	Indication	Remarks
8		Announce: <u>"ON THE WAY"</u>		Wait one (1) second before firing
9	Firing trigger on the hand controller	Press		
10		Observe where round(s) strikes		Sight aiming point must be maintained on target center of mass

JOB ELEMENTS

4.0 DUTY ENGAGING TARGETS POSITION TC

4.6 TASK Firing the Coaxial Machine Gun TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Mode selector rotary switch on main panel	Rotate to the <u>MG</u> position	MG lamp illuminates. Stadia type reticle appears in sight picture and the fiducial marks illuminate	Driving rotary switch in driver's station must be in <u>ACCY</u> or <u>DRIVE</u> position
2	Machine gun safety lever	Command gunner to place in the <u>F</u> (fire) position	Gunner announces: <u>"READY"</u>	Fire control switch on main panel must be in <u>ON</u> position
3	Palm switch on hand controller	Squeeze		
4	Hand controller and the panoramic sight	Simultaneously view through sight eyepiece and adjust hand controller until sight aiming point is aligned on target center of mass		

(Continued)

Firing the Coaxial Machine Gun. Continued

Skill Elements				
No.	Equipment	Activity	Indication	Remarks
5		Announce: <u>"ON THE WAY"</u>		Wait <u>one (1) second</u> before firing
6	Firing trigger on hand controller	Press		
7		Observe where rounds strike		Sight aiming point must be maintained on target center of mass

JOB ELEMENTS

4.0 DUTY ENGAGING TARGETS POSITION TC

4.7 TASK Firing the Grenade Launchers TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Direction selector rotary switch	Rotate to desired position		Driving rotary switch in driver's station must be in ACCY or DRIVE position.
2	SMOKE/OFF/ON toggle switch	Switch to type of ammunition desired		Fire control toggle switch must be in ON position
3	FIRE push button	Press and release		

JOB ELEMENTS

5.0 DUTY ENGAGING TARGETS DURING PERIOD OF REDUCED VISIBILITY

POSITION TC

5.1 TASK Selecting Panoramic Sight Filters

TANK MRT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Filter selector rotary knob on panoramic sight	Rotate while viewing through sight eyepiece	Sight picture tint corresponds to filter selected	One of two filters must be selected: GREEN/YELLOW--for glare RED/AMBER--for fog tracer fire or camouflaged targets

JOB ELEMENTS

5.0 DUTY ENGAGING TARGETS DURING PERIOD OF REDUCED VISIBILITY POSITION TC

5.2 TASK Placing Night Sight Into Operation TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Caging latch	Place in <u>UNLOCK</u> position		Driving rotary switch in driver's station must be in <u>ACCY</u> or <u>DRIVE</u> position
2	Raise/lower rotary switch on night sight control panel	Rotate to <u>RAISE</u> position		Fire control switch on main panel must be in <u>ON</u> position
3	Electronics toggle switch on night sight control unit	Switch to the <u>ON</u> position		
4	Optical arm latch	Pull to the extreme <u>FORWARD</u> position		
5	Optical arm	Raise and push forward until detent is engaged		

(Continued)

Placing Night Sight Into Operation, Cont'd.

Skill Elements				
No.	Equipment	Activity	Indication	
6	Optical arm latch	Push to the extreme <u>RIGHT</u> position	Optical arm is locked, NATO reticle appears in sight	
7	Reticle potentiometer knob on night sight control unit	Rotate as desired	Brightness of reticle changes	
8	Reticle focus potentiometer knob on night sight	Rotate	Focus changes	
9	Zoom-fixed toggle switch on night sight	Switch to the <u>ZOOM</u> or <u>FIXED</u> position	Focus range variation from 100 m to 1000 m is provided in <u>ZOOM</u> position. Fixed focus at 1000 m. is provided in the <u>FIXED</u> position	
10	Interpupillary distance rotary control on night sight	Rotate		Interpupillary distance of the two eye pieces changes
				The binocular eye piece is provided with interpupillary distance of the two eye pieces continuously adjustable from 57 mm to 72 mm

(Continued)

(Continued)

Placing Night Sight Into Operation, Cont'd.

Skill Elements

No.	Equipment	Activity	Indication	Remarks
11	Diopter rotary knobs on night sight	Rotate	Focus changes	Adjustment of the rings around each eye piece will adjust the diopter + 4
12	Brow pad rotary knob on night sight	Rotate	Curvature of brow pad changes	

JOB ELEMENTS

6.0 DUTY DRIVING THE TANK POSITION TC

6.1 TASK Overriding the Driver TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Override toggle switch on driving panel	Switch to <u>ON</u> position	<u>DRIVING</u> lamp (green) illuminates	

POSITION	TC
TANK	MBT-70
DATE	15 May 1967

6.0 DUTY DRIVING THE TANK

6.2 Changing the Transmission Drive TASK

Skill Elements				
No.	Equipment	Activity	Indication	Remarks
1	Transmission pushbuttons on driving panel	Depress <u>↑</u> , <u>0</u> , or <u>↓</u> and release		The transmission pushbuttons are forward, neutral, and reverse The transmission is placed in automatic whenever the TC overrides the driver

JOB ELEMENTS

6.0 DUTY DRIVING THE TANK POSITION TC

6.3 TASK Accelerating TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Hand controller	Rotate forward until tank reaches speed desired		Hand controller returns to null position when forward pressure released A corresponding de-acceleration occurs as pressure is released

JOB ELEMENTS

6.0 DUTY DRIVING THE TANK POSITION TC

6.4 TASK Braking TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Hand controller	Rotate forward until the tank comes to a complete stop and hold	Service brakes are applied, tank stops, and the engine runs at a "FAST IDLE"	The steering handles are spring loaded and will re-turn to the UP position when released

JOB ELEMENTS

6.0 DUTY DRIVING THE TANK POSITION TC

6.5 TASK Steering TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Steering handles on hand controller	Turn right or left as desired	Tank responds accordingly	When driving forward, turning the steering handles right turns the tank right; turning the steering handles left, turns the tank left The steering handles are spring loaded and will re-turn to the <u>CENTER STEER</u> position when released Turn the tank smoothly, never in jerks Tank must not exceed <u> </u> mph when turning <u>sharply</u>

JOB ELEMENTS

8.0 DUTY OPERATING MISCELLANEOUS EQUIPMENT

POSITION TC

8.1 TASK Opening and Closing the Hatch

TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Hatch handwheel	Rotate clockwise, push hatch back with both hands until turret hatch catch is engaged, then release	Hatch retaining "dogs" (3) retract as handwheel rotates clockwise, hatch rotates up and back, handwheel returns to <u>STARTING</u> position and hatch locks in the <u>OPEN</u> position	The hatch handwheel is spring-loaded and returns to the <u>STARTING</u> position when released
2	Hatch lock handle on turret	Pull out and raise hatch slightly to disengage from hatch catch	Hatch is released from turret hatch catch	
3	Hatch handwheel	Rotate clockwise, pull hatch down with both hands until forward movement stops, then release	Hatch retaining "dogs" (3) retract as handwheel rotates clockwise, hatch rotates up and down, handwheel returns to <u>STARTING</u> position and hatch locks in the <u>CLOSED</u> position	

JOB ELEMENTS

8.0 DUTY OPERATING MISCELLANEOUS EQUIPMENT

POSITION TC

8.2 TASK Adjusting Seat

TANK MBT-70

DATE 15 May 1967

Seat Elements

No.	Equipment	Activity	Indication	Remarks
1	Hydraulic controller pumping handle on left side of seat	Pump forward and rearward while remaining in seat	Seat raises to desired height	
2	Foot pedal	Depress while remaining in seat	Seat lowers to desired height	

JOB ELEMENTS

8.0 DUTY OPERATING MISCELLANEOUS EQUIPMENT

POSITION TC

8.3 TASK Operating Panoramic Sight Wiper and Deicer

TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Wiper toggle switch on the panoramic sight control unit	Switch to the <u>ON</u> position		The driving rotary switch in the driver's station must be in the <u>ACCY</u> or <u>DRIVE</u> position
2	Deicer toggle switch on the panoramic sight control unit	Switch to the <u>ON</u> position	Deicer lamp (yellow) <u>illuminates</u>	

JOB ELEMENTS

8.0 DUTY OPERATING MISCELLANEOUS EQUIPMENT POSITION TC

8.4 TASK Operating Night Sight Wiper and Deicer TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Washing toggle switch on night sight control unit	Switch to the ON position		The driving rotary switch in the driver's station must be in the <u>ACCY</u> or <u>DRIVE</u> position
2	Wiper toggle switch on night sight control unit	Switch to the ON position		
3	Deicing toggle switch on night sight control unit	Switch to the ON position		

JOB ELEMENTS

8.0 DUTY OPERATING MISCELLANEOUS EQUIPMENT

POSITION TC

8.6 TASK Operating the Laser/IR Indicator

TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Laser-IR toggle switch on Laser/IR indicator panel	Switch to the ON position		The driving rotary switch in the driver's station must be in the <u>ACCY</u> or <u>DRIVE</u> position
2	Dimmer rotary knob on Laser/IR indicator panel	Rotate to desired position	Brightness of the <u>LASER</u> /IR lamps changes	
3	Reset pushbutton on Laser/IR indicator panel	Depress <u>R</u> and release	<u>LASER</u> and <u>IR</u> warning indicators reset to zero	Position of indicator shows sector from which IR or <u>LASER</u> beam is received
4	Deicer toggle switch on Laser/IR indicator panel	Switch to the <u>ON</u> position	<u>DEICER</u> lamp (amber) illuminates	Deicer must be activated when temperature is below <u> </u> ° F

JOB ELEMENTS

8.0 DUTY OPERATING MISCELLANEOUS EQUIPMENT

POSITION TC

8.7 TASK Testing Fire Control Lamps

TANK MBT-70

DATE 15 May 1967

Skill Elements

No.	Equipment	Activity	Indication	Remarks
1	Control lamps dimmer rotary switch on the auxiliary panel	Rotate clockwise to the "STOPS" position	Fire control lamps in the gunner's and TC's stations illuminate	The fire control toggle switch in the TC station must be in the ON position If a fire control light fails to illuminate in either station, remove and install as required