STP 8-91H14-SM-TG

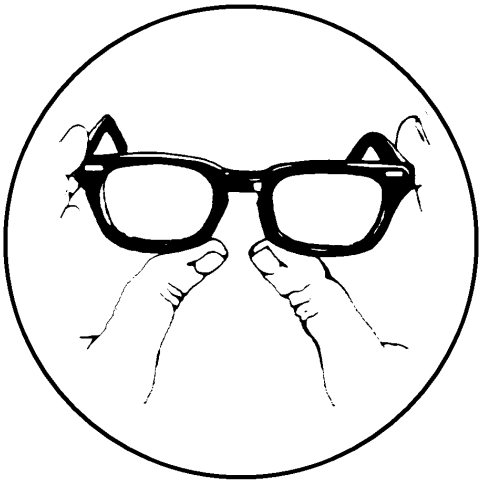
SOLDIER'S MANUAL
AND TRAINER'S GUIDE

MOS 91H

OPTICAL LABORATORY SPECIALIST

SKILL LEVELS 1/2/3/4

OCTOBER 2002



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SOLDIER'S MANUAL and TRAINER'S GUIDE

MOS 91H

Soldier's Manual, Skill Levels 1/2/3/4 and Trainer's Guide, MOS 91H, Optical Laboratory Specialist

Skill Levels 1, 2, 3 and 4

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PREFACE

This publication is for skill level 1, 2, 3, and 4 soldiers holding military occupational specialty (MOS) 91H and for trainers and first-line supervisors. It contains standardized training objectives, in the form of task summaries, to train and evaluate soldiers on critical tasks that support unit missions during wartime. Trainers and first-line supervisors should ensure soldiers holding MOS/SL 91H1/2/3/4 have access to this publication. This STP is available for download from the Reimer Digital Library (RDL).

This manual applies to both Active and Reserve Component soldiers.

The proponent of this publication is HQ, TRADOC. Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Academy of Health Sciences, ATTN: MCCS-HTI, 1750 Greeley Rd, STE 135, Fort Sam Houston, TX 78234-5078.

CHAPTER 1

Introduction

1-1. General

This manual identifies the individual MOS training requirements for soldiers in MOS 91H. Commanders, trainers, and soldiers should use it to plan, conduct, and evaluate individual training in units. This manual is the primary MOS reference to support the self-development and training of every soldier.

Use this manual with Soldier's Manuals of Common Tasks (STP 21-1-SMCT and STP 21-24-SMCT), Army Training and Evaluation Programs (ARTEPs), and FM 25-101, Battle Focused Training, to establish effective training plans and programs that integrate soldier, leader, and collective tasks.

1-2. Battle Focused Training

As described in FM 25-100, Training the Force, and FM 25-101, Battle Focused Training, the commander must first define the mission essential task list (METL) as the basis for unit training. Unit leaders use the METL to identify the collective, leader, and soldier tasks which support accomplishment of the METL. Unit leaders then assess the status of training and lay out the training objectives and the plan for accomplishing needed training. After preparing the long- and short-range plans, leaders then execute and evaluate training. Finally, the unit's training preparedness is reassessed, and the training management cycle begins again. This process ensures that the unit has identified what is important for the wartime mission, that the training focus is applied to the necessary training, and that training meets established objectives and standards.

Additionally, the AMEDD is developing training products that will enhance medical preparedness in the case of a Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) event. To assist commanders and leaders in training their units, CBERNE-related information is being included in AMEDD Mission Training Plans (MTPs). Even though most collective tasks within an MTP may directly affect or support a CBRNE event, the ones that will most directly be impacted are clearly indicated with a statement in the CONDITION that reads: "THIS TASK MAY BE USED TO SUPPORT A CBRNE EVENT." These collective tasks and any supporting individual tasks in this soldier’s manual should be considered for training emphasis. Also included in the MTP is a CBRNE Appendix. The purpose of the appendix is to give a general overview of the Federal Response Plan, the AMEDD support role, and the command structure for those agencies and elements involved or participating in a CBRNE event. It is understood that military resources temporarily support and augment, but do not replace local, state, and federal civilian agencies having primary authority and responsibility for domestic disaster assistance.

1-3. Relationship of Soldier Training Publications (STPs) to Battle Focused Training

The two key components of enlisted STPs are the Trainer's Guide (TG) and Soldier's Manual (SM). The TG and SM give leaders important information to help in the battle focused training process. The TG relates soldier and leader tasks in the MOS and SL to duty positions and equipment. It provides information on where the task is trained, how often training should occur

to sustain proficiency, and who in the unit should be trained. As leaders go through the assessment and planning stages, they should use the TG as an important tool in identifying what needs to be trained.

The execution and evaluation of soldier and leader training should rely on the Armywide training objectives and standards in the SM task summaries. The task summaries ensure that soldiers in any unit or location have the same definition of task performance and that trainers evaluate the soldiers to the same standard.

1-4. Task Summaries

Task summaries contain information necessary to conduct training and evaluate soldier proficiency on tasks critical to the MOS. A separate task summary is provided for each critical task. These task summaries are, in effect, standardized training objectives which ensure that soldiers do not have to relearn a task on reassignment to a new unit. The format for the task summaries included in this manual is as follows:

- Task Title. The task title identifies the action to be performed.
- Task Number. A 10-digit number identifies each task or skill. Include this task number, along with task title, in any correspondence relating to the task.
- Conditions. The task conditions identify all the equipment, tools, references, job aids, and supporting personnel that the soldier needs to perform the task in wartime. This section identifies any environmental conditions that can alter task performance, such as visibility, temperature, and wind. This section also identifies any specific cues or events that trigger task performance.
- Standards. The task standards describe how well and to what level you must perform a task under wartime conditions. Standards are typically described in terms of accuracy, completeness, and/or speed.
- Performance Steps. This section includes a detailed outline of information on how to perform the task.
- Evaluation Preparation (when used). This subsection indicates necessary modifications to task performance in order to train and evaluate a task that cannot be trained to the wartime standard under wartime conditions. It may also include special training and evaluation preparation instructions to accommodate these modifications and any instruction that should be given to the soldier before evaluation.
- Performance Measures. This evaluation guide identifies the specific actions that the soldier must do to successfully complete the task. These actions are listed in a GO/NO-GO format for easy evaluation. Each evaluation guide contains a feedback statement that indicates the requirements for receiving a GO on the evaluation.
- References. This section identifies references that provide more detailed and thorough explanations of task performance requirements than that given in the task summary description.

Additionally, some task summaries include safety statements and notes. Safety statements (danger, warning, and caution) alert users to the possibility of immediate death, personal injury, or damage to equipment. Notes provide a small, extra supportive explanation or hint relative to the performance measures.

1-5. Soldier's Responsibilities

Each soldier is responsible for performing individual tasks which the first-line supervisor identifies based on the unit's METL. The soldier must perform the tasks to the standards listed in the SM. If a soldier has a question about how to do a task or which tasks in this manual he or she must perform, it is the soldier's responsibility to ask the first-line supervisor for clarification. The first-line supervisor knows how to perform each task or can direct the soldier to the appropriate training materials.

1-6. NCO Self-Development and the Soldier's Manual

Self-development is one of the key components of the leader development program. It is a planned progressive and sequential program followed by leaders to enhance and sustain their military competencies. It consists of individual study, research, professional reading, practice, and self-assessment. Under the self-development concept, the NCO, as an Army professional, has the responsibility to remain current in all phases of the MOS. The SM is the primary source for the NCO to use in maintaining MOS proficiency.

Another important resource for NCO self-development is the Army Correspondence Course Program (ACCP). Refer to DA Pamphlet 350-59 for information on enrolling in this program and for a list of courses, or write to: AMEDDC&S, ATTN: MCCS-HSN, 2105 11TH STREET SUITE 4191, FORT SAM HOUSTON TX 78234-5064.

Unit learning centers are valuable resources for planning self-development programs. They can help access enlisted career maps, training support products, and extension training materials. A life cycle management diagram for MOS 91H soldiers is on page 1-4. You can find more information and check for updates to this diagram at http://das.cs.amedd.army.mil/ooc.htm (scroll down to LIFE CYCLE MANAGEMENT, select ENLISTED, and find the appropriate tab along the bottom.) This information, combined with the MOS Training Plan in Chapter 2, forms the career development model for the MOS.

1-7. Trainer's Responsibilities

Training soldier and leader tasks to standard and relating this training to collective mission-essential tasks is the NCO trainer's responsibility. Trainers use the steps below to plan and evaluate training.

- Identify soldier and leader training requirements. The NCO determines which tasks soldiers need to train on using the commander's training strategy. The unit's METL and ARTEP and the MOS Training Plan (MTP) in the TG are sources for helping the trainer define the individual training needed.

- Plan the training. Training for specific tasks can usually be integrated or conducted concurrently with other training or during "slack periods." The unit's ARTEP can assist in identifying soldier and leader tasks which can be trained and evaluated concurrently with collective task training and evaluation.

- Gather the training references and materials. The SM task summary lists all references which can assist the trainer in preparing for the training of that task.

MOS 91H
OPTICAL LABORATORY SPECIALIST
CAREER/TRAINING LIFE CYCLE

RANK	AMEDD Course NR	TRAINING	LENGTH	LOCATION	ATTENDANCE REQUIREMENT	Self-Development Course NR	SELF-DEVELOPMENT	LENGTH	LOCATION	ATTENDANCE REQUIREMENT
E1 - E5		Basic Combat Training Course	9 wks	Ft. LW Ft. Sill Ft. Jackson Ft. Benning	IET					
					IET		**Army Correspondence Course Program**			
	311-91H10	Optical Lab Spec 91H10	24 wks	ITRO - VA	IET/MOS					
		PLDC	4 wks	Multiple sites	Leadership	081-CBRNE-W	***Introduction to CBRNE***		***On-Line***	***Just in Time***
						MD0010	Basic Medical Terminology		Correspondence	Optional
						MD1210	ASMART		Unit Training	Sustainment
	6-8-C40	BNCOC 91H30	7 wks 1 day	FSH, TX	Leadership		Combat Life Saver (CLS)		Unit Training	Just in Time
		BASELINE	**REQUIRED**	**RECOMMENDED**	**PROFIS**					
		Basic Trauma Life Support (BTLS)	X							
		Cardiopulmonary Resuscitation (CPR)	X							
		Field Management of Chemical & Biological Casualties (FMCBC)			X(TOE Only)					
		Emergency Medical Training (EMT)-I		X						
E6 - E9		**Instructor Courses**								
	5K-F3/520-F3	Instructor Training Course	10 days	AHS, FSH, TX	Just in time SQI-H		**Specialty Courses**			
	5K-F6/520-F6	Small Group Instruction Training	5 days	AHS, FSH, TX	Just in time	5K-F13/520-F10	***CBRNE TRAINER EVALUATOR***	***2 Days***	***Fort Sam Houston, TX***	***Just in Time***
		Master Fitness Trainer	2 wks	Multiple Sites	Just in time ASI P5	5K-F7/520-F7(PILOT)	Advanced Instructor Training	1 Wk, 3 Days	Fort Sam Houston, TX	
		Recruiter	6 wks	USAREC	Just in time	5K-F8/520-F8(PILOT)	Education and Training for the 21st Century	4 Weeks	Fort Sam Houston, TX	
		Drill Sgt School	9 wks	Multiple Sites	Just in time SQI-X					
	6-8-C42	ANCOC (SL4)	6 wks	FSH, TX	Leadership					
		First Sergeant Course	5 wks	USASMA	Just in time SQI-M					
		SGM Course	9 months	USASMA	Just in time MEL-A		**PPSCP**			
		CSM Course	1 wk	USASMA	Just in time/leadership	300-A0704	75/71 Personnel/Retention Legal/EO	4 days	SA,TX	Just in Time
		Battle Staff	6 wks, 2 days	USASMA	Just in time - ASI 2S	300-A0710	Medical Logistics Enlisted Supervisors Short Course	4 days	SA, TX	Just in Time
Note: Converts to MOS 91W at the E8 level. **Combat Lifesaver and DEPMEDS recommended if assigned PROFIS**						340-A0715	MEDCOM CSM/SGM NCO Short Course	4 days	SA, TX	Leadership

- Determine risk assessment and identify safety concerns. Analyze the risk involved in training a specific task under the current conditions at the time of scheduled training. Ensure that your training preparation takes into account those cautions, warnings, and dangers associated with each task.

- Train each soldier. Show the soldier how the task is done to standard, and explain step-by-step how to do the task. Give each soldier one chance to do the task step-by-step.

- Emphasize training in mission-oriented protective posture (MOPP) level 4 clothing. Soldiers have difficulty performing even the very simple tasks in an NBC environment. The combat effectiveness of the soldier and the unit can degrade quickly when trying to perform in MOPP 4. Practice is the best way to improve performance. The trainer is responsible for training and evaluating soldiers in MOPP 4 so that they are able to perform critical wartime tasks to standards under NBC environment conditions.

- Check each soldier. Evaluate how well each soldier performs the tasks in this manual. Conduct these evaluations during individual training sessions or while evaluating soldier proficiency during the conduct of unit collective tasks. This manual provides an evaluation guide for each task to enhance the trainer's ability to conduct year-round, hands-on evaluations of tasks critical to the unit's mission. Use the information in the MTP as a guide to determine how often to train the soldier on each task to ensure that soldiers sustain proficiency.

- Record the results. The leader book referred to in FM 25-101, appendix B, is used to record task performance and gives the leader total flexibility on the method of recording training. The trainer may use DA Forms 5164-R (Hands-On Evaluation) and 5165-R (Field Expedient Squad Book) as part of the leader book. The forms are optional and locally reproducible. STP 21-24-SMCT contains a copy of the forms and instructions for their use.

- Retrain and evaluate. Work with each soldier until he or she can perform the task to specific SM standards.

1-8. Training Tips for the Trainer

Prepare yourself.

- Get training guidance from your chain of command on when to train, which soldiers to train, availability of resources, and a training site.

- Get the training objective (task, conditions, and standards) from the task summary in this manual.

- Ensure you can do the task. Review the task summary and the references in the reference section. Practice doing the task or, if necessary, have someone train you on the task.

- Choose a training method.

- Prepare a training outline consisting of informal notes on what you want to cover during your training session.

- Practice your training presentation.

Prepare the resources.

- Obtain the required resources identified in the conditions statement for each task.
- Gather equipment and ensure it is operational.
- Coordinate for use of training aids and devices.
- Prepare the training site according to the conditions statement and evaluation preparation section of the task summary, as appropriate.

Prepare the soldiers.

- Tell the soldier what task to do and how well it must be done. Refer to the standards statement and evaluation preparation section for each task as appropriate.
- Caution soldiers about safety, environment, and security.
- Provide any necessary training on basic skills that soldiers must have before they can be trained on the task.
- Pretest each soldier to determine who needs training in what areas by having the soldier perform the task. Use DA Form 5164-R and the evaluation guide in each task summary to make this determination.

NOTE: Deficiencies noted in soldiers' ability to perform critical tasks taught in schools or by extension training materials should be reported to the proponent school.

Train the soldiers who failed the pretest.

- Demonstrate how to do the task or the specific performance steps to those soldiers who could not perform to SM standards. Have soldiers study the appropriate materials.
- Have soldiers practice the task until they can perform it to SM standards.
- Evaluate each soldier using the evaluation guide.
- Provide feedback to those soldiers who fail to perform to SM standards and have them continue to practice until they can perform to SM standards.

Record results in the leader book.

1-9. Training Support

This manual includes the following information which provides additional training support information.

- Appendix A, DA Form 5165-R (Field Expedient Squad Book). This appendix provides an overprinted copy of DA Form 5165-R for the tasks in this MOS. The NCO trainer can use this form to set up the leader book described in FM 25-101, appendix B. The use of this form may help preclude writing the soldier tasks associated with the unit's mission essential task list, and can become a part of the leader book.

- Appendix B contains information on surface section computations.

- Glossary. The glossary, which follows the last appendix, is a single comprehensive list of acronyms, abbreviations, definitions, and letter symbols.

- References. This section contains two lists of references, required and related, which support training of all tasks in this SM. Required references are listed in the conditions statement and are required for the soldier to do the task. Related references are materials which provide more detailed information and a more thorough explanation of task performance.

CHAPTER 2

Training Guide

2-1. General. The MOS Training Plan (MTP) identifies the essential components of a unit training plan for individual training. Units have different training needs and requirements based on differences in environment, location, equipment, dispersion, and similar factors. Therefore, the MTP should be used as a guide for conducting unit training and not a rigid standard. The MTP consists of two parts. Each part is designed to assist the commander in preparing a unit training plan which satisfies integration, cross training, training up, and sustainment training requirements for soldiers in this MOS.

Part One of the MTP shows the relationship of an MOS skill level between duty position and critical tasks. These critical tasks are grouped by task commonality into subject areas.

Section I lists subject area numbers and titles used throughout the MTP. These subject areas are used to define the training requirements for each duty position within an MOS.

Section II identifies the total training requirement for each duty position within an MOS and provides a recommendation for cross training and train-up/merger training.

- **Duty Position column**. This column lists the duty positions of the MOS, by skill level, which have different training requirements.
- **Subject Area column**. This column lists, by numerical key (see Section I), the subject areas a soldier must be proficient in to perform in that duty position.
- **Cross Train column**. This column lists the recommended duty position for which soldiers should be cross trained.
- **Train-up/Merger column**. This column lists the corresponding duty position for the next higher skill level or MOSC the soldier will merge into on promotion.

Part Two lists, by general subject areas, the critical tasks to be trained in an MOS and the type of training required (resident, integration, or sustainment).

- **Subject Area column**. This column lists the subject area number and title in the same order as Section I, Part One of the MTP.
- **Task Number column**. This column lists the task numbers for all tasks included in the subject area.
- **Title column**. This column lists the task title for each task in the subject area.
- **Training Location column**. This column identifies the training location where the task is first trained to soldier training publications standards. If the task is first trained to standard in the unit, the word “Unit” will be in this column. If the task is first trained to standard in the training base, it will identify, by brevity code (ANCOC, BNCOC, etc.), the resident course where the task was taught. Figure 2-1 contains a list of training locations and their corresponding brevity codes.

AIT	Advanced Individual Training
UNIT	Trained in the Unit
BNCOC	Basic NCO Course
ANCOC	Advanced NCO Course

Figure 2-1. Training Locations

- **Sustainment Training Frequency column**. This column indicates the recommended frequency at which the tasks should be trained to ensure soldiers maintain task proficiency. Figure 2-2 identifies the frequency codes used in this column.

BA - Biannually
AN - Annually
SA - Semiannually
QT - Quarterly
MO - Monthly
BW - Bi-weekly
WK - Weekly

Figure 2-2. Sustainment Training Frequency Codes

- **Sustainment Training Skill Level column**. This column lists the skill levels of the MOS for which soldiers must receive sustainment training to ensure they maintain proficiency to soldier's manual standards.

2-2. Part One, Section I. Subject Area Codes.

Skill Level 1

1 Fabrication
2 Surfacing
3 Equipment Maintenance
4 Optical Unit Assemblage

Skill Level 2

5 Basic Administration
6 General Administration

Skill Level 3

7 Advanced Administration

Skill Level 4

8 Senior Administration

2-3. Part One, Section II. Duty Position Training Requirements.

	DUTY POSITION	SUBJECT AREAS	CROSS TRAIN	TRAIN-UP/ MERGER
SL 1	Optical Laboratory Specialist	1-4	NA	91H2 Optical Laboratory Specialist
SL 2	Optical Laboratory Specialist	1-6	NA	91H3 Optical Laboratory Specialist
SL 3	Optical Laboratory Specialist	1-7	NA	91H4 Optical Laboratory Specialist
SL 4	Optical Laboratory Specialist	1-8	NA	91W5 Operations SGT 91W5M Medical 1st SGT

2-4. Part Two. Critical Tasks List.

MOS TRAINING PLAN
91H14

CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
Skill Level 1					
1. Fabrication	081-875-4420	DOWNLOAD OPTICAL PRESCRIPTIONS	AIT	AN	1-4
	081-875-4451	EDIT AN OPTICAL PRESCRIPTION	AIT	AN	1-4
	081-875-4376	SELECT FINISHED STOCK	AIT	AN	1-4
	081-875-4377	SPOT LENSES FOR FABRICATION	AIT	AN	1-4
	081-875-4398	BLOCK LENSES FOR EDGING	AIT	AN	1-4
	081-875-4380	EDGE LENSES	AIT	AN	1-4
	081-875-4382	SAFETY BEVEL LENSES	AIT	AN	1-4
	081-875-4401	DYE PLASTIC LENSES TO A SPECIFIED TINT	AIT	AN	1-4
	081-875-4386	ASSEMBLE FRAME STOCK	AIT	AN	1-4
	081-875-4387	INSERT LENSES INTO NONMETALLIC FRAMES	AIT	AN	1-4
	081-875-4428	INSERT LENSES INTO METAL FRAMES	AIT	AN	1-4
	081-875-4429	INSPECT COMPLETED SPECTACLES	AIT	AN	1-4
	081-875-4397	PREPARE SPECTACLES FOR SHIPMENT	AIT	AN	1-4
2. Surfacing	081-875-4399	PREPARE A SURFACE WORKSHEET	AIT	AN	1-4
	081-875-4351	BLOCK LENS BLANKS FOR SURFACING	AIT	AN	1-4
	081-875-4402	CUT LENS SURFACES USING A LENS GENERATOR	AIT	AN	1-4
	081-875-4403	FABRICATE LAPS USING A LENS GENERATOR	AIT	AN	1-4
	081-875-4404	FINE GRIND LENS SURFACES USING AN AUTOMATIC SURFACER	AIT	AN	1-4
	081-875-4405	POLISH LENS SURFACES USING AN AUTOMATIC SURFACER	AIT	AN	1-4
	081-875-4364	DEBLOCK LENSES	AIT	AN	1-4

CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
3. Equipment Maintenance	081-875-4389	PERFORM PMCS ON A LENSOMETER	AIT	AN	1-4
	081-875-4410	PERFORM PMCS ON A FABRICATION MARKER/BLOCKER	AIT	AN	1-4
	081-875-4392	PERFORM PMCS ON AN EDGER	AIT	AN	1-4
	081-875-4414	PERFORM PMCS ON A DYE BATH UNIT	AIT	AN	1-4
	081-875-4411	PERFORM PMCS ON A SURFACE BLOCKER	AIT	AN	1-4
	081-875-4412	PERFORM PMCS ON A LENS GENERATOR	AIT	AN	1-4
	081-875-4413	PERFORM PMCS ON AN AUTOMATIC LENS SURFACER	AIT	AN	1-4
	081-875-4374	PERFORM PMCS ON A DEBLOCKER	AIT	AN	1-4
	081-875-4394	PERFORM PMCS ON A HAND EDGER	AIT	AN	1-4
4. Optical Unit Assemblage	081-875-4431	MAINTAIN AN OPTICAL FABRICATION UNIT ASSEMBLAGE	AIT	AN	1-4
	081-875-4423	SET UP AN OPTICAL FABRICATION UNIT ASSEMBLAGE	AIT	AN	1-4
Skill Level 2					
5. Basic Administration	081-875-4438	PREPARE A MONTHLY METRICS REPORT	UNIT	AN	2-4
6. General Administration	081-875-4430	INSPECT AN OPTICAL LABORATORY TO ENSURE A SAFE WORKING ENVIRONMENT	UNIT	AN	2-4
Skill Level 3					
7. Advanced Administration	081-875-4434	MAINTAIN OPTICAL LABORATORY CREDIT CARD ACCOUNT	BNCOC	AN	3-4
Skill Level 4					
8. Senior Administration	081-875-4435	DEVELOP THE ANNUAL OPTICAL LABORATORY BUDGET REQUIREMENT	ANCOC	AN	4

CHAPTER 3

MOS/Skill Level Tasks

Skill Level 1

Subject Area 1: Fabrication

DOWNLOAD OPTICAL PRESCRIPTIONS
081-875-4420

Conditions: You have received prescriptions from supported clinics using the Lab Spectacle Request Transmittal System (SRTS), Lab version 5.04. You will need CPU with minimum specifications (Pentium 200 with 64MB RAM (96 MB for NT); Windows 95,98, or NT; 2 GB hard drive with minimum of 500 MB of free space; CD-ROM; network card; internet access with web browser; e-mail account; updated virus checking program), SRTS End User Guide, printer, and DD Forms 771.

Standards: Printed the prescriptions on DD Form 771 and forwarded them to the Editing Section for their review.

Performance Steps

NOTE: All DOD optometry clinics have SRTS capabilities.

NOTE: Lab version 5.04 will only print to the July 96 revision of DD Form 771. Older versions of DD Form 771 are no longer compatible.

NOTE: This lab version does not support modems. The lab should receive SRTS e-mail attachment files from the clinics and place the files into a specific directory to access them.

1. Access your LAB SRTS program.
    a. Log in will be first prompt.

NOTE: You must obtain a password from your Information Management Office.

    b. Type in the lab account number. This will open the main menu.

NOTE: Lab account numbers are provided by the Executive Agency (EA), Naval Ophthalmic Support and Training Activity (NOSTRA).

CAUTION: If you type in the wrong account number, you will get a screen that tells you this is a new account and asks do you want to create it. You should select NO. Selecting YES will reformat your databases and cause major problems.

2. Select PACKAGE PROCESS from the main menu under the LAB OPERATIONS pull down menu.

NOTE: The PACKAGE PROCESS screen shows all the order files (packages) from the clinics that have yet to be processed and/or printed. There are three ways to process the files.

    a. Process one file only.
        (1) Double click on the file you want to process.

NOTE: You must double click on this file or it will not be highlighted.

        (2) Click on the "Process This File Only" button.
    b. Process all files from one clinic/account.

Performance Steps

(1) Double click on the file you want to process.
(2) Ensure the correct clinic account number is displayed in the boxes at the top center of the screen.
(3) Click on the "Process All Files For This Clinic/Account" button.

c. To process all the files. Click on the "Process All Files" button.
d. Selecting a process will automatically generate the printing of selected files on to DD Forms 771.

NOTE: If you do not want duplicate orders printed, do not check mark in the box in front of the words "Reprint Same/Duplicate Orders".

NOTE: The number of orders in a file will be shown in the box in the center of the screen as well as the total number of orders contained in all unprocessed files.

NOTE: Once a file is processed it will be moved to the "Packages Processed" screen.

3. Ensure all DD Forms 771 have printed successfully.

NOTE: Obtain a listing of all prescription order numbers from the requesting clinic and check against the printed DD Forms 771. This is the most accurate way of ensuring all prescriptions completed the transmission from clinic to lab.

4. Forward the printed prescriptions for editing.

5. Return to MAIN MENU.

NOTE: Reprinting may be necessary for the following reasons:

a. An order has been lost.
b. Paper jam in printer.
c. Printer memory loss. (If this occurs, and the orders are not printed to the DD Forms 771, the computer will recognize the orders as printed. Therefore, you must reprint the orders.

6. Reprint processed orders.
   a. Choose the "Browse Processed" button, from the lab operations pull down menu, on the main menu to see packages processed.
   b. This screen shows all files/packages that have been processed.
   c. Click on the "Show Orders Per Package" button.
   d. The screen display will show each order number that is in the selected file.
   e. Click on the order number you wish to reprint and click print.

Performance Measures	**GO**	**NO GO**
1. Accessed the LAB SRTS program.	____	____
2. Selected PACKAGE PROCESS from the main menu.	____	____
3. Ensured all DD Forms 771 printed successfully.	____	____
4. Forwarded the printed prescriptions for editing.	____	____
5. Returned to MAIN MENU.	____	____
6. Reprinted if the initial package processing failed.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	SRTS END USER GUIDE

EDIT AN OPTICAL PRESCRIPTION
081-875-4451

Conditions: You have received eyeglass prescriptions (DD Forms 771) off of SRTS. You will need date stamp, red marking pen, AR 40-63, Frame of Choice (FOC) SOP, and a lens stock range chart.

Standards: Verified, dated, and sorted incoming prescriptions by eligibility category, type of glasses, and single and multi-vision. Marked special information in the appropriate location on the DD Form 771, e.g., number of pairs, tinting.

Performance Steps

NOTE: Perform initial prescriptions review. If an excessive amount of time has elapsed between the date the prescription was written and the date it was received, the requesting facility should be notified and cautioned against the practice of stockpiling prescriptions or holding them until a number have accumulated. Prescriptions should be forwarded on a daily basis.

1. Process all incoming prescriptions on a daily basis.
   a. Ensure that each prescription has two copies stapled together. (Produce a second copy if only one is available)
   b. Ensure that each prescription is authorized IAW AR 40-63 for special requested items, e.g., gold flights, FOC, MCU2P, etc.
   c. Date/time stamp all prescriptions with the date received.

2. Scan each prescription for completeness, legibility, and for conformance with AR 40-63.

NOTE: If a prescription requesting a replacement of only one lens is received and the requesting facility failed to record the prescription of the lens in the frame, contact the requesting clinic to verify the order.

3. Identify items for special attention. Mark the prescription with a red marking pen on the item for special attention.
   a. Branch of service, if other than Army.
   b. Type of spectacle, if other than standard issue, including all FOC.

NOTE: Each type of prescription, such as single vision, bifocal, tint, or protective mask insert, requires a separate DD Form 771.

   c. Female shape spectacles.
   d. Different sphere power signs.
   e. Out decentration.
   f. Prism requirement.
   g. Number of pairs, if other than one.
   h. Tinted lenses.
   i. Type of bifocals.
   j. Any other special attention items.

4. Sort the prescriptions by categories (branch of service, retired, dependents, and others).

5. Count the number of pairs of single vision, multi-vision, inserts, plastics, and other types for each category and record on an informal tally sheet to be reported against outgoing prescriptions on a daily basis for monthly reporting purposes.

Performance Steps

6. Sort the prescriptions for laboratory capability (single vision finished, single vision surface, multi-vision, and special lens requests).
7. Forward the work to the appropriate section (Fabrication or Surfacing).
8. Refer any work that is beyond the laboratory's capability to the authorized supporting laboratory.

NOTE: As a courtesy, you should inform the requesting clinic of any referrals to the supporting laboratory.

Performance Measures	**GO**	**NO GO**
1. Scanned each prescription for completeness, legibility, and for conformance with AR 40-63.	____	____
2. Identified items for special attention. Marked the prescription with a red marking pen.	____	____
3. Sorted the prescriptions by categories (branch of service, retired, dependents, and others).	____	____
4. Counted the number of pairs of single vision, multi-vision, inserts, plastics, and other types for each category and recorded on an informal tally sheet.	____	____
5. Sorted the prescriptions for laboratory capability (single vision finished, single vision surface, multi-vision, and special lens requests).	____	____
6. Forwarded the work to the appropriate section.	____	____
7. Referred any work which is beyond the laboratory's capability to the authorized supporting laboratory.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
AR 40-63	AR 40-61

SELECT FINISHED STOCK

081-875-4376

Conditions: You have received edited single vision prescriptions. You will need job trays, single vision lens stock, marking pen, and stock accounting cards.

Standards: Trayed the prescription, selected the proper lenses, and pulled the stock cards and forwarded them to supply when applicable.

Performance Steps

1. Place each prescription in a separate job tray.
2. Select lens stock to match the prescription.
   a. If a job calls for two pairs but only one is available, supply one pair of spectacles and annotate the prescription (preferably in red) for notification of the requesting clinic by the Editing Section.
   b. If the required lenses are not in stock, lenses may be substituted if the lens power exceeds 5 diopters. Substitution is limited to a 0.25 D change in either the sphere or cylinder power. If a substitution cannot be made, forward the prescription to the Surfacing Section.
   c. Ensure that the pulled lenses will cut out by determining the blank size required.

NOTE: Selecting the minimal lens blank size available will allow a lens to be fabricated at minimum thickness, making it more cosmetically appealing. It also will reduce the weight of the lens and its magnification, as well as reduce lens breakage. Smaller lenses also cost less.

(1) Minimum lens blank size (MLBS) is determined by using the following formula:

MLBS = ED + 2(d) + 2 mm

Where: ED = effective diameter (twice the distance from the center of the lens to the farthest corner of the eyewire)
d = decentration per lens

Example: ED + 2(d) + 2 = MLBS
52 + 2(3) + 2 = 60 mm

(2) The overall lens blank size must increase by 2 mm for every 1 mm of decentration per lens.

3. Initiate lens reorder and forward stock accounting cards to supply as needed.
   a. When lens stock is pulled and the card is reached, extract the card and place it in a central location within the section.
   b. Forward the collected cards to supply for reordering of lens stock IAW local supply procedures.

Performance Measures	**GO**	**NO GO**
1. Placed each prescription in a separate job tray.	____	____
2. Selected lens stock to match the prescription.	____	____

Performance Measures	GO	NO GO
3. Initiated lens reorder and forwarded stock accounting cards to supply as needed.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	FM 8-37

SPOT LENSES FOR FABRICATION
081-875-4377

Conditions: You have received a job tray with lenses that must be spotted. You will need lensometer, lens marking pen, water, towel, and PD ruler.

Standards: Spotted the lenses. Lenses with prism were identified and spotted with prism. The factory dots were removed, the lens powers were verified, and the lenses were marked for the right or left eye.

Performance Steps

1. Adjust the eyepiece for sharp focus.
    a. Position the power wheel on plano or zero.
    b. Rotate the eyepiece until the target is in the clearest possible focus.
2. Compare the powers on the package with the prescription powers.
3. Remove the lenses from the package and inspect for flaws.
4. Wipe off factory dots with a clean towel.
5. Position a lens in the lens measuring instrument with the concave side facing away and verify the lens powers.

NOTE: If the lens is not the correct power and is not within tolerance, return the job to the proper section for lens replacement.

6. Spot the lens.

NOTE: Do not spot flat top bifocals.

    a. Without prism.
        (1) Set the axis wheel on the axis reading for the lens.
        (2) Turn the lens so that the single line comes in clear and straight.
        (3) Center the single line in the reticle (or center the entire image when spotting spherical lenses) both vertically and horizontally.
        (4) If the lens is a cylinder lens, turn the power wheel to the PWIII reading and ensure that the three lines come in clear and straight.
        (5) Center the three lines in the reticle, both vertically and horizontally.

NOTE: You may have to go between PWI and PWIII several times to ensure both are centered.

        (6) Spot the lens.

NOTE: When spotting lenses with little or no power in the 180th meridian, always spot the lens so that the lens will cut out after proper decentration.

    b. With prism.

NOTE: Normally an individual wearing corrective lenses has each lens positioned with its optical center over the visual center. When prism is prescribed, small amounts of prism may be produced by decentration. When the optical center is moved off-center in relationship to the visual center, a prismatic effect occurs. Higher amounts of prism must be ground into a lens due to lens size limitations on decentering for prism.

        (1) Decenter a plus lens IN to create Base In prism.
        (2) Decenter a plus lens OUT to create Base Out prism.
        (3) Decenter a minus lens IN to create Base Out prism.
        (4) Decenter a minus lens OUT to create Base In prism.

Performance Steps

NOTE: Remember that a lens is positioned in the lensometer with the concave side facing away. Thus, all decentration movements should be made from the perspective of the wearer.

7. Remove the lens from the lens-measuring instrument.
8. Indicate right or left lens with a marking pen and mark "T", indicating top, on lenses that were spotted with prism.
9. Return the lens to the proper tray.
10. Repeat steps 4 through 9 until all lenses in the tray have been completed.

Performance Measures	**GO**	**NO GO**
1. Adjusted the eyepiece for sharp focus.	____	____
2. Compared the powers on the package with the prescription powers.	____	____
3. Removed the lenses from the package and inspected them for flaws.	____	____
4. Wiped off factory dots with a clean towel.	____	____
5. Positioned a lens in the lens measuring instrument with the concave side facing away and verified the lens powers.	____	____
6. Spotted the lens.	____	____
7. Removed the lens from the lens-measuring instrument.	____	____
8. Indicated right or left lens with a marking pen and marked "T", indicating top, on lenses that were spotted with prism.	____	____
9. Returned the lens to the proper tray.	____	____
10. Repeated steps 4 through 9 until all lenses in the tray were completed.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	ANSI Z80 STANDARDS FM 8-11-2 FM 8-37

BLOCK LENSES FOR EDGING

081-875-4398

Conditions: You have received a job tray with lenses that have been spotted for blocking. You will need fabrication marker/blocker, various curvature lens blocks, and adhesive pads.

Standards: Blocked the lenses for edging in compliance with the prescription requirements. The correct block size was applied in accordance with the base curve and size of the lens to be edged.

Performance Steps

1. Select the appropriate block.

NOTE: There are three sizes of blocks. The most common is the block with a 6.00 base curve. There are also 0.50 base curve blocks for high minus lenses and 10.00 base curve blocks for high plus lenses.

2. Apply an adhesive pad to the block.
    a. Remove an adhesive pad from the roll and apply it to the block.

NOTE: Local SOP may allow preparing several blocks at a time by removing the paper covers from the individual adhesive pads and applying blocks to the pads while the pads are still on the paper strip.

    b. Ensure the block is centered on the pad.

CAUTION: Care should be taken to limit contact of the pad with your fingers. Unnecessary contact with the adhesive portion of the pad may result in the pad losing its adhesive properties.

3. Place the padded block into the chuck adapter.

4. Position the lens on the protractor.
    a. Place the lens over the protractor of the machine with the convex side of the lens facing up.
    b. Look through the window of the protractor and decenter the lens according to prescription requirements.
        (1) Start with the vertical and horizontal alignment lines set at the origin (0,0).
        (2) According to prescription, adjust the vertical movement knob up or down the correct number of millimeters for the desired segment setting on multifocal lenses.
        (3) Adjust the lateral movement knob left or right the correct number of millimeters for IN or OUT decentration.

5. Block the lens.
    a. Pull the block holder handle downward.
    b. Apply enough pressure to block the lens.

6. Remove the blocked lens and place it in the tray.

7. Repeat the procedure until all lenses in the tray have been completed.

Performance Measures	**GO**	**NO GO**
1. Selected the appropriate block.	____	____
2. Applied an adhesive pad to the block.	____	____

Performance Measures	GO	NO GO
3. Placed the padded block into the chuck adapter.	____	____
4. Positioned the lens on the protractor.	____	____
5. Blocked the lens.	____	____
6. Removed the blocked lens and placed it in the tray.	____	____
7. Repeated the procedure until all lenses in the tray were completed.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	FM 8-37 MARKER/BLOCKER MANUAL

EDGE LENSES
081-875-4380

Conditions: You have received a job tray with lenses that have been blocked for edging. You will need Horizon II lens edger (or equivalent) and operator instruction manual, DD Form 771, vacuum, deblocking tool, air compressor providing 80 psi with inline regulator/filter and coupling hose, cut resistant gloves, towel, soft lint-free cloth, box-o-graph, frame patterns for each type of military frame, prescribed frame, and PD ruler.

Standards: The lenses were edged to the size and shape specified on the DD Form 771. The lenses were edged on axis and do not have rejectable faults, e.g., shape, chips, or flakes.

Performance Steps

1. Prepare the edger.
    a. Attach the vacuum system.
        (1) Insert the end of the 2 1/2" flex vacuum hose into the coupler on the bottom of the edger from below the bench.

NOTE: This connects the hose to the chip chute, the device in the edger that captures the plastic debris.

        (2) Maintaining a gentle curve between the chip chute and vacuum, connect the other end of the 2 1/2" hose to the vacuum inlet.

NOTE: The vacuum inlet is the lower hole in the vacuum canister.

    b. Attach the compressed air line.
        (1) Install the regulator/filter assembly by inserting it into the quick-connect bulkhead fitting and snapping it in place.
        (2) Attach the quick disconnect onto the end of the air line to be used.
        (3) Push the air line on the male fitting of the regulator/filter assembly.
        (4) Air pressure to edger must not exceed 80 psi.

NOTE: To adjust air pressure to the edger, if necessary, adjust the knob on the top of the regulator/filter assembly until it is set at 80 psi. This is the required operating air pressure to the edger.

        (5) The air pressure to the pattern tracking pressure gauge on the front panel of the edger must be set at 50 psi.

NOTE: If the pattern tracking pressure gauge does not read 50 psi, adjust it using the adjustment knob on the control panel directly below the pattern tracking pressure gauge.

2. Apply power to the edger.

3. Cut several test lenses to check for correct size, shape and flaws.

4. Select the frame pattern to match the DD 771 prescription requirements.

NOTE: Safety feature will not allow edger machine to operate unless clear Plexiglas shield is in closed position. To access edging compartment clear Plexiglas shield must be manually opened to mount blocked lens or frame pattern.

5. Mount the frame pattern.

NOTE: With the clear plexiglas shield raised, mount the frame pattern on the pattern retainer spring clip on the left side of the lens drive motor shaft.

6. Chuck the lens.
    a. Place the blocked lens into the edger chuck adapter.

Performance Steps

NOTE: Block is designed with 3 ridges that will only fit into chuck adapter one way.

b. Hold the lens in position by hand and observe the operator's panel and press the CHUCK button to apply air pressure to edger chuck, which will clamp the lens into position for edging.

7. Set the size dial.

NOTE: The edger uses the U.S. convention of 36.5 mm as the size-on-size setting. It will be necessary to determine your frame pattern size prior to setting the size dial for the prescribed frame.

a. Measure the pattern horizontally using a box-o-graph or PD ruler.
b. Calculate the difference between the pattern size (stamped on the frame pattern) and 36.5 mm. This difference is the SET of the pattern.
c. If the pattern measures less than 36.5 mm, add the SET to the eye size of the frame you will be using (see example 1). If the pattern measures greater than 36.5 mm, subtract the SET from the eye size of the frame you will be using (see example 2).

Example 1: Pattern measures 31.5 mm. Eye size of frame is 48 mm.

	36.5 mm		48.0 mm	
	- 31.5 mm	SO	+5.0 mm	
SET =	5.0 mm		53.0 mm	(this will be the machine setting)

Example 2: Pattern measures 51.5 mm. Eye size of frame is 50 mm.

	51.5 mm		50.0 mm	
	- 36.5 mm	SO	- 15.0 mm	
SET =	15.0 mm		35.0 mm	(this will be the machine setting)

8. Edge the lens.

a. Close the plexiglass shield.
b. Set the bevel placement.

NOTE: The edger has two methods of bevel control. The front curve tracking bevel placement system uses a Teflon wheel that traces the front curve of the lens. The multi-cam tracking system utilizes a stair-step cam mounted on the lens drive motor carriage and a cam follower assembly that replaces the bevel guide wheel assembly. The multi-cam system is most effective with small lenses such as gas mask inserts and half-eyes, irregular fronts, and lower base lenses, when a high-based bevel curve is needed for frame insertion (such as inserting a 2-base lens into a 6-base frame).

(1) Set the bevel placement by turning the knob on the right side of the edger.
(2) Position the bevel guide to ensure a 1/3, 2/3 bevel.

NOTE: Ideally, the bevel should have a 1/3, 2/3 bevel, with 1/3 of the lens thickness towards the front of the lens and 2/3 of the thickness towards the back of the lens.

c. Engage the start button.

9. Engage the appropriate cycle button for edging adjustments if necessary.

NOTE: To avoid making bevel adjustments on each lens, arrange job trays to that similar base curves and prescriptions are on the same edger.

a. STOP/RESET. This is a "Panic Button". Pressing this button at any time will abort the cycle and return the lens drive/cutter motor carriages to the start position.

Performance Steps

b. PAUSE. The pause control can be used in two modes:
   (1) When engaged during the first half of the cutting cycle (roughing), it will prevent the edger from advancing to the finishing position until it is released.
   (2) When engaged during the second half of the cutting cycle (finishing), this will freeze the cycle.

NOTE: The pause feature is particularly helpful for making mid-cycle bevel adjustments.

10. Remove the lens from the edger chuck adapter.

11. Inspect the lens for rejectable defects in size, shape, axis, chips, chatter marks, and flakes.
    a. Flakes and chips that are too large to be removed by the safety beveler will be cause for rejection of the lens.
    b. Check the lens sizing by using a box-o-graph or by sizing it to the prescribed frame.
    c. Axis adjustments should be accomplished using the guidelines in the lens edger manufacturer's manual

12. Make necessary adjustments to correct rejectable defects before edging more lenses.
    a. Correct for bumps on the lens edge.
       (1) The Teflon wheel may be set too high and contacting the lens edging adhesive pad (LEAP) or block. Verify that the wheel assembly is locked in its proper position for beveling, with the locating pin fully seated in the mounting block.
       (2) If the Teflon wheel is contacting the block, check the effective diameter of the lens. The minimum diameter that can be edged with the standard front curve tracking system is 34 mm. Smaller diameters will require the multi-cam system.
       (3) A bump on the lens edge may also be caused by improper pattern tracking pressure. Ensure that the pattern tracking pressure gauge, on the operator's panel, is set at 40 psi.
    b. Correct for lines running across the periphery of the lens.
       (1) The cutter inserts may be too dull. Install new inserts. (See task 081-875-4392.)
       (2) The cutter may be unbalanced. Ensure that both inserts are fully seated in the cutter.
    c. Correct for pit marks appearing around the entire periphery of the lens. The nose bearings of the cutter motor may be bad, requiring replacement.
    d. Correct for pit marks appearing only on the corners of the lens.
       (1) Thrust plate wear may require adjustment.
       (2) The lens drive assembly may require replacement.
    e. Correct for marks on the front of the lens.
       (1) Extremely dull cutters can cause this problem and may require replacement.
       (2) Static electricity may cause mild aberrations. The lens can often be heated and wiped with a soft lint-free cloth to remove any plastic dust adhering to the surface of the lens.

13. Remove the block from the lens with the deblocking tool while wearing cut resistant gloves.

CAUTION: Use the proper deblocking tool and wear cut resistant gloves when deblocking. Lenses can cause severe lacerations.

14. Return the lens to the proper tray if no defects are found.

15. Repeat the procedure until all lenses in the tray have been edged, inspected, and deblocked.

16. Forward the completed tray to the Safety Bevel Section.

Performance Measures	GO	NO GO
1. Prepared the edger.	____	____
2. Powered on the edger.	____	____
3. Cut test lenses.	____	____
4. Selected the pattern to match the DD Form 771 prescription requirements.	____	____
5. Mounted the frame pattern.	____	____
6. Chucked the lens.	____	____
7. Set the size dial.	____	____
8. Edged the lens.	____	____
9. Engaged the appropriate cycle button for edging adjustments if necessary.	____	____
10. Removed the lens from the edger chuck adapter.	____	____
11. Inspected the lens for rejectable defects in size, shape, axis, chips, chatter marks, and flakes.	____	____
12. Made necessary adjustments to correct rejectable defects before edging more lenses.	____	____
13. Removed the block from the lens with the deblocking tool while wearing cut resistant gloves.	____	____
14. Returned the lens to the proper tray if no defects were found.	____	____
15. Repeated the procedure until all lenses in the tray were edged, inspected, and deblocked.	____	____
16. Forwarded the completed tray to the Safety Bevel Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	LENS EDGER MANUAL

SAFETY BEVEL LENSES
081-875-4382

Conditions: You have received a job tray with lenses that have been edged and deblocked. You will need AIT hand edger or equivalent, water, sponges, and a towel.

Standards: The lenses were free of all flakes, chips, sharp edges and bumps remaining from the machine edging process and the bevel apex has been smoothed.

Performance Steps

1. Turn on the hand edger.
2. Adjust the water source, ensuring a steady supply of water is maintained to keep the beveling wheel wet.

NOTE: Some safety bevelers are designed with a drip spout attached above the wheel. For this type, adjust the drip to allow only enough water to keep the wheel wet. Other safety bevelers are designed with a water well on the underside of the beveling wheel. To maintain an even flow of water it may be
necessary to place a wet sponge inside the well and against the wheel.

NOTE: Safety beveling machines used solely for plastic lenses can be operated as a dry unit (no water), but there must be a vacuum source connected to the machine, e.g., shop vac or central vacuum system.

3. Safety bevel only the concave (back) edge of plastic lenses to be inserted in zylonite (plastic) frames.
    a. Move the lens side to side so as not to put ruts in the face of the wheel.
    b. Remove only what is necessary to eliminate sharp edges, chips, flakes, or humps.

CAUTION: Ensure that the convex surface of the lens does not come in contact with the wheel, thereby causing a stone bruise (a visible defect on the front or back of the lens surface that inhibits observing a clear image.)

4. Wipe and inspect each safety beveled lens with a soft dry towel to ensure that all defects, e.g., sharp edges, chips, flakes, stone bruises, have been removed.

NOTE: If this check reveals any defects that cannot be removed, return the lens and job tray to the Stock Selection Section for replacement.

NOTE: Lenses for metal frames generally require smoothing the edger bevel for proper fit into the metal frame. If the bevel is too sharp, the lenses could be damaged, i.e. chipped or flaked during insertion.

5. Safety bevel the concave (back) and the apex of the edger generated bevels of plastic lenses to be inserted into metal frames.
    a. Move the lens side to side so as not to put ruts in the face of the wheel.
    b. Smooth the apex on the edger generated bevel to avoid damage during insertion into metal frames.
6. Return each lens to the tray from which it came, convex side up.
7. Repeat the procedure until all lenses in the tray have been safety beveled and inspected.
8. Forward completed trays to the Frame Assembly Section.

Performance Measures	GO	NO GO
1. Turned on the hand edger.	____	____
2. Adjusted the water source, ensuring a steady supply of water was maintained to keep the beveling wheel wet.	____	____
3. Safety beveled only the concave (back) edge of plastic lenses to be inserted into zylonite (plastic) frames.	____	____
4. Wiped and inspected each safety beveled lens with a soft dry towel to ensure that all defects have been removed.	____	____
5. Safety beveled the concave (back) edge and the apex of edger generated bevels on plastic lenses to be inserted into metal frames.	____	____
6. Returned each lens to the proper tray, convex side up.	____	____
7. Repeated the procedure until all lenses in the tray were safety beveled and inspected.	____	____
8. Forwarded completed trays to the Frame Assembly Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	FM 8-11-2
	FM 8-37

DYE PLASTIC LENSES TO A SPECIFIED TINT

081-875-4401

Conditions: You have received a job tray with plastic lenses that require tinting. You will need DD Form 771, hot plates, lens dye (grey or black, brown, yellow, pink, blue, and red) all heating at once (1 pint to 200 ml water), dye bath (500 ml glass beaker), manufacturer's application chart (heat/time chart), thermometer (170-180° F), a UV/Visible photometer, neutralizer, lens prep (cleaning) solution, clean towel, and lens holder.

Standards: Tinted the lenses to prescription requirements stated on the DD Form 771. Verified with the photometer that the correct amount of light is transmitted through the lens and the colors of the lenses match.

Performance Steps

1. Apply power to the dye bath or hot plate and ensure it is heated to the dye manufacturer's recommendation.

NOTE: Do not bring the dye to a boil. This will render the dye ineffective.

NOTE: Consider the effect of altitude on the boiling point when selecting a dye. The dye solution will reach its boiling point at lower temperatures in higher elevations. Verify the accuracy of the dye bath thermostat with a thermometer.

2. Ensure the lenses are clean.

3. Place the lenses in the lens holder.
   a. One or both lenses may be placed in the lens holder.
   b. Contact of the lens holder should be at the edge of the lens.
   c. Contact of lens surface to lens holder should be minimized.

4. Place the lenses into the dye bath after the dye bath has reached the manufacturer's temperature recommendation.

NOTE: Leave the lenses undisturbed for at least 2 minutes. (Consult the manufacturer's heat/time chart.)

5. Check the lenses for desired tint periodically thereafter every 30 seconds to 1 minute.

NOTE: Lenses are to be tinted to the specifications as stated on DD Form 771. The time required to tint lenses will vary greatly depending on the dye, the manufacturer of the lens, the age of the lens, and various other factors. Check the lens tint with an approved UV/Visible photometer. The Visible photometer reads the total light transmitted by percentages. Typically the tints are graded 15% or 30%. The normal tint color you are attempting to achieve is dark gray to black.

6. Adjust for correct tint.
   a. If the lenses are too blue, dip them in brown.
   b. If the lenses are too purple, dip them in yellow.
   c. If the lenses are too green, dip them in pink.
   d. If the lenses are too brown, dip them in blue.
   e. If the lenses are too yellow, dip them in blue, followed by red.

7. Repeat the procedure until all lenses in the tray have been tinted and inspected.

8. Determine the causes of deficient tints.

Performance Steps

a. Poor color may mean the dye is contaminated or too old and should be replaced. Incorrect temperature could also cause poor color.
b. Dark stray marks may mean the lenses were improperly cleaned or that there are defects in the manufacturer's lens coating.
c. Light areas are caused by poor dye/lens contact such as the lens coming in contact with another lens, the lens holder, or an air bubble if a lens is dyed concave side down.
d. Lenses that take too long to tint may indicate the dye bath is set at too low a temperature or
that there is a coating on the lens, such as a scratch resistant coating.

9. Correct the causes of deficient tints.
   a. For problems found in steps 8a, 8b, and 8c--
      (1) Check the temperature of the solution.
      (2) Neutralize (bleach) the defective lens.
      (3) Retint the lens.
      (4) If steps 9a(1)-9a(3) do not correct the problem, return the defective lens to lens selection.
   b. For problems found in step 8d--
      (1) Check the temperature of the dye solution. If the temperature is low, increase the temperature and retint the lens.
      (2) Check the lens for scratch resistant coating. If scratch coating is detected, return the lens to lens selection.
      (3) If the dye solution temperature is normal and no scratch resistant coating is detected, return the lens to lens selection. The lens is defective.
10. Forward completed trays to the Lens Insertion Section.

Performance Measures	**GO**	**NO GO**
1. Applied power to the dye bath or hot plates. Heated the dye to the manufacturer's recommendation.	____	____
2. Ensured the lenses were clean.	____	____
3. Placed the lenses in the lens holder.	____	____
4. Placed the lenses into the dye bath or 500 ml beaker after the dye solution had reached the manufacturer's temperature recommendation.	____	____
5. Ensured the lenses reached the correct shade.	____	____
6. Adjusted for correct tint.	____	____
7. Repeated the procedure until all lenses in the tray had been tinted and inspected.	____	____
8. Determined the causes of deficient tints.	____	____
9. Corrected deficient tints.	____	____
10. Forwarded completed trays to the Lens Insertion Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-11-2

ASSEMBLE FRAME STOCK

081-875-4386

Conditions: You have received a job tray with the prescription and lenses that have been edged and safety beveled. You will need DD Form 771, selection of all military frame styles, optician's screwdriver, #7 barrel screws, and peening pliers.

Standards: Assembled the prescription frame components and placed them in the job tray with the lenses.

Performance Steps

1. Review DD Form 771 for selecting the correct frame.

2. Pull the frame(s) prescribed on DD Form 771 from frame stock.
   a. Select a quick pull frame (front with temples attached) according to the prescription.
   b. If a quick pull frame is not available, pull the front and temple length required.

NOTE: Look for special conditions/annotations, in the special comments/justification block, that require non-standard frames, i.e., gas mask insert, aviator frame.

   c. Select the correct gas mask insert or aviator frame, from the frame stock, according to the prescription.

3. Assemble the frame, if required, by attaching the temples to the fronts.

NOTE: For the Standard S-9, S-8 zylonite frames use # 7 barrel screws.

   a. Insert the hinge portion of the temple into the hinge portion of the frame front.

NOTE: Hinging the temple and frame front at right angles eases the assembly process.

   b. Insert the screw into the hole formed by the combination of both temple and frame front hinges.
   c. Thread the screw through the top of the joined hinges and screw into the threaded portion at the bottom of hinge.

4. Peen the screws. (Peening flairs the screw ends helping to ensure the screw will not self-loosen and fail.)
   a. Grasp the screw at both ends with peening pliers.
   b. Squeeze until the threaded end of the screw is flaired to prevent backing out.

5. Repeat the process in steps 3 and 4 for the opposite temple.

6. Place assembled frame in tray with lenses and forward to the Lens Insertion Section.

NOTE: If you are out of the required frame, notify the requesting clinic and place the tray in the held for stock section to await delivery of the frame.

Performance Measures	**GO**	**NO GO**
1. Reviewed DD Form 771 for selecting the correct frame.	____	____
2. Pulled the frame prescribed on DD Form 771 from frame stock.	____	____
3. Assembled the frame, if required, by attaching the temples to the fronts.	____	____
4. Peened the screws.	____	____

Performance Measures	GO	NO GO
5. Placed the assembled frame in the tray with lenses and forwarded to the Lens Insertion Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	AR 40-63 FM 8-11-2 FM 8-37

INSERT LENSES INTO NONMETALLIC FRAMES

081-875-4387

Conditions: You have received a job tray with the prescription, lenses, and assembled frame stock. You will need frame warmer with glass beads, axis pliers, optician's file, a pan of cool water, and a clean dry towel.

Standards: Inserted the lenses into the frames. The frame shows no signs of overheating. The lenses are on shape; no distortion of the eyewire is apparent.

Performance Steps

1. Activate the frame warmer.
    a. Heat the glass beads.
    b. Use a file or similar tool to stir the glass beads to remove any "hot spots".

2. Heat the frame front.
    a. Place the frame front into the glass beads.

NOTE: The frame should be moved in a circular motion through the glass beads.

CAUTION: Care should be taken not to touch the sides of the frame warmer. This could cause the frame to burn or scratch.

    b. The heating of the frame does not take long.
    c. Periodically remove the frame and check for pliability of eyewire.

3. Remove the frame from the frame warmer when the eyewire is soft and pliable.

4. Insert the lenses into the appropriate eyewire.

NOTE: Lenses must be inserted from the front because the back inside diameter of the eyewire is slightly smaller than the front inside diameter. This is a safety feature that helps prevent the lens from being forced against the face in case of a blow to the lens while being worn.

    a. Insert the OD (ocular dexter - right) lens by beginning at the temporal edge and working around the eyewire to the bridge.
    b. Insert the OS (ocular sinister - left) lens in the same manner.

NOTE: Proper technique should allow both lenses to be inserted with only one frame warming. Repeated heating of a frame may cause frame burns, rolls, stretches, or pinched eyewires.

    c. Align the lens shape with axis pliers. (Alignment is necessary if the lenses were inserted slightly off causing the eyewire shape to appear distorted.)

5. Ensure the lenses fit the frame eyewire.
    a. If the eyewire is snug, continue with step 6.
    b. If the eyewire is not snug, dip the frame with lenses into a pan of cool water to shrink the eyewire.

6. Wipe the eyewire and lenses clean and inspect for rejection, e.g., frame burns, rolls, scratches.

NOTE: If a damaged frame or eyewire is not correctable, remove the lenses, place them in the tray, and return the tray to the Frame Stock Section.

7. Return the completed prescription to the tray.

8. Forward the completed tray to the Final Inspection Section.

Performance Measures	GO	NO GO
1. Activated the frame warmer.	____	____
2. Heated the frame front.	____	____
3. Removed the frame from the frame warmer when the eyewire was soft and pliable.	____	____
4. Inserted the lenses into the appropriate eyewire.	____	____
5. Ensured the lenses fit the frame eyewire.	____	____
6. Wiped the eyewire and lenses clean and inspected for rejection, e.g., frame burns, rolls, scratches.	____	____
7. Returned the completed prescription to the tray.	____	____
8. Forwarded the completed tray to the Final Inspection Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	ANSI Z80 STANDARDS FM 8-11-2 FM 8-37

INSERT LENSES INTO METAL FRAMES
081-875-4428

Conditions: You have received a job tray with the prescription, lenses, and frame stock. You will need optician's screwdriver, axis pliers, PD ruler, lens marker, lens washer, and clean dry towel.

Standards: Inserted the lenses into the frames without chipping the lenses. The lenses are on shape, and no distortion of the eyewire is apparent. The lenses fit snugly into the frames and no gaps between lenses and frames are present.

Performance Steps

1. Loosen the right eyewire screw.
2. Insert the right lens from the front of the frame, ensuring that the bevel fits into the frame groove before you tighten the eyewire screw.
3. Tighten the eyewire screw.

CAUTION: Care should be taken while tightening screws. A potential poking hazard and damage to the lens exists while working with the optician's screwdriver. To avoid a poking hazard to your hand, use a tabletop as a brace for difficult tightening screws, keeping your hands clear of the screw being tightened.

4. Clean the lens and inspect the lens for proper size.

NOTE: Lenses that have been cut too large may chip, flake, or warp the lens when tightening the eyewire screw. Lenses that have been cut too small may require lens washer to fill in the gaps. The lens should be rejected if lens washer is needed to fill more than one half of the circumference.

NOTE: If a lens is rejected, return it to the Finished Stock Section

5. Repeat steps 1 through 4 for the left lens.
6. Return the spectacles to the tray and forward to the Final Inspection Section.

Performance Measures	**GO**	**NO GO**
1. Loosened the right eyewire screw.	____	____
2. Inserted the right lens from the front of the frame.	____	____
3. Tightened the eyewire screw.	____	____
4. Cleaned and inspected the lens for proper size.	____	____
5. Repeated steps 1 through 4 for the left lens.	____	____
6. Returned the spectacles to the tray and forwarded to the Final Inspection Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	FM 8-11-2
	FM 8-37

INSPECT COMPLETED SPECTACLES

081-875-4429

Conditions: You have received a job tray with lenses inserted into the frames. You will need DD Form 771, frame warmer with beads, optician's screwdriver, axis pliers, PD ruler, clean dry towel, a flat surface, cold water, lensometer, lensometer operator's manual, spectrometer, copy of current ANSI Z80.1 standards, marking pen, inspection stamp, and lens washer.

Standards: Alignment and fitting requirements conform to tolerances established by ANSI Z80.1 standards. Prescription of the lenses meets requirements of the DD Form 771 and final inspection.

Performance Steps

1. Inspect the frame measurements to verify that the eye size, bridge size, and temple length are as requested on the prescription.
2. Inspect the frame alignment.
    a. Check 4-point alignment. (See Figure 3-1, A.)
        (1) Lay the frame upside down on a flat surface with the temples in the open position.
        (2) Ensure each temple touches the flat surface equally, and the frame front lies flat throughout.
    b. Check the temple alignment. (See Figure 3-1, B.)
        (1) The temples must lie flat across each other.
        (2) Some temples may lie slightly angled due to pantoscopic tilt. This angle of the temples to the frame front, when in the open position, should be approximately 5 to 7 degrees less than perpendicular.

NOTE: This is not an exact measurement. The clinical optician (91WP3) will make final adjustments for the patient.

    c. Check that the lenses are on shape. (See Figure 3-1, C.)
        (1) Lenses will be off shape if inserted off axis.
        (2) Use axis pliers to twist the lenses on axis or within tolerance of ANSI standards.
    d. Check that the lenses are on the same plane. (See Figure 3-1, D.)
        (1) Lay a PD ruler along the frame front on top of the temples.
        (2) If the lenses are not on the same plane, first heat the frame and the bend the frame slightly as needed to bring both eyewires on the same plane.

Performance Steps

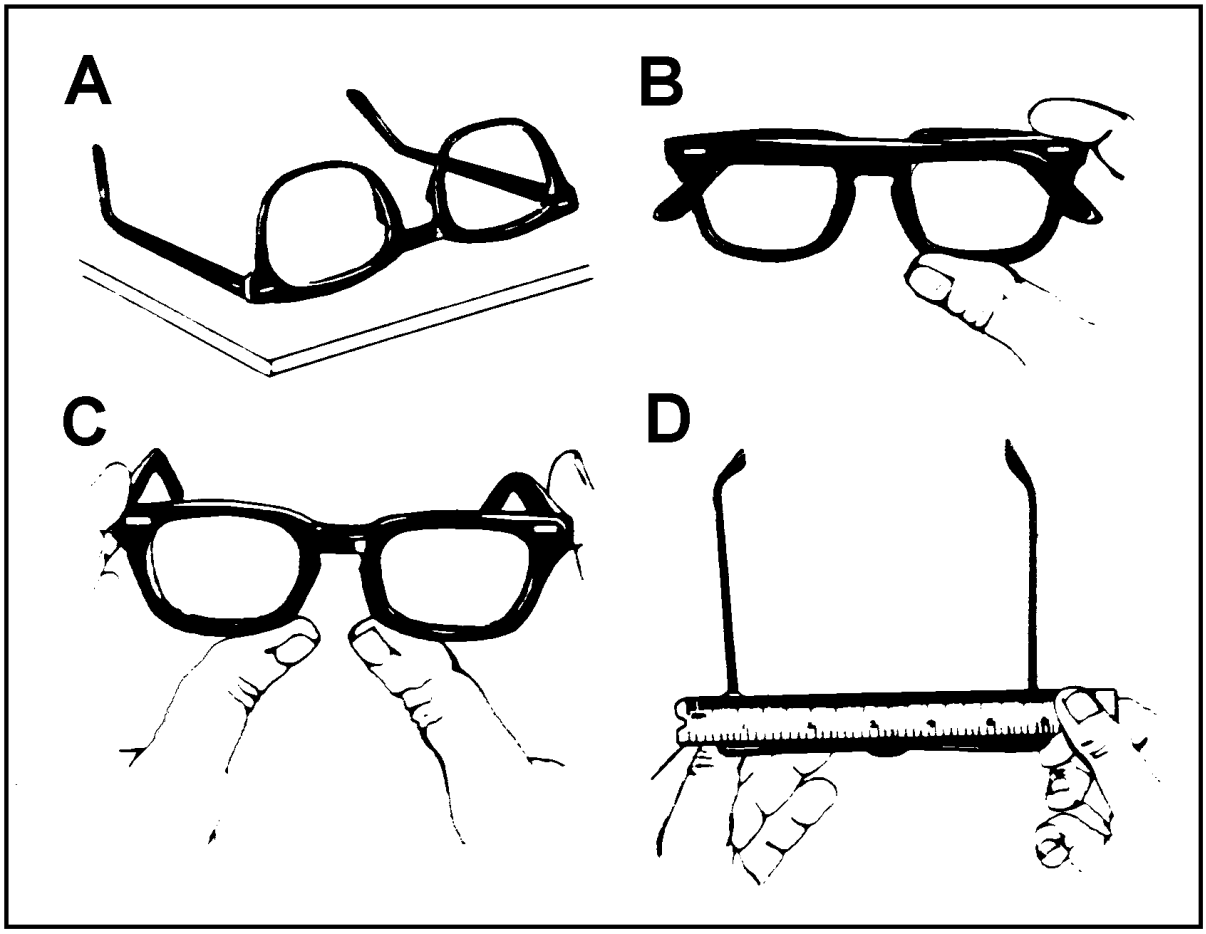

Figure 3-1

3. Inspect the frame for burns, rolls, tool marks, cracks, scratches, unpeened screws, or loose hinges.

NOTE: For plastic frames, if the lenses are loose or there is a small gap in the eyewire, the frame can be shrunk. Heat the frame and lenses, and then dip them in cold water. This may shrink the eyewire around the lenses. If not, return to the Lens Selection Section.

NOTE: For metallic frames, lenses that have been cut too large may chip, flake, or warp the lens when tightening the eyewire screw. Lenses that have been cut too small may require lens washer to fill in the gaps. The lens should be rejected if lens washer is needed to fill more than one half of the circumference.

4. Inspect the lenses for appearance.
   a. Ensure there are no pits, scratches, gray areas, bubbles, cracks, striae, or watermarks.
   b. Ensure tinted lenses transmit the proper amount of light, using the spectrometer, and that they are color matched.
   c. Ensure the lenses fit snugly and are on shape.

Performance Steps

5. Clean the lenses and frame with a clean dry towel.

NOTE: Prior to inspecting lenses in a lensometer instrument, you must always adjust the eyepiece for accuracy.

6. Apply power to the lensometer.

7. Adjust the eyepiece for sharp focus.
   a. Position the power wheel on plano or zero.
   b. Rotate the eyepiece until the PWI and PWIII mires are in the clearest possible focus.

8. Inspect the lenses with a lensometer for accuracy and tolerance within ANSI Z80.1 standards.
   a. Verify the strongest lens first.
   b. Verify the cylinder axis is within the following maximum tolerances:
      (1) Seven degrees for cylinder powers 0.12 to 0.37 D.
      (2) Five degrees for cylinder powers 0.50 to 0.75 D.
      (3) Three degrees for cylinder powers 0.87 to 1.50 D.
      (4) Two degrees for cylinder powers above 1.50 D.

9. Spot the lens. This will create three white dots in a horizontal plane along the axis.

NOTE: On a spherical lens both the PWI And PWIII lines will be clear and straight.

   a. Without prism.
      (1) Set the axis wheel on the axis reading for the lens from the DD Form 771.
      (2) Turn the lens so that the single line (PWI) comes in clear and straight.
      (3) Center the single line (PWI) in the reticle (or center the entire image when spotting spherical lenses) both vertically and horizontally.
      (4) If the lens is a cylinder lens, turn the power wheel to the PWIII reading and ensure that the three lines (PWIII) come in clear and straight.
      (5) Center the three lines (PWIII) in the reticle, both vertically and horizontally.

NOTE: You may have to go between PWI and PWIII several times to ensure both are centered.

      (6) Spot the lens.
   b. Verify the vertical measurements of the bifocal segments are within 1.0 mm of ANSI Z80.1 standards.
   c. Verify the horizontal positions of the bifocal segments are within 1.0 mm of ANSI Z80.1 standards and are balanced and symmetrical.
   d. Verify the optical centers of the lenses have no greater than 1/3 diopter of vertical imbalance or are within 1.0 mm of the specified location, and no greater than 2/3 diopter horizontal imbalance or 2.5 mm of the specified pupillary distance on DD Form 771.

10. Ensure the DD Form 771 has been annotated correctly if any substitutions were necessary.

NOTE: Step 10 should be accomplished during the lens selection process.

11. Return the completed job tray to the appropriate section if any of the above-listed inspections reveal any defects or tolerance violations.
    a. If a frame is rejected, return it to the Frame Selection Section.
    b. If a lens is rejected, return it to the Finished Stock Section.

12. Stamp both copies of the DD Form 771 with the inspector identification number once the spectacles have passed final inspection.

13. Retain one copy of each DD Form 771 which has passed final inspection for the audit file.

Performance Steps

14. Forward the remaining copy of the DD Form 771 along with the completed spectacles and job tray to the mailroom for shipment.

Performance Measures	**GO**	**NO GO**
1. Inspected the frame measurements to verify that the eye size, bridge size, and temple length are as requested on the prescription.	____	____
2. Inspected the frame alignment.	____	____
3. Inspected the frame for burns, rolls, tool marks, cracks, scratches, unpeened screws, or loose hinges.	____	____
4. Inspected the lenses for appearance.	____	____
5. Cleaned the lenses and frames with a clean dry cloth.	____	____
6. Applied power to the lensometer.	____	____
7. Adjusted the eyepiece for sharp focus.	____	____
8. Inspected the lenses in a lensometer for accuracy and tolerance within ANSI Z80.1 standards.	____	____
9. Spotted the lens.	____	____
10. Ensured the DD Form 771has been annotated correctly if any substitutions were necessary.	____	____
11. Returned the completed job tray to the appropriate section if any of the above-listed inspections revealed any defects or tolerance violations.	____	____
12. Stamped both copies of the DD Form 771 with the inspector identification number once the spectacles passed final inspection.	____	____
13. Retained one copy of each DD Form 771 that has passed final inspection for the audit file.	____	____
14. Forwarded the remaining copy of the DD Form 771 along with the completed spectacles and job tray to the mailroom for shipment.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
ANSI Z80 STANDARDS	AR 40-63
LENSOMETER MANUAL	FM 8-11-2
	FM 8-37

PREPARE SPECTACLES FOR SHIPMENT

081-875-4397

Conditions: You have received job trays with spectacles that have passed final inspection. You will need spectacle cases, rubber bands, mailing boxes, mailing labels, packing materials, tape, and postal mailing classification, e.g.; FEDEX, UPS, USPS, MPS.

Standards: Packed the spectacles and mailed them to the appropriate clinics on a daily basis. Spectacles with plastic lenses were furnished with a lined case.

Performance Steps

1. Place the spectacles in a lens case.
   a. Provide a lined case for plastic lenses.
   b. If two pairs are furnished, place the second pair outside the case.

NOTE: Only one case is furnished per prescription.

2. Wrap the spectacles.
   a. Place a copy of the prescription around the spectacles.
   b. Ensure the address of the ordering clinic is visible.
   c. Bind the prescription around the spectacles with a rubber band.
3. Sort the wrapped spectacles by clinics.
4. Pack the spectacles.
   a. Lay the spectacles in a box in an orderly fashion.
   b. Do not overpack the box.
   c. Add sufficient packing material to add cushioning or fill empty space in the box.
   d. Tape each box to satisfy postal requirements.
5. Place the mailing label on the box, e.g., FEDEX, UPS, USPS, MPS.
6. Take the boxes to a postal delivery point.

Performance Measures	**GO**	**NO GO**
1. Placed the spectacles in a lens case.	____	____
2. Wrapped the spectacles.	____	____
3. Sorted the wrapped spectacles by clinics.	____	____
4. Packed the spectacles.	____	____
5. Placed the appropriate mailing label on the box.	____	____
6. Took the boxes to a postal delivery point.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	AR 40-63

Subject Area 2: Surfacing

PREPARE A SURFACE WORKSHEET

081-875-4399

Conditions: You have received edited DD Forms 771 that require surfacing. There may or may not be an automated surface write-up system available. You will need field expedient write-up computations, surface worksheets, sagometer, and job trays. For an automated surface write-up system, the minimum hardware requirements are: Pentium 200 with 64 MB RAM (96 MB RAM for NT), 2 GB hard drive with minimum of 500 MB free space, CD-ROM, Windows 95, 98 or NT operating system, updated virus checking program, printer, surface write-up software, and blank automated surface worksheet forms. The system is operational and the attached printer is on line.

Standards: Produced a surface worksheet for each submitted DD Form 771 with all information filled in correctly, matching the on hand stock of lens blanks.

Performance Steps

NOTE: Steps for field expedient surface write-up computations and computer computations are listed.

1. Enter the tray number.
    a. In the tray number block on the surface worksheet for manual computation.
    b. In the tray number field for computer computation.
2. Enter the number of pairs requested from DD Form 771.
    a. In the number of pair(s) block on the surface worksheet for manual computation.
    b. In the number of pair(s) field for computer computation.
3. Enter the lens material and style.
    a. In the lens material data block on the surface worksheet for manual computation.
    b. In the lens material data field(s) for computer computation.
4. Enter the frame data from DD Form 771.
    a. Eye size ("A" measurement).
    b. Bridge size.
    c. "B" measurement of the frame.
    d. Effective diameter (ED) of the frame.
5. Enter the prescription data for the right eye from DD Form 771.

NOTE: Ensure the prescription is recorded in minus cylinder form.

    a. In the prescription data block on the surface worksheet for manual computation.
    b. In the prescription data field(s) for computer computation.
        (1) Sphere power.
        (2) Cylinder power.
        (3) Axis.
        (4) Prism amount and direction (in or out).
        (5) Prism amount and direction (up or down).
        (6) Distant pupillary distance (PD).

NOTE: The near PD will be figured by the software.

        (7) Segment height.

Performance Steps

NOTE: The software recommends a minimum lens blank size at this point. If the software is set to use the lens files and pick the lens from inventory, the software will recommend a lens blank and automatically compute the job.

NOTE: Inspect the convex surface for defects such as gray, scratches, pits, air bubbles, or unusual size or shape of the segment. If the lens is rejected, select another lens.

6. Accept the recommendation or enter the manufacturer's lens data for the right eye.
    a. Manufacturer's name.
    b. Lens diameter.
    c. Actual sag value.

NOTE: Sag the picked lens if the manufacturer's data for actual sag value is not loaded in the computer.

    d. Add power for the lens.

NOTE: The inset and drop of the multifocal segment will be automatically figured by the software.

    e. Thickness of the lens blank.

NOTE: The software will enter this automatically if the manufacturer's data for the picked lens is in the computer. You will only have to enter the lens blank thickness, if the manufacturer's data is not in the computer.

7. Manual computation, select the correct lens blank.

NOTE: Inspect the convex surface for defects such as gray, scratches, pits, air bubbles, or unusual size or shape of the segment. If a lens is rejected, select another lens.

NOTE: Select the appropriate base curve by using the nominal base curve selection formula (NBC = spherical equivalent +6.00 D) and rounding off to the nearest nominal base curve available.

NOTE: The true base curve (measured with sagometer) will be recorded in the margin next to the nominal base curve (provided by manufacturer on product box).

    a. Check the true base curve (convex or front surface) accuracy with a sagometer.
    b. Choose a lens blank that will provide the flattest front curve in relation to back curve generated.
    c. Check the ADD power from the manufacturer's package to ensure it is correct and in accordance with the prescription if surfacing bifocals.

8. Ensure the lens will cut out.

NOTE: To ensure a lens will cut out, use the minimum lens blank formula: ED + (2 x decentration per lens) + 2 mm. (ED = effective diameter of the prescribed frame.) Single vision lenses use the distance PD, while single vision reading lenses and bifocals use the near PD for computing decentration. The pupillary distance (PD) is taken from the patient's DD Form 771.

9. Compute the compensated power for the lens material used. (See Appendix B for computation details.)

10. Record the amount and base direction of prism. (See Appendix B for computation details.)

11. Record the finished center thickness. (See Appendix B for computation details.)

12. Record the back curve (D2) and back cross curve (D3). Round up for minus lenses and down for plus lenses to the nearest tool curve. (See Appendix B for computation details.)

Performance Steps

13. Repeat steps 5 through 12 for the left eye.
14. Print and forward the surface worksheet with tray and lenses to the Surface Blocking Section.

Performance Measures	**GO**	**NO GO**
NOTE: Steps for field expedient surface write-up computations and computer computations are listed.		
1. Enter the tray number.	____	____
2. Enter the number of pairs requested from DD Form 771.	____	____
3. Enter the lens material and style.	____	____
4. Enter the frame data from DD Form 771.	____	____
5. Enter the prescription data for the right eye from DD Form 771.	____	____
6. Accept the recommendation or enter the manufacturer's lens data for the right eye.	____	____
7. Manual computation, select the correct lens blank.	____	____
8. Ensure the lens will cut out.	____	____
9. Compute the compensated power for the lens material used. (See Appendix B for computation details.)	____	____
10. Record the amount and base direction of prism. (See Appendix B for computation details.)	____	____
11. Record the finished center thickness. (See Appendix B for computation details.)	____	____
12. Record the back curve (D2) and back cross curve (D3). Round up for minus lenses and down for plus lenses to the nearest tool curve. (See Appendix B for computation details.)	____	____
13. Repeat steps 5 through 12 for the left eye.	____	____
14. Print and forward the surface worksheet with tray and lenses to the Surface Blocking Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-37

BLOCK LENS BLANKS FOR SURFACING
081-875-4351

Conditions: You have received trayed surface work that requires blocking. You will need lens blanks, Gerber blocker and operator's manual, surface blocks, blocking material, and surface worksheet. The Gerber blocker is connected to a layout computer with bar code reader capability, 115 volt 60 Hz 10 amp grounded electrical service, and 90 psi clean dry compressed air.

Standards: Blocked the lenses securely without induced prism.

Performance Steps

1. Enter the job number with a bar code reader or the blocker keypad.

NOTE: A job may be manually entered using the blocker keypad and menu interface if your blocker is not hooked to a layout computer.

2. Edit the job parameters.
    a. Review the surface worksheet and ensure that the correct lenses or lens has been selected.

NOTE: Verify the lens against the lens box, surface worksheet.

    b. Select the block specified in the job status window of the Gerber blocker.

NOTE: The Gerber blocker automatically defaults to the right lens. The right lens can be skipped if desired.

3. Align the right lens.
    a. Place the selected block in the blocking ring.
    b. Align the lens blank.
        (1) Place and hold the lens blank, concave side facing up, on the alignment ring.
        (2) Match the lens blank with the target in the alignment template. The reflected image should align with the target.

4. Block the right lens.
    a. Hold the lens in place and press the MOVE key. The transport arm will move to the alignment ring. The vacuum chuck will be lowered to the lens and vacuum will be applied. When the blocker beeps, you may release the lens blank.
    b. Depress the MOVE key again. The transport arm lifts the lens and moves it to the blocking station.
    c. Depress the FILL key and hold it until blocking material fills the gap between the lens and the blocking ring.

NOTE: If the lens does not seat properly (inducing unwanted prism), blocking material may begin to flow past the seat. Press the ESCAPE key. The transport arm will move the lens back to the alignment ring. Deblock the lens and reblock.

NOTE: Once the lens is successfully blocked, wait for the blocker to chill blocking material and release the blocked lens.

    d. Place the blocked lens in the job tray.

5. Repeat steps 3 and 4 for the left lens.

6. Allow the lenses and blocking material to set up (cool) for 15 minutes before surfacing. Allow a longer set up time for warmer rooms.

Performance Steps
CAUTION: Do not try to accelerate the setup time.

NOTE: Lenses and blocking material must be kept between 60° and 90° F during generating. Allowing the lenses or blocking material to exceed 90°+ F may cause the lens to slip, inducing unwanted prism, or complete failure of block. For temperatures above 90° F, the lenses and blocking material should be chilled to within this optimal range before processing.

NOTE: It is not likely you will be operating an optical lab in temperatures above 90° F, however; here are some field expedient methods of cooling blocked lenses: keep them in a cool, dark area, place them in water until they are ready to be generated, and if available place them in a refrigerator that is marked not for food storage.

7. Forward the tray with blocked lenses to the Generator Section.

Performance Measures	**GO**	**NO GO**
1. Entered the job number with a bar code reader or keypad.	____	____
2. Edited the job parameters.	____	____
3. Aligned the right lens.	____	____
4. Blocked the right lens.	____	____
5. Repeated steps 3 and 4 for the left lens.	____	____
6. Allowed the lenses and blocking material to set up (cool) for 15 minutes before surfacing. Allowed a longer setup time for warmer rooms.	____	____
7. Forwarded the tray with blocked lenses to the Generator Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	SURFACE BLOCKER MANUAL

CUT LENS SURFACES USING A LENS GENERATOR
081-875-4402

Conditions: You have received blocked surfaces that must be generated. You will need Gerber SGX lens generator or equivalent three axis lens generator connected to a 115 volt 60 Hz grounded electrical source and 80 psi dry clean air, voltage regulator for field and overseas environments, and surface worksheet. The generator is connected to a computer with bar code reader capability and running surface write-up software. The lens generator warm-up diagnostics are complete.

Standards: Generated the specified curves on the lens blank from the surface worksheet.

Performance Steps

1. Enter the job number with a bar code reader or keypad.

NOTE: If your generator is not receiving data from a write-up computer, you must use the generator's keypad to manually enter the prescription data, lens blank data, and block data.

2. Select the lens material to be cut, e.g., plastic, polycarbonate, high index.

3. Chuck the blocked lens blank in the generator.

NOTE: Verify that the data showing on the generator screen matches the data shown on the surface worksheet.

4. Cycle the job.

NOTE: The generator will not operate with the cover open. It automatically opens after each cycle.

   a. Close the generator cover.
   b. Press the start button.

NOTE: The cycle is complete when the generator stops generating curves and the cover opens.

5. Remove the blocked lens from the generator chuck.

6. Repeat steps 2 through 5 for other lenses in the tray.

7. Forward the tray with generated curves on the lenses to the Fining Section for the fining process.

CAUTION: An unstable electrical supply can cause numerous problems with lens quality. Uninterruptible, stabilized power supply equipment should always be used for these generators. External voltage regulators can be purchased, at minimal costs, to help stabilize the power supply for field equipment and equipment utilized overseas.

Performance Measures	**GO**	**NO GO**
1. Entered the job number with a bar code reader or keypad.	____	____
NOTE: If the computer interface is down, data can be entered for surface writing by keypad.		
2. Selected lens material.	____	____
3. Chucked the lens blank and block in the generator.	____	____

Performance Measures	**GO**	**NO GO**
NOTE: Verified that the data showing on the generator screen matched the data shown on the prescription and surface worksheet.		
4. Cycled the job by pressing the start button.	____	____
NOTE: The generator should not operate with the cover open.		
5. Removed the blocked lens from the generator chuck.	____	____
6. Repeated steps 1through 5 for other lenses in the tray.	____	____
7. Forwarded the tray with generated curves on the lenses to the Fining Section.	____	____
CAUTION: An unstable electrical supply can cause numerous problems with lens quality. External voltage regulators can be purchased, at minimal costs, to help stabilize power supply with field equipment and equipment utilized overseas.		

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-37 LENS GENERATOR MANUAL

FABRICATE LAPS USING A LENS GENERATOR
081-875-4403

Conditions: You have received plastic or foam lap tools that must be accurately trued to the curvature specified on the surface worksheet. You will need a Gerber SGX lens generator or equivalent three axis lens generator connected to a 220/240 volt 60 Hz grounded electrical source, voltage regulator in field and overseas environments, continuous 80 psi dry clean air, surface worksheet, lap sag gauge, and thickness gauge. The lens generator is connected to a computer with bar code reader capability and running surface write-up software. The lens generator warm-up diagnostics are complete.

Standards: Fabricated lap tools are accurate to .01 diopter of the specified curvature.

Performance Steps

1. Enter the job number with the bar code reader or keypad.

NOTE: If your generator is not receiving data from a write-up computer, you must manually enter the prescription data, lens blank data, and block data.

2. Select lap material (plastic or foam).

NOTE: If using foam laps, select S-foam for base curves of +10.00 or greater. All other base curves select the normal foam lap.

NOTE: Verify that the data showing on the generator screen matches the data shown on the surface worksheet.

3. Chuck the lap in the generator

4. Cycle the job.

NOTE: The generator will not operate with the cover open. It automatically opens after each cycle.

   a. Close the generator cover.
   b. Press the start button.

NOTE: The cycle is complete when the generator stops generating curves.

5. Remove the lap from the generator chuck.

6. Verify the accuracy of curve(s) on the lap with the sag gauge.

7. Repeat steps 2 through 6 for other laps in the tray.

NOTE: Typically, foam laps will be discarded after completion of each job. However, a foam tool will remain accurate for several uses, if needed for reuse after a lens breakage or to complete a multiple spectacle request for the same patient, e.g., two pairs of S-9 spectacles and an M-40 mask insert.

8. Forward plastic laps to the Tool Selection Section.

CAUTION: An unstable electrical supply can cause numerous problems with lap quality. External voltage regulators can be purchased, at minimal cost, to stabilize the power supply to field equipment and equipment utilized overseas.

Performance Measures	**GO**	**NO GO**
1. Entered the job number with a bar code reader or keypad.	____	____
2. Selected lap material (plastic or foam).	____	____
3. Chucked the lap into the generator.	____	____
4. Cycled the job.	____	____
5. Removed the lap from the generator chuck.	____	____
6. Verified the accuracy of the generated curve(s) with the sag gauge.	____	____
7. Repeated steps 2 through 6 for the remaining laps in the tray.	____	____
8. Forwarded plastic laps to the Tool Selection Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-37 LENS GENERATOR MANUAL

FINE GRIND LENS SURFACES USING AN AUTOMATIC SURFACER
081-875-4404

Conditions: You have received lenses that have been generated and require fining. The lenses are in their respective job trays with the surface work sheets. You will need Coburn automatic toric lens surfacer (finer), lap tools stocked in storage bins, white frosted light, one roll of fining pads, one roll of polishing pads, a clean soft towel, thickness gauge set for blocked lenses, continuous source of clean water, and 80 psi regulated air supply provide by air compressor.

Standards: Fined lenses to meet the specification of the surface work sheet with no defects visible, e.g., incomplete fining, scratches, swirls, pits, and lens generator marks. Fined lenses forwarded for final polishing.

Performance Steps

NOTE: Charge the fining bowl with water.

1. Select the correct lap tool for fining.
    a. Select a tool, from the storage bins, matching the curves annotated on the surface work sheet.
    b. Place the right tool in the tray above the right lens.
    c. Place the left tool in the tray above the left lens.
    d. Place a peel and stick (self-sticking) fining pad on each tool.

2. Load the tools with fining pads onto the automatic surfacer.
    a. Place the tools onto the surfacer tool tables (tool adapter).
        (1) Tools are held in place by a spring loaded clamp.
        (2) Depress the clamp sleeve at the front of the tool table to open the tool clamp.
        (3) Seat the tool onto the tool table.
        (4) Release the clamp sleeve to close the tool clamp.
    b. Ensure the tools are clamped securely in place.
        (1) Grasp the tool from the top by hand and gently attempt to move the tool side to side.
        (2) If the tool wobbles or comes completely loose from the tool table, repeat step 2a.

3. Clamp the lenses on the tools using axis pins of the automatic surfacer.

NOTE: Observe the clamp pressure gauge and adjust, if needed, to verify the clamp pressure is between 14 and 22 psi.

    a. Place the blocked lens onto the tool.
    b. Rotate the axis arm downward to place the axis pins into the holes on the block, capturing the blocked lens between the axis pins and the tool.
    c. Depress the clamp switch on the operator's panel to activate the pneumatic axis arm.

4. Start the water pump.
    a. Depress the water pump switch on the operator's panel.
    b. Direct water toward the tools, wetting the fining pads with water.

5. Fine the lenses.
    a. Set the timer to 1½ - 2½ minutes.

NOTE: Local SOP may require different fining times and pressures depending on multiple variable factors, e.g., quality or type of fining pad, type of generation process.

    b. Depress the start button to begin the fining cycle.

Performance Steps

6. Inspect each lens after fining.
    a. Release air pressure to the axis arm by pressing the clamp switch.
    b. Remove the lens from the axis pins.
    c. Rinse the lens in warm water.
    d. Dry the lens with a clean soft towel or dry it in a compressed air stream.

CAUTION: Compressed air can peel skin from your hand. Observe the air pressure gauge and adjust, if needed, to verify the air pressure at the nozzle does not exceed safety standards of more than 30 psi.

    e. Visually inspect the lens for pits, scratches, and generator marks by examining it under a white frosted light.

NOTE: Some minor flaws may require re-fining a lens for a few seconds if enough thickness remains. A blocked lens thickness gauge will determine if this option is feasible.

    f. If re-fining a lens is necessary, repeat steps 4 through 6.
    g. Place the lens back in the tray.

7. Clean, dry, and pad the tool.
    a. Remove the tool from the finer and rinse it in warm water.
    b. Remove the fining pad by simply peeling it away with your fingernails.
    c. Dry the tool with a clean soft towel or in a compressed air stream.
    d. Place a polishing pad on each tool.
    e. Return the tools to the tray.

8. Forward the tray to the Polishing Section.

Performance Measures	**GO**	**NO GO**
1. Selected the correct tool for fining.	____	____
2. Loaded the tools with fining pads onto the automatic surfacer.	____	____
3. Clamped the lenses on the tools using axis pins of the automatic surfacer.	____	____
4. Started the water pump and directed water toward the tools.	____	____
5. Fined the lenses.	____	____
6. Inspected each lens after fining.	____	____
7. Cleaned, dried, and padded the tool.	____	____
8. Forwarded the tray to the Polishing Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-37 LENS SURFACER MANUAL

POLISH LENS SURFACES USING AN AUTOMATIC SURFACER
081-875-4405

Conditions: You have received a job tray with a completed surface work sheet. You will need Coburn automatic toric lens surfacer (polisher) or equivalent, plastic lens polish, chilled water (below 72° F), clean warm water, fined lens blanks, tools padded with polish pads, one roll of polish pads, clean soft towel, thickness gauge set for blocked lenses, and inspection lamp (blue light).

Standards: Polished lenses to meet the specification of the surface work sheet with no visible flaws, e.g., incomplete polishing, scratches, swirls, pits, and lens generator marks.

Performance Steps

NOTE: Charge the polisher bowl with plastic lens polish.

1. Load the tools with polishing pads onto the automatic surfacer.
    a. Place the tools onto the surfacer tool tables (tool adapter).
        (1) Tools are held in place by a spring loaded clamp.
        (2) Depress the clamp sleeve at the front of the tool table to open the clamp.
        (3) Seat the tool onto the tool table.
        (4) Release the clamp sleeve to close the clamp.
    b. Ensure the tools are clamped securely in place.
        (1) Grasp the tool from the top by hand and gently attempt to move the tool side to side.
        (2) If the tool wobbles or comes completely loose from the tool table, repeat step 1a.
        (3) Repeat step 1a, if needed, to ensure tools are safely attached to the tool table while the polisher is cycling.
    c. Start the polish pump, using the pump switch on the operator's panel, and direct polish toward the tools wetting the polish pad with polish.

2. Clamp the lenses on the tools using the axis pins of the automatic surfacer.

NOTE: Observe the clamp pressure gauge to verify the air pressure is between 20 and 28 psi by adjusting the valve, if needed.

    a. Place the blocked lens onto the tool.
    b. Rotate the axis arm downward to place the axis pins into the holes on the block, capturing the blocked lens between the axis pins and the tool.
    c. Depress the clamp switch on the operator's panel to activate the pneumatic axis arm.

3. Polish the lenses.
    a. Set the timer on the operator's panel to 4-6 minutes.

NOTE: Local SOP may require different polishing times and pressures depending on multiple variable factors, e.g., quality or type of polishing pad, type of generation process.

    b. Depress the START button on the operator's panel to begin the polishing cycle.

4. Inspect the lens after polishing.
    a. Release air pressure to the axis arm by pressing the clamp switch.
    b. Remove the lens from the axis pins.
    c. Rinse the lens in warm water.
    d. Dry the lens with a clean soft towel or dry it in a compressed air stream.

CAUTION: Compressed air can peel skin from your hand. Observe the air pressure gauge to verify the air pressure at the nozzle does not exceed safety standards of more than 30 psi.

Performance Steps

e. Visually inspect the lens for gray, pits, scratches, and waves by examining it under a blue light.

NOTE: Some minor flaws may require re-fining a lens for a few seconds if enough thickness remains. The surface work sheet will specify the required lens thickness. A blocked lens thickness gauge will determine if this option is feasible.

f. If re-fining a lens is necessary--
   (1) Clean and dry the tool, removing the polish pad.
   (2) Inspect the tools to ensure curvature accuracy.
   (3) Return the tray with blocked lenses to the Fining Section.

g. Place the lens back in the tray.

5. Clean, dry, and return the tool to the tool section.
   a. Remove the tool from the automatic surfacer.
   b. Remove the polishing pad and rinse the tool in warm water.
   c. Dry the tool with a clean soft towel or in a compressed air stream.
   d. Return tools to the tool section.

6. Forward the tray to the Deblocking Section.

Performance Measures	**GO**	**NO GO**
1. Loaded the tools with polishing pads onto the automatic surfacer.	____	____
2. Clamped the lenses on the tools using the axis pins of the automatic surfacer.	____	____
3. Started the polish pump and directed polish toward the tools.	____	____
4. Polished the lenses.	____	____
5. Inspected the lens after polishing.	____	____
6. Cleaned, dried and returned the tool to the tool section.	____	____
7. Forwarded the tray to the Deblocking Section.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-37
	LENS SURFACER MANUAL

DEBLOCK LENSES

081-875-4364

Conditions: You have received a job tray with polished surface work that needs to be deblocked. You will need Gerber lens washer, clean hot water, heating container (to heat 5 gallons of water to 150-160° F), a 220° F thermometer, clean soft towel, Gerber lens washing solution, an ultrasonic cleaner with a lens rack, a container for collection of blocks, clean container for reclamation of blocking material, compressed air supplied by air compressor, and a clock or timer.

Standards: Deblocked, cleaned, and dried the lenses, inspected them for flaws (e.g., cracks, chips, waves, grey, pits, scratches), and forwarded them to the Fabrication Section. Cleaned the blocks, air-dried them with compressed air supplied by air compressor, and returned them to the Blocking Section. The blocking material is cleaned, dried, and kept free from contamination for reuse.

Performance Steps

1. Remove blocks from the lenses.
    a. Hold the blocked lens with the block down, and lightly tap the very edge of the lens against a table edge.
    b. Catch the block in the opposite hand as it falls away from the lens.
    c. Place the block with blocking material still attached in a separate container.
    d. Place the lens back in the tray.

2. Wash the lenses in the lens washer with washing solution to remove any blocking material still affixed to the front surface of the lens.
    a. Load lenses onto the lens washer's rotating carousel convex side up.
    b. Press the start button to begin the cycle.

NOTE: The lens washer may have either a start button and/or a foot pedal that will start the cycle.

    c. Cycle ends automatically. Repeat the wash cycle if the lenses are not completely free of blocking material.

NOTE: Blocking material that has been exposed to washing solution is not reusable. It is 100% biodegradable; therefore, it can be disposed of with normal garbage.

3. Inspect surfaced lenses.
    a. Hold the lens up to any white light source, e.g., natural light, florescent, or incandescent.
    b. Inspect the lens for flaws, e.g., cracks, chips, waves, grey, pits, scratches, defects, and dirt.
    c. Return inspected lenses to their trays.
        (1) Lenses with no defects will be placed in their tray.
        (2) Lenses with defects will be identified/marked and returned to their tray. Trays with defective lenses will be returned to the Surface Write-up Section.

4. Forward trays with no defective lenses to the Fabrication Section.

5. Clean the blocks of blocking material.
    a. Place the blocks in a heated (150-160° F) container.
    b. Allow the blocks to heat for 5-10 minutes. While the blocks are still warm, the blocking material can be removed by hand.

Performance Steps

NOTE: A clock or timer can be used. The time may vary depending on the actual temperature of the water and well the blocking material has cured.

c. Place the blocks in a lens rack and set the rack in an ultrasonic lens cleaner for 5 minutes.
d. Remove the blocks, dry them, and inspect for cleanliness.

6. Return the blocks, clean and dried to the Blocking Section.

7. Recapture blocking material.

NOTE: Place blocking material in a clean container until reuse.

a. Clean blocking material under normal tap water and inspect for contaminants such as polishing solution and pieces of polishing pads.
b. Return blocking material, in the dust free container, to the Blocking Section for reuse.

Performance Measures	**GO**	**NO GO**
1. Removed blocks from the lenses.	____	____
2. Washed the lenses in the lens washer with washing solution to remove any blocking material still affixed to the front surface of the lens.	____	____
3. Inspected surfaced lenses.	____	____
4. Forwarded completed trays to the Fabrication Section.	____	____
5. Cleaned blocks of blocking material.	____	____
6. Returned the blocks, cleaned and dried to the Blocking Section.	____	____
7. Recaptured blocking material.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	DEBLOCKER MANUAL

Subject Area 3: Equipment Maintenance

PERFORM PMCS ON A LENSOMETER

081-875-4389

Conditions: You will need American Optical lensometer or equivalent, lensometer instruction manual, clean soft rags, water, ink, set of small allen wrenches, a small flat head screwdriver, an optician's screwdriver, penetrating oil, a known power lens, light bulbs (G.E. No. 25s11/5c or equivalent), test lens set #21-65-77, a plus five diopter lens, hot tap water, dust cover, ink roller pad replacement kit, and a tray with an edited prescription with a known power cylindrical lens.

Standards: The lens measuring instrument must be clean, calibrated to within 0.125 dioptric power of the known power lens, and operational IAW the operator's manual.

Performance Steps

1. Perform procedures at the beginning of each day.
    a. Apply power to the lensometer.
    b. Wipe the telescope objective and eye lens with a clean soft cloth.

NOTE: Internal lenses may be cleaned as needed.

    c. Inspect the inking attachment.
        (1) Ensure the ink roller pad is serviceable. If the ink roller pad has deep grooves worn into it from the marking pens, replace it (see step 3a).
        (2) Ensure the inkwell is not clogged with dried ink. If the inkwell is clogged, detach the inkwell assembly and thoroughly wash it with water before refilling it with ink.
    d. Ensure the light bulb is operational. If not, replace it (see step 3b).
    e. Ensure that the eyepiece is focused for a clear target reading when the power wheel is set at 0 diopters.
    f. Ensure that the target is centered (no more than 1/4 diopter prism).
        (1) Remove the lensometer's body cover to expose three adjustment screws.
        (2) Loosen two screws and tighten the opposite screw to center the target.
        (3) Verify that the target is centered and replace the cover.

NOTE: If the target rotates around center, the manufacturer's instructions are required to properly adjust it. It is very difficult to recalibrate the lensometer if the target is adjusted on the power assembly.

    g. Using a known power lens, check the power wheel and axis wheel readings.
        (1) If the power reading is off more than .125 diopters, perform the following steps:
            (a) Bring the lens into focus.
            (b) Loosen the knob set screw on the power wheel and reset as required.
            (c) Retighten the knob set screw.
        (2) If the axis is off, perform the following steps:
            (a) Bring the lens into focus.
            (b) Loosen the knob set screw on the axis wheel and reset as required.
            (c) Retighten the knob set screw.

NOTE: Axis may also be adjusted by loosening the four eyepiece screws and rotating the eyepiece.

    h. Verify the power at zero (no lens) and at plus and minus 12.00 diopters with the test lens set. Calibrate, if necessary, by adjusting the lens stop in or out.

Performance Steps

i. Ensure smooth operation of the marking device. If the marking device does not operate smoothly, wipe and lightly oil the marking device axle and guide plunger. If the pins stick, remove the pin spring cover and remove excess ink with hot water.

CAUTION: Do not flood the exposed moving parts with oil. Use one to two drops of oil.

j. Verify spotter calibration.
   (1) Spot a 5 diopter lens.
   (2) Rotate the lens 180 degrees and respot it.
   (3) Make necessary adjustments so that the center dots overlap.

2. Perform procedures at the end of each day.
   a. Turn off the power.
   b. Clean the exterior of the instrument with water and a soft cloth.
   c. Cover the instrument with the dust cover.

3. Perform operator repairs as needed.
   a. Replace the ink roller pad.
      (1) Open the inkwell and remove the roller.
      (2) Remove the two spring clips holding the old ink pad and discard both the clips and the pad.
      (3) Wipe the ink roller clean with hot tap water and a cloth.
      (4) Remove the paper backing from the new ink roller pad. (Flex the pad a few times and peel off the smooth paper backing from the adhesive surface.)
      (5) Lay the new pad on a flat surface with the adhesive side up.
      (6) Carefully align the roller with one end of the pad and pressing firmly, roll the roller across the pad, wrapping the pad around the roller twice.
      (7) Spread the new spring clips slightly and slip them over each end of the roller. (Position the clips about 3/8 inch in from each end of the pad.)
      (8) Replace the roller in the inkwell. Make sure the spring clips do not obstruct the marking pen holes.
   b. Replace the light bulb. (Only if burned out.)

CAUTION: Ensure the power cord is disconnected before working with electrical components.

      (1) Set the power drum to approximately minus 17.
      (2) Lift off the access cover on the right side of the instrument.
      (3) Place your thumb on the light assembly lever and swing the bulb and socket assembly out.
      (4) Replace the bulb and swing the assembly back into place.
      (5) Replace the access cover.
      (6) Reconnect the power and check operation. (The target area should be well illuminated when viewed through the eye piece.)

NOTE: Replacement bulbs can be locally purchased as G.E. No. 25s11/5c.

   c. Tighten excessive looseness of the power wheel, axis wheel, or lens table.

NOTE: If too loose, these items will move on their own causing rejectable deficiencies with the lenses.

      (1) Remove the cover to expose the pressure adjustment pivots.
      (2) Clean and lubricate before adjusting.
      (3) Tighten the adjustment only by small amounts, using the allen wrenches, and frequently check the movement of the component.

CAUTION: Do not overtighten.

4. Perform an operational test.
   a. Ensure the target area is centered.

Performance Steps

b. Center the cylindrical lens, from the tray, in the lens clamp assembly and spot it.
c. Check the power wheel and axis wheel to ensure they read correctly.

NOTE: If either 4 a-c are incorrect, perform the necessary steps in 1e-j to correct the problem.

Performance Measures	**GO**	**NO GO**
1. Performed procedures at the beginning of each day.	____	____
a. Wiped the telescope objective and the eye lens.		
b. Inspected the inking attachment.		
c. Ensured the light bulb is operational.		
d. Ensured the eye piece is focused.		
e. Ensured the target is centered.		
f. Checked the power and axis wheel readings.		
g. Verified the power at zero and at plus and minus 12.00 diopters.		
h. Ensured smooth operation of the marking device.		
i. Verified spotter calibration.		
2. Performed procedures at the end of each day.	____	____
a. Turned off the power.		
b. Cleaned the exterior of the instrument.		
c. Covered the instrument with the dust cover.		
3. Performed operator repairs as needed.	____	____
a. Replaced the ink roller pad.		
b. Replaced the light bulb.		
c. Tightened excessive looseness of the power wheel, axis wheel, and lens table.		

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
LENSOMETER MANUAL	FM 8-37

PERFORM PMCS ON A FABRICATION MARKER/BLOCKER
081-875-4410

Conditions: You will need Accu-marker/blocker or equivalent, blocker operation and maintenance instructions, Teflon or silicon lubricant, 1/8" X 4" flathead screwdriver, set of small allen wrenches (some applications may require hex/star type wrenches), light bulb (single prong/post GE 1680X), pencil, soft cloth, glass cleaner, 1/8" open-end wrench, layout scale, blocked +10.00 BC lens, replacement lens support pins and rubber caps, replacement block adapters, replacement squeeze levers, mm (PD) ruler, Tray containing edited prescription and spotted lenses, a small metal file.

Standards: Cleaned, lubricated, and calibrated the fabrication marker/blocker against the operator's manual specifications. Conducted an operational test.

Performance Steps

1. Lubricate the sliding shaft, as needed, with a Teflon or silicone lubricant.

CAUTION: Do not use petroleum based lubricants.

2. Replace the layout scale.

NOTE: The layout scale should be replaced if the markings are worn away or the scale is damaged and cannot be properly centered.

a. Apply power to the blocker.
b. Center the layout scale at 0,0.
c. Loosen the set screws and remove the lens support plate.
d. Remove the layout scale with a small screwdriver.
e. Replace the layout scale, ensuring the zeros are lined up with the 180 and 90 degree alignment lines.
f. Replace the lens support plate and slowly tighten the set screws.

NOTE: Some manufacturer's marker/blockers can be left/right and up/down calibrated by loosening the covered adjustment screws on the face of the lens support plate assembly.

3. Replace an inoperable light bulb, e.g., burned out, worn contact prong/post.

CAUTION: Ensure that the power switch is turned off and the bulb is cool.

a. Holding the U bracket out of the way, turn the bulb 1/4 turn counterclockwise and remove it.
b. Push the new light bulb into the spring loaded light bulb socket assembly and turn the light bulb 1/4 turn clockwise.

4. Clean the mirrors.

a. Using a pencil, trace an outline to mark the mounting position of the lens layout and support assembly.
b. Loosen the screws holding the assembly and lift out the assembly.

NOTE: Hex screws or allen screws will be used on the lens layout and support assembly. The manufacturer and year will determine which type screw is used.

NOTE: Some manufacturer's lower mirrors can be accessed by removing the view port instead of removing the lens layout and support assembly.

c. Clean the upper mirror and lower mirrors with glass cleaner applied to a soft cloth.
d. Replace and secure the lens layout and support assembly.

5. Adjust the sliding block down stop.

Performance Steps

NOTE: This adjustment may be necessary to limit the downward travel of the sliding block assembly and avoid damage to the lens and/or the lens support pin cap.

a. Use the 1/8" open-end wrench to loosen the nut holding the sliding block down stop adjustment screw.
b. Chuck the blocked +10.00 BC lens into the block adapter.
c. Slowly bring down the sliding block assembly until the lens rests gently on the lens support pins and adjust the adjustment screw while the sliding block is down.
d. Tighten the holding nut with the 1/8" open-end wrench.

6. Replace the block adapter.
   a. Remove the two holding pins that hold the block adapter.
   b. Replace it with a new or repaired block adapter by placing it back in the U bracket, using the guide pin.

NOTE: A blocking adapter is repaired by replacing the squeeze levers or filing the edges of the old squeeze levers to allow the levers to grip the block.

   c. Replace holding pins.

8. Replace worn lens support pins and rubber pin caps.
   a. Pull the support pins out of the layout and support assembly by grasping them with your fingers and twisting left and right.
   b. Push the new support pins into the layout and support assembly.
   c. Push the new rubber pin caps onto the support pins by hand.

9. Conduct an operational test.
   a. Block the lenses from the tray with the edited prescription.
   b. Using the mm (PD) ruler, measure the distance between the center hole of the block and the spotted optical center of the lens. It should match the decentration on the edited prescription.

Performance Measures	**GO**	**NO GO**
1. Lubricated the sliding shaft.	____	____
2. Replaced the layout scale.	____	____
3. Replaced the light bulb.	____	____
4. Cleaned the mirrors.	____	____
5. Adjusted the sliding block down stop.	____	____
6. Replaced the block adapter.	____	____
7. Replaced worn lens support pins and rubber pin caps.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
MARKER/BLOCKER MANUAL	None

PERFORM PMCS ON AN EDGER

081-875-4392

Conditions: You will need Horizon II edger or equivalent, alcohol, lens clamp assembly, O-ring (1), Teflon guide ring, standard and metric ruler or tape measure, dull blade (for scraping), motor brushes (2), pattern clamps, small container, small brush, cyanoacrylate super adhesive (NSN 8040-00-142-9193 or equivalent), scrap lens, vacuum cleaner, replacement vacuum bags and filter, 1.5 inch hose fitted with the crevice tool, cutter blade inserts, dry towels, gallon container of warm water, edger instruction manual, compressed air supply source providing 80 psi, penetrating oil, tray containing edited prescription, pattern blank and blocked lenses, and the manufacturer's supplied accessory kit including safety air gun.

Standards: The edger must be clean. The edger must be operational and connected to a dry air supply. The guides and O-rings must be smooth and set. The vacuum bags and filter must be replaced. The cutter blades must be replaced.

Performance Steps

1. Clean the interior of the edger daily.

CAUTION: Follow recommended power settings during daily, monthly, or as needed PMCS. Failure to do so may result in damage to operator and/or equipment.

a. Clean the interior of the edger.
   (1) Switch the power of the edger to the OFF position.
   (2) Remove the 2.5 inch hose from the vacuum canister. Attach the 1.5 inch hose fitted with the crevice tool.

NOTE: Ensure the vacuum hoses do not have leaks by visual inspection for excessive dust accumulation. If leaks are present, order a new hose and replace it..

   (3) Move the toggle switch on the back right corner of the edger to the down position. This will turn on the vacuum independent of the edger's operation. Although the power is drawn from the edger, this switch cuts off the power to the cutter and carriage motors.
   (4) Vacuum debris from the interior of the edger with the crevice tool and a small brush, being careful not to disturb the control wiring.
   (5) Reverse steps 1a(3) and 1a(2) to return the edger to normal operation.

b. Drain any accumulated moisture from the air filter/regulator assembly, onto a dry towel, by pressing up on the valve stem located at the bottom of the bowl.

c. Check the Teflon ring for wear and contamination. Replace nicked, gouged, or rough Teflon guide rings.

d. The air pressure gauge located on the right side of the edger should read 80 psi. If the pressure drops too low, lens slippage could occur. For normal operations, the tracking gauge should read 40 psi.

NOTE: These air pressure gauges have control valves that can be adjusted.

CAUTION: This equipment has pneumatic cycle controls and will have numerous problems if the pressure drops too low.

e. Check the height of the bevel guide wheel. The distance between the cutting edge of the cutter and the flat underside of the bevel guide wheel should be 1 to 1.5 mm.

NOTE: Use the cam guide wheel for smaller eye sizes to prevent off-shape lenses or humps.

f. Check the O-ring in the lens clamp. If the O-ring is torn or compressed excessively, replace it.

Performance Steps

(1) Remove the mounting screw running through the right side of the clamp arm. Remove the clamp assembly. Do not remove the brass swivel from the clamp body.

CAUTION: Removing the brass swivel from the clamp body will cause excessive damage to the part and will necessitate replacement.

(2) Remove the O-ring, by scraping away old adhesive with the dull blade.
(3) Spread about two drops of cyanoacrylate super adhesive (NSN 8040-00-142-9193 or equivalent) throughout the groove of the brass swivel.
(4) Place a new O-ring in the groove. Place the clamp assembly on the clamp arm and clamp on a scrap lens. Allow it to set for 2 minutes, and then remove the scrap lens.

g. Clean the exterior of the edger.
(1) Vacuum around the edge and underneath the edger.
(2) Wipe down the machine housing with a clean cloth and warm water if necessary.

2. Clean the cutter motor biweekly. Use the safety air gun supplied in the accessory kit to thoroughly blow out the vents in the cutter motor.

3. Perform monthly PMCS.
a. Inspect the cutter motor brushes for wear.

NOTE: Newer edgers have brushless motors. These edgers have quieter operation and less maintenance.

(1) Turn the edger power switch and cutter motor toggle switch to the OFF position.
(2) Unscrew the brush caps at the rear of the motor and remove the brushes.
(3) Measure the brushes. Replace brushes that are worn to a length of 3/8 inch or less. New brushes are 3/4 inch long.

b. Inspect the lens clamp assembly for wear. Apply hand pressure to the clamp and rotate it. The clamp should turn smoothly. If any rough areas are detected, the clamp should be replaced.

4. Perform as needed PMCS.
a. Change the vacuum bags every 300 to 500 cycles or when filled to 2/3 capacity.
(1) Disconnect power from the vacuum unit.
(2) Release the three restraining clamps on the vacuum unit and remove the vacuum head.
(3) Replace the collection bag if filled to 2/3 capacity.
(4) Remove the spring clamp holding the filter bag on the inlet cage.
(5) Remove the filter bag and inspect the foam filter on the inlet cage for tears or holes. Clean or replace as necessary.
(6) Slip a new filter bag over the inlet cage and foam filter. Secure the filter bag with the spring clamp.
(7) Clamp the head of the vacuum unit on the vacuum canister.

b. Replace the cutter inserts every 500 cycles

CAUTION: Even worn cutter blade inserts are extremely sharp and may cause lacerations if handled carelessly.

NOTE: Some edgers have two cutter inserts and some have only one.

(1) Turn off power to the cutter motor.
(2) Loosen the collet nut with the wrenches supplied in the accessory kit, by turning counter clockwise, and remove the cutter assembly.

Performance Steps

(3) Remove the old inserts and discard or send them to National Optronics for resharpening. The inserts can be resharpened twice and then must be discarded.
(4) Thoroughly clean the cutter body with compressed air and a small brush. Alcohol or other adhesive dissolving agent may be required.

CAUTION: Compressed air can peel skin from your hand. Ensure the air pressure at the nozzle does not exceed safety standards of more than 30 psi.

(5) Remove and thoroughly clean the collet and collet nut. Reinstall the collet and collet nut.
(6) Insert a fresh set of cutter blades into the cutter body.
(7) Slide the cutter assembly into the motor until it contacts the collet nut. Hand tighten the collet.
(8) Ensuring that the cutter assembly maintains contact with the face of the collet, tighten the collet nut with the wrenches provided in the accessory kit.
(9) Verify the size of a cut lens. Adjust as necessary to achieve the desired size..

c. Inspect the lens and pattern clamp assemblies every 2500 cycles IAW the monthly PMCS procedure.

NOTE: There is a lens/cycle counter on the operator's panel.

d. Check the axis of the edger by cutting a pattern blank. Off axis can be caused by gear lash or a worn lens drive assembly (refer to the manufacturer's manual or contact the manufacturer for replacement procedures). The axis can be adjusted at the pattern clamp. (Refer to the operator's manual.)

NOTE: If the lens drive assembly is worn, submit a maintenance repair work-order.

e. Check carriage and cutter assembly movement.
(1) Disconnect the air supply.
(2) Move the carriage and cutter assemblies on roundways, checking for resistance to movement.

NOTE: Roundways are the cylindrical shaped stainless steel rods that the carriage and cutter motor travel across.

(3) Clean and lubricate the bearings with penetrating oil.

NOTE: It may be necessary to turn the unit over to access the bearings from underneath.

(4) Remove all excess oil with a clean dry cloth.
(5) Reconnect the air supply.

f. Check the locking screws on the bevel control and size control. Tighten them while turning the controls to avoid overtightening.

5. Conduct an operational test.
a. Select the pattern from the provided tray and snap into place.
b. Chuck the right lens from the tray.
c. Set the size dial to the correct setting.
d. Make adjustments to the bevel guide.

NOTE: If necessary, the bevel guide can be adjusted as the lens is cutting.

e. Push start and cut the lens.
f. Inspect lens for correct size, shape, bevel placement and chips.

NOTE: If any flaws or malfunctions are detected, repeat the necessary steps to correct that particular flaw or malfunction.

Evaluation Preparation: Setup: Have each soldier perform end of the day, weekly, and as needed procedures before scoring the soldier GO or NO GO.

Brief soldier: Tell the soldier that he or she must perform the daily and weekly procedures.

Performance Measures	GO	NO GO
1. Cleaned interior of the edger daily.	____	____
2. Cleaned the cutter motor biweekly.	____	____
3. Performed monthly PMCS.	____	____
4. Performed as needed PMCS.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
LENS EDGER MANUAL	None

PERFORM PMCS ON A DYE BATH UNIT
081-875-4414

Conditions: You will need dye tanks (water heated, air heated, or hot plate), dye pots/beakers, clean cloth, clean tap water, dye, 220° F thermometer, dye manufacturer's heating chart, and standard ruler.

Standards: The dye bath and surrounding area are free of chemical spills and dirt. The dye tanks are heating dye to the dye manufacturer's specified temperature (see manufacturer's heating chart; the standard heating temperatures range between 130-150° F). The dye is not too old or contaminated to prevent good color absorption. (When you start loosing good color absorption, the dye is either old or contaminated.)

Performance Steps

1. Verify that the dye bath thermostat keeps dye at the recommended operating temperature IAW the dye manufacturer's specifications, using the 220° F thermometer.

NOTE: Do not allow the thermometer to touch the side or the bottom of the dye bath, as this will cause a false reading.

NOTE: If the heating elements fail, submit a work order through medical maintenance.

2. Wipe down the outside of the dye tanks and the surrounding area with a damp cloth.

3. Replace old or contaminated dye. This can vary on how often or little the dye is used.

NOTE: Dye can be contaminated from dirt or other chemicals such as heat transfer fluid, different dyes, or neutralizer.

NOTE: Lens dye and neutralizer are 100% biodegradable and can be poured down the drain.

a. Dispose of old dye down the drain.
b. Rinse the dye pot with clean water.
c. Mix one 2.5 ounce bottle of dye with one quart of clean tap water in the dye pot.
d. Return the dye pot to the tint unit.

4. Ensure appropriate water level..

NOTE: Air heated units do not require water.

a. Water levels in the water heated dye units must cover no less than one half of the bottom of the dye pots.
b. Water and dye mixture levels in beakers, used with hot plates, should be 3 inches from the top of the beaker, at a minimum.

Performance Measures	**GO**	**NO GO**
1. Verified that the dye bath thermostat keeps dye at the recommended operating temperature IAW the dye manufacturer's specifications.	____	____
2. Wiped down the outside of the dye tanks and the surrounding area with a damp cloth.	____	____
3. Replaced old or contaminated dye.	____	____
4. Ensured appropriate water level.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-37

PERFORM PMCS ON A SURFACE BLOCKER

081-875-4411

Conditions: You will need Gerber Step-One blocker, blocker maintenance manual, a small container, glass cleaner, a clean dry cloth, one each #1Phillips head and 1/8" X 4" flat head screwdrivers, adjustable air regulator, air filter, one air spray nozzle, and continuous 80 psi clean, dry air. The blocker warm-up and diagnostics are complete.

Standards: The blocker must be clean and free of water in the air filter, foreign material, and blocking material buildup and contaminants in the blocking material. Performed PMCS following the step-by-step instructions in the operator's/Maintenance manual.

Performance Steps

1. Drain the water residue from the air filter by depressing the valve located at the bottom of the glass bulb. Collect the water in a small container and dispose of it.
   a. Release the glass bulb valve by depressing the valve at the bottom of the glass bulb.
   b. Capture waste water in the small container and discard it.
2. Verify that compressed air input is set to a minimum of 80 psi by observing the air regulator and adjusting the valve as needed.
3. Clean the glass viewer window with glass cleaner.
4. Clean any foreign material from the vacuum transport by simply wiping it away with a clean dry cloth.

NOTE: For performance of weekly PMCS, add the following performances to steps 1 through 4.

5. Clean any foreign material from the keyboard by spraying with compressed air and wiping with a clean cloth.
6. Remove any foreign material from the chill ring by wiping it away with a clean dry cloth.
7. Service the elevator plate.
   a. Remove the four small screws on the elevator plate and lift out the elevator plate.
   b. Remove the spring and washer and clean both by hand and wiping them clean with a towel.

CAUTION: Do not use any sharp instruments to clean these parts. Any nicks or gouges can render the machine inoperable.

   c. Carefully remove any built-up blocking material from the elevator and its seat.
   d. Operate the elevator for diagnostic purposes.
   e. Assemble the spring and washer and then the elevator plate. Ensure the finger springs on the elevator plate are not inducing prism by ensuring the elevator plate and its four small screws are seated properly (flush).

NOTE: For the performance of monthly PMCS add the following performances to steps 1 through 7.

8. Remove the Phillips head screws on each side of the cover and remove the cover.
9. Wipe the vacuum transport's roundway with a clean dry cloth.
10. Change or clean the blocking material as needed.

Performance Steps

NOTE: Changing the blocking material would be necessary only if it is to dirty/contaminated to be cleaned properly and is no longer effective.

11. Check the reservoir for foreign objects and remove if observed.
12. Clean foreign material from pulleys with a clean dry cloth.

NOTE: In the event of malfunction, submit a medical maintenance work order request.

Performance Measures	**GO**	**NO GO**
1. Drained water residue from the air filter and captured waste water.	____	____
2. Ensured that compressed air input was set to a minimum of 80 psi.	____	____
3. Cleaned the glass viewer window with glass cleaner.	____	____
4. Removed foreign material from the vacuum transport.	____	____
5. Cleaned foreign material from the keyboard.	____	____
6. Cleaned foreign material from the chill ring.	____	____
7. Serviced the elevator plate. a. Removed the four small screws on the top of the elevator plate and lifted out the elevator plate. b. Removed the spring and washer and cleaned both by hand or wiped clean with a clean towel. c. Carefully removed any built-up blocking material from around the elevator and its seat. d. Operated the elevator for diagnostic purposes. e. Assembled the spring and washer and then the elevator plate. Ensured that the finger springs on the elevator plate were not inducing any prism.	____	____
8. Removed the screws from the sides of the cover and removed the cover.	____	____
9. Wiped the vacuum transport's roundway with a clean dry cloth.	____	____
10. Changed or cleaned the blocking material.	____	____
11. Checked the reservoir for foreign objects and removed if observed.	____	____
12. Cleaned foreign material from pulleys. *NOTE:* In the event of malfunction, submitted a medical maintenance work order request.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
SURFACE BLOCKER MANUAL	None

PERFORM PMCS ON A LENS GENERATOR
081-875-4412

Conditions: You will need Gerber/Coburn SGX lens generator or equivalent, lens generator operation and maintenance manual, a clean cloth, penetrating spray lubricant, lithium or silicone grease, hex keys (Allen wrenches) (1/8, 3/32, 5/32, 7/64, 9/64 inch), hex key T-handle 5/32 inch, No. 2 Phillips screwdriver, 3/16 slotted blade screwdriver, box end wrench 5/8, open end wrenches (1/2, 9/16, 11/16), open end wrench 19 mm (or 3/4 inch) ground down, inch-pound capacity torque wrench, dust brush, shop vacuum, compressed air source, dust collector filter, spare cutting tool, small container, and motor brushes.

Standards: The lens generator will pass an operational test. The dust collector will be empty. There will be no water in the air filter.

Performance Steps

1. Clean the interior and exterior of the lens generator.

NOTE: Steps 1 through 3 should be performed daily/weekly dependent upon level of use.

   a. Vacuum the generator interior, paying particular attention to the cutting chamber around the chuck, tool guard, chip chute, and the sliding seal.

NOTE: Foreign material in the chuck can cause unwanted prism.

   b. Wipe off the inner and outer plastic covers with a clean dry cloth.
   c. Clean the chuck and the chuck face and pins with a brush and vacuum.

2. Empty the dust collector. Ensure that the dust collector filter is clean by blowing out built-up dust on the filter with compressed air.

NOTE: Vacuums tend to lose suction as the dust collection filter becomes clogged.

3. Check the chuck air pressure with the chuck activated. Adjust to 50 to 60 psi with the adjustable air regulator valve.

4. Drain accumulated water from the air filter on the rear of the generator by depressing the valve button. Capture water in the small container and dispose of it.

NOTE: Steps 5 through 11 should be performed for monthly/quarterly PMCS dependent upon level of use.

5. Change the cutting tool following the generator operation and maintenance manual whenever the cutter is worn.

NOTE: Bogged down motor performance or the need to increase fining time are indicators of a worn cutter.

6. Lubricate bearings with penetrating spray lubricant (WD-40).

7. Wipe the roundways with a dry, clean cloth.

8. Replace internal or exhaust air filters, if needed. (You will only have one or the other.)

NOTE: Some generators will have their own internal vacuum and filter system. Others will be on a centralized vacuum system with an external exhaust filter.

9. Inspect the door opening gears and lubricate if dry with a small amount of lithium or silicone grease on the gear teeth.

10. Wipe off any foreign material accumulated on the generator's moving parts, such as plastic or polycarbonate shavings.

Performance Steps

11. If your generator has a brush type motor, inspect the cutter motor brushes for wear and replace if less than 3/8" long.

NOTE: If the brushes are worn more than half way, they should be replaced.

NOTE: Step 12 should be performed annually.

12. Remove, clean, and regrease the seals on the cutter spindle.

CAUTION: Failure to provide uninterruptible voltage and frequency stabilized electrical power will result in serious and expensive damage to computer controlled equipment.

NOTE: Although, it is not a requirement. External voltage regulators can be purchased, at minimal cost, and will help stabilize electrical power.

Performance Measures	**GO**	**NO GO**
1. Cleaned the interior and exterior of the lens generator.	____	____
2. Emptied the dust collector..	____	____
3. Checked the chuck air pressure with the chuck activated.	____	____
4. Drained accumulated water from the air filter.	____	____
5. Changed the cutting tool.	____	____
6. Lubricated the bearings.	____	____
7. Wiped the roundways.	____	____
8. Replaced internal or exhaust air filters.	____	____
9. Inspected and lubricated the door opening gears.	____	____
10. Wiped off foreign material accumulated on the generator's moving parts.	____	____
11. Inspected the cutter motor brushes for wear.	____	____
12. Removed, cleaned, and regreased the seals on the cutter spindle.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
LENS GENERATOR MANUAL	None

PERFORM PMCS ON AN AUTOMATIC LENS SURFACER

081-875-4413

Conditions: You will need Gerber/Coburn toric surfacer or equivalent, surfacer maintenance manual, rags, water, slurry, axis block set, lubricants (#6 light oil and Hp Mobile blue grease), thin plastic wrap, axis pins, axis pin holders, locking pins (2), standard/metric ruler or tape measure (mm/inch), neoprene bellows (rubber baffles), pattern block, grease pencil (preferably red or yellow), clean 5 gallon container, small set of allen wrenches (hex key), 3/8 inch drive standard socket set, open end wrenches (1/4 inch through 3/4 inch), #2 Phillips screwdriver, and 3/16 inch slotted screwdriver.

Standards: The surfacer must pass an operational test. The surfacer must be clean and lubricated. The axis is aligned, and the baffles are not torn, punctured, dry rotted, or leaking.

Performance Steps

1. Check the baffles for tears or punctures. Replace them if they are damaged.

NOTE: Check the inside of the unit for leaks, which indicate primary baffle damage.

2. Lubricate the unit following the maintenance checklist in the surfacer maintenance manual.

CAUTION: Failure to keep automatic oilers filled within maintenance specifications can cause pneumatic clamp problems.

NOTE: Ensure that you use the manufacturer's recommended lubricants and schedule, which differ with brand of surfacer.

3. Flush slurry from the pump system at the end of each day.

NOTE: Slurry may be stored and reused if production is low. Replace slurry daily in high production facilities.

   a. Pour slurry into the 5 gallon container for reuse.
   b. Pump clean water through the pump system.

4. Wipe spilled slurry from machine surfaces with rags and water.

CAUTION: Keep moisture away from timers. They are very fragile and expensive. Covering the control panel with thin plastic wrap will also keep the controls clean.

5. Check axis pins and pin holders for wear.
   a. Inspect pins for dullness and flatness.
   b. Inspect pin holders for looseness.

NOTE: Dull, flat, and loose axis pins should be replaced.

6. Replace axis pins.
   a. Loosen and remove the two soc caps holding the pins, using the 1/4 inch open end wrench.
   b. Remove the pins from the rocker arm.
   c. Install new pins and retighten the soc caps.

7. Replace pin holders.
   a. Loosen and remove the two soc caps holding the pins, using the 1/4 inch open end wrench.
   b. Remove the pins from the rocker arm.
   c. Remove the center soc cap, using the 5/16 inch allen wrench.
   d. Remove the axis pin adapter body, using the 1/4 inch open end wrench.

Performance Steps

e. Install a new axis pin adapter body and retighten.
f. Replace the center soc cap and retighten.
g. Replace the pins and pin soc caps and retighten.

NOTE: Axis pins may be reused, if they show no signs of wear.

8. Calibrate the axis whenever pins or pin holders are replaced.
   a. Mount the pattern block on one of the two lap tables.
   b. Set the pump switch, on the operator's panel, to the manual position to secure the pattern block.
   c. Position the axis block on top of the pattern block.
   d. Push the rocker arm down until the axis pins are positioned into the groove of the axis block.

NOTE: If the front edge of the axis block is parallel to the front edge of the pattern block, no adjustment is necessary. If the two front edges are not parallel, proceed with steps 8e through 8i.

   e. Lift the top control panel and secure in the upright position.
   f. Locate the rocker arm oscillating fork. The fork is mounted to the wobble bracket.
   g. Loosen the two cap screws in the wobble bracket (one on each side), using the 5/16 inch allen wrench.
   h. Move the rocker arm until the front edge of the axis block is parallel to front edge of the pattern block.

NOTE: A jack screw is provided, on top of the wobble bracket, to assist in the movement of the oscillating fork.

   i. Tighten the two cap screws (one on each side) in the wobble bracket, once the rocker arm is positioned correctly.
   j. Repeat steps 8a through 8i for the other lap table.

9. Adjust belt timing.
   a. Disconnect the power cord.
   b. Remove the back panel from the cabinet, using the 3/16 slotted screwdriver.
   c. Loosen the drive belt idler pulleys, on each side of the motor pulley.
   d. Remove the belt by rolling it off of the motor pulley.
   e. Insert a locking pin into the timing hole on the side of one of the tool post assemblies by rotating the eccentric pulley until the pin goes into the shaft. This will lock the lap table into position.
   f. Repeat step 9e for the other lap table.
   g. Place the drive belt into one of the eccentric pulleys and stretch it onto the other eccentric pulley.
   h. Remove the locking pin from each tool post assembly.

NOTE: Be sure the drive belt remains in the eccentric pulleys.

   i. Roll the drive belt onto the motor pulley.
   j. Adjust the idler pulleys until the belt tension is the same on both sides.

NOTE: The machine may vibrate if the belt is too tight.

10. Adjust orbit diameter.
    a. Mount the pattern block on the lap table.
    b. Set the pump switch, on the operator's panel, to the manual position to clamp the pattern block on the lap table.
    c. Grease the top surface of the pattern block with a grease pencil.
    d. Push the rocker arm down until the rocker arm axis pins are against the pattern block.
    e. Disconnect the power cord and raise the top cover until it locks back in position.

Performance Steps

f. Reach inside the cabinet and manually turn the motor drive belt until two circles appear on the greased pattern block.
g. Measure the orbit pattern. The diameter should be 1/2 inch.

NOTE: If the orbit diameter is 1/2 inch, no adjustment is necessary. If the orbit diameter is greater or less than 1/2 inch, proceed with steps 10h through 10n.

h. Remove the back panel from the cabinet, using the 3/16 inch slotted screwdriver.
i. Rotate the eccentric pulley until the set screw in the top eccentric is visible.
j. Loosen the set screw with an allen wrench.
k. Insert an allen wrench into the hole in the upper half of the eccentric.
l. Rotate the upper half of the eccentric clockwise to increase the orbit diameter or counterclockwise to decrease the orbit diameter.
m. Tighten the set screw at the top of the eccentric.
n. Repeat steps 10a through 10g and remeasure the orbit diameter.
o. Repeat steps 10a through 10n for the other lap table.

11. Adjust pattern size.
    a. Mount the pattern block on one of the two lap tables.
    b. Set the pump switch, on the operator's panel, to the manual position to clamp the pattern block on the lap table.
    c. Grease the top surface of the pattern block with a grease pencil.
    d. Pull the rocker arm down until the rocker arm axis pins are against the pattern block.
    e. Depress the start button, on the operator's panel, and run the machine for approximately 30 seconds at 10 psi or until a distinct pattern appears on the greased pattern block.

NOTE: There is a timer on the operator's panel.

f. Raise the rocker arm and measure the size of the pattern. The correct size is 60 mm long and 19 mm wide.

NOTE: If the size is correct, no adjustment is necessary. If the size is not correct proceed with steps 11g through 11q.

g. Disconnect the power cord.
h. Remove the back panel from the cabinet, using the 3/16 inch slotted screwdriver.
i. Loosen the set screw in the upper sweep shaft cam with an allen wrench.
j. Insert a small allen wrench into the hole in the top half of the cam.
k. Rotate the cam clockwise to increase pattern length or counterclockwise to decrease pattern length.
l. Tighten the set screw in the upper sweep shaft cam.

NOTE: The adjustment made in steps 11i through 11l changes the pattern length for both rocker arms.

NOTE: The pattern width is adjusted separately for each rocker arm following steps 11m through 11q.

m. Loosen the set screw, with an allen wrench, in either the right or left lower sweep shaft cam depending on which rocker arm you are adjusting.
n. Insert a small allen wrench in the hole in the lower half of the cam.
o. Rotate the cam clockwise to increase pattern width or counterclockwise to decrease pattern width.
p. Tighten the set screw in the lower sweep shaft cam.
q. Repeat steps 11a through 11f and remeasure pattern size.
r. Repeat steps 11m through 11q to check and adjust the pattern width of the other rocker arm.

Performance Steps

12. Center the pattern.
    a. Mount the pattern block on one of the two the lap tables.
    b. Set the pump switch, on the operator's panel, to the manual position to clamp the pattern block on the lap table.
    c. Grease the top surface of the pattern block with a grease pencil.
    d. Pull the rocker arm down until the rocker arm axis pins are against the pattern block.
    e. Depress the start button, on the operator's panel, and run the machine for approximately 30 seconds at 10 psi or until a distinct pattern appears on the greased pattern block.

NOTE: There is a timer on the operator's panel.

    f. Raise the rocker arm and measure the distance from the edge of the pattern to the edge of the pattern block. The distance should be equal on all sides (left, right, top, and bottom).

NOTE: If the distances are equal, no adjustment is necessary. If they are not equal, proceed with steps 12g through 12p to center the pattern.

    g. Loosen the locknut on the upper rod end bearing with an open end wrench.
    h. Remove the allen head shoulder bolt with an allen wrench.
    i. Thread the rod end bearing in or out to change the side to side movement of the pattern.

NOTE: One complete turn moves the pattern approximately 1 mm. Clockwise moves the pattern toward the center of the machine and counterclockwise moves the pattern toward the outside of the machine.

    j. Replace the allen head shoulder bolt.
    k. Tighten the locknut on the rod end bearing.
    l. Loosen the locknut on the lower rod end bearing with an open end wrench.
    m. Remove the allen head shoulder bolt with an allen wrench.
    n. Thread the rod end bearing in or out to change the in and out movement of the pattern.

NOTE: One complete turn moves the pattern approximately 1 mm. Clockwise moves the pattern in toward the back of the machine and counterclockwise moves the pattern out toward the front of the machine.

    o. Replace the allen head shoulder bolt.
    p. Tighten the locknut on the rod end bearing.
    q. Repeat steps 12a through 12f and remeasure pattern distances.
    r. Repeat steps 12a through 12q for the other lap table.

Performance Measures	**GO**	**NO GO**
1. Checked the baffles for tears, punctures, dry rot, and leaks.	____	____
2. Lubricated the unit .	____	____
3. Flushed slurry from the pump system at the end of each day.	____	____
4. Wiped spilled slurry from machine surfaces with rags and water.	____	____
5. Checked the pins and pin holders for wear.	____	____
6. Replaced axis pins.	____	____
7. Replaced pin holders.	____	____

Performance Measures	GO	NO GO
8. Calibrated the axis after pin or pin holder replacement.	____	____
9. Adjusted the belt timing.	____	____
10. Adjusted the orbit diameter.	____	____
11. Adjusted the pattern size.	____	____
12. Centered the pattern.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
LENS SURFACER MANUAL	FM 8-37

PERFORM PMCS ON A DEBLOCKER

081-875-4374

Conditions: You will need Gerber deblocker and maintenance manual, a small container, compressed air supply of 80 psi with adjustable air regulator gauge, additional air regulator attached to deblocker, a clean towel, water, and a dull scraping tool.

Standards: The deblocker is clean and free of water in the air filter.

Performance Steps

1. Drain any water that may have collected in the air filter daily by depressing the valve located on the rear of the deblocker. Collect water in a small container and dispose of it.
2. Clean any blocking material buildup away from the moving jaw and the fixed jaw with the scraping tool and place it in the blocker's reservoir.
3. Observe the compressed air source air regulator gauge and verify the incoming air pressure is 80 psi minimum. Use the adjustable valve to adjust the air pressure.
4. Ensure the air pressure regulator valve on the deblocker is adjusted to 50 psi. Use the adjustable valve to adjust the air pressure.

NOTE: In the event of malfunction, submit a medical maintenance or manufacturer's work order request.

Evaluation Preparation:
Setup: Have each soldier perform end of the day and weekly procedures before scoring the soldier GO or NO GO.

Brief soldier: Tell the soldier that he or she must perform the daily and weekly procedures.

Performance Measures	GO	NO GO
1. Drained water from the air filter.	____	____
2. Cleaned blocking material buildup from the moving and fixed jaws of the deblocker.	____	____
3. Verified the incoming air pressure is 80 psi minimum.	____	____
4. Verified the deblocker air pressure regulator is adjusted to 50 psi.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
DEBLOCKER MANUAL	FM 8-37

PERFORM PMCS ON A HAND EDGER

081-875-4394

Conditions: You will need AIT hand edger or equivalent, water, small set of open/box end wrenches, clean cloth, water soaked gray honing stick, stiff bristle brush, shop vacuum, vacuum bags, spare diamond wheel, spare fuse, maintenance manual, and grease or petroleum jelly.

Standards: The hand edger must be clean and operational. The diamond wheel should not have builtup lens residue. Full vacuum bags were replaced. Water was changed weekly. There should be no wobble or bounce in the diamond wheel.

Performance Steps

1. Perform daily PMCS.

NOTE: Some hand edgers use a water pump. For those with water pumps, steps 1a and 2a-2e must be followed.

   a. Check water flow from the pump. The wheel should remain moist during operation.
   b. Check for buildup of lens material in the diamond wheel. Excessive buildup of lens material will slow the grinding ability of the wheel.
      (1) If the wheel is a diamond plated wheel, clean the excess lens material out of the working surface of the wheel with a stiff bristle brush.

NOTE: Do not hone a diamond plated wheel as you would a diamond bonded wheel.

      (2) Hone a diamond bonded wheel by lightly rubbing a water soaked gray honing stick across the complete working surface of the moist rotating wheel. When the wheel begins to aggressively wear down the honing stick, the wheel is properly honed. The wheel will have a uniformly dull matte finish without any shiny spots.

NOTE: The fewer times a bonded wheel is honed, the longer it will last.

   c. Wipe down the outside of the hand edger each day.

2. Change water weekly.
   a. Disconnect the power cord and water lines. Remove the pump from the water. Wash the pump and water lines.
   b. Remove and dispose of lens material and water from the water tank.
   c. Line the water tank with a plastic bag and fill it close to the top with water.
   d. Replace the pump into the water tank and connect the hoses and power cords.
   e. Turn on the pump and adjust the water flow to keep the wheel moist during operation.

3. Perform as needed PMCS.
   a. Replace the vacuum bag when necessary.
      (1) Disconnect the hand edger from the electrical power supply.
      (2) Disconnect the vacuum from the electrical power supply.
      (3) Remove the vacuum lid from the vacuum container.
      (4) Replace the old vacuum bag with a new one.
      (5) Replace the vacuum lid.
      (6) Reconnect the vacuum and hand edger to the electrical power supply.
   b. Replace the wheel when necessary.
      (1) Disconnect the hand edger from the electrical power supply.
      (2) Remove the shields to gain access to the diamond wheel retaining screw.
      (3) Remove the diamond wheel retaining screw, wheel washer, and wheel.

NOTE: The screw is reverse threaded on some manufacturer's equipment.

Performance Steps

(4) Place a new wheel on the shaft. Ensure the arrow on the new wheel is pointed in the direction of rotation.
(5) Clean and replace the wheel plate and screw.

NOTE: A thin coat of petroleum jelly or grease will prevent rust on the hub, sides of the wheel, and the wheel plate and make future wheel replacements easier.

(6) Reconnect and turn on the power to get the wheel spinning. Turn the power switch off and closely check for wheel bounce or wobble. If any abnormality is present, disconnect the power, loosen the wheel retaining screw, and rotate the wheel 30 degrees. Repeat this step until the smoothest operation is observed.
(7) Reinstall any shields previously removed.

c. Replace the fuse.
(1) Disconnect the power and remove the fuse holder.
(2) Replace the fuse and reconnect the power.

Performance Measures	**GO**	**NO GO**
1. Performed daily PMCS.	____	____
a. Checked water flow from the pump.		
b. Cleaned builtup lens material from the diamond wheel.		
2. Changed the water weekly.	____	____
3. Performed as needed PMCS.	____	____
a. Replaced full vacuum bags.		
b. Replaced the diamond wheel when necessary.		
c. Replaced the fuse.		

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
None	FM 8-37

Subject Area 4: Optical Unit Assemblage

MAINTAIN AN OPTICAL FABRICATION UNIT ASSEMBLAGE

081-875-4431

Conditions: You must maintain an Optical Fabrication Unit Assemblage (UA3003, UA3004, or UA3005). You will need line item hand receipt, Authorized Unit Assemblage Listing, and a secure storage area.

Standards: Maintained the Optical Fabrication Unit Assemblage at required operating levels with all necessary optical equipment and supplies.

Performance Steps

1. Identify the Optical Fabrication Unit Assemblage.
    a. UA3003 is a 2-Man Divisional Level Single-Vision Fabrication Lab.

CAUTION: Handling Optical Fabrication Unit Assemblage UA3003 containers requires a 2-man lift.

    b. UA3004 is a 5-Man Corp Level Single-Vision Fabrication Lab.

CAUTION: Handling Optical Fabrication Unit Assemblage UA3004 containers requires a forklift.

    c. UA3005 is a 12-Man EAC Level Multi/Single-Vision Fabrication Lab.

CAUTION: Handling Optical Fabrication Unit Assemblage UA3005 containers requires a forklift.

2. Unpack the Optical Fabrication Unit Assemblage.
    a. Unpack in a location with 110/120 electrical power available for the UA3003 and UA3004.
    b. Unpack in a location with 110/120 and 220/240 electrical power available for the UA3005.

3. Conduct an inspection of all field containers.

CAUTION: Handling Optical Fabrication Unit Assemblage containers requires a 2-man lift.

    a. Inspect the exterior of each field container for cleanliness and damage.
        (1) Ensure the retaining latches are functioning properly.
        (2) Ensure the handles are functioning properly.
    b. Inspect the interior of each container.
        (1) Ensure packing foam is serviceable.
        (2) Ensure the container is not leaking.

NOTE: Request replacement of damaged containers through your unit supply office.

4. Inventory all optical supply support items against the Authorized Unit Assemblage List.

NOTE: Ensure the Optical Fabrication Unit Assemblage matches hand-receipt authorization levels.

5. Inventory all equipment against the Authorized Unit Assemblage List.

6. Conduct a serviceability assessment of all equipment items.

NOTE: This can be accomplished by setting up and operating your set during an FTX or Sergeants Time Training.

7. Rotate optical supplies to prevent aging as needed.

Performance Steps

NOTE: Self life is dependent on each specific item and manufacturer; i.e., lenses typically take anywhere from 12 to 36 months to begin yellowing, liquid lens dye can last from 6 to 18 months.

8. Repack and store the Optical Fabrication Unit Assemblage in a secure area.

CAUTION: Handling Optical Fabrication Unit Assemblage containers exposes personnel to numerous pinch points.

Performance Measures	**GO**	**NO GO**
1. Identified the Optical Fabrication Unit Assemblage.	____	____
2. Unpacked the Optical Fabrication Unit Assemblage.	____	____
3. Conducted an inspection of all field containers.	____	____
4. Inventoried all optical supply support items against the Authorized Unit Assemblage List.	____	____
5. Inventoried all equipment against the Authorized Unit Assemblage List.	____	____
6. Conducted a serviceability assessment of all equipment items.	____	____
7. Rotate optical supplies to prevent aging as needed.	____	____
8. Repacked and stored the Optical Fabrication Unit Assemblage in a secure area.	____	____

CAUTION: Handling Optical Fabrication Unit Assemblage containers exposes personnel to numerous pinch points.

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References None

SET UP AN OPTICAL FABRICATION UNIT ASSEMBLAGE
081-875-4423

Conditions: You have an Optical Fabrication Unit Assemblage (UA3003, UA3004, or UA3005) that needs to be set up. You will need Optical Fabrication Unit Assemblage, your specific optical lab operations plan, sufficient power source (110/120 for UA3003 and UA3004, 110/120 and 220/240 for UA3005), and line item hand receipt.

Standards: The unit was inspected for completeness and serviceability. Set up and operated the Optical Fabrication Unit Assemblage with all required optical equipment and supplies.

Performance Steps

1. Select a deployment area, within the deployment site, that is as far as possible from high traffic areas, e.g. vehicle traffic and pedestrian traffic such as dining facility traffic.

NOTE: An advance party will conduct a site recon prior to deployment.

2. Ensure an appropriate power source is available.

NOTE: Optical Fabrication Unit Assemblages require a specific power level. The power generators below are components of the Unit Assemblages.

NOTE: Although not required, power distribution boxes and external voltage regulators are helpful with maintaining appropriate power levels.

a. UA3003 requires 30 amps. A 10 KW power generator will provide sufficient power.
b. UA3004 requires 50 amps. A 15 KW power generator will provide sufficient power.
c. UA3005 requires 120 amps. A 30 KW power generator will provide sufficient power.

3. Lay out the Optical Fabrication Unit Assemblage.

NOTE: The layout of any optical lab should provide continuity to workflow. Each optical lab will have it's own operations plan for lay out and redeployment.

a. UA3003, Single-Vision Optical Fabrication Unit, Divisional Level.
   (1) Editing Section.
   (2) Marking/Blocking Section.
   (3) Edging Section.
   (4) Deblocking/Beveling Section.
   (5) Tint Section.
   (6) Lens Insertion Section.
   (7) Final Inspection Section.
   (8) Mailroom Section.
b. UA3004, Single-Vision Optical Fabrication Unit, Corp Level.
   (1) Editing Section.
   (2) Marking/Blocking Section.
   (3) Edging Section.
   (4) Deblocking/Beveling Section.
   (5) Tint Section.
   (6) Lens Insertion Section.
   (7) Final Inspection Section.
   (8) Mailroom Section.
c. UA3005, Multi-/Single-Vision Optical Fabrication Unit, EAC Level.

NOTE: Steps 3c(1)-(11) apply to the Surface Department.

   (1) Editing Section.

Performance Steps

(2) Surface Write-up Section.
(3) Lens Pull Section.
(4) Blocking Section.
(5) Generating Section.
(6) Lap Section.
(7) Surfacing (Fining) Section.
(8) Polishing Section.
(9) Deblocking Section.
(10) Inspection Section.

NOTE: Steps 3c(11)-(19) apply to the Fabrication (Finishing) Department.

(11) Editing Section.
(12) Marking/Blocking Section.
(13) Edging Section.
(14) Deblocking/Beveling Section.
(15) Tint Section.
(16) Lens Insertion Section.
(17) Final Inspection Section.
(18) Mailroom Section.

4. Redeploy the Optical Fabrication Unit Assemblage. Prepare the assemblage for transport by repacking all equipment and supplies in the original containers.

CAUTION: Handling Optical Fabrication Unit Assemblage containers exposes personnel to numerous pinch points.

Performance Measures	**GO**	**NO GO**
1. Selected the deployment area.	____	____
2. Ensured an appropriate power source was available.	____	____
3. Laid out the Optical Fabrication Unit Assemblage.	____	____
4. Redeployed the Optical Fabrication Unit Assemblage.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References None

Skill Level 2

Subject Area 5: Basic Administration

PREPARE A MONTHLY METRICS REPORT
081-875-4438

Conditions: You will need AR 40-61, AR 40-63, DFAS-IN Regulation 37-1, weekly production data, supply transactions, soldier and civilian productive and nonproductive hours, laboratory and supplier rejects, funds (for training, equipment/parts replacement, contracts, reimbursables, shipping), and a copy of the metrics report from the previous production period.

Standards: Filled out the metrics form reflecting workload accomplished in the current production period, divided by categories IAW AR 40-61 and AR 40-63. Reported data to MEDCOM on a monthly basis via the FEDLOG web site (http://www.medlogspt.army.mil).

NOTE: MEDCOM no longer requires the optical labs to prepare DA Form 2717. It is advisable to maintain the same data required for completing the DA Form 2717 for future reference, i.e.; budget requirements and data calls.

Performance Steps

NOTE: All data for this report is compiled from weekly in-house reports and from information maintained by the NCOIC and the Resource Management Office.

NOTE: The user must obtain a USER ID and PASSWORD to access the FEDLOG web site (http://www.medlogspt.army.mil). All optical lab NCOICs will be provided with a USER ID and PASSWORD.

NOTE: Once you have accessed the web site, select the Army tab and then select the Optical Programs tab.

1. Fill out the Standard Issue Production Section.
    a. Select the Lab Matrix tab.
    b. Select the month, year, and lab that are being reported.
    c. Select the Production tab.

NOTE: This section is for standard issue frames, not Fame of Choice (FOC).

    (1) Record active military personnel and frame type in the appropriate cells.
    (2) Record retired personnel and frame type in the appropriate cells.
    (3) Record all reimbursables and frame type in the appropriate cells.
    (4) Record all others, not mentioned in steps 1c(1), 1c(2) and 1c(3), in the Other Customers row in the appropriate frame cells.

NOTE: The program automatically calculates all totals in this section.

2. Fill out the Frame of Choice Production section. Record active military personnel and frame type in the appropriate cells.

Performance Steps

NOTE: This section is for FOC only.

NOTE: FOC is authorized for active military personnel only; however, if FOC becomes available for other personnel, in the future, use the same procedures in this section as in steps 1c(1) through 1c(4).

NOTE: The program automatically calculates all totals in this section.

3. Enter the number of tint jobs per month in the appropriate cell.
4. Enter the number of jobs requiring surfacing.
5. Enter the percentage of jobs shipped within two working days.
6. Enter the total number of incoming jobs.
7. Fill out the Financial Metrics section.
    a. Select the Financial tab.
    b. Select the year and lab to report.

NOTE: All entries in this section must be made on the reported month.

    c. Enter the dollar amount used for supplies in the appropriate column.
    d. Enter the dollar amount used for OFE travel and training in the appropriate column.
    e. Enter the dollar amount used for equipment maintenance in the appropriate column.
    f. Enter the dollar amount used for repair parts in the appropriate column.
    g. Enter the dollar amount used for Fed Ex in the appropriate column.
    h. Enter the dollar amount used for USPS in the appropriate column.
    i. Enter the dollar amount of reimbursables earned in the appropriate column.
    j. Enter the dollar amount used for contract labor charges in the appropriate column.
    k. Enter the dollar amount used for expenses not covered in steps 7c through 7j in the Other column.

NOTE: The program automatically calculates all totals in this section.

8. Fill out the Staff Metrics section.
    a. Select the Staff tab.
    b. Select the year and lab to report.

NOTE: All entries in this section must be made on the reported month.

    c. Enter the number of active duty personnel authorized in the # AD Authorized column.
    d. Enter the number of active duty opticians (91H), on hand, in the # AD Opticians column.
    e. Enter the number of active duty non-opticians, on hand, in the # AD Other column. Example: 91J Medical Logistics Specialist.
    f. Enter the number of civilians authorized in the # CIV Authorized column.
    g. Enter the number of civilian opticians, on hand, in the # CIV Opticians column.
    h. Enter the number of civilian non-opticians, on hand, in the # CIV Other column. Examples: mail clerk, supply specialist, secretary (anyone not hired as an optician).

NOTE: Step 8h does not apply to hired opticians working as mail clerks, etc. They are still reported as opticians.

    i. Enter the number of productive hours spent on production of military eyewear in the Production Hours column.
    j. Enter the number of non-productive hours in the Non-Production Hours column. Examples of non-productive hours: NCODP, SGT's Time, CO2, PT (anything that detracts from the everyday operation of the optical lab).

Performance Steps

NOTE: The program automatically calculates the averages in this section.

9. Fill out the Performance Metrics section.
    a. Select the Performance tab.
    b. Select the year and lab to report.

NOTE: All entries in this section must be made on the reported month.

    c. Enter the number of production rejects in the appropriate column.
       Examples: off axis, unwanted prism, burnt frame.
    d. Enter the number of supplier rejects in the appropriate column.
       Examples: discolored lenses, broken frames from package, contaminated polish.
    e. Enter the number of customer rejects/clinic errors in the appropriate column.
    f. Enter the number of customer rejects/lab errors in the appropriate column.

10. Submit the report to MEDCOM headquarters.

NOTE: Data is compiled from weekly in-house reports and from information maintained by the NCOIC and the Resource Management Office.

NOTE: Laboratory data is maintained live as a working database through out the month. Once the OFL manager submits the data for that month, it is locked in for Optical Fabrication Enterprise Executive Agent personnel to view.

    a. Click on the Select icon located on the upper right of the screen.
    b. Verify production data. If you need to make corrections, do so and click "Save Changes" at the bottom of the screen. Then, click "Continue" to go to the next step.
    c. Verify financial data. If you need to make corrections, do so and click "Save Changes" at the bottom of the screen. Then, click "Continue" to go to the next step.
    d. Verify staff data. If you need to make corrections, do so and click "Save Changes" at the bottom of the screen. Then, click "Continue" to go to the next step.
    e. Verify performance data. If you need to make corrections, do so and click "Save Changes" at the bottom of the screen. Then, click "Continue" to go to the next step.
    f. Once all data has been verified, click the "Submit" icon at the bottom of the screen.

Performance Measures	**GO**	**NO GO**
1. Filled out the Standard Issue Production section.	____	____
2. Filled out the Frame of Choice Production section.	____	____
3. Entered the number of tint jobs per month.	____	____
4. Entered the number of jobs requiring surfacing.	____	____
5. Entered the percentage of jobs shipped within two working days.	____	____
6. Entered the total number of incoming jobs.	____	____
7. Filled out the Financial Metrics section.	____	____
8. Filled out the Staff Metrics section.	____	____
9. Filled out the Performance Metrics section.	____	____
10. Submitted the report to MEDCOM.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	**Related**
AR 40-61	None
AR 40-63	
DFAS-IN REG 37-1	

Subject Area 6: General Administration

INSPECT AN OPTICAL LABORATORY TO ENSURE A SAFE WORKING ENVIRONMENT 081-875-4430

Conditions: The optical laboratory is in operation. There is a written hazard communication program, and a risk management program is ongoing. You will need material safety data sheets (MSDS), initial counselings, and military and civilian safety training documents.

Standards: The optical laboratory is a safe work environment. Laboratory areas, work practices, equipment, and chemicals were inspected for hazards. The hazard communication program meets the standards of 29 CFR 1910.1200. An effective risk management program has eliminated or reduced the hazards to acceptable risk levels.

Performance Steps

1. Inspect work areas.

NOTE: Do not hesitate to request assistance from the local Safety Officer and Environmental Officer.

   a. Ensure emergency shower and eyewash stations are operational and monthly inspections of each are documented.
   b. Ensure walking and working surfaces are not slippery or cluttered.
   c. Ensure exits and passageways are not blocked and clearly marked.

2. Perform initial counselings on all military and civilian employees.
   a. Ensure horse play is not allowed.
   b. Ensure workers use caution when working with or around electricity.
   c. Ensure personal protective equipment such as safety boots, eye protection, hearing protection, gloves, barrier creams, smocks, aprons, and respiratory protection are worn in appropriate areas.
   d. Ensure that sharp edges are guarded, such as the safety beveling of all knife edge lenses.
   e. Ensure that workers do not wear loose clothing or jewelry near machinery.
   f. Ensure that the proper tool is used for the job.
   g. Ensure workers remain alert while working.
   h. Ensure proper lifting techniques are used.
   i. Ensure that lockout and tag out procedures are followed when working with electrical or kinetic energy.
   j. Ensure that no food or drinks are allowed in the laboratory.

3. Inspect equipment.
   a. Ensure engineering controls such as guards or interlock devices are in place, preventing access to moving equipment parts, sharp edges, or electrically "hot" components.
   b. Ensure equipment is electrically grounded.
   c. Ensure fire extinguishers are serviceable and monthly inspections are documented on tags or in the files.

4. Access individual operations to gather data for the risk management program.
   a. Review each step of every individual operation.
   b. List all hazards associated with each step.

Performance Steps

c. Maintain a detailed hazard list for implementation into the risk management program. (See step 7.)

5. Inspect chemicals.
   a. Inventory all chemicals used in the laboratory and insert the inventory list into the MSDS or post it in a location easily accessible to all personnel.
   b. Ensure each chemical container is properly labeled. (See step 6.)
   c. Verify that a material safety data sheet (MSDS) is on hand for each chemical.

NOTE: Manufacturers and importers are now required by Federal law (29 CFR 1910.1200) to provide MSDSs with their products. Copies of MSDSs must be where they can be used by employees during the work shift. This regulation also requires employers to develop a written hazard communication program and provide workers with training and information. (29 CFR 1910.1200 should be available from the local Safety Officer.)

   d. Compile a list of physical, chemical, and medical hazards for each chemical.
   e. Keep a detailed hazard list for the risk management program. (See step 7.)

6. Ensure the Hazard Communication Program is in place.
   a. Verify that an accurate chemical inventory is posted.

NOTE: The chemical inventory should be updated quarterly and can be performed with the quarterly building safety inspection.

   b. Verify that each chemical container is labeled (in English as a minimum), with the identity of the hazardous chemical, the name and address of the manufacturer, importer, or other responsible party, and the appropriate hazard warning (e.g., flammable, caustic, corrosive, etc.).
   c. Verify that the MSDS for each chemical meets the following minimal standards in English:
      (1) Product identity from the label, including chemical and common names of hazardous ingredients.
      (2) Physical and chemical characteristics of ingredients (e.g., vapor pressure and flash point).
      (3) Physical hazards of ingredients (potential for fire, explosion, and reactivity).
      (4) Health hazards associated with ingredients (including signs and symptoms of exposure and any medical conditions generally recognized as being aggravated by exposure to the product).
      (5) Primary routes of entry to the body.
      (6) The permissible exposure limit (PEL), the threshold limit value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the MSDS.
      (7) An indication as to whether the product and/or ingredients are listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or are designated as a potential carcinogen by the Occupational Safety and Health Administration (OSHA) or in the International Agency for Research on Cancer (IARC) (latest editions).
      (8) Any generally applicable precautions for safe handling and use known to persons preparing the MSDS (e.g., appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for cleanup of spills and leaks).
      (9) Any known, generally applicable control measures (e.g., appropriate engineering controls, work practices, or personal protective equipment).
      (10) Emergency and first aid procedures.

Performance Steps

(11) Date of MSDS preparation or last amendment.
(12) Name, address, and telephone number of a responsible party who can provide additional information on the hazardous chemical and on appropriate emergency procedures.

NOTE: If any of the information in 6c(1)-(12) is not present, it can be obtained from the chemical manufacturer.

d. Inspect safety training documentation of military and civilian employees and enforce completeness.
(1) Details of employees training upon initial employment and upon introduction of any new hazards.
(2) Location of chemical inventory and MSDS file.

NOTE: MSDSs for each chemical in the work place must be available to every employee during their work shift.

(3) Physical and health hazards in the work area.
(4) Measures you can use to protect yourself from the hazards, including work practices and personal protective equipment.
(5) Details of the Hazard Communication Program, including complete information on labels and MSDSs.
(6) Methods used to inform employees of hazards of nonroutine tasks.

7. Review the Risk Management Program.
a. Identify hazards to the force. Consider all aspects of current and future situations, environment, and known historical problem areas.
b. Assess hazards to determine risks. Assess the impact of each hazard in terms of potential loss and cost, based on probability and severity.
c. Put controls in place that eliminate the hazards or reduce their risks.
d. Enforce standards and controls. Evaluate the effectiveness of controls and adjust or update them as necessary.
e. All hazards must be communicated to workers via the Hazard Communication Program. (See step 6.)

Performance Measures	**GO**	**NO GO**
1. Inspected work areas.	____	____
2. Inspected work practices.	____	____
3. Inspected equipment.	____	____
4. Inspected tasks.	____	____
5. Inspected chemicals.	____	____
6. Inspected the Hazard Communication Program.	____	____
7. Inspected the Risk Management Program.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References

Required	Related
None	29 CFR 1910.1200 AR 385-10

Skill Level 3

Subject Area 7: Advanced Administration

MAINTAIN OPTICAL LABORATORY CREDIT CARD ACCOUNT
081-875-4434

Conditions: You received a statement of account (SOA). You will need Card Holder's Worksheet, IMPAC Card Purchaser Register, Supply List for Credit Card Purchase Form (local forms), Purchase Request and Commitment form (DA Form 3953), Card Holder's Statement of Questioned Item Form (CSQI), and purchase activity documents (receipts, invoices, packing slips, etc.).

Standards: Reconciled the statement of account (SOA) against the IMPAC Card Purchase Register and forwarded it to the approving official for verification of the billing statement for certification of payment.

Performance Steps

1. Reconcile the statement of account (SOA).
    a. Compare purchases listed on the SOA with local records of expenditures.
    b. Sign the statement of account.

NOTE: For items required to be placed on the property book, add the phrase "property hand receipts have been completed when necessary".

2. Attach receipts, purchase requests, invoices, and any other hard copy documentation (packing/register slips, etc.) to the statement of account.

3. Identify any transaction in dispute.

NOTE: All charges (except fraud) will be paid on the statement of account and then disputed if a dispute becomes necessary.

NOTE: Some examples of fraud are use of the card by someone other than the card holder, unauthorized purchases by the card holder, or unauthorized charges by a merchant.

    a. The card holder must contact the vendor to resolve disputes at the lowest level.
    b. If a dispute is not resolved and credited on the second statement of account, contact the bank immediately and complete a Card Holder's Statement of Questioned Item Form (CSQI).
    c. Track the disputed transaction suspense.

NOTE: Card holders have 60 days from the date of the first listing of the transaction to dispute it with the bank.

4. Maintain copies of signed statements of account.

NOTE: The card holder signs the statement upon reconciliation. The signed copies are maintained in the card holder's files.

5. Forward the statement of account, receipt originals, disputed records, and CSQI to the approving official.

6. Maintain your own files of purchase activity to include:
    a. Supply List for Credit Card Purchases (local forms), Card Holder's Worksheet, IMPAC Card Purchaser Register, DA Form 3953.

Performance Steps

b. Indication that funds are available.

NOTE: The card holder checks the request against funds available in the requester's budget and then the approving official verifies funds availability and signs the request.

c. Price competition or price verification of purchase.

NOTE: Call vendors and get price quotes. If quotes, quality, and service are competitive, use a different vendor each time you place an order.

d. Credit card slips, invoices.
e. Packing slips, delivery tickets.
f. Any disputed records.
g. Property book completion paperwork for items required to be placed on the property book and hand receipted.

NOTE: Records must be secured and maintained for 3 years.

Performance Measures	**GO**	**NO GO**
1. Reconciled the statement of account.	____	____
2. Attached receipts to the statement of account.	____	____
3. Identified any transaction in dispute.	____	____
4. Maintained copies of the signed statement of account.	____	____
5. Forwarded the statement of account to the approving official.	____	____
6. Maintained own files of purchase activity.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References None

Skill Level 4

Subject Area 8: Senior Administration

DEVELOP THE ANNUAL OPTICAL LABORATORY BUDGET REQUIREMENT
081-875-4435

Conditions: You must develop the annual optical laboratory budget for the forthcoming fiscal year (FY). You will need the previous FY Annual Optical Laboratory Metrics Report, and civilian and military pay schedules.

Standards: Developed and submitted future budget requirements based on past practice and known mission support requirements to ensure the annual operating production mission. Budget requirements were submitted to the budget office.

Performance Steps

1. Identify annual optical laboratory expenses.

NOTE: Information for steps 1a-c can be obtained from your resource manager or budget office.

a. Military work force.
b. Civilian work force.
c. Facility maintenance.

NOTE: Information for steps 1d-h can be obtained from records maintained by the optical laboratory NCOIC, supply technician, and the FEDLOG web site (http://www.medlogspt.army.mil) under Optical Programs.

NOTE: The NCOIC of each Optical Lab will receive a USER NAME and PASSWORD, from MEDCOM, to access the FEDLOG web site.

d. Optical equipment maintenance.
e. Optical equipment procurement.
f. Other equipment costs.
g. Optical supply costs.
h. Other supply costs.

NOTE: Information for steps 2 - 6 can be obtained from records maintained by the optical laboratory NCOIC, supply technician, and the FEDLOG web site (http://www.medlogspt.army.mil) under Optical Programs.

2. Acquire previous FY reimbursable funds.
3. Acquire previous FY production costs.
4. Acquire previous FY work force costs.
5. Acquire previous FY optical equipment costs.
6. Acquire previous FY all other costs.
7. Submit forecasted expenditures to your budget office.

Performance Measures	GO	NO GO
1. Identified annual optical laboratory expenses.	____	____
2. Identified previous FY reimbursable funds.	____	____
3. Identified previous FY production costs.	____	____
4. Identified previous FY work force costs.	____	____
5. Identified previous FY optical equipment costs.	____	____
6. Identified previous FY all other costs.	____	____
7. Submitted the forecasted expenditures to the budget office.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any step, show what was done wrong and how to do it correctly. Then reevaluate performance.

References None

APPENDIX A

FIELD EXPEDIENT SQUAD BOOK

FIELD EXPEDIENT SQUAD BOOK

For use of this form, see AR 350-57; the proponent agency is DCSOPS

SHEET 1 OF 3

USER APPLICATION

SOLDIER'S NAME

TASK NUMBER AND SHORT TITLE	STATUS																	
	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO
081-875-4420 Download Optical Prescriptions																		
081-875-4451 Edit an Optical Prescription																		
081-875-4376 Select Finished Stock																		
081-875-4377 Spot Lenses for Fabrication																		
081-875-4398 Block Lenses for Edging																		
081-875-4380 Edge Lenses																		
081-875-4382 Safety Bevel Lenses																		
081-875-4401 Dye Plastic Lenses to A Specified Tint																		
081-875-4386 Assemble Frame Stock																		
081-875-4387 Insert Lenses Into Nonmetallic Frames																		
081-875-4428 Insert Lenses Into Metal Frames																		
081-875-4429 Inspect Completed Spectacles																		
081-875-4397 Prepare Spectacles for Shipment																		

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FIELD EXPEDIENT SQUAD BOOK

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SHEET 2 OF 3

USER APPLICATION

SOLDIER'S NAME

TASK NUMBER AND SHORT TITLE	STATUS																	
	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO
081-875-4399 Prepare a Surface Worksheet																		
081-875-4351 Block Lens Blanks for Surfacing																		
081-875-4402 Cut Lens Surfaces Using a Lens Generator																		
081-875-4403 Fabricate Laps Using a Lens Generator																		
081-875-4404 Fine Grind Lens Surfaces Using an Automatic Surfacer																		
081-875-4405 Polish Lens Surfaces Using an Automatic Surfacer																		
081-875-4364 Deblock Lenses																		
081-875-4389 Perform PMCS on a Lensometer																		
081-875-4410 Perform PMCS on a Fabrication Marker/Blocker																		
081-875-4392 Perform PMCS on an Edger																		
081-875-4414 Perform PMCS on a Dye Bath Unit																		
081-875-4411 Perform PMCS on a Surface Blocker																		
081-875-4412 Perform PMCS on a Lens Generator																		

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FIELD EXPEDIENT SQUAD BOOK

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SHEET 3 OF 3

USER APPLICATION

SOLDIER'S NAME

TASK NUMBER AND SHORT TITLE	STATUS																	
	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO	GO	NO-GO
081-875-4413 Perform PMCS on an Automatic Lens Surfacer																		
081-875-4374 Perform PMCS on a Deblocker																		
081-875-4394 Perform PMCS on a Hand Edger																		
081-875-4431 Maintain an Optical Fabrication Unit Assemblage																		
081-875-4423 Set Up an Optical Fabrication Unit Assemblage																		
081-875-4438 Prepare a Monthly Metrics Report																		
081-875-4430 Inspect an Optical Laboratory to Ensure a Safe Working Environment																		
081-875-4434 Maintain Optical Laboratory Credit Card Account																		
081-875-4435 Develop the Annual Optical Laboratory Budget Requirement																		

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APPENDIX B

Surface Section Computations

1. Compute compensated power.

NOTE: Lap tool curvatures are standardized for a 1.530 index of refraction. Consequently, when surfacing lens materials with a different index of refraction, it is necessary to compensate for this difference to achieve accurate ophthalmic power.

Compensated Power - the true power of the lens when referenced to a 1.530 index of refraction.

$$\text{CP for a CR-39 lens} = \frac{R_x \text{ power (diopters)}}{\text{CR-39 index of refraction -1}} \quad \frac{\text{standard tool index of refraction -1}}{\text{CR-39 index of refraction -1}}$$

$$D \times \frac{(1.530 - 1)}{(1.498 - 1)} = CP$$

$$D \times \frac{(.530)}{(.498)} = CP$$

$$CP = D \times 1.064257$$

Where: D = dioptric power of lens
1.530 = standard index of refraction
1.498 = index of refraction of CR-39 plastic

Example 1: OD: -1.00 SPH PD: 64/61 ADD: +2.00 ST-28

CP = -1.00 X 1.064257 = -1.06

Example 2: OS: +1.50 SPH PD: 65/62 ADD: +2.50 ST-28

CP = +1.50 X 1.064257 = +1.59

Example 3: OD: -1.50 -1.00 X 135 PD: 68/64 ADD: +2.25 FT-35

CP = -1.50 X 1.064257 = -1.59 at axis 135
CP = -2.50 X 1.064257 = -2.66 at axis 45

Example 4: OS: +2.50 -2.00 X 60 1.00 BI PD: 65/62
ADD: +2.00 ST-35

CP = +2.50 X 1.064257 = +2.66 at axis 60
CP = +0.50 X 1.064257 = +0.53 at axis 150

Example 5: OD: -1.50 -1.75 X 35 2.00 BO & 1.50 BU PD: 64/60
ADD: +2.50 ST-28

CP = -1.50 X 1.064257 = -1.59 at axis 35
CP = -3.25 X 1.064257 = -3.45 at axis 125

Example 6: OS: +3.25 -1.25 X 115 1.00 BO & 2.00 BD PD: 70/67
ADD: +2.50 ST-28

CP = +3.25 X 1.064257 = +3.45 at axis 115
CP = +2.00 X 1.064257 = +2.12 at axis 25

Example 7: OD: -1.00 -1.00 X 145 PD: 65/62
ADD: +2.25 TRIFOCAL ST-28

CP = -1.00 X 1.064257 = -1.06 at axis 145
CP = -2.00 X 1.064257 = -2.12 at axis 55

2. Select a lens blank.

a. Select the best nominal base curve (NBC) lens in stock using the base curve selection formula. Select a lens blank that will allow the back curve to be as close as possible to a -6.00 diopter curve.

NBC = Lens Spherical Equivalent + 6.

b. Select the closest stocked lens blank.

3. Determine the actual base curve (ABC) of a lens with the sagometer.

Example 1: ABC = +6.23

Example 2: ABC = +8.11

Example 3: ABC = +4.10

Example 4: ABC = +8.11

Example 5: ABC = +4.10

Example 6: ABC = +8.11

Example 7: ABC = +4.10

4. Calculate on-center blocking prism.

NOTE: Knowledge of the following definitions and formulas is necessary.

On-Center Blocking - the practice of placing the surfacing block at the geometric center of the lens blank and moving the reference point of the lens to the desired location by grinding prism for decentration.

Segment Inset - the horizontal distance between the lens blank geometric center to the center of the multifocal segment.

Patient Inset Per Eye - one half the difference between distant pupillary distance (DPD) and near pupillary distance (NPD).

Segment Drop - the vertical distance between the lens geometric center and the top of the segment.

Major Reference Point - the point on a lens where the prism equals that called for by the prescription.

Optical Center - the point on an ophthalmic lens where there is no prismatic effect.

Compensated Power - the true power of the lens when referenced to a 1.530 index of refraction.

a. Verify that the prescription is in minus cylinder form.

b. Determine the segment inset and drop of the lens blank from manufacturer's literature or by measuring from the geometric center of the lens to the midpoint of the top of the segment.

c. Calculate the patient's inset per eye.

$$\frac{DPD - NPD}{2} = \text{Inset}$$

d. Determine the standard drop for multifocal style IAW local SOP.

(1) Bifocal - 5 mm

(2) Trifocal - 3 mm

e. Calculate the amount of horizontal decentration.

Seg inset - inset per eye = horizontal decentration

f. Calculate the amount of vertical decentration.

Seg drop - standard drop = vertical decentration

NOTE: The following rules apply if the segment drop is greater than the standard drop:

* If the power on the 90 is (+) the prism direction will be base down. OD & OS = 270

* If the power on the 90 is (-) the prism direction will be base up. OD & OS = 90

NOTE: The following rules apply if the segment drop is less than the standard drop:

* If the power on the 90 is (+) the prism direction will be base up. OD & OS = 90

* If the power on the 90 is (-) the prism direction will be base down. OD & OS = 270

g. Calculate the power in the 180th meridian IAW FM 8-37.

h. Calculate the power in the 90th meridian IAW FM 8-37.

i. Calculate the horizontal prism required.

j. Calculate the vertical prism required.

NOTE: The following rules apply if prism is prescribed by the doctor:

* If the prescribed prism is the same direction as the on-center blocking (O.C.B) prism, add the two together and the base direction will remain the same.

* If the prescribed prism is the opposite direction from the O.C.B. prism, find the difference and retain the prism direction of the larger.

* If resultant prism is prescribed, combine the prescribed horizontal prism with the on-center blocking horizontal prism and the prescribed vertical prism with the on-center blocking vertical prism.

k. Compute resultant prism IAW FM 8-37 and the resultant prism chart, Figure B-1, page B-19.

(1) Calculate the resultant prism amount.

NOTE: An alternative method for computing resultant prism amount is:

Resultant prism squared = Horizontal prism squared plus Vertical prism squared

$$c^2 = a^2 + b^2$$

(2) Calculate the resultant prism base direction.

NOTE: The following rules apply for determining prism direction for on-center blocking:

* If the power on the 180 is (+) the prism direction will be base in. OD=000 OS=180

* If the power on the 180 is (-) the prism direction will be base out. OD=180 OS=000

Example 1: OD: -1.00 SPH PD: 64/61
ADD: +2.00 ST-28 Blank seg inset: 6 mm Blank seg drop: 6 mm
Patient inset: 1.5 mm Standard drop: 5 mm

6 - 1.5 = 4.5 mm in 6 - 5 = 1 mm down

Power on 180 = -1.00 Power on 90 = -1.00

Prism (^) = Lens power (D) x decentration in cm

NOTE: For minus lenses, the prism base direction will be the opposite of the decentration direction.

Horizontal ^ = 0.45 BO Vertical ^ = 0.10 BU

0.46 ^ Base 167

Example 2: OS: +1.50 SPH PD: 65/62
ADD: +2.50 ST-28 Blank seg inset: 6 mm Blank seg drop: 6 mm
Patient inset: 1.5 mm Standard drop: 5 mm

6 - 1.5 = 4.5 mm in 6 - 5 = 1 mm down

Power on 180 = +1.50 Power on 90 = +1.50

NOTE: For plus lenses, the prism base direction will be the same as the decentration direction.

Horizontal ^ = 0.67 BI Vertical ^ = 0.15 BD

0.68 ^ Base 202

Example 3: OD: -1.50 -1.00 X 135 PD: 68/64
ADD: +2.25 FT-35 Blank seg inset: 7 mm Blank seg drop: 6 mm
Patient inset: 2 mm Standard drop: 5 mm

7 - 2 = 5 mm in 6 - 5 = 1 mm down

Power on 180 = -2.00 Power on 90 = -2.00

Horizontal ^ = 1.00 BO Vertical ^ = 0.20 BU

1.01 ^ Base 168

Example 4: OS: +2.50 -2.00 X 60 1.00 BI PD: 65/62
ADD: +2.00 ST-35 Blank seg inset: 6 mm Blank seg drop: 6 mm
Patient inset: 1.5 mm Standard drop: 5 mm

6 - 1.5 = 4.5 mm in 6 - 5 = 1 mm down

Power on 180 = +1.00 Power on 90 = +2.00

O.C.B. ^ = 0.45 BI Vertical ^ = 0.20 BD

NOTE: Combine the prescribed prism with the on-center blocking prism. Horizontal prism will only be combined with horizontal prism and vertical prism will only be combined with vertical prism.

Prescribed ^: 1.00 BI (horizontal)
O.C.B. ^ : + 0.45 BI (horizontal)
Horizontal ^ = 1.45 BI Vertical ^ = 0.20 BD

1.46 ^ Base 187

Example 5: OD: -1.50 -1.75 X 35 2.00 BO & 1.50 BU PD: 64/60
ADD: +2.50 ST-28 Blank seg inset: 6 mm Blank seg drop: 6 mm
Patient inset: 2 mm Standard drop: 5 mm

6 - 2 = 4 mm in 6 - 5 = 1 mm down

Power on 180 = -2.07 Power on 90 = -2.67

Horizontal ^ = 0.82 BO Vertical ^ = 0.26 BU

Prescribed prism is 2.00 BO and 1.50 BU.

3.32 ^ Base 148

Example 6: OS: +3.25 -1.25 X 115 1.00 BO & 2.00 BD PD: 70/67
ADD: +2.50 ST-28 Blank seg inset: 7 mm Blank seg drop: 6 mm
Patient inset: 1.5 mm Standard drop: 5 mm

7 - 1.5 = 5.5 mm in 6 - 5 = 1 mm down

Power on 180 = +2.23 Power on 90 = +3.03

Horizontal ^ = 1.22 BI Vertical ^ = 0.30 BD

Prescribed prism is 1.00 BO and 2.00 BD.

2.31 ^ Base 264

Example 7: OD: -1.00 -1.00 X 145 PD: 65/62
ADD: +2.25 TRI ST-28 Blank seg inset: 5 mm Blank seg drop: 2 mm
Patient inset: 1.5 mm Standard drop: 3 mm

5 - 1.5 = 3.5 mm in 2 - 3 = 1 mm

Power on 180 = -1.33 Power on 90 = -1.67

Horizontal ^ = 0.46 BO Vertical ^ = 0.16 BD

0.48 ^ Base 199

4. Calculate lens center thickness.

NOTE: The following formulas and information are necessary for calculating lens thickness.

Chord Diameter - the minimum lens blank size required to ensure a lens will completely cut out according to prescription.

$$CD = ED + (A + DBL - PD)$$

Where ED = effective diameter
A = frame eye size
DBL = distance between lenses (frame bridge size)
PD = pupillary distance

Strap Thickness - the difference, in millimeters, between the center and edge of the lens, truncated at the tenths place.

$$\frac{r^2 \times CP}{1000} = S$$

Where S = Strap Thickness
r = radius of the lens (half the chord diameter)
CP = the dioptric Compensated Power of the lens
1000 = constant in the formula

Base to Apex Thickness Difference

$$BATD = \frac{CD \times Prism}{100\,(n-1)}$$

Where CD = chord diameter
Prism = amount of prism to be computed
n = index of refraction of lens (CR-39)

NOTE: The edge thickness at the most plus meridian (always the sphere meridian) will have an edge thickness of 1.7 mm. Compute the center thickness using the strap formula at the most plus meridian and then adding the result to 1.7 mm edge thickness.

NOTE: The ideal finished center thickness of a minus or plano lens is 2.0 mm.

NOTE: Each diopter of minus power in the prism meridian neutralizes the need for one prism diopter's additional thickness.

a. Compute the compensated power (CP).

b. Compute the chord diameter (CD).

c. Compute the strap thickness.

d. Combine the strap thickness with the center thickness of plus lenses.

e. Compute the base to apex thickness difference.

f. Combine the center thickness of the lens with one half the base to apex prism thickness.

Example 1: OD: -1.00 SPH PD: 64/61

CP = -1.00 X 1.064257 = -1.06

NOTE: Minus lenses have a 2.0 mm center thickness.

NOTE: Minus power at the prism base meridian exceeds prism power, so there will be no prism thickness added.

2.0 mm (center thickness)

Example 2: OS: +1.50 SPH PD: 65/62

CP = +1.50 X 1.064257 = +1.59

ED = 54 mmA = 52 mm
DBL = 20 mm PD = 65 mm

CD = 54 + (52 + 20 - 65) = 61

$$\frac{30.5^2 \text{ X } 1.59}{1000} = 1.5 \text{ mm}$$

1.7 mm (finished edge at 010°) (sphere axis)
+ 1.5 mm (strap for sph meridian)
3.2 mm (center thickness w/o prism)

$$\text{BATD} = \frac{61 \text{ X } 0.68^{\wedge}}{100\ (1.498 - 1)} = 0.8329 \text{ mm}$$

3.2 mm (center thickness w/o prism)
+ 0.4 mm (1/2 BATD)
3.6 mm (center thickness with prism)

Example 3: OD: -1.50 -1.00 X 135 PD: 68/64

CP = -1.50 X 1.064257 = -1.59 at axis 135
CP = -2.50 X 1.064257 = -2.66 at axis 45

NOTE: Minus lenses have a 2.0 mm center thickness.

NOTE: Minus power at the prism base meridian exceeds prism power, so there will be no prism thickness added.

2.0 mm (center thickness)

Example 4: OS: +2.50 -2.00 X 60 1.00 BI PD: 65/62

CP = +2.50 X 1.064257 = +2.66 at axis 60
CP = +0.50 X 1.064257 = +0.53 at axis 150

ED = 54 mm A = 52 mm
DBL = 20 mm PD = 65 mm

CD = 54 + (52 + 20 - 65) = 61

$$\frac{30.5^2 \text{ X } 2.66}{1000} = 2.5 \text{ mm}$$

1.7 mm (finished edge at 060°) (sphere axis)
+ 2.5 mm (strap for sph meridian)
4.2 mm (center thickness w/o prism)

$$\text{BATD} = \frac{61 \text{ X } 1.46\text{^}}{100\ (1.498 - 1)} = 1.7883 \text{ mm}$$

4.2 mm (center thickness w/o prism)
+ 0.9 mm (1/2 BATD)
5.1 mm (center thickness with prism)

Example 5: OD: -1.50 -1.75 X 35 2.00 BO & 1.50 BU PD: 64/60

CP = -1.50 X 1.064257 = -1.59 at axis 35
CP = -3.25 X 1.064257 = -3.45 at axis 125

NOTE: Minus lenses have a 2.0 mm center thickness.

NOTE: Minus power in the prism base direction is one half diopter less than prism power, so thickness is figured for one half diopter of prism.

$$\text{BATD} = \frac{62 \text{ X } 0.50\text{^}}{100\ (1.498 - 1)} = 0.6224 \text{ mm}$$

2.0 mm (center thickness w/o prism)
+ 0.3 mm (1/2 BATD)
2.3 mm (center thickness with prism)

Example 6: OS: +3.25 -1.25 X 115 1.00 BO & 2.00 BD PD: 70/67

CP = +3.25 X 1.064257 = +3.45 at axis 115
CP = +2.00 X 1.064257 = +2.12 at axis 25

ED = 54 mm A = 52 mm
DBL = 20 mmPD = 70 mm

CD = 54 + (52 + 20 - 70) = 56

$$\frac{28^2 \text{ X } 3.45}{1000} = 2.7 \text{ mm}$$

1.7 mm (finished edge at 115°) (sphere axis)
+ 2.7 mm (strap for sph meridian)
4.4 mm (center thickness w/o prism)

$$\text{BATD} = \frac{56 \text{ X } 2.31\text{^}}{100\ (1.498 - 1)} = 2.5975 \text{ mm}$$

4.4 mm (center thickness w/o prism)
+ 1.3 mm (1/2 BATD)
5.7 mm (center thickness with prism)

Example 7: OD: -1.00 -1.00 X 145 PD: 65/62

CP = -1.00 X 1.064257 = -1.06 at axis 145
CP = -2.00 X 1.064257 = -2.12 at axis 55

NOTE: Minus lenses have a 2.0 mm center thickness.

NOTE: Minus power at the prism base meridian exceeds prism power, so there will be no prism thickness added.

2.0 mm (center thickness)

5. Compute back curves.

$$\text{Back Curve} = \text{CP} - \frac{\text{Actual Base Curve (ABC)}}{1 - (\text{ABC (Center Thickness in Meters}/1.53))}$$

Example 1: ABC = +6.23

$$\text{Back Curve} = -1.06 - \frac{6.23}{1 - (6.23\ (.002/1.53))}$$

$$\text{Back Curve} = -1.06 - \frac{6.23}{1 - (6.23\ (.001307189))}$$

$$\text{Back Curve} = -1.06 - \frac{6.23}{1 - 0.008143787}$$

$$\text{Back Curve} = -1.06 - \frac{6.23}{0.991856213}$$

Back Curve = -1.06 - 6.281152366 = -7.34

Tool = 7.37

NOTE: If curve is in the middle between standard curves, round curves on minus power lenses up, round curves on plus power lenses down.

Example 2: ABC = +8.11

$$\text{Back Curve} = +1.59 - \frac{8.11}{1 - (8.11\ (.0036/1.53))}$$

Back Curve = -6.67

Tool = 6.62

Example 3: ABC = +4.10

$$\text{Back Curve} = -1.59 - \frac{4.10}{1 - (4.10\ (.002/1.53))}$$

Back Curve = -5.71 (Sphere Curve)

$$\text{Back Curve} = -2.66 - \frac{4.10}{1 - (4.10\ (.002/1.53))}$$

Back Curve = -6.78 (Cyl Curve)

Tool = 5.75 / 6.75

Example 4: ABC = +8.11

$$\text{Back Curve} = +2.66 - \frac{8.11}{1 - (8.11\ (.0051/1.53))}$$

Back Curve = -5.67 (Sphere Curve)

$$\text{Back Curve} = +0.53 - \frac{8.11}{1 - (8.11\ (.0051/1.53))}$$

Back Curve = -7.80 (Cyl Curve)

Tool = 5.62 / 7.75

Example 5: ABC = +4.10

$$\text{Back Curve} = -1.59 - \frac{4.10}{1 - (4.10\ (.0023/1.53))}$$

Back Curve = -5.71 (Sphere Curve)

$$\text{Back Curve} = -3.45 - \frac{4.10}{1 - (4.10\ (.0023/1.53))}$$

Back Curve = -7.57 (Cyl Curve)

Tool = 5.75 / 7.62

Example 6: ABC = +8.11

$$\text{Back Curve} = +3.45 - \frac{8.11}{1 - (8.11\ (.0057/1.53))}$$

Back Curve = -4.91 (Sphere Curve)

$$\text{Back Curve} = +2.12 - \frac{8.11}{1 - (8.11\ (.0057/1.53))}$$

Back Curve = -6.24 (Cyl Curve)

Tool = 4.87 / 6.25

Example 7: ABC = +4.10

$$\text{Back Curve} = -1.06 - \frac{4.10}{1 - (4.10\ (.002/1.53))}$$

Back Curve = -5.18 (Sphere Curve)

$$\text{Back Curve} = -2.12 - \frac{4.10}{1 - (4.10\ (.002/1.53))}$$

Back Curve = -6.24 (Cyl Curve)

Tool = 5.25 / 6.25

Field Expedient Surface Curve Computation

1. Compute compensated sphere power without thickness or prism by multiplying the lens prescription by 1.064.

Example 6: OS: +3.25 -1.25 X 115

3.25	-1.25
X 1.064	X 1.064
1300	500
1950	750
000	000
325	125
3.45800	-1.33000

NOTE: The compensated sphere power = +3.45; the compensated cylinder = -1.33.

2. Subtract compensated sphere power from lens blank actual base curve to compute concave sphere curve without thickness change.

Example 1: Lens ABC +6.23 - (-1.06) = 7.29

Example 2: Lens ABC +8.11 - (+1.59) = 6.52

Example 3: Lens ABC +4.10 - (-1.59) = 5.69

Example 4: Lens ABC +8.11 - (+2.66) = 5.45

Example 5: Lens ABC +4.10 - (-1.59) = 5.69

Example 6: Lens ABC +8.11 - (+3.45) = 4.66

Example 7: Lens ABC +4.10 - (-1.06) = 5.16

3. Compute center thickness IAW previous section, step 4, page B-7.

Example 1: 2.0 mm

Example 2: 3.6 mm

Example 3: 2.0 mm

Example 4: 5.1 mm

Example 5: 2.3 mm

Example 6: 5.7 mm

Example 7: 2.0 mm

4. Compute the power change for center thickness from "Change in Concave Surface Power for Center Thickness" chart, Figure B-2, page B-20.

a. Find the base curve of the lens blank on the left side of the chart.

b. Find the center thickness on top of the chart.

c. Find the intersection of the lens base curve and center thickness. This is the power change for thickness.

5. Add the thickness power change to the concave sphere meridian curve without thickness, from step 2.

6. Round to the nearest .12 diopter. This gives the tool sphere curve.

NOTE: If the curve is in the middle between standard tool curves, round curves on minus power lenses up and round curves on plus power lenses down.

Example 1:	7.29 + 0.05 = 7.34	7.37
Example 2:	6.52 + 0.17 = 6.69	6.62
Example 3:	5.69 + 0.02 = 5.71	5.75
Example 4:	5.45 + 0.23 = 5.68	5.62
Example 5:	5.69 + 0.02 = 5.71	5.75
Example 6:	4.66 + 0.26 = 4.92	4.87
Example 7:	5.16 + 0.02 = 5.18	5.25

7. Compute compensated power of minus cylinder without thickness or prism.

NOTE: Do not use total power in cylinder meridian for this step.

8. Combine the compensated cylinder power with the unrounded concave sphere curve to find the concave cross curve. Round to the nearest .12 diopter for the tool cross curve .

NOTE: If the curve is in the middle between standard curves, round curves on minus power lenses up and round curves on plus power lenses down.

Example 1:	No Cylinder	
Example 2:	No Cylinder	
Example 3:	1.06 + 5.71 = 6.77	6.75
Example 4:	2.12 + 5.68 = 7.80	7.75
Example 5:	1.86 + 5.71 = 7.57	7.62

Example 6: 1.33 + 4.92 = 6.25 6.25

Example 7: 1.06 + 5.18 = 6.24 6.25

NOTE: Lens graphs for the seven examples:

Actual Lens Base Curve
Tool curve or curves

Example 1: + 6.23
- 7.37

Example 2: + 8.11
- 6.62

Example 3: + 4.10
- 5.75 - 6.75

Example 4: + 8.11
- 5.62 - 7.75

Example 5: + 4.10
- 5.75 - 7.62

Example 6: + 8.11
- 4.87 - 6.25

Example 7: + 4.10
- 5.25 - 6.25

Example 8: RX: OD: +3.00 -0.25 X 90 OS: +2.75 Sphere
Pupillary Distance: 66/63, Frame: S-9, 52/20 ED: 56 mm
ADD: +2.50 FT-25, Total Decentration: 4.5 mm.

Compute the compensated sphere power without thickness or prism by multiplying the lens sphere meridian prescription by 1.064.

OD: Compensated Sphere Power = +3.00 x 1.064 = +3.19

OS: Compensated Sphere Power = +2.75 x 1.064 = +2.92

Subtract the compensated sphere power from the lens blank actual base curve to compute the concave sphere curve without thickness change.

Actual Base Curve of lens blank = +8.72 for both eyes.

OD:	+ 8.72	OS:	+ 8.72
	- + 3.19		- + 2.92
	+ 5.53		+ 5.80

Compute the center thickness IAW previous section, step 4, page B-7.

	Blank seg inset = 6	Blank seg drop = 7
	Patient inset per eye = 1.5	Standard drop = 5
	6 - 1.5 = 4.5 mm in	7 - 5 = 1 mm dn
OD:	Power on the 180th = +3.00	Power on the 90th = +2.75
	Prism = 3.19 x .45 = 1.4 in	Prism = 2.92 x .1 = .6 dn

NOTE: The resultant prism graph shows the prism to be 1.53 at base direction 203, also called 23 down, depending on local procedures.

OS:	Power on the 180th = +2.75	Power on the 90th = +2.75
	Prism = 2.92 x .45 = 1.3 in	Prism = 2.92 x .1 = .6 dn

NOTE: The resultant prism graph shows the prism to be 1.43 at base direction 335, also called 155 down, depending on local procedures.

Cord Diameter = 56 + (52 + 20 - 66) = 62

BATD OD: $\frac{62 \times 1.53}{49.8} = 1.9$

BATD OS: $\frac{62 \times 1.43}{49.8} = 1.7$

Strap OD: $\frac{31^2 \times 3.19}{1000} = 3.0$

Strap OS: $\frac{31^2 \times 2.92}{1000} = 2.8$

Strap thickness + edge thickness + one half BATD = center thickness

OD: 3.0 + 1.7 + 1.0 = 5.7 mm

OS: 2.8 + 1.7 + 0.9 = 5.4 mm

Compute the power change for center thickness from Figure B-2, page B-20

OD: 0.26

OS: 0.25

Combine powers and round to nearest tool curve.

OD:	+ 5.53	OS: + 5.80
	+ 0.26	+ 0.25
	+ 5.79	+ 6.05

OD sphere tool curve = 5.75 OS sphere tool curve = 6.00

Compensated power of cylinder OD = 0.26 OS = 0.00

Tool curves for this job are:

OD: 5.75 / 6.00 OS: 6.00 sphere

Right Eye = OUT

Left Eye = IN

Right Eye = IN

Left Eye = OUT

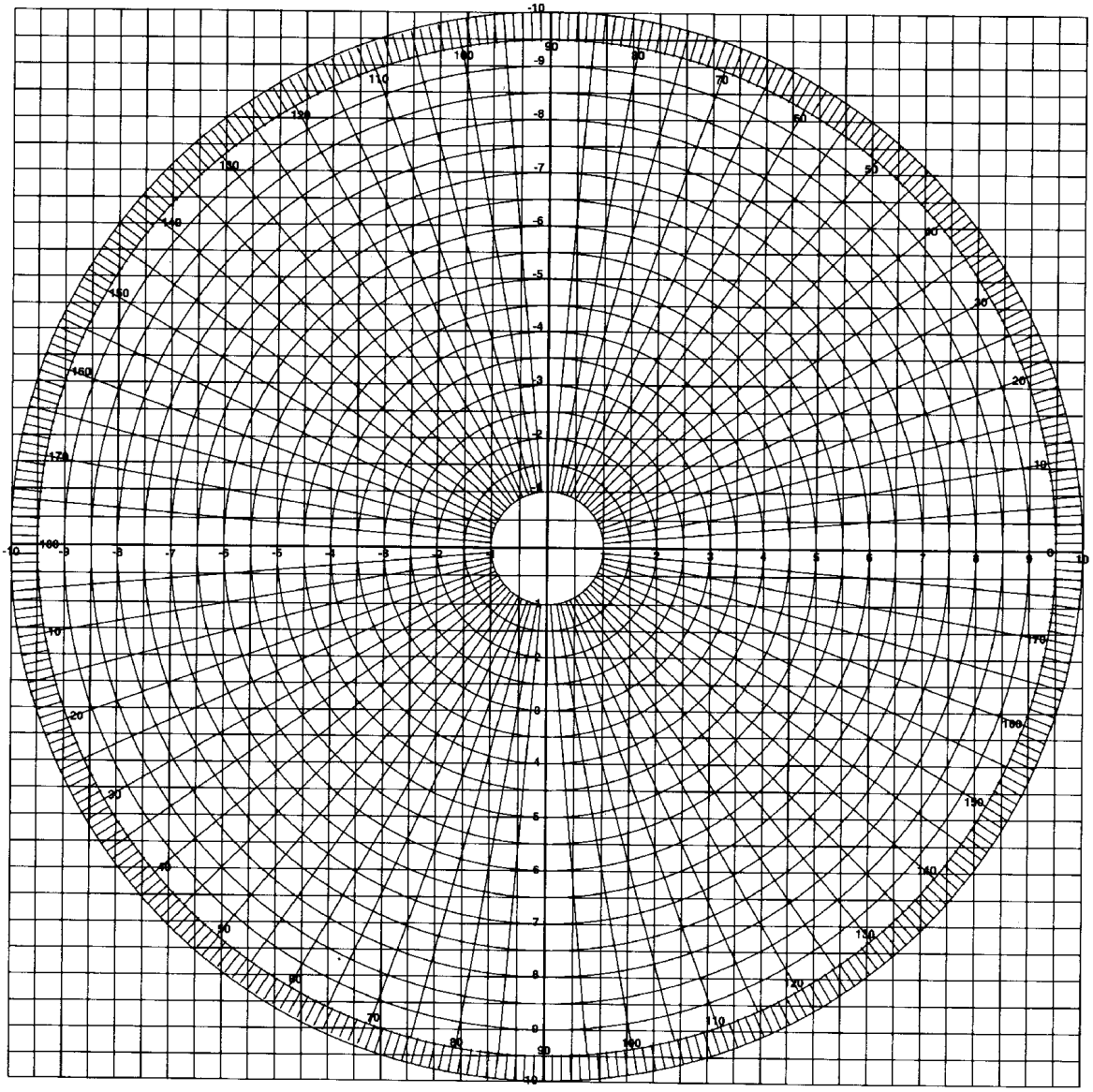


Figure B-1

Change in Concave Surface Power for Center Thickness

CENTER THICKNESS

BASE CURVE	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
4.25	.00	.00	.00	.00	.01	0.1	0.1	.01	0.1	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10
6.25	.00	.01	.01	.01	.01	.02	.02	.02	.02	.03	.05	.08	10	.03	.05	.18	.20	.23	.25
7.25	.00	.01	.01	.01	.02	.02	.03	.03	.03	.04	.07	.11	.14	.18	.21	.25	.28	.32	.35
8.25	.00	.01	.01	.02	.02	.03	.03	.04	.04	.05	.09	.14	.18	.23	.27	.32	.36	.41	.45
10.25	.01	.02	.02	.03	.04	.05	.05	.06	.07	.08	.15	.23	.30	.38	.45	.53	.60	.68	.75
12.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
13.00	.01	.02	.04	.05	.06	.07	.08	.10	.11	.12	.24	.36	.48	.60	.72	.84	.96	1.08	1.20
14.00	.01	.03	.04	.06	.07	.08	.10	.11	.13	.14	.28	.42	.56	.70	.84	.98	1.12	1.26	1.40
15.00	.02	.03	.05	.07	.08	.10	.12	.14	.15	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.53	1.70
16.00	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.40	.60	.80	1.00	1.20	1.40	1.60	1.80	2.00

Figure B-2

GLOSSARY

ACCP
The Army Correspondence Course Program

amp
ampere

ANSI
American National Standards Institute

Army Training and Evaluation Program (ARTEP).
The Army's collective training program that establishes unit training objectives critical to unit survival and performance in combat. They combine the training and the evaluation process into one integrated function. The ARTEP is a training program and not a test. The sole purpose of external evaluation under this program is to diagnose unit requirements for future training.

Battle focus
A process to guide the planning, execution, and assessment of the organization's training program to ensure they train as they are going to fight.

CBRNE
chemical, biological, radiological, nuclear, and high-yield explosive

CD-ROM
compact disk-read only memory

Collective training.
Training, either in institutions or units, that prepares cohesive teams and units to accomplish their combined arms and service missions on the battlefield.

Common task.
A critical task that is performed by every soldier in a specific skill level regardless of MOS.

CPU
central processing unit

Cross training.
The systematic training of a soldier on tasks related to another duty position within the same military occupational specialty or tasks related to a secondary military occupational specialty at the same skill level.

CSQI
card holder's statement of questioned item

D
diopter

DOD
Department of Defense

EAC
echelons above corps

ED
effective diameter

F
Fahrenheit

FOC
frame of choice

Hz
hertz (cycles per second)

IARC
International Agency for Research on Cancer

IAW
in accordance with

Individual training.
Training which prepares the soldier to perform specified duties or tasks related to the assigned duty position or subsequent duty positions and skill levels.

Integration training.
The completion of initial entry training in skill level 1 tasks for an individual newly arrived in a unit, but limited specifically to tasks associated with the mission, organization, and equipment of the unit to which the individual is assigned. It may be conducted by the unit using training materials supplied by the school, by troop schools, or by inservice or contract mobile training teams. In all cases, this training is supported by the school proponent.

kw
kilowatt(s)

MEDCOM
medical command

Merger training.
Training that prepares noncommissioned officers to supervise one or more different military occupational specialties at lower skill levels when they advance to a higher level in their career management field.

METL
mission essential task list

Mission essential task list.
A compilation of collective mission essential tasks which must be successfully performed if an organization is to accomplish its wartime mission(s).

ml
milliliter

MLBS
minimum lens blank size

mm
millimeter

MOPP
mission-oriented protective posture

MOS
military occupational specialty

MOSC
military occupational specialty code

MSDS
material safety data sheet

NBC
nuclear, biological, and chemical

NCO
noncommissioned officer

NOSTRA
Naval Ophthalmic Support and Training Activity

NTP
National Toxicology Program

OD
oculus dexter (right lens or eye)

OS
ocular sinister (left lens or eye)

OSHA
Occupational Safety and Health Administration

PD
pupillary distance

PEL
permissible exposure limit

PMCS
preventive maintenance checks and services

psi
pounds per square inch

RAM
random-access memory

Self-development.
Self-development is a planned, progressive, and sequential program followed by leaders to enhance and sustain their military competencies. Self-development consists of individual study, research, professional reading, practice, and self-assessment.

SL
squad leader; skill level

SM
soldier's manuals

SMCT
soldier's manual of common tasks

SOA
statement of account

SOP
standing operating procedures

SRTS
spectacle request transmittal system

Sustainment training.
The provision of training to maintain the minimum acceptable level of proficiency required to accomplish a critical task.

TG
trainer's guide

TLV
threshold limit value

Train-up.
The process of increasing the skills and knowledge of an individual to a higher skill level in the appropriate MOS. It may involve certification.

Unit training.
Training (individual, collective, and joint or combined) conducted in a unit.

UV
ultraviolet

REFERENCES

New reference material is being published all the time. Present references, as listed below may become obsolete. To keep up-to-date, see DA Pam 25-30. Many of these publications and forms are available in electronic format from the sites listed below:

U.S. Army Publishing Agency
Administrative Departmental Publications and Forms
(ARs, Cirs, Pams, OFs, SFs, DD & DA Forms)
General Dennis J. Reimer Training and Doctrine Digital Library (RDL)
Army Doctrinal and Training Publications
(FMs, PBs, TCs, STPs)

Required Publications

Required publications are sources that are listed in task conditions statements and are required for the soldier to perform the task.

Army Regulations

AR 40-61	Medical Logistics Policies and Procedures 25 January 1995
AR 40-63	Ophthalmic Services 1 January 1986

Department of Army Forms

DA FORM 3953	Purchase Request and Commitment 1 March 1991

Other Product Types

ANSI Z80 STANDARDS	American National Standard Institute Z80 Standards
DD FORM 771	Eyewear Prescription
DEBLOCKER MANUAL	Operator's Manual for the Deblocker
DFAS-IN REG 37-1	Finance and Accounting Policy Implementation (Available only at http://www.asafm.army.mil) 1 January 2000
LENS EDGER MANUAL	Operator's Manual for the Lens Edger
LENS GENERATOR MANUAL	Operator's Manual for the Lens Generator
LENS SURFACER MANUAL	Operator's Manual for the Automatic Lens Surfacer
LENSOMETER MANUAL	Operator's Manual for the Lensometer
MARKER/BLOCKER MANUAL	Operator's Manual for the Fabrication Marker/Blocker
SURFACE BLOCKER MANUAL	Operator's Manual for the Surface Blocker

Related Publications

Related publications are sources of additional information. They are not required in order to perform the tasks in this manual.

Army Regulations

AR 385-10	The Army Safety Program 23 May 1988

Department of Army Forms

DA FORM 2028	Recommended Changes to Publications and Blank Forms
DA FORM 5164-R	Hands-On Evaluation
DA FORM 5165-R	Field Expedient Squad Book

Department of Army Pamphlets

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms 1 July 2002
DA PAM 350-59	Army Correspondence Course Program Catalog 26 October 2001

Field Manuals

FM 25-100	Training the Force 15 November 1988
FM 25-101	Battle Focused Training 30 September 1990
FM 8-11-2	System for Ophthalmic Dispensing 15 November 1983
FM 8-37	Optical Laboratory Specialist 30 August 1976

Other Product Types

29 CFR 1910.1200	Hazard Communication
SRTS END USER GUIDE	End User's Guide for the Spectacle Request Transmittal System

Soldier Training Publications

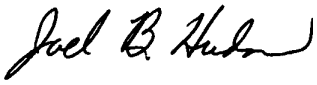
STP 21-1-SMCT	Soldier's Manual of Common Tasks Skill Level 1 1 October 2001
STP 21-24-SMCT	Soldier's Manual of Common Tasks (SMCT) Skill Levels 2-4 1 October 2001

STP 8-91H14-SM-TG
11 OCTOBER 2002

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



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