



# UTC TRAINING

This Brief is Classified UNCLASSIFIED//FOR OFFICIAL USE ONLY



# Universal Thermal Clip-on (UTC)

C4ISR - SPAWAR - AUSGAR

- Enabling Learning Objectives
- Terminal Learning Objectives
- What is the UTC
- How to use the UTC
- How to employ the UTC
- Care and cleaning of the UTC





# Universal Thermal Clip-on

C4ISR - SPAWAR - AUSGAR

## Enabling Learning Objectives:

Upon completion of this period of instruction the Warfighter will be familiar with the following:

- A. Specifications
- B. Basic functions
- C. Manipulation of the Menu Options
- D. Maintenance, Care and Cleaning

## Terminal Learning Objective:

Upon completion of this period of instruction, you the Warfighter will have a better understanding on how to operate UTC optic.





# UTC Specifications

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## Size

*Weight* 12.8 oz (0.8lbs)

*Dimensions* 5.1"L x 2.1"H x 3.2"W

## Imaging Sensor

*Format* 640 x 480 Focal Plane Array  
Un-cooled Micro-bolometer

*Range (Max Eff.)* 500-700m

*Refresh Rate* 60 Hz

*Spectral Response* 8–12  $\mu$ m Micron LWIR

*ZOOM* 1x True Unity Display / 0.5x & 2x Digital

*Minimum Focus Range* 18"

*Still Photo and Video Output Capable*

*Startup* <4 seconds

## Eyepiece

*Display* 640 x 480 Display, 307,200 pixels

*Diopter* -4 to +2

*Eye Relief* 1" (up to 8" standoff weapons mounted)

## Power usage

*Disposable Battery* 1 x CR123A / 2.5 Hours

2 x CR123A / 5.5 Hours

## External connections

*Helmet Mount, Weapons Mount*

*Still and Video Connection* RS-170 NTSC to USB

*Tripod* 1/4-20 thread mount



## Environmentals

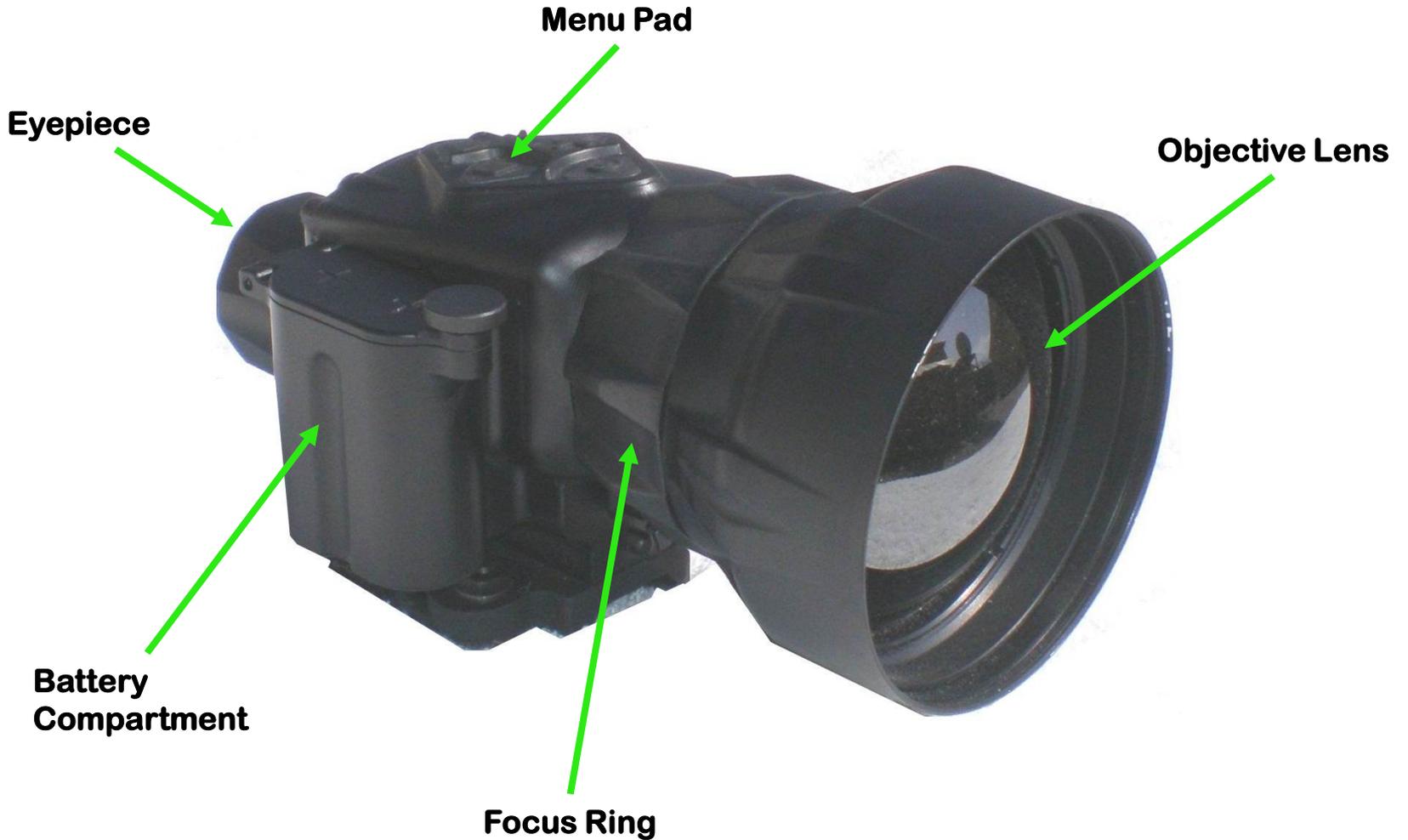
*Temperature Range* Operating -38°F to 140°F

*Waterproof* 66" (Total Immersion, 30 mins)



# UTC Nomenclature (Left/Front)

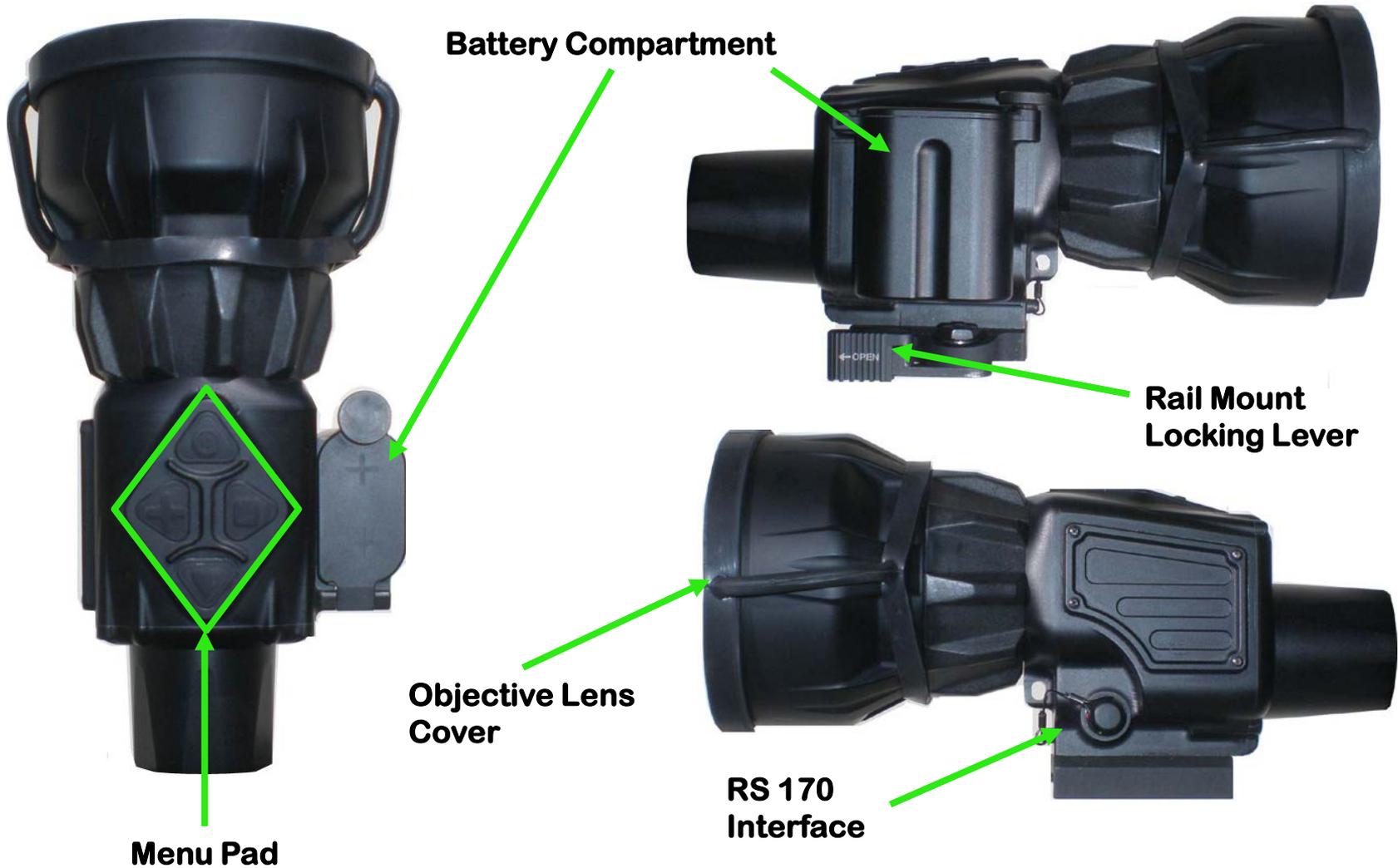
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# UTC Nomenclature (Cont'd)

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# UTC Battery Change

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## **To OPEN:**

Unscrew the battery door thumbscrew counter-clockwise and rotate the battery cover towards the rear of the UTC. Place 2x CR-123A batteries with the positive end (+) towards the top of the battery box.

## **To CLOSE:**

Rotate the battery cover towards the front of the UTC and screw the thumbscrew clockwise until hand tight.





# Powering on the UTC

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To power on the UTM, depress both the top and bottom buttons at the same time for approximately 4 seconds.



UTC MENU PAD





# UTC View Screen

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NORTH-SEEKING ARROW

IR OR VISIBLE LASER ON / OFF

HEADING  
PITCH  
ROLL

H 360.0 ↑  
P -10.0  
R 0.0

IRLO



BATTERY  
LIFE



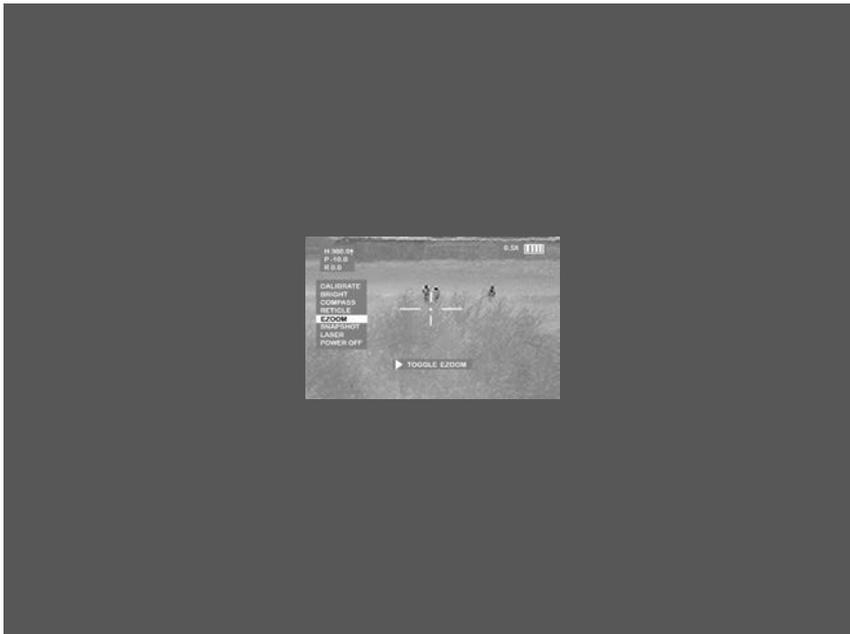
RETICLE





# UTC View Screen (Cont'd)

C4ISR - SPAWAR - AUSGAR



- WHEN THE UTC DISPLAY IS VIEWED WITHOUT BEING IN-LINE WITH A MAGNIFYING OPTIC (SUCH AS AN ACOG OR A POWERED SCOPE), THE DISPLAY WILL APPEAR FAR AWAY AND SMALL IN SIZE.



- THIS ALLOWS THE USER TO MAKE USE OF THE FULL FIELD OF VIEW WHEN PLACED IN FRONT OF A POWERED SCOPE. AS THE DISPLAY IS MAGNIFIED BY THE OPTICS THEMSELVES.



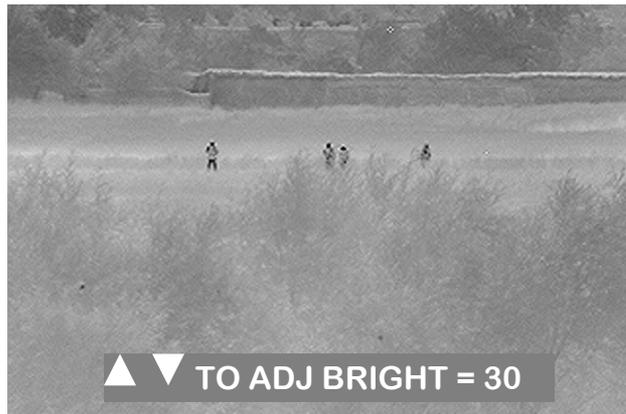


# UTC Brightness & Gain Settings

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**BRIGHTNESS**  
**PRESS REAR**  
**ARROW KEY ONCE**  
**TO BRING UP**  
**BRIGHTNESS**  
**CONTROL. - PUSH**  
**FRONT ARROW KEY**  
**TO CHANGE**  
**VALUES**



• **BRIGHTNESS VALUES RANGE FROM 1 TO 32**



**GAIN**  
**PRESS FRONT**  
**ARROW KEY ONCE**  
**TO BRING UP GAIN**  
**CONTROL. - PUSH**  
**REAR ARROW KEY**  
**TO CHANGE**  
**VALUES**



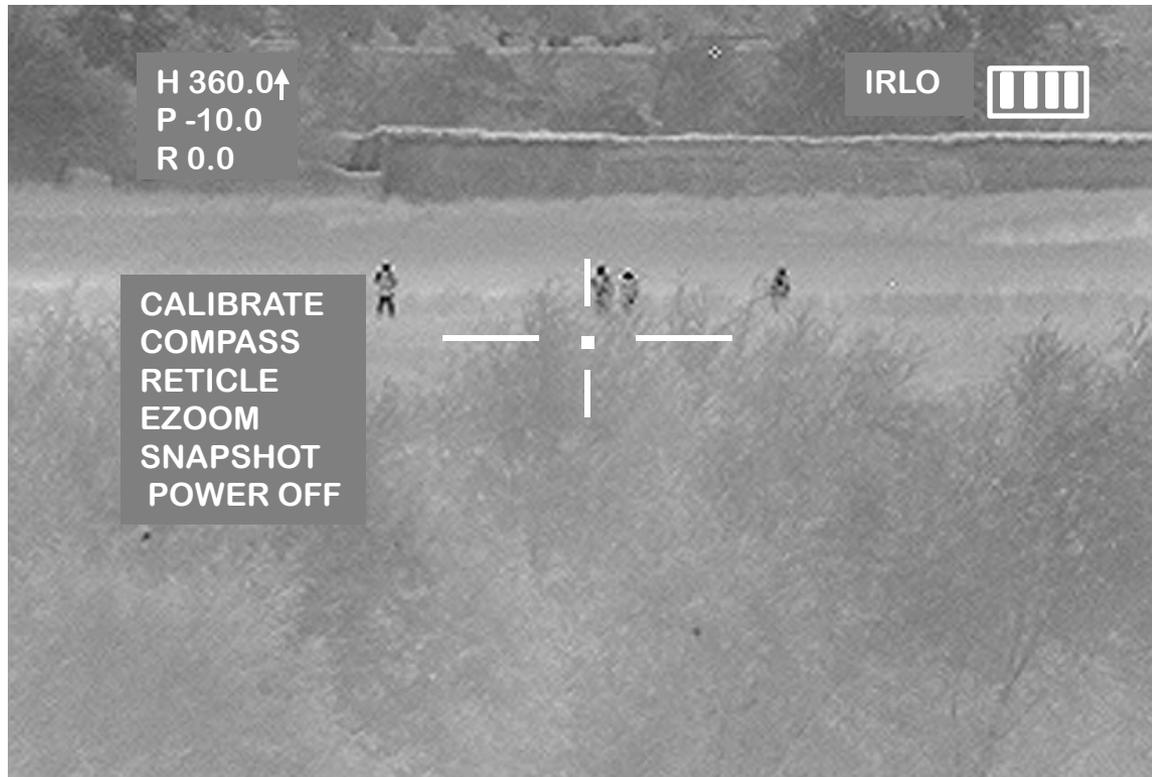
• **GAIN VALUES RANGE FROM 1 TO 10, AND "AGC" (AUTOMATIC GAIN CONTROL)**





# UTC View Screen Menu

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- WHEN THE RIGHT BUTTON IS PUSHED, THE UTC VIEW SCREEN MENU WILL APPEAR ON THE LEFT SIDE OF THE VIEW SCREEN.
- THE BATTERY LIFE INDICATOR WILL APPEAR IN THE UPPER RIGHT HAND CORNER OF THE VIEW SCREEN ONLY WHEN THE MENU FUNCTION IS IN USE.



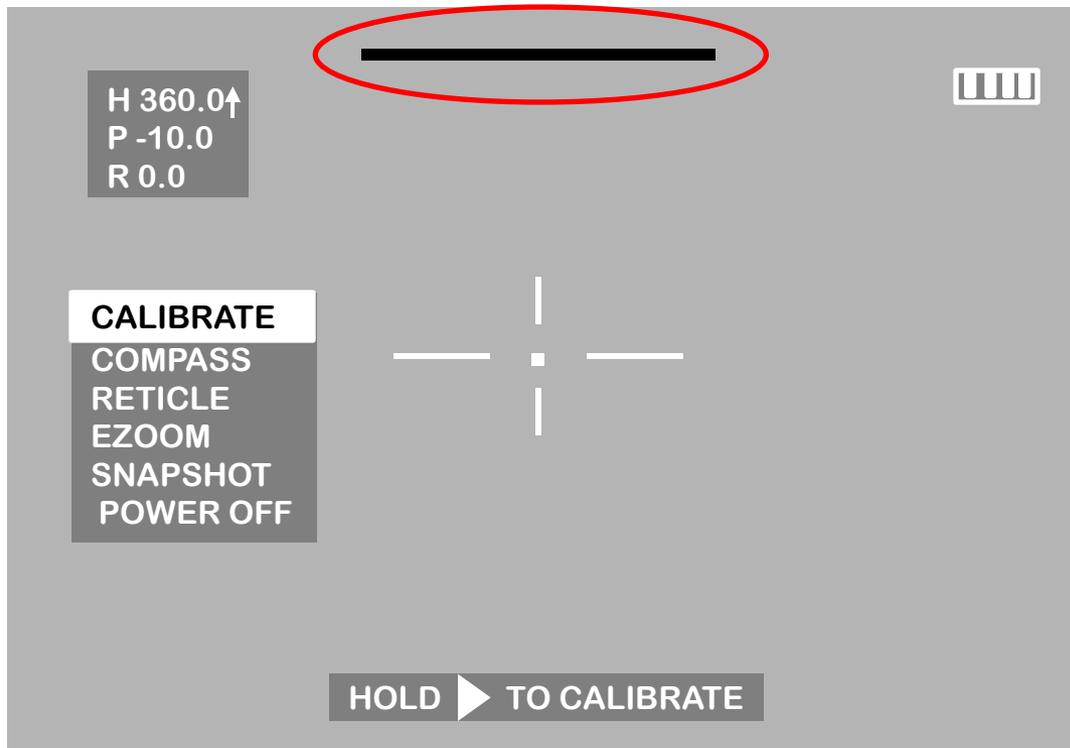
**PUSH ONCE TO ACTIVATE  
THE UTC MENU FUNCTION**





# UTC IR Sensor Calibration

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**NOTE:**

**ALWAYS COVER THE LENS WITH THE LENS CAP OR WITH AN OPAQUE SURFACE WHEN CALIBRATING**

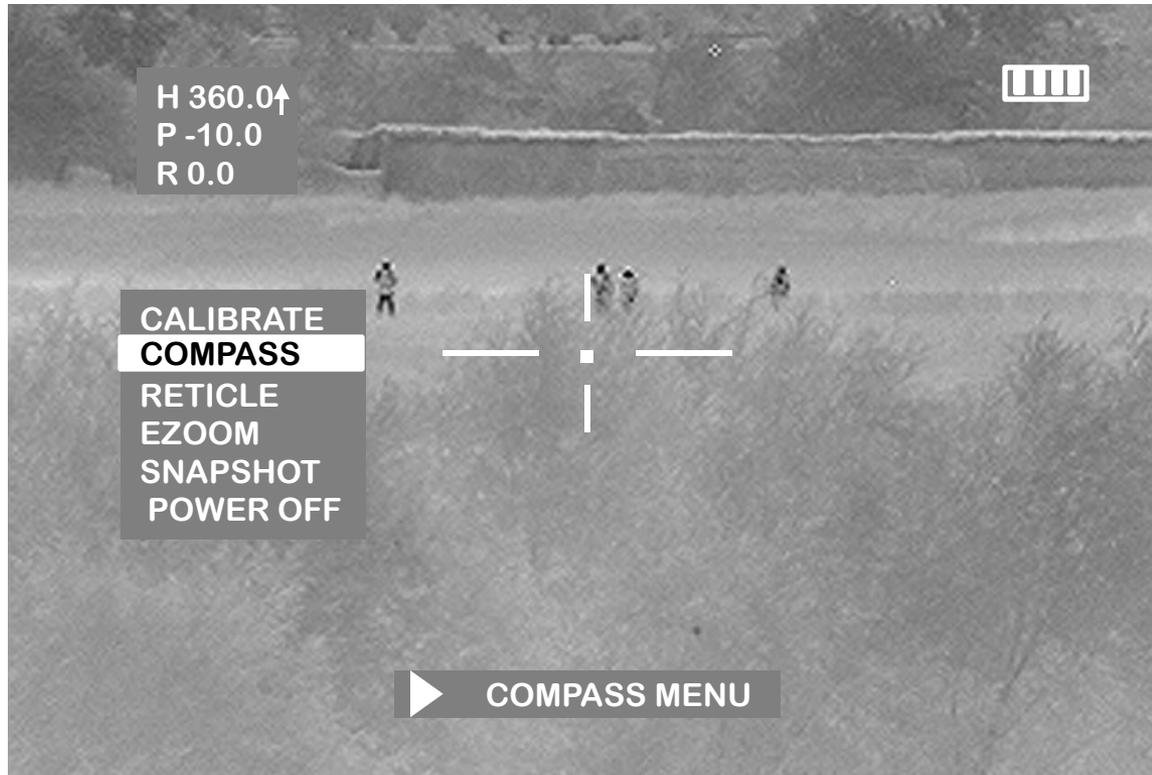
- ENSURE THAT THE LENS CAP IS ON BEFORE CALIBRATION
- PUSH THE RIGHT ARROW KEY ONE TIME AND HIGHLIGHT "CALIBRATE".
- PUSH AND HOLD THE RIGHT ARROW KEY TO CALIBRATE THE UTC.
- A BLACK LINE WILL APPEAR AT THE TOP OF THE UTC VIEWSCREEN MOVING FROM LEFT TO RIGHT.





# UTC Compass and Calibration

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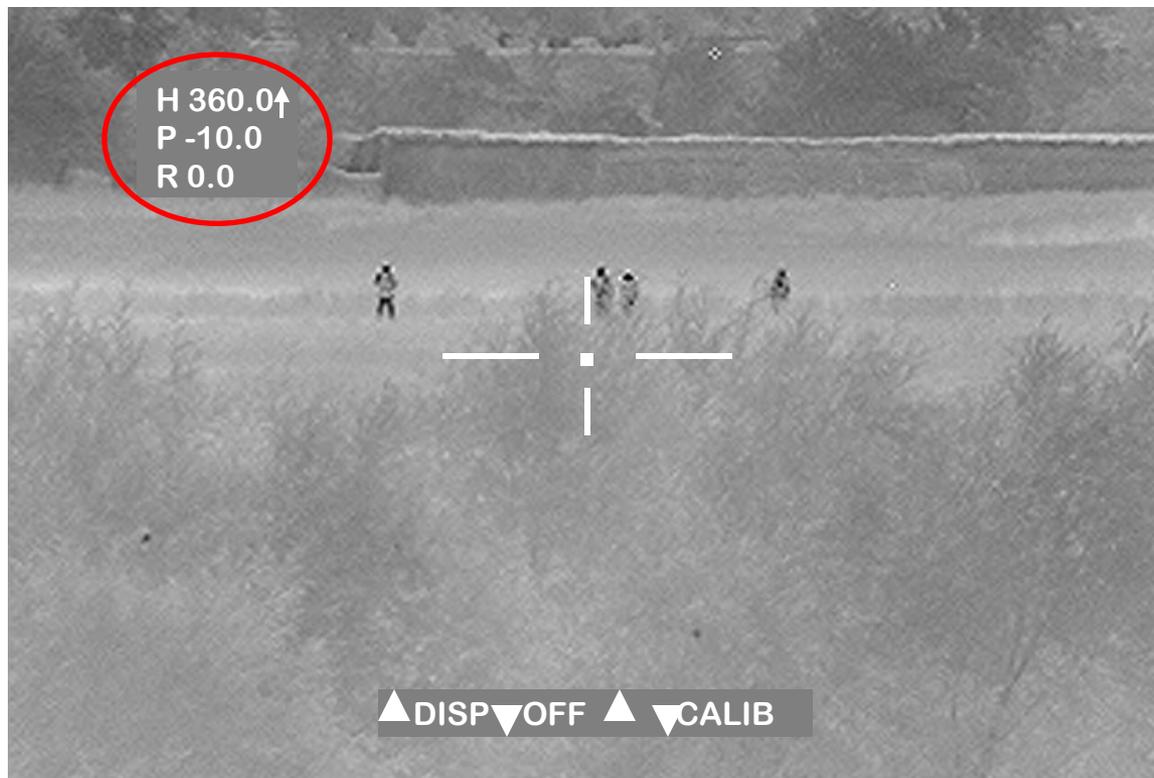
- PUSH THE RIGHT ARROW KEY ONE TIME TO BRING UP THE MENU FUNCTION.
- PUSH THE DOWN ARROW AND HIGHLIGHT "COMPASS".
- PUSH AND HOLD THE RIGHT ARROW TO BRING UP THE "COMPASS MENU".





# UTC Compass and Calibration (cont.)

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▲ DISP ▼ OFF ▲ ▼ CALIB

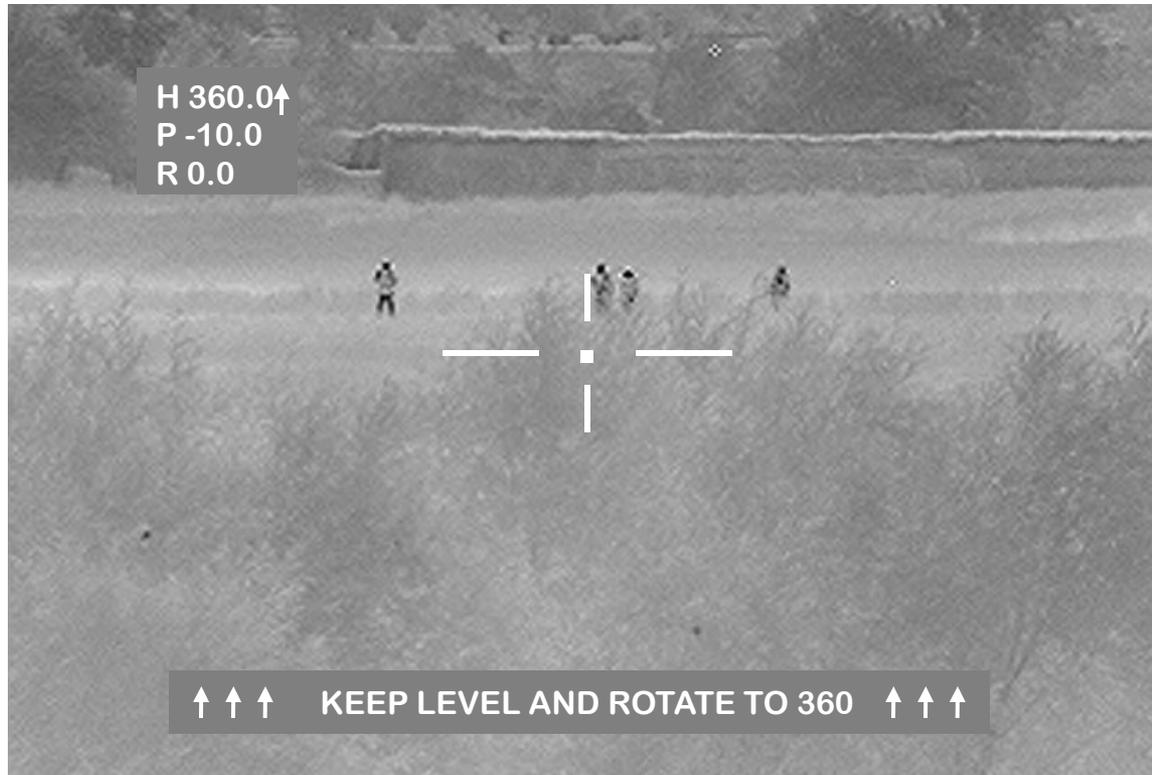
- PUSH THE UP ARROW TO CYCLE THROUGH THE HEADING, PITCH, AND ROLL; KEEPING HEADING ONLY OR ALL THREE ON THE VIEW SCREEN.
- PUSH THE DOWN ARROW TO TURN OFF THE HEADING, PITCH, AND ROLL.





# UTC Compass Calibration

C4ISR - SPAWAR - AUSGAR



▲ DISP ▼ OFF ▲ ▼ CALIB

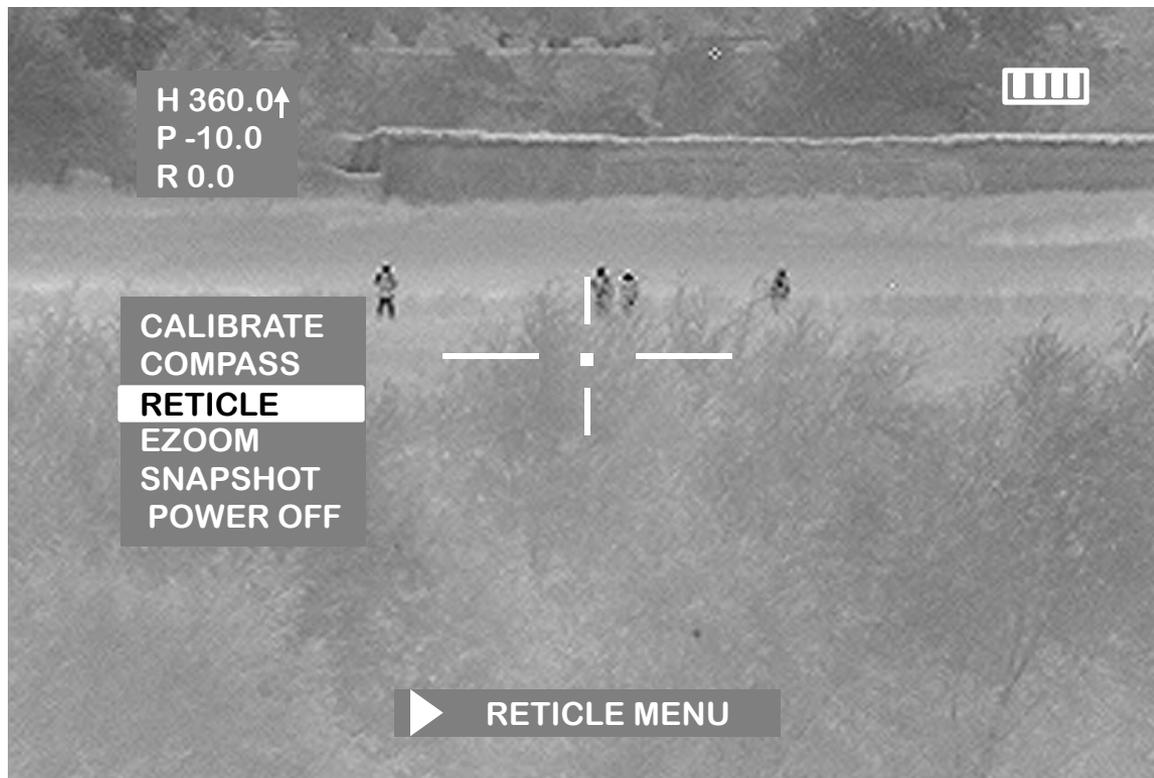


- PUSH THE UP AND DOWN ARROW KEYS AT THE SAME TIME.
- HOLD THE UTC LEVEL AND ROTATE 360 DEGREES.
- THE 6 ARROWS WILL ROTATE GIVING A VISUAL CUE.



# UTC Reticle Menu

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- PUSH THE RIGHT ARROW KEY ONE TIME TO BRING UP THE MENU FUNCTION.
- PUSH THE DOWN ARROW AND HIGHLIGHT "RETICLE".
- PUSH AND RIGHT ARROW TO BRING UP THE "RETICLE MENU".

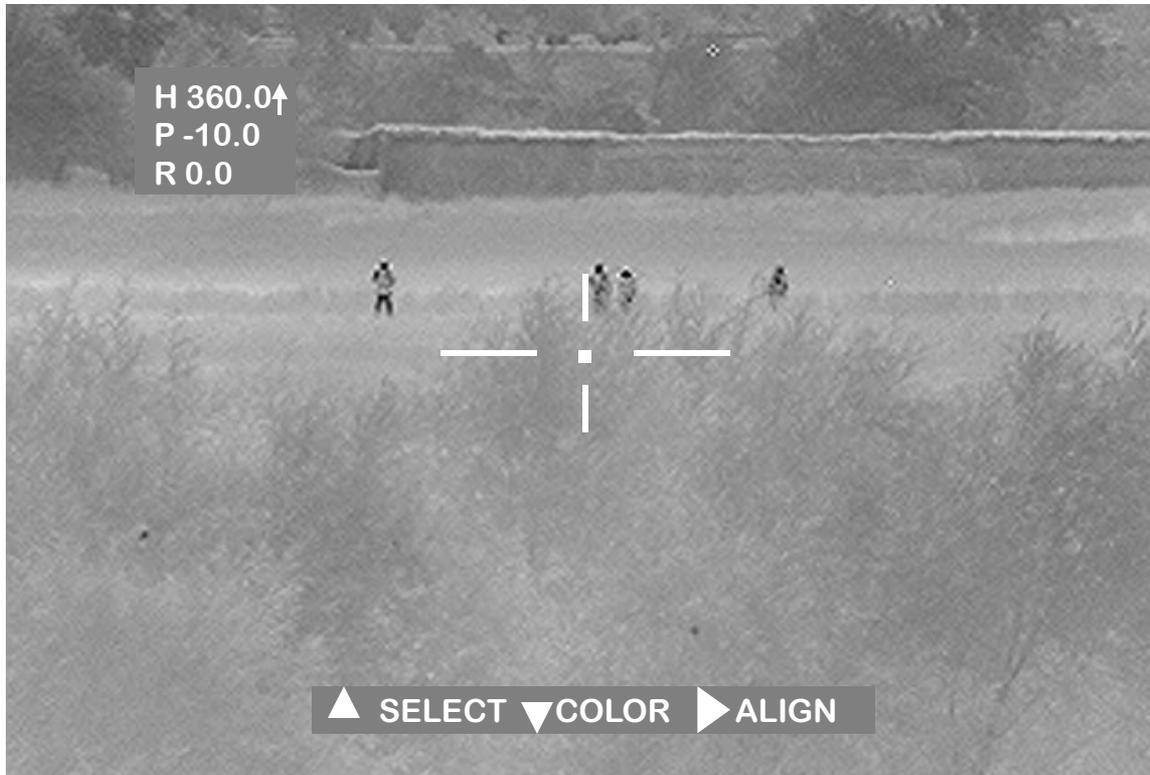






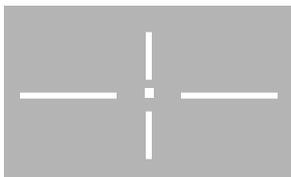
# UTC Reticle Select (cont.)

C4ISR - SPAWAR - AUSGAR

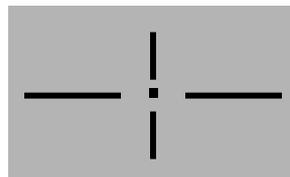


- PUSH THE DOWN ARROW FOR THREE DIFFERENT COLOR SETTINGS:

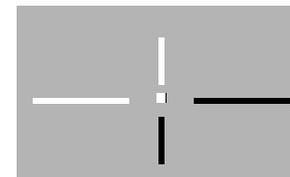
“WHITE”



“BLACK”



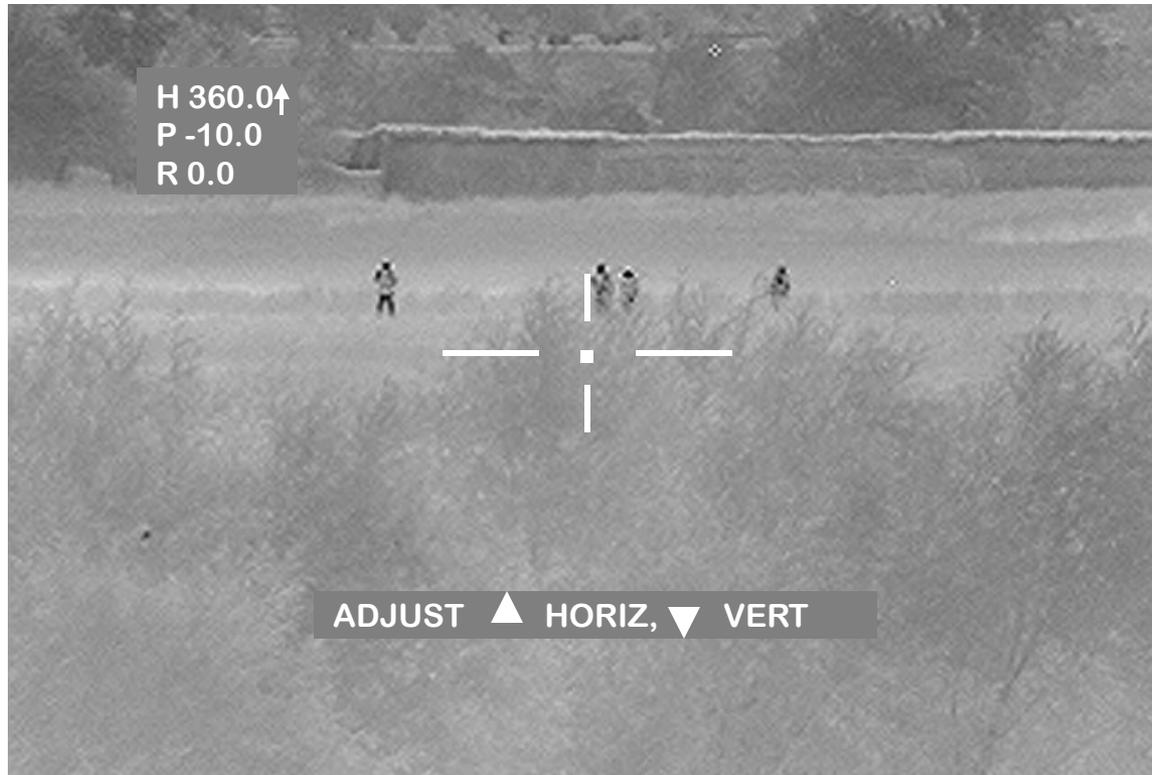
“ADAPTIVE”





# UTC Reticle Alignment

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ADJUST ▲ HORIZ, ▼ VERT

- FROM THE RETICLE MENU SELECT "ALIGN" BY PUSHING THE RIGHT ARROW KEY

▲ SELECT ▼ COLOR ▶ ALIGN

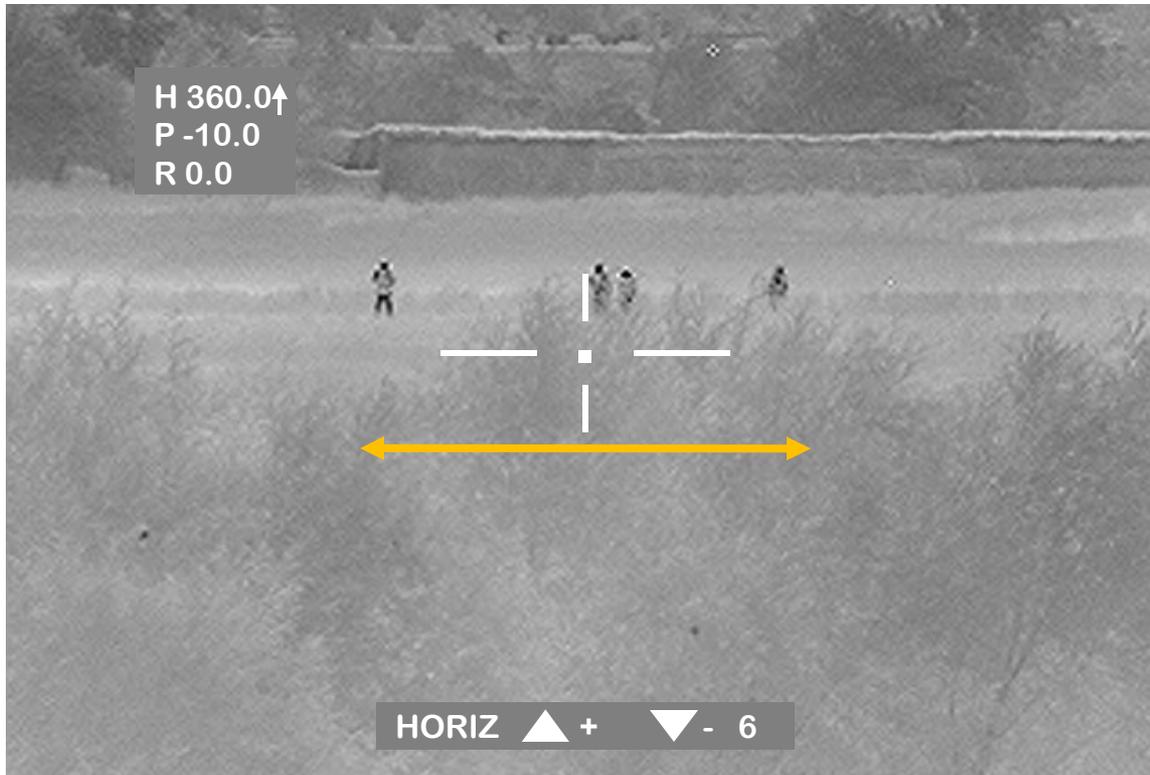
- SELECT EITHER THE HORIZONTAL OR VERTICAL RETICLE ADJUSTEMENT BY PRESSING THE UP OR DOWN ARROW KEYS





# UTC Horizontal Reticle Alignment

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HORIZ ▲ + ▼ - 6

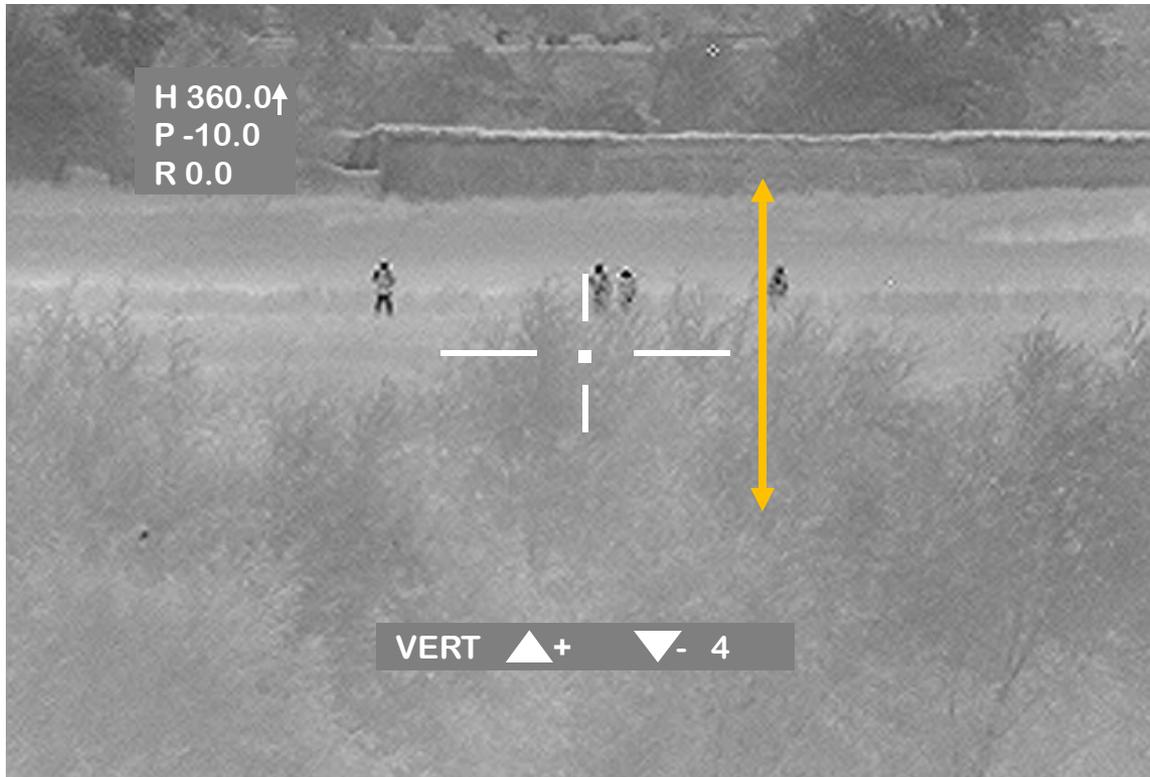
- WHEN HORIZONTAL ADJUSTMENT HAS BEEN SELECTED, CHANGE THE POSITION OF THE RETICLE USING THE UP AND DOWN ARROW KEYS. A NUMERIC VALUE WILL APPEAR THAT CORRESPONDS TO THE HORIZONTAL POSITION OF THE RETICLE.





# UTC Vertical Reticle Alignment

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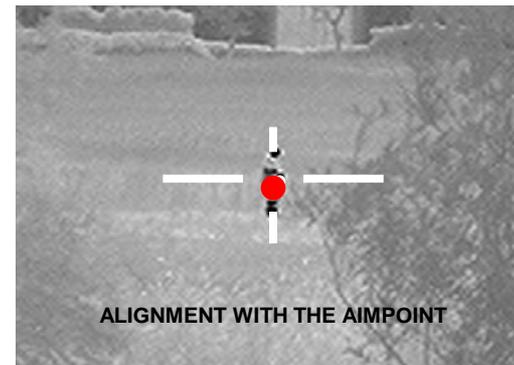
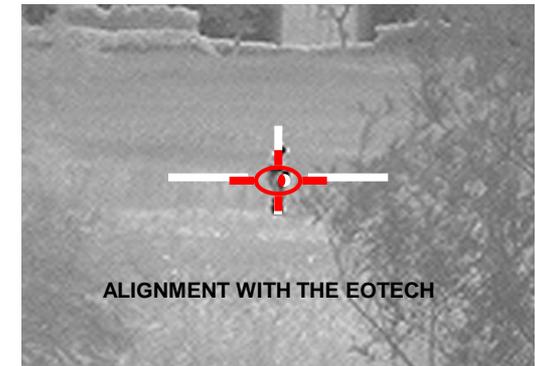
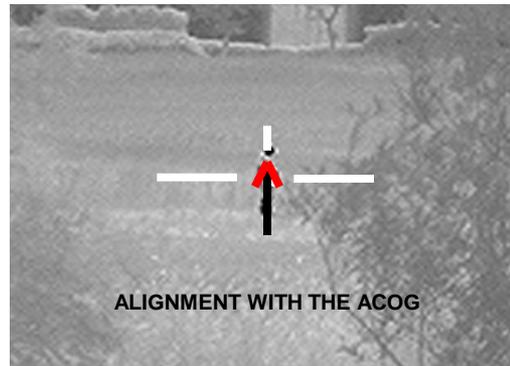
- WHEN VERTICAL ADJUSTMENT HAS BEEN SELECTED, CHANGE THE POSITION OF THE RETICLE USING THE UP AND DOWN ARROW KEYS. A NUMERIC VALUE WILL APPEAR THAT CORRESPONDS TO THE VERTICAL POSITION OF THE RETICLE.





# Reticle Alignment to Sights

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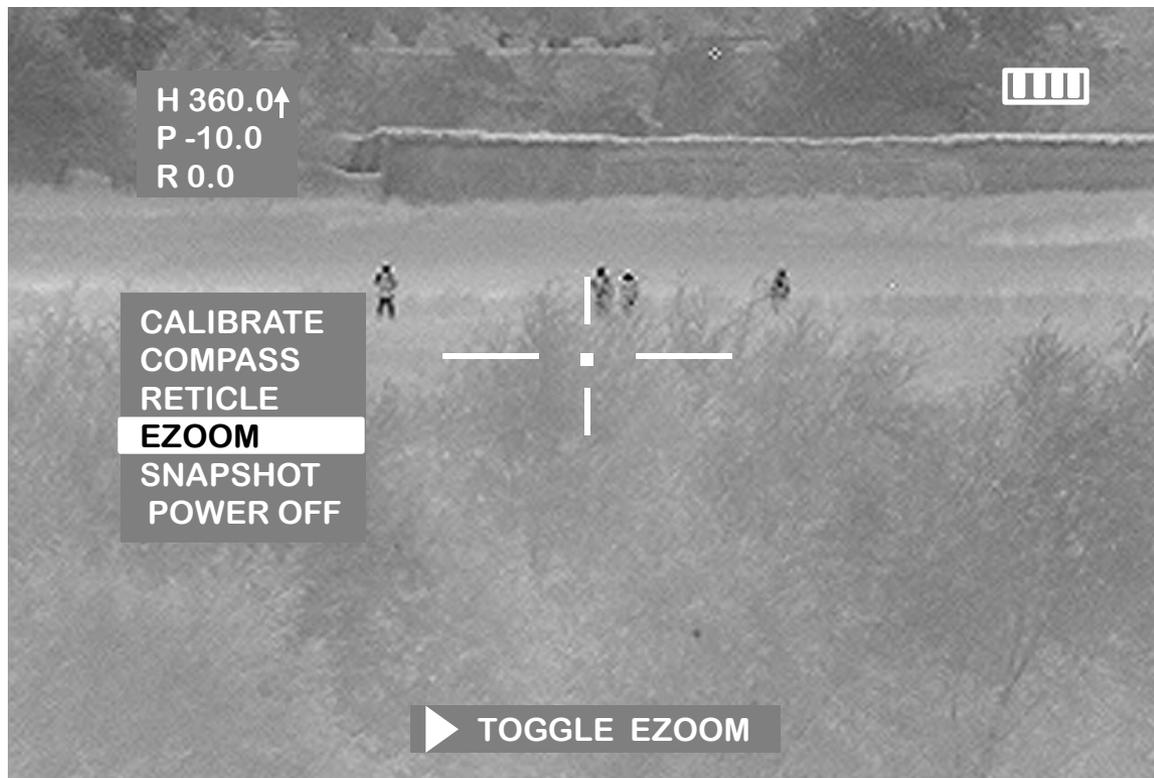
- **ALIGN THE CENTER DOT OF THE UTC RETICLE TO THE CENTER OF YOUR SNIPER DAY SCOPE, ACOG CHEVRON TIP, EOTECH CENTER DOT, OR THE AIMPOINT DOT.**
- **AFTER ALIGNING THE UTC RETICLE WITH YOUR SCOPE'S INTERNAL PATTERN, YOU CAN TURN THE UTC RETICLE OFF.**





# UTC EZoom Menu

C4ISR - SPAWAR - AUSGAR



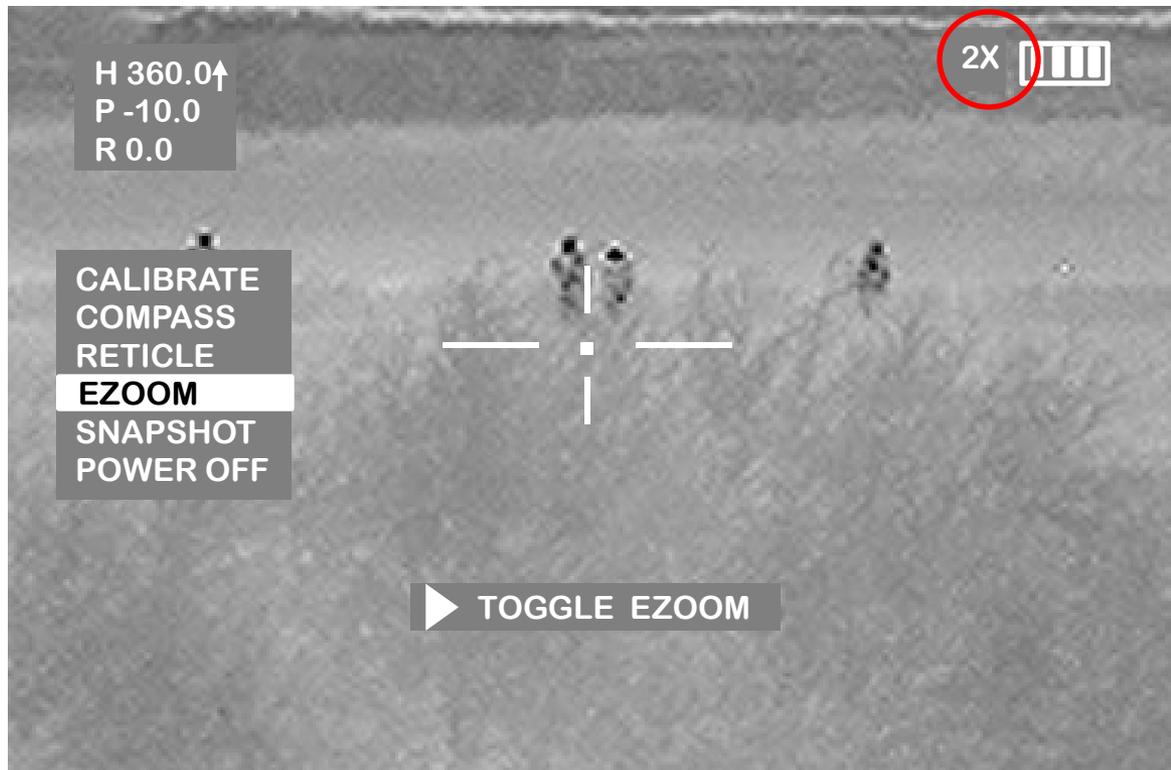
- PUSH THE RIGHT ARROW KEY ONE TIME TO BRING UP THE MENU FUNCTION.
- PUSH THE DOWN ARROW KEY TO HIGHLIGHT "EZOOM".





# UTC 2X / 0.5X / 1X Zoom Function

C4ISR - SPAWAR - AUSGAR



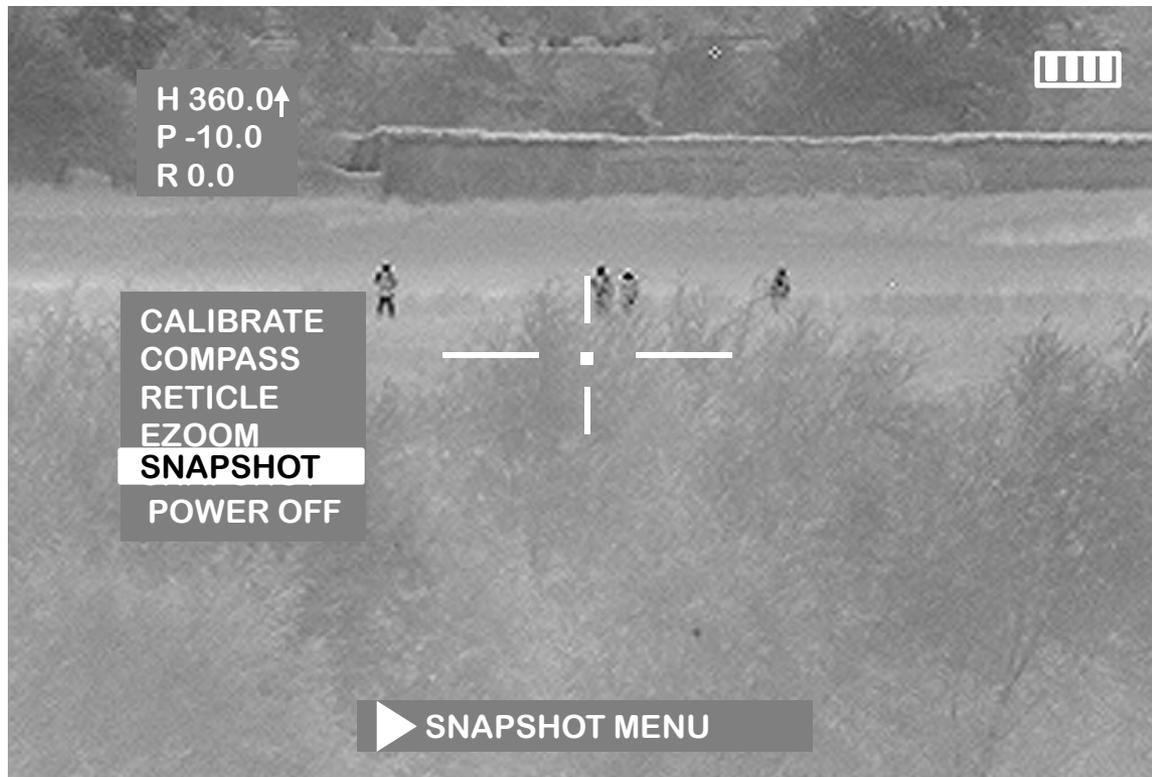
- PUSH THE RIGHT KEY TO TOGGLE THE 2X, 0.5X, OR 1X POWERED EZOOM FUNCTION.
- **2X** OR **0.5X** WILL APPEAR IN THE VIEW SCREEN IN THE UPPER RIGHT HAND CORNER AND WILL REMAIN VISIBLE ONCE THE MENU HAS TIMED OUT.
- REPEAT THE PROCESS TO SWITCH BACK TO 1X EZOOM. THERE IS NO SYMBOL ON THE DISPLAY WHEN THE UTC IS IN 1X EZOOM.





# UTC Snapshot Menu

C4ISR - SPAWAR - AUSGAR



- PUSH THE RIGHT ARROW KEY ONE TIME TO BRING UP THE MENU FUNCTION.
- PUSH THE DOWN RROW KEY AND HIGHLIGHT "SNAPSHOT".
- PRESS THE RIGHT ARROW KEY TO BRING UP THE SNAPSHOT FUNCTIONS.





# UTC Snapshot Photos

C4ISR - SPAWAR - AUSGAR



- **PUSH THE UP ARROW TO TAKE A SNAPSHOT PHOTO. THE NUMBER OF THE PHOTO WILL BE DISPLAYED.**

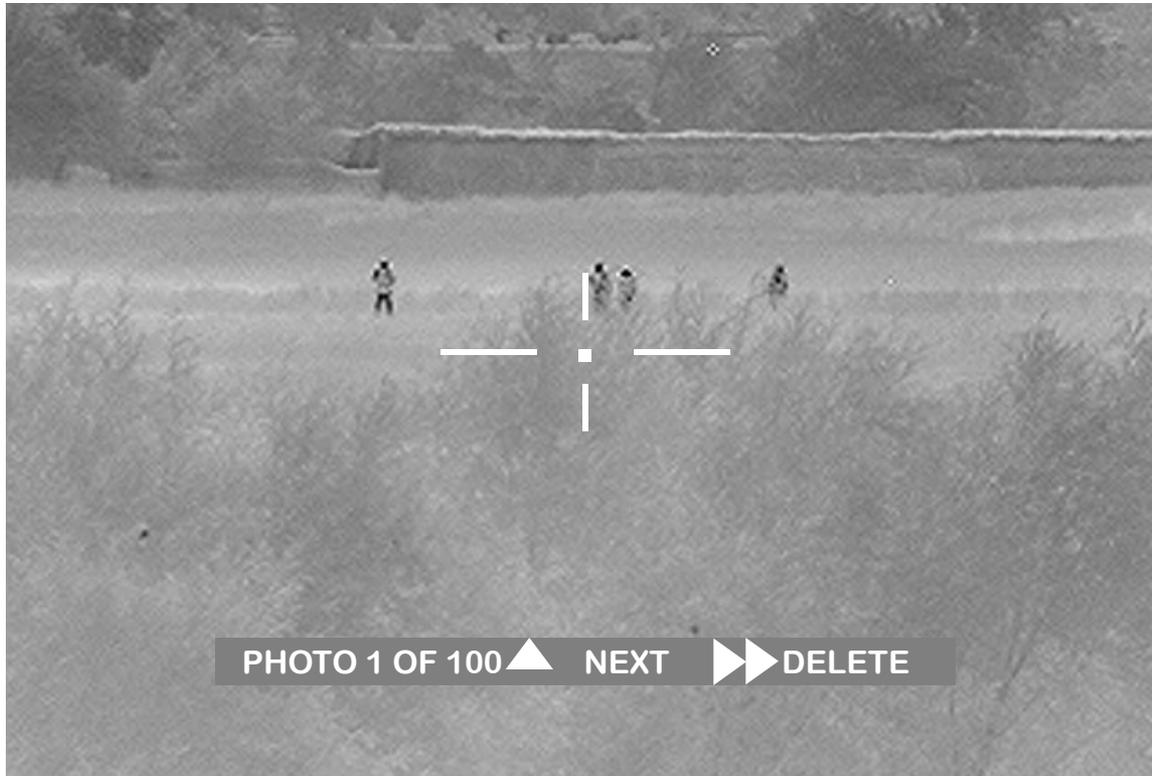
STORING IMAGE 4 OF 100





# UTC Snapshot Photos (cont.)

C4ISR - SPAWAR - AUSGAR



- PUSH THE DOWN ARROW TO REVIEW ALL SNAPSHOT PHOTOS RECORDED ON THE INTERNAL MEMORY.
- PUSH THE UP ARROW TO REVIEW ALL SUBSEQUENT PICTURES STORED ON THE INTERNAL MEMORY.

PHOTO 1 OF 100 ▲ NEXT ► DELETE

- PUSH AND HOLD THE LEFT ARROW BUTTON TO DELETE A CURRENTLY SELECTED SNAPSHOT PHOTO.

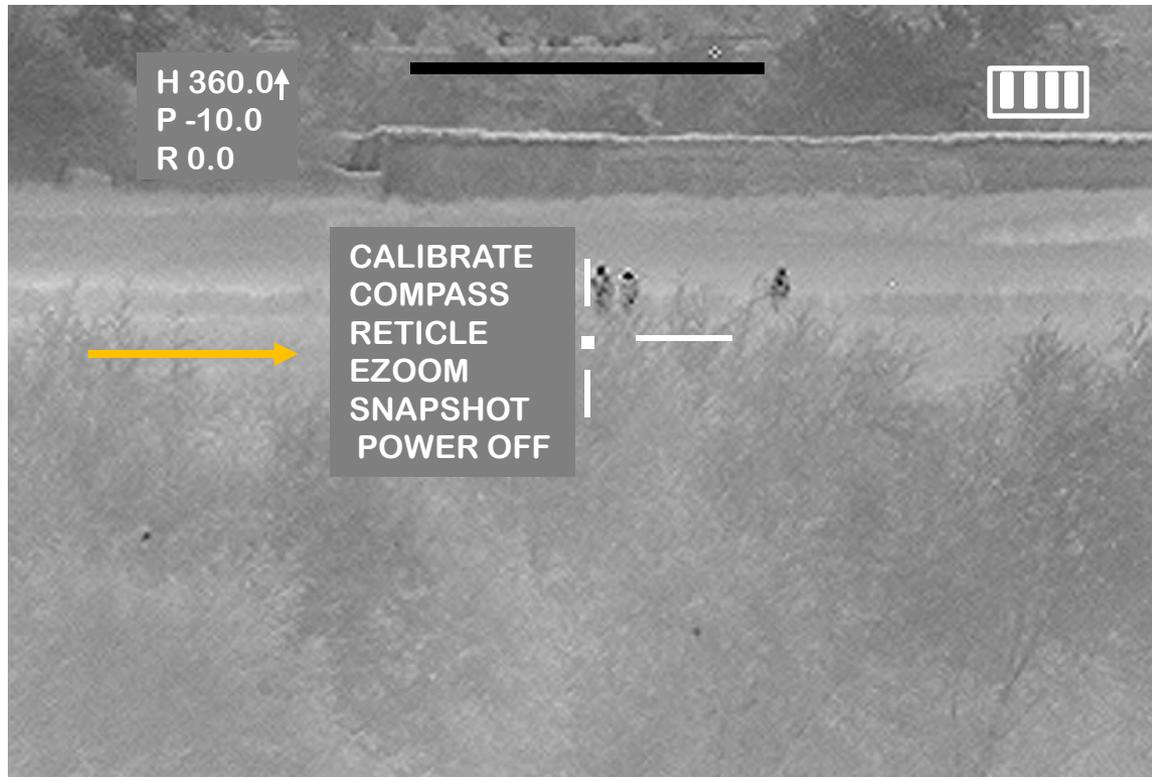
PHOTO 1 OF 100 ▲ NEXT ►► DELETE





# UTC Menu Position

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**PUSH AND HOLD BOTH  
BUTTONS TO MOVE MENU**

- **PUSH BOTH THE RIGHT AND REAR ARROW BUTTONS AT THE SAME TIME AND HOLD TO MOVE THE MENU TOWARDS THE CENTER OF THE DISPLAY. THE UTC WILL ALSO CALIBRATE WHEN THIS IS DONE.**
- **REPEAT TO MOVE THE MENU BACK TO THE LEFT OF THE DISPLAY.**



# UTC Polarity

C4ISR - SPAWAR - AUSGAR



**PUSH TO CYCLE  
THROUGH WHITE HOT,  
BLACK HOT, AND EDGE  
DETECT**



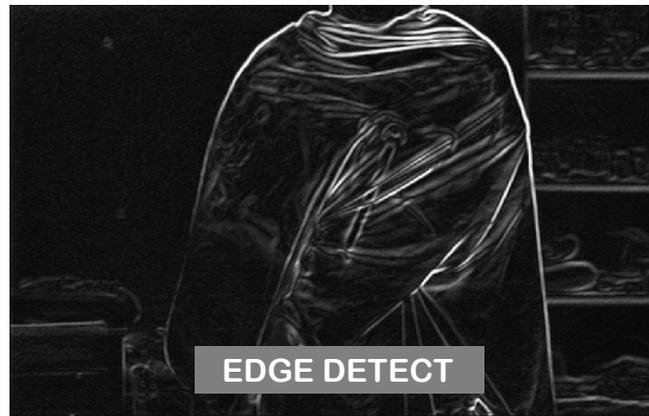
WHITE HOT

- **WARMER OBJECTS ARE WHITE**



BLACK HOT

- **WARMER OBJECTS ARE BLACK**



EDGE DETECT

- **SHOWS THE HEAT HORIZON OR  
“EDGE” WHERE TEMPERATURE  
DIFFERENCES OCCUR**

**NOTE: THE UTC CAN TAKE  
SNAPSHOTS IN EITHER WHITE HOT  
OR BLACK HOT MODES, BUT *NOT*  
WHILE IN EDGE DETECT MODE**

**ALL THREE MODES ARE VISIBLE  
WHEN USING VIDEO CAPTURE VIA  
THE RS-170 INTERFACE CABLE**

**Thermal pictures are of a male with a rifle concealed under a tunic.**

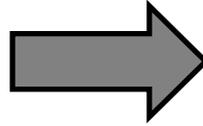


# UTC Weapons Mounting

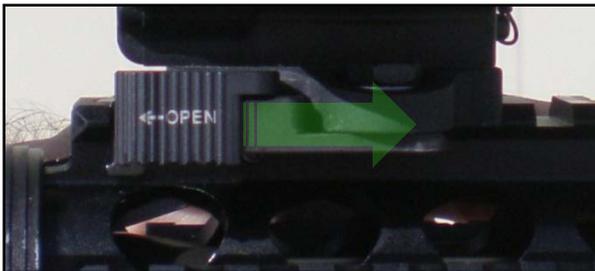
C4ISR - SPAWAR - AUSGAR



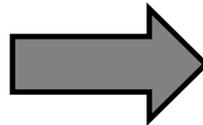
- PUSH THROW LEVER TO THE OPEN POSITION.
- PLACE UTC EYEPIECE AS CLOSE TO THE DAY OPTIC AS POSSIBLE.
- CANT UTC 30 DEGREES AND ALIGN RECOIL STOP WITH A FOREARM STOCK, RAIL-GROOVE.



- ROTATE THE UTC DOWN INTO POSITION ON THE FOREARM STOCK RAIL.
- PUSH THROW LEVER TO THE CLOSED POSITION.



- PUSH THE UTC THROW LEVER CAP FORWARD UNTIL YOU FEEL A "CLICK".



- THE UTC IS NOW SECURED TO THE WEAPON.





# UTC Maintenance, Care and Cleaning

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- **ENSURE WHEN YOU STORE THE UTC THAT YOU REMOVE THE CR-123A BATTERIES. REPLACE THE EYE COVER AND OBJECTIVE LENS COVERS WHEN YOU STORE THE UTM IN ITS CASE.**
- **AFTER EACH OPERATION, TAKE A SOFT PENCIL ERASER AND RUB THE BATTERY CONTACTS TO CLEAN THEM.**
- **WHEN STARTING A NEW OPERATION, ENSURE YOU USE NEW BATTERIES.**
- **YOUR UTC IS WEATHER-PROOFED BUT DO NOT SUBMERGE IT IN WATER OR ANY OTHER LIQUID.**
- **AFTER EACH OPERATION, TAKE A CLEAN DAMP CLOTH TO WIPE DOWN THE OUTER CASING.**
- **ALWAYS (NEVER USE ANYTHING ELSE BUT) USE LENS CLEANING PAPER TO CLEAN THE EYE PIECE AND OBJECTIVE LENS.**





# UTC Equipment Repairs

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- IF ANY ITEM IN YOUR KIT BECOMES INOPERABLE, PLEASE CONTACT THE FOLLOWING BY E-MAIL OR PHONE:
- ***SSC Pacific C4I Help Desk - 24/7/365***  
***ssc\_pac\_c4isrhd@navy.mil***  
***(619/DSN) 524-3888***
- IF ANY ITEM IN YOUR KIT BREAKS OR BECOMES DAMAGED (FOR ANY REASON), CONTACT THE ABOVE WEB ADDRESS TO CONFIRM SHIPPING INSTRUCTIONS. PLEASE BOX BROKEN OR DAMAGED GEAR AND SHIP TO:
- ***N69255 Receiving Officer***  
***Attn: Ron Brown Tel:(619) 524-3882***  
***SPAWAR Systems Center Pacific (41420)***  
***4297 Pacific Highway, Building 7***  
***San Diego, CA. 92110***
- ONCE CONFIRMATION OF SHIPPING OF DAMAGED EQUIPMENT TAKES PLACE, REPLACEMENT GEAR WILL BE SENT TO YOU. ENSURE YOU PUT YOUR UNIT'S RUC OR DODAAC NUMBERS AND UNIT'S ADDRESS AND A POINT OF CONTACT WITH EMAIL AND PHONE NUMBER.



# QUESTIONS?

