THE KING OF BATTLE

STANDARD CONDITIONS

WEATHER

1. AIR TEMPERATURE 100% (59 °F)
2. AIR DENSITY 100% (1225 g/m^3)

STANDARD CONDITIONS

POSITION

1. GUN, TARGET, AND MDP AT SAME ALTITUDE
2. ACCURATE RANGE
3. NO ROTATION OF THE EARTH

STANDARD CONDITIONS

MATERIAL

1. STANDARD WEAPON, PROJECTILE, AND FUZE
2. PROPELLANT TEMPERATURE 70 °F
3. LEVEL TRUNNIONS AND PRECISION SETTINGS
4. FIRING TABLE MUZZLE VELOCITY
5. NO DRIFT

TABULAR FIRING TABLE (TFT)

- INTRODUCTION
- FIRE CONTROL INFORMATION (FCI)
- APPENDICES

INTRODUCTION

FIRE CONTROL INFORMATION (FCI)

TABLE A

LINE NUMBER

- ENTRY ARGUMENT: QE
  DETERMINE: MET MESSAGE LINE NUMBER
- GIVEN: QE 315
- DETERMINE: LINE 02

TABLE B

COMPLEMENTARY RANGE LINE NUMBER

- **ENTRY ARGUMENTS:**
  - **CHART RANGE (NEAREST 100m)**
  - **HEIGHT OF TARGET ABOVE GUN (NEAREST 100m)**

  DETERMINE: COMPLEMENTARY RANGE
- **GIVEN:**
  - **CHART RANGE 5000m**
  - **HEIGHT OF TARGET ABOVE GUN +100m**
- **DETERMINE: +26m**

TABLE C

WIND COMPONENTS

- ENTRY ARGUMENT:
  - -CHART DIRECTION OF WIND

DETERMINE:
  - - COMPONENTS OF A ONE KNOT WIND
- GIVEN:
  - - CHART DIRECTION OF WIND 2000 mils
- DETERMINE:
  - - CROSS WIND R .92
  - - RANGE WIND T .38

TABLE D

TEMERATURE AND DENSITY CORRECTIONS

- ENTRY ARGUMENT:
  - DIFFERENCE IN HEIGHT BETWEEN THE MDP AND THE BATTERY (DH)

  DETERMINE: TEMP CORR (DT) AND DENSITY CORR (DD)
- GIVEN: DH +130m
- DETERMINE: DT -0.3
  DD -1.3

TABLE E

PROPELLANT TEMPERATURE

- **ENTRY ARGUMENT:**
  - **PROPELLANT TEMPERATURE** ***(INTERPOLATION REQUIRED)***

  DETERMINE:
  - **EFFECT ON MUZZLE VELOCITY**
- **GIVEN: PROP TEMP 88 °**

TABLE E

		80	+0.4	
	+8			X
+10		88	?	+0.4
		90	+0.8	

TABLE E

		80	+0.4	
	+8			X
+10		88	?	+0.4
		90	+0.8	

$$\frac{+8}{+10} = \frac{X}{+0.4}$$

TABLE E

		80	+0.4	
	+8			X
+10		88	?	+0.4
		90	+0.8	

$$+10X = (+8)(+0.4)$$

$$\frac{+8}{+10} = \frac{X}{+0.4}$$

TABLE E

		80	+0.4	
	+8			X
+10		88	?	+0.4
		90	+0.8	

$$\frac{+8}{+10} = \frac{X}{+0.4}$$

$$+10X = (+8)(+0.4)$$

$$+10X = +3.2$$

TABLE E

	80	+0.4		
+8			X =	+0.3
+10	88	?		+0.4
	90	+0.8		

$$\frac{+8}{+10} = \frac{X}{+0.4}$$

$$+10X = (+8)(+0.4)$$

$$+10X = +3.2$$

$$X = +0.32 \approx +0.3$$

TABLE E

	80	+0.4		
+8			X =	+0.3
+10	88	?		+0.4
	90	+0.8		

$$\frac{+8}{+10} = \frac{X}{+0.4}$$

$$+10X = (+8)(+0.4)$$

$$+10X = +3.2$$

$$X = +0.32 \approx +0.3$$

?: $(+0.4) + (+0.3) = +0.7$

TABLE G

SUPPLEMENTARY DATA

- ENTRY ARGUMENT: RANGE (NEAREST LISTED*)
  DETERMINE: SUPPLEMENTARY DATA

* COMP SI FACTOR (COLs 12 & 13) INTERPOLATE TO NEAREST 10m

TABLE H

ROTATION - RANGE

- ENTRY ARGUMENTS:
  - RANGE (NEAREST LISTED)
  - DIRECTION OF FIRE (NEAREST LISTED)

  DETERMINE: RANGE CORRECTION CAUSED BY ROTATION
- GIVEN: RANGE 4800m (LOW ANGLE)
  DIRECTION OF FIRE 0851 mils
- DETERMINE: RG CORR -13
  - MULTIPLY BY LATITUDE CORR FACTOR

TABLE I

ROTATION - AZIMUTH

- ENTRY ARGUMENTS:
  - LATITUDE (NEAREST LISTED)
  - RANGE (NEAREST LISTED)
  - DIRECTION OF FIRE (NEAREST LISTED

  DETERMINE: AZ CORR CAUSED BY ROTATION
- GIVEN: LATITUDE 34 °N
  RANGE 4800m (LOW ANGLE)
  DIRECTION OF FIRE 0851 mils
- DETERMINE: L 0.6

TABLE J

FUZE CORRECTION FACTORS

- **ENTRY ARGUMENT:**
  - **FUZE SETTING (LISTED VALUE)**

DETERMINE: FUZE CORRECTION FACTORS

TABLE K

FUZE SETTING

- NOT USED BECAUSE IT IS FOR OLD M520A1 TI FUZES

ILLUMINATION

APPENDICES

TABLE F

BASIC DATA & CORR FACTORS

- ENTRY ARGUMENT:
  - RANGE (NEAREST LISTED*)
  DETERMINE: BASIC DATA & CORR FACTORS

  *TO DETERMINE ELEVATION (COL 2) REQUIRES INTERPOLATION TO NEAREST 10m
- GIVEN: RANGE 5000m (LOW ANGLE)
- DETERMINE: EL 304.5 mils
- GIVEN: RANGE 5030m

TABLE F

		5000	304.5	
	+30			X
+100		5030	?	+7.8
		5100	312.3	

TABLE F

		5000	304.5	
+30				X
+100		5030	?	+7.8
		5100	312.3	

$$\frac{+30}{+100} = \frac{X}{+7.8}$$

TABLE F

		5000	304.5	
	+30			X
+100		5030	?	+7.8
		5100	312.3	

$$+100X = (+30)(+7.8)$$

$$\frac{+30}{+100} = \frac{X}{+7.8}$$

TABLE F

		5000	304.5	
	+30			X
+100		5030	?	+7.8
		5100	312.3	

$$+100X = (+30)(+7.8)$$

$$+100X = +234$$

$$\frac{+30}{+100} = \frac{X}{+7.8}$$

TABLE F

+100	+30	5000	304.5	X = +2.3
		5030	?	+7.8
		5100	312.3	

$$\frac{+30}{+100} = \frac{X}{+7.8}$$

$$+100X = (+30)(+7.8)$$

$$+100X = +234$$

$$X = +2.34 \approx +2.3$$

TABLE F

		5000	304.5	
	+30			X = +2.3
+100		5030	?	+7.8
		5100	312.3	

$$\frac{+30}{+100} = \frac{X}{+7.8}$$

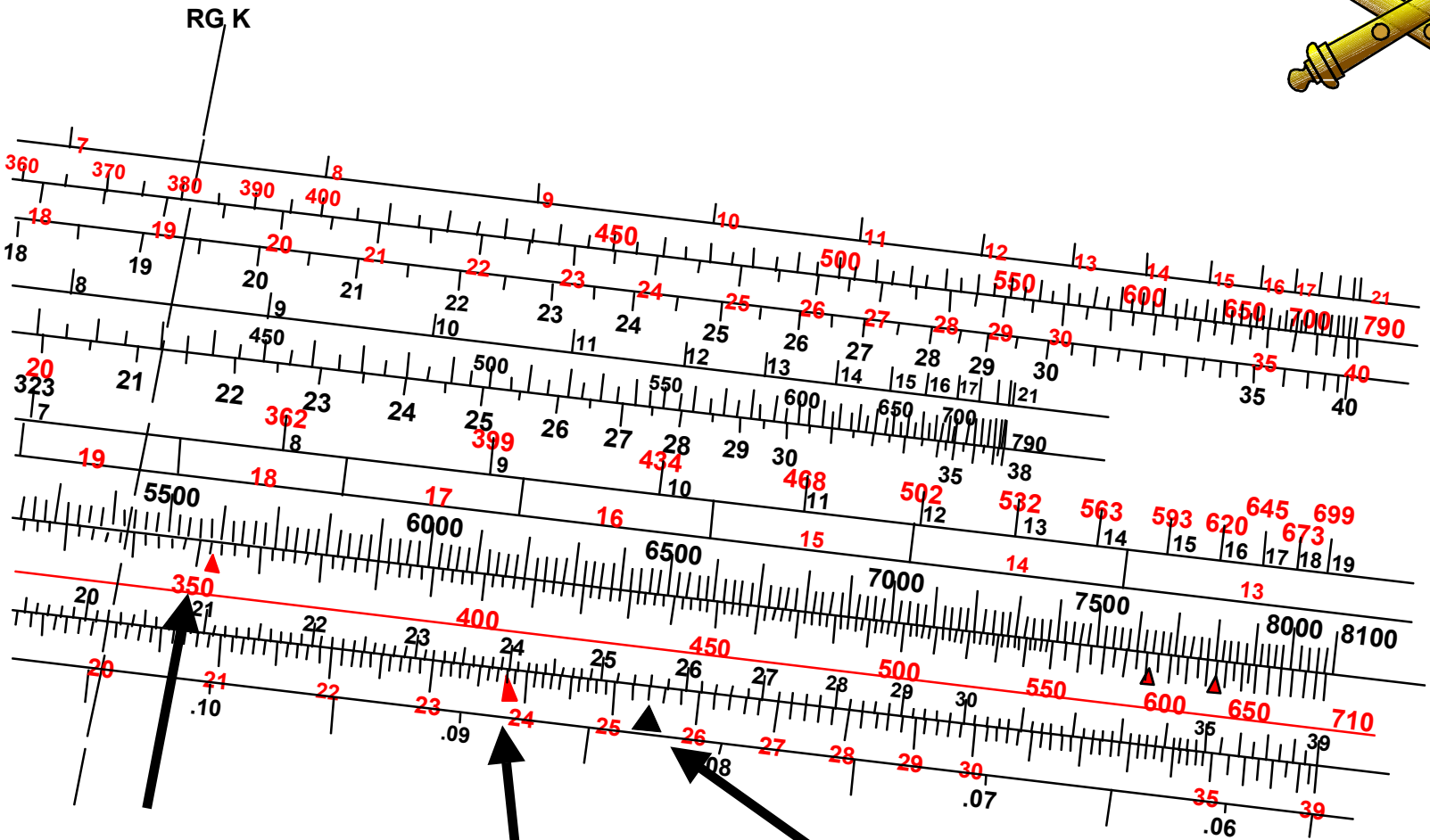
$$+100X = (+30)(+7.8)$$

$$+100X = +234$$

$$X = +2.34 \approx +2.3$$

$$?: 304.5 + (+2.4) = 306.9 \approx 307$$

GUNNERY DEPARTMENT



USAFAS

LOW ANGLE GFT PEs

CHG	RANGE	DRIFT	100/R	ELEV	FS M564	TOF	FS M728	ΔFS
4	5950							
4	3950							
2	3100							
2	2550							

LOW ANGLE GFT PEs

CHG	RANGE	DRIFT	100/R	ELEV	FS M564	TOF	FS M728	ΔFS
4	5950	L8	17	384	22.6	23	22.0	0.09
4	3950							
2	3100							
2	2550							

LOW ANGLE GFT PEs

CHG	RANGE	DRIFT	100/R	ELEV	FS M564	TOF	FS M728	ΔFS
4	5950	L8	17	384	22.6	23	22.0	0.09
4	3950	L4	26	228	13.8	14	13.0	0.15
2	3100							
2	2550							

LOW ANGLE GFT PEs

CHG	RANGE	DRIFT	100/R	ELEV	FS M564	TOF	FS M728	ΔFS
4	5950	L8	17	384	22.6	23	22.0	0.09
4	3950	L4	26	228	13.8	14	13.0	0.15
2	3100	L7	33	324	14.6	15	14.0	0.14
2	2550							

LOW ANGLE GFT PEs

CHG	RANGE	DRIFT	100/R	ELEV	FS M564	TOF	FS M728	ΔFS
4	5950	L8	17	384	22.6	23	22.0	0.09
4	3950	L4	26	228	13.8	14	13.0	0.15
2	3100	L7	33	324	14.6	15	14.0	0.14
2	2550	L6	40	255	11.6	12	11.0	0.18

HIGH ANGLE GFT PEs

CHG	RANGE	100/R	ELEV	10miSI	DRIFT	TOF
6	9500					
4	7320					
3	5050					

HIGH ANGLE GFT PEs

CHG	RANGE	100/R	ELEV	10miSI	DRIFT	TOF
6	9500	11	1151	-2.2	L68/L69	69
4	7320					
3	5050					

HIGH ANGLE GFT PEs

CHG	RANGE	100/R	ELEV	10miSI	DRIFT	TOF
6	9500	11	1151	-2.2	L68/L69	69
4	7320	14	1023	-6.6	L39	51
3	5050					

HIGH ANGLE GFT PEs

CHG	RANGE	100/R	ELEV	10miSI	DRIFT	TOF
6	9500	11	1151	-2.2	L68/L69	69
4	7320	14	1023	-6.6	L39	51
3	5050	20	1141	-2.6	L57	48

ILLUMINATION
GFT PEs

CHG	RANGE	HOB	ETI	EL TO BURST	FS M565	100/R
3	5040	650				
2	3160	400				

ILLUMINATION GFT PEs

CHG	RANGE	HOB	ETI	EL TO BURST	FS M565	100/R
3	5040	650	408	628	22.0	20
2	3160	400				

ILLUMINATION GFT PEs

CHG	RANGE	HOB	ETI	EL TO BURST	FS M565	100/R
3	5040	650	408	628	22.0	20
2	3160	400	324	539	14.1	32

THE KING OF BATTLE