



STANT
3TFS

CONVENTIONAL WEAPONS PLANNING GUIDE

(aka DESTRUCTION, INC.)

OPR: 3TFS/Weapons Shop
March 1980

PROFILES

Air Defense - STTO, Climb to FL 200/.88 Mach.

Jettison Tanks when empty

4000# engagement Fuel

Climb to FL 380/.88 Mach

Idle, 250k descent, land with 2000#

H-L-H - STTO, Climb to FL 200/480-500 KTAS

130NM from Target - Combat Descent (.8 M, 80%)

100NM Low Level Ingress - 480 KTAS to target

2000# in target area

30NM Low Level at 540 KTAS

Climb to FL 360-380/.86-.88 Mach

250k, Idle Descent, 70NM from base

Land with 2000#

L-L-H - STTO, Low Level Ingress at 480k to Target

2000# in target area, 30NM Low Level at 540k

Then same as H-L-H profile

L-L-L - STTO, Low Level Ingress at 480 knots

2000# in target area, low level egress at 540k for

30NM, Low Level RTB at 480k, Land with 2000#

Fuel Flow to TGT at FL 200 approx 9000-10000

Fuel Flow Low Alt Ingress approx 15000-17000

Fuel Flow RTB FL 360-380 approx 5500-6200

PROFILES (cont.)COMBAT RADIUS/BINGO

<u>Ordinance</u>	<u>Profile</u>	<u>2TKS</u>	<u>3TKS</u>	<u>T.O. WGT(W/CL)</u>	<u>D.I.(W/CL)</u>
6MK82SE	HLH	260/6500	380/7900	52.3(56.5)	47(57)
	LLH	230/6100	300/7000	52.3(56.5)	47(57)
	LLL	160/7900	230/9400	52.3(56.5)	47(57)
3xAIM 7 4xAIM 9	HLH	260/6000	380/7300	52.5(56.7)	36(46)
6MK 20	HLH	260/6500	380/8000	53.0(57.0)	49(59)
	LLH	220/6100	300/7000	53.0(57.0)	49(59)
	LLL	170/7800	230/9500	53.0(57.0)	49(59)
10MK 20	HLH	250/6300	----	55.0	71
	LLH	205/5800	----	55.0	71
	LLL	150/7200	----	55.0	71
12MK 20	HLH	235/6300	----	56.0	77
	LLH	200/5800	----	56.0	77
	LLL	160/7500	----	56.0	77
12xMK 82	HLH	250/6600	----	56.9	71
	LLH	205/6200	----	56.9	71
	LLL	150/7500	----	56.9	71
2MK 84 EO	HLH	305/6700	420/8000	54.0(58.0)	31(41)
	LLH	250/5700	320/6900	54.0(58.0)	31(41)
	LLL	180/7600	240/9200	54.0(58.0)	31(41)
10 CBU 52/58/71	HLH	225/6100	----	57.3	88
	LLH	190/5800	----	57.3	88
	LLL	150/7600	----	57.3	88
6 CBU 52/58/71	HLH	260/6500	370/7800	54.0(58.0)	59(69)
	LLH	210/6000	290/6800	54.0(58.0)	59(69)
	LLL	160/7500	220/9200	54.0(58.0)	59(69)
7 BLU 27	HLH	250/6300	----	55.6	69
	LLH	205/5800	----	55.6	69
	LLL	150/7200	----	55.6	69

I. Pop-Up Deliveries

a. Pop-Up Point: A position at which the attack is initiated. The pull-up point.

b. MAP (Minimum Attack Perimeter): An imaginary circle centered on the target, which depicts the point at which target tracking is initiated. The radius of the circle varies with delivery parameters and desired tracking time on final.

c. Pop-to MAP Distance and MAP Distance: Distances from the Pop-Up Point to the MAP and from the MAP to the target.

d. Tracking: A portion of any diving weapons delivery that is devoted to the final alignment of aircraft sighting systems with the target. The amount of time associated is referred to as wings level or tracking time.

II. Rules of Thumb

a. Climb angle = dive angle + 5deg (for 15deg and 10deg deliveries)
= dive angle + 10deg (for 20deg and higher angle deliveries)

b. Apex altitude = $(2 \times \text{dive angle} \times 100) + \frac{\text{release altitude}}{2}$

c. Pull down altitude (3-3½ G's) = Apex altitude - (climb angle X 50)
(4½-5 G's) = Apex altitude - (climb angle X 37.5)

d. Pull up point (PUP) = $\frac{\text{Apex altitude}}{\text{climb angle}} \times 60$

e. Run in angle off = $2 \times \text{climb angle}$ (90° max)

f. MAP = bomb range + tracking distance

g. Turn Radius at 500 KTAS and 3½ G = 6500'
500 KTAS and 5 G = 5500'

h. Release Advance = $\frac{I_r (N-1)}{2}$ (center impact on tgt)

i. Pattern Length = $(I_r \times V_r \times \cos \theta (N-1)) - \Delta R$

j. $\Delta R = \frac{\text{Difference in bomb range for next lower alt X alt lost}}{\text{Next lower altitude increment}}$

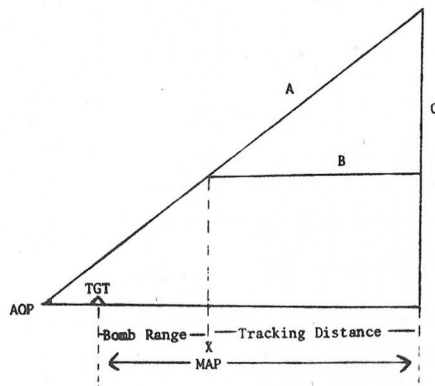
NOTES:

1. The delivery pass will be aborted anytime the dive angle exceeds the pre-planned dive angle by more than 5 degrees.

2. Minimum airspeed is 320 Kts for 30deg events and above, 350 Kts for events less than 30deg.

POP UP PLANNING AIDS

<u>Dive X</u>	<u>Sine</u>	<u>Cosine</u>
5	.087	.996
10	.173	.984
15	.258	.965
20	.342	.939
25	.422	.906
30	.500	.866
35	.573	.819
40	.642	.766
45	.707	.707



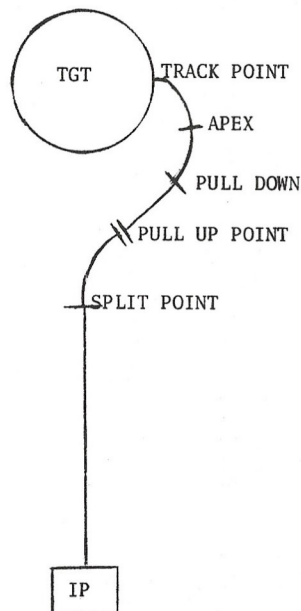
$A = 1.69 \times \text{Average KTAS} \times \text{Tracking Time in Seconds}$

$B = \text{Cosine of Dive Angle} \times A$

$C = \text{Sine of Dive Angle} \times A$

POP UP PLANNING AIDS (Cont.)

DIRECT RUN TO SPLIT (ATTACK) POINT

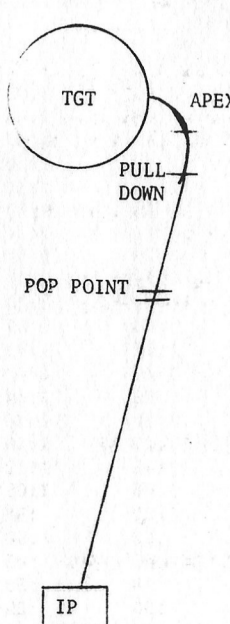


IP to TGT Distance	IP to Split Distance	Time to Split		
		480 KTAS	500 KTAS	540 KTAS
30	26	3:15	3:07	2:53
29	25	3:08	3:00	2:47
28	24	3:00	2:53	2:40
27	23	2:52	2:46	2:33
26	22	2:45	2:38	2:27
25	21	2:38	2:31	2:20
24	20	2:30	2:24	2:13
23	19	2:23	2:17	2:07
22	18	2:15	2:10	2:00
21	17	2:08	2:02	1:53
20	16	2:00	1:55	1:47
19	15	1:52	1:48	1:40
18	14	1:45	1:41	1:33
17	13	1:38	1:34	1:27
16	12	1:30	1:26	1:20
15	11	1:23	1:19	1:13
14	10	1:15	1:12	1:07
13	9	1:08	1:05	1:00
12	8	1:00	:58	:53
11	7	:52	:50	:47
10	6	:45	:43	:40
9	5	:38	:36	:33
8	4	:30	:29	:27
7	3	:23	:22	:20
6	2	:15	:14	:13
5	1	:08	:07	:06

NOTE: 4 NM Split point is based on a 30° - 45° 4G turn and for 20° - 45° dive angles. For 10° and 20° passes use a 3NM Split point and 30° turn to pop point.

POP UP PLANNING AIDS (Cont.)

DIRECT RUN TO POP POINT



IP-TGT NM	POP Hdg*	Time to POP			Distance to POP
		540	500	480	
30	4	2:56	3:11	3:19	26.5
29	4	2:50	3:04	3:11	25.5
28	5	2:43	2:56	3:04	24.5
27	5	2:36	2:49	2:56	23.5
26	5	2:30	2:42	2:49	22.5
25	6	2:23	2:35	2:41	21.5
24	6	2:16	2:28	2:34	20.5
23	6	2:10	2:20	2:25	19.5
22	7	2:03	2:13	2:19	18.5
21	7	1:57	2:06	2:11	17.5
20	7	1:50	1:59	2:04	16.5
19	7	1:43	1:52	1:56	15.5
18	8	1:36	1:43	1:48	14.5
17	8	1:29	1:36	1:40	13.5
16	8	1:23	1:30	1:34	12.5
15	9	1:17	1:23	1:26	11.5
14	9	1:10	1:16	1:19	10.5
13	10	1:03	1:08	1:11	9.5
12	11	:57	1:01	1:04	8.5
11	12	:51	:55	:57	7.5
10	13	:44	:48	:50	6.5
9	14	:37	:40	:41	5.5
8	16	:30	:32	:34	4.5
7	19	:23	:25	:26	3.5
6	22	:17	:18	:19	2.5
5	27	:10	:11	:11	1.5

*NOTE - Degrees left or right of IP-TGT Heading to arrive at POP POINT.

MIL SETTING EXPLANATIONS

1. All release altitudes include altimeter lag rounded off to the nearest 100'.
2. All computations are based on standard day at mean sea level (OPA, 15 degC). Mil corrections are listed with each set of tables. Add corrections for lower pressure altitudes and lower temperatures. Subtract corrections for higher pressure altitudes and higher temperatures.
3. The weight of the ordnance should be added to the fuel weight and applied against the Mil weight correction factor.
4. Wind corrections in feet are for fully drifting deliveries, except for those listed level deliveries, which are for crabbed deliveries.
5. Release advance can be computed by:

$$RA = \frac{n-1}{2} \times \text{Release interval in milliseconds}$$

6. Drag coefficients are for 4G pull.
7. Minimum altitudes were the highest of the following factors in each case:
 - a. Threat Envelope
 - b. Frag Clearance
 - c. Fuze Functioning Envelope
 - d. BDU Deliveries Simulate MK-82 LDGP & MK-82 SE Deliveries.

Basic Mils are computed for the aircraft gross weight minus usable fuel. The fuel mil correction factor for each 1000 lbs follows the basic mil setting.

The aircraft weights used are as follows:

- a. 2xSUU-21, ALQ-119, 2x370 Gal tanks (empty),
2xMAU-12, AERO-27, plus operating weight = 35,500 lbs
- b. 2xTER, ALQ-119, 2x370 gal tanks (empty), 2xMAU-12,
AERO-27, plus operating weight = 34,200 lbs

Since different types of ordnance will be carried on the TERs, the weight of the ordnance load should be added to the fuel weight and applied against the mil weight correction factor.

FUZES

M 904

- 1) Delay from 2-18 seconds, increments of 2 sec, set by aircrew. However, to set 4 seconds or 2 seconds, a set screw must be removed.
- 2) Impact delay-instantaneous to .25 seconds - not visible to aircrew.
- 3) + 10% Tolerance
- 4) Nose fuze for MK 82, MK 82SE

M 905

- 1) Delay from 4-20 seconds, increments of 2 sec, set by aircrew.
- 2) Impact delay - instantaneous to .25 sec
- 3) + 20% Tolerance
- 4) Tail fuze for MK 82, MK 84EO, MK 84 LGB

FMU 7

- 1) Electric fuze for BLU 27 (Nape)
- 2) Armed .3 to .9 seconds after release.

FMU 54

- 1) Delay from 2.5 to 6.0 seconds, preset by munitions. Recorded on red tag attached to bomb.
- 2) Impact delay - instantaneous only.
- 3) Tail fuze for MK 82 SE only -- if Low Drag is released, fuze will not arm.

FMU 56

- 1) 9 settings for burst height (250'-3000') and 9 safe separation settings (2-18 seconds)
- 2) ECM switch must be set ON or OFF as required by mission.
- 3) Recommended minimum of 3 sec for Safe Sep.
- 4) Munition time of flight from release to function altitude must be greater than timer setting or dud will result.
- 5) Fuze for CBU 52, 58, 71.

FMU 26

- 1) Electric fuze powered by internal thermal battery.
- 2) Can be used as nose or tail fuze and will provide airburst or impact initiated burst.
- 3) Airburst-1.9 to 99.9 in .5 sec increments with $\pm .3$ sec for tolerance.
- 4) Impact -2.0 to 20.0 in 2 sec increments with $\pm 10\%$ tolerance.
- 5) Impact delay-instantaneous to 125.
- 6) Event and arm times are set by munitions and displayed in the windows on the face of the fuze.
- 7) FZU1/B Booster is used for airburst.
- 8) Fuze has 3 positions: Red, Green, Blue.
 - a) Green-bomb arms 6.6 sec after release.
 - b) Red-used if time of fall is less than 6.6 sec.
 - c) Blue-Airburst only using FZU1/B Booster.
- 9) Fuze for MK-82 LDGP, MK-83, MK-84, MK-117, MK-118, and SUU-30 dispenser.

MK 82

MK 82 531E, 2.4 DI, Low drag bomb producing blast, fragmentation, and deep cratering.

Fuzing - M 904 Nose, M 905 Tail, M1A1 Fuze Extender

SAFE ESCAPE

MINIMUM RELEASE ALT

0-800'	<u>4 sec</u>	<u>6 sec</u>
0-300' (4G-pull)		
15-1200	0-370	820
20-1500	15-1500	2500
30-2000	20-1840	3010
45-3200	30-2500	3980
	45-3340	5230

Employment:

Carriage - 550/1.1, +5, -1, (500K for Fuze Extenders)

Jettison - 175-550/1.1 Stations 2,8
 175-450/1.1 Station 5
 250-475 with slats extended

Release - 175-550/1.1, +5 (475 with Fuze Extenders)
 Max release 500K with slats extended

Dive Toss with Fuze Extenders, do not use more than 3G's
Use minimum .1 intervalometer for Ripple Release of FF's

MK-82 LDGP (SINGLE 450 KCAS)

EVENT (DEG)	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	REC ALT	IPP
45 HADB	140+.7/1.03	1.4/18.0	13.1	8.0	1900	6104	5.1	16
45 DB	108+.7/1.02	1.5/12.4	11.6	5.0	950	4075	2.3	30
30 DB	142+.8/1.02	1.2/12.9	8.0	4.0	1700	5217	2.7	38
30 DB	122+.8/1.01	1.2/10.3	7.5	3.0	1100	4088	1.7	46
20 LALD	160+.8/1.02	1.0/12.9	5.5	3.0	2700	5545	2.3	51
20 LALD	128+.8/1.01	1.0/9.5	5.0	2.0	1500	4006	1.4	45
10 LALD	200+.9/1.02	0.7/16.5	3.2	2.5	5800	6656	2.3	--
10 LALD	149+.9/1.01	0.7/10.6	2.7	1.5	3800	4702	1.3	--

MK-82 LDGP (SINGLE 500 KCAS)

45 HADB	121+.5/1.05	1.3/17.1	13.1	8.0	1700	6309	4.6	25
45 DB	95+.5/1.03	1.3/12.4	11.8	5.5	950	4570	2.2	32
30 DB	131+.6/1.03	1.1/13.5	8.3	4.5	1850	5958	2.9	48
30 DB	113+.6/1.03	1.1/11.0	7.8	3.5	1250	4812	2.0	42
20 LALD	150+.7/1.03	0.9/13.8	5.7	3.5	3050	6528	2.7	34
20 LALD	107+.7/1.02	0.8/8.9	5.0	2.0	1350	4174	1.2	42
10 LALD	169+.7/1.03	0.6/14.5	3.2	2.5	6250	7124	2.3	10
10 LALD	127+.7/1.02	0.6/10.2	2.7	1.5	3500	4998	1.3	32

- NOTES:
1. Plus/minus 2.25 Mils/1000' PA. Plus/minus 2.25 Mils/10deg C.
 2. Add 1 Mil for the following: EA 2 MK-82, EA 2 AIM-7/9.
 3. Where two release altitudes appear for a given dive angle, the higher altitude allows 6 sec for fuze arming, the lower altitude allows 4 sec arming.
 4. Top of frag envelope is 2520' at 9 sec. A minimum of 20 sec between passes, recovery above 2520' or flight paths with a minimum of 3100' lateral separation should be observed to clear frag pattern.

MK-82 LDGP RIPPLE 6 450 KCAS (RIPPLE 12*)

EVENT (DEG)	INT	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	PATTN LGTH	REC ALT	IPP
45 HADB	.14	143+.7/1.03	1.4/19.5	13.5	9.0	2200	6795	167	5.7	29
45 DB	.14	113+.7/1.02	1.4/14.0	12.0	6.0	1150	4834	134	2.8	37
30 DB	.14	145+.8/1.02	1.2/13.9	8.3	4.5	1950	5834	201	2.9	46
30 DB	.14	125+.8/1.01	1.1/11.3	7.8	3.5	1350	4730	176	1.9	48
20 LALD	.14	167+.8/1.02	1.0/14.2	5.7	3.5	3250	6341	267	2.6	43
20 LALD	.14	135+.8/1.01	0.9/10.9	5.2	2.5	1950	4913	232	1.6	52
10 LALD	.14	190+.9/1.02	0.7/14.8	3.2	2.5	7000	7188	264	2.0	44
10 LALD	.14	142+.9/1.01	0.6/10.4	2.7	1.5	3700	4818	232	1.2	43

- NOTES:
1. Plus/minus 2.5 Mils/1000' PA. Plus/minus 2.5 Mils/10deg C.
 2. Add 1 Mil/bomb for ripple releases of less than 6 bombs.
 3. Add 1 Mil for the following: EA 2 MK-82, EA 2 AIM-7/9.
 4. Where two release altitudes appear for a given dive angle, the higher altitude allows 6 sec fuze arming, the lower altitude allows 4 sec arming.
 5. Top of frag envelope is 2520' at 9 sec. A minimum of 20 sec between passes, recovery above 2520' or flight path with a minimum of 3100' lateral separation should be observed to clear frag pattern.

* For ripple 12, increase altitude 100' for each 10deg of dive.
Add 2 Mils to release setting.

MK-82 RIPPLE 6 500 KCAS RIPPLE 12*

EVENT (DEG)	INT	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	PATTN LGTH	REC ALT	IPP
45 HADB	.14	122+.5/1.06	1.3/18.3	13.6	9.0	1950	7076	169	5.0	24
45 DB	.14	100+.5/1.04	1.3/14.0	12.3	6.5	1150	5340	138	3.0	32
30 DB	.14	132+.6/1.04	1.0/14.3	8.5	5.0	2100	6594	212	3.1	41
30 DB	.14	115+.6/1.03	1.0/11.9	8.0	4.0	1450	5470	189	2.2	43
20 LALD	.14	155+.7/1.04	0.9/15.0	6.0	4.0	3600	7387	290	3.0	38
20 LALD	.14	114+.7/1.02	0.8/10.3	5.2	2.5	1750	5112	235	1.5	47
10 LALD	.10	164+.7/1.03	0.6/14.3	3.2	2.5	6400	7264	280	2.1	39
10 LALD	.10	120+.7/1.02	0.5/10.0	2.7	1.5	3400	5119	243	1.1	38

- NOTES: 1. Plus/minus 2.25 Mils/1000' PA. Plus/minus 2.25 Mils/10deg C.
 2. Add 1 Mil/bomb for ripple releases of less than 6 bombs.
 3. Add 1 Mil for the following: EA 2 MK-82, EA 2 AIM-7/9.
 4. Where two release altitudes appear for a given dive angle, the higher altitude allows 6 sec fuze arming, the lower altitude allows 4 sec arming.
 5. Top of frag envelope is 2520' at 9 sec. A minimum of 20 sec between passes, recovery above 2520' or flight paths with a minimum of 3100' lateral separation should be observed to clear frag pattern.

* For ripple 12, increase release altitude 100' for each 10 deg of dive. Add 2 Mils to release setting.

MK-82 (SNAKEYE I) HIGH DRAG (SINGLE 450 KCAS)

EVENT (DEG)	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	REC ALT	IPP
20 LAHD	199+.8/3.02	2.1/6.5	4.7	1.5	1600	2542	1.0	
10 LAHD	131+.9/2.13	1.0/2.9	2.3	0.6	1600	2028	0.4	
LEVEL	122+.9	0.4/2.3		0.2		1916		

MK-82 (SNAKEYE I) HIGH DRAG (RIPPLE 6 450 KCAS)

EVENT (DEG)	INT	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	PATTN LGTH	REC ALT	IPP
20 LAHD	.14	234+.8/3.02	2.3/8.8	5.0	2.0	2400	3136	468	1.1	
10 LAHD	.14	142+.9/2.13	1.0/3.8	2.4	0.8	1950	2591	462	0.5	
LEVEL	.14	109+.9	0.4/2.3		0.2		1916	532		

- NOTES:
1. Plus/minus 2.0 Mils/1000' PA. Plus/minus 2.0 Mils/10deg C.
 2. Add 3.5 Mils/bomb for ripple releases of less than 6 bombs.
 3. Add 1 Mil for the following: EA 2 MK-82SE, EA 2 AIM-7/9.
 4. Fuze arming: M-904 4.0 sec, FMU-54 2.5 sec. For cockpit selectable high/low drag, the above deliveries are compatible with these settings. If any delivery parameters are to be used consult and comply with the appropriate warnings and notes in the -34-1-1.
 5. Since certain MK-82SE ripple release configurations require a minimum intervalometer setting of 0.14 sec, all releases herein are planned for 0.14 sec.
 6. Top of frag envelope is 2520' at 9 sec. A minimum of 25 sec between passes or flight paths with a minimum of 3100' lateral separation should be observed to clear frag pattern.
 7. For straight ahead recovery on level high drag delivery, release altitude must not exceed 250' AGL. This altitude restriction does not apply if the release is single or salvo and an immediate 4 G pullup or 4 G 60deg climbing turn is made.

MK 84 LGB -- 2052#, 4.6DI, Gives laser terminal guidance capability. Weapon flies ballistically until the illuminated TGT is within detector field of view.

MK 84 EO -- 2286#, 6.0 DI, Gives standoff capability and assures accurate impact.

Fuzing -- FMU 26 Nose, M 905 Tail

SAFE ESCAPE

10 - 1200
15 - 1500
20 - 1900
30 - 2500
45 - 3300

MINIMUM RELEASE ALT

<u>4 sec</u>	<u>6 sec</u>
0 - 290	620
15 - 1240	2010
20 - 1550	2460
30 - 2130	3310
45 - 3340	5230

EMPLOYMENT

Carriage: 650/1.4, +3, 0, or 550/.95, +5, -1

Jettison: 175-550/.95(E0) 175-650/1.4(LGB)

Release: 175-650/1.4

MK-84 LDGP (SINGLE 450 KCAS)

EVENT (DEG)	MILS/ CB	WIND	APEX	REL	AOD	BOMB RANGE	REC ALT	IPP
45 HADB	142+.7/1.10	1.4/17.8	13.1	8.1	1950	6082	5.1	23
45 DB	111+.7/1.13	1.5/12.2	11.5	5.1	950	4050	2.3	24
30 DB	144+.8/1.09	1.2/12.7	8.0	4.1	1750	5191	2.7	32
30 DB	125+.8/1.11	1.2/10.2	7.5	3.1	1150	4061	1.7	32
20 LALD	165+.8/1.08	1.0/12.8	5.5	3.0	2800	5487	2.3	37
20 LALD	148+.8/1.09	1.0/11.1	5.3	2.5	2100	4765	1.8	36
10 LALD	198+.9/1.07	0.7/14.8	3.5	2.5	6600	6628	2.3	43
10 LALD	178+.9/1.08	0.7/12.8	3.0	2.0	5800	5695	1.8	42

MK-84 LDGP (SINGLE 500 KCAS)

45 HADB	121+.5/1.10	1.3/16.7	13.1	8.2	1750	6295	4.6	22
45 DB	97+.5/1.14	1.3/12.2	11.8	5.7	950	4547	2.2	22
30 DB	133+.6/1.09	1.1/13.2	8.3	4.6	1900	5847	2.9	31
30 DB	115+.6/1.11	1.1/10.8	7.8	3.6	1300	4786	2.0	28
20 LALD	152+.7/1.08	0.9/13.5	5.8	3.5	3100	6502	2.7	37
20 LALD	125+.7/1.10	0.9/10.5	5.3	2.5	1900	4985	1.7	34
10 LALD	170+.7/1.08	0.6/14.2	3.5	2.5	6300	7249	2.3	39
10 LALD	153+.7/1.09	0.6/12.3	3.0	2.0	5300	6083	1.8	40

- NOTES:
1. Plus/minus 2.25 Mils/1000' PA. Plus/minus 2.25 Mils/10deg C.
 2. Add 1 Mil for the following: EA MK-84, EA 2 AIM-7/9.
 3. Where two release altitudes appear for a given dive angle, the higher altitude allows 6 sec fuze arming, the lower altitude allows 4 sec arming.
 4. Max load for MK-84 is 3 bombs, 1 EA stations 1, 5, and 9.
 5. Top of frag envelope is 2820' at 9 sec. A minimum of 20 sec between passes, recovery above 2820' or flight paths with a minimum of 3400' lateral separation should be observed to clear frag pattern.

MK 20 (Rockeye) -- 476#, 2.9 DI, 247 MK 118 anti-tank bombs
Will penetrate 7.5" of Armor

Fuzing: Bombs arm .5 sec after cluster opening and
detonate upon impact
MK 339 Mechanical time fuze with 1.2, 4.0, 6.0
Set by armament crews (Fuze may be set from 1.2
to 50 sec in .1 sec increments if desired)

EMPLOYMENT

Carriage: 550/1.1, +5, -1 or 650/1.3, +3, 0
Jettison: 175-450/1.1 Station 5
175-550/1.1 Station 2,8
250-475/1.1 Station 2,8 with slats extended
Release: 175-550/1.1, +4G or 175-650/1.2, +3G

If 1.2 Fuze: Safe Escape
0 - 800
0 - 400(4G pull after release)
10 - 900(4G pull after release)

Primary - 1.2 sec (Nose)

Secondary - 4.0 sec (Nose and Tail)
Tail only will result in dud

MK-20 MODS 2, 3, 4 ROCKEYE II (SINGLE 450 KCAS)

EVENT (DEG)	FUZE FUNCT	MILS	WIND	APEX	REL	AOD	BOMB RG	REC ALT	IPP
45 HADB	4.0	190+.7	2.8/24.4	12.1	6.0	1850	4114	3.2	46
30 DB	4.0	169+.8	1.8/16.2	7.8	3.5	1750	4328	2.2	45
20 DB	4.0	140+.8	1.2/11.1	5.0	2.0	1600	3886	1.4	40
20 DB	1.2	143+.8	1.5/10.0	4.7	1.5	1150	2706	0.8	52
10 LAB	1.2	166+.9	1.1/10.8	3.0	1.0	2700	2976	0.8	61
LEVEL	1.2	158+.9	0.5/3.5	--	0.4	----	2832	---	--

MK-20 MODS 2, 3, 4 ROCKEYE II (SINGLE 500 KCAS)

45 HADB	4.0	160+.5	2.5/22.8	12.1	6.0	1650	4366	2.7	41
30 DB	4.0	142+.6	1.6/15.0	7.8	3.5	1550	4531	2.0	39
20 DB	4.0	118+.7	1.0/10.3	5.0	2.0	1450	4059	1.2	37
20 DB	1.2	121+.7	1.4/9.5	4.7	1.5	1050	2820	0.6	49
10 LAB	1.2	145+.7	1.0/10.5	3.0	1.0	2550	3138	0.7	60
LEVEL	1.2	143+.7	0.4/3.8	---	0.4	----	3050	---	--

- NOTES:
1. Plus/minus 2.25 Mils/1000' PA. Plus/minus 2.25 Mils/10deg C.
 2. Add 1 Mil for the following: EA MK-20, EA 2 AIM-7/9.
 3. Due to the possibility of an intact, high order detonation, a 4 G wings level pull off should be made on the 10deg delivery. 300' is the minimum altitude for a level delivery with a straight ahead recovery. A 4 G recovery lowers this minimum to 200' AGL.

CBU 52 -- 770#, 4.6 DI, 217 BLU 61 A/B bombs, used
against materiel targets

CBU 58 -- 840#, 4.6 DI, 650 BLU 63 B bombs used
against personnel and light materiel targets

CBU 71 -- 840#, 4.6 DI, 650 BLU 86B bombs used
against personnel and light materiel targets,
has time delay fuze for random detonation,

Fuzing: FMU 56/FMU 26

MINIMUM RELEASE ALT

0 - 2020
15 - 2800
30 - 3530
45 - 4150

EMPLOYMENT

Carriage: 550/1.1, +5, -1, or 600/1.3, +3, 0
Jettison: 175-500/1.3, Station 2,8
250-475/1.3, Station 2,8 with slats extended
300-500/1.1, Station 5
Release: 175-550/,9, +4G
500K Max with slats extended

CBU-58/B, 71/B (RIPPLE 3 500 KCAS) INT .14

EVENT	HOB	MILS/CB	WIND	BASE	REL	AOD	BMB RG	PAT LG	REC ALT	IPP
45 HADB	1800	138+.5/1.41	1.7/22.4	15.0	8.5	2050	6452	74	4.8	27
30 DB	1800	170+.6/1.62	1.6/21.0	10.5	5.5	2800	6698	93	3.7	36
15 LAB	1800	237+.7/1.72	1.3/25.6	7.0	4.5	7500	8400	149	3.9	46
15 LAB	1500	218+.7/----	1.2/24.1	6.5	4.0	6800	8036	150	3.4	41
LEVEL	1800	352+.7/----	1.0/13.2	---	4.0	----	11477	246	---	--
LEVEL	1500	326+.7/----	0.9/10.9	---	3.5	----	10942	246	---	--
LEVEL	1100	278+.7/----	0.7/7.9	---	2.5	----	9283	241	---	--

CBU-58/B, 71/B (RIPPLE 3 450 KCAS)

45 HADB	1800	155+.7/1.33	1.9/22.9	14.5	8.0	2100	5919	68	4.9	26
30 DB	1800	199+.8/1.53	1.8/22.6	10.5	5.5	3200	6372	91	4.0	39
15 LAB	1800	274+.8/1.58	1.5/26.8	7.0	4.5	8500	7817	140	4.0	54
15 LAB	1500	238+.8/----	1.4/24.3	6.5	4.0	7000	7664	136	3.5	46
LEVEL	1800	375+.9/----	1.1/12.5	---	4.0	----	10758	227	---	--
LEVEL	1500	354+.9/----	1.0/10.2	---	3.5	----	10065	222	---	--
LEVEL	1100	304+.9/----	0.8/7.4	---	2.5	----	8667	222	---	--

CBU-58/B, 71/B (RIPPLE 6 500 KCAS)

45 HADB	1800	138+.5/1.41	1.7/22.6	15.0	8.5	2000	6498	180	4.6	24
30 DB	1800	168+.6/1.62	1.6/21.6	10.5	5.5	2800	6730	229	3.5	35
15 LAB	1800	236+.7/1.72	1.3/26.4	7.0	4.5	7500	8436	361	3.8	46
15 LAB	1500	213+.7/----	1.2/24.1	6.5	4.0	6800	8139	356	3.3	39
LEVEL	1800	349+.7/----	1.0/13.2	---	4.0	----	11662	615	---	--
LEVEL	1500	321+.7/----	0.9/10.9	---	3.5	----	10828	615	---	--
LEVEL	1100	273+.7/----	0.7/7.9	---	2.5	----	9464	603	---	--

NOTE: For CBU deliveries, see Notes on last CBU card.

CBU-58/B, 71/B (RIPPLE 6 450 KCAS)

EVENT	HOB	MILS/CB	WIND	BASE	REL	AOD	BMB RG	PAT LG	REC ALT	IPP
45 HADB	1800	150+.7/1.33	1.8/22.6	14.5	8.0	2050	5970	170	4.6	25
30 DB	1800	193+.8/1.53	1.7/22.3	10.5	5.5	3100	6438	224	3.9	38
15 LAB	1800	262+.8/1.58	1.4/26.7	7.0	4.5	8500	8014	347	3.9	50
15 LAB	1500	235+.8/----	1.4/24.3	6.5	4.0	7000	7766	341	3.4	44
LEVEL	1800	369+.9/----	1.1/12.5	---	4.0	----	10929	568	---	--
LEVEL	1500	349+.9/----	1.0/10.2	---	3.5	----	10232	556	---	--
LEVEL	1100	297+.9/----	.08/7.4	---	2.5	----	8834	556	---	--

CBU-52B/B (RIPPLE 3 500 KCAS)

45 HADB	1800	141+.5/1.38	1.7/22.4	15.0	8.5	2050	6452	73	4.8	24
30 DB	1800	170+.6/1.55	1.5/21.0	10.5	5.5	2800	6698	93	3.7	36
15 LAB	1800	237+.7/1.62	1.3/28.3	7.0	4.5	7500	8400	149	3.9	46
15 LAB	1500	215+.7/----	1.2/23.4	6.5	4.0	6800	8073	144	3.4	40
LEVEL	1800	328+.7/----	0.8/10.5	---	4.0	----	12278	246	---	--
LEVEL	1500	304+.7/----	0.7/8.5	---	3.5	----	11672	246	---	--
LEVEL	1100	276+.7/----	0.7/7.3	---	2.5	----	9321	241	---	--

CBU-52B/B (RIPPLE 3 450 KCAS)

45 HADB	1800	153+.7/1.31	1.8/22.4	14.5	8.0	2100	5928	68	4.9	26
30 DB	1800	196+.8/1.47	1.7/21.8	10.5	5.5	3150	6406	90	4.0	38
15 LAB	1800	269+.8/1.54	1.4/25.9	7.0	4.5	8500	7977	139	4.0	51
15 LAB	1500	236+.8/----	1.3/22.6	6.5	4.0	7000	7716	168	3.5	45
LEVEL	1800	365+.9/----	1.0/11.5	---	4.0	----	10821	227	---	--
LEVEL	1500	348+.9/----	0.9/9.5	---	3.5	----	10109	222	---	--
LEVEL	1100	296+.9/----	0.8/6.8	---	2.5	----	8700	222	---	--

NOTE: For CBU deliveries see Notes on last CBU card.

CBU-52B/B (RIPPLE 6 500 KCAS)

EVENT	HOB	MILS/CB	WIND	BASE	REL	AOD	BMB RG	PAT LG	REC ALT	IPP
45 HADB	1800	138+.5/1.38	1.6/22.1	15.0	8.5	2000	6506	181	4.6	24
30 DB	1800	165+.6/1.55	1.5/20.3	10.5	5.5	2800	6768	231	3.5	34
15 LAB	1800	231+.7/1.62	1.2/25.5	7.0	4.5	7500	8510	368	3.8	44
15 LAB	1500	212+.7/----	1.2/23.4	6.5	4.0	6800	8181	360	3.3	38
LEVEL	1800	345+.7/----	0.8/10.5	---	4.0	----	12462	615	---	--
LEVEL	1500	319+.7/----	0.7/8.5	---	3.5	----	11856	615	---	--
LEVEL	1100	271+.7/----	0.7/7.3	---	2.5	----	9501	603	---	--

CBU-52B/B (RIPPLE 6 450 KCAS)

45 HADB	1800	150+.7/1.31	1.8/22.1	14.5	8.0	2050	5978	170	4.6	25
30 DB	1800	191+.8/1.47	1.7/21.6	10.5	5.5	3100	6473	223	3.9	37
15 LAB	1800	259+.8/1.54	1.4/25.9	7.0	4.5	8500	8031	348	3.9	50
15 LAB	1500	234+.8/----	1.3/22.6	6.5	4.0	7000	7804	345	3.4	43
LEVEL	1800	360+.9/----	1.0/11.5	---	4.0	----	10991	568	---	--
LEVEL	1500	343+.9/----	0.9/9.5	---	3.5	----	10276	556	---	--
LEVEL	1100	291+.9/----	0.8/6.8	---	2.5	----	8867	556	---	--

- NOTES:
1. + 2.5 MILS/1000' PA. + 2.5 MILS/10 DEG C.
 2. ADD 1.5 MILS/CBU FOR RIPPLE REL OF LESS THAN 6 CBU'S.
 3. ADD 1 MIL FOR: EA 2 AIM-7/9.
 4. DELIVERIES ARE FOR FMU-56B/B, D/B SET AT LISTED HOB. SAFE SEP WILL BE SET AT 3 SEC. ECM SWITCH WILL BE "OFF" UNLESS BRIEFED OTHERWISE BY WEAPONS OFFICER.
 5. MAX LOADING ON TER IS SHOULDER STATIONS ONLY, OR OUTBOARD SHOULDER AND BOTTOM STATION. MAX LOADING ON CENTERLINE MER IS ALL AFT STATIONS AND FORWARD SHOULDER STATIONS.
 6. 45 DEG HADB MIN ALT IS BASED ON THREAT. ALL OTHER "MIN ALT" ARE MIN. PICKLE ALT FOR THE FUNCTIONING OF THE FMU-56 FUZE. UP TO 12 CBU'S MAY BE RIPPLED IN A PASS. IF MORE THAN 6 ARE TO BE RIPPLED, INCREASE THE PICKLE ALT BY 200' FOR 15 DEG, 400' FOR 30 DEG.

BLU 27 (Nape) -- 870#, 3.8 DI, Fire Bomb

Fuzing -- FMU 7 B/B

EMPLOYMENT

Carriage: 600/1.3, +3, 0, or 550/1.1, +5, -1

Jettison: 275-375/1.1 Station 5
275-500/1.1 Station 2, 8
250-475/1.1 Station 2,8 with slats extended

Release: 250-500/1.1

- 1) Use .14 Intvl only for releasing ripple
- 2) Sight depression is computed for 1st bomb on target.
When it is desirable to hit short, estimate distance
or recompute mil setting
- 3) Do not fly through fire bomb smoke within 20 sec.

BLU 27 (Finned)

DIVE	TAS	REL ALT	ALT LOSS PULLOUT	TIME OF FLIGHT	MILS	H/T	X
0	480	300	----	4.1	113	.20	7
0		500	----	5.4	138	.25	9
0		1000	----	7.8	184	.35	13
10		500	260	2.6	81	.50	4
10		600	260	3.1	89	.50	5

BLU 27/Dive Toss

DIVE	TAS	REL ALT	DC
		Below	
15	500	5000	1.01

BLU 27 (Unfinned)

DIVE	CAS	REL ALT	ALT LOSS PULLOUT	TIME OF FLIGHT	MILS	H/T	X
0	450	300	----	4.1	111	.30	7.5
0		500	----	5.4	146	.40	10.0
0		1000	----	7.8	216	.66	14.5
10		500	260	2.6	77	.60	5.0
10		600	260	3.1	88	.62	6.0

STRAFE 450 KCAS

EVENT	MILS	WIND	APEX	REL	HORIZ RANGE	REC ALT
45 HAS	72+.1	1.0/14	13.0	8.0	7066	4500
30 HAS	55+.2	0.6/8	8.0	4.0	6340	2200
10 LAS	37+.2	0.1/1	3.0	--	2500	200

NOTES:

1. Plus/minus 1 mil/1000 PA. Plus/minus 1 mil/10deg C.
2. Firing slant ranges/altitudes permit 1.0 sec burst for 45 deg. and 30 deg. Permits 0.5 sec burst for 10 deg.
3. Gross weight used: 40,000 lbs.

BDU-33A/B SUU-21 (SINGLE 450 KCAS)

EVENT (DEG)	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	REC ALT	IPP
45 HADB	154+.6/1.18	1.5/18.8	13.1	8.0	2100	5922	5.1	47
45 DB	120+.6/1.19	1.6/12.7	11.6	5.0	1050	3975	2.3	54
30 DB	155+.7/1.16	1.3/13.2	8.0	4.0	1850	5080	2.7	60
30 DB	133+.7/1.15	1.3/10.5	7.5	3.0	1200	3989	1.7	62
20 LALD	174+.9/1.14	1.0/13.1	5.5	3.0	4500	5379	2.3	65
20 LALD	140+.9/1.14	1.0/9.5	5.0	2.0	2600	3896	1.4	68
10 LALD	160+.9/1.13	0.7/10.5	2.7	1.5	3950	4532	1.3	52
10 HD	98+.9/1.13	0.6/5.2	2.3	0.6	1150	2259	0.4	57

NOTES: 1. Plus/minus 2.5 Mils/1000' PA. Plus/minus 2.5 Mils/10deg C.

BDU-33A/B SUU-21 (SINGLE 500 KCAS)

45 HADB	134+.5/1.19	1.4/17.8	13.1	8.0	1800	6133	4.6	
45 DB	107+.5/1.19	1.4/12.8	11.8	5.5	1050	4462	2.2	
30 DB	144+.6/1.16	1.2/13.8	8.3	4.5	2000	5799	2.9	
30 DB	124+.6/1.17	1.2/11.2	7.8	3.5	1350	4696	2.0	
20 LALD	164+.7/1.15	1.0/14.1	5.7	3.5	3250	6795	2.7	
20 LALD	118+.7/1.15	0.9/9.0	5.0	2.0	1450	4063	1.2	
10 LALD	138+.7/1.15	0.6/10.2	2.7	1.5	3700	4816	1.3	

NOTES: 1. Plus/minus 2.25 Mils/1000' PA. Plus/minus 2.25 Mils/10deg C.

BDU-33A/B TER (SINGLE 450 KCAS)

EVENT (DEG)	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	REC ALT	IPP
45 HADB	148+.6/1.07	1.6/19.8	13.1	8.0	2000	6007	5.1	24
45 DB	110+.6/0.96	1.6/13.3	11.6	5.0	950	4070	2.3	35
30 DB	146+.7/1.01	1.3/13.9	8.0	4.0	1750	5179	2.7	43
30 DB	122+.7/0.97	1.3/10.9	7.5	3.0	1100	4095	1.7	47
20 LALD	165+.9/1.02	1.1/13.8	5.5	3.0	2800	5488	2.3	46
20 LALD	128+.9/0.99	1.0/10.0	5.0	2.0	1500	4013	1.4	47
10 LALD	151+.9/1.00	0.7/11.2	2.7	1.5	3800	4679	1.3	--
10 HD	84+.9/1.00	0.6/ 5.6	2.3	0.6	1000	2392	0.4	--

NOTES: 1. Plus/minus 2.5 MILS/1000' PA. Plus/minus 2.5 MILS/10deg C.

BDU-33A/B TER (SINGLE 500 KCAS)

45 HADB	128+.5/1.08	1.5/18.0	13.1	8.0	1800	6215	4.6	20
45 DB	97+.5/0.97	1.5/13.5	11.8	5.5	950	4552	2.2	28
30 DB	136+.6/1.04	1.2/14.5	8.3	4.5	1900	5890	2.9	36
30 DB	115+.6/0.99	1.2/11.8	7.8	3.5	1300	4794	2.0	35
20 LALD	156+.7/1.05	1.0/14.9	5.7	3.5	3150	6415	2.7	32
20 LALD	107+.7/0.98	0.9/9.5	5.0	2.0	1350	4178	1.2	38
10 LALD	130+.7/0.99	0.6/10.9	2.7	1.5	3550	4964	1.3	--

NOTES: 1. Plus/minus 2.25 MILS/1000' PA. Plus/minus 2.25 MILS/10deg C.

BDU-33A/B TER RIPPLE 6 450 KCAS

EVENT (DEG)	INT	MILS/ CB	WIND	APEX	REL	AOD	BOMB RG	PATTN LGTH	REC ALT	IPP
45 HADB	.14	155+.6/1.10	1.6/21.9	13.5	9.0	2350	6598	182	5.7	18
45 DB	.14	118+.6/1.00	1.6/15.6	12.0	6.0	1150	4737	140	2.8	33
30 DB	.14	153+.7/1.02	1.3/15.3	8.3	4.5	2050	5670	213	2.9	40
30 DB	.14	130+.7/0.99	1.3/12.5	7.8	3.5	1400	4626	183	1.9	44
20 LALD	.14	178+.9/1.03	1.1/15.6	5.7	3.5	3400	6108	287	2.6	40
20 LALD	.14	138+.9/0.99	1.0/12.0	5.2	2.5	2000	4775	237	1.6	47
10 LALD	.10	146+.9/1.00	0.7/11.2	2.7	1.5	3750	4679	229	1.2	--
10 HD	.14	99+.9/1.00	0.6/6.6	2.4	0.8	1550	2950	264	0.5	--

- NOTES: 1. Plus/minus 2.5 Mils/1000' PA. Plus/minus 2.5 Mils/10deg C.
2. Add 1 Mil/bomb for ripple releases of less than 6 bombs.

BDU-33A/B TER RIPPLE 6 500 KCAS

45 HADB	.14	133+.5/1.09	1.5/20.7	13.6	9.0	2100	6860	185	5.0	13
45 DB	.14	106+.5/1.03	1.5/15.7	12.3	6.5	1450	5225	156	3.0	26
30 DB	.14	142+.6/1.05	1.2/16.0	8.5	5.0	2200	6389	230	3.1	28
30 DB	.14	122+.6/1.00	1.2/13.3	8.0	4.0	1550	5334	201	2.2	36
20 LALD	.14	169+.7/1.07	1.0/16.6	6.0	4.0	3750	7080	298	3.0	27
20 LALD	.14	119+.7/0.99	0.9/11.4	5.2	2.5	1800	4969	240	1.5	39
10 LALD	.10	123+.7/0.99	0.6/10.9	2.7	1.5	3400	4964	336	1.1	--

- NOTES: 1. Plus/minus 2.5 Mils/1000' PA. Plus/minus 2.25 Mils/10deg C.
2. Add 1 Mil/bomb for ripple releases of less than 6 bombs.

MK 106 SUU 21 (SINGLE 450KCAS)

10HD	218+.9	2.1/9.0	.6	1900	1550	.4
10HD	153+.9	1.5/6.0	.4	1000	1260	.2
LEVEL	171+.9	.75/6.5	.2	----	1280	.2

- NOTES: 1. Plus/minus 2.5 mils/1000'PA. Plus/minus 2.5 mils/ 10°C.

CAS SETTINGS

MK 82 LDGP (Single 450 KCAS)

	<u>MILS/CB</u>	<u>WIND</u>	<u>REL</u>	<u>AOD</u>	<u>BOMB RANGE</u>	<u>REC ALT</u>
LVL	180/---	.37/12.4	.9	---	5550	----
10°	121/1.01	.60/8.0	1.0	2400	3600	.8
20°	On page 12					
30°	113/1.01	1.25/9.0	2.5	800	3500	1.1
45°	101/1.01	1.60/10.5	4.0	750	3320	1.2

Note: See notes on page 12 for mil corrections.

MK 82 Snakeye Hi Drag (Single 450 KCAS)

	<u>MILS/CB</u>	<u>WIND</u>	<u>REL</u>	<u>AOD</u>	<u>BOMB RANGE</u>	<u>REC ALT</u>
LVL	On page 15					
10°	94	.80/5.0	.4	---	1580	.2
20°	129	1.6/8.0	1.0	---	2000	.4

Note: See notes on page 15 for mil corrections.

BLU-27 Finned (Single 450 KCAS)

	<u>MILS/CB</u>	<u>WIND</u>	<u>REL</u>	<u>AOD</u>	<u>BOMB RANGE</u>	<u>REC ALT</u>
LVL	64	.10/2.7	.05	---	1220	---
10°	74	.52/4.0	.4	---	1720	.2
20°	83	.90/5.3	1.0	---	2250	.4

Note: See notes on page 24 for mil corrections.

BLU-27 Unfinned (Single 450 KCAS)

	<u>MILS/CB</u>	<u>WIND</u>	<u>REL</u>	<u>AOD</u>	<u>BOMB RANGE</u>	<u>REC ALT</u>
LVL	67	.12/2.8	.05	---	1160	---
10°	81	.60/4.2	.4	---	1675	.2

Note: See notes on page 24 for mil corrections.

NOTE: The above weapon settings are the absolute minimum altitudes weapons may be released. This means no press factor whatsoever!!

INTRODUCTION

The following pages include release parameters for GBU-10 A/B (PW I), GBU-10 C/B (PW II), GBU-12 A/B (PW I), GBU-12 B/B (PW II), BDU-33 A/B and MK-106s.

ALL DELIVERIES ARE FOR BALLISTIC RELEASE PARAMETERS.

Those C_B settings with parenthesis around them are based on interpolation as no tables/data are available.

All loft timer settings are the release time only. A time that YOU compute from a VTRP to the pullup must be entered in the pullup timer (minimum recommended is .2 sec). The pullup is 4'G' in 2 seconds.

All level deliveries have settings for 3 methods of release: C_B for a WRCS automatic release, release slant range (REL SRI) for a ROR and a mil setting for a direct delivery.

The Long Range Spike Toss (LRST) deliveries include all data needed for low alt ingress to pop up attacks. A 7NM split point is assumed.

The Plain Vanilla Delivery pages give only an apex/base altitude. This altitude allows for approximately 5 seconds of tracking time down the chute. If using a low alt ingress to a pop up attack, compute climb angles and pull down altitudes as follows: *See Note

Climb Angles = Dive Angle + 10° (For 20° and higher dive angles)

= Dive Angle + 5° (For less than 20° dive angles)

Pull Down Altitude (3-3½ 'G') = Apex Alt - (Climb Angle x 50)

(4-4½ "G") = Apex Alt - (Climb Angle x 37½)

*NOTE-- A Rule Of Thumb (ROT) for pull down alt is for 10°-15° dive angles use 1000' less than apex alt, for 20° use 1500' less than apex alt and for 30° use 2000' less than apex altitude.

LOFT DELIVERIES

EVENT	WEAPON	RUN-IN ALT	RUN-IN REL KTAS	C _B	P&P SRI	REL SRI	TOF
5° LOFT	*GBU-10A/B	500'	550	1.08	9300'	7500'	8 Sec
	*GBU-10C/B	↓	↓	1.09	9300'	7500'	↓
	*GBU-12A/B	↓	↓	1.11	9200'	7400'	↓
	*GBU-12B/B	↓	↓	1.10	9200'	7400'	↓
	BDU-33A/B	↓	↓	SUU-1.15	8800'	7100'	↓
				TER-1.06			
	TLADD BACKUP - Release Timer = 1.9						
10° LOFT	*GBU-10A/B	500'	550	1.09	13500'	10800'	15 Sec
	*GBU-10C/B	↓	↓	1.10	13400'	10800'	↓
	GBU-12A/B	↓	↓	1.14	13000'	10900'	↓
	GBU-12B/B	↓	↓	1.13	13100'	10800'	↓
	BDU-33A/B	↓	↓	SUU-1.23	12100'	9500'	12
				TER-1.09			
	TLADD BACKUP - Release Timer = 2.8						
20° LOFT	*GBU-10A/B	500'	550	1.11	21400'	17300'	29 Sec
	*GBU-10C/B	↓	↓	1.13	21200'	17100'	↓
	GBU-12A/B	↓	↓	1.21	20200'	16100'	↓
	GBU-12B/B	↓	↓	1.20	20300'	16200'	↓
	BDU-33A/B	↓	↓	SUU-1.25	17800'	13700'	20
				TER-1.16			
	TLADD BACKUP - Release Timer = 4.4						
30° LOFT	GBU-10A/B	500'	550	1.13	27100'	21500'	38 Sec
	GBU-10C/B	↓	↓	1.15	26800'	21200'	↓
	GBU-12A/B	↓	↓	1.24	25500'	19900'	↓
	GBU-12B/B	↓	↓	1.24	25300'	19700'	↓
	BDU-33A/B	↓	↓	SUU-1.27	21600'	16000'	28
				TER-1.22			
	TLADD BACKUP - Release Timer = 6.0						

*These deliveries require a 10' (minimum) LASER spot elevation.

LONG RANGE SPIKE TOSS (LRST)

<u>EVENT</u>	<u>WEAPON</u>	<u>RUN-IN</u> <u>ALT</u>	<u>REL</u> <u>KTAS</u>	<u>POP</u> <u>CLIMB</u> <u>ANGLE</u>	<u>PULL</u> <u>DOWN</u>	<u>APEX</u>	<u>P&P</u> <u>SRI</u>	<u>REL</u> <u>RNG</u> <u>SRI</u>	<u>REL</u> <u>CL</u> <u>ANG</u>	<u>C_R</u>	<u>TOF</u>
10° DIVE	GBU-10A/B	500'	550	15°	2500'	3000'	20700'	17300'	15°	1.12	25 Sec
↓	GBU-10C/B	↓	↓	↓	↓	↓	20600'	17200'	↓	1.13	25
↓	GBU-12A/B	↓	↓	↓	↓	↓	18700'	16400'	↓	1.22	27
↓	GBU-12B/B	↓	↓	↓	↓	↓	18800'	16500'	↓	1.20	27
↓	BDU-33A/B	↓	↓	↓	↓	↓	20000'	16700'	↓	S-1.25	27
										T-1.36	
15° DIVE	GBU-10A/B	500'	550	20°	2700'	3500'	19500'	16900'	10°	1.11	23 Sec
↓	GBU-10C/B	↓	↓	↓	↓	↓	19300'	16700'	↓	1.12	23
↓	GBU-12A/B	↓	↓	↓	↓	↓	18600'	16000'	↓	1.21	25
↓	GBU-12B/B	↓	↓	↓	↓	↓	18700'	16100'	↓	1.19	25
↓	BDU-33A/B	↓	↓	↓	↓	↓	18000'	15400'	↓	S-1.25	25
										T-1.35	

LEVEL DELIVERIES

<u>WEAPON</u>	<u>REL ALT</u>	<u>REL KTAS</u>	<u>CR</u>	<u>MILS</u>	<u>H/T</u>	<u>X-W CORR</u>	<u>REL RNG SRI</u>	<u>TOF</u>
GBU-10A/B	*2000'	550	(1.08)	208+.7	.4	.4'	10100'	10 Sec
	*3000'	↓	(1.09)	251+.7	.4	.5'	12300'	12
	4000'	↓	(1.10)	--	.5	.7'	14400'	15
GBU-10C/B	*2000'	550	(1.09)	204+.7	.4	.4'	10200'	10 Sec
	*3000'	↓	(1.10)	243+.7	.4	.5'	12400'	12
	4000'	↓	(1.11)	--	.5	.7'	14500'	15
GBU-12A/B	*1000'	550	(1.10)	156+.7	.3	.4'	6700'	8 Sec
	2000'	↓	(1.12)	214+.7	.4	.7'	9300'	11
GBU-12B/B	*1000'	550	(1.11)	149+.7	.3	.4'	7000'	8 Sec
	2000'	↓	(1.13)	209+.7	.4	.7'	10000'	11
BDU-33A/B	1000'	550	S-1.18	160+.7	.3	1'	6600'	7.5 Sec
			T-1.09	156+.7			6800'	
	2000'		S-1.19	224+.7	.4	2'	9500'	11
			T-1.10	221+.7			9400'	
	3000'		S-1.20	--	-	-	11600'	14
			T-1.11	--	-	-	11500'	
	4000'		S-1.22	--	-	-	13500'	16
		↓	T-1.13	--	-	-	13300'	
MK-106	500'	500	--	280+.7	1.7	12'	1850'	7 Sec
	↓	550	--	268+.6	1.6	12'	1920'	7
	1000'	500	--	--	-	18'	2178'	10
	↓	550	--	--	-	18'	2250'	10

*These deliveries have a CEP of 50'.

All Cps in parenthesis are interpolated data as no tables are available with this release information.

Under the BDU-33 columns, the S is for SUU-21 CBs and the T is for TER Cps.

PLAIN VANILLA DELIVERIES

SPIKE TOSS or
DIVE TOSS or
DIRECT

GBU-10 A/B - PW I

<u>EVENT</u>	<u>REL KTAS</u>	<u>SLANT RNG</u>	<u>CR*</u>	<u>MILS</u>	<u>H/T CORR</u>	<u>X-W CORR</u>	<u>BASE/ APEX ALT</u>	<u>REL ALT</u>	<u>TOF</u>
10° DIVE	500	7400'	(1.14)	180+1	.7	14'	3000'	2500'	8 Sec
	550	7400'	(1.15)	188+1	.5	14'	3500'	2500'	8
15° DIVE	500	7300'	(1.18)	175+.9	.8	14'	5000'	3000'	8
	550	7700'	(1.19)	150+.9	.7	13'	5000'	3000'	8
20° DIVE	500	7200'	(1.18)	165+.8	.9	14'	6000'	3500'	8
	550	7300'	(1.19)	145+.8	.8	14'	6000'	3500'	8
30° DIVE	450	6450'	(1.19)	166+.8	1.3	13'	8000'	4000'	8
	500	7300'	(1.18)	150+.8	1.2	14'	8500'	4500'	8
	550	7500'	(1.19)	131+.8	1.0	13'	8500'	4500'	8
30° HA	500	11400'	1.17	231+.8	1.1	21'	14000'	9000'	14
	550	11900'	1.18	204+.8	1.1	20'	14000'	9000'	13
45° DIVE	450	6400'	1.25	131+.6	1.6	13'	10000'	5000'	8
	500	7700'	1.25	124+.6	1.4	14'	11000'	6000'	8
	550	7750'	1.26	107+.6	1.3	13'	11000'	6000'	8
45° HA	450	11000'	1.21	185+.6	1.6	21'	15000'	9000'	12
	500	11100'	1.22	159+.6	1.4	20'	15000'	9000'	11
	550	11400'	1.24	138+.6	1.3	13'	15000'	9000'	11

NOTES: *1. Cps in parenthesis are interpolated as no tables are available with this release information.

2. The frag envelope for 2000# bombs goes up to 2850'.

PLAIN VANILLA DELIVERIES

SPIKE TOSS or
DIVE TOSS or
DIRECT

GBU-10 C/B - PW II

EVENT	RFL KTAS	SLANT RNG	C _B *	MILS	H/T CORR	X-W CORR	BAGE/ APEX ALT	RFL ALT	TOF
10° DIVE	500	7400'	(1.19)	168+.9	.7	14'	3000'	2500'	8 Sec
	550	7800'	(1.20)	146+.9	.5	14'	3500'	2500'	8
15° DIVE	500	7300'	(1.23)	163+.9	.8	14'	5000'	3000'	8
	550	7700'	(1.24)	139+.9	.7	13'	5000'	3000'	8
20° DIVE	500	7200'	(1.23)	131+.9	.9	14'	6000'	3500'	8
	550	7800'	(1.24)	133+.9	.8	14'	6000'	3500'	8
30° DIVE	450	6450'	(1.24)	153+.8	1.3	13'	8000'	4000'	8
	500	7300'	(1.23)	138+.8	1.2	14'	8500'	4500'	8
	550	7500'	(1.24)	119+.8	1.0	13'	8500'	4500'	8
30°	500	11400'	(1.22)	222+.8	1.1	21'	14000'	9000'	14
HADE/C	550	11900'	(1.23)	196+.8	1.1	20'	14000'	9000'	13
45° DIVE	450	6400'	(1.30)	117+.7	1.6	13'	10000'	5000'	8
	500	7700'	(1.30)	111+.7	1.4	14'	11000'	6000'	8
	550	7750'	(1.31)	95+.7	1.3	13'	11000'	6000'	8
45°	450	11000'	(1.26)	174+.7	1.6	21'	15000'	9000'	12
HADE/C	500	11100'	(1.27)	149+.7	1.4	20'	15000'	9000'	11
	550	11400'	(1.28)	128+.7	1.3	18'	15000'	9000'	11

NOTES: 1. Cbs in parenthesis are interpolated data as no tables are available with this release information.

2. The frag envelope for 2000lb bombs goes up to 2850'

PLAIN VANILLA DELIVERIES

SPIKE TOSS or
DIVE TOSS or
DIRECT

GBU-12 A/B - PW I

EVENT	REL KTAS	SCANT RNG	C _B *	MILS	H/T CORR	X-W CORR	BASE/ APEX ALT	REL ALT	TOF
10° DIVE	500	6300'	(1.05)	163+.1	.6	13'	3000'	2000'	8 Sec
	550	7700'	(1.06)	161+.1	.6	14'	3500'	2500'	8
15° DIVE	500	7300'	(1.09)	179+.9	.8	14'	5000'	3000'	8
	550	7600'	(1.10)	155+.9	.7	13'	5000'	3000'	7.5
20° DIVE	500	7350'	(1.25)	193+.8	.9	14'	6000'	3500'	8
	550	7500'	(1.27)	171+.8	.8	13'	6000'	3500'	8
30° DIVE	450	6400'	(.99)	156+.8	1.3	13'	8000'	4000'	7.5
	500	7400'	(1.07)	152+.8	1.2	14'	8500'	4500'	8
	550	7500'	(1.10)	133+.8	1.1	13'	8500'	4500'	8
30°	500	13800'	(1.14)	242+.8	1.3	23'	14000'	9000'	14
HADB/C	550	13700'	(1.14)	216+.8	1.2	22'	14000'	9000'	14
45° DIVE	450	6400'	(1.06)	130+.6	1.6	13'	10000'	5000'	8
	500	7700'	(1.09)	125+.6	1.4	14'	11000'	6000'	8
	550	7800'	(1.13)	108+.6	1.2	13'	11000'	6000'	8
45°	450	11000'	(1.09)	190+.6	1.6	21'	15000'	9000'	13
HADB/C	500	11200'	(1.12)	165+.6	1.4	20'	15000'	9000'	12
	550	11400'	(1.15)	145+.6	1.2	19'	15000'	9000'	11

NOTES: *1. Cps in parenthesis are interpolated data as no tables are available with this release information.

2. The frag envelope for 500 lb bombs goes up to 2550'.

PLAIN VANILLA DELIVERIES

SPIKE TOSS of
DIVE TOSS or
DIRECT

GBU-12 B/B - PW II

EVENT	REL KIAS	SCANT RNG	C _B [*]	MILS	H/T CORR	X-W CORR	BASE/ APEX ALT	REL ALT	TOF
10° DIVE	500	6300'	(.97)	150+.9	.6	13'	3000'	2000'	8 Sec
	550	7700'	(.98)	149+.9	.6	14'	3500'	2500'	8
15° DIVE	500	7300'	(1.00)	166+.9	.8	14'	5000'	3000'	8
	550	7600'	(1.01)	143+.9	.7	13'	5000'	3000'	7.5
20° DIVE	500	7350'	(1.16)	180+.9	.9	14'	6000'	3500'	8
	550	7500'	(1.17)	158+.9	.8	13'	6000'	3500'	8
30° DIVE	450	6400'	(.98)	155+.8	1.3	13'	8000'	4000'	7.5
	500	7400'	(1.00)	143+.8	1.2	14'	8500'	4500'	8
	550	7500'	(1.02)	124+.8	1.1	13'	8500'	4500'	8
30°	500	13800'	(1.08)	229+.8	1.3	23'	14000'	9000'	14
HADB/C	550	13700'	(1.10)	208+.8	1.2	22'	14000'	9000'	14
45° DIVE	450	6400'	(.96)	119+.7	1.6	13'	10000'	5000'	8
	500	7700'	(.99)	114+.7	1.4	14'	11000'	6000'	8
	550	7800'	(1.01)	97+.7	1.2	13'	11000'	6000'	8
45°	450	11000'	(1.01)	177+.7	1.6	21'	15000'	9000'	13
HADB/C	500	11200'	(1.03)	152+.7	1.4	20'	15000'	9000'	12
	550	11400'	(1.04)	132+.7	1.2	19'	15000'	9000'	11

NOTES: *1. Cbs in parenthesis are interpolated data as no tables are available with this release information.

2. The frag envelope for 500lb bombs goes up to 2550'.

PLAIN VANILLA DELIVERIES

SPIKE TOSS or
DIVE TOSS or
DIRECT

BDU-33 A/B - SUU-21

<u>EVENT</u>	<u>REL</u> <u>KTAS</u>	<u>SLANT</u> <u>RNG</u>	<u>CB</u>	<u>MILS</u>	<u>H/T</u> <u>CORR</u>	<u>X-W</u> <u>CORR</u>	<u>BASE/</u> <u>APEX ALT</u>	<u>REL</u> <u>ALT</u>	<u>TOF</u>
10° DIVE	500	6100'	1.15	168+1	.65	12'	3000'	2000'	8 Sec
	550	6500'	1.16	168+1	.6	14'	3500'	2500'	7
15° DIVE	500	7100'	1.15	185+.9	.8	14'	5000'	3000'	8.5
	550	7500'	1.16	160+.9	.8	14'	5000'	3000'	8
20° DIVE	500	7100'	1.15	175+.8	1.0	15'	6000'	3500'	8.5
	550	7350'	1.16	154+.8	.9	14'	6000'	3500'	8
30° DIVE	450	6400'	1.15	174+.8	1.4	14'	8000'	4000'	8
	500	7200'	1.15	159+.8	1.2	14'	8500'	4500'	8.5
	550	7400'	1.16	138+.8	1.1	13'	8500'	4500'	8
30°	500	13600'	1.19	250+.8	1.4	23'	14000'	9000'	13
HADB/C	550	13500'	1.21	218+.8	1.3	22'	14000'	9000'	13
45° DIVE	450	6300'	1.17	137+.6	1.7	13'	10000'	5000'	8
	500	7600'	1.18	131+.6	1.5	15'	11000'	6000'	8.5
	550	7700'	1.19	112+.6	1.4	14'	11000'	6000'	8
45°	450	10900'	1.19	197+.6	1.7	22'	15000'	9000'	13
HADB/C	500	11100'	1.20	170+.6	1.5	20'	15000'	9000'	12
	550	11200'	1.21	148+.6	1.4	20'	15000'	9000'	12

PLAIN VANILLA DELIVERIES

SPIKE TOSS or
DIVE TOSS or
DIRECT

BDU-33 A/ - TER

EVENT	REL KTAS	SLANT RNG	Ce	MILS	H/T CORR	X-W CORR	BASE/ APEX ALT	REL ALT	TGF
10° DIVE	500	6100'	1.06	162+.9	.65	12'	3000'	2000'	8 Sec
	550	6500'	1.07	164+.9	.6	14'	3500'	2500'	7
15° DIVE	500	7100'	1.06	179+.9	.8	14'	5000'	3000'	8.5
	550	7500'	1.07	154+.9	.8	14'	5000'	3000'	8
20° DIVE	500	7100'	1.06	168+.9	1.0	15'	6000'	3500'	8.5
	550	7350'	1.06	148+.9	.9	14'	6000'	3500'	8
30° DIVE	450	6400'	1.02	164+.8	1.4	14'	8000'	4000'	8
	500	7200'	1.05	151+.8	1.2	14'	8500'	4500'	8.5
	550	7400'	1.05	131+.8	1.1	13'	8500'	4500'	8
30° HADB/C	500	13600'	1.20	251+.8	1.4	23'	14000'	9000'	13
	550	13500'	1.22	226+.8	1.3	22'	14000'	9000'	13
45° DIVE	450	6500'	1.01	125+.7	1.7	13'	10000'	5000'	8
	500	7600'	1.04	120+.7	1.5	15'	11000'	6000'	8.5
	550	7700'	1.04	103+.7	1.4	14'	11000'	6000'	8
45° HADB/C	450	10900'	1.15	190+.7	1.7	22'	15000'	9000'	13
	500	11100'	1.14	164+.7	1.5	20'	15000'	9000'	12
	550	11200'	1.14	143+.7	1.4	20'	15000'	9000'	12

COMBAT CONFIGURATION PLANNING GUIDE

F-4	WEIGHT	DRAG
A/C INT FUEL 20mm Ammo	45,873	---
PYLONS Outboard Tanks	5,426	12.8
INBD PYLON/ALE-40/AERO 3-B	940	12.4
ALQ-119	580	1.7(2.5WG)
DOCUMENTATION CAMERA(PR)	32	3.7
TISEO	-----	5.8
BASIC	52,851	36.4(37.2)
6x MK - 82		
BASIC	52,852	36.4
MER	270	10.0
6x MK-82 LOW DRAG/(Hi-Drag)	3,060(3300)	6.6(14.4)
	56,181(56,421)	53.0(60.8)
12x MK - 82		
BASIC	52,851	36.4
MER	270	10.0
TER(2)	190	8.4
12x MK-82 LD(HD)	6,120(6600)	13.2(28.8)
	59,431(59,911)	68.0(83.6)
6x MK - 82		
BASIC	52,851	36.4
TER x2	190	8.4
6x MK - 82 low drag(Hi-drag)	3,060(3300)	6.6(14.4)
	56,101(56,341)	51.4(59.2)

CBU

<u>BASIC</u>	<u>52,851</u>	<u>36.4</u>
MER	270	10.0
6x CBU-52 (CBU-58/71)	4,710 (4800)	27.6
	<u>57,831 (57921)</u>	<u>74.0</u>
2xTER	190	8.4
6x CBU-52 (CBU-52/71)	4,710 (4800)	27.6
	<u>57,751 (57,841)</u>	<u>72.4</u>
<hr/>		
FOR 2x AIM - 7E-2/3	ADD: 870	2.6

PAVE SPIKE

<u>F-4</u>	<u>WEIGHT</u>	<u>DRAG</u>
BASIC (ALQ-119 Wing Mounted)	52,851	37.2
SPIKE POD	422	1.3
	<u>53,273</u>	<u>38.5</u>
2x GBU-10	4,104	12.6
2x GBU-12 Hi Spd	1,210	4.6
2x GBU-12 Lo Spd	<u>1,238</u>	<u>6.2</u>

ROCKEYE

BASIC	52,851	36.4
MER	270	10.0
6x MK-20	2,940	17.4
	<u>56,061</u>	<u>63.8</u>
2x TER	190	8.4
6x MK-20	2,940	17.4
	<u>3,130</u>	<u>25.8</u>
2x TER	190	8.4
MER	270	10.0
12x MK-20	5,880	34.8
	<u>59,191</u>	<u>89.6</u>

F-4E TURN CAPABILITIES

2g			3g		
TAS	RADIUS	RATE	KTAS	RADIUS	RATE
00	4700'	6.2°	300	2900'	10°
60	6700'	5.2°	360	4100'	8.5°
20	9000'	4.5°	420	5800'	7.2°
80	10400'	3.9°	480	7400'	6.3°
40	15000'	3.5°	540	9200'	5.7°

4g			5g		
TAS	RADIUS	RATE	KTAS	RADIUS	RATE
60	3000'	12°			
20	4100'	10°	420	3200'	13°
80	5200'	8.8°	480	4200'	12°
40	6700'	7.8°	540	5200'	10°

VELOCITY

KNOTS	FT/SEC
300	507
360	608
420	710
480	811
500	845
540	913
550	930
600	1014

F-4E AVERAGE FUEL FLOW - POUNDS PER MINUTE
 WEIGHT - 55,000# ALTITUDE - SEA LEVEL

	30	40	50	60	70
360	160	167	174	182	189
420	198	208	219	229	239
480	246	260	275	289	304
540	307	325	348	370	400

WEIGHT - 55,000# ALTITUDE - 4,000'

	30	40	50	60	70
360	152	155	161	167	173
420	180	189	198	206	216
480	220	232	246	259	275
540	275	292	316	340	365

WEIGHT - 55,000#/40,000# ALTITUDE-16000'

	30	40	50	60	70
360	127/100	130/104	136/108	140/112	144/116
420*	138/120	144/125	150/131	156/137	162/144
480	160/145	168/153	177/162	185/171	194/180
540	198/186	209/198	224/213	239/227	257/243

WEIGHT - 40,000# ALTITUDE - 30,000'

	30	40	50	60
360	88	91	93	96
420	88	91	94	97
480	100	104	110	115
540	-	-	-	-

CROW VALLEY SPECIAL WEAPONS DELIVERY

Bomb Strobe MK 106 SUU-21
Run-in Hdg 214° Front C/P T LAD
Altitude 1900 MSL EMR Altitude 2928 MSL
Airspeed 500 KTAS

Offset Bomb Mk 106 SUU-21
Front C/P OFFSET
Bomb Range 2377'
At 1.5nm on HSI ^{pickle and}
pull to 30°

5NM	
Pull up	Release
49.3	6.0

Timer Factor .160*

K crab 37.0

5NM	
Pull up	Release
27.3	6.0

Timer Factor .116*

K crab 37.0

OAP Hill
Reflector

Target
Reflector

2NM	
Pull up	Release
27.7	6.0

Timer Factor .117*

K crab 37.0

2NM	
Pull up	Release
5.7	6.0

Timer Factor .073*

K crab 37.0

* Add for headwind, subtract for tailwind.

D VALUE COMPUTATIONS

MISSION CONDITIONS

1. Bombing Altitude AGL
2. Target Elevation MSL
3. Target Surface Altimeter Setting
4. Bombing Altitude D Value

D VALUE CORRECTION

5. Bombing Altitude AGL (#1)
6. D Value (Reverse Sign) (#4)
7. Corrected Altitude MSL (#5 ± #6)
(Use when 29.92 is set in Kollsman window)

ALTIMETER SETTING CORRECTION

8. Target Surface Altimeter Setting (#3)
9. Standard Altimeter Setting
10. Pressure Altitude Variation (PAV)
11. PAV times 1000
12. Corrected Altitude AGL (#7 ± #11)

INDICATED ALTITUDE COMPUTATION

13. Target Elevation MSL (#2)
14. Corrected Altitude AGL (#12)
15. Corrected Indicated Alt (#13 + #14)

WRCS TARGET ELEVATION CORRECTION

16. Target Elevation MSL (#2)
17. DD Value (Reverse Sign) (#4)
18. Corrected Target Elevation Setting
(#16 ± #17)

EXAMPLE

1000	_____
900	_____
30.05	_____
+200	_____
1000	_____
-200	_____
800	_____
30.05	_____
29.92	_____
+.13	_____
+130	_____
930	_____
900	_____
930	_____
1830	_____
900	_____
-200	_____
700	_____

2	2	2	2		2	2	2	2
2	2	2	2		2	2	2	2
2	X	2	2		2	X	2	2
X	X	X	X		2	2	2	2
X	X	X	X		2	2	2	2
2	2	2	2		2	2	2	2
X	2	X	X		X	2	2	X
X	X	X	X		2	2	2	2
X	X	2	X		X	X	2	X
X	X	2	X		2	2	2	2

2	2	2	2		2	2	2	2
2	2	2	2		2	2	2	2
2	X	2	2		2	X	2	2
X	X	X	X		2	2	2	2
X	X	X	X		2	2	2	2
2	2	2	2		2	2	2	2
X	2	X	X		X	2	2	X
X	X	X	X		2	2	2	2
X	X	2	X		X	X	2	X
X	X	2	X		2	2	2	2

B₁ PENN. 15-12.3N 121-27.5E
 B₂ ROL 15-03 N 121-50 E
 B₃ 6184'PK 15-36.8N 121-23.45E
 B₄ PENN 15-42.75N 121-38.40E
 B₅ PENN 16-01.8 N 121-59.2E
 B₆ PENN 17-08.2N 122-30.0E
 B₇ DAM 15-49.5N 121-07.2E
 B₈ 1332'PK 15-46.9N 121-44 E
 B₉ ISLE 16-06.9N 120-07.3E
 B₁₀ 2520'PK 15-51.0N 120-09.2E
 B₁₁ 928'PK 15-34.1 N 120-23.45E
 B₁₂ 1850'PK 15-14 N 120-02.4E
 B₁₃ SADDLE 15-06.45N 120-13.25E

OVERWATER

UNIFORM 15-00N 118-25E
 VICTOR 14-58N 119-53E
 WHISKEY 15-52N 119-46E
 XRAY 15-52N 119-22E
 YANKEE 15-26N 119-12E
 ZULU 14-58N 119-13E

TARGET AREAS

T₁ CROW VALLEY 15-15.5N 120-22.3E
 T₂ WILD HORSE CREEK 14-50N 120-07E
 SPARBOROUGH SHOAL 15-07N 117-45E

2/A-2, 2

2/6-2, 2

3/2-3/A, 3/2, 3

4/6-4, 4

2/6-2, 4/6-6, 6

8, 8/A, 8/A, 8

6

3/A, 2/A, A

2/A-C, C/A-C, C

A

2, A/A-2

2, A/A-2

3/2-2, A, 2, 8/2, 3/2, A/2

3/2, A/2, A/A-A, A

A(A/A-A, A)

3/2-2

A, 8/A-A

A, 8/A-A

A, 8/A-A

A/A, A

A, U

A, 2/A-A, 2/A-A

A, A/A-A, 3/2-3/A, 8/A-A

3/A-A, 8/A-A

A A/A-A A/A-A

A, A/A-A, 2-A, A, A

3

4, 4/6-4, 4/6, 4/A

8, 8/A, 8/A, A/8, 8/A, 8

B₁ PENN. 15-12.3N 121-27.5E
 B₂ ROL 15-03 N 121-50 E
 B₃ 6184'PK 15-36.8N 121-23.45E
 B₄ PENN 15-42.75N 121-38.40E
 B₅ PENN 16-01.8 N 121-59.2E
 B₆ PENN 17-08.2N 122-30.0E
 B₇ DAM 15-49.5N 121-07.2E
 B₈ 1332'PK 15-46.9N 121-44 E
 B₉ ISLE 16-06.9N 120-07.3E
 B₁₀ 2520'PK 15-51.0N 120-09.2E
 B₁₁ 928'PK 15-34.1 N 120-23.45E
 B₁₂ 1850'PK 15-14 N 120-02.4E
 B₁₃ SADDLE 15-06.45N 120-13.25E

OVERWATER

UNIFORM 15-00N 118-25E
 VICTOR 14-58N 119-53E
 WHISKEY 15-52N 119-46E
 XRAY 15-52N 119-22E
 YANKEE 15-26N 119-12E
 ZULU 14-58N 119-13E

TARGET AREAS

T₁ CROW VALLEY 15-15.5N 120-22.3E
 T₂ WILD HORSE CREEK 14-50N 120-07E
 SPARBOROUGH SHOAL 15-07N 117-45E

2/A-2, 2

2/6-2, 2

3/A-3/A, 3/A, 3

4/6-4, 4

2/6-2, 4/6-6, 6

8, 8/A, 8/A, 8

6

3/A, 2/A, A

2/A-C, C/A-C, C

A

2, A/A-2

2, A/A-2

3/2-2, A, 2, 8/2, 3/2, A/2

3/2, A/2, A/A-A, A

A(A/A-A, A)

3/2-2

A, 8/A-A

A, 8/A-A

A, 8/A-A

A/A, A

A, U

A, 2/A-A, 2/A-A

A, A/A-A, 3/2-3/A, 8/A-A

3/A-A, 8/A-A

A, A/A-A, A/A-A

A, A/A-A, 2-A, A, A

3

4, 4/6-4, 4/6, 4/A

8, 8/A, 8/A, A/8, 8/A, 8

CROW VALLEY SPECIAL WEAPONS DELIVERY

Integrated Ladd Mk 106 SUU-21 OAP Hill Reflector

Run In Hdg 214 Activate after insert

Altitude 1900 MSL Bomb Range 2377'

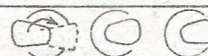
Airspeed 500 KTAS Altitude Gain 1028'

KR3 41.2 Timer Factor .070 Sec

K_{crab} 37.0 Front C/P TLAD

PULL UP RELEASE

3.7 6.0



S157.5 000

W117.5 105

009

OFFSETS

	W110	W111	W112	W113	W114	W115	W116	W117	W118	W119	W120	W121	W122	W123	W124	W125
S163																
S162																
S161																
S160																
S159																
S158																
S157																
S156																
S155																
S154																
S153																
S152																

