RANGE AND TRAINING REGULATIONS

Range: R-219	**Lateral Limits**: **Claymore/Shotgun –** **Left Lateral Limit - 344° deg mag** **Right Lateral Limit - 057° deg mag**	**Min/max Engagement Distance:** N/A	**Range Facilities:** Observation bunker, port-a-johns; Demo Pit; Ammo Table
Location: 59562 93905	**Boundaries**: 59562 93905 to 59589 93886 59614 93979 to 59652 93954		
Type: Demolition Range			
Troop Penetration Line: Not beyond boundaries of the range	**Impact Area**: Whiskey Impact Area	**Allowable Wpns:** Demolitions, not to exceed fifty (50) lbs. NEW; claymore; Shotgun (Breacher Round Only)	**Assigned to**: CO, MCB **Date Revised:** 10 June, 2008

Scheduling		
1. Scheduling of this range accomplished through MCB Camp Pendleton Range Scheduling. 2. Unit will utilize RFMSS to schedule range.		
Scheduling Conflicts		**Conflict Notes**
MFA 15	1	Note (1) – Can Not Be Occupied

GENERAL INSTRUCTIONS

1. **A safety Brief will be conducted prior to each live fire event to all participants.**
2. **All personnel shall wear required PPE during all training events.**
3. **OIC & RSO Requirements -**
   a. **Live Fire, SESAMS, Flash Bangs & BFX**
      i. **OIC Requirement – GySgt or Above**
      ii. **RSO Requirement - SSgt or Above**
   b. **Blanks**
      i. **OIC Requirement – SSgt or Above**
      ii. **RSO Requirement - Sgt or Above**
   c. **No Munitions**
      i. **OIC Requirement – None**
      ii. **RSO Requirement - Sgt or Above**
      iii. **LASER (If Used) LSSO Requirement - Sgt or Above**
4. IOT **occupy** this range unit must have the following personnel/equipment:
   a. RSO
   b. Corpsman & Safety Vehicle
   c. Positive Communication with LONGRIFLE
   d. **An ORM reviewed and signed by the Command, RSO and OIC.**
5. IOT go into a **hot status** on range unit must have the following personnel/equipment:
   a. OIC
   b. RSO
   c. **LSSO – If using Laser**
   d. Corpsman & Safety Vehicle
   e. Positive Communication with LONGRIFLE
6. **POVs are authorized to park in parking lot area without a POV pass.**
7. The RSO & OIC will personally observe each event.
8. **A non-participating Corpsman will be stationed with safety vehicle.**
9. Ammunition will only be issued per event and accounted for on NAVMC 11381.
10. After each event, unit leaders will conduct a line out.
11. Each RSO/PSO will certify to the OIC that all weapons are in Condition 4 prior to exiting the range/facility and all ammunition is accounted for.

All weapon malfunctions shall be corrected per the appropriate TM/FM, and unit SOP.

RANGE AND TRAINING REGULATIONS

SPECIAL INSTRUCTIONS

1. **At no time will more than 50 lbs total NEW ever be placed in the demo area.**
2. **All time fuses will be cut to a minimum time of 3 minutes (verified by RSO).**
3. All charges will be dual primed and utilize a dual initiation system.
4. **Minimum of 30 seconds between charges.**
5. A range guard shall be posted at 58859 93404 with a "demolition in progress" sign, and with two-way radio communication with the RSO. No traffic/personnel shall enter the range without permission from the RSO
6. All tactical and government vehicles will be parked behind the bleaches with the windshields facing Basilone road. **NO POV'S are permitted on this range!**
7. The RSO shall check each shot hole, looking for unconsumed explosives prior to departing the range. **The RSO shall also ensure all shot holes are filled and the debris is policed-up.**
8. ALL unconsumed explosives shall be policed-up and consolidated for one last clean-up shot prior to the range going cold (Not to exceed 50 lbs NEW).
9. ALL unused blasting materials shall be retrieved upon completion of training, and shall be returned to the Las Pulgas ASP.
10. ALL target materials which were used (blown) during training shall be policed-up and taken back with the unit.
11. **During general demolition training personnel shall be outside the surface danger area (SDZ) depicted on graphic or in the Observation Bunker 54275 95095 when firing is in progress.**
12. **During breaching operations:**
    a. The breach will consist of a field expedient urban breaches (duel primed) at no more than .78 lbs.
    b. Max Ord is 386 feet for vertical or fragmentation hazard.
    c. A maximum K – Factor of 18 (3.5 PSI) will be utilized and all personnel are to follow the below unshielded safety standoffs.
    d. If shielded, RSO may reduce standoff by 50%.
    e. Double hearing protection required for all PSIs at or above 1.68.
    f. Only breacher rounds shall be used for shotguns.
    g. **All Fence & Concrete Charges will be conducted IAW the listed Safety Stand Offs for those charges.**
13. **Claymore Operations:**
    a. Only one (1) claymore at a time
    b. All personnel shall remain inside the observation bunker while claymore is detonated.
    c. Only the RSO and the firing team shall be forward at the FP.
    d. RSO will verify to OIC that all personnel in the firing team are behind the berm prior to firing the claymore.

14. Charges placed on steel

a. If a steel-cutting charges are to be fired they will be fired in an excavated pit that is at least 1m deep and a mat made of a hemp type material must cover the charge. Steel-cutting charges will not exceed 5 lbs.

b. Personnel must be in a missile-proof shelter.

13. Charges placed on concrete

a. Charges placed on concrete will not exceed 50 lbs and shall be placed on the side nearest observers.

14. Shaped charges

a. Shaped charges will be oriented so that gas jets will be directed toward the target. Charges shall be placed on the side of the target nearest observers and directed away from observers

15. Bangalore torpedoes

a. Bangalore torpedoes will only be fired in a horizontal position on the ground.

b. If a field-expedient bangalore torpedo is used the explosive weight shall not exceed the standard issued torpedo.

16. Cratering charges

a. The maximum charge to be fired in training will not exceed 50 lbs.

b. All cratering charges will be dual primed with detonating cord. Blasting caps will not be placed underground. Electric or non-electric caps will be attached to the detonating cord above ground.

17. A total of three (3) radios are needed to safely use this range.

RANGE AND TRAINING REGULATIONS

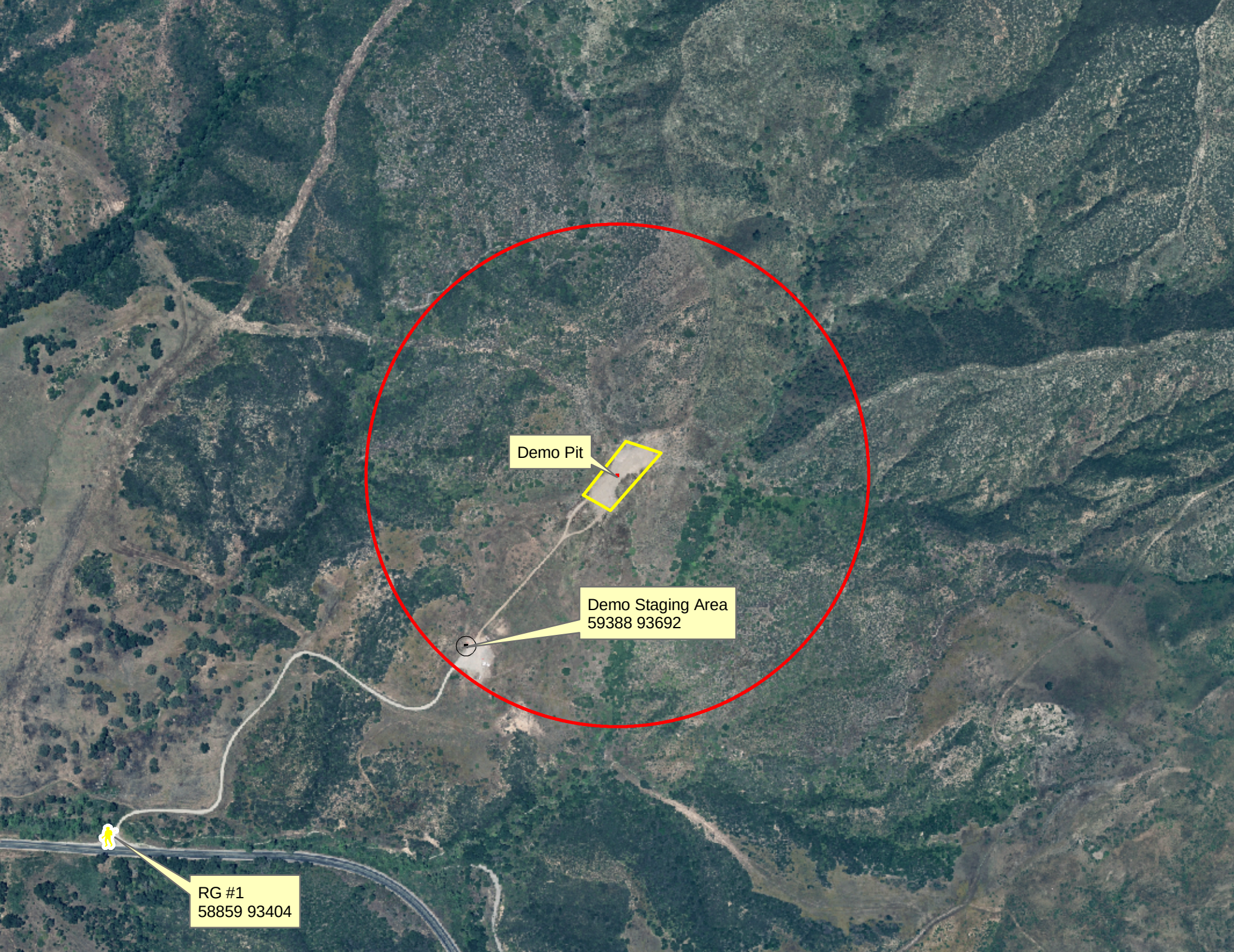
18. The RSO is responsible for all charges, and ensuring all misfire procedures are in compliance with current directives.
19. All demolitions shall be detonated in the demo pit, from 59562 93905 to 59589 93886 59614 93979 to 59652 93954

K FACTOR

NEW OF CHARGE (TNT EQUIVELENT)	**40** **1.2 -.9 PSI**	**30** **1.7 PSI**	**24** **2.3 PSI**	**18** **3.5 PSI**	**11** **8 PSI**	**9** **12 PSI**	**6** **27 PSI**
	Distance in Feet From Detonation						
0.04	13.67980757	10.25985568	8.207884544	6.155913408	3.761947083	3.077956704	2.051971136
0.23	24.5077027	18.38077703	14.70462162	11.02846622	6.739618243	5.514233108	3.676155405
0.26	25.5300172	19.1475129	15.31801032	11.48850774	7.020754729	5.744253869	3.829502579
0.5	31.74802104	23.81101578	19.04881262	14.28660947	8.730705786	7.143304734	4.762203156
0.78	36.82065633	27.61549225	22.0923938	16.56929535	10.12568049	8.284647674	5.52309845

Safety Stand-Off & PPE Requirements for Fence & Concrete Charges

						Personal Protection Equipment (PPE) Requirements			
						Double Hearing Protection and Eye Protection	Single Hearing Protection and Eye Protection	Eye Protection	
	MAX NEW 50 GR Det Cord	Equivalent TNT Det Cord RE Factor 1.66 In Pounds	MAX NEW C-4	Equivalent TNT RE Factor 1.34 In Pounds	Total Charge NEW In Pounds	Safe Distance in Feet for Over Pressure (3.5 PSI) K-Factor = 18	Safe Distance in Feet for Over Pressure (1.2 PSI) K-Factor = 40	Safe Distance in Feet for Over Pressure (0 PSI) K-Factor = 300	Missile hazard in feet
Fence Charge	650	0.154	2.5	3.350	3.504	27.5	60.9	455.8	498.4
Concrete Charge	1600	0.379	7.5	10.050	10.429	39.7	87.8	655.8	717.0


Demo Pit
Demo Staging Area
59388 93692
RG #1
58859 93404

Vertical(Missile) Hazard Formula [NEW^3 * 100 * 3.28 = Vertical Hazard in Feet]

NEW	Ft	NEW	Ft	NEW	Ft	NEW	Ft	NEW	Ft	NEW	Ft
1	328	51	1216	101	1527	151	1747	201	1921	251	2069
2	413.3	52	1224	102	1533	152	1750	202	1925	252	2072
3	473.1	53	1232	103	1538	153	1754	203	1928	253	2075
4	520.7	54	1240	104	1542	154	1758	204	1931	254	2077
5	560.9	55	1247	105	1547	155	1762	205	1934	255	2080
6	596	56	1255	106	1552	156	1766	206	1937	256	2083
7	627.4	57	1262	107	1557	157	1769	207	1940	257	2085
8	656	58	1270	108	1562	158	1773	208	1943	258	2088
9	682.3	59	1277	109	1567	159	1777	209	1947	259	2091
10	706.7	60	1284	110	1572	160	1781	210	1950	260	2093
11	729.5	61	1291	111	1576	161	1784	211	1953	261	2096
12	750.9	62	1298	112	1581	162	1788	212	1956	262	2099
13	771.2	63	1305	113	1586	163	1792	213	1959	263	2101
14	790.5	64	1312	114	1590	164	1795	214	1962	264	2104
15	808.9	65	1319	115	1595	165	1799	215	1965	265	2107
16	826.5	66	1326	116	1600	166	1803	216	1968	266	2109
17	843.4	67	1332	117	1604	167	1806	217	1971	267	2112
18	859.6	68	1339	118	1609	168	1810	218	1974	268	2115
19	875.2	69	1345	119	1613	169	1813	219	1977	269	2117
20	890.3	70	1352	120	1618	170	1817	220	1980	270	2120
21	904.9	71	1358	121	1622	171	1821	221	1983	271	2123
22	919.1	72	1365	122	1627	172	1824	222	1986	272	2125
23	932.8	73	1371	123	1631	173	1828	223	1989	273	2128
24	946.1	74	1377	124	1636	174	1831	224	1992	274	2130
25	959.1	75	1383	125	1640	175	1835	225	1995	275	2133
26	971.7	76	1389	126	1644	176	1838	226	1998	276	2136
27	984	77	1395	127	1649	177	1842	227	2001	277	2138
28	996	78	1401	128	1653	178	1845	228	2004	278	2141
29	1008	79	1407	129	1657	179	1849	229	2007	279	2143
30	1019	80	1413	130	1662	180	1852	230	2010	280	2146
31	1030	81	1419	131	1666	181	1855	231	2013	281	2148
32	1041	82	1425	132	1670	182	1859	232	2015	282	2151
33	1052	83	1431	133	1674	183	1862	233	2018	283	2153
34	1063	84	1436	134	1678	184	1866	234	2021	284	2156
35	1073	85	1442	135	1683	185	1869	235	2024	285	2159
36	1083	86	1448	136	1687	186	1872	236	2027	286	2161
37	1093	87	1453	137	1691	187	1876	237	2030	287	2164
38	1103	88	1459	138	1695	188	1879	238	2033	288	2166
39	1112	89	1464	139	1699	189	1882	239	2036	289	2169
40	1122	90	1470	140	1703	190	1886	240	2038	290	2171
41	1131	91	1475	141	1707	191	1889	241	2041	291	2174
42	1140	92	1481	142	1711	192	1892	242	2044	292	2176
43	1149	93	1486	143	1715	193	1896	243	2047	293	2179
44	1158	94	1491	144	1719	194	1899	244	2050	294	2181
45	1167	95	1497	145	1723	195	1902	245	2052	295	2183
46	1175	96	1502	146	1727	196	1905	246	2055	296	2186
47	1184	97	1507	147	1731	197	1909	247	2058	297	2188
48	1192	98	1512	148	1735	198	1912	248	2061	298	2191
49	1200	99	1517	149	1739	199	1915	249	2064	299	2193
50	1208	100	1522	150	1743	200	1918	250	2066	300	2196

M58 Mine Clearing Line Charge (MICLIC)

1750	3953

RANGE AND TRAINING REGULATIONS

K FACTOR

NEW OF CHARGE (TNT EQUIVELENT)	40 1.2 -.9 PSI	30 1.7 PSI	24 2.3 PSI	18 3.5 PSI	11 8 PSI	9 12 PSI	6 27 PSI
	Distance in Feet From Detonation						
0.04	13.67980757	10.25985568	8.207884544	6.155913408	3.761947083	3.077956704	2.051971136
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0.26	25.5300172	19.1475129	15.31801032	11.48850774	7.020754729	5.744253869	3.829502579
0.5	31.74802104	23.81101578	19.04881262	14.28660947	8.730705786	7.143304734	4.762203156
0.78	36.82065633	27.61549225	22.0923938	16.56929535	10.12568049	8.284647674	5.52309845