# RANGE AND TRAINING REGULATIONS

**Range:**
R-211

**Location:**
54420 95150

**Type:**
Demolition Range

**Lateral Limits**:
**PDF for Claymore –**
**54418 95155 at 017° deg mag**

**Boundaries**:
54406 95069 to 54411 95147
54446 95164 to 54450 95147

**Min/max Engagement Distance:**
N/A

**Range Facilities:**
Observation bunker, port-a-johns; Breaching Pit; Ammo Table

**Troop Penetration Line**:
Not beyond boundaries of the range

**Impact Area**:
Whiskey Impact Area

**Range Phone Number(s)**:
None

**Allowable Wpns:**
Demolitions, not to exceed fifteen (15) lbs. NEW; claymore; Shotgun (Breacher Round Only)

**Assigned to**:
CO, MCB

**Date Revised:**
18 June, 2007

## GENERAL INSTRUCTIONS

1. **A safety Brief will conducted prior to each live fire event to all participants.**
2. IOT occupy this range unit must have the following personnel/equipment:
   - RSO
   - Corpsman & Safety Vehicle
   - Positive Communication with LONGRIFLE
   - If ammunition is present on range - Ammo Guards will be armed.
3. IOT go into a hot status on range unit must have the following personnel/equipment:
   - OIC
   - RSO
   - Corpsman & Safety Vehicle
   - Positive Communication with LONGRIFLE
4. **RSO will verify the left and right lateral limits utilizing a compass and map.**
   - Overall range lateral limits will be identified.
   - Each firing position lateral limits will be identified.
5. The RSO & OIC will personally observe each live fire event.
6. **A signed ORM must be on hand IOT conduct training.**
7. **A non-participating Corpsman will be stationed with safety vehicle.**
8. A full rehearsal will be conducted prior to live fire.
9. **Unit is required mark/post signs for any lateral limits and/or MSLs listed in this brief if not already marked/posted.**
10. **At no time will any unit go from live fire to blank or SESAMS force-on-force within a 24 hour period**
11. **At any time Range guards are required, they will be posted in pairs with positive communication with the RSO.**
12. Ammunition will only be issued per event and accounted for on NAVMC 11381.
13. After each event, unit leaders will conduct a line out.
14. Each RSO will certify to the OIC that all weapons are in Condition 4 prior to exiting the range and all ammunition is accounted for.
15. Ensure all weapons are cleared and inspected prior to departing the firing line.
16. 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 15 lbs total NEW ever be placed in the demo area.**
2. All time fuse 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. A range guard shall be posted at 53826 94253 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
5. 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.**
6. ALL unconsumed explosives shall be policed-up and consolidated for one last clean-up shot prior to the range going cold (Not to exceed 15 lbs NEW).
7. ALL unused blasting materials shall be retrieved upon completion of training, and shall be returned to the Las Pulgas ASP.
8. ALL target materials which were used (blown) during training shall be policed-up and taken back with the unit.
9. **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.**
10. **During breaching operations:**
    a. Breaching Pit is located at 54303 95109.
    b. The breach will consist of a field expedient urban breaches (duel primed) at no more than .78 lbs.
    c. Max Ord is 386 feet for vertical or fragmentation hazard.
    d. A maximum K – Factor of 18 (3.5 PSI) will be utilized and all personnel are to follow the below unshielded safety standoffs.
    e. If shielded, RSO may reduce standoff by 50%.
    f. Double hearing protection required for all PSIs at or above 1.68.
    g. Only breacher rounds shall be used for shotguns.
11. **Claymore Operations:**
    a. Firing Point – 54418 95155
    b. PDF – 017 degrees magnetic
    c. Only one (1) claymore at a time
    d. All personnel shall remain inside the observation bunker while claymore is detonated.
    e. Only the RSO and the firing team shall be forward at the FP.
    f. RSO will verify to OIC that all personnel in the firing team are behind the berm prior to firing the claymore.
12. **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 15 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 15 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.
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 54406 95069 to 54411 95147 to 54446 95164 to 54450 95147.

# RANGE AND TRAINING REGULATIONS

**K FACTOR**

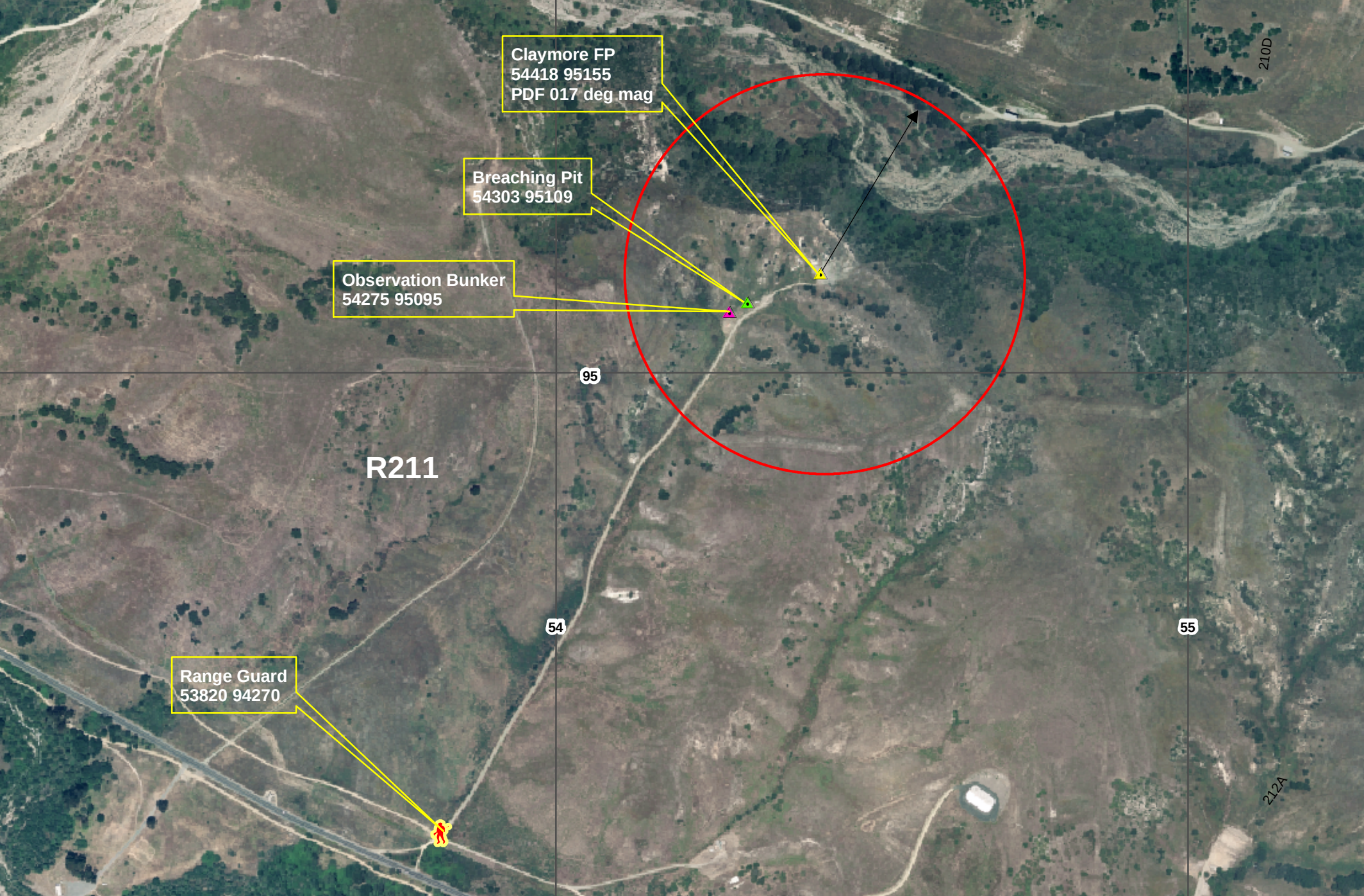
| NEW OF CHARGE (TNT EQUIVELENT) | 40<br>1.2 -.9 PSI | 30<br>1.7 PSI | 24<br>2.3 PSI | 18<br>3.5 PSI | 11<br>8 PSI | 9<br>12 PSI | 6<br>27 PSI |
|---|---|---|---|---|---|---|---|
| | **Distance in Feet From Detonation** | | | | | | |
| 0.04 | 13.67980757 | 10.25985568 | 8.207884544 | 6.155913408 | 3.761947083 | 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 |

**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 |


Claymore FP
54418 95155
PDF 017 deg mag
Breaching Pit
54303 95109
Observation Bunker
54275 95095
95
R211
54
55
Range Guard
53820 94270
210D
212A