

INDEX

A

Accident prevention program, 357
Adjustment and repair of hydraulic systems, 175-182
 at a Navy Yard or repair tender, 181
 shipboard maintenance, 175
Administration and supply, 325-356
 administration requirements, 325
 inventories and surveys, 353-355
 management of ordnance stowage area, 355
 security, 351-353
 Standard Navy Maintenance and Material Management System, 326-336
 supplies for maintenance and repair, 336-351
Advancement;
 assignments, types of, 5
 classification codes, 4
 examination, 7-9
 final multiple, 9
 Gunner's Mate rate, 3
 opportunities for Petty Officers, 14
 PNA factor, 10
 rewards and responsibilities, 1-3
 scope of manual, 6
 studying for the test, 7
Air driven handling equipment, 206-210
Air lubricators, 223
Air motors, 222
Air supply, use of, 217
Air throttle valve, 207
Aligning the missile batteries, 284-291
 alignment of launcher, 288-291
 information sources, 284
 system alignment, 285
Allowance Parts List (APL) , 341
Ammunition and explosives safety, 367-373
 disposal, 372
 hazards, 367, 370
 igniters, 369
 liquid propellants and fuels, 369
 pyrotechnics, 368
 S and A device, 369
 safety features of missiles, 372

Ammunition and explosives safety- Continued
 stowage, 368
 transportation, 371
Ammunition and magazines, 229-252
 explosives, dangers of, 231
 inspection and test of explosive components, 234-251
 nuclear warhead weapons, 233
 RF radiation, 230
 safety, 230, 231
Ammunition records and reports, 250
Amplifiers, 129-143
 applications in servomechanisms, 131
 magnetic, 130
 maintenance, 162 power supply regulator, 132-134
 servoamplifier, 134-137
 synchro testers, 140-142
 synchrosystems, 137-139
 troubleshooting synchro systems, 142
 zeroing synchros, 139-142
Angular rate, 255
Angular velocity, 255
AN/SPS-10 surface search radar, 255
AN/SPS-37 long range radar, 258
AN/SPS-39 air search radar, 255
Anti-icing systems, 217
Asroc loading fixture, 212-214
Asroc missiles, 107-114
 care of cable assemblies, 108
 duds and misfires, 111-114
 loading, 108
 torpedo, 112
 unloading, 109-111
Assignment priorities, 5
Assignments, types of, 5
Assistance teams, 335

B

Ballistics, fire control, and alignment, 253-296
 aligning the missile batteries, 284
 equipment of missile weapons system, 254-284

INDEX

Ballistics, fire control, and alignment - Continued
 final alignment adjustment procedures, 294
 firing stop mechanisms, 291-293
 radar alignment, 293
Batteries, 284
Bench mark, 286
Bibliography for Advancement Study, 7
Bi-rail trolley hoist, 206
Boosters,
 disposal, 235
 safety, 368
Bridge cranes, 206
Budgeting and funding, 338

C

Cam alignment, 293
Captain's panel, launcher, 272
Capture transmitter, 275
Carbon dioxide, 238, 375
Carbon monoxide, 376
Carriage-mounted hydraulic parts, 163
Chain driven fixture, 207-210
Chemicals, safety precautions, 377
Classification Codes, 4
Commanding Officer's Narrative Report (CONAR) , 345
Components used with and/or in missile systems, 205-217
 air driven handling equipment, 206-210
 pneumatic components of launching systems, 210-217
 tools, 205
Constant velocity operation, 307
Control system, weapons, 261
Controller and actuator units, 199-204
Coordinated Shipboard Allowance List (COSAL), 339-341
 disposition of repair items, 341
 in-excess requisitions, 340
 issuing procedures, 341
 ordering supplies, 340
 ordnance segment, 339
 procurement of material, 340
 records and reports, 339
Cranes, bridge, 206
Current Ships Maintenance Project (CSMP), 322

D

Daily System Operability Tests (DSOTs), 298
DCAP system, 345
Defense Supply Agency (DSA), 337
Depot handling and stowage,
 Talos missiles, 40

Depot handling and stowage - Continued
 Terrier missiles, 31-36
Director Assignment Console (DAC), 266
Disposal of explosives, 235
Disposition of repair items, 341
Dud-jettisoning, 86-91, 93-95, 100-107
Dummy director and error recorder, 305-311

E

Ejectors and dud-jettisoning equipment, 215-217
Electrical and electronic safety precautions, 360-363
Electrical fires, 379
Electrical zero conditions, 139
Electricity and electronics, 115-149
 amplifiers, 129-143
 GMM's responsibility, 115-129
 circuit testing by GMM, 116-127
 control panels, 115, 116
 safety rules, 128
 oscilloscope, dummy director and dual trace recorder, 143-148
 servomechanisms, 128
 similarities and differences in, 148
Elevation horizon check, 290
Elevation (train) accuracy test, i48
Entry and access control, 47
Equipment, missile weapons system, 254
 GMLS capabilities, 258-261
 guided missile fire control system Mk 76, 275-284
 linear rate systems, 254
 search radar, 255-258
 weapons control system, 261-275
Equipment OPs, 327
Error recorder, 305, 307
Explosives,
 components, inspection and test of, 234-251
 disposal of explosives, 235
 limitations imposed by nuclear warheads, 251
 magazine inspection records and reports, 248-251
 missile component identification, 236-238
 missile magazines, 238-240
 nuclear warhead inspection, 234
 organization and administration of safety programs, 241-248
 testing, 238
 dangers of, 231
 disposal of damaged explosives, 372
 safety, 367
 stowage, 268
 transportation, 371

GUNNER'S MATE M 1 & C

F

Fault location lamps, 228
Feedback report, 336
Final alignment adjustment procedures, 294
Final multiple system, 9
Fire protection systems, checking, 302
Fire safety, 378
 electrical, 379
 in explosives, 378
Firefighting equipment, magazine, 241
Firing stop mechanisms, 291-293
Frequency generation operation, 307
Fusible slug, installing, 242
Fuze delay time, 277

G

G agent, 377
Gases, vapors, and toxic materials, safety, 375-378
 biological and chemical warheads, 378
 carbon dioxide, 375
 carbon monoxide, 376
 chemicals, 377 ,
 exhausts from missiles, 376
 hydrogen, 376, 377
 missile fuels, 376
 nitrogen, 376, 377
 other toxics, 377
 oxygen, 376, 377
 war gases, 377
Guidance transmitter, 276
Guided missile fire control system Mk 76, 275-284
Guided missile launching systems capabilities, 258-261
 airborne, 261
 modes of operation, 259
 surface and shore targets, 259
 underwater targets, 261
Guided Missile Service Record, 346
Guided missile status indicator, 273
Guided missile support facilities, 338
Gunner's Mate Missile Rating, 3
Gunner's Mate ratings, 3
Gyros, 284

H

Hand control box, 207
Handling equipment, air driven, 206
Hazards of Electromagnetic Radiation (HERO)
 program, 230

Hoists,

 bi-rail trolley, 206
 telescoping, warhead, 206

Hydraulic fluid and equipment safety, 363-365
 hazards, 363, 364
 in missiles, 365

Hydraulic power in missile systems, 151-175
 handling equipment, 151
 hoist mechanisms, 156
 hydraulic schematics, 173
 hydraulically operated launcher components, 163-173
 hydraulics in the feeder system, 151
 loader components, 159
 magazine doors, 157
 tray shift mechanism, 155

Hydraulics,

 in missile launching systems, 150-204
 adjustment and repair, 175-182
 receiver-regulators, 182-192
 testing and maintenance, 192
 trouble analysis, 195
 in missiles, 365

Hydrogen, 377

I

Identification of friend or foe (IFF), 258
Identification, ordnance sources, 342
Igniters, 369
Illuminator transmitter, 276
Inert munitions, 368
In-excess requisitions, 340
Injuries, personal, 351
Inspection and test of explosive components, 234-251
Inspection records and reports, magazine, 248
Integrated testing, 326
Inventories and surveys, 353-355
Inventory Control Points, 338
Inventory record of small arms and pyrotechnics, 249

L

Launcher orders, 277
Launcher shipboard performance test, 304-324
 dummy director and error recorder, 305-311
 missile simulator, 311-313
 ORDALTS, 323
 overhaul, 324
 own ship's maintenance program, 322
 preparation for missile checkout, 318

INDEX

Launcher shipboard performance test- Continued
slow-run-through (SRT), 322
sonar simulator, 315
testing the missile, 316-318
training missiles, 313-315

Launching systems,

Mk 4, 66
Mk 7, 17-79
Mk 9, 63-66
Mk 10, 66-69
Mk 11, 101-106
Mk 12, 79
Mk 13, 70-75, 102
Mk 22, 75, 106

Linear rate system, 254

Loading and stowage plans, missiles, 16-23

knowledge factors, 16-19
planning sequence, 20
radiation monitoring and protection, 20
scheduling of work, 19
security, 19
stowage areas, 20-23

Loading, unloading and dud-jettisoning, 82-114

Asroc missiles, 107-114
Talos missile system, 91-97
Tartar missile system, 97-114
Terrier missile, 82-91

Log, SMS Equipment Status, 347

M

Magazine accumulator power system, 151-159

Magazine inspection records and reports, 248-251

Magazine safety precautions, 240

Magnetic amplifiers, 130

Maintenance Data Collection System (MDCS), 298

Maintenance level responsibilities, 328-329

Maintenance of weapons systems, NavOrdSysCom

program for, 297
responsibilities of GMM, 298

Maintenance procedure, steps in, 298-304

cleaning of parts, 299
lubrication, 300
tests, 301-304
visual inspection, 299

Maintenance, repair, adjust, test, and overhaul, 297-324

Maintenance Requirement Card, 327

Management of ordnance stowage area, 355

Manual control valve, 207

Military Standard Requisitioning and Issue Procedures (MILSTRIP), 343

Missile batteries, aligning, 284-291

Missile checkout, preparation for, 318-322

Missile component identification, 236-238

color code interpretation, 236

markings, 236

miscellaneous explosive devices, 237

Missile control components and systems, 195

Missile firing report, 344

Missile handling and stowing, 16-50

loading and stowage plans, 16-23

nuclear weapons, 46-48

standard missile, 49

Talos missile, 36-41J

Tartar missile, 41-50

Terrier missiles, 23-36

Missile launching systems, 51-81

differences in systems, 57

launcher captain's panel, 53-56

manning stations, 59

NTDS/WDS, 52

power panels, 53

preparation of launcher for firing, 51

safety checks, 57-59, 62

standard missile system, 80

Talos system, 76-80

Tartar system, 69-76

Terrier system, 63-69

test panels, 56

wing and fin assembly areas, 57

Missile orders, 277

Missile simulator, 311-313

Missile Systems Test (MST) , 317

Missile weapons system, equipment of, 254-284

GMLS capabilities, 258-261

guided missile fire control system Mk 76, 275-284

linear rate systems, 254

search radars, 255-258

weapons control system, 261-275

Mk 4 launching system, 66

Mk 7 launching system, 77-79

Mk 9 launching system, 63-66

Mk 10 launching system, 66-69

Mk 11 launching system, 69

Mk 11 launching system, dud and misfire handling
in, 101-106

Mk 12 launching system, 79

Mk 13 launching system, dud and misfire handling
in, 102

Mk 13 Mod 0 launching system, 70-75

Mk 17 depth charge, 112

Mk 22 launching system, 75

Mk 22 launcher dud-jettison system, 106

Mk 22 Tartar system train and elevation power
drives, 170

Mk 119 computer, 277

GUNNER'S MATE M 1 & C

N

NavOrdSysCom program for maintenance of weapons systems, 297
Navy Management Data List (NMDL) , 342
Navy Technical Proficiency Inspection (NTPI) , 348-350
NEC Coding System, 4
Nitrogen, 377
Nuclear radiation, 373
 detection and measurement, 373
 peacetime safety rules, 374
 protection against, 373
Nuclear warhead inspection, 234
Nuclear warhead weapons, 233
Nuclear Weapons Acceptance Inspection (NWAII) , 350
Nuclear weapons handling and stowage, 46-48
 alarm and warning systems, 48
 entry and access control, 47
 human reliability program, 48
 safety, 47
 two-man rule, 47
 ventilation in nuclear weapons spaces, 48

O

OAR Program, 330
Ordering publications, 343
Open-and closed-loop servosystems, 197
OPNAV Form 4790/2L, 334
ORDALTS, 323
Ordnance identification, sources of, 342
Ordnance material, survey of, 354
Ordnance protection against FR radiation, 374
Ordnance segment of COSAL, 339
Ordnance stowage area, management of, 355
Oscillographs, 143
Oscilloscope, dummy director and dual trace recorder, 143-148
Overhaul, 324
Own ship's maintenance program, 322

P

Parts, cleaning of, 299
Performance test, launcher shipboard, 304
Personnel report, 350
PETN, 232
Planned Maintenance Material Management (3-M) , 326
Planned Maintenance System, 298
Planned Maintenance System for Surface Missile Systems, 326-328

Plenum chambers, 245
PNA factor, 10
Pneumatic components of launching systems, 210-217
Pneumatic equipment and components, 205-228
 components used with and/or in missile systems, 205-217
 overhaul, repair, testing, and adjustment, 222-228
 air lubricators, 223
 air motors, 222
 repairs aboard ship, 228
 test set TS-1165/DSM, 224-228
 ship's air supply, 217 - 222
Pneumatic equipment safety, 365-:-367
 air flasks, tanks, and bladders, 367
 air motors, 366
 air pressure gages, 367
 high-pressure compressed air, 366
 low-pressure air, 365
 tools and handling equipment, 365
Pneumatic test set TS-1165/DSM, 224-228
Pneumatic wrenches, 206
Pressure regulator, 207
Pressurizing air flasks, tanks, and bladders, 367
Priority system, 343
Procurement of material, 340
Proficiency pay, 14
Pyrotechnics, 249, 368

R

Radar alignment, 293
Radar set AN/SPG-55, 275
 AN/SPS-10, 255
 AN/SPS-37, 258
 AN/SPS-39, 255
Radiation safety, 373-375
 cosmic rays, 375
 detection and measurement, 373
 luminescent paints, 375
 nuclear, 373
 peacetime safety rules, 374
 protection against, 373 ,
 RF or electromagnetic radiation, 374
 X-rays, 375
Rate Training Manuals, 7
Receiver-regulators, 182-192
 indicating equipment, 190-192
 maintenance of, 194
 shipboard adjustments, 192
Talos, 189
Tartar, 184
Terrier, 187
Receiving stands, 206

INDEX

Records,
ammunition, 250
for COSAL, 339
Guided Missile Service Record, 346
inventory of small arms and pyrotechnics, 249
material usage and job data, 336
Relative rate, 254
Repair,
aboard ship, 228
air lubricators, 223
air motors, 222
and maintenance, supplies for, 336
items, disposition of, 341
pneumatic test set TS-1165/DSM, 224
supplies, studies to improve, 341
Reports,
ammunition, 250
completion inspection, 350
CONAR, 345
feedback, 336
for COSAL, 339
missile firing, 344
missiles, 250
personnel, 350
Requisitions, preparation of, 343
in-excess, 340
Rescue of shock victims, 363
Resuscitation, 361
RF radiation, 230, 374
Rules, safety, 360

S

Safety,
accident prevention programs, 357
ammunition and explosives, 367-373
around machinery, 358-360
at shore stations, 359
checks, 231
electrical and electronic safety precautions, 360-363
fires, 378
gases, vapors, and toxic materials, 375-378
handling and stowage, 358
hydraulic fluid and equipment, 363-365
magazine, 240
moving machinery, 360
obligations, 230
on shipboard, 358
pneumatic equipment, 365-367
programs, organization and administration of,
241-248
during tests and maintenance, 242
installing fusible slug, 242-245
magazine anti-icing system, 245-247
magazine firefighting equipment, 241
missile magazine hazards, 241

Safety, programs, organization and administration of -
Continued
plenum chambers, 245
ventilating system, 247
radiation, 373-375
rescue of shock victims, 363
Tartar missile, 43
Search radars, 255
Security, weapons, 19
Seeker head orders, 280
Servoamplifier, 134-137
gain, phase, and balance adjustments, 135
magnetic amplifiers used as servocontrol amplifiers, 135
repair, replacement, or adjustment, 137
review of use in launching system, 134
servoamplifiers in launching systems, 136
Ship Armament Inventory List, 330-331
Shipboard alignment, 285
Shipyard and tender availability, 332-335
Ship's air supply, use of, 217-222
pneumatics in missiles, 220
thermo-pneumatic control systems, 218-220
Ship's Parts Control Center, 337
Shock victims, rescue of, 363
Simple harmonic motion operation, 307
Simulator, missile, 311
Slow-run-through (SRT) , 322)
Small arms, 249
SMS Equipment Status Log, 347
Sonar simulator, 315
Sonar-to-radar alignment checkout, 293
Stable element, 283
Standard Navy Maintenance and Material Management System, 326-336
assistance teams, 335
feedback report, 336
maintenance level responsibilities, 328
OAR Program, 330
planned maintenance for surface missile systems, 326-328
records of material usage and job data, 336
Ship Armament Inventory List, 330, 331
shipyard and tender availability, 332-335
Steps in maintenance procedure, 298-304
Stowage area, ordnance, management of, 355
Stowage, missile components, 240
Strikedown operation,
Tartar missile, 42
Terrier missile, 26-31
Supplies for maintenance and repair, 336-351
budgeting and funding, 338
COSAL, 339-341
GMM responsibility, 336

GUNNER'S MATE M 1 & C

Supplies for maintenance and repair - Continued

- Guided Missile Service Record, 346
- nuclear reports and inspections, 347-350
- personnel reports, 350
- preparing requisitions, 343
- SMS Equipment Status Log, 347
- sources of ordnance identification, 342
- sources of supply, 337
- studies to improve repair supplies, 341
- Uniform Material Movement and Issue Priority System, 343
- Weapons department reports, 343

Supply references, 342

Surface and shore targets, 259

Survey of ordnance material, 354

Surveys and inventories, 353-355

Sustainers and boosters, 235

Synchro testers, 140-142

Synchrosystems, 137-139

System alignment, 285

System OPs, 328

T

Talos launching system, 76-80

Talos missile handling and stowage, 36-41

- handling and stowage at depots, 40
- shipboard equipment, 37

Talos missile system, 91-97

- adjustment of launcher to missiles, 95
- automatic loading operation, 91
- dud-jettisoning, 93-95
- location and duties of personnel, 96
- step control, 93
- unloading, 92

Target designation transmitter (TDT), 258

Target Selection and Tracking Console (TSTC) , 263

Tartar launching system, 69-76

Tartar missile handling and stowage, 41-46

- deck equipment, 42
- missile-no-test program, 42
- safety precautions, 43-46
- struckdown operation, 42

Tartar missile system, 97-107

- automatic loading, 97
- automatic unloading, 99
- dud-jettisoning, 100-107
- step control, 99

Technical Standardization Inspection (TSI) , 350

Telescoping warhead hoists, 206

Tender availability, 332

Terrier launching system, 63-69

Terrier missile handling and stowage, 23-36

- assembly and disassembly, 36
- depot handling and stowage, 31-36
- equipment needed, 23-26
- problems with missile, 23
- safety precautions, 26
- struckdown, 26-31

Terrier missile system, 82-91

- dud-jettisoning, 86-91
- loading, 82
- malfunctions and their corrections, 85
- troubleshooting, 86
- unloading, 83

Test,

- aboard ship, 226
- air lubricators, 223
- air motors, 222
- checkout, 34, 317-322
- daily, 301
- explosive components, 234
- hydraulic system, 192
- launcher performance, 304
- missile, 316
- missile magazines, 238
- Missile Systems Test (MST), 317
- monthly, 302
- periodic, 303
- Pneumatic Test Set TS-1165/DSM, 224
- quarterly, 303
- safety, 242, 361
- weekly, 302

Thermo-pneumatic control systems, 218-220

Toxic materials, 377

Track transmitter, 275

Train alignment errors, correcting, 289

Train and elevation air drive motor, 210

Training missiles, 313-315

Tram readings, 286

Transportation of explosives, 371

Two-man rule, 47

U

Underwater targets, 261

Uniform Material Movement and Issue Priority System (UMMIPS), 343

Unloading order, 56

V

Vapors, toxic materials, and gases, 375

Ventilating system, 247

INDEX

Ventilation in nuclear weapons spaces, 48
Visual inspection, maintenance procedure, 299

W

War gases, 377
Warheads, nuclear, 233
 biological and chemical, 378
 inspection, 234
 limitations imposed by, 251
Warning and alarm system, 48
Weapon electrical simulator, 313
Weapon systems,
 equipment of, 254
 NavOrdSysCom program for maintenance of,
 297

Weapons Assignment Console (WAC), 268
Weapons control system, 261-275
Weapons department reports, 343
Weapons direction system, 261
Wing and fin assembly areas, 58
Work Center Manual, 329
Work requests, 333
Wrenches, pneumatic, 206

Z

Zeroing procedures, 139