

DMSi

Test Measures Catalog

21 June 1987

Prepared For:

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Test Measures Catalog

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I Introduction

INTRODUCTION

1. Purpose

This catalog provides the results of a survey of 89 test reports dating from 1973 through 1986 that were prepared by the Operational Test and Evaluation Agency (OTEA). It is designed to provide the user with a listing of test measures used in those reports and definitions of the most common or significant test measures. This catalog:

- a) Allows the user to see what measures have been used in the past
- b) Provides a list of suggested test measures
- c) Defines a list of significant test measures used in OTEA testing
- d) Provides a basis for standardization of the use of test measures

2. Relationship to USACDC Pamphlet 71-1, The Measurement of Effectiveness

This catalog is an update and supplement to USACDC Pamphlet 71-1, The Measurement of Effectiveness. It does not replace it. As the Test Measures Catalog was drawn from a sample of tests used, the selection of measures is considerably different than in The Measurement of Effectiveness. The following table summarizes the elements common to both catalog.

Elements Common to Both Catalogs

<u>Title of Report</u>	<u>Total Measures</u>	<u>Number of Categories</u>	<u>Number of Test Reports Analyzed</u>	<u>Number of Measures in Common</u>
The Measurement of Effectiveness (1973)	207	10 (28 subcategories)	175	24*
Test Measures Catalog (1987)	149	10	89	

* Six categories in common, counting Intelligence, which was subsumed into Firing in the Test Measures Catalog

II Defintions

DEFINITIONS

<u>Category Code</u>	<u>Category Title</u>	<u>Definition</u>
COM	Communications	Related to transmittal/receipt of information, speed and efficiency of processing data, organizational efficiency and effectiveness.
FIR	Firing	Target detection, acquisition and destruction. Also subsumes the related measure, Intelligence, and as such includes identification and evaluation of target.
HUM	Human Factors	Conditions affecting crew performance and safety.
ILS	Integrated Logistic Support	Supplies and life cycle support required for operation General support requirements (non-maintenance).
IOP	Interoperability	Interfacing and linking of electronic components.
MIS	Miscellaneous	Measures not included under other categories.
MOB	Mobility	Tactical and Operational speed and maneuverability.
RAM	Reliability and Maintainability	Maintenance support for system, as well as system reliability and general availability.
TRN	Training	Training and doctrine, for both performance, and acquisition of skills.
V/S	Vulnerability/ Survivability	System vulnerability in tactical environment, as well as survivability given threat forces.

III Methodologies

METHODOLOGIES

Extraction of the Test Measures from the 89 test reports was done at Data Level 4, that is to say, at a "finding of fact" level characterized by percentages, proportions, sums, lists of causes, etc. Measures were identified as those results of a test that produced numerical outputs, and that were the actual output of a test, not simply a finding of fact. Definitions were drawn from the test report itself, where possible, or produced using the test report as a guide. Given the highly context sensitive nature of many of the measures, definitions often were developed using the environment of the measure as a guide. The 89 test reports were selected by OTEA as representing a useful cross section of the agency's activities from 1973 through early 1986.

Measures were extracted from each of the 89 test reports through textual search using the Data Level 4 criterion as the basis for extraction, and added to the Test Measures Database for purposes of storage, retrieval, and analysis. They have been categorized by the category of measure (see Definitions for descriptions of categories) and summarized by a simple numerical count of each measure's number or repetitions in the database.

Inclusion in the Test Measures Catalog was determined using three criteria. Any measure that could meet any one of the criteria would qualify for entry into the catalog. These three criteria are:

- 1) Measure was repeated at least 3 times in the database.
- 2) Measure was identified as highly significant by analysts.
- 3) Measure was identified as interrelated to other measures chosen for catalog.

The Intelligence category, though used for the Measurement of Effectiveness Catalog, was omitted from the Test Measures Catalog, because it contained measures that were also clearly definable as Firing measures, based on the context of their employment. Though there were several cases of measures being used in a manner that would suggest their employment as Intelligence measures, the measures were used in test reports in such a way that textual analysis clearly identified them as Firing measures despite their similarities to the Intelligence category. Thus, the measures were omitted from the Test Measures Catalog, so that the archived data might be more representative of what was actually found.

IV Test Measures Lists

Test Measures List
Measures Selected for Catalog

Category Code	Test Measure	Count
COM	Error Rate	9
COM	Errors	3
COM	Length of Delay	3
COM	Message Quality	1
COM	Number of Messages Attempted	6
COM	Number of Messages Completed	5
COM	Time to Call Fire	1
COM	Time to Complete Action	16
COM	Time to Counter Jamming	1
COM	Time to Initialize	7
COM	Time to Process and Transmit	23
Subtotal for COM is 75		
FIR	Circular Error Probable	1
FIR	Detection Range	4
FIR	Engagement Range	3
FIR	Errors	13
FIR	Mean Radial Error	26
FIR	Mean Response Time	18
FIR	Mean Rounds Required	2
FIR	Mean Time Required	5
FIR	Mean Time to Hit	3
FIR	Number of Engagements	8
FIR	Number of Hits	20
FIR	Number of Misses	10
FIR	Number of Rounds Fired	28
FIR	Number of Rounds to Achieve Target Effect	1
FIR	Number of Rounds to Adjust	2
FIR	Number of Successful Boresights	1
FIR	Number of Targets	10
FIR	Number of Targets Engaged	5
FIR	Offset Range	3
FIR	Penetrations Per Hit	1
FIR	Percent Detected	4
FIR	Percent Effectively Engaged	3
FIR	Percent Engaged	4
FIR	Percent Errors	1
FIR	Percent Hits	26
FIR	Percent Identified	3
FIR	Percent Kills	1
FIR	Percentage of Duds	1
FIR	Probability of Hit	3
FIR	Range	9
FIR	Ranging Error	1
FIR	Rate of Fire	6
FIR	Time Between Subsequent Rounds	2
FIR	Time to Acquire Target	4
FIR	Time to Boresight	3
FIR	Time to Change Barrels	1
FIR	Time to Complete Firing Sequence	3
FIR	Time to Detect Target	9
FIR	Time to Engage	19
FIR	Time to Fire	4
FIR	Time to Fire for Effect(FFE)	3

Category Code	Test Measure	Count
FIR	Time to First Hit	4
FIR	Time to First Round	5
FIR	Time to Identification	6
FIR	Time to Load Weapon	3
FIR	Time to Perform Action	8
FIR	Time to Reload Weapon	8
FIR	Time to Shift Fire	3
FIR	Time to Unload	1
FIR	Total Mission Time	2
FIR	Weapon Flight Time	1
Subtotal for FIR is 315		
HUM	Action Rating	1
HUM	Ambient Noise Level	1
HUM	Egress Time	6
HUM	Ingress Time	6
HUM	Toxic Gas Accumulation (parts per million)	1
Subtotal for HUM is 15		
ILS	Battery Usage	3
ILS	Coolant Usage	2
ILS	Fuel Consumption	12
ILS	Idling Time	3
ILS	Mileage	10
ILS	Oil Consumption	1
ILS	Resupply Time	1
ILS	Time to Load	3
ILS	Time to Rearm	2
ILS	Time to Refuel	6
ILS	Time to Unload	3
Subtotal for ILS is 46		
IOP	Percent Successful Integration Checks	2
IOP	Time to Complete Integration	3
Subtotal for IOP is 5		
MIS	Bank Cubic Yards/Hour	2
MIS	Number of Items Used	1
MIS	Square Yards/Hour	1
MIS	Volume Capacity	1
Subtotal for MIS is 5		
MOB	Acceleration	1
MOB	Distance Travelled	20
MOB	Maximum Speed	1
MOB	Miles Towed	4
MOB	Miles Transported	1
MOB	Movement Rate	13
MOB	Movement Time	4
MOB	Time to Complete Course	6

Category Code	Test Measure	Count
MOB	Time to Derig	10
MOB	Time to Displace	16
MOB	Time to Emplace	16
MOB	Time to Load	8
MOB	Time to Rig	16
MOB	Time to Unload	6
MOB	Turning Radius	1
MOB	Vehicle Handling Rating	1
Subtotal for MOB is 124		
RAM	Achieved Availability	47
RAM	Active Maintenance Time	18
RAM	Distance Travelled	3
RAM	Downtime	37
RAM	Failure Rate	1
RAM	Inherent Availability	14
RAM	Level of Maintenance	3
RAM	Maintenance Burden	10
RAM	Maintenance Error Rate	2
RAM	Maintenance Ratio	46
RAM	Mean Miles Between Failures(MMBF)	27
RAM	Mean Preventative Maintenance Time	2
RAM	Mean Rounds Between Failures(MRBF)	25
RAM	Mean Time Between Failures(MTBF)	51
RAM	Mean Time Between Maintenance Actions(MTBMA)	13
RAM	Mean Time to Repair(MTTR)	59
RAM	Mission Length	4
RAM	Mission Reliability	9
RAM	Number of Different Tools Used	1
RAM	Number of Failures	66
RAM	Number of Maintenance Actions	16
RAM	Number of Missions	3
RAM	Number of Missions Aborted	3
RAM	Number of Missions Attempted	6
RAM	Number of Missions Completed	4
RAM	Number of Missions Flown	3
RAM	Number of Operator/Maintenance Errors	1
RAM	Number of Special Tools	1
RAM	Number of Successful Missions	3
RAM	Number of Times Tools Used	1
RAM	Number of Tools Used	1
RAM	Operating Time	55
RAM	Operational Availability	44
RAM	Percent Missions Completed	3
RAM	Percent Successful Missions	3
RAM	System Reliability	11
RAM	Time to Assemble	9
RAM	Time to Disassemble	6
RAM	Time to Perform Maintenance Action	6
RAM	Uptime	3
Subtotal for RAM is 620		
TRN	Average Time Performing Action	1

Category Code	Test Measure	Count
TRN	Marksmanship Scores	1
TRN	Number of Errors Performing Action	2
TRN	Performance Examination Score	1

Subtotal for TRN is 5

V/S	Detection Range	3
V/S	Exposure Time	5
V/S	Number of Detections	14
V/S	Time in Detected State	3

Subtotal for V/S is 25

Total Test Measure Count 1235

Test Measures List

Measures Not Selected for Catalog

Category Code	Test Measure	Count
COM	Estimated Position Error	1
COM	Input Time	1
COM	Jamming Margin	1
COM	Location Error	1
COM	Mean Spherical Error	1
COM	Measured Beacon Strength	1
COM	Message Preparation Time	1
COM	Miles Aircraft Not Tracked	1
COM	Number of Actions	1
COM	Number of Assignments	1
COM	Number of Calls to Contact	1
COM	Number of Data Passes	1
COM	Number of Data Passes Analyzed	1
COM	Number of Edits per Message	1
COM	Number of Fixes	1
COM	Number of Integrations Attempted	1
COM	Number of Integrations Successful	1
COM	Number of Lockouts	1
COM	Number of Messages Not Acknowledged	1
COM	Number of Messages Not Received	2
COM	Number of Messages Received	2
COM	Number of Messages Rejected	1
COM	Number of Missions Assigned	1
COM	Number of Missions Fired	1
COM	Number of Missions Planned	1
COM	Number of Missions Processed	1
COM	Number of Ports in Use	1
COM	Number of Problems	1
COM	Number of Satellites Available	1
COM	Number of Startpoints	1
COM	Number of Stations in Net	1
COM	Number of Stations Responding	1
COM	Number of Successful Hopsets	1
COM	Number of Targets Processed	1
COM	Number of Unsuccessful Hopsets	1
COM	Number of Waypoints	1
COM	Percent Dual Designations	1
COM	Percent Lines Lost in Edit	1
COM	Percent Messages Correctly Received	1
COM	Percent Messages Correctly Transmitted	1
COM	Percent Messages Received	2
COM	Percent Messages Rejected	1
COM	Percent Messages With Errors	1
COM	Percent of Messages Degraded	1
COM	Percent of Messages Delayed	1
COM	Percent of Messages Jammed	1
COM	Percent Successful Transmissions	1
COM	Percent Targets Tracked	1
COM	Percent Targets Updated	1
COM	Receiver to Transmitter Range	1
COM	Retransmission Rate	1
COM	Safety Time for Initial/Subsequent Data	1
COM	Self Location Error	1
COM	Time Aircraft Not Tracked	1
COM	Time Aircraft Tracked	1

Category Code	Test Measure	Count
COM	Time to Activate	2
COM	Time to Adjust	1
COM	Time to Compose Message	1
COM	Time to Display Message	1
COM	Time to Edit Message	1
COM	Time to Establish Communications Link	1
COM	Time to First Fix	1
COM	Time to Generate Database	1
COM	Time to Hopset	1
COM	Time to Lay to	2
COM	Time to Load Individual Station	1
COM	Time to Load Net	1
COM	Time to Plot Mission	1
COM	Time to Register	1
COM	Time to Review	1
COM	Time to Stabilize	1
COM	Transmission Rate	2

Subtotal for COM is 78

FIR	Acquired Locations	1
FIR	Acquisition Time	1
FIR	Angle of Attack	1
FIR	Base Plate Forward Displacement	1
FIR	Base Plate Vertical Displacement	1
FIR	Boresight Deviation	1
FIR	Cumulative Acquisition Frequency	1
FIR	Dispersion	1
FIR	Elevation Above the Mask	1
FIR	Firing Time	1
FIR	Forward Observation/Target Ratio	1
FIR	Height of Burst	1
FIR	Hit Ratio	1
FIR	Hits per Burst	1
FIR	Identification Range	1
FIR	Identification Time	1
FIR	Initiation Range	1
FIR	Interception Range	1
FIR	Intervisibility	1
FIR	Intervisibility Loss	1
FIR	Kill Probability	2
FIR	Missile Time of Flight	1
FIR	Mission Time	1
FIR	Missions Attempted	1
FIR	Missions Completed	1
FIR	Muzzle Velocity	1
FIR	Number Engaged	1
FIR	Number Identified	1
FIR	Number of Alerts	1
FIR	Number of Attempts to Engage	1
FIR	Number of Boresight Attempts	1
FIR	Number of Breaklocks	1
FIR	Number of Bursts	1
FIR	Number of Correct Engagements	1
FIR	Number of Correct Identifications	1

Category Code	Test Measure	Count
FIR	Number of Detections	2
FIR	Number of Direct Attacks	1
FIR	Number of Duds	1
FIR	Number of False Targets	1
FIR	Number of Firing Locations	2
FIR	Number of Firing Opportunities	1
FIR	Number of Firings	2
FIR	Number of Impact Predictions	1
FIR	Number of Interceptions	1
FIR	Number of Interrogations	1
FIR	Number of Kills	1
FIR	Number of Launches	1
FIR	Number of Missions	2
FIR	Number of Positions Located	1
FIR	Number of Reloads	1
FIR	Number of Repetitions	1
FIR	Number of Rounds Detonated	1
FIR	Number of Rounds Fired/Rounds Available	1
FIR	Number of Rounds for Registration	1
FIR	Number of Rounds Observed	1
FIR	Number of Rounds on Target	1
FIR	Number of Rounds to Reseat Baseplate	1
FIR	Number of Rounds to Rezero	1
FIR	Number of Rounds to Seat Baseplate	1
FIR	Number of Rounds to Zero	1
FIR	Number of Submunitions Flown	1
FIR	Number of Submunitions Recovered	1
FIR	Number of Successful Engagements	1
FIR	Number of Targets Assigned	1
FIR	Number of Targets Detected	1
FIR	Number of Targets Identified	2
FIR	Number of Targets Killed	1
FIR	Number of Targets Presented	2
FIR	Number of Track Initiations	1
FIR	Number of Tracks Active	1
FIR	Number of Trigger Pulls	1
FIR	Percent Correct Engagements	1
FIR	Percent Correct Weapon Assignment	1
FIR	Percent Firing Positions Located	2
FIR	Percent First Fire	1
FIR	Percent First Round Hits	2
FIR	Percent Improper Weapon Assignment	1
FIR	Percent Multiple Launches	1
FIR	Percent of Direct Attacks	1
FIR	Percent of Target Covered By Secondary Armament	1
FIR	Percent of Targets Located	1
FIR	Percent Propellant Charge Type	1
FIR	Percent Second Round Hits	1
FIR	Percent Targets Engaged	1
FIR	Percent Targets Identified	1
FIR	Percent Targets Recognized	1
FIR	Percentage of Duds Recovered	1
FIR	Probability of Recognition	1
FIR	Probability of Success	1
FIR	Proportion of Coverage	1

Category Code	Test Measure	Count
FIR	Range From Defended Point at Ordnance Release	1
FIR	Range to Defended Point at Assign	1
FIR	Terrain Mask Angle	1
FIR	Time Between Alert Attacks	1
FIR	Time for Six Rounds	1
FIR	Time to Alternate Firing Position	1
FIR	Time to Arm Weapon	1
FIR	Time to Complete Mission	1
FIR	Time to Defilade	1
FIR	Time to Designate	1
FIR	Time to Enable	1
FIR	Time to Erect Launcher	1
FIR	Time to Install Weapon	1
FIR	Time to Lock-on	1
FIR	Time to Predict Location	1
FIR	Time to Ready	1
FIR	Time to Remove Weapon	1
FIR	Time to Self-Locate	1
FIR	Time to Set Guns	1
FIR	Time to Subsequent Rounds	1
FIR	Total Fire Opportunities	1
FIR	Total First-Round Engagements	1
FIR	Tracking Time	1
FIR	Trial Time	1
	Subtotal for FIR is 123	
HUM	Crew Size	1
HUM	Horizontal Field of Vision	1
HUM	Vertical Sweep Angle	1
	Subtotal for HUM is 3	
ILS	Average Pounds per Refuel	1
ILS	Miles per Trip	1
ILS	Net Change in Mileage	1
ILS	Operating Range	1
ILS	Pump Rate	1
ILS	Refuel Ratio	1
ILS	Rounds Stored Per Minute	1
ILS	Time to Change Batteries	1
ILS	Time to Prepare for Refuelling	1
ILS	Time to Reload	1
ILS	Time to Secure From Refuelling	1
	Subtotal for ILS is 11	
IOP	Integration Attempts	1
IOP	Integration Attempts Causing Delay	1
IOP	Integration Attempts Rejected	1
IOP	Mean Time to Interconnect	1
IOP	Number of Alerts	1
IOP	Time to Synchronize	1

Category Code	Test Measure	Count
Subtotal for IOP is 6		
MIS	Gallons/Minute Pumped	1
MIS	Loose Cubic Yards/Hour	1
MIS	Productivity	1
MIS	Total Gallons Pumped	1
MIS	Total Pumping Time	1
Subtotal for MIS is 5		
MOB	Airlifts	1
MOB	Braking Distance	1
MOB	Distance of Course	1
MOB	Freeboard	1
MOB	Hookup Time	1
MOB	Number of Airdrops	1
MOB	Number of Displacements	2
MOB	Number of Emplacements	1
MOB	Number of Movements	1
MOB	Number of Personnel to Load	1
MOB	Number of Personnel to Unload	1
MOB	Number of Resupply Missions	1
MOB	Number of Rigging Personnel	1
MOB	Number of Slings	1
MOB	Swimming Speed	1
MOB	Time From Move to Fire	1
MOB	Time Required for Evacuation	1
MOB	Time Required to Evacuate Position After Firing	1
MOB	Time to Adjust Ground Level Laser Designator	1
MOB	Time to Assemble Ground Level Laser Designator	1
MOB	Time to Derig	1
MOB	Time to Disestablish Observation Post	1
MOB	Time to Establish Observation Post	1
MOB	Time to Ford	2
MOB	Time to Mate Gripstock	1
MOB	Time to Navigate	1
MOB	Time to Negotiate Obstacles	1
MOB	Time to Offload	2
MOB	Time to Prepare for Action	1
MOB	Time to Prepare for Towing	1
MOB	Time to Remove Gripstock	1
MOB	Time to Setup	2
MOB	Time to Start Engine	1
MOB	Time to Tear Down	2
MOB	Total Travel Time	1
MOB	Towing Impairments By Type	1
MOB	Unhook Time	1
Subtotal for MOB is 42		
RAM	Engine Hours	1
RAM	Flight Time	1
RAM	Frequency of Alignment	1
RAM	Frequency of Peaking	1

Category Code	Test Measure	Count
RAM	Mean Cycles Between Failures(MCBF)	2
RAM	Mean Trigger Pulls Between Incident	1
RAM	Median Time to Peak Power	1
RAM	Missions Required	2
RAM	Number of Accidents	1
RAM	Number of Deferred Maintenance Items	1
RAM	Number of Disconnects	1
RAM	Number of Failures	1
RAM	Number of Installations	1
RAM	Number of Maintenance Man/Hours	1
RAM	Number of Missions Delayed/Degraded	1
RAM	Number of Missions Not Completed	1
RAM	Number of Operators	1
RAM	Number of Systems Down	1
RAM	Number of Unsuccessful Missions	1
RAM	Number of Vehicles	1
RAM	Operating Time	1
RAM	Percent Engaged Without Failure	1
RAM	Percent Moves Without Failure	1
RAM	Percent Operational Failures	1
RAM	Percent Reliability Failures	1
RAM	Percent Systems Down	1
RAM	Preflight Time	1
RAM	Probability of Mean Time Between Failures	1
RAM	Probability of Mission Success	2
RAM	Probability of Reliable Round	2
RAM	Time to Boresight	1
RAM	Time to Change Configuration	1
RAM	Time to Complete Project	1
RAM	Time to Detect Fault	2
RAM	Time to Dismount Weapon	1
RAM	Time to Install	2
RAM	Time to Mount Weapon	1
RAM	Time to Remove	2
RAM	Time to Restore System	1
RAM	Time to Shift to Second Target	1
RAM	Time to Zero	1
RAM	Total Flight Hours	1
RAM	Total Number of Cycles	1
RAM	Total Repair Hours	1
RAM	Warm-up Time	1
Subtotal for RAM is 52		
TRN	Contractor Training Time	1
TRN	Hours of Instruction	1
TRN	Number of Personnel Trained	1
TRN	Percent Classroom/Firing Instruction During Contractor T	1
TRN	Posttest Score	1
TRN	Pretest Score	1
TRN	Time to Train Gunners	1
Subtotal for TRN is 7		
V/S	Distance to Observe Flash	1

Category Code	Test Measure	Count
V/S	Distance to Observe Rocket Ignition	1
V/S	Distance to Observe Smoke	1
V/S	Frequency of Initial Detection	1
V/S	Jammed Transmissionr Requiring Retransmission	1
V/S	Jammed Transmissions Requiring Alternate Means of Commun	1
V/S	Jamming Missions With No Effect	1
V/S	Laser On Time	1
V/S	Number of False Detections	1
V/S	Number of Jamming Attempts	1
V/S	Number of Monitored Transmissions per Monitor Period	1
V/S	Number of Nondetections	1
V/S	Number of Recoveries From Jamming	1
V/S	Number of Successful Jamming Attempts	1
V/S	Number of Successful Jammings	1
V/S	Number of Transmissions Needed to Identify Source	1
V/S	Percent Exposure Time	1
V/S	Percent Firings Detected	1
V/S	Percent of EW Missions Causing Erroneous Action	1
V/S	Percent of Sucessful Jamming Missions That Required Use	1
V/S	Percent Recoveries From Jamming	1
V/S	Receiver to Jammer Range	1
V/S	Signature	1
V/S	Tanks in Threat Force with Line of Sight	1
V/S	Time Required to Locate and Identify Source of Transmiss	1
V/S	Time to Camouflage	1
V/S	Time to Detect Firing	1

Subtotal for V/S is 27

Total Test Measure Count 354

Test Measures List

All Measures

Category Code	Test Measure	Count
COM	Error Rate	9
COM	Errors	3
COM	Estimated Position Error	1
COM	Input Time	1
COM	Jamming Margin	1
COM	Length of Delay	3
COM	Location Error	1
COM	Mean Spherical Error	1
COM	Measured Beacon Strength	1
COM	Message Preparation Time	1
COM	Message Quality	1
COM	Miles Aircraft Not Tracked	1
COM	Number of Actions	1
COM	Number of Assignments	1
COM	Number of Calls to Contact	1
COM	Number of Data Passes	1
COM	Number of Data Passes Analyzed	1
COM	Number of Edits per Message	1
COM	Number of Fixes	1
COM	Number of Integrations Attempted	1
COM	Number of Integrations Successful	1
COM	Number of Lockouts	1
COM	Number of Messages Attempted	6
COM	Number of Messages Completed	5
COM	Number of Messages Not Acknowledged	1
COM	Number of Messages Not Received	2
COM	Number of Messages Received	2
COM	Number of Messages Rejected	1
COM	Number of Missions Assigned	1
COM	Number of Missions Fired	1
COM	Number of Missions Planned	1
COM	Number of Missions Processed	1
COM	Number of Ports in Use	1
COM	Number of Problems	1
COM	Number of Satellites Available	1
COM	Number of Startpoints	1
COM	Number of Stations in Net	1
COM	Number of Stations Responding	1
COM	Number of Successful Hopsets	1
COM	Number of Targets Processed	1
COM	Number of Unsuccessful Hopsets	1
COM	Number of Waypoints	1
COM	Percent Dual Designations	1
COM	Percent Lines Lost in Edit	1
COM	Percent Messages Correctly Received	1
COM	Percent Messages Correctly Transmitted	1
COM	Percent Messages Received	2
COM	Percent Messages Rejected	1
COM	Percent Messages With Errors	1
COM	Percent of Messages Degraded	1
COM	Percent of Messages Delayed	1
COM	Percent of Messages Jammed	1
COM	Percent Successful Transmissions	1
COM	Percent Targets Tracked	1
COM	Percent Targets Updated	1

Category Code	Test Measure	Count
COM	Receiver to Transmitter Range	1
COM	Retransmission Rate	1
COM	Safety Time for Initial/Subsequent Data	1
COM	Self Location Error	1
COM	Time Aircraft Not Tracked	1
COM	Time Aircraft Tracked	1
COM	Time to Activate	2
COM	Time to Adjust	1
COM	Time to Call Fire	1
COM	Time to Complete Action	16
COM	Time to Compose Message	1
COM	Time to Counter Jamming	1
COM	Time to Display Message	1
COM	Time to Edit Message	1
COM	Time to Establish Communications Link	1
COM	Time to First Fix	1
COM	Time to Generate Database	1
COM	Time to Hopset	1
COM	Time to Initialize	7
COM	Time to Lay to	2
COM	Time to Load Individual Station	1
COM	Time to Load Net	1
COM	Time to Plot Mission	1
COM	Time to Process and Transmit	23
COM	Time to Register	1
COM	Time to Review	1
COM	Time to Stabilize	1
COM	Transmission Rate	2

Subtotal for COM is 153

FIR	Acquired Locations	1
FIR	Acquisition Time	1
FIR	Angle of Attack	1
FIR	Base Plate Forward Displacement	1
FIR	Base Plate Vertical Displacement	1
FIR	Boresight Deviation	1
FIR	Circular Error Probable	1
FIR	Cumulative Acquisition Frequency	1
FIR	Detection Range	4
FIR	Dispersion	1
FIR	Elevation Above the Mask	1
FIR	Engagement Range	3
FIR	Errors	13
FIR	Firing Time	1
FIR	Forward Observation/Target Ratio	1
FIR	Height of Burst	1
FIR	Hit Ratio	1
FIR	Hits per Burst	1
FIR	Identification Range	1
FIR	Identification Time	1
FIR	Initiation Range	1
FIR	Interception Range	1
FIR	Intervisibility	1
FIR	Intervisibility Loss	1

Category Code	Test Measure	Count
FIR	Kill Probability	2
FIR	Mean Radial Error	26
FIR	Mean Response Time	18
FIR	Mean Rounds Required	2
FIR	Mean Time Required	5
FIR	Mean Time to Hit	3
FIR	Missile Time of Flight	1
FIR	Mission Time	1
FIR	Missions Attempted	1
FIR	Missions Completed	1
FIR	Muzzle Velocity	1
FIR	Number Engaged	1
FIR	Number Identified	1
FIR	Number of Alerts	1
FIR	Number of Attempts to Engage	1
FIR	Number of Boresight Attempts	1
FIR	Number of Breaklocks	1
FIR	Number of Bursts	1
FIR	Number of Correct Engagements	1
FIR	Number of Correct Identifications	1
FIR	Number of Detections	2
FIR	Number of Direct Attacks	1
FIR	Number of Duds	1
FIR	Number of Engagements	8
FIR	Number of False Targets	1
FIR	Number of Firing Locations	2
FIR	Number of Firing Opportunities	1
FIR	Number of Firings	2
FIR	Number of Hits	20
FIR	Number of Impact Predictions	1
FIR	Number of Interceptions	1
FIR	Number of Interrogations	1
FIR	Number of Kills	1
FIR	Number of Launches	1
FIR	Number of Misses	10
FIR	Number of Missions	2
FIR	Number of Positions Located	1
FIR	Number of Reloads	1
FIR	Number of Repetitions	1
FIR	Number of Rounds Detonated	1
FIR	Number of Rounds Fired	28
FIR	Number of Rounds Fired/Rounds Available	1
FIR	Number of Rounds for Registration	1
FIR	Number of Rounds Observed	1
FIR	Number of Rounds on Target	1
FIR	Number of Rounds to Achieve Target Effect	1
FIR	Number of Rounds to Adjust	2
FIR	Number of Rounds to Reseat Baseplate	1
FIR	Number of Rounds to Rezero	1
FIR	Number of Rounds to Seat Baseplate	1
FIR	Number of Rounds to Zero	1
FIR	Number of Submunitions Flown	1
FIR	Number of Submunitions Recovered	1
FIR	Number of Successful Boresights	1
FIR	Number of Successful Engagements	1

Category Code	Test Measure	Count
FIR	Number of Targets	10
FIR	Number of Targets Assigned	1
FIR	Number of Targets Detected	1
FIR	Number of Targets Engaged	5
FIR	Number of Targets Identified	2
FIR	Number of Targets Killed	1
FIR	Number of Targets Presented	2
FIR	Number of Track Initiations	1
FIR	Number of Tracks Active	1
FIR	Number of Trigger Pulls	1
FIR	Offset Range	3
FIR	Penetrations Per Hit	1
FIR	Percent Correct Engagements	1
FIR	Percent Correct Weapon Assignment	1
FIR	Percent Detected	4
FIR	Percent Effectively Engaged	3
FIR	Percent Engaged	4
FIR	Percent Errors	1
FIR	Percent Firing Positions Located	2
FIR	Percent First Fire	1
FIR	Percent First Round Hits	2
FIR	Percent Hits	26
FIR	Percent Identified	3
FIR	Percent Improper Weapon Assignment	1
FIR	Percent Kills	1
FIR	Percent Multiple Launches	1
FIR	Percent of Direct Attacks	1
FIR	Percent of Target Covered By Secondary Armament	1
FIR	Percent of Targets Located	1
FIR	Percent Propellant Charge Type	1
FIR	Percent Second Round Hits	1
FIR	Percent Targets Engaged	1
FIR	Percent Targets Identified	1
FIR	Percent Targets Recognized	1
FIR	Percentage of Duds	1
FIR	Percentage of Duds Recovered	1
FIR	Probability of Hit	3
FIR	Probability of Recognition	1
FIR	Probability of Success	1
FIR	Proportion of Coverage	1
FIR	Range	9
FIR	Range From Defended Point at Ordnance Release	1
FIR	Range to Defended Point at Assign	1
FIR	Ranging Error	1
FIR	Rate of Fire	6
FIR	Terrain Mask Angle	1
FIR	Time Between Alert Attacks	1
FIR	Time Between Subsequent Rounds	2
FIR	Time for Six Rounds	1
FIR	Time to Acquire Target	4
FIR	Time to Alternate Firing Position	1
FIR	Time to Arm Weapon	1
FIR	Time to Boresight	3
FIR	Time to Change Barrels	1
FIR	Time to Complete Firing Sequence	3

Category Code	Test Measure	Count
FIR	Time to Complete Mission	1
FIR	Time to Defilade	1
FIR	Time to Designate	1
FIR	Time to Detect Target	9
FIR	Time to Enable	1
FIR	Time to Engage	19
FIR	Time to Erect Launcher	1
FIR	Time to Fire	4
FIR	Time to Fire for Effect (FFE)	3
FIR	Time to First Hit	4
FIR	Time to First Round	5
FIR	Time to Identification	6
FIR	Time to Install Weapon	1
FIR	Time to Load Weapon	3
FIR	Time to Lock-on	1
FIR	Time to Perform Action	8
FIR	Time to Predict Location	1
FIR	Time to Ready	1
FIR	Time to Reload Weapon	8
FIR	Time to Remove Weapon	1
FIR	Time to Self-Locate	1
FIR	Time to Set Guns	1
FIR	Time to Shift Fire	3
FIR	Time to Subsequent Rounds	1
FIR	Time to Unload	1
FIR	Total Fire Opportunities	1
FIR	Total First-Round Engagements	1
FIR	Total Mission Time	2
FIR	Tracking Time	1
FIR	Trial Time	1
FIR	Weapon Flight Time	1
Subtotal for FIR is 438		
HUM	Action Rating	1
HUM	Ambient Noise Level	1
HUM	Crew Size	1
HUM	Egress Time	6
HUM	Horizontal Field of Vision	1
HUM	Ingress Time	6
HUM	Toxic Gas Accumulation (parts per million)	1
HUM	Vertical Sweep Angle	1
Subtotal for HUM is 18		
ILS	Average Pounds per Refuel	1
ILS	Battery Usage	3
ILS	Coolant Usage	2
ILS	Fuel Consumption	12
ILS	Idling Time	3
ILS	Mileage	10
ILS	Miles per Trip	1
ILS	Net Change in Mileage	1
ILS	Oil Consumption	1
ILS	Operating Range	1

Category Code	Test Measure	Count
ILS	Pump Rate	1
ILS	Refuel Ratio	1
ILS	Resupply Time	1
ILS	Rounds Stored Per Minute	1
ILS	Time to Change Batteries	1
ILS	Time to Load	3
ILS	Time to Prepare for Refuelling	1
ILS	Time to Rearm	2
ILS	Time to Refuel	6
ILS	Time to Reload	1
ILS	Time to Secure From Refuelling	1
ILS	Time to Unload	3
Subtotal for ILS is 57		
IOP	Integration Attempts	1
IOP	Integration Attempts Causing Delay	1
IOP	Integration Attempts Rejected	1
IOP	Mean Time to Interconnect	1
IOP	Number of Alerts	1
IOP	Percent Successful Integration Checks	2
IOP	Time to Complete Integration	3
IOP	Time to Synchronize	1
Subtotal for IOP is 11		
MIS	Bank Cubic Yards/Hour	2
MIS	Gallons/Minute Pumped	1
MIS	Loose Cubic Yards/Hour	1
MIS	Number of Items Used	1
MIS	Productivity	1
MIS	Square Yards/Hour	1
MIS	Total Gallons Pumped	1
MIS	Total Pumping Time	1
MIS	Volume Capacity	1
Subtotal for MIS is 10		
MOB	Acceleration	1
MOB	Airlifts	1
MOB	Braking Distance	1
MOB	Distance of Course	1
MOB	Distance Travelled	20
MOB	Freeboard	1
MOB	Hookup Time	1
MOB	Maximum Speed	1
MOB	Miles Towed	4
MOB	Miles Transported	1
MOB	Movement Rate	13
MOB	Movement Time	4
MOB	Number of Airdrops	1
MOB	Number of Displacements	2
MOB	Number of Emplacements	1
MOB	Number of Movements	1
MOB	Number of Personnel to Load	1