Title: Logistics Supportability Test and Evaluation
What is SUPPORTABILITY

The degree to which system design characteristics and planned logistics resources meet system peacetime readiness and wartime utilization requirements.

Reliability + Maintainability + Supportability = Operational Availability
Why Conduct Supportability T&E

• During DT the supportability tester participates in early validation of the Product Support Package (PSP).
  
  – PSP: Consists of the 9 testable IPS elements and support functions required to perform maintenance tasks.

• Provide feedback to appropriate customers utilizing informal and formal reporting processes via the Lead Test Engineer (LTE) for:
  
  – Evaluation the system’s PSP as defined in the Life Cycle Sustainment Plan (LCSP)
  
  – Identification of issues with the Product Support Package (PSP) before fleet maintainers find them
  
  – Providing a prediction of success for the Logistics COI during Initial Operational T&E (IOT&E)
The Product Support Package

The PSP is the amount and type of IPS Elements provided to the system to compensate for the difference between the inherent R&M and the availability required by the Warfighter.

This represents the amount of reliability and maintainability that is **DESIGNED** into the system.
Supportability Effects on Ao

**Availability KPP**

$$Ao = \frac{MTBM}{MTBM + MTTR_{c&p} + MLDT}$$

$$98\% = \frac{500}{500 + 1.5 + 6}$$

**Logistics Delay Time (LDT)**

- Awaiting parts & facilities
- Confusing maintenance procedures
- Work assignment priorities
- Paperwork/Computer entry

Checking out SE, tools, etc.
Training issues
Wasted time during task
The Roles of Supportability T&E

- **Plan ST&E**
- **Write Test Plans**
- **Execute Test**
- **Report Test Results**

- Ensure the PSP is properly evaluated prior to fielding.

- Work with LEMs to ensure the test program is logistically supported
- Ensure work-around’s are in place when IPS elements are not mature enough to support test
Logistics Test and Evaluation Big Picture

R&M
AIR 4.1.10

IPS Element Verification
AIR 6.7/6.8 LEMS

Supportability Testing
AIR 6.7.1.8 ST&E

Suitability Testing
COTF

Reliability / Maintainability (R&M) Testing
Maintainability Demo (M-Demo)

(Logistic Test and Evaluation)

Routine Maintenance

Maintenance Tasks

Requirements Testing (Availability KPP)
Collect Maintainer Feedback

Logistics Demonstration (LOG Demo)

Maintenance Tasks

Requirements Testing (Availability KPP)
Collect Maintainer Feedback

(Note: If it can’t be fixed by an IPS element, it is most likely a system design issue vice supportability)
Systems Engineering “V” and ST&E

**Design Down**

- Interpret user needs, refine system performance specs, & environmental constraints
- Develop system functional specs & verification plan to evolve system functional baseline
- Evolve functional performance specs into system allocated baseline
- Evolve CI functional specs into “build to” documentation & verification plan
- Fabricate, assemble, code to “build to” documentation

**Build Up**

- Integrated DT&E/OT&E/LFT&E
- System DT&E, OT&E, LFT&E & OAs verify system functionality & constraints compliance to specs
- Integrated DT&E, LFT&E & EOAs verify performance compliance to specs
- Individual CI verification DT&E
- Components of IPS elements verification by contractor
- Validation of the product support package by OT
- Pre-validation of the product support package by Supportability T&E

**SRR**
- Integrated DT&E/OT&E/LFT&E. Demonstrate system to specified user needs & environmental constraints

**SFR**
- System DT&E, OT&E, LFT&E & OAs verify system functionality & constraints compliance to specs

**PDR**
- Integrated DT&E, LFT&E & EOAs verify performance compliance to specs

**CDR**
- Individual CI verification DT&E

**SVR**
- Components of IPS elements verification by contractor

**PRR**
- IPS element verification by LEM’s
ST&E’s Process During Logistics Testing

**DIMP**
- Determines IPS Elements required for the product support package

**PSM**
- Buys required IPS Elements

**LEMs**
- Analyze/demonstrate/inspect/test procured IPS Elements for specification compliance

**VERIFIED IPS**
- IPS Elements sent to test squadron for use in maintenance

**ST&E requests verification results from LEM**
- ST&E prepares test plan

**During DT, ST&E records & reports results, by IPS Element**
- ST&E evaluates the product support package during the execution of maintenance tasks

**ST&E consolidates results from all IPS Element evaluations to one Logistics Supportability input to DT/OT Transition Report**

This process is **VERIFICATION** testing. Note that ST&E does **NOT** conduct these tests.
ST&E Duties
- Test plan writing
- Test execution
- Test reports
- DT/OT transition report input
- Support of test
- Member T&E WIPT

ST&E Duties
- Feedback on PSP deficiencies
- Risk/Issue identification
- Line of communication for required logistics support of test program (FT spares, off site testing, etc.)
Supportability Tester Products/Services

- Assist in ILA preparation (ST&E portion)
- Participate in SETR events and complete 6.7.1.8 SETR checklist questions
- Assess testability of logistics requirements
- Track status of IPS element validation/verification
- Plan supportability test strategy
- Perform supportability risk assessments
- Provide supportability risk mitigation inputs
- Write and execute ST&E Test Plan
- Assess PSP supportability compliance
- Provide logistics support to flight/ground test
Supportability Tester Products/Services

- Inputs to program documentation
  - SOW
  - LCSP
  - LRFS
  - TEMP
  - ILA checklists
  - SETR checklists
- Periodic Status Briefs
- Test plans
- Deficiency reports
- Report of Test Results (RTR)
- DT/OT transition report inputs
- Inputs to Operational Test Readiness Review (OTRR)
Benefits of ST&E

• Ensure the Product Support Package (IPS Elements) provided to the fleet maintainer is effective to facilitate safe and efficient maintenance tasks

• Contribute to increased Operational Availability (Ao)

• Contribute to increased long term readiness and impacting future Ready Basic Aircraft (RBA)
  – Test new maintenance approaches
  – Identify potential readiness issues
  – Recommend supportability improvements
Supportability Policy and Guidance

- Defense Acquisition Guidebook
- Product Support Managers (PSM) Guidebook
- DoD Test Evaluation Management Guidebook
- Integrated Product Support (IPS) Element Guidebook
- NAVAIRINST 3960.2, Acquisition Test and Evaluation
- NAVAIRINST 3960.4, Test Plan Policy
- NAVAIRINST 3905.1, Test Report Policy
- ST&E Handbook
Contact Info

- Billy Biggs
- 301-995-1601
- Billy.Biggs@navy.mil