NACES Maint Review and updates



Warfighter Focused & Cost Conscious

Jose V. Santiago AECS ISSC June 26-27, 2018







- AECS ISSC
 - Who are we?
- Naval Aircrew Common Ejection Seat (NACES):
 - Maintenance concept
 - Manuals related to NACES and purpose
 - Recent and future seat updates
- Recent NACES maintenance issues





AECS ISSC



- Aircrew Escape and Crashworthy Systems In Service Support Center:
 - Supports US Navy/Marine fleet aviation on Ejection and Crashworthy Seat Issues:
 - Funded by PMA-202 (Human Systems), PMA-265 (F/A-18) and PMA-273 (T-45)
 - AECS ISSC lead located at FRC East Cherry Point
 - AECS ISSC team members located in seven locations in the continental US
 - Supplemented by 3 CSS support at the moment:
 - 2 Martin Baker Reps funded by production team
 - 1 local rep (non MBA) at Lemoore FRC/I level loft





AECS ISSC



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- AECS ISSC Sites:
 - NAWCAD Patuxent River (CW Seats, Survival Kits).
 - FRC East Cherry Point (Core Team, Ejection Seats)
 - FRC SW North Island (Ejection Seats)
 - FRC SE Jacksonville (Ejection Seats)
 - NAWCWD China Lake (Parachutes and Torso Harnesses)
 - NAWCAD Lakehurst (Support Equipment)
 - NSWC Indian Head (CADS/PADS)



Ejection Seat Products



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Parachute Recovery Systems













Crashworthy Seating Systems









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Survival Kits











AECS ISSC FUNCTIONS



- Fleet support
- Investigation of failed materials (EI's/HMR's and mishaps).
- Design improvements and issue TD's/Bulletins
- Optimize maintenance requirements and manual changes (TMSDR's or TPDR's)
- Supply support recommendations.
- Our job is to SUPPORT YOU!





- Ejection Seat:
 - Organizational and Depot Level maintenance
 - Organizational level:
 - Remove and Install
 - Clean
 - Inspect
 - Check and test
 - Minor repair (if required)
- Parachutes and survival kits:
 - Organizational and I Level maintenance







Organizational Level:

- F/A-18:
 - A1-F18AC-IETM:
 - Legacy F/A-18A/B/C/D acft maint manual.
 - A1-F18EF-IETM:
 - F/A-18E/F and EA-18G acft maint manual.
 - Both IETMS are used only for <u>on ACFT</u> seat maint.
 - Scheduled maintenance and removal (14/28/84/728 days).
 - Periodic Maint Instruction Cards (PMICs).





Organizational Level:

- T-45:
 - A1-T45AB-160-000:
 - Used only for on ACFT seat maint and removal/installation.
 - Checklist
 - A1-T45AB-MRC-SERIES
 - Scheduled maint and removal (Daily/28/140/728 days).
 - Periodic Maint Instruction Cards (PMICs).







- IETMS:
 - Removal of individual seat components:
 - Bucket and related components
 - Survival Kit
 - WB-55s
 - Main Beam
 - Catapult
 - Parachute
 - Drogue Canister (coming soon)
 - PDRM (coming soon)







- A1-120-600 series (Checklist):
 - AC (A/B/C/D), SJU-5/6 and NACES
 - AE (A/B/C/D), NACES
 - EA (E/F and G), NACES
 - Removal/Inst by Disassembly/Assembly
- A1-120-650 series (Checklist):
 - AC (A/B/C/D), SJU-5/6 and NACES
 - AE (A/B/C/D), NACES
 - EA (E/F and G), NACES
 - Removal/Inst as a complete unit







- A1-120-700 series (Checklist):
 - AC (A/B/C/D), SJU-5/6 and NACES
 - AE (A/B/C/D), NACES
 - EA (E/F and G), NACES
 - Removal/Inst of Survival kit and Seat Bucket







- Purpose of Checklist:
 - Use of Checklist is MANDATORY
 - For -700:
 - To be completed by a two member team:
 - Safety Observer/helper
 - Working member (perform procedures)
 - For -600/-650:
 - To be completed by a three member team:
 - Safety Observer/QA/CDQAR (Controlling Guide)
 - Working member (perform procedures)
 - Tool handler/helper







- Purpose of Checklist (cont):
 - BE PHYSICALLY THERE!
 - All personnel must be qualified/certified
 - Ensures the accomplishment of tasks in the correct sequence
 - Purpose is to eliminate the possibility of error or omission
 - NO INTERRUPTIONS (UNLESS IN AN EMERGENCY)
 - No partial work/checklist allowed

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- For on acft individual removal/installation of component or seat maint:
 - Use IETMS (F/A-18) or A1-T45AB-160-000 (T-45)
- NAVAIR 13-600-15-6-3:
 - NACES MRC deck (updated annually)
 - Provides the task/maint to perform the 728 day seat inspection
 - Detail instructions will refer to NAVAIR 13-1-36 (shop Maint)







- NAVAIR 13-1-36:
 - NACES Seat Shop Maintenance and IPB
 - Updated annually
 - Detailed org level maint instructions for the seat removed from the acft
 - Not for seat maint on the acft -> Use IETMS.







- NACES related pubs and purpose
- NAVAIR 13-1-37 NACES Dearm/Arm Checklist:
 - Updated annually
 - To be completed by a three member team:
 - Safety Observer/QA/CDQAR (Controlling Guide)
 - Working member (perform procedures)
 - Tool handler/helper









- Ejection Seat:
 - -Depot Level maint:
 - -NAVAIR 13-1-44:
 - Components Sent to Depot/FRC
 - -BRU (16 yrs)
 - -Harness Reel (20 yrs)
 - -Multi-Purpose Initiator (IMP, 14 yrs)
 - -Catapult, Bucket & Main Beam send for cause (corrosion, damage, etc.), BCM





- Lanyard Retention Collar (ACC-756):
 - Replaces metallic tape.
 - Strict compliance with assembly instructions.









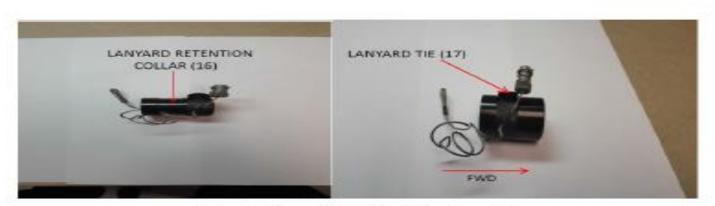
Recent NACES Mods



Lanyard Retention Collar (ACC-756):



Picture 2. Lanyard Tie and Emergency/O2 Lanyard



Picture 3. Lanyard Retention Collar Assembly



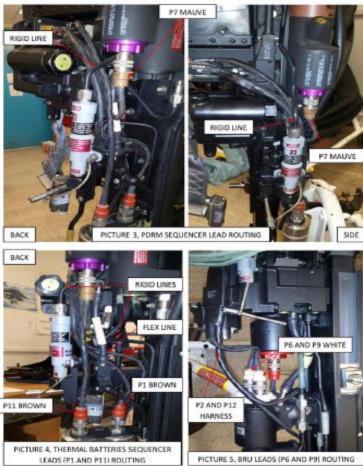


Recent NACES Updates



• Enhanced Sequencer routing Procedures:





NAV



Recent Updates



Time and Altitude Test Set (TATS):



NAV





• New ejection Handle (Late 2016):



Current Handle

Current Handle (repaired)

New Handle

 New handle did not meet environmental/operational Acft conditions.





- Digital Inline Timer (DIT) (WB54/55/56/M720):
 - Effort to increase reliability and increase service life over current timers





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• Digital Inline Timer (DIT) (WB54/55/56/M720):

Minor installation/routing changes needed for T-45/FA-18 FWD seat



Chafing problem



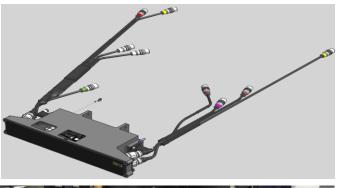
Tie strap to avoid chafing







- Ejection Seat Sequencer:
 - Enhanced software
 - Detachable leads
 - New test set







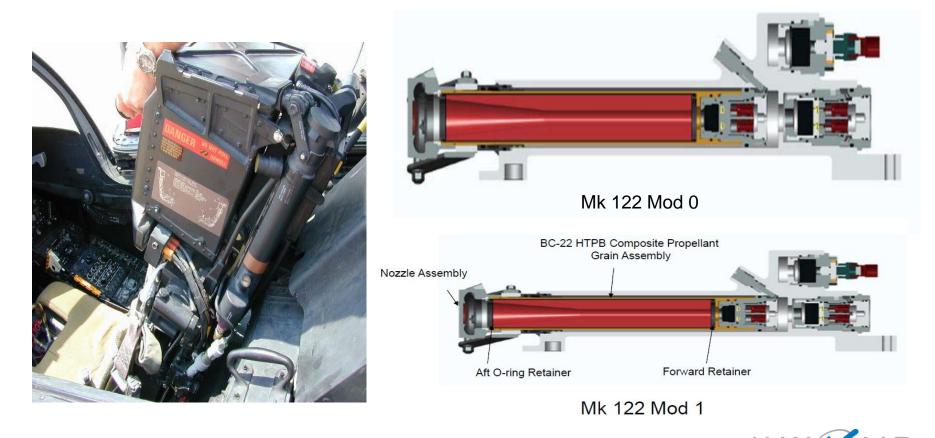






MK-122 (PDRM) Improvement

 Increase Service Life









- Detachable Risers and UWARS:
 - Includes new packing press
 - Reduce maint (packing and 28 day insp)



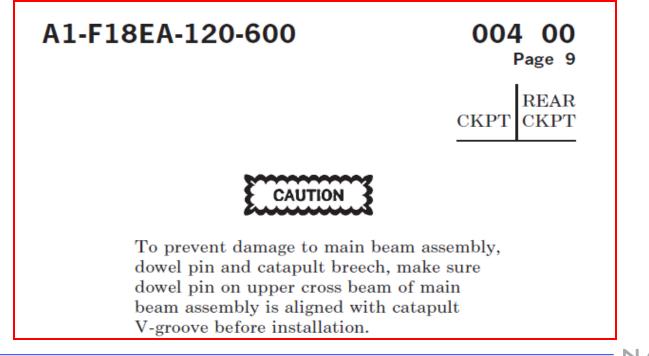






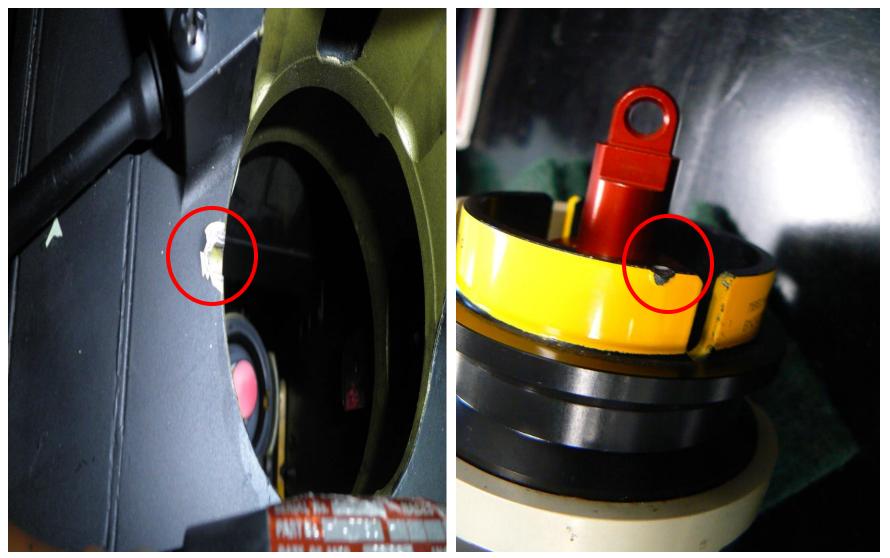


- Main Beam Dowel Pin Damage:
 - Pin damaged during Main Beam/Seat installation.
 - Total of 9 main beams damaged in the last 3 years.
 - Damaged caused by non-compliance with seat installation checklist.









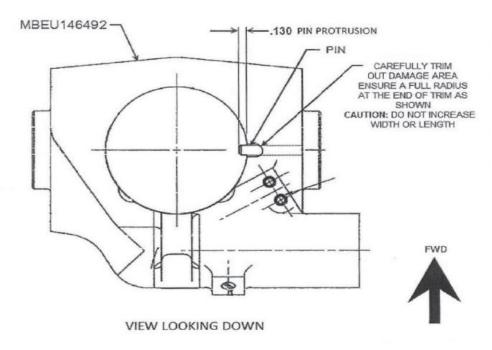






- Main Beam Dowel Pin Damage:
 - Depot repair in place.
 Main Beam Repair

Main Beam Repair











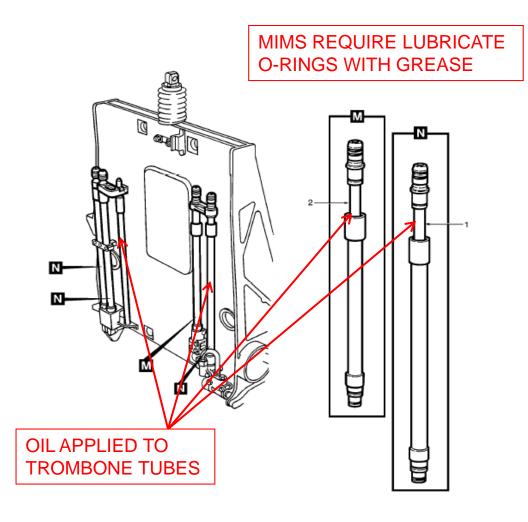
• USRM Pipe discrepancy:





Maintenance Issues <u>NACES Seat Bucket Trombone Tubes Oil Intrusion</u>







Mor Cartridge Firing









Mor Cartridge Firing









Maintenance Issues Parachute FOD











Expired MW19 installed

						98	12 FWD	
Site : PNCLAIMA Pested Org Code : T91 Requested Assy Cd : YPCY Requested Serno : MB0443	, c	NALCOMIS onfiguration Manage Aircrew Equipment R	ment eport		Date Time Req By Page	: 29 SEP 20 : 12:48 y: J. HILLES :1 of 1	15	
		Crew Member : Equipmen	nt Not Assigned					
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	Crew	w Member : Equi	ipment	Not Assigned				NAS JAX
Nomenclature	Part Number	Cont#/	DODIC	<u>Serno</u>	Quantity	Mfg <u>Date</u>	Install Date	Expire Date
PARACHUTE ASSY, PACKED	MBEU186027	UNK		MB0443	01			
PARACHUTE AND KIT ASSY	MBEU185420	FA8617-06-D		MB0443	01		29 Sep 2015	05 Oct 2019
PARACHUTE ASSEMBLY	MBEU171693	FA8617-06-D		E1098207	01	01 Jun 2011	29 Sep 2015 28 Sep 2011	AA 1 - 0004
HARNESS ASSY	MBEU179916	W27299		15-428-238	01	01 Jul 2015	1	30 Jun 2021
CANOPY RELEASE ASSEMBLIES	CANOPY RELEASE	UNK		MB0443LH	01	01 JUI 2015	18 Sep 2015	30 Sep 2021
SENSING RELEASE UNIT PARACHUTE HARNESS (852AS117-3	UNK		MB0443LH	01		30 May 2018	
PHSRU BATTERY	852AS102	0218		MB0443LH	01	01 Feb 2017	18 Sep 2015	
ELECTRONICS PACKAGE ASSEMBLY	852AS101-3	CAX11D005-		038185LH	01			28 Feb 2021
MPULSE CARTRIDGE (MW19)	851AS275	MSV14C005(MW19	005110LH	01			30 Apr 2021
CANOPY RELEASE ASSEMBLIES	CANOPY RELEASE	UNK		MB0443RH	01		22 Aug 2017 30 May 2018	30 Sep 2024
SENSING RELEASE UNIT PARACHUTE HARNESS (852AS117-4	UNK		MB0443RH	01		27 Apr 2015	
PHSRU BATTERY	852AS102	0617		MB0443RH	01		and the second	20.1
ELECTRONICS PACKAGE ASSEMBLY	852AS101-3	CAX11K005-		043504RH	01		a sure a sure of the	30 Jun 2021
MPULSE CARTRIDGE (MW19)	851AS275	HLX01E0080	MW19	2461RH	01			31 Oct 2021
PARACHUTE ASSY, AUXILLIARY	MBEU185483	FA8617-06-D		E1087716	01	in the second		31 May 2021 30 Apr 2021





NA۱













Corrosion







Questions?



