USACRC

Digital Collection, Analysis, and Integration Lab

DCAI Lab Mission

- Support the CAI and IAI Board President with data collected from DSC's
  - Assist in analysis of the Data
  - Provide an accident animation upon request
  - Provide a Technical Report of the Data upon request
- Support Army Shoot Down Analysis Team (ASDAT)
- Support the ACT-E program (DOTD)
- Assist with the Development and Management of the Army DSC Program; including MFOQA and CBM
- Assist units with other needs as time and resources allow (with cost savings through data analysis)

The Digital Source Collector

LUH-72A

- **USACR/SC has capability of downloading and analyzing data**
- **All LUH-72A will be equipped with L-3 FA5001 CV/FDR System**
- **25 hours of data, 2 hours of cockpit audio (4 channels)**

The Digital Source Collector

LUH-72A DSC Location

The Digital Source Collector
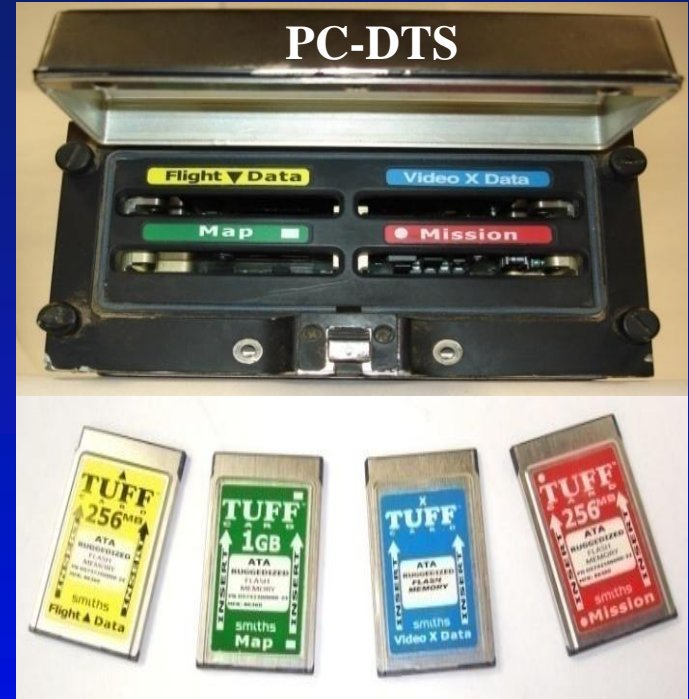
LUH-72A DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send the CVFDR to the DCAI Lab
- When sending the DSC unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab

The Digital Source Collector

PC-DTS

OH-58D

- **USACR/SC has capability of downloading and analyzing data**
- **Not a certified crash recorder**
- **No voice**

- **PC-DTS – Mission Software and Hardware includes a Map, Mission, Flight Data and Video Cards (PCMCIA Cards)**
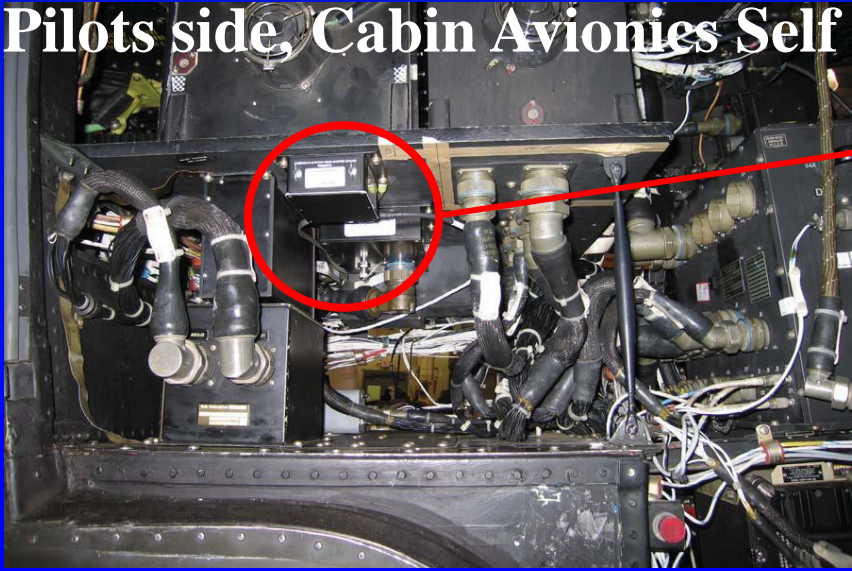
Modernized Signal Processing Unit (MSPU)

The Digital Source Collector

OH-58D DSC Location

Pilots side, Cabin Avionics Self

The Digital Source Collector

OH-58D DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send the DTC, DTM, or PCDTS Card(s) or .DAT file to the DCAI Lab for Download & Processing
- If sending the DSC unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab
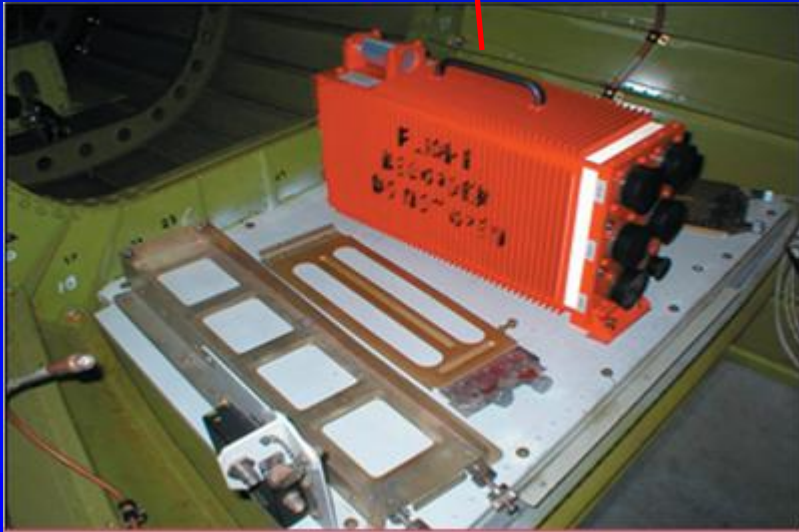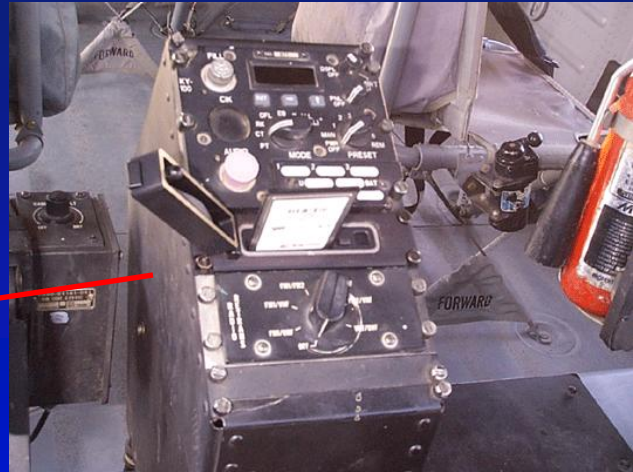
The Digital Source Collector

IVHMS and CV/FDR

UH-60A/L/M

- **USACR/SC has capability of downloading and analyzing data**
- **All UH-60M equipped with Goodrich IVHMS and Penny & Giles CV/FDR System**
- **13 hours of data, 2 hours of cockpit audio (4 channels)**

- **All UH-60A/L aircraft will be equipped with the same system over time**

The Digital Source Collector

UH-60A/L/M DSC Location

UH-60 A/L

UH-60 M

The Digital Source Collector

UH-60 DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send the PCMCIA card and IVHMS unit or .MUD file(s) and CV/FDR files for IVHMS/CVFDR aircraft
- If sending the DSC unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab

The Digital Source Collector

Maintenance Data Recorder (MDR)

AH-64D/E

- **USACR/SC has capability of down loading and analyzing data**
- **MDR with 80 MB/ 6 GB CSMU**
- **33 Hours of Data (minimum)**
- **Cockpit Audio 30 min (2 channels)**

Modernized Signal Processing Unit (MSPU)

- **MDR already proven critical in the investigation of AH-64D Apache Longbow accidents**
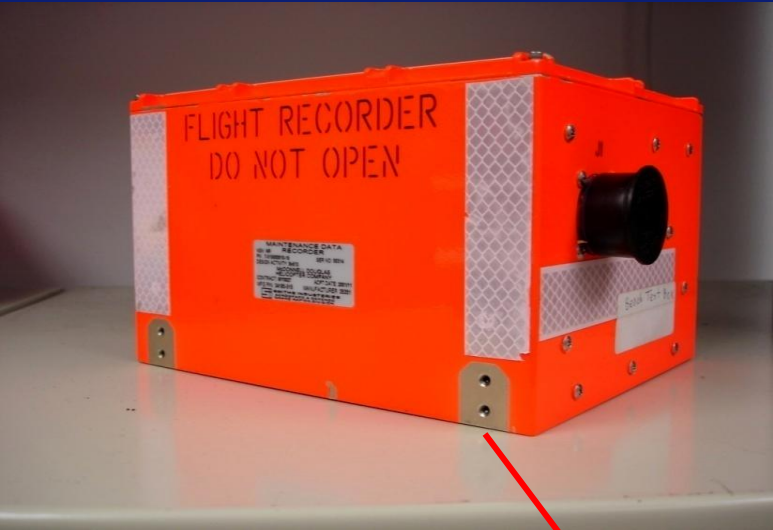- **All AH-64D/Es are equipped with MDR**

The Digital Source Collector

AH-64D/E DSC Locations

The Digital Source Collector

AH-64D/E DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send the MDR or BIN Files (4) to the DCAI Lab for Download & Processing
- If sending the DSC unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab
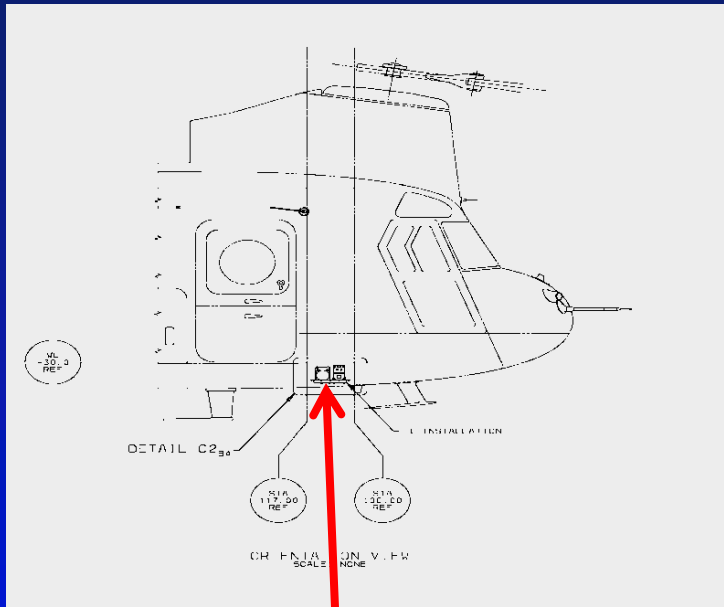
The Digital Source Collector
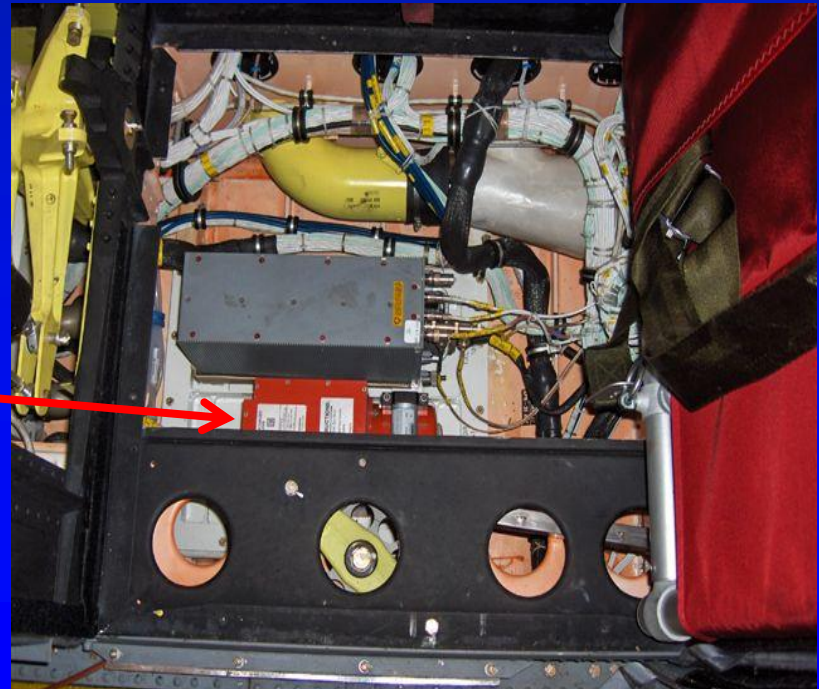
FA-2500 (APR)
CV/FDR

CH-47F

- USACR/SC has capability of downloading and analyzing data
- All CH-47F will have a CV/FDR
- 9 hours of data, 2 hours of cockpit audio (4 channels)

The Digital Source Collector

CH-47F DSC Location

The Digital Source Collector

CH-47F DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send the CVFDR to the DCAI Lab
- When sending the DSC unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab

The Digital Source Collector

Cockpit Voice Recorder (CVR)

FIXED WING

- USACRC has capability of downloading and analyzing data
- Cockpit voice recorders
- Older Airframes still have "Mag Tape" based systems

Flight Data Recorder (FDR)

- Secretary of Defense, "You should install Flight Data Recorders on your fixed-wing, commercial derivative aircraft."

The Digital Source Collector

F/W DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send the FDR and CVR to the DCAI Lab
- When sending the DSC unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab

The Digital Source Collector

MQ-1C (Warrior)

- **USACR/SC has the capability to download and process the data**
- **Shelter records all uplink and down link data**
- **Records shelter crew audio if recorder is on**

The Digital Source Collector

MQ-5B (Hunter)

- **USACR/SC has the capability of down loading and analyzing data**
- **Shelter records all uplink and down link data**
- **Records shelter crew audio if recorder is on**

The Digital Source Collector

MQ-7B (Shadow)

- **USACR/SC has the capability of down loading and analyzing data**
- **Shelter records all uplink and down link data**
- **Records shelter crew audio if recorder is on**

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Other Data Sources

- Disk Drives; PCMCIA Cards; Health Usage Monitoring System (HUMS) and Helicopter Operation Monitoring System (HOMS); Aircraft Systems Computers; EDMs

- Global Positioning Systems (GPS): Non-crashworthy device; current track usually 1 sample/sec; Selected waypoints; Battery backup or non volatile memory, Fixed memory or flashcard storage

- Non Volatile Memory (NVM) DSCs: Flight Management Computer (FMC) FADEC, EEC, ECU, DECU, etc.; Radio Stacks; Fuel Gauges; Engine Instrument Crew Alert System (EICAS); Engine Trend Monitoring Systems

The Digital Source Collector

PROCEDURES

- Contact the DCAI Lab with your request and the Lab will provide instructions on how to proceed
- Contact information:
  - Mail the DSC to: Commander, US Army Combat Readiness/Safety Center; ATTN: DCAI Lab; Bldg 4905, Ruf Ave; Ft Rucker, AL 36362-5363
  - Email the data, along with a short description of the problem to: or William.F.Rhode.civ@mail.mil; Timothy.S.Ashcom.civ@mail.mil; Carl.J.Shea.civ@mail.mil ; William.Rhode@us.army.smil.mil ; usarmy.rucker.hqda-secarmy.list.safe-dcai@mail.mil
- Provide a brief history of the accident/incident
- Provide unit POC with phone number & email address

The Digital Source Collector

DCAI Lab will Provide

- Provide the Board President or Unit with the downloaded, processed and analyzed data in excel spreadsheet format with areas of interest/concern highlighted

- The Lab will assist with the following:
  - Assistance with Data Interpretation
  - Develop 3D Animation (Upon Request)
  - Develop Technical Report (Upon Request)
  - Coordinate with AED for Airworthiness Release

The Digital Source Collector

ACCIDENT ANIMATION

- CAI/ IAI – DCAI Lab develops a 3D animation from DSC data (flight data, video, audio, etc), Sent to Board President no sooner than 2 Days prior to out brief.

- Animations are handled as FOUO

- Animation Release – GO to GO

- Audio is NOT releasable

- Flight data and audio transcripts are releasable data

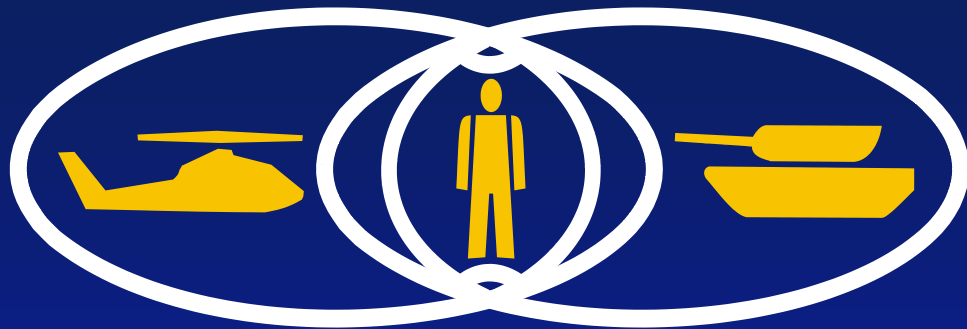# The Digital Source Collector

OH-58D/UH-60/AH-64 DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send PCDTS Card(s) or .DAT/.MUD/.BIN file to the DCAI Lab for Download & Processing
- If sending the DSC Unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab

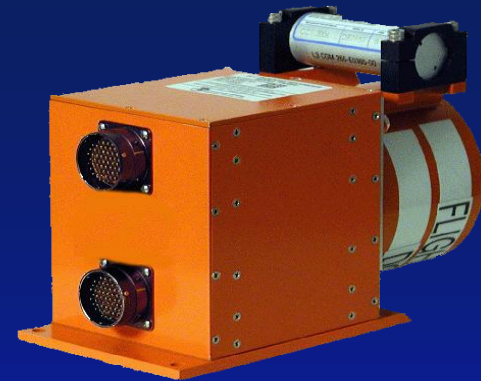# The Digital Source Collector

CH-47F & Fixed Wing DSC Procedures

- Contact the DCAI Lab with your request
- Provide unit POC w/phone number & email address
- Give a brief description of the accident/incident
- Send the CVFDR to the DCAI Lab
- When sending the DSC Unit, include a Pre-paid method to return the DSC to owning unit (UPS/FEDEX/DHL etc.)
- DO NOT attempt to Download or Process the data without coordinating with the DCAI Lab

U.S. ARMY COMBAT READINESS/SAFETY CENTER

Creating Information From Recorder Data

Bill Rhode, Chief, DCAI Lab, USACRC
Tim Ashcom, FDR Analyst, USACRC
Carl Shea, FDR Analyst, USACRC

U.S. ARMY COMBAT READINESS/
SAFETY CENTER
ATTN: CSSC-O (DCAI Lab)
BUILDING 4905, RUF AVENUE
FT. RUCKER, AL 36362-5363

OFFICE: (334) 255-1641/2259/2884
DSN: 558-1641/2259/2884
FAX: (334) 255-3749
William.F.Rhode.civ@mail.mil
Timothy.S.Ashcom.civ@mail.mil
Carl.J.Shea.civ@mail.mil