• Combat Aircraft Survivability and Threat Lethality
  ➢ Survivability is a critical characteristic of military aircraft
    – Current aircraft are too complex and expensive to be expendable
  ➢ Need to understand threats and their impact on aircraft survivability features

• Ways combat aircraft deal with threats:
  ➢ Avoid
    – Understanding threat system engagement capabilities (Max range, seeker sensitivity, etc)
  ➢ Defeat
    – Use of Aircraft Survivability Equipment (Chaff/Flare Dispensers, EW Jammers, IR Suppressors)
  ➢ Survive
    – Withstand weapon effects after taking a hit (Self sealing fuel tanks, redundant systems, etc)
    – Or allow for expedient repairs

• NASC 0766 supports CASTL in 2 ways:
  ➢ Provide operational experience and engineering support to AIR 4.1.8
    – Incorporate lessons learned into future aircraft acquisition programs
    – Support In-service survivability improvements to naval aircraft systems
  ➢ Joint Combat Assessment Team (JCAT)
    – Forward deployable battle damage assessors to document weapon effects for the aircraft survivability community
    – Provide threat assessment support to the operational and intelligence communities
Joint Combat Assessment Team
Joint Combat Assessment Team

- Provided a Rapid Response to a Critical Need During OIF
- Provide embedded threat assessment support to the aviation warfighter
  - Collaborate with operations and intelligence organizations to provide empirical combat damage data in support of decision making processes (i.e., TTP’s, intelligence assessments).
- Collect damage effects data, in-the-field, for the aircraft survivability engineering community
  - Support life cycle survivability improvements to naval aircraft systems

- 45 Trained JCAT Assessors
- USA, USN, USAF, USMC
Joint Combat Assessment Team

JCAT data collection and assessment

Threat weapon assessment provided to Ops/Intel Teams

Damage effects report archived by SURVIAC

TTPs reviewed

Data used to improve aircraft survivability design

Increased aircrew & aircraft survivability
Increased operational effectiveness

JCAT Serves Operational and Acquisition Communities!
Data Collection

On site examination of battle damage

Weapon effects simulations

Engineering Analysis

Battle Damage, System Impacts, ASE performance, Maintenance & Repair
### JCAT Accomplishments

#### 308 Total Assessments since 2004

#### Threat Systems Assessed
- MANPADS
- RPG
- S-5 Rocket
- Heavy Machine Gun
- AAA
- Smalls Arms

#### Aviation units supported

<table>
<thead>
<tr>
<th>Unit</th>
<th>3rd MAW</th>
<th>2nd MAW</th>
<th>1st ACB</th>
<th>3rd CAB</th>
<th>12th CAB</th>
<th>25th CAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>36th CAB</td>
<td>1st CAV</td>
<td>45th MedCo</td>
<td>332nd AEW</td>
<td>777th EAS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Assessments by Aircraft Type
- AH-1W - 42 (%)
- UH-1N - 21 (%)
- CH-46 - 23 (%)
- Other USMC - 20 (%)
- AH-64 - 73 (%)
- UH-60 - 58 (%)
- OH-58 - 34 (%)
- CH-47 - 13 (%)
- USAF - 8 (%)

#### IMPACTS
- Cataloged OIF Aircraft Battle Damage
- Supported the determination of root cause of aircraft losses during OIF
- Data collected supported USMC changes to aircraft operational TTP's (e.g., altitudes, time of day)
- Supported the identification of new enemy weapons types and tactics within the OIF theater of operation.
JCAT Summary

• Has provided an in theater combat damage assessment capability in direct response to aircraft battle damage during OIF
  ➢ Gather and report Battle Damage, System Impacts, ASE performance, Maintenance & Repair data

• Serves the operational and engineering communities as well as collaborates with the intelligence community on combat damage and threat assessment
  ➢ 308 assessments (through Oct 2007) covering over nine different U.S. aircraft types and six classes of threat weapon systems.

• Direct impact to the operational, intelligence and acquisition communities
  ➢ TTP’s, Engineering Changes, Intelligence summaries…