

## AH-64D Quick Reference Kneeboard

### **Startup Checklist**

- **Canopy** – Close
- **Lights** – AR
- **COMM Panel** – AR
- **Battery** – Set BATT
- **APU** – ON (Verify On)
- **SAI** – Uncage
- **TSD > UTIL > DOPPLER** – ON
- **UTIL > SHOW > COORD SHOW** – Enable All
- **COM > MAN** – SET FREQ
- **M > FUEL** – Robby Tank: Enable (C Aux)
- **M > FLT > SET > LO** – Set Altitude (AD)
- **WPN > UTIL** – All Weapons Selected
- **UTIL > Setup Weapons**
  - 1. GUN
    - Set Burst
  - 2. MSL
    - Set Code
  - 3. Rockets
    - Set Quantity
- **IHADSS** – On
- **Primary light knob** – Set
- **WPN > BORESIGHT > IHADSS** – Align to Boresight Reticle Unit
- **B/S MSL** – Press softkey (B/S NOW) when centered
- **NVS Mode** – Set
- **ENG 1** – Start
  - **NG** – 20%
  - **Power Lever** – FWD
- **ENG 2** – Start
  - **NG** – 20%
  - **Power Lever** – FWD
- **TSD > UTIL > Check Alignment** – INU ½: 0.004 KM (GREEN)
- **TSD > ENG > SYS** – Verify Oil PSI  $\leq$  70 on ENG 1 and 2
- **Advance Power from IDLE to FLY**
- **APU** – OFF
- **TSD > DMS > WCA > RESET**



## **Shutdown Checklist**

- **APU** – Start (Verify on)
- **Tail Wheel** – Locked
- **Parking Brake** – Set
- **Power Levels** – IDLE (2 Minutes)
- **SAI** – CAGE
- **CMWS** – ALL OFF
- **NVS** – OFF
- **ACM** – OFF
- **Power Levers** – OFF (After 2 Minutes)
- **Rotor Brake** – BRK (NR < 50%)
- **Search Light** – OFF
- **Rotor Brake** – OFF (After Rotor Stop)
- **Lights** – ALL OFF
- **Battery** – OFF
- **Apu** – OFF
- **Canopy** – Open

## **Weapon Data**

- **M139 Area Weapon System (M230 Chain Gun)**
  - **Light Armor Penetrating Capability**
  - **Ammunition Types (30x113mm)**
    - M789 High Explosive Dual Purpose (HEDP)
    - M788 Target Practice (TP)
  - **Effective Firing Range** – 1.5 km
  - **Maximum Firing Range** – 4 km
  - **Capacity** – 1200 Rounds (300 with IAFS)
- **Aerial Rocket Subsystem (Rockets)**
  - **M261 Rocket Launcher** – 19 Rocket Capacity
  - **4 Pylon Locations** – 76 Rockets Total
  - **Primary Rocket Type** – Hydra 70
  - **Hydra 70 Variants**
    - M151 HE – High Explosive
    - M229 HEDP – High Explosive (Large Warhead)
    - M257 Illum – Parachute Retarded Flare
    - M274 Smk – Target Practice (Smoke)
    - M282 MPP – Multi Purpose Penetrator

- **AGM-114K HEAT (Laser Hellfire)**
  - **Effective Ranges**
    - **Max Direct Fire Range** – 7 km
    - **Max Indirect Fire Range (LOBL)** – 8 km
    - **Max Indirect Fire Range (LOAL)** – 11 km
    - **Minimum Range** – 0.5 – 1.5 km
  - **Firing Modes**
    - **LOBL** – Lock on Before Launch
    - **LOAL** – Lock on After Launch

## **Navigation**

### **Point Types**

- **Waypoint (WP): 01-50** – Waypoints and Hazards
- **Control Measures (CM): 51-99** – Friendly/enemy units, airfields and other graphical CMs for controlling a mission
- **Target/Threats (TG): 01-50** – Depicts targets and threats
- **Terrain (HZ): 51-56**

### **TSD Add Point Procedure**

- **POINT page > ADD** – Select Type: WP, HZ, CM, TG
- **IDENT > IDENT Code (see ABR page) > FREE: 3 character identity**
- **KU Check 2 letter code > Verify code is accurate**
- **KU 8 DIGIT MGRS code > Add chosen MGRS**
- **KU check/enter ALT**

### **Adding a Waypoint to a route**

- **Utilize above checklist to add WP**
- **RTE page > ADD > POINT > WXX**
- **Sequence into route (on right) by clicking softkey where you want it to be added**

## Useful Formulas

### Speed/Time/Distance

- **Ground Speed required (knots)**= (Distance/Minutes)x 60
- **Time of Flight (mins)**= (Distance/Ground Speed) x 60

### Fuel/Endurance

- **Bingo Fuel (lbs)**= (Time of Flight/60) x Fuel Burn (lb/hr)
- **Objective Time (mins)**= ([Total Fuel – Bingo] ÷ Fuel lb/hr) x 60

### Altitude/Elevation Conversion

- **Feet to Meters**- [ft]/3.281= Meters
- **Meters to Feet**- [m]x 3.281= Feet

### Latitude/Longitude Conversion

- **DDD-MM-SS.SS to DDD-MM.MMM**
  - SS.SS/60= .MMM
- **DDD-MM.MMM to DDD-MM-SS.SS**
  - .MMM x 60= SS.SS

## George Ai (As CPG)

Slave TADS to PHS	US	Rules of Engagement	UL
CPG Weapon Select	LS	Weapon Type (Variant)	LL
Weapon Mode	RS	Hellfire Traj	RL
Stop Lasing/Break Track	DS	Repeat Target Search	DL

### George ROE's

- **Yellow** – Hold fire until given consent
- **Green** – Weapons free

## 9-Line Assistant

1. **IP/BP:\_\_\_\_\_** - Initial Point or Battle Point
2. **Heading:\_\_\_\_\_Offset:L\_\_\_\_\_R\_\_\_\_\_** - HDG(mag) from IP to TGT
3. **Distance:\_\_\_\_\_** - From IP to BP given in NM
4. **Target Elevation:\_\_\_\_\_** - In feet above MSL
5. **Target Description:\_\_\_\_\_** - Detailed description of area
6. **Target Location:\_\_\_\_\_** - UTM/MGRS/LatLong/Navaid/Visual
7. **Mark Type:\_\_\_\_\_Code:\_\_\_\_\_LTL:\_\_\_\_\_** - LTL= Laser Target Line
8. **Friendlylies:\_\_\_\_\_** - Location of nearest friendlylies
9. **Egress:\_\_\_\_\_** - Direction to depart after attack
- **Remarks:\_\_\_\_\_**
  - Troops in contact or danger close
  - Airspace coordination: final attack heading (FAH) or altitude restrictions
  - Threat
  - SEAD support in effect
  - Active gun target lines
  - Ordnance Requested
  - Hazards
  - Weather
- **TOT:\_\_\_\_\_ or TTT:\_\_\_\_\_**
  - Time Over Target- Specific time ordnance will hit target
  - Time To Target- Countdown timer started with "HACK!"