

## **Douglas A3D/A-3 Skywarrior**

- A3D-2 (Early)
- A-3B (Early)
- A3D-2 (Late)
- A-3B (Late)
- A3D-2Q
- EA-3B

### **See Also**

- Douglas B-66 Destroyer

|   |  |       |  |           |  |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
|---|--|-------|--|-----------|--|-----------|--|-----------|--|---|--|--------|--|--------|--|--------|--|-----|--|--------------------------|--|--|--|--|---------------|--|--|--|--|
| <div>A3D-2 Skywarrior</div> <div>(Early)</div>  |  |       |  |           |  |           |  |           |  | Crew: Pilot, Bombardier-Navigator, and Gunner |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
|   |  |       |  |           |  |           |  |           |  | Maneuver HFPs/DPs:                            |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| LR/DR   |  | —     |  | —         |  |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| VR  |  |       |  | 1.0       |  |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Power APs/DPs: ○○   |  |       |  |           |  |           |  |           |  | Turn DPs:                                     |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| CL  |  | 1/2   |  | DT        |  | Fuel      |  | CL        |  | 1/2   |  | DT     |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| AB  |  | —     |  | —         |  | —         |  | TT        |  | 1.0   |  | 2.0    |  | 3.0    |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| M   |  | 1.0   |  | 1.0       |  | 0.5       |  | 4.0       |  | HT  |  | 2.0    |  | 3.0    |  | 3.0    |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| N   |  | 0.0   |  | 0.0       |  | 0.0       |  | 2.0       |  | BT  |  | —      |  | —      |  | —      |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| I   |  | 1.0   |  | 1.0       |  | 2.0       |  | 0.0       |  | ET  |  | —      |  | —      |  | —      |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| SPBR  |  | 1.0   |  | 1.0       |  | 2.0       |  | —         |  | Only one vertical roll allowed per game turn. |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Smoker in military power (SMP).   |  |       |  |           | Cruise Spd. 5.0    Restr. Arcs: —        |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
|   |  |       |  |           | CL:                                      |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
|   |  |       |  |           | Climb Spd.: 3.5    Blind Arcs: 60–       |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
|   |  |       |  |           | Visibility: 8    Internal Fuel: 1450     |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
|   |  |       |  |           | Size: –1    AtA Refuel: Yes              |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
|   |  |       |  |           | Vulnerability: –1    Ejection Seat: None |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Speeds and Ceilings   |  |       |  |           |  |           |  |           |  | Climb Capabilities                            |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Alt.  |  | Conf. |  | CL        |  | 1/2       |  | DT        |  | Dive  |  | CL     |  | 1/2    |  | DT     |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Band  |  | Ceil. |  | 41        |  | 35        |  | 30        |  | Speed   |  | AB Oth |  | AB Oth |  | AB Oth |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| EH+   |  | 46+   |  | —         |  | —         |  | —         |  | —   |  | — —    |  | — —    |  | — —    |  | EH+ |  |                          |  |  |  |  |               |  |  |  |  |
| VH  |  | 36–45 |  | 3.0 – 5.5 |  | —         |  | —         |  | 6.0   |  | — 0.50 |  | — —    |  | — —    |  | VH  |  |                          |  |  |  |  |               |  |  |  |  |
| HI  |  | 26–35 |  | 2.5 – 5.5 |  | 3.0 – 5.5 |  | 3.0 – 5.0 |  | 6.5   |  | — 0.50 |  | — 0.50 |  | — 0.25 |  | HI  |  |                          |  |  |  |  |               |  |  |  |  |
| MH  |  | 17–25 |  | 2.0 – 6.0 |  | 2.5 – 5.5 |  | 2.5 – 5.5 |  | 6.5   |  | — 1.00 |  | — 0.50 |  | — 0.50 |  | MH  |  |                          |  |  |  |  |               |  |  |  |  |
| ML  |  | 8–16  |  | 2.0 – 6.0 |  | 2.0 – 6.0 |  | 2.5 – 5.5 |  | 6.5   |  | — 1.00 |  | — 1.00 |  | — 0.50 |  | ML  |  |                          |  |  |  |  |               |  |  |  |  |
| LO  |  | 0–7   |  | 1.5 – 6.0 |  | 2.0 – 5.5 |  | 2.0 – 5.0 |  | 6.5   |  | — 1.00 |  | — 1.00 |  | — 1.00 |  | LO  |  |                          |  |  |  |  |               |  |  |  |  |
| Radar:  |  |       |  |           | ASB-7                                    |           |  |           |  | ECM:  |  |        |  |        | IFF  |        |  |     |  | Weapon Stations Diagram: |  |  |  |  |               |  |  |  |  |
| ECCM:   |  |       |  |           | 1  |           |  |           |  | RWR:  |  |        |  |        | A  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Arcs:   |  |       |  |           | 180+                                     |           |  |           |  | DDS:  |  |        |  |        | —  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Search:   |  |       |  |           | Gr. Nav. (150)                           |           |  |           |  | DJM:  |  |        |  |        | —  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Track:  |  |       |  |           | Gr. Attack (90)                          |           |  |           |  | AJM:  |  |        |  |        | A3   |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Lock-On:  |  |       |  |           | 7  |           |  |           |  | BJM:  |  |        |  |        | —  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Guns:   |  |       |  |           | Two 20 mm M3L                            |           |  |           |  | Technology:                                   |  |        |  |        | Load Point Limits:   |        |  |     |  | CL : 0–6                 |  |  |  |  |               |  |  |  |  |
| To Hit:   |  |       |  |           | 3/2/1                                    |           |  |           |  | None  |  |        |  |        | Weight Limit:  |        |  |     |  | 15,000                   |  |  |  |  | 1/2: 7–9      |  |  |  |  |
| Ammunition:   |  |       |  |           | 6.0                                      |           |  |           |  |   |  |        |  |        |  |        |  |     |  | DT : 10+                 |  |  |  |  |               |  |  |  |  |
| Gunsight:   |  |       |  |           | —  |           |  |           |  |   |  |        |  |        | Station  |        |  |     |  | Limit                    |  |  |  |  | Allowed Loads |  |  |  |  |
| Ranging:  |  |       |  |           | —  |           |  |           |  |   |  |        |  |        | 1 and 3  |        |  |     |  | 3,000                    |  |  |  |  | BB FT EP      |  |  |  |  |
| AtA/AtG:  |  |       |  |           | 4/4*                                     |           |  |           |  |   |  |        |  |        | 2  |        |  |     |  | 9,000                    |  |  |  |  | BB            |  |  |  |  |
| Bomb System:  |  |       |  |           | Ballistic                                |           |  |           |  |   |  |        |  |        | Load Notes:  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| Notes:  |  |       |  |           |  |           |  |           |  |   |  |        |  |        | 1. Station 2 is the internal bomb bay. Load options are (a) four 2,000 lb BB, (b) six 1,000 lb BB, (c) twelve 500 lb BB, or (d) two nuclear bombs. |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| 1.  |  |       |  |           |  |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| 2. High transonic drag (HTD).   |  |       |  |           |  |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| 3. Tail Radar. Equipped with an APS-54 tail radar with ECCM 1, arc 60–, search 30–10, track 15–10, and lock-on 7–.  |  |       |  |           |  |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| 4. Articulated Guns. The guns can only fire at locked-on targets in the 60– arc. They may return fire twice per game turn in response to gun attacks or conduct one gun attack. The hit rolls are modified only by the target size. |  |       |  |           |  |           |  |           |  |   |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |
| VPs: 24/16/8/4  |  |       |  |           |  |           |  |           |  | v2 00000000<br>0000-00-00T00:00:00            |  |        |  |        |  |        |  |     |  |                          |  |  |  |  |               |  |  |  |  |

|                                 |             |                 |           |                        |   |                    |            |  |     |   |  |          |  |                          |  |  |  |
|---------------------------------|-------------|-----------------|-----------|------------------------|---|--------------------|------------|--|-----|---|--|----------|--|--------------------------|--|--|--|
| A-3B Skywarrior<br>(Early)      |             |                 |           |                        |   |                    |            |  |     | Crew: Pilot, Bombardier-Navigator, and Gunner |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        |   |                    |            |  |     | Maneuver HFPs/DPs:                            |  |          |  |                          |  |  |  |
| LR/DR                           |             | —               |           | —                      |   |                    |            |  |     |   |  |          |  |                          |  |  |  |
| VR                              |             |                 |           | 1.0                    |   |                    |            |  |     |   |  |          |  |                          |  |  |  |
| Power APs/DPs: ○○               |             |                 |           |                        |   |                    |            |  |     | Turn DPs:                                     |  |          |  |                          |  |  |  |
| CL                              | 1/2         | DT              | Fuel      |                        | CL  | 1/2                | DT         |  |     |   |  |          |  |                          |  |  |  |
| AB                              | —           | —               | —         | —                      | TT  | 1.0                | 2.0        | 3.0  |     |   |  |          |  |                          |  |  |  |
| M                               | 1.0         | 1.0             | 0.5       | 4.0                    | HT  | 2.0                | 3.0        | 3.0  |     |   |  |          |  |                          |  |  |  |
| N                               | 0.0         | 0.0             | 0.0       | 2.0                    | BT  | —                  | —          | —  |     |   |  |          |  |                          |  |  |  |
| I                               | 1.0         | 1.0             | 2.0       | 0.0                    | ET  | —                  | —          | —  |     |   |  |          |  |                          |  |  |  |
| SPBR                            | 1.0         | 1.0             | 2.0       | —                      | Only one vertical roll allowed per game turn. |                    |            |  |     |   |  |          |  |                          |  |  |  |
| Smoker in military power (SMP). |             |                 |           |                        | Cruise Spd.                                   |                    | 5.0        | Restr. Arcs:   |     | —   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        | CL:   |                    |            |  |     |   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        | Climb Spd.:                                   |                    | 3.5        | Blind Arcs:  |     | 60–   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        | Visibility:                                   |                    | 8          | Internal Fuel:   |     | 1450  |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        | Size:   |                    | –1         | AtA Refuel:  |     | Yes   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        | Vulnerability:                                |                    | –1         | Ejection Seat:   |     | None  |  |          |  |                          |  |  |  |
| Speeds and Ceilings             |             |                 |           |                        |   | Climb Capabilities |            |  |     |   |  |          |  |                          |  |  |  |
| Alt. Band                       | Conf. Ceil. | CL 41           | 1/2 35    | DT 30                  | Dive Speed                                    | CL AB Oth          | 1/2 AB Oth | DT AB Oth  |     |   |  |          |  |                          |  |  |  |
| EH+                             | 46+         | —               | —         | —                      | —   | — —                | — —        | — —  | EH+ |   |  |          |  |                          |  |  |  |
| VH                              | 36–45       | 3.0 – 5.5       | —         | —                      | 6.0   | — 0.50             | — —        | — —  | VH  |   |  |          |  |                          |  |  |  |
| HI                              | 26–35       | 2.5 – 5.5       | 3.0 – 5.5 | 3.0 – 5.0              | 6.5   | — 0.50             | — 0.50     | — 0.25   | HI  |   |  |          |  |                          |  |  |  |
| MH                              | 17–25       | 2.0 – 6.0       | 2.5 – 5.5 | 2.5 – 5.5              | 6.5   | — 1.00             | — 0.50     | — 0.50   | MH  |   |  |          |  |                          |  |  |  |
| ML                              | 8–16        | 2.0 – 6.0       | 2.0 – 6.0 | 2.5 – 5.5              | 6.5   | — 1.00             | — 1.00     | — 0.50   | ML  |   |  |          |  |                          |  |  |  |
| LO                              | 0–7         | 1.5 – 6.0       | 2.0 – 5.5 | 2.0 – 5.0              | 6.5   | — 1.00             | — 1.00     | — 1.00   | LO  |   |  |          |  |                          |  |  |  |
| Radar: ASB-7                    |             |                 |           |                        |   |                    |            |  |     |   |  | ECM: IFF |  | Weapon Stations Diagram: |  |  |  |
| ECCM:                           |             | 1               |           | RWR:                   |   | A                  |            |  |     |   |  |          |  |                          |  |  |  |
| Arcs:                           |             | 180+            |           | DDS:                   |   | —                  |            |  |     |   |  |          |  |                          |  |  |  |
| Search:                         |             | Gr. Nav. (150)  |           | DJM:                   |   | —                  |            |  |     |   |  |          |  |                          |  |  |  |
| Track:                          |             | Gr. Attack (90) |           | AJM:                   |   | A3                 |            | Load Point Limits: CL : 0–6  |     |   |  |          |  |                          |  |  |  |
| Lock-On:                        |             | 7               |           | BJM:                   |   | —                  |            |  |     |   |  | 1/2: 7–9 |  |                          |  |  |  |
| Guns:                           |             | Two 20 mm M3L   |           | Technology: None       |   |                    |            | Weight Limit: 15,000   |     |   |  | DT : 10+ |  |                          |  |  |  |
| To Hit:                         |             | 3/2/1           |           |                        |   |                    |            | Station  |     |   |  | Limit    |  | Allowed Loads            |  |  |  |
| Ammunition:                     |             | 6.0             |           |                        |   |                    |            | 1 and 3  |     |   |  | 3,000    |  | BB FT EP                 |  |  |  |
| Gunsight:                       |             | —               |           |                        |   |                    |            | 2  |     |   |  | 9,000    |  | BB                       |  |  |  |
| Ranging:                        |             | —               |           |                        |   |                    |            |  |     |   |  |          |  |                          |  |  |  |
| AtA/AtG:                        |             | 4/4*            |           | Bomb System: Ballistic |   |                    |            | Load Notes:  |     |   |  |          |  |                          |  |  |  |
| Notes:                          |             |                 |           |                        |   |                    |            | 1. Station 2 is the internal bomb bay. Load options are (a) four 2,000 lb BB, (b) six 1,000 lb BB, (c) twelve 500 lb BB, or (d) two nuclear bombs. |     |   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        |   |                    |            |  |     |   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        |   |                    |            |  |     |   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        |   |                    |            |  |     |   |  |          |  |                          |  |  |  |
|                                 |             |                 |           |                        |   | VPs: 24/16/8/4     |            |  |     | v2 0000000<br>0000-00-00T00:00:00             |  |          |  |                          |  |  |  |

|  |  |           |  |           |                                       |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|--|--|-----------|--|-----------|---------------------------------------|--------------------|--|-------|--|--|--|--------|--|--------|--|-----|--|--|--|
| A3D-2 Skywarrior<br>(Late)   |  |           |  |           |                                       |                    |  |       |  | Crew: Pilot, Bombardier-Navigator, and EW Officer  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           |                                       |                    |  |       |  | Maneuver HFPs/DPs:   |  |        |  |        |  |     |  |  |  |
| LR/DR  |  | —         |  | —         |                                       |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| VR   |  |           |  | 1.0       |                                       |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Power APs/DPs: ○○  |  |           |  |           |                                       |                    |  |       |  | Turn DPs:  |  |        |  |        |  |     |  |  |  |
| CL   |  | 1/2       |  | DT        |                                       | Fuel               |  | CL    |  | 1/2  |  | DT     |  |        |  |     |  |  |  |
| AB   |  | —         |  | —         |                                       | —                  |  | TT    |  | 1.0  |  | 2.0    |  | 3.0    |  |     |  |  |  |
| M  |  | 1.0       |  | 1.0       |                                       | 0.5                |  | 4.0   |  | HT   |  | 2.0    |  | 3.0    |  | 3.0 |  |  |  |
| N  |  | 0.0       |  | 0.0       |                                       | 0.0                |  | 2.0   |  | BT   |  | —      |  | —      |  | —   |  |  |  |
| I  |  | 1.0       |  | 1.0       |                                       | 2.0                |  | 0.0   |  | ET   |  | —      |  | —      |  | —   |  |  |  |
| SPBR   |  | 1.0       |  | 1.0       |                                       | 2.0                |  | —     |  | Only one vertical roll allowed per game turn.  |  |        |  |        |  |     |  |  |  |
| Smoker in military power (SMP).  |  |           |  |           | Cruise Spd. 5.0 Restr. Arcs: —        |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           | CL:                                   |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           | Climb Spd.: 3.5 Blind Arcs: 60–       |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           | Visibility: 8 Internal Fuel: 1450     |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           | Size: –1 AtA Refuel: Yes              |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           | Vulnerability: –1 Ejection Seat: None |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           |                                       |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Speeds and Ceilings  |  |           |  |           |                                       | Climb Capabilities |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Alt. Conf.   |  | CL        |  | 1/2       |                                       | DT                 |  | Dive  |  | CL   |  | 1/2    |  | DT     |  |     |  |  |  |
| Band Ceil.   |  | 41        |  | 35        |                                       | 30                 |  | Speed |  | AB Oth   |  | AB Oth |  | AB Oth |  |     |  |  |  |
| EH+ 46+  |  | —         |  | —         |                                       | —                  |  | —     |  | — —  |  | — —    |  | — —    |  | EH+ |  |  |  |
| VH 36–45   |  | 3.0 – 5.5 |  | —         |                                       | —                  |  | 6.0   |  | — 0.50   |  | — —    |  | — —    |  | VH  |  |  |  |
| HI 26–35   |  | 2.5 – 5.5 |  | 3.0 – 5.5 |                                       | 3.0 – 5.0          |  | 6.5   |  | — 0.50   |  | — 0.50 |  | — 0.25 |  | HI  |  |  |  |
| MH 17–25   |  | 2.0 – 6.0 |  | 2.5 – 5.5 |                                       | 2.5 – 5.5          |  | 6.5   |  | — 1.00   |  | — 0.50 |  | — 0.50 |  | MH  |  |  |  |
| ML 8–16  |  | 2.0 – 6.0 |  | 2.0 – 6.0 |                                       | 2.5 – 5.5          |  | 6.5   |  | — 1.00   |  | — 1.00 |  | — 0.50 |  | ML  |  |  |  |
| LO 0–7   |  | 1.5 – 6.0 |  | 2.0 – 5.5 |                                       | 2.0 – 5.0          |  | 6.5   |  | — 1.00   |  | — 1.00 |  | — 1.00 |  | LO  |  |  |  |
| Radar: ASB-7   |  |           |  |           | ECM: IFF                              |                    |  |       |  | Weapon Stations Diagram:   |  |        |  |        |  |     |  |  |  |
| ECCM: 1  |  |           |  |           | RWR: A                                |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Arcs: 180+   |  |           |  |           | DDS: A                                |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Search: Gr. Nav. (150)   |  |           |  |           | DJM: B3                               |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Track: Gr. Attack (90)   |  |           |  |           | AJM: A3                               |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Lock-On: 7   |  |           |  |           | BJM: —                                |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Guns: —  |  |           |  |           | Technology:                           |                    |  |       |  | Load Point Limits: CL : 0–6  |  |        |  |        |  |     |  |  |  |
| To Hit: —  |  |           |  |           | None                                  |                    |  |       |  | 1/2: 7–9   |  |        |  |        |  |     |  |  |  |
| Ammunition: —  |  |           |  |           |                                       |                    |  |       |  | Weight Limit: 15,000 DT : 10+  |  |        |  |        |  |     |  |  |  |
| Gunsight: —  |  |           |  |           |                                       |                    |  |       |  | Station Limit Allowed Loads  |  |        |  |        |  |     |  |  |  |
| Ranging: —   |  |           |  |           |                                       |                    |  |       |  | 1 and 3 3,000 BB FT EP   |  |        |  |        |  |     |  |  |  |
| AtA/AtG: —   |  |           |  |           |                                       |                    |  |       |  | 2 9,000 BB   |  |        |  |        |  |     |  |  |  |
| Bomb System: Ballistic   |  |           |  |           |                                       |                    |  |       |  | Load Notes:  |  |        |  |        |  |     |  |  |  |
| Notes:<br>1.<br>2. High transonic drag (HTD).<br>3. The DDS has 120 CH or 90 CH and 30 FL. |  |           |  |           |                                       |                    |  |       |  | 1. Station 2 is the internal bomb bay. Load options are (a) four 2,000 lb BB, (b) six 1,000 lb BB, (c) twelve 500 lb BB, or (d) two nuclear bombs. |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           |                                       |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |           |  |           |                                       |                    |  |       |  |  |  |        |  |        |  |     |  |  |  |
| VPs: 24/16/8/4   |  |           |  |           |                                       |                    |  |       |  | v2 00000000<br>0000-00-00T00:00:00   |  |        |  |        |  |     |  |  |  |

|  |  |       |  |           |                                       |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
|--|--|-------|--|-----------|---------------------------------------|-----------|--|-------|--|--|--|--------|--|--------|--|-----|--|--|--|
| A-3B Skywarrior<br>(Late)  |  |       |  |           |                                       |           |  |       |  | Crew: Pilot, Bombardier-Navigator, and EW Officer  |  |        |  |        |  |     |  |  |  |
|  |  |       |  |           |                                       |           |  |       |  | Maneuver HFPs/DPs:   |  |        |  |        |  |     |  |  |  |
| LR/DR  |  | —     |  | —         |                                       |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| VR   |  |       |  | 1.0       |                                       |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Power APs/DPs: ○○  |  |       |  |           |                                       |           |  |       |  | Turn DPs:  |  |        |  |        |  |     |  |  |  |
| CL   |  | 1/2   |  | DT        |                                       | Fuel      |  | CL    |  | 1/2  |  | DT     |  |        |  |     |  |  |  |
| AB   |  | —     |  | —         |                                       | —         |  | TT    |  | 1.0  |  | 2.0    |  | 3.0    |  |     |  |  |  |
| M  |  | 1.0   |  | 1.0       |                                       | 0.5       |  | 4.0   |  | HT   |  | 2.0    |  | 3.0    |  | 3.0 |  |  |  |
| N  |  | 0.0   |  | 0.0       |                                       | 0.0       |  | 2.0   |  | BT   |  | —      |  | —      |  | —   |  |  |  |
| I  |  | 1.0   |  | 1.0       |                                       | 2.0       |  | 0.0   |  | ET   |  | —      |  | —      |  | —   |  |  |  |
| SPBR   |  | 1.0   |  | 1.0       |                                       | 2.0       |  | —     |  | Only one vertical roll allowed per game turn.  |  |        |  |        |  |     |  |  |  |
| Smoker in military power (SMP).  |  |       |  |           | Cruise Spd. 5.0 Restr. Arcs: —        |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |       |  |           | CL:                                   |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |       |  |           | Climb Spd.: 3.5 Blind Arcs: 60–       |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |       |  |           | Visibility: 8 Internal Fuel: 1450     |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |       |  |           | Size: –1 AtA Refuel: Yes              |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
|  |  |       |  |           | Vulnerability: –1 Ejection Seat: None |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Speeds and Ceilings  |  |       |  |           |                                       |           |  |       |  | Climb Capabilities   |  |        |  |        |  |     |  |  |  |
| Alt. Conf.   |  | CL    |  | 1/2       |                                       | DT        |  | Dive  |  | CL   |  | 1/2    |  | DT     |  |     |  |  |  |
| Band Ceil.   |  | 41    |  | 35        |                                       | 30        |  | Speed |  | AB Oth   |  | AB Oth |  | AB Oth |  |     |  |  |  |
| EH+  |  | 46+   |  | —         |                                       | —         |  | —     |  | — —  |  | — —    |  | — —    |  | EH+ |  |  |  |
| VH   |  | 36–45 |  | 3.0 – 5.5 |                                       | —         |  | 6.0   |  | — 0.50   |  | — —    |  | — —    |  | VH  |  |  |  |
| HI   |  | 26–35 |  | 2.5 – 5.5 |                                       | 3.0 – 5.5 |  | 6.5   |  | — 0.50   |  | — 0.50 |  | — 0.25 |  | HI  |  |  |  |
| MH   |  | 17–25 |  | 2.0 – 6.0 |                                       | 2.5 – 5.5 |  | 6.5   |  | — 1.00   |  | — 0.50 |  | — 0.50 |  | MH  |  |  |  |
| ML   |  | 8–16  |  | 2.0 – 6.0 |                                       | 2.0 – 6.0 |  | 6.5   |  | — 1.00   |  | — 1.00 |  | — 0.50 |  | ML  |  |  |  |
| LO   |  | 0–7   |  | 1.5 – 6.0 |                                       | 2.0 – 5.5 |  | 6.5   |  | — 1.00   |  | — 1.00 |  | — 1.00 |  | LO  |  |  |  |
| Radar: ASB-7   |  |       |  |           | ECM: IFF                              |           |  |       |  | Weapon Stations Diagram:   |  |        |  |        |  |     |  |  |  |
| ECCM: 1  |  |       |  |           | RWR: A                                |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Arcs: 180+   |  |       |  |           | DDS: A                                |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Search: Gr. Nav. (150)   |  |       |  |           | DJM: B3                               |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Track: Gr. Attack (90)   |  |       |  |           | AJM: A3                               |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Lock-On: 7   |  |       |  |           | BJM: —                                |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| Guns: —  |  |       |  |           | Technology:                           |           |  |       |  | Load Point Limits: CL : 0–6  |  |        |  |        |  |     |  |  |  |
| To Hit: —  |  |       |  |           | None                                  |           |  |       |  | 1/2: 7–9   |  |        |  |        |  |     |  |  |  |
| Ammunition: —  |  |       |  |           |                                       |           |  |       |  | Weight Limit: 15,000 DT : 10+  |  |        |  |        |  |     |  |  |  |
| Gunsight: —  |  |       |  |           |                                       |           |  |       |  | Station Limit Allowed Loads  |  |        |  |        |  |     |  |  |  |
| Ranging: —   |  |       |  |           |                                       |           |  |       |  | 1 and 3 3,000 BB FT EP   |  |        |  |        |  |     |  |  |  |
| AtA/AtG: —   |  |       |  |           |                                       |           |  |       |  | 2 9,000 BB   |  |        |  |        |  |     |  |  |  |
| Bomb System: Ballistic   |  |       |  |           |                                       |           |  |       |  | Load Notes:  |  |        |  |        |  |     |  |  |  |
| Notes:<br>1.<br>2. High transonic drag (HTD).<br>3. The DDS has 120 CH or 90 CH and 30 FL. |  |       |  |           |                                       |           |  |       |  | 1. Station 2 is the internal bomb bay. Load options are (a) four 2,000 lb BB, (b) six 1,000 lb BB, (c) twelve 500 lb BB, or (d) two nuclear bombs. |  |        |  |        |  |     |  |  |  |
|  |  |       |  |           |                                       |           |  |       |  |  |  |        |  |        |  |     |  |  |  |
| VPs: 24/16/8/4   |  |       |  |           |                                       |           |  |       |  | v2 0000000<br>0000-00-00T00:00:00  |  |        |  |        |  |     |  |  |  |

|  |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
|--|--|-----------|--|-----------|---------------------------------------|-----------|--------------------|-------|--|---|--|--------|--|--------|-----------------|-----|--|--|--|------------------------------------|--|--|--|--|
| A3D-2Q Skywarrior  |  |           |  |           |                                       |           |                    |       |  | Crew: Pilot, Bombardier-Navigator, EW Officer, EW Officer, and EW Officer |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
|  |  |           |  |           |                                       |           |                    |       |  | Maneuver HFPs/DPs:  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| LR/DR — —  |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| VR 1.0   |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Turn DPs:  |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Power APs/DPs: ○○  |  |           |  |           | Cruise Spd. 5.0 Restr. Arcs: —        |           |                    |       |  | TT 1.0 2.0 3.0  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| CL 1/2 DT Fuel   |  |           |  |           | CL:                                   |           |                    |       |  | HT 2.0 3.0 3.0  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| AB — — — —   |  |           |  |           | Climb Spd.: 3.5 Blind Arcs: 60–       |           |                    |       |  | BT — — —  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| M 1.0 1.0 0.5 4.0  |  |           |  |           | Visibility: 8 Internal Fuel: 1450     |           |                    |       |  | ET — — —  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| N 0.0 0.0 0.0 2.0  |  |           |  |           | Size: –1 AtA Refuel: Yes              |           |                    |       |  | Only one vertical roll allowed per game turn.                             |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| I 1.0 1.0 2.0 0.0  |  |           |  |           | Vulnerability: –1 Ejection Seat: None |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| SPBR 1.0 1.0 2.0 —   |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Smoker in military power (SMP).  |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Speeds and Ceilings  |  |           |  |           |                                       |           | Climb Capabilities |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Alt. Conf.   |  | CL        |  | 1/2       |                                       | DT        |                    | Dive  |  | CL  |  | 1/2    |  | DT     |                 |     |  |  |  |                                    |  |  |  |  |
| Band Ceil.   |  | 41        |  | 35        |                                       | 30        |                    | Speed |  | AB Oth  |  | AB Oth |  | AB Oth |                 |     |  |  |  |                                    |  |  |  |  |
| EH+ 46+  |  | —         |  | —         |                                       | —         |                    | —     |  | — —   |  | — —    |  | — —    |                 | EH+ |  |  |  |                                    |  |  |  |  |
| VH 36–45   |  | 3.0 – 5.5 |  | —         |                                       | —         |                    | 6.0   |  | — 0.50  |  | — —    |  | — —    |                 | VH  |  |  |  |                                    |  |  |  |  |
| HI 26–35   |  | 2.5 – 5.5 |  | 3.0 – 5.5 |                                       | 3.0 – 5.0 |                    | 6.5   |  | — 0.50  |  | — 0.50 |  | — 0.25 |                 | HI  |  |  |  |                                    |  |  |  |  |
| MH 17–25   |  | 2.0 – 6.0 |  | 2.5 – 5.5 |                                       | 2.5 – 5.5 |                    | 6.5   |  | — 1.00  |  | — 0.50 |  | — 0.50 |                 | MH  |  |  |  |                                    |  |  |  |  |
| ML 8–16  |  | 2.0 – 6.0 |  | 2.0 – 6.0 |                                       | 2.5 – 5.5 |                    | 6.5   |  | — 1.00  |  | — 1.00 |  | — 0.50 |                 | ML  |  |  |  |                                    |  |  |  |  |
| LO 0–7   |  | 1.5 – 6.0 |  | 2.0 – 5.5 |                                       | 2.0 – 5.0 |                    | 6.5   |  | — 1.00  |  | — 1.00 |  | — 1.00 |                 | LO  |  |  |  |                                    |  |  |  |  |
| Radar: ASB-7   |  |           |  |           | ECM: IFF                              |           |                    |       |  | Weapon Stations Diagram:  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| ECCM: 1  |  |           |  |           | RWR: C                                |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Arcs: 180+   |  |           |  |           | DDS: A                                |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Search: Gr. Nav. (150)   |  |           |  |           | DJM: B4                               |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Track: Gr. Attack (90)   |  |           |  |           | AJM: B4                               |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Lock-On: 7   |  |           |  |           | BJM: Two B3                           |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Guns: —  |  |           |  |           | Technology:                           |           |                    |       |  | Load Point Limits: CL : 0–6   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| To Hit: —  |  |           |  |           | None                                  |           |                    |       |  | 1/2: 7–9  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Ammunition: —  |  |           |  |           |                                       |           |                    |       |  | Weight Limit: 15,000 DT : 10+   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Gunsight: —  |  |           |  |           |                                       |           |                    |       |  | Station Limit Allowed Loads   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Ranging: —   |  |           |  |           |                                       |           |                    |       |  | 1 and 2 3,000 BB FT EP  |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| AtA/AtG: —   |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Bomb System: Ballistic   |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |
| Notes:   |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        | VPs: 34/23/11/6 |     |  |  |  | v2 00000000<br>0000-00-00T00:00:00 |  |  |  |  |
| 1.<br>2. High transonic drag (HTD).<br>3. The DDS has 120 CH or 90 CH and 30 FL. |  |           |  |           |                                       |           |                    |       |  |   |  |        |  |        |                 |     |  |  |  |                                    |  |  |  |  |

|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|---|--|-------------|--|-----------|---------------------------------------|--------------------|--|-----------|--|---|--|-----------|--|------------|--|-----------|--|-----|--|
| EA-3B Skywarrior                          |  |             |  |           |                                       |                    |  |           |  | Crew: Pilot, Bombardier-Navigator, EW Officer, EW Officer, and EW Officer |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  | Maneuver HFPs/DPs:  |  |           |  |            |  |           |  |     |  |
| LR/DR                                     |  | —           |  | —         |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| VR  |  |             |  | 1.0       |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Power APs/DPs: ○○                         |  |             |  |           |                                       |                    |  |           |  | Turn DPs:   |  |           |  |            |  |           |  |     |  |
| CL  |  | 1/2         |  | DT        |                                       | Fuel               |  | CL        |  | 1/2   |  | DT        |  |            |  |           |  |     |  |
| AB  |  | —           |  | —         |                                       | —                  |  | TT        |  | 1.0   |  | 2.0       |  | 3.0        |  |           |  |     |  |
| M   |  | 1.0         |  | 1.0       |                                       | 0.5                |  | 4.0       |  | HT  |  | 2.0       |  | 3.0        |  | 3.0       |  |     |  |
| N   |  | 0.0         |  | 0.0       |                                       | 0.0                |  | 2.0       |  | BT  |  | —         |  | —          |  | —         |  |     |  |
| I   |  | 1.0         |  | 1.0       |                                       | 2.0                |  | 0.0       |  | ET  |  | —         |  | —          |  | —         |  |     |  |
| SPBR                                      |  | 1.0         |  | 1.0       |                                       | 2.0                |  | —         |  | Only one vertical roll allowed per game turn.                             |  |           |  |            |  |           |  |     |  |
| Smoker in military power (SMP).           |  |             |  |           | Cruise Spd. 5.0 Restr. Arcs: —        |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           | CL:                                   |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           | Climb Spd.: 3.5 Blind Arcs: 60–       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           | Visibility: 8 Internal Fuel: 1450     |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           | Size: –1 AtA Refuel: Yes              |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           | Vulnerability: –1 Ejection Seat: None |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Speeds and Ceilings                       |  |             |  |           |                                       | Climb Capabilities |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Alt. Band                                 |  | Conf. Ceil. |  | CL 41     |                                       | 1/2 35             |  | DT 30     |  | Dive Speed  |  | CL AB Oth |  | 1/2 AB Oth |  | DT AB Oth |  |     |  |
| EH+                                       |  | 46+         |  | —         |                                       | —                  |  | —         |  | —   |  | — —       |  | — —        |  | — —       |  | EH+ |  |
| VH  |  | 36–45       |  | 3.0 – 5.5 |                                       | —                  |  | —         |  | 6.0   |  | — 0.50    |  | — —        |  | — —       |  | VH  |  |
| HI  |  | 26–35       |  | 2.5 – 5.5 |                                       | 3.0 – 5.5          |  | 3.0 – 5.0 |  | 6.5   |  | — 0.50    |  | — 0.50     |  | — 0.25    |  | HI  |  |
| MH  |  | 17–25       |  | 2.0 – 6.0 |                                       | 2.5 – 5.5          |  | 2.5 – 5.5 |  | 6.5   |  | — 1.00    |  | — 0.50     |  | — 0.50    |  | MH  |  |
| ML  |  | 8–16        |  | 2.0 – 6.0 |                                       | 2.0 – 6.0          |  | 2.5 – 5.5 |  | 6.5   |  | — 1.00    |  | — 1.00     |  | — 0.50    |  | ML  |  |
| LO  |  | 0–7         |  | 1.5 – 6.0 |                                       | 2.0 – 5.5          |  | 2.0 – 5.0 |  | 6.5   |  | — 1.00    |  | — 1.00     |  | — 1.00    |  | LO  |  |
| Radar: ASB-7                              |  |             |  |           | ECM: IFF                              |                    |  |           |  | Weapon Stations Diagram:  |  |           |  |            |  |           |  |     |  |
| ECCM: 1                                   |  |             |  |           | RWR: C                                |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Arcs: 180+                                |  |             |  |           | DDS: A                                |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Search: Gr. Nav. (150)                    |  |             |  |           | DJM: B4                               |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Track: Gr. Attack (90)                    |  |             |  |           | AJM: B4                               |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Lock-On: 7                                |  |             |  |           | BJM: Two B3                           |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Guns: —                                   |  |             |  |           | Technology: None                      |                    |  |           |  | Load Point Limits: CL : 0–6   |  |           |  |            |  |           |  |     |  |
| To Hit: —                                 |  |             |  |           |                                       |                    |  |           |  | 1/2: 7–9  |  |           |  |            |  |           |  |     |  |
| Ammunition: —                             |  |             |  |           |                                       |                    |  |           |  | Weight Limit: 15,000 DT : 10+   |  |           |  |            |  |           |  |     |  |
| Gunsight: —                               |  |             |  |           |                                       |                    |  |           |  | Station Limit Allowed Loads   |  |           |  |            |  |           |  |     |  |
| Ranging: —                                |  |             |  |           |                                       |                    |  |           |  | 1 and 2 3,000 BB FT EP  |  |           |  |            |  |           |  |     |  |
| AtA/AtG: —                                |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Bomb System: Ballistic                    |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| Notes:                                    |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| 1.  |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| 2. High transonic drag (HTD).             |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
| 3. The DDS has 120 CH or 90 CH and 30 FL. |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |
|   |  |             |  |           |                                       |                    |  |           |  |   |  |           |  |            |  |           |  |     |  |