2006-2007 AIAA Foundation Graduate Team Aircraft Design Competition

PREPAIRED BY

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Awards Subcommittee Chair
AIAA Technical Committee on Management

Questions regarding this RFP may be submitted via email directly to the preparer at the following address: chris.beskar@stavatti.com

RULES

1. All groups of three to ten graduate AIAA branch or at-large Student Members are eligible and encouraged to participate.

2. The competition will be conducted and scored electronically. An Adobe PDF file of the submittal shall be e-mailed to: chris.beskar@stavatti.com. Individual File size should not exceed 20 Mb. **Note: an FTP site may be made available. Please check the AIAA site for updates.** Additionally, the following must be delivered to the AIAA Student Programs Department: One printed hard-copy bearing the signatures, names, and student numbers of the project leader and the AIAA Student Members who are participating; One disk/CD of the submittal containing an Adobe PDF file of the submittal. Designs that are submitted must be the work of the students, but guidance may come from the Faculty Advisor and should be accurately referenced and acknowledged.

3. Design projects that are used as part of organized classroom requirement are eligible and encouraged for competition.

4. The prizes shall be: First place-$2,500, Second place-$1,500, and Third place-$1,000. Certificates will be presented to the winning design team for display at their university and a certificate will also be presented to each team member and the faculty project advisor. One representative from the first place design team will be expected to present a summary design paper at the AIAA Aviation Technology, Integration, and Operations (ATIO) Conference in 2007. Reasonable airfare and lodging will be defrayed by the AIAA Foundation for the team representative.

5. More than one design may be submitted from students at any one school. Project files should include no more than 100 double-spaced pages and typeset should be no smaller than 10pt Times (including graphs, drawings, photographs, and appendix) on 8.5" x 11.0" (A-size) format. Up to five of the 100 pages may be formatted no larger than 11" x 17" (B-size).

6. If a design group withdraws their project from the competition, the team chairman must notify the AIAA National Office immediately!

SCHEDULE AND ACTIVITY SEQUENCES

Significant activities, dates and addresses for submission of proposal and related materials are as follows:

A. Letter of Intent – 16 Mar 2007
B. Receipt of Proposal – 8 June 2007
C. Announcement of Winners – Aug 2007

Groups intending to submit a proposal must submit a letter of intent with a maximum length of one page to be received with the attached intent form (page 5, below) on or before the date specified above, at the following address:

Mr. Stephen Brock
AIAA Student Programs Dept.
1801 Alexander Bell Drive, Suite 500
Reston, VA 20191-4344

The finished proposal must be submitted (received) to the same address on or before the date specified for the Receipt of Proposal (Item B).

PROPOSAL REQUIREMENTS

The success of a proposal is dependent upon a number of factors which must be appropriately addressed to result in contract award. This specific Request For Proposals (RFP) requires offerors to submit a proposal consisting of both a

Technical Proposal and Program Plan. Approximately 70% of the proposal must consist of the Technical Proposal with 30% focusing upon the Program Plan.

The Technical Proposal focuses upon the presentation of a thoroughly developed conceptual design of an original platform intended to satisfy RFP requirements. The Technical Proposal concentrates upon conceptual engineering design and systems integration, with particular emphasis placed upon design for manufacturing considerations.

The Program Plan must provide a presentation of the strategic, executive level approach to the program business model, program management model, and presentation of a business case for the program. The program plan must include a presentation of a suitable approach for the implementation the business, technical and production elements of the program. A summary of anticipated program development costs and program major-milestone timeline/schedule matrix must be provided.

The following factors should be included into the proposal:

1. Demonstration of a thorough understanding of the Request for Proposal (RFP) requirements.

2. Describe the proposed business, technical, program, management and risk reduction approaches to comply with each of the requirements specified in the RFP, including phasing of tasks. Legibility, clarity, and completeness of the technical approach are primary factors in evaluation of the proposals.

3. Particular emphasis should be directed at identification of critical business, technical, management and program problem areas. Descriptions, sketches, drawings, org charts, diagrams, systems analysis, method of attack, and discussions of new techniques should be presented in sufficient detail to permit engineering, management and business evaluation of the proposal. Exceptions to proposed RFP requirements should be identified and explained.

4. Include tradeoff studies including opportunity cost as well as technical, performed to arrive at the proposed design concept and total program approach.

5. Provide a detailed description of program management techniques that will ensure the successful implementation of lean, commercial practices throughout the design, development and production process. Include within the description a definitive approach to quality assurance.

6. Provide a summary of the automated design tools and Product Lifecycle Management (PLM) tools used in engineering of the platform and its associated program.

BASIS FOR JUDGING

1. Content (35 points)

This concerns the correctness of approach, theory, validity of reasoning used, apparent understanding and grasp of the subject, etc. Are all major factors considered and a reasonably accurate evaluation of these factors presented?

Approximately 70% of the submission should consist of the Technical Proposal with 30% consisting of the Program Plan.

2. Organization and Presentation (20 points)

The description of the design and program as an instrument of communication is a strong factor on judging. Organization of written design, clarity, and inclusion of pertinent information are major factors.

3. Originality (20 points)

The design proposal should avoid standard textbook information, and should show the independence of thinking or a fresh approach to the project. Does the method and treatment of the problem show unprecedented imagination? Does the method show an adaptation or creation of automated design tools?

4. Practical Application and Feasibility (25 points)

The proposal should present conclusions or recommendations that are feasible and practical, and not merely lead the evaluators into further difficult or insolvable problems. Is the project

realistic from a cost, quality, time-table and risk management standpoint? Does the presentation include an analysis of force projection/regional balance of power/arms limitation treaty compliance?

REQUEST FOR PROPOSAL (RFP)

SUPER CAS

BACKGROUND

The A/OA-10 is a Close Air Support (CAS) and battlefield interdiction aircraft. Originally designed to satisfy an anti-tank role on an anticipated Western European battlefront against Warsaw Pact forces, the A-10 has continued to remain an essential military asset as proven in Operation Desert Storm, Operation Enduring Freedom and throughout the ongoing War on Terror. Although a variety of studies have been undertaken to consider successors to the A-10, including GPU-5/A 30mm gun pod equipped F-16s, the A-10 remains in service today due to its unique ability to serve as a heavily armored, highly maneuverable, low-level attack aircraft with significant warload.

The most recent USAF long range plan stipulates that the A/OA-10 Thunderbolt II will remain in the USAF active duty fleet through FY2015, provided the existing aircraft receive a Service Life Extension to approximately 16,000 hours total time per airframe. After 2015, however, the USAF will require a dedicated, next generation aircraft to replace the 2005 Total Active Inventory of 356 A-10s in USAF service. Although the F/A-35 JSF was originally anticipated to serve as a suitable A-10 successor, USAF Long Range Planners have recognized that the JSF will lack the armor, firepower, low level performance, simplicity and reliability necessary to adequately replace the A-10 in a wide variety of Close Air Support and attack missions. This RFP focuses upon the conceptual design of a dedicated A-10 successor for 2015 and beyond designated SUPER CAS.

Intended to replace the A-10, SUPER CAS is also perceived as a platform which not only satisfies the A-10 mission, but will bridge current F-16 attack capabilities. The SUPER CAS aircraft is to be a manned or unmanned military air vehicle of fixed wing or powered lift type. General requirements for the SUPER CAS include an aircraft designed to satisfy a variety of missions including Anti-Tank, Battlefield Interdiction, Close Air Support and limited Air-To-Air capability. An all-weather, day/night aircraft (designed for the weather conditions associated with Western Europe, the Middle East and Philadelphia, PA) capable of satisfying low-level attack missions, the SUPER CAS is a quasi A-10/F-105 class aircraft.

PROJECT OBJECTIVE

Overall Objectives

The objective of the SUPER CAS program is to develop a new, next generation Close Air Support aircraft specifically designed to succeed the A-10 while significantly expanding upon A-10 capabilities.

SUPER CAS must function as an all-weather, day/night attack aircraft. Focused upon low-level attack with specific emphasis placed upon anti-armor and providing air support for urban warfare, the primary lethal mechanism for SUPER CAS will be at minimum a 30mm cannon of the GAU-8 class.

Designed as either a manned or unmanned autonomous aircraft, SUPER CAS must be engineered for significant levels of survivability including, at minimum, armored powerplant(s), self-sealing fuel tanks, redundant flight controls, and crew/cockpit armor. A low observable aircraft, SUPER CAS is to incorporate features to significantly reduce aircraft RCS and IR signature including an internal weapons bay for the carriage of precision weapons.

SUPER CAS is desired to feature fully integrated avionics, a comprehensive electronic countermeasures suite, inertial navigation, Electro Optical/Infra-Red (EO/IR) targeting and at minimum, vertical profile weather radar with a possible requirement for terrain following radar. A Helmet Mounted Display (HMD) is intended to serve as the pilot's primary visual flight reference instrument.

An essential asset for the USAF, the RFP will assume a requirement for between 300 and 500 SUPER CAS aircraft to be procured between 2015 and 2035 at a per unit flyaway cost of under $75 million ($50 million desired) in FY2006 USD. To reduce costs, the SUPER CAS is intended to integrate a wide variety of COTS

systems although advanced technology solutions may be incorporated. Each submission must include a key technology development plan to identify limiting technologies, as well as opportunities for Pre-Planned Product Improvement (PPPI). Submissions are encouraged to consider the impact of MEMS technologies, as well as incorporate trade studies driving the pursuit of either manned or unmanned configurations.

Student teams are to assume that the total DoD budget for the SUPER CAS program, including development and production for between 300 and 500 aircraft, is not to exceed $50 billion in 2007 USD. It is also assumed that DoD will provide $15.0 billion in funding to address the cost of SUPER CAS RDT&E, from DEM/VAL through SDD. SUPER CAS will be developed as a DoD funded program.

During this conceptual design, student teams are granted the authority to assume that lean, commercial product development practices will be employed throughout the RDT&E process, reducing the restrictions normally imposed by a U.S. DoD SPO directed program. Students are expected to develop a program development and program management model which will result in a lean, prompt and cost-effective approach to the development program to ensure that total development costs will not exceed $15.0 billion.

PLATFORM REQUIREMENTS

General Configuration & Design

1. Design a SUPER CAS platform for IOC in 2015.

2. SUPER CAS must be a fixed wing aircraft.

3. SUPER CAS may be a manned, unmanned remote piloted, unmanned autonomous or hybrid manned-unmanned aircraft.

4. PROPULSION: SUPER CAS must be powered by an airbreathing powerplant(s). A requirement for a specific type or number of powerplants is not specified. While multi-engine designs are encouraged to ensure survivability, single engine designs are acceptable provided adequate provisions are made to ensure overall improved reliability, maintainability and survivability. Selected powerplant(s) must be in current service or anticipated to enter service within the next 8 years. The powerplant(s) may be of U.S. domestic or allied foreign/international origin. The aircraft may be powered by an advanced cycle powerplant, provided a supporting reference to the conceptual design of the advanced cycle powerplant is included within the submission.

5. OBSERVABLES: SUPER CAS must be a Low Observable aircraft with emphasis placed upon reduced Radar Cross Section (RCS) in the clean configuration and significantly reduced Infra-Read and aural signatures. RCS should be on the order of the 0.005 square meters in the clean configuration.

6. SURVIVABILITY: SUPER CAS must be designed for survivability. Survivability features must include reduced signature, rugged airframe construction, self-sealing fuel tanks/OBIGS, armored cockpit and crew stations, armored powerplant and critical subsystems, armored ammunition containment, redundant flight control, hydraulic and electrical systems, flat-resistant tires and the ability to remain airborne and return home upon sustaining damage to primary fuselage, wing, canard and/or stabilizers and flight control elements. SUPER CAS must be hardened against EMP while featuring NBC protection for crewmembers. SUPER CAS must be highly survivable against advanced MANPADs (Stinger) and ground based 35mm AAA. A comprehensive electronic countermeasures and electronic warfare suite must be incorporated to detect and counter IR, Radar and Laser Guided threats.

7. PRIMARY WEAPON: The primary weapon system for SUPER CAS must be a fixed, large caliber cannon system or Directed Energy Weapon for air-to-ground and secondary air-to-air engagements. Minimum cannon size is 30mm. The cannon must be capable of delivering the PGU-14 series of ammunition or equivalent. Selection of the GD GAU-8 30mm cannon system as principal aircraft armament is encouraged. If selected, the GAU-8 will be provided as Government Furnished Equipment (GFE). Minimum ammunition capacity for GAU-8 ammunition drum is 2,000 rounds in the SUPER CAS application. Data describing the GAU-8 is provided in Appendix A.

Offerors are encouraged to submit SUPER CAS designs which employ alternate primary weapon systems, including Directed Energy Weapons (DEW). Submissions employing alternate primary weapons must include a detailed technical description/ justification for the weapon systems.

8. INTERNAL STORES: SUPER CAS must feature internal weapons carriage capacity such that at minimum 8,000 lbs of stores may be carried internally in the clean, Low Observable configuration.

9. EXTERNAL STORES: SUPER CAS must be offer a high degree of stores carriage flexibility including accommodations for the installation of external stores hardpoints for missions which do not necessitate Low Observability. Minimum external stores load must exceed 15,000 lbs.

10. SUPPORTABILITY/MAINTAINABILITY: SUPER CAS must be designed for supportability and maintainability. SUPER CAS MMH/FH is to be less than 12 hours. The design must permit easy access to all primary systems. Primary systems must be Line Removable Units (LRUs). SUPER CAS must be supportable from forward airfields with a minimum number of C-130/C-17 Support Aircraft.

Performance & Systems Design

1. MISSION PROFILES: SUPER CAS must satisfy at least three specific Combat Mission Profiles (CMPs) as specified in Attachment B. Additional, SUPER CAS mission profiles may be submitted to illustrate platform capabilities.

2. MANNED VARIANTS: Manned SUPER CAS configurations must incorporate provisions for single pilot operation, a zero-zero escape system, bullet resistant/bird strike resistant canopy, armored cockpit capable of surviving sustained 23mm cannon fire and 15º over-the-nose and 40º over-the-side visibility. Crewmembers ranging from 1st percentile female through the 99th percentile male (5 ft 4in/100 lbs through 6 ft 4 in/250 lbs) must be accommodated. For planning purposes, assumed standard crew-member weight is 260 lbs, including survival equipment.

3. UNMANNED VARIANTS: Unmanned SUPER CAS configurations may be of remotely piloted or autonomous type. Remotely piloted variants must ensure positive threat identification and adequately address command, control, communication and band-with issues related to remote control. Autonomous variants must ensure positive threat identification as well as the ability for Man-On-The-Ground to maintain control of weapons release. Operational concepts must be provided for all unmanned submissions which address not only threat identification/tracking, but also target verification, kill verification, damage assessment, collision avoidance, loss of vehicle command and control management, systems redundancy, survivability with automated execution of electronic countermeasures and launch and recovery techniques. Unmanned submissions must incorporate technology description, readiness, development and implementation plan for the remote for the remote or autonomous control and interface.

4. STRUCTURE: SUPER CAS Design limit loads are +7 and -3 vertical g's at MTOW with 100% internal fuel and 100% payload. SUPER CAS structure must be capable of withstanding a dynamic pressure of 2,140 psf (M=1.2 at SL). A safety factor of 1.5 must be used in the analysis of ultimate design loads. Primary structures must be of fail-safe type designed for resilience, corrosion resistance, damage tolerance and a service life of no less than 20,000 hours. The primary airframe structure may consist of any combination of aircraft grade alloy or composite materials.

5. ELECTRIC, HYDRAULIC AND FUEL SYSTEMS: SUPER CAS must employ redundant electrical power and hydraulic systems. Alternatively, an 'all electric' design, eliminating the need for traditional hydraulic-electric systems, may be proposed provided that a trade study indicating total lifetime cost benefit is provided.

   SUPER CAS fuel systems must be of survivable configuration. The aircraft must facilitate ground refueling and must

maintain provisions for in-flight refueling via a standard USAF Flying Boom Refueling Systems. Provisions for external fuel tanks of 300 and 360 USG capacity must be included. Primary design fuel is JP-8 with a density of 6.7 lbs/USG.

6. STABILITY AND CONTROL: SUPER CAS must employ a redundant flight control system. Static and dynamic stability and handling characteristics must meet MIL-F-8785B. Unstable configurations reliant upon stability augmentation are acceptable.

7. SENSORS, AVIONICS & DISPLAYS: SUPER CAS must feature an integrated comprehensive sensor suite appropriate for the acquisition and targeting of air-to-ground and air-to-air targets for engagement using primary weapon(s) and expendable ordinance of guided and unguided type. Sensors must be capable of acquiring targets in a passive mode to ensure low observability. Avionics must be integrated via a MIL-STD-1553B data bus. The cockpit must be Gen IV night vision compliant.

8. STALL SPEED: SUPER CAS must demonstrate a level stall speed in the landing configuration of no greater than 120 kts at SL/MTOW.

9. CORNER SPEED: SUPER CAS must demonstrate a standard level attack/combat entry corner speed no greater than 300 kts at SL/MTOW.

10. MAXIMUM LEVEL SPEED: SUPER CAS must demonstrate a maximum performance level speed no less than 900 kts at optimum performance altitude.

11. RATE OF CLIMB: SUPER CAS must demonstrate a maximum initial rate of climb of at least 10,000 ft/min at SL/MTOW.

12. CEILING: SUPER CAS must demonstrate a maximum service ceiling of no less than 40,000 ft at MTOW.

13. RADIUS/RANGE: SUPER CAS must demonstrate a tactical radius of at least 800 nm on internal fuel in a Hi-Lo-Hi mission carrying (4) GBU-31 JDAM. SUPER CAS must demonstrate a range in excess of 2,000 nm on internal fuel. SUPER CAS must demonstrate a Ferry Range in excess of 3,500 nm on maximum internal and external fuel.

14. OPERATIONS: SUPER CAS must be capable of operating from austere, unprepared forward airstrips with field lengths of 2,000 ft x 75 ft or shorter at MTOW. SUPER CAS may be a CTOL, STOL, VTOL or VSTOL aircraft. A trade study describing weight and performance trade-offs must be included for none CTOL/STOL configurations. SUPER CAS must feature retractable landing gear capable of withstanding a 18 ft/s vertical descent rate. SUPER CAS takeoff and landing cycles must handle a 30 kts/90 degree cross wind component. SUPER CAS must be capable of self-start capability. SUPER CAS must be of all weather type and incorporate deicing and terminal avoidance systems.

15. COSTS: All monetary values are to be calculated in 2007 United States Dollars.

Program, Management & Business

1. FLYAWAY COST AND PRODUCTION: SUPER CAS must exhibit a per unit flyaway cost of no more than $75 million in 2007 USD assuming a nominal production run of 300 aircraft over 10 production years. A flyaway cost of less than $50 million per aircraft is desired, corresponding to the production of over 500 units. This flyaway production cost most provide at minimum a 10% profit margin per aircraft.

2. COST PER FLIGHT HOUR: SUPER CAS must exhibit a Cost Per Flight Hour (CPFH) no greater than $4,500/hour (desired).

3. QUALIFICATION: SUPER CAS is to be designed to address all applicable MIL-SPECS and must be US DoD qualified. It is anticipated that the SUPER CAS will undergo a flight test/qualification program at the AFFTC, Edwards AFB.

4. DEVELOPMENT: SUPER CAS must be developed in minimum time at minimum cost. Total development time for must not exceed 96 months (8 years) from concept definition, to full production. Development program costs must be accessed and

maintained at a level no greater than the $15.0 billion contributed by DoD.

MEASURES OF MERIT & DATA REQUIREMENTS

Submissions offered in response to this RFP will be judged based upon adequacy of the design in meeting said design and performance criteria, overall design feasibility, feasibility and historical trend support of management process, design and RDT&E program process originality, total system development and production costs, breadth of conceptual design effort and commercial/private sector program economic feasibility. The mission of this design competition is not only to result in the conceptual design of a new aircraft type which offers radical capabilities, but to develop a profitable methodology whereby undertaking a high risk endeavor is possible.

Specific Measures of Merit which must be reported include:

1. A detailed overview discussing the final design and the driving factors which justified the selection of that design. Include a detailed discussion of the technologies and technical approach used to satisfy all mission and design requirements. Carpet plots employed in the optimization of the final design should be provided.

2. General Arrangement and Design Drawings including three-view and perspective renderings. Conceptual General Schematics, including an illustrated description of primary aircraft structures, must be included. A material selection drawing must also be provided.

3. Aircraft Geometry and Systems Integration data including wing and control surface area, fuselage size and volume, frontal area, wetted area, powerplant and air intake/diffuser, landing gear, sensors and avionics locations, etc.

4. Weight Summary including a complete group weight statement, useful load and gross-weight buildup statement. Corresponding CG envelopes should be provided

5. Drag polars and estimates of parasite, induced and wave drag build ups for the aircraft in the Clean and the Close Air Support Configuration (Appendix B) must be provided, supported with a justification of predicted aircraft skin friction coefficients and Oswald efficiency factors.

6. Aircraft performance data at MTOW including 1-g level flight envelope, V-n diagram, maximum thrust maneuvering performance and rate-of-climb diagrams at sea level, 15,000 ft, and 36,000 ft, maximum range, endurance, wing loading and power loading/thrust-to-weight ratio diagrams, etc. All calculations and performance estimates are to be made at sea level with Standard Day conditions unless otherwise noted

7. Take-off and landing distances at MTOW including standard day balanced field lengths at sea level.

8. Provide stability diagrams, including longitudinal stability diagrams, for principal aircraft flight and loading conditions.

9. Warload and ordinance load charts presenting an overview of potential stores loading configurations, as well as mission specific stores load out charts. The stores included on these charts are to be selected by the Offeror based upon their best estimate of likely stores to be carried by the aircraft in compliance with typical USAF practices. Stores featured within the Combat Mission Profile Diagrams in Appendix A must be incorporated into these charts.

10. Combat Mission Profile Diagrams for the three Combat Mission profiles as outlined in Appendix B. Additional Combat Mission Profiles may be generated by the Offeror to exhibit overall aircraft performance capabilities.

11. Tactical Radius/Radius of Action, Maximum Range and Ferry Range Data Tables at primary aircraft weights, as determined by the Offeror, must be provided.

12. Radar Cross Section data tables including Azimuthal RCS diagrams for Low Observable configurations.

13. Aural and Infrared Signature Estimates.

14. Flyaway and total life cycle costs with cost trade studies for aircraft buys of 100, 300 and 500 aircraft.

15. CPFH and MMH/FH summary charts with justification of the methodologies used to arrive at CPFH and MMH/FH projections.

16. Describe any advanced technologies and their relative benefits as used to obtain performance improvements. Provide a key technology development plan for any new technologies to be incorporated into SUPER CAS.

APPENDIX A:

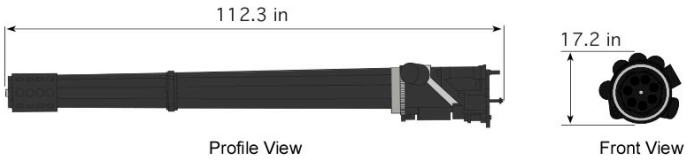
General Dynamics GAU-8/A 30mm Cannon

General Arrangement, Dimensions & Specifications

GAU-8/A SPECIFICATIONS

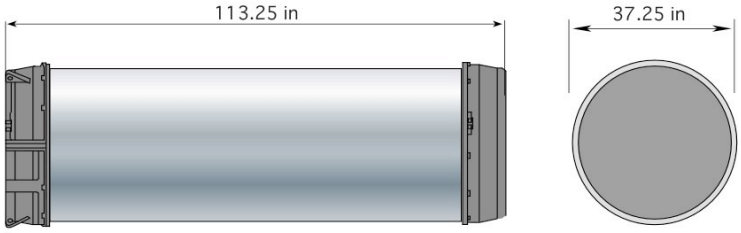
Gun Designation	GAU-8/A
Gun Caliber	30mm
Gun Barrels	7 Barrel
Gun Type	Gatling Gun
Gun Weight (Gun Only)	620 lbs
Gun Length (Gun Only)	112.3 in
Gun Height (Gun Only)	17.2 in
Maximum Rate of Fire	4,200 rds/min
Muzzel Velocity	3,400 ft/sec
Average Recoil Force	10,000 lbs
Drive System	Hydraulic, Electric or Pneumatic
Feed System	Linkless
Ammunition Designation	PGU-14/B
Ammunition Caliber	30mm
Ammunition Type	API
Ammunition Length	11.4 in
Ammunition Weight (total)	1.62 lbs
Projectile Weight (average)	0.94 lbs

GAU-8/A Cannon
Profile/Front Views



Profile View — Front View

GAU-8/A 2,000 Rd Drum
Profile/Front Views

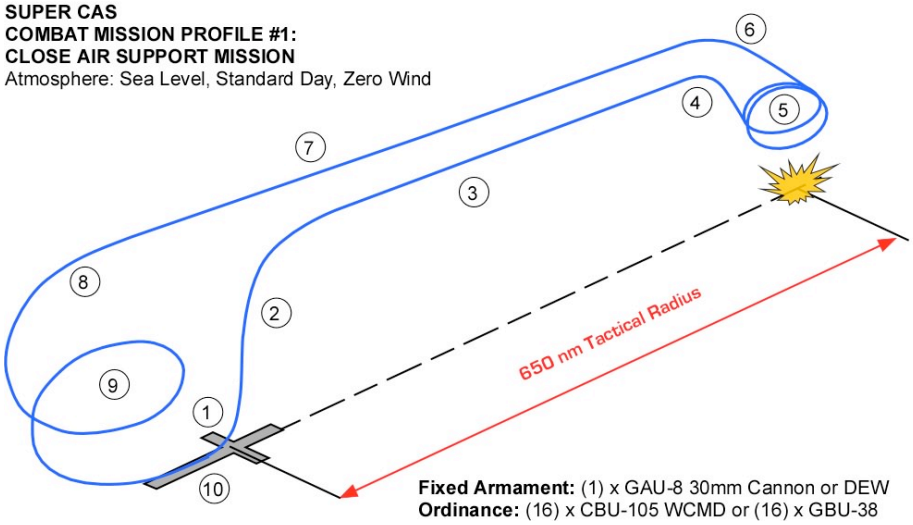


Profile View — Front View

APPENDIX B:

SUPER CAS COMBAT MISSION PROFILES (CMPs)

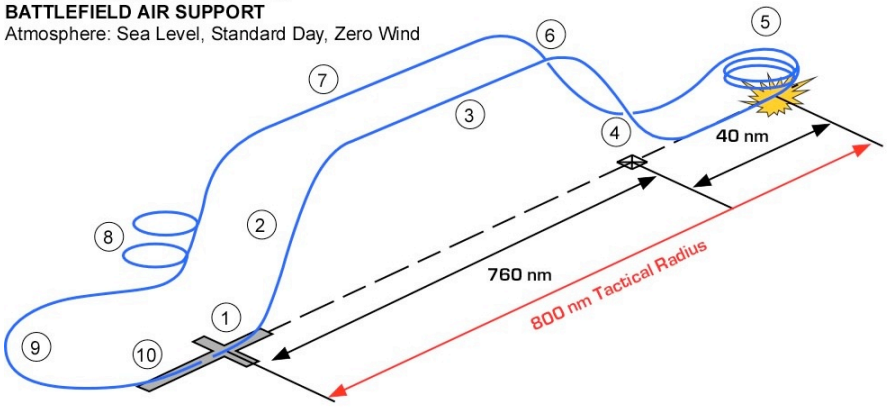
SUPER CAS
COMBAT MISSION PROFILE #1:
CLOSE AIR SUPPORT MISSION
Atmosphere: Sea Level, Standard Day, Zero Wind



Fixed Armament: (1) x GAU-8 30mm Cannon or DEW
Ordinance: (16) x CBU-105 WCMD or (16) x GBU-38

1. Max Performance Take-Off @ SL
2. Max Power Climb to Optimum Alt
3. Cruise out 750 nm @ Optimum Speed/Alt
4. Loiter for 120 min @ 5,000 ft
5. 20 min combat @ corner speed/SL
6. Max Power Climb to Optimum Alt
7. Cruise back 750 nm @ Optimum Speed/Alt
8. Descend to SL @ Idle Thrust Setting
9. 20 min Loiter @ Endurance Speed/SL
10. Landing with 30 min Reserve Fuel @ SL

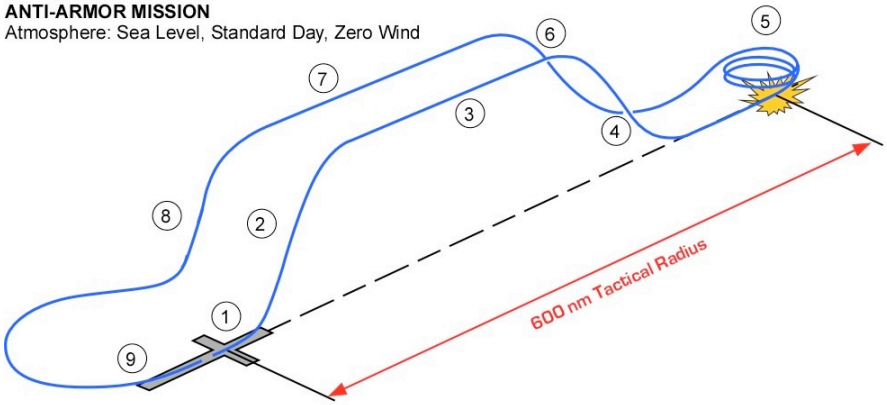
SUPER CAS
COMBAT MISSION PROFILE #2:
BATTLEFIELD AIR SUPPORT
Atmosphere: Sea Level, Standard Day, Zero Wind



1. Max Performance Take-Off @ SL
2. Max Power Climb to Optimum Alt
3. Cruise out 760 nm @ Optimum Speed/Alt
4. Descend to SL 40 nm From Target
5. 20 min combat @ corner speed/SL
6. Max Power Climb to Optimum Alt
7. Cruise back 760 nm @ Optimum Speed/Alt
8. 20 min Loiter @ Endurance Speed
9. Descend to SL @ Idle Thrust Setting
10. Landing with 30 min Reserve Fuel @ SL

Fixed Armament: (1) x GAU-8 30mm Cannon or DEW
Ordinance: (12) x AGM-65 Maverick + (4) AIM-120

SUPER CAS
COMBAT MISSION PROFILE #3:
ANTI-ARMOR MISSION
Atmosphere: Sea Level, Standard Day, Zero Wind



1. Max Performance Take-Off @ SL
2. Max Power Climb to Optimum Alt
3. Cruise out 600 nm @ Optimum Speed/Alt
4. Descend to SL for Penetration
5. 30 min combat @ corner speed/SL
6. Max Power Climb to Optimum Alt
7. Cruise back 600 nm @ Optimum Speed/Alt
8. Descend to SL @ Idle Thrust Setting
9. Landing with 45 min Reserve Fuel @ SL

Fixed Armament: (1) x GAU-8 30mm Cannon or DEW
Ordinance: (8) x AGM-65 Maverick + (8) CBU-105

Intent Form 2006-2007

AIAA FOUNDATION
Graduate Team Aircraft Design Competition
Request for Proposal: SUPER CAS

Title of Design Proposal: _____

Name of School: _____

Designer's Name	AIAA Member Number	Graduation Date	Degree

Team Leader

Team Leader's email.

In order to be eligible for the 2006/2007 AIAA FOUNDATION Graduate Team Aircraft Design Competition, you must complete this form and return it to the AIAA Director of Student Programs before 16 March 2007, at AIAA Headquarters, along with a one-page "Letter of Intent" as noted in Section II, "Schedules and Activity Sequences." *For any nonmember listed above, a student member application and member dues payment should also be included with this form.*

Signature of Faculty Advisor

Signature of Project Advisor