

INCH-POUND

A-A-59620

September 1, 2004

## COMMERCIAL ITEM DESCRIPTION

## TEST STAND, AIRCRAFT GENERATOR CONSTANT SPEED DRIVE (CSD) UNITS

The General Services Administration has authorized the use of this commercial item description, for all federal agencies.

## 1. SCOPE.

1.1 Scope. This is a Performance Purchase Description (PPD) for a CSD Test Stand (TS), for field testing multi-aircraft Integrated Drive Generators (IDG), Constant Speed Drives (CSD), and their associated generators.

## 2. SALIENT CHARACTERISTICS.

2.1 Equipment. A current and complete Test Stand (TS) shall be provided. The proposed TS shall be of modular design and shall include all items and /or accessories required for testing all the identified IDG's and CSD's (see Table 3-2 Page 2). When actual accuracy's or specified ranges are not directly specified, the "best commercial practice" shall be proposed.

2.2 Function. Field level test stand is used to test aircraft Intergraded Drive Generators (IDG), the IDG consists of the Constant Speed Drives (CSD) Units and its associated Generator. The test stand shall accept and successfully operate all the IDG systems shown in Table 3-2 (page 2) and the applicable components of the Adapter Kits in Table 3-1. The test stand shall have its own oil coolers(s) and shall be capable of maintaining the CSD/IDG oil temperature required without the aid of the existing MC-2 or other auxiliary oil coolers. The auxiliary oil coolers in the MC-2 adapter kits shall not be used, nor required.

Beneficial comments (recommendations, additions, deletions, clarifications, etc.) and any Data that may improve this document should be addressed to: WR-ALC/TILCC, 420 Second Street, suite 100, Robins AFB, GA 31098-1640.

AMSC N/A

FSC 4920

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TABLE 3-1 ADAPTER KITS

<b>Application</b>	<b>Model No.</b>	<b>Part No.</b>	<b>NSN</b>
B-52, KC- 135B, EC/RC-	FSAK-3008	688307A	4920-01-147-0432
C-135	FSAK-3330	65997	4920-00-532-2713
C-135B	FSAK-3327	693581/A	4920-00-512-3432
F-4C	FSAK-3333	697466	4920-00-795-9698
F-4C	FSAK-3341	701484	4920-00-929-6805
F-15	FSAK-3351	712667	4920-00-171-6621
F-106A/B	FSAK-3354	713711	4920-00-369-5443
E-3A/RC-135M/W	FSAK-3359	715734A	4920-01-013-1998
F-111A/B	None	12A3411-3	4920-00-794-7601
C-141	None	A4794	4920-00-912-0833
F-16	FSAK-3360	718301	4920-01-024-5099
T-38 / F-5	None	9520-0007	4920-01-486-1313

## AIRCRAFT GENERATOR CONSTANT SPEED DRIVE UNITS

TABLE 3-2 CONSTANT SPEED DRIVE SYSTEMS

Aircraft	Model No	P/N	Tech. Manual 9H6- Series	Oil-in Testing Temp. (°F)	Δ T Max (°F)	Flow Rate in GPM	Input Speed (Rated) (RPM)	Load testing Input Speed (RPM) (±50-±100) **	Accel/ Decel rpm/sec (±50)	Charge Pressure (PSI)	Test Load 3 φ KW
B-52H	120AGD04	708754A	5-5-2	150±10 125±10	50	12	4475-7980ccw	2500-7900	800max	240-500	54
KC-135B	"	"	"	"	"	"	"	"	"	"	"
ECRC-135C	"	"	"	"	"	"	"	"	"	"	"
KC-135	40CSD30	691680A	3-15-2	200±10	40		3600-7000ccw	3650-7000	800max	280-380	36
C-135B	40AD18	694256B	3-23-2	200±10	35	5.7	4475-8814ccw	4500-8814	800max	300-360	39
F-4C	30ADG05	695145G	3-25-2	185±20 200±10		6.5	4750-7685ccw	4900-7685		275-500	30
F-106A/B	60ADS06	708645C	3-37-2	175±10 180±10	30	13	4100-7600ccw	4150-7550	100max	210-260	30
F-111A/B	60ADG01	694874D	3-30-2	200±10	30	10	3700-7400ccw	4000-7400	800max	190-250	45
C-141	40AGD04	698471C	3-29-2	195±10	30	10.3	4100-8500ccw	4150-8450	800max	200-275	39
E-3A		714672M	*	200±10	40	6.75	4565-8765ccw	4800-8600		220-260	43
RC-135M/W		727410A	*	200±10	40	6.75	4593-7987ccw	4800-8600		220-260	43
F-16A/B		734556	3-44-3	250±10 200±10 150±10	45	16.5	5000-9000ccw	5000-9000	500& 950	240-300	60
F-16C/D		734556A	3-44-3	250±10 200±10 150±10	45	16.5	5000-9000ccw	5000-9000	500& 950	240-300	60
F-15		711595L 711595J	3-36-2	200±10	30	16.5	4500-9000ccw	4600-8000	800max	240-300	30
F-15E		739827A 739827B	5-14-2	200±10	40		5000-8750ccw	4375-7000	100& 500	240-320	30

TABLE 3-2 CONSTANT SPEED DRIVE SYSTEMS

\* T.O.# 9H23-5-2

\*\* 3 KW Load required for underspeed testing

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2.3 NDI Commercial Item. The test stand shall be an already developed, state-of-the-art, market proven, commercial test stand with a proven reliability track record. Minor modifications are allowed to the existing test stand. Modifications such as rearrangement or mounting of units on skids frame and changes to interface the unique military MC-2 adapters for IDG and CSD units are considered acceptable “NDI” modifications.

2.3.1 Major Modules of Assemblies. If the proposed TS is assembled using commercial NDI major modules or assemblies, which have not been previously merged and sold commercially as a test stand, the major modules or assembly that is proposed used shall have a proven reliability track record of reliable and satisfactory service in similar test stands. Offeror shall provide evidence that these are proven and reliable commercially available assemblies.

2.3.2 Ambient Temperature Ranges:

Test Stand during Operation:	0°F	to	+125 °F
Load Bank Operation (outdoor environment):	-25 °F.	to	+130 °F
Storage, All Units:	-65 °F.	to	+160 °F

2.4 Description. The proposed test stand shall be a commercial NDI test stand. It shall be compactly packaged/arranged and suitable for testing all the identified CSD’s and IDG’s. The test stand shall not require any modification of the “real property” (test cell floor space area, walls, ceiling, or utility/power support systems) used with the current MC-2 Test Stands.

2.4.1 DIGITAL ENTRY DEVICES. All inputs and control setting shall use digital keypads or digital keyboard entry devices. The entry keypad(s) and/or keyboard(s) shall be rugged environmentally sealed devices for use in wet, dirty or extreme environments. Toggle or selector switches are allowed for selecting the desired load on the load bank; however, the total selected load(s) must be indicated on electronic digital display(s).

2.4.2 ELECTRONIC DIGITAL DISPLAYS. Except for protective alarms, all indicators shall be electronic shall be electronic digital displays. Electronic digital displays shall be LED, LCD vacuum fluorescent or electro-fluorescent type devices. Mechanical counters, odometers or turn counter devices are not acceptable “electronic digital displays”.

2.4.3 DATA INPUT AND OUTPUT CONSISTENT FORMATS. Display formats should be consistent within a system. When appropriate for users, the same format should be used for input and output. Data entry formats should match the source document formats.

2.4.4 LABELING APPLICATION. Labeling shall be of a consistent type and consistently located within the entire system. Labels, legends, placards, signs, markings, or a combination of these shall be provided whenever personnel must identify items (except when it is obvious to the observer what an item is).

2.4.5 MAJOR MODULES OF ASSEMBLIES. While the final configuration is dependent on the commercial NDI test stand proposed, some of the major modules or assemblies should consist of:

Control Console	Drive Unit/Prime Mover
Drive Control Panel	Drive Power Supply
Gearbox	Gearbox Output pad
Hydraulic Supply	Hydraulic Instrumentation Panel
Oil Cooler	Oil Heater
Interface Panel	Load Bank Control Panel
Load Bank	Air Cooling Blower
Electrical Hoist	Skid (Mounting) Frame
Mounting Pad for CSD Adapters	Blast Air Blower
Work Bench	Built in Digital Multi-Meter
Instrumentation as Required	

2.4.6 Mounting Pad for CSD Adapters. A single mounting pad shall be provided for permitting compatibility with the mechanical adapters currently used with the current MC-2 test stands.

2.4.7 Interface Panel. An interface panel shall be provided as the electrical connection points for the generator under the test and CSD adapter and associated generator control units/voltage regulators. The connecting points, connectors, test leads, indicators, in the interface panel shall be compatible with all the existing MC-2 adapters.

2.4.8 Drive Unit. The drive unit shall consist of a 125 to 150Hp DC drive motor. The controller shall a state-of-the-art microprocessor based DC power supply, with electronic digital inputs and outputs. The power supply shall contain built-in self test capabilities and shall have protection against drive unit over speed for safe operation of the drive unit and the unit under test (UUT)

2.4.9 Load Bank. The load bank shall be a 75 to 90KW, 400 Hz (PF 1.0) resistive load bank. To allow for outdoor heat dissipation, the load bank shall be in a rain tight and splash proof enclosure. The incremental loading steps shall be selected to allow operator 1KW resolution loading for the entire range or the load bank. Short time (1 to 5 minutes) maximum loading shall permit loading up to 150% of the continuous rating of the load bank. Electronic digital display(s) shall indicate the total selected load. The load bank shall have built in protection safe operation of the load bank. At least fifty feet of cabling shall be provided for the remote outdoor location of the load bank. The controls and metering for the remotely located in the proximity of the Main Control Panel. Load Bank controls shall include selection of the load steps, master load switch, blower air fail indicator.

2.4.10 Blast Air Blower. A built-in cooling air blower with all necessary adapters and flexible hoses shall be provided for generators that required blast air cooling. Air pressure (0-16 inches of water) and volume shall be adjusted as required.

2.4.11 Hydraulic Oil Cooler. Shall provide 10 micron nominal supply and return filters with pre heater and heat exchanger, quick disconnect couplings, automatic temperature and pressure controls. UUT protective alarms for Flow Loss and Over Temperature to shut down the drive system shall be provided. The oil cooler shall have means for providing external pressure for priming and / or purging the UUT (Drive Units) prior to running tests. Pressure regulator with gauges shall be provided. Pressure required to 0 to 15 Psi Maximum

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2.4.12 Work Bench. Shall be provided for test equipment, adapters, voltage regulators etc. The work bench shall be rugged and capable of safely holding at least 150 lb. of equipment.

2.4.13 Built in Digital Multi-Meter. With appropriate probes and test leads for testing and trouble shooting.

2.5 Specifications. All speeds and power requirements shall be met using all the voltage and frequencies listed.

TABLE 3-3

Hydraulic system operating oil	MIL-L-7808 or MIL-L-23699
Hydraulic oil flow rate	20 GPM maximum capability
Oil reservoir capacity	12 gallons (approximate)
Hoist capacity	0 - 500 lb.
Output Power: continuous operation	125 HP to 150 HP (in speed range 4200 to 11,000 RPM)
Output Power: Intermittent one minute operation	187 HP (in speed range 4200 to 11,000 RPM)
Speed drive	Electronically controlled variable 0-11,000 RPM
Acceleration/deceleration rate	Adjustable 50 to 1200 RPM/sec
Output shaft rotation	Clockwise and counter-clockwise
Instrumentation	
RPM indicator	0-15,000 RPM
Kilowatt meter range	0-125 KW, PF 1.0
AC voltage range	0-300 VAC
DC voltage range	0-30 VDC
AC ammeter range	0-250 AMPS (as required)
Frequency counter range	0-999.9 HZ
Test timer	0-99 Min 59 Sec
Lapse timer	9999.9 Hr.
Charge oil pressure gage	0-600 PSI
Oil temperature controller	50-400 °F
Oil temperature gage	0-500 °F
Input power	220/380/440 VAC, 3 Phase, 50/60 HZ
Length	110 in (approximate.)
Width	80 in (approximate)
Height	80 in (approximate)
Weight	7,000 lb. (approximate)

TABLE 3-3

2.6 Disturbance to other Elements. The equipment shall be constructed to permit the replacement and adjustment of components and accessories with minimum disturbance to and without removal of other elements for the units.

2.7 Quick-Disconnect Connectors and Fastenings. The Test Stand shall utilize the maximum use of electrical connectors and quick disconnect fastenings to allow for rapid removal and replacement of components parts. Covers or access plates that must be removed for component adjustments or for component or parts removal shall be equipped with durable quick-disconnect fastenings or combinations of quick-disconnect fastenings and hinges.

2.8 Special Test Equipment. In the event that any special test equipment is required for the operation or maintenance of this Test Stand, the special test equipment shall be identified and it

shall be included with the offer. Contractor failure to identify and include required special test equipment within the offer is considered grounds for contract default.

## 2.9 First Article:

- (1) First Article inspection and limited tests are required at contractor site (see 5.3).
- (2) First article inspection and complete performance and compatibility tests are required at a government site (see 5.4).

## 3.0 REGULATORY REQUIRMENTS

3.1 Regulatory Requirements. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

## 4.0 PRODUCT CONFORMANCE PROVISIONS

4.1 Product conformance. The products provided shall meet the salient characteristics of the PD, conform to the producer's own drawings, specifications, standards, and quality assurance practices and be the same product offered for sale in the commercial market. The Government reserves the right to require proof of such conformance.

4.2 Contractor Certification. The contractor shall certify and maintain substantiating evidence that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices, and is the same product offered for sale in the commercial marketplace. The Government reserves the right to request that the contractor proof of such conformance prior to first delivery and thereafter as may be appropriate.

4.3 First Article Inspection and Test at Contractor Site. The contractor shall perform the Phase 1 First Article Inspection and Tests prior to delivery. Approved Phase 1 Test Procedure delivered per CDRL 0002, Data Item 01 shall be used. A Phase 1 Test Report per CDRL 0002, Data Item 02 is required. The government shall witness all inspection and testing.

4.4 First Article Testing at Government Site. The contractor shall perform the Phase II First Article Testing at a government site to be identified after contract award (probably Robins AFB, Georgia). Approved Phase II Test Procedure delivered per CDRL 0002, Data Item 01, shall be used. A Phase II Test Report per CDRL 0002, Data Item 02, is required. The government shall witness all inspection and testing. The testing shall demonstrate that the test stand can successfully run and test all the CSD systems listed in this document Table 3-2. First Article Testing at a government site does not relieve the contractor from ensuring that the test meets all performance requirements. All defects of failures will be corrected and satisfactorily demonstrated by the contractor prior to Final Acceptance.

## 5.0 PACKAGING



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5.1 Preservation, Packing, Labeling, and Marking. Shall be as specified in the contract or order.

5.2 Standard Commercial Packaging and Marking Practices. In the absence of specific instructions in the contract or order, the manufacturer's standard commercial packaging and marking practices will be used.

## 6.0 NOTES

(This section contains information of a general or explanatory nature that may be helpful but not mandatory.)

6.1 Intended Use. These test stands will be used for field testing multi-aircraft Integrated Drive Generators (IDG), Constant Speed Drives (CSD), and their associated generators.

6.2 Associated DID's.

6.2.1 First Article Test Procedures; CDRL 0002 Data Item 01

6.2.2 First Article Test Report; CDRL 0002, Data Item 02.

6.3 Required Modification. The technical proposal should include drawings, sketches, and other technical data to describe the modifications required for this application.

6.4 Market Proven / Acceptance. Offeror should be provided proof of market acceptance and testing of the offered unit by providing test data, performance history, warranty repair data, and/or reliability test data. Also submit commercial literature, performance specifications, specifications sheets, receipts or invoices, lists of customers with addresses and telephone numbers to show the offered Test Stand has a proven reliable history (track record). Evidence that the offered test stand has been sold as a complete test stand in significant quantities for some time is highly desirable.

6.5 Evaluation Data. Proposals will be evaluated for compliance with Section 3 of the PD. Bidders should submit the following data with their offer for evaluation.

6.5.1 Part number and manufacturer of offered item(s)

6.5.2 Part number or model number and photographs of the TS that will be modified

6.5.3 Provide a side by side comparison of how the proposed units meet or will meet all the minimum essential criteria in Section 3 thru 3.9 of this (PD03WRLEEG181)

6.5.4 Provide Contractor Certifications of meeting all the published and proposed technical specifications and requirements.

6.5.5 Provide evidence that the proposed unit is reliable and commercially "market proven" per 3.3 and 3.3.1.



6.5.5.1 Any available data or evidence providing reliability.

6.5.5.2 Descriptive literature for commercial Test Stand (commercial catalog cut-sheets, specification sheets, etc.).

6.5.5.3 Operation & Maintenance manuals for the Commercial Test Stand that will be modified.

6.5.5.4 Location of a commercial "similar" test stand, and point of contact for the government to inspect if deemed necessary by the evaluation team.

## 6.6 Applicable Documents

6.6.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in section 3 and 4 of this specification, whether or not they are listed.

### 6.6.2 Government Documents:

#### Military Specifications:

MIL-PRF-7808K Lubricating Oil, Aircraft Turbine, Synthetic  
Base; Amendment 1, Dated 31 October 1995

MIL-PRF-23699E Lubricating Oil, Aircraft Turbine, Synthetic  
Base, NATO CODE NUMBER O-156; Amendment 1, Dated November 23, 1994

#### Department of Defense:

DOD 5010.12-L; ACQUISITION MANAGEMENT SYSTEM  
AND DATA REQUIREMENTS CONTROL LIST: Dated 1 October 1996; DATA  
ITEM DESCRIPTION:

DI-NDTI-80603 TEST PROCEDURE; Dated 880601  
(YYMMDD)

DI-NDTI-80809B TEST / INSPECTION REPORT; Dated 970124 (YYMMDD)

Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standard Document Order Desk, 700 Robins Avenue, Building 4D, Philadelphia, PA 19111-5094.

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6.6.3 Order of Precedence. In the event of conflict between the text of this document and the reference cited herein, the text of this document takes precedence. Nothing in this document however supersedes applicable laws and regulations.

Custodian:  
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Preparing Activity:  
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