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## **Flight Standardization Board (FSB) Report**

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Revision: 1  
Date: 07/22/2015

### **Sikorsky Aircraft Corporation S-92A (TCDS R00024BO)**

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## RECORD OF REVISIONS

<b>Revision Number</b>	<b>Section</b>	<b>Pages Affected</b>	<b>Date</b>
Original	All	All	08/30/2004
1	All	All	07/22/2015

## HIGHLIGHTS OF CHANGE

Revision 1: All Sections. Original FSB report is reformatted in compliance with current FAA published specifications.

Gross Weight Expansion Option. 1.1

Offshore Rig Approach Procedure. 5.5.4, 5.7.2, 9.4

Search and Rescue, and Hoisting procedures. 5.5.4, 5.7.2, 9.3

Combination Passenger and Cargo Configuration. 5.5.4, 5.7.2, 9.2

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## **1. PURPOSE AND APPLICABILITY**

1.1. This report specifies master training, checking, and currency requirements applicable to crews operating the Sikorsky Aircraft Corporation Helicopter S-92A helicopter under 14 CFR parts 61, 91, 91K, 133, 135, and 142.

**Note:** All regulatory references within this report are found in Title 14 of the Code of Federal Regulations (14 CFR) unless otherwise indicated

The initial Flight Standardization Board (FSB) was convened as part of the certification of the Sikorsky Aircraft Corporation S-92A helicopter in April 2004. Additionally the Fort Worth Aircraft Evaluation Group performed an evaluation of the aircraft training program required to conduct Search and Rescue operations during March 2010 and the automated Rig Approach System in February 2013. The FSB evaluated operating characteristics and techniques to propose training, checking, and currency requirements applicable to the S-92A helicopter FAA certificated in accordance with 14 CFR part 29, to a maximum certificated takeoff weight of 27,700 pounds, with installation of the optional Gross Weight Expansion option. A separate pilot type rating is required for the S-92A helicopter, and is designated as SK-92.

Provisions of this report are:

- Determination of Pilot Type Rating for the models S-92A aircraft.
- Establish Master Common Requirements for the S-92A aircraft.
- Establish Operator Difference Requirements.
- Identify training, checking, and currency requirements.
- Review Rotorcraft Flight Manual (RFM) and Checklist procedures for operational suitability.
- Describe an acceptable training program and training device characteristics.
- Identify checking and currency standards to be applied by FAA or operators.

1.2. This report addresses the Sikorsky Aircraft Corporation S-92A listed in the FAA Type Certificate Data Sheet R00024BO.

1.3. Determinations made in this report are based on the evaluations of the specific S-92A aircraft equipped in a given configuration and in accordance with current regulations and guidance. Modifications and upgrades made to the models described herein, or introduction of new related aircraft, may require amendment of the findings in this report. The FSB reserves responsibility and authority to re-evaluate and modify sections of this report based on new or revised Advisory Circular (AC) material, the applicable (14 CFR), aircraft operating experience, or the testing of new or modified aircraft under the provisions of Advisory Circular AC 120-53B, Guidance for Conducting and Use of Flight Standardization Board Evaluations". This is revision 1 of the original FSB report relative to the model S-92A aircraft. Provisions of this Flight Standardization Board (FSB) report are effective until amended, superseded, or withdrawn by subsequent revisions to this report.

1.4 The guidelines in this report apply to: operations inspectors, principal operations inspectors (POI), training center program managers (TCPM), and aircrew program managers (APM). This report also applies to part 135 air carrier check airmen and instructors, airline transport pilots instructing in air transportation service, certificated flight instructors, aircrew program designees, training center evaluators (TCE), and part 61, 91, 91K, 135, 141 and 142 training providers.

1.5. Terminology. The term "must" is used in this FSB report and even though it is recognized that this report provides one acceptable means, but not necessarily the only means of compliance with 14 CFR parts 61, 91K, 133, and 135 requirements. This terminology acknowledges the need for operators to fully comply with this FSB report, when applicable, if AC 120-53 is to be used by the operator as the means of complying with parts 61, 91, 133, and 135 requirements.

1.6. This report includes:

- Minimum requirements for approval by FAA field offices,
- General advisory information, which may be approved for that operator (e.g., footnotes, etc.).

## **2. PILOT TYPE RATING REQUIREMENTS**

2.1. In accordance with the provisions of part 61, FAA Order 8900.1, Aviation Safety Inspectors Handbook, and AC120-53, The FSB, with concurrence of the manufacturer, determined that the type rating for the Sikorsky Aircraft Corporation model S-92A helicopter is designated as SK-92.

2.1.1. Current FAA policy for the type rating of the S-92A is based on the certified takeoff gross weight of the aircraft 27,700 pounds, additionally with the Gross Weight Extension kit installed, or external load, 28,300 pounds, and defined as a large aircraft.

2.1.2. The FSB has identified Level E training, checking, and currency for the Sikorsky Aircraft Corporation S-92A. The FSB recommends implementation of a single standard for training, checking, and currency for the Sikorsky Aircraft Corporation S-92A aircraft. Implementation of a single standard of training, checking, and currency to S-92A operations, including part 91 operations, is necessary to achieve safety and comply with the requirements of this report. The Board determined the Sikorsky Aircraft Corporation S-92A met AC120-53 criteria for Level E Training in a Flight Simulation Training Device. Level E training can only be accomplished in an aircraft, or with the use of a simulator qualified as level C or D consistent with FAA criteria. Level E training accomplished in an aircraft should be modified for safety reasons where the maneuvers can result in a high degree of risk.

2.2 The Second-In-Command Pilot Type Rating, SK-92 SIC PRIVILEGES ONLY, may be issued in accordance with § 61.55.

## **3. MASTER DIFFERENCE REQUIREMENTS (MDR)**

3.1. Master Difference Requirements. (Reserved).

## **4. ACCEPTABLE OPERATOR DIFFERENCE REQUIREMENTS (ODR) TABLES**

4.1. Reserved.

## **5. FSB SPECIFICATIONS FOR TRAINING**

5.1. Assumptions Regarding an Airmen's Previous Experience. The provisions of this section apply to programs for airmen who have experience in part 91, or 135 operations of multi-engine, turbine rotorcraft equipped with integrated autopilot flight management systems, and integrated avionics displays. For airmen not having this experience, additional requirements may be appropriate as determined by the POI, FSB, and/or AFS-200. Training must include the subjects and maneuvers listed in the Areas of Special Emphasis of this report (5.5.4.). All training and checking must be conducted in accordance with RFM recommended procedures and maneuvers.

5.2. Level E training for Pilot in Command, and Second in Command is required. Simulator task credit may be given in accordance with Airline Transport Pilot, Commercial Pilot Helicopter, or Instrument Rating for Helicopter as appropriate. (See Appendix 1)

5.3. Second-In-Command Training Tasks. A Flight Crew member who serves as SIC, must accomplish certain tasks, procedures or maneuvers for the SIC crew position. Training must include the subjects and maneuvers listed in the Areas of Special Emphasis of this report (5.5.4.). Additionally training programs should address all training elements of § 61.55 and a certificate holder's part 135 training program, and in accordance with FAA Order 8900.1, Volume 3, Chapter 19.

5.4. Future Air Navigation Systems (FANS) RNP/ANP/CNS/CPDLC/ADS. Flight Crews operating aircraft equipped with FANS software should receive appropriate instruction in its general operational functions, appropriate uses for areas of operation, routes, or procedures to be flown. General training should address Communications, Navigation, and Surveillance (CNS) functions covered by FANS, RNP, and ANP. In addition, sufficient training in the use of data link communication and Automatic Dependent Surveillance (ADS) to ensure adequate knowledge, skill, and proficiency for flight crews to operate the above system(s) in typical daily operations that requiring their use should be provided.

### 5.5. Pilots Initial, Transition and Upgrade Training Type Rating

5.5.1. Pilots Initial, Transition and Upgrade Ground Training: Initial, transition, or upgrade ground training for the helicopter must addressed as specified by the § 91.1065, or the certificate holder's part 135 approved training program. Specific design features of the helicopter, combined with the various types of operations to be conducted, should be considered when approving helicopter Transition Ground Training.

5.5.2 Pilots Initial, Transition and Upgrade Flight Training: Initial, transition, or upgrade flight training for the model S-92A, designated as the SK-92 type rating, is accomplished as specified by § 135.347 in accordance with the following conditions, and at the discretion of Principal Operations Inspectors, and Training Center Program Managers, having airmen certification responsibility for the following helicopter type rating designation SK-92.

5.5.3 Flight Crewmember Emergency Training: Crewmember training in emergency equipment and evacuation procedures is required. Evacuation procedures training must include passenger briefing requirements to comply with RFM Limitations.

5.5.4 Areas of Emphasis: The following areas of emphasis must be addressed during ground and flight training:

- **Engine Indication Caution Advisory System (EICAS)** discipline and messaging function are critical because of the large amount of information available through the EICAS and the need of the flight crew to use it without being excessively distracted.
- **Health Utilization Monitoring System (HUMS) Messages** are depicted on any MFD displays using the health key.
- **Primary Flight Displays (PFD's)**. Altitude, airspeed, and vertical speed are presented on round analog scale format. Additionally a reduced set of engine parameters is displayed on the left of outboard PFD's. Pilots need to be able to understand the information presented on these displays. Pilots transitioning from traditional round dial basic "T" instruments may require additional training and instrument scan practice to gain proficiency in manually flying by reference to the PFD. Recognition of reversionary modes and display failures and appropriate corrective action to be taken must be addressed.
- **Full Authority Digital Engine Control (FADEC)**. An operational understanding of the FADEC, its relationship to the collective pitch indicator, and the power indicating modes in AEO and OEI operations is required, for both training mode and actual OEI operations.
- **Torque Indicating System (TQS)** displays engine and transmission parameters in a relative scale indicating a percent of available power. The TQS cannot be used as a ITT, or Ng gage. The TQS indicator displays multiple limitations during AEO and OEI operations. The pilot must be proficient in the interpretation of this instrument.
- **Cyclic and Collective control grip switches**. There are ten switches on the cyclic control, and eleven switches on the collective. These switches control multiple aircraft systems including the AFCS Trim Release, Flight Director, Auto Pilot, OEI select switch, Hover, and Go-Around commands. Proficiency in the use of these switches is essential.
- **Display Control Panel** uses pushbuttons with integral light bars, and rotary selector knobs. Pilots should have an understanding of the switch position and system configuration as it relates to whether the light bar is illuminated or not. This understanding is required for both normal and abnormal system operation.
- **Mode Select Panel (Flight Director)**. An understanding of the various lateral and vertical modes and the ability to select and arm the modes during different phases of flight is essential. Integrated use of the Autopilot and Flight Management System is critical.
- **All the combinations FMS and Ground Based navigation** information must be understood to safely and reliably operate the aircraft during instrument approaches, including the use of vertical navigation functions.
- **Rockwell Collins Avionics Management System (AMS)** integrated flight management system. Programing of navigational information must be understood to safely and reliably operate the aircraft during instrument approaches, including the use of vertical navigation functions.
- **Optional WX Radar, FLIR, TCAS and TAWS inputs.** (If installed.)
- **Optional Gross Weight Extension** modification kit increasing gross weight to 27,700 pounds gross weight with appropriate and RFM supplement number 14. (If installed.)
- **Optional Combined Passenger / Cargo Configuration**, required crew training, and RFM supplement Number 12. (If installed.)

- **Optional Search and Rescue** required crew training, navigational equipment, appropriate AFCS software, RFM Supplement's number 04 Search and Rescue Automatic Flight Control System, and Supplement's number 02 Dual Rescue Hoist. (If installed.)
- **Optional Automated Rig Approach System**, required crew training, appropriate navigational equipment software, and AFCS systems, and RFM Supplement number 36.
- **Knowledge of emergency procedure for dual engine failure during cruise.** At cruise power settings, and relatively high angles of attack in the main rotor blades a sudden loss of power in both engines can produce rapid main rotor (Nr) decay. This can result in excessive coning, destabilization of the rotor system, and subsequent loss of control. This condition is possible in all multiengine helicopters and historically has resulted in catastrophic hull loss. (If installed.)  
**Knowledge of aircraft performance determination** should be emphasized.
- **CRM and CFIT procedures**

5.5.5. Training for Seat Dependent Tasks: The RFM minimum flight crew is specified as: two pilots the pilot occupies the right cockpit seat and the copilot occupies the left cockpit seat. The Pilot in Command (PIC) may occupy either seat. Additionally 1 cabin crew is required for Combination Passenger and Cargo Interior Option, or a hoist operator for Search and Rescue operations (SAR). There are currently no seat dependent tasks, however additional modification to the helicopter could result in seat dependent tasks that have not been evaluated.

5.5.6. Differences Training as specified in the pertinent 14 CFR.

5.5.7. Recurrent Ground Training Fleets with Different Engine Types: Mixed-flying of helicopter fleets with different engine types (e.g. helicopter fleet with model/manufactures engines) requires additional training.

5.5.8. Recurrent Flight Training Fleets with Different Engine Types: Mixed-flying of helicopter fleets with different engine types (e.g. helicopter fleet with different model/manufactures engines) requires additional training.

## 5.6. Operating Experience

5.6.1. Operating Experience Pertinent to Each Flight Crewmember: Operating experience must be obtained while serving in a primary crew position.

5.6.2. Separate Operating Experience for Single Fleet Operations: Operating experience for the helicopter will be accomplished in the S-92A.

5.6.3. Operating experience for Mixed Fleet Flying Operations: Operating experience for the helicopter will be accomplished in each make/model/series helicopter.

## 5.7. Instrument Approaches

5.7.1. Operators should assure that flight crews are familiar with appropriate use of the FGS and FMS, including modes to be used, for the types of instrument approaches to be flown, when using FMS NAV mode in

lieu of or in conjunction with NDB, VOR, localizer, or back course localizer procedures. This emphasis is also appropriate for aircraft that do not have certain navigation system sensors, such as ADF, installed.

5.7.2. Sections 135.293, and 135.297, specifies Pilot in command (PIC) and Second in command (SIC) competency, and PIC instrument proficiency checking requirements. At minimum the Sikorsky Aircraft Corporation S-92A requires a training program which addresses the following automated systems and displays:

- All primary flight and navigation instrumentation.
- Flight director and autopilot operation and status.
- Rockwell Collins Flight Management System.
- Engine and rotor drive system indications.
- Electrical, hydraulic, and fuel system monitoring.
- Crew alerting system as warning, caution, advisory, and aural alerts.
- Navigation route mapping display.
- Electrical, AFCS, fuel, weight and balance information.
- Recording of exceedances, and chip detection history.
- Optional WX Radar, FLIR, TCAS and TAWS inputs.
- Optional Gross Weight Extension modification kit increasing gross weight to 27,700 pounds gross weight with appropriate and RFM supplement number 14.
- Optional Combined Passenger / Cargo Configuration, required crew training, and RFM supplement Number 12.
- Optional Automated Rig Approach System, required crew training, appropriate navigational equipment software, and AFCS systems, and RFM Supplement number 36.
- Optional Search and Rescue required crew training, navigational equipment, appropriate AFCS software, RFM Supplement's number 04 Search and Rescue Automatic Flight Control System, and Supplement's number 02 Dual Rescue Hoist.

## **6. FSB SPECIFICATIONS FOR CHECKING**

6.1. Checking Items: All checking requirements of §§ 61.31, 61.58, 61.63, 61.157, and will be administered in accordance with the Airline Transport Pilot and Aircraft Type Rating Practical Test Standards, or § 135.293 in accordance with the certificate holder's approved training, testing, and checking program.

6.2. Areas of Emphasis: The following areas of emphasis should be addressed during checks as necessary:

- Proficiency with manual and automatic flight must be demonstrated.
- Proper selection and use of PFD displays, raw data, and Flight Guidance System modes should be demonstrated, particularly during instrument approaches.
- Demonstration of FMS navigation proficiency in approaches, departures, and arrivals.
- OEI Training Switch and appropriate management during simulated OEI conditions.
- Proper outside visual scan without prolonged fixation on FMS operation should be demonstrated, and failure of component(s) of the PFD and FMS should be addressed.
- CRM and CFIT procedures.

6.3. All flight checks required by § 135.293(b), must be level E accomplished in an S-92A helicopter, or level C or D full motion simulator according to instructions in the appropriate practical test standards, FAA-S-8081-E Instrument Rating, 8081-16A Commercial Pilot, and 8081-20 Airline Transport Pilot. Additionally checking is supplemented with guidance in FAA Handbook 8900.1, Volume 5, Chapter 2. and FAA Order 8900.2.

## **7. FSB SPECIFICATIONS FOR REGENCY OF EXPERIENCE**

7.1. The FSB has found no additional “Recency of Experience” requirements for the S-92A, other than those already specified in part 61, and 135. No legacy variants for the models S-92A were evaluated, therefore all checks required by parts 61, 91, or 135 must be accomplished in the specific type, make, model, and series aircraft.

## **8. AIRCRAFT REGULATORY COMPLIANCE CHECKLIST**

### 8.1. Compliance Checklist. (Reserved)

Compliance checklists are provided as an aid to FAA Certificate Holding District Offices (CHDO) in identifying those specific rules or policies for which compliance has already been demonstrated to the FAA for aircraft having a particular aircraft type certificate. For additional information contact the Fort Worth Aircraft Evaluation Group.

### 8.2 Discussion of Specific Compliance Checklist Items

8.2.1 Emergency Evacuation Demonstration § 29.308. An additional full scale evacuation is not necessary for aircraft configurations consistent with previously approved tests. Passenger capacity less than or equal to the demonstrated capacity may be authorized. Aircraft configured for passenger / cargo option demonstrated compliance with § 29.803. Evacuation demonstration procedures and passenger information used for the test should be used by operators unless another full scale evacuation is conducted to validate alternative procedures.

8.2.2 Ditching. Compliance with § 29.801 has been demonstrated at initial certification.

8.2.3 Forward Observer Seat. Available crew, and forward passenger seats, were evaluated and found suitable for conducting enroute inspections per § 135.75(b). The front row passenger seats have been demonstrated suitable with the standard passenger seat / seatbelt, and a splitter cord for audio. Audio jacks may be installed at the forward seat to provide for enroute inspection.

8.2.4 Proving Tests to satisfy § 135.145 have not been conducted and should be conducted in accordance with FAA Order 8900.1.

8.2.5 Validation Tests to satisfy § 135.145(d) have not been conducted and should be conducted in accordance with FAA Order 8900.1.

8.2.6 Cockpit Checklist: The Manufacturer’s Pilot Checklist is acceptable for compliance with § 135.83(b) for cockpit checklist procedures.

8.2.7 Electronic Flight Bag  
Electronic Checklists

Printed Pilot Checklist remains required for compliance with § 135.83(b). The Electronic Pilot Checklist was not installed with the software of the flight test aircraft. The Electronic Pilot Checklist may be acceptable for use after updated software is installed, provided the aircraft operator ensures the Electronic Pilot Checklist procedures remain current for the aircraft.

## **9. ADDITIONAL FSB FINDINGS AND RECOMMENDATIONS**

9.1. Instructors, Check pilot, and Examiners: For the purpose of checking, FAA Aviation Safety Inspectors, Designated Pilot Examiners, Training Center Evaluators, Check Airmen, and contract Check Airmen (Sim. only) must be PIC qualified in the S-92A. Examiners and Check Airmen should have 100 hours PIC in the S-92A and maintain currency in accordance with applicable 14 CFR rules.

9.2 Optional Combined Passenger / Cargo Configuration. The RFM supplement Number 12 calls out a minimum of three crewmembers, a pilot, copilot, and an additional third crewmember. Principal Operations Inspectors (POI)'s should review 14 CFR §§ 135.23 and 135.123 to insure the certificate holder's required crew training program, and manual, to conduct flight's with the S-92 configured for combined passenger / cargo operations is acceptable.

9.3 Optional Search and Rescue Configuration. RFM Supplement's number 04 Search and Rescue Automatic Flight Control System, and Supplement's number 02 Dual Rescue Hoist call out an additional hoist operator crewmember. POI's should review 14 CFR 133, and §§ 135.23, 135.123 to insure the certificate holder's required crew training program, and manual, to conduct flight's with the S-92 configured for external load operations is acceptable.

9.4 Optional Automated Rig Approach System, RFM Supplement number 36 calls out required equipment to conduct automated rig approach operations. POI's should review AC No. 90-80B to insure the certificate holder's training, testing and checking program's for offshore standard approach procedures are acceptable.

## **10. FSB SPECIFICATIONS FOR DEVICES AND SIMULATORS**

10.1. Part 60: Flight Simulation Training Device Initial and Continuing Qualification and Use, outlines specifications for helicopter simulator and flight training devices. The FAA approved full flight simulator (FFS) was used in the evaluation of the models S-92A helicopter, including Search and Rescue operations, and the automated Rig Approach System. Currently multiple FAA approved level C and D FFS's are available through 14 CFR part 142 training centers. These devices may be used to complete the required training, testing, and checking tasks for the SK-92 type rating.

10.2. FTD/GFS: Several 14 CFR part 142 training centers have level 4 thru level 7 Flight Training Devices(FTD), or ground/graphic based procedural simulator. Any FTD must be equivalent to installed equipment operational in the aircraft. Proficient pilot use of the Rockwell Collins (FMS) is critical to operation of the avionics system.

10.3. Device Approval: Requests for device approval should be made to the POI. The POI may approve these devices for that operator if their characteristics clearly meet the established FAA criteria and have been approved by the National Simulator Program (NSP) Office, and are consistent with § 135.335.

## **11. APPLICATION OF FSB REPORT**

11.1. All S-92A operators are subject to the provisions of this report. This report becomes effective when given final approval by the FAA. All training, checking, and currency for the S-92A aircraft, must be conducted in accordance with all provisions of this report. All training programs must incorporate the latest FAA Approved RFM Procedures, RFM Checklists, and the manufacturer's recommendations for training maneuvers.

## **12. ALTERNATE MEANS OF COMPLIANCE**

12.1. Alternate Means of Compliance to the requirements of this report must be approved by the FSB. If alternate means of compliance is sought, operators must show that the proposed alternate means provides an equivalent level of safety to the provisions of AC120-53 (as amended) and this FSB report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

12.2. Equivalent Level of Safety: Significant restrictions may apply in the event alternate means of compliance is sought, and the reporting requirements may be increased to ensure equivalent safety. FAA will generally not consider relief through alternate means of compliance unless sufficient lead-time has been planned by an operator to allow for any necessary testing and evaluation.

12.3. Interim Programs: In the event of clearly unforeseen circumstances, in which it is not possible for an operator to comply with provisions of this report, the operator may seek an interim program approval rather than a permanent alternate means of compliance method. Financial arrangements, scheduling adjustments, and other such reasons are not considered, "unforeseen circumstances", for the purposes of this provision. The Administrator must approve interim program approvals.

## **13. MISCELLANEOUS RECOMMENDATIONS. N/A**

**APPENDIX 1**  
**Flight Training PIC/SIC Flight Training S-92A Helicopter**  
**Maneuvers and Procedures Tables**

The events, which must be accomplished during flight training, are listed in the maneuvers and procedures tables in this section. These tables also contain the acceptable flight training equipment (Full Flight Simulators (FFS), Flight Training Device (FTD), or aircraft), which may be used for any training event. An “X” indicates that the specified FFS or FTD has been qualified for that event without further consideration or approval. An “A” indicates that a lower level device or simulator may be used for procedural training if that device has the necessary systems representations and functions for training on the event. These systems representations and functions exceed the basic requirements for that level device or simulator; therefore, an “A” indicates that the device or simulator must be evaluated and approved for each particular event. Any maneuver or procedure permitted in a specific level of FFS or FTD may also be conducted in a higher level of FSS, FTD, or the aircraft itself (provided the event can safely be accomplished in the aircraft). Certain training events within the tables are preceded with a box ([ ]). If the operator is authorized (or required) to conduct these maneuvers by Operations Specifications (OpSpecs) (for example, a circling approach), P.O.I. should check the appropriate box to indicate these events must be included in the training curriculum. Certain optional training events indicated by a pound sign (#) in the maneuvers and the regulations or OpSpecs does not specifically require procedures tables. Many of these optional training events, however, are often included in an operator’s flight training curriculums and should be conducted in a properly qualified device or simulator

FLIGHT PHASE	TRAINING EVENT	REMARK	FTD LEVEL				SIM LEVEL			A C F T
			4	5	6	7	B	C	D	
PREPARATION	Visual Inspection	Pictorial	-	-	-	-	-	-	-	X
	Before Taxi Procedures		A	A	A	A	A	X	X	X
	Performance Limitations		A	A	A	A	A	X	X	X
SURFACE OPERATION	Starting		A	A	A	A	A	X	X	X
	Rotor Engagement		A	A	A	A	A	X	X	X
	Taxiing		A	A	A	A	A	X	X	X
	Lift-to-Hover IGE/OGE (M)		A	A	A	A	A	X	X	X
	Hover Turns IGE/OGE		A	A	A	A	A	X	X	X
	Sideward/Rearward Hovering		A	A	A	A	A	X	X	X
	Slope Operations		A	A	A	A	A	X	X	X
	Liftoff		A	A	A	A	A	X	X	X

FLIGHT PHASE	TRAINING EVENT	REMARK	FTD LEVEL				SIM LEVEL			A C F T
			4	5	6	7	B	C	D	
TAKEOFF	Normal		A	A	A	A	A	X	X	X
	Instrument		A	A	A	A	A	X	X	X
	Obstacle Clearance		A	A	A	A	A	X	X	X
	Running (High Altitude)		A	A	A	A	A	X	X	X
	Crosswind		A	A	A	A	A	X	X	X
	Category "A"		A	A	A	A	A	X	X	X
	Category "A" With Powerplant Failure Before CDP									
	Category "A" With Powerplant Failure After CDP									
	CLIMB	Rejected Takeoff		A	A	A	A	A	X	X
CLIMB	Normal		A	A	A	A	A	X	X	X
	Best Rate		A	A	A	A	A	X	X	X
	Best Angle		A	A	A	A	A	X	X	X
	Powerplant Shutdown and Restart	Enroute	A	A	A	A	A	X	X	-
DESCENT	Normal		A	A	A	A	A	X	X	X
	Maximum Rate		A	A	A	A	A	X	X	X
	Auterotative Glide		A	A	A	A	A	X	X	X

FLIGHT PHASE	TRAINING EVENT	REMARK	FTD LEVEL				SIM LEVEL			A C F T
			4	5	6	7	B	C	D	
APPROACHES	VFR Procedures Normal		A	A	A	A	A	X	X	X
	Obstacle Clearance		A	A	A	A	A	X	X	X
	High Altitude		A	A	A	A	A	X	X	X
	Elevated Landing Site		A	A	A	A	A	X	X	X
	With Degraded Control Augmentation		A	A	A	A	A	X	X	X
	Balked Landing		A	A	A	A	A	X	X	X
	IFR Precision Approaches ILS/Normal		A	A	A	A	A	X	X	X
	ILS/One-Engine Inoperative		A	A	A	A	A	X	X	X
	[ ] PAR/Normal		A	A	A	A	A	X	X	X
	[ ] PAR/One-Engine Inoperative #		A	A	A	A	A	X	X	X
	IFR Non-precision Approaches (M) NDB/Normal		A	A	A	A	A	X	X	X
	VOR/Normal		A	A	A	A	A	X	X	X
	[ ] LOC & LOC Backcourse Procedures		A	A	A	A	A	X	X	X
	[ ] SDF/LDA Procedures		A	A	A	A	A	X	X	X
	[ ] ASR Procedures		A	A	A	A	A	X	X	X
	[ ] RNAV Procedures		A	A	A	A	A	X	X	X
	[ ] Automated Rig Approach		A	A	A	A	A	X	X	X
	[ ] Search And Rescue Apch.		A	A	A	A	A	A	A	A
	[ ] Circling Approach (Simulator must be qualified for training/checking on the circling maneuver)		A	A	A	A	A	X	X	X
	Missed Approaches From Precision Approach		A	A	A	A	A	X	X	X
	From Non-precision Approach		A	A	A	A	A	X	X	X
NOTE: At least one MAP must be a complete approved procedure.		A	A	A	A	A	X	X	X	
With Powerplant Failure (Applies to all missed approaches)		A	A	A	A	A	X	X	X	

FLIGHT PHASE	TRAINING EVENT	REMARK	FTD LEVEL				SIM LEVEL			A C F T
			4	5	6	7	B	C	D	
LANDINGS	Normal		A	A	A	A	A	X	X	X
	Emergency-to-the-water SEA	Ditching	-	-	-	-	-	X	X	-
	[ ] Category "A"		A	A	A	A	A	X	X	X
	[ ] Category "A" With Powerplant Failure after LDP		A	A	A	A	A	X	X	X
	Crosswind		A	A	A	A	A	X	X	X
	From Precision Instrument Approach		A	A	A	A	A	X	X	X
	From a Precision Approach With at Least 50 percent Power Deficiency		A	A	A	A	A	X	X	X
	With Degraded Control Augmentation		A	A	A	A	A	X	X	X
AFTER LANDING	Taxi		A	A	A	A	A	X	X	X
	Parking		A	A	A	A	A	X	X	X
	Stopping the Rotors		A	A	A	A	A	X	X	X
	Emergency Evacuation		A	A	A	A	A	X	X	X
UNPREPARED SITE OPERATIONS	Confined Areas		A	A	A	A	A	X	X	X
	Pinnacles		A	A	A	A	A	X	X	X
	Ridgelines		A	A	A	A	A	X	X	X
	Hoisting / SAR Operations		A	A	A	A	A	X	X	X
OTHER FLIGHT PROCEDURES DURING ANY AIRBORNE PHASE	Holding		A	A	A	A	A	X	X	X
	Ice Accumulation on Airframe		A	A	A	A	A	X	X	-
	Air Hazard Avoidance		A	A	A	A	A	X	X	X
	Inadvertent IMC Recovery		A	A	A	A	A	X	X	X

## **APPENDIX 2**

### **Sample Training Program S-92A**

#### **CURRICULUM SEGMENT OUTLINE**

As part of an approved training program, an operator may use many methods when conducting helicopter ground training, including classroom instruction, pictures, videotape, ground-training devices, computer-based instruction, and static helicopter training.

The ground training curriculum segment outline is comprised of the following subject areas: General Operational Subjects, Aircraft Systems, and Systems Integration. Additional subjects may be required under 14 CFR 135.

#### **General Operational Subjects**

The portion of ground training referred to as "General Operational Subjects" includes instruction in:

- A. Weight and Balance
- B. Performance
- C. Flight Planning
- D. Approved Rotorcraft Flight Manual/Rotorcraft Operating Manual (As Appropriate)
- E. Crew Resource Management (CRM)

#### **Aircraft Systems**

The training modules presented in the aircraft systems subject area consists of a breakdown of the various systems of the S-92A. These modules may be taught in any sequence, however all modules must be covered.

- A. Aircraft General
- B. Lighting
- C. Master Warning System/Caution Advisory Module
- D. Electrical
- E. Fuel
- F. Powerplant
- G. Ice and Rain Protection
- H. Fire Protection
- I. Powertrain
- J. Main Rotor
- K. Tail Rotor
- L. Hydraulics
- M. Landing Gear and Brakes
- N. Flight Controls
- O. Integrated Automatic Flight Control System
- P. Avionics Rockwell Collins Flight Management System
- Q. Environmental

- R. Rotor Ice Protection System (If Equipped)
- S. Health Usage Monitoring System (HUMS)
- T. Kits and Accessories
- U. Optional Dual Rescue Hoist
- V. System Review, Examination, and Critique

## **Systems Integration**

The training modules presented in the Systems Integration subject area provides the pilots/crews with instruction on aircraft systems interrelationships with respect to normal, malfunctions, and emergency procedures. Pilots will be introduced to, and will have exercises in, the elements of Crew Resource Management as part of the integration process, including but not limited to such elements as: Situational Awareness, the Error Chain, Synergy, Crew Concept, Workload Assessment, and Time Management. Pilots will become familiar with the cockpit layout, checklists, maneuvers, and procedures. Lessons are normally conducted in a cockpit procedures mockup, Graphic Flight Simulator (GFS), cockpit procedures trainer, flight training device, or full flight simulator.

- A. Systems Integration Module No. 1- Aircraft Checklists/Normal Procedures/ Rockwell Collins FMS Cockpit/CRM
- B. Systems Integration Module No. 2 - Normal Procedures/ Rockwell/Collins FMS Cockpit
- C. Systems Integration Module No. 3 - Normal Procedures/Abnormal Procedures/Emergency Procedures
- D. Systems Integration Module No. 4 - Normal Procedures/Abnormal Procedures/Emergency Procedures
- E. Systems Integration Module No. 5 - Normal Procedures/Abnormal Procedures/Emergency Procedures

## **TRAINING MODULE OUTLINES**

### **General Operational Subjects Modules**

- A. Weight and Balance Module
  - 1. General Principles and Methods of Weight and Balance Determination
  - 2. Operations
  - 3. Limitations
- B. Performance Module
  - 1. Use of Charts, Tables, Tabulated Data, and Other Related Material
  - 2. Performance Problems, Normal, Abnormal, and Emergency Conditions
  - 3. Performance Limiting Factors such as Ambient Temperature, Runway Contamination, etc.
- C. Flight Planning Module
  - 1. Flight Planning Charts, Such as Fuel Consumption Charts
  - 2. Operations
  - 3. Limitations

- D. Approved Rotorcraft Flight Manual/Rotorcraft Operating Manual Module (As Appropriate)
  - 1. Applicability and Description of the RFM
  - 2. Normal, Abnormal, and Emergency Procedures Sections
  - 3. Limitations Section
  - 4. Maneuvers and Procedures Section
  - 5. General Performance Section
  - 6. Systems Description
  - 7. Appendices, Bulletins and Supplements
- E. Crew Resource Management (CRM) Module
  - 1. Situational Awareness and the Error Chain
  - 2. Stress
  - 3. Communications
  - 4. Synergy and Crew Concept
  - 5. Workload Management
  - 6. Decision Making
  - 7. Advanced/Automated Cockpit)

## **Systems Modules**

- A. Aircraft General Module
  - 1. General
    - a. Aircraft Contents of RFM
    - b. Training Manuals
    - c. Equipment and Furnishings
    - d. Emergency Equipment
  - 2. Structures
  - 3. Operating Limitations
  - 4. Instrument Markings
    - a. Engines
    - b. Miscellaneous Cockpit Instruments
  - 5. Aircraft Walk Around
    - a. Use Appropriate Visual, ACPS or Available Aircraft
- B. Lighting Module
  - 1. General
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedure
- C. Master Warning / Caution Advisory System Module
  - 1. General
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures

- D. Electrical Module
  - 1. General
    - a. System Description
    - b. AC Power
    - c. DC Power
    - d. Annunciators
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
  - 5. Operations
  - 6. Limitations
  - 7. Abnormal and Emergency Procedures
- E. Auxiliary Power Unit
  - 1. General
    - a. System Description
    - b. Controls and Components
    - c. Indicators/Indications
    - d. Annunciators
  - 2. Operations
  - 3. Limitations
    - Abnormal and Emergency Procedures
- F. Powerplant Module
  - 1. General
    - a. System Description
    - b. Controls and Components
    - c. Indicators/Indications
    - d. Annunciators
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- G. Ice and Rain Protection Module
  - 1. General
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- H. Fire Protection Module
  - 1. Engine Fire Detection
    - a. General
    - b. Operations
  - 2. Engine Fire Extinguishing
    - a. General
    - b. Operations
    - c. Limitations
    - d. Abnormal and Emergency Operations

- 3. Portable Fire Extinguisher
  - a. Location
  - b. Preflight
- I. Powertrain Module
  - 1. General
    - a. System Description
    - b. Controls and Components
    - c. Annunciators
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- J. Main Rotor Module
  - 1. General
    - a. System Description
    - b. Controls and Components
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
  - 5. Abnormal and Emergency Procedures
- K. Tail Rotor Module
  - 1. General
    - a. System Description
    - b. Controls and Components
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- L. Hydraulics Module
  - 1. General
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- M. Landing Gear and Brakes Module
  - 1. General
    - a. Landing Gear
    - b. Brakes
    - c. Annunciators
    - d. Servicing
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- N. Flight Controls Module
  - 1. General
    - a. System Description
    - b. Controls and Components
    - c. Indicators/Indications

- d. Annunciators
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- O. Digital Automatic Flight Control System (DAFCS) Module
- 1. General
    - a. System Description
    - b. Controls and Components
    - c. Annunciators
    - d. Servicing
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- P. Avionics Module
- 1. Rockwell/Collins FMS
  - 2. Multi-Functional Displays (MFD)
  - 3. Primary Flight Displays (PFD)
  - 4. General
    - a. System Description
    - b. Controls and Components
    - c. Annunciators
    - d. Servicing
  - 5. Operations/Limitations
  - 6. Abnormal and Emergency Procedures
- Q. Environmental Module
- 1. General
    - a. System Description
    - b. Controls and Components
    - c. Annunciators
    - d. Servicing
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
  - 5. Abnormal and Emergency Procedures
- R. Health Usage Monitoring System
- 1. General
  - 2. Operations
  - 3. Limitations
  - 4. Abnormal and Emergency Procedures
- S. Kits and Accessories Module (Floats/Rescue Hoist/Cargo Hook - as equipped)
- 1. General
    - a. System Description
    - b. Controls and Components
    - c. Annunciators
    - d. Servicing

2. Operations
  3. Limitations
  4. Abnormal and Emergency Procedures
- T. Systems Review, Examination and Critique Module
1. Written Examination with a Passing Grade of 80%, corrected to 100%.

### **APPENDIX 3**

#### **Aircraft Compliance Checklist**

(Reserved).

**APPENDIX 4  
ODR TABLE**

**(Reserved)**

<b>Type Rating SK-92</b>	<b>From Helicopter Model</b>		
		<b>S-92A</b>	
<b>To Helicopter Model</b>	<b>S-92A</b>	<b>Not Used</b>	

## **APPENDIX 5**

### ***Operator Differences Requirements***

(Reserved)