



Advisory Circular NCAA-AC-PEL031

**SUBJECT: COMMERCIAL PILOT - BALLOON SKILL TEST STANDARDS
ADVISORY CIRCULAR NCAA-AC-PEL031
DATE: 2ND JUNE 2010**

0.0 FOREWORD

0.1 The Nigerian Civil Aviation Authority (NCAA) has developed skill test standards for airmen licences and ratings and these are published as Advisory Circulars (ACs). This AC establishes the standards for the Commercial Pilot licence skill tests for Balloon. Nigerian inspectors and designated pilot flight test examiners shall conduct skill tests in compliance with these standards. Flight instructors and applicants should find these standards helpful in skill test preparation. Other ACs have been developed for other airmen licences and can be obtained from the NCAA website: <http://www.ncaa.gov.ng>.

0.2 Information considered directive in nature is described in this skill test AC in terms such as “shall” and “must”, indicating the actions are mandatory. Guidance information is described in terms such as “should” and “may” indicating the actions are desirable or permissive, but not mandatory.

0.3 The Nigerian Civil Aviation Regulations (Nlg. CARs) can be obtained from the NCAA at the address listed below. Nlg. CARs Part 2 cover the requirements for personnel licensing.

0.4 This Skill Test Standard may be downloaded from the NCAA website at <http://www.ncaa.gov.ng>. Subsequent changes to the Skill Test Standard will also be available on the NCAA web site.

0.5 Comments regarding this publication should be sent to:

Nigerian Civil Aviation Authority
Aviation House
Murtala Muhammed Airport
Ikeja

Dr. H. O. Demuren
Director General, Civil Aviation Authority

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SKILL TEST STANDARDS
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SECTION ONE

PURPOSE

1.1 The purpose of this AC is to prescribe the standards that shall be used by NCAA inspectors and designated flight test examiners when conducting the Commercial Pilot skill test for Balloons. Flight instructors are expected to use this document when preparing applicants for skill tests. Applicants should be familiar with this document and refer to these standards during their training.

GENERAL

1.2 The NCAA has developed this skill test AC as the standard that shall be used by NCAA inspectors and designated flight test examiners when conducting Commercial Pilot - Balloon skill tests. Flight instructors are expected to use this book when preparing applicants for skill tests. Applicants should be familiar with this book and refer to these standards during their training.

SKILL TEST STANDARD CONCEPT

1.3 The Nig. CARs specify the areas in which knowledge and skill must be demonstrated by the applicant before the issuance of a licence or rating. The Nig. CARs provide the flexibility to permit the NCAA to publish Skill Test Standards (STS) containing the AREAS OF OPERATION and specific TASKS in which pilot competency shall be demonstrated. The NCAA will revise this STS whenever it is determined that changes are needed in the interest of safety. Adherence to the provisions of the regulations and the STS is mandatory for evaluation of pilot applicants.

SKILL TEST DESCRIPTION

1.4 (1) This AC contains the skill test standards for a Commercial Pilot – Balloon rating.

(2) AREAS OF OPERATION are phases of the skill test arranged in a logical sequence within each standard. They begin with preflight preparation and end with postflight procedures. The examiner may conduct the skill test in any sequence that results in a complete and efficient test; however, the ground portion of the skill test shall be accomplished before the flight portion.

In Section 2, an abbreviation within parentheses immediately following a TASK title refers to the type of balloon to which that TASK applies. Absence of an abbreviation indicates the TASK is appropriate for all balloons.

LBG	Lighter-Than-Air, Balloon (Gas)
LBH	Lighter-Than-Air, Balloon (with Airborne Heater)

(3) TASKS are titles of knowledge areas, flight procedures, or maneuvers appropriate to an AREA OF OPERATION.

(4) NOTE is used to emphasize special considerations required in the AREA OF OPERATION or TASK.

CDI	Course Deviation Indicator
CFIT	Controlled Flight into Terrain
CRM	Crew Resource Management
DA	Decision Altitude
DH	Decision Height
DME	Distance Measuring Equipment
DP	Departure Procedure
NCAA	Nigerian Civil Aviation Authority
FDC	Flight Data Center
FMS	Flight Management System
FSTD	Flight Simulation Training Device
GLS	GNSS Landing System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
IAP	Instrument Approach Procedure
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
IPC	Instrument Proficiency Check
LAHSO	Land and Hold Short Operations
LCD	Liquid Crystal Display
LDA	Localizer-type Directional Aid
LED	Light Emitting Diode
LOC	Localizer
LORAN	Long Range Navigation
MAP	Missed Approach Point
ACA	Minimum Descent Attitude
METAR	Aviation Routine Weather Report
MLS	Microwave Landing System
NAVAID	Navigational Aid
NDB	Non-Directional Beacon
NOTAM	Notice to Airmen
NPA	Nonprecision Approach
PA	Precision Approach
RAIM	Receiver Autonomous Integrity Monitoring
RMI	Radio Magnetic Indicator
RNAV	Area navigation
SAS	Stability Augmentation System
SDF	Simplified Directional Facility
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Advisory
SRM	Single Pilot Resource Management
STAR	Standard Terminal Arrival
STS	Skill Test Standards
TCAS	Traffic Alert and Collision Avoidance System
VDP	Visual Descent Point
VHF	Very High Frequency
VNAV	Vertical Navigation
VOR	Very High Frequency Ominidirectional Range

1.5 USE OF THE SKILL TEST STANDARDS

(1) The NCAA requires that all skill tests be conducted in accordance with the appropriate STS and the policies set forth in Section 1. Applicants shall be evaluated in ALL TASKS included in the AREAS OF OPERATION of the appropriate STS (unless noted otherwise).

(2) In preparation for each skill test, the examiner shall develop a written “plan of action” for each skill test. The “plan of action” is a tool, for the sole use of the examiner, to be used in evaluating the applicant. The plan of action need not be grammatically correct or in any formal format. The plan of action must contain all of the required AREAS OF OPERATION and TASKS and any optional TASKS selected by the examiner. The “plan of action” shall incorporate one or more scenarios that will be used during the skill test. The examiner should try to include as many of the TASKS into the scenario portion of the test as possible, but maintain the flexibility to change due to unexpected situations as they arise and still result in an efficient and valid test. **Any TASK selected for evaluation during a skill test shall be evaluated in its entirety.**

(3) The examiner is not required to follow the precise order in which the AREAS OF OPERATION and TASKS appear in this book. The examiner may change the sequence or combine TASKS with similar Objectives to have an orderly and efficient flow of the skill test. However, the Objectives of all TASKS shall be demonstrated and evaluated during the skill test.

(4) In AREAS OF OPERATION I, II, and IV, the term “instructional knowledge” means the “what,” “why,” and “how” of a subject matter topic, procedure, or maneuver. It also means that the applicant's discussions, explanations, and descriptions should follow the recommended teaching procedures and techniques.

(5) The examiner shall not simulate any condition that may jeopardize safe flight or result in possible damage to the aircraft.

(6) The examiner shall place special emphasis upon areas of aircraft operation that are most critical to flight safety. Among these are precise aircraft control and sound judgment in decision making. Although these areas may or may not be listed under each TASK, they are essential to flight safety and should receive careful evaluation throughout the skill test. **THE EXAMINER SHALL ALSO EMPHASIZE COLLISION AVOIDANCE, CHECKLIST USAGE, AND USE OF DISTRACTIONS.**

- (a) ADM and risk management;
- (b) checklist usage; and
- (c) other areas deemed appropriate to any phase of the skill test.

(2) Although these areas may not be specifically addressed under each TASK, they are essential to flight safety and will be evaluated during the skill test.

1.6 SPECIAL EMPHASIS AREAS (RESERVED)

1.7. SKILL TEST PREREQUISITES

An applicant for an Commercial Pilot - Balloon skill test is required to:

- (a) Meet the applicable requirements in Nig. CARs Part 2 for a Commercial Pilot – Balloon rating;
- (b) Hold the appropriate medical certificate;
- (c) Pass the required knowledge test; and
- (d) Instructor Authorisation: Obtain a written endorsement from an authorised instructor certifying that the applicant has met the flight training requirements for the skill test. The endorsement shall also state that the instructor finds the applicant competent to pass the skill test and that the applicant has satisfactory knowledge of the subject area(s) in which a deficiency was indicated by the Airman Knowledge Test Report.

1.8 AIRCRAFT AND EQUIPMENT REQUIRED FOR THE SKILL TEST

The commercial pilot applicant is required to provide an airworthy, certificated aircraft for use during the skill test. This section further requires that the aircraft must:

1. be of Nigerian, foreign or military registry of the same category, class, and type, if applicable, for the licence and/or rating for which the applicant is applying;
2. have fully functioning dual controls, except as provided in Nig. CARs Part 2; and
3. be capable of performing ALL AREAS OF OPERATION appropriate to the rating sought and have no operating limitations, which prohibit its use in any of the AREAS OF OPERATION, required for the skill test.

1.9 USE OF NCAA-APPROVED FLIGHT SIMULATION TRAINING DEVICE (RESERVED)

1.10 FLIGHT INSTRUCTOR RESPONSIBILITY

(1) A commercial balloon pilot, when exercising flight instructor privileges, is responsible for training pilot applicants to acceptable standards in all TASKS appropriate for the rating sought. Because of the impact of their teaching activities in developing safe, proficient pilots, instructors should exhibit a high level of knowledge, skill, and the ability to impart that knowledge and skill to students. The instructor shall certify that the applicant is:

- a. Able to exhibit a practical application of the fundamentals of instructing;
- b. Competent to teach the subject matter, procedures, and maneuvers included in the standards to students with varying backgrounds and levels of experience and ability;
- c. Able to perform the procedures and maneuvers included in the standards to the COMMERCIAL PILOT skill level; and
4. Competent to pass the required skill test for issuance of the commercial pilot licence with the associated category and class ratings, or the addition of a category and/or class rating to a commercial pilot licence.

(2) Throughout the applicant's training, the instructor is responsible for emphasizing the performance of, and the ability to teach, effective visual scanning and collision avoidance procedures

1.11 EXAMINER RESPONSIBILITY

(1) The examiner conducting the skill test is responsible for determining that the applicant meets the acceptable standards of knowledge and skill of each TASK within the

appropriate skill test standard. The examiner makes this determination by accomplishing the Objective for each selected TASK, and includes an evaluation of the applicant's:

1. ability to apply fundamentals of instructing, when required;
2. knowledge of and ability to teach subject matter covered in required TASKS; and
3. ability to perform procedures and maneuvers included in the standards to the COMMERCIAL PILOT skill level.

(2) Although it is the examiner's primary concern to observe the applicant's ability to skillfully and safely operate the aircraft, oral questioning may be used at any time during the skill test to determine that the applicant has a comprehensive knowledge of the TASKS and their related safety factors. During the flight portion of the skill test, the examiner shall evaluate use of visual scanning and collision avoidance procedures.

1.12 SATISFACTORY PERFORMANCE

The skill test is passed if, in the judgment of the examiner, the applicant demonstrates satisfactory performance with regard to:

1. knowledge of fundamentals of instructing;
2. knowledge of technical subject areas;
3. knowledge of flight instructor responsibilities concerning the pilot licencing process;
4. knowledge of flight instructor responsibilities concerning log book entries and pilot licence endorsements;
5. knowledge of development and effective use of a course of training, a syllabus, and a lesson plan; and
6. ability to demonstrate all required procedures and maneuvers to the COMMERCIAL PILOT skill level.

1.13 UNSATISFACTORY PERFORMANCE

(1) If, in the judgment of the examiner, the applicant does not meet the standards of performance of any TASK performed, the associated AREA OF OPERATION is failed and therefore, the skill test is failed.

(2) The examiner or applicant may discontinue the test at any time when the failure of an AREA OF OPERATION makes the applicant ineligible for the licence or rating sought. **The test may be continued ONLY with the consent of the applicant.** If the test is discontinued, the applicant is entitled credit for only those AREAS OF OPERATION and their associated TASKS that were satisfactorily performed. However, during the retest, and at the discretion of the examiner, any TASK may be re-evaluated, including those previously passed.

(4) Typical areas of unsatisfactory performance and grounds for disqualification are:

- a. failure to perform a procedure or maneuver to the COMMERCIAL PILOT skill level;
- b. any action or lack of action by the applicant which requires corrective intervention by the examiner to maintain safe flight; and
- c. failure to use proper and effective visual scanning techniques to clear the area before and while performing maneuvers.

(3) When a notice of disapproval is issued, the examiner shall record the applicant's

unsatisfactory performance in terms of the AREA OF OPERATION and specific TASK(s) not meeting the standard appropriate to the skill test conducted.

1.14 DISCONTINUANCE OF A SKILL TEST

When a skill test is discontinued for reasons other than unsatisfactory performance (i.e., equipment failure, weather, or illness) NCAA Airman Licence and/or Rating Application, and, if applicable, the Airman Knowledge Test Report, shall be returned to the applicant. The examiner at that time shall prepare, sign, and issue a Letter of Discontinuance to the applicant. The Letter of Discontinuance should identify the AREAS OF OPERATION and their associated TASKS of the skill test that were successfully completed. The applicant shall be advised that the Letter of Discontinuance shall be presented to the examiner when the skill test is resumed, and made part of the licencing file.

1.15 AERONAUTICAL DECISION MAKING AND RISK MANAGEMENT

(1) The examiner shall evaluate the applicant's ability throughout the skill test to use good aeronautical decision making procedures in order to evaluate risks. The examiner shall accomplish this requirement by developing scenarios that incorporate as many TASKS as possible to evaluate the applicants risk management in making safe aeronautical decisions. For example, the examiner may develop a scenario that incorporates weather decisions and performance planning.

(2) The applicant's ability to utilize all the assets available in making a risk analysis to determine the safest course of action is essential for satisfactory performance. The scenarios should be realistic and within the capabilities of the aircraft used for the skill test.

1.16 CREW RESOURCE MANAGEMENT

(1) CRM refers to the effective use of all available resources; human resources, hardware, and information. Human resources includes all other groups routinely working with the cockpit crew (or if a single pilot operation, the pilot) who are involved in decisions that are required to operate a flight safely. These groups include, but are not limited to: flight operations officers, cabin crewmembers, maintenance personnel, and air traffic controllers. CRM is not a single TASK. CRM is a set of skill competencies which must be evident in all TASKS in this skill test standard as applied to the single pilot or the multicrew operation. CRM competencies, grouped into three clusters of observable behavior, are:

(a) COMMUNICATIONS PROCESSES AND DECISIONS

1. Briefing/Debriefing
2. Inquiry/Advocacy/Assertiveness
3. Self-Critique
4. Communication with Available Personnel Resources
5. Decision Making

(b) BUILDING AND MAINTENANCE OF A FLIGHT TEAM

1. Leadership/Followership
2. Interpersonal Relationships

(c) WORKLOAD MANAGEMENT AND SITUATIONAL AWARENESS

1. Preparation/Planning
2. Vigilance
3. Workload Distribution
4. Distraction Avoidance
5. Wake Turbulence Avoidance

(2) CRM deficiencies almost always contribute to the unsatisfactory performance of a TASK. Therefore, the competencies provide an extremely valuable vocabulary for debriefing.

(3) The standards for each CRM competency as generally stated and applied are subjective. Conversely, some of the competencies may be found objectively stated as required operational procedures for one or more TASKS. Examples of the latter include briefings, radio calls, and instrument approach callouts. Whether subjective or objective, application of CRM competencies is dependent upon the composition of the crew.

1.17 SINGLE-PILOT RESOURCE MANAGEMENT

Single-Pilot Resource Management refers to the effective use of ALL available resources: human resources, hardware, and information. It is similar to Crew Resource Management (CRM) procedures that are being emphasized in multi-crewmember operations except that only one crewmember (the pilot) is involved. Human resources "...include all other groups routinely working with the pilot who are involved in decisions that are required to operate a flight safely. These groups include, but are not limited to: dispatchers, weather briefers, maintenance personnel, and air traffic controllers." Pilot Resource Management is not a single TASK; it is a set of skill competencies that must be evident in all TASKS in this skill test standard as applied to single-pilot operation.

1.18 HOW THE EXAMINER APPLIES CREW RESOURCE MANAGEMENT

(1) Examiners are required to exercise proper CRM competencies in conducting tests as well as expecting the same from applicants.

(2) Pass/Fail judgments based solely on CRM issues must be carefully chosen since they may be entirely subjective. Those Pass/Fail judgments which are not subjective apply to CRM-related procedures in NCAA-approved operations manuals that must be accomplished, such as briefings to other crewmembers. In such cases, the operator (or the aircraft manufacturer) specifies what should be briefed and when the briefings should occur. The examiner may judge objectively whether the briefing requirement was or was not met. In those cases where the operator (or aircraft manufacturer) has not specified a briefing, the examiner shall require the applicant to brief the appropriate items from the following note. The examiner may then judge objectively whether the briefing requirement was or was not met.

(3) The majority of aviation accidents and incidents are due to resource management failures by the pilot/crew; fewer are due to technical failures. Each applicant shall give a crew briefing before each takeoff/departure and approach/landing. If the operator or aircraft manufacturer has not specified a briefing, the briefing shall cover the appropriate items, such as runway, SID/STAR/IAP, power settings, speeds, abnormals or emergency prior to or after takeoff, emergency return intentions, missed approach procedures, FAF, altitude at FAF, initial rate of descent, DH/ACA, time to missed approach, and what is expected of the other crewmembers during the takeoff/SID and approach/landing. If the first takeoff/departure and approach/landing briefings are satisfactory, the examiner may allow the applicant to brief only the changes, during the remainder of the flight.

1.19 APPLICANT'S USE OF CHECKLISTS

Throughout the skill test, the applicant is evaluated on the use of an appropriate checklist. Proper use is dependent on the specific TASK being evaluated. The situation may be such that the use of the checklist, while accomplishing elements of an Objective, would be either unsafe or impracticable, especially in a single-pilot operation. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Division of attention and proper visual scanning should be considered when using a checklist.

1.20 USE OF DISTRACTIONS DURING SKILL TESTS

Numerous studies indicate that many accidents have occurred when the pilot has been distracted during critical phases of flight. To evaluate the pilot's ability to utilize proper control technique while dividing attention both inside and/or outside the cockpit, the examiner shall cause a realistic distraction during the flight portion of the skill test to evaluate the applicant's ability to divide attention while maintaining safe flight.

1.21 POSITIVE EXCHANGE OF FLIGHT CONTROLS

(1) During flight, there must always be a clear understanding between pilots of who has control of the aircraft. Prior to flight, a briefing should be conducted that includes the procedure for the exchange of flight controls. A positive three-step process in the exchange of flight controls between pilots is a proven procedure and one that is strongly recommended.

(2) When one pilot wishes to give the other pilot control of the aircraft, he or she will say, "You have the flight controls." The other pilot acknowledges immediately by saying, "I have the flight controls." The first pilot again says "You have the flight controls." When control is returned to the first pilot, follow the same procedure. A visual check is recommended to verify that the exchange has occurred. There should never be any doubt as to who is flying the aircraft.

1.22 RATING TASK TABLES

(1) The following tables indicate the areas of operations required during a skill test for an additional rating in another aircraft category.

ADDITION OF A BALLOON CLASS RATING (AND A LIGHTER-THAN-AIR CATEGORY RATING, IF APPROPRIATE) TO A COMMERCIAL PILOT LICENCE						
AREAS OF OPERATION	COMMERCIAL PILOT LICENCE AND RATING HELD					
	ASE	AME	Helicopter	Glider	AIRSHIP	
I	ALL	ALL	ALL	ALL	ALL	
II	ALL	ALL	ALL	ALL	ALL	
III	D,E	D,E	D,E	D,E	D,E	
IV	ALL	ALL	ALL	ALL	NONE	
V	ALL	ALL	ALL	ALL	ALL	
VI	NONE	NONE	NONE	NONE	NONE	
VII	ALL	ALL	ALL	ALL	ALL	
VIII	ALL	ALL	ALL	ALL	ALL	
IX	NONE	NONE	NONE	NONE	NONE	
X	A,C,D	A,C,D	A,C,D	ALL	A,C,D	
XI	ALL	ALL	ALL	ALL	ALL	

LEGEND

ASE Airplane Single-Engine
 AME Airplane Multiengine

NOTE: If an applicant holds more than one rating on a commercial pilot licence and the table indicates both ALL and NONE for a particular AREA OF OPERATION, the NONE entry applies. This is logical since the applicant has satisfactorily accomplished the AREA OF OPERATION on a previous commercial pilot skill test. At the discretion of the examiner, the applicant's competence in all AREAS OF OPERATION may be evaluated.

SECTION TWO

**APPLICANT'S SKILL TEST CHECKLIST
(BALLOON)**

APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME _____

LOCATION _____

DATE/TIME _____

ACCEPTABLE AIRCRAFT

- ? Aircraft Documents:
 - Airworthiness Certificate
 - Registration Certificate
 - Operating Limitations
- ? Aircraft Maintenance Records:
 - Logbook Record of Airworthiness Inspections and AD Compliance
- ? Balloon Flight Manual

PERSONAL EQUIPMENT

- ? Skill Test Standard
- ? Current Aeronautical Chart
- ? Computer and Plotter
- ? Flight Log
- ? Current AIM

PERSONAL RECORDS

- ? Identification - Photo/Signature ID
- ? Pilot Licence
- ? Current and Appropriate Medical Certificate or Statement
- ? Airman Licence and/or Rating Application form with Instructor's Signature
- ? Airman Written Test Report or Computer Test Report
- ? Pilot Logbook with Appropriate Instructor Endorsements
- ? Notice of Disapproval (if applicable)
- ? Approved School Graduation Certificate (if applicable)
- ? Examiner's Fee (if applicable)

**EXAMINER'S SKILL TEST CHECKLIST
(BALLOON)**

APPLICANT'S NAME _____

LOCATION _____

DATE/TIME _____

I. FUNDAMENTALS OF INSTRUCTING

- ? A. The Learning Process
- ? B. Human Behavior
- ? C. The Teaching Process
- ? D. Teaching Methods
- ? E. Critique and Evaluation
- ? F. Flight Instructor Characteristics and Responsibilities
- ? G. Planning Instructional Activity

II. TECHNICAL SUBJECTS

- ? A. Aeromedical Factors
- ? B. Visual Scanning and Collision Avoidance
- ? C. Principles of Flight
- ? D. Regulations and Publications
- ? E. National Airspace System
- ? F. Logbook Entries and Licence Endorsements

III. PREFLIGHT PREPARATION

- ? A. Licences and Documents
- ? B. Weather Information
- ? C. Flight Planning
- ? D. Performance and Limitations
- ? E. Operation of Systems

IV. PREFLIGHT LESSON ON A MANEUVER TO BE PERFORMED IN FLIGHT

- ? Maneuver Lesson

V. PREFLIGHT PROCEDURES

- ? A. Launch Site Selection
- ? B. Crew Briefing and Preparation
- ? C. Layout and Assembly
- ? D. Preflight Inspection
- ? E. Inflation
- ? F. Basket/Gondola Management
- ? G. Pre-Launch Check

VI. AIRPORT OPERATIONS

- ? Radio Communications

VII. LAUNCHES AND LANDINGS

- ? A. Normal Launch
- ? B. Launch Over Obstacle
- ? C. Approach to Landing
- ? D. Steep Approach to Landing
- ? E. Normal Landing
- ? F. High-Wind Landing

VIII. PERFORMANCE MANEUVERS

- ? A. Ascents
- ? B. Altitude Control (Level Flight)
- ? C. Descents
- ? D. Rapid Ascent and Descent
- ? E. Contour Flying (LBH)
- ? F. High Altitude Flight (LBG)
- ? G. Obstacle Avoidance (LBH)
- ? H. Tethering (LBH)
- ? I. Winter Flying
- ? J. Mountain Flying

IX. NAVIGATION

- ? Navigation

X. EMERGENCY OPERATIONS

- ? A. Systems and Equipment Malfunctions
- ? B. Emergency Equipment and Survival Gear
- ? C. Water Landing
- ? D. Thermal Flight

XI. POSTFLIGHT PROCEDURES

- ? A. Recovery
- ? B. Deflation and Pack-up
- ? C. Refueling (LBH)

I. AREA OF OPERATION: FUNDAMENTALS OF INSTRUCTING

NOTE: The examiner will select TASK F and at least one other TASK.

A. TASK: THE LEARNING PROCESS

Objective. To determine that the applicant exhibits instructional knowledge of the elements of the learning process by describing:

1. The definition and characteristics of learning.
2. Practical application of the laws of learning.
3. Factors involved in how people learn.
4. Recognition and proper use of the various levels of learning.
5. Principles that are applied in learning a skill.
6. Factors of forgetting and retention.
7. How the transfer of learning affects the learning process.
8. How the formation of habit patterns affects the learning process.

B. TASK: HUMAN BEHAVIOR

Objective. To determine that the applicant exhibits instructional knowledge of the elements of human behavior by describing:

1. Control of human behavior.
2. Development of student potential.
3. Relationship of human needs to behavior and learning.
4. Relationship of defense mechanisms to student learning and pilot decision making.
5. General rules which a flight instructor should follow during student training to ensure good human relations.

C. TASK: THE TEACHING PROCESS

Objective. To determine that the applicant exhibits instructional knowledge of the elements of the teaching process by describing:

1. Preparation of a lesson for a ground or flight instructional period.
2. Presentation of knowledge and skills, including the methods which are suitable in particular situations.
3. Application, by the student, of the knowledge and skills presented by the instructor.
4. Review of the material presented and the evaluation of student performance and accomplishment.

D. TASK: TEACHING METHODS

Objective. To determine that the applicant exhibits instructional knowledge of the elements of teaching methods by describing:

1. The organization of a lesson, i.e., introduction, development, and conclusion.
2. The lecture method.
3. The guided discussion method.
4. The demonstration-performance method.
5. Computer/video assisted instruction.

E. TASK: CRITIQUE AND EVALUATION

Objective. To determine that the applicant exhibits instructional knowledge of the elements of critique and evaluation by describing:

1. Purpose and characteristics of an effective critique.
2. Difference between critique and evaluation.
3. Characteristics of effective oral questions and what type to avoid.
4. Responses to student questions.
5. Characteristics and development of effective written tests.
6. Characteristics and uses of performance tests, specifically, the NCAA skill test standards.

F. TASK: FLIGHT INSTRUCTOR CHARACTERISTICS AND RESPONSIBILITIES

Objective. To determine that the applicant exhibits instructional knowledge of the elements of flight instructor characteristics and responsibilities by describing:

1. Characteristics and qualifications of a professional flight instructor.
2. Role of the flight instructor in dealing with student stress, anxiety, and psychological abnormalities.
3. Flight instructor's responsibility with regard to student pilot supervision and surveillance.
4. Flight instructor's authority and responsibility for endorsements and recommendations.
5. Flight instructor's responsibility in the conduct of the required FAA flight review.

G. TASK: PLANNING INSTRUCTIONAL ACTIVITY

Objective. To determine that the applicant exhibits instructional knowledge of the elements of planning instructional activity by describing:

1. Development of a course of training.
2. Content and use of a training syllabus.
3. Purpose, characteristics, proper use, and items of a lesson plan.
4. Flexibility features of a course of training, syllabus, and lesson plan required to accommodate students with varying backgrounds, levels of experience, and ability.

II. AREA OF OPERATION: TECHNICAL SUBJECTS

A. TASK: AEROMEDICAL FACTORS

Objective. To determine that the applicant exhibits instructional knowledge of the elements of aeromedical factors by describing:

1. Hypoxia, its symptoms, effects, and corrective action.
2. Hyperventilation, its symptoms, effects, and corrective action.
3. Middle ear and sinus problems, their causes, effects, and corrective action.
4. Effects of alcohol and drugs, and their relationship to safety.
5. How evolved gas from scuba diving can affect a pilot during flight.
6. Fatigue, its effects and corrective action.

B. TASK: VISUAL SCANNING AND COLLISION AVOIDANCE

Objective. To determine that the applicant exhibits instructional knowledge of the elements of visual scanning and collision avoidance by describing:

1. Relationship between a pilot's physical or mental condition and vision.
2. Practice of "time sharing" of attention inside and outside the basket.
3. Appropriate visual scanning techniques.
4. Importance of controlling ascents and descents.
5. Situations which involve the greatest collision risk.

C. TASK: PRINCIPLES OF FLIGHT

Objective. To determine that the applicant exhibits instructional knowledge of the elements of the principles of flight by describing:

1. Physical laws applicable to balloon flight.
2. Effects of changes in temperature and density altitude on maintaining equilibrium.
3. Effects of false lift during takeoff, landing, and windshear penetration.

D. TASK: REGULATIONS AND PUBLICATIONS

REFERENCES: Nig. CARs Parts 1, 2 and 8;

Objective. To determine that the applicant exhibits instructional knowledge of the elements of regulations and publications, their purpose, general content, availability, and how to obtain revisions by describing:

1. Nig. CARs parts 1, 2, and 8 and NTSB 830.
2. Flight information publications.
3. Advisory circulars.
4. Skill test standards.
5. Balloon flight manual.

E. TASK: NATIONAL AIRSPACE SYSTEM

REFERENCES: Nig. CARs Part 8;

Objective. To determine that the applicant exhibits instructional knowledge of the elements of the national airspace system by describing:

1. Definitions and dimensions of Class A, B, C, D, E, and G airspace.

2. Pilot certification, weather, and equipment requirements for operating in Class A, B, C, D, E, and G airspace.
3. Special use airspace and other airspace areas.

F. TASK: LOGBOOK ENTRIES AND LICENCE ENDORSEMENTS

REFERENCES: Nig. CARs Part 2;

Objective. To determine that the applicant exhibits instructional knowledge of the elements of logbook entries and licence endorsements by describing:

1. Required logbook entries for instruction given.
2. Logbook entry certifying student's completion of presolo knowledge test.
3. Required student pilot licence endorsements and appropriate logbook entries.
4. Preparation of a recommendation for a pilot skill test, including appropriate logbook entry.
5. Required endorsement of a pilot logbook for satisfactory completion of the required NCAA flight review.
6. Instructor record keeping.

III. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: LICENCES AND DOCUMENTS

REFERENCES: Nig. CARs Parts 2, 5, and 8;

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of licences and documents by explaining:

1. Requirements for the issuance of pilot licences and ratings, and the privileges and limitations of those licences and ratings.
2. Medical requirements.
3. Airworthiness and registration licences.
4. Balloon flight manuals.
5. Balloon maintenance/inspection requirements and associated records.

B. TASK: WEATHER INFORMATION

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of weather information by explaining:

1. Importance of a thorough weather check.
2. Sources available for obtaining weather information.
3. Use of weather reports, forecasts, and charts.
4. Use of PIREP's, SIGMET's, and AIRMET's.
5. Recognition of aviation weather hazards and their effects on balloon operations.
6. Factors to be considered in making a "go/no go" decision.

C. TASK: FLIGHT PLANNING

REFERENCES: NOTAM's.

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge of the elements of flight planning by presenting and explaining a preplanned flight of maximum duration, appropriate to the balloon used for the flight test, as previously assigned by the examiner. The final flight plan shall include real-time weather.
2. Uses appropriate, current aeronautical charts and appropriate, current local road/street maps.
3. Constructs a flight profile and plots a course for intended route of flight based on winds aloft.
4. Selects appropriate VHF communication frequencies, if radio equipped.
5. Identifies airspace, obstructions, and terrain features.
6. Selects suitable landing areas.
7. Extracts and applies pertinent information from AIM and NOTAM's, as appropriate.

D. TASK: PERFORMANCE AND LIMITATIONS

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of performance and limitations, appropriate to the balloon used for the skill test, by explaining:

1. Use of performance charts, tables, and other data in determining performance in various phases of flight.
2. Computation of operating weight, maximum load, fuel quantity and endurance.
3. Determination of normal and maximum rates of ascent and descent, and the altitude required to arrest a high rate of descent.
4. Determination of envelope temperatures, including never-exceed temperature and maximum continuous temperature.
5. Effects of atmospheric conditions on performance.
6. Factors to be considered in determining that the required performance is within the balloon's capabilities and limitations.

E. TASK: OPERATION OF SYSTEMS

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of the operation of systems, as applicable to the balloon used for the skill test, by explaining:

1. Fuel system, burners, pilot lights, and associated gauges.
2. Flight instruments and gauges.
3. Venting and/or deflation systems.
4. Avionics/communications system, as appropriate.

IV. AREA OF OPERATION: PREFLIGHT LESSON ON A MANEUVER TO BE PERFORMED IN FLIGHT

NOTE: Examiner will select at least one maneuver from AREAS OF OPERATION VII through XI and ask the applicant to present a preflight lesson on the maneuver selected as the lesson would be taught to a student. Previously developed lesson plans from the applicant's library may be used.

TASK: MANEUVER LESSON

Objective. To determine that the applicant exhibits instructional knowledge of the selected maneuver by:

1. Using a lesson plan that includes all essential items to make an effective and organized presentation.
2. Stating the objective.
3. Giving an accurate, comprehensive oral description of the maneuver, including the elements and associated common errors.
4. Using instructional aids, as appropriate.
5. Describing the recognition, analysis, and correction of common errors.

V. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: LAUNCH SITE SELECTION

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of launch site selection.
2. Arranges to launch at a suitable time, considering atmospheric conditions.
3. Selects a launch site with emphasis on—
 - a. size and surface condition of site.
 - b. consideration of accessibility and obstacles.
 - c. surface wind and winds aloft.
 - d. obstacles in vicinity of launch site.
 - e. consideration of suitable landing areas based on wind conditions.
4. Makes a competent "go/no-go" decision considering all of the factors involved in the selection of a launch site.

B. TASK: CREW BRIEFING AND PREPARATION

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of crew briefing and preparation.
2. Designates a crew chief, if appropriate, and explains duties and responsibilities to each crewmember.
3. Briefs crewmembers in all areas of the flight, including layout and assembly; tie-off, if appropriate; inflation; in-flight; landing; recovery; and emergency procedures.
4. Establishes a common means of communication such as hand signals and/or two-way radio.
5. Describes the proposed direction of flight and estimated time aloft.
6. Ensures that all necessary equipment is on board.
7. Supervises and coordinates all activities.

C. TASK: LAYOUT AND ASSEMBLY

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of layout and assembly.
2. Positions envelope and basket properly, considering wind conditions, surface, and obstacles.
3. Assembles fuel system (as appropriate) and checks for security, leaks, and correct fuel pressure.
4. Completes attachment of all cables and lines and assembles basket to envelope in accordance with the flight manual.
5. Completes an appropriate checklist.

D. TASK: PREFLIGHT INSPECTION

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a preflight inspection. This shall include the items which must be inspected, reasons for inspecting each item, and how to detect possible defects.
2. Inspects the balloon with reference to the checklist emphasizing the—
 - a. basket and envelope, to include suspension and handling lines.
 - b. venting and/or deflation systems.
 - c. burner and fuel system check.
 - d. instruments and gauges.
3. Verifies the balloon is in condition for safe flight.
4. Completes an appropriate checklist.

E. TASK: INFLATION

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of inflation.
2. Accomplishes proper tie-off procedure, if appropriate.
3. Positions inflator for initial cold inflation.
4. Begins ignition and hot air inflation.
5. Inflates balloon to a vertical position.
6. Positions and secures the vent/deflation lines.
7. Completes an appropriate checklist.

F. TASK: BASKET/GONDOLA MANAGEMENT

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of basket/gondola management.
2. Ensures all loose items in the basket/gondola are secured.
3. Briefs passengers on the proper boarding, in-flight, and landing behavior and procedures.
4. Organizes material and equipment in a logical, efficient manner.

G. TASK: PRE-LAUNCH CHECK

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a pre-launch check.
2. Reviews wind conditions, temperatures, and obstructions.
3. Performs final instrument check.
4. Ensures that vent/deflation lines are positioned and secured properly.
5. Accomplishes final coordination with ground crew, including signals and emergency procedures.
6. Accomplishes pre-launch checklist and confirms that the balloon is in safe operating condition.
7. Brings balloon to equilibrium.
8. Divides attention in and around the basket/gondola. Ensures no conflict with traffic prior to launch.

VI. AREA OF OPERATION: AIRPORT OPERATIONS

TASK: RADIO COMMUNICATIONS

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of radio communications by explaining:

1. Selection and use of appropriate radio frequencies.
2. Recommended procedure and phraseology for radio voice communications.
3. Receipt, acknowledgment of, and compliance with, ATC clearances and other instructions.

VII. AREA OF OPERATION: LAUNCHES AND LANDINGS

A. TASK: NORMAL LAUNCH

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a normal launch.
2. Directs ground crew to clear the area.
3. Recognizes equilibrium.
4. Uses tie-off-quick release line correctly, if appropriate.
5. Recognizes wind conditions and presence of false lift.
6. Appropriately controls lift-off and initial ascent.

B. TASK: LAUNCH OVER OBSTACLE

NOTE: If conditions do not allow an additional launch to be performed, the applicant's knowledge of this TASK shall be evaluated orally.

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a launch over an obstacle.
2. Determines height of the obstacle.
3. Considers distance to the obstacle relative to the wind conditions.
4. Recognizes presence of false lift.
5. Lifts off and acts decisively so as to clear the obstacle safely.

C. TASK: APPROACH TO LANDING

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of an approach to landing.
2. Considers the wind conditions, landing area, obstructions, and surface, and selects the most suitable touchdown point.
3. Stows loose articles and secures equipment, as appropriate.
4. Ensures that each occupant is thoroughly briefed and positioned properly in accordance with landing conditions.
5. Check fuel tanks for quantity and selection and completes an appropriate checklist.
6. Establishes the appropriate approach profile and rate(s) of descent.
7. Makes a timely decision to abort the approach, if necessary.

D. TASK: STEEP APPROACH TO LANDING

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a steep approach to landing.
2. Selects a landing site relative to wind speed and direction.
3. Briefs occupants and secures equipment.
4. Uses vents and burner controls properly to land balloon and control ground travel.
5. Exhibits timing, judgment, and control throughout the approach and landing.
6. Aborts landing, if requested by examiner.

E. TASK: NORMAL LANDING

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a normal landing.
2. Prepares vent/deflation system for use.
3. Touches down within the selected area or aborts the landing and ascends, if requested by examiner.
4. Uses burner controls and vent/deflation system properly to stabilize balloon on landing.
5. Stabilizes balloon prior to occupants exiting.

F. TASK: HIGH-WIND LANDING

NOTE: If a high-wind condition does not exist, the applicant's knowledge of this TASK shall be evaluated orally.

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a high-wind landing.
2. Ensures a thorough briefing to include positioning of occupants and securing of equipment.
3. Identifies hazards associated with a high-wind landing.
4. Selects a landing site appropriate for high-wind conditions.
5. Prepares vent/deflation system for use.
6. Uses burner controls and vent/deflation system to land the balloon and control ground travel.
7. Touches down within the selected area or aborts the landing and ascends, if requested by examiner.
8. Extinguishes pilot lights and shuts off fuel, as appropriate.

VIII. AREA OF OPERATION: PERFORMANCE MANEUVERS

A. TASK: ASCENTS

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of ascents.
2. Transitions from level flight to ascent, as specified by the examiner.
3. Ascends at a specified rate, ± 50 feet (20 meters) per minute.
4. Transitions from ascent to level flight at an altitude specified by the examiner, ± 50 feet (20 meters).

B. TASK: ALTITUDE CONTROL (LEVEL FLIGHT)

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of altitude control.
2. Recognizes vertical movement.
3. Maintains equilibrium by smooth use of burner controls.
4. Uses instruments to assist in altitude control.
5. Maintains assigned altitudes, ± 50 feet (20 meters).

C. TASK: DESCENTS

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of descents.
2. Transitions from level flight to descent, as specified by the examiner.
3. Descends at a specified rate, ± 50 feet (20 meters) per minute.
4. Transitions from descent to level flight at an altitude specified by the examiner, ± 50 feet (20 meters).

D. TASK: RAPID ASCENT AND DESCENT

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of a rapid ascent and descent by explaining:

1. Situations requiring use of a rapid ascent and descent.
2. Exceeding manufacturer's limitations.
3. Potential problems with envelope distortions.
4. Time and altitude required to recover from a rapid descent.
5. Reasons for monitoring temperature control during a rapid ascent and descent.

E. TASK: CONTOUR FLYING (LBH)

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of contour flying.
2. Uses controls properly to maintain the altitude desired based on appropriate clearance over terrain, obstacles and consistent with safety.
3. Considers effects of wind gusts, wind shear, thermal activity and orographic conditions.
4. Avoids overburning and overventing.
5. Divides attention between balloon control, ground track, and visual scanning.

F. TASK: HIGH ALTITUDE FLIGHT (LHG)

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of high altitude flight by explaining:

1. Regulatory requirements for use of oxygen.
2. Physiological effects of high altitude flight.
3. Effects of high altitude on fuel system and performance.
4. Density altitude and its effects on flight characteristics.
5. Difficulties associated with altitude control.

G. TASK: OBSTACLE AVOIDANCE (LBH)

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of obstacle avoidance by explaining:

1. Importance of timely recognition of obstacles, particularly powerlines.
2. Techniques that can be used to avoid these obstacles.
3. Proper procedures to be used if collision is imminent.

H. TASK: TETHERING (LBH)

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of tethering by explaining:

1. Recommended procedures to include number, strength, and location of lines in accordance with flight manual.
2. Size of area required, considering wind conditions and obstructions.
3. Effects of false lift and wind gusts.
4. Importance of briefing ground crew on procedures, to include crowd control.

I. TASK: WINTER FLYING

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of winter flying by explaining:

1. Fuel pressure concerns and proper methods of pressurizing fuel tanks.
2. Equipment and preparation necessary for cold temperature operations.
3. Added concerns for fuel vaporization, leaks, and/or fire risk.

J. TASK: MOUNTAIN FLYING

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of mountain flying by explaining:

1. Proper preparation, equipment, and survival supplies necessary for flight over mountainous terrain.
2. Availability of and accessibility to landing areas.
3. Recognition of cloud formations and descending air currents on the leeward side of mountains as evidence of possible turbulence.
4. Caution required regarding windshear encounters and possible rapid weather changes.

IX. AREA OF OPERATION: NAVIGATION

TASK: NAVIGATION

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of navigation.
2. Identifies airspace and altitude restrictions (if appropriate).
3. Identifies landmarks by relating surface features to chart symbols.
4. Verifies balloon's position at all times.
5. Manages fuel properly.
6. Determines duration of the flight, considering—
 - a. availability of suitable landing areas.
 - b. fuel consumption.
 - c. wind and other atmospheric conditions.
 - d. obstacles.
7. Notes differences between planned flight and the actual flight.

X. AREA OF OPERATION: EMERGENCY OPERATIONS

A. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of systems and equipment malfunctions, appropriate to the balloon used for the skill test, by explaining recommended pilot action for:

1. Pilot light flameout or failure.
2. Blast valve failure.
3. Fuel exhaustion.
4. Propane leak and/or fire.
5. Any other malfunction that may occur.

B. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of emergency equipment and survival gear, appropriate to the balloon used for the skill test, by explaining:

1. Location and purpose.
2. Method of operation or use.
3. Equipment appropriate for operation in various climates and types of terrain.

C. TASK: WATER LANDING

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of a water landing by explaining:

1. The emergency conditions under which water landings are necessary.
2. Consideration for wind effects and water current.
3. Preparation required for contact with water, to include briefing passengers.
4. Procedure to be used after water contact.

D. TASK: THERMAL FLIGHT

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of thermal flight by explaining:

1. Conditions that can cause thermal activity.
2. Recognition and effects of thermal activity on balloon flight.
3. Procedures that can be followed when encountering thermal activity.

XI. AREA OF OPERATION: POSTFLIGHT PROCEDURES

A. TASK: RECOVERY

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of a recovery.
2. Coordinates recovery with landowner, as appropriate.
3. Supervises ground crew during recovery, including vehicle and spectator control.
4. Ensures importance of minimizing property damage.

B. TASK: DEFLATION AND PACK-UP

Objective. To determine that the applicant:

1. Exhibits commercial pilot knowledge by explaining the elements of deflation and pack-up.
2. Ensures the fuel system is secure.
3. Deflates envelope properly, considering wind conditions and obstacles.
4. Disassembles envelope and basket components, as appropriate.
5. Packs and stores envelope, basket and components, and fuel system, as appropriate.
6. Performs satisfactory postflight inspection.
7. Completes an appropriate checklist.

C. TASK: REFUELING (LBH)

Objective. To determine that the applicant exhibits commercial pilot knowledge of the elements of refueling by explaining:

1. Physical properties of propane.
2. Propane cylinders and related parts.
3. Safety factors, to include ventilation.
4. Danger of explosion and burns.
5. Moisture contamination.
6. Proper method of filling cylinders.

APPENDIX 1
TASK VS. SIMULATION DEVICE CREDIT
RESERVED