МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

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АННОТИРОВАНИЕ И РЕФЕРИРОВАНИЕ ТЕКСТОВ ПО АВИАЦИОННОЙ ТЕМАТИКЕ

(АНГЛИЙСКИЙ ЯЗЫК)

Часть 2

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Целью данных методических указаний является развитие и совершенствование навыков чтения аннотирования и реферирования текстов по авиационной тематике.

Содержит аутентичные тексты на английском языке по актуальным проблемам современной авиации из оригинальных источников. Обширные тематические материалы и система заданий дают студентам возможность совершенствовать речевую компетентность на английском языке, развивать логическое мышление и анализировать информацию.

Методические указания предназначены для студентов 1 и 2 курсов I – III факультетов.

UNIT 1

An-124 – the WORLD'S LARGEST AIRCRAFT

Vocabulary: performance, appearance, capability, to haul, payload, to achieve, cross-section, advanced wing section, fly-by- wire system, fixed-Incidence tailplane, composite material, consumption, hold, slot, slat, to smooth, vortex generator, to swing, fence, to tilt, to suspend, lobe, failure, range.

Exercises:

I. Read the text and mark the paragraphs which contain the information on the subject.

II. Answer the following questions:

1. What are the capabilities of the An-124?
2. What payload can this plane carry?
3. What are the most important design features of the aircraft?
4. How can the An-124 be controlled?
5. How is the weight reduction achieved?
6. What are the wing modifications?
7. Is the landing gear construction of the An-124 similar to that of the C-5?
8. How are the passengers accomodated?
9. What routes is the An-124 designed for?

III. Analyze the information and make a summary in Russian.

IV. Retell the summary in English.

The An-124 is significantly more advanced in its technology and has a much better performance than anyone expected. The An-124 is clearly a replacement for the An-22 Antea, itself the largest aircraft in the world at the time of its appearance. The An-124 is due to enter service early next year. The An-124's capability in this area appears significantly superior to that of the C-5 – "an older design". The An-124 appears to be able to haul 25,000 lb (11,000 kg) more than the US aircraft over the same distance, or to carry a similar payload 500 nmi (900 km) farther than the C-5. The Soviet type can carry a 25 per cent greater maximum payload and has a significantly larger cabin cross-section. Moreover, all this has been achieved within a maximum take-off weight.

One of the most important feature of the design is an advanced wing section, with the flat top and undercut trailing edge. Such a section makes it possible to design a wing of greater span for a given weight, while providing more internal volume for fuel.

Important weight reductions also result from the use of artificial stability, provided by a four-channel analogue fly-by-wire system. There is a mechanical back-up in the pitch axis, but this is restricted in authority through the use of very high stick forces. The result is that the An-124 can be effectively controlled with a relatively small, low-set, fixed-incidence tailplane, further reducing structural weight, drag and system complexity.

More weight is saved[1] by using 12,125 lb (5,500 kg) of composite material. While this is not used for the primary structure or the control surfaces, it is used for much of the rest of the aircraft.

The attention to weight is also apparent in the cabin. Both weight and fuel consumption are cut by the simple but unusual expedient of accepting[2] a lower pressure differential in the main hold (0,25 bar/3.6 lb/in^2) than in the upper cabins. This reduces fuel burn.

In detail, the An-124 is clean and straight-forward. The wing is with full-span slats and simple slotted Fowler flaps in three spanwise sections on each side. There is a small slot built into the outer end of the two inboard flap sections on each side to smooth the flow between them. The wing is completely free from vortex generators and fences, a particularly marked contrast to previous large Soviet aircraft.

Like the C-5, the An-124 features a complex landing gear which allows operations from semi-prepared surfaces and moves the aircraft vertically for loading. The An-124 gear features twelve independent twin-wheel members: two forward-retracting nose units, and five main gears on each side. Each main gear unit swings upwards and inwards. The An-124 is designed to operate from hard but semi-prepared surfaces such as the packed-tundra runways of Siberia.

On the ground, the suspension of each main unit can be raised or lowered under central control to tilt the aircraft for loading. Loading is also facilitated[3] by the quartet of 5-tonne electric cranes travelling on rails in the cabin ceiling.

Power for the An-124 is provided by four Lotarev D-18T turbofans.

The onboard data and diagnosis system. Based, on a digital computer, this is a multi-purpose device which monitors systems, detects and diagnoses failures in flight, and can be used to calculate the most efficient way to load the aircraft.

2800 знаков

Notes:

1) is saved - (зд.) сэкономлено;
2) to accept - принимать, допускать;
3) to facilitate – облегчать.

UNIT 2

DORNIER 228

Vocabulary: power-to-weight ratio, improvement, fatigue test, to claim, to obtain, complication, push-rod, friction, to droop, centring spring, circuit, trimming, to reinforce, stall, substantial, bus, inverter, boost pump, cut-off, cross-feed switch, nozzle, steering, throttle, flat-rated, torque limit.

Exercises:

I. Read the text and answer the questions:

1. What does the text deal with?
2. What is described in detail?
3. What is considered briefly?
4. What is the key idea of the text?

II. Make a summary in English and Russian using the anwers on the questions.

III. Read the text and mark the paragraphs which contain the information on the subject. Then, answer the questions:

1. Is Dornier 228 settled into service?

2. What makes Dornier 228 to move into higher weights without serious loss of performance?
3. What improvements are being introduced?
4. The tests have shown that the operating weight can be yet further increased without modifications, haven't they?
5. Are the flight controls all mechanical with minimum complications?
6. What are the ailerons provided with?
7. What are the elevators provided with?
8. What is the rudder controlled by?

IV. Analyze the information and make a summary in Russian.

V. Retell the summary in Englis.

The Dornier 228 is now well settled into service[1] and orders for 40 aircraft have been received. 24 of them have been delivered. The production line is running at two to three aircraft a month. In addition, India has signed up for 150 228s, eight of which will be delivered complete, 16 in kit form[2] and the rest will be made under licence.

The TNT wing is paying off in offering good short-field performance combined with high cruising speed and excellent rate of climb. In fact, the new wing and the high power-to-weight ratio of 8.8 lb/HP are already allowing Dornier to move into higher weights without serious loss of performance.

Certification

A variety of improvements are already being introduced. First of all, the landing weight has been increased from 5,500 kg (12,125 lb) to the same level as maximum take-off weight, 5,700 kg (12,630 lb), so that minimum stage length is no longer determined by the landing weight.

Dornier's fatigue tests have now reached more than 180,000 flight cycles and the company claims it can now guarantee four lives of 30,000 flight cycles. These tests have shown that the operating weights can be yet further increased without modifications and Dornier should now be obtaining German certification for an increase in take-off weight to 5,980 kg, a landing weight of 5,750 kg and a zero-fuel weight of 5,590 kg. It is now clear that weight increases beyond those already mentioned could be achieved with only minor[3] airframe modifications.

Dornier claims that the 228 requires 0.71 maintenance man-hours (that is, actual hands-on time), per flying hour, including 0.1 hours for the engines.

Systems

The 228 is a simple aircraft, even to the extent of being certificated for single-pilot operation for those who want it. The flight controls are all mechanical with minimum complications. Elevator and ailerons are controlled through push-rods which make them light and free of friction. The ailerons droop with the flaps. A light centring spring in the aileron circuit can be offset by an electric motor to apply aileron trim.

The elevator circuit contains a spring giving a permanent nose-down effort to reinforce natural static stability. The surface is mounted on the movable, tailplane, whose electric actuator motor is controlled from conventional twin-gang switches on the aileron wheels. The tailplane motor will stall when the out-of-trim effort becomes equivalent to a pull or push force of 110 lb (50 kg). British certification has required automatic trimming when the flaps are lowered or raised, because the trim change caused by the first five degrees of flap is substantial and in the opposite direction to that expected. The rudder is controlled by cables and has a plain, mechanically actuated trim tab.

The electrical system has two engine-driven generators, two static inverters, two batteries, essential and non-essential buses and an external supply. The fuel system has two boost pumps, two engine cut-offs and a cross-feed switch. The two main tanks in each wing are interconnected and transfer into a feeder tank behind each engine nacelle. Normal refuelling is over-wing, but a low-mounted, single-point pressure refuelling nozzle is optional.

The flaps are electrically operated. A self-contained hydraulic system operates the undercarriage, wheel-brakes and nose-wheel steering. Pressure is raised to about 3,000 lb/in^2 (210 bar) by an electric pump as soon as the gear lever is selected down. The system is switched off as soon as the gear is retracted, but some pressure is stored in an accumulator. There is a manual pump for emergency undercarriage lowering. The aircraft can be taxied with brakes and asymmetric throttle if nosewheel steering fails.

The Garrett TPE331-5 engines are flat-rated at 715SHP and top temperature and torque limits are automatically controlled. The full power is maintained at up to ISA +18° at sea level or up to 7,300 ft in ISA. The propellers normally turn at just under 1,600 rev/min. The propeller pitch is also automatically adjusted to prevent reverse thrust if an engine loses power.

The standard flight control system is the King KFC-250, which has an integrated flight director.

<u>At the controls</u>

Pilots should like this aircraft. It has that quality of smooth responsiveness and excellent control harmony which is a trademark of German aircraft design. The stalls are absolutely classically pure and single-engined handling seems to be quite viceless.

3700 знаков

<u>Notes</u>

1) to settle into service – ввести в эксплуатацию;
2) in kit form – (зд.) комплектом;
3) minor – незначительный;
4) smooth responsiveness – плавная управляемость;
5) viceless – safe.

VI. Make a written translation of the text, using the following words. You have 30 minutes.

1) to offer – предлагать;
2) to be confident – быть уверенным;
3) to mill – выделывать;
4) spanwise – по размаху;
5) stiffener – элемент жесткости, подкрепляющий элемент;
6) wing box - коробка крыла;
7) billet – заготовка;
8) missive – ракета.

T e x t

The 228 is being offered to India for licence production, in competition with the de Havilland Canada Twin Otter and CASA C-212. Dornier is confident that it has something extra to offer: the chance for India to get involved at the beginning of a project with significant advances in aerodynamic and manufacturing technology. Dornier has made great efforts to stay in the forefront of manufacturing technology and the techniques developed for Alpha Jet manufacture have been applied to the 228, and taken a stage further. Thus, Alpha Jet wing panels are integrally milled with spanwise stiffeners only but on the 228 wingbox the skins are milled with integral ribs and stringers. Dornier's experience with complex, numerically-controlled machining tasks has won it an Airbus subcontract for the production of A310 flaptracks, which are milled from solid titanium billets. The company is keeping up with composite materials technology, too, and is studying the use of Kevlar or carbon-fibre composite for the 228 wing secondary structure.

Advanced production techniques and materials are not used for their own sake, however. The aim is to reduce production costs by more efficient use of labour, which is expensive in Germany.

For a company of Dornier's size, the scope of its activity is astonishing – being little less than that of the much larger MBB. Military aircraft, civil aircraft, space activities, rotorcraft (unmanned drones) , missiles (the private venture Tirailleur study), and remotely-piloted aircraft all fall within the company's orbit. In addition, Dornier is involved in energy (solar, wind and nuclear), information systems, construction materials, urban transport systems, medical technology and textile machinery (the textile machinery division, Lindauer Dornier, operates in a highly competitive industry and accounted for 14 per cent of the group's turnover).

Dornier will only enter a new field if it already has the basic capability in its existing activities; and is not pursuing advanced technology as an end it itself – "we aim to produce market-oriented products, not toys"

1800 знаков

VII. Suggest the title for the text and retell it in Russian.

VIII. Translate the retell into English.

UNIT 3

TECHNOLOGY FOR TOMORROW'S BUSINESS AIRCRAFT

V o c a b u l a r y: to concern, to get away, riveting, bonding, to incorporate, carbon fibre material, stress, to persevere, certification program, residual strength, winglet, canard foreplane, transonic, camber, tunnel test, sweep, spin, boundary layer.

Exercises:

I. Read and translate the title of the text.

II. Look through the text and determine, what this text is about.

III. Point the problem of the text. Correlate this information with a wider area of knowledge.

IV. Read the text one more time. In each paragraph find facts which characterize something new in constructing planes and using materials.

V. Find in the text or suggest the main conclusion using the information on the subject.

VI. Express your attitude to the information, point out the originality and topicality of the topic.

VII. Tell orally or in a written form:

1. What is the text about?
2. What is described in detail?
3. What is given in short?
4. What is the key idea of the text?

VIII. Make a summary and translate it into English.

Structures

As far as structures are concerned, the manufacturers are going to try to get away from the traditional methods of working with metal. There was first the move from riveting to bonding, followed by the transfer from mechanical to chemical milling. The next move, which has already begun and which is going to increase, is towards composite materials. Their intensive use should produce a reduction in the empty weight of an aircraft of about 20 per cent. Each part made of composite material is 20 to 30 per cent lighter than the same part made in metal.

Several types of business aircraft already incorporate various parts made of Kevlar, glass, carbon or other fibre composite materials. This is especially true for the Canadair Challenger, and development managers of this Canadian company told INTERAVIA that while Kevlar would continue to be used for the manufacture of secondary structures, increasing attention was going to be paid in the future to the possibilities offered by carbon fibre materials, which can be used to produce components subjects to high stresses and which are still made of metal today. There will be a resultant simplification of the manufacturing process and, as a result, a reduction in cost. This is a point of view, which is currently developing a wing box to be tested on the Falcon 10 as part of a research program into the application of carbon fibres. This program is being carried out jointly with Aerospatiale. In spite of a number of difficulties, which have recently arisen in the program, the two French manufacturers have decided to persevere as they are convinced that they will make definite progress in the medium term.

Another project which should not be omitted is the Lear Pan, which is successfully continuing its test flights. Manufactured almost completely from composite materials based on carbon fibre Kevlar, this aircraft has a planned minimum service of 15.000 hours and typifies one of the objectives of the whole industry, which is waiting for the results of its certification program with some interest, and in particular, the solution of the problem of residual strength after damage.

Another problem which arises in the production of aircraft using parts made of carbon fibre is testing, not of the material itself but of the finished part. Unlike metal components, it is not sufficient to use statistical methods of checking. It is necessary, to carry out a quality check on every part. In addition, the manufacturers will have to develop methods of checking the whole production process, step-by-step[1], before they can really launch large-scale composite production of primary structures.

Aerodynamics

Innovation in aerodynamics is likely to produce the greatest changes in the external appearance of future light and business aircraft. In the course of the past few years, winglets have gained considerable ground[2], and this tendency will probably continue; likewise we may see the appearance of new canard foreplanes and other aerodynamic devices, as well as the development of new aerofoil sections or wing shapes. In this connection, one of the preoccupations[3] of the design departments is to develop a transonic wing with drag at least 20 per cent lower than current wings, within the next five or six years. Several thicknesses and cambers are being examined and, from the first wind tunnel tests, it seems that the move is towards thicker sections than those used at present (relative thickness exceeding[4] 15 per cent at the root) as well as towards wings with high aspect ratios (more than 10) and increased sweep (35 per cent and more).

Canards are the subject of some controversy with some designers maintaining that they represent an ideal aerodynamic solution while others remain more sceptical and feel that this still needs to be proved. NASA, which is currently carrying out tests and performance measurements with a modified Varieze aircraft, has already established that the foreplane appears to be a potentially useful device (improving safety by eliminating nearly all risk of stalling and going into a spin).

The only limitation is that, in the case of aircraft with a high maximum weight, to keep the centre of gravity in the correct position, the installation of a foreplane requires a reduction in the dimensions of the wings. As a result, the capacity of the wings to carry fuel is reduced appreciably[5].

As for the so-called active techniques used in aerodynamics, such as control of the boundary layer or the various methods of over-wing blowing, some manufacturers believe in these very strongly, and it is certainly not likely that NASA is going to, contradict them, bearing in mind that the agency has launched a research project for a four-jet business aircraft with over-wing blowing.

4000 знаков

Notes:

1) step-by-step – постепенный;
2) to gain ground – (зд.) распространять(ся);
3) preoccupation – забота;
4) to exceed – превышать;
5) appreciably – considerably, greatly.

UNIT 4

THIS COMPUTERIZED COCKPIT FOR THE ONE-MAN CREW

Vocabulary: fighter, keyboard, guidance, hardware, tuning, software, data highway, frequency, navaids, to select, waypoint, to insert, to identify, to ensure, to take into account, descent angle, to fit, execution, to couple (to), beam, altitude, warning, touchdown, beacon, leg, endurance, to estimate, to arrive, manifold pressure, cowl, to disengage, datum attitude, to release.

Exercises:

I. Read the text.

II. Answer the questions:

1. What's the aim of placing the computer on board the plane?
2. Why is the computer used in the one-man crew plane?
3. How many programs are necessary for the navigation?
4. What extra operations may be performed by the computer?

III. Make a plan of retell of the first and second parts of the text.

IV. Make a summary in English and Russian.

With the aid of computers, data highways, some relatively straightforward hardware and a year or two of programming, you can revolutionize life in the general aviation cockpit. It has already been done in fighters and airliners. Now it is the turn of the kind of light aircraft that a private pilot is likely to fly solo on airways. Virtually[1] every pre-flight and in-flight job can be reduced to a keyboard routine and an integrated computer system can be organized to produce information, guidance and control in a volume altogether disproportionate to the amount of hardware used.

The reason behind the NASA exercise, called Demonstration Advanced Avionics System (DAAS), is that the general aviation pilot is going to have to live in a more and more complex airspace system, but may not have room or money to install all the new equipment which would make this safe and effective. Present moves towards reducing cockpit work-load are efforts to automate radio tuning and to integrate the autopilot and flight director. But NASA believes that modern computers, data highways and software, together with shared displays and controls, allow far more productive use of the basic information already available in light twins. Particularly, the navigation system can be made more responsive to flight planning requirements, and the navigation instructions in both horizontal and vertical modes can be passed directly to the autopilot.

In the DAAS system, the locations, call signs, frequencies and elevations of a set of VORs and DMEs are stored in the navigation computer and the computer will automatically select whichever of the navaids is best suited to[2] define a succession[3] of geographical waypoints inrerted by the pilot. DAAS will cause the navaids to be tuned automatically at the right moment. It will constantly compare the signals from the navaids by Kalman filtering to identify the best signals and ensure that they are adequate for navigation, and it will tell the pilot which aid is being used. Very little additional hardware is needed to do this job.

The navigation system can also take into account the safe or flight-planned altitude over the stored geographical area and can calculate descent angles required when changing altitudes. Hot fitted in DAAS, but foreseeable, is an autothrottle to automate the execution of climbs and descents. The DAAS system is designed to couple to ILS and to capture the localizer beam from acute[4] angles. With a radio altimeter, the system could even be extended to automatic landing.

Extra help

The kind of extra help DAAS gives the pilot is that it will decide from the navaid frequency whether it should treat the appropriate altitude input as an airways minimum descent altitude at which it will level the aircraft off and sound the warning, or as a decision height, at which it also sounds a warning, but allows the aircraft to continue down towards touchdown. It will also automatically generate intermediate[5] waypoints close to good beacons along the line between the starting and finishing waypoints of a long leg.

All the required information is inserted on individual "pages" in the display system of the main computer. The pilot selects from a "menu" of pages by pressing buttons beside the display and can select information for display on a separate key-board.

On two "flight status" pages, DAAS will, whenever asked, list true airspeed, groundspeed, wind speed and direction (calculated from TAS and groundspeed), percentage engine power (taken from engine indications), fuel remaining in pounds and in minutes of endurance, distance and time to next waypoint and estimated time of arrival overhead. Greenwich Mean Times[6] is preset in the system.

On the cruise performance page, DAAS tells the pilot his propeller rev/min, manifold pressure and percentage power, fuel flow, miles/lb of fuel, TAS, groundspeed, ETA and fuel required to the next waypoint.

The checklist display is already a familiar feature in weather radars, but DAAS goes a long way further. After the pilot has inserted take-off gross weight and fuel load and detailed the location and weight of people and other items on board, DAAS tells him his centre of gravity location. This can be transferred to the Initial departure page and becomes available for use during cruise control. Similarly, DAAS will work out take-off speeds, normal and single-engined rates of climb and airspeeds, accelerate-stop distance, ground run and distance to 50ft for the actual aircraft weight, airfield elevation and temperature.

The DAAS warning system checks and warns of aircraft configuration items such as gear, flaps, doors, cowl flaps, trim settings and fuel pump settings, and also monitors that engine settings are within limits. It warns if low and high airspeed limits are reached and provides full altitude alert[7] service. Conventional warning lights and sounds are supplemented by written messages in the electronic display.

The autopilot is actually based on a digital King general aviation system. Its main additional mode, apart from being integrated with the navigation system, is control wheel steering. The pilot can fly manually without disengaging the autopilot and the aircraft is brought back to datum attitude or settles at a new height when the controls are released.

4500 знаков

Notes:

1) virtually – in fact;
2) to suit to – подходить к... ;
3) succession – последовательность;
4) acute angle – острый угол;
5) intermediate – промежуточный;
6) Greenwich Mean Time (GMT) – среднее время по гринвичскому меридиану;
7) alert – (зд.) быстрый.

UNIT 5

CESSNA CARAVAN I PLIGHT ANALYSIS

Vocabulary: avionics, de-icing, plywood, bulkhead, cargo net, canvas divider, load shift, type-rating, boot, twin-sparred, strut, average, slab, spoiler, adverse yaw, to handle, ground clearance, propeller clearance, blade, to deflate, ambient, inlet, lever, evaluation, column force, to pitch nose-down, to pitch-up.

Exercises:

I. Read the text. Pay attention to the description of the systems of plane control.

II. Answer the questions:

1. Is the described aircraft a passenger one or has it a military application?
2. What equipment is it provided with?
3. Is it possible to use the Caravan I for cargo carrying?
4. What are the peculiarities of the wing structure?
5. What is the engine operation characterized by?
6. What are the handling characteristics of the plane?
7. When does the nose-down reaction occur?

III. Determine the theme of each paragraph.

IV. Write down the theme of each paragraph to get the logical plan of the text.

V. Think about the plan and combine it in a logical order.

VI. Make a summary.

It is the third production Model of the series of utility aircraft, 208 Caravan I, and contains optional avionics and equipment, including full de-icing, oxygen and a refueling ladder[1] stowed in the back.

208A a special version – will have no windows aft of the flight deck, and a three-compartment glass-composite cargo pod attached under the fuselage. The floor will be reinforced with plywood panels and the rear bulkhead will be replaced by a rollup canvas divider. Cargo nets are fitted and steel panels will protect the pilots in case the load shifts. The 208A have a full set of King avionics, including an autopilot and a weather radar with its antenna unit mounted in the right wing. Plight instruments are provided for a co-pilot. Because the aircraft weighs less than 5,670kg, pilots do not need a type rating, but Cessna offers training as part of the sale.

The two-piece over-under cargo door, measuring 124.5 cm x 127 cm was designed for Federal Express and Cessna will now develop a door which can be opened in flight, or left open or removed before flight to permit air drops of parachutists or cargo.

Though based on the NACA 23000 aerofoil, the Caravan I wing is tapered in chord and thickness and carries powerful slotted flaps. Though twin-sparred, each wing is only supported by a single strut at the forward spar and this is large enough to justify a boot when de-icing is fitted. At $128 kg/m^2$, the wing loading is average for the gross weight, but the power loading, at 5.5 kg/SHP would be rather high for a short-field aeroplane if the wing were a plain NACA 23000 slab. Wing thickness tapers from 17 per cent at the root to 12 per cent at the tip and the aspect ratio is 9,5 : 1. The use of slot-lip spoilers[2] to assist the ailerons makes it possible to occupy much more of the trailing-edge with flap and probably reduces adverse yaw, which normally be-devils[3] the handling of high-wing aeroplanes.

Cessna adopted a nosewheel landing gear because more pilots are familiar with it, for passenger comfort on the ground and to have a level cargo floor. Consequent disadvantages are reduced ground clearance for the 254cm-diameter, three-blade propeller and complications when operating on skis, which Cessna is also developing. Propeller clearance is at least 17.15cm with the standard nosewheel tyre deflated and the strut compressed, but there has been one propeller ground strike.

The Pratt & Whitney Canada PT6A-114 engine, flat-rated at 600 SHP in ambient temperatures up to 58°C, is canted down five degrees and offset to the right to minimize torque effects, and this also improves forward vision in the climb. The engine inlet, located on the left side of the nose, passes air through a particle separator which is controlled by a cable and lever inside cockpit.

Engine operation during the evaluation flight was relatively smooth and response was quick. Because the engine is flat-rated, both temperature and torque limits have to be observed but, on this day, temperatures stayed well within the normal range. Maximum propeller rev/min[4] are 1,900 but, in cruise, they are set at about 1,750. The torque limit of 1,685 lb/in^2 [5] tended to be reached rather quickly and, above 1,500 lb/in, the needle almost jumped to, or past the limit, making over-torquing a ready possibility. Below 10,000 ft, limiting torque was reached with the power lever only half way through its travel.

Approaches were flown at 1,000 lb/in^2 torque until the start of descent, where 600 lb/in^2 was used at all flap settings, giving a steady 500 to 600 ft/min descent rate. Throughout the evaluation flight, fuel consumption stayed 10 to 20 lb/h below book values, and indicated speeds, on a 10°C day with barometer setting of 29.84in Hg, were two to four knots[6] below book[7]. Others doing similar demonstrations reported slightly higher-than-book speeds and fuel consumption figures.

The Caravan I is one of the bigger 7.3001b (3,300kg) aero-planes. But it felt stable in roll, handled well generally, offered good visibility over the nose and sideways ahead of the wing and, for the most part, felt like a somewhat lighter aircraft, even at or near maximum gross weight.

From a handling standpoint, the aircraft required no unusual I column forces except when extending flaps or applying power rapidly when trimmed hands-off in level flight. The plane had a tendency to pitch nose-down with addition of flaps, but during the flight, adding flaps in level flight brought a rapid pitch-up and substantial forward force on the control yoke was necessary to regain straight and level flight. The nose-down reaction probably occurs when the engine is at low power. The need for strong nose-down control probably accounts for the vortex generators on top of the elevators.

The aircraft is designed for long overhaul life, and for operation by relatively inexperienced pilots. In that sense, it may be a success, but its market is filled with older airplanes, more or less designed for the same job.

4100 знаков

Notes:

1) refuelling ladder – топливозаправочный шланг;
2) slot-lip-spoiler – щелевой интерцептор консоли;
3) to be-devil – (зд.) ухудшать;
4) rev/min (revolutions per minute) – об/мин;
5) lb/in (pounds per square inch) – фунт/кв. дюйм;
6) kn (knot) – (морской) узел – 0,514444 м/сек;
7) below book – (зд.) ниже нормы.

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Часть 2

Методические указания

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