

8. Technical data multipurpose tactical aircraft F-16 Block 70/72 and JAS-39 C/D Gripen

8.1. JAS-39 C / D Gripen

This version of the aircraft is currently on top of their options. Since the company SAAB plans in the future start mass production version of E/F, the modernization version C/D does not count.

The aircraft JAS-39 C/D Gripen is compared to the F-16 Block 70/72 load of less equipment, less the capacity of the fuel, less tactical range, a lower endurance in air, lower climbing ability and a significantly lower acceleration. The aircraft is older avionics (radar older generation, early warning and protection elements of the aircraft), which no longer meets the needs of current and future operation of air operations.

Acquisition of aircraft JAS-39 C/D Gripen by the Slovak Armed Forces of tactical and technical point of view did not constitute a significant modernization of the change, because it can be stated that there was an exchange of old aircraft (MiG-29) for indeed new but powerful aircraft (the technical maximum possibilities, without further development). Airspace would be protected to a limited extent, since it is not possible to simultaneously operate one aircraft against air and ground targets, or would need to use more aircraft simultaneously. Due to the limited capacity of equipment and fuel (and the related lower-range tactical and less perseverance in the air) would not be possible to maintain air superiority over a longer period.

2.8 F-16 Block 70/72

Plane F-16 Block 70/72 with elements of integrated avionics, which is used in aircraft 5th generation is one of the most powerful multi-purpose aircraft at present. Extreme load equipment, the possibility of hundreds of variants underslung weapons, fuel capacity, tactical range and endurance in the air, acceleration and gradeability, advanced avionics and advanced targeting, weapons and imaging systems make it ideal for the management of operations to be successful and effective at the same time. The aircraft in addition has the most advanced security features Auto GCAS, which can save the aircraft and crew at indisponovanosti crew.

The possibility that the plane F-16 Block 70/72 provides, it is virtually a new aircraft since the aircraft F-16 Block 70/72 offers high combat value and will still be several decades more than balanced adversary aircraft 5th generation.

Acquisition of aircraft F-16 Block 70/72 by the Slovak Armed Forces represented a significant step forward and fundamentally would extend eligibility tactical air when exposed to the air and on the ground (sea) targets. Airspace could be protected more effectively while countering air and ground targets. At the same time it will be possible to maintain the domination of the airspace over a longer period.

Table. 2 Basic tactical - technical data of aircraft

1.1.1	F-16 Block 70	JAS-39 C
Wingspan	10 m	8.4 m

Length	15.1 m	14.8 m
Height	4.9 m	4.5 m
Empty weight of the aircraft	9 720 kg	7 042.5 kg
Maximum take-off weight	21 600 kg	13 888 kg
The maximum resistance of the equipment and fuel to the outer hinge points	7 350 kg	4 725 kg
The amount of fuel in internal tanks	4 715 kg	2 380 kg
The number of attachment points for gear	9	7

Size aircraft (wingspan / length / height):

Aircraft have almost identical dimensions and the advantage of both is that their detection with the naked eye during air combat maneuvering at close distances is difficult. Effective radar reflector of both aircraft is similar to what is important in the conduct of air combat in the border of visual contact (BVR).

The maximum take-off weight / load bearing capacity of equipment and fuel:

The greater load of the arms 7 350 kg (1.5 times compared to the aircraft JAS-39) enables the pod plane F-16 and also plenty of different types of ammunition. The aircraft can thus be applied simultaneously (during one mission) against air and against ground (maritime) a view. Greater additional carrying capacity fuel tank makes aircraft F-16 greater range and endurance in the air and thus effectively protect the airspace of the Slovak Republic or act in the performance of tasks international environment. F-16 aircraft is equipped with conformal fuel tanks positioned on top of the wing root, which significantly increases the range and endurance of the aircraft without causing a reduction in the number of attachment points. Conformal tanks while preserving the performance characteristics of the aircraft.

The amount of fuel in internal tanks:

The plurality of fuel in internal tanks of an aircraft F-16 (1.96 fold compared to the aircraft JAS-39). It allows greater tactical range and endurance in the air while using all available attachment points.

The number of attachment points for gear:

A larger number of attachment points (9 attachment points compared with 7 aircraft JAS-39) enhances the value of combat aircraft F-16, where it is possible to carry more ammo and act so the more air or land (sea) targets.

Table. 3 Flight Performance Aircraft

	F-16 Block 70	C	JAS-39
The maximum number of Mach at low altitude *	+ 1.2		+ 1.0
The maximum number Mach at high altitude *	+ 2.0		+ 1.4

	FL 500	FL 530
Maximum static ceiling plane	(15 240 meters)	(16 150 meters)
Maximum climb rate	254 m/s (50,000 ft / min)	203 m/s (35,000 ft / min)
Maximum G load	+ 9 g	+ 9 g
Maximum range with auxiliary fuel tanks without refueling	3 940 km / 2128 NM	3 000 km / 1620 NM
Range tactical (combat radius)**	1 570 km / 879 NM	830 km / 447NM
Tactical endurance at a distance of 740 km / 400 NM ***	113 minutes	12 minutes

* Configuration podvážení aircraft: missile air-air (AA)

** Profile: Flight from home base - Departure into space warfare - Return to home base. Underslung configuration aircraft: missile air-air (AA)

*** Profile: Takeoff - Operation in the area of combat operations at a distance of 740 km / 400 NM from home base - Return to home base. Underslung configuration aircraft: missile air-air (AA)

The maximum number Mach:

F-16 aircraft reaches his full network access improved Mach number (a small amount of 1.2/2.0 at high altitude) than aircraft JAS-39 (in a small amount of 1.0/1.4 at high altitude). This parameter, along with acceleration and hill-starting ability is a crucial factor in countering air targets. Larger values of Mach numbers provide shortening capture intruder airspace SR, quickly taking a space countering means of air attack and rapid response in support of ground troops. For countries with less land area (such as SR) is the early detection of intruder airspace key.

Maximum static ceiling of the aircraft:

JAS-39 aircraft is still high availability (FL530 / 16 150 m) over the F-16 aircraft (FL500 / 15 240 meters). Both aircraft are capable of carrying missiles air-air medium-range (AIM120 C-7), which are able to operate against air targets up to FL700 (21 330 m). To identify the objectives in its entirety heights are used in both aircraft trolley containers. In terms of tactical use, the action of the air in order to normally carried out in the FL400 (12 200 meters). In countering land and maritime order but this difference is not important evaluation criterion. Parameter maximum static network access is not a priority when considering the possibility of combat aircraft.

Maximum rate of climb:

F-16 aircraft has a better value for the maximum climbing ability (254 m/s) over the aircraft JAS-39 (203 m/s), an essential factor in the operation of the air targets. Better value climbing ability ensures reducing the time catching violators airspace SR in time of peace (Air Policing within NATINAMDS), or in times of crisis (war).

Maximum G load:

Both aircraft reached a maximum overload + 9 g, which is a standard combat aircraft. Underslung auxiliary tanks lowers the elongation at the maximum of the two aircraft. Plane F-16 but is equipped with conformal fuel tanks, the use of which does not affect the reduction of the maximum overload.

Maximum range / tactical range / endurance:

Plane F-16 has a greater maximum range with auxiliary fuel tanks without refueling (3 940 km / 2 128 NM), equivalent to 1.3 times compared to the aircraft JAS-39 (3 000 km / 1 620 NM). Plane F-16 has a greater combat radius (1 570 km / 879 NM), representing 1.89 times compared to the aircraft JAS-39 (830 km / 447NM). Plane F-16 has a longer endurance in the air while conducting combat operations in the distance of 740 km (400 NM) from home base without refueling in flight (113 minutes), which represents a 9.4-fold compared to the aircraft JAS-39 (12 minutes).

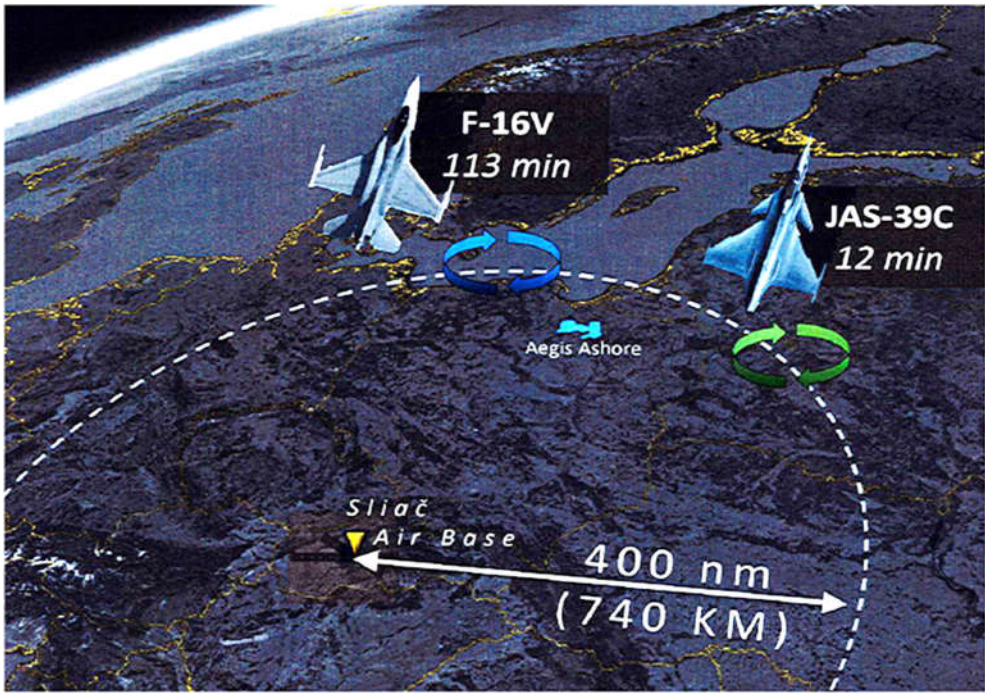


Figure 2: Availability of operational aircraft operation

This parameter is an important factor in the defense of the Slovak territory, because airspace is thus possible to protect more efficiently even with fewer aircraft. At the same time, it is possible to maintain air superiority over a longer period. When assessing the suitability of an aircraft under the influence of the territory of the Slovak Republic this parameter is secondary, but important assessment criteria for the advantageous use of aircraft in foreign operations.

Table. 4 Drive unit

	F-16 Block 70	JAS-39 C
Engine	F110-GE-129D	F-404-GE-RM12
Maximum thrust	129 kN (29,000 lbf)	80 kN (18,000 lbf)
Acceleration *	25.3 seconds (From 0.8 M to 1.2	40 seconds (From 0.8 M to 1.1

Mach)

Mach)

* Aircraft F-16 carries a greater amount of air missiles and ammunition

F-16: 2 x AIM-120, 2 x AIM-9X, 2 x pylon

JAS-39: 2 x missile air-air (unspecified type of missile)

Maximum thrust:

Engine aircraft F-16 has better maximum thrust (129 kN), which represents a 1.6-fold compared with the engine in the aircraft JAS-39 (80 kN).

Acceleration:

The engine of the aircraft exceeds the F-16 aircraft engine JAS-39 in the acceleration, which, in particular, to overcome the speed of sound (Mach > 1.0) exhibits a higher tension.

Better acceleration enables faster reach the required speed (or Mach number) and to ensure shortening capture intruder airspace SR, quickly taking a space countering means of air attack, as well as rapid response in support of ground troops. When an area smaller countries (such as Slovakia) is yet early detection intruder airspace key.

Acceleration has a significant impact in defensive maneuvers in the air against medium-range missiles (AIM-120, R-77, R-27), where the proper and speedy implementation of defensive maneuver decides the survival aircraft in combat. Acceleration is a decisive factor for the action against ground (sea) targets. After the destruction of the target must be swift implementation of defense maneuver and achieve the greatest possible speed in the shortest possible time and escape out of the active field covered by means of air defense.

Table. 5: Equipment and Pods

		F-16 Block 70	JAS-39 C
Gun	mark	M61A1 Vulcan	Mauser BK27
	caliber	20 mm	27 mm
	Stocks of ammunition	511 rounds	120 rounds
Short range air-air (AA) missile	AIM-9	max. 6 pc	max. 6 pc
		AIM-9X / II	AIM-9M-9 (Not part of the offer)
Intermediate range air-air missile	AIM-120	max. 6 pc	max. 4 pieces
		AIM-120 C-7	AIM-120 C-5 (Not part of the offer)
Air-ground (AG) Ammunition		GBU-12, GBU-49, GBU-54, GBU-38	(Not part of the offer)
Pods	mark	AN / AAQ-33	AN / AAQ-28
		Sniper ATP	LITENING III

Number of
pieces

6

(Not part of the
offer)

Cannon:

F-16 aircraft has šest'hlavňovým rotating 20 mm M61A1 Vulcan cannon with a supply of ammunition rounds, and 511 is an effective weapon against air targets, but in particular against ground targets in support of ground forces. The F-16D Block 72 (double version) has a gun and can be included in the standby system (NATINAMDS) without restrictions.

JAS-aircraft gun Mauser BK27 39 has a supply of ammunition rounds, and 120 is an effective weapon against air and against ground targets. A significant deficiency aircraft JAS-39 D (double version) is that it has built the gun and therefore can not be subsumed into standby system (NATINAMDS).

Controlled missile air-air (AA) short-range (AIM-9):

Both aircraft are capable of carrying ammunition guided short-range missile (AIM-9) with infrared samonavedení.

F-16 aircraft is capable of carrying 6 units of AIM-9X / II represents the latest model-driven short-range missiles with infrared samonavedení to destroy airborne targets.

The aircraft JAS-39 is able to use the 6 pcs AIM-9M-9, that an earlier version of missiles. Acquisition of missile AIM-9M-9 is incurring any additional costs. Recent management model AIM-9X / II is the aircraft JAS-39 integrated.

Controlled missile air - air (AA) intermediate-range (AIM-120)

The two aircraft are capable of carrying a controlled rocket munitions medium-range (AIM-120) with an active radiolocation guided.

F-16 aircraft is capable of carrying 6 pcs AIM-120 C-7, which represent the latest model-driven medium-range missiles with active radar guidance system to destroy airborne targets. JAS-39 aircraft is capable of carrying 4 pieces AIM-120 C-5, which represent the older model-driven medium-range missiles with active radar guidance system to destroy airborne targets.

Controlled missiles AIM-120 represent a major element of modern weaponry tactical aircraft. Allows to treat the air targets behind the border of visual contact and reduce the likelihood of loss own aircraft during air combat the visible distance. A greater number of this type of missile enables more efficient management of air operations in the importance of action against multiple air targets. Airspace is thus possible to protect more efficiently even with fewer aircraft. At the same time, it is possible to maintain air superiority over a longer period.

Acquisition of missile AIM-120 C-5 aircraft at JAS-39 is not offered and is incurring any additional costs. Recent management model AIM-120 C-7 is the aircraft JAS-39 integrated.

Ammunition air-ground (AG):

For flew F-16 suspension features a wide range of ammunition (over 180 species compatible ammunition), the future is an important factor in the procurement. Ordered ammunition AG is listed in the Table. 5. Acquisition of ammunition air-ground (AG) aircraft JAS-39 is not part of the offer and is incurring any additional costs.

Pods:

Both aircraft have the possibility of carrying pods, which are intended for positive identification and automatic tracking and laser marking targets. Procurement of pods for aircraft JAS-39 is not part of the offer and is incurring any additional costs.

Table. 6: Onboard radar

	F-16 Block 70	JAS-39 C
designation radar	AN/APG-83	PS-05/A
maximum reach (Capture larger targets)	to 296 km	is not listed
maximum reach (Capturing smaller goals to 2m2)	to 160 km	to 120 km
Immunity	increased resistance	lower resistance
Possibility of simultaneous capture and action (firing line) against air and ground (sea) order	YES	NOT
Number of objectives, which can be applied simultaneously	more than 20 airborne targets	4 air targets

F-16: Radar AESA (Active Electronically Scanned Array) AN/APG-83 to F-16 aircraft is the most advanced technology component, based on radar used for aircraft 5th generation (F-35 and F-22). It is currently the best and most advanced radar in the world. Radar provides better situational awareness, flexibility and rapid capture targets in any weather. Radar can show aboard digitally scanned the terrain. Its main advantages are increased impacts, increased resistance to interference, possibility of simultaneous operation (running fire) against air, land and sea targets. Radar is able to capture and act while (keep firing) against more than 20 different targets simultaneously.

JAS-39: Radar PS-05/A to aircraft JAS-39 is designed to engage air and ground (sea) targets. At the time of its introduction into the aircraft JAS-39 amounted to technological progress, but currently lags behind the possibilities of AESA radars used for aircraft 4 ++ and 5th generation and represents the average. The radar has a shorter range and lower resistance to interference. It is capable of simultaneously capturing and acting (lead fire) against air and ground (sea) targets. In countering air targets can simultaneously operate (keep fire) up to 4 targets.

Security

F-16: In the plane F-16 Block 70/72 is the built-in Automatic Ground Collision Avoidance System (Auto GCAS), which represents the latest technology element. It was developed to prevent fatal accidents and by the end of 2014 already saved at least 4 aircraft of the US Air Force and their crews. The system

reduces the risk of a controlled collision with terrain (CFIT - Controlled Flight Into Terrain). The system for the assessment of a possible collision with the ground, will assume control of the aircraft and carry out necessary maneuver to rescue.

JAS-39: The aircraft JAS-39 C/D does not have a similar system. The aircraft has a system that warns the collision with the ground, indicates the need for multiple overload to avoid a collision with the ground. But it can not automatically avoid collision with the ground.

9. Training block flying tactical aircraft for multiple JAS-39 C/D, and F-16 Block 70/72

9.1. JAS-39 C/D

Offered training in Sweden is for a period of 6-8 months. In training it is included as retraining for a different type of aircraft. The aircraft offers new possibilities compared to the present (LINK-16 pod AN/AAQ-28 LITENING III), but the tactical use of the equipment is not part of basic training. The pilot can turn the device on and off, how to use them in air operations and tactics of their use does not include training. The aircraft also provides the ability to refuel in flight, this training is not included in the framework of retraining. Refueling is here today, basic competence in the conduct of air operations. It should also be noted that training in countering air targets is insufficient (BFM 1 v 1 and BVR pair). The biggest weakness of the provided training is the lack of training in action at ground targets.

The big disadvantage of a problem area while the entry requirements for pilots, who have to undergo retraining. The first problem area is a requirement for 500 hours on jet aircraft. This requirement is satisfied only 5 pilots (the remaining 6 pilots a raid on a jet plane less than 250 hours). The second major problem is the requirement of language proficiency - STANAG 6001 Level 3. This requirement does not meet any pilot. Achieving Level 3 is here in the short term unrealistic.

Based on two problem areas relating to the entry requirements of the Swedish side of the flying personnel it can be stated that at present (or in the near future) would be very difficult to ensure the fulfillment of the required conditions and undergo training in Sweden.

2.9 F-16 Block 70/72

Offered a training program in the US is a time-consuming process (3-4 years with breaks between blocks of training), it implies a time-tested quality and continuity, together with training is provided and tactics. As part of training, pilots will be trained in all kinds of air operations, including refueling. Quality training flying personnel in the US several times higher than training in Sweden. The successful and efficient conduct of air operations is in fact necessary to drive to the platform (aircraft) and quality of weapons and training of flying personnel. Crucial preferred are the entry requirements for training that allow all pilots selected to attend the training. If a candidate does not reach the required level of current knowledge of the English language (ECL 85), he provided a basic English course (GET) within 25 weeks.

10. Training technical personnel ILS for multiple tactical aircraft F-16 Block 70/72 and JAS-39 C/D

The information gathered and analysis conducted preparedness ILS technical staff can clearly identify such conclusions. Unless it is clearly established under which conditions will be sent ILS technical staff training and the resulting liabilities can not be the current number of 137 candidates for the actual number of available members ILS to work on new aircraft. Due to the risks described in the available number certainly less!

In the case of a decision on the acquisition of new tactical aircraft F-16 Block 70/72 or JAS-39 C/D Gripen will need to review the way of recruiting new members ILS completed secondary/tertiary technical education in electrical engineering/mechanical engineering with an air/air without focus and improve the system of education of technical staff members new to ILS ILS were after regrutácii as soon as possible enrolled in training to receive type certification and entry into service of the new type of aircraft.

Whatever the choice of a new type of aviation equipment will be necessary to create a completely new organizational structure engineering of air services in order to rapidly increase the staffing for the maintenance program of the new aviation technology while ensuring the operation and maintenance of the standby system aircraft MiG-29 and the operation of aircraft L-39 to time delivery of a new type of aircraft.

A method of aircraft and technical staff training system for both types of air vehicles is different. Based on available information, it can be stated that the training system for aircraft F-16 Block 70/72, taking into account all the entry requirements and training programs, including language course at DLI (Defense Language Institute) is a comprehensive system of training of technical staff and is more suitable for us.

11. Logistic support for multiple tactical aircraft JAS-39 C/D, and F-16 Block 70/72

A new type of aviation technology (LT) brings and the new logistic support. This is in particular the supply of spare parts (ND), the material, ground equipment, control-measuring equipment (KMT), the equipment of air and air ammunition. It also requires the provision of services associated with the supply of parts and materials (transport services, complaint procedures, repair parts, etc.).

Each supplier (provider) has the logistical set their own rules and ways of providing each service. It requires its own suppliers (public and private companies) and thus defined procurement and transport solutions, claims and other services related to logistics security.

11.1. JAS-39: The logistic support aircraft JAS-39 is calculated for 12 pieces JAS-39 C and 2 pieces of JAS-39 D aircraft will operate from one air base, provided the total annual raid 2,100 flight hours/year. The security operation envisages cooperation of Slovak and Swedish sides. Delivery of spare parts is guaranteed by the Swedish side for 10 years. Slovak Party is a member of the program, sharing spare parts (LRU/SRU) together with the Swedish Air Force. However, the program does not cover the supply of spare parts, which will be integrated into the aircraft by a third party (manufacturer of aircraft munitions, avionics equipment and overhead equipment). Swedish party creates the premises airbase local store, which will contain spare parts and consumables. Their complementarity and variations will be provided through the Swedish side of the Swedish stock. Management cycle spare parts logistics ensure the Swedish side.

Swedish party liability under the provision of spare parts and consumables consists of:

- management and administration of stocks of spare parts warehouses in central Sweden
- management of sustaining the level of stocks of spare parts and consumables in local stock airbase in Slovakia
- security fixes and the extension of the life-cycle of aggregates through maintenance
- Carriage of spare parts and supplies between Sweden and Slovak
- technical support software (software designed to manage inventory)

Slovak party liability under the provision of spare parts and consumables consists of:

- ensuring adequate storage space for spare parts and supplies
- Security material handling in a local warehouse
- preparation of supporting documentation before sending replacement parts to repair to Sweden and documents related to the requirement for consumables
- informed the Swedish side of the planned airstrike and performing maintenance of aircraft, so that the Swedish party well in advance to ensure appropriate material

In the case of acquisition of aircraft JAS-39 Swedish side will ensure the delivery of the material, the producer is the manufacturer of the aircraft (possibly direct subcontractor manufacturer). Systems of other suppliers (controlled air missiles, air-controlled bombs, trolley containers, LINK-16, etc.) are not included in the contract for the supply of spare parts. This implies that these systems will require separate contracts, through which it will be solved not only the integration of new systems, but also their logistical and service support. This represents incurring any additional costs.

11.2. F-16: The logistic support aircraft F-16 is calculated for 12 pieces F-16 C and 2 pieces of F-16 D, which will operate from one air base, provided the total annual aircraft raid 2,520 flight hours/year. Spare parts and supplies are designed to provide two years of operation of aircraft. After this period it is necessary to conclude a new contract for the supply of spare parts. It is incurring any additional costs. Spare parts and supplies will be delivered no later than six months before the first delivery of the aircraft so as to ensure their operation. Delivery of spare parts for the operation of aircraft ground operating equipment, aviation equipment and ammunition does not require entry of a third party.

Responsibility of the American side in the framework of the provision of spare parts and consumables consists of:

- management and administration of supplies of spare parts, consumables, equipment ground and air munitions
- security services related to a claim, and repair parts, assemblies aeronautical, land and air operating equipment ammunition
- Security transport services within the supply air munitions classified documents and software
- providing technical and logistical support from Flight aircraft supplier in Slovakia

Slovak party liability under the provision of spare parts and consumables consists of:

- ensuring adequate storage facilities for spare parts and supplies
- Security Storage and material handling in storage
- preparation of parts sent for repair in the context of complaint
- Security transport reclaimed material - transport services

In the case of acquisition of aircraft F-16 American side will secure material supply in accordance with a contract. Through agreements will also be supplied aerial ammunition and trolley containers. Aircraft configuration is completed with systems of other suppliers (controlled air missiles, air-controlled bombs, trolley containers, LINK-16, etc.). However, these systems will be part of a closed contract.

The two-year logistic support, which is included in the bid, starting from the receipt of any aircraft Slovak side. After this period it is necessary to conclude a new contract for the supply of spare parts.

12. Infrastructure for multipurpose tactical aircraft F-16 Block 70/72 and JAS-39 C/D

Analysis of the necessary infrastructure is based on the recommendations of the Swedish and American side, in which the minimum infrastructure requirements. Recommended changes to infrastructure are necessary to ensure the effective operation of the new aviation technology at the required level in order to ensure system NATINAMDS and flight training.

Acquisition of new aircraft technology is necessary from the start to change the system of operation of aviation technology with the construction of all necessary and required facilities according to the manufacturer, since the present state of available infrastructure does not meet manufacturers and condition of the existing infrastructure is at very low levels. In most cases, end of life objects, because it is not secure routine and standard maintenance because of the low allocation of funding. Failure to implement the recommended changes by the operation of the new aviation technology most likely caused innumerable restrictions. It would not secure compliance warranty.

In terms of both the above mentioned documents will be before the delivery of the new aircraft technology readiness inspected the premises from which will be based on follow-up actions and recommendations if the infrastructure is not ready.

In an analysis of the conditions compared to available infrastructure and infrastructure that must be built for operation of new aircraft. It can be said that despite the small differences are infrastructure requirements the same for both types of new aviation technology without significant differences in the requirements.

Estimated cost of infrastructure based on the recommended dimensions for individual objects given by representatives of both aerospace manufacturer and the price per unit of measurement of the publication Proceedings of indicators of average fiscal price per unit of measurement object - buildings and civil engineering structures under Declaration, 2012. The final cost of the infrastructure changes the airport of **49 673 731€**.

The costs for the individual objects are not counted the cost of possible demolition of substandard buildings, structural modifications of individual objects were not quantified the costs necessary for the construction of utilities and the costs for building the security level "SECRET". It is reasonable to assume that the ultimate cost of changing the airport infrastructure will be higher than indicated in the analysis. The estimated increase is 10%, ie., The final cost expected to be 55 million. €.

13. Conclusion

Purchase of new multipurpose tactical aircraft will create conditions to meet operational requirements and tasks of the Air Force of the Armed Forces of the Slovak Republic under the laws of the Slovak Republic to ensure the safety, protection of life, health and property of citizens of the Slovak Republic and tasks resulting from the international commitments of the Slovak Republic. They will actually comply with the conclusions of the strategic and policy documents. There will be a significant strengthening of capacity in the defense of the Slovak Republic, competence in NATINAMDS while allowing the use of new aircraft in a whole range of scenarios outside the Slovak Republic.

In connection with the long-term development plan of defense, with an emphasis on the construction and development of the Armed Forces of the Slovak Republic with a view to 2030, approved by the Slovak Government, which aims to create the conditions for building a modern armed forces is calculated with the acquisition of 14 units of multi-purpose tactical aircraft including the necessary training, logistic support and air munitions.

During the preparation of materials and evaluation of tenders, completed the project team more times a bilateral meeting at the expert level with representatives of countries operating both types of aircraft, including visits to airports: Aircraft JAS-39: Sweden (Säve and Linköping), Hungary (Kecskemet) and Czech Republic (Caslav). Plane F-16: Republic of Poland (Krzesiny and Lask), Italy (Aviano) and Greece (Volos).

When creating analysis and decision-making process were taken into account scientific papers, international studies, professional military and aviation magazines and other supporting documents, for example,⁴:

- Ingrid Hallander, Alexis Stanke, Massachusetts Institute of Technology; Lifecycle value framework for tactical aircraft product development
- JP Herteman, Goutines M.: Design principles and methods for military turbojet engines. NATO RTO-MP-*, AC / 323 (Avt) TP / 9,
- Swiss Air Force: The SAF / OT & E report Evaluation NFA Flight Test 2008;
- Piotr Wygonik: Rzeszów University of Technology, Selection criteria of turbine engine parameters for multi-purpose aircraft
- Aurel Cobianu, Konrad Madej Advisors: Raymond E. Franck Marshall R. Engelbeck Naval Postgraduate School in Monterey, California, USA: Analysis and forecasting of Operating and Support Costs for F-16
- Barre R. Seguin, The George C. Marshall European Center for Security Studies Why did Poland Choose the F-16?

The project team in evaluating the bids of the two countries take into account all criteria with an emphasis on the current needs of the Air Force of the Armed Forces of the Slovak Republic and the prospects for further development of capabilities (purchase additional modules, the development of other types of ammunition, future modernization, interoperability, joint deployment, training requirements for pilots and ground staff) evaluated the offer as follows:

Table. 8: Percentage Award

⁴ Full details of references is given at the analytical material

	Area	The percentage of the user	JAS-39 C / D Gripen	F-16 Block 70/72
First	Operational and technical competence	30%	22%	30%
Second	Security and training cost ratio	5 + 5%	Pilots 3%	Pilots 5%
			Technicians 3%	technicians 4%
Third	logistic support	10%	10%	6%
4th	Interoperability with NATO support in joint operations	5%	4%	5%
5th	involvement SVK	5%	2%	5%
6th	The price	40%	38%	38%
7th	In sum	100%	82%	93%

Total financial expenses in accordance with the submitted draft contract after conversion to ensure the 10-year operation of aircraft F-16 Block 70/72 is about the same as the total cost of providing 10 years of operation of aircraft JAS-39C/D.

Term delivery of the first aircraft is bound to sign the contract, which is to ensure the protection of Slovak airspace important factor. Delivery of the first aircraft JAS-39C/D in the Slovak Republic can be realized from signing the contract to 20 months, with delivery of the last pieces to 28 months. Delivery of the first aircraft F-16 Block 70/72 is 36 months from signing the contract and last up to 48 months.

Draft agreements between the US and Slovak is ready for signature. Swedish party submitted a draft contract with annexes, whose details he wants Dorok after the adoption of a government decision on the choice of aircraft. In the case of a decision of the Slovak Government on the choice of the Swedish offer, you will need to take into account the duration of the joint negotiations on specific terms of the contract (from past experience is a prerequisite duration 6-12 months). It should also be borne in mind that some of the material that is the subject of the basic treaty with the US, must Slovak party in the event of acceptance of the Swedish offer to purchase from a third party about what must conclude additional contractual relationship until the signing of the basic treaty with Sweden. Negotiating and signing contracts with third parties, as well as subsequent term supply of materials from a third party makes the overall delivery date JAS 39 C/D.

Following the logistic support was subject to evaluation by the involvement of Slovak industry. By Sweden offer by the Government not presented. Saab individual submitted a tender for the creation of 500 jobs in the logistics center for Central Europe for 100 aircraft JAS-39 in the Slovak Republic. It should be noted in this case that it was the company's offer and not offer the Swedish Government and the closer this offer was not detailed to the specified. By the United States offer the involvement of Slovak industry in the process logistics and repairs includes a form called. "Security of supply". It is currently negotiating a joint-stock company LOTN, as Trenčín (100% stock company owned by the state) with representatives of Lockheed Martin on the details of cooperation. Since the company

Lockheed Martin and owner of Sikorsky helicopter manufacturer UH-60 Black Hawk and similar negotiations are conducted in this case, it appears cooperation companies LOTN, as - Lockheed Martin as strategically important with the potential not only for the Slovak Republic than for the whole Central European region . At the same time such cooperation gives us precondition of fulfilling the production program of public joint stock company, stabilization and staff development and retention of jobs in the company LOTN, as.

Complete acquisition capabilities protect Slovak airspace to new types of aircraft and decommissioning of the existing MiG 29 from service, it is possible only after reaching full operational readiness of aircraft flying around the ground personnel and infrastructure. At the same time less SEASON contract to operate the MiG-29 is valid until November 2019 to cover the period from 2020 to delivery and the introduction of new aircraft, obtaining full operational capabilities of protecting the airspace of the Slovak Republic as well as the fulfillment of the Slovak Republic in the framework of NATO and the EU will need to make financial costs of operating the MiG-29.

The analysis of the variations of tactical fighter aircraft, taking into account all the factors: the purchase of aircraft, ammunition, training costs for pilots and ground personnel, logistic support, completion of infrastructure, delivery time and other costs of operation and the case of modernization, with a view to using new tactical fighter aircraft for horizon 2040 shows that it is preferable procurement of 14 units of aircraft F-16 Block 70/72.

Ministry of Defense proposed under variations of fighter MiG-29 to implement a US offer to purchase 14 aircraft F-16 Block 70/72 and conclude the appropriate contractual relations with the United States.