



Monitoring the Replacement of the F-16

*Situation in December 2011; deployability of F-16s
and developments concerning the Joint Strike Fighter*





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Original title

Algemene Rekenkamer (2012). *Monitoring vervanging F-16; Stand van zaken December 2011; inzetbaarheid F-16 en ontwikkelingen Joint Strike Fighter*. Tweede Kamer, vergaderjaar 2011-2012, nrs. 27.

ISBN 978 90 12 57555 3. Den Haag: Sdu.



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Part 1 Conclusions, recommendations and government response

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1 About this study

2

Since 2005 we have been informing the House of Representatives annually about the situation regarding the replacement of the Dutch armed forces' F-16s and the procurement of the Joint Strike Fighter (JSF). Although successive governments have not yet made a final decision on which aircraft will replace the F-16, the ministries involved assume that it will be the JSF. This report describes the situation regarding the deployability of F-16s and developments concerning the JSF at the end of 2011.

1.1 The air force's fighter aircraft

F-16s

Between 1979 and 1992 the Ministry of Defence purchased 213 F-16s. Following successive adjustments to ambitions and the loss of 33 aircraft, 87 were still operational at the beginning of 2011. On 8 April 2011 the Minister of Defence announced that 19 of these 87 aircraft would be decommissioned (Ministry of Defence, 2011b).

The JSF

Since 1997 the Ministry of Defence has been involved in the development and production of the Lockheed Martin F-35 Lightning II Joint Strike Fighter (JSF). This is a multifunctional fighter aircraft being developed in three variants. The Netherlands is interested in the Conventional Take-Off and Landing (CTOL) variant, which uses a standard runway. According to Lockheed Martin, the JSF will have stealth capabilities, making it difficult for enemy radar and weapons systems to detect. It is seen as a candidate to replace various increasingly obsolete fighters currently deployed by the United States and its allies.

1.2 Recent decisions on the replacement of F-16s

The coalition agreement signed by the Rutte-Verhagen government that took office in October 2010 states that no JSFs (other than a second test aircraft) will be purchased during its term of office. A final decision on the



purchase of a replacement for the F-16 has thus been postponed from 2012 to an as yet unknown date beyond this government's term of office.¹

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However, the government has maintained the Netherlands' participation in the international JSF programme. This implies involvement in the JSF, as well as financial obligations and contributions.

The coalition agreement also states that the Ministry of Defence must reduce expenditure in the period 2011-2015 by EUR 2,322 million and 635 EUR million structurally (People's Party for Freedom and Democracy and Christian Democratic Alliance, 2010). One of the measures announced in the Minister of Defence's policy letter entitled 'The Ministry of Defence in the wake of the financial crisis: reduced armed forces in a turbulent world' is the decommissioning of 19 of the Netherlands' 87 F-16s (Ministry of Defence, 2011b). The number of fighter pilots will likewise be reduced from 87 to 68. Related projects will be scaled down. The minister thereby plans to save EUR 41.4 million a year on the operating costs of fighter aircraft.

Since the Rutte-Verhagen government has stated that it will not make a decision on the replacement of the F-16s, the armed forces will have to fulfil the Netherlands' military ambitions with today's contracting and increasingly outdated air fleet. This will have both financial and operational implications.

1.3 Revised agreements on provision of information

The provision of information and the decision-making on the deployability of F-16s, the Replacement of F-16s project and the JSF programme are subject to various rules. First there are regulations on the structure and content of the central government budget, for which the Ministry of Defence draws up a Materiel Projects Overview (MPO). The Ministry of Defence has its own rules for procuring new materiel, known as the Defence Materiel Process (DMP). There are also rules governing international cooperation on the JSF programme. Finally, the House of Representatives has special rules for 'large projects', which include the replacement of F-16s.

¹ The next regular elections to the House of Representatives are scheduled for 13 May 2015.



The rules applying to the replacement of F-16s as a large project have recently been amended. In 2009 the House of Representatives also reviewed its information requirements regarding the replacement of F-16s. As compared with 1999, the minister now also had to provide information on the total costs of the JSF programme (including the operating costs and related costs not falling within the current definition), a financial summary of the total multiyear schedule and the exit and postponement costs (House of Representatives, 2009a).

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On 12 December 2011 the House of Representatives amended its information requirements once again, deciding that:

- the Replacement of F-16s project would retain its large-project status;
- the House would discuss the project with the government once a year;
- these discussions would take place *after* the regular annual report on the replacement of F-16s had been received;
- the annual report should henceforth be submitted by 1 June rather than 1 April (House of Representatives, 2011a).

On 22 December 2011 the Minister of Defence informed the House of Representatives that he would submit the annual report on the replacement of F-16s to the House by the first working day after 1 June (Ministry of Defence, 2011e). He stated that this would enable the report to take account of the reports by the Government Accountability Office (GAO) and the Congressional Budget Office in the United States. It would also allow the financial information in the report to be based on the same source data as the Selected Acquisition Report (SAR) for that year.²

For a detailed description of the various rules and the part they play in the provision of information and decision-making on the deployability and replacement of the F-16s and the JSF programme, see Part 2, chapter 1 of this report.

² The SAR, which is drawn up annually by the US Department of Defense, contains information on changes in the costs of the JSF programme. The US Department of Defense has to send this document to the US Congress on the 1st of April each year.



1.4 Aim and scope of monitoring the replacement of F-16s

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The aim of our monitoring is to provide the House of Representatives with independent information on the deployability of F-16s, the progress of the international JSF programme and the financial and operational risks involved.

This report covers both the financial and operational aspects of the Replacement of F-16s project and the way in which the minister informs the House of Representatives about it, as well as developments in related projects not falling within the current definition (see box).

More than in previous years, this year's study also focuses on the existing fighter aircraft. The reason for this is the government's decision to fulfil the Netherlands' military ambitions with a smaller fleet of fighters and not to designate the F-16's replacement at this juncture.

Definition of Replacement of F-16s project in the 2010 annual report (Ministry of Defence and Ministry of Economic Affairs, Agriculture and Innovation 2011)

The aim of the Replacement of F-16s project is the timely replacement of the Dutch armed forces' F-16 fighter aircraft. In addition to procurement of the actual aircraft the project includes procuring the accompanying simulators, initial spare parts, infrastructure, special tools, measuring and test equipment, documentation, initial training and transport, and payment of VAT. An important related aim is to involve the Dutch private sector as much as possible. In the light of this, and given the financial scale of the project, the government decided in 2002 to take part in the JSF development phase. This would put the Dutch private sector in a good position to obtain orders for the production and, after procurement, sustainment of the aircraft.

The Replacement of F-16s project contains the following main components:

- participation in the development, production and operational test phases of the JSF programme;
- encouraging the participation of the Dutch private sector;
- preparing the procurement of the replacement for the F-16.



1.5 Structure of this report

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This report contains two parts. Part 1 examines the conclusions of our monitoring activities in 2011 and presents a recommendation on the provision of information on fighter aircraft (chapter 2). At the end of Part 1 (chapter 3) we present the response of the Minister of Defence, on behalf of himself, the Minister of Economic Affairs, Agriculture and Innovation and the Minister of Finance. The ministers' response is followed by our afterword. The appendix to Part 1 presents a summary of our conclusions, the recommendation and the ministers' response.

Part 2 presents the findings that led to the conclusions in Part 1. Appendix 1 to Part 2 sets out the questions that formed the basis for our study and details of the methodology. Appendix 2 contains the framework of standards that we used. Abbreviations and terms are listed in Appendix 3.

A summary of our reports, letters and supplementary information on this subject can be found on our website (see www.rekenkamer.nl/F16). The site also provides links to reports by audit offices in other countries involved in the JSF programme.



2 Conclusions and recommendations

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The Rutte-Verhagen government intends to maintain flexibly deployable armed forces. At the same time, the Ministry of Defence must save up to EUR 2,322 million over the period 2011-2015 and EUR 635 million every year after that. To do this, the Minister of Defence will decommission 19 F-16s and reduce the number of pilots. In the years to come, the Netherlands' ambitions will therefore have to be fulfilled with today's contracting and increasingly outdated fleet of F-16s. It is not certain how long the F-16s will continue to fly. This government will not make a decision on which aircraft will replace the F-16. This absence of a decision on when, and how soon, the F-16's replacement is phased in will directly affect the duration and intensity of the deployment of the F-16s. It will also have consequences for the efficiency of the Netherlands' participation in the international JSF programme (which will be maintained despite the postponement of a decision on the replacement of the F-16s).

In the years to come the Ministry of Defence will therefore continue to invest in two types of fighter aircraft, the F-16 and the JSF, which are linked both financially and operationally. Despite these links, there is no integrated provision of information on the F-16 or its replacement. Given the different rules governing the provision of information on the F-16 and the Replacement of F-16s project, the information is now divided over various documents. In our opinion, the financial and operational links between the two types of fighter are such that the minister should provide the House of Representatives with an integrated overview in addition to the individual documents. This chapter will look first at the provision of information (section 2.1), i.e. where and how the minister informs the House about the F-16 and the JSF, and how we believe he can make the provision of information more coherent.

We will also describe the situation regarding the deployment of F-16s now (section 2.2) and in the future (section 2.3), and the replacement of F-16s (participation in the JSF project, section 2.4).



2.1 Provision of information on the F-16s and the JSF

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Various kinds of information (financial information and information on progress) on the two types of aircraft are provided by the Ministry of Defence in various documents.

Financial information on the F-16s and the JSF

Financial information on investment in the F-16s and the JSF can be found in the Ministry of Defence budget and the accompanying MPO. The information in the MPO is divided over eleven projects. For each project, the minister briefly describes the relationship with defence policy. He also indicates which of the eleven projects are directly or indirectly related to one another. However, he does not explain what these relationships specifically involve. Thus the MPO alone does not make clear how the eleven projects are interrelated, or are related to defence policy. For example, the minister states that keeping the F-16s in service will affect the air missiles procurement project, but does not explain how.

Furthermore, in accordance with the agreements on the MPO, the financial information on the budget only concerns *investment* in the two types of fighter. It gives no indication of the (estimated) annual *operating costs* for each fighter.

Information on progress concerning the F-16s and the JSF

Information on the progress of the eleven projects in the MPO and the decision-making on them is provided by the minister in the letters that the DMP requires him to send to the House of Representatives. This information always covers only the individual projects, rather than how they relate to one another. The DMP also requires the information to be forwarded to the House only when decisions are made.

Financial information and information on progress concerning the JSF

Information on progress and financial information on the JSF can be found in the annual reports on the Replacement of F-16s project which the Minister of Defence and the Minister of Economic Affairs, Agriculture and Innovation are required to send to the House of Representatives under the Rules for Large Projects. Although the annual reports state that there is a relationship between the Replacement of F-16s project and the other ten projects in the MPO, no further details are provided. Given the – understandable – focus on the JSF, the annual reports mainly concentrate on the estimated total investment and operating costs of the JSF.



The Minister of Defence's provision of information on the fighters therefore always focuses on developments regarding each specific type of aircraft. Furthermore, even where the information relates to both types, it concerns either progress or costs for each individual project or, in the case of operating costs, each individual aircraft. In the MPO and the annual reports on the Replacement of F-16s project, the Minister of Defence rightly states that the individual projects are interrelated. We would go a step further. In our view the F-16 and the JSF are so closely connected, both financially and operationally, that the ministers should provide fuller information on this in addition to the separate flows of information.

Recommendation

We recommend that the ministers and the House of Representatives consider jointly how to produce an integrated overview. The purpose of this would be to provide a clearer picture of the coherence of and connections between:

- the choices made in investing in the current fighter and its intended successor;
- the operation of the current fighter and its intended successor;
- the air force's operational strength and the armed forces' ambitions.

In our opinion, the annual reports under the House of Representatives' Rules for Large Projects provide a basis for such an integrated overview.

The annual reports on the Replacement of F-16s project by the Minister of Defence and the Minister of Economic Affairs, Agriculture and Innovation discuss not only the Replacement of F-16s project but also related projects, as required by the Rules for Large Projects.³

According to the Ministry of Defence's MPO there are currently eleven investment projects for the two fighters, all of them interrelated.

We would like to suggest that in the annual reports on the Replacement of F-16s project the eleven projects and the operating costs for the two types of aircraft be dealt with in relation to one another and to ministry-wide ambitions, in order to ensure the aforementioned integrated provision of information. The data in our monitoring reports will help all

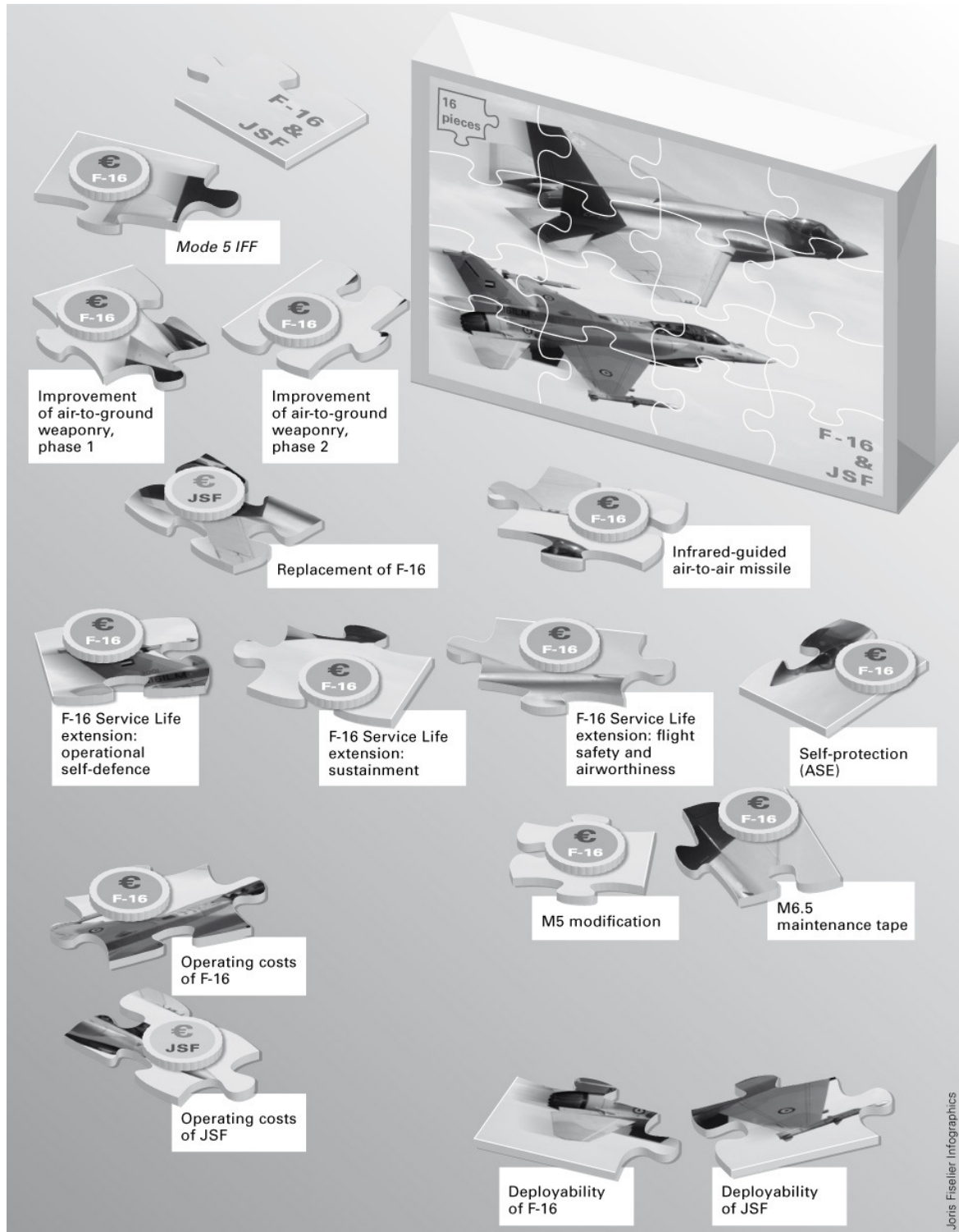
³ Article 12 of the Rules for Large Projects states that the information contained in progress reports concerns 'all additional information that relates to the project, whether indirectly or directly, and that can reasonably be assumed to be necessary for the exercise of the House of Representatives' monitoring task' (see Appendix 2).



the pieces of the information puzzle to be put together in one clear picture. See the figure below.

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Figure 1 Provision of information on F-16s and the JSF





2.2 Deployability of F-16s: the current situation

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Between 1979 and 1992 the Ministry of Defence purchased 213 F-16s. Following successive adjustments to ambitions and the loss of 33 aircraft, 87 were still operational at the beginning of 2011. On 8 April 2011 the Minister of Defence announced that 19 of these 87 aircraft would be decommissioned. The number of pilots was reduced from 87 to 68 during 2011.

Flying fewer hours with the same number of aircraft

The 19 F-16s that the air force plans to decommission remained in service at the airbases throughout 2011 (in so far as they were airworthy at the time). This was to help make possible a sufficient number of flying hours (including for training purposes). The Ministry of Defence has made savings on the operating costs for the F-16s by reducing the *total number of budgeted flying hours*, so that, on average, each aircraft now flies fewer hours. The 19 aircraft were not literally grounded in 2011. The ministry's current plans to sell off some or all of them mean that airworthy, functioning aircraft will be taken out of the air force and that the remaining aircraft will have to fly more hours a year.

Until such time as the government decides how many of the 19 aircraft will be sold and how many dismantled, the air force will incur costs in order to keep them airworthy. However, postponement of the decision does mean that the aircraft scheduled for decommissioning can be used by the air force to compensate for any losses (including peacetime losses). In addition, if the budgeted number of flying hours is increased again, there will be aircraft available to make up the required hours.

Deployment capabilities of the F-16s

The Minister of Defence's 2012 budget included the following deployment objectives for the air force. They indicate what the armed forces must be capable of, subject to the financial constraints over the coming years:

1. Permanent surveillance of Dutch airspace by two F-16s (QRA: Quick Reaction Alert).
2. Single contributions to international intervention operations involving one squadron of fighters.
3. Long-term contributions to stabilisation operations: a single airborne operation with fighters, involving an average of eight aircraft.

To meet its current commitments to NATO, the Netherlands must have two squadrons available for a mission lasting less than a year, or three

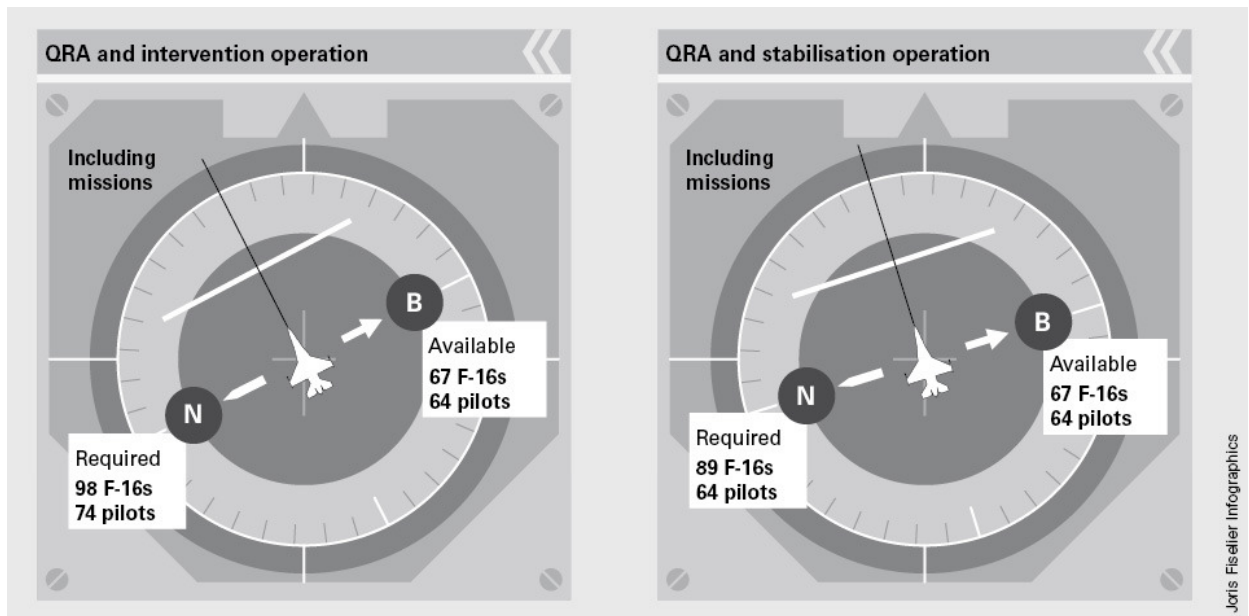


squadrons for one lasting more than a year.⁴ QRA is a round-the-clock, year-round task. It is not the intention that, in addition to this, the Netherlands should simultaneously contribute to an intervention operation and a stabilisation operation.

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Given NATO's current readiness requirements for its partner countries, the government's ambitions are not in balance with the budgeted number of flying hours, the number of pilots and the number of aircraft. In practice, its deployment objectives can only be met by making concessions. If the air force takes part in missions (as in Libya), this requires so many flying hours and pilots that there is not enough time for training, and this in turn jeopardises the pilots' deployability. In the debate on his budget, however, the Minister of Defence said that it 'is just feasible, although the margins are very tight' (House of Representatives, 2011b). The figure below shows the discrepancy between requirements and availability if the Netherlands takes part in either an intervention or stabilisation operation in addition to QRA. It is based on NATO standards for pilot training and squadron crews. We will return to this in Part 2, section 2.2.

Figure 2 The Ministry of Defence's deployment objectives: required and available fighter aircraft and fighter pilots



⁴ A squadron is a unit of F-16s with the accompanying operational and support personnel. The Ministry of Defence's units comprise 15 aircraft.



Operating costs for F-16s

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The Ministry of Defence's ability to provide an overview of the operating costs for F-16s is limited. The Defence Operational Plan does indicate all the operating expenditure on defence materiel, but this is not itemised for individual weapons systems; instead, it shows total weapons-system expenditure for each category of expenditure, such as fuel or maintenance. Since last year the ministry has been working on a more detailed overview that will specify operating expenditure for each system.

2.3 Deployability of F-16s: the consequences of keeping them in service longer than planned

It is now certain that the F-16s will have to be kept in service longer than planned. What is not certain is how long that will be. The point at which the current aircraft will start to be phased out, and the rate at which this will take place will depend on when the replacement aircraft are phased in. However, a decision on this will not be made by the present government. Therefore, in the absence of a fixed schedule for phasing out the F-16s, a key ingredient for a precise calculation of the operational and financial implications of keeping the F-16s in service is lacking.

The Minister of Defence's policy letter also fails to make clear how he intends to divide his materiel budget over the required numbers of new fighters and existing or additional investment in the current aircraft. The minister has announced on a number of occasions that this will be reviewed, and that operating costs will then also be taken into account. However, no such review has yet taken place.

Until the April 2011 policy letter (Ministry of Defence, 2011b), the F-16s' replacement was due to reach initial operational capability (IOC) in 2018 (this means that at least ten new aircraft with trained personnel must be available for deployment within a medium to high spectrum of violence) and the first squadron was due to reach full operational capability (FOC) in 2019 (at which point the replacement aircraft would take over the F-16s' operational role). At the time, the replacement aircraft were still scheduled to be delivered, and the F-16s phased out, between 2016 and 2024.

Postponement of the procurement decision has left a gap between participation in the test and evaluation phase and preparations for IOC. Internally, the Ministry of Defence now assumes that IOC will be reached in 2021. The various shifts in the dates are shown in table 1.

**Table 1 Shifting milestones in the replacement of F-16s**

| Stage | Procurement decision | IOC | FOC | Replacement phased in | F-16s phased out |
|----------------------------|----------------------|------|------|-----------------------|--------------------|
| The A letter (1999) | | 2016 | 2018 | 2014-2020 | 2015-2021 |
| Hamer motion (2009) (1) | 2012 | 2018 | 2019 | 2016-2024 | 2016-2024 |
| After policy letter (2011) | After 2015 | 2021 | 2022 | 2019-2027 | Possibly 2019-2026 |

1) Among other things, the Hamer motion – which was adopted – stated that the decision to take part in the test and evaluation phase of the international JSF programme was not a final decision to purchase the JSF, and that a final decision to purchase a replacement for the F-16s would be taken in 2012 rather than 2010 (House of Representatives, 2009b).

Operational consequences

Keeping the F-16s in service longer than planned further upsets the balance between the Dutch armed forces' ambitions and the available funds, materiel and personnel. According to our calculations the aircraft to be kept in service, which at the moment have flown for an average of 4,000 hours, will probably have to keep flying for up to 6,000 hours at least. With unchanged ambitions, an unchanged annual number of required flying hours and a contracting fleet of F-16s, the air force will have to fly older and older aircraft for an increasing average number of hours a year. In recent years the Dutch armed forces have flown their aircraft for an average of just 183 hours a year.

The basis for our findings is set out in detail in Part 2 of this report. This also shows that during the planned transition from the F-16s to their replacements the fighters will not be as operationally deployable as at present.

Financial consequences

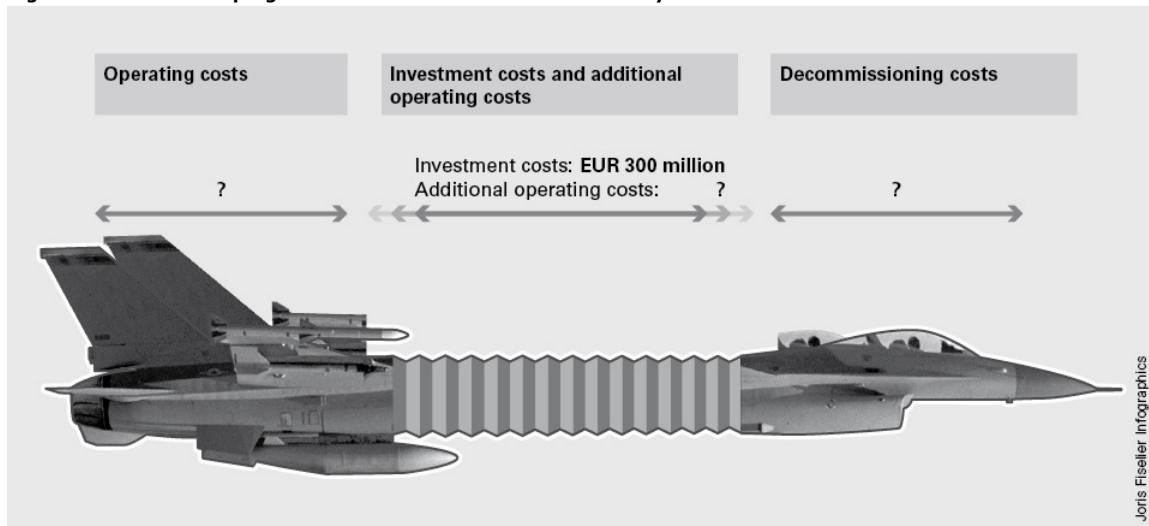
In his April 2011 policy letter, the Minister of Defence informed the House of Representatives that the first deliveries of the intended successor to the F-16s, the JSF, will not take place before 2019. Over the next three years the F-16s' greater need for repairs will make them less available for exercises and operational deployment, and will increase their operating costs. The minister's letter estimates the investment costs of keeping 68 F-16s in service at EUR 300 million (Ministry of Defence, 2011a). This amount is based on a provisional phase-out series for the F-16s, and only covers investment in operational self-protection, flight safety and airworthiness, and sustainment of the F-16s up to the end of 2020. It does not include the costs – which are expected to rise – of material operation, possible replacement of wings, flight safety, airworthiness,



sustainment and operational self-protection from 2021 until the F-16s have been completely phased out and subsequently disposed of.

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Figure 3 Costs of keeping the F-16s in service for three more years



However, until such time as the phase-out series is finally determined, it is not clear how long the air force will have to keep the F-16s in service, or how many of them it will still require. This estimate of investment costs is therefore uncertain.

2.4 Replacement of F-16s: developments concerning the JSF

Costs of participation in the JSF programme

In his April 2011 policy letter, the Minister of Defence stated that he was appropriating EUR 4.5 billion for the replacement of F-16s. By the end of 2015 he plans to have spent EUR 510.4 million⁵ of that amount on participation in the JSF programme and the purchase and operation of the two test aircraft. His 2012 budget includes the main actual and estimated expenditure, totalling EUR 353.8 million by the end of 2015.⁶

This further increases both the exit costs and the Netherlands' commitment to the JSF as the successor to the F-16s, and there are still major uncertainties regarding the Replacement of F-16s project. This government will not decide which aircraft will replace the F-16s, how many aircraft should be purchased in order to fulfil future ambitions, or

⁵ At 2011 prices (planned dollar rate USD 1 = EUR 0.83).

⁶ At 2011 prices (planned dollar rate USD 1 = EUR 0.75).



how much all this should cost. We consider this an ambivalent situation, and one that will persist over the coming years.

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Uncertainties regarding the JSF programme

In 2011 the US Department of Defense made no decisions on the JSF programme. This increased the uncertainty regarding the further planning and costs of the international programme and their consequences for the Netherlands. In 2011 the Ministry of Defence did not receive an updated estimate of the operating costs of the JSF, although at the beginning of April 2011 it did receive information from the JSF Program Office on the investment costs of the aircraft. The ministry adjusted this information to take account of the Dutch situation, and on 1 July 2011 the House of Representatives was informed of the updated average basic unit price.

Involvement of the Dutch private sector

In his April 2011 policy letter, the Minister of Defence stated that the involvement of the government and the Dutch private sector in the development and production of the JSF would remain unchanged, as would the planned number of aircraft for the Netherlands. If the Dutch private sector receives JSF-related orders for production work, it will remit corresponding amounts to the state. In 2011 the Ministry of Economic Affairs, Agriculture and Innovation took steps to reduce the administrative burden of this remittance procedure on the private sector. In 2011 it was not altogether clear to the ministry what impact the US decision to stop developing the second JSF engine, the F136, would have on the Dutch private sector.



3 **Government response and afterword by the Court of Audit**

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We submitted our study to the Minister of Defence, the Minister of Economic Affairs, Agriculture and Infrastructure and the Minister of Finance so that they could give their response. On 14 March 2012 the Minister of Defence responded on behalf of himself, the Minister of Economic Affairs, Agriculture and Innovation and the Minister of Finance. A summary of his response is provided below, followed by our afterword. The full text of the response can be found on our website (www.rekenkamer.nl).

3.1 **Government response**

Provision of information on F-16s and the JSF

The minister states that although he reports on the F-16s and the JSF in the appropriate documents, the resulting picture may be fragmented. He is now examining how an integrated overview of F-16 investments and operation in relation to the Replacement of F-16s project and the Ministry of Defence's operational objectives can be provided.

Deployability of F-16s: the current situation

The minister considers that our approach to calculating whether the government's ambitions are in balance with the budgeted number of flying hours, the number of pilots and the number of fighter aircraft is basically correct. The same applies to our conclusion that this balance will be further upset if the F-16s are kept in service longer than planned. The minister adds that in his view this is not an exact science. If the aircraft are kept in service for any considerable length of time, the Ministry of Defence must set priorities, given the budgeted number of flying hours and the number of pilots available. These priorities may temporarily be at the expense of training and will make major demands on personnel and materiel. The minister states that senior operational staff at the Ministry of Defence and the Royal Netherlands Air Force Command weigh up the various factors professionally and efficiently.



According to the minister, his April 2011 policy letter made clear that flexible deployment of the armed forces cannot be fully achieved within the financial constraints set out in the coalition agreement, and that the armed forces will be substantially less deployable during the implementation process. Considerable efforts will be required during the period of cutbacks to ensure that the Ministry of Defence's weapons systems, including its fighter aircraft, are kept in readiness. The minister states that this is well illustrated by our findings and conclusions.

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He also states that with effect from the 2013 budget year he will tighten up and fine-tune the allocation of his budget so as to strike a better balance between ambitions, resources and funds.

The minister agrees with our conclusion that the Ministry of Defence's ability to provide an overview of operating costs for F-16s is limited. He states that the ministry is doing its best to obtain a clearer picture of the operating costs for all its weapons systems.

As regards the 19 F-16s that are to be decommissioned, the minister will soon let the House of Representatives know how many of these aircraft will be kept to provide spare parts or made ready for sale. He says he has already notified the House that the aircraft scheduled for decommissioning have not been immediately grounded.

Deployability of F-16s: the consequences of keeping them in service longer than planned

The minister agrees with our analysis that, in the absence of a fixed phase-out schedule, there is no basis for a precise calculation of the operational and financial consequences of keeping the F-16s in service longer than planned. However, he considers this inevitable, since this government will not be making a decision on the successor to the F-16s. The minister states that a review of fighter aircraft was carried out before his April 2011 policy letter.

He qualifies our conclusion that the estimated EUR 300 million investment costs do not include the increased material operation costs, replacement of wings, flight safety, airworthiness, sustainment and operational self-protection after 2020. He currently assumes that the EUR 300 million investment will enhance the *technical* deployability of the F-16s until they are completely phased out in 2026 and their *operational* deployability until 2021, when he expects the first replacement aircraft to be able to take over tasks from the F-16s. He confirms that the additional operating costs arising from the decision to keep the F-16s in service longer than



planned have not yet been budgeted. He will provide a clearer picture of these additional operating costs as part of the integrated overview that we have recommended, and will incorporate this into the budget.

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Replacement of F-16s: developments concerning the JSF

As regards our conclusions that the Netherlands' involvement in the JSF as the successor to the F-16s, and also the exit costs, are increasing, the minister states that he discussed this situation with the House during the parliamentary committee meeting on 8 February 2012. The Netherlands' involvement in the JSF has been a fact ever since the decision in 2002 to take part in the development programme. In the minister's view, the potential exit costs arising from failure to meet existing commitments will not increase further.

The US Department of Defense did not make any decisions about the JSF programme in 2011. We note that this has increased the uncertainty about the further scheduling and costs of the international JSF programme and the consequences of this for the Dutch situation. In this connection the minister states that the House is constantly kept informed of the situation regarding the JSF development programme. He keeps a close eye on decision-making in the United States concerning the scheduling and costs of the international programme.

The annual report to the House on the replacement of F-16s will include an updated financial overview that 'takes the impact of the US measures into account'.

3.2 Afterword by the Court of Audit

Provision of information on the F-16s and the JSF

We are pleased to note that the minister is examining how to provide an integrated overview of F-16 investment and operation in relation to the Replacement of F-16s project and the Ministry of Defence's operational objectives. Longer operational and technical deployability of the F-16s can by now be considered a programme in its own right, whose various components must be capable of being presented coherently. An integrated overview will provide a clear picture of the relationship between keeping the F-16s in service and replacing them.

Deployability of F-16s: the current situation

We acknowledge the fact that the minister has stated he cannot fully achieve the government's ambitions for flexibly deployable armed forces,



and that the armed forces will be substantially less deployable during the coming period. We are pleased to note that he is looking within the ministry for even more efficient ways of using the resources available to him.

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We would like to suggest that he indicate which ambitions *can* be fulfilled within the prevailing budgetary constraints. In this connection we look forward to his 2013 budget.

Deployability of F-16s: the consequences of keeping them in service longer than planned

Since the government will not be making a decision about which aircraft will replace the F-16s, or when, there is for the time being no information on the replacement aircraft's introduction series. However, a fixed phase-out series is now needed in order to estimate the investment requirements and costs and the operating costs, make an assessment of the operational consequences and justify any changes to these. It is therefore important that details of the introduction and phase-out series used by the minister be specified in the integrated overview of the F-16 and its successor.

The review of fighter aircraft referred to by the minister has so far not enabled him to strike a balance between the government's ambitions and the available personnel, resources and time.

Replacement of F-16s: developments concerning the JSF

In recent annual reports the minister has always reported an increase in the exit costs. We look forward to the overview of exit costs in the coming annual report, along with the updated financial overview in the annual report, which will take the impact of the US measures concerning the JSF programme into account.



Summary of conclusions, recommendations and undertakings

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| Conclusions | Recommendation to minister and House of Representatives | Government response | Afterword by Court of Audit |
|--|--|--|---|
| Provision of information on fighter aircraft to House of Representatives | | | |
| Provision of information fragmented – restricted to individual aircraft or individual projects, and to costs or progress. No integrated overview. | Consultation on design of integrated overview on F-16s and JSF that will show coherence of and connections between: <ul style="list-style-type: none"> • investment in F-16s and JSF; • operation of F-16s and JSF; • air force's operational strength and armed forces' ambitions. | Minister is examining how to provide integrated overview of F-16 investment and operation in relation to Replacement of F-16s project and Ministry of Defence's operational objectives. | Integrated overview shows relationship between keeping F-16s in service and replacing them. |
| Deployability of F-16s: current situation | | | |
| Government's ambitions out of balance with budgeted number of flying hours, number of pilots and number of aircraft. Minister of Defence's ability to provide overview of operating costs for F-16s is limited. Aircraft scheduled for decommissioning not grounded immediately. They still allow fewer hours to be flown per aircraft. | | Not an exact science. Priorities may temporarily be at expense of training, with major demands on personnel and materiel. Ministry weighs up factors professionally and efficiently. Ministry doing its best to obtain clearer picture of operating costs for weapons systems. Minister will soon let House know how many F-16s will be decommissioned and how many kept in service. | Indicate what <i>can</i> be achieved as well as what cannot. |
| Deployability of F-16s: the consequences of keeping them in service longer than planned | | | |
| Without a fixed phase-out schedule for F-16s, no basis for precise calculation of operational and financial consequences of keeping the aircraft in service longer than planned. The EUR 300 million investment costs estimated by the Minister of Defence do not include increased material operation costs, replacement of wings, flight safety, airworthiness, sustainment and operational self-protection after 2020. | | Lack of phase-out schedule is inevitable. EUR 300 million enhances <i>technical</i> deployability of F-16s until 2026 and <i>operational</i> deployability until 2021. Clearer picture of operational expenditure in integrated F-16 and JSF overview. This will be incorporated into budget. | Introduction and phase-out series provide link between F-16s and JSF, so include them in integrated overview. |



| Conclusions | Recommendation to minister and House of Representatives | Government response | Afterword by Court of Audit |
|---|---|--|---|
| Keeping F-16s in service longer than planned further upsets balance between ambitions, funding, and available materiel and personnel. | | Not an exact science. Priorities may temporarily be at expense of training, with major demands on personnel and materiel. Ministry weighs up factors professionally and efficiently. | Indicate what <i>can</i> be achieved as well as what cannot. |
| Replacement of F-16s: developments concerning JSF | | | |
| <p>Minister of Defence has not reviewed the Replacement of F-16s project.</p> <p>Of the EUR 4.5 billion appropriated by the government for the replacement of F-16s, EUR 0.5 billion will be spent by the end of 2015.</p> <p>Involvement in and exit costs from the JSF as successor to the F-16s are continuing to increase.</p> <p>No decisions on JSF programme by US Department of Defense in 2011. This has increased uncertainty regarding scheduling and costs of international JSF programme and consequences for Dutch situation.</p> | | <p>Fighter aircraft reviewed before his April 2011 policy letter.</p> <p>Netherlands' involvement in JSF a fact since 2002. Exit costs for failure to meet existing commitments will not increase further.</p> <p>House is constantly kept informed.</p> | <p>This fighter aircraft review has not led to balance between ambitions, personnel, resources and time.</p> <p>We look forward to overview of exit costs and updated financial overview in 2011 annual report.</p> |



Part 2 Findings



1 Provision of information on F-16s and the JSF

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In Part 1 of this report we concluded that the Minister of Defence provides various kinds of information on the two types of fighter aircraft – the F-16 and the Joint Strike Fighter (JSF) – in various documents. This chapter will describe, section by section, these various kinds of information and the documents and rules relating to them. We will first look at information in the central government budget and the Ministry of Defence's Materiel Projects Overview (MPO) (section 1.1). We will then describe information concerning the Defence Materiel Process (DMP) (section 1.2). Next we will discuss the information in the annual reports on the Rules for Large Projects (section 1.3), and finally the information in the correspondence between the House of Representatives and the ministers concerned (section 1.4).

1.1 Central government budget and Materiel Projects Overview

Central government budget

Approving the Ministry of Defence's budget is the House of Representatives' main budgetary and control instrument. Rules governing the budget are set out in the Central Government Budget Regulations.

In the ministry's 2012 budget, details of the main investments in the two types of fighter can be found in policy article 25 (Defence Materiel Organisation) under operational objective 1 (Providing new materiel). A total of five projects already in progress and another seven still being planned are listed for the two types of aircraft under this operational objective.



F-16 and Replacement of F-16s projects in 2012 Ministry of Defence budget (Ministry of Defence, 2011l)

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Projects in progress:

- F-16 M5 modification
- F-16 Mode 5 IFF
- F-16 Improvement of air-to-ground weaponry, phase 1
- F-16 Self-protection (ASE)
- Replacement of F-16s: SDD/Dutch projects

Planned projects:

- F-16 Infrared-guided air-to-air missile
- F-16 M6.5 maintenance tape
- F-16 Improvement of air-to-ground weaponry, phase 2
- Keeping F-16s in service longer than planned: sustainment
- Keeping F-16s in service longer than planned: operational self-defence
- Keeping F-16s in service longer than planned: flight safety and airworthiness
- Replacement of F-16s: procurement preparations/production

The F-16 M6.5 maintenance tape project is only listed in the budget table and is, in accordance with the rules governing the budget, not described. Explanatory notes are provided on the 'Replacement of F-16s: continued procurement preparations/production' project (planned), because a number of actual payments and commitments have already been made in respect of it (see Part 2, section 4.1).

Materiel Projects Overview

Since September 2007 the Minister of Defence has drawn up an annual Materiel Projects Overview (MPO) to accompany the budget (Ministry of Defence, 2011j). The purpose of the MPO is to provide the House of Representatives with more strategic, more coherent and less technical and fragmented information on materiel projects. The minister presents the MPO to the House on Budget Day. It indicates the current situation regarding strategic materiel projects costing more than EUR 25 million, as well as cheaper projects that are deemed politically sensitive and for which expenditure has been budgeted during the next five years.

The MPO brings together the financial tables for the projects listed in policy article 25 of the minister's budget, and provides additional information on them. There is one page for each project, including information on:

- the requirement;
- financial and project plans;



- major changes over the past year;
- related projects;
- relevant parliamentary papers.

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The following eleven projects relating to the F-16 and its replacement are included in the MPO accompanying the Ministry of Defence's 2012 budget for the air force:

F-16 and Replacement of F-16s projects in 2012 Ministry of Defence budget MPO (Ministry of Defence, 2011I)

Projects in progress:

- F-16 M5 modification
- F-16 Mode 5 IFF
- F-16 Improvement of air-to-ground weaponry, phase 1
- F-16 Self-protection (ASE)
- Replacement of F-16s

Planned projects:

- F-16 Infrared-guided air-to-air missile
- F-16 M6.5 maintenance tape
- F-16 Improvement of air-to-ground weaponry, phase 2
- Keeping F-16s in service longer than planned: sustainment
- Keeping F-16s in service longer than planned: operational self-defence
- Keeping F-16s in service longer than planned: flight safety and airworthiness

There are 11 projects in the MPO, but 12 in the budget. This is because in the budget the Replacement of F-16s project is divided into 'Replacement of F-16s: SDD/Dutch projects' (in progress) and 'Replacement of F-16s: continued procurement preparations/production' (planned).

According to the Minister of Defence, the 11 projects for the two types of fighter are directly or indirectly related to one another. Related projects are listed for each project. For example, the 'Keeping the F-16s in service: operational self-defence' project (planned) is related to eight other projects, including the Replacement of F-16s project. There is no further explanation of how they are related. With regard to the Replacement of F-16s project, the minister states that replacement of F-16s is taken into account in connection with numerous current and new requirements. He also states that he reported on the related projects in the 2010 annual report on the Replacement of F-16s project, and that three new projects were listed in 2011 because the F-16s were to be kept in service longer than planned.



The MPO also identifies parliamentary papers of relevance to each project, in most cases papers concerning the Defence Materiel Process. These will be discussed in the next section.

1.2 Defence Materiel Process

The ministry's Defence Materiel Process (DMP) lays down rules for the purchase of military materiel, information systems and infrastructure for projects costing EUR 5 million or more. The rules govern processes within the ministry itself and the way in which the minister informs the House of Representatives about the purchases. In this connection the minister has written: 'The DMP marks points in the political decision-making process where important choices are made and ensures appropriate provision of information to the minister and, in the case of larger projects, the House of Representatives throughout the project, so that adjustments can be made where necessary' (Ministry of Defence, 2011j). Projects pass through the following phases in the DMP:

1. requirement definition (phase A);
2. the preliminary study (phase B);
3. the study (phase C);
4. the procurement preparations (phase D).

For DMP projects costing EUR 250 million or more, there is also a DMP evaluation (phase E).

After the requirement has been approved, the minister normally delegates projects costing less than EUR 100 million to the civil service. Projects that cost EUR 100 million or more, or are deemed politically sensitive, are not usually delegated in this way (Ministry of Defence, 2011j).

The MPO accompanying the minister's 2012 budget mentions that in his letter of 7 July 2010 (Ministry of Defence, 2010c) he amended and extended the DMP in response to proposals by the Permanent Committee on Defence. This led to the following four changes:

1. The minister will not normally combine the B, C and D phases of the DMP unless there are good reasons to do so.
2. The minister will provide information on a confidential basis only if operational interests are involved or the ministry's commercial interests may be harmed. He will substantiate such decisions in a public letter.



3. The minister will inform the House of Representatives of major developments in between scheduled DMP reports. Such developments may concern funding, products, project organisation or timetables. Changes in qualitative or quantitative requirements, or unexpected market developments, may necessitate amendments to the project budget. The minister will inform the House in between scheduled reports whenever the budget is exceeded by more than EUR 25 million.
4. The minister will inform the House whenever unusual developments in price levels and market prices are expected during phase A.

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In our previous report we discussed decision-making on the Replacement of F-16s project. Phase A of the project was completed in 1999. Phases B and C were completed in 2002 with a joint B/C letter. Since 2002 the project has been in the procurement preparation phase (Netherlands Court of Audit, 2011a). The minister mentions the DMP letters for the projects on the project pages of the MPO under the heading 'relevant parliamentary papers'. The schedule for the various phases of the project can also be found there. Among other things, this makes clear that the minister expects the A letters for the three projects planned because the F-16s are being kept in service longer than planned to be ready in 2012 and 2013.

1.3 Rules for Large Projects

The House of Representatives can decide to categorise a policy area or project as a 'large project'. The minister responsible for the policy concerned then has to draw up an annual progress report, with an assurance report on the control and management of the project and the quality and completeness of the financial and non-financial information in the progress report. The assurance report must be produced by the ministry's audit department or an independent accounting firm.

In June 1999 the Replacement of F-16s project was designated as a large project by the House of Representatives, which requested the Minister of Defence to draw up a basic document that could be referred to in order to gauge the progress made by the project. On 15 March 2000 the minister issued a document containing criteria and conditions which the successor to the F-16 would have to meet (Ministry of Defence, 2000). Since then, the Ministry of Defence and the Ministry of Economic Affairs, Agriculture and Innovation have drawn up a joint annual report on the project. The audit departments of these ministries then draw up an assurance report on this annual report.



On 27 October 2009 the Permanent Committee on Defence sent the State Secretary for Defence and the Minister of Economic Affairs a letter concerning its information requirements regarding the Replacement of F-16s project (House of Representatives, 2009a). The letter indicated that the committee was reviewing its information requirements as stated in 1999 and was making a number of permanent changes to its requirements concerning the annual reports on the project. The committee now also wanted to receive information on the total costs of the JSF programme (including the operating costs and related costs not falling within the current definition), a financial summary of the total multiyear plan and the exit and postponement costs. On 12 December 2011 the House's Permanent Committees on Defence and on Economic Affairs, Agriculture and Innovation again amended their information requirements concerning the project (see box).

Revised rules on provision of information to House of Representatives (House of Representatives, 2011a)

On 12 December 2011 the House of Representatives decided with regard to its information requirements for the Replacement of F-16s project that:

- the Replacement of F-16s project would retain its large-project status under the Rules for Large Projects;
- the House would in principle discuss the project with the government once a year (including the test phase, the further development of the JSF and market developments concerning fighter aircraft);
- the House committees would hold these discussions after the regular annual report on the replacement of F-16s had been received;
- the annual report should henceforth be submitted by (the first working day after) 1 June rather than 1 April (as required under the Rules for Large Projects).

On 22 December 2011 (Ministry of Defence, 2011e) the Minister of Defence sent the committees a letter stating that he would submit the annual report on the Replacement of F-16s project to the Permanent Committee on Defence by the first working day after 1 June. He indicated that this would allow account to be taken of the reports by the US Government Accountability Office and Congressional Budget Office. The minister could then also base the financial information in the annual report on the then available financial source data (the data on which that year's Selected Acquisition Report⁷ would also be based).

⁷ For the 2010 Selected Acquisition Report (SAR), see Part 1.



Each year's annual reports also mention projects related to the Replacement of F-16s project. In their 2010 annual report the ministers made a distinction between (a) related projects the requirement for which had already been fully approved by the Ministry of Defence (phase A of the DMP) and for which funds had already been allocated, and (b) related projects that had been identified but not yet officially approved. In this connection the ministers stated that changes might be made to the related projects in the light of the policy letter.

The 2010 annual report also subdivided the approved related projects into (a) seven headings that in some cases matched projects from the MPO (e.g. F-16: improvement of air-to-ground weaponry), in other cases were a combination of MPO projects (e.g. Improvements in F-16s) and in still others were entirely separate (e.g. External links to Generic Defence Interface), and (b) eight identified related projects (such as the purchase of on-board cannon ammunition and self-protection equipment for the successor to the F-16).

The ministers did not explain how these projects actually related to the Replacement of F-16s project. Nor is there any reference to the MPO or relevant parliamentary papers. However, in the chapter on procurement preparations the ministers do discuss the consequences of keeping the F-16s in service longer than planned. They mention operational, logistic and financial consequences and discuss these briefly. We have made a recommendation about this in Part 1 of this report.

1.4 Letters and questions

In addition to the regular reports, the ministers concerned provide the House of Representatives with information in letters, sometimes in response to questions from members of the House. The parliamentary papers for 2011 can be found under various file numbers.

| File | Number |
|--|----------|
| Replacement of F-16s | 26 488 |
| Policy letter from minister of Defence | 32 733 |
| Finalisation of Ministry of Defence's budget statements for 2012 (X) | 33 000-X |
| Monitoring of Joint Strike Fighter | 31 300 |

Below we will discuss several important letters that were sent to the House in 2011, and will present a figure summarising the correspondence on the JSF.

*Policy letter*

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On 8 April 2011 the Minister of Defence sent the House of Representatives his policy letter entitled 'The Ministry of Defence in the wake of the credit squeeze: reduced armed forces in a turbulent world' (Ministry of Defence, 2011b). The letter presented the decisions he had had to make as a result of the financial cutbacks set out in the coalition agreement. Among other things, it stated that the number of F-16s and fighter pilots would be reduced from 87 to 68, and that keeping the F-16s in service longer than planned would cost EUR 300 million. The 19 surplus F-16s would be decommissioned, and related projects would be cut back proportionally. The minister also stated that keeping the F-16s in service longer than planned would increase their operating costs (see also chapters 2 and 3). He stated that first deliveries of the aircraft he considered as the replacement for the F-16 would not take place before 2019. In his investment summary he had appropriated EUR 4.5 billion for the replacement of the F-16s. Two JSFs would be purchased, but no commitments would be made to purchase additional aircraft (see also chapter 4).

Questions from the House about the policy letter

On 20 May 2011 the Minister of Defence replied to questions from the House about his policy letter (Ministry of Defence, 2011a). Among other things, he explained that the EUR 300 million referred to in the letter consisted of investment costs for keeping the 68 F-16s in service for three more years owing to the postponement of their replacement from 2016 to 2019. Regarding the operating costs, he stated that a total of EUR 122.8 million had been spent on 87 F-16s in 2010, and that reducing the number of aircraft to 68 would result in structural savings of EUR 41.4 million a year. He indicated that he could not give a detailed multiyear estimate of the expected rise in operating costs resulting from the aircraft being kept in service longer than planned (see also chapters 2 and 3).

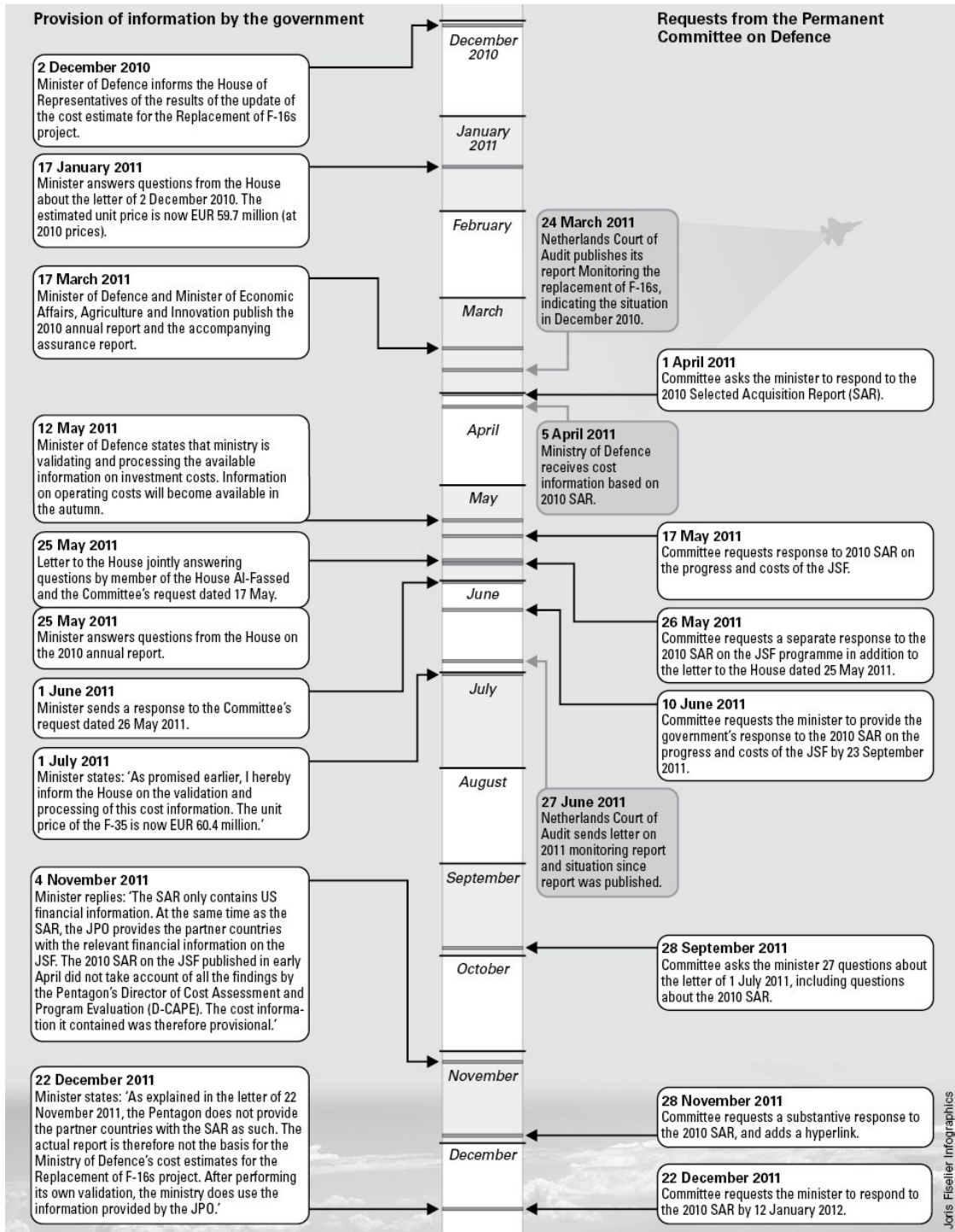
Joint Strike Fighter

In 2011 the Minister of Defence and the Permanent Committee on Defence exchanged a number of letters on financial developments concerning the JSF. We have summarised this correspondence in figure 4 and also provided details of other important stages in the provision of information to the House of Representatives. We will return to this in section 4.2.2.



Figure 4 Provision of financial information on the JSF in 2011

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2 Deployability of F-16s: the current situation

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In an ideal world, policy ambitions are in balance with the available time, funds, staff and other resources. We see this as a key part of policymaking and policy implementation. This chapter will indicate the extent to which the air force can fulfil the government's ambitions with the present fleet of F-16s. We will start by looking at the size and condition of the fleet (section 2.1). We will then describe the relationship between the policy ambitions, the number of F-16s, the number of pilots and the number of hours that can be flown (section 2.2). Finally, we will discuss the costs of deploying the present fleet (section 2.3).

2.1 The F-16 fleet as of 2011

Number of aircraft

Between 1979 and 1992 the Netherlands purchased a total of 213 F-16s. Following successive adjustments to ambitions and the loss of 33 aircraft, the air force had 87 left at the beginning of 2011. On 8 April 2011 the Minister of Defence announced that he would decommission 19 of them (see figure 5). This has not yet happened: in 2011 the aircraft were kept operational and were deployed. In May 2011, however, the total budgeted number of flying hours for the F-16s in 2011 was reduced from 17,000 to 13,500. With effect from 2012 the number of hours will be 12,800 a year. The decommissioning of the 19 F-16s will be discussed in more detail in section 3.3.

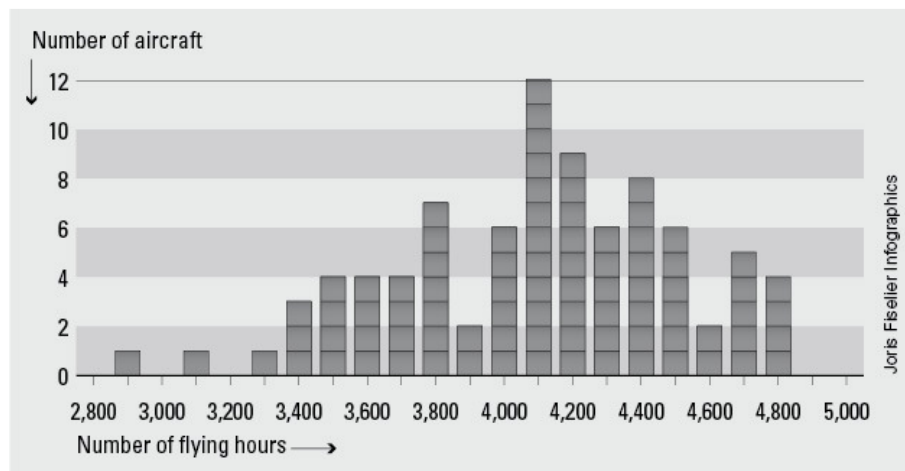
**Figure 5 The current fleet of F-16s and planned decommissioning of 19 aircraft**

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Hours flown

By the 31st of December 2011 the Netherlands' F-16s had clocked up an average of 4,144 flying hours. The number of flying hours for the individual aircraft ranged from 2,952 to 4,893. Most of the aircraft had flown between 4,000 and 4,700 hours (see figure 6).

Figure 6 Frequency distribution of absolute flying hours per aircraft (situation 31 December 2011, n = 85)

Of the fleet of 87 F-16s, one aircraft is used for testing. It is not deployed on missions and therefore has an exceptionally low number of flying hours. Another aircraft was damaged in April 2011 and will not fly again. Both aircraft have been omitted from the calculation.



In various letters to the House of Representatives the Minister of Defence has stated that quite soon after coming into service the F-16s were subject to greater stress than foreseen at the design stage. The minister was referring here to the number of flying hours in relation to 'damage hours', rather than the absolute number of flying hours.

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To calculate damage hours, the absolute number of flying hours is multiplied by an internationally adopted stress index known as the crack severity index (CSI), developed in the Netherlands by the National Aerospace Laboratory (NLR). A CSI higher than 1 indicates that the aircraft is subject to greater stress than was foreseen during its design.

The CSI is determined, in particular, by sensors that measure stress in various components of the aircraft. It is affected by the type of mission. In 2004 the NLR determined which criteria applied to the CSI for the Netherlands' F-16s.

The Ministry of Defence endeavours to keep the CSI as low as possible. This can be achieved by ensuring that exercises are flown in configurations known to cause less stress. For instance, the aircraft fly with additional weight on the wings if there are no weapons suspended from them. This is because cracks can occur more easily at the wing attachment points if nothing is suspended from the wings. For 2011, on the basis of Ministry of Defence data, we have calculated a CSI of 0.92. This means that the absolute number of flying hours must be multiplied by 0.92 to arrive at the relative number of flying hours (the damage hours). In 2011, the aircraft were therefore subject to less stress (an average of 3,796 relative flying hours) than would have been expected on the basis of the average absolute number of flying hours (4,144) (see table 2).

Table 2 Absolute and relative hours flown by F-16 fleet in 2011 (situation 31 December 2011, n = 85) (1)

| | |
|--|-------|
| Average number of absolute flying hours per aircraft | 4,144 |
| Average number of relative hours ('damage hours') | 3,796 |
| Crack Severity index (CSI) | 0,92 |

1) Of the fleet of 87 F-16s, one aircraft is used for testing; it is not deployed on missions and hence has an exceptionally low number of flying hours. Another aircraft was damaged in April 2011 and will not fly again. Both aircraft have been omitted from the calculation.

The number of hours flown by the individual 85 F-16s in 2011 ranged from 2,952 to 4,893.



2.2 Ambitions and capabilities

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In 2011 the Netherlands' F-16s were deployed on several missions abroad, in addition to regular QRA flights.

Quick Reaction Alert and operations in Libya and Afghanistan in 2011

Two fully armed F-16s, two pilots and other personnel are in readiness 24 hours a day to defend Dutch airspace and the area of responsibility assigned to this country by NATO. This Quick Reaction Alert (QRA) came into operation several times in 2011. From 30 March to 31 October 2011 the Netherlands took part in NATO's Unified Protector operation in Libya. The purpose of the mission was to protect the population, monitor compliance with the arms embargo and enforce the no-fly zone over the country. Six F-16s, two of which were kept in reserve, monitored Libyan airspace, gathered intelligence and kept air traffic towards Libya under surveillance. They did this from the Decimomannu airbase on the Italian island of Sardinia. The fighters were not deployed against land or sea targets. Since mid-2011 the Netherlands has been training the Afghan civilian police in northern Afghanistan. Since 27 October 2011 four Dutch F-16s, supported by 120 soldiers, have been in readiness at Mazar-e-Sharif (to the west of Kunduz Province), from where they locate improvised explosives. They also protect Afghan and international units in emergency situations.

2.2.1 Level of ambition

Flexibly deployable armed forces were a feature of the coalition agreement signed by the Rutte-Verhagen government (People's Party for Freedom and Democracy and Christian Democratic Alliance, 2010). Structural cutbacks were to be achieved on this basis. Three budgetary alternatives for this level of ambition are set out in the Ministry of Defence report *Verkenningen: houvast voor de krijgsmacht van de toekomst*: ('Explorations: guidelines for tomorrow's armed forces') (see table 3) (Ministry of Defence, 2010b).



Table 3 Budgetary options for the 'flexible deployability' level of ambition (Ministry of Defence, 2010b)

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| Minus option | Zero option | Plus option |
|---|--|--|
| 1 long-term stabilisation operation involving up to 8 aircraft AND 1 short-term stabilisation operation involving up to 8 aircraft OR 1 intervention or defence operation involving up to 1 squadron for up to 1 year | 2 long-term stabilisation operations involving up to 8 aircraft each OR 1 intervention or defence operation involving up to 2 squadrons for up to 1 year | 2 long-term stabilisation operations involving up to 8 aircraft each OR 1 intervention or defence operation involving up to 3 squadrons for up to 1 year |

In May 2011, replying to questions from the House, the Minister of Defence formulated 'deployment objectives' for this government's term of office (Ministry of Defence, 2011a). These indicate what the armed forces must be capable of, subject to the financial constraints over the coming years. In the 2012 budget these objectives are worded as follows:

1. Permanent surveillance of Dutch airspace by two F-16s (QRA: Quick Reaction Alert).
2. A single contribution to international intervention operations, involving one squadron of fighters.⁸
3. Long-term contributions to stabilisation operations: a single airborne contribution by fighters, involving an average of eight aircraft. (Ministry of Defence, 2011l)

Among other things, the minister has made the financial cutbacks stipulated in the coalition agreement by standing down one of the five F-16 squadrons. This affects the extent to which NATO commitments can be met.

In 2011 the Netherlands' commitments to NATO were as follows:

- two squadrons (30 F-16s) available for a mission lasting less than a year; and/or
- three squadrons (45 F-16s) available for a mission lasting more than a year.

⁸ A squadron is a unit of F-16s with the accompanying operational and support personnel. The Ministry of Defence's units comprise 15 aircraft.



Given NATO's current readiness requirements for its partner countries, the government's ambitions are out of balance with the budgeted number of flying hours, the number of pilots and the number of aircraft. In practice, however, NATO rarely calls on the Netherlands to make its maximum contribution. The Netherlands' commitments to NATO are being revised to take account of its reduced fleet of F-16s. The Netherlands also currently fails to meet the NATO standard for the number of pilots per operational aircraft (the 'crew ratio'). In peacetime this is 1.2. The Netherlands has 68 pilots and 68 to 87 aircraft, so its crew ratio is currently 1 or less.

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The Ministry of Defence does not have a detailed calculation or description of how many F-16s are needed to attain the deployment objectives. Nor has the ministry described how it intends to attain these objectives with the available resources. We have made these calculations on the basis of the ministry's own data. In the light of the objectives we will first calculate the required number of pilots (section 2.2.2), then the number of flying hours required in order to keep them properly trained (section 2.2.3) and, on that basis, the required number of aircraft (section 2.2.4).⁹ Finally, we examine to what extent these factors are in balance (section 2.2.5).

2.2.2 Pilots

Defending Dutch airspace

Two fully armed F-16s, two pilots and other personnel must be in readiness 24 hours a day to defend Dutch airspace and the area of responsibility assigned to this country by NATO. This task is known as Quick Reaction Alert (QRA). QRA comes into operation if, for example, an aircraft enters Dutch airspace without identifying itself and without having submitted a flight plan in advance. The QRA task is performed alternately by the airbases at Volkel and Leeuwarden.

The Working Hours Act stipulates that pilots may be deployed for no more than two 12-hour QRA duty periods a week; the rest of the week is needed for compensation purposes. This means that 14 pilots are required *each week* (14 12-hour duty periods x 2 pilots per duty period ÷ 2 duty periods per pilot).

Since leave, training and courses prevent pilots from being available for 52 weeks of the year, 24 full-time pilots are in practice required *each year* in order to maintain QRA capability.

⁹ The calculations take no account of maintenance technicians and other personnel.

**Sustainment capability**

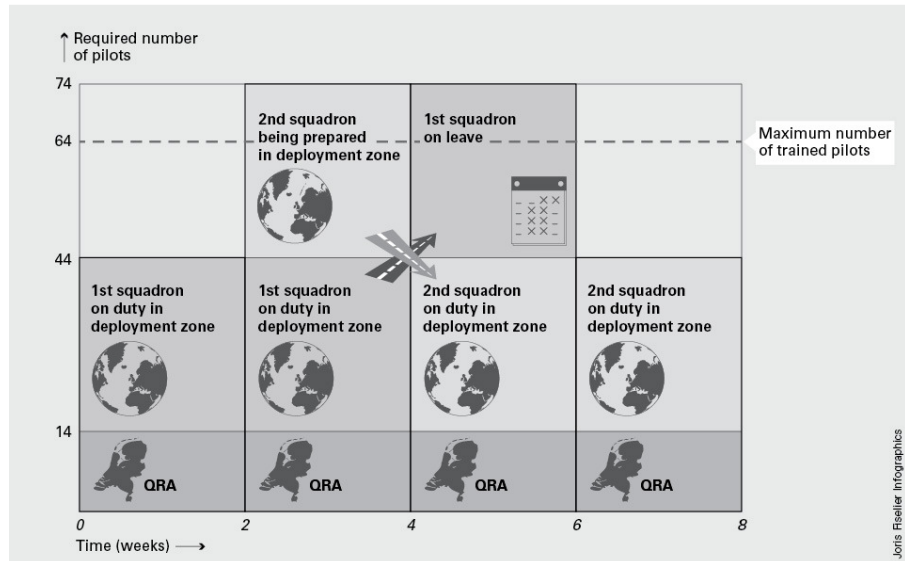
Pilots cannot be deployed on missions for more than a few months in succession. Successive units are therefore needed to maintain a continuous presence in a deployment zone. The Ministry of Defence achieves this 'sustainment capability' with a system of three-way rotation, which means that in a given six-month period one unit is deployed on a mission, one is in the Netherlands after returning from a mission and one is preparing for a mission. In the case of stabilisation operations, the ministry plans to introduce four-way rotation, so that four units will be available to ensure that one unit can always be deployed. (Ministry of Defence, 2010b)

Single contribution to international intervention operations

The NATO crew ratio for squadrons deployed on missions is 2. This means that the squadron must have $15 \times 2 = 30$ pilots available for a period of up to six months (see box). If the Netherlands' contribution lasts a year (the maximum length of an intervention operation), the total number of pilots required is 2×30 . The 30 relief pilots arrive in the deployment zone two weeks before the six-month period elapses, and the 30 pilots from the deployment zone have two weeks' recuperation leave on returning to the Netherlands. This means that 60 pilots are unavailable for other duties during the four-week changeover period. At least 14 additional pilots are needed to maintain QRA during this period. These pilots perform only QRA duties during this time. In other words, deploying one squadron on a one-year mission while maintaining this country's QRA capability requires 74 pilots. The current total of 68 is insufficient for this task.

**Figure 7 Deployment of pilots during changeover period in intervention operations**

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The Ministry of Defence is able to keep 64 pilots trained.

Long-term contributions to stabilisation operations

The full deployment objective for a long-term contribution to a stabilisation operation is a single airborne fighter operation, involving an average of eight aircraft. If four-way rotation is adopted, four units are required for a long-term mission. Given a crew ratio of 2 for squadrons deployed on missions, a deployable unit with an average of eight fighters must consist of at least 16 pilots. A long-term mission therefore requires 16×4 (four-unit rotation) = 64 pilots. Since up to 32 pilots are in the deployment zone around the time of the changeover, there are still enough pilots in the Netherlands to maintain QRA.

Total number of pilots required

In order to attain the level of ambition set out in the budget, at least 74 pilots are required for a single contribution to an intervention operation and at least 64 for a long-term contribution to a stabilisation operation. However, it is not the intention that the Netherlands should take part in both types of operation simultaneously. The budget includes the statement that 'in the event of the armed forces being called on to take part in an intervention operation, this country's contributions to stabilisation operations may – temporarily – have to be reduced or terminated' (Ministry of Defence, 2011l).



2.2.3 Flying hours

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As a result of the decision to decommission 19 of the 87 F-16s, the budgeted number of flying hours will be reduced from 17,000 to 12,800 a year.¹⁰

Subject to these budgetary constraints, the air force must:

- carry out missions;
- perform its QRA task;
- train new pilots;
- ensure that all pilots complete their annual programme of exercises (see box);
- ensure that all 'guest pilots' (personnel not now operationally deployable but nevertheless required to maintain a given level of flying experience) complete part of the annual programme of exercises.

Annual Programme of Exercises

To keep operational fighter pilots up to the desired standard of training, they must complete an Annual Programme of Exercises each year. This is a combination of actual flights in F-16s, simulator flights and other training requirements. According to the Ministry of Defence, a Dutch pilot can complete the training activities required for an F-16 in an average of 172 hours.

The NATO guideline recommends 220 to 240 hours of training a year per pilot. The air force has a training system that is believed to enable Dutch pilots to achieve the required standard in just 180 hours – the minimum number laid down in the NATO guideline.

The 74 pilots required for a single contribution to an international intervention operation need 12,728 training hours. The 64 pilots required for a long-term contribution to a stabilisation operation need 11,008 hours. As of late 2011, besides the pilots that complete a full annual programme of exercises, the Ministry of Defence has 54 guest pilots,¹¹ who should each complete a quarter of the programme (43 hours), totalling 2,322 additional training hours. In practice, however, the

¹⁰ 2011 was a transitional year, with 13,500 budgeted flying hours.

¹¹ 20 pilots were stood down as of 1 August 2011. It is not clear whether this number will be maintained in the years to come. In any case, given the reduction in the number of pilots to 68 and unchanged mission commitments (including headquarters, staff and liaison), there seems to be a need for more hours for the guest pilots.



ministry has decided that no more than 35 guest pilots will complete a quarter of the programme, totalling 1,505 training hours. The budgeted flying hours also include 1,200 training hours, 390 ferrying hours (for the transport of aircraft) and 65 logistic hours.

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Table 4 Ministry of Defence's deployment objectives: required number of pilots and training hours

| | Intervention operation | Stabilisation operation |
|--|-----------------------------------|------------------------------------|
| Required number of pilots | 74 pilots | 64 pilots |
| Required number of training hours: fully trained pilots (1) | 12,728 | 11,008 |
| Required number of training hours: guest pilots (2) | 1,505 | 1,505 |
| Required additional hours (3) | 1,655 | 1,655 |
| Total hours | 15,888 | 14,168 |
| Budgeted hours | 12,800 | 12,800 |

1) Based on an annual programme of exercises lasting 172 hours (see box).

2) Based on 35 guest pilots completing a quarter of the annual programme of exercises (43 training hours).

3) Training, ferrying and logistic hours.

As table 4 makes clear, there are not enough budgeted flying hours to keep enough pilots properly trained, accommodate some of the guest pilots and maintain other necessary flying hours. What is more, no account has been taken here of actual mission hours or hours spent on QRA flights.

Mission hours do not count as training hours. Depending on the duration and diversity of the mission, pilots' training levels may actually decline during missions. In addition, when Dutch F-16 pilots are deployed on missions, there may not be enough hours left for the annual programme of exercises to keep all the pilots properly trained. This in turn has an adverse impact on operational readiness.

Pilots deployed on missions complete fewer training hours. The ministry therefore treats some of the unusable training hours as hours of deployment.

A rough calculation shows that missions involve an average of 2,700 flying hours a year.¹²

Pilots deployed on missions cannot consume all of their training hours from the full annual programme of exercises. These 'unusable' training

¹² Over the past ten years (2002-2011) the air force took part in various missions with F-16s, including in Afghanistan and Libya. During this period the F-16s flew a total of 27,000 hours. These hours were flown by varying numbers of aircraft.



hours are in practice used as hours of deployment. During the last ten years these training hours formed 31% (837 hours) of the average number of hours of deployment. We have reduced these hours from the total average number of needed hours of deployment each year ($2,700 - 837 = 1,863$). Therefore the average number of extra needed hours of deployment for each year is 1,863. These hours will have to be added to the total amount of flying hours if the air force is deployed.

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2.2.4 Aircraft

Once the 19 aircraft have been decommissioned, as the minister intends, the air force will have no more than 68 F-16s. Ten of these are permanently stationed in the United States for courses and training. Each of these aircraft flies 200 hours a year. However, six of them are used full-time for courses and hence cannot be used for training purposes. The other four aircraft therefore provide a total of 800 hours' training capacity.

One of the aircraft in the Netherlands is only used for testing and is hence not available for training or operational tasks. As of late 2011, the remaining 57 aircraft in the Netherlands each flew an average of 180 hours a year. These aircraft are used for missions, training and QRA.

On the basis of the required number of pilots, the number of hours to be flown each year and the average number of hours to be flown by each aircraft, we can calculate how many aircraft are required each year. The results of this calculation can be found in table 5.

Table 5 Needed pilots, flying hours and F16s at different operations (including continuous staffing of the QRA)

| | Intervention operation | Stabilisation operation |
|------------------------------|-----------------------------------|------------------------------------|
| Trained pilots | 74 | 64 |
| Required number of hours (1) | 17.751 | 16.031 |
| F-16s | 98 | 89 |

1) Based on an annual programme of exercises lasting 172 hours, 35 guest pilots required to complete a quarter of the programme and an annual total of 1,863 mission hours.

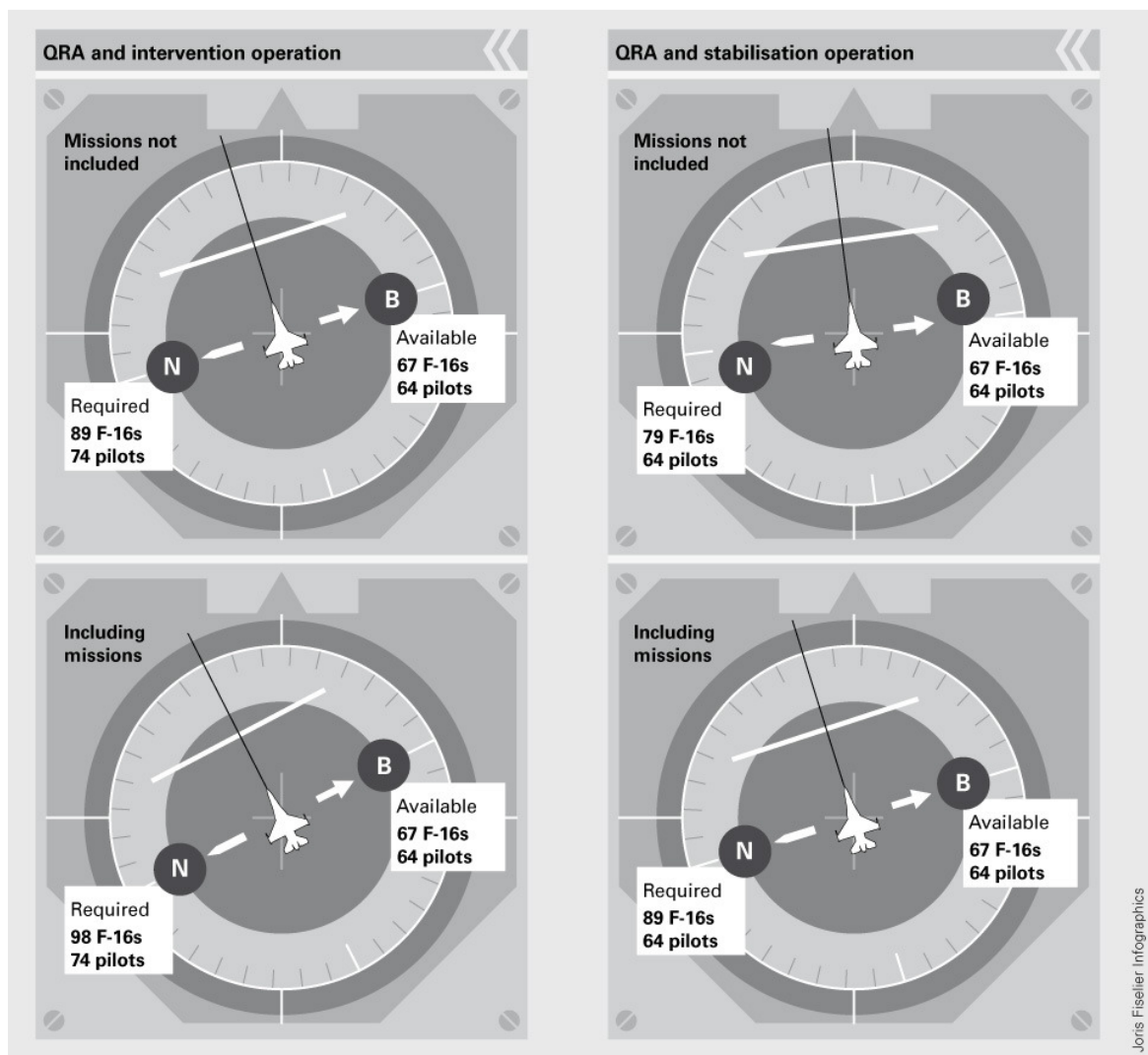
2.2.5 Feasibility of ambitions

In an ideal situation the government's ambitions can be fulfilled within the agreed period and with the available personnel and resources. When policy is drawn up, we expect the government and associated organisations to consider whether it can be implemented in good time and is sustainable.



Figure 8 shows that in the light of the above calculations the government's ambitions as set out in the 2012 budget cannot be fulfilled. With a total of 57 aircraft in the Netherlands that can fly for an average of 180 hours a year, plus four aircraft in the United States that are each available for no more than 200 training hours a year, and an annual programme of exercises lasting 172 hours, the Ministry of Defence can keep 64 pilots properly trained.

Figure 8 Ministry of Defence's deployment objectives: required aircraft and pilots





There are various ways to deal with this. The air force can reduce the training hours needed in order to take part in missions. However, this reduces pilots' readiness, since fewer of them can complete the annual programme of exercises. Alternatively, more hours could be flown with the available F-16s in order to take part in missions. However, we note that in recent years an average of 180 flying hours per aircraft has proved to be the maximum.¹³ In short, the limiting factor is the budgeted number of flying hours.

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Additional flying hours

In November 2011 the Minister of Defence informed the House of Representatives that the first extension of the deployment in Libya in June of that year had made clear that the deployments in Libya and Afghanistan would reduce the remaining number of flying hours for the F-16s to below the level required for readiness. Since then the government had therefore decided to treat all the F-16 flying hours for the deployment in Libya as additional flying hours. The costs incurred for these additional hours would be charged to the HGIS¹⁴ budget, so that they would not be deducted from the budget for training hours (Ministry of Defence, 2011d).

2.3 F-16s: operating costs and investment

The Ministry of Defence has yet to provide the House of Representatives with a picture of the operating costs for the fleet of F-16s. Although the Defence Operational Plan (DOP) lists all the operating expenditure on defence materiel, this is not itemised for individual weapons systems. It shows the total expenditure for all the weapons systems category by category (fuel, maintenance etc.). Since last year the ministry has been drawing up a weapons systems DOP, which should provide an indication of the operating expenditure for each weapons system. The ministry intends to make this part of the regular budgeting procedure from next year onwards.

¹³ If more flying hours are generated, more spare parts and maintenance man-hours are required. This causes problems, because maintenance contracts have to be altered (at great expense) and personnel must work longer hours or more personnel must be recruited. A limiting factor in generating additional flying hours is therefore the available funding.

¹⁴ Homogeneous Group for International Cooperation, an item on the Ministry of Foreign Affairs budget used to pay for development aid and missions.



The investments in the F-16 budgeted before the policy letter of 8 April 2011 are shown in table 6. Over the period 2011-2015 these investments total EUR 230.1 million for projects in progress and at least EUR 100 million for planned projects (ministerial estimate). These costs are over and above the aforementioned EUR 300 million invested in keeping the F-16s in service longer than planned.

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Table 6 Costs of F-16s already budgeted before the policy letter, for the period 2011-2015, in millions of EUR

| | Size of project | Until end of 2011 | 2012 | 2013 | 2014 | 2015 | Phasing until |
|---|------------------|-------------------|---------------|-------------|-------------|------------|---------------|
| Projects in progress | | | | | | | |
| F-16 M5 modification | 51.0 (2) | 35.4 | 4.2 | 2.4 | 1.5 | 0.0 | 2018 |
| F-16 Mode 5 IFF | 39.3 | 13.2 | 12.1 | 7.5 | 5.5 | 1.0 | 2015 (3) |
| F-16 Improvement of air-to-ground weaponry. phase 1 | 58.8 | 37.2 | 0.0 | 1.5 | 14.0 | 6.1 | 2015 |
| F-16 Self-protection (ASE) | 81.0 | 5.6 | 13.0 | 26.0 | 36.4 | 0.0 | 2014 |
| Total for projects in progress | 230.1 | 91.4 | 29.3 | 37.4 | 57.4 | 7.1 | |
| Planned projects | | | | | | | |
| F-16 Infrared-guided air-to-air missile (1) | 25-50 (min. 25) | | | | | | 2013-2015 |
| F-16 M6.5 maintenance tape | <25 | | <25 | | | | 2012-2015 |
| F-16 Improvement of air-to-ground weaponry. phase 2 | 50-100 (min. 50) | <25 | <25 | | | | 2010-2021 |
| Total for planned projects | 100 | <25 | <50 | | | | |

Source: Ministry of Defence, 2011/

- 1) Delegated project (the A letter has already been sent to the House of Representatives).
- 2) This figure includes an amount of EUR 7.5 million which is already planned for 2018 in the ministry's internal investment overview but is not mentioned separately in the 2012 budget. In the budget this project is planned to end in 2014. This should have been 2018.
- 3) In the budget this project is planned to end in 2018. This should have been 2015.

Until last year, the fleet of F-16s was due to be reduced in size in 2017. According to the Ministry of Defence, earlier reduction of the fleet will allow EUR 41.4 million a year to be saved on the operation of the F-16s (Ministry of Defence, 2011a).

The additional investment required in order to keep the F-16s in service longer than planned will be discussed in more detail in section 3.4.



3 Deployability of F-16s: consequences of keeping them in service longer than planned

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It is now certain that the F-16s will have to be kept in service longer than planned. What is not certain is how long that will be. This chapter discusses how much longer and how intensively they must continue to fly (section 3.1), how many hours can be flown in the future (section 3.2), the situation regarding the decommissioning of 19 F-16s (section 3.3) and the probable and possible financial and operational consequences of keeping the aircraft in service longer than planned (sections 3.4 and 3.5).

3.1 Duration and intensity of continued service

Until a decision has been made on the replacement of the F-16s, these must continue to fly. How long and how intensively they must do so will depend on when and at what rate the replacement aircraft become available.

The Ministry of Defence has conducted an efficiency study that examines both the operational and financial consequences of the transition from the F-16 to its intended successor, the JSF (see box).

Efficiency study of the transition from the F-16 to the JSF

The Ministry of Defence is conducting an efficiency study to analyse the financial and operational consequences of various introduction series of the JSF and the related phase-out series of the F-16. This study will enable it to determine the most efficient scenario for introducing the JSF and phasing out the F-16. For this purpose, the Netherlands Organisation for Applied Scientific Research (TNO) has developed a model for the ministry. The model uses various cost elements, including the investment costs in the F-16 and the JSF and the costs per flying hour of each aircraft. In a review in 2007 TNO concluded that the model can be used for the efficiency study (TNO, 2007). In addition the Ministry of Defence's audit department validated the use of the model in 2005 and



2007. The department also validated the model in 2010, after a number of amendments to its structure.

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The ministry considers it risky, and hence undesirable, if phasing-in does not match up with the test and evaluation phase. One of the assumptions in the efficiency study was therefore that the aircrew and maintenance personnel taking part in the JSF test and evaluation phase would instruct the conversion unit, thus acting as 'trailblazers' for the new aircraft. They would be able to transfer their knowledge and experience to the first groups of operational pilots and maintenance personnel with minimum delay – a key factor in ensuring an effective, safe and efficient transition from the F-16 to the JSF.

Until the policy letter of 8 April 2011 (Ministry of Defence, 2011b), the F-16's replacement was due to reach initial operational capability (IOC) in 2018 (this means that at least 10 new aircraft with trained personnel must be available for deployment within a medium to high spectrum of violence). The first squadron was due to reach full operational capability (FOC) in 2019, at which point the replacement aircraft would take over the F-16's operational role. At the time, the replacement aircraft were still scheduled to be delivered, and the F-16 phased out, between 2016 and 2024.

Postponement of the procurement decision has left a gap between participation in the test and evaluation phase and the preparations for IOC. Internally, the Ministry of Defence now assumes that IOC will be reached in 2021. The various shifts in the dates are shown in table 7.

Table 7 Shifting milestones in the replacement of F-16s

| Stage | Procurement decision | IOC | FOC | Replacement phased in | F-16s phased out |
|----------------------------|----------------------|------|------|-----------------------|--------------------|
| The A letter (1999) | | 2016 | 2018 | 2014-2020 | 2015-2021 |
| Hamer motion (2009) (1) | 2012 | 2018 | 2019 | 2016-2024 | 2016-2024 |
| After policy letter (2011) | After 2015 | 2021 | 2022 | 2019-2027 | Possibly 2019-2026 |

1) Among other things, the Hamer motion – which was adopted – stated that the decision to take part in the test and evaluation phase of the international JSF programme was not a final decision to purchase the JSF, and that a final decision to purchase a replacement for the F-16s would be taken in 2012 rather than 2010 (House of Representatives, 2009b).

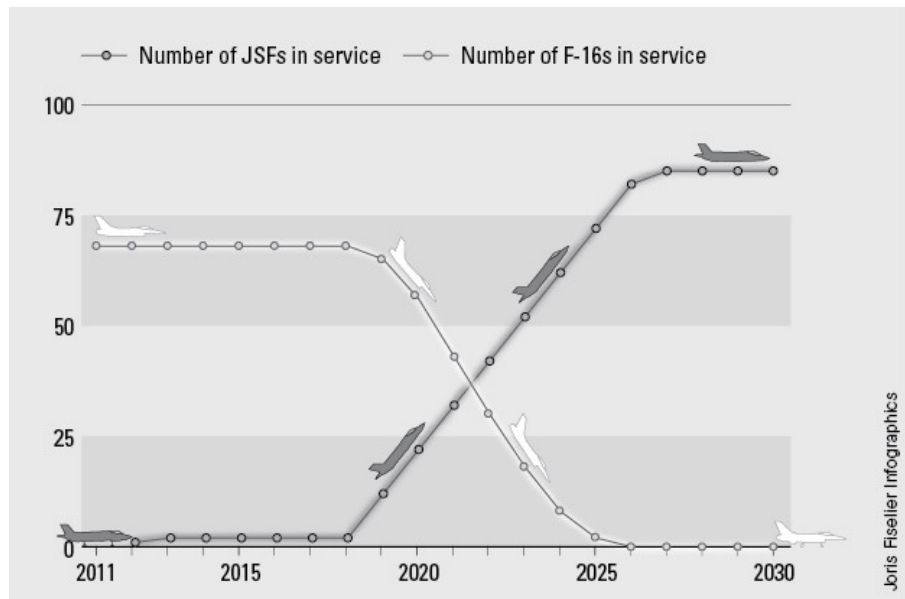
The Ministry of Defence assumes that the first replacement aircraft cannot be delivered before 2019. They will be deployable from 2021 onwards, and will take over the F-16s' operational role from 2023



onwards. Aircraft will then continue to be delivered for several years until the planned total of 85 is reached. At the end of 2011 the ministry did not yet have a revised phase-out series for the F-16s. However, there was a provisional transitional schedule (see figure 9).

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Figure 9 Provisional schedule for transition from F-16s to the JSF (situation as of late 2011)



3.2 Future flying hours

This section indicates how many hours the remaining 68 F-16s must continue to fly until their replacement reaches full operational capability (FOC) in 2022.

At the end of 2011 the Ministry of Defence had not yet decided which aircraft would be decommissioned. However, it had made a provisional selection of 18 aircraft, plus the aircraft that was lost in April 2011. Our calculations of future flying hours are based on the existing fleet of F-16s as of 1 April 2011, minus these 19 aircraft.

We have assumed that the annual number of flying hours for each aircraft is between 180 and 200.¹⁵ We have indicated the results based on both

¹⁵ In 2010 the air force flew an average of 180 hours per aircraft. Owing to problems with the use of materiel, this figure seems unlikely to increase, and may even fall. The entire US fleet of F-16s generates 180 to 200 flying hours a year per aircraft. In other countries with F-16s, each aircraft flies 150 to 200 hours a year.



figures. We have also made a distinction between absolute and relative flying hours (corrected for stress), based on a CSI of 0.92 (see section 2.1).

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Table 8 provides a summary of the expected number of flying hours for each aircraft until they are phased out.

Table 8: Summary of various indicators for hours flown by the current fleet of 68 F-16s

| Variabele | April 2011 | Mid-2022 based on 180 flying hours a year | Mid-2022 based on 200 flying hours a year |
|---|------------|---|---|
| Average number of absolute flying hours per aircraft | 4,144 | 6,124 | 6,344 |
| Average number of flying hours per aircraft corrected for relative stress (<i>damage hours</i>) | 3,796 | 5,609 | 5,811 |

1) This figure includes all the aircraft except the 19 that will probably be decommissioned.

An initial qualification regarding the above calculations is the uncertainty about the future budgeted number of flying hours, the extent to which the aircraft will be deployed on missions and possible losses of aircraft. In recent years the average rate of loss has been one aircraft every 16,000 flying hours. During the 140,000 hours that the aircraft will have to fly between now and 2022 (assuming that the budgeted number of flying hours remains unchanged at 12,800), this would mean the loss of another eight or nine aircraft.

The remaining aircraft will then have to fly more hours than they usually do at present. Additional flying hours will also be required so that pilots whose level of training declines during missions can fly more training hours. It is uncertain to what extent these additional hours can be achieved, given possible cutbacks in flight and ground personnel and the state of maintenance of the aircraft. The Minister of Defence has stated that up to 2009 his ministry did not generate more than 180 flying hours a year per aircraft, and that the average number of hours was 183 in 2009 and 2010, and 174 in 2011 (Ministry of Defence, 2012).

A second qualification is that we have based our calculation on an approximate phase-out series. In practice, it is quite conceivable that the aircraft will on average be phased out later, since it is uncertain whether there is sufficient funding to maintain the current provisional phase-in series of ten replacement aircraft a year.

In the light of all this we conclude that the aircraft to be kept in service will probably have to continue flying up to a total of at least 6,000 hours. Owing to peacetime losses, losses during deployment and additional



flying hours generated during missions, the ministry will have to generate more flying hours a year per aircraft than the Netherlands has managed so far.

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Comparison with other countries

In other JSF partner countries that are considering replacing their F-16s with the JSF, the transition series are not yet known either. The Dutch aircraft have flown an average of over 200 fewer hours compared with those countries. In the light of the other countries' provisional introduction series, it seems likely that the Netherlands will phase out its F-16s one or more years later than the rest. On the basis of an average of 200 flying hours a year, the Netherlands can be expected to phase out its F-16s with at least the same total number of flying hours as other European countries.

In various letters to the House of Representatives the Minister of Defence has indicated that 'the expected service life of 6,000 flying hours was not a norm or a firm yardstick' (Ministry of Defence, 2002). A more relevant factor, in his opinion, is that the aircraft will be over 30 years old by the time they are phased out.

In the 2010 annual report on the Replacement of F-16s project, the minister wrote: 'From a flight safety and logistic point of view, it is in principle technically feasible to keep the Dutch F-16s from the block 15 production series in service longer than planned. However, given the need for more and more extensive inspection programmes, this will entail an increasing maintenance workload. At the same time, alterations to the aircrafts' load-bearing structures and wings may be necessary in order to keep them airworthy. Older aircraft are also more liable to sudden defects. The greater need for repairs will make the aircraft less available for exercises and operational deployment, and operating costs will increase' (Ministry of Defence and Ministry of Economic Affairs, Agriculture and Innovation, 2011).

In the budget debate on 30 November 2011 the Minister of Defence stated that 2012 would be a year in which he intended to eliminate existing backlogs. This is based on the 'flexible deployability' level of ambition. He added that the choices he had made in the previous year were such that 'in our view such flexible deployability is just feasible, although the margins are very tight' (House of Representatives, 2011b).



3.3 Decommissioning of 19 aircraft

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'The number of F-16 fighter aircraft will be reduced from 87 to 68. The number of pilots will also be cut to 68.' The Minister of Defence's policy letter of 8 April 2011 announced the decommissioning of 19 aircraft (Ministry of Defence, 2011b). However, the air force has not yet grounded these aircraft – so far they are still flying, see § 3.3.4.

3.3.1 Sale and/or reuse

The Ministry of Defence has drawn up three decommissioning scenarios: (1) sell all the aircraft, (2) dismantle them and reuse the components, or (3) a combination of the two (see box). In any case, one of the 19 aircraft cannot be sold, for an unsuccessful touch-and-go manoeuvre in Belgium in April 2011 left it too badly damaged to fly again.

Decommissioning of 19 F-16s: three scenarios

Option 1: 18 aircraft sold and 1 reused

Option 2: 19 aircraft reused:

3 aircraft reused for training purposes and the 3 engines reused for the 68 operational F-16s.

16 aircraft dismantled; 13 engines and 2 sets of wings reused for the 68 operational F-16s 1 set of wings used for service life testing; other components kept in reserve; remainder scrapped.

Option 3: 15 aircraft sold and 4 reused:

1 aircraft: engine reused for the 68 operational F-16s; wings used for service life testing; remainder dismantled and scrapped.

2 aircraft reused to train armament crews at the bases; 2 engines reused for the 68 operational F-16s.

1 aircraft reused to train technical personnel; 1 engine reused for the 68 operational F-16s.

Other weapons systems will also be partly decommissioned by the Ministry of Defence. The ministry will not make a decision on the 'decommissioning of F-16s' business case until the business cases for the other decommissioning projects become available. Nevertheless, the ministry's 2012 budget includes an estimate of proceeds from sales, based on the sale of 23 F-16s (Netherlands Court of Audit, 2011b).



3.3.2 Intended proceeds from sales

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In 2007 the Netherlands sold six F-16s to Jordan for EUR 20.5 million, and in 2009 18 F-16s were sold to Chile for EUR 90 million. However, these past figures provide only a limited basis for estimating future proceeds from sales, for the aircraft involved differed to some extent (in type, configuration and technical generation) from the current ones. In addition, the costs of making aircraft ready for sale and providing the purchasing air force with training and/or support will depend on the purchaser's requirements. It also costs money to make and keep the F-16s fit for sale. The air force can only sell aircraft that are ready to fly. Until they are sold, it must therefore incur costs for airworthiness, hanging and any necessary modifications, spare parts, tools and maintenance.

Assuming that the net proceeds from sales in the above scenarios are approximately equal, the Ministry of Defence prefers to reuse some of the aircraft, which may reduce the logistic pressure on the operational process (if the reused items are ready for operational use and their value is not deducted from the operations budget)

3.3.3 Intended structural cutbacks on operating costs

Standing down operational units and the accompanying materiel should result in structural savings on operating costs for both materiel and personnel. Less money will have to be spent on fuel and airbase personnel, less logistic support will be required and savings can be made on infrastructure. On the assumption that 19 F-16s will be decommissioned, the ministry believes this should result in structural savings of EUR 41.4 million a year from 2014 onwards (see table 9).

Table 9 Savings on materiel and personnel costs if 19 F-16s are decommissioned

| | 2012 | 2013 | 2014 and beyond |
|--|-------------|-------------|-----------------|
| Budget article 23: Royal Netherlands Air Force Command | 2.0 | 14.5 | 20.2 |
| Budget article 25: Defence Materiel Organisation | 8.3 | 15.7 | 19.2 |
| Budget article 26: Support Command | | | 2.0 |
| Total operating costs | 10.3 | 30.2 | 41.4 |

Source: Ministry of Defence, 2011k

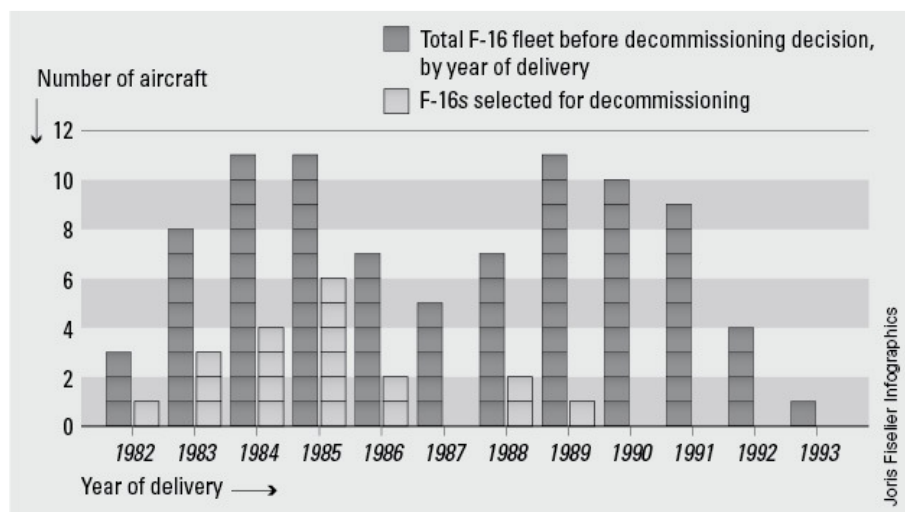


3.3.4 Provisional selection of aircraft for decommissioning

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In advance of a decision on the number of aircraft to be sold, the Ministry of Defence has made a provisional selection of 19 aircraft that are eligible for decommissioning. These aircraft are relatively old; most of them were delivered during the first half of the 1980s, and some in the years thereafter (see figure 10).

Figure 10 F-16s selected for decommissioning compared with total F-16 fleet before decision to decommission, by year of delivery



The 19 selected aircraft¹⁶ have flown for an average of 4,391 hours, compared with an average of 4,012 hours for the whole fleet. The average number of flying hours for the 68 aircraft to be kept in service is 3,910. After decommissioning, the Ministry of Defence will therefore have a fleet that on average has been subject to somewhat less stress. In the past two-and-a-half years the aircraft to be decommissioned have flown more hours than the average for the fleet (543 as against 448).

Owing to lengthy maintenance or lack of materiel, some aircraft have flown very little over the last six months to a year. However, the ministry is not aiming to decommission as many structurally unusable aircraft as possible.

Apart from the one damaged aircraft, all the listed aircraft have flown during the past year. However, this is not to say that the other Dutch F-16s are all airworthy. To keep aircraft ready for deployment, components are sometimes taken from aircraft that were on the ground

¹⁶ The aircraft that was damaged during the touch-and-go manoeuvre in April 2011 is not included in the calculation. However, it is one of the 19 aircraft listed for decommissioning.



anyway (if only temporarily). Where possible, shortages of equipment are coped with by 'cannibalising' the same few aircraft, which as a result lack more and more components. By the end of December 2011 five aircraft had been 'stripped down' to the point where they could no longer be made airworthy at short notice. One of them has not flown for the past two years. None of these aircraft has been selected for decommissioning.

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The 19 selected aircraft have not in fact been stood down. As already mentioned, only airworthy aircraft are fit to be sold. To remain airworthy, they must fly at least once every 90 days. In practice, the air force used all its airworthy aircraft for training purposes in 2011 (within the budgeted 13,500 hours).

3.3.5 Opportunities and risks

Pending a decision as to how many of the 19 aircraft to be decommissioned will be sold and how many dismantled, the air force must incur costs in order to keep them airworthy. However, postponement of this decision does mean that aircraft listed for decommissioning can be used to compensate for the loss of aircraft (including peacetime losses). Furthermore, should the budgeted number of flying hours be increased, there will still be aircraft available to make up the required hours. As long as the aircraft continue to fly, there is less need to increase the average annual number of flying hours.

3.4 Required additional investment

It is unclear how long the F-16s must continue to fly. In the absence of a fixed phase-out schedule, the adapted transition schedule cannot be clearly calculated. This means that the Ministry of Defence does not have a complete, up-to-date picture of the financial consequences of postponing the introduction of the replacement aircraft. In this connection, the minister's 2009 annual report stated that 'the consequences and hence the costs of keeping the F-16s in service longer than planned as a result of delays in the Replacement of F-16s project are so dependent on how long the aircraft will actually be kept in service that a general quantification of the costs cannot be provided' (Ministry of Defence and Ministry of Economic Affairs, 2010).

The 2009 annual report on the Replacement of F-16s project stated that the minister would review the project and work out the potential consequences for the F-16s in further detail. The review would be part of



the policy letter to be published in 2011. In a response to our 2011 report entitled *Monitoring the replacement of F-16s*, the minister stated that his policy vision would examine the project budget and the required number of fighter aircraft in the light of the government's ambitions for the armed forces, the defence policy review and relevant international developments. The operating costs and the consequences for the F-16 would also be taken into account (Netherlands Court of Audit, 2011a). However, the April 2011 policy letter gives no indication that such an extensive review of the financial and operational consequences for today's F-16s has in fact been carried out.

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Table 10 sets out the costs of keeping the F-16s in service longer than planned, as estimated by the Ministry of Defence.¹⁷

Postponement of the introduction of the successor to the F-16 shifts the point at which it is still efficient and necessary to make operational improvements to the F-16s to 2018. After 2018, according to the ministry, the only changes until the F-16s are completely withdrawn from service will be those needed for purposes of flight safety, airworthiness and sustainment. In table 10 we make a distinction between the costs if the engines of the decommissioned aircraft are or are not reused. Reusing the engines will yield absolute financial savings of EUR 19 million.

The EUR 300 million that the minister refers to in the policy letter does not include:

- material operation;
- the costs of four additional F-16s to be kept in service;
- replacement of wings;
- the costs of flight safety, airworthiness, sustainment and operational self-protection from 2021 until the aircraft are phased out;
- disposal of the F-16s after they are phased out.

The EUR 300 million costs of keeping in the F-16s in service longer than planned, as referred to in the minister's policy letter, only concern investments planned at the time of the letter. These estimated investments will do little in practice to improve operational employability. Nor does the estimate take account of possible operational losses. This means that the air force cannot replace F-16s that become unusable as a result of, say, an accident.

¹⁷ Some operational self-protection projects had already begun or were already included in the investment budget, but only for a limited number of needs in the total self-protection package. The funds available for keeping the aircraft in service longer than planned can be used for needs that could not previously be met.



Table 10 Additional costs of keeping 68 F-16s in service up to the end of 2020 as compared with schedules before the policy letter (in millions of EUR, at 2011 prices)

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| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Total not including reuse | Total including reuse of 23 engines |
|--|--|-----------|-----------|-----------|-----------|-----------|---------------------------|-------------------------------------|
| Flight safety + airworthiness | These numbers are commercially confidential, but have been seen by the Netherlands Court of Audit. | | | | | | | |
| Sustainment | | | | | | | | |
| Operational self-protection | | | | | | | | |
| Additional material operation | 2 | 4 | 6 | 8 | 10 | 10 | 40 | 40 |
| Costs of dismantling, storage and management of reuse of 23 F-16s | ? | ? | ? | ? | ? | ? | x | 20 |
| Total | 45 | 55 | 77 | 70 | 47 | 44 | 338 | 319 |
| Regular material operation (not including Royal Netherlands Air Force Command) | 95 | 92 | 92 | ? | ? | ? | ? | ? |
| Regular material operation of Royal Netherlands Air Force Command | ? | ? | ? | ? | ? | ? | ? | ? |
| Costs of four extra F-16s to be kept in service | ? | ? | ? | ? | ? | ? | ? | ? |
| Replacement of wings (1) | ? | ? | ? | ? | ? | ? | ? | ? |
| Costs from 2021 until phase-out | x | x | x | x | x | x | ? | ? |
| Disposal of F-16s after phase-out (2) | x | x | x | x | x | x | ? | ? |

1) The F-16s' wings are a key factor in keeping the current aircraft in service. The Fighter and Training Aircraft Division has asked the National Aerospace Laboratory to carry out stress tests and damage analysis on the wings so that the Ministry of Defence has a clearer picture of what damage to the wings can be expected and can make more effective preparations for the necessary repairs. For this purpose, one of the wings of aircraft J-640 will be opened up and subjected to testing. The laboratory is due to complete the tests in the course of 2012. The ministry could then remove any usable wings from the decommissioned aircraft and use them to replace any worn-out wings on the remaining 68 F-16s.

2) Since the F-16s will be completely used up, there are unlikely to be any proceeds from sales.

The Ministry of Defence's ability to provide an overview of the operating costs for F-16s is limited. The Defence Operational Plan does contain all the operating expenditure on defence materiel, but this is not itemised for individual weapons systems; instead, it shows total weapons-system expenditure for each category of expenditure, such as fuel or maintenance. Since last year the ministry has been working on a more detailed overview that should specify operating expenditure for each system.

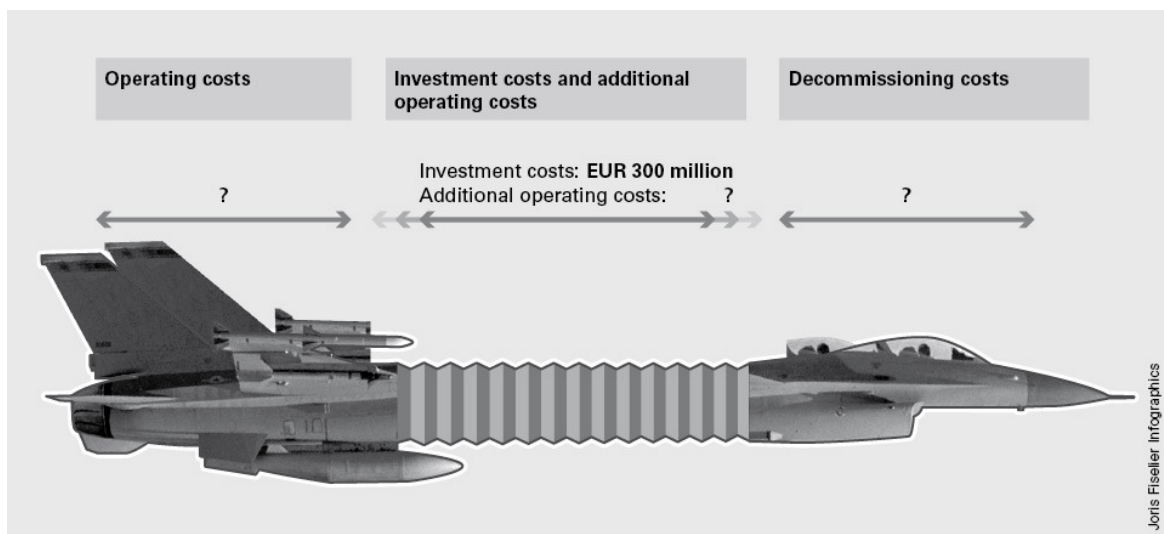
Furthermore, the eventual costs of keeping the F-16s in service longer than planned will depend on the number of countries, the type and the total number of aircraft taking part in improvement projects under the Multinational Fighter Programme (MNFP). This Programme dates from the



introduction of the F-16 and consists of Belgium, Denmark, Norway, the Netherlands, the United States and Portugal. Within the programme the partners can jointly implement follow-up developments to their fighter aircraft if they own the same configurations. The Ministry of Defence intends to identify feasible projects within the MNFP that can counteract operational obsolescence. The costs of updates will partly depend on partners that also want to update their F-16s and on the number of aircraft in the Netherlands and other countries that will be updated.

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Figure 11 Costs of keeping the F-16s in service for three more years



It is therefore difficult to provide a picture of the total and additional costs of keeping the aircraft in service longer than planned. It is unclear what the operating costs of the F-16s are at present; the EUR 300 million costs of keeping them in service longer than planned, as referred to by the minister, only concern investments in a limited number of areas, for a limited period (and here again the additional operating costs are unclear); and the costs of phasing out the aircraft and rounding off the project (which will have to be incurred at some point) have not yet been estimated.

3.5 Deployability during the transition from F-16s to replacement aircraft

The government's current ambitions cannot be fulfilled during the transition period. At an early stage of the project Replacement of the F-16 the Ministry of Defence decided to carry out the transition with the existing number of personnel. This means it will take place squadron by squadron, without temporary duplication of personnel. The four



squadrons will be taken out of service one at a time, leaving three available for operational tasks. This means that about two thirds to three quarters of current ambitions can be fulfilled during the transition.

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The extent to which the air force can fulfil its ambitions will depend on how fast the F-16's replacement is phased in, the total number of replacement aircraft and the number required by each squadron.



4 Replacement of F-16s: developments concerning the JSF

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This chapter discusses the situation regarding the replacement of the F-16s. Section 4.1 looks at the financial implications of the policy letter for the replacement of the F-16s. Section 4.2 then describes the international JSF programme and developments within it during 2011. Section 4.3 outlines the situation regarding the involvement of the Dutch private sector.

4.1 Financial implications of the policy letter

For the first time, the policy letter that the Minister of Defence sent to the House of Representatives in April 2011 no longer referred to a project budget for the replacement of the F-16s (Ministry of Defence, 2011b). Instead, it referred to an amount of EUR 4.5 billion that the minister had appropriated in his investment summary. He stated that the commitment of the Dutch government and the Dutch private sector to the development and production of the JSF was unchanged. So was the number of aircraft (85) that the Netherlands planned to purchase. This section looks at how this is reflected in the Ministry of Defence's budget and its financial and other plans.

4.1.1 Appropriated funds rather than a fixed project budget

The Minister of Defence's 2010 annual report stated that the budget for the Replacement of F-16s project, as set out in the Ministry of Defence's budget for 2011, was EUR 6,227 million (at 2010 prices; planned dollar rate USD 1 = EUR 0.83; planned number of aircraft = 85). The minister added that his letter of 2 December 2010 to the House had stated that the updated estimate of Dutch investment costs was EUR 1.4 billion higher than in the project budget. As of late 2010 the estimated cost of purchasing 85 aircraft and the accompanying equipment was therefore EUR 7.6 billion. Given the announced review of the project, this amount was never officially adopted as an adjusted project budget. The April



2011 policy letter made no further mention of a project budget or the results of an updated estimate, but replaced these with an appropriated amount of EUR 4.5 billion.

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According to the Ministry of Defence, this is an amount set aside for the replacement of F-16s in the investment budget for defence materiel. It need not necessarily be the same as the amount eventually needed to purchase the planned total of 85 aircraft. Nor, according to the ministry, is this planned total the result of a definitive requirement. The appropriation of EUR 4.5 billion should not therefore be taken to mean that the ministry plans to procure no more than EUR 4.5 billion worth of JSFs.

During this government's term of office the appropriated amount will not be adjusted to take account of price levels or new cost information from the United States, contrary to previous practice with the fixed project budget.

4.1.2 Expenditure and commitments within the appropriated amount

A number of compulsory expenses that have already been paid are included in the appropriated EUR 4.5 billion, e.g. expenditure for participation in the PSFD MoU, the IOT&E MoU and two test aircraft plus the accompanying resources. This is apparent from the ministry's 2012 budget, which includes the following planned project for the air force:

Table 11 Project related to the replacement of F-16s: one of the air force's planned projects (in millions of EUR, at 2011 prices)

| Project description | Size of project | Forecast expenditure until end of 2011 | Forecast expenditure in 2012 | DMP planning 2015 | Phasing |
|---|-----------------|--|------------------------------|-------------------|----------|
| Replacement of F-16s: continued procurement preparations/production Until end of 2023 | >250 | 100–250 | 100–250 | D | t/m 2023 |

Source: Ministry of Defence, 2011

This project is described as follows in the budget: 'As stated in the policy letter, EUR 4.5 billion has been appropriated in the investment summary for the replacement of F-16s. This government will not be making any decisions about the successor to the F-16, the number of aircraft to be purchased or the funds required. In connection with the replacement of F-16s the Ministry of Defence has made a number of commitments; the main ones are summarised below. The ministry is taking part in the Production, Sustainment and Follow-on Development (PSFD)



Memorandum of Understanding for the F-35 (Joint Strike Fighter). In May 2008 the ministry also signed a Memorandum of Understanding on participation in the operational test phase (IOT&E).

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'As part of the operational test phase, commitments have also been made for two test aircraft: one in 2009 for the first test aircraft from the Low-Rate Initial Production (LRIP)-3 production series, including the accompanying resources, and the other at the end of April 2011 for the second test aircraft from the LRIP-4 production series, again including part of the accompanying resources.'

'No commitments have yet been made for the remaining part of the accompanying resources to be contracted ... The following table provides an overview of estimated expenditure on the PSFD IOT&E MoUs and the two test aircraft.' (Ministry of Defence, 2011)

The table from the budget is reproduced below; the row containing the totals has been added by the Court of Audit.

Table 12 Estimated expenditure (in millions of EUR, at 2011 prices; planned dollar rate USD 1 = EUR 0.75)

| Project description | Size of project | Until end of 2011 | 2012 | 2013 | 2014 | 2015 | 2016 and beyond | Phasing until |
|--|-----------------|-------------------|-------------|-------------|-------------|-------------|-----------------|---------------|
| PSFD MoU | 123.0 | 71.3 | 10.8 | 8.7 | 2.6 | 2.3 | 27.3 | 2024 |
| IOT&E MoU | 21.0 | | | | 10.6 | 10.4 | | 2015 |
| Test aircraft including accompanying resources | 237.1 | 138.8 | 72.6 | 25.7 | | | | 2013 |
| Total | 381.1 | 210.1 | 83.4 | 34.4 | 13.2 | 12.7 | 27.3 | |

The above table indicates that by the end of 2011 the Ministry of Defence had made at least EUR 210.1 million worth of commitments as part of the 'Replacement of F-16s: continued procurement preparations/production' project. According to the ministry's estimates, EUR 353.8 million will be spent on participation in the PSFD MoU and the IOT&E MoU to the end of 2015; this includes the procurement of two test aircraft and the accompanying resources.

The minister's project description states that the above table includes the main commitments. This means that the ministry has not included all the estimated expenditure that is part of the appropriated EUR 4.5 billion in the table. We note, for instance, that expenditure for material operation of the IOT&E must be deducted from the appropriated EUR 4.5 billion as



soon as it becomes compulsory. In his letter of 8 April 2011 to the House of Representatives the minister wrote: 'The estimated operating costs of taking part in the operational test phase are EUR 32 million (at 2010 prices). Of this, EUR 25.9 million relates to material operating costs that are part of the Replacement of F-16s project budget. An estimated EUR 6.1 million for additional expenditure on personnel will be charged to personnel operation budgets' (Ministry of Defence, 2011g).

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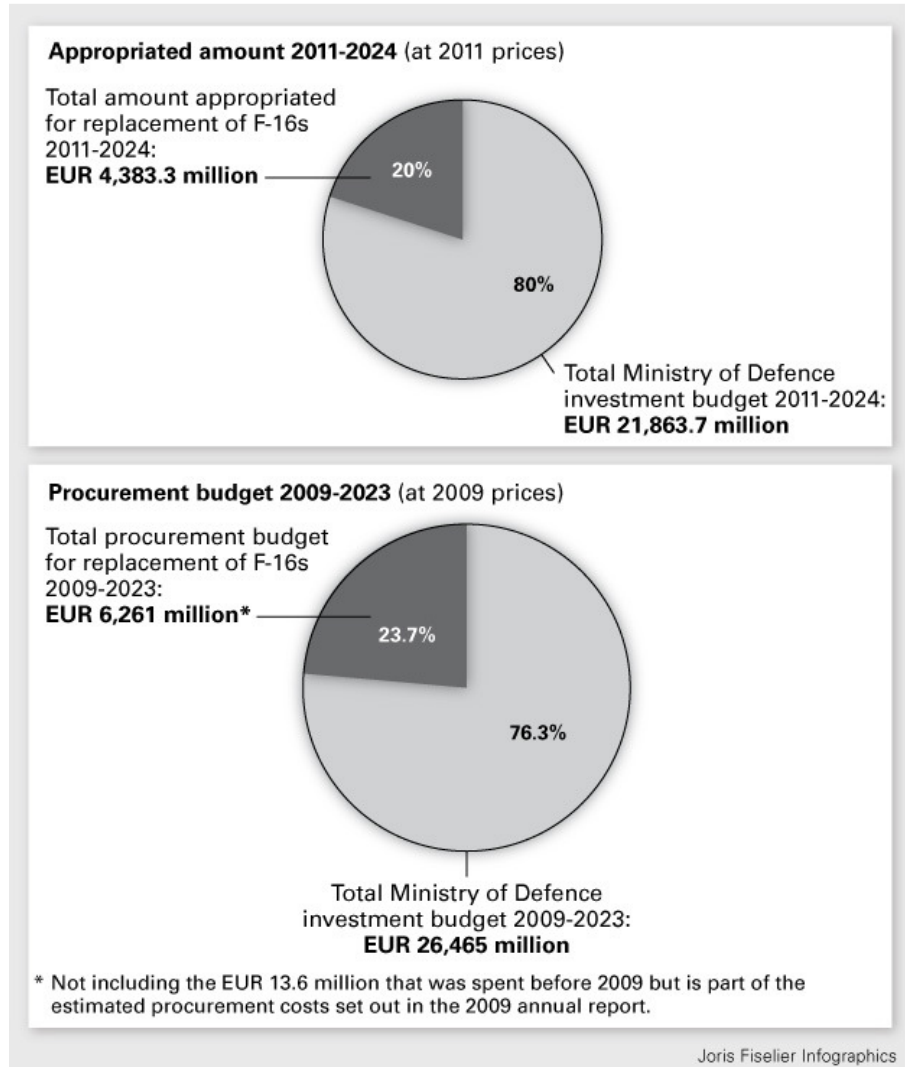
In his investment budget for defence materiel, the minister has planned that in total EUR 510.4 million of the appropriated EUR 4.5 billion will be spent up to the end of 2015 (at 2011 prices; planned dollar rate USD 1 = EUR 0.83).

The 2009 annual report on the Replacement of F-16s project included a table showing the total investment budget for defence materiel and the budget for the Replacement of F-16s project, as well as the Replacement of F-16s budget as part of the total investment budget for defence materiel. At our request, the ministry has compared the appropriated EUR 4.5 billion with the total investment budget for defence materiel, using the same method of calculation as in the annual reports. Figure 12 shows that the planning series of the EUR 4.5 billion appropriated for the replacement of F-16s between 2011 and 2024 accounts for 20% of the ministry's investment budget for defence materiel.



Figure 12 Share of the amount appropriated for replacement of F-16s in the Ministry of Defence's investment budget for 2011-2024

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4.1.3 Comparing amounts

We have pointed out in previous monitoring reports that amounts can only be compared if they are based on the same price levels and planned dollar rates. This year we again note the use of different price levels and exchange rates. The ministry has now also decided to allow for expected inflation in determining the costs of long-term commitments, contrary to previous practice in the Replacement of F-16s project.



Price levels

Owing to differences in the price levels used, amounts quoted for the purchase of materiel, operating costs or participation in MoUs do not always tally in the Minister of Defence's letters to the House of Representatives, the budget and the investment budget for defence materiel. This makes them difficult to compare. A case in point is the minister's letter of 1 July 2011 (Ministry of Defence, 2011c), in which an updated average basic unit price of EUR 60.4 million plus VAT is compared with a unit price of EUR 59.7 million mentioned previously in the annual report. The former is in 2011 prices, the latter in 2010 prices.

Planned dollar rate

The Ministry of Defence uses the planned dollar rate when calculating and recording investment commitments in its accounts, budgets and annual reports (except where these commitments are covered by a futures contract). Until 2011 the ministry applied a fixed rate of USD 1 = EUR 0.83. When drawing up the 2012 budget, however, it changed the rate to USD 1 = EUR 0.75. It has indicated that from now on it will use the most recent rate when calculating financial information on the successor to the F-16 (see box). Adjustments to the planned dollar rate may affect the unit price of aircraft, which is expressed in euros.

Planned dollar rate

For many years Ministry of Defence budgets applied a fixed planned dollar rate of USD 1 = EUR 0.83 for all defence materiel projects. The agreement between the Ministry of Defence and the Ministry of Finance was that all currency fluctuations within a 15% range would be absorbed by the Ministry of Defence; if these limits were exceeded, the Ministry of Finance would reclaim or make up the difference. In 2011 it was agreed that all exchange-rate risks would be borne by the Ministry of Defence, superseding the 15% agreement. This means that Ministry of Defence budgets must in future make allowance for unexpected gains or losses. The ministry has informed us that it will continue to adjust the planned dollar rate each year. Changes in the dollar rate might affect the unit price in euros.

Costs of long-term commitments

With effect from 2011, in the light of findings by the ministry's audit department, the Ministry of Defence changed the way in which long-term commitments are recorded in the financial annex of the annual report. In the internal report of the costs of these long-term commitments the Ministry will now report the contract value in current prices.



As the budget and annual report are in actual prices this new practice will not lead to changes. It will lead to changes in the annual reports' financial report in which the financial commitments are reported in current prices. It is the task of ministerial audit departments to verify this.

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4.1.4 Additional requirements and projects related to the Replacement of F-16s project

The minister's 2010 annual report makes a distinction between additional requirements that are part of the Replacement of F-16s project and projects that are related to the Replacement of F-16s project but not actually part of it. The Ministry of Defence records the costs of related projects in a database. This has not been updated since the policy letter was published. We may possibly examine the database when drawing up a subsequent report on current and future Dutch fighter aircraft.

The 2011 Defence Materiel Projects Overview states the following regarding the Replacement of F-16s project (in progress): 'The replacement of F-16s is taken into account in numerous current and new requirements. These include (1) improvements to the F-16 (both hardware and software) that are still required, (2) materiel projects for which the resources to be procured are initially intended for use with the F-16 but must eventually also be usable with its successor, and (3) projects that are not directly related to the F-16 but are expected to be related to its successor. The related projects were discussed in the 2010 annual report on the Replacement of F-16s project. Three new projects have been added this year as a result of the decision to keep the F-16s in service longer than planned' (Ministry of Defence, 2011j).

Regarding the 'F-16 Service Life extension: operational self-defence' project (planned), the same document states that the project is related to eight other F-16 investment projects, including the Replacement of F-16s project. The Minister of Defence is expected to send the House of Representatives a DMP 'A letter', indicating the project requirement, in 2013.

4.2 Developments in the international JSF programme during 2011

This section describes the situation regarding the international JSF programme and the Netherlands' position within it. We will first discuss developments during 2011 and then the provision of information on them,



focusing first on information supplied to the Dutch Ministry of Defence from the United States and then on information supplied to the House of Representatives by the ministers concerned.

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The JSF programme is an international cooperation programme that consists of various partly overlapping phases. The various Memoranda of Understanding (MoUs) that participating countries have signed for the various phases of the programme are set out in the box below.

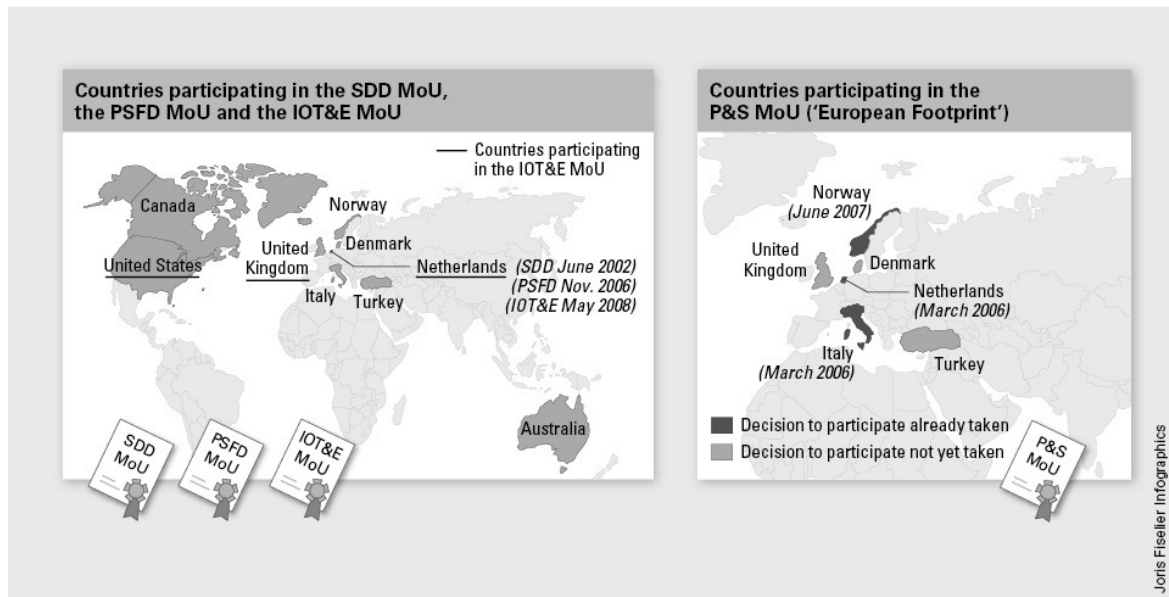
Phases of the international JSF programme

- Development phase. The programme is currently in the System Development and Demonstration (SDD) phase. This started at the end of 2001, and the Netherlands has participated in it since 2002. The phase is divided into different steps, known as blocks. Nine partner countries are taking part in it, at three levels of cooperation. These levels reflect a number of factors, including the country's financial stake in the programme, the extent of technology transfer and the sub-contracts for which national companies can submit bids.
- Test and evaluation (IOT&E) phase. The Netherlands will take part in the IOT&E phase together with the United States and the United Kingdom. In order to take part in the IOT&E MoU, the Netherlands has ordered two test aircraft in the LRIP phase of the programme. These will be delivered in 2012 and 2013.
- Production (PSFD) phase. The programme is also currently in the PSFD phase. The PSFD MoU covers the production, sustainment and follow-on development of the JSF. The Netherlands signed the PSFD MoU in November 2006. The MoU will run until 2052 and includes both the Low-Rate Initial Production (LRIP) and Full-Rate Production (FRP) subphases. In the LRIP subphase, which will run until the end of the development phase, aircraft will for the time being be ordered in nine production series (LRIP 1 to LRIP 9).
- The Netherlands signed the Production & Sustainment MoU (P&S MoU) (which is not overseen by the JPO) in February 2007. This 'European Footprint' has been signed by the Netherlands, Italy and Norway. Other European countries may possibly join it.

The figure below shows the contracts and participants in the international JSF programme.



Figure 13 JSF programme contracts and participating countries



4.2.1 US decisions on schedules and costs of the JSF programme

In spring 2010 the JSF programme was restructured by the US government. In 2010 the Director of Cost Assessment and Program Evaluation (CAPE) at the US Department of Defense conducted a study of the investment and operating costs of the JSF. In December 2010 the Dutch Minister of Defence told the House of Representatives what the findings of the CAPE study of the *investment* costs would mean for the Netherlands (Ministry of Defence, 2010a). The Dutch Ministry of Defence has not been informed of the findings of the study of the *operating* costs.

On 7 January 2011 the Dutch Minister of Defence informed the House about a number of 'additional measures' that the US Secretary of Defense Robert Gates had taken the previous day concerning the JSF programme (Ministry of Defence, 2011f). The 2010 annual report states that the JSF Program Office (JPO) has since been working on new schedules for the development phase and the operational test and evaluation phase.

In drawing up these schedules, according to the Dutch Ministry of Defence, the JPO is largely dependent on US Department of Defense schedules. At the time our study was completed, the Department of Defense had not yet made a decision about the new schedules. In 2011 the Dutch Ministry of Defence made several statements to the House of Representatives and to us about when this decision was due. The date gradually shifted from June 2011 to early 2012, and hence is now beyond the scope of this report.

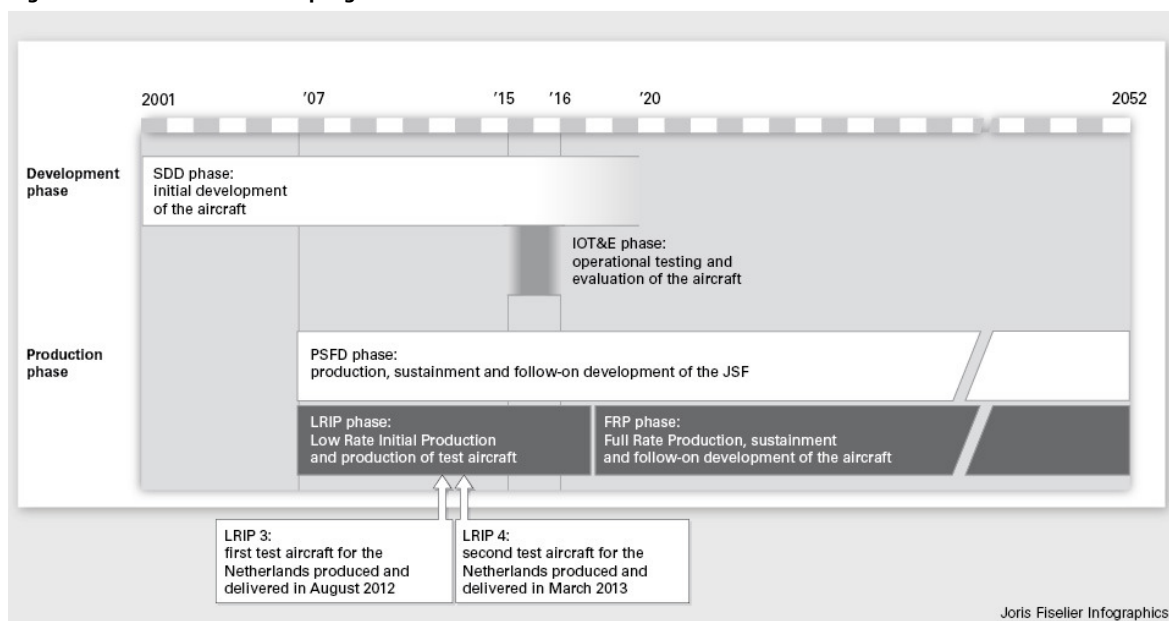


We note that the schedules and the costs of the JSF programme are related. The Dutch Ministry of Defence expects that the JPO can provide new cost information once the Department of Defense has made decisions on the schedules. According to the ministry, the amount of time the JPO will require for this depends on what changes the Department of Defense decides to make.

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In the absence of US decisions on the scheduling and costs of the JSF programme, this report cannot say anything about their consequences for the Dutch situation. The situation as of December 2011 is shown in figure 14. It is not yet known when the test and evaluation phase will take place or when the development phase will officially end.

Figure 14 Phases of the JSF programme: situation as of December 2011



4.2.2 Provision of information from the United States

2010 Selected Acquisition Report

The 2010 Selected Acquisition Report (SAR) was published in the United States on 1 April 2011. It contains aggregated cost information on the JSF programme. This information is based on obsolete data. For example, it takes no account of the consequences of the higher CAPE estimate of the investment costs, the measures taken by the US Department of Defense when recertifying the JSF programme in 2010 or the Department of Defense's postponement of aircraft orders in 2010 and January 2011.



The Department of Defense nevertheless sent the 2010 SAR to Congress, since it was under a statutory obligation to do so. In 2011 the Dutch Ministry of Defence did not receive the 2010 SAR from the United States through official channels.

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Cost information based on the 2010 SAR

However, on 5 April 2011 the Ministry of Defence did receive cost information *based on* the 2010 SAR from the JPO. Some of this was more up to date than the aggregated information in the 2010 SAR, which the US Department of Defense had sent to Congress on 1 April 2011.

The Dutch Ministry of Defence used the information it received on 5 April to calculate the financial consequences of the planned Dutch introduction series. The series will start with the first deliveries of production aircraft in 2019 and will continue until the planned total of 85 is reached in 2027. On 1 July 2011 the Minister of Defence informed the House of Representatives of the estimated financial consequences of the Dutch introduction series: an average basic unit price of EUR 60.4 million for the CTOL variant of the JSF (at 2011 prices; planned dollar rate USD 1 = EUR 0.83).

The minister's letter points out differences from the method used to calculate the average basic unit price of EUR 59.7 million quoted in his 2010 annual report. In particular, these differences concern the choice of introduction series, the choice of price levels and the use of the CAPE estimates. The Ministry of Defence's audit department has not audited the unit price of EUR 60.4 million or the way in which it was calculated.

On 5 April 2011 the ministry also received details of then applicable Unit Recurring Flyaway (URF) price for the CTOL variant of the JSF from the JPO. The URF reflects the costs of one CTOL aircraft, including the airframe, vehicle systems, mission systems, propulsion and other costs. It is the average unit price calculated on the basis of all the JSF aircraft (CTOL variant) to be sold in the course of the programme. To make changes in the unit price clear, it is always quoted in dollars at 2002 prices. This means that the price is not directly applicable to the Dutch situation, but it does provide a picture of how the international JSF programme is progressing. In the period covered by our study, the URF price of the CTOL variant of the aircraft was not made known to the House of Representatives. The Ministry of Defence is expected to state the price in its 2011 annual report. In previous years the URF price has always been quoted in annual reports, and the ministry has told us that it does not expect to do otherwise this year.



In the period covered by our study, the ministry did not receive any information that would allow it to update the estimate of operating costs for the CTOL variant of the JSF set out in its 2010 annual report. The Minister of Defence's letter of 1 July 2010 to the House of Representatives had already stated that the necessary information would probably become available later (in 2011). We expect partner countries to have a clearer picture of the estimated operating costs of the JSF once the US Department of Defense has made a decision (see section 4.2.1).

4.3 Involvement of the Dutch private sector

This section examines developments concerning the involvement of the Dutch private sector in the JSF programme (for a description of its involvement and the relevant business case, see the box below). We will start by describing the development of orders placed with the Dutch private sector, and will then discuss remittances to the state. Finally, we will look at how the Dutch private sector is to be compensated for the fact that the F-16s are to be kept in service longer than planned.

History of the business case

In 2002, the Netherlands made a commitment to participate in the development phase of the JSF. One of the assumptions underlying participation in the development phase was that this would put the Dutch aviation industry in a good position to obtain orders for the subsequent production of JSF aircraft. The Netherlands has committed USD 800 million, which the state pays in instalments. The Netherlands has agreed that USD 50 million will be spent on Dutch projects in the Netherlands. The dollar rate was set at USD 1 = EUR 1.05587 under a futures contract signed in 2002.

As one of the conditions for participating in the development phase the government insisted that it should not cost Dutch taxpayers any more than buying a replacement for the F-16 off the shelf. The cofinancing agreement (CFA) concluded between the state and the private sector in 2002 stipulates that the companies involved will repay the difference between the costs of participating in the JSF programme and buying a replacement off the shelf in the period from 2002 to 2052.

When the government decided to participate in the development phase in 2002 a business case was drawn up, comparing all the expenditure and income relating to participation in the development phase and buying a



replacement off the shelf. The calculations showed a financial deficit (the 'gap' in the business case) of EUR 191 million (net present value, at 2001 prices). This was to be made up by the private sector by remitting a percentage of the turnover generated during the JSF production phase (the remittance percentage). When the planned review of the business case was carried out in 2008, the state calculated that the gap was EUR 302 million (net present value, at 2001 prices). In response, the Dutch private sector instituted arbitration proceedings in December 2008. The arbitrators calculated that the gap was EUR 157 million (net present value, at 2001 prices). Following the arbitration proceedings, the state and the private sector agreed that the private sector would remit no more than EUR 105 million to the state. We have reported on this in recent years, and refer to our previous reports for more information on the review of the business case in 2008 and 2009 and the additional agreements reached in 2010.

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4.3.1 Orders

Recent political decisions

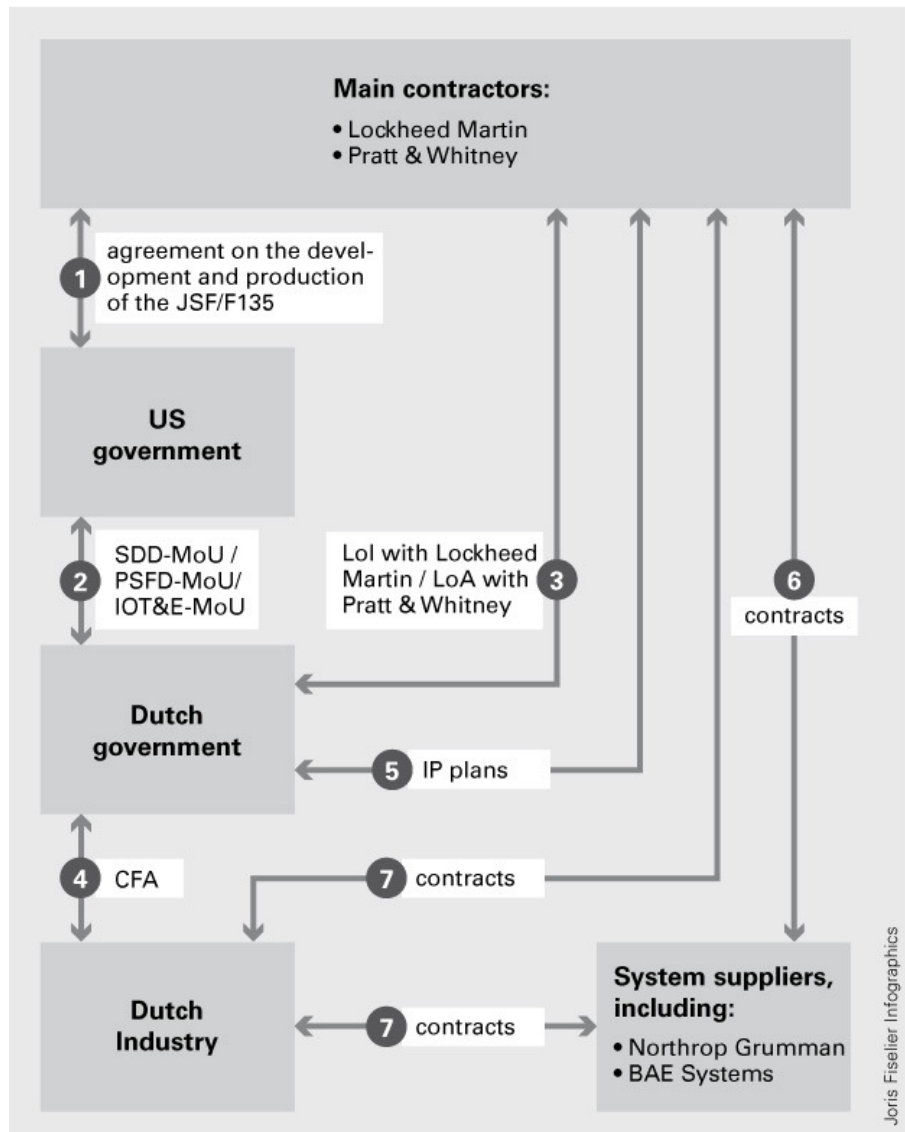
Lockheed Martin is in a powerful position. The company has considerable influence on which parties, in which JSF partner countries, will be granted orders (Netherlands Court of Audit, 2011a). For example, it signs framework agreements with manufacturers for the delivery of components over long periods and several series of aircraft. The US government orders aircraft from Lockheed Martin on a yearly basis. Only when the company receives an order for a number of planes from the US government does it implement all or part of the framework agreement applicable to that number of aircraft. Manufacturers must then submit bids to Lockheed Martin for the components in the agreements on a 'best value' basis. The company determines which manufacturer offers the best value for each product or component, using such criteria as price, technology, quality, management and operational risks. An important criterion even *before* Lockheed Martin decides which manufacturer offers the best value is that it be based in a country that is planning to purchase JSFs.

Figure 15 indicates which contacts and/or contracts Lockheed Martin has with various parties at the various stages of the JSF programme.



Figure 15 Agreements between relevant parties

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MoU = Memorandum of Understanding, Lol = Letter of Intent, LoA = Letter of Agreement, CFA = Cofinancing Agreement, IP = Industrial Participation

Development and distribution of orders

For the entire duration of the development phase, the Ministry of Economic Affairs, Agriculture and Innovation expected orders worth a total of USD 800 million to be placed with the Dutch private sector (Lockheed Martin, 2002). The development phase has taken longer than foreseen (see also section 4.2.1), giving the Dutch private sector more time to obtain orders for the development phase. The ministry keeps a record of JSF-related orders placed with the Dutch private sector, known as the 'JSF thermometer'. This includes details not only of definite orders but also of long-term contracts, current and expected calls for tenders and future possibilities. This provides a picture of the volume of JSF-related orders that are likely to be placed with the Dutch private sector,



including free riders.¹⁸ The 'thermometer' uses differing exchange rates for the dollar, such as the current rate or the rate at the time of the bid.

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According to the 2010 annual report on the Replacement of F-16s project, orders worth USD 1,006 million had been placed with the Dutch private sector by the end of 2010, an increase of USD 200 million since the end of 2009 (Ministry of Defence and Ministry of Economic Affairs, Agriculture and Innovation, 2011). Orders for development work totalled USD 416 million and orders for production work USD 590 million. The private sector will pay remittances to the state on orders for production work. Changes in the scale of definite orders placed with the Dutch private sector are shown in the table below. The last column shows the value of orders for development and production work for that year only.

Table 13 Situation regarding JSF-related orders placed with the Dutch private sector 31 December 2010 (in millions of USD and cumulative, except the last column)

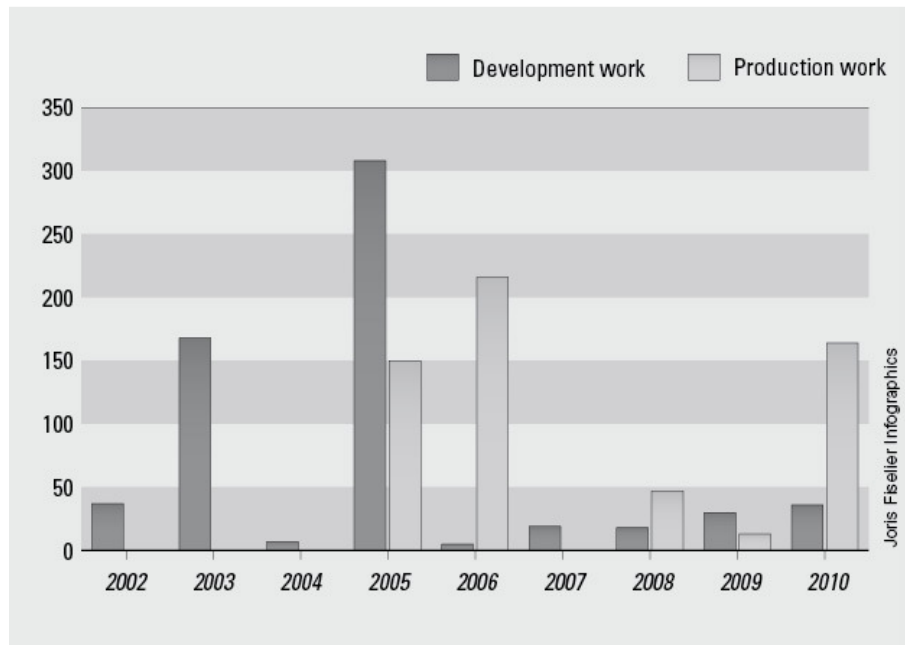
| Situation on 31 December 2010 | SDD | LRIP | Cumulative total | Total per year |
|-------------------------------|-----|------|------------------|----------------|
| 2002 | 37 | -- | 37 | 37 |
| 2003 | 205 | -- | 205 | 168 |
| 2004 | 212 | -- | 212 | 7 |
| 2005 | 308 | 150 | 458 | 246 |
| 2006 | 313 | 366 | 679 | 221 |
| 2007 | 332 | 366 | 698 | 19 |
| 2008 | 350 | 413 | 763 | 65 |
| 2009 | 380 | 426 | 806 | 43 |
| 2010 | 416 | 590 | 1,006 | 200 |

Source: Ministry of Defence and Ministry of Economic Affairs, Agriculture and Innovation, 2011

At the end of 2010, USD 406 million (68.8%) of the USD 590 million worth of orders for production work and USD 22 million (5.3%) of the USD 416 million worth of orders for development work had yet to be confirmed. In 2009, USD 335 million (78.6%) of the USD 426 million worth of orders for production work had yet to be confirmed.

The year-by-year increase in orders is shown in figure 16, broken down into development and production work.

¹⁸ Free riders are companies that have not signed the CFA but have acquired orders for the JSF. In 2010 there was one new free rider, bringing the total to five.

**Figure 16 Development of orders year by year and phase by phase, in millions of USD****75**

Source: Ministry of Defence and Ministry of Economic Affairs, Agriculture and Innovation, 2011

We asked the Ministry of Economic Affairs, Agriculture and Innovation to indicate what impact the decision to stop developing the F136 engine may have.

Development of the F136 engine

Two engines were being developed for the JSF: the F135 by Pratt & Whitney, and the F136 by the Fighter Engine Team (FET), a consortium consisting of General Electric and Rolls Royce. The development of two engines for the JSF was intended to foster competition between the manufacturers and create a number of additional benefits such as reduced operational dependence on a single type of engine, improved customer orientation on the part of the supplier, greater innovation due to competition and improved deployability.

In 2011, however, the US Department of Defense made a firm decision to stop developing the F136 engine.

The ministry replied that the decision to stop developing the second engine would affect orders, but that it was not clear to what extent. The ministry is endeavouring to obtain a clearer picture of the situation. This was also reported to the House of Representatives in May 2011, in response to questions from the House on the 2010 annual report (Ministry of Defence, 2011i).



Dutch projects

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The Dutch contribution to the development phase (SDD) is USD 800 million. When the Netherlands first started participating in the programme, it was agreed with the United States that the Netherlands could spend USD 50 million of this development contribution directly on Dutch projects. The agreement specified three dates by which parts of these 'bilateral funds' were to be spent. If the Netherlands had not spent the agreed part of the funds by these dates, the United States could immediately claim the remainder. The original agreement was that the last date would be 30 September 2011, at which point the whole of the USD 50 million would have to have been spent on Dutch projects. Under the agreement on bilateral funds, US accounts form the basis for determining whether the target dates have been met. The JPO records contracts differently, and according to their accounts contracts worth only USD 48.9 million have been signed. In order to make up the missing USD 1.1 million, the Netherlands has requested that the final target date be extended to 30 September 2013. This request has been granted.

4.3.2 Remittances

Reduction of the administrative burden

In 2010 the Ministry of Economic Affairs, Agriculture and Innovation made efforts to reduce the administrative burden on the Dutch private sector due to the reporting requirement under the cofinancing agreement. Most of the companies that have signed the agreement (CFA partners) have not yet generated any turnover, and were required to report this each year by completing various forms. In consultation with NIFARP,¹⁹ the ministry therefore decided to amend the reporting requirement, which has now been suspended for most of the companies concerned. The ministry will decide year by year whether this arrangement should continue.

Auditing of remittances

CFA partners that are required to make remittances must remit to the state a yearly percentage of their turnover from participation in the project. Full and accurate details of their turnover must be submitted to the state in writing, together with an audit opinion by their auditors.

The Ministry of Economic Affairs, Agriculture and Innovation's audit department has drawn up an audit protocol that lays down standards for this purpose. The department can or review the work of the CFA partner's auditor. The audit departments of the Ministry of Defence and the

¹⁹ The Netherlands Industrial Fighter Aircraft Replacement Platform, set up on behalf of Dutch companies and institutions taking part, or wishing to take part, in the JSF programme.



Ministry of Economic Affairs, Agriculture and Innovation can visit the CFA partners and conduct an annual review of CFA partners that have generated turnover and submitted an audit opinion on it. This is to determine whether the auditor's work justifies the findings in the audit opinion, and whether the information received by the Ministry of Economic Affairs, Agriculture and Innovation is reliable and complete. The two audit departments have now reviewed the work of several CFA partners' auditors and in every case found that the auditors' audit work and documentation were satisfactory.

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CFA partners are not required to pay remittances on turnover generated by development work. The extension of the development phase of the international JSF programme means that the Dutch private sector's turnover may shift from production work to development work. This is a risk for the state, since in that case companies are no longer required to pay remittances. The risk has been acknowledged by the Ministry of Economic Affairs, Agriculture and Innovation and the audit departments. The control protocol states that this must be audited. The auditing requirement has – at least partly – eliminated the risk that a business's stated turnover, and hence remittance, may be too low.

We conclude that the design and operation of the remittance procedure is orderly and auditable. However, we note that the ministry's administrative organisation procedure for private contributions to JSF remittances does not include a reference to the ministry's general debt collection and recovery policy.

Amounts remitted

In 2008 and 2009 the Ministry of Economic Affairs, Agriculture and Innovation received a total of EUR 483,726.74 in remittances from five companies. In 2010 a total of EUR 617,139.33 was remitted by six companies, which all submitted an unqualified audit opinion. The payments in 2010 included statutory interest for late payment by one business, plus an amount for payment arrears for 2008 and 2009.

According to the Ministry of Economic Affairs, Agriculture and Innovation, the statutory interest is not treated as part of the remittance, but is recorded as a receipt in the ministerial budget. All the amounts received so far are shown in table 14.

**Table 14 Summary of remittances received**

| Explanation | 78 EUR |
|--|---------------------|
| Received by Ministry of Economic Affairs. Agriculture and Innovation for 2010 | 617,139.33 |
| Including statutory interest received for 2008-2010)1' | 331.08 |
| Including remittance arrears for 2008 and 2009 | 2,879.75 |
| Net remittances for 2010 (receipts – interest – remittances for 2008 and 2009) | 613,928.50 |
| Remittances received for 2008 and 2009 | 483,726.74 |
| Remittance arrears for 2008 and 2009 | 2,879.75 |
| Net remittances for 2008 and 2009 (received and arrears) | 486,606.49 |
| Total, not including statutory interest | 1,100,534.99 |

Source data from the Ministry of Economic Affairs, Agriculture and Innovation. Calculation by the Netherlands Court of Audit.

1) The remittances are a kind of commercial transaction between a company and the Ministry of Economic Affairs. Agriculture and Innovation. They are subject to the statutory rate of interest indicated by De Nederlandsche Bank and also compound interest. According to the bank's website, the statutory rate of interest for commercial transactions was 8% with effect from 1 July 2009. This is the rate applied by the ministry. The interest fell due on 1 June 2010 and 1 June 2011.

4.3.3 Compensation for keeping the F-16s in service longer than planned

Since no JSFs (other than the second test aircraft) will be purchased during this government's term of office, the Netherlands will have to keep the F-16s in service longer than planned. The Ministry of Defence is investing EUR 300 million for this purpose. If, as a result, the ministry places orders in the United States or elsewhere, it will have to provide 100% compensation in the Netherlands as part of the compensation policy.

Compensation policy

The market for military materiel is largely a closed one, and orders are not often put out to public tender. In this respect the defence industry forms an exception to EU public procurement rules. A country that does not produce weapons systems of its own usually has a choice between buying a ready-made system off the shelf or helping to develop a system in partnership with other countries (also known as 'participation'). Apart from Dutch participation in the development of the JSF, examples of the latter include the NH-90, the Boxer and the Fennek.

Since the early 1960s the Netherlands has usually purchased products off the shelf via the compensation system. It insists that compensation is indeed provided. This means that 100% of the amount of the order should return to the Netherlands in the form of orders for military and



civilian products and/or services. Dutch compensation policy assumes compensation of the full value of the order, which need not necessarily be spent on military purchases.

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The Commissariat for Military Production reports annually to the Minister of Defence and every two years to the House of Representatives on changes in compensation requirements. The House is then also sent a confidential appendix indicating how much compensation has already been received for each active order.



Appendix 1 Methodology

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1 Questions

This year's study focuses more on the current fighter aircraft than in the past. This is because of the government's decision to fulfil the Netherlands' military ambitions with a smaller fleet of fighters, pending a decision on the procurement of a replacement for the F-16.

1.1 Key question

The key question in our study is as follows. What developments are of relevance to the deployability and replacement of the F-16s, and what are the associated risks?

This concerns the following issues:

- the costs of the F-16 and the JSF (investment, operation, decommissioning and replacement);
- the operational deployability of the F-16s;
- the involvement of the Dutch private sector.

The related study questions are discussed in detail below (section 1.2).

As in previous years we will also inform the House of Representatives about the context of the Replacement of F-16s project. We focus here on:

- International developments regarding the JSF programme
We outline the international developments relating to the JSF programme in the United States. On the basis of information acquired from our fellow institutions at the annual JSF audit institution conference and other sources we describe developments in other JSF partner countries (for example, the situation regarding decision-making or the number of aircraft to be purchased).
- National developments
We describe the scenarios presented in the defence policy review and the reviews of fighter aircraft requirements. We also examine national developments relevant to the JSF programme.
- Annual reports and assurance report
We look at the 2010 annual report on the Replacement of F-16s project and the accompanying assurance report by the audit departments of the Ministry of Defence and the then Ministry of Economic Affairs, Agriculture and Innovation.



1.2 Study questions

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Costs

Since April 2009 the ministers involved have reported to the House of Representatives on the total costs to the Netherlands of replacing the F-16s and participating in the international JSF programme. We intend to examine the accuracy and completeness of these costs next year.

The Minister of Defence's April 2011 policy letter no longer refers to a project *budget* for the replacement of the F-16s, but to the *appropriation* of EUR 4.5 billion for the successor to the F-16. The minister also mentions an amount of EUR 300 million for keeping the current F-16s in service longer than planned. We will also examine the justification and completeness of these figures.

The purpose of our monitoring is to provide a picture of known and as yet unknown costs (or cost estimates) for the Replacement of F-16s project, by asking the following questions:

- How are the costs of keeping the F-16s in service longer than planned justified?
 - Are these investment or operating costs?
 - Which introduction series (JSF) and phase-out series (F-16s) are the costs based on?
- Does the Ministry of Defence have an up-to-date picture of the financial consequences of the new transition schedule (phasing-out of the F-16s and phasing-in of the JSFs)?
- Are the costs of phasing out the F-16s and phasing in the JSFs covered in the ministry's multiyear financial plans (investment and operating schedule)? What are the risks if these plans do not provide sufficient cover?
- What is the meaning of the appropriated EUR 4.5 billion in the Minister of Defence's policy letter?
- What additional and related costs are estimated by the Ministry of Defence, how do these relate to the appropriated EUR 4.5 billion and how are they justified?
- What are the financial consequences – both costs and proceeds – of decommissioning the F-16s?
 - How do the estimates of the financial consequences relate to earlier experience of decommissioning F-16s?
- What costs are incurred for the Netherlands' participation in the IOT&E, and how are they justified?

*Operational consequences*

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Postponement of the procurement decision on the replacement of F-16s means that some of the current aircraft will have to be kept in service until at least 2025. In addition, 19 F-16s will be decommissioned.

- What impact will (1) keeping the current F-16s in service longer than planned and (2) decommissioning 19 F-16s have on the present and future deployability of the air force?
- To what extent are the air force's ambitions currently in balance with the available time, funds, staff and other resources? Will this balance change in the coming years and, if so, how?
- How were the 19 decommissioned aircraft selected?
- How many hours can, and must, the remaining F-16s fly until they are phased out?
- How will all this affect the extent to which the Netherlands can meet its international treaty obligations?

Involvement of the Dutch private sector

We have monitored and described changes in the order portfolio for the Dutch private sector and the scale of remittances by the private sector to the state. Turnover that is related to JSF production, and on which companies have paid or will have to pay remittances, has been generated since 1 July 2008. We have described the various types of contract and the relative proportions of these within the order portfolio. We have not conducted a study of our own, but have based our conclusions on information from the Ministry of Economic Affairs, Agriculture and Innovation and its audit department. On the basis of this information, we have answered the following questions:

- What changes have occurred within the order portfolio for the Dutch private sector and the scale of remittances by the private sector to the state over the past year? To what extent has the remittance procedure been orderly and auditable?
- What are the consequences for the Dutch private sector of the decision by the United States to stop funding the development of the second engine for the time being?
- What changes, if any, have occurred in the additional agreements to the cofinancing agreement (CFA) signed by the private sector and the state in 2002?



2 Working procedure

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In drawing up this monitoring report we held interviews with staff of the following organisations:

- the Ministry of Defence;
- the Ministry of Economic Affairs, Agriculture and Innovation;
- the Ministry of Finance;
- the Netherlands Defence Manufacturers Association (NIDV).

We also carried out desk research, which involved analysing:

- available parliamentary papers;
- documents from the three ministries involved;
- publicly available information from international sources;
- the MoUs signed by the Netherlands;
- internal policy documents and memorandums from the three ministries involved.



Appendix 2 Framework of standards and criteria

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We have assessed the information provided to the House of Representatives on the deployment and replacement of the F-16s and on participation in the international JSF programme. We have done so with the help of own basic standards for policy information (see section 1) and the requirements set out in the Rules for Large Projects (see section 2).

The Netherlands is a member of NATO, to which it has made a number of commitments. We have examined to what extent the Netherlands is meeting these commitments and NATO's current readiness requirements for its partner countries (see section 3).

In the light of the deployment objectives set out in the 2012 budget, we have examined to what extent the Ministry of Defence can meet them (in principle), focusing on the extent to which ambitions, staff, resources, time and funding are in balance (see section 4).

1 Policy information

First, we assessed this on the basis of the following standards and criteria for the presentation and compilation of policy information.

| Standards | Criteria | Subcriteria | Explanation |
|---------------------|--|----------------------------|---|
| Presentation | Relevant and faithful account: The report must faithfully present the policy information that is considered relevant. What aspects are relevant will depend on the wishes of the user, the policy areas studied and the question to be answered. These two concepts comprise in any case: | Complete | All information required, given the objectives, to steer, learn lessons or render account must be available. However, this does not mean that a report on policy, for example, should contain all information that is actually available. The most important criterion is that no information relevant to the user is withheld. |
| | | Up-to-date | The available information must be sufficiently up-to-date (i.e. not obsolete). |
| | | Timely | The necessary information should be provided on time (i.e. not too late). |
| | Comprehensibility | Absence of material errors | Material errors are errors of qualitative or quantitative importance. Information is material if not including it or presenting it inaccurately can have an impact on: granting discharge to the management of the entity; the choices made by users on the basis of the information. It is not possible to formulate a uniform, quantitative threshold value for this, because the extent to which information is material depends on the nature of the information and the situation in which it is being presented (IPSAS Board, 2008). |
| | | Accessible / clear | The information must be clear to those who use it (policymakers, the House of Representatives, etc.). Excessive detail and complex descriptions must be avoided. Graphs and |



| Standards | Criteria | Subcriteria | Explanation |
|----------------------------------|-----------------------|--|---|
| | | | figures must be used as much as possible. |
| | | Unambiguous | The information must not be open to more than one interpretation. |
| | Comparability | Consistency over time | The data must be comparable over time and changes in information provided earlier must be made explicit. |
| | | Consistency between different components of the policy chain | The data must be consistent with the way in which the policy is defined and the method for measuring performance must be compatible with the instruments used and the performance objectives; the method of measuring effects must be tailored to the societal problem and intended social impact. |
| | | Consistency between different information sources | Different data on the same subject must be mutually consistent. Data from different sources on the same subject must be compared and preferably be presented together. If data are contradictory, this must be specified explicitly and, if possible, explained. |
| Generation of information | Reliable and valid | Reliability | Policy information must have been generated in a sufficiently reliable way. Policy information must have been generated reliably, within certain limits. This is to ensure that repeated measurements will produce the same results in comparable circumstances (replicability). Absolute accuracy is not necessary. Estimates can also be reliable. To help the user, assumptions and uncertainties must be specified in reports. If there is some uncertainty about the reliability of the data, that must be made clear to the user. |
| | | Validity | 'Validity' means that the measuring instrument is appropriate. Concepts must be measured in a valid way, i.e. they have to be operationalised and measured in such a way that you measure what you want to measure. |
| | Orderly and auditable | | It must be possible to reconstruct the process by which information is generated. For systems of regular performance data a description of the information system concerned and the administrative organisation underlying it must make it possible to make statements about the quality of non-financial information. For an evaluation, an audit file must provide this information. |
| | Cost effective | | The costs of generating the policy information must be proportionate to the benefits. |
| | | | |

2 Rules for Large Projects

Second, we examined to what extent the standards for annual reporting imposed on the Minister of Defence and the Minister of Economic Affairs, Agriculture and Innovation by the House of Representatives under the Rules for Large Projects have been met. In particular, we looked at article 12 (see box). The part of the explanatory memorandum dealing with this article states that proper parliamentary scrutiny depends on the funds



associated with the project being recognisably and transparently identified in the budget. 'The guiding principle is therefore that expenditure, receipts and commitments in respect of a large project should be accounted for in a single article (or part of an article) of the central government budget. An exception can be made if a large project has several objectives and the funds are therefore divided over several budgets. In such cases it is to be expected that a full summary will be provided in the central government budget.'

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Article 12: Instructions on progress reports

1. Where appropriate, the information in progress reports must focus on:
 - a. changes in project goals as compared with the basic report;
 - b. any changes in anticipated decision-making and other procedures concerning the project and the House of Representatives' involvement therein;
 - c. any changes in the scope of the project;
 - d. changes in the project timetable;
 - e. changes in project finances;
 - f. changes in risks arising from the project;
 - g. the way in which the project is controlled and managed;
 - h. any other information that directly or indirectly affects the project and can reasonably be considered necessary in order for the House of Representatives to perform its scrutinising role.
2. In the case of information on the finances of large projects, the following rules apply:
 - a. progress reports must explicitly mention any risk of budgets being exceeded and make proposals on how such risks can be averted or minimised and how budgetary provision can be made for this;
 - b. if the project is put out to tender, progress reports must specify the sum total of the tendering results;
 - c. if the project budget includes contingency funds, each progress report must indicate whether and, if so, for what purpose they have been used, and whether they are still deemed sufficient in the prevailing circumstances;
 - d. the financial information in progress reports must be capable of being related to information in ministerial budget documents;
 - e. expenditures, commitments and receipts in respect of a large project must normally be accounted for under a single budget article, or part of an article, and clearly identified in the central government budget.
3. In the case of information on the control and management of a large project, progress reports must mention any major changes in the way the project is controlled and managed, the design of the project organisation and the results of any relevant audits.



3 NATO commitments

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The Netherlands' current commitments to NATO are:

- two squadrons available for a mission lasting less than one year, and/or
- three squadrons available for a mission lasting more than one year.

A squadron is a unit of F-16s with the accompanying operational and support personnel. The Ministry of Defence's units comprise 15 aircraft.

There are NATO standards for the minimum number of pilots per operational aircraft (the 'crew ratio'). In peacetime this is 1.2. For squadrons deployed on missions, it is 2. This means that a squadrons deployed on missions must have $15 \times 2 = 30$ pilots available.

NATO requires pilots to be trained to a particular standard. The NATO guideline for this is 220 to 240 training hours a year for each pilot. The minimum number of hours a year is 180.

4 Deployment objectives

The Minister of Defence has drawn up deployment objectives for this government's term of office (Ministry of Defence, 2011a). These indicate what the armed forces must be capable of, subject to the financial constraints over the coming years. The air force must be deployable for:

- single contributions to international intervention operations involving one squadron of fighters;
- long-term contributions to stabilisation operations, in particular a single airborne operation by fighters, involving an average of eight aircraft.

In the event of the armed forces being called on to take part in an intervention operation, contributions to stabilisation operations may – temporarily – have to be reduced or terminated.

The structural national Quick Reaction Alert (QRA) task was added to these objectives in the 2012 budget (Ministry of Defence, 2011l):

- permanent surveillance of Dutch airspace by two F-16s.



Appendix 3 Abbreviations and definitions

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| | |
|-----------|---|
| CAPE | Cost Assessment and Program Evaluation (part of the US Department of Defense) |
| CFA | Cofinancing Agreement |
| CTOL | Conventional Take-Off and Landing The JSF is available in three versions: Conventional Take-Off and Landing (CTOL), Short Take-Off and Vertical Landing (STOVL) and a Carrier Variant (CV). The Netherlands is planning to purchase the CTOL version of the JSF. |
| DMO | Defence Materiel Organisation |
| DMP | Defence Materiel Process |
| FOC | Full Operational Capability |
| FRP | Full-Rate Production |
| GAO | Government Accountability Office (the US supreme audit institution) |
| HGIS | Homogeneous Group for International Cooperation |
| IOC | Initial Operational Capability |
| IOT&E | Initial Operational Testing and Evaluation (operational test phase) |
| IOT&E MoU | Initial Operational Test & Evaluation Memorandum of Understanding An agreement to take part in the Initial Operational Test and Evaluation phase, a separate part of the SDD phase. |
| JPO | JSF Program Office A US government body that supervises the day-to-day running of the JSF programme. Depending on the agreed level of cooperation, it may include delegates from the partner countries. The Netherlands is represented. |
| JSF | Joint Strike Fighter (official name: F-35 Lightning II) |
| LRIP | Low-Rate Initial Production |
| MoU | Memorandum of Understanding |
| NIDV | Netherlands Defence Manufacturers Association |
| NIFARP | Netherlands Industrial Fighter Aircraft Replacement Platform |
| NLR | National Aerospace Laboratory |
| P&S MoU | Production & Sustainment MoU The signing of this MoU was not overseen by the JPO; it is a development of the PSFD MoU at European level (the European Footprint). |
| PSFD | Production, Sustainment and Follow-on Development (production phase of the international JSF programme) |
| PSFD | Production, Sustainment and Follow-on Development MoU |



| | |
|-----|--|
| MoU | The PSFD phase includes initial production and the production of test aircraft (the Low-Rate Initial Production (LRIP) subphase) and full production (the Full-Rate Production (FRP) subphase). |
| SDD | System Development and Demonstration (development phase of the JSF programme) |
| TNO | Netherlands Organisation for Applied Scientific Research |
| URF | Unit Recurring Flyaway price The average basic unit price of all the aircraft to be produced in a single version of the JSF (in USD, at 2002 prices). This includes the costs of the airframe, vehicle systems, mission systems and propulsion. |
| | |



References

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House of Representatives (2009a). *Review of information requirement for large project Replacement of F-16s*, 2009Z19758/2009D52267. The Hague: Sdu.

House of Representatives (2009b). *Motion on postponement of definitive choice to participate in the test phase and of purchase decision*. House of Representatives, 2008-2009 session, 26 488, no. 178. The Hague: Sdu.

House of Representatives (2011a). *Letter from Permanent Committee on Defence on provision of information concerning the Replacement of F-16s project*. 2011Z22374/2011D61097. The Hague: Sdu.

House of Representatives (2011b). *Uncorrected stenographic report on parliamentary committee meeting with members of government on 30 November 2011 concerning the Ministry of Defence's 2012 budget (33 000 X)*.

IPSAS Board (2008). *Conceptual Framework for General Purpose Financial Reporting by Public Sector Entities*. NB.

Lockheed Martin (2002). *Letter of 5 February 2002 from Lockheed Martin to Minister of Economic Affairs*.

Ministry of Defence (2000). *Letter from the state secretary accompanying the basic document on the progress of the project*. House of Representatives, 1999-2000 session, 26 488, no. 3. The Hague: Sdu.

Ministry of Defence (2002). *Minister of Defence's replies to questions from the House about the letter of 11 February 2002 (B/C letter) on the replacement of F-16s*. House of Representatives, 2001-2002 session, 26 488, no. 8. The Hague: Sdu.

Ministry of Defence (2009). *Requirement for replacement of the F-16; List of questions and answers on answers to questions on the endlife update of the F-16 (parliamentary paper 26 488, no. 139)*. House of Representatives, 2008-2009 session, 26 488, no. 161. The Hague: Sdu.

Ministry of Defence (2010a). *Letter from the Minister of Defence on the update of the cost estimates for the Replacement of F-16s project*. House of Representatives, 2010-2011 session, 26 488, no. 249. The Hague: Sdu.



Ministry of Defence (2010b). *Final report 'Explorations: Guidelines for tomorrow's armed forces'*. House of Representatives, 2009-2010 session, 31 243, nos. 16-17. The Hague: Ministry of Defence.

Ministry of Defence (2010c). *Adoption of the budget statements of the Ministry of Defence (X) for 2010; Letter from the Minister van Defence on adjustments to the Defence Materiel Process*. House of Representatives, 2010-2011 session, 32 123 X, no. 135. The Hague: Sdu.

Ministry of Defence (2011a). *Answers to the written questions of 10 May 2011 from the Permanent Committee on Defence on the policy letter 'The Ministry of Defence in the wake of the credit crisis'*. House of Representatives, 2010-2011 session, 32 733, no. 2. The Hague: Sdu.

Ministry of Defence (2011b). *Minister of Defence's policy letter 'The Ministry of Defence in the wake of the credit crisis: reduced armed forces in a turbulent world'*. House of Representatives, 2010-2011 session, 32 733, no. 1. The Hague: Sdu.

Ministry of Defence (2011c). *Minister of Defence's letter of 1 July 2011 on the consequences of the cost information based on the 2010 SAR*. House of Representatives, 2010-2011 session, 26 488, no. 275. The Hague: Sdu.

Ministry of Defence (2011d). *Minister of Defence's letter of 7 November 2011 answering questions from the 'Personnel and Materiel' legislative consultations*. BS2011037719. The Hague: Sdu.

Ministry of Defence (2011e). *Minister of Defence's letter of 22 December 2011 responding to various requests from the Permanent Committee on Defence on the Replacement of F-16s project*. House of Representatives, 2010-2011 session, 26 488, no. 279. The Hague: Sdu.

Ministry of Defence (2011f). *Minister of Defence's letter on the updating of the Replacement of F-16s project budget and additional measures taken by the US Secretary of Defence Robert Gates*. House of Representatives, 2010-2011 session, 26 488, no. 252. The Hague: Sdu.

Ministry of Defence (2011g). *Minister of Defence's letter on the government's decision to purchase a second JSF test aircraft*. House of Representatives, 2010-2011 session, 26 488, no. 261. The Hague: Sdu.



Ministry of Defence (2011h). *Business case for decommissioning 19 F-16s*, dated 27 May 2011.

92

Ministry of Defence (2011i). *List of questions and answers to questions from the House on the letter of 17 March 2011 concerning the annual reports on the Replacement of F-16s project*. House of Representatives, 2010-2011 session, 26 488, no. 271. The Hague: Sdu.

Ministry of Defence (2011j). *Materiel Project Overview for Budget Day 2011*. House of Representatives, 2011-2012 session, 27 830, no. 90. The Hague: Sdu.

Ministry of Defence (2011k). *Ministry of Defence's calculation model* dated 3 October 2011.

Ministry of Defence (2011l). *Adoption of the budget statements of the Ministry of Defence (X) for 2012*. House of Representatives, 2011-2012 session, 33 000 X, no. 2. The Hague: Sdu.

Ministry of Defence (2012). *Minister of Defence's letter of 7 February 2012 answering questions on the number of flying hours per F-16 in recent years*. BS2012003009. The Hague: Sdu.

Ministry of Defence and Ministry of Economic Affairs (2010). *2009 annual report on the Replacement of F-16s project*. House of Representatives, 2000-2010 session, 26 488, no. 232. The Hague: Sdu.

Ministry of Defence and Ministry of Economic Affairs, Agriculture and Innovation (2011). *2010 annual report on the Replacement of F-16s project*. House of Representatives, 2010-2011 session, 26 488, no. 258. The Hague: Sdu.

Netherlands Court of Audit (2011a). *Monitoring the Replacement the F16: situation as of December 2010, including developments concerning the Joint Strike Fighter*. House of Representatives, 2010-2011 session, 31 300, no. 21. The Hague: Sdu.

Netherlands Court of Audit (2011b). *Financial cutbacks on armed forces' materiel: leaflet on A16 spending cuts in the Ministry of Defence's 2010 budget (X)*. The Hague: Sdu.



People's Party for Freedom and Democracy and Christian Democratic Alliance (2010). *Freedom and Responsibility: People's Party for Freedom and Democracy and Christian Democratic Alliance Coalition Agreement*. The Hague: Sdu.

Audit team

Mr J.S. Kerseboom (audit manager)

Mr G.W. Bolte

Mr J. Doornbos

Ms T. Vandersmissen

Ms C.W. van Vliet

The Netherlands Court of Audit

Algemene Rekenkamer

Lange Voorhout 8

P.O. Box 20015

2500 EA The Hague

phone +31 70 342 43 00

www.courttofaudit.nl

Translation

Translation Department

Ministry of Foreign Affairs

Cover

Design: Corps Ontwerpers, The Hague

Photography: Chris Ayre/iStock

The Hague, April 2012