

# Future Heavy Transport Helicopter

The capabilities and fields of tasks of the CH-53 medium transport helicopter are very extensive and range from peace stabilization mission in the Balkans and in Afghanistan, support of refugees in different crisis regions of the earth, fighting forest fires in Southern Europe, rapid reaction reserves, qualified aero medical transport of wounded personnel at home and abroad up to evacuations or worldwide transport missions. The missions of the Army Aviation with CH-53 helicopters have become more and more challenging over the years. Missions of the Bundeswehr in Africa, Asia or Europe would not be possible without the use of CH-53 and their capabilities.

The CH-53 is anticipated to remain in service with the Army and the armed forces at least up until or maybe even beyond 2020. A so-called half-life alternation of generations is to be effected as of 2020. The oldest helicopters of the CH-53 fleet will then be phased out and decommissioned. In order to provide the Army with suitable equipment for transport missions in elevated and hot areas like Afghanistan, the Directorate General of Armaments at FMoD, the Federal Office of Defence Technology and Procurement, the Weapon System Command of the Air Force, and the Army Office have been working for years on modernizing the helicopter for the mission requirements. The CH-53 of the German Army was time and time again given a "product improvement" – as it is called in the Customer Product Management (CPM) – by way of programs to increase the range and improve self-protection, to provide performance-adapted engines with sand filters and special adaptation kits for special tasks as well as new avionics for improved flight control and communication.

At the same time, those in charge are taking a look at the future and are actively debating about the time when the medium transport helicopter will lose its operational value due to its age it will have reached by then and the constantly increasing requirements in respect to operating range/mission radius, volume of the cargo/troop compartment and payload. The analysis phase regarding a "Future Transport Helicopter" (FTH) was already started with the establishment of the "Functional Requirements" department. The Directorate General of Armaments, the Federal Office of Defence Technology and Procurement, and the Army Office have been working together in a working group since 2000, which is engaged in concepts on the successor of the CH-53.

On 19 December 2000, German armament experts met for the first time with the French side, the "Délégation générale pour l'armement – DGA", on this subject with the purpose of



CH-53 Helicopter on a Mission in Afghanistan.

Picture: FMoD

founding a working group. At that time, the DGA had already prepared a market study for a Heavy Transport Helicopter (HTH). Presently, France hasn't got any large transport helicopters at its disposition. The biggest and heaviest helicopter available to the neighbors is the "Super Puma/Cougar". From a French point of view it is operationally imperative, however, to have in future a helicopter with such capabilities in addition to the NH90.

First informational talks took place with Boeing, Sikorsky and Mil/Rosoboronexport in 2001. The manufacturers of large transport helicopters in the USA know of the requirement from mission experiences of the US armed forces and have been able for years already to gear their production of heavy transport helicopters to the missions of the U.S. Marine Corps, the Special Forces as well as the U.S. Army. In 2006, a formalized market study/



Super Puma/Cougar of the French Armed Forces.

Picture: Eurocopter



Design Study for a Future European Heavy Transport Helicopter in Single-Rotor Design ...



... and as Tandem-Rotor Variant. Graphics: MTU

probe based on the then bilateral capability requirements was conducted with a "Request for Information – RFI". It was forwarded to all leading helicopter producers with the request for detailed answers.

Germany and France are the initiators of this HTH that is adapted to today's mission requirements, and both countries cooperate closely on this project. The two nations have signed a declaration of interest on the occasion of the air show in Le Bourget on 19 June 2007 which provides for the analysis phase for a Future Transport Helicopter to be conducted conjointly; the possibility of a common realization to be pursued with coordinated capability requirements and programmatic parameters; and additional preparatory measures to be ultimately planned for that.

#### *Future Orientation of Defence and National Security of France*

The core of the task of the French armed forces is to secure the national independence of France. This also includes the "integrity of the territory" just as the overseas departments as well as the protection of the population and humanitarian missions. Currently, this also comprises the task of the French military to participate in the war against international terrorism and in international peace missions.

Moreover, France sets great store on a strategic coordination of the European defence and Paris intends a return to the military institutions of NATO. The greater importance attributed to the pillar of defence policy is also corroborated by the European White Paper on Defence which France presented within the scope of its French Council Presidency on 18 June 2008.

#### *Considering a Successor Europe-wide in Due Time*

Numerous defence initiatives were started during the French Council Presidency, especially under the umbrella of the European Defence Agency (EDA) of the European Union. The FTH project is one of them. Germany and France have informed and requested the Steering Committee of EDA last year already to introduce their bilateral initiative for an FTH to EDA in due time. With that the project is intended to be opened for additional interested member states so that a heavy transport helicopter can be realized by 2020.

#### *Engagement of NATO*

Not to be forgotten here is the preparatory work already done by NATO, which has passed a "Mission Need Document for Future Heavy Class Transport Helicopters" within the scope of the NATO Army Armament Group in January 2003. An "Outline NATO Staff Target" was then worked out on the basis of this document. In October 2006, a "Pre-Feasibility Study" was commissioned for the preparation of the next phase document (NATO Staff Target – NST). The study subject "Future Tactical Heavy Lift Capability" was worked on by the NATO Industrial Advisory Group in which all renowned helicopter manufacturers are represented. The results are available since early August 2008 and they confirm to a great extent the information gained from the responses to the German-

French RFI conducted in 2006. Based on the study results, the NATO Armament Group is presently working on an NST for a "Future Heavy Lift System". A cooperative co acting on this basis is planned to be effected between NATO and EDA.

#### *Extended Mission Spectrum*

The qualitative capability gap in operational/tactical air transports – inter alia in respect to the operating range/mission radius, the volume of the cargo/troop compartment, and payload – will not be possible to be completely closed even with the delivery of the comprehensively modernized CH-53 (GA version). The increased requirements can be taken into account only with the definition of a new air transport means, the FTH. In summary, the numerous existing requirement sets for the FTH within the scope of the reorientation of the armed forces can be described as an operational/tactical air transport component which is to be particularly able to rapidly deploy both robust infantry forces and their protected command and multifunction vehicles.

This encompasses the transport of airmobile infantry forces and their equipment including vehicles, the tactical delivery of Special Forces as well as the airlifting of direct tactical support forces with their vehicles and their future air-transportable equipment over short ranges (<500 km) and medium ranges (500-2,400 km with in-flight refueling).

Additional tasks are the parachuting of materiel/personnel, the transport of bulk and individual expandable supplies and special equipment, the quick and careful and qualified transport of wounded and sick personnel and traumatized patients within the scope of rescue and recovery missions as well as qualified aero medical evacuation of casualties.

In addition the helicopter is needed for transporting and recovering high-value materiel as well as personnel, i.e. rescuing personnel from dangerous environment, and for conducting evacuation operations. Additionally required are instant pickup/hookup capability and transport of different external loads as well as the self-deployability.

#### *Worldwide Operations Around the Clock*

All tasks have to be performed in joint and combined and multinational missions largely independent of fixed infrastructure, the time of day, climate, and threat conditions.

The armed forces' key requirements are high internal and external load capacities (10 to 15 tons), also for large and heavy vehicles, extended climatic and high-altitude capabilities with constant agility, an enhanced protection of the helicopter as well as advanced NEW-capable mission equipment. This represents a huge spectrum of requirements which will be tackled by the Directorate General of Armaments and the Federal Office of Defence Tech-

nology and Procurement in cooperation with the French counterpart and, if so desired, with additional nations in order to realize a common heavy transport helicopter by the year 2020 at the latest.

### Analysis Phase High on the Priority List

Until then it is essential to consider the current parametric conditions which, from the standpoint of the armaments domain – and here we speak of a bilateral framework – need to be focused on, especially in the run-up to the procurement of the FTH. The measures to limit the realization risk are given a lot of attention without neglecting the future qualification of the FTH, however. The search for commercially available, off-the-shelf solutions figures prominently in the analysis phase.

In line with the intention of the joint RFI issued in 2006, the generic mission requirements outlined in there were described as maximum requirements in order to explore the solution and performance potentials of the relevant helicopter industry. The ideas and proposals submitted were used to establish functional requirements, which are possible to be realized and financed with a manageable risk within the planned period of time. Furthermore, the life cycle costs are to be realistically predicted. A pre-selection of products was not intended with the RFI. The goal of the analysis phase is to find sound alternatives of solutions for the FTH in the overall operational context.

### First Results

The evaluation of the RFI had already revealed that a completely new development of an FTH in Europe would involve many too high technical, time-related and financial risks. On the other hand, there is no product available on the world market at present and in the near



Mi-26T Helicopter in Fire Fighting Mission over Athens. Picture: ES-Archiv

future, which would be fully suited to meet the capability requirements that can be foreseen now already. When mirrored against the joint German-French functional requirements, it will be the CH-53K (Sikorsky Aircraft Company), which is still under development, or the CH-47F (Boeing) that can be considered as a basis for a required adaptive development. These could serve to design and produce an FTH adapted to the German-French functional requirements with participation of the European aeronautical industry.

### Main Efforts of Research and Technology

The main efforts determined by Germany and France for research and technology studies on an FTH were and are selected in the analysis phase in a way to allow, on the one hand, to



Boeing's CH-47F Helicopter can carry a Payload of nearly 10,000 kg. 48 Units are in Service with the U.S. Army since August 2008. Picture: U.S. Army

sound out within the meaning of risk minimization the potential for future commercially available technologies and, on the other hand, to vigorously use the presently gained competence of the European aeronautical industry and to specifically introduce it into possible transatlantic cooperations with the respective helicopter manufacturers.

Experts of the armaments domain who have been dealing with the subject for years already do setting of priorities and awarding of studies. The responsibility for this lies with the Federal Office of Defence Technology and Procurement and the Bundeswehr Technical Center for Aircraft and Aeronautical Equipment Qualification in cooperation with the armed forces.

### Offer of a European Armament Cooperation

Based on their common experiences and current information and knowledge gained in the joint analysis phase, Germany and France have developed distinct ideas for European armament cooperation in the FTH project. This is to be realized as a European program, so that the future HTH can be operated autonomously by the partner nations in Europe as well as serviced and maintained and technically supported by the European industry. In addition, it is to be qualified in accordance with European terms and certified in line with civilian and military standards. If possible, the procurement is to be effected with additional partner nations based on helicopter platforms available on the market and component technologies within the scope of a worldwide competitive bidding with European participation of industries. France and Germany attach great value to cost cutting and optimization of the life cycle costs. A procurement contract should therefore also include in the service use all subsequent technical support services in addition to development and production.

In early 2009 the European Defence Agency (EDA) will, on this basis, be instructed by Germany and France as the initiators of the project to win additional European or even non-European partner nations for a cooperation in the realization of an FTH.

Since successor systems for the CH-53 and the CH-47, respectively, are needed in Europe as of 2020, it might, from France's and Germany's point of view, be an attractive offer for European and non-European partners to join the initiative and the already finished preparatory work of the two armament directorates and to profit from them, respectively.

On the European stage the FTH project will reach a new dimension in a Europe that is merging into one in defence policy respects. As a consequence, the European defence policy is taking a bit more shape in a challenging armed forces environment with demanding global mission scenarios. ■

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