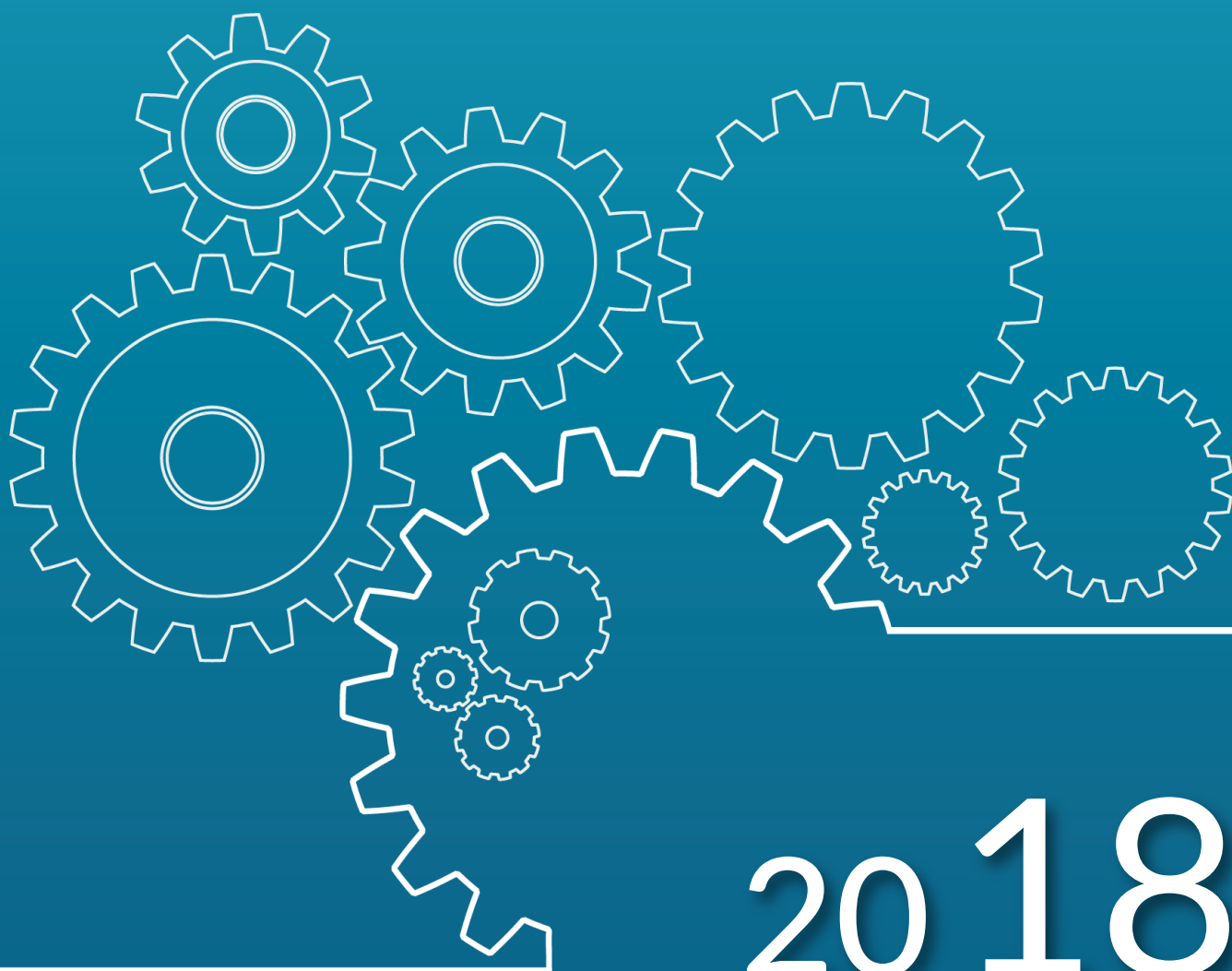


ACTIVITY REPORT

CIVIL AVIATION TECHNICAL CENTRE



2018

Ministry for an Ecological and Solidary Transition



www.stac.aviation-civile.gouv.fr

STAC

TABLE OF CONTENTS



1

EDITORIAL

5

SAFETY

- 6 STUDY AND RESEARCH
- 8 REGULATION STANDARDISATION
- 11 IMPLEMENTATION
- 14 OVERSIGHT

17

SECURITY

- 18 STUDY AND RESEARCH
- 20 REGULATION STANDARDISATION
- 22 IMPLEMENTATION
- 23 OVERSIGHT

25

BIODIVERSITY
AND SUSTAINABLE
DEVELOPMENT

- 26 STUDY AND RESEARCH
- 29 REGULATION STANDARDISATION
- 31 IMPLEMENTATION

34

KNOWLEDGE
DISSEMINATION

40

CONTRIBUTION
TO TRAINING

45

RESOURCES

52

ORGANISATION
CHART

54

GLOSSARY



EDITORIAL

2018 was marked by the development of our strategic project "STAC 2035: preparing the skies of tomorrow". All staff took part and it is with great pride that we invite you to read the summary, attached to our activity report.

This project presents the vision of our environment, our challenges and our commitment to serving air transport stakeholders. It defines our ambition to be the DGAC's expert department in the field of airports and air-ground communications.

Among the emerging areas identified, STAC is now investing in the field of cybersecurity by developing skills in systems resilience, initially through an entity shared with the DTI.

In terms of security, the SGITA system, which was used to issue 2.5 million airport badges over 18 years of operation, has given way to the STITCH software that has just been rolled out.

Work on the runaway of lithium batteries has led to better understanding of the problem and has resulted in instructions being given to airlines regarding flight safety. STAC has supported industry generally by developing new detection algorithms to cope with new threats.

STAC also supports major airport projects on a technical level. With regard to studies prior to the construction of the future Terminal 4 at Paris-Charles de Gaulle airport, STAC carried out infrastructure simulations for 2035 (the planned completion date). The goal was to allow comparison of development scenarios for aeronautical areas using quantitative indicators relating to aircraft taxiing times, delays due to the infrastructure and occupancy of parking stands.

In addition, STAC carried out a study at the request of the DSAC, to optimise departures and approaches of RAFALE aircraft in the surroundings of Bordeaux-Mérignac airport, thus contributing to the identification of solutions generating less noise.

International activity remains dynamic and buoyant. This can be seen through the 50 international working groups that STAC is associated with, the large number of visits by foreign delegations and by Mr Philippe BERTOUX, ambassador and permanent representative of France at the ICAO.



© Alexandre RABETLAT DGAC/STAC

Frédéric **MÉDIONI** - Director named in 2019

Sandrine **LEFEBVRE** - Deputy Director

Among the international projects, STAC is strongly involved, in connection with the DSAC, in the deployment of the new global system for evaluation and reporting of runway surface conditions (the Global Reporting Format). STAC is one of the leaders of the French steering committee and participates in the dedicated working groups within EASA and the ICAO.

Together with EASA, STAC jointly organised the High Level Meeting on Cybersecurity in Civil Aviation in November 2018 in Toulouse.

Finally, in order to increase French influence within international bodies, STAC is resolutely pursuing its policy of translating technical guides and its new website.

These few examples are just a snapshot of the diversity of our activities and we are pleased to share with you, through the pages of this report, the achievements of all STAC employees.

Enjoy the read!

SENIOR MANAGEMENT TEAM



Stéphane LY
Head of Systems Information
and Air Navigation Department



Thierry MADIKA
Head of Security
and Equipment Department



Guilhem BLANCHARD
Head of Airport
Infrastructures Department



Gabriel BERCARU
Head of Naval Aviation
and Support Department



Olivier **JOUANS**
Director



Sandrine **LEFEBVRE**
Deputy Director



Jean-Claude **GUILPIN**
Head of Quality
and Communication



Julie **EUDES**
Head of Administrative
Department



Farid **ZIZI**
Scientific and
International Adviser



Stéphanie **CHAYLA**
Deputy Head of
Administrative Department

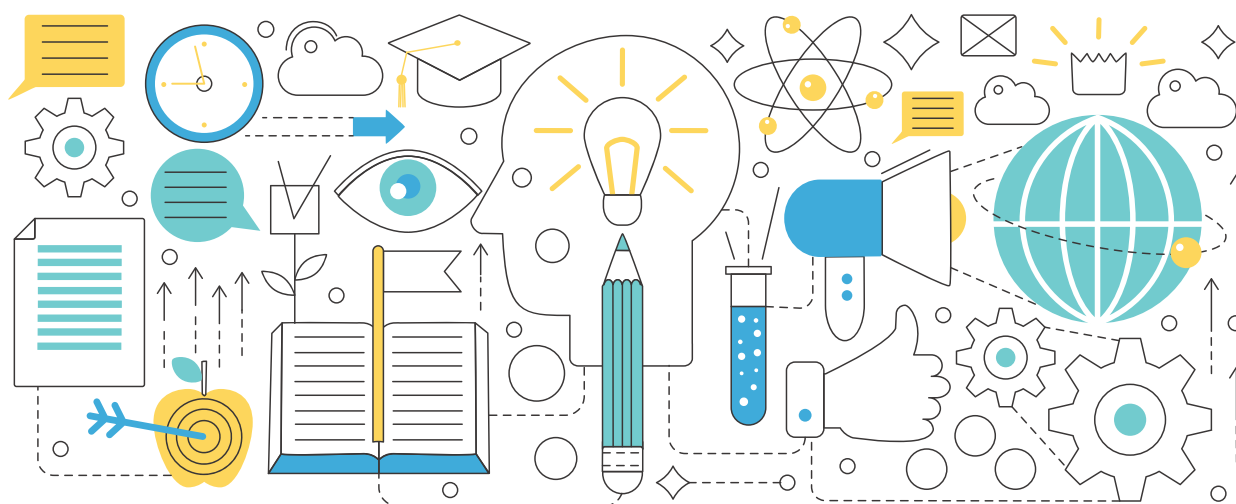
SAFETY







STUDY AND RESEARCH



STAC SIMULATES PROSPECTIVE VARIANTS FOR THE FUTURE TERMINAL 4 AT ROISSY

To support the growth in air traffic, the ADP Group is currently planning the construction of a new passenger terminal at Paris Charles de Gaulle. This new terminal should increase the airport's capacity from 80 to 120 million passengers a year.

As part of this project, STAC's Aerodrome Safety and Capacity division was asked to study and analyse the taxiing constraints on aircraft around the future building. Two very different concepts for the terminal were considered by the ADP Group: a "Satellite" variant consisting of a two-part terminal linked by a driverless metro passing under aircraft taxiways; and a variant consisting of a single building with two docks and four jetties for aircraft parking.

In collaboration with ADP and the airport's air navigation department, STAC modelled the two variants for the future terminal using fast time traffic simulation software. Several simulation samples were then carried out, varying the operating conditions as well as elements of the planned new infrastructure, followed by analysis to allow an objective comparison based on quantitative indicators.

In addition to measuring simulated impacts, which is essential for the decision-making process, STAC's work has also made it possible to refine ground plans for the two terminal variants considered, with a view to optimising aircraft traffic for each of the two scenarios.



➔ BAFOUSSAM AERONAUTICAL CONSTRAINTS PLAN

DSNA Services asked STAC to support the Cameroon Civil Aviation Authority (CCAA) in continuous skills transfer for its staff members in developing aeronautical constraints plans.

The chosen approach consisted of carrying out training and then putting it into practice: development of the aeronautical constraints plan for Bafoussam airport. To carry out these actions, STAC designated Pierre LECLERC, head of the aerodrome safety and capacity division, as lead trainer for the CCAA.

Training of more than twenty staff members in ICAO Annex 14 regulations on the limitation and removal of obstacles was carried out over several visits to Douala, Yaoundé and Bafoussam between July and October 2018. The trained staff members were then able to understand the different stages of developing aeronautical constraints plans in France, in order to allow the CCAA to create its own procedures for development and approval of the plans for its airports.

➔ INTERLABORATORY TESTS

A FRENCH PRACTICE TAKEN INTO ACCOUNT AT THE EUROPEAN LEVEL

Every year, the Laboratory for Expertise and Experiments organizes round-robin tests aiming at evaluating the performance of continuous friction measuring devices (CFMDs) on the one hand, and harmonizing friction measurements on airfield pavements on the other hand. That is indeed an effective and efficient mean, for CFMD owners, to have the metrological quality of their devices checked.

This practice, which requires specific metrology skills, was shared and taken into account within the collaborative works of EASA Rule Making Task 0704. It inspired the drafting of EASA requirements for CFMDs, more specifically the NPA 2018-14 published for comments in December 2018.



© Richard NIETZGER DGAC/STAC



STANDARDISATION AND REGULATION

STANDARDISATION AND RUNWAY LIGHTING

WORK IN 2018 AND STAC'S PROPOSAL FOR A NEW COMMITTEE

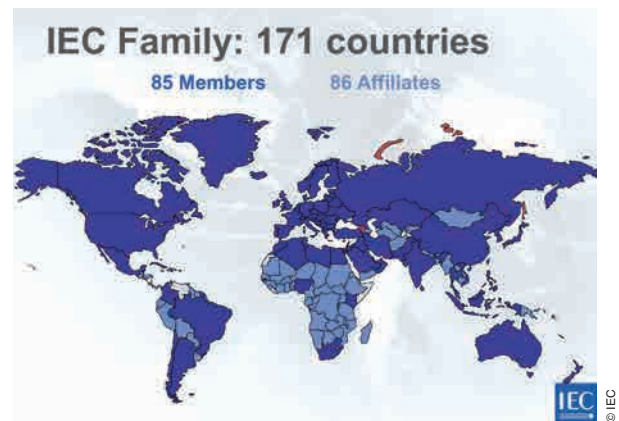
Sébastien MIROUZE of the STAC Equipment division, chairman of IEC technical committee 97 (TC97), organised a working seminar in May 2018 at STAC's premises in Toulouse.

This TC97 technical committee is in charge of standardisation of electrical facilities for runway lighting and general lighting of aerodromes. Around thirty experts from 14 different countries took part in the five-day meeting.

Among the many points raised during this seminar, it is worth noting the work done on the future IEC 61820 standard dealing with electrical facilities specific to runway lighting. Part No. 1 (general) was finalised during this seminar and should appear as a standard around mid 2019. Drafting of part No. 2 (series circuit) has started. Technical teleconferences on the progress of the IEC 61820 standard are being scheduled before the next seminar to be held in Canada in 2019.

Numerous standards must also be renewed and/or completed, in particular the standards for runway lighting and for constant current controllers, which will be grouped together in the IEC 61820 standard. In fact, the arrival of LED lights has drastically changed the technical landscape of airport runway lighting. The many experts present thanked STAC for organising this seminar.

Sébastien MIROUZE is leaving to take on other duties within the DGAC in early 2019, and will no longer chair the TC97 committee. We would like to thank him for his commitment and wish him all the best for his new assignment off the coast of Canada.



LE BOURGET AERONAUTICAL CONSTRAINTS PLAN

For several years, STAC's Aerodrome Safety and Capacity division has been involved in the various steps necessary to produce the aeronautical constraints plan (PSA) for Le Bourget airport.

More specifically, STAC teams have been working since 2009, in close collaboration with DSAC-Nord and the DTA, to define the surfaces for the preliminary PSA for Le Bourget airport, and then to take into account the obstacles and how the surfaces are adapted.

After a nine-year process, Le Bourget's PSA was approved on 28 June 2018 by a Decree published in the Official Journal on 30 June 2018.



➤ PREVENTION OF THE WILDLIFE HAZARD

INTERNATIONAL CONTRIBUTION

STAC has continued its international involvement in the field of animal collision risk prevention with ICAO and the World Birdstrike Association (WBA).

STAC took an active part in the ICAO Wildlife Hazard Management Expert Group (WHMEG) by contributing to the drafting and proofreading of the next update of Part 3 of the ICAO Airport Services Manual (Document 9137).

STAC also facilitated a workshop on the integration and monitoring of wildlife hazard assessment and observation data at the WBA conference in Warsaw in November 2018.

➤ NEW WORKING GROUP ON THE MARKING AND THE LIGHTING OF WIND ENERGY CONVERTORS

The Visual aids subdivision of the STAC attended on November 26 and 27, 2018 the start-up meeting of the IEC working group PT 61400-29 dealing with the marking and the lighting of wind energy convertors and wind farms. This standardization work aims at harmonizing the various national regulations in Europe which targets at enhancing the conspicuity of wind farms and wind energy convertors with respect to aircrafts while minimizing induced light pollution. This work is expected to be completed by the end of 2021. The use of aircraft detection systems as well as the incompatibility issues between LED technology and night vision systems including infrared sensors will be addressed.



© Richard METZGER DGAC/STAC



➡ ANIMATED VIDEO CLIPS TO RAISE SAFETY AWARENESS IN GROUND HANDLING OPERATIONS



© Richard METZGER DGAC/STAC



© Richard METZGER DGAC/STAC

DSAC-Nord has been asked by the director of civil aviation safety to coordinate the implementation of safety actions that may have emerged following the 2015 symposium dedicated to ground handling.

STAC has been appointed to pilot this project.

STAC, assisted by the CAPA agency, has designed and produced a series of animated videos on safety awareness in ground handling covering three main topics: weight and balance, traffic in handling areas and on stands, and docking and withdrawal of equipment.

These are to be widely distributed to all involved in ground handling.

The project ended successfully in December 2018 and has received very positive feedback in France and abroad. A presentation of the work done will take place during the STAC technical day on 4 June 2019 at DGAC headquarters.

These video clips, which represent a new form of deliverable for STAC, have helped to strengthen STAC's expertise in the safety of ground handling activities.

➡ RUNWAY FRICTION AND SURFACE CONDITION ASSESSMENTS

INTERNATIONAL WORKING GROUPS

STAC attended the two Friction Task Force (FTF) annual meetings. The FTF managed to complete the update of the Aeroplane Performance Manual and the Circular 329 on runway surface conditions.

A new Job card has also been adopted, related to "Assessing and monitoring runway surface friction characteristics as part of an appropriate maintenance program". In the same time, STAC has been involved in the EASA Rule Making Task 0704, dealing with the implementation of the Global Reporting Format for European certified airports.



IMPLEMENTATION

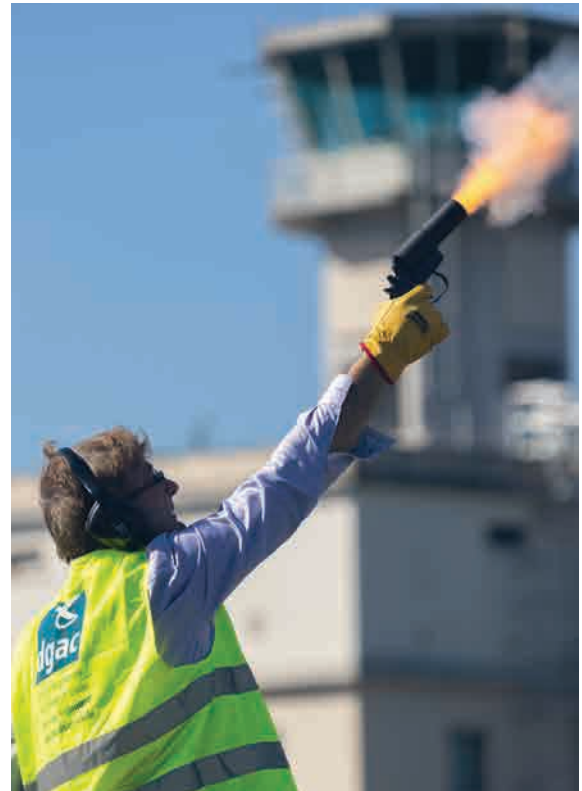
SCARING TECHNIQUES

QUALIFICATION OF PYROTECHNIC EQUIPMENT

In 2018, STAC Environment division launched a campaign to qualify the pyrotechnic equipment used by the departments responsible for preventing wildlife strike risk at airports. These tests follow the publication by STAC in July 2017 of a technical information note on pyrotechnic incidents.

The goal is ultimately to provide the first national technical data on the trajectory, range and sound level of the projectiles. This data will be a decision-making aid for airport operators in their choice of animal risk prevention equipment.

The first tests carried out in 2018 led to the development of a measurement methodology. The test campaign will be continued in 2019 and the results will be published during the year.



© Richard METZGER DGAC/STAC

FRENCH AND WORLDWIDE IMPLEMENTATIONS OF THE GLOBAL REPORTING FORMAT REGULATION

STAC went on managing the French implementation of the Global Reporting Format, in coordination with DSAC-ERS. A regulatory group was created in order to assess changes to be done in regulations applicable to non-EASA airports. Advances from ICAO friction task force and EASA rule making tasks (0704 and 0296) were also discussed, as well as an interesting feedback on the US implementation of the GRF concept, from Fedex pilots.

Lastly, STAC contributed to the dissemination of the GRF, particularly during the Global Air Safety Net Concept Forum that took place in Toulouse, DSNA, in April 2018.



➡ AIRPORT INFRASTRUCTURE ASSET MANAGEMENT

A NEW SCOPE OF PRACTICE FOR THE STAC



Because the expenses in investment and maintenance of aging airport infrastructures need to be optimized, STAC is committed to explore the techniques for asset management. A dedicated working group has been established with the French service for airport engineering (SNIA) and the French infrastructure-management center for military airports (CR Aéro).

Participants to the working group have agreed on various actions, such as the implementation of practical tools for the documentary management of airport infrastructures and aircraft traffic; the development of a technical framework for automated airfield pavement survey; and the integration of new features within information systems for both civil and military airports. A strong interface with the road sector will also be necessary, so as to benefit from their tools and experiences.

➡ TECHNICAL ASSISTANCE AT TUNIS-CARTHAGE AIRPORT

As part of the twinning with Tunisia in the civil aviation sector, bringing together the Tunisian Directorate General of Civil Aviation of the Ministry of Transport and the French Directorate General of Civil Aviation (DGAC), two STAC experts provided technical assistance to Tunis-Carthage airport in the field of animal risk prevention.

This assistance, based on an assessment of the animal situation at the airport and the risk of collisions, concluded with the submission of an expert report containing a set of recommendations aiming to reduce the number of animal collisions and guaranteeing a high level of aviation safety.



➤ ARFF & EMERGENCY PLAN AUDIT IN SINGAPORE

As part of Changi Airport Group's Best Practices Audit programme, STAC audited the emergency service at two of Singapore's civil airports, Changi and Seletar, in October 2018. This is an internal audit organised every three years by Changi Airport, in addition to its usual internal audits, with the participation of an external auditor from outside Singapore. The objective is to assess the level of compliance and readiness of Aircraft Rescue and Firefighting (ARFF) and the Emergency Plan, with reference to ICAO's recommended standards and best practices implemented by other airports or States.

The week of 15 to 19 October, spent on site, provided an opportunity for observation and discussions with the airport operator on the ARFF organisation and resources implemented at Changi (an ARFF category 10 airport) and Seletar (category 7), and with the Singapore Aviation Academy on firefighter training.

Also of note during the audit programme:

- follow-up to the "Bobcat 2018" exercise organised on the night of 16-17 October to test the organisation and resources provided for in the Changi Airport Emergency Plan;
- presentation of the organisation and specific resources for rescue at sea, determined and implemented by the operator to take account, for its airports, of approaches and take-offs taking place over bodies of water and in the immediate proximity of Indonesia and Malaysia.



© Laurent OSTY

➤ TECHNICAL INFORMATION NOTE ON THE MONITORING OF SURFACE CONDITION ON SHORT RUNWAYS

The acceleration and braking distances necessary for the use of self-wetting continuous friction measuring devices (CFMDs) mean that they are ineffective on the shortest runways, of only a few hundred metres. At the request of the DSAC, STAC has therefore developed a visual method for monitoring deterioration in the surface condition that is likely to exert an influence on runway friction. A technical information note presenting this methodology as well as routine runway maintenance actions should be available on the STAC website in mid 2019.






OVERSIGHT

WILDLIFE TECHNICAL ASSESSMENTS

STAC continued its action in support of the Directorate of Airports and Air Navigation of the DSAC and the Ministry of the Armed Forces as part of its annual programme of animal expert assessments of civil airports and military air bases.

These expert assessments are based on 3 main actions:

-  a measure of the airport's animal risk level (calculation and validation of the level of risk),
-  an animal risk analysis (search for the origin of the animal risk),
-  the identification of actions to control or mitigate the risk.

At the end of the assessment, a technical opinion is issued on the animal situation at the airport and the animal risk management implemented by the airport operator.

In 2018, five airport sites (three civil airports and two military air bases) were assessed by the STAC team responsible for animal risk prevention.

STAC also submitted more than a dozen technical opinions to DSAC (central level and interregional directorates) on facilities, activities, works or installations deemed dangerous for air traffic with regard to the risk of bird strike.

TECHNICAL COOPERATION

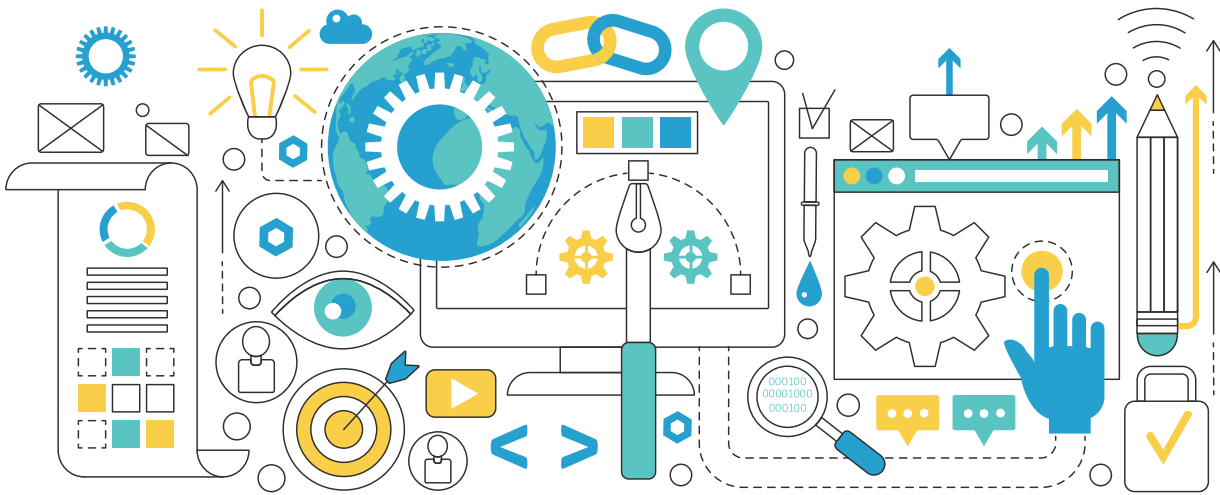
CAPACITY AND SECURITY EXPERT ASSESSMENT FOR BANGUI M'POKO AIRPORT

As part of the technical cooperation with the Central African Republic, STAC was asked by the Sub-Directorate of Security and Defence to carry out a review of proposals for reorganisation to improve passenger flows at Bangui M'Poko international airport.

In coordination with the Ministry of Foreign Affairs, STAC collaborated with the Ministry of Equipment, Civil Aviation Transport and Accessibility, the National Civil Aviation Authority of the Central African Republic and the operator of Bangui M'Poko airport.

The objective of the mission was to make development proposals compatible with the security issues encountered at the airport. These proposals had to take into account the current layout of the premises and not require major work.

After an essentially qualitative capacity assessment, STAC came up with simple and inexpensive measures to improve flow management in the terminal. STAC delivered its conclusions at a meeting in the presence of the Chief of Staff of the Minister of Transport and various stakeholders.



The Air Navigation division is involved in the oversight of the top critical technical projects designed by the Air Navigation providers on behalf of the DSAC. In this context, a new practice based on software assurance audits is being developed.

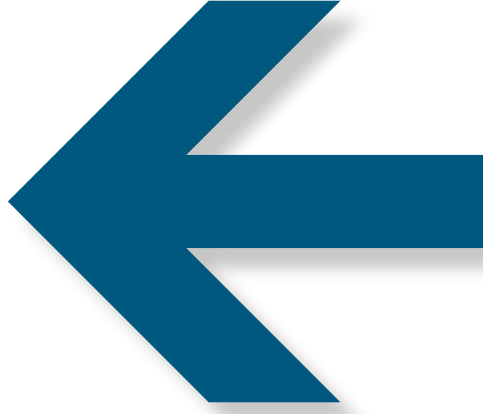
Software audits are intended to insure that the necessary features were implemented so that the application works as specified without risk for safety. They cover all the software development aspects: the adequate capture of the needs, purpose proper design and the exhaustive implementation in the source code. The audit has to adapt to the development methodology, to the technological choice and to the industrial organisation.

As the software quality shall not depend on the skill level of the individuals in charge of the development, an extensive description of the development processes needs to be provided. The audit will have to bring some confidence in the completeness of the development process formalization and will have to check the technical validity of the implementation.

The full verification of the software being impossible in audits, the on-site inspections are based on sampling. It is a matter of assessing the correctness of the implementation of the processes and the adequacy of the technical solutions on some functional capacities of the software. Any inadequately formalized process, any anomaly in the monitoring of the processes or any unsuitable choice of design can reveal defaults potentially impacting safety. These technical or methodological defaults will have to be analyzed to identify if it is an isolated or a structural problem (inadequate process, architecture issue,...). Although the inspections are sample-based, the efficiency of software assurance audits is amazing to identify gaps.

The most critical applications of the DSNA have been reviewed. It allowed to make an assessment in the software development practices and to identify opportunities to improve good practices in order to reduce the inconsistencies and thus to improve the safety level.

SECURITY







STUDY AND RESEARCH

SPEECH AT THE PASSENGER TERMINAL CONFERENCE ON REMOTE-MULTIPLEXED ANALYSIS

STOCKHOLM, 20-22 MARCH 2018

On the occasion of the Passenger Terminal Conference in Stockholm in March 2018, STAC made a speech on the subject of remote-multiplexed analysis in the session on "Security, Border Controls and Facilitation".

The presentation gave a reminder of the results of the experiments carried out in Toulouse, Lyon and Paris as part of the Vision Sûreté programme, and discussed the regulatory changes brought about by the DGAC and STAC in particular (new technical specifications, chapter on security systems, etc.).

The Passenger Terminal Conference is an annual event that brings together more than 1,700 participants and approximately 300 speakers, representing more than 100 countries around the world.



© Richard METZGER DGAC/STAC

EXPLOSIVES DETECTORS FOR HOLD BAGGAGE

THREE-DIMENSIONAL IMAGE PROCESSING FUNCTIONS

As part of the deployment of Explosive Detection Systems (EDS) for standard 3 hold baggage at airports, and because of an emerging threat, STAC has established technical criteria for 3D image processing functions.

These image processing functions should allow the image analysis operator to better analyse the objects contained in a piece of luggage and to more conveniently examine objects that raise alarms.

This work continues today, notably in the working groups of the European Civil Aviation Conference (ECAC). The aim is to achieve even more robust evaluation methodologies for standard 3 EDS.



➔ NEW EXPERIMENT ON STOWS

Public areas in European air terminals are freely accessible to passengers, those accompanying them, staff and users of commercial areas, making them potentially attractive targets for terrorists. In order to reinforce the protection of public areas in air terminals, in 2017 the company CEIA INTERNATIONAL in partnership with STAC developed a system for detecting unconventional metallic threats, called STOWS "STand-Off Walk-through System". This system aims, for example, to detect people with assault rifles entering a building such as an airport terminal.

In 2018, STAC carried out an evaluation in an operational environment to assess the problems of possible concentrations of people and also untimely alarms. This experiment yielded useful feedback, helping to define optimal conditions of use.



© Richard METZGER DGAC/STAC

➔ PARTICIPATION IN WGIAS/5

SHENZHEN, MAY 15-17, 2018

In May 2018, STAC represented France at the 5th International Civil Aviation Organization (ICAO) Working Group on Innovation in Aviation Security (WGIAS), held in Shenzhen (People's Republic of China).

In particular, STAC presented the ongoing regulatory work within the DGAC, for which STAC is a driving force, to develop a new chapter dedicated to "security systems".

DGAC's objective is to have a framework to ensure that, in addition to deployed security equipment meeting the technical specifications defined in European regulations, such equipment effectively integrates into a system that allows for the efficient implementation of security measures.

This original work attracted the interest of the States and represented entities (IATA, ACI-World, etc.).

➔ EXPLOSIVE TRACE DETECTORS AGAINST NEW THREATS

To take account of the detection of new threats at passenger screening and cabin bag inspection stations, L3COM, in collaboration with STAC, has developed a new software version for QS-B220 model explosive trace detection equipment. The evaluations carried out by STAC both in the laboratory and in the operating environment, in collaboration with Paris Aéroports and Air France, demonstrated the reliability of this new software version, which offers excellent levels of detection and false alarms for these new threats.

STAC has already brought the results of its research to the international level and is continuing its work on other models of explosive trace detectors (ETDs).



STANDARDISATION AND REGULATION

INTERNATIONAL COOPERATION WITH THE CENTRAL AFRICAN REPUBLIC



Within the scope of the technical cooperation established in the field of security between France and the Central African Republic, an expert assessment of capacity, organisation of passenger flows and optimisation of the use of the security technologies installed at BANGUI-M'POKO international airport was carried out by two experts from STAC (Mr Salim MAMMAR and Mr Denis BARBAZANGES).

The purpose of this mission was to study the current configuration of the air terminal premises, review the security equipment and associated operating procedures, share best practices on its use and finally to provide recommendations on the procedures for the selection, approval and acquisition of security equipment.

The mission was accomplished in October 2018 and was judged a great success by both parties.



➡ SPEECHES AT THE AVSEC COMMITTEE IN BRUSSELS

At the request of the security and defense branch of the air transport directorate, STAC was asked twice in 2018 to present its work to the Aviation security (AVSEC) regulatory committee chaired by the European Commission. This lecture, entitled the STAC to share its expertise at the European level, is the result of several months of studies and fruitful collaboration with industry on the capacity to discriminate organic and inorganic materials and to take into account a new threat to air transport.

These speeches, which aroused the interest of our foreign partners, made it possible to share STAC's know-how on subjects with a strong technical content.

Through this approach, the STAC is contributing to the objectives of the DGAC in improving security at the national and international level.

➡ CYBERSECURITY FOR CIVIL AVIATION

The STAC took part several times during 2018 in the ESCP-TAC "Regulatory Work-stream" (European Strategic Coordination Platform - Technical Advisory Committee) in order to prepare the ATM/ANS part of the Notice of Proposed Amendment regarding Cyber security for every Civil Aviation stakeholder. This NPA publication is expected during 2019.



© Richard METZGER DGAC/STAC



IMPLEMENTATION

KICK OFF MEETING FOR THE VISION SÛRETÉ 2 PROGRAMME

The Minister of Transport, Elisabeth BORNE, officially launched the second phase of the Vision Sûreté programme on April 3, 2018 as part of the air transport conference. The first phase of this national innovation programme related only to passenger and cabin baggage inspection and screening. The VISION SÛRETÉ 2 programme now covers all areas (hold baggage, freight, etc.) and allows all security players (airlines, industry, security companies, etc.) to suggest projects. Facial recognition, perimeter protection and drone prevention are all new topics that can be dealt with in this context.



ROLL-OUT OF STITCH

As part of the roll-out of STITCH (a computerised system for the printing of badges for access to airport security zones and the management of authorisations), STAC has used its expertise across all airport platforms and some DSNA sites, by putting in place user certificates, by installing a “fat client” badge printer and gateway interconnection with access controls with their dedicated certificate and by dismantling the old SGITA system.

Phase 1 of the roll-out, in 2017, operated at the rate of two sites per month.

In 2018, phase 2 of the roll-out was implemented at a steadily increasing pace, ranging from three sites per month at the beginning of the year, to nine sites per month at the end of the year, with remote deployment for simple sites.

In total, the STITCH application was rolled out across 43 platforms in 2018.

This roll-out, on site or remotely, was also an opportunity for STAC to better understand the access control systems in place, their constraints, their users and their expectations.



OVERSIGHT

NEW ECAC COMMON EVALUATION PROCESS FOR WALK-THROUGH METAL DETECTORS

2018 was marked by the setting up of a common evaluation process for walk-through metal detectors (WTMDs) at ECAC level. This is the result of several years of work during which STAC participated with its European counterparts in order to define the technical specifications required for this equipment and to organise pilot tests in order to validate a common testing methodology.

This approach was an opportunity for STAC to acquire new technical resources for its laboratory, to ensure the reliability of tests and robust evaluations.

STAC has thus become, with its German counterpart, one of the two ECAC test centres for the evaluation of this type of security equipment.



© Richard METZGER DGAC/STAC

ACCREDITATION

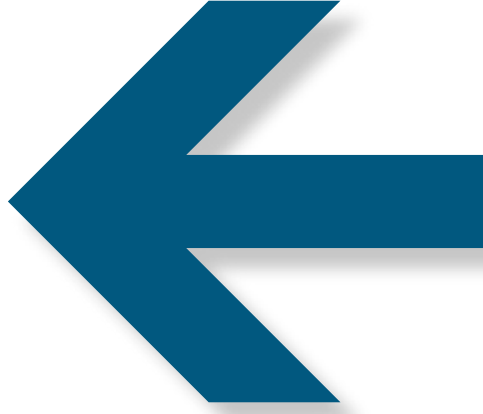
FLEXIBLE SCOPE

With the Civil Aviation technical service always striving to deliver quality services, STAC's security laboratories have been accredited to the ISO 17 025 standard, by the French Accreditation Committee (COFRAC) for carrying out tests on explosive detection systems in hold baggage and for explosive trace detector tests, according to the common ECAC testing methodologies (scope available at www.cofrac.fr).

COFRAC renewed these accreditations on 22 March 2018, and accepted the transition to a flexible scope (scope "FLEX 1").

This flexible scope will allow STAC to be more responsive to CTM version changes, and able to issue accredited test reports without having to wait for the next COFRAC evaluation in case of changes in ECAC testing methodologies.

BIODIVERSITY AND SUSTAINABLE DEVELOPMENT







➔ STAC/CER TEST FACILITY

FIRST RESULTS AND A NEW COOPERATION AGREEMENT

From 2016, a flexible pavement test facility has been implemented by the STAC in partnership with the CEREMA Road Expertise Center (CER). The project has multiple objectives: comparing the results from several NDT devices used at various levels within the pavement; comparing the results for two subgrade status regarding the water content; and highlighting a rebate correction factor to be applied to the backcalculated subgrade modulus from Heavy Weight Deflectometer tests before further use within the bearing capacity or life expectancy direct calculation phase. This first study was achieved and the corresponding results released in 2018. A second experimentation stage is being launched in 2019, which deals with the fatigue behavior of the bituminous layers when comparing laboratory tests and full-scale on-site measurements. The test survey, which includes surface moduli monitoring, image analysis to study cracking evolution and laboratory fatigue tests, will be performed from 2019 to 2021.

➔ EXPERIMENTAL IMPLEMENTATION OF THE FRENCH RATIONAL METHOD FOR OVERLAY DESIGN ON TFFR RUNWAY

The STAC is assisting the Pointe-à-Pitre (TFFR) airport operator in its project for setting out a technical solution to reinforce its runway pavement. A rational method for overlay design, which enables optimizing pavement layer thicknesses, has been tested under a research partnership. The STAC provided training on this new procedure to the contracting authority, its technical assistant and the prime contractor. A research version of the Alizé-Aéronautique software, extended to the overlay design, was specifically developed for this study and provided to all partners. The diagnosis and pre-project phases were implemented in 2018.

➔ COMPUTATION OF THE GLOBAL WEIGHTED MEASURED INDICATOR (IGMP) FOR 2017

As happens every year, the STAC was mandated by the DTA to compute the IGMP index for the previous year.

This indicator is representative of the sound energy emitted by planes taking off and landing from Paris-Charles de Gaulle airport.

In September 2018, STAC and the DTA jointly presented the computation and results of the 2017 IGMP at ACNUSA. The indicator is continuing to fall, despite a slight increase in the number of movements (+ 0.7% compared with 2016). The use of more modern and less noisy aircraft is the main factor explaining this decrease.



© Richard METZGER DGAC/STAC



➤ TYPE RATING ON THE RAFALE

ACOUSTIC OPTIMISATION OF FLIGHT PATHS

Bordeaux-Mérignac Airport will serve as the take-off and landing base for Qatari and Indian pilots undergoing Rafale training in the first half of 2019. In collaboration with DSAC/SO, STAC has carried out work on the optimisation of flight paths for these transformation* flights.

The purpose of this study was to find optimal flight paths in order to reduce the environmental noise impact to the airport's surroundings and minimise disturbance.

Specific procedures (for departures and approaches) to optimise the environmental impact of these flights were developed, and STAC evaluated the sound impact through modelling.

*type rating upgrade



© Richard METZGER DGAC/STAC

➤ ACOUSTIC MEASUREMENT CAMPAIGNS

FROM LIGHT AVIATION TO PUBLIC TRANSPORT

STAC carries out acoustic measurement campaigns every year. 2018 was very busy, as from mid March to the end of November 2,012 aircraft acoustic measurement campaigns were carried out according to the Calipso protocol but also according to the ICAO Annex 16 standard (Chapters 6, 10 & 11).

These campaigns took place at 5 different sites, in order to connect as closely as possible with the aircraft to be measured: Mauléon (west), Moissac (south), Montargis (north), Montceau les Mines (east), Vesoul (north-east).

Other comparative acoustic measurements were carried out at Orly & CDG (Roissy) on behalf of the DTA's Sustainable Development sub-division, as part of a study on the frequency distribution of noise in the vicinity of APUs (Auxiliary Power Units). These measurements were carried out on 8 different aircraft from the A320 to the A380 and including the B737, B777, etc.

THE WORKINGS OF AN ACOUSTIC MEASUREMENT CAMPAIGN...

The production of laboratory reports on acoustic measurement goes through several stages. The acquisition, tabulation and analysis of various data, in order to produce a test report under COFRAC accreditation (scope available at www.cofrac.fr). These steps require the use of many software programs, internal or external to STAC, as well as specific Macros for noise measurement (see block diagram below).

Significant work on updating some of this software was carried out in 2018, in order to be able to measure twin-engine aircrafts as part of the acoustic measurements carried out by STAC.



STANDARDISATION AND REGULATION

A NEW ICAO PROCEDURE FOR THE ASSESSMENT AND REPORTING OF AIRFIELD PAVEMENTS' BEARING CAPACITY

During its 2018 meeting, the IACO Airfield Pavements Expert Group (APEG) validated and promoted the work that had previously been done by the task-force that was mandated to update the ACN/PCN methodology for the assessment and reporting of airfield pavements' bearing capacity. The new ACR/PCR (Airfield / Pavement Classification Rating) method has been made coherent with the rational airfield pavements design procedures which are now being used widely, including France. The method has been approved by the Airport Design & Operations Panel (ADOP) and an official State Letter has been sent for approval of the modifications to ICAO Annex 14 and Aerodrome Design Manual (ADM).

STAC, which participated to the ACR/PCR task-force, is now checking the consistency between this new methodology and the French airfield pavement design procedures. Adaptations will be made in order to fit the ICAO generic framing procedure with French design specificities. The goal is to facilitate the transition period between 2020 and 2024.



© Richard METZGER DGAC/STAC



➡ CONTRIBUTION TO THE WORK OF CAEP AND ECAC

The Committee on Aviation Environmental Protection (CAEP) provides technical expertise to the ICAO Council in the area of aircraft noise, aircraft engine gas emissions and, more generally, environmental impact of aviation. It is composed of experts from certification authorities, aircraft manufacturers, airlines, airport operators and non-governmental organisations.

STAC contributes to several CAEP working groups:

- ➡ WG2 on “Airports and Operations”, which covers several environmental areas, including the vulnerability of airports to climate change.
- ➡ WG3 on “Emissions Technical Issues” within the CAEP of the International Civil Aviation Organization (ICAO). This group is in charge of updating the certification standards of engines in terms of pollutant emissions and the introduction of new standards, such as non-volatile particle emissions.

STAC also leads two ad hoc subgroups of WG3 in charge of drafting changes to aircraft engine certification standards and the introduction of the new standards in Volume II of Annex 16.

For studies on non-volatile particulate matter (nvPM) standards, STAC also participates in the CAEP11 international working group (Modelling Data Base). This group is responsible for updating databases and modelling related to the definition of future standards (emissions and noise).

In addition to ICAO, STAC is actively involved in ECAC's work in terms of recommendations related to noise modelling around aerodromes. Through the European AIRMOD Working Group, STAC has contributed to updating the 4th edition of ECAC Doc 29, which has been officially presented.

➡ EUROCAE WG-109

A NEW STANDARDIZATION COMMITTEE UNDER STAC LEADERSHIP

Following STAC experiments on pavement contamination sensors, the European standardization organization EUROCAE initiated a new working group on runway weather information systems. This initiative was very successful, since no less than 26 participants from 20 organizations in 11 countries answered to the first call for participation. All stakeholders are represented: airport operators, sensors & systems manufacturers, aircraft manufacturers and civil aviation authorities work together so as to produce minimal performance requirements and performance assessment procedures for these new automated systems, which could support the implementation of the Global Reporting Format regulation from 2020.



IMPLEMENTATION







© Richard METZGER DGAC/STAC

NANTES ATLANTIQUE AIRPORT

A FLAGSHIP PROJECT FOR DGAC WITH A SUBSTANTIAL INVOLVEMENT FROM STAC

Since French Prime Minister decided to cancel the project of a new airport at Notre-Dame des Landes in January 2018, the civil aviation authority (DGAC) is mandated to conduct all the actions needed for a new concession contract to be signed for the existing airport in Nantes Atlantique. Beyond normal airport operations, the contract will need to tackle a major (several hundred millions of euros) program of public works on airport infrastructures and buildings in order to substantially increase its capacity.

Within this complex and sensitive project, STAC is mandated for several important missions:

-  the design of a new masterplan for the airport medium and long-term development, and the oversight of all technical and environmental studies needed for this development to be planned;
-  the diagnosis of the airport's current status, and the design of short-term works that are considered necessary to absorb the demand in airport capacity until the new concession contract is applicable;
-  the coordination with local authorities for the planning of road infrastructures, car parking and collective transportation projects in the surrounding areas;
-  the technical assistance to the Directorate for air transportation for all other actions related to Nantes Atlantique, including the update of noise management plans and the preparation of the various steps of public consultation.



➡ INTERNATIONAL HEAVY WEIGHT DEFLECTOMETERS ROUND-ROBIN ON THE STAC TEST FACILITY

From 17 to 21 September 2018, STAC organized a new international Heavy Weight Deflectometer (HWD) round-robin test survey on its Bonneuil instrumented test facility. This interlaboratory comparison involved 7 devices from 6 companies from France, Hungary, Switzerland and the Netherlands.

The experimental protocol included two major steps: a calibration assessment of the force sensors of all devices using the STAC precision dynamical weighting system, and a series of tests at multiple loads, performed on several tests points from the three test areas (flexible, non-dowelled rigid and dowelled rigid pavements).

In addition to the valuable lessons obtained about the repeatability, reproducibility and interchangeability of the devices, this survey was also a good opportunity for multiple discussions and experience-sharing between the attendees. Given the fruitful tests and the attendees satisfaction index, another round-robin test campaign should be planned in 2020.



© Richard METZGER DGAC/STAC

➡ VARIOUS PROJECTS ON NOISE MODELLING

In 2018, numerous modelling studies were requested and carried out in order to minimise the noise impact for populations living under flight paths.

Acoustic modellers at STAC have undertaken several noise exposure plan (PEB) revisions for ACNUSA airports. The Environment division has also produced sound environment maps (CESSs) to assess the need for revision of strategic noise maps (CSBs).



➤ EXPERT ASSESSMENT OF MONITORING SYSTEMS

In 2018, the monitoring team from the noise measurement laboratory carried out the expert assessment for approval of the noise and flight-path monitoring system at Beauvais-Tillé airport. This expert assessment, carried out in accordance with the methodology developed by the laboratory and validated by the Airport Pollution Control Authority (ACNUSA), took place in three phases:

- Phase 1: Preliminary visit to the measurement stations
- Phase 2: Carrying out comparative acoustic measurements
- Interviews with staff of Beauvais airport's management and operations company (SAGEB) involved in the use and maintenance of the system.

An expert report was drawn up following this assessment. It was presented to ACNUSA, which approved this system on 9 October 2018.



© Richard METZGER DGAC/STAC

➤ IMPACT OF CLIMATE CHANGE

CREATION OF THE "VULCLIM" ONLINE TOOL

In 2018, STAC continued its work to produce an online tool to assess the vulnerability of aerodromes to the effects of climate change. After useful discussions with the DTA and different aerodromes about the STAC evaluation method and its automation, STAC was able to produce a functional assessment tool.

This tool, "VULCLIM", will soon be accessible via the STAC website and will allow aerodromes to obtain a risk matrix indicating the vulnerability of their platform to the expected effects of climate change by 2100.



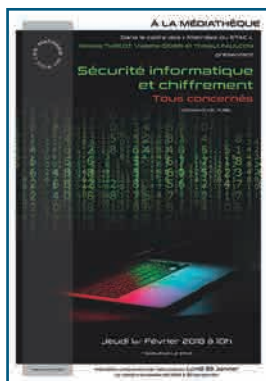
KNOWLEDGE DISSEMINATION

STAC MORNING SESSIONS IN 2018



STAC morning sessions are organized four times a year in the STAC media library. These sessions are a special occasion to discuss our technical topics in a simple way, to present a study or a particular activity. They are an opportunity to bring together STAC staff from different backgrounds, in order to exchange and thus contribute to the dissemination of administrative or technical knowledge.

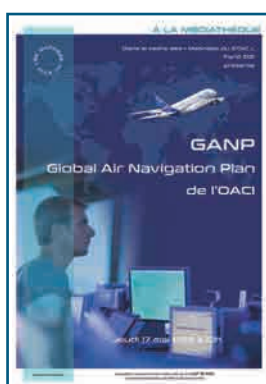
In 2018, the morning sessions presented the following themes:



➡ COMPUTER SECURITY AND ENCRYPTION

ALL INVOLVED!

The purpose of this session was to explain in a simple way what encryption was and how this allows safe wireless surf in a public zone. Simple explanations were given to address concepts such as HTTPS, certificate, encryption, Crypto virus or phishing that no longer have any secrets for the Morning session audience.



➡ "GANP" GLOBAL AIR NAVIGATION PLAN FOR ICAO

This session presented the ICAO Global Air Navigation Plan (GANP).

ICAO Doc 9750, GANP, provides strategic direction for the ICAO Technical Work Program in the area of Global Air Navigation Systems effectiveness. It serves as guidelines for regional planning and implementation groups (RPIGs), states, service providers, airspace users and other stakeholders.



➡ FRICTION, A KEY FACTOR IN FLIGHT SAFETY

This session introduced the principle of friction measurement and specially the definition of measured forces. Participants discovered the following concepts: functional friction assessment, inter-laboratory comparisons and related COFRAC issues, regulatory developments and the impact of the STAC internationally in this field.



➡ PUBLIC PROCUREMENT

This morning session presented the organisation of public procurement within the STAC.

The objective was to raise the awareness of the largest possible number of procurement within the STAC, whenever they buy under an agreement, a public contract or through a purchase order.

FIND ALL OF OUR PUBLICATIONS ON OUR WEBSITE:

www.stac.aviation-civile.gouv.fr



➡ METHODOLOGY FOR WILDLIFE HAZARD ASSESSMENT AT AERODROMES

The assessment of the wildlife hazard at aerodromes is a procedure covered by several international recommendations and several European and French regulations. It makes it possible to identify, for each aerodrome, the animal species that pose a danger to aviation safety in view of the collisions they are involved in and their presence throughout the year at the aerodrome and in its surroundings.

The wildlife hazard assessment follows a methodology developed by the Civil Aviation Technical Centre (STAC) for aerodromes. Based on measurement of collision risk level and animal hazard level, this approach should allow definition of a graduated set of actions for each of the species present at the aerodrome.

The new edition of this technical document provides methodological details on the calculation of the wildlife risk level and proposes a simplification of the terminology used to evaluate animal risk.



© Richard METZGER DGAC/STAC

➡ INTERNATIONAL CONFERENCES ON AIRFIELD PAVEMENT STRUCTURAL BEHAVIOUR

The STAC continues to promote internationally the French knowledge on airport civil engineering, with notably a presentation of the French rational methods for new pavement design, pavement testing and overlay design at the XIVth Alacpa annual congress (association of airport infrastructure managers in Latin and Central America) and the co-organization with the FAA of the “Airfield Pavement” session at the quadriennal ISAP congress (International Society for Asphalt Pavements) (about flexible pavements).

➡ THE STAC CONTRIBUTES TO THE FUTURE SKY SAFETY FINAL EVENT WITH A POSTER ON OPHELIA SOFTWARE

From 6 to 7 November 2018, the European “Future Sky Safety” program held its final conference at Eurocontrol premises in Brussels, Belgium. STAC, which contributed to the project on the prevention and mitigation of runway excursions, presented a poster on the OPHELIA software for the prediction of water depths on runways. This tool was developed by STAC and CEREMA for the modeling of water flows on the pavement surface, so as to determine accumulation areas and to assess the water depth from data on rain events’ intensity. OPHELIA was successfully tested at Lyon Saint-Exupéry (LFLL) airport, and is now under further testing at Strasbourg (LFST) airport.



➤ THE CREATIVE STAC CELEBRATE 60 YEARS OF THE SIA

The STAC Photo Library Unit was solicited to contribute to the 60th anniversary ceremony of the French Aeronautical Information Service (SIA).

The request consisted of making a film to promote the image of the institution.

The three days of filming covered aerial views taken by drones, the staging of SIA personnel, in particular with a Steadicam-type camera allowing the shooting of images on mobility and the capture of the speech of the director of the SIA.

Starting from 500 shots and 3 hours of rushes; the audiovisual unit of the STAC allowed the projection of a film showcasing the SIA during the celebration September 27, 2018, in front of a hundred personalities, SIA staff and partners.



➤ REGIONAL MEETING OF THE FRENCH METROLOGY COMMITTEE AT OUR TOULOUSE SITE

STAC organised a regional meeting of the French metrology committee (CFM) at its Toulouse site on 12 June 2018. Around forty participants from regional companies, the CFM and AFNOR, came to discuss the ISO 9001 standard and the metrological monitoring of measuring instruments.

STAC presented its accredited laboratories (scopes available at www.cofrac.fr) and its feedback on risk management relating to the metrological monitoring of its measuring instruments.

A tour of STAC's acoustic measurement laboratory and Visual Aids laboratory followed these discussions.



➡ TRAINING IN TUNISIA ON ENERGY AND RUNWAY LIGHTING

As part of the twinning project “support for the strengthening of civil aviation institutions in Tunisia”, STAC was asked to provide training in the monitoring of runway lighting systems and facilities for a power supply backup energy to air navigation facilities.

This twinning was financed by the European Union and involved Tunisian and French civil aviation authorities. Two experts from the Equipment division conducted this training course at Tabarka Airport from 16 to 20 July 2018.

The executives and senior technicians present during this training course came from both the Tunisian DGAC and from the Energy-Runway Lighting technical departments of the aerodromes managed by OACA* in Tunisia.

During the debriefing, all the executives and senior technicians expressed their satisfaction with the content of the training course and highlighted the quality of their relations with the two STAC experts.

*OACA: Office de l'Aviation Civile et des Aéroports

➡ ARFF TRAINING IN TUNISIA

As part of the twinning programme of the French and Tunisian civil aviation authorities, STAC organised a training course in June 2018 on Aircraft Rescue and Firefighting (ARFF), for staff of the Tunisian DGAC and airport operators, including the Civil Aviation and Airports Authority (OACA).

This one-week course involved around twenty trainees and took place at Tunis Carthage airport, in coordination with the Tunisian DGAC, OACA and the Aircraft Rescue and Firefighting service.

➡ LOOK BACK ON THE BONNEUIL-SUR-MARNE SITE

FROM STBA TO STAC



The STAC site in Bonneuil-sur-Marne, a legacy of the First World War, has evolved a lot, in connection with the Port of Bonneuil-sur-Marne (now an integral part of the Port Autonome de Paris).

A photographic exhibition inaugurated in December 2018, “look back in pictures on the Bonneuil-sur-Marne: from STBA to STAC”, tracing the evolution of the civil aviation establishment at the Bonneuil-sur-Marne site, was designed and produced using images from the DGAC photo library, which is administered by the STAC “knowledge dissemination” group.

You will be able to visit this exhibition at the end of 2019, at the DGAC headquarters, and discover aerial photos of the site at various times and photos showing STBA and STAC staff in action.



➡ “ORLY SUD” EXHIBITION OF PAINTINGS BY JACQUES BENOÎT IN CHÂTEAURoux



Passionate about architecture and Orly South air terminal, the painter Jacques BENOÎT put on an exhibition entitled “Orly Sud” at the Couvent des Cordeliers de Châteauroux from 21 June to 16 September 2018.

To prepare for this exhibition, Jacques BENOÎT asked STAC for the use of a set of photographs of Orly Sud airport from the DGAC photo library.

These photographs, prepared by STAC photographer Richard METZGER, allowed the production of photographic posters that were exhibited alongside the paintings on display.







The canvas by Jacques BENOÎT entitled “The landing” (Vinyl on canvas, 133 x 237 cm, 2014), acquired by DGAC, can be seen in the renovated lobby of the Orly control tower.



INPUT TO TRAINING

ENVIRONMENTAL TRAINING

In 2018, STAC delivered again several training courses on behalf of ENAC, both in the engineering curriculum and in continuing education:

-  13 training sessions on animal risk were delivered to DGAC staff for continuing education, or to students following a Master's degree.
-  2 air quality training sessions were delivered to DGAC staff for continuing education.
-  2 Aircraft Emissions training sessions were carried out as part of the specialised Master's in "Air Navigation System Engineering and Operations".
-  2 "INM noise modelling software" training sessions were delivered to engineering students and DGAC staff for continuing education.
-  1 training session on "noise pollution control" to DGAC staff for continuing education.
-  1 "environmental issues" training session was delivered as part of the "Airport Engineering: aircraft area design" training course.



© Richard METZGER DGAC/STAC



➤ A NEW COOPERATION WITH THE UNIVERSITY OF NOTTINGHAM TRANSPORTATION ENGINEERING CENTER

On July 2018, the STAC organized the kick-off meeting for a new science & technology cooperation with the Nottingham Transportation Engineering Center (NTEC), part of the University of Nottingham. While the Airfield Pavements & Friction department has registered students with the Highway Infrastructure Transportation MSc in this university for many years, no further cooperation had yet been implemented. The new cooperation meeting has allowed for fruitful discussions on various research topics related to airfield pavements. A STAC student has just started his MSc in September 2018 and will focus his dissertation on a common topic of common interest: airfield pavements' asset management. STAC's participation in training sessions dedicated to airfield pavements is currently under discussion.



➤ FRENCH-AMERICAN COOPERATION WITH PROF. ZOLTAN RADO ON AIRPORT FRICTION ISSUES

In September 2018, the Airfield Pavements & Friction department received Prof. Zoltan Rado, former director of a transportation research center at Penn State University and current chairman of ASTM E-17 committee on vehicle/pavement systems, for a technical cooperation on airport friction issues.

This bilateral meeting, which originates in the SURF conference that took place in May 2018, allowed for multiple and fruitful discussions on the various topics of interest for STAC, including runway contamination sensors, friction-measuring devices and interlaboratory comparisons. The collaboration also enabled the strengthening of the transatlantic connections in the field of airport friction: STAC was invited to an ASTM event in December 2018, as the chairman of EUROCAE working group on runway weather information systems.



➤ A SUCCESSFUL YEAR FOR THE STAC-FAA COOPERATION ON AIRFIELD PAVEMENTS

The STAC has strengthened its technical and scientific cooperation with the FAA Technical Center in the domain of airfield pavements, especially by sending two students for a 2-months stay on the NAPTF site in Atlantic City, with the aim of cooperating on the CC8 construction cycle data analysis. One of the objectives of this construction cycle was indeed to study the efficiency of several load transfer systems between the concrete slabs of rigid airfield pavements, one of which being the French sinusoidal key-joint. Valuable conclusions about the fatigue behaviour of the various load transfer systems were obtained from this common works and a joint poster was presented at the January 2019 TRB congress. The analysis work will be pursued and completed with the shipment of American concrete from the CC8 test facility, to be laboratory tested using French characterization methodology.

The success of this first staff exchange between both organisms was emphasized during the annual STAC/FAA cooperation agreement meeting in November 2018, and both parties went on record with the principle of reiterating the experience.

➤ NEW TRAINING SESSIONS FOR THE ENGINEERING SCHOOLS OF OUR MINISTRY

In 2018, the Airfield Pavements & Friction department provided new specialized training sessions on airfield pavements:

- for the engineering students of the National Graduate and Research School for Sustainable Development (ENTPE), a comprehensive training course dedicated both to pavement design method and airfield pavements maintenance was created;
- at the Civil Aviation National School (ENAC), two courses focusing on technical maintenance operations on airfield pavements were given both to engineering students and learners of the advanced master on airport management.

These cooperations were greatly appreciated by teachers and students. Consequently, they will be renewed in 2019.



➤ INTERNATIONAL CONFERENCES – AIRFIELD PAVEMENTS FRICTION AND SURFACE CONDITION

In 2018, the Airfield Pavements & Friction department participated in two international symposiums focusing on the friction and the evaluation of pavements' surface condition:

- SURF (Symposium on Pavement Surface Characteristics), in Brisbane (Australia), provided an opportunity to:
 - highlight the work conducted in the frame of the Global Reporting Format project;
 - make presentations on the development of an assessment methodology for wet runway surface conditions and its associated tool;
 - promote the development of a tyre - pavement interface model, in order to better evaluate runways' friction characteristics, in link with aircraft braking performances;
- ERPUG (European Road Pavement Users' Group), in Madrid (Spain), provided an opportunity to communicate with the international community as far as automated cracks detection tools and methods and infrastructure asset management systems are concerned.

These two meetings have already allowed the French civil aviation center to initiate new international cooperation efforts. There is no doubt that others will follow soon.



© Richard WETZGER DGAC/STAC

RESOURCES







WORKING WITH THE STAC

 THE STAC CAN PERFORM PRIVATE TRIALS IN ITS TESTING PLATFORMS



 THE STAC CAN BE INVOLVED IN PARTNERSHIPS THROUGH NATIONAL OR INTERNATIONAL CALLS FOR PROJECTS OR FOR RESEARCHES





➔ THE STAC CONDUCTS PRIVATE STUDIES RELATED TO ITS EXPERTISE FIELDS

- Airport runways: conception and maintenance plans
- Airport management and airport planning
- Airport safety systems
- Evaluation of environmental impacts: biodiversity and wildlife hazards, noise, quality of air
- Air traffic management safety systems



© Richard METZGER DGAC/STAC

➔ THE STAC CAN PERFORM COOPERATIVE ACTIONS THROUGH NATIONAL BILATERAL AGREEMENTS OR UPON REQUEST



© Richard METZGER DGAC/STAC

➔ THE STAC EXPERTS CAN ALSO SHARE THEIR KNOWLEDGE THROUGH THEIR PARTICIPATION IN INTERNATIONAL WORKING GROUPS OR TECHNICAL SYMPOSIUMS, OR THE ELABORATION OF TECHNICAL TRAININGS



© Guilhem BLANCHARD DGAC/STAC



➡ PLANTING OF 92 FRUIT TREES AT THE BONNEUIL SITE

Ninety-two fruit trees were planted in spring 2018 at the STAC site in Bonneuil-sur-Marne.

This plantation increases biodiversity at our site in Bonneuil and also offsets the creation of the waste management area that reduced the grassed area at the site.

A total of 18 different varieties were planted: Almond, Apple, Apricot, Blackcurrant, Cherry, Fig, Goji, Hazelnut, Medlar, Mulberry, Nectarine, Peach, Pear, Persimmon, Plum, Raspberry, Redcurrant, Walnut.

➡ ARCHIVE OFF !

The company Perles d'Histoire was entrusted with the processing of a collection of 500 linear meters of paper archives (from the 1920s to the 2000s) produced by the Civil Aviation Technical Center (STAC), in order to transfer them to the national Archives. The task was significant: file inventory, description in ISAD-(G) standard, sorting, filing entry records and disposal by destruction...The review and analysis of the files resulted in numerous meetings between the DGAC Archives Mission, the STAC Documentation & Knowledge Dissemination Group and Perles d'Histoire.

This work began in mid-November 2017 and was completed in September 2018 with the transfer of 57 pallets of 36 cartons each, to the DGAC Intermediate Archiving Center in Chevannes.

This work contributes to the preservation of the legacy of the DGAC.

When the public will have access to these archives, researchers involved in the history of aviation, in the development of French territory, in the economy and in the airport security will find real nuggets.



© Alexandre FABET/LAT DGAC/STAC



© Richard METZGER DGAC/STAC

➔ THE STAC VETERANS AND WAR VICTIMS ASSOCIATION

The STAC Veterans and War Victims Association (ACVG/STAC) of Bonneuil-sur-Marne decided to close at the end of 2018.

On this occasion, Mr Henry DEFAYSSE presented STAC with the flag of the veterans section he created in 1951 in Rennes. A ceremony was organised in collaboration with the town hall of Bonneuil-sur-Marne on 26 September 2018, to which all members of the association and STAC staff were invited.

STAC's management, on behalf of the Director General of Civil Aviation, Patrick GANDIL, the Chief of Staff, Odile CHÉREL, thanked ACGV for its activities, and Mr DEFAYSSE for entrusting STAC with this flag, which is now on display in the rotunda of the STAC office building in Bonneuil-sur-Marne.

This ceremony was also an opportunity to recall Mr DEFAYSSE's lifetime in the service of France and civil aviation, from signing up in 1944 at the age of 17 as a volunteer with the Free French army, and his career in the service of civil aviation until his retirement in 1993 from STBA.

We are pleased to be able to publish a letter here from Mr DEFAYSSE recalling the history of this association, whose members have led all remembrance ceremonies organised at the DGAC and within the ministry since 1957.



➔ THE STAC VETERANS AND WAR VICTIMS ASSOCIATION (ACVG/STAC) IN BONNEUIL-SUR-MARNE WAS BORN!

It was taken in hand on 12 December 1956 by Victor ZAMMIT, who had arrived from Tunisia, repatriated to France by the French Embassy.

ACVG/STAC was created on 1 December 1957.

It was part of the association of veterans, resistance fighters, deportees, prisoners and war victims of the General Secretariat for Civil and Commercial Aviation, whose headquarters were located at 155, rue de la Croix Nivert in Paris (15th).

Due to deaths and transfers, ACGV/STAC then came to officially represent all DGAC veterans.

At this time, its Board was made up as follows: **Chairman: Édouard GUEZ**

General Secretary: Robert COMBES - Vice-Chairman and Treasurer: Victor ZAMMIT

Typing was carried out by Mrs Jocelyne PERCEAU until her retirement.

Mr Henry DEFAYSSE joined STBA in 1990 after 30 years of overseas service, and headed the administrative department.

It was on his retirement that the duties of General Secretary of ACGV/STAC were entrusted to him (Robert COMBES having retired and moved to the Vendée).

On the death of Édouard GUEZ, Henri DEFAYSSE was asked to head the ACGV/STAC and was elected Departmental Chairman.

Each year, ACGV/STAC was represented at all commemorations of "Patriotic Remembrance":

The armistice of 11 November 1918 and the victory of 8 May 1945 at the following sites:

Ministry headquarters - DGAC headquarters - Arc de Triomphe

STAC headquarters (Bonneuil-sur-Marne) - Bonneuil-sur-Marne town hall - Val de Marne prefecture

Finally, since 2015, Mrs Jacqueline VINCENT, retired from STAC, ensured the secretariat of the association.

With age, and the health of the members no longer allowing them to move easily, aged 92, I made the decision on 31 December 2018 to put an end to the existence of ACGV/STAC.

I would like to thank all our members, the staff of the DGAC and the administration of the DGAC who accompanied us during all these years to honour the memory of those who fought, and in some cases died, for France.

Henry DEFAYSSE

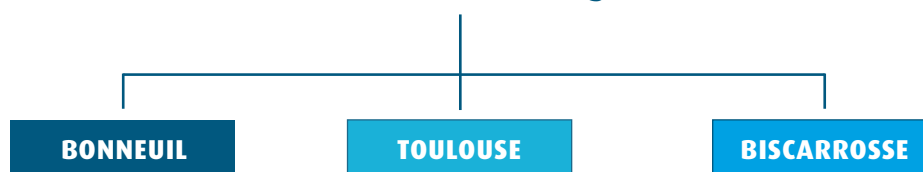


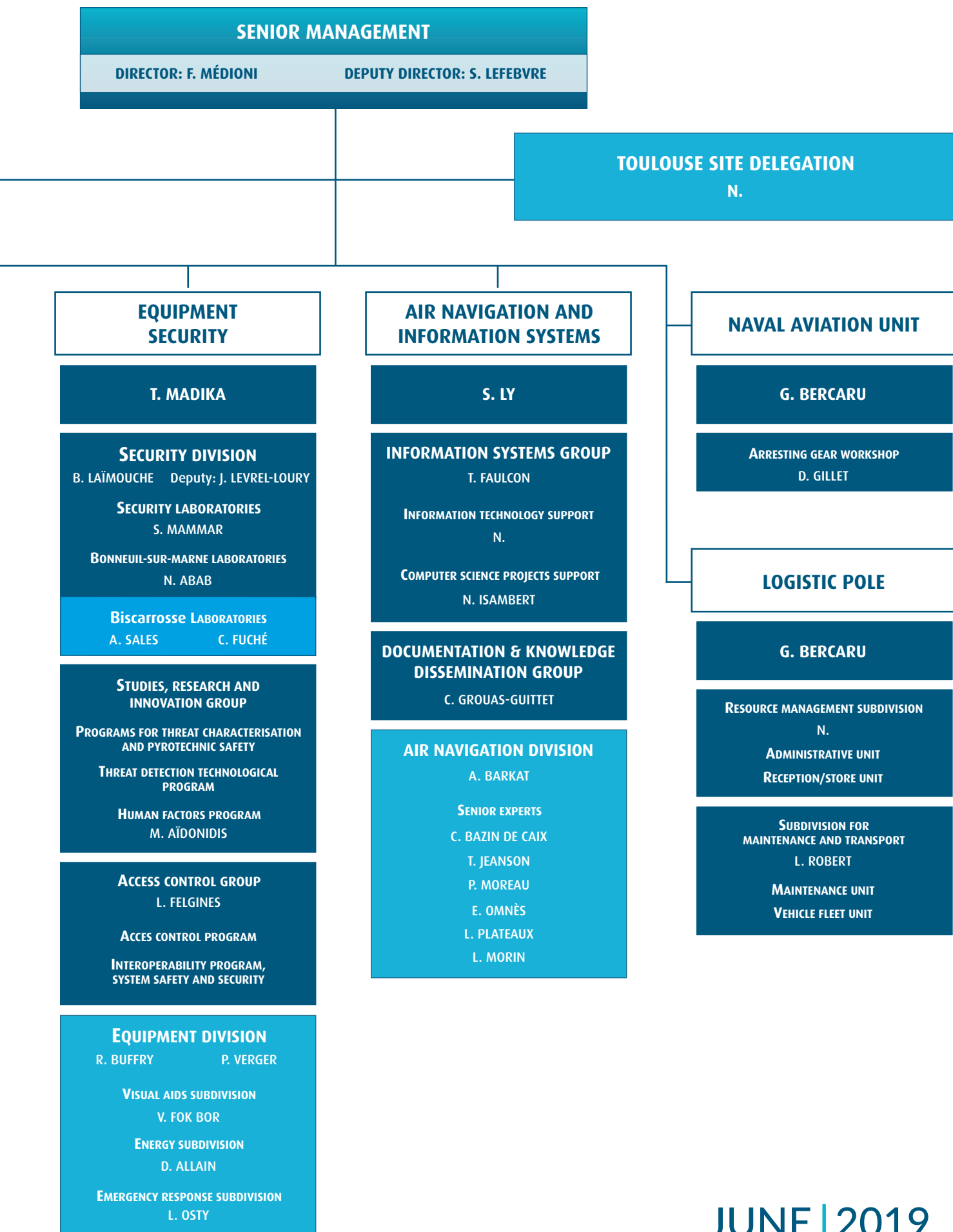
SCIENTIFIC AND INTERNATIONAL ADVISER	N.
HEAD OF PROGRAMMES AND PARTNERSHIPS	N.
HEAD OF QUALITY AND COMMUNICATION	J-C. GUILPIN
HYGIENE AND SAFETY ADVISER	S. LEMRABET
PERSONS RESPONSIBLE FOR RADIOPROTECTION	F. SAGENLY

Departments



www.stac.aviation-civile.gouv.fr





JUNE | 2019



GLOSSARY

➤ A

AC

Aviation civile

A-CDM

Airport Collaborative Decision Making

ACE

Département Aménagement, capacité environnement du STAC

ACI

Airports council international

ACNUSA

Autorité de contrôle des nuisances aéroportuaires

ACR

Aircraft Classification Rating

ADM

Analyse Déportée Multiplexée

ADOP

Aerodromes Design and Operations Panel

ADP

Aéroports de Paris

ADWG

Aerodrome design working group

AESA

Agence européenne de sécurité aérienne

AFNOR

Agence française de normalisation

ALACPA

Association des gestionnaires d'infrastructures aéroportuaires d'Amérique centrale et du Sud

APEG

Airfield Pavement Expert Group

APU

Auxiliary Power Unit

ATM/ANS

Air traffic management/air navigation service

➤ B

BOP

budget opérationnel de programme

➤ C

CCAA

Cameroon civil aviation authority

CAEP

Committee on Aviation Environmental Protection

CEAC

Conférence européenne de l'aviation civile

CEM

Compatibilité électromagnétique

CEN

Comité européen de normalisation

CER

Centre d'expérimentation et de recherche du CEREMA de Rouen

CEREMA

Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement

CFM

Comité français de métrologie

CFMD

Appareils auto-mouillants de mesure continue du frottement

COFRAC

Comité Français d'accréditation

➤ D

DCSID

Direction générale de l'armement

DGA

Direction générale de l'armement

DGAC

Direction générale de l'aviation civile

DSAC

Direction de la sécurité de l'aviation civile

DSNA

Direction des services de la navigation aérienne

DTA

Direction du transport aérien

DTI

Direction de la technique et de l'innovation

➤ E

ENAC

École nationale de l'aviation civile

EDS

Explosives Detection System

ENTPE

École nationale des travaux publics de l'État

ETD

Explosives trace detector

ERPUG

European Road Pavement User's Group

➤ F

FAA

Federal Aviation administration

➤ G

GANP

Global Air Navigation Plan

GRF

Global reporting format

➤ H

HWD

heavy weight deflectometer

➤ I

IATA

International air transport association

ICAO

International Civil aviation Organisation

IEC

International Electrotechnical Commission



IEEAC

Ingénieur des études et de l'exploitation de l'aviation civile

IEESA

Ingénieur électronicien des systèmes de la sécurité aérienne

IFSTTAR

Institut français des sciences et technologies des transports, de l'aménagement et des réseaux

IGMP

Indice Global Mesuré Pondéré

ILS

Instrument landing system

IPEF

Ingénieur des ponts des eaux et des forêts

IS

Indice de service

ISAP

International Society for Asphalt Pavements

ITPE

ingénieur des travaux publics de l'État

➔ L

L2E

Laboratoire Essais et Expertises du STAC (département Structures Adhérence)

LIBELaéro

Librairie aéroportuaire (www.libelaero.fr)

➔ N

NPA

Notice of proposed Amendment

NTEC

Nottingham Transportation Engineering Center

➔ O

OACI

Organisation de l'aviation civile internationale

OACA

Office de l'Aviation Civile et des Aéroports (Tunisie)

OE

Ouvrier d'État

OPA

Ouvrier des parcs et ateliers

ORAMIP

Observatoire Régional de l'Air en Midi-Pyrénées

➔ P

PCN

Pavement classification number

PCNS

Prestataire de communication, navigation et surveillance

PCR

Pavement Classification Rating

PEB

Plan d'exposition au bruit

PSA

Plan de servitudes aéronautiques

➔ R

RCR

Runway Condition Report

RGA (25e)

25e régiment du génie de l'Air

RIN

Règlement Intérieur National

➔ S

SAGEB

Société Aéroportuaire de Gestion et d'Exploitation de Beauvais

SDP

Sous-direction des personnels

SGITA

Système de gestion informatisée des titres d'accès

SIA

Service de l'information aéronautique

SID

Service d'infrastructure de la défense

SINA

Département Systèmes d'information, Navigation aérienne du STAC

SNIA

Service national de l'infrastructure aéroportuaire

SSLIA

Service de sauvetage et de lutte contre l'incendie d'aéronefs

STAC

Service technique de l'Aviation civile

STITCH

Système de traitement informatisé des titres d'accès et des habilitations

SURF

Symposium on Pavement Surface Characteristics

➔ T

TC

Technical committee

TF

Task Force

TRB

Transportation Research Board

TSDD

Technicien supérieur du développement durable

TSEEAC

Technicien supérieur des études et de l'exploitation de l'aviation civile

➔ U

UE

Union européenne

USID

Unité de soutien de l'infrastructure de la Défense

➔ W

WBA

World Birdstrike Association

WHMEG

Wildlife Hazard Management Expert Group (OACI)

Activity report designed and created by the Civil Aviation Technical Centre:
Head of Quality and Communication; SINA Department; Documentation and Knowledge Sharing Group.

Composition, creation: Franck **DUJARDIN**

Iconographic research: Chrystèle **GROUAS-GUITTET**, Richard **METZGER**, Alexandre **RABETLLAT**

Photo credits

- © Richard **METZGER** DGAC/STAC, unless stated otherwise
- © Guilhem **BLANCHARD** DGAC/STAC page 47
- © Romain **BOUTEILLER** DGAC/STAC page 37
- © Jean-Claude **GUILPIN** DGAC/STAC page 39
- © Laurent **OSTY** DGAC/STAC page 13
- © Alexandre **RABETLLAT** page 1, 49

Illustrations

- © Freepik @lembervector

Publication director: Sandrine **LEFEBVRE**

Coordination: Jean-Claude **GUILPIN**

Printing: Direction de l'information légale et administrative

Printed using vegetable-based inks on paper from sustainably managed forests

Copyright: 2nd quarter 2019

June 2019

service technique de l'Aviation civile
CS 30012
31, avenue du Maréchal Leclerc
94385 BONNEUIL-SUR-MARNE CEDEX
Tél. +33 1 49 56 80 00
Fax +33 1 49 56 82 19