# ET-CAC 2018 – Final Report

[[1]](#endnote-1)

# DISCLAIMER

**Regulation 43**

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

**Regulation 44**

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation on behalf of the constituent body when the matter is, in his opinion, urgent, and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

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World Meteorological Organization (WMO)

7 bis, avenue de la Paix Tel.: +41 (0)22 730 84 03

P.O. Box No. 2300 Fax: +41 (0)22 730 80 40

CH-1211 Geneva 2, Switzerland E-mail: Publications@wmo.int

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# Final Report Of The Meeting Of The Expert Team on Centre Audits and Certification (ET-CAC)01 to 04 October 2018

## 1 Organization of the meeting

### 1.1 Welcome

1. Mr Peter Lennox (CEO Metservice and PR to WMO) welcomed all to Wellington. He noted the importance of the work of this group and wished all a successful meeting. A list of participants is included in [Annex 1](#_Annex_1._Participants).
2. Mr David Thomas (WMO) thanked Mr Lennox and New Zealand for hosting the meeting recalling the appropriateness of their support as Metservice had led the field in implementation of QMS as early initiators. He also gave an introduction to the history of ET-GDDP, TT-CAC and ET-CAC.
3. Mr Kevin Alder (Chair) welcomed the team to New Zealand. He noted the objectives on the meeting were to: Review lessons learnt from space weather centres audits; Conduct training in audit practices and procedures; Review audit schedules and lessons learnt from WIS centre certifications; Review and address matters on ET-CAC work plan; Review ET-CAC Terms of Reference. He further noted the further demands likely from WMO applications areas, in particular aviation and the global data processing and forecast systems. The meeting will need to discuss resourcing and expertise, taking into consideration that the group of 14 people is likely to be heavily loaded.

### 1.2 Agree Agenda

1. The meeting noted that agenda item 7 “Audit tools and practices” would include a training workshop on audit practices and principles and include a review of tools to be used by group, in particular, Trello, the WIS Wiki and the ET-CAC email group.
2. Mr Lothar Wolf (Co-chair) highlighted the need to address ongoing training and mentoring processes and highlighted some points to address. These included clearly defining the audit process, ensuring independence of audit teams, identifying what documentation would be necessary and what approval processes should be in place. He also reminded the meeting of the need to establish an approach to closing old action items that were specific to TT-CAC.
3. The meeting agreed to the agenda as provided [Annex 2](#_Annex_2_Draft).

### 1.3 Working arrangements

1. Mr Alder described the safety and proposed working arrangements. In the light of the objectives provided by the chair and co-chair above, the meeting agreed to keep agenda as flexible as possible and to drive meeting along the needs identified to address the above items.

## 2 Review of EC,CBS decisions and Constituent Body Reform

1. The secretariat introduced the documents [CBS-TECO-2018-Doc-5(2)-WIS2\_draft1.docx](http://wis.wmo.int/file%3D4514)[[2]](#endnote-2), CBS-TECO-2018-Doc-5(3)-WIS-Operations\_draft1.docx[[3]](#endnote-3) and [CBS-TECO-2018-Doc-5(3)-Annex1-Audit\_draft1.docx](http://wis.wmo.int/file%3D4518)[[4]](#endnote-4) that were presented to CBS Teco2018 March 2018. He also introduce relevant decisions/recommendations as presented in the final [Report of EC-70](https://library.wmo.int/doc_num.php?explnum_id=4981)[[5]](#endnote-5). He also introduced the meeting to the [Guide to QMS (WMO No 1100)](https://library.wmo.int/doc_num.php?explnum_id=4141)[[6]](#endnote-6) and the relevant QMS sections of [WMO TechReg49](https://library.wmo.int/doc_num.php?explnum_id=4065)[[7]](#endnote-7).
2. The issues addressed in the WIS related papers of CBS-Teco-2018 are listed in Annex 3 to this report. Of these documents, the Annex 1 to Teco Document 5(3) (ie [CBS-TECO-2018-Doc-5(3)-Annex1-Audit\_draft1.docx](http://wis.wmo.int/file%3D4518)[[8]](#endnote-8)) contained the amendments as proposed by ET-CAC2017.
3. The meeting noted that from a technical regulations view in light of the Constituent Body reform to be considered by Cg 18, ET-CAC should refine its proposals to ensure that the audit process and team are structured for the consideration of Cg to ensure ongoing audit services in the new structure.
4. The meeting noted that ET-CAC’s role is embedded in the Technical Regulations the team will need to persist, most likely within the Infrastructure Technical Commission. Make sure we are ready for requests for certification from programmes. Anticipating that the new TCs will first meet in April 2020 kick-off, ET-CAC needs to clarify what can we do in the interim? How to improve Members’ awareness of requirement and audits etc?
5. Constituent body reform should be taken into consideration when reviewing ET-CAC recommendations for Cg-18.
6. No further changes would be needed to the proposed TORs of ET-CAC as those presented to CBS Teco 2018 would align with new TC structure.
7. The meeting noted a minor ambiguity in the Manual on WIS (2017) that refers to the MOW as Annex VII to the TechReg 49 which is more specifically a reference to Volume 1, Part II of Tech Reg 49.
8. The meeting recommended a change to the Manual on WIS second paragraph in the Introduction as provided in [Annex 4](#_Annex_4._Draft).
9. The meeting noted the need to review the recommendations of Annex 1 to Teco Document 5(3) prior to the consultation period scheduled for December 2018 to February 2019. In particular, they need to be linked from of WMO No.49 Part VII “Quality Management” section.
10. Changes to ET-CAC recommended audit practices provided to CBS Teco 2018 would be addressed under agenda item 5 of this meeting.

## 3 Review of ET-CAC actions

1. The meeting reviewed the list of decisions recorded in the ET-CAC2017 final report (see [ET-CAC2018-AI(04)-Review2017decisions.docx](http://wis.wmo.int/file%3D4520)[[9]](#endnote-9)). The ET-AC2017 decisions are replicated in Annex 5 of this report and included updated status comments in red.
2. Of the 26 decisions reviewed, all but two had been addressed, many of them reflected in the draft procedures and technical regulation material presented to CBS Teco 2018, and following review of the current meeting, will be part of the CBS 2018 Consultation process.
3. Two items are to be followed up by ET-CAC. The first relates to the 2017 Decision 07 to consult ICT-ISS on having ET-WISC develop the WIS Centre assessment criteria against which ET-CAC will then audit WIS Centres. The second relates to 2017 Decision 08 recommending ET-WISC amend their terms of reference to include development and operation of a QMS for WIS- including use of external audit [by ET-CAC] for validating compliance with agreed practices and standards.
4. Mr Francis is to follow up on 2017 Decision 07 and report back to ET-CAC. (Note: Replaces 2017-D07).
5. Mr Alder is to follow up with ICT-ISS and ET-WISC chairs on both ET-CAC 2017 Decision 07 and 08 for consideration of ICT-ISS 2019. (Note: Replaces 2017-D08)
6. Some 2017 Decisions were updated during this ET-CAC 2018 meeting and addressed under the associated agenda items. These included: 2017 D06 on tools (agenda item 6) and the new decision to drop the use of the online WIS Centres Audit form to be replaced by a questionnaire, and the 2017 D22 on formal notification of Centres to be audited which is to be updated to having the responsible OPAG providing a two to four year outlook on anticipated audit requirements for centres in its programme area.

## 4. Lessons from Space Wx Centre Audits

1. ET-CAC reviewed the activities and processes associated with the Space Weather Centre audits. This audit varied from the GISC audits process in that WMO undertook the audits on behalf of ICAO. As such, it was an effective pilot towards generalising the WIS audit process developed by OPAG-ISS teams (ET-GDDP, TT-CAC and ET-CAC) and to manage cases where ET-CAC auditors were not topic experts on the centres’ operations. As this was a confidential process, no documents associated with the process are publicly available.
2. The ET-CAC review of the process was divided into four phases: Phase 1 – Receipt of nomination including capabilities evidence; Phase 2 – Pre-audit capabilities assessment; Phase 3 – Site assessment and audit, and Phase 4 – Post-audit reporting and recommendation.
3. Discussion at the meeting then focused on: Documentation and Coordination; Preparation Phase; On site audit phase, and the Post Audit phase as follows:

### 4.1 Documents and coordination

1. The WMO Aviation programme Office was coordinator for Space Wx centres audits. This was led by Mr Greg Brock (WMO) and Daniel Biron (TT.AVI leader).
2. TT.AVI was an ad hoc Task Team on Aviation (TT-AVI) of IPT-SWeISS that was formed in June 2017 to develop documents and to assist WMO in the conducting of the referred site assessments and audits within the timeframes described. The documents were based on ET-CAC documentation and other information such as the Manual on GDPFS. They provided concise descriptions of the applicable audit procedures, reporting templates and assessment guidelines to be used in the demonstration process. The information contained was used by WMO in the conducting of the site assessments and audits and may be used by prospective space weather information providers in preparing their responses to the demonstration process. The documents are available to ET-CAC members on the [ET-CAC trello](https://trello.com/c/k87qUt0p)[[10]](#endnote-10), or directly off the ET-CAC work area at [http://wis.wmo.int/doc=3683](http://wis.wmo.int/doc%3D3683) for the Audit guide and templates, and [http://wis.wmo.int/doc=3685](http://wis.wmo.int/doc%3D3685) for the working Methodology and assessment guide.
3. The meeting agreed to use the Space Wx “[Audit procedures and reporting templates\_v1.3.pdf](http://wis.wmo.int/doc%3D3683) and [Space Wx Working methodology and schedule](http://wis.wmo.int/doc%3D3685) along with current WIS Centre documentation as a basis for development of new ET-CAC guidance material.

### 4.2 Preparation Phase

1. The meeting noted that the Space Wx Centre audits were undertaken within a very tight timeline, and that much use was made of the experience gained by ET-CAC team in undertaking the audits of GISCs. It noted that it was an opportunity to exercise some improvements, such as using a questionnaire rather than the WIS Centre Audit interactive database. It noted that the Self-Assessment was very helpful to get an impression of the organization and was highly appreciated as a supporting information by us to carry out the audit under the given time frame.
2. Relevant documents were provided well in advance and travel arrangements were made by site without any problems. Standard letters etc were used for arranging audits.

### 4.3 On-site Audit

1. Members of ET-CAC that led the Space Wx audits shared their experience with the meeting. As experienced with the GISC audits, the meeting noted that standard questions and answer templates provided for the project were very useful. See Trello card for templates <https://trello.com/c/k87qUt0p>[[11]](#endnote-11).
2. The meeting observed that having a topic expert as a part of the audit team was very useful, however, they still experienced some problems in normalising ratings, including how to measure a service that is pre-operational.
3. The meeting noted that the Audit recommendations were similar to WIS centre, in particular:

A. Compliant: The space weather information provider has demonstrated to the satisfaction of the WMO audit team that, at the time of observation, it fulfils the ICAO criteria at its space weather centre(s).

B. Compliant but with qualification: The space weather information provider has demonstrated to the satisfaction of the WMO audit team that, at the time of observation, it fulfils the ICAO criteria at its space weather centre(s) but with qualification. This qualification shall be in the made in the form of concise accompanying statement.

C. Not compliant: The space weather information provider has not demonstrated to the satisfaction of the WMO audit team that, at the time of observation, it fulfils the ICAO criteria at its space weather centre(s).

1. The chair and co-chair highlighted the advantages in having the assessment guide table and other guides as provided in the [Space Wx Working methodology and schedule](http://wis.wmo.int/doc%3D3685)[[12]](#endnote-12).
2. However, the ICAO Annex 3 Amendment 78 with requirements for Space Weather Centres was not in force at the time of the audits but elements were used as audit criteria. Also, ICAO had, at the time of the audit, yet to decide how to proceed in the future (global centres, local centres, etc.). Noting that the Auditors has to assess the Space Wx Centres capability to meet ICAO requirements, so asked for evidence to prove the statement given by the auditee in respect of the anticipated audit criteria and objective.
3. ET-CAC agreed that provision of assessment guidance by programmes having centres audited should be standard practices as these were the core to a successful set of audits.

### 4.4 Post -Audit Phase

1. Writing and harmonizing the report could not be done within the given time-frame, this was briefly discussed with each site and was no further problem.
2. The secretariat reported that the ET-CAC Trello (<https://trello.com/c/k87qUt0p>)xi was an important tool for overseeing the process, but that nearly all the entries were made by the secretariat. 5. Review of Tech- Regs and Audit Standards / Practices
3. The meeting, noting the findings from the above discussions, reviewed the proposed amendments to Tec Reg 49, the WIS manual and guide that had been presented to CBS Teco 2018
4. The meeting reviewed the generic audit processes as presented to CBS TECO 2018. Taking note of the potential constituent body reform activities to be considered by Congress 18, and the release of the “Guidelines for auditing management systems (ISO 19011:2018) English version, it proposed the addition of text for inclusion in WMO No49 under QMS as well as annexes to the paragraph describing generic processes for onsite and offsite audits. The Chair and Co-chair drafted the updates which were then reviewed by the ET-CAC.
5. The key issues involved in the update were as follows:

(1) Add Audit procedures for off-site to match onsite guidelines

(2) Put the process directly in Tech Reg 49 Part VII “Quality Management”, including introductory text for the TechReg. This will allow

(3) Noted that WMO No 1100 is very specific guide and would involve considerable inter-commission coordination to update, while we want the audit principles to be Shall [ or should], and thus to be in Manual.

(4) Suggest that it be an annex to the paragraph or appendix

1. The meeting also noted the need to stress the importance of logistics and interview process in an off-site audit. When sitting in the same room, it is easier to elicit further information for the interviewee in order to obtain the evidence sought. In an offsite audit, not only does the auditor require a particular set of interview skills, but the interviewee(s) need to be better prepared.
2. The results of the review are shown in [Annex 6](#_Annex_6._Draft) to this report.
3. The meeting agreed to the changes as shown in [Annex 6](#_Annex_6._Draft). It authorised the secretariat to include post meeting updates in consultation with the chair and to prepare for the CBS Consultation 2018.

## 6. Review of audit schedules

1. ET-CAC noting that GISCs are now approaching 8 years, proposed to skip the interim audit for all GISCs and simply work to ensuring that the 8 year audit is done as it would be unfair to introduce midterm audits on some GISCs and not others.
2. ET-CAC decided to focus on meeting the Manual on WIS requirement and focus on arranging the 8 year re-audit of GISCs.
3. The meeting reviewed [ET-CAC2018-AI(06)-ReviewAuditSchedule.docx](http://wis.wmo.int/file%3D4584)[[13]](#endnote-13) and updated based on the new principles proposed under agenda item 5 above and the timelines likely under the Constituent Body Reform process. The results are in [Annex 7](#_Annex_7._Revised) to this report.
4. The meeting noted that ET-CAC’s role is to provide a guideline as to when these audits are due but ET-WISC, ICT-ISS and the GISCs are responsible for taking action to call for the audit.
5. Mr Francis (Co-chair ET-WISC) to report back to ET-WISC to seek feedback on GISC and DCPC audit schedule
6. ET-CAC reviewed the matrix for certification criteria (see <http://www-db.wmo.int/WIS/centres/guidance.doc>[[14]](#endnote-14) and [https://wis.wmo.int/doc=2163](https://wis.wmo.int/doc%3D2163)[[15]](#endnote-15) . It advised that the matrix was too detailed at this stage. It noted the need to identify the objective of the audit and the need to address issues that were not assessed in initial audit as it was done in pre-operational stage. For example, the audit should not be a technical verification activity, that is, simply ensure that the centres is providing the information needed for monitoring but don’t review JSON files. The latter should be a part of GISC watch, not the audit.
7. It decided to refer ET-WISC to the examples provided in the space wx audit, in particular the [Audit guide and templates](http://wis.wmo.int/doc%3D3683)[[16]](#endnote-16) and the [Working Methodology and Assessment guide](http://wis.wmo.int/doc%3D3685)[[17]](#endnote-17). ET-WISC need to focus on what is really needed for audit
8. Mr Francis to review with ET-WISC and update us after ET-WISC meeting in week 2 March 2019
9. The meeting noted that the existing process included a sub team of ET-WISC involving Mr Al Kellie and Marcus Heene for approving ET-CAC to action WIS centre nominations is no longer in place.
10. Mr Francis to ask ET-WISC to confirm what the process is to authorise the secretariat to be able to pass on a request for audit or certification to ET-CAC
11. The meeting highlighted that the required schedule just for auditing GISCs would be a heavy workload on ET-CAC core and associate members and that there was a strong need to widen the group of available auditors. This could be offset by using experts from ET-WISC for WIS centres and similar experts from other OPAGs as done with Space Wx Centre audits
12. The meeting agreed, subject to confirmation from ET-WISC, to the GISC schedule as provide in [Annex 7](#_Annex_7._Revised) to this report.
13. Secretariat and Chair to update Trello for GISCs schedule
14. The meeting reviewed the DCPC audit schedule directly on the Trello. It noted that Jacques and Fatima should lead for Morocco and west African countries. It further noted that the [WIS centre database](http://wis.wmo.int/WIScentresDb)[[18]](#endnote-18) showed seven data centres as currently under review be ET-CAC, three from Argentina and four from the USA.
15. The meeting updated the trello board (<https://trello.com/b/RZd4hwfA/et-cac-certification>)[[19]](#endnote-19) with what was known at the time.
16. The meeting asked the secretariat and chair to cross check the database and Trello and update the database accordingly.
17. The meeting also looked at the certification procedures for National Centres.
18. Meeting suggests that TT-DC request ET-WISC to update practices to note that the GISCs should take the lead for coordinating Members nominating and certification, and that ET-CAC or its future form should be available to advise on audit and certification processes
19. Mr Francis to follow up on NC certification practices at ET-WISC meeting scheduled for March 2019.

## 7. Audit tools and practices

### 7.1 Review of current guidance and tools

1. The meeting took the form of a workshop and reviewed the ET-GDDP form (<http://www-db.wmo.int/WIS/centres/candidates.asp>)xviii and WIS Demonstration Process Procedures and Guidelines (<http://www-db.wmo.int/WIS/centres/guidance.doc>)xiv.
2. The chair demonstrated the use of the WIS centre candidate nomination form above, as well as other tools that had been established to assist auditors and maintained in the ET-CAC restricted work area <https://wiswiki.wmo.int/ET-GDDP>[[20]](#endnote-20). Note that the restricted area requires membership of ET-CAC and the user to login.
	* These included
		+ [DCPC Benchmark from ET-GDDP 3](https://wiswiki.wmo.int/tiki-index.php?page=DCPC9)[[21]](#endnote-21)
		+ [GISC AUDIT Template](http://wis.wmo.int/doc%3D3439)[[22]](#endnote-22)
		+ GISC AUDIT Checklist [.xls version](https://wiswiki.wmo.int/tiki-download_wiki_attachment.php?attId=2165&download=y)[[23]](#endnote-23) & [.xlsx version](https://wiswiki.wmo.int/tiki-download_wiki_attachment.php?attId=2163&download=y)[[24]](#endnote-24)
		+ [DCPC Template - WIS Demonstration Test Report](http://wis.wmo.int/doc%3D2167)[[25]](#endnote-25)
	* Others, such as the following templates had been looked at earlier
		+ [Template](http://wis.wmo.int/doc%3D138)[[26]](#endnote-26) - Fax to PR of GISC advising of audit date
		+ [Template](http://wis.wmo.int/doc%3D139) - Fax to PR of GISC advising of audit requirement[[27]](#endnote-27)
		+ [Template](http://wis.wmo.int/doc%3D2885) - Fax to PR of Auditor requesting participation[[28]](#endnote-28)
		+ [Template](http://wis.wmo.int/doc%3D3277) letter from auditors to centre being audited (GISC)[[29]](#endnote-29)
3. The meeting noted that the www-db server that the Centre Nomination Form operates on, will be discontinued in 2019 and that the application is to be discontinued. Instead, WMO will have an environment based on Dynamics 365 and share point that we will be able to use. ET-CAC will need to decide on an interim solution that can be mapped easily into the new WMO environment. It noted that WMOs Google drive (Doc or Form) is a possible solution but that too, will be replaced in the next couple of years.
4. ET-CAC decided to keep working on the current environment and design a new guidance doc and input/collaboration forms that can be implemented when we get the new environment.
5. The meeting requested that the secretariat keep the current server and applications operational until the new solution and guidance material are able to be prepared and put in place.
6. The meeting having agreed that on the need to update the guide for external users under the agenda item three above, noting that to undertake this work, it would be advantageous to use a single environment with suitable access control that would not be affected by the change. It noted that WMO used Alfresco for restricted access to the cache in the cloud team and requested the secretariat set up a site <https://my.alfresco.com/share/wmo.int/page/site/et-cac/dashboard>[[30]](#endnote-30) to facilitate the following:

(1) Design of new report forms for preparation for a centre review (i.e. for centre to complete);

(2) Design spreadsheet check list for auditors;

(3) Design Audit reporting form (part 1 and 2).

1. The meeting requested the secretariat to add all ET-CAC members to the [ET-CAC my.alfresco site](https://my.alfresco.com/share/wmo.int/page/site/et-cac/dashboard).xxx

### 7.2 Training on audit practices and tools

1. The workshop then focused on audit principles based on part one of a presentation titled [ET-CAC Auditing Training](http://wisi.wmo.intfile=4588)[[31]](#endnote-31). The chair led the participants through a refresher course on planning interviews aligning to the roles of ET-CAC. He focused on the PEACE Model (Preparation and Planning, Engage and explain, Account, clarify and challenge then closure and Evaluate).
2. Discussion highlighted that an ET-CAC auditor can only prepare so much and need to make sure key areas are covered. It is also necessary to coordinate with co-auditors in preparation to ensure they are on the same page.
3. Part 2 of the presentation focused on process controls, how to identify and test them.
4. Part 3 of the presentation looked at operational risks and the role of the auditor in ensuring that a centre has an established risk profile, and to some extent, helping them improve their risk profile and engagement of all involved staff.
5. Following the presentations, the chair and co-chair led round table discussions on how to understand he tools and how to ensure ET-CAC members activities lead to the same results. Several participants noted that having the time in the meeting to take a wider look at the issues led to a significant improvement in auditor confidence level.
6. The meeting noted that some of the terminology and ideas were dominated by jargon, both from a WIS perspective or from an ISO perspective and that it could be useful to de jargon a little but being careful not to lose relevance to WMO community.
7. The final stage of the workshop was a run through the use of Trello and its important role both as a coordinating mechanism and as a tool supporting the transparency and accountability of the work of the group.
8. The meeting agreed that in future, the ET-CAC auditors should ensure to maintain the Trello cards associated with the centres they are auditing.
9. Following the workshop, the meeting established a team consisting of A9 Kevin Alder, Mark Francis, Eugene Burger, Tobias Spears to review and update for new procedures by end of March 2019. Other ET-CAC members are welcome to assist.
10. Kevin Alder, Mark Francis, Eugene Burger, Tobias Spears to review and update for new procedures by end of March 2019.

## 8. Evolution of WIS to 2030

1. Noting the discussions under Agenda Item 2 above based on the final [Report of EC-70](https://library.wmo.int/doc_num.php?explnum_id=4981)v, In particular Resolution 23 and Decision 18 (EC-70) the work on evolution of WIS including WIS 2.0 will impact on the work plan and actions of ET-CAC. Thus ET-CAC needs to make sure that it monitors and understands the evolution of WIS and WIS 2.0.
2. From a high level perspective ET-CAC should carry on as if the audit plan is stable and under the current words of WIS Manual and Guide but take note that requirements may change as TT-eWIS and WIS 2.0 evolve. That is, for WIS centres activity, ET-CAC should work as normal until the manual is updated including responding to requests to audit a centre.
3. From an assessment point of view relating to WIS 2.0 capabilities, ET-CAC can only assess the centres demonstrated ability to manage change. e.g. Lags in implementing TT-GISC decisions such as providing JSON files for monitoring.
4. This is a measure of readiness criteria that ET-CAC can assess

## 9 ET-CAC work plan and actions items

### 9.1 Work plan

1. The meeting noted that the [work plan on the ET-CAC website](http://www.wmo.int/pages/prog/www/CBS/Experts/plans/ET-WISC-ActionPlans.pdf#page=6) is still the version of TT-CAC as a part of the ET-WISC and that his has largely been overtaken by the [ET-CAC Trello](https://trello.com/b/RZd4hwfA/et-cac-certification).
2. Comment from Dave: It may be necessary for the chair to produce an ET-CAC work plan for ICT-ISS in 2019 as the Trello is restricted access.
3. Action items from previous ET-CAC meetings were reviewed under agenda item 3 above, and where necessary replace by new or updated action items. The following is a list of decisions and action items from the current meeting.

### 9.2 Action and Decision Summary

#### Actions

[**A1** Mr Francis (Co-chair ET-WISC) to report back to ET-WISC to seek feedback on GISC and DCPC audit schedule](#_Toc534481470)

[**A2** Mr Francis to review with ET-WISC and update us after ET-WISC meeting in week 2 March 2019](#_Toc534481471)

[**A3** Mr Francis to ask ET-WISC to confirm what the process is to authorise the secretariat to be able to pass on a request for audit or certification to ET-CAC](#_Toc534481472)

[**A4** Secretariat and Chair to update Trello for GISCs schedule](#_Toc534481473)

[**A5** The meeting asked the secretariat and chair to cross check the database and Trello and update the database accordingly.](#_Toc534481474)

[**A6** Mr Francis to follow up on NC certification practices at ET-WISC meeting scheduled for March 2019.](#_Toc534481475)

[**A7** The meeting requested that the secretariat keep the current server and applications operational until the new solution and guidance material are able to be prepared and put in place.](#_Toc534481476)

[**A8** The meeting requested the secretariat to add all ET-CAC members to the ET-CAC my.alfresco site.xxx](#_Toc534481477)

[**A9** Kevin Alder, Mark Francis, Eugene Burger, Tobias Spears to review and update for new procedures by end of March 2019.](#_Toc534481478)

#### Decisions

[**D1** The meeting agreed to the agenda as provided Annex 2.](#_Toc534481479)

[**D2** Constituent body reform should be taken into consideration when reviewing ET-CAC recommendations for Cg-18.](#_Toc534481480)

[**D3** No further changes would be needed to the proposed TORs of ET-CAC as those presented to CBS Teco 2018 would align with new TC structure.](#_Toc534481481)

[**D4** The meeting recommended a change to the Manual on WIS second paragraph in the Introduction as provided in Annex 4.](#_Toc534481482)

[**D5** Changes to ET-CAC recommended audit practices provided to CBS Teco 2018 would be addressed under agenda item 5 of this meeting.](#_Toc534481483)

[**D6** Mr Francis is to follow up on 2017 Decision 07 and report back to ET-CAC. (Note: Replaces 2017-D07).](#_Toc534481484)

[**D7** Mr Alder is to follow up with ICT-ISS and ET-WISC chairs on both ET-CAC 2017 Decision 07 and 08 for consideration of ICT-ISS 2019. (Note: Replaces 2017-D08)](#_Toc534481485)

[**D8** The meeting agreed to use the Space Wx “Audit procedures and reporting templates\_v1.3.pdf and Space Wx Working methodology and schedule along with current WIS Centre documentation as a basis for development of new ET-CAC guidance material.](#_Toc534481486)

[**D9** ET-CAC agreed that provision of assessment guidance by programmes having centres audited should be standard practices as these were the core to a successful set of audits.](#_Toc534481487)

[**D10** The meeting agreed to the changes as shown in Annex 6. It authorised the secretariat to include post meeting updates in consultation with the chair and to prepare for the CBS Consultation 2018.](#_Toc534481488)

[**D11** ET-CAC decided to focus on meeting the Manual on WIS requirement and focus on arranging the 8 year re-audit of GISCs.](#_Toc534481489)

[**D12** The meeting agreed, subject to confirmation from ET-WISC, to the GISC schedule as provide in Annex 7 to this report.](#_Toc534481490)

[**D13** ET-CAC decided to keep working on the current environment and design a new guidance doc and input/collaboration forms that can be implemented when we get the new environment.](#_Toc534481491)

[**D14** The meeting agreed that in future, the ET-CAC auditors should ensure to maintain the Trello cards associated with the centres they are auditing.](#_Toc534481492)

[**D15** The meeting agreed to holding a teleconference following ET-WISC March meeting (Mr Francis to report on ET-WISC, the secretariat on the CBS Consultation).](#_Toc534481493)

[**D16** The meeting agreed that the first week of September 2019 would be best, possibly Vienna or Seattle. The meeting would need to be for 3 days.](#_Toc534481494)

#### Pending

[Pending: 1. Comment from Dave: It may be necessary for the chair to produce an ET-CAC work plan for ICT-ISS in 2019 as the Trello is restricted access.](#_Toc534481495)

## 10. Session review and next meeting

1. Participants noted that the discussions and training had made it more clear on what is expected from audit teams, and what was still need from ET-WISC. It was further noted that ET-CAC had some deliverables and subsequent requirements on ET-WISC feedback. It would be necessary to hold at least a couple of teleconferences to achieve this.
2. The meeting agreed to holding a teleconference following ET-WISC March meeting (Mr Francis to report on ET-WISC, the secretariat on the CBS Consultation).
3. Final arrangements for the next face to face meeting of ET-CAC will depend on the feedback from ET-WISC, and if necessary after CBS Management Group, but it was expected that the next face to face meeting of ET-CAC would be after Congress but before the audits start.
4. ET-CAC further reviewed the requirements for a next meeting, noting the potential outcome of the Congress in 2019 relating to the proposed changes to technical regulations and the impact on the group’s core activities.
5. The meeting agreed that the first week of September 2019 would be best, possibly Vienna or Seattle. The meeting would need to be for 3 days.
6. The meeting closed at 1500 on Thursday 4 October.

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## Annex 1. Participants

|  |  |
| --- | --- |
| **Participant (Role)** | **Proposed by** |
| Kevin ALDER (Chairperson) | New Zealand |
| Lothar WOLF (Co-Chairperson) | EUMETSAT |
| Weiqing QU (Core member) | Australia |
| Tobias SPEARS (Core member) – via video conf | Canada |
| Jacques ANQUETIL (Core member) | France |
| Thorsten BÜSSELBERG (Core member) | Germany |
| KOSUGE, Kenji (Associate-member) | Japan |
| Sungsoo DO (Core member) | Republic of Korea |
| Mark FRANCIS (Core member) | UK |
| Eugene BURGER (JCOMM Representative) | JCOMM (USA) |
| David THOMAS (Secretariat) | WMO |
|  |  |
| **Unable to attend** |  |
| Ting ZHU (Core member) | China |
| Fatima ZAHRA BENSAID (Core member) | Morocco |
|  |  |

## Annex 2. Draft agenda

|  |  |
| --- | --- |
| **Item** | **Title** |
| 1 | Opening of the meeting |
| 2 | Review of EC,CBS decisions and Constituent Body Reform |
| 3 | Review of ET-CAC actions |
| 4 | Review of Space Wx Centre Audits |
| 5 | Review of Technical Regulations and Audit Standards/Practices |
| 6 | Review of audit schedules |
| 7 | Audit tools and practices |
| 8 | Evolution of WIS to 2030 |
| 9 | ET-CAC work plan and actions items |
| 10 | Session review and next meeting |

## Annex 3. WIS issues presented to CBS Teco 2018

The following is a brief summary of WIS related issues considered by CBS Teco 2018. Some issues were approved by CBS Management Group following Teco to be considered by EC-70, however, most WIS related issues needed to wait to be considered by Congress 18 following consultation with CBS members. See Decision 17 (EC-70).

* Issue 5(2)/1: WIS 2.0 implementation plan
	+ EC-70 agreed to put WIS 2.0 on the Agenda for Cg-18. TT-eWIS is tasked with putting together background information for the consideration of Cg-18. EC-70 recommended that Congress delegate authority to EC to oversee the development and implementation of WIS 2.0. See Resolution 23 (EC-70) and Decision 18 (EC-70).
* Issue 5(2)/2: Cache in the cloud
	+ Teco supported this work based on confirmation at EC-70 regarding funding and commitment of the GISCs to move forward. This did not happen and the project has been put back to TT-GISC with the idea that a single country (Japan) will follow up on this technology as a national pilot. See Decision 20 (EC-70). Note that EC did approve the concept of the secretariat coordinating such a system (See Decision 19 (EC-70)).
* Issue 5(2)/3: Guidance on managing ICT Operations
	+ This material is to go out to CBS Consultation 2018
* Issue 5(2)/4: Information Management (WIS Part C)
	+ This material is to go out to CBS Consultation 2018. This is a work in progress and much needs to be done by TT-IM prior the consultation.
* Issue 5(3)/1: Audits of centres
	+ This material is to go out to CBS Consultation 2018
* Issue 5(3)/2: Cybersecurity
	+ This material is to go out to CBS Consultation 2018
* Issue 5(3)/3: Annual meetings of GISC operators
	+ This material is to go out to CBS Consultation 2018
* Issue 5(3)/4: Operational monitoring of the WMO Information System (“GISC Watch”)
	+ This material is to go out to CBS Consultation 2018
* Issue 5(3)/5: Escalation procedures for the WMO Information System
	+ This material is to go out to CBS Consultation 2018
* Issue 5(3)/6: Approval of centres for the Manual on WIS
	+ Approved by EC-70 (See Resolution 22 (EC-70))
* Issue 5(3)/7: WIS connectivity
	+ Approved by EC-70 (See Resolution 21 (EC-70))

## Annex 4. Draft amendment for Manual on WIS “Introduction”

*ET-CAC recommend the following update to the Manual on WIS (WNO No.1060), second paragraph in the introduction.*

The Manual is Annex VII to the Technical Regulations (WMO-No. 49), Volume I: General Meteorological Standards and Recommended Practices, in Part II of which it is stated that WIS is established and shall be operated in accordance with the practices, procedures and specifications described in the Manual.

## Annex 5. Review of ET-CAC 2017 Decisions

The meeting reviewed the list of decisions recorded in the [ET-CAC2017 final report](http://wis.wmo.int/file%3D3784). Comments on status are in red.

D1 Core members of ET-CAC have additional responsibilities: both developing the audit procedures and associated guidance materials, plus the coordination and scheduling of the audits themselves. Done

D2 As set out in the Meeting background, the scope of ET-CAC is extended from WIS Centres to cover all types of WMO Centres. Already happening with space wx centres

D3 Recommend to OPAG-ISS that the ET-CAC ToR is amended as per Appendix 5: Proposed new Terms of reference for the Expert Team on Centre Audit/Certification. Done, see CBS TECO 2018/Doc. 5(3), Annex 1

D4 The authority for ET-CAC to conduct audits derives from Part VII Quality Management of WMO-No. 49 Volume I. [1]. Noted – See proposed additional text for TechReg 49 Part VII

D5 Recommend to OPAG-ISS that, for approval by president CBS, ET-WISC draft a formal instruction to ET-CAC requesting the audit of WIS Centres according to the regulation defined in the Manual on WIS. Done see CBS TECO 2018/Doc. 5(3), Annex 1

D6 Continue to use Trello, WIS wiki and WIS Centre database to support WIS Centre audit. Remove WIS centre nomination database. Think about what is really needed and under what circumstances. Topic related questionnaire (See under Agenda Item 6 of ET-CAC2018)

D7 Recommend to OPAG-ISS that it is ET-WISC that need to develop the WIS Centre assessment criteria against which ET-CAC will then audit WIS Centres. Document floating around TT-GISC. Mark Francis to address

D8 Recommend to OPAG-ISS that ET-WISC amend their terms of reference to include development and operation of a QMS for WIS- including use of external audit [by ET-CAC] for validating compliance with agreed practices and standards (Chair to follow up with OPAG ISS)

D9 ET-CAC should employ different approaches for designation of new centres and the reaffirmation of the designation of an existing centre. (Done – see procedures in draft tech reg)

D10 The risk-based approach (outlined in ISO/DIS 19011:2018e) should be adopted in the new audit framework. (Done – see procedures in draft tech reg)

D11 A new generalized audit framework will be developed; adopting a risk-based approach, providing clarity on the authority for the audit and ensuring adequate separation between the owner of the “system” and the auditors. (Done – see procedures in draft tech reg)

D12 Members of ET-CAC will lead audits on all WMO Centres; auditors should have participated in a WMO Centre audit with another experienced member of ET-CAC before they take the role of lead auditor. (Done – see procedures in draft tech reg) ie D10, 11 and 12 were effectively one decision and went to CBS Teco 2018 and now a part of the consultation process

D13 At least two auditors will participate in a WMO Centre audit. We now have new ideas and need to be more flexible, taking more factors into consideration including skills and competencies. These were included in the revise Audit Procedures for CBS Consultation 2018

D14 On site audits will continue to be two-days in duration (No change)

D15 Audits will be conducted following an invitation from the Centre to be audited (OK)

D16 Recommend to OPAG-ISS that ET-WISC define the assessment criteria for WIS Centres, using a risk-based approach, against which WIS Centres shall be audited. Applies to all potential programmes

D17 Co-opt experienced auditors as new associate members of ET-CAC to expedite the space weather auditing. (Done – see procedures in draft tech reg) Note:Worked well with Bryan, Shane and Gerald in Space Wx

D18 Audit teams for space weather centre audits will comprise a lead auditor from ET-CAC and a subject matter expert (with expertise relating to space weather) from TT-AVI. (Done – noted the excellent work in opting in Space Wx experts)

D19 Audits of space weather centres to March 2018 will be conform to an interim audit process framework proposed by TT-AVI (Done)

D20 GISC audits will be based on the new procedures . (Done – see procedures in draft tech reg now under consultation review)

D21 GISC audit cycle will be reset - beginning again with on-site audits from 2018; provisional schedule from May 2018-April 2019 Now under consultation review, we need to ensure that the GISCs have enough time to have it in their budget planning. Discussion noting that ET-CAC not responsible for setting timetable or initiating audits. That is part of ET-WISC and its parent groups.

D22 Recommend to OPAG-ISS that before audits of GISCs resume, a formal instruction from president CBS, or ET-WISC as their delegate, is provided.

New decision: Side discussion on advanced notice of timing of onsite centre audits. ET-CAC or responsible OPAG, should provide 4 year outlooks, with first 2 years. ie what is planned for the next 2 to 4 years. (This would help avoid the problem of multiple onsite audits for one member coming from different programmes). This should be applied to non onsite audits too

D23 Pre-designation audits for DCPCs will continue using the existing criteria and process (OK)

D24 ET-CAC will support TT-AVI preparing the report to ICAO from audit of candidate space weather service providers; the report shall be provided no-later than March 2018 to meet ICAOs timeline. Done

D25 ET-CAC will convene monthly WebEx meetings to ensure that the tempo of work is maintained. Done for space wx but can reintroduce monthly if work practices required

D26 Certification of auditors, through officially recognized training, is recommended - but not considered essential; the credentials of auditors must include an appropriate level of experience to conduct an audit in a professional manner. Group agree. We want to use a process of mentoring to build the competencies to ensure consistencies

ET-CAC2018 Final Report ET-CAC [http://wis.wmo.int/file=3784](http://wis.wmo.int/file%3D3784) (01Oct2018)

## Annex 6. Draft Updates to WMO technical regulations for auditing of centres

ET-CAC recommends ICT-ISS to put the following updated changes to CBS members as a part of the CBS Consultation 2018 process. These are updated and more comprehensive of those presented to CBS Teco 2018 taking into consideration lessons learnt from undertaking the Space Weather Centre audits and the new Constituent Body Reform processes.

### 1. Amend Technical Regulations (WMO-No. 49), Volume I related to centre auditing

Amend Technical Regulations (WMO-No. 49), Volume I: General Meteorological Standards and Recommended Practices, Part VII on Quality Management to incorporate a link to centre audit processes defined in the Manual on WIS (WMO-No. 1060).

*1.1 Insert the text into paragraph 1.2 as follows:*

1.2 World Meteorological Organization international centres and facilities

Members undertaking to host either global or regional centres, or facilities on behalf of WMO programmes should establish and implement a QMS that covers the entire scope of services for which the centre or facility has been designated. Compliance requirements for related services shall be defined by the programme responsible for the functions and services being provided. Certification of such compliance should follow the principles defined in section 1.4.3 below.

*1.2 Update the text in the note following paragraph 1.4.2 and insert new paragraph 1.4.3 as follows:*

1.4.2 Demonstration of compliance of the QMS, centres or services applied should be by audit. All audits should be performed by qualified quality management auditors and appropriately documented and retained. If nonconformities are identified during audit, remedial action should be initiated to determine and correct the cause.

Note: Additional ~~Guidance~~ guidance on the methodology and procedures for internal and external audits ~~to be conducted~~ relating to quality management system is provided in the Guide to the Implementation of a Quality Management System for National Meteorological and Hydrological Services (WMO-No. 1100) concerning the provision of meteorological, hydrological and climatological services within the framework of ISO 9001:2015 – Quality management systems – Requirements.

1.4.3 Audits conducted within the WMO operational centre certification process shall be along the lines defined in the annexes to this paragraph for onsite and offsite audits.

~~1.4.3~~1.4.4 An ISO 9001 certificate of compliance issued by an appropriately accredited conformity assessment body, covering the information and services provided, should be considered as sufficient demonstration of compliance of the established QMS.

*1.3 Insert new annex to paragraph 1.4.3 as follows:*

**Annex to Paragraph 1.4.3 on Generic Audit Processes**

**Section 1. Introductory statement to audit processes**

The audit processes available to certify centres or services includes an offsite audit, where the auditors do not travel to the centre being audited but make use of remote technologies. The other process is the on-site audit where the auditors travel to the centre.

The responsibility for on-site or off-site audit is up to the body responsible for the activity of the centre or service.

*Note: The typical cases where an on-site audit could apply include:*

* *The first audit of a new centre or a centre delivering new services,*
* *An audit scheduled by the responsible body to be ‘on site’.*
* *Where a full scope audit is required.*
* *The centre failed a previous audit.*

*The typical cases where a remote or off-site audit could apply include:*

* *A recurring audit of a pre-existing centre or service.*
* *Where a limited scope audit is required.*
* *Where the timeline of the schedule may not allow the audit to be performed by a certain deadline.*
* *When a recent onsite audit has been undertaken.*
* *To review any follow-up actions from a previous audit.*

**Section 2. Generic audit process for on-site audits**

**INTRODUCTION**

1. The generic demonstration and reporting process for assessment and auditing of any WMO member centre is based on the experience of WMO’s initial audit programme.

2. At a high level, the audit process consists of four phases:

**Phase 1** Notification / request to audit a centre, accompanied by a completed self-assessment questionnaire;

**Phase 2** Pre-audit capability assessment;

**Phase 3** Onsite audit and validation by the audit and certification team;

**Phase** 4 Post audit reporting and recommendation.

3. This process assumes that the audit and certification team has been previously informed of the intention to certify one or more centres by the body responsible for the activity of the centre or service.

4. The audit and certification team will conduct the audits in reference to audit guidelines published by ISO within ISO 19011:2018. In particular, the following audit principles apply:

* integrity, fair representation, due professional care, confidentiality, independence, use of an evidence and risk-based approach.

5. The entire audit process, including all documentation, site assessments, discussions and reporting to be conducted in the English language.

7. As experienced by WMO’s initial audit and certification teams, the following aspects will be retained:

* Geographic diversity (e.g. ensuring that auditors do not audit centres within their region) to ensure the necessary impartiality of audit teams;
* Audits will be undertaken by audit teams consisting of at least two persons, including a lead auditor with audit experience and a Subject Matter Expert;
* Onsite audits to be conducted over 2-days, excluding auditor travel time to and from the audit site.

**PHASE 1 RECEIPT OF NOMINATION / REQUEST TO RE-CERTIFY**

8. Phase one commences when the audit and certification team receives a formal request to undertake an audit of a centre. Such a request will be accompanied by all relevant contact point information to allow the team to liaise with the centre management and experts.

9. The centre will also provide a completed self-assessment questionnaire that provides preliminary evidence of the centre’s capabilities, based upon the audit criteria provided the ‘system owner’.

10. The self-assessment information should be provided in the English language and be in a style that can be easily understood by an auditor, avoiding the use of highly technical language unless it is necessary.

11. The audit and certification team, in consultation with the system owner’s body responsible for the activity of the centre or service, will assign a team of auditors, with the Lead auditor being responsible for ensuring the outcome of each audit delivers clear and concise findings upon which informed decisions can be made.

12. With the transparency of the audit process key to ensuring a successful audit, all participants in the audit process need to understand their role and responsibilities. To ensure clarity, the process should be clearly articulated, and the information provided to all stakeholders should include:

* The audit objective;
* The audit process;
* The applicable guiding principles found in ISO 19011:2018;
* Information concerning the composition of the audit team, including their contact details and relevant skills, experience and competence;
* Advice that all documentation is in place (including security and health and safety requirements) to enable the auditors to visit all sites and facilities required by the audit;
* Providing clarity and details of what expenses are being met by the host organization;
* Confirmation that the host organization will provide organizational support to facilitate auditor travel arrangements, including assistance with visa applications as required.

**PHASE 2: RECEIPT OF NOMINATION / REQUEST TO RE-CERTIFY**

13. Phase 2 commences with the audit team undertaking an assessment of the information provided by the centre in their self-assessment questionnaire.

14. The auditors will advise the centre whether the self-assessment information is sufficient for the audit team to move to the third phase.

15. Should further information be required to make this initial assessment, the audit team will correspond with the candidate centre’s point/s of contact to request further information, or to clarity specific matters, to the audit team’s own satisfaction.

16. Should sufficient information not be received by the audit team to complete the pre-audit assessment, the team will advise the centre and the system owner’s body responsible for the activity of the centre or service that a site assessment should not take place, with an explanation of the reasons for that recommendation.

17. Should this situation occur, progression to Phase 3 will only occur if sufficient preliminary evidence is subsequently supplied, again to the satisfaction of the audit team.

**PHASE 3: SITE ASSESSMENT AND AUDIT**

18. Phase 3 commences with the conducting of the onsite assessment and audit by the audit team to verify the centre’s capabilities against the predetermined assessment criteria.

19. In line with professional audit practise, the assessment will commence with a formal opening meeting where the audit team provides and overview of their activities, and finish with a formal closing meeting where the team informally presents a short summary of their findings, and their provisional assessment.

20. The auditors will then undertake the assessment and audit by means of discussion, interview, document and/or records review, and observation of appropriate operational functions using the predetermined assessment criteria to guide their assessment and evidence gathering to assess the centre has in place the necessary acceptable means of compliance with the audit criteria.

21. Certain tests or simulations on systems may also be requested by the audit team or offered by the candidate centre to verify the correction operation of a system or application.

22. It should be noted that the audit team may not be able to assess all organizational, technical or scientific aspects of the centre’s programme during the audit, but may, at their discretion, selectively sample particular aspects of the operation to support their assessment of the centre’s capability.

23. The audit team will make their assessment of based solely on the evidence collected during the on-site assessment, and will determine whether the centre is:

* **Compliant** – the centre has demonstrated to the satisfaction of the audit team that, at the time of observation, it fulfils the relevant criteria to pass assessment without any qualification;
* **Compliant, but with qualification** - the centre has demonstrated to the satisfaction of the audit team that, at the time of observation, it fulfils the relevant criteria to pass assessment, but with qualification; the qualification will be made in the form of a short concise statement;
* **Not compliant** – The centre has not demonstrated to the satisfaction of the audit team, that at the time of observation, it fulfils the relevant criteria to pass assessment.

**PHASE 4 POST AUDIT REPORTING AND RECOMMENDATION**

24. Phase four commences at the end of phase three with the preparation of the post audit report and its submission to the appropriate WMO body, ideally within five business days of returning from the assessment and audit.

25. The report will provide additional detail on the strengths, weaknesses, opportunities for improvement, non-compliance and areas of concern, in as well as a recommendation on the overall assessment of the centre.

26. The report will be treated as a confidential document, available only to the centre being audited and to authorised individuals within WMO and the responsible body.

27. The body responsible for the activity of the centre or service will finalise each post-audit report and will forward it to their own predefined distribution list.

28. Evidence that has been collected during the site assessments and audits will be forwarded to WMO. Any hard or soft copies held by the auditors will be destroyed or deleted.

**Section 3. Generic audit process for Off-site audits**

**INTRODUCTION**

1. The generic demonstration and reporting process for assessment and auditing of any WMO member centre is based on the experience of WMO’s initial audit programme.

2. At a high level, the audit process consists of four phases:

**Phase 1** Notification / request to audit a centre, accompanied by a completed self-assessment questionnaire;

**Phase 2** Pre-audit capability assessment;

**Phase 3** Remote (off site) audit and validation by audit and certification team ;

**Phase** 4 Post audit reporting and recommendation.

3. This process assumes that the audit and certification team has been previously informed of the intention to certify one or more centres by the body responsible for the activity of the centre or service.

4. The audit and certification team will conduct the audits in reference to audit guidelines published by ISO within ISO 19011:2018. In particular, the following auditing principles apply:

integrity, fair representation, due professional care, confidentiality, independence, and use of an evidence and risk-based approach.

5. The entire audit process, including all documentation, site assessments, discussions and reporting to be conducted in the English language.

6. As experienced by WMO’s initial audit and certification teams, the following aspects will be retained:

Audits will be undertaken by audit teams consisting of at least two persons, including a lead auditor with audit experience and a Subject Matter Expert;

Remote audits will be conducted using remote video conferencing tools, and will normally be limited to two equivalent working days.

**PHASE 1 RECEIPT OF NOMINATION / REQUEST TO RE-CERTIFY**

7. Phase one commences when the audit and certification team receives a formal request to undertake a audit of a centre. Such a request will be accompanied all relevant contact point information to allow the team to liaise with the centre management and experts.

8. The centre will also provide a completed self-assessment questionnaire that provides preliminary evidence of the centre’s capabilities, based upon the audit criteria provided the ‘system owner’.

9. The self-assessment information should be provided in the english language and be in a style that can be easily understood by an auditor, avoiding the use of highly technical language unless it is necessary.

10. The audit and certification team, in consultation with the system owner’s constituent body, will assign a team of auditors, with the Lead auditor being responsible for ensuring the outcome of each audit delivers clear and concise findings upon which informed decisions can be made.

11. With the transparency of the audit process key to ensuring a successful audit, all participants in the audit process need to understand their role and responsibilities. To ensure clarity, the process should be clearly articulated, and the information provided to all stakeholders should include:

The audit objective;

The audit process;

The applicable guiding principles found in ISO 19011:2018;

Information concerning the composition of the audit team, including their contact details and relevant skills, experience and competence;

Advice that all documentation necessary for the audit is in place

**PHASE 2: RECEIPT OF NOMINATION / REQUEST TO RE-CERTIFY**

12. Phase 2 commences with the audit team undertaking an assessment of the information provided by the centre in their self-assessment questionnaire.

13. The auditors will advise the centre whether the self-assessment information is sufficient for the audit team to move to the third phase.

14. Should further information be required to make this initial assessment, the audit team will correspond with the candidate centre’s point/s of contact to request further information, or to clarity specific matters, to the audit team’s own satisfaction.

15. Should sufficient information not be received by the audit team to complete the pre-audit assessment, the team will advise the centre and the system owner’s constituent body that the audit should not take place, with an explanation of the reasons for that recommendation.

16. Should this situation occur, progression to Phase 3 will only occur if sufficient preliminary evidence is subsequently supplied, again to the satisfaction of the audit team.

**PHASE 3: SITE ASSESSMENT AND AUDIT**

17. Phase 3 commences with the conducting of the assessment and audit by the audit team to verify the centre’s capabilities against the predetermined assessment criteria.

18. In line with professional audit practise, the assessment with commence with a formal opening meeting where the audit team provides and overview of their activities, and finish with a formal closing meeting where the team informally presents a short summary of their findings, and their provisional assessment.

19. The auditors will then undertake the assessment and audit by means of discussion, interview, document and/or records review using the predetermined assessment criteria to guide their assessment and evidence gathering to assess the centre has in place the necessary acceptable means of compliance with the audit criteria.

20. Certain tests or simulations on systems may also be requested by the audit team or offered by the candidate centre to verify the correction operation of a system or application.

21. It should be noted that the audit team may not be able to assess all organizational, technical or scientific aspects of the centre’s programme during the audit, but may, at their discretion, selectively sample particular aspects of the operation to support their assessment of the centre’s capability.

22. The audit team will make their assessment of based solely on the evidence collected during the on-site assessment, and will determine whether the centre is:

**Compliant** – the centre has demonstrated to the satisfaction of the audit team that, at the time of observation, it fulfils the relevant criteria to pass assessment without any qualification;

**Compliant, but with qualification** - the centre has demonstrated to the satisfaction of the audit team that, at the time of observation, it fulfils the relevant criteria to pass assessment, but with qualification; the qualification will be made in the form of a short concise statement;

**Not compliant** – The centre has not demonstrated to the satisfaction of the audit team, that at the time of observation, it fulfils the relevant criteria to pass assessment.

**PHASE 4 POST AUDIT REPORTING AND RECOMMENDATION**

23. Phase four commences at the end of phase three with the preparation of the post audit report and its submission to the to appropriate WMO constituent body, ideally within 5 business days of after the completion of the assessment and audit.

24. The report will provide additional detail on the strengths, weaknesses, opportunities for improvement, non-compliance and areas of concern, in as well as a recommendation on the overall assessment of the centre.

25. The report will be treated as a confidential document, available only to the centre being audited and to authorised individuals within WMO and the responsible body.

26. The body responsible for the activity of the centre or service will finalise each post-audit report and will forward it to their own predefined distribution list.

27. Evidence that has been collected during the site assessments and audits will be forwarded to WMO. Any hard or soft copies held by the auditors will be destroyed or deleted.

### 2. Amend Appendix D of WMO­‑No. 1061 Guide to the WMO Information System

*Amend the text in Annex to Paragraph 7.6.2: “RECOMMENDED PRACTICES FOR THE ROLLING REVIEW OF WIS CENTRES” of WMO‑No. 1061 Guide to the WMO Information System as follows:*

1. Background

The Commission for Basic Systems is responsible for certification of WIS centres’ compliance with the WIS technical specifications defined in the Manual on WIS, Appendix D. The Commission for Basic Systems will maintain, within its OPAG on Information Systems and Services (OPAG‑ISS) structure (or its successor), a ~~task~~ team to coordinate audits and certification of WIS centres. For the purpose of this Guide, the ~~task~~ team or its equivalent group of experts is referred to as the ~~Task~~ Expert Team on Centre Audit and Certification (~~TT‑CAC~~ ET-CAC).

Audits and certifications will be carried out in line with the principles established in Technical Regulations (WMO-No. 49), Volume I: General Meteorological Standards and Recommended Practices, Part VII on Quality Management.

Access to TT‑CAC workspace and online databases is restricted to TT‑CAC and the WMO Secretariat.

*Amend the text in Annex to Paragraph 7.6.2: “RECOMMENDED PRACTICES FOR THE ROLLING REVIEW OF WIS CENTRES” of WMO‑No. 1061 Guide to the WMO Information System as follows:*

Replace all occurrences of “Task Team on Centre Audit and Certification” or “TT‑CAC” with “Expert Team on Centre Audit and Certification” and “ET‑CAC” respectively.

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## Annex 7. Revised GISC Audit Status and Proposed Audit Team

The table below indicates proposed audit teams for the next round of GISC audits, taking into account the need for new members of ET-CAC to undertake an audit with an experienced auditor before they are able to lead a GISC audit themselves.



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Centre** | **Previous Audit Date** | **Previous Team** | **Proposed Audit Timeframe** | **Proposed Team (Subject to change)** |
| GISC Tokyo | Aug 2010 | FR/EC | 2019/20 | Thorsten/Jacques |
| GISC Beijing | Aug 2010 | FR/EC | 2019/20 | Weiqing/Eugene |
| GISC Offenbach | Sep 2010 | JP /CN | 2019/20 | Lothar /Mark/ Sungsoo |
| GISC Toulouse | May 2011 | JP / AU | 2019/20 | Kevin/ Tobias |
| GISC Exeter | May 2011 | JP / AU | 2019/20 | Lothar / Kenji / Fatima |
| GISC Seoul | May 2012 | FR / EM | 2020/21 |  |
| GISC Melbourne | Jun 2012 | FR / EM | 2020/21 |  |
| GISC Brazil | Apr 2013 | EM / NZ | 2020/21 |  |
| GISC Tehran | May 2013 | DE/ CN | 2020/21 |  |
| GISC Jeddah | April 2013 | EM/ NZ | 2020/21 |  |
| GISC Moscow | May 2013 | EM / KR | 2021/22 |  |
| GISC Washington | April 2013 | NZ / KR | 2021/22 |  |
| GISC Pretoria | April 2014 | AU / NZ | 2021/22 |  |
| GISC New Delhi | Sept 2013 | EM / DE | 2021/22 |  |
| GISC Casablanca | May 2015 | NZ / KR | 2021/22 |  |

## Annex 8. References

1. Photo by Eugene Burger [http://wis.wmo.int/file=4897](http://wis.wmo.int/file%3D4897) [↑](#endnote-ref-1)
2. CBS-TECO-2018-Doc-5(2)-WIS2\_draft1.docx [http://wis.wmo.int/file=4514](http://wis.wmo.int/file%3D4514) [↑](#endnote-ref-2)
3. CBS-TECO-2018-Doc-5(3)-WIS-Operations\_draft1.docx http://xxxx [↑](#endnote-ref-3)
4. CBS-TECO-2018-Doc-5(3)-Annex1-Audit\_draft1.docx http://wis.wmo.int/file=4518 [↑](#endnote-ref-4)
5. Final Report of EC-70 https://library.wmo.int/doc\_num.php?explnum\_id=4981 [↑](#endnote-ref-5)
6. Guide to QMS (WMO No 1100) https://library.wmo.int/doc\_num.php?explnum\_id=4141 [↑](#endnote-ref-6)
7. WMO TechReg49 https://library.wmo.int/doc\_num.php?explnum\_id=4065 [↑](#endnote-ref-7)
8. CBS-TECO-2018-Doc-5(3)-Annex1-Audit\_draft1.docx http://wis.wmo.int/file=4518 [↑](#endnote-ref-8)
9. ET-CAC2018-AI(04)-Review2017decisions.docx http://wis.wmo.int/file=4520 [↑](#endnote-ref-9)
10. ET-CAC Trello https://trello.com/c/k87qUt0p [↑](#endnote-ref-10)
11. ET-CAC Trello card for Space Wx Audits <https://trello.com/c/k87qUt0p> [↑](#endnote-ref-11)
12. Space Wx Working methodology and schedule [http://wis.wmo.int/doc=3685](http://wis.wmo.int/doc%3D3685) [↑](#endnote-ref-12)
13. ET-CAC2018-AI(06)-ReviewAuditSchedule.docx [http://wis.wmo.int/file=4584](http://wis.wmo.int/file%3D4584) [↑](#endnote-ref-13)
14. WIS centre nomination guidance <http://www-db.wmo.int/WIS/centres/guidance.doc> [↑](#endnote-ref-14)
15. GISC Check List template [https://wis.wmo.int/doc=2163](https://wis.wmo.int/doc%3D2163) [↑](#endnote-ref-15)
16. Space Wx Audit procedures and reporting templates [http://wis.wmo.int/doc=3683](http://wis.wmo.int/doc%3D3683) [↑](#endnote-ref-16)
17. Space Wx Working Methodology and Assessment guide [http://wis.wmo.int/doc=3685](http://wis.wmo.int/doc%3D3685) [↑](#endnote-ref-17)
18. WIS centre database <http://wis.wmo.int/WIScentresDb> [↑](#endnote-ref-18)
19. ET-CAC Trello board (<https://trello.com/b/RZd4hwfA/et-cac-certification>) [↑](#endnote-ref-19)
20. ET-CAC restricted work area <https://wiswiki.wmo.int/ET-GDDP> [↑](#endnote-ref-20)
21. DCPC Benchmark from ET-GDDP 3 [https://wis.wmo.int/page=DCPC9](https://wis.wmo.int/page%3DDCPC9) [↑](#endnote-ref-21)
22. GISC AUDIT Template [http://wis.wmo.int/doc=3439](http://wis.wmo.int/doc%3D3439) [↑](#endnote-ref-22)
23. GISC AUDIT Checklist .xls version  [https://wis.wmo.int/doc=2165](https://wis.wmo.int/doc%3D2165) [↑](#endnote-ref-23)
24. GISC AUDIT Checklist .xlsx version  [https://wis.wmo.int/doc=2163](https://wis.wmo.int/doc%3D2163) [↑](#endnote-ref-24)
25. DCPC Template - WIS Demonstration Test Report [http://wis.wmo.int/doc=2167](http://wis.wmo.int/doc%3D2167) [↑](#endnote-ref-25)
26. Template Fax to PR of GISC advising of audit date [http://wis.wmo.int/doc=138](http://wis.wmo.int/doc%3D138) [↑](#endnote-ref-26)
27. Template Fax to PR of GISC advising of audit requirement [http://wis.wmo.int/doc=139](http://wis.wmo.int/doc%3D139) [↑](#endnote-ref-27)
28. Template Fax to PR of Auditor requesting participation [http://wis.wmo.int/doc=2885](http://wis.wmo.int/doc%3D2885) [↑](#endnote-ref-28)
29. Template letter from auditors to centre being audited (GISC) [http://wis.wmo.int/doc=3277](http://wis.wmo.int/doc%3D3277) [↑](#endnote-ref-29)
30. ET-CAC document collaboration site <https://my.alfresco.com/share/wmo.int/page/site/et-cac/dashboard> [↑](#endnote-ref-30)
31. ET-CAC Presentation for Auditing Training <http://wisi.wmo.intfile=4588> [↑](#endnote-ref-31)