From:
Sent: July-23-18 11:48 AM
To:

Subject: FW: UK Huawei ANNUAL REPORT 2018
Attachments: HCSEC OB ANNUAL REPORT 2018.pdf

Classification: CONFIDENTIAL

FYI.

From:
Sent: July-23-18 11:12 AM
To:
Cc: Waters, Michael
Subject: FW: UK Huawei ANNUAL REPORT 2018

Classification: CONFIDENTIAL

Tel que discuté.

From: Waters, Michael
Sent: July-23-18 10:27 AM
To:
Cc: Mahu, Vlad
Subject: UK Huawei ANNUAL REPORT 2018

Classification: CONFIDENTIAL

Hi

Do you know who is working on ICA? I think that they should be made aware of the email below and report attached.

Regards,
Michael

Michael Waters
Manager / Gestionnaire
National Cyber Security Directorate / Direction de la cyber-sécurité nationale
Public Safety Canada / Sécurity public Canada
Tel/Tél: 613-991-1634
Mobile: 613-796-4286

Email/courriel: Michael.Waters@canada.ca
CTSN:

From: Waters, Michael
Sent: July-23-18 10:05 AM
To: Bunghardt, Gregory; Hashem, Mohsen; Frigon, Sylvie; Hartley, William; Park, Beom-Jun; Merchant, Colleen; Binne, Christine; Ouellet, Benoit; Brydges, Lucas; Goldfinger, Marc; Gauthier, Darren; Hamilton, Sharon; Bendelier, Kenneth; (CSE-CST); (CSE-CST)
Subject: UK Huawei ANNUAL REPORT 2018

Classification: CONFIDENTIAL

Colleagues,

The UK has informed its National Security Advisor that, for the first time, the Huawei Cyber Security Evaluation Centred Oversight Board "can provide only limited assurance that all risks to UK national security from Huawei's involvement in the UK's critical networks have been sufficiently mitigated."

See report attached.

Regards,
Michael

Michael Waters
Manager / Gestionnaire
National Cyber Security Directorate / Direction de la cyber-sécurité nationale
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From: NCSCCAP GBR GOV (GCHQ) [mailto:
Sent: July-22-18 6:05 AM
To:

Waters, Michael;

Subject: PUBLICATION OF HCSEC ANNUAL REPORT 2018

CLASSIFICATION: UK OFFICIAL

All,

[redacted] and as you may already be aware, the fourth Huawei Cyber Security Evaluation Centred Oversight Board Annual Report (attached) was published on 19th July 2018 on the www.gov.uk website (where the previous three year reports can be found if you search for HCSEC annual report).

[redacted]

If you have any questions please do not hesitate to contact me.

[redacted]
NCSC Telecoms Security Relationship Manager
[redacted]
Rus: [redacted]
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HUAWEI CYBER SECURITY EVALUATION CENTRE (HCSEC) OVERSIGHT BOARD

ANNUAL REPORT

2018

A report to the National Security Adviser of the United Kingdom

July 2018

HUAWEI CYBER SECURITY EVALUATION CENTRE OVERSIGHT BOARD ANNUAL REPORT

Part I: Summary

1. This is the fourth annual report from the Huawei Cyber Security Evaluation Centre (HCSEC) Oversight Board. HCSEC is a facility in Banbury, Oxfordshire, belonging to Huawei Technologies (UK) Co Ltd, whose parent company is a Chinese headquartered company which is now one of the world's largest telecommunications providers.
2. HCSEC has been running for seven years. It opened in November 2010 under a set of arrangements between Huawei and HMG to mitigate any perceived risks arising from the involvement of Huawei in parts of the UK's critical national infrastructure. HCSEC provides security evaluation for a range of products used in the UK telecommunications market. Through HCSEC, the UK Government is provided with insight into Huawei's UK's strategies and product ranges. The UK's National Cyber Security Centre (NCSC, and previously GCHQ), as the national technical authority for information assurance and the lead Government operational agency on cyber security, leads for the Government in dealing with HCSEC and with Huawei more generally on technical security matters.
3. The HCSEC Oversight Board, established in 2014, is chaired by Ciaran Martin, the Chief Executive Officer of the NCSC, and an executive member of GCHQ's Board with responsibility for cyber security. The Oversight Board continues to include a senior executive from Huawei as Deputy Chair, as well as senior representatives from across Government and the UK telecommunications sector. The structure of the Oversight Board has not changed significantly, but membership has changed in the year 2017-18. Mainly, this is due to staff rotations in both HMG and Huawei positions.

4. The Oversight Board has now completed its fourth full year of work. In doing so it has covered a number of areas of HCSEC's work over the course of the year. The full details of this work are set out in Parts II and III of this report. In this summary, the main highlights are:

i. **New secure premises for HCSEC are on track**; the previously reported acquisition of new premises for HCSEC has experienced some commercial delays, but remains broadly on track for completion in late 2018;

ii. **Technical issues have been identified in Huawei's engineering processes,** leading to new risks in the UK telecommunications networks;

iii. **The GCHQ Technical Competence Review found that the capability of HCSEC has improved in 2017**, and the quality of staff has not diminished, meaning that technical work relevant to overall mitigation strategy can be performed at scale and with high quality;

iv. **The fourth independent audit of HCSEC's ability to operate independently of Huawei HQ has been completed**, with – again – no high or medium priority findings. The audit report identified two low rated finding and two advisory issues, relating to record keeping and the retention of auditable information. Each issue has an agreed rectification plan, Ernst & Young concluded that there were no major concerns and the Oversight Board is satisfied that HCSEC is operating in line with the 2010 arrangements between the Government and the company.

5. The three key conclusions from the Oversight Board's fourth year of work are:

i. It is evident that HCSEC continues to provide unique, world-class cyber security expertise and technical assurance of sufficient scope and quality as to be appropriate for the current stage in the assurance framework around Huawei in the UK.

ii. The HCSEC Oversight Board is assured that the Ernst & Young Audit Report provides important, external reassurance that the arrangements for HCSEC's operational independence from Huawei Headquarters is operating robustly and effectively, and in a manner consistent with the 2010 arrangements between the Government and the company.

iii. However, identification of shortcomings in Huawei's engineering processes have exposed new risks in the UK telecommunication networks and long-term challenges in mitigation and management.

6. The Oversight Board concludes that in the year 2017-18, HCSEC fulfilled its obligations in respect of the technical work required of it by NCSC.

7. Due to areas of concern exposed through the proper functioning of the mitigation strategy and associated oversight mechanisms, the Oversight Board can provide only limited assurance that all risks to UK national security from Huawei's involvement in the UK's critical networks have been sufficiently mitigated. We are advising the National Security Adviser on this basis.

HUAWEI CYBER SECURITY EVALUATION CENTRE OVERSIGHT BOARD 2017 ANNUAL REPORT

Part II: Technical and Operational Report

This is the fourth annual report of the Huawei Cyber Security Evaluation Centre Oversight Board. The report may contain some references to wider Huawei corporate strategy and to non-UK interests. It is important to note that the Oversight Board has no direct locus in these matters and they are only included insofar as they could have a bearing on conclusions relating directly to the assurance of HCSEC's UK operations. The UK Government's interest in these non-UK arrangements extends only to ensuring that HCSEC has sufficient capacity to discharge its agreed obligations to the UK. Neither the UK Government, nor the Board as a whole, has any locus in this process otherwise.

Introduction

1. This is the fourth annual report from the Huawei Cyber Security Evaluation Centre (HCSEC) Oversight Board. HCSEC is a facility in Banbury, Oxfordshire, belonging to Huawei Technologies (UK) Co Ltd, whose parent company is a Chinese headquartered company which is now one of the world's largest telecommunications providers.

2. HCSEC has been running for seven years. It opened in November 2010 under a set of arrangements between Huawei and HMG to mitigate any perceived risks arising from the involvement of Huawei in parts of the UK's critical national infrastructure. HCSEC provides security evaluation for a range of products used in the UK market. Through HCSEC, the UK Government is provided with insight into Huawei's UK's strategies and product ranges. The UK's National Cyber Security Centre (NCSC, and previously GCHQ), as the national technical authority for information assurance and the lead Government operational agency on cyber security, leads for the Government in dealing with HCSEC and with Huawei more generally on technical security matters.

3. The HCSEC Oversight Board, established in 2014, is chaired by Ciaran Martin, the Chief Executive Officer of the NCSC, and an executive member of GCHQ's Board with responsibility for cyber security. The Oversight Board continues to include a senior executive from Huawei as Deputy Chair, as well as senior representatives from across Government and the UK telecommunications sector. The structure of the Oversight Board has not changed significantly, but membership has changed in the year 2017-18. Mainly, this is due to staff rotations in both HMG and Huawei positions.

4. This fourth annual report has been agreed unanimously by the Oversight Board's members. As with last year's report, the Board has agreed that there is no need for a confidential annex, so the content in this report represents the full analysis and assessment.

5. The report is set out as follows:

I. Section I sets out the Oversight Board terms of reference and membership;

II. Section II describes HCSEC staffing, skills, recruitment and accommodation;

III. Section III covers HCSEC technical assurance, prioritisation and research and development;

IV. Section IV summarises the findings of the 2016-17 independent audit;

V. Section V brings together some conclusions.

SECTION I: The HCSEC Oversight Board: Terms of Reference and membership

1.1 The HCSEC Oversight Board was established in early 2014. It meets quarterly under the chairmanship of Ciaran Martin, the Chief Executive of the UK National Cyber Security Centre (NCSC) and an executive member of GCHQ's Board at Director General level. Mr Martin reports directly to GCHQ's Director, Jeremy Fleming, and is responsible for the agency's work on cyber security.

1.2 The role of the Oversight Board is to oversee and ensure the independence, competence and overall effectiveness of HCSEC and to advise the National Security Adviser on that basis. The National Security Adviser will then provide assurance to Ministers, Parliament and ultimately the general public as to whether the risks are being well managed.

1.3 The Oversight Board's scope relates only to products that are relevant to UK national security risk. Its remit is two-fold:

- first, HCSEC's assessment of Huawei's products that are deployed or are contracted to be deployed in the UK and are relevant to UK national security risk which is determined at the NCSC's sole and absolute discretion; and
- second, the independence, competence and therefore overall effectiveness of HCSEC in relation to the discharge of its duties.

1.4 The Board has an agreed Terms of Reference, a copy of which is attached at **Appendix A**. There have been no changes to the terms of reference this year and the main objective of the Oversight Board remains unchanged. The Oversight Board is responsible for providing an annual report to the National Security Adviser, who will provide copies to the National Security Council and the ISC.

The Board's objectives for HCSEC

1.5 The Oversight Board's four high level objectives for HCSEC remained consistent with those reported previously and are:

- To provide security evaluation coverage over a range of UK customer deployments as defined in an annual HCSEC evaluation programme;

- To continue to provide assurance to the UK Government by ensuring openness, transparency and responsiveness to Government and UK customer security concerns;
- To demonstrate an increase in technical capability, either through improved quality of evaluations output or by development of bespoke security related tools, techniques or processes;
- For HCSEC to support Huawei Research and Development to continue to develop and enhance Huawei's security and engineering competence.

The HCSEC Oversight Board: Business April 2017- March 2018

1.6 In its two meetings since the publication of the 2017 Annual Report, the Oversight Board has:

- Provided regular corporate updates on Huawei UK
- Discussed future technology trends and how they may affect the work of the Oversight Board;
- Been supplied with regular updates on HCSEC recruitment, staffing and accommodation plans;
- Received updates on the HCSEC technical programme of work and its progress and received a detailed report on technical visits to Huawei HQ in Shenzhen by the NCSC Technical Director and technical team, some with UK operators, to discuss technical issues;
- Taken evidence around the root causes of the problems achieving binary equivalence and agreed a programme of work towards remediation;
- Taken evidence of redelivery of source code packages, the basis of which was detailed in the previous report;
- Taken evidence on the security risks engendered by Huawei's lifecycle management of critical components and written to the National Security Adviser based on this;
- Commissioned a fourth HCSEC management audit of the independence of the Centre.

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SECTION II: HCSEC Staffing

2.1 This section provides an account of HCSEC's staffing and skills, including recruitment and retention.

Staffing and skills

2.2 A change was made to the senior management team in HCSEC. A long serving member of the HCSEC team, who has demonstrated excellent technical knowledge during his tenure, was appointed as Director Solutions and Programme, overseeing the execution of technical operations in HCSEC. His appointment to the senior management team is welcomed by the Board. The leadership team continues to work well together, leading HCSEC and engaging with Huawei in a constructive manner.

2.3 The NCSC leads for the Government in dealing with HCSEC and the company more generally on technical security matters. The NCSC, on behalf of the Government, sponsors the security clearances of HCSEC's staff. The general requirement is that all staff must have Developed Vetting (DV) security clearance, which is the same level required in Government to have frequent, uncontrolled access to classified information and is mandatory for members of the intelligence services. New recruits to HCSEC are managed under escort during probation pending completion of their DV clearance period, which is typically six months.

2.5 Staffing at HCSEC has increased in line with expectations for the year 2017. By the end of the calendar year, the staff numbers were almost as predicted with, once again, only one position not filled (taking 'offer accepted' as the point of employment). Due to uncertainty around the binary equivalence work, it was unclear precisely what skills were needed to support this work and so a conscious decision made to not fill the three extra posts committed to by Huawei and preserve the headcount for 2018.

2.6 It remains critical that HCSEC continues to recruit technical cyber security specialists to manage attrition and succession. This continued excellent progress has been driven by the ongoing personal involvement of HCSEC leadership and represents a significant amount of work.

2.7 Again, a significant number of potential recruits were sifted out due to clearance requirements. Furthermore, three candidates that passed initial sifting and were employed by HCSEC subsequently failed DV clearance and were removed from the centre. The small risk associated with these staff was adequately managed through the supervision and oversight provided during their probationary employment period.

Accommodation

2.9 The 2017 report spoke of the successful search for new accommodation for HCSEC to cope with the expansion of HCSEC's operation. The delays alluded to in that report came to pass for reasons associated with the building configuration and the logistics of the move. However, the process has been successfully concluded and the move to the new premises should be completed during 2018Q4. These delays are not in any way the result of Huawei HQ's inaction or interference.

2.10 The new accommodation will allow for concurrent reference networks to be put in place, allowing solution evaluations to proceed at pace. It also allows for increased development activity to help manage the significant number of products needing assessment.

2.11 Overall, good progress has been made on staffing and skills during 2017. Quarterly monitoring by the Oversight Board has shown no causes for concern in the number of staff and their skills. The delay to the new accommodation is unfortunate but has in no way affected the ability of HCSEC to discharge its functions this year.

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Section III: HCSEC Technical Assurance

2017 is the seventh year of the Government's extended risk management programme for Huawei's involvement in the UK telecommunications market. In the previous two years, the Oversight Board chose to publish, exceptionally, more details of the technical assurance work undertaken as part of this programme. This report builds on the previous three reports. The Oversight Board's intent is to provide detailed technical assessment only periodically and when issues specifically warrant it. This year there have, once again, been technical issues that specifically warrant inclusion in the report due to their direct impact on the ability of the Oversight Board to provide assurance to the National Security Advisor. It is to be welcomed that despite difficulties, Huawei has continued to work closely with NCSC and HCSEC and provided access and information when requested.

Evaluation Process

3.1 HCSEC's assessment programme in 2017 continued the product and solution evaluation split which proved successful in previous years. In 2017, 27 product evaluations were completed, 5 solution evaluations were started, with 3 being completed during the reporting period. The evaluations covered products and architectures for 4 UK operators.

3.2 The last Oversight Board report detailed issues with a particular evaluation, concerning the virtualised SMSC. Regardless of the issues, the operator chose to deploy the solution with an expectation that they would upgrade to the next version to be evaluated by HCSEC. The operator has not yet chosen to upgrade the system to a version that could be evaluated by HCSEC.

3.3 The NCSC has a stated intent of HCSEC performing a product evaluation on every relevant product in the UK at least every two years. HCSEC's product evaluation pipeline is configured to achieve this. Huawei have provided long term headcount for the evaluation and infrastructure build teams and the Oversight Board is confident that continued attention from HCSEC seniors will ensure that there are sufficient appropriately skilled staff to maintain the NCSC intent. HCSEC staff must be capable

of achieving security clearance and have the requisite skills, meaning the pool of available talent is small.

3.4 The previous Oversight Board report described a group set up by NCSC to discuss the management of the risks around the Huawei Mobile Virtual Network Operator (MVNO) solution in the UK. Over 2017, this has been expanded and its scope broadened to cover wider supply chain risk management issues in the telecoms sector as a whole.

3.5 The evaluation process continues to find a significant number of point vulnerabilities and more strategic architectural and process issues. Huawei continues with their remediation work; the feedback provided by HCSEC to Huawei R&D continues to be of high quality and the HCSEC technical staff continue to assist the Huawei R&D teams in their remediation efforts.

Prioritisation and programme build

3.6 The risk-based prioritisation scheme detailed in previous Oversight Board reports has continued to be applied during 2017.

3.7 The programme build process remains broadly as previous years. The operators, NCSC and HCSEC collaboratively prioritise the work of HCSEC. This is necessary to balance the sometimes-competing constraints and requirements for the best benefit of the UK, for example not allowing a particular operator to dominate the programme of work due to commercial pressures. The final programme is signed off by the NCSC Technical Director or NCSC Technical Director for Telecommunications on behalf of the Oversight Board and kept under review during the year by HCSEC. Where HCSEC believes modifications to the programme are necessary, a lightweight process involving the NCSC and the relevant operators is used to manage and approve any modifications.

3.8 Little has changed in terms of high level prioritisation of equipment, although the scale and scope of Huawei's involvement in the UK telecoms sector means there is a significant pipeline of work for HCSEC to manage. At present, HCSEC manages

that pipeline well. The results of HCSEC's work is reported directly to the operators and they are expected to feed them into their corporate risk management processes.

Configuration Management and Binary Equivalence

3.9 The previous Oversight Board report spoke to two significant issues. The first of these was the extraction by Huawei HQ of a subset of source code from configuration managed repositories for onward delivery to HCSEC. The second was the failure of Huawei R&D to repeatably build a product to a consistent binary. As described in the previous Oversight Board report, this means that any assurance provided by the overall risk management strategy, and therefore the Oversight Board, is currently limited.

3.10 The Oversight Board agreed with Huawei HQ a timetable for the redelivery of all source code for the products previously delivered to HCSEC, with all code having been redelivered by December 2017. The redelivery of code packages was completed three months ahead of the deadline.

3.11 HCSEC have observed that all new packages contain more code. If the Binary Equivalence Programme completes and is successful, then HCSEC should be able to verify that all products build to the binary running in the UK network. It is important that this work is completed quickly.

3.12 The last report talked about rescoping the division of effort between HCSEC and Huawei R&D, with Huawei R&D expected to take on more of the mandrolic work to show binary equivalence, leaving HCSEC to perform a verification function.

3.13 This rescoping started with Huawei R&D performing some work to understand the underlying issues observed by HCSEC in performing repeatable builds for products. This work showed that the underlying engineering and build process was not repeatable.

3.14 Huawei R&D was asked by NCSC and HCSEC to perform analysis of four specific products from different product groups which showed that the underlying

engineering issues, including the failure to reproduce builds, are consistent across the various product lines.

3.15 HCSEC have worked with Huawei R&D to try to correct the deficiencies in the underlying build and compilation process for these four products. This has taken significant effort from all sides and has resulted in a single product that can be built repeatedly from source to the General Availability (GA) version as distributed. This particular build has yet to be deployed by any UK operator, but we expect deployment by UK operators in the future, as part of their normal network release cycle. The remaining three products from the pilot are expected to be made commercially available in 2018H1, with each having reproducible binaries. The engineering changes have not yet been integrated into the wider development process. A second batch of products has been selected by NCSC, the operators and HCSEC and work on these should complete by the end of 2018H1, with all remaining products to follow. Assuming the continued success of the initial trials, it is the NCSC and Oversight Board expectation that this will be completed by mid 2020.

3.16 It is the NCSC intent that all products deployed in the UK will have repeatable builds and that HCSEC will be able to routinely show equivalence between the binary installed in UK networks and the binary that can be built from the source code held by HCSEC. This verification should be completed for every product version deployed in the UK that has been assessed by HCSEC. It is important that all products can be built in this way to enable the risk-based approach to HCSEC's prioritisation of work.

3.17 The Chairman of the Oversight Board had previously written to the National Security Adviser in February explaining the issue. Details of the next phase of this work were presented to the Oversight Board at the March meeting where the Board approved the plan. Work continues to remediate the engineering process issues in other products that are deployed in the UK, prioritised based on risk profiles and deployment volumes. This work should give us the ability to provide end-to-end assurance that the code analysed by HCSEC is the constituent code used to build the binary packages executed on the network elements in the UK.

3.18 Until this work is completed, the Oversight Board can offer only limited assurance due to the lack of the required end-to-end traceability from source code examined by HCSEC through to executables use by the UK operators.

Third Party Component Support Issue

3.19 A technical visit to Shenzhen was scheduled for September 2017 for NCSC, HCSEC and the UK Operators to discuss with Huawei HQ the progress around source code redelivery to HCSEC and binary equivalence. Previous technical visits have discussed Huawei's management of third party components imported as part of a product build, both commercial and open source. During a review of the programmes of work being undertaken, NCSC identified that not all components are managed through this process and, in particular, security critical third party software used in a variety of products was not subject to sufficient control.

3.20 It is now apparent that third party software, including security critical components, on various component boards will come out of existing long-term support in 2020, even though the Huawei end of life date for the products containing this component is often longer. Huawei has provided the Oversight Board with data on the extent to which this affects the UK deployments. NCSC has determined how the issue directly affects the security and reliability of deployed products and has provided the Oversight Board its opinion that this issue limits the ability of HCSEC's efforts to contribute to the overall assurance strategy in a sustainable manner.

3.21 There have been a number of detailed technical discussions between Huawei R&D and HCSEC, some including NCSC. These discussions are working towards a full understanding of the problem, a short-term mitigation plan and a more strategic fix for the underlying cause of the problem. However, there is a significant risk in the UK telecoms infrastructure if Huawei and the operators are unable to support these boards long-term.

3.22 A range of technical and contractual solutions are being discussed between the operators, NCSC, HCSEC and Huawei R&D. Any short-term mitigation obviously needs to be cognisant of the realities of the UK telecoms networks and the operators' testing and release cycles.

3.23 It is expected that the Oversight Board will receive an update on progress at its June meeting, to be held at Huawei's facilities in Shanghai, with NCSC and HCSEC working with Huawei technical teams on the detailed plans.

Summary of NCSC Technical Competence Review

3.24 The work of HCSEC in 2017 has continued capability development in the underpinning tooling necessary to provide assurance and technical security artefacts to the UK operators at the scale necessary given Huawei's position in the UK market. Through 2017, HCSEC has continued to find issues in Huawei products, demonstrating their continued ability to discover weaknesses in the Huawei product set.

3.25 HCSEC continues to have world class security researchers who are creating new tools and techniques to provide assurance in the complex sphere of telecommunications, while taking into account Huawei's unique engineering and security processes.

3.26 The work conducted by HCSEC on the binary equivalence, build process and subsequent understanding of the recurrent third party component management and support problem shows that they are competent in the field to the level necessary to independently verify Huawei R&D claims and satisfy the Oversight Board requirements.

3.27 The NCSC believes that HCSEC remains competent in the areas of technical security necessary to advise the operators, NCSC and the Oversight Board as to the product and solution risks admitted by the use of Huawei products in the UK telecoms infrastructure. The NCSC's report to the Oversight Board is that HCSEC continues to provide unique, world class cyber security expertise to assist the Government's ongoing risk management programme with the UK operators.

Conclusion: technical assurance

3.28 NCSC still believes that the assurance model including HCSEC is the best way to manage the risk of Huawei's involvement in the UK telecommunications sector. The model is predicated on industry good practice security and engineering in Huawei. Overall, given this account, the NCSC has advised the Oversight Board that it is less confident that NCSC and HCSEC can provide long term technical assurance of sufficient scope and quality around Huawei in the UK. This is due to the repeated discovery of critical shortfalls, including but not limited to BEP and the third party component support issue, in the Huawei engineering practices and processes that will cause long term increased risk in the UK. These risks are not due to any issue with HCSEC's staffing and capabilities. Obviously, significant work will be required in managing these risks both short term and long term. The Oversight Board will be looking to HCSEC to continue to ensure that Huawei are making appropriate remediations and to advise the Oversight Board, the UK operators and the NCSC of any issues arising.

3.29 A further medium-term issue that the Oversight Board must take account of is the shift in architecture and technology brought about by things like software defined networking, virtualisation, MVNO proliferation and edge compute architectures such as 5G, along with changes in the operational models of many telecommunications operators. NCSC will need to revisit the technical assessment, including how HCSEC contributes to mitigation, and advise the Oversight Board on what mechanisms may be appropriate to continue to gain the required assurance in the use of Huawei equipment in the UK telecommunications environment.

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SECTION IV: The work of the Board: Assurance of independence

4.1 This section focuses on the more general work of the Oversight Board beyond its oversight of the technical assurance provided by HCSEC. For the fourth year running, the Board commissioned and considered an audit of HSCEC's required operational independence from Huawei HQ. This was the most effective way, in the Board's view, of gaining assurance that the arrangements were working in the way they were designed to work in support of UK national security. The principal question for examination by the audit was whether HCSEC had the required operational independence from Huawei HQ to fulfil its obligations under the set of arrangements reached between the UK Government and the company in 2010. This section provides an account of the process by which the audit took place, and a summary of the key findings.

Appointing Ernst & Young as auditors

4.2 Ernst & Young LLP (E&Y) were appointed to carry out the first HCSEC audit in 2014, following a rigorous process during which GCHQ invited three audit houses to consider undertaking the management audit and sought their recommendation as to the appropriate audit standard and process to be followed. E&Y undertook the second audit in 2015 and in 2016, at the NCSC's instigation, they were retained to provide audit services for the subsequent three years, that is until November 2019. E&Y's Annual Management Audit was conducted in accordance with the International Standard on Assurance Engagements (ISAE) 3000.

4.3 The Oversight Board agreed a three stage approach to the audit, which broadly followed that of previous years:

i. An initial phase to assess the control environment and agree the scope and key issues for review. This phase was completed by November 2017;
ii. A second phase to run a rehearsal audit of the design and operation of the controls in place to support the independent operation of HCSEC. This phase was completed during November 2017;
iii. A final audit phase comprising the full year end audit during December 2017, with the report presented to the NCSC, HCSEC and Huawei HQ in February 2018 and the full Oversight Board in March 2018.

The nature and scope of the audit

4.4 The audit assessed the adequacy and the operation of processes and controls designed to enable the staff and management of HCSEC to operate independently of undue influence from elsewhere in Huawei. The principal areas in scope were: Finance and Budgeting; HR; Procurement; Evaluation Programme Planning; Cooperation and Support from elsewhere in Huawei; and Evaluation Reporting. For all the review areas listed, E&Y took into account that the operation of HCSEC must be conducted within the annual budget agreed between Huawei and HCSEC.

4.5 The Oversight Board agreed some exclusions to the scope of the audit. Specifically, they agreed that the audit would not:

- Opine as to the appropriateness of the overall governance model adopted to support the testing of Huawei products being deployed in the UK Critical National Infrastructure;
- Assess the technical capability of HCSEC, the competency of individual staff or the quality of the performance of technical testing;
- Assess physical access to HCSEC or logical access to its IT infrastructure. Nor would it look at the resilience of the infrastructure in place or at Disaster Recovery or Business Continuity planning.

Headline audit findings

4.6 The HCSEC Annual Management Audit January 2018 comprised a rigorous evidence-based review of HCSEC processes and procedures. The audit report was produced by a team of DV cleared staff from Ernst & Young; the fieldwork was conducted by an experienced Manager and led by Senior Manager. A Partner with Technology and Assurance subject matter knowledge acted as quality reviewer, and a second review of the final report was performed by an Ernst & Young Executive Director.

4.7 In summary, Ernst & Young concluded that there were no major concerns about the independent operation of HCSEC. The audit report's principal conclusion said:

"With the exception of the findings below [two findings rated as 'Low']*, the controls evaluated were considered to be effective as per the control descriptions and agreed test procedures. In some instances, it was noted that there is the opportunity to further strengthen the control regime or to improve the efficiency of the audit process and these have been noted below as "advisory" recommendations as opposed to identified control deficiencies."*

4.8 The audit report identified two control weaknesses within the HCSEC control environment for the Board to consider. The weaknesses were both rated as "Low", meaning that action should be considered to reduce an exposure which results in a limited impact to some aspects of the independent operation of HCSEC, but which in itself would be unlikely to compromise the independence of HCSEC overall. There were another two advisory issues, which were noted as potential minor improvements in the overall control regime. The audit findings were presented to the Board in its March meeting with an Ernst & Young Partner in attendance to brief the Board. The Oversight Board discussed each of the identified weaknesses and advisory notes in the audit and agreed an approach for each one.

Control Weakness

4.9 In summary, the area of control weakness identified, and the agreed response, relate to the following area:

i. Request and Retain Evaluation Plan Sign-Off

4.10 The evaluation plan, which outlines which products will be tested at which points of the year, is discussed with the NCSC when it is being created. Discussion with HCSEC management identified that the plan was presented to the NCSC at a scoping meeting but no evidence that this plan was approved was available. This is a repeat finding from last year.

4.11 Following review and agreement of the evaluation plan with NCSC, HCSEC should ensure that they obtain a formal confirmation that the evaluation plan is fit for purpose and retain this in their records. This should take the form of either written approval (e.g. via email) from NCSC or in the form of agreed minutes

following a meeting with NCSC hosted by HCSEC. The process has been further updated such that the NCSC Technical Director for Telecoms now has delegated authority to sign off the evaluation plan, with an escalation route when necessary which will hopefully address the issue.

ii. Budget setting and ongoing financial review

4.12 The audit identified that the agreed process for establishing and approval of HCSEC's budget for the year under review had not been fully followed. Formal sign-off from each member of the HCSEC SMT (Senior Management Team) had not been formally obtained.

4.13 This control has historically been performed by HCSEC senior leadership; it is noted that there has been a significant change in senior leadership this year. Going forward, an auditable record of key decisions on the setting of the budget should be retained – particularly the explicit approval of the HCSEC SMT following the final iteration of value.

Advisory Notices

4.11 Two advisory notices were identified by the audit, relating to the recording and retention of specific, auditable information:

i. RFIs returned outside SLA period

4.12 Requests for information made to Huawei were not always returned inside the stated SLA period. In their tests the auditors identified that 4 requests for hardware were completed outside of the stated 12 week SLA period.

4.13 In discussion with HCSEC it was noted that, although specified in the Terms of Reference, the SLA is 'aspirational' and that non-adherence would not necessarily adversely impact evaluation performance. In practice there is "slack" built into the delivery to accommodate late returns. To clarify for the purposes of review, RFIs

could be updated to include a "required by" date (of no earlier than the SLA period) with the intention that this is strongly adhered to and escalated when it is breached.

ii. Monitoring of spend versus budget has not been well maintained over the audit period.

4.14 Although testing of controls on expenditure did not identify any evidence that HCSEC spend had been restricted, and accordingly no undue influence exerted on its independent operation, it is difficult to verify if HCSEC spend in the year was within the agreed final budget for 2017.

4.15 Over the course of the year HCSEC made amendments to the set budget value that they track spend against (e.g. for depreciation rather than cash spend on the new premises and staff bonuses); these changes were not clearly documented.

4.16 Internal monitoring, in the form of reconciliation between spend and budget is performed informally and on an ad-hoc basis, and there is no record maintained of these reviews Related, there was also a discrepancy between the values reported by the Huawei UK finance system and those maintained by HCSEC, showing higher spend on the Huawei finance system than that tracked internally by HCSEC.

4.17 Changes to the budget from proposal through to approval should be documented. The final approved budget should be consistent with the figures monitored by HCSEC internally. If errors or accounting corrections are required this should be documented such that there is traceability between the approved value and the actual amount spent in the year.

Prior year issues and current status

4.14 **Appendix B** provides a summary of the issues and observations from the previous year's report, published in 2017.

Overall Oversight Board conclusions of the audit

4.16 Taking the audit report in its totality, the HCSEC Oversight Board has concluded that the report provides important, external reassurance from a globally

respected company that the arrangements for HCSEC's operational independence from Huawei Headquarters are operating robustly and effectively, and in a manner consistent with the 2010 arrangements between the Government and the company. Four issues – two low rated finding and two advisory issues – have been identified.

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SECTION V: Conclusions

5.1 The Oversight Board has now completed its fourth full year of work. Its two meetings and its work out of Committee have provided a useful enhancement of the governance arrangements for HCSEC.

5.2 The key conclusions from the Board's fourth year of work are:

i. It is evident that HCSEC continues to provide unique, world-class cyber security expertise and technical assurance of sufficient scope and quality as to be appropriate for the current stage in the assurance framework around Huawei in the UK

ii. However, Huawei's processes continue to fall short of industry good practice and make it difficult to provide long term assurance. The lack of progress in remediating these is disappointing. NCSC and Huawei are working with the network operators to develop a long-term solution, regarding the lack of lifecycle management around third party components, a new strategic risk to the UK telecommunications networks. Significant work will be required to remediate this issue and provide interim risk management.

iii. The HCSEC Oversight Board is assured that the Ernst & Young Audit Report provides important, external reassurance that the arrangements for HCSEC's operational independence from Huawei Headquarters is operating robustly and effectively, and in a manner consistent with the 2010 arrangements between the Government and the company. The issue identified was rated as low risk and two further advisory issues were identified.

5.3 Overall therefore, the Oversight Board has concluded that in the year 2017-2018, HCSEC fulfilled its obligations in respect of the provision of security and engineering assurance artefacts to the NCSC and the UK operators as part of the strategy to manage risks to UK national security from Huawei's involvement in the UK's critical networks. However, the execution of the strategy exposed a number of risks which will need significant additional work and management. The Oversight Board will need to pay attention to these issues.

5.4 Additionally, it is hoped that this report continues to add to Parliamentary – and through it, public – knowledge of the operation of the arrangements and the transparency with which they are operated.

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Appendix A : Terms of Reference for the Huawei Cyber Security Evaluation Centre Oversight Board

1. Purpose

This Oversight Board will be established to implement recommendation two of the National Security Adviser's Review of the Huawei Cyber Security Evaluation Centre (HCSEC). The Oversight Board's primary purpose will be to oversee and ensure the independence, competence and therefore overall effectiveness of HCSEC and it will advise the National Security Adviser on this basis. It will work by consensus. However, if there is a disagreement relating to matters covered by the Oversight Board, GCHQ, as chair, will have the right to make the final decision.

The Board is responsible for assessing HCSEC's performance relating to UK product deployments. It should not get involved in the day-to-day operations of HCSEC.

2. Scope of Work

2.1 In Scope

The Oversight Board will focus on:

- HCSEC's assessment of Huawei products that are deployed or are contracted to be deployed in the UK and are relevant to UK national security risk.
- The independence, competence and therefore overall effectiveness of HCSEC in relation to the discharge of its duties.

2.2 Out of Scope

- All products that are not relevant to UK national risk;
- All products, work or resources for non UK-based deployment, including those deployed outside the UK by any global CSPs which are based in the UK;
- The commercial relationship between Huawei and CSPs; and
- HCSEC's foundational research (tools, techniques etc.) which will be assessed

and directed by GCHQ.

3. Objectives of the Oversight Board

3.1 Annual Objectives and Report to the National Security Adviser

To provide a report on the independence, competence and effectiveness of HCSEC to the National Security Adviser on an annual basis, explicitly detailing to what extent HCSEC has met its in-year objectives as set by the Board. This will draw upon the Annual Management Audit, the Technical Competence Review and will specifically assess the current status and the long term strategy for resourcing HCSEC.

All UK CSPs that have contracted to use HCSEC for assurance in the context of management of UK national risk for deployments shall be consulted.

In the event of a change to the operation of HCSEC, or the emergence of any other factor that affects HCSEC's security posture, HCSEC will report this to the Oversight Board in a timely manner. GCHQ [or any other member of the Oversight Board] shall also be expected to inform the Oversight Board of any factor which appears to affect the security posture of HCSEC.

3.2 Commission Annual Management Audit

To assure the continued independence of HCSEC from Huawei HQ, the Oversight Board will commission a management audit to be performed by security cleared UK auditors; this will be funded by UK Government. The scope of the audit shall be as set out in the Huawei HQ Letter of Authorisation (Operational Independence) to HCSEC (as set out in Annex 3), or other agreed standards, as agreed by the Oversight Board. This will include the independence of budget execution and whether HCSEC were provided with the timely information, products and code to undertake their work.

The Oversight Board will ensure the scope of any such audit is appropriate and the auditor shall be agreed by the Chair and Deputy Chair.

The audit report mentioned in section 3.2 and 3.3 shall be treated as confidential information and subject to section 8.

3.3 Commission Technical Competence Review

To provide assurance that the functions performed by HCSEC are appropriate in terms of the wider risk management strategy as defined by GCHQ and the CSPs. The Oversight Board will commission GCHQ to undertake an audit of the technical competence of the HCSEC staff, the appropriateness and completeness of the processes undertaken by HCSEC and the strategic effects of the quality and security of Huawei products relevant to UK national security risks. GCHQ as part of the annual planning process will advise HCSEC of any enhancements in technical capability they wish to see developed by them within the year.

3.4 Process to Appoint Senior Management Team

The Oversight Board will agree the process by which GCHQ will lead and direct the appointment of senior members of staff of HCSEC. However, the Oversight Board will not be directly involved but will receive updates on any developments from GCHQ.

3.5 Timely Delivery

The Oversight Board will agree the formalisation of the existing arrangements for code, products and information to be provided by Huawei HQ to HCSEC to ensure that the completion of evaluations are not unnecessarily delayed.

3.6 Escalation / Arbitrator for issues impacting HCSEC

Board members should inform the Oversight Board in a timely manner in the event that an issue arises that could impact the independence, effectiveness, resourcing or the security posture of HCSEC. Under these circumstances the Board may convene an extraordinary meeting.

4. Oversight Board Membership

The Board will initially consist of the following members. Membership will be reviewed annually. The National Security Advisor will appoint the Chair of the Board. Membership with then be via invitation from the Chair.

- GCHQ – Chair (Ciaran Martin, CEO NCSC)
- Huawei HQ – Deputy Chair (Ryan Ding, Executive Director of the Board)
- Huawei UK Managing Director
- Huawei UK Communications Director
- HCSEC Managing Director
- Cabinet Office Director, Cyber Security, National Security Secretariat
- NCSC Technical Director
- Whitehall Departmental representatives: (Deputy Director, Head of Telecoms Security, DCMS, Head of Cyber Policy Hub, Office for Security and Counter Terrorism, Home Office)
- Current CSP representatives: BT CEO Security; Director Group Security, Vodafone

There will be up to 4 CSP representatives at any one time. CSPs are appointed to represent the industry view on an advisory capacity to the board[1]. In the case of an actual or perceived commercial conflict of interest or prospect of commercial advantage the relevant CSP will be expected to recuse themselves from the relevant board discussion. CSPs that do not sit on the Oversight Board will receive regular updates and information from the Secretariat and they can feed in comments and requirements through the Secretariat. The Secretariat will ensure that no information which would be deemed commercially sensitive between CSPs is circulated to the member CSPs. Non-member CSPs may be invited to attend on an ad hoc basis.

5. Meeting Frequency and Topics

It is expected that the Oversight Board will meet three times per year, more frequently if required.

[1] The term 'advisory capacity' is used in relation to the CSP members acting on a personal, industry expert basis rather than representing their companies. They remain full members of the Oversight Board.

- Meeting One – will be to set the high level objectives of HCSEC as relevant to the scope of the Oversight Board, based on CSP contractually confirmed requirements to HCSEC.

- Meeting Two – mid-year will be to assess progress of HCSEC in achieving their objectives

- Meeting Three – end of year will be to assess the delivery of objectives, and to review the findings of the Annual Management Audit and the Technical Competence Review to develop the annual report for the National Security Adviser.

6. Reporting

The Oversight Board will provide an annual report to the National Security Adviser addressing the topics set out at paragraph 3.1. The National Security Adviser will provide copies of this report to the National Security Council and a summary of key points to the Chairman of the Intelligence and Security Committee of Parliament. All reports will be classified according to the sensitivity of their contents and will be distributed at the discretion of the National Security Adviser.

7. Modification to the Oversight Board Terms of Reference (TORs)

The Board's intent is that these Terms of Reference are modified only when absolutely necessary. The following process shall be used to amend the Terms of Reference when necessary:

- Any modification to the Terms of Reference requires a specific topic on the Oversight Board Agenda and must be discussed at a face-to-face meeting.

- The proposed changes and text should be distributed to the OB members at least 7 working days in advance of the meeting;

- The proposed amendment shall be discussed at the Oversight Board meeting and may be amended after all members have reached a consensus.

- The final text of the amendment shall be formally confirmed in writing by all Oversight Board members.

Upon final agreement, updated Terms of Reference will be distributed to all Oversight Board members.

8. Secretariat

GCHQ will provide the secretariat function.

9. Non-Disclosure Obligation

Without prejudice to paragraph 6, all information provided to any Oversight Board Member or third-party (together a "receiving party") in connection with the operation of the Oversight Board shall be treated as confidential information which shall not be copied, distributed or disclosed in any way without the prior written consent of the owner of the information. This obligation shall not apply to any information which was in the public domain at the time of disclosure otherwise than by the breach of a duty of confidentiality. Neither shall it apply to any information which was in the possession of a receiving party without obligation of confidentiality prior to its disclosure to that party. Nor shall it apply to any information which a receiving party received on a non-confidential basis from another person who is not, to the knowledge and belief of the receiving party, subject to any duty not to disclose that information to that party. Nor shall it prevent any receiving party from complying with an order of Court or other legal requirement to disclose information.

Appendix B

Issues raised in the 2016-2017 Audit and current status

The 2017-2018 Audit reviewed progress against addressing the following issue that was highlighted in the 2016-2017 report. The issue was rated as "Low".

iii. Request and Retain Evaluation Plan Sign-Off

The NCSC process was updated to attempt to ensure that the NCSC Technical Director formally signed off the plan in a timely manner. Unfortunately, the finding was repeated in the 2017-2018 audit. The process has been further updated such that the NCSC Technical Director for Telecoms now has delegated authority to sign off the evaluation plan, with an escalation route when necessary.

The two advisory notices were addressed through updating of HCSEC internal processes.

5G OVERVIEW

July 2018

Communications Security Establishment
Centre de la sécurité des télécommunications

Canada

Pages 37 to / à 38

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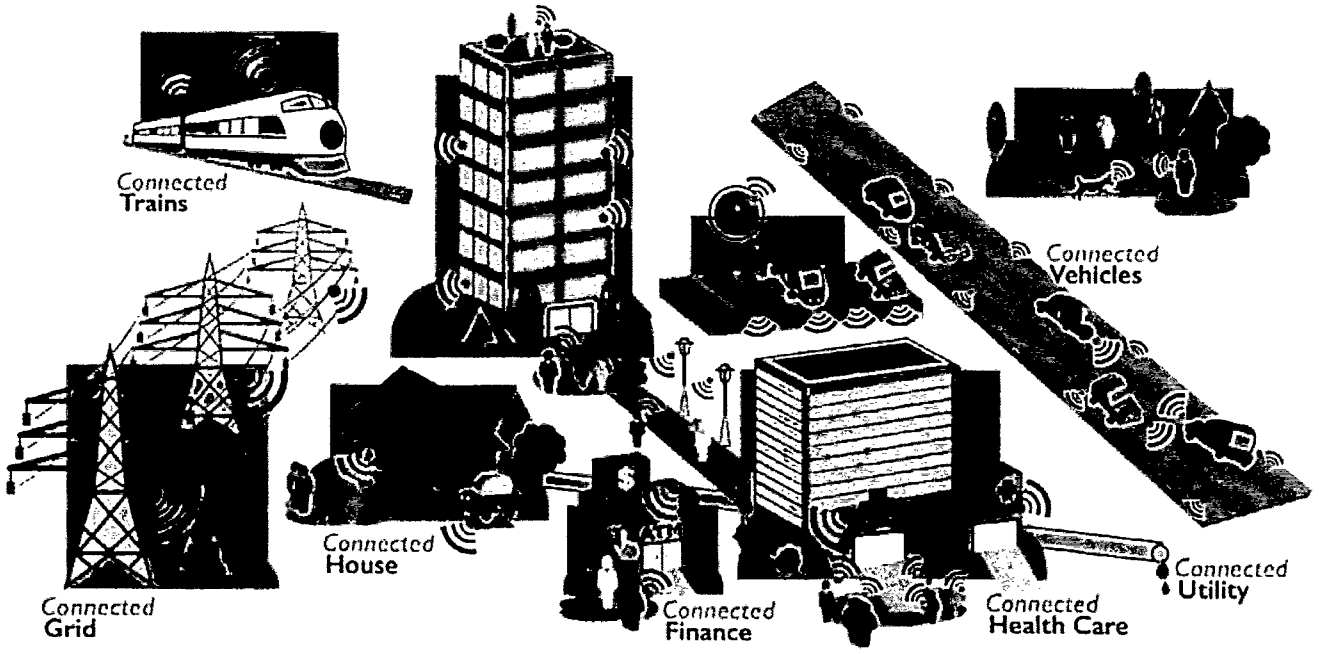
de la Loi sur l'accès à l'information

...to the whole economy

5G



What is 5G

- Faster (xMBB)
  - 4G (100Mbps) vs 5G (10Gbps) 100x increase
- Massive connectivity (mMTC)
  - 4G (10K connections/km) vs 5G (1 million connections/km) 100x increase
- Real-time and reliable (uMTC)
  - Round trip delay 4G (50 ms not guaranteed), 5G (<1 ms guaranteed)
- Key driver for the fourth stage of the industrial revolution
  - 5G (Connectivity), Internet of Things (Sensors), Artificial Intelligence (Orchestration)

Key Takeaways

- 5G presents immense potential for social and economic benefit

  The mobile ecosystem's contribution to the North American economy will increase to more than $1 trillion by 2020—nearly 5% of the region's GDP. -GSMA, 2017

- [redacted]
- [redacted]

What's Next

- Continue to refine and implement Canada's 5G security roadmap
  - [redacted]
- Enable Canada to take full economic advantage of the transition to 5G
  - [redacted]
- Begin planning for 6G
  - Canada is a leader in 5G research and innovation (Ericsson & Huawei R&D in Kanata, AI technical leadership). [redacted]

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From:
Sent: July-30-18 10:41 AM
To:
Cc:
Subject: FW: DRC

Classification: SECRET//CANADIAN EYES ONLY

Hi All,

Can we please add to the DRC agenda?

Thanks,

From: [mailto:
Sent: July-30-18 10:07 AM
To:
Subject: RE: DRC

Classification: SECRET//CANADIAN EYES ONLY

Good morning

will be able to present a brief overview of the at tomorrow's DRC. There is no slide deck required for the talk.

Let us know if any further information is needed.

Thanks!

From: [mailto:
Sent: July-27-18 10:05 AM
To:
Cc: (PSEPC-SPPCC); (PSEPC-SPPCC); (PSEPC-SPPCC)
Subject: DRC -

Classification: SECRET//CANADIAN EYES ONLY

Hello,

At a previous DRC it was mentioned the CSE could provide an overview of for the community. Would you be able to do so at this upcoming DRC on Tuesday July 31?

Let me know!
Thanks,

National Security Operations Directorate – Direction générale des opérations de la sécurité nationale
Public Safety and Emergency Preparedness Canada – Sécurité publique et Protection civile Canada
Tel. – Tél.:

[redacted]

From: [redacted]
Sent: July-18-18 9:43 AM
To: Partridge, Shannon SK (DND-MDN)
Subject: [redacted]

Classification: SECRET//CANADIAN EYES ONLY

Hey –

Very basic summary below. Hope that helps, but give me a call if you need to discuss further. CSE will be briefing on this generally and thinking around it now [redacted]

[redacted]

[redacted]

From: [redacted]
Sent: May-11-18 5:17 PM
To: [redacted]
Subject: FW: [redacted] information
Attachments: [redacted]

Follow Up Flag: Follow up
Flag Status: Completed

Classification: SECRET//CABINET CONFIDENCE/CANADIAN EYES ONLY

From: [redacted] mailto: [redacted]
Sent: May-11-18 4:57 PM
To: [redacted]
Cc: [redacted]
Subject: FW: [redacted] information

Classification: SECRET//CABINET CONFIDENCE/CANADIAN EYES ONLY

Hi [redacted]

Some [redacted] docs attached below. [redacted]

Happy to provide you with a brief when I'm back [redacted]

Cheers,

[redacted]

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HUAWEI & ZTE

- The Government of Canada takes the security of our country's critical infrastructure very seriously.
- Canadians can be assured that the Communications Security Establishment works to address cyber security concerns to protect Canada's critical infrastructure from threats.
- Since 2013, CSE's Security Review Program has been in place to test and evaluate designated equipment and services considered for use on Canadian 3G and 4G/LTE networks, including Huawei.
- CSE, through the Canadian Centre for Cyber Security, will continue to provide advice and guidance regarding emerging technologies and systems of important to Canada and Canadians.
- Our Government takes security matters extremely seriously and goes to great lengths to ensure the integrity and protection of our facilities and information.

HUAWEI ET ZTE

- Le gouvernement prend la sécurité de ses infrastructures essentielles très au sérieux.

- Les Canadiens peuvent être certains que le Centre de la sécurité des télécommunications travaille en vue d'éliminer les préoccupations en matière de cybersécurité afin de protéger les infrastructures essentielles du Canada contre toute menace.

- Depuis 2013, le Programme d'examen de la sécurité du CSTC est en place afin de tester et d'évaluer l'équipement et les services qu'on envisage utiliser sur les réseaux canadiens 3G et 4G/LTE, y compris Huawei.

- Par l'entremise du Centre canadien pour la cybersécurité, le CSTC continuera de fournir des avis et des conseils concernant les technologies et systèmes en émergence qui sont importants pour le Canada et les Canadiens.

- Notre gouvernement prend les questions liées à la sécurité très au sérieux et ne ménage aucun effort pour assurer l'intégrité et la protection de nos installations et de l'information.

BACKGROUND

- On June 18, 2018, Senators on the United States Senate intelligence committee warned the federal government and other Five Eyes countries of the risks posed by Chinese smartphone and telecom equipment maker, Huawei. They indicated a desire to see a concerted response among allies, and made reference to the integrated nature of the U.S. and Canadian economies and infrastructures as a concern.

- Previously, former directors of Canada's key security agencies, Ward Elcock, John Adams and Richard Fadden, warned the federal government to cut Canadian ties with Huawei. The warning followed comments made by the heads of the CIA, FBI, National Security Agency and the Defence Intelligence Agency to the U.S. Senate intelligence committee that Huawei poses a cybersecurity threat to American customers.

- The media reported that security officials are particularly concerned that Huawei products in the context of emerging 5G network technologies could provide China with the capacity to conduct remote espionage, modify or steal information, or even shut down systems. John Adams, the former head of the Communications Security Establishment (CSE), was quoted in the article as saying that Huawei has long been a concern to Canadian and U.S. security and intelligence services.

- On May 4, 2018 media reported that the Pentagon banned the sale of Huawei and ZTE phones on military bases. These devices are not currently on sale on Canadian Armed Forces bases.

- On September 7, 2018, media reported that CSE has been testing Huawei's equipment for security vulnerabilities for the last five years. As part of its cyber security mandate, CSE works with telecommunications service providers representing over 99% of Canadian subscribers. In this role, CSE provides advice and guidance to mitigate supply chain risks in telecommunications infrastructures upon which Canadians rely, including, since 2013, a program that has been in place to test and evaluate designated equipment and services (including Huawei) considered for use on Canadian 3G and 4G/LTE networks. CSE accredits third party labs to conduct assurance testing in accordance with requirements outlined by CSE. CSE reviews the testing results and provides tailored advice and guidance to Canada's telecommunications sector. While non-disclosure agreements limit the degree to which CSE can comment on specific details, Canadians can be assured that the Government of Canada is working to make sure that robust protections are in place to safeguard the communications systems that Canadian rely on.

Name of PCO Policy Analyst. Nom de l'analyste du BCP : [redacted]
Marcoux

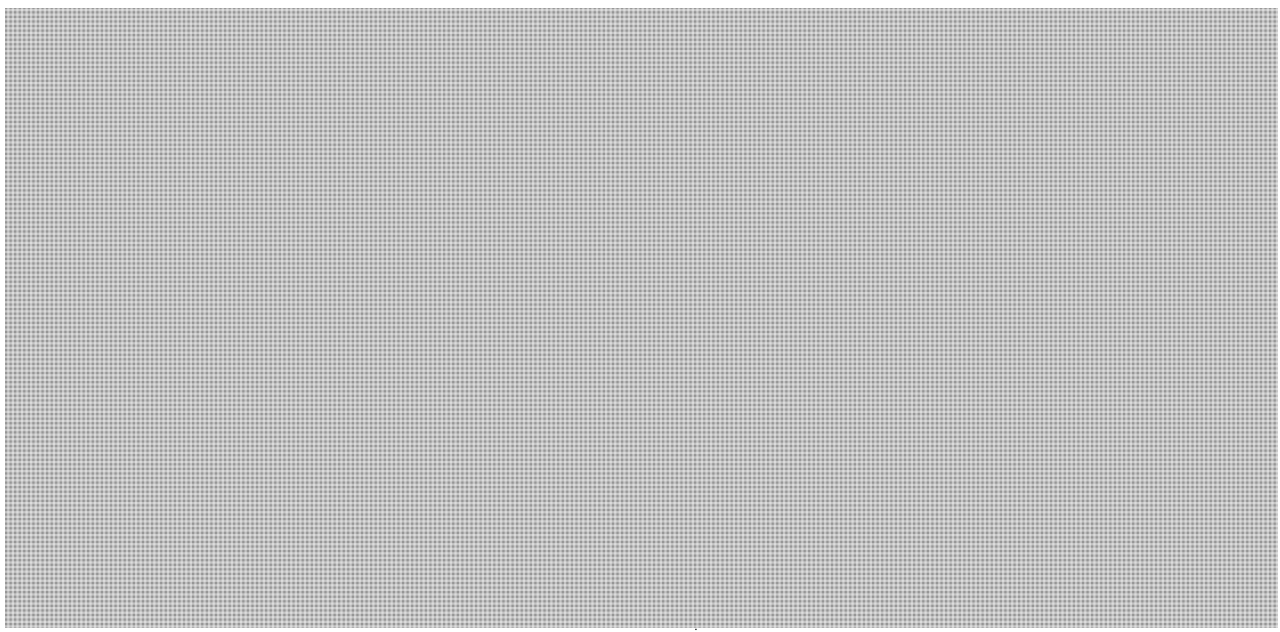
Secretariat. Secrétariat : Security and Intelligence

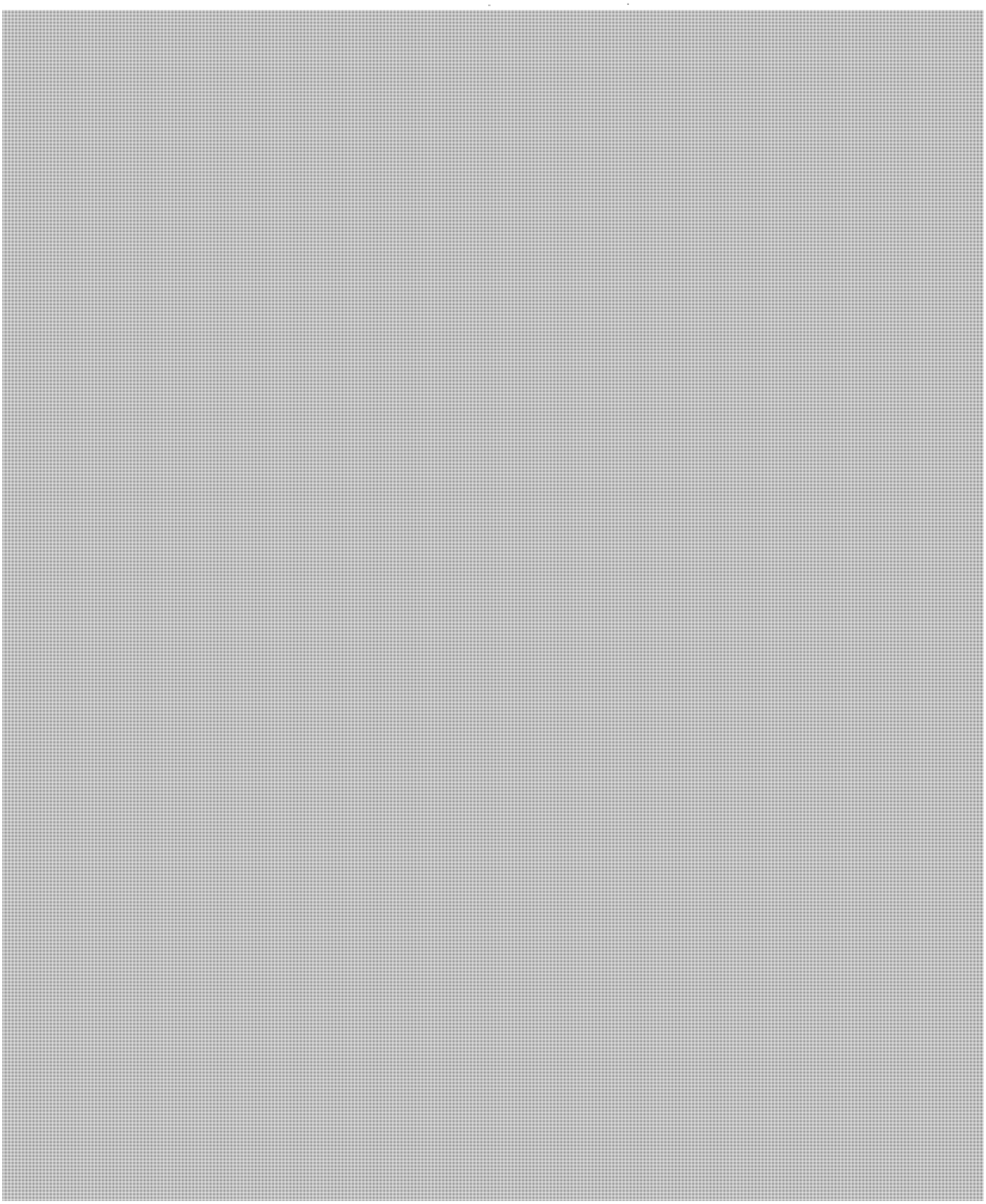
Telephone number. Numéro de téléphone : [redacted]

12/17/2018 8:33

Five Eyes

Background

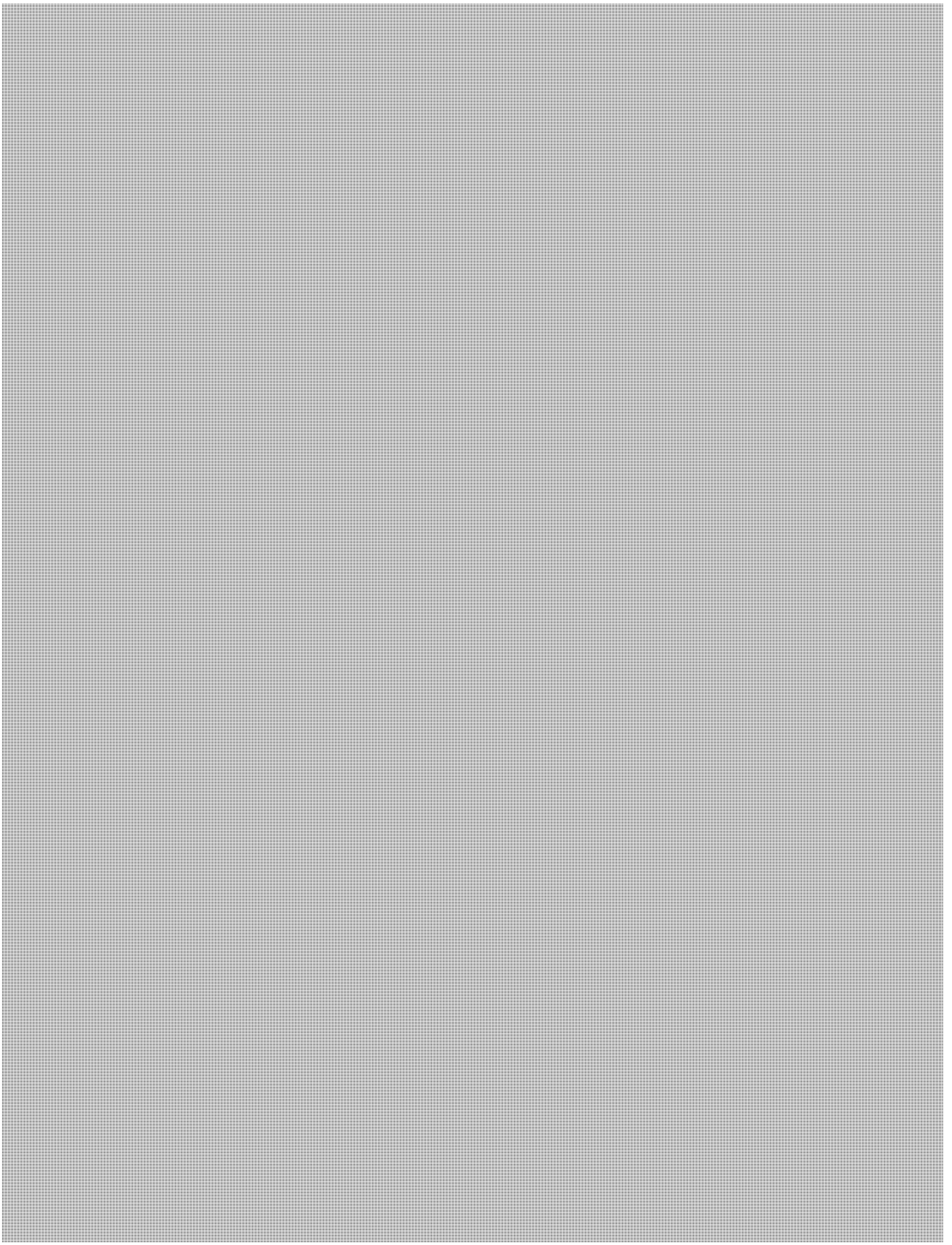




From:
Sent: Monday, April 15, 2013 3:30 AM
To:
Cc: Vigneault, David Clairmont, Lynda; (CSE-CST); (CSE-CST); Banerjee, Ritu;
(CSE-CST);
Banerjee, Ritu;
(CSE-CST);
(CSE-CST);
(CSE-CST);
(CSE-CST);
(CSE-CST);
(CSE-CST);
(CSE-CST);
(CSE-CST)
Subject:

Attachments:

Classification: SECRET //CANADIAN EYES ONLY



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SECRET (CEO)

Broader CI Sector Teleconference Call
_____ XX, 2013

Key Objectives

- [redacted]
- **Provide an overview of the Government of Canada's approach to supply chain security for telecommunications infrastructure; and**
- [redacted]

Introduction:

- One of the reasons that we wanted to hold this briefing was to bring you up to speed on several issues around technology supply chain security.

- Many of you will have seen news stories focusing on cyber espionage and the potential role of particular foreign companies. We wanted to take this opportunity to share more with you on the Government's assessment of this security risk, the initial actions we are taking, and to consider how we can work together to improve the security of Canada's telecommunications infrastructure.

- I should note that the content of this discussion is sensitive. [redacted] We ask you to please respect the confidentiality of this information.

- I would like to start by giving an overview [redacted] and provide an update on the Government of Canada's position [redacted]

Cyber Security [redacted]:

- [redacted]
- [redacted]

- [redacted]
- The Government of Canada faces cyber threats on a constant basis. [redacted]
- [redacted]
- To make real the [redacted] threat, here is an example.

[redacted]

- The greater threat comes from [redacted]

- [redacted]
- [redacted]

Revised Threat Assessment:

- The Canadian intelligence community has recently revised its threat assessment [redacted]
- [redacted]

Government of Canada's Approach:

- [redacted]
- [redacted]

[redacted]

- We have been monitoring the evolving threat situation and the Government is working at all levels to ensure that its strategy remains proportional to the risk [redacted]
- [redacted]
- [redacted]
- Beyond these specific items, there are ways to mitigate the risks [redacted]

- For our part, the Government of Canada will continue to implement measures to secure our networks. Shared Services Canada has invoked the National Security Exception for some major procurements, which ensures that they have the capacity to define security requirements for core transformation areas (data centers, email and networks) whenever a requirement exists to do so.

- As you may know, the Government provides threat and risk awareness briefings

Informing Risk Assessments through Broader Engagement:

-

- There are two immediate ways in which we can work together to address

-

- [redacted]
- [redacted]
- Ideally we'd like to hear back from you [redacted] by April X, 2013.

Closing:

- [redacted]
- [redacted]
- We would like to thank you for making yourselves available today. If you would like to follow up bilaterally, we will circulate contact information to facilitate any follow up discussions.

Provincial and Territorial Teleconference Call
April XX, 2013

Key Objectives:

- [redacted]
- **Provide an overview of the Government of Canada's approach to supply chain security for telecommunications infrastructure; and**
- [redacted]

Introduction:

- One of the reasons that we wanted to hold this call was to brief you on several issues around technology supply chain security.

- Many of you will have seen news stories focusing on cyber espionage and the potential role of particular foreign companies. We wanted to take this opportunity to share more with you on the Government's assessment of this security risk, the initial actions we are taking, and to consider how we can work together to improve the security of Canada's telecommunications infrastructure.

- I should note that the content of this discussion is sensitive. [redacted] We ask you to please respect the confidentiality of this information.

- I would like to start by giving an overview and provide an update on the Government of Canada's position

Cyber Security

-

-

- [redacted]
- The Government of Canada faces cyber threats on a constant basis. [redacted]
- [redacted]
- To make real the [redacted] threat, here is an example.

[redacted]

- [redacted]

- [redacted]
- [redacted]

Revised Threat Assessment:

- The Canadian intelligence community has recently revised its threat assessment [redacted]
- [redacted]

Government of Canada's Approach:

- [redacted]

- [redacted]

- We have been monitoring the evolving threat situation and the Government is working at all levels to ensure that its strategy remains proportional to the risk [redacted]

- [redacted]

- [redacted]

- Beyond these specific items, there are ways to mitigate the risks [redacted]

- For our part, the Government of Canada will continue to implement measures to secure our networks. Shared Services Canada has invoked the National Security Exception for some major procurements, which ensures that they have the capacity to define security requirements for core transformation areas (data centers, email and networks) whenever a requirement exists to do so.

- As you know, the Government provides threat and risk awareness briefings [redacted]

Informing Risk Assessments through Broader Engagement:

- [redacted]

- There are three immediate ways in which we can work together to address [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

- Ideally we'd like to hear back from you [redacted] by April X, 2013.

Closing:

- [redacted]
- [redacted]
- We would like to thank you for making yourselves available today. If you would like to follow up bilaterally, we will circulate contact information to set up any follow up discussion.

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Public Safety Canada | Sécurité publique Canada

Deputy Minister | Sous-ministre

Ottawa, Canada
K1A 0P8

(TOP SECRET/ //CEO)

DATE:

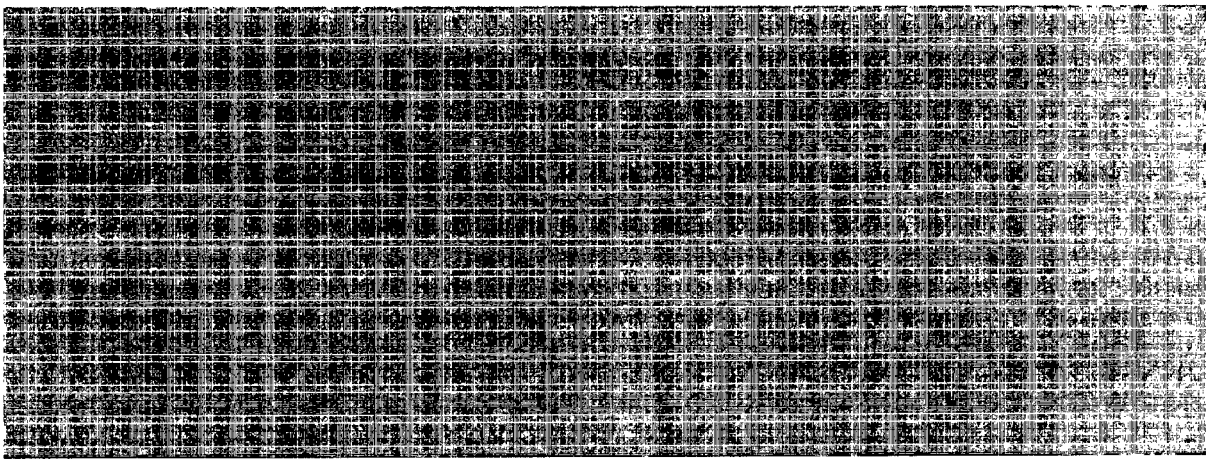
File No.: NS 6644 / PS-

MEMORANDUM FOR THE MINISTER

RESPONSE TO MINISTERIAL QUESTION

(For Information)

BACKGROUND



Should you require additional information, please do not hesitate to contact me or Ms. Monik Beauregard, Senior Assistant Deputy Minister, National and Cyber Security Branch at 613-990-4976.

Malcolm Brown

Enclosures:

Canada

Pages 691 to / à 692

are withheld pursuant to sections

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Public Safety Canada | Sécurité publique Canada

Senior Assistant Deputy Minister | Sous-ministre adjoint(e) principal(e)

Ottawa, Canada
K1A 0P8

TOP SECRET [redacted] CEO

DATE: June 6, 2018

File No.: PS-023259

BRIEFING NOTE TO THE DEPUTY MINISTER

DEPUTY MINISTER LEVEL MEETING ON [redacted]
(Information only)

PURPOSE

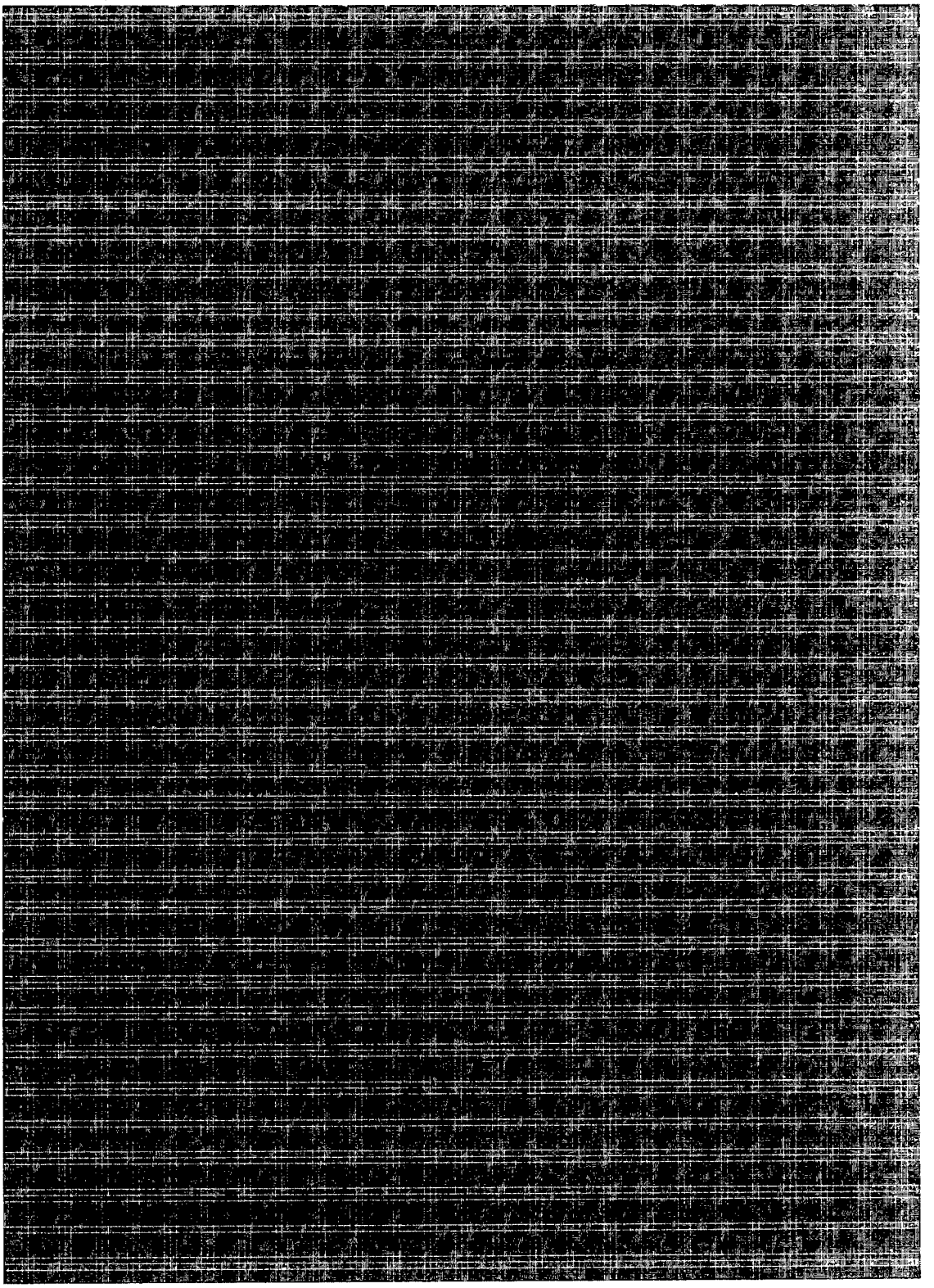
The purpose of this note is to provide you with contextual and background information on [redacted] in preparation for your upcoming meeting on July 6, 2018. This note will build on an ADM-level meeting held on July 3, 2018 during which [redacted]

BACKGROUND

[redacted]

Canada

CONSIDERATIONS



Should you require additional information, please do not hesitate to contact me or [redacted] Director General, National Security Operations Directorate, at [redacted]

Monik Beauregard

Enclosures: (0)

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Pages 729 to / à 737

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de la Loi sur l'accès à l'information

[redacted]

From: [redacted]
Sent: November-29-18 9:07 AM
To: [redacted]
Subject: FW: UPDATE: [redacted]

Classification: SECRET//[redacted]/CANADIAN EYES ONLY

FYI.

From: Bunghardt, Gregory
Sent: November-29-18 9:02 AM
To: [redacted]
Cc: [redacted] Devoe, Cody; Quinlan, Andrew; Gibson, Kelly-Anne; Sandford, Amanda; Brydges, Lucas; McIntosh, Sarah; Larose, Juline
Subject: RE: UPDATE: [redacted]

Classification: SECRET//[redacted]CANADIAN EYES ONLY

Thanks very much for this, [redacted] Very useful.

greg.

From: [redacted]
Sent: November-29-18 9:00 AM
To: Bunghardt, Gregory
Cc: [redacted] Devoe, Cody; Quinlan, Andrew
Subject: FW: UPDATE: [redacted]

Classification: SECRET//[redacted]CANADIAN EYES ONLY

[redacted]

From: [redacted] [mailto:[redacted]
Sent: November-28-18 10:54 PM
To: [redacted] (PCO) (PCO-BCP); [redacted] (PCO) (PCO-BCP); Yendall, Jonathan
Cc: [redacted] Abbott Kathleen [redacted] (PCO) (PCO-BCP); [redacted] INTERNATIONAL); Askari Rankouni Saam [redacted] PCO) (PCO-BCP); [redacted] (CSIS-SCRS); [redacted] (INTERNATIONAL); Careau Marie-Cecile [redacted] (PCO); [redacted] Chayer, Marie-Helene MH - Civ; Xavier Caroline [redacted] (PCO) (PCO-BCP); [redacted] Dalziel Alex [redacted] (PCO) (PCO-BCP) [redacted] (INTERNATIONAL); [redacted] Green Martin [redacted] (PCO) (PCO-BCP); IASManagement (PCO-BCP); Lacroix, Stephane; MacKillop, Karisa-Ann (CSE-CST); [redacted] (PCO) (PCO-BCP); Miller Bryan [redacted] (PCO) (PCO-BCP); [redacted] (CSE-CST); [redacted] (PCO); Therriault, Sylvain JCS - Cdr (DND-MDN); [redacted] (INTERNATIONAL); [redacted] (INTERNATIONAL); [redacted] (INTERNATIONAL);

(INTERNATIONAL); (INTERNATIONAL); Dewolfe, Jonathan (ISED); (INTERNATIONAL)
Subject: UPDATE:

Classification: SECRET/ ANADIAN EYES ONLY

An update

Kind regards,

From:
Sent: November-29-18 10:02 AM
Subject: New Zealand 5G - GCSB Assessment of Spark Proposal

Classification: SECRET // CANADIAN EYES ONLY
Classification: SECRET // RÉSERVÉ AUX CANADIENS

[redacted]

Below is the GCSB media statement as well as links to generic fact sheets. [redacted]

I've also copied several media articles that reflect the coverage in NZ's media. Two themes that have emerged recently through the media and public discourse are: a) without Huawei, you will pay more for your internet services; and, b) the US and Australia are pressuring us to do this. [redacted]

Mario

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https://www.gcsb.govt.nz/news/gcsb-statement/

GCSB statement

Posted November 28, 2018

The following can be attributed to the Director-General of GCSB, Andrew Hampton

The Government Communications Security Bureau (GCSB) regulates network security under the Telecommunications Interception Capability and Security Act (TICSA). The Act requires network operators to notify GCSB of certain proposed decisions, courses of action, or changes to their network.

As per Spark New Zealand's statement today, I can confirm the GCSB under its TICSA responsibilities, has recently undertaken an assessment of a notification from Spark. I have informed Spark that a significant network security risk was identified.

As there is an ongoing regulatory process I will not be commenting further at this stage. The GCSB treats all notifications it receives as commercially sensitive.

- For more information about TICSA click here [PDF, 210.39 KB]
- For more information about 5G click here [PDF, 270.08 KB]

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https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12168156

Not a ban - Andrew Little offers hope for Huawei, but Spark dubious

29 Nov, 2018 8:24am

Andrew Little says Spark can now work with Huawei to mitigate the security risk identified by the GCSB. Photo / Mark Mitchell.

[redacted]

By: Chris Keall
Business writer, NZ Herald
chris.keall@nzherald.co.nz@ChrisKeall

The GCSB's assessment that Huawei's 5G technology poses "significant national security risks" does not equate to a ban, Andrew Little said this morning.

Spark could still work with Huawei to address the security risk, the GCSB Minister said.

However, he was fuzzy on how many details of the classified security threat could be shared with the telco.

In its first comment on the controversy, Huawei also described events as an ongoing process.

Spark seemed dubious about whether Little's comments represented fresh hope.

"We would, of course, welcome any opportunity to achieve a different decision from the Government," a Spark insider told the *Herald* shortly after the GCSB Minister made his comments.

"That said, the fact we felt the need to make a market announcement yesterday should give you an indication, based on what we currently know of the GCSB position, of what we think are the prospects of changing that decision."

Yesterday afternoon, Spark pre-empted the government and GCSB by announcing the security agency's finding, and saying it could not now use Huawei gear for its pending 5G upgrade to its mobile network.

"The Director-General has informed Spark today that he considers Spark's proposal to use Huawei 5G equipment in Spark's planned 5G RAN would, if implemented, raise significant national security risks," Spark said.

"Under TICSA [The Telecommunications Interception Capability & Security Act], this means Spark cannot implement or give effect to its proposal to use Huawei RAN equipment in its planned 5G network."

"The role of the GCSB, at this point in the process, is to make an assessment when a telco wants to access new technology to their network. To access that against potential national security risks," Little said.

"That has been found in this case. That was what Spark was notified of yesterday.

"They [Spark] now have the option of coming back and working with the GCSB to see if it can mitigate those assessed risks ... That is the next part of the process if they choose to do that."

Little refused to say if the "significant national security risk" assessment was in part the result of intelligence about Huawei's alleged role in espionage, but he emphasised that it was a primarily a technical assessment.

Huawei said in a statement, "As the GCSB has noted, this is an ongoing process. We will actively address any concerns and work together to find a way forward."

Huawei says that it is a private company and is not controlled by Beijing. The deputy chief executive of its New Zealand operation, Andrew Bowater, has repeatedly told the *Herald*that no evidence has ever been tabled of Huawei posing a security threat.

Huawei currently provides network gear for Vodafone, Spark and 2degrees, as well as the Ultrafast Broadband (UFB) and Rural Broadband Initiative (RBI) rollouts.

Some commentators have said a finding against Huawei on 5G would mean that existing infrastructure would have to be ripped out - something that Telecommunications Users Association head Craig Young said would be an expensive and disruptive process.

But Little said that would not be necessary.

"The conventional [3G and 4G] technology has an infrastructure core and then peripheral technology such as cellphone towers and the like and they can - in effect - be kept separate, you cannot do that with 5G technology," he said.

Yesterday's development followed a US push, revealed on Friday, to persuade allies to drop Huawei.

But Little said this morning that the GCSB had arrived at an independent decision.

"I can say with considerable confidence that there's been no representations made to the GCSB from Australia, from the United States, from anywhere, about how it should go about making its decision," he said.

https://www.stuff.co.nz/business/108940155/Ministers-briefed-on-GCSBs-Huawei-5G-ban

Ministers briefed on GCSB's Huawei 5G ban

Tom Pullar-Strecker, Henry Cooke & Susan Edmunds08:14, Nov 29 2018

Huawei ban not political - GCSB Minister Andrew Little insists the decision to ban the tech giant Hauwei from Spark's 5G rollout isn't because the company is Chinese.

The Minister responsible for the Government Communications Security Bureau (GCSB) says Huawei has been blocked from providing 5G equipment to Spark because of the technology, not because it is Chinese. The decision was revealed on Wednesday. The GCSB rejected the deal, citing concerns about national security.

Andrew Little told RNZ he could not elaborate on what those concerns were. Installation of any new 5G technology had potential security implications, he said.

The United States and Australian governments have long expressed concerns about the security implications of using telecommunications equipment from China.

A spokeswoman for the Government Communications Security Bureau (GCSB) said the decision was the start of a process rather than the end of one.

Kiwi network operators had up to now appeared to have a relatively free hand to source equipment from Huawei, which is used extensively by Spark, 2degrees and in the delivery of ultrafast broadband.

But sources have indicated the Government was facing greater pressure to toe the line with its fellow members of the "Five Eyes" security alliance, which also include the UK and Canada.

Little said the GCSB had not been approached by Australia or United States as part of its process. Huawei has repeated denied intelligence work for any government.

He said Kiwis didn't have to worry about all of the Huawei technology that was currently in use.

Spark told by GCSB it can't use Huawei technology to build 5G network because of security risks The US and Australia have made a similar move over the Chinese company.

"This is an assessment related specifically to the notification Spark made under the particular legislation, it doesn't apply to any other technology that Spark is currently using," he said.

Little said other ministers had also been briefed about the assessment, when asked about possible diplomatic repercussions.

Spark notified the director-general of the GCSB, Andrew Hampton, of its planned approach to 5G, which it hopes to offer to customers by July 2020.

It is understood it was keen to know whether it could use Huawei as it prepares to negotiate its supply agreements.

Its plan involved deploying Huawei 5G equipment on its cellphone towers.

Spark said it had been told by the GCSB on Wednesday that plan would raise "significant national security risks".

It is understood the advice – if it stands – would in practice ban Huawei from participating in the roll-out of 5G technology in New Zealand, but there has been no suggestion that equipment already supplied by Huawei for other telecommunications networks would need to be removed.

Huawei in a statement said it was "looking into the situation."

"As the GCSB has noted, this is an ongoing process. We will actively address any concerns and work together to find a way forward," it said.

"As a leading global supplier of telecoms equipment, we remain committed to developing trusted and secure solutions for our customers. Huawei's 5G equipment is already being deployed by major carriers around the world, with whom we have signed more than 20 commercial 5G contracts."

Canterbury University professor Anne-Marie Brady, who fears she has been targeted by the Chinese Government for her research on its influence campaigns, said the GCSB's decision was an "about-face" and a change in policy.

"From the information we have about Huawei that's the right decision," she said.

A "fact sheet" provided by the GCSB stated the next step could be for Spark to explain how it could "prevent or mitigate" the risk the GCSB had identified. Alternatively it might withdraw its proposal.

Little said Spark did have the option of "coming back and working with the GCSB on any mitigation to the risk".

The GCSB said that if Spark did attempt to address its concerns, the GCSB would then have to decide whether to refer the matter to Little.

"The minister must have regard to different considerations from the director-general's determination, including the potential consequences that the direction may have on competition and innovation in telecommunication markets," the GCSB said.

But Paul Spain, chief executive of Auckland IT services firm Gorilla Technology, said the GCSB's decision made it "incredibly clear to Huawei and to the telcos where the lines will be drawn".

"The US have been putting pressure on their allies, New Zealand and the Five Eyes partners, to avoid using Huawei in their networks going forward," he said.

Another industry source said New Zealand had fared well from trying to maintain good relations with both the US and China, but had been put on the spot by the pressure over Huawei.

Spark said it would review the reasoning behind the decision and consider what further steps it could take.

"While we are disappointed with this decision, we are confident that the decision will not affect our plans to launch Spark's 5G network by July 2020, subject to the necessary spectrum being made available by the New Zealand Government," the company said in a statement.

Hampton confirmed its decision in a statement while not naming Huawei as the company whose equipment was the subject of its concerns.

"GCSB, under its Telecommunications (Interception Capability and Security) Act responsibilities, has recently undertaken an assessment of a notification from Spark," he said.

"I have informed Spark that a significant network security risk was identified. As there is an ongoing regulatory process I will not be commenting further at this stage. The GCSB treats all notifications it receives as commercially sensitive," he added.

Huawei's links to the Chinese Communist Party and the business environment in China, where even private companies have strong government connections, appear to have led to Huawei being considered a security threat. A more detailed explanation of the concerns raised by Huawei's involvement in the 5G roll-out can be found here.

Australia and the United States have blocked the firm from supplying 5G equipment for security reasons.

Spark has warned a ban would also impact its costs.

2degrees spokesman Mathew Bolland said it had not had a discussion with the GCSB on how its decision could impact its 5G plans and was "seeking clarity".

"Our comments on the importance of multiple vendors to deliver price competitiveness still stand, so if this announcement has a similar impact on 2degrees it will be a real disappointment for competition," he said.

"2degrees is, however, committed to building a 5G network," he added.

From: [redacted]
Sent: October-08-18 5:59 PM
To: [redacted](PCO); [redacted](PCO); Yendall, Jonathan
Cc: [redacted] Abbott Kathleen [redacted](PCO); [redacted] Askari Rankouhi Saam [redacted](PCO); [redacted] Careau Marie-Cecile [redacted]PCO); Chayer, Marie-Helene MH - Civ; Xavier Caroline [redacted](PCO); Dalziel Alex [redacted](PCO); England, Ken; [redacted] Green Martin (PCO); [redacted] IASManagement; Lacroix, Stephane; MacKillop, Karisa-Ann; [redacted](PCO); Miller Bryan [redacted](PCO); [redacted](PCO); Therriault, Sylvain JCS - Cdr; [redacted]
Subject: [redacted]

Classification: SECRET/[redacted]CANADIAN EYES ONLY

[redacted]

Pages 747 to / à 748

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[redacted]

- The Australian Department of Home Affairs webpage for the TSSRs is at http://www.homeaffairs.gov.au/about/consultations/telecommunications-sector-security-reforms

[redacted]

[redacted]
Counsellor/Conseiller
Security and Intelligence Liaison Officer to Australia and New Zealand / Agent de liaison au renseignement auprès de l'Australie et de la Nouvelle-Zélande
Canadian High Commission / Haut-commissariat du Canada / CNBRA
Tel: [redacted](unclass.)
Mitnet [redacted]
Hydra [redacted]

[redacted](unclass)

[redacted]

From: [redacted]
Sent: September-11-18 3:41 PM
To: [redacted]
Subject:
Attachments:

Classification: TOP SECRET/[redacted]/CANADIAN EYES ONLY

FYI

From: [redacted] mailto:[redacted]
Sent: September-11-18 3:10 PM
To: [redacted]
Subject: [redacted]

Classification: Top Secret/[redacted]Canadian Eyes Only
Classification: Très secret/[redacted]Réservé aux Canadiens
Not for PA / Ne pas classer

[redacted]

Cheers,

[redacted]

[redacted]

>>>**********[INFO DEPOT START / DÉBUT INFO DÉPÔT]**********
Sender / Envoyeur : [redacted]
Recipients / Receveurs [redacted](PSEPC-SPPCC); [redacted](PSEPC-SPPCC); [redacted](PSEPC-SPPCC); [redacted](PSEPC-SPPCC);
Subject / Sujet : [redacted]
Date : 9/11/2018 3:09:56 PM

Pages 751 to / à 759

are duplicates

sont des duplicatas

From:
Sent: July-19-18 11:18 AM
To:
Subject: FW:

Attachments:

Classification: TOP SECRET/

Of interest for assessment.

Grateful if you could distribute to full mailing list please.

Thanks,
Jenny

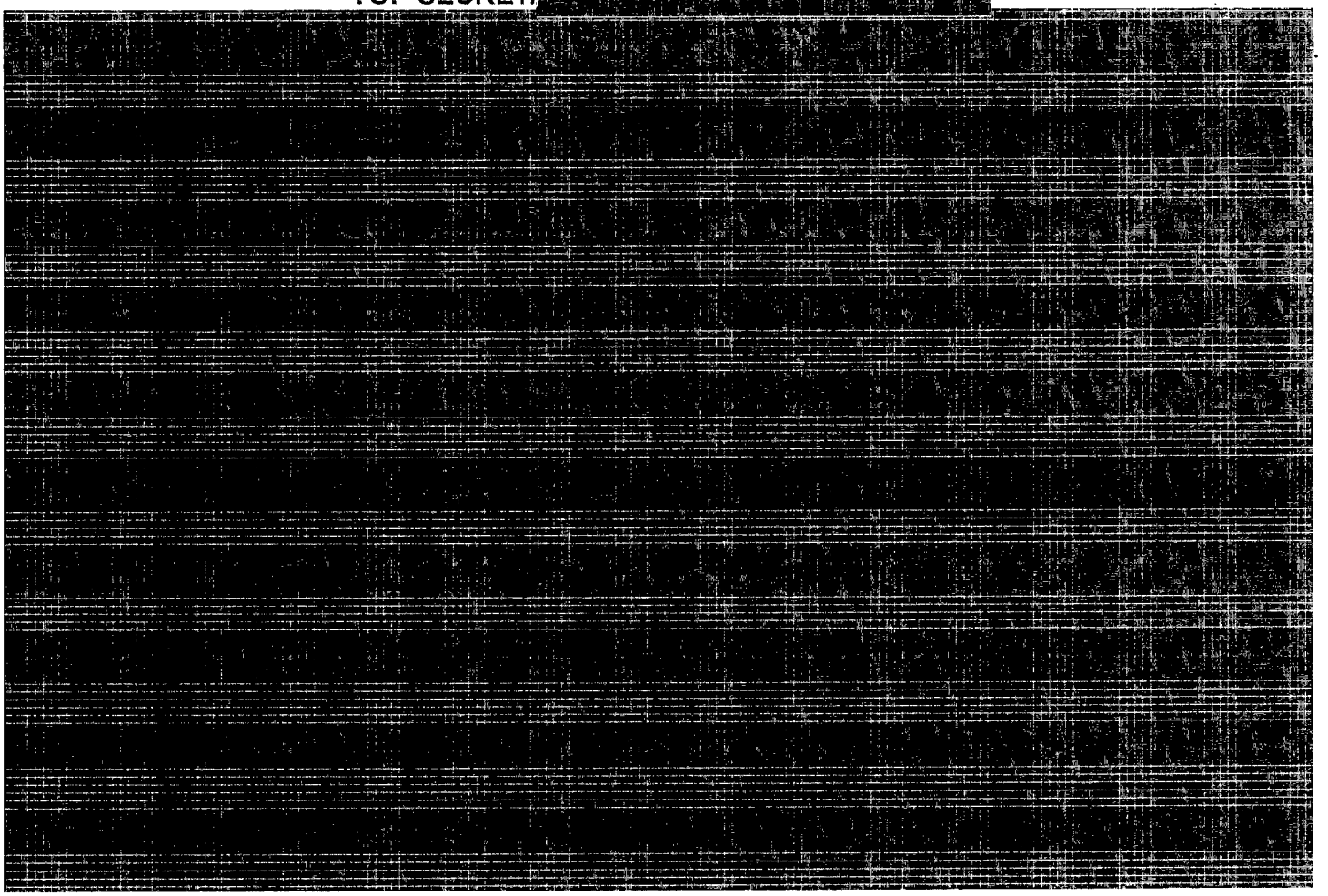
From:
Sent: July-19-18 8:47 AM
To:
Banerjee, Ritu;
Cc:
Subject:

Classification: TOP SECRET/

PCO S&I and GAC/ Please share through to your investment/telecommunications contacts.

Colleagues,

Key Judgements:



[redacted]

From: [redacted]
Sent: July-19-18 1:37 PM
To: [redacted] (CSE-CST); Gordon, Eric (RCMP-GRC); Gumley, Matthew (RCMP-GRC); Burns, Genevieve (RCMP-GRC); Anderson, Cori C - Civ (DND-MDN); Partridge, Shannon SK (DND-MDN) [redacted] (INTERNATIONAL); [redacted] (INTERNATIONAL); [redacted] (INTERNATIONAL); [redacted] (INTERNATIONAL); [redacted] (PCO) (PCO-BCP); Richard, Daniel (PWGSC-TPSGC); 'jpherne@pwgsc-tpsgc.gc.ca'; Burke, Mary (ISED); Dewolfe, Jonathan (ISED); Kack, Shannon (ISED); Tarantino, Maria (ISED); Keating, Sean (ISED); Burrell, Christopher (ISED); [redacted] INTERNATIONAL); [redacted] (INTERNATIONAL); [redacted] (INTERNATIONAL); Best, Emma (RCMP-GRC); [redacted] Faucher, Monique (NRCAN-RNCAN); Karman, Mehmet (ISED)
Cc: [redacted]
Subject: [redacted]
Attachments: [redacted]

Classification: TOP SECRET/[redacted]

Good afternoon,

I am sending the attached document on behalf of [redacted]

Take care,
[redacted]

PSPC: Daniel and/or Joel, can you please forward the documentation to Louis Bedard, Peter Au & Antoine Parker
NRCan: Irina Spassova can you please forward the documentation to Michael Brown
Thank you!

Pages 763 to / à 770

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Pages 771 to / à 780

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Pages 781 to / à 816

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Ouellet, Benoit

From: [redacted]
Sent: October-24-16 10:49 AM
To: Zaharuk, Sasha
Subject: RE: [redacted] For your review
Attachments: [redacted]

Classification: TOP SECRET/[redacted]CANADIAN EYES ONLY

Hi Sasha,

Nice job on V2. Please see attached draft with additional input from OPC.

I discussed the paper with managers here Friday. We think you have done a commendable job with the assignment you were given but the length and the structure may need to be adjusted to reflect the needs of the target audience. The [redacted] will be offering an alternative framework/formulation for consideration at the Nov. 2 meeting which will draw on your work.

We also wanted to suggest that you consider seeking an opinion on the paper from PCO/Victor Radujko. He's an old hand at these [redacted] and knows your target audience well. He would be a useful source for you to consult with.

Thanks,

[redacted]
Senior Desk Officer
Greater China Division
Global Affairs Canada
[redacted]

From: Zaharuk, Sasha [mailto:[redacted]
Sent: October-19-16 4:13 PM
To: [redacted] Arajs, Christopher; [redacted]; St.John, Adam; Stewart, Brittany; Solonynko, Michael MK - Maj; Bjornson, Erik EP - Civ; McLaren, Joshua JM - Civ; [redacted] Martin, Christopher; Ronald, Fraser FI - Civ; Bullock, Christopher CR - Civ; Hodgins, Paul P - Civ; [redacted] Kendrick W; Waters, Michael; [redacted]
Subject: [redacted] - For your review
Importance: High

CLASSIFICATION:TOP SECRET/[redacted]CANADIAN EYES ONLY

Colleagues,

Please find attached the updated [redacted] for your review. Please disregard the table of contents and over formatting, I am still working on the esthetics of the document but wanted to circulate regardless. If I have missed someone in your organization on the distribution list I would be grateful if you could please pass this along to them. I

wanted to thank those of you who clarified points, provided additional feedback or answered my questions over the past few weeks.

[redacted] The document is due to CSE for circulation on October 26th, as such I am asking for your review and comments before it goes to Directors no later than **Monday, October 24th at noon**. I will ensure to recirculate the final draft to you at the same time it goes to CSE.

[redacted]

Please don't hesitate to reach out should you have any questions—
Cheers,
Sasha

Sasha Zaharuk

Policy Advisor | Conseillère des politiques
National Cyber Security Directorate | Direction de la cyber-sécurité nationale
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