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**Task Title: Report of inclusion of unused numbers from previously assigned CO Codes in pool**

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Canadian Interconnection Steering Committee (CISC)

Canadian Steering Committee on Numbering (CSCN)

TIF 119 [Non-] Consensus Report CNRE1XX: Inclusion of unused numbers from previously assigned CO codes to the number pooling inventory

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 Executive Summary

# Scope

# Background

# Additional considerations for inclusion of unused numbers from previously assigned CO Codes

[Identify what must be done/decided for TBP including previously assigned codes as compared to TBP for new assignments, who must implement the additional functions (i.e., industry bodies, all carriers, specific carriers etc)]

# Timing of implementation

[Analysis and recommendations regarding whether implementation should proceed with TBP initially or shortly thereafter, and if the latter, how long that might be. Analysis should consider:

* what the impact on code consumption might be due to a deferring inclusion;
* increased implementation risks due to inclusion;
* other ]

# Implementation options

[Analysis and recommendations regarding each of the bulleted issues in para 66.

In each case, there are specific concerns raised by interveners which led to the CRTC’s request. The analysis of each issue should address these concerns specifically.]

# Level of Contamination

Contamination occurs when at least one Telephone Number (TN) within a Thousands-Block of TNs is not available for assignment to end users or customers.

Prior to donating any Thousands-Block, a Carrier must determine if the contamination level of the block is within the eligible range for donation. Telephone numbers classified as Administrative, Aging, Assigned, Intermediate, Reserved or Ported Out are not available for assignment and would therefore be included in the calculation of the contamination level.

In the US, thousands-blocks contaminated up to and including ten percent are eligible for donation/return. The US industry is currently considering raising the contamination level.

There may be diminishing returns for higher contamination percentages. The higher the contamination level, there will be fewer available numbers in the Thousands Block. For example, a maximum 50 percent contamination level could mean only 500 telephone numbers would be available out of that Thousands Block. On the other hand, there may be more blocks available with fewer telephone numbers which could contribute to the overall availability of numbering resources. In this case, if a Carrier required 1000 numbers, they may need to request multiple blocks to obtain the required amount of telephone numbers.

Higher contamination levels may create a significant increase in the amount of work for Carriers. The amount of work is dependent on the Carrier’s Inventory Management Systems. If a Carrier uses a manual process for Inventory Management, it would be very time consuming to audit their entire numbering inventory and manually delete contaminated numbers from their inventory.

The CSCN recommends that the Canadian industry should start with a ten percent contamination level and review the need for a potential increase in the future. A ten percent contamination level will still save a lot of CO Codes.

# Cleanup of previously assigned codes

Cleanup of previously assigned codes is defined as a donation of excess blocks of inventory which are below the contamination threshold and for which the Carrier does not forecast a requirement within the next 6 or 12? months.

In the US, Carriers file semi-annual telephone number utilization reports along with their NRUF and forecasted demand. Having an assessment of number utilization by Exchange Area is the starting point for any necessary clean-up process.

As excess inventory is determined in part by forecasted demand, the CSCN recommends semi-annual utilization reports be submitted to the CNA which will trigger further clean-up as appropriate.

In all Exchanges where Thousands-Block pooling is rolled out, an initial internal audit is mandatory for CO Code Holders to complete prior to the donation of a block.

CSCN supports the inclusion of unused numbers from previously assigned codes in the pool in the initial implementation of TBP. The availability of donated number blocks will reduce the demand for new CO Code assignments. As industry forecasts indicate the current Canadian inventory of geographic numbers could exhaust before 2030, every effort should be made to convert to the use of thousand block assignments at the beginning of the TBP implementation.

The block return process from a previously retained CO Code is a critical process to the implementation of thousands block pooling for the efficient use of numbering resources. As such, an initial implementation (in a limited region for a limited number of CO Codes) should include the return of one or more unused blocks prior to the allocation of new thousands blocks.

Carriers would have the opportunity to donate excess Thousands-Blocks from existing CO Codes in these Exchanges without the need for an Inventory Management System. This plan would give Carriers more time to develop or make changes to their Inventory Management System. After the initial rollout was complete, a supplementary implementation plan would be developed for rolling out Thousands Block Pooling in other Exchanges.

It is recommended that the block return process commence prior to the block request process subject to the development of a detailed implementation plan.

The following outlines the Exchange Area Number Pooling Implementation Procedures:

**1.0 Exchange Area Number Pooling Implementation Procedures**

This section describes the responsibilities of the Pooling Administrator (PA) and Service Providers (SP) when Thousands-Block Number Pooling is to be implemented in one or more Exchange Areas in accordance with the implementation plan.

The decision to establish an Exchange Area Number Pool in any given location(s) shall be in accordance with a thousands-block implementation plan filed by CSCN and approved by the CRTC.

1. **Outline of Milestones**

At least 3 months prior to the expected Implementation and Pool Start/Allocation Date for one or more Exchange Areas as set out in the approved thousands -block implementation plan, the PA shall:

1. obtain a list of SPs that have Local Number Portability (LNP)-capable Switching Entities/Points of Interconnection (POI) in the geographic area where Thousands-Block Number Pooling is to be implemented;
2. schedule a meeting and assure that the SPs are aware of their requirement to participate in Thousands-Block Number Pooling and encourage their attendance and participation, and
3. Present a template of the implementation milestones (Table 1) which identifies the milestones that SPs shall be required to meet in order to implement Thousands-Block Number Pooling by the mandated or agreed upon Implementation Date.

The PA and participating SPs determine the dates of the milestones on Table 1 at the Initial Planning Meeting.

|  |  |  |
| --- | --- | --- |
| Milestone | Description | Date |
| 1 | Forecast Report Date |  |
| 2 | Thousands-Block Protection and Block Donation/Return Identification Date |  |
| 3 | Thousands-Block Disconnect Date  |  |
| 4 | PA Assessment of Industry Inventory Surplus/Deficiency |  |
| 5 | Implementation and Pool Start/Allocation Date  |  |

**2.1 Forecast Report Date**

The Forecast Report Date is the deadline for SPs to report their forecasted Thousands-Block demand to the PA using a form equivalent to the current TBCOCAG Appendix 4. This forecast shall be used by the PA to establish the Exchange Area Number Pools and by SPs to determine quantity of Thousands-Blocks to return.

**2.2 Thousands-Block Protection and Donation/Disconnect Identification Date**

SPs shall identify all Thousands-Blocks that to be donated/returned to the Exchange Area Number Pools. These Thousands-Blocks must not exceed the Contamination threshold.

SPs shall protect Thousands-Blocks to be returned from further Contamination as of the Thousands-Block Protection and Donation/Disconnect Identification Date. (Note: If the interval between the Thousands-Block Protection and Donation/Disconnect Identification Date and the Implementation and Pool Start/Allocation Date is at least 90 days, then numbers in aging pools associated with Thousands-Blocks to be donated/returned do not require an ISP port.)

**2.3 Thousands-Block Disconnect Date**

The interval between the Thousands-Block Protection and Donation/Disconnect Identification Date and the Thousands-Block Disconnect Date shall be determined by industry consensus. This time interval requires considerable verification work by SPs so that all Available TNs are identified. Therefore, the length of the interval between the Thousands-Block Protection and Donation/Disconnect Identification Date and the Thousands-Block Disconnect Date should depend upon the quantity of contaminated Thousands-Blocks to be donated/returned. However, in no case shall the interval be less than 30 calendar days.

SPs shall submit all Part 1A Thousands-Block disconnects to the PA by the Thousands-Block Disconnect Date.

**2.4 PA Assessment of Industry Inventory Surplus/Deficiency**

For each Exchange Area Number Pooling implementation, the PA shall evaluate whether there shall be enough Thousands-Blocks donated/returned to create an Exchange Area Number Pool with enough supply to meet the aggregate forecasted demand for TNs for 6 six months beyond the Implementation and Pool Start/Allocation Date. If the PA determines there shall be an insufficient supply to meet this demand, the PA shall allow SPs with a forecasted demand the option to apply for additional CO Codes from the North American Numbering Plan Administrator (NANPA) when requesting Thousands-Blocks.

The PA shall post the assessment of the Exchange Area Number Pool(s) to the PA website for SPs to view the results of the surplus/deficiency determination on the eighth calendar day after the Thousands-Block Disconnect Date.

**2.5 Implementation and Pool Start/Allocation Date**

The Implementation and Pool Start/Allocation Date is the date the PA may start allocating Thousands-Blocks from the Exchange Area Number Pool(s) to SPs. This is also the start date for SPs to send applications for Thousands-Blocks to the PA. In the US, Carriers file semi-annual telephone number utilization reports along with their NRUF and forecasted demand. Having an assessment of number utilization by Exchange Area is the starting point for any necessary clean-up process.

As excess inventory is determined in part by forecasted demand, the CSCN recommends semi-annual utilization reports be submitted to the CNA which will trigger further clean-up as appropriate.

The Implementation and Pool Start/Allocation Date may be as few as five business days following the Thousands- Block Disconnect Date: two calendar days are necessary to allow the NPAC download of ISP Ports to occur and two business days to allow the PA to compile the necessary data; the additional three business days are for the initialization of the data in BIRRDS. The Pool Start/Allocation Date may also be established beyond five business days following the Thousands-Block Disconnect Date, depending on local circumstances.

The CSCN recommends that the donation of Thousands-Blocks should be on a volunteer basis during the initial roll-out phase. The number utilization reports for Carriers who have donated Thousands-Block(s) will reflect their cleanup efforts. The number utilization reports for Carriers who chose not to donate blocks may reflect an excess of numbering resources in an Exchange area where Thousands-Block Pooling has been implemented. This may trigger an audit when the Carrier requests additional numbering resources in the TBP Exchange.

The requirement for mandatory donations of excess numbers will be assessed after the initial implementation period. The CSCN believes that Utilization reporting is an important metric for monitoring effectiveness of the Thousands-Block Pooling regime. The amount of excess numbering resources identified on Carriers’ utilization reports will be used in the determination of mandatory donations.

#  Return of number blocks

CSCN recommends the following Block Return Checklist be adopted by all Carriers prior to returning a Thousands-Block.

**Block Return Checklist for Carriers Prior to Submitting a Part 1A for a Thousands-Block Return**

**Note**: Carriers may retain a Thousands-Block if they can demonstrate

that:

a) the Thousands-Block is required to meet the Carrier’s 6-month projected forecast beyond the Implementation and Pool Start/Allocation Date, or

b) there are Technical Reasons which justify retaining the Thousands-Block such as TNs that are Assigned to non-portable services (e.g., packet switched service), or

c) the Thousands-Block is an Initial Thousands-Block, or footprint Thousands-Block

Key Definitions:

|  |  |
| --- | --- |
| Administrative Numbers | Numbers used by Telecommunications Carriers to perform internal administrative or operational functions necessary to maintain reasonable quality of service standards. Examples of Administrative Numbers are: Test Numbers, Employee/Official Numbers, Location Routing Numbers (LRNs), Temporary Local Directory Numbers (TLDNs), Soft Dial Tone Numbers andPseudo-Automatic Number Identification (p-ANI) numbers. |
| Aging Numbers | Disconnected numbers that are not Available for Assignment to another end user or customer for a specified period of time. Numbers previously Assigned to residential customers may be aged for no less than 45 days and no more than 90 days. |
| Assigned Numbers | Numbers working in the Public Switched Telephone Network (PSTN) under an agreement such as a contract or tariff at the request of specific end users or customers for their use, or numbers not yet working but having a customer service order pending. Numbers that are not yet working and have a service order pending for more than five calendar days shall not be classified as Assigned Numbers. Ported-out numbers should be included as a subcategory of Assigned Numbers.  |
|  Available Numbers | Numbers thatare available for assignment to subscriber access lines, or their equivalents, within an Exchange Area and are not classified as Assigned, Intermediate, Administrative, Aging, or Reserved. Available Numbers is a residual category that can be calculated by subtracting a sum of numbers in the Assigned, Intermediate, Administrative, Aging, and Reserved primary categories from the total of numbers in the Carrier’s inventory of a CO Code or Thousands-Block. |
| Contamination | Contamination occurs when at least one Telephone Number (TN) within a Thousands-Block (NPA-NXX-X) of TNs is not Available for Assignment to end users or customers. Thousands-Blocks Contaminated up to and including 10 percent are eligible for Donation/return. For purposes of this provision, a TN is not Available for Assignment if it is classified as Administrative, Aging, Assigned, Intermediate, or reserved. |
| Effective Date | The date by which routing and rating within the Public Switching Telephone Network (PSTN) shall be working for the Assigned Thousands-Block (NPA-NXX-X) or the Assigned Central Office (CO) Code (NPA-NXX). Also, the date by which the Thousands-Block becomes an active Thousands-Block or the CO Code becomes an Active CO Code. Also referred to as the LERG™ Routing Guide Effective Date in these guidelines. |
| Exchange Area Number Pool | Used in Thousands-Block number pooling to describe a reservoir of un-allocated Thousands-Blocks (NPA-NXX-X) in an Exchange Area administered by the Pooling Administrator (PA) for the purposes of assignment to Carriers participating in Thousands-Block number pooling. |
| Intermediate Numbers | Numbers that are made Available for use by another Telecommunications Carrier or non-Carrier entity for the purpose of providing telecommunications service to an end user or customer. Numbers ported for the purpose of transferring an established customer’s service to another Carrier shall not be classified as Intermediate Numbers. An Intermediate Number is one that is made Available to a Carrier or non-Carrier entity from another Carrier but has not necessarily been Assigned to an end-user or customer by the receiving Carrier or non-Carrier entity. Numbers provided to Carriers, or other non-Carrier entities by numbering partners should be reported as Intermediate, and do not qualify as end users or customers. |
| Intra-Service Provider (ISP) Port | A process which allows a Carrier to retain unavailable Telephone Numbers (TN) in contaminated Thousands-Blocks (NPA-NXX-X) that are being Returned to an Exchange Area Number Pool. Specifically, numbers assigned to customers from Returned Thousands-Blocks that are contaminated shall be ported back to the returning Carrier to enable it to continue to provide service to those customers. An ISP Port can also be used to move a TN(s) from one Switching Entity/Point of Interconnection (POI) serving an Exchange Area to another Switching Entity/POI serving the same Exchange Area where Location Routing Number (LRN)-Local Number Portability (LNP) is in use. |
| Return/Returning | The process by which Carriers contribute Telephone Numbers (TN) to an Exchange Area Number Pool. In the context of these guidelines, Carriers shall use the Thousands-Block (NPA-NXX-X) return process to return Thousands-Blocks to appropriate Exchange Area Number Pool. |
| Unavailable Numbers | Numbers that are not Available numbers. |

1. Run reports to verify that there are not more than 100 Unavailable TNs in any Thousands-Block which the carrier is considering Returning.
2. Verify Available TNs in Thousands-Blocks which they intend to Return to assure they are not assigned in Switching Entities/POIs, billing systems, etc.
3. Protect the Thousands-Block from further assignments.
4. Carriers shall complete ISP Ports on Unavailable TNs in contaminated Thousands-Blocks which they are Returning, including (i) TNs assigned to other Carriers and non-Carriers (i.e., Intermediate Numbers), (ii) TNs used for administrative purposes (i.e., Administrative Numbers), and (iii) TNs assigned to customers (i.e., Assigned Numbers). (Not Numbers in Aging Pool). If ISP Ports in the NPAC are not completed and a Returned contaminated Thousands-Block is Assigned, there may be service disruptions including double assignments, for those Contaminated TNs.
5. If a pending Local Number Portability (LNP) Port exists for an Unavailable TN(s), with no underlying active port or TN, within a contaminated Thousands-Block that is being Returned, the two Carriers involved in the LNP Port shall work cooperatively to resolve the pending LNP Port. This process could be accomplished by having the recipient Carrier of the LNP Port cancel the pending LNP Port so that the Returning Carrier can perform the ISP(s) for Thousands-Block return purposes. Afterwards, the recipient Carrier of the LNP Port would then re-establish the pending LNP Port. Another alternative would be to have the Carriers involved attempt to advance the pending LNP Port through contact with the NPAC (utilizing automated clean-up). [More work need to further clarify]
6. A Carrier Returning a Thousands-Block containing a test line number shall disconnect the test line number prior to submitting the Part 1A to Return of the Thousands-Block. The test line shall be re-Assigned to a number in a Thousands-Block retained by, or Assigned to, the Carrier.
7. A Carrier Returning a Thousands-Block that contains an LRN shall migrate any ported numbers or pooled Thousands-Blocks utilizing the LRN to another LRN within a Thousands-Block retained by or Assigned to the Carrier and delete the LRN in the NPAC and BIRRDS.
8. Ensure that all Returned Thousands-Blocks are within CO Codes that have been identified as LNP capable in the iconectiv BIRRDS and the NPAC and that the associated (donor) Switching Entities/POIs are LNP-capable and ready to process terminating traffic.
9. When the CO Code is already a Pooled Central Office (CO) Code (NPA-NXX), Carriers shall create a ‘D’ view on the NXD screen for the each of the Thousands-Blocks in BIRRDS prior to submitting the Thousands-Block Part 1A Return to the PA. (Note: This will impact all AOCs).
10. Converting an assigned CO Code from non-pooled to pooled as part of the process for Returning one or more Thousands-Blocks: At the time the PA approves a Thousands-Block Return application, the PA shall update the Block Control Record (BCR) record in BIRRDS with the Effective Date indicated on the Part 3A Pooling Administrator’s Response/Confirmation. The Carrier shall build the records for any Thousands-Blocks being retained on the NXD screen for after the PA has processed the Return request. (Note: By default, the Carrier does not need to update the NPAC for the retained Thousands-Block(s).
11. The donated/returned Thousands-Blocks shall be ready for allocation and use on the date indicated by the Carrier on the Part 1A or on the Implementation and Pool Start/Allocation Date, as applicable.

On the Part 1A there will be a field for Carriers to confirm that ISP Ports have been completed and a field for Carriers to confirm that the Thousands-Block has been protected from further TN assignments.

**Implementation Notes**

1. Prior to the Thousands-Block Return Effective Date, a carrier may need to retrieve a Thousands-Block it had previously returned to the Exchange Area Number Pool. As long as the Return Effective Date has not yet passed, the Carrier may cancel the Thousands-Block Part 1A Return in the Pooling Administration System.
2. Subsequent to the Thousands-Block Return Effective Date but before the Thousands-Block has been Assigned to another Carrier, the Carrier may need to retrieve a Thousands-Block it had previously returned to the pool by submitting a Part 1A to the PA. For example, the Carrier may have made an error in reporting the Thousands-Block’s Contamination level or failed to protect the Thousands-Block from further number assignments.
3. If the block has already been assigned to a new carrier and needs a number back, they should work with the new carrier to get the number back.

For reference:

7.1.16 TBCOCAG: In instances where a pooled Unavailable TN is Assigned to more than one customer served by different SPs (i.e., the Thousands-Block Holder and the CO Code Holder of the Pooled CO Code) due to an error made by the CO Code Holder, the conflict shall be resolved as follows:

1. If the TN was Assigned before the Thousands-Block was donated/returned and the CO Code Holder made an error in the population of Unavailable TNs in the LNP database (NPAC) at the time of Donation/return, the customer of the original SP (i.e., the customer to whom the TN was originally Assigned) shall retain assignment of the TN and the Thousands-Block Holder shall assign its customer a new TN.
2. If the TN was not Assigned at the time of the Donation/return and the CO Code Holder failed to protect the Thousands-Block from further assignment in their databases and Assigned the TN after the Thousands-Block was donated/returned, the customer of the Thousands-Block Holder shall retain assignment of the TN, and the CO Code Holder that Assigned the TN to its customer in error shall assign its customer a new TN.

# 5.3.1 Return of Requested Number Blocks Requested but Not Put in Service within 6 Months

The CSCN recommends that the process for thousands-blocks requested but not put in service within 6 months should be treated in the same manner as CO Codes.

A Thousands-Block assigned to a Carrier by the Pool Administrator must be placed In-Service within 6 months after the initially published Effective Date of the Thousand-Block Activation. If the Block Holder no longer has a need for the Thousand-Block, the Block Holder must return the Thousand-Block to the Pool Administrator for reassignment. If it is determined through an audit process or other means that a Thousand-Block is not in use 6 months after the Effective Date, the block reclamation procedures will apply.

Need References

Based on the Carrier’s regular reporting and cleanup activities, donations of excess inventory may be required. Which blocks of the excess inventory to be donated is at the discretion of the Carrier subject to the contamination thresholds and not based on individual block usage history.

# Hindrances to reuse of telephone numbers (Requires Updates)

In their intervention to Telecom Notice of Consultation CRTC 2023-92, Iristel identified potential encumbrances that might hinder the reuse of telephone numbers (e.g. Short Message Service [SMS] listings, National Do Not Call List listings, 4-1-1 listing, the 90-day disconnect blackout period and burned numbers).

Customers often port their wireline number to a wireless carrier to obtain SMS Capability. NetNumber maintains a database of SMS capable numbers. If the numbers are not removed prior to a block donation, this could cause issues if the new block holder is a wireline carrier.

Numbers added to the National Do Not Call List do not expire and will stay on the list indefinitely until the customer removes it from the list. This issue exists today and is not specific to Thousands-Block Pooling.

Due to the slow response time to remove 4-1-1 directory listings, the new block holder may encounter delays in listing the number for their new customer. This issue exists today and is not specific to Thousands-Block Pooling.

There were concerns that numbers would be included in a block donation before the 90-day aging period was complete. This could cause problems if the CO Code Holder’s customer wanted their number back before the aging period was finished.

CSCN participants agreed that the minimum aging period will be 60 days with a maximum aging period of 120 days. Each service provider will have the flexibility to determine their aging period between the agreed upon minimum and maximum aging periods.

CSCN agreed that Aging Numbers are to be included in the determination of block contamination levels. CSCN recommends that the telephone number aging period must be completed prior to returning a block to the pool.

Burned numbers include numbers that are blocked as spam, block listed on social media, and numbers with a bad reputation identified in STIR/SHAKEN analytics. The “burned” numbers carry a history that may make them unsuitable for reuse by another customer. These issues exist today and are not specific to Thousands-Block Pooling. Should “burned” numbers be part of the contamination level?

In paragraph 66 of Telecom Regulatory Policy CRTC 2024-26, the Commission asked the CSCN whether and how to curtail or prohibit the one and done approach in the case of IoT and other services. The CSCN have determined that this question has no relevance to Thousands-Block Pooling.

# Changes to snap-back

Modifications to NPAC must be completed to accommodate thousand block pooling in the Canadian Region. The CLNPC Board have approved turning on the 2017 Neustar Functional Requirement Specification (FRS) for Thousand Block Pooling. This implementation will also include any updates made to the Canadian NPAC since that time. The implementation of Neustar’s 2017 FRS will occur in early 2025, giving service providers ample time to test their LSMS updates and SCP functionality.

Prior to the Thousands-Block Pooling implementation, all Service Providers must update their LSMS to support receipt of Thousands-Block record information from NPAC. Testing LSMSs must be completed prior to the TBP implementation to ensure proper configuration to Receive and Process Thousands-Block records. Testing can be coordinated with the CLNPC & Neustar.

Service Providers must also ensure their SCP LNP Applications (which access locally stored LSMS data) support Thousands-Block records from the LSMS.

Neustar has confirmed that there will be no impact to the existing SCP LNP GTT functions in a Thousands-Block Pooling environment.

CLNPC members are investigating what changes will be required to the GTT distribution process and will report back to CSCN when their investigation is complete.

 Additional snap back processes will be implemented with Thousands-Block Pooling.

When a contaminated Thousands-Block has been donated to the pool and subsequently assigned to another carrier, and a previously ported out number is snapped back, the number will return to the new owner of the Thousands-Block.

If a donated Thousands-Block has not yet been assigned to a new block holder, a previously ported out number will snap back to the CO Code holder. When the CO Code holder receives the notification that the number snapped back, the CO Code holder cannot put the returned number back in their inventory for reassignment as the number now belongs to the Pool. The Code Holder receives the snap back notification to provide vacant number treatment.

A previously assigned CO Code or a CO Code assigned in a Thousands-Block Pooling environment where a Carrier is only retaining a portion of the blocks will, in either case, need to have a process to ensure that numbers that snapped back are not put into inventory where the block no longer belongs to them.

# Considerations for smaller carriers

[8th issue]

# Other considerations

[Add sections as needed]

# Conclusions

# Recommendations

# Matters for Further Consideration

# Terms and Acronyms[May not be needed. If only a few terms need definition, define them at the first use. Stick with terms as used in the Policy if possible.]

# Contributions

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| --- | --- | --- |
| **Contribution Name** | **Submitter** | **Date Posted** |
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# CSCN TIF 119 Participants

The CSCN recognizes the participation and contributions from the following participants:

|  |  |
| --- | --- |
| Organization | Name & Specific Roles |
|  |  |
|  |  |

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