

TOP/IRO Technical Conference Notes

The notes contained in these slides are captured from participant discussions from technical conferences held on March 3-4, 2014 and March 6, 2014. The statements represent the views of various participants, and any conflicts or factual errors are a result of the “brainstorming” nature of the discussions.



1. Should only be one responsible authority and that is the RC - plus RC has the wide-area view.
2. But TOP needs to protect its lines and RC can't push the 'button' - TOP & RC must work together – it is being done now, leverage existing practices.
3. Operating Plans are required and will cover majority of cases.
4. Need to differentiate between establishing IROL and enforcing it – right now IRO and TOP standards seem to conflict with both given authority to act, can't have possible conflicting actions.
5. Is there time for the RC to direct the TOP in all cases? Or are there times when the TOP must act quickly and coordinate later?
6. TOP-001-2, R10 says TOP must inform RC of actions so coordination is mandated.
7. Maybe a few words in standards needed to clarify responsibilities.
8. Need to explore 'version 0' standards to make sure that nothing got deleted that needs to be retained.

Analysis of System Operating Limits (SOLs)

1. How far outside of area does TOP look? One bus? SW Outage report said that was not sufficient (see recommendations 2 and 3).
2. Can't solve problems on other systems. But some SOLs overlap TOP areas. Need to plan & operate to all SOLs in own area. No hybrid set of SOLs.
3. TOP-003-2 takes care of data outside of area. TOP professional judgment of what it needs.
4. FAC standards mandate SOL methodology from RC but TOP should operate to all SOLs. FAC standards are not in scope of project.
5. But IROLs are different than SOLs and should be treated as such in standards. (see #9)
6. Need to review concerns in NOPR paragraphs 48 – 56 as well.
7. Need more clarity on SOLs – just thermal and stability? Need consistent understanding. SOLs are Facility Ratings and there are a lot of those. Can't exceed Facility Ratings.
8. Can we leverage how people are actually operating? Need to provide clear and simple guidelines to operator.
9. System performance should be the end result.

1. SOLs have differing timeframes – not just 30 minutes for all. Facility ratings determine SOL timeframes as pointed out in FAC-008. SOLs in 30 minutes could cause actions that decrease reliability. 30 minutes simple for operators to work to. Don't want to get too complex. SW Outage Report talks about SOLs and the 30 minute timeframe.
2. T_v can never be more than 30 minutes. IROLs should thus be covered.
3. Special subset of SOLs is not desirable.
4. If the 4-hour rating allows 135% loading, when does an exceedance occur? If you exceed normal then do you go to emergency prior to action? Need to handle contingency after exceedance has occurred. Need to elaborate pre-contingency versus post-contingency actions.
5. White paper talks about T_m for SOLs which should be consistent with FAC-008. T_m tried in WECC but presented problems.
6. SOLs can't cause Cascading by definition. So, why is a timeframe needed for SOLs? Series of unmitigated SOLs caused problems in SW Outage. Can we use old Operating Manual for guidance on SOLs? Stay with fundamentals.
7. FRCC just says that when you reach 140%, consider as IROL. (maybe others as well)

Operating to the Most Severe Single Contingency (MSSC)

1. Doesn't operating to an IROL and T_v address this? And therefore MSSC specific language would be redundant?
 - The group in STL believed that this is the case. But DC may not agree (see #2).
2. Are there situations where you don't have a pre-determined IROL and you get pushed into an IROL?
 - If so, you need to move back to a secure state within 30 minutes or less. Is this an IROL or an unknown state?
 - If it isn't an IROL then do we need to retain old TOP-004-2, R2 to cover the situation? And should R2 only be a planning issue? Re-word to 'next n-1 should not exceed x%' instead of MSSC? Need a measurable requirement.
3. If you establish SOL & IROL correctly (as per FAC standards) then you will cover any single contingency, not just the MSSC.

1. Unknown state is undefined and open to interpretation – ‘unanalyzed and unstudied’. Always want to be operating in a ‘known’ state. Can you really always know what operating state you are in or will be in?
2. Seen as a loss of telemetry type situation? EOP-008-1, R1.6.2 talks of the need for plans on loss of functionality. Does this cover the issue? Should for functionality issues.
3. Today’s technology should cover the limits issue. Loss of functionality is something different. Is a set of tools implied?
4. If ‘unknown’ remains, then it needs to be described as to what it means to an operator and clear actions spelled out. Operator needs full authority to act. Some entities have tried to define ‘unknown’ already – could leverage.

1. Group agrees with NOPR comment in general. Need consistent approach to time horizons.
2. Would imply need for RTCA or similar. But not all TOPs can do RTCA.
3. What if something happens between next-day study and real-time? IRO-008-1, R2 talks of RC doing real-time assessment every 30 minutes – can this be adapted for TOP? Maybe. Is definition of real-time assessment lacking? Or upon topology change? Can we leverage 2009-02 white paper?
4. All SOLs issue covered previously.
5. RC doesn't really need all SOLs – it would actually distract them. Perhaps only exceedances. Would be more interested in plans to correct. If TOP needs others to act, does the RC need to get involved?

System Models, Monitoring, and Tools

1. Circuitous logic as certification is based on requirements. If requirements are removed then certification is weakened. This might work if there was a certification standard or re-certification effort.
2. Does new PER-005 cover any of this?
3. Should we just fall back to existing language in -0 standards? Then wait for 2009-02 to elaborate. We need to observe deadline and there are advances in these standards that should be implemented as quickly as possible. Might be points in 2009-02 white paper that could be used here.
4. Functional model dictates what a TOP needs to be able to do. But that doesn't set accountability.
5. Do we need to recognize size of TOP in solution? Impact of small entity could still be significant. Every Facility must be covered by someone somewhere – BES must be protected.
6. Do we need standards on tools? Some would like to see Project 2009-02 move forward. But doesn't believe timing fits for this project.

Cause of SOL Violations

1. Need to know cause to determine how to act – this is not root-cause but enough information to know how to mitigate in real-time. Tools could provide info to the extent operator needs it in real-time. Emphasis should be on fixing the problem.
2. Given other discussions (and subsequent requirements and fixes), this may be a redundant issue but need to provide rationale and mapping.

1. Refer to Time Horizons issue for additional info
2. How to accommodate performance issues for any tools?
3. TOP should always know that they are n-1 secure in real-time – need to achieve acceptable system performance. How do they get this knowledge? Some sort of tool appears to be implied.
4. TOPs in WECC do not all have RTCA capability. Sometimes RC performs function for TOP who doesn't have capability.
5. Functional model does talk about this and requires that TOP provide info to the RC on real-time situations
6. Size is issue again – every Facility needs to be covered somewhere by someone. Applicability a concern – all TOPs may not be correct.

1. See *Analysis of SOLs slide* for additional info on this topic.
2. SDT may want to supplement existing language with explicit words concerning external and sub-100 kV data as needed to complete required tasks – may need to set bounds as per SW Outage report.

1. RC doesn't always know the exact conditions in a TOP area.
2. Definition of Emergency is broad and covers a lot of conditions – and no easy way to know when you have transitioned from normal to Emergency.
3. Need a way to comment on directions in ‘normal’ conditions but in ‘emergencies’ the party receiving the communication needs to act immediately. Need this tool as a ‘club’ to force action.
4. Need to provide clear guidance to operators on issue of directives – both as issuer and receiver. May need to identify as a Reliability Directive – no questions allowed, jump first and ask questions later. Also look at definition of Operating Instruction in COM-002-4.
5. Directives handled differently in different regions – need to study how it is done.
6. If everything is a directive then everything has same level of importance and that could be dangerous.
7. Need to check that RC, TOP, and BA both have clear and comparable requirements. Would need to make sure that DP is part of BA trail.

1. Companies don't separate problems – whatever happens you need to correct it regardless of cause.
2. TOP-003 was designed to handle data on an all inclusive basis but having the data isn't the same as acting on it. Do we need to say that data recipients must utilize the data?
3. Could split out relay info as specific item in TOP-003 to provide additional weight to topic – is white paper guidance on what type of data needed required?
4. Original 693 directive (para. 1433) asked for clarification on time to correct.
5. Also concerns about R5 and R6 pertinence – are these the same as R2?

1. Do FAC-011 and FAC-014 cover this situation?
2. Same day operations may be problematic due to definition of Emergency – it is more real-time than anything else but some Emergencies may span multiple day timeframes.
3. What is the correct term: Emergency or Adverse Reliability Impact? Emergency may be the best term to use.
4. Shouldn't TOP notify of any Emergency in any/all timeframe? That is, need to be sure to notify of Emergencies that emerge after OPA is completed but before real-time - but need to be careful of overloading operator. Can we prioritize?
5. Should TOP-001-2, R3 & R5 be combined?

1. Identified as a gap in the IERP report. Includes both generation and transmission.
2. Requirements inherently include coordination – can't make a valid plan without coordination.
3. Approach should be the same for RC and TOP (and BA as needed).
4. Was existing language in TOP/IRO covering this explicitly? TOP-003-1.
5. Entities have different requirements now for coordination items.
6. Outage info is a vital concern that needs to be shown.
7. Is time line coordination an issue?
8. Outage coordination methodology requirement similar to FAC standards required? Or just general requirement(s) to have a documented plan with required participation? What does coordination really mean here?

1. IRO-002-2, R2 - only place in standards where term was used.
2. SDT said covered in ROP and IRO-014 and now redundant.
3. Everyone agrees that exchange should be secure and that current methods are secure.
4. How far does secure go? Once it leaves entity who is responsible?
5. Need to cover RC, TOP, and BA.
6. Need to continue concept somewhere in standards. Can existing language be retained?
7. If you adhere to COM and CIP is this covered? Need to check and perhaps provide better explanation as to why. Do we need 'security' experts to go off and draft response?
8. Could be covered in Project 2009-02 down the road.