

“Operations of SCRs with EPA’s new Startup Rule”

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EPA New Rules Startup-Shutdown 4/15/2015

Nov. 7 2014 Provides for 2 options to startup

- **Option 1**
- Startup begins first firing of fuel into a boiler (startup or aux. fuel)
- • Must operate CEMS during startup
- • Must use “clean” fuel throughout startup and shutdown.
- Startup ends when first power is generated.
- When start burning Primary fuel
- • Engage PM equipment, WFGD, DSI and ACl.
- • Do not have to engage DFDG or SCR
- • Engage DFDG and SCR when you reach emission limits
- • Must comply with all applicable emissions limits at all times except for periods that meet the applicable definitions of startup and shutdown.
- • Record keeping and reporting

EPA New Rules Startup-Shutdown

- **Option 2**
- Startup begins with either the firing of any fuel in an EGU for the purpose of producing electricity or useful thermal energy
- All CEMS must operate during startup. Clean fuels to the maximum extent possible throughout the startup period.
- PM equipment must be engaged 1 hour after firing Primary fuel.
- Must meet the startup period work practice requirements as identified in §§63.10020(e).
- Startup ends 4 hours after any power is generated

EPA New Rules Startup-Shutdown

Option 2 Continued

- Once any power is generated, you must be in compliance with emission limits within 4 hours.
- Must start all other applicable control devices as expeditiously as possible, considering safety and OEM recommendations, but, in any case, when necessary to comply with other standards made applicable to the EGU by a permit limit or a rule other than this Subpart that require operation of the control devices
- You must keep records during startup periods

O&M Issues Coal Fired Plants

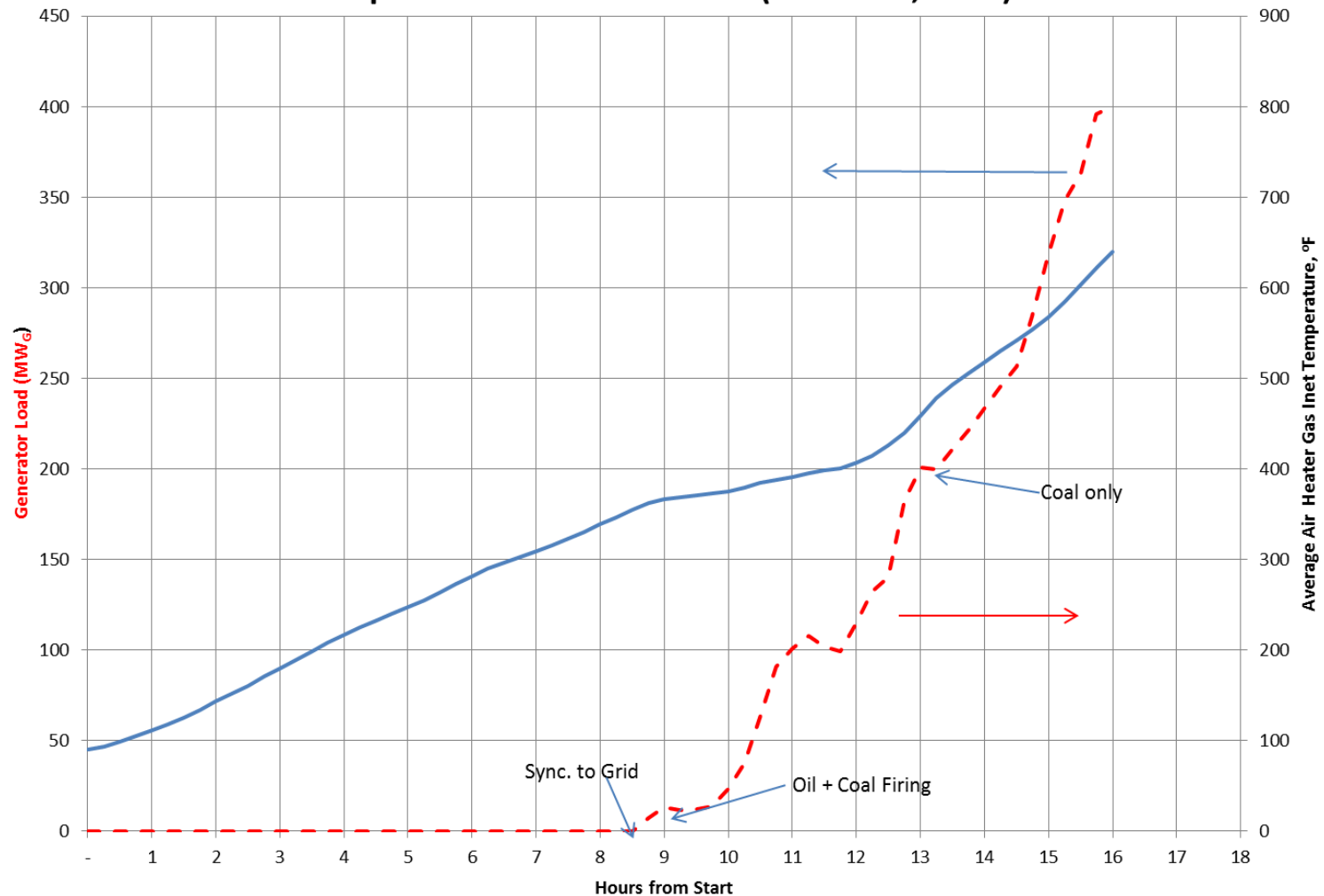
- Other Industry Challenges Cycling Loads
- “Green” Energy and gas price: coal plant cycling
 - Shutdowns: hours to a few days
- Low load operations
- Improved heat rate for CO₂ Rule
- **Burn more startup fuel !!!!!**
- Economizer Bypass (water or flue gas)
- DSI applications
- Low NOx Burners
- Change operating procedures/over comply

MATs and NO_x

- EPA did not address the operation of SNCR in Rulemaking
- Maintenance periods are not addressed ????
- NO_x is not a MATs pollutant – Why is EPA requiring SCRs to be in operation. If or Hg control - get better oxidation with NH₃ off

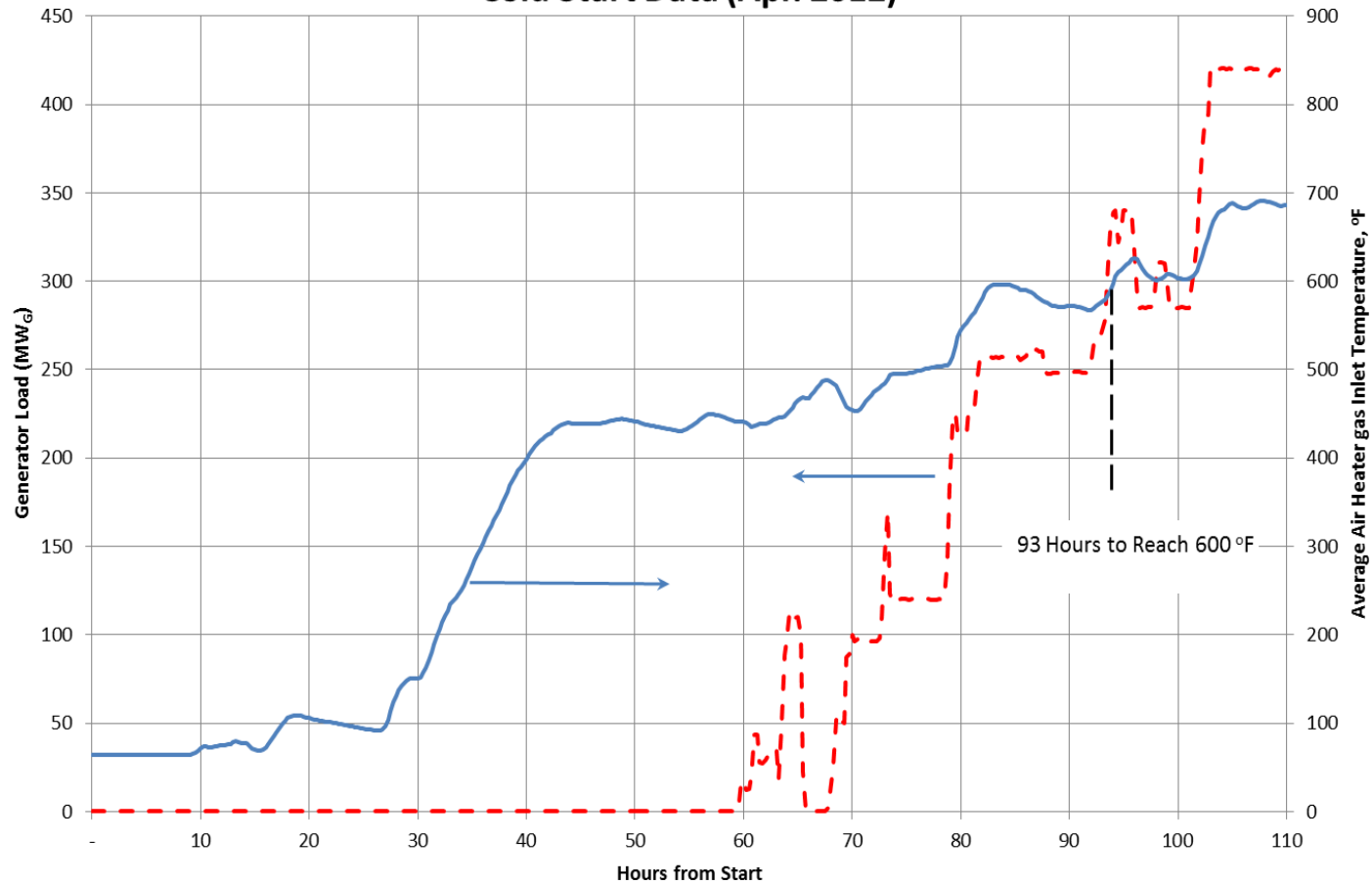
Warm Startup

Graph 2- U1 Warm Start Data (Jan 11-12, 2012)

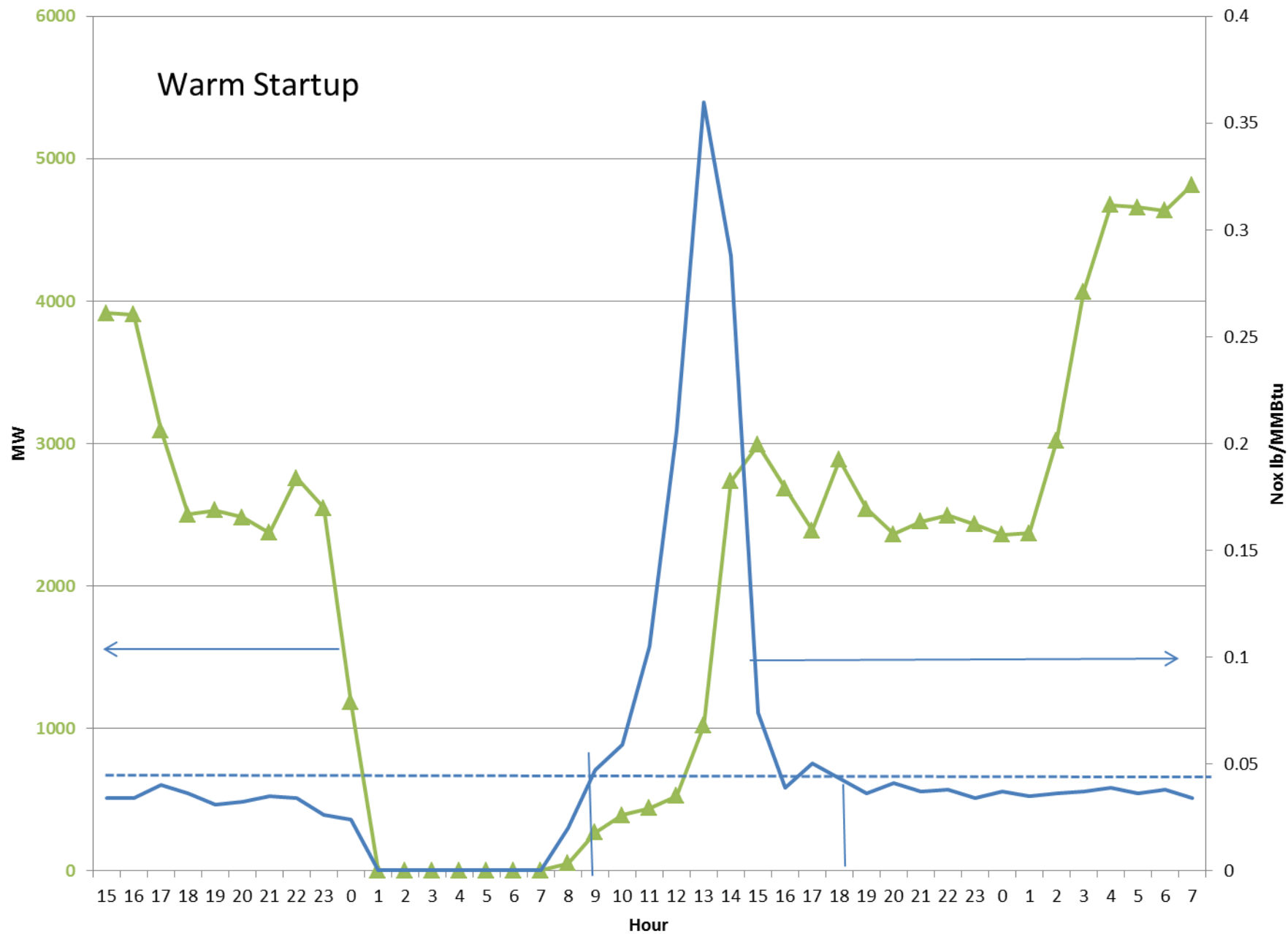


Cold Startup

Graph 3
Cold Start Data (Apr. 2012)

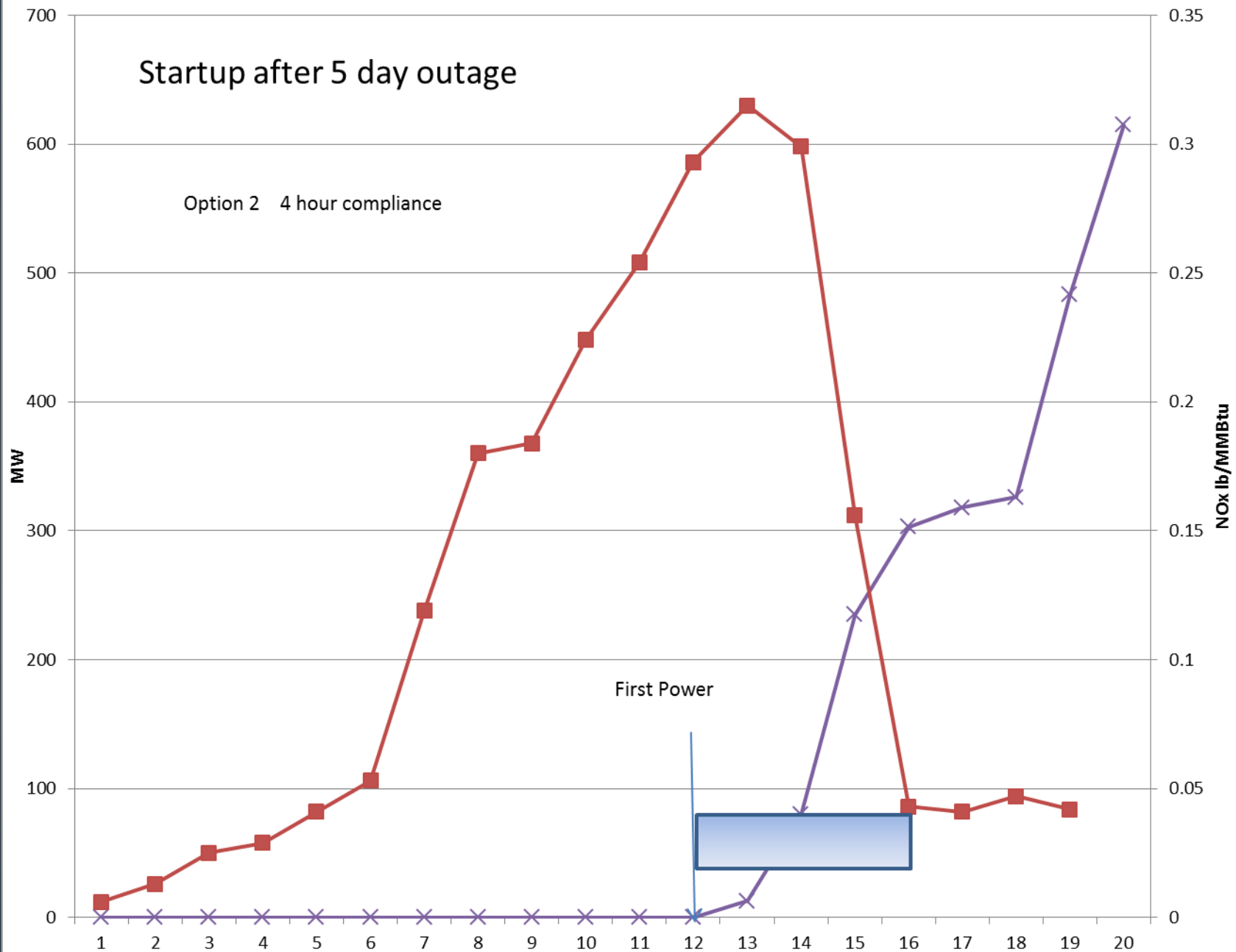


Warm Startup



Startup after 5 day outage

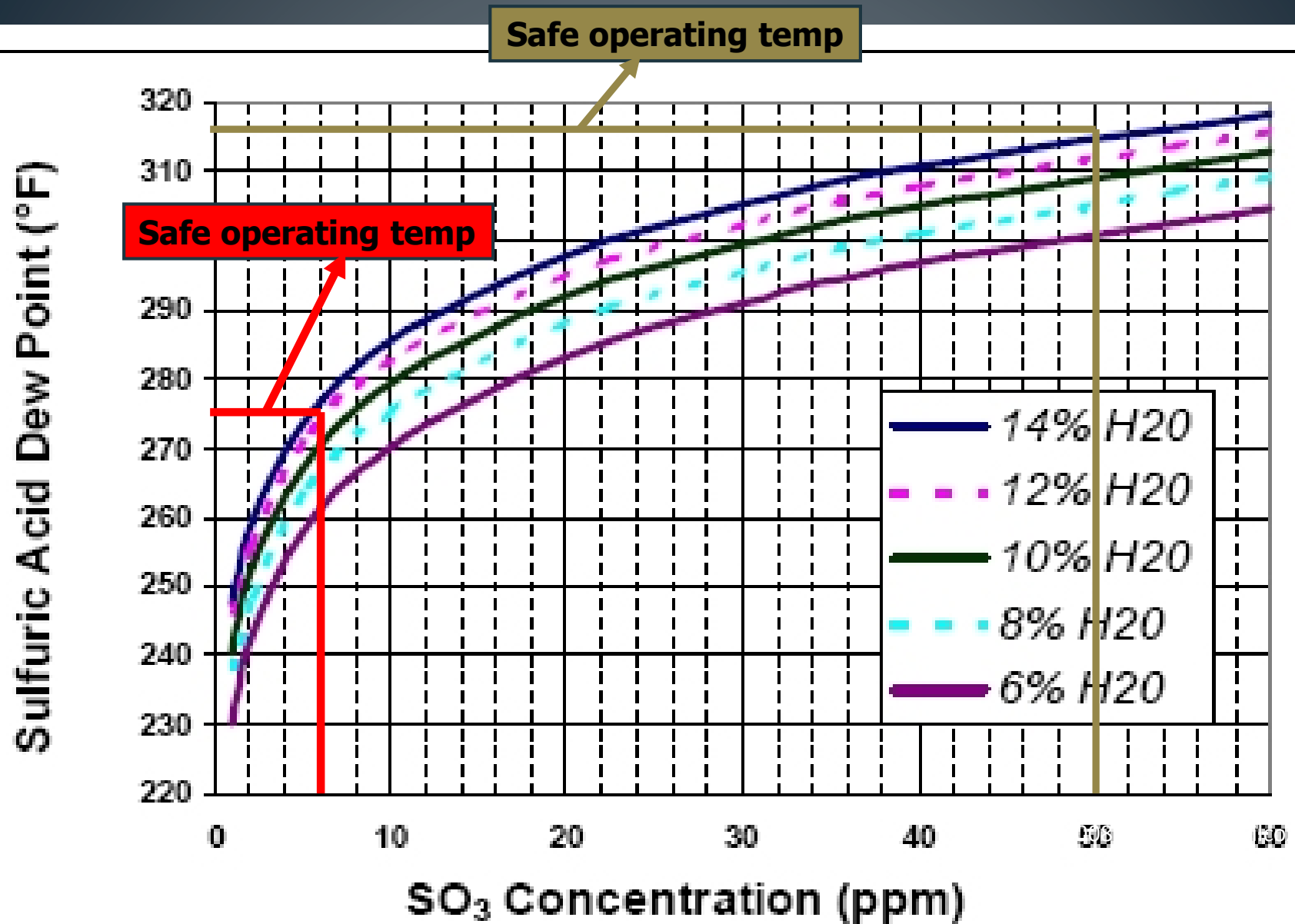
Option 2 4 hour compliance



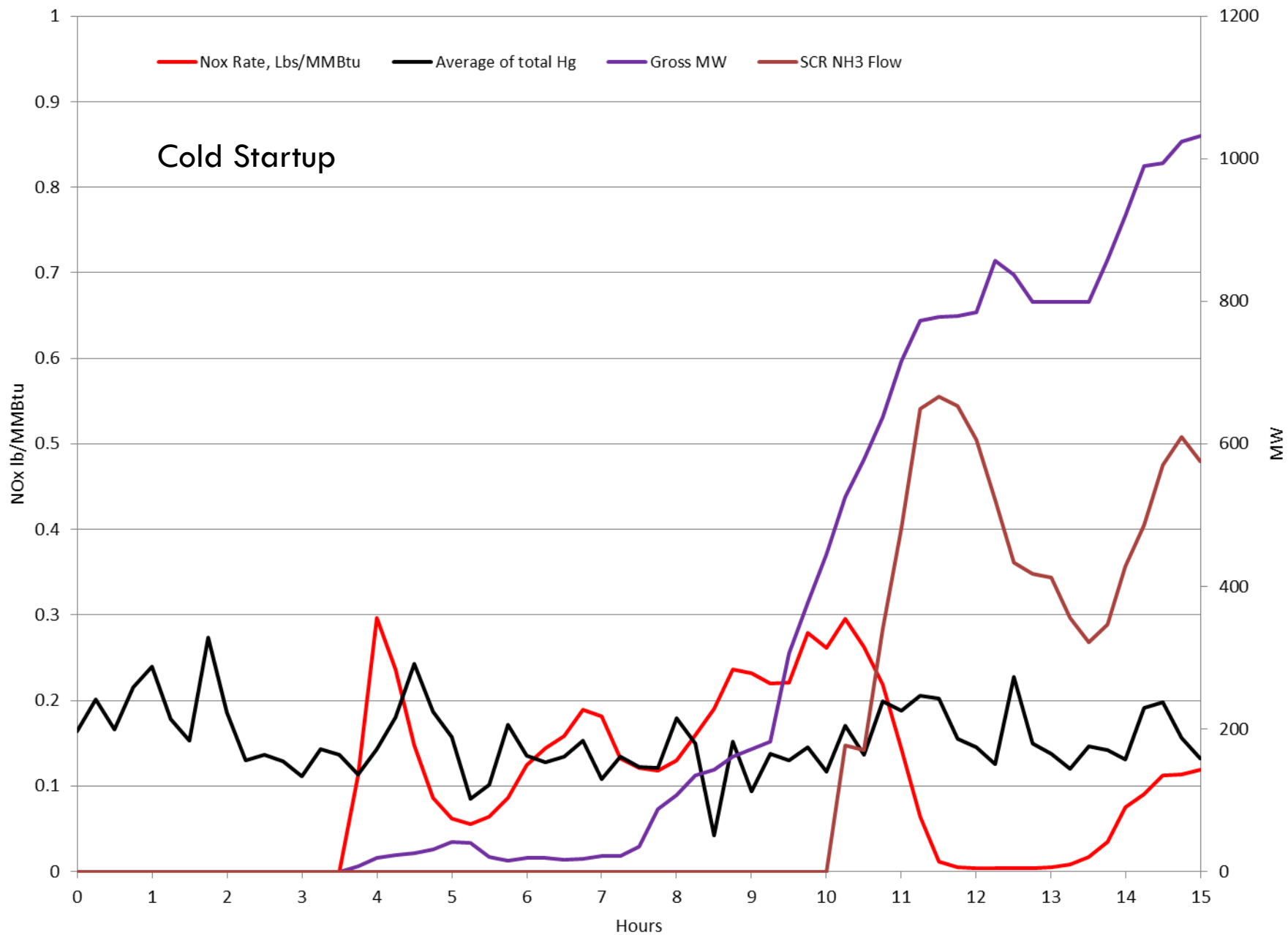
Can DSI Help????

- How soon can we turn on or turn off on DSI & carbon systems.
- Prevent deposits forming in ductwork.
- Sorbent contact with acid gases/Hg at low flow conditions -**mass transfer**
- Does the chemistry work at lower temperatures seen during startup/shutdown?
- Contact time
- Impacts on balance of plant

SO₃ Acid Dew Point Curve



Cold Startup



Questions & Answers

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