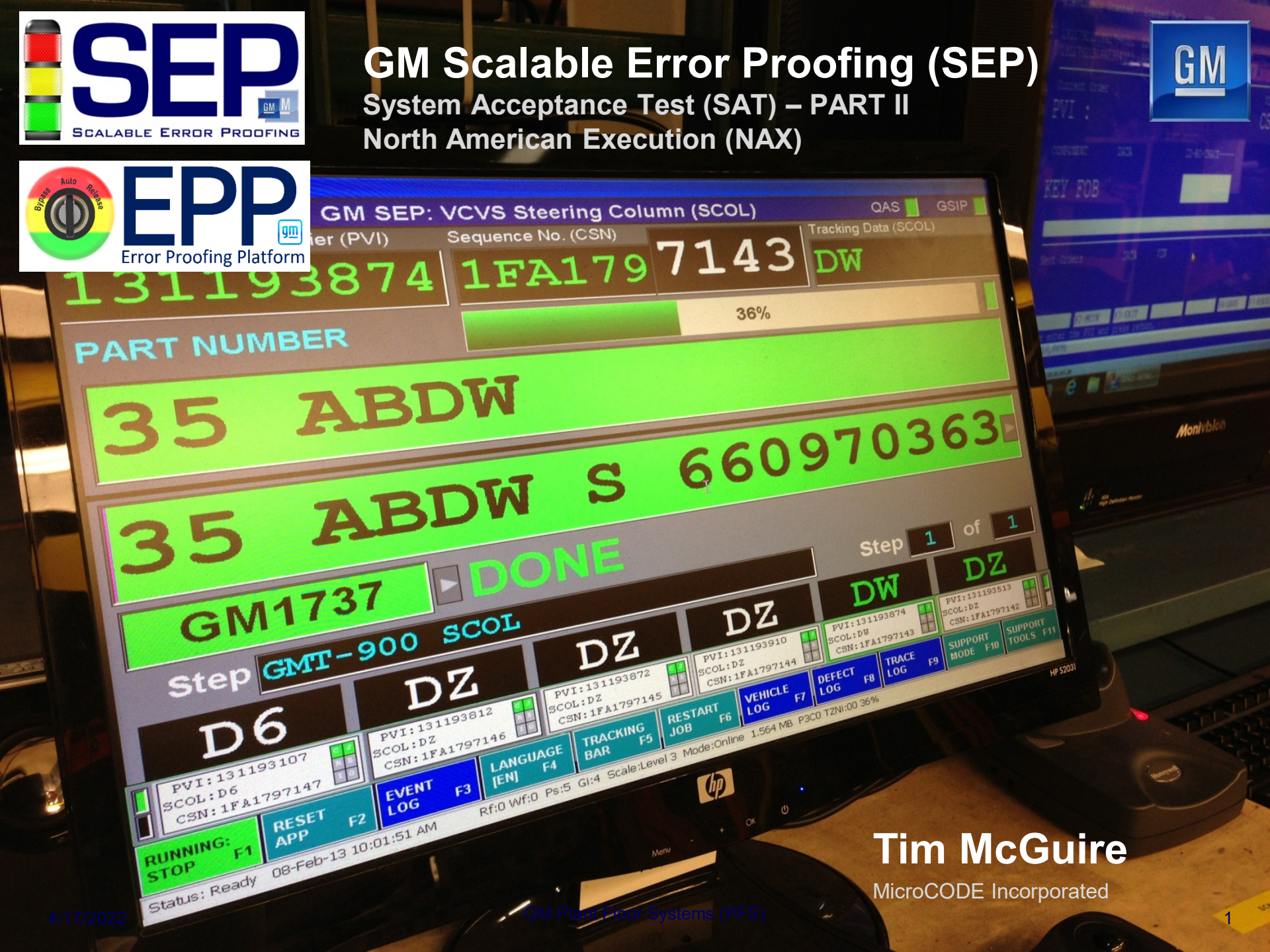
GM Scalable Error Proofing (SEP)

System Acceptance Test (SAT) – PART II

North American Execution (NAX)



Tim McGuire

MicroCODE Incorporated

SEP/EPP SAT Requirements

Overview of requirements to do an **SEP/EPP SAT**:

- **Training** – each person doing SATs must be trained to ensure consistent results, to protect GM's quality and customers

Note: *This does not require advanced SEP Controls training, but it helps. The SAT procedures are the same things the Operators, Group, and Team Leaders will perform during Production.*

- **Hardware** – physical equipment
- **Software** – 3rd party and GM proprietary
- **Access** – performing SEP/EPP SATs requires access to many GM Network, IT and Controls systems

SEP/EPP SAT Requirements – Hardware

Hardware components needed for executing SEP/EPP SATs…

- **SAT Cart** = A sturdy cart to work from… as a mobile, wireless desk.
- **Washer Stack** = A washer stack capable of simulating Vehicle Fasteners for testing Torque Tools. This should be attached to the SAT Cart.
- **EtherNet/IP O.I.** = a standard SEP Operator Interface for testing the SEP EtherNet/IP infrastructure before EPA SATs. **NOTE:** This is a new activity with the advent of **G-16**.
- **Laptop** = a GM Controls Engineering Laptop or equivalent with wireless network support.

SEP/EPP SAT Requirements – Software

Software components needed for executing SEP/EPP SATs…

- **Microsoft Office 2016+ =** needed for all SEP/EPP Launch Tools. Minimum – Word, Excel.
- **ETS Tool** = Area specific, and SAT Team needs exclusive control over their area of the file to merge later.*
- **WITS File** = the latest published—from SharePoint—to help resolve conflicts between SEP and the hardware installation.
- **DCDL File** = used to resolve EtherNet/IP configuration issues and for reference to all **120.x.y.z** addresses in the area.
- **GEPICS Test Jobs** = Excel spreadsheet to identify Jobs with specific option content.

** This requires careful coordination with the core SEP Launch Team to ensure all SAT status is returned to a single Master File in MASS.*

SEP/EPP SAT Requirements – Software

Software components needed for executing SEP/EPP SATs…

- **TAGs Tool(s)** = the ETS and legacy Tools. The ETS is required to print EtherNet/IP SEP Tags.
- **GEP I/O Box Tool** = used to check VNET/VNODE based I/O with the SEP Controller from all external sources.
- **SEP Simulation Tool** = used from the SEP Server to control Conveyor movement and to generate specific defects that can't be otherwise.
- **RSLinx (OEM)** = required to run SEP controls tools.

SEP/EPP SAT Req. – Permissions

Plant permissions needed for executing SEP/EPP SATs…

- **Wireless Network Access** = required to form 'a Team of One'. With wireless access, a single person—with a mobile SAT Cart—can perform all parts of an SEP/EPP SAT by themselves.
- **SEP Server Login** = using Remote Desktop*, the ability to login to the SEP Server to edit tracking, monitor EPAs, update configurations, etc.
- **GSIP Login** = used to look up SEP Defects on Test Vehicles as they are generated by SAT activity.*
- **GEPICS Login** = used to check all SEP Trace Data reaches the Test Vehicles during VCVS SATs. **Note:** This should be READ-ONLY.
- **GPM&C Access** = used to check all SEP Alarms and EPA state changes during SAT activity.*

** As an alternative the laptop can have CIMPLICITY installed and the SEP HMI can be access thru the Client software. Laptops used in multiple plants should *not* install CIMPLCITY. If installed on laptop it must be **v8.000.043***

** This required GSIP Reporting Client Proxy Software from IT, and GSIP Report Access from the Plant's GSIP Quality Lead.*

** This requires access to the Plant GPM&C Alarms Screens on something other than the SEP Server.*

SEP/EPP SAT Req. – Wireless Network

The wireless network access must include…

- **Wireless Network Access** = required to form 'a Team of One'. Access to the following are required…

Internet – for email and information sharing
Intranet – for GM Shared Drives and SharePoint Site(s) – Project data, DCDLs, Doc
Plant SEP Server – to monitor Actions and I/O for proper responses to all tests
Plant MASS Server – to monitor existing SEP programs while executing tests
Plant Maintenance Workstations – to monitor/update Production's software while e
Plant GPM&C Server/Clients – to monitor existing Screens/Reports while executing
Plant GSIP Server/Clients – to monitor generated Vehicle Defects while executing te
Plant SEP PLCs – to monitor existing SEP programs while executing tests
Plant SEP CE Stations – to monitor existing SEP configurations while executing tests
Plant Conveyor PLCs – to monitor existing SEP programs while executing tests
Plant Tooling PLCs – to monitor existing SEP programs while executing tests
Plant ToolsNet Server – to monitor existing Torque Controller responses while executing tests
Plant Hirschmann Switches – to monitor/update existing Switch configuration while executing tests
Plant Printers – to print SEP EQUIPMENT TAGS for everything being SAT'ed

Note: Access to the Fort Wayne wireless network "LAUNCH-TEMP" requires you be added ahead of time to the FWA Domain.

You need to fill out a **MaTE** Ticket to get this fulfilled.

See the following document for complete details…

(SPN-2017-01-30) SEP Deployment - Required Plant Access.docx

SEP/EPP SAT Req. – Software Training

Software components used for Error Proofing…

- **CIMPLICITY Project** = “SEP HMI”, loaded on the SEP Server and SEP Clients (HMIs) throughout the plant. Common Code. Not modified.

- **Console** = “GEP Console” a CE App loaded into a ‘CE Station’, a PV600 emulator that replaced the ‘Tin Cans’ – *now replaced by SEP Actions SEP App (LTC Action).*

- **Sequence** = “GEP Sequence” a CE App loaded into a ‘CE Station’, , a ‘Level 2’ application for sequencing and kitting, i.e.: Part Picks and Scans. Currently there is no SEP Actions equivalent.

- **Actions** = “SEP Actions” a CE App loaded into a ‘CE Station’, designed as a scalable alternative to all software components in GEP except for a shared tracking image.

SEP/EPP SAT Requirements – Software

Software components used for Error Proofing…

- **Conveyor Driver** = PLC-5, Logix 5000, or custom PLC subroutine(s) place in a Conveyor PLC to provide tracking information to an SEP Cell Controller.
- **Process Tool Driver** = PLC-5, Logix 5000, or custom PLC subroutine(s) place in a Process Tool PLC to provide equipment status to an SEP Cell Controller.
- **Deployment Tools** = VB Apps, Excel/VBA Tools, C# Apps, Access Tools.

SEP/EPP SAT Requirements – Software

External GM Systems that SEP/EPP connects to…

- **GEPICS** = **G**lobal **E**nterprise **P**roduction **I**nformation **C**ontrol **S**ystem, the customer order system as seen by the manufacturing plants, controls Vehicle build order and receives vehicle status.
- **GSIP** = **G**lobal **S**tandardized **I**nspection **P**rocess, controls the tracking of Vehicle quality, receives defects on vehicles from various sources.
- **GPM&C** = **G**lobal **P**lant **M**onitoring and **C**ontrol, a central collection of all plant floor manufacturing systems status, alarms, and data; receives status, counts, alarms and other data from various sources.
- **QAS** = **Q**uality **A**ndon **S**ystem, “Andon” means lantern in Japanese, provides a common means for Operators and Systems to stop Production for defects before they leave a Station, Footprint, or Area.

SAT Execution

Overview of the actual execution of an SAT…

- **CFG** – Verify that the EPA is properly configured for all Vehicles assembled in this plant: e.g.: K2XX Only, T1XX Only, Both K2XX/T1XX (Always), Both K2XX/T1XX (Conditional).

- **HW** – Verify that all required hardware is installed to support the EPA Configuration
- **I/O** – Verify all hardware is operational.
- **EPA** – Simulate one of every Vehicle Type, to test all configured Behaviors and all effected order types.

- **GEPICS** – Verify all data to exercise the EPA's Behaviors is in the GEPICS Build Data Packet, for all Vehicle Types, and contains valid values.
- **GSIP** – Verify, as a GSIP Terminal User, that SEP Defects generated by the SAT appear on the PVI/CSN that you used and recorded during the SAT.
- **GPM&C** – Verify that all standard SEP Alarms appear on the GPM&C Alarm screen during the SAT.

SEP/EPP SAT Execution – Actions (review

Acronyms used for Error Proofing Action (Task) types…

- **EPA** = Error Proofing Action, generic type for any type
- **LTC** = Line Tracking Console… sensing Vehicle entry and movement
- **TT** = Torque Tool, also called a 'Nut Runner', 'Electric Tool', 'Electric Gun'… these sense the Operator tightening Fasteners on the Vehicle or Sub-Assembly.
- **SC/BC** = Scan Component, also called 'Part Scan', 'Scanners', 'Trace Stations'… these sense an Operator scanning a barcode on a selected Part for install on the Vehicle.
- **PP** = Part Pick, also called 'Light Screens', 'Hoppers', 'Bins', 'Acknowledge Lights', 'Acknowledge Buttons'… these sense the Operator picking up optional Parts for the Vehicle.
- **PT** = Process Tool, also called by their specific names, like "Fluid Fill', 'Glass Cell', 'Fuel Fill', 'Body Marriage', etc…. These sense a remote equipment controller completing a process on the Vehicle.

SEP/EPP SAT Execution: Internals

System Acceptance Test (SAT)…

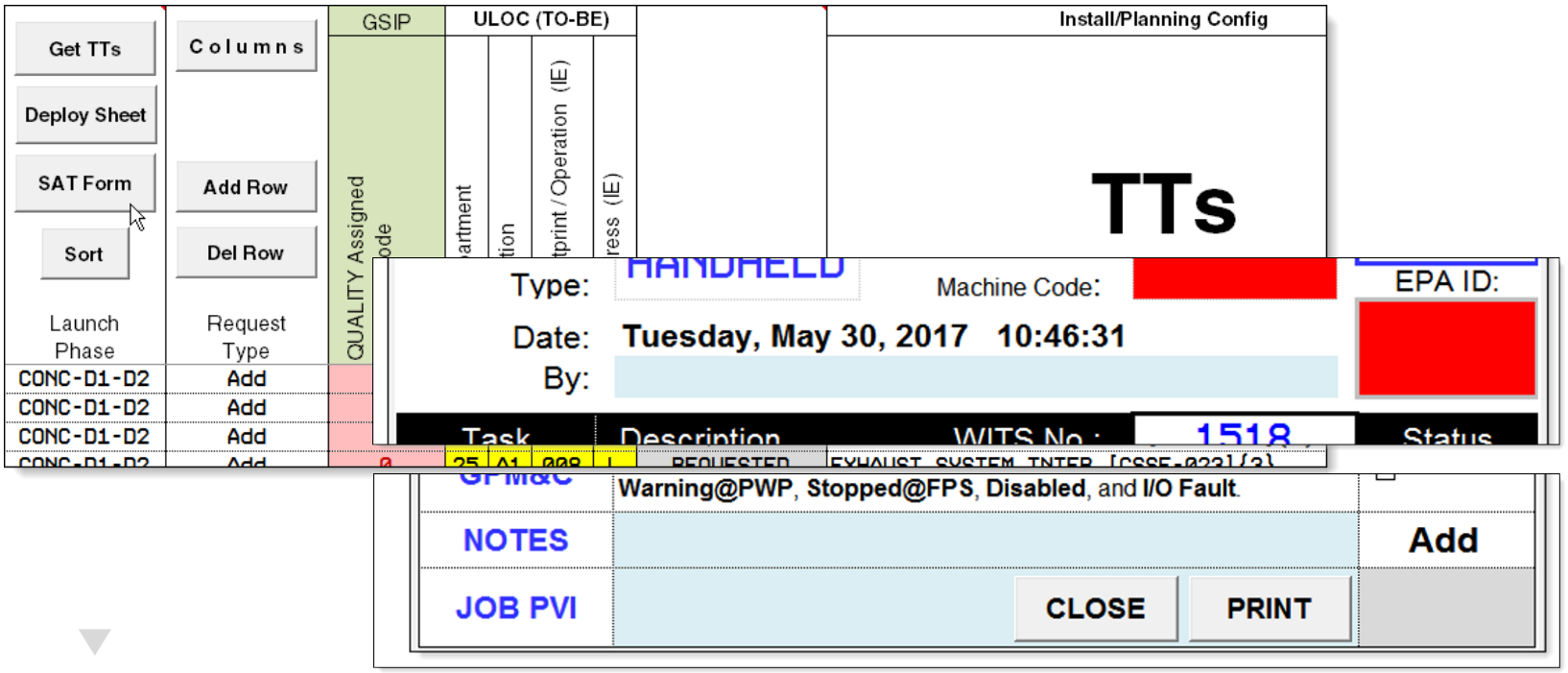
- **ETS Checklist** – used to record SAT status
- **Functionality –** "We know this EPA is ready for Production, Plant… perform your User Acceptance Test (UAT) so you agree."

Get TTs / Deploy Sheet / SAT Form / Sort	Columns / Add Row / Del Row	GSIP	ULOC (TO-BE)					Install/Planning Config		figuraical Imissio			SAT										UAT		
Launch Phase	Request Type	QUALITY Assigned Machine Code (TO-BE)	Target Department	Target Section	Target Footprint / Operation (IE)	Target Address (IE)	STATUS	**TTs** DESCRIPTION (TO-BE) PAD PART NOUN NAME ...end with [TOOL-NUMBER] {ROUNDOWNS} e.g. [SSE-112]	RUNDOWNS	CONFIGURED	INSTALLED	COMMISSIONED	Ready For SAT	Operator Interface	Equipment Tagged	GEPICS Build Data	TTC responds to New Job in FP	QAS Configuration	GPM&C DTR Alarms	SAT Complete	UAT Ready	UAT Complete	Local File Storage
CONC-D1-D2	Add	0	25	A1	005	R	Ready For SAT	TRANS MOUNT STRUT [CSSE-017]{1}	1	Y	Y	Y	Y							N	N	N	
CONC-D1-D2	Add	0	25	A1	006	L	REQUESTED	LH FRONT KNUCKLE SECURE [CSSE-015]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	006	R	REQUESTED	RH FRONT KNUCKLE SECURE [CSSE-016]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	008	L	REQUESTED	EXHAUST SYSTEM INTER [CSSE-023]{3}	3	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	170	L	REQUESTED	LH REAR SHOCK TO BODY [CSSE-024]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	170	R	REQUESTED	RH REAR SHOCK TO BODY [CSSE-025]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	171	L	REQUESTED	LH DRIVETRAIN & FRT SUSP C/MBR FRT [CSSE-026]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Behavior	0	25	A1	171	L	REQUESTED	LH DRIVETRAIN & FRT SUSP C/MBR RR [CSSE-026]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	171	R	REQUESTED	RH DRIVETRAIN & FRT SUSP C/MBR FRT [CSSE-027]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Behavior	0	25	A1	171	R	REQUESTED	RH DRIVETRAIN & FRT SUSP C/MBR RR [CSSE-027]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	172	L	REQUESTED	LH REAR SUSPENSION AXLE [CSSE-028]{3}	3	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	172	L	REQUESTED	LH REAR SUSPENSION EQUALIZER [CSSE-111]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	172	R	REQUESTED	RH REAR SUSPENSION AXLE [CSSE-029]{3}	3	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	172	R	REQUESTED	RH REAR SUSPENSION EQUALIZER [CSSE-112]{1}	1	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	174	L	REQUESTED	LH SHOCK TOWER OUTBOARD TRANS MOUNT [CSSE-030]{3}	3	N	N	N	N							N	N	N	
CONC-D1-D2	Add	0	25	A1	174	R	REQUESTED	RH SHOCK TOWER OUTBOARD TRANS MOUNT [CSSE-031]{3}	3	N	N	N	N							N	N	N	
CONC-D1-D2	Behavior	31054	25	A1	178	L	REQUESTED	Enterprise Bracket Secure [SSE-090]{2}	2	N	N	N	N							N	N	N	

SEP/EPP SAT Execution: ETS SAT Form

System Acceptance Test (SAT)…

- **SAT Form** – electronic form is contained with the **ETS**
- **Execute SAT** – fill in Names, use Checkboxes, take Notes, Print result to .PDF file for your records, and return to the SEP Launch Team to merger results into the Master.



SEP/EPP SAT Execution: CFG

Key Configuration items to check before printing SEP TAGs…

- **NOUN NAME** – verify EPA is described with the APM NOUN NAME of the PART or PROCESS being error proofed. **It should not use VERBS like 'Fasten', 'Secure', 'Scan', 'Fill', 'Install', etc.** This should—in a perfect world—match the GSIP description for the PART or PROCESS that receives the DEFECT. The defects will contain VERBs if required to describe the problem with the PART or PROCESS.

- **GSIP Machine Code** – must match the code assigned by the GM Quality Lead who configured GSIP Defect Relationships.

- **DSOA** – Department, Section, Operation, Address: The location of the EPA on the Plant Floor.

- **I/O Configuration** – the Virtual Network, Virtual Node, and (if EtherNet/IP) the related Switch(s) and Port(s).

SEP/EPP SAT Execution: HW

Key Hardware items to check when attaching SEP TAGs…

- **I/O Node Numbers** – verify that the I/O Blocks, Torque Tools, Scanners, Process Tools… are all at the Network and Node address configured in SEP. If not resolve why and correct SEP or the Hardware.

- **Permanent Cabled** – nothing should temporary at the start of the SAT. Do not proceed with an SAT until corrected.

- **Labeled Hardware** – verify SSE #s, cable labels, port labels, switch labels.

Note: there should be no cable labels on the movable SEP equipment:

* Operator Interface (O.I.)
* Cables to Torque Tools
* 5TX Switch cables
* etc.

SEP/EPP SAT Execution: I/O

After attaching SEP TAGs…

- **Verify I/O** – check that every input and output if functional all the way back to the SEP HMI, including: BYPASS/RELEASE, LIGHT STACK, all PART PICK BINs, TORQUE TOOL Interface, PROCESS TOOL Interface, SCANNERs.

SEP/EPP SAT Execution: EPA/TASK

The actual running of the Action…

- **Plan Vehicles** – looking at the configuration of the EPA, select a group of GEPICS Test Vehicles needed to exercise all EPA Behaviors, including ‘No Work Required’.
- **Log into:** SEP Server, GPM&C Screens, GSIP Reporting Client.
- **Present Test Vehicle** – using the SEP HMI edit the Footprint and present each type of Vehicle.
- **Verify Behavior(s)** – as you present Vehicle(s) verify each Behavior as dictated by the EPA’s configuration.

SEP/EPP SAT Exe: QAS/GPM&C – Step 1

The actual running of the Action…

- **Programmable Warning Point (PWP)** – verify each EPA's PWP is set to a value appropriate for the work being performed. E.g.: if the standardized work has the Operator complete the action at 85% then the PWP must be set higher than that.

- **Conveyor Simulator** – it may be necessary to run the Conveyor Simulator to verify this process.

- **Normal** – before Programmable Warning Point (PWP) – silent flashing Green Stack Light, no Andon Beacon, No Andon Board alarms. SEP HMI shows Action button in **FLASHING GREEN.**

- **PWP** – flashing Yellow Stack Light w/pulsing Horn, Andon Beacon in correct Operation (side of Footprint), Andon Board Team/Footprint in **Yellow**, Team Music playing, GPM&C Alarm **'Warning@PWP'**. SEP HMI shows Action button in **FLASHING YELLOW**. **Conveyor stop request is active and should be acknowledged immediately.**

SEP/EPP SAT Exe: QAS/GPM&C – Step 2

The actual running of the Action…

- **Fixed Position Stop (FPS)** – verify each response properly at FPS.
- **Conveyor Simulator** – it may be necessary to run the Conveyor Simulator to verify this process.
- **Stopped with Andon Acknowledge** – when the Conveyor is stopped at FPS—because of an Andon pull by an SEP EPA—the Light Stack will flash Red. If the Conveyor is not acknowledging the Andon pull the Light Stack will flash Yellow… this must be corrected in the Conveyor or Andon PLC code.
- **FPS** – flashing Red Stack Light with continuous horn, Andon Beacon in correct Operation (side of Footprint), Andon Board Team/Footprint in **Red**, Team Music playing, GPM&C Alarm **'Stopped@FPS'.** SEP HMI shows Action button in **FLASHING RED**. **Conveyor stop request is active and should be acknowledged continuously.**

SEP/EPP SAT Exe: GSIP/GPM&C – Step 3

Check abnormal Action States…

- **BYPASSED** – silent Solid Red Stack Light, GPM&C Alarm **'Bypassed'**, GSIP Defect on the Vehicle in Footprint: '**BYPASSED**'. SEP HMI shows Action button in **SOLID RED**. No Andon music, Andon Board Team/Operation in **Red**. **No Conveyor hold**.

- **RELEASED** – silent Solid Red Stack Light, GPM&C Alarm **'Released'**, specific GSIP Defect on the Vehicle in Footprint based on the state of the work in process, e.g.: Low Torque, Missed Rundown, Missed Pick, Working Scan, etc. **Every defect must be checked at the GSIP Terminal (or Remote Connection to one) and the text verified to match the condition you just 'Released'.** SEP HMI shows Action button in **SOLID RED**. No Andon music, Andon Board Team/Operation in **Red**. **No Conveyor hold**.

SEP/EPP SAT Exe: GPM&C – Step 4

Check abnormal Action States…

- **DISABLED** – Solid Green-Yellow-Red Stack Light, GPM&C Alarm **'Disabled'**, SEP HMI shows Action button in **SOLID MAGENTA**.

- **I/O FAULT** – Cascading Green-Yellow-Red Stack Light w/Horn, GPM&C Alarm **'Disabled'**, SEP HMI shows Action button in **SOLID MAGENTA**.

SEP/EPP SAT Execution: LTC

Line Tracking Console (LTC)

- **Software** = Scanner (**SCN**) Configuration.
- **Hardware** = CE Station, Job Detect, Carrier Detect, Scanner(s).

LTC Specific Work:

- **Carrier Detect:** with Vehicle in motion
- **Job Detect:** with Vehicle in motion
- **Scanner Read:** with Vehicle in motion
- **GEPICS/PLC:** Complete transfer to PLC

Line Tracking Console: System Acceptance Test (SAT)

DSOA: 17-T2-200L | TZN_T2 | P2C1 — LTC (LTC SAT)

Description: TRIM 2 LTC

Equipment Scan Number: TRACKING — GSIP Machine Code: n/a — EPA ID:

Date: Tuesday, May 30, 2017 10:45:12

By:

Task	Description	WITS No.: 0733	Status
CFG	Error Proofing Action (EPA) is configured in the SEP HMI with a valid and all information matches this sheet. **Print TAGS after this step is validated.**		☐
HW	Fixed Head Scanner (SCN), Operator Interface (O.I.), are installed, powered up, connected to their networks (Ethernet and/or DeviceNet) and they are **tagged and matches this sheet**.		☐
I/O	SCN and O.I. have proper Node Addresses and all their I/O is functional on their respective Networks.		☐
EPA	Error Proofing Action (EPA), SCN, Sensors, and O.I. respond to new Job in Footprint. Light Stack works, Bypass/Release Key works, SCN control respond to ENABLE signal.		☐
QAS	Andon (**Beacon**, **Music**, and **Bingo Board**) responds properly as Conveyor passes EPA's Programmable Warning Point (PWP), and at when Stopped at FPS.		☐
GEPICS	GEPICS Build Data Packet is valid, GET SPECIFIC and GET NEXT function properly to CE Station, ID Action writes the BDP to the SEP Cell Controller properly.		☐
GSIP	Behaviors produce the proper GSIP Defects when the EPA is Bypassed or Released: **Bypassed.**		**FALSE**
	Critical operaiton is configured and produces **Quality Pass**.		**N/A**
GPM&C	EPA Status in visble in GPM&C Screens: **Bypassed**, **Released**, **Warning@PWP**, **Stopped@FPS**, **Disabled**, and **I/O Fault**.		☐
NOTES			**Add**
JOB PVI		CLOSE PRINT	REQUESTED

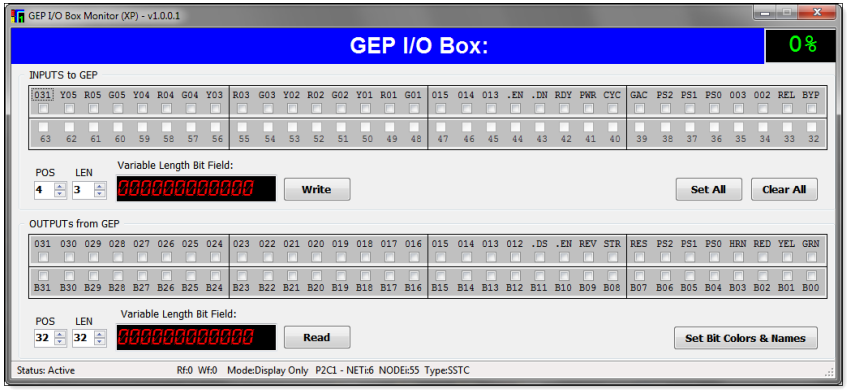
SEP/EPP SAT Execution: TT

Torque Tool

- **Software** = Torque Tool Controller (**TTC**) Configuration.
- **Hardware** = TTC, optional Click Wrenches (**CWR**).

TT Specific Work:

- **Torque Controller:** Verify Config, SSE#
- **Torque Controller:** Verify PSET, Response
- **Torque Tool:** Verify I/O on Washer Stack
- **Torque Tool:** Verify Disable/Enable, Lights



Torque Tool: System Acceptance Test (SAT)

DSOA: 17-IP-104R | TZN_IP1 | P2C1 — TT

Description: (K2) GTWY MOD BRKT

Equipment Tool Number: SSE-302 — GSIP Machine Code:

EPA ID:

Date: Tuesday, May 30, 2017 10:49:40

By:

Task	Description WITS No.: 0051	Status
CFG	Error Proofing Action (EPA) is configured in the SEP HMI with a valid GSIP Machine Code and all information matches this sheet. **Print TAGS after this step is validated.**	☐
HW	Torque Tool Controller (TTC), Operator Interface (O.I.), are installed, powered up, connected to their networks (Ethernet and/or DeviceNet) and they are **tagged and matches this sheet**.	☐
I/O	TTC and O.I. have proper Node Addresses and all their I/O is functional on their respective Networks. **PSETS are programmed.**	☐
EPA	Error Proofing Action (EPA), TTC, and O.I. respond to new Job in Footprint. Light Stack works, Bypass/Release Key works, TTC Spindles respond to **ENABLE** signal & produce Torque **RESULTS.**	☐
QAS	Andon (**Beacon**, **Music**, and **Bingo Board**) responds properly as Conveyor passes EPA's Programmable Warning Point (PWP), and at when Stopped at FPS.	☐
GEPICS	Behaviors produce the proper EPA reactions based on Vehicle Order data from GEPICS, found within the "Build Data Record" in the GMP Line Tracking Image.	☐
GSIP	Behaviors produce the proper GSIP Defects when the EPA is Bypassed or Released: **Bypassed**, **Missed**, **Low**, **High**, **Over**, **PSC Mismatch.**	☐
	Critical operaiton is configured and produces **Quality Pass**.	☑ TRUE
GPM&C	EPA Status in visble in GPM&C Screens: **Bypassed**, **Released**, **Warning@PWP**, **Stopped@FPS**, **Disabled**, and **I/O Fault**.	☐
NOTES		Cancel
JOB PVI	CLOSE PRINT	

SEP/EPP SAT Execution: SC/BC

Scan Component

- **Software** = Scanner (**SCN**) Configuration.
- **Hardware** = CE Station, Scanner(s).

SC/BC Specific Work:

- **Scanner:** Auto/Manual behavior
- **Scanner:** Barcode acceptance/decode
- **CE Station:** Operator Instructions
- **CE Station:** App response/display

Scan Component: System Acceptance Test (SAT)

DSOA: 17-IP-118L | TZN_IP1 | P2C1 — **SC** (SC SAT)

Description: **(T1) DEFROSTER DUCT**

Scanner Type: HANDHELD — GSIP Machine Code: [redacted] — EPA ID: [redacted]

Date: **Tuesday, May 30, 2017 10:46:31**

By:

Task	Description	WITS No.: 1518	Status
CFG	Error Proofing Action (EPA) is configured in the SEP HMI and CE DEVICE with a valid GSIP Machine Code and all information matches this sheet. **Print TAGS after this step is validated.**		☐
HW	Scanner (SCN), Operator Interface (O.I.), are installed, powered up, connected to their networks (Ethernet and/or DeviceNet) and they are **tagged and matches this sheet**.		☐
I/O	SCN and O.I. have proper Node Addresses and all their I/O is functional on their respective Networks.		☐
EPA	Error Proofing Action (EPA), SCN, and O.I. respond to new Job in Footprint. Light Stack works, Bypass/Release Key works, SCN Imager/Laser responds to ENABLE signal & scan Barcodes.		☐
QAS	Andon (**Beacon**, **Music**, and **Bingo Board**) responds properly as Conveyor passes EPA's Programmable Warning Point (PWP), and at when Stopped at FPS.		☐
GEPICS	Behaviors produce the proper EPA reactions based on Vehicle Order data from GEPICS, found within the "Build Data Record" in the GMP Line Tracking Image.		☐
GSIP	Behaviors produce the proper GSIP Defects when the EPA is Bypassed or Released: **Bypassed**, **Wrong, Missed**, and for VCVS - **Dup.VID**, **Dup.SN**, **Invalid SN** and **Uncollected.**		☐
	Critical operaiton is configured and produces **Quality Pass**.		☑ TRUE
GPM&C	EPA Status in visble in GPM&C Screens: **Bypassed**, **Released**, **Warning@PWP**, **Stopped@FPS**, **Disabled**, and **I/O Fault**.		☐
NOTES			Add
JOB PVI		CLOSE PRINT	

SEP/EPP SAT Execution: PP

Part Pick

- **Software** = Sensor Configuration.
- **Hardware** = Sensor(s).

PP Specific Work:

- **Bins/Sensors:** Proper annunciation
- **Bins/Sensors:** Proper response
- **Bins/Sensors:** Proper alignment to Material

Part Pick: System Acceptance Test (SAT)

DSOA: 17-IP-157L | TZN_IP2 | P2C1 — PP (PP SAT)

Description: (T1) START/STOP SWITCH

Pick Type: ACK BUTTON — GSIP Machine Code: — EPA ID:

Date: Tuesday, May 30, 2017 10:47:31

By:

Task	Description	WITS No.: 1521	Status
CFG	Error Proofing Action (EPA) is configured in the SEP HMI with a valid GSIP Machine Code and all information matches this sheet. **Print TAGS after this step is validated.**		☐
HW	Part Sensors (BINs), Operator Interface (O.I.), are installed, powered up, connected to their networks (Ethernet and/or DeviceNet) and they are **tagged and matches this sheet**.		☐
I/O	BINs and O.I. have proper Node Addresses and all their I/O is functional on their respective Networks.		☐
EPA	Error Proofing Action (EPA), BINs, and O.I. respond to new Job in Footprint. Light Stack works, Bypass/Release Key works, BIN Lights respond to ENABLE signal & produce inputs.		☐
QAS	Andon (**Beacon**, **Music**, and **Bingo Board**) responds properly as Conveyor passes EPA's Programmable Warning Point (PWP), and at when Stopped at FPS.		☐
GEPICS	Behaviors produce the proper EPA reactions based on Vehicle Order data from GEPICS, found within the "Build Data Record" in the GMP Line Tracking Image.		☐
GSIP	Behaviors produce the proper GSIP Defects when the EPA is Bypassed or Released: **Bypassed**, **Missed**, **Wrong, Duplicate.**		☐
	Critical operaiton is configured and produces **Quality Pass**.		☑ TRUE
GPM&C	EPA Status in visble in GPM&C Screens: **Bypassed**, **Released**, **Warning@PWP**, **Stopped@FPS**, **Disabled**, and **I/O Fault**.		☐
NOTES			Add
JOB PVI		CLOSE PRINT	

SEP/EPP SAT Execution: PT

Process Tool

- **Software** = Process Tool Driver Install & Configuration.
- **Hardware** = Process Tool PLC.

PT Specific Work:

- **Process PLC:** Correct SEP Driver
- **Process PLC/SEP PLC:** Communication
- **Process PLC:** Correct code integration
- **Process PLC:** Proper Style Select
- **Process PLC:** GSIP Defect generation

Process Tool: System Acceptance Test (SAT)

DSOA: 17-T4-452L | #N/A | #N/A — PT (PT SAT)

Description: WINDSHIELD INSTALL

Equipment Tool Number: | GSIP Machine Code: 0 | EPA ID:

Date: Tuesday, May 30, 2017 10:48:47

By:

Task	Description	WITS No.: 0000	Status
CFG	Error Proofing Action (EPA) is configured in the SEP HMI with a valid GSIP Machine Code and all information matches this sheet. **Print TAGS after this step is validated.**		☐
HW	Process Tool Controller (PTC), Operator Interface (O.I.), are installed, powered up, connected to their networks (Ethernet and/or DeviceNet) and they are **tagged and matches this sheet**.		☐
I/O	PTC and O.I. have proper Node Addresses and all their I/O is functional on their respective Networks. **Driver Configured.**		☐
EPA	Error Proofing Action (EPA), PTC, and O.I. respond to new Job in Footprint. Light Stack works, Bypass/Release Key works, PTC Interface respond to ENABLE signal & produces results/defects.		☐
QAS	Andon (**Beacon**, **Music**, and **Bingo Board**) responds properly as Conveyor passes EPA's Programmable Warning Point (PWP), and at when Stopped at FPS.		☐
GEPICS	Behaviors produce the proper EPA reactions based on Vehicle Order data from GEPICS, found within the "Build Data Record" in the GMP Line Tracking Image.		☐
GSIP	Behaviors produce the proper GSIP Defects when the EPA is Bypassed or Released: **Bypassed**, **Unknown,** or **Tool Specific Defects.**		☐
	Critical operaiton is configured and produces **Quality Pass**.		☐
GPM&C	EPA Status in visble in GPM&C Screens: **Bypassed**, **Released**, **Warning@PWP**, **Stopped@FPS**, **Disabled**, and **I/O Fault**.		☐
NOTES			Add
JOB PVI	CLOSE PRINT		REQUESTED