

**Notes:**

- 1) Emission - Anything that cause system to stop working and relies on the engine to operate in the faulted/conventional mode (i.e. - relates to consuming fuel and producing exhaust)
- 2) Non Emission - Anything that is just used as a warning or only relates to other hybrid functionality
- 3) Controlled SD - System is shut down and will operate in the faulted/conventional mode to allow primary jobsite operation (i.e. - running pump, compressor, etc.)
- 4) Critical SD - System is shut down and can not operate anything, no driving or jobsite operation, vehicle can still be driven but without any launch/regen assist
- 5) TestFailed - Indicates when the fault is active, the proper conditions and malfunction criteria have been satisfied
- 6) TestFailedSinceKeyCycle - Indicates a fault did happen but may not be active anymore, this accounts for faults that are intermittent
- 7) The Status will determine how a fault is handled and the Action will determine what we do with the system
- 8) The previous Status and Actions will not be used anymore (Pending, Permanent, Non Permanent): TestFailed replaces Non Permanent and TestFailedSinceKeyCycle replaces Permanent
- 9) The HCU will use SAE J1939 OBD pre-defined SPN's & FMI's, some maybe generic hybrid SPN's and most will be Manufacturer Assignable SPN's (starts at 516096), FMI is selected based on defined list of typical failure modes

**G2V4 (b672+) Updated: 4/23/2018**

SPN	FMI	Old Fault #	Fault Name	Emission Related	Status	Action	Supplier Code	Brief Description
516100	5	101	PTOEnable	Emission	TestFailedSinceKeyCycle	Controlled SD	NA	PTO relay not detected, HCU output driver/signal issue
516101	5	102	EngineStart	Non Emission	None	NA	NA	Engine Start relay not detected, HCU output driver/signal issue
516102	5	103	HydraulicOrClutchRequest	Non Emission	None	NA	NA	Hyd or Clutch relay not detected, HCU output driver/signal issue
516103	5	104	EngineStop	Non Emission	None	NA	NA	Engine Stop relay not detected, HCU output driver/signal issue
516104	5	105	DctoDCEnable	Non Emission	None	NA	NA	DC/DC relay not detected, HCU output driver/signal issue
516105	5	106	InverterEnable	Non Emission	None	NA	NA	Inverter relay not detected, HCU output driver/signal issue
516106	5	107	CoolingPumpEnable	Non Emission	None	NA	NA	Cooling Pump relay not detected, HCU output driver/signal issue
516107	5	108	DisplayEnable	Non Emission	None	NA	NA	Display relay not detected, HCU output driver/signal issue
516108	5	109	PackEnable	Non Emission	None	NA	NA	Pack relay not detected, HCU output driver/signal issue
516109	5	110	CompressorAux	Non Emission	None	NA	NA	Compressor relay not detected, HCU output driver/signal issue
516110	5	111	CrankInhibit	Non Emission	None	NA	NA	Inhibit relay not detected, HCU output driver/signal issue
516111	5	112	HeaterEnable	Non Emission	None	NA	NA	Heater relay not detected, HCU output driver/signal issue
516112	5	113	Vanair_Brusa_PathwaysEnable	Non Emission	None	NA	NA	Vanair Unload/Bruse/Pathways relay not detected, HCU output driver/signal issue
516113	5	114	EngineSpeedUp	Non Emission	None	NA	NA	Engine Set Speed relay not detected, HCU output driver/signal issue
516114	5	115	HornEnable	Non Emission	None	NA	NA	Horn relay not detected, HCU output driver/signal issue
516115	5	116	EnableEngineSpeed	Non Emission	None	NA	NA	Engine Enable Speed relay not detected, HCU output driver/signal issue
516116	5	117	AirConditioningEnable	Non Emission	None	NA	NA	A/C relay not detected, HCU output driver/signal issue
516117	5	118	HVJBDIScharge	Non Emission	None	NA	NA	Discharge relay not detected, HCU output driver/signal issue
516118	5	119	CompressorFanEnable	Non Emission	None	NA	NA	Compressor Fan relay not detected, HCU output driver/signal issue
516119	5	120	ExportablePowerEnable	Non Emission	None	NA	NA	Export Power relay not detected, HCU output driver/signal issue
516120	7	121	PTOPressureSense	Non Emission	None	NA	NA	PTO pressure signal not detected
516121	31	168	HoodSwitch	Non Emission	None	NA	NA	Hood is open while engine is off
516122	31	177	ServiceDisable	Emission	TestFailedSinceKeyCycle	Controlled SD	NA	Hybrid system has been disabled with service disable connector or calibration
516123	5	180	MPRD_Enable	Non Emission	None	NA	NA	Main Power Relay not detected, HCU output driver/signal issue
516124	5	122	BMS_HVIL	Emission	TestFailed	Critical SD	NA	BMS HVIL input not detected. Note: This fault action is hardcoded.
516125	31	123	AC_CompSpeed	Non Emission	None	NA	NA	Major speed difference between commanded and actual
516126	31	124	Mitsubishi_Compressor_Faulted	Non Emission	None	NA	NA	A faulted status is coming from the Mitsubishi compressor controller
516127	5	125	Switch_HVJB_DCDC_Charger_Motor_HVIL	Emission	TestFailedSinceKeyCycle	Critical SD	NA	HVIL input not detected Note: This fault action is hardcoded.
516128	5	126	ExportablePower_And_AC_HVIL	Emission	TestFailedSinceKeyCycle	Critical SD	NA	Exportable Power & AC HVIL input not detected Note: This fault is hardcoded.
516129	31	146	HVDischargeTimeout	Non Emission	None	NA	NA	HVJB Discharge failed
516130	31	167	PTO_Slip	Non Emission	None	NA	NA	RPM delta between input and output speed higher than expected
516131	0	188	CompressorOverPressure	Non Emission	None	NA	NA	Compressor pressure higher than expected
516132	0	189	CompressorTempFault	Non Emission	None	NA	NA	Compressor temperature higher than expected/Temperature value does not change in 60 Secs
516133	0	191	HVACOverPressure	Non Emission	None	NA	NA	HVAC pressure higher than expected
516134	31	192	EngineStartFault	Non Emission	None	NA	NA	Could not start engine
516135	31	198	MotorOverSpeedFault	Non Emission	None	NA	NA	Motor/shaft speed higher than PTO RPM max limit
516136	31	199	EngineSpeedCalMismatch	Emission	TestFailedSinceKeyCycle	Controlled SD	NA	Engine PTO set speed differs from HCU PTO set speed by more than 100 rpm
516137	31	200	LaunchRegenFault	Non Emission	None	NA	NA	PTO slip occurred during launch or regen operation
516138	31	201	SpeedControlFault	Emission	TestFailedSinceKeyCycle	Controlled SD	NA	Desired motor speed not achieved
516139	31	202	CompressorClutchFault	Non Emission	None	NA	NA	Compressor or clutch not engaged as expected due to blow down
516140	1	205	Sys12V_BusLow	Emission	TestFailed	Controlled SD	NA	12V bus lower than expected
516141	31	207	Charger_CmdDiscrepancy	Non Emission	None	NA	NA	Charger output is not following command.
516142	31	208	PackCurrentUneven	Non Emission	None	NA	NA	Current difference between JCS batteries is higher than expected
516143	31	209	SystemCurrentDiscrepancy	Non Emission	None	NA	NA	Current sensor values do not sum as expected
516144	31	210	Inverter_VoltageCorrelation	Non Emission	None	NA	NA	Voltage reported from Phoenix is not as expected under load.
516145	31	211	PumpCmdDiscrepancy	Non Emission	None	NA	NA	EMP Pump not following command.
516146	31	212	FanCmdDiscrepancy	Non Emission	None	NA	NA	EMP Fan not following command.
516147	31	213	Inverter_CmdDiscrepancy	Non Emission	None	NA	NA	Phoenix motor torque not following command.
516148	31	214	ExpPwrCmdDiscrepancy	Non Emission	None	NA	NA	Bel output not following command.
516149	31	215	Pack1_CmdDiscrepancy	Non Emission	None	NA	NA	JCS1 contactors not following command.
516150	31	216	Pack2_CmdDiscrepancy	Non Emission	None	NA	NA	JCS2 contactors not following command.
516151	31	217	DCDCCmdDiscrepancy	Non Emission	None	NA	NA	DCDC output is not following command.

516152	12	218	EVSE_Contactor	Non Emission	None	NA	NA	EVSE not closing contactors to provide grid power
516153	31	219	PackSOC_Conflict	Emission	TestFailedSinceKeyCycle	Controlled SD	NA	SOC difference between pack 1 & 2 greater than limit
516154	31	220	Inverter_HVMismatch	Non Emission	None	NA	NA	Inverter voltage does not match other voltage measurements
516155	31	221	Charger_HVMismatch	Non Emission	None	NA	NA	Charger voltage does not match other voltage measurements
516156	31	222	Pack1_HVMismatch	Non Emission	None	NA	NA	Pack1 voltage does not match other voltage measurements
516157	31	223	Pack2_HVMismatch	Non Emission	None	NA	NA	Pack2 voltage does not match other voltage measurements
516158	31	224	DCDC_HVMismatch	Non Emission	None	NA	NA	DCDC voltage does not match other voltage measurements
516159	31	225	Inverter_LVMismatch	Non Emission	None	NA	NA	Inverter low voltage does not match other low voltage measurements
516160	31	226	DCDC_LVMismatch	Non Emission	None	NA	NA	DCDC low voltage does not match other low voltage measurements
516161	0	227	Motor_TempHigh	Emission	TestFailed	Controlled SD	NA	Motor temperature too high to continue operating
516162	0	228	Inverter_TempHigh	Emission	TestFailed	Controlled SD	NA	Inverter temperature too high to continue operating
516163	0	229	Pack1_TempHigh	Emission	TestFailed	Controlled SD	NA	Pack1 temperature too high to continue operating
516164	0	230	Pack2_TempHigh	Emission	TestFailed	Controlled SD	NA	Pack2 temperature too high to continue operating
516165	1	231	Pack1_TempLow	Emission	TestFailed	Controlled SD	NA	Pack1 temperature too low to continue operating
516166	1	232	Pack2_TempLow	Emission	TestFailed	Controlled SD	NA	Pack2 temperature too low to continue operating
516167	1	233	HV_IsolationFault	Emission	TestFailedSinceKeyCycle	Critical SD	NA	Isolation measurement of HV system is below acceptable limits.
516168	31	234	ZeroSocShutdownKO	Emission	TestFailed	Controlled SD	NA	SOC is 0% in key-on mode, and hybrid is disabled to avoid locking out the RESS.
516169	31	235	ZeroSocShutdownPI	Emission	TestFailed	Controlled SD	NA	SOC is 0% in plug-in mode, and hybrid is disabled to avoid locking out the RESS.
516170	0	450	PumpMotorOverTemp	Non Emission	None	NA	NA	Cooling system pump is over temperature.
516171	0	462	FanMotorOverTemp	Non Emission	None	NA	NA	Cooling system fan motor is over temperature.
516172	3	127	Ignition_SwitchOORHigh	Non Emission	None	NA	NA	Ignition switch input higher than expected
516172	4	128	Ignition_SwitchOORLow	Non Emission	None	NA	NA	Ignition switch input lower than expected
516173	3	129	HVACHighSidePressSensOORHigh	Non Emission	None	NA	NA	HVAC highside pressure sensor input higher than expected
516173	4	130	HVACHighSidePressSensOORLow	Non Emission	None	NA	NA	HVAC highside pressure sensor input lower than expected
516174	3	131	Brusa_ChgrPrxSwHOOORHigh	Non Emission	None	NA	NA	Charger prox switch input higher than expected
516174	4	132	Brusa_ChgrPrxSwHOOORLow	Non Emission	None	NA	NA	Charger prox switch input lower than expected
516175	3	133	HydPressureRequestOORHigh	Non Emission	None	NA	NA	Hydraulic pressure request input higher than expected
516175	4	134	HydPressureRequestOORLow	Non Emission	None	NA	NA	Hydraulic pressure request input lower than expected
516176	3	135	HydraulicFlowSensorOORHigh	Non Emission	None	NA	NA	Hydraulic flow sensor input higher than expected
516176	4	136	HydraulicFlowSensorOORLow	Non Emission	None	NA	NA	Hydraulic flow sensor input lower than expected
516177	3	138	CurrentWays_ChgrPrxSwHOOORHigh	Non Emission	None	NA	NA	Charger prox switch input lower than expected
516177	4	137	CurrentWays_ChgrPrxSwHOOORLow	Non Emission	None	NA	NA	Charger prox switch input higher than expected
516178	3	139	BMS_HVILOOORHigh	Non Emission	None	NA	NA	BMS HVIL input higher than expected
516178	4	140	BMS_HVILOOORLow	Non Emission	None	NA	NA	BMS HVIL input lower than expected
516179	3	141	HighSpeedRequestOORHigh	Non Emission	None	NA	NA	High speed request input higher than expected
516179	4	142	HighSpeedRequestOORLow	Non Emission	None	NA	NA	High speed request input lower than expected
516180	3	147	Switch_HVJB_DCDC_Charger_Motor_HVILOOORHigh	Non Emission	None	NA	NA	HVJB/DCDC/Charger/Motor HVIL input higher than expected
516180	4	148	Switch_HVJB_DCDC_Charger_Motor_HVILOOORLow	Non Emission	None	NA	NA	HVJB/DCDC/Charger/Motor HVIL input lower than expected
516181	3	149	ExpPwrAndAC_HVILOOORHigh	Non Emission	None	NA	NA	Exportable Power & AC HVIL input higher than expected
516181	4	150	ExpPwrAndAC_HVILOOORLow	Non Emission	None	NA	NA	Exportable Power & AC HVIL input lower than expected
516182	3	151	AC_BlowerEnabledOORHigh	Non Emission	None	NA	NA	AC blower enabled input higher than expected
516182	4	152	AC_BlowerEnabledOORLow	Non Emission	None	NA	NA	AC blower enabled input lower than expected
516183	3	153	Boss_CompressorTempSsrOORHigh	Non Emission	None	NA	NA	Compressor temperature sensor input higher than expected
516183	4	154	Boss_CompressorTempSsrOORLow	Non Emission	None	NA	NA	Compressor temperature sensor input lower than expected
516184	3	155	CompressorRecvrPressSsrOORHigh (200&300 psi)	Non Emission	None	NA	NA	Compressor receiver pressure sensor input higher than expected
516184	4	156	CompressorRecvrPressSsrOORLow (200&300 psi)	Non Emission	None	NA	NA	Compressor receiver pressure sensor input lower than expected
516185	3	157	CompressorResvrPressSsrOORHigh (200&300 psi)	Non Emission	None	NA	NA	Compressor reservoir pressure sensor input higher than expected
516185	4	158	CompressorResvrPressSsrOORLow (200&300 psi)	Non Emission	None	NA	NA	Compressor reservoir pressure sensor input lower than expected
516186	3	159	Vanair_CompressorTempSsrOORHigh	Non Emission	None	NA	NA	Compressor temperature sensor input higher than expected
516186	4	160	Vanair_CompressorTempSsrOORLow	Non Emission	None	NA	NA	Compressor temperature sensor input lower than expected
516187	3	161	CabinTempSensorOORHigh	Non Emission	None	NA	NA	Cabin temperature sensor input higher than expected
516187	4	162	CabinTempSensorOORLow	Non Emission	None	NA	NA	Cabin temperature sensor input lower than expected
516188	3	163	AirFlowSensorOORHigh	Non Emission	None	NA	NA	Air flow sensor input higher than expected
516188	4	164	AirFlowSensorOORLow	Non Emission	None	NA	NA	Air flow sensor input lower than expected
516189	3	165	HydrPressSensorOORHigh	Non Emission	None	NA	NA	Hydraulic pressure sensor 1 input higher than expected
516189	4	166	HydrPressSensorOORLow	Non Emission	None	NA	NA	Hydraulic pressure sensor 1 input lower than expected
516190	3	169	PTOPressureSenseOORHigh	Non Emission	None	NA	NA	PTO pressure sensor input higher than expected
516190	4	170	PTOPressureSenseOORLow	Non Emission	None	NA	NA	PTO pressure sensor input lower than expected
516191	3	173	HoodSwitchOORHigh	Non Emission	None	NA	NA	Hood switch input higher than expected
516191	4	174	HoodSwitchOORLow	Non Emission	None	NA	NA	Hood switch input lower than expected
516192	3	175	ServiceDisableOORHigh	Non Emission	None	NA	NA	Hybrid disable switch input higher than expected
516192	4	176	ServiceDisableOORLow	Non Emission	None	NA	NA	Hybrid disable switch input lower than expected
516193	3	178	OutAirTempSensOORHigh	Non Emission	None	NA	NA	Outside air temperature sensor input higher than expected
516193	4	179	OutAirTempSensOORLow	Non Emission	None	NA	NA	Outside air temperature sensor input lower than expected
516194	3	203	HydraulicPressSens2OORHigh	Non Emission	None	NA	NA	Hydraulic pressure sensor 2 input higher than expected
516194	4	204	HydraulicPressSens2OORLow	Non Emission	None	NA	NA	Hydraulic pressure sensor 2 input lower than expected
516195	3	236	HVACLowSidePressSwOORHigh	Non Emission	None	NA	NA	HVAC Low Side Pressure Switch input higher than expected
516195	4	237	HVACLowSidePressSwOORLow	Non Emission	None	NA	NA	HVAC Low Side Pressure Switch input Lower than expected
516196	2	181	CAN1BusPassive	Emission	TestFailed	Controlled SD	NA	CAN1 bus not responding
516197	2	182	CAN1TxError	Emission	TestFailed	Controlled SD	NA	CAN1 bus has more errors than expected
516198	2	183	CAN1RxError	Emission	TestFailed	Controlled SD	NA	CAN1 bus has more errors than expected

516199	2	184	CAN2BusPassive	Emission	TestFailed	Controlled SD	NA	CAN2 bus not responding
516200	2	185	CAN2TXError	Emission	TestFailed	Controlled SD	NA	CAN2 bus has more errors than expected
516201	2	186	CAN2RxError	Emission	TestFailed	Controlled SD	NA	CAN2 bus has more errors than expected
516202	2	193	CAN3BusPassive	Emission	TestFailed	Controlled SD	NA	CAN3 bus not responding
516203	2	194	CAN3TxError	Emission	TestFailed	Controlled SD	NA	CAN3 bus has more errors than expected
516204	2	195	CAN3RxError	Emission	TestFailed	Controlled SD	NA	CAN3 bus has more errors than expected
516205	12	196	J1939CANTimeout	Emission	TestFailed	Controlled SD	NA	Chassis J1939 CAN message was not received as expected
516206	12	197	TelematicsCANTimeout	Non Emission	None	NA	NA	Telematics CAN message was not received as expected
516207	12	190	MiniView_CANTimeout	Non Emission	None	NA	NA	Miniview CAN message was not received as expected
516208	12	172	Switch_CANTimeout	Non Emission	None	NA	NA	Switch CAN message was not received as expected
516209			Spares					Place holder, not used yet
516210	5	NA	LubePumpSense	Emission	TestFailedSince KeyCycle	Controlled SD	NA	Lube Pump Fault
516211			Spares 516211 to 516219					
516220	5	317	Phoenix_BusInterlock	Emission	TestFailedSince KeyCycle	Critical SD	521371/31	HVDC Bus Interlock Fault
516221	5	318	Phoenix_PhaseInterlock	Emission	TestFailedSince KeyCycle	Critical SD	521371/12	Phase Interlock Fault
516222	31	319	Phoenix_DriveCommandMissing	Emission	TestFailedSince KeyCycle	Controlled SD	2003/9	Drive Command Missing Fault
516223	12	344	Phoenix_CANTimeout	Emission	TestFailed	Controlled SD	NA	Inverter CAN message was not received as expected
516224	31	351	Phoenix_OtherFault	Non Emission	None	NA	Others	Phoenix inverter fault/warning which is not specified in HCU.
516225	12	352	Sevcon_CANTimeout	Emission	TestFailed	Controlled SD	NA	Sevcon inverter CAN messages not received
516226	31	353	Sevcon_InverterFaulted	Non Emission	None	NA	NA	Sevcon inverter is reporting it is faulted
516227	31	NA	Sevcon_OtherFault					Place holder, not used yet
516228			Spares 516228 to 516229					Place holder, not used yet
516230	12	375	Allison_CANTimeout	Non Emission	None	NA	NA	Allison EM77 CAN message was not received as expected
516231	31	376	Allison_NoECMComm	Non Emission	None	NA	NA	TCM not able to communicate with ECM
516232	31	NA	Allison_OtherFault					Place holder, not used yet
516233			Spares 516233 to 516234					Place holder, not used yet
516235	12	435	Brusa_CANTimeout	Emission	TestFailed	Controlled SD	NA	Brusa CAN message was not received as expected
516236	31	NA	Brusa_OtherFault		None			Place holder, not used yet
516237			Spares 516237 to 516239					Place holder, not used yet
516240	12	440	EMP_PumpCANTimeout	Non Emission	None	NA	NA	EMP pump CAN message was not received as expected
516241	12	441	EMP_FanCANTimeout	Non Emission	None	NA	NA	EMP fan CAN message was not received as expected
516242	31	NA	EMP_OtherFault					Place holder, not used yet
516243			Spares 516243 to 516244					Place holder, not used yet
516245	12	442	HCT_FanCANTimeout	Non Emission	None	NA		HCT fan CAN message was not received as expected
516246	31	NA	HCT_OtherFault					Place holder, not used yet
516247			Spares 516247 to 516249					Place holder, not used yet
516250	12	470	CurrentWays_CANTimeout	Emission	TestFailed	Controlled SD	NA	Current Ways CAN message was not received as expected.
516251	5	476	CurrentWays_InterlockFailure	Emission	TestFailedSince KeyCycle	Critical SD	NA	Charger interlock circuit failure detected.
516252	31	NA	CurrentWays_OtherFault		None			Place holder, not used yet
516253			Spares 516253 to 516254					Place holder, not used yet
516255	12	501	Delphi_CANTimeout	Emission	TestFailed	Controlled SD	NA	DC/DC CAN message was not received as expected
516256	31	NA	Delphi_OtherFault		None			Place holder, not used yet
516257			Spare					Place holder, not used yet
516258	12	NA	Valeo1Charger_CANTimeout	Non Emission	TestFailed	Controlled SD	NA	Valeo1 Charger CAN message was not received as expected
516259			Spare					Place holder, not used yet
516260	12	525	Bel_EP_CANTimeout	Non Emission	None	NA	NA	BelPower CAN message was not received as expected
516261	31	532	Bel_EP_Fault	Non Emission	None	NA	NA	Inverter general fault
516262	31	535	Bel_EP_CANFault	Non Emission	None	NA	NA	CAN bus fault
516263	31	NA	Bel_EP_OtherFault		None			Place holder, not used yet
516264			Spare					Place holder, not used yet
516265	12	550	PathWays_CANTimeout	Non Emission	None	NA	NA	Pathways CAN message was not received as expected
516266	31	551	PathWays_ServerNotFound	Non Emission	None	NA	NA	The smart energy server was not found.
516267	31	NA	PathWays_OtherFault		None			Place holder, not used yet
516268			Spares 516268 to 516269					Place holder, not used yet
516270	31	566	Bel_DC_CANFault	Non Emission	None	NA	7	CAN bus fault on Bel DC/DC
516271	5	571	Bel_DC_HVIL	Emission	TestFailed	Critical SD	55	The Bel DC/DC is indicating an HVIL error.
516272	12	572	Bel_DC_CANTimeout	Emission	TestFailed	Controlled SD	NA	DC/DC CAN message was not received as expected
516273	31	NA	Bel_DC_OtherFault		None			Place holder, not used yet
516274			Spare					Place holder, not used yet
516275	12	600	JCS1_CANTimeout	Emission	TestFailed	Controlled SD	NA	JCI pack 1 CAN message was not received as expected
516276	5	602	JCS1_HighVoltageSystemInterlockCircuit	Emission	TestFailedSince KeyCycle	Critical SD	2570	Set fault if HVIL is not measured (HVIL sate = STD_IDLE)
516277	0	606	JCS1_PackOverTemp	Non Emission	None	NA	2686	Temperature fault is set if the max cell temperature is greater than the high temperature fault threshold for the calibrated debounce time.
516278	1	615	JCS1_VoltageSystemIsolationFault	Emission	TestFailedSince KeyCycle	Critical SD	2726	Sets fault if the isolation calculated is less than the min limit ohms per volt calibration
516279	2	616	JCS1_VoltageIsolationSensorCircuit	Emission	TestFailed	Critical SD	2727	Set if isolation measurement error

516280	31	698	JCS1_PowerLimitExceeded	Emission	TestFailed	Controlled SD	6667	Set if 0kW power is greater than threshold, or lithium plating reserve is negative or heating capacity is zero or number of invalid cell voltage measurements greater than calibration.
516281	31	709	JCS1_OtherFault	Non Emission	None	NA		JCS fault/warning which is not specified in HCU.
516282	31	597	JCS1_MILLevel1MIL	Non Emission	None	NA	NA	MIL state is at level 1
516283	31	598	JCS1_MILLevel3LOS	Emission	TestFailedSince KeyCycle	Controlled SD	NA	MIL state is at level 3
516284	31	599	JCS1_MILLevel4QOR	Emission	TestFailedSince KeyCycle	Controlled SD	NA	MIL state is at level 4
516285	0		Pack1_ContactOpen_Fault	Non Emission	TestFailed	Controlled SD	NA	Pack1 is not closing Contact
<b>516286</b>			<b>Spares 516286 to 516289</b>					<b>Place holder, not used yet</b>
516290	12	710	JCS2_CANTimeout	Emission	TestFailed	Controlled SD	NA	JCI pack 2 CAN message was not received as expected
516291	5	712	JCS2_HighVoltageSystemInterlockCircuit	Emission	TestFailedSince KeyCycle	Critical SD	2570	Set fault if HVIL is not measured (HVIL state = STD_IDLE)
516292	0	716	JCS2_PackOverTemp	Non Emission	None	NA	2686	Temperature fault is set if the max cell temperature is greater than the high temperature fault threshold for the calibrated debounce time.
516293	1	725	JCS2_VoltageSystemIsolationFault	Emission	TestFailedSince KeyCycle	Critical SD	2726	Sets fault if the isolation calculated is less than the min limit ohms per volt calibration
516294	2	726	JCS2_VoltageIsolationSensorCircuit	Emission	TestFailed	Critical SD	2727	Set if isolation measurement error
516295	31	808	JCS2_PowerLimitExceeded	Emission	TestFailed	Controlled SD	6667	Set if 0kW power is greater than threshold, or lithium plating reserve is negative or heating capacity is zero or number of invalid cell voltage measurements greater than calibration.
516296	31	819	JCS2_OtherFault	Non Emission	None	NA	NA	JCS fault/warning which is not specified in HCU.
516297	31	820	JCS2_MILLevel1MIL	Non Emission	None	NA	NA	MIL state is at level 1
516298	31	821	JCS2_MILLevel3LOS	Emission	TestFailedSince KeyCycle	Controlled SD	NA	MIL state is at level 2
516299	31	822	JCS2_MILLevel4QOR	Emission	TestFailedSince KeyCycle	Controlled SD	NA	MIL state is at level 3
516300	0		Pack2_ContactOpen_Fault	Non Emission	TestFailed	Controlled SD	NA	Pack2 is not closing Contact