MPI Exceptions/HPI Compliance Matrix

Section No	Specification Requirements	HPI's Compliance	MPI's Exception	Estimated Effect on MPI's proposal	Estimated Effect on UTA given MPI's proposed Rebuild Spec- Life Cycle Impact and Cost (based on 10 year life duration)
Scope of Work - Specific Requirements 3.1.H.	H. Perform check to qualify length, squareness of end plates, and square-ness of base rails.	HPI will verify case block length squareness of end plates and squareness of base rails as part of the normal qualification.	MPI will verify end plate flatness, a joint agreement change order will be required if end plates do not pass flatness qualification and rework is necessary.	MPI has benefited by not costing for thorough qualification. By stating as change order, UTA will incur additional costs (potentially 25% of units).	MPI should be utilizing modern technology for this qualification process. Due to inaccuracies of their standard processes, UTA will incur long-term costs due to change order when failures (on 5%, or 1 engine) develop at a later date. This out-of-carbody (OCB) repair entails materials and labor, and requires engine to be sent to off-site engine rebuild center, with 7 weeks out of service time.
Scope of Work - Specific Requirements 3.1.Q.	Q. Upgrade water manifold holes in the generator end end plate for application of new hardened sleeves. Renew water inserts for each bank (EMD 8433264)	HPI has factored the costs for the hardened insert and Flange (P/N 8433264).	Inserts will be qualified with new hardened sleeves applied; this is MPI's standard service proven engine rebuild process.	MPI has benefited by choosing to qualify the inserts (flanges) instead of renewing. This results in a cost savings of replacement of 2 flanges per engine at 100%, which totals 36 flanges.	This out-of-carbody (OCB) repair requires engine to be sent to off-site engine rebuild center, requiring 7 weeks out of service. Given possibility of failure with expected fallout of 10%, incremental cost will be realized on approximately 2 engines, including materials, labor, and out-of-service revenue lost.
Scope of Work - Specific Requirements 3.3.C.	C. Exhaust chambers shall be cleaned and inspected. Cracked exhaust chambers shall be renewed.	HPI is in full compliance with replacement of cracked exhaust chambers, expansion joints and gaskets.	Cracked exhaust chambers will be renewed by repairing the cracked exhaust section.	MPI has chosen not to renew cracked chambers. Given possibility of failure with expected fallout of 10%, incremental cost should have been applied on approximately two engines.	The repair in-carbody (ICB) of exhaust chambers by welding will fix cracks or defects but will not re-machine the bases for a more perfect exhaust seal. Possible impacts will require the replacement of the defective segment with new chamber at a later time. Assuming a standard 20% fallout rate, incremental costs realized by UTA will be on approximately 4 engines (material and labor costs, plus out-of-service revenue lost).
Scope of Work - Specific Requirements 3.4.A.	A. Inspect and qualify the accessory drive housing. If the housing is defective it shall be replaced with the new style (EMD 9531367).	HPI is compliant with the inspect and qualify process of these housings. If the housing does not qualify, it shall be replaced with new style.	Housing will be replaced if the existing housing is defective and unrepairable, otherwise it will be repaired.	MPI has chosen not to renew defective. Given possibility of failure with expected fallout of 5%, incremental cost should have been applied on approximately one engine.	The repair is out-of-carbody (OCB), requiring the engine to be sent to rebuild center (4 weeks out of service). Given possibility of failure with expected fallout of 5%, incremental costs realized by UTA will be on approximately 1 engine (material and labor costs, plus out-of-service revenue lost).
Scope of Work - Specific Requirements 3.4.E.	E. Apply new governor drive gear, accessory drive gear*, water pump gears and lube oil pump drive gears. Accessory gear assembly to be equipped with new springs and segments. *EMD X891195	HPI is in full compliance with the replacement of the gears, and has included such within its proposal.	MPI's proposal is based on requalifying the drive gear, accessory drive	Significant cost-savings benefited MPI's price proposal, given their exception to renewing gears.	Some defects may be minor but a major defect could be catastrophic gear train failure and require the removal of the engine and strip down for repair. Such an event

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			gear and lube oil pump drive gears. Replacement of gears will require joint agreement change order.		would require significant man hours at an off-site engine rebuild facility (OCB) and impact the use of the locomotive for up to one month. Materials required included, but not limited to: · 8485722 Accessory Drive Gear · 8041930 Governor Drive Gear · 8296366X Main Lube and pump cooling pump gear · 8485722 Scavenging Oil Pump gear · 9531367 Housing assembly Given, 20% fall out rate impact will be realized on approximately 4 engines, including materials, labor, and time for unit out of service (7 weeks at rebuild facility, for OCB failure).
Scope of Work - Specific Requirements 3.4.F.	F. Gear back lash shall be 0.014 - 0.016.	HPI will comply with UTA's requirement for 16-645F3B backlash of .014-.016". HPI will comply with the tighter tolerances as we planned on renewing the accessory gears as specified and see no problem in meeting the tighter tolerance. The tighter tolerance will develop naturally as worn gears with greater distances between gear teeth will be replaced with new. See HPI evaluation of long term effects of new gears in explanation 3.4.E above.	MPI will follow EMD M.I. for gear backlash.		MPI's position to follow EMD M.I. vs. UTA requirement of 0.014-0.016 tolerance includes risk due to their position of gear requalification, which will result in greater wear. See above description of cost due to failure (3.4.E).
Scope of Work - Specific Requirements 3.4.R.i.	Remove, rebuild and/or utilize emission kit the following components with OEM parts: i. Lube Oil Pressure Pump	HPI is in full compliance. HPI will remove, document serial number and ship to OEM for re-build. MPI's treatment of this section as an exception indicates that the pump will be rebuilt without OEM parts.	Pump will be rebuilt in-house by following OEM procedures.	Significant cost-savings benefited MPI's price proposal, given their exception to the utilization of OEM parts during rebuild.	This (ICB) repair requires 2 days out of service. Given standard fall out rate of 25%, UTA would see incremental cost on approximately 5 units, including materials, labor, and unit-out-of-service costs.
Scope of Work - Specific Requirements 3.4.R.iii.	Remove, rebuild and/or utilize emission kit the following components with OEM parts: iii. Lube Oil Scavenging Pump	HPI is in full compliance. HPI will remove, document serial number and ship to OEM for re-build. MPI's treatment of this section as an exception indicates that the pump will be rebuilt without OEM parts.	Pump will be rebuilt in-house by following OEM procedures.	Significant cost-savings benefited MPI's price proposal, given their exception to the utilization of OEM parts during rebuild.	This (ICB) repair requires 2 days out of service. Given standard fall out rate of 25%, UTA would see incremental cost on approximately 5 units, including materials, labor, and unit-out-of-service costs.

Scope of Work - Specific Requirements 3.5.H.	H. Recondition aftercooler air ducts and replace cores with emission kit components. Cracked air ducts shall be renewed.	HPI is in compliance with replacement of the cracked air ducts as new.	Cracked air ducts will be renewed by repairing the cracked section.	MPI has chosen to repair cracked air ducts instead of renewing. Given possibility of failure with expected fallout of 10%, incremental cost should have been applied on approximately two engines.	This (ICB) repair requires 3 days out of service to repair the failed air ducts and replace with new. Given standard fall out rate of 10%, UTA would see incremental cost on approximately 2 units (4 air ducts), including materials, labor, and unit-out-of-service costs.
Scope of Work - Specific Requirements 3.8.A.	A. Camshafts shall be renewed with cam shaft segments supplied in the emission kit for the interface with the EFI injectors.	HPI is in full compliance with 100% replacement.	Camshaft segments will be qualified. Replacement of camshaft will require joint agreement change order.	Significant cost-savings benefited MPI's price proposal, given their exception to the renewal of all camshaft segments.	Because of the age of the engines and the fact that Tier 2 Emissions require offset cams, HPI has elected to comply with the UTA specification and provide new cams. The advantage in using new cams is that an area of potential risk due to wear and spalling or other fatigue failure is eliminated or minimized and the engine reliability in this area is increased to new. It is our understanding that the engines as furnished to UTA in their locomotives were not new but rather rebuilt using a high percentage of qualified parts. Further, we understand that the camshafts were not new but requalified. HPI believes that the UTA specification to renew the camshafts is reasonable and warranted. This (ICB) repair requires 6 days out of service. Given standard fall out rate of 35%, UTA would see incremental cost on approximately 6 units, including materials, labor, and unit-out-of-service costs.
Scope of Work - Specific Requirements 3.11.B.viii.	viii. DOC - Diesel Oxidation Catalyst (After treatment as applicable) - Harco Manufacturing or equivalent supplied by the emission kit Supplier.	HPI plans to provide a DOC that meets Tier 2+ with either HARCO or equivalent supplied equipment.	MPI does not require DOC for either Option 1 or Option 2.	Significant cost-savings benefited MPI's price proposal, given their exclusion of DOC within approach to Tier 2+.	HPI is very confident that DOC implementation is critical in the achievement of Tier 2+ emissions levels on this engine. The cost that UTA will incur as a change order, once it is realized that DOC must be implemented to meet Tier 2+, is significant and should be seriously considered by UTA.
Engine Build-Up Configuration Sheet 7.	7. Engine Build-Up Configuration Sheet For each Emissions Kit Power Assemblies a record sheet for each shall be submitted to UTA indicating new or re-built status, part number, serial number and Supplier name for each of the following PA components as a minimum: i Head ~ OEM diamond 6 or better ii Liner ~ new only iii Piston ~ new only iv Carrier ~ new only	HPI has taken into consideration UTA's specification requirement and has incorporated new carriers.	MPI's offer includes EMD UTEX Power Assemblies for Option 1 and Option 3. New EMD Power Assemblies will be included in Option 2. For Option 1 and 3, the UTEX power assemblies shall include UTEX	Industry standard re-manufactured power assemblies incorporate a new piston, new piston thrust washer, new piston rings and a re-conditioned piston carrier. Significant cost-savings benefited MPI's price proposal, given their exception to the 100% replacement of carriers.	This (ICB) repair requires 2 days out-of-service for minimal repair, and 5 weeks for catastrophic event. For a minimal impact failure, repair includes power assembly and carrier change out. For a catastrophic event, repair includes block damage and power assembly change out. Given standard fall out rate of 25% and the current condition of these F3B engines, UTA would experience an estimated 3 minimal and 2 at catastrophic events. UTA would see incremental cost of materials, labor, and unit-out-of-

			carrier, this is EMD standard practice.		service costs.
Warranty 18.C.	C. When an identical failure of a particular component or, subsystem, product, part, apparatus, article, or other Material occurs within the applicable warranty period on 10% or more of the systems furnished by the Contractor, then 100% of such item, including those with expired warranty, will be deemed to require an approved redesign, replacement, or adjustment under this warranty.	Based on HPI's experience with 16-cylinder F3B engines in passenger duty cycle, we are comfortable with the application of our past warranty experience (based on history of over 200 F3B overhauls) and the 10% factor on two units, as set forth by UTA. HPI has factored into its proposal a reliability engineer to cover this area, which equates to 2% of total project value.	MPI's offer is based on 10% applicable to the entire fleet, and that for the base order with only 2 units, a 10% factor would not be practical. The % applied to for the base order shall be mutually agreeable to both MPI and UTA.		Based on MPI's response, we can only assume that they did not factor this cost.
Scope of Work, General-H	UTA will perform the removal and the re-installation of the locomotive's components including the engine and main traction alternator at their Salt Lake City, Utah maintenance facility. All supplied on-board emission kit components, Tier 1+ or Tier 2+, will be installed at this same facility with installation instructions, including all interfaces, onboard modifications and personnel for Validation and Verification (V&V) purposes shall be furnished by the Contractor.	HPI fully complies with this requirement, with all installation to be conducted in SLC for unit. We have factored these additional development and non-recurring costs into the proposal pricing provided to UTA.	For Options 1, 2 and 3, it is MPI's proposal to upgrade the first MP36 unit at MPI's Main Complex in Boise…	MPI benefits from this arrangement by utilizing a UTA live locomotive versus a simulated EPA test bed, which would require a 16-F3B engine, split cooling and four pass aftercooler systems, EFI, microprocessor, etc., as well as transport of all items to a certified EPA test facility. MPI's proposal, therefore, benefited from cost savings for the material and transport costs that they avoided for such a simulation requirement.	This scenario places the first locomotive out of service for a period of at least 90 days, which UTA should recognize as lost revenue for unit-out-of-service time.