BADA 4.2 Release Note

17th March 2016

Request	Title	Description	Conclusion	Affected Files
BSA-419	Addition of twenty-one Embraer models.	Reference data are now available for most Embraer jet aircraft: EMB-135ER EMB-135LR EMB-135BJ Legacy 600 EMB-135BJ Legacy 650 EMB-145ER EMB-145LR EMB-145XR EMB-170STD EMB-170LR EMB-170AR EMB-175STD EMB-175LR EMB-175AR EMB-190STD EMB-190LR EMB-190AR EMB-195STD EMB-195LR EMB-195AR EMB-500 Phenom 100 EMB-505 Phenom 300	New models have been developed for those aircraft types.	Addition of the following folders (XML, ATF, OPT): EMB-135ER EMB-135LR EMB-135BJ-Legacy600 EMB-135BJ-Legacy650 EMB-145ER EMB-145LR EMB-145XR EMB-170STD EMB-170LR EMB-170AR EMB-175STD EMB-175LR EMB-175AR EMB-190STD EMB-190LR EMB-190AR EMB-195STD EMB-195LR EMB-195AR EMB-500 EMB-505
-	Addition of nine Boeing models.	Reference data are now available for the following Boeing aircraft: B787-8 (GEnx-1B67 engines) B787-8 (GEnx-1B70 engines) B787-8 (Trent 1000-E engines) B787-8 (Trent 1000-AE engines) B787-8 (Trent 1000-G engines) B787-8 (Trent 1000-CE engines) B787-9 (GEnx-1B74/75 engines) B787-9 (Trent 1000-AE engines) B787-9 (Trent 1000-J engines)	New models have been developed for those aircraft types.	Addition of the following folders (XML, ATF, OPT): B788GE67 B788GE70 B788RR53 B788RR64 B788RR67 B788RR70 B789GE75 B789RR64 B789RR74
-	Addition of one Airbus model.	Reference data are now available for the following Airbus aircraft: A350-941 (Trent XWB-84 engines)	A new model has been developed for this aircraft type.	Addition of: A350-941 folder (XML, ATF, OPT)
-	Addition of one ATR model.	Reference data are now available for the following ATR aircraft: ATR72-600 (PW127M engines)	A new model has been developed for this aircraft type.	Addition of: ATR72-600 folder (XML, ATF, OPT)
-	Renaming of one ATR model.	ATR72-210A is the manufacturer's internal name of the aircraft also known as ATR72-212A (certification name) or ATR72-500 (commercial name).	The ATR72-210A model has been renamed ATR72-500.	Replacement of: ATR72-210A folder (XML, ATF, OPT) with: ATR72-500 folder (XML, ATF, OPT)
-	Removal of one Boeing model.	The B788RR model was based on preliminary data and is now obsolete.	The B788RR model has been removed.	Removal of: B788RR folder (XML, ATF, OPT)
-	Addition of the MTKF turbofan engine rating	In order to enable accurate computations of the take-off performances, the maximum take-off (MTKF) thrust rating has been introduced in BADA 4.	This new engine rating is available in all Boeing/McDonnell models (except B737-200 and B747-300).	Replacement of: all Boeing/McDonnell files (XML, ATF, OPT), except B73215 and B743PW

Request	Title	Description	Conclusion	Affected Files
-	Addition of the Taxi Fuel Allowance	In order to enable estimations of the fuel consumption during taxi, a Taxi Fuel Allowance (TFA) parameter has been introduced in BADA 4, which represents the average all-engine fuel consumption during taxi.	This new parameter is available in all Airbus (except A350-941), ATR, Boeing/McDonnell and Embraer (except EMB-500/505) models.	Replacement of: all Airbus, ATR, Boeing/McDonnell and Embraer files (XML, ATF, OPT), except A350-941, EMB-500 and EMB-505
-	Improved thrust and fuel flow modelling for existing jet models.	Several issues or limitations have been identified in the existing BADA 4 jet models: 1) Some models exhibit an unusual degradation in accuracy when climbing at temperatures higher than the engine kink point (ISA+10 for most engines). 2) Some models produce unexpected fuel flow estimations at very low speeds (i.e. below the stall speed). Note that this issue only impacts specific applications where the BADA 4 fuel model is combined with another thrust model (e.g. ANP-based models) to simulate ground operations such as the take-off run. In addition, the continuous R&D work performed by the BADA team and partner aircraft manufacturers has resulted in a new choice of active coefficients in the thrust and throttle models, which provides increased accuracy (with respect to altitude) and stability (with respect to speed) to the models during the climb phase.	All jet models have been re-identified to include the following improvements: 1) Change of formula to model the throttle parameter in the temperature-rated area. 2) Change of active coefficients in the thrust, throttle and fuel models. 3) Addition of (previously missing) reference trajectories at ISA+30 and cruise fuel data at non-ISA conditions to some Airbus reference datasets.	Replacement of: all jet aircraft files (XML, ATF, OPT)