



Baja SAE BRAZIL – Northeast Event 2019

Informative 02 – Deliverables

Salvador April 26th, 2019

Dear Participants,

The Design Evaluations will be broken down in different events, this informative refers only to Deliverables.

All deliveries must be written in English (**TSS, DV**, presentation files and any other document), any document delivered partially or totally in a language other than English will have a 30% deduction from their score.

Design Validation

The Design Evaluation will have partial deliveries throughout the year and correlation tests during the event. Validation is a requirement to any project, all the reports we ask should already be part of the team activities and should not add to the team workload.

All details regarding templates, subjects to be covered, scores, penalties, submission and further clarification are described within this document.

The goal is to have a closer look on the team's work and evolution throughout the year, encouraging continuous learning and improvement as well as to identify coherence between targets/goals and achieved results.

Scores and Penalties

This part of Design Evaluations has a score of 100 points.

Delays in file submission will not be accepted; the teams are strongly advised to submit all documents hours before the deadline.

Any document submitted by any team which does not meet the deadline will be disregarded and will be assigned a score of zero (0).

Deliverables

This section is meant to describe all deliverables, what is expected for each of them, how many points each is worth, and how each may be penalized.

Each deliverable has a specific date and time for submission; Delays will not be accepted.

- **Deliverable 1 – due date: Jun 13th, 2019**
 - Issues at 2019 competition (5 pts);
 - Issue Description: Teams are required to present the two main issues faced at the 2019 National event with the highest impact on result, one vehicle failure and the other a team issue (if the team was not in the competition or failed to pass safety inspection this should be main team issue);
 - Root Cause: Present which was the root cause which led this failure to happen. Show methodology and steps to reach presented cause;
 - Permanent Correction: How did the team permanently fixed the issue, show solution robustness;
 - Prevent Recurrence: How the lessons learned will be passed on to make sure the issues do not happen again in the future.
 - Targets and Goals for 2019 Northeast competition (15 pts):
 - Each team needs to submit the following list of vehicle targets and goals:
 - Time for 0-30m of acceleration (s);
 - 100 m Final Speed from rest (Km/h);
 - Traction Capacity (N);
 - Turn Radius (mm);
 - Braking Distance (mm);
 - Width (mm);
 - Wheelbase (mm);
 - Total Weight (Kg);
 - Ground clearance without driver (mm);
 - Ground clearance with driver (mm);
 - Each team will start with 15 points and will lose 1.5 points for each undelivered item;
 - If there are targets/goals changes through the project, the teams are allowed to submit a new file to replace an old one, penalty will be 0.5 point +

- 0.1 point per month to be deducted from **Delivery 4 Test Results and Reports:**
- Project Management Plan (20 pts):
 - Each team is required to deliver the timing plan for its vehicle. This timing plan should be built in a way that the team understands and presents all important events and milestones for the vehicle design and manufacture, tasks already completed by Jun 13rd should also be on the timing plan and compared to the initial plan; The timing plan must be delivered as an attachment, in PDF format;
 - 5 pages maximum.
 - **Deliverable 2 – due date: Jul 25th, 2019**
 - Validation Report (20 pts):
 - Each team is required to report 3 validation studies;
 - The first study shall be based on the vehicle failure described on the **Deliverable 1**;
 - The second study will describe the design, manufacturing, set up and validation of the brakes system;
 - And the third study must present kinematics and dynamics of suspension system;
 - All studies should contain input information, assumptions considered, output data and any other information considered important to understand the results;
 - When applicable, present: Boundary conditions, mesh, solver, post processing, fatigue, tests used as input, off-the-shelf components selection, etc.
 - The final report, including all validation studies, must have up to 4 pages in length (maximum size).
 - Design Freeze (5 pts):
 - Each team is required to send CAD screenshots of final vehicle design; they should provide vehicle images for: front, rear, left, front diagonal and rear diagonal views as well as close looks to each of the sub-systems: roll cage, steering, suspension, brakes, powertrain and electronics. Penalties will be applied if there are missing components, interferences or any other condition that indicates the project is not finished.

- Validation Plan (5pts)
 - Each team is required to submit the validation plan briefly describing which activities will be performed to ensure the vehicle has achieved its performance and durability targets.
- **Deliverable 3 – Due date: Sep 12th, 2019**
 - Vehicle completed and ready for testing (10 pts):
 - Teams should submit photographic evidence that the vehicle is finished and ready for testing, the images should replicate the screenshots delivered on **Deliverable 2** and both will be compared;
 - Important: If on the Timing Plan submitted in **Deliverable 1** the schedule determines the vehicle should be finished before Sep 12th the Timing Plan vehicle completed date + 7 days will be the deadline for **Deliverable 3**;
 - Important: Vehicles will only be considered finished if all subsystems are assembled and all safety equipment is present (including but not limited to firewall, drip pan, seats, seat belt, front/side panels, etc.);
 - Finishing elements, such as painting, body panels stickers, roof cover, etc. are optional.
- **Deliverable 4 – Due date: Oct 03rd, 2019**
 - Technical Specification Sheet (TSS)
 - Same sheet as sent on previous years, the template will be informed in the next section;
 - Test Results and Reports (20 pts):
 - On this section teams are requested to provide test results to verify if they have achieved the target established on **Deliverable 1**, the numbers will be verified, and the penalties will be applied as below:
 - 0% to 5% deviation: no penalties;
 - 5% to 10% deviation: for every 1% above 5% mark the team will lose 4% points from its score, the teams are allowed to justify the reason for the target not to be achieved, if accepted 2% will be lost instead;
 - Deviation above 10%: The team will lose 5% for every 1% above 5% deviation. No justification will be accepted;



- Show testing targets evidence, otherwise the results will not be considered;
 - One of the tests must have video evidence submitted (maximum 20 MB file);
 - For each undelivered test report 5 points will be deducted as penalty;
 - The deductions will be applied for each item, no negative points will be awarded.
- **Competition Verification**
 - All deliverables from 1 to 4 will be submitted by the teams in advance, these deliverables should guide the teams in the design process throughout the year, these deliverables will provide 0 to 100 points maximum for each team, which is a partial score to be checked during the competition;
 - During competition some items from Test Results will be measured by the judging committee, each objective will be measured and compared to what the team claims to have achieved on **Deliverable 4** and the deviation error between the event and team's measurement will be applied as follows:
 - 0% to 5% deviation: no penalties;
 - 5% to 10% deviation: for every 1% above 5% mark the team will lose 2% points from each item score;
 - Over 10% deviation: for every 1% above 5% mark the team will lose 5% points from each item score;
 - For tests not performed by the team, the committee will cross check the results to targets and goals submitted on **Deliverable 1**;
 - If the team has not performed the test and does not have a target/goal for the item, a 50% punishment will be applied.

Template

A specific informative will be released for deliverables template, which should work as format guide, however slight changes are acceptable.

For every submission the team should submit a DOCX and a PDF of the complete deliverables template, even if the next deliverables remain blank; for deliverables 2, 3 and 4 the previous pages already sent should be resent unchanged, in the event of targets update a new submission date should be informed and penalties will be applied as described on **Deliverable 1** section. If the team changes the previous



deliverables content without informing the changes, the Design Validation score will be 0.

The templates to be used in the **Technical Specification Sheet** are the same templates used in the International Competition, which can be accessed through the link below:

- Technical Specification Sheet:
<https://drive.google.com/file/d/12TBOd-RK7M8vyfhctZQn7UgHIZUwXhup/view?usp=sharing>
- No change is allowed.

Additional Considerations

Judges of the Northeast Baja SAE Competition aim to provide feedbacks to all teams that submit their deliverables on time.

The feedback sheet will be available one day after the Design Presentation evaluation, so the team captain can retrieve it from the judges.

Dates and times for files delivery

The design evaluations files should be delivered following the dates below:

Design Validation (Delays will NOT be accepted):

- Deliverable 1 – Jun 13th, 2019 up to 13h59min (Brasilia time);
- Deliverable 2 – Jul 25th, 2019 up to 13h59min (Brasilia time);
- Deliverable 3 – Sep 12th, 2019 up to 13h59min (Brasilia time);
- Deliverable 4 – Oct 3rd, 2019 up to 13h59min (Brasilia time);

Submission procedure

Due to documents size, there will be two different submission procedures.

Design Validation:

Deliverables submission will be made through email (bajasaene@gmail.com). The deliverables should be submitted by the teams as a single document in DOCX and PDF format (except for **Deliverable 4** in which the team will also submit the TSS, and **Deliverable 1** where the schedule can be sent in PDF format), following the standard title below:

BNE19– Deliverable X – Car ## – Team YYYYYY

The teams are allowed to update the files by making a new upload until the deadline, only the latest submission will be considered as official and the appropriate penalties will be applied.

If the file is too large the team may use the same presentation file submission procedure below.

Baja SAE Brazil – Northeast Event Committee