QNET-CFD WIKI
KNOWLEDGE BASE

UNDERLYING FLOW REGIME QUALITY REVIEW CHECKLIST

INSTRUCTIONS TO THE REVIEWER
Please indicate your agreement or disagreement with the comments below, by ticking either the YES or NO box (using symbol ☑). If you would like to comment on any of the questions, please also tick the CO (comment) box, and add your comments in the box provided at the end of each section. Please make sure that all questions are answered.

When you have completed the review, please indicate below your overall judgment of the UFR and its documentation:

When you have completed the review, please indicate below your overall judgment of the Application Challenge

Gold Standard ☐ Silver * Standard ☐ Silver Standard ☐ None of these ☐

Recommendations for further work

Underlying Flow Regime Title:	
UFR Author and UFR number:	
Reviewer (Name/Organisation) :	

1	**TOP LEVEL CHECK**	**YES**	**NO**	**CO**
1.1	Is the selected test-case study a good representation of the assigned UFR?	❑	❑	❑
1.2	Does the test-case study include both flow measurements and CFD calculations?	❑	❑	❑
1.3	Does the document under review comply with the UFR Document template	❑	❑	❑
1.4	Should any parts be expanded, condensed or deleted?	❑	❑	❑
1.5	Are the illustrations and their captions clear and informative?	❑	❑	❑
1.6	Are the references adequate and complete?	❑	❑	❑
1.7	If any hyperlinks are used, do these function correctly?	❑	❑	❑

Comments:

DETAILED CHECK

2	REVIEW OF UFR STUDIES AND CHOICE OF TEST CASE	YES	NO	CO
2. 1	Have past studies of the UFR been reviewed adequately?	❑	❑	❑
2. 2	Is the chosen test-case study selected from an established database or comparison exercise?	❑	❑	❑
2. 3	Have the test-case experiments been devised for CFD validation?	❑	❑	❑

Comments:

3	DESCRIPTION OF THE STUDY TEST CASE	YES	NO	CO
3. 1	Is the geometry described adequately, including an appropriate sketch?	❑	❑	❑
3. 2	Are the flow parameters defining the flow regime specified?	❑	❑	❑
3. 3	Are the principal measured quantities (i.e. those by which success or failure of CFD is to be judged) specified?	❑	❑	❑
3. 4	Is the description fully self-contained and sufficiently detailed ? (the level of detail required depends on whether a hyperlink to a detailed database is provided)	❑	❑	❑

Comments:

4	TEST CASE EXPERIMENTS	YES	NO	CO
4. 1	Is the test-case facility described adequately?	❑	❑	❑
4. 2	Are the measurement techniques explained?	❑	❑	❑
4. 3	Is the quality/accuracy of the measured data discussed?	❑	❑	❑
4. 4	Are the following quality aspects addressed in this discussion :-			
a)	Closeness of flow to target/design conditions?	❑	❑	❑
b)	Accuracy estimation of measured quantities?	❑	❑	❑
c)	Checks on global conservation of conserved quantities?	❑	❑	❑
d)	Consistency in the measurements of different quantities?	❑	❑	❑
e)	Other (briefly describe)			❑
4. 5	Is the evidence of data quality judged to be sufficient?	❑	❑	❑
4. 6	Is the information provided at the flow boundaries sufficient to specify or estimate reasonably well the boundary conditions required for a CFD calculation?	❑	❑	❑
4. 7	Is the overall discussion self-contained and sufficiently detailed? (the level of detail required depends on whether a hyperlink to a detailed database is provided)	❑	❑	❑

Comments:

5	**CFD METHODS**	**YES**	**NO**	**CO**
5. 1	Is an overview given of the methods used?	❑	❑	❑
5. 2	Have the following aspects of the methods used been explained adequately:-			
a)	The codes employed?	❑	❑	❑
b)	The turbulence/physical models used?	❑	❑	❑
c)	The wall treatments applied?	❑	❑	❑
d)	The numerical boundary conditions?	❑	❑	❑
5. 3	Are comments made on how well the boundary conditions replicate conditions in the test rig?	❑	❑	❑
5. 4	Is the quality of the calculations discussed?	❑	❑	❑
5. 5	Are the following quality aspects addressed in this discussion?			❑
a)	The discretisation scheme(s) and solver(s)?	❑	❑	❑
b)	The sufficiency of grid resolution(s) ?	❑	❑	❑
c)	Sensitivities to uncertainties in the boundary conditions	❑	❑	❑
d)	Comparisons between separate calculations using the same physical model	❑	❑	❑
e)	Other (briefly describe)			❑
5. 6	Is the evidence of CFD quality judged to be sufficient in all cases?	❑	❑	❑

Comments:

6	COMPARISON OF CFD CALCULATIONS WITH EXPERIMENT	YES	NO	CO
6. 1	Are key comparisons of CFD results with experiment presented in the form of tables or plots?	❑	❑	❑
6. 2	Do these comparisons include the assessment quantities?	❑	❑	❑
6. 3	Are further comparisons available via hyperlinks to a results database?	❑	❑	❑
6. 4	Is the performance of the CFD calculations judged by comparison with experiments discussed and analysed in all cases?	❑	❑	❑

Comments:

7	BEST PRACTICE ADVICE FOR THE UFR	YES	NO	CO
7. 1	Are model abilities for this test case discussed and analysed in sufficient detail?	❑	❑	❑
7. 2	Are recommendations provided on which models should be used for this UFR?	❑	❑	❑
7. 3	Are these recommendations supported by the evidence?	❑	❑	❑

Comments: