Keywords

Wave overtopping, wave run-up, overtopping, run-up, WTI 2017, safety assessment, software, failure mechanism.

Summary

This document describes the test results for the 16.2 release for the 'wave overtopping at dikes' kernel. It also contains some recommendation for further improvements on the test procedure.

Samenvatting

Dit document beschrijft de testresultaten voor de 16.2 release voor rekenkern “golfoverslag bij dijken”. Het bevat ook enkele aanbevelingen voor verbeteringen van de testprocedure.

References

KPP 2016 Waterveiligheidsinstrumentarium - VTV Tools.

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| Version | Date | Author | Initials | Review | Initials | Approval | Initials |
| 1.0 | dec. 2016 | E.J. Spee |  | H. van Putten |  |  |  |
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# Introduction

## About this document

This document describes the test results for the 16.2 release for the 'wave overtopping at dikes' kernel. The functional design of this kernel is given in (De Waal, 2015a).

Compared to the 16.1 release, the test bench is extended with new tests, which are related to issues resolved between the 16.1 and 16.2 release.

## Brief description of the changes in the test procedure

The test bench is extended with the following 14 new tests:

|  |  |
| --- | --- |
| Name tests | Description |
| omkeerVariantIssue34A, B & C | Integration test fix for endless loop in omkeervariant |
| omkeerVariantIssue35A, B & C | Integration test fix for endless loop in omkeervariant |
| omkeerVariantIssue36A & B | Integration test fix in omkeervariant with water level at toe |
| omkeerVariantIssue42A & B | Integration test fix in omkeervariant with water level at berm |
| TestRoughnessIssue44A & B | Integration test fix to avoid error in roughness calculation with very small waves |
| testCalculateGammaF &  testCalculateGammaF2 | Unit test for fix to avoid error in roughness  calculation with very small waves |

There are no changes in the tests belonging to the 16.1 release, and they still pass. All these tests are described in (Waal, J.P. de, 2015b).

# Test results

## Results from TeamCity

The test bench runs automatically on TeamCity, a well-known continuous integration environment. It compares actual results with results from a reference run. Between the 16.1 and 16.2 release there was no update of the references.

The overtopping project can be found here:

<https://build.deltares.nl/viewType.html?buildTypeId=VtvInstrumentarium_DikesOvertopping>

The results are summarized below:

Summary:

|  |  |
| --- | --- |
| Number of tests run: | 170 |
| Number of tests ignored: | 0 |
| Number of tests failed: | 0 |
| Number of failed assertions: | 0 |
| Number of runs needed to complete the tests: | 1 |

We conclude that all tests are succeeded, both the 156 old and 14 new tests.

Including the new tests, it takes only 4 s to run all tests.

# Discussion

## Introduction

The test series described in the earlier chapters is quite extensive and is very useful for testing the wave overtopping kernel. However, there are also some shortcomings of this test set, some of which are considered serious enough to mention in this report.

## Shortcomings in strategy

* There are only integration tests, except for the two new unit tests related to issue 44.  
  (Integration tests a complete overtopping or ‘omkeervariant’ calculation; Unit tests are on specific parts of the computation).
* The coverage in unknown.

## Recommendations

* It is recommended to add both unit and integration tests, when problems are reported which must be fixed.
* Extend the test environment with a tool to determine the code coverage.

# References

Waal, J.P. de, 2015a. Wave overtopping at dikes kernel. Functional design. Deltares report 1220043-002, september 2015.

Waal, J.P. de, 2015b. Wave overtopping at dikes kernel. Test Report. Deltares report, september 2015.