



TRANSPORT CONTAINER DROP TEST PROCEDURE

**Design
Approval**

D W Rogers

A handwritten signature in black ink that reads "D W Rogers". The signature is written in a cursive style with some loops and flourishes.

.....
(signature)

date: 22/03/04

**Quality System
Approval**

B S Patel

A handwritten signature in black ink that reads "B S Patel". The signature is written in a cursive style with some loops and flourishes.

.....
(signature)

date: 25 March 2004

Date implemented

12 APR 2004

Controlled file number



1.0 PURPOSE AND SCOPE

The purpose of this procedure is to describe the method by which transport containers are drop tested. in order to demonstrate compliance with the IAEA test requirements. It covers dropping the specimen onto a flat faced target, dropping it onto a punch and dropping a penetration bar onto the specimen.

It is intended to be applied to transport containers for radioactive materials, or components and features thereof, though it is not necessarily limited to this application. It applies to operations performed by Revisss personnel and to contractors working on their behalf.

2.0 REFERENCES

- “Regulations For The Safe Transport Of Radioactive Materials”, IAEA Safety Series, IAEA, Vienna, current edition.
- QS/QR 227: Drop Test Checklist Pro-forma.

3.0 EQUIPMENT

3.1 SPECIMEN

Assembly, part assembly, feature or component that is sufficiently representative in mechanical performance as to provide useful information.

3.2 INSTRUMENTATION

All measuring equipment required to conduct the test in accordance with the specification or plan shall be uniquely identified and within calibration.

- Height gauge or measure.
- Other (spirit level, torque wrench, temperature measuring etc.) as required by test specification or test plan conditions.

3.3 OTHER EQUIPMENT

- Target:
 - Shall have a mass not less than 10 times the specimen.
 - Shall have a horizontal surface sufficiently hard as to cause maximum damage to the specimen.
 - Punch, if necessary, capable of being rigidly mounted on target.
 - Penetration bar, if necessary.
- Hoist, slinging and release mechanism: Optional if specimen is less than 10kg and is being dropped 1.2m or less.
- Camera (still): As necessary to adequately record specimen, orientation, test and damage.
- Camera (video): If necessary.
- Other: As required by test specification or test plan conditions.

4.0 PROCEDURE

4.1 SAFETY

- All operations should be subject to a risk assessment and appropriate precautions specified.



- All operations and lifting equipment shall comply with local safety rules and procedures.
- All personnel in attendance should be adequately briefed on safety rules.

4.2 TEST SPECIFICATION/PLAN

All tests should have a specification detailing what is to be tested, how it is to be tested and, if necessary, the inspection and pass/fail criteria.

If the test is part of a sequence of drop tests and/or other tests there should be a test plan defining the overall test programme, any special conditions and, if necessary, the inspection and pass/fail criteria.

4.3 TYPICAL SPECIMEN ORIENTATIONS AND VERIFICATION

The following orientations and guidance are based on simple symmetrical specimen shapes, i.e. cuboid, rectangular or cylindrical. More complex geometries should be individually considered.

- Flat on flat face (i.e. uppermost surface horizontal): Most easily confirmed using a spirit level in two positions at right angles on uppermost surface.
- Flat on a curved face (i.e. uppermost surface horizontal): Most easily confirmed using a spirit level along uppermost surface.
- Centre of gravity over a straight edge: Most easily confirmed using a spirit level on opposite (uppermost) straight edge and visually checking line of contact is vertically under lifting point, or in line with hoist cable.
- Centre of gravity over a curved edge: Most easily confirmed by visually checking from the side and front that the point of contact is vertically under lifting point, or in line with hoist cable.
- Centre of gravity over a corner: Most easily confirmed by visually checking from side and front that point of contact is vertically under lifting point, or in line with hoist cable.

4.4 PROCEDURE

Unless otherwise specified:

- Record test number, time and date.
- Record test plan number and issue level, if applicable.
- Record specimen design/serial number or other unique identifier and drawing number.
- Record measuring equipment design/serial number or other unique identifier and calibration due date.
- Record target, punch and penetration bar details as necessary.
- Assemble specimen to manufacturing drawing.
- Assemble punch to target, if applicable.
- Confirm and record test plan preparation requirements have been met.
- Take sufficient photographs to confirm specimen orientation and condition.
- Check and record test height.
- Drop specimen.
- Photograph specimen (firstly undisturbed and then as necessary to record damage).
- Confirm correct execution of drop.
- Confirm PASS/FAIL result, if required (see test specification or test plan).
- Record all pertinent observations.
- Sign checklist and have countersigned by witness.



5.0 DOCUMENTATION AND RECORDS

5.1 CHECKLIST

Unless otherwise specified use pro-forma QS/QR 227.

To ensure all key operations are recorded adequately planned a checklist should be used.

This should contain all key instructions together with the pass/fail result, if applicable, and space for observations.

5.2 REPORTING

More detailed reporting of the test should be included in a subsequent report which should include the completed checklist, photographs and, if applicable, data and photographs from subsequent dismantling of the specimen.