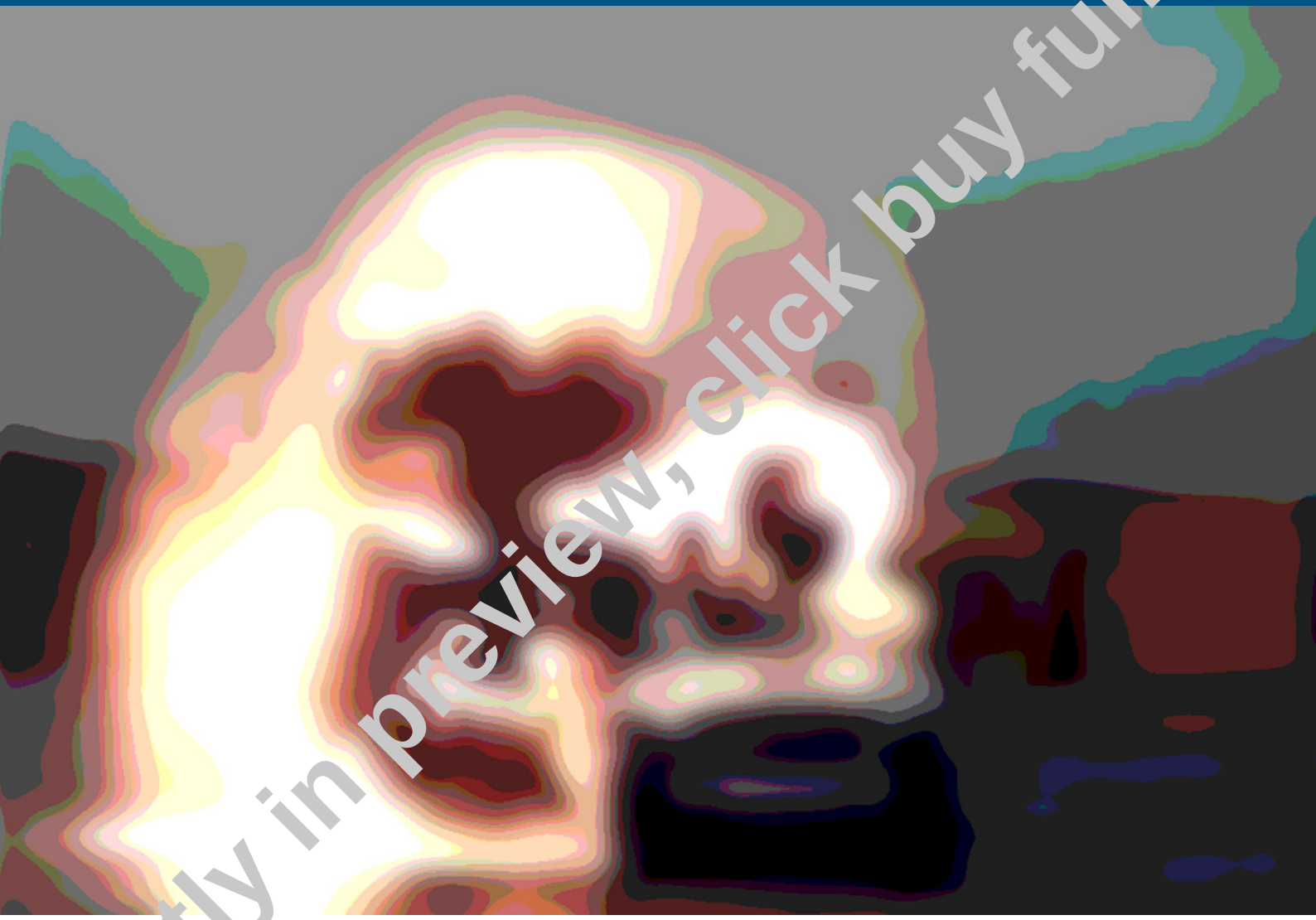
PAS 300:2015

Civilian armoured vehicle – Test methods for ballistic and blast protection



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Contents

List of tables

Foreword

This PAS was sponsored by the Centre for the Protection of National Infrastructure (CPNI). Its development was facilitated by BSI Standards Limited and it was published under licence from The British Standards Institution. It came into effect on 31 March 2015.

Acknowledgement is given to the technical author from the Metropolitan Police Service Special Projects, and to the following organizations that were involved in the development of this PAS as members of the steering group:

- Blastech Limited
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- Radnor Range Limited
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Acknowledgement is also given to the members of a wider review panel who were consulted in the development of this PAS.

Relationship with other publications

The test methods described in this PAS were developed from the *VSAG 12 Part 2: Civilian armoured vehicles – Ballistic and blast testing handbook* [1] with kind permission from the Vehicle Security Advisory Group (VSAG).

Product testing. Users of this PAS are advised to consider the desirability of third-party testing of product conformity with this PAS. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this specification are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in italic type, and does not constitute a normative element.

Requirements in this standard are drafted in accordance with *Rules for the structure and drafting of UK standards*, subclause **J.1.1**, which states, "Requirements should be expressed using wording such as: 'When tested as described in Annex A, the product shall ...'". This means that only those products that are capable of passing the specified test will be deemed to conform to this specification.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

Introduction

PAS 300 describes four test procedures that may be completed on a civilian armoured vehicle (CAV) to assess its performance against ballistic and blast levels. The test methods are set out in a manner to allow each test to be completed independently. If more than one test is required on a CAV then the test order followed is usually ballistics, side blast, under vehicle blast and then roof blast. One or multiple test vehicles may be used to complete testing assuming that all test vehicles are built to the same design specification being tested.

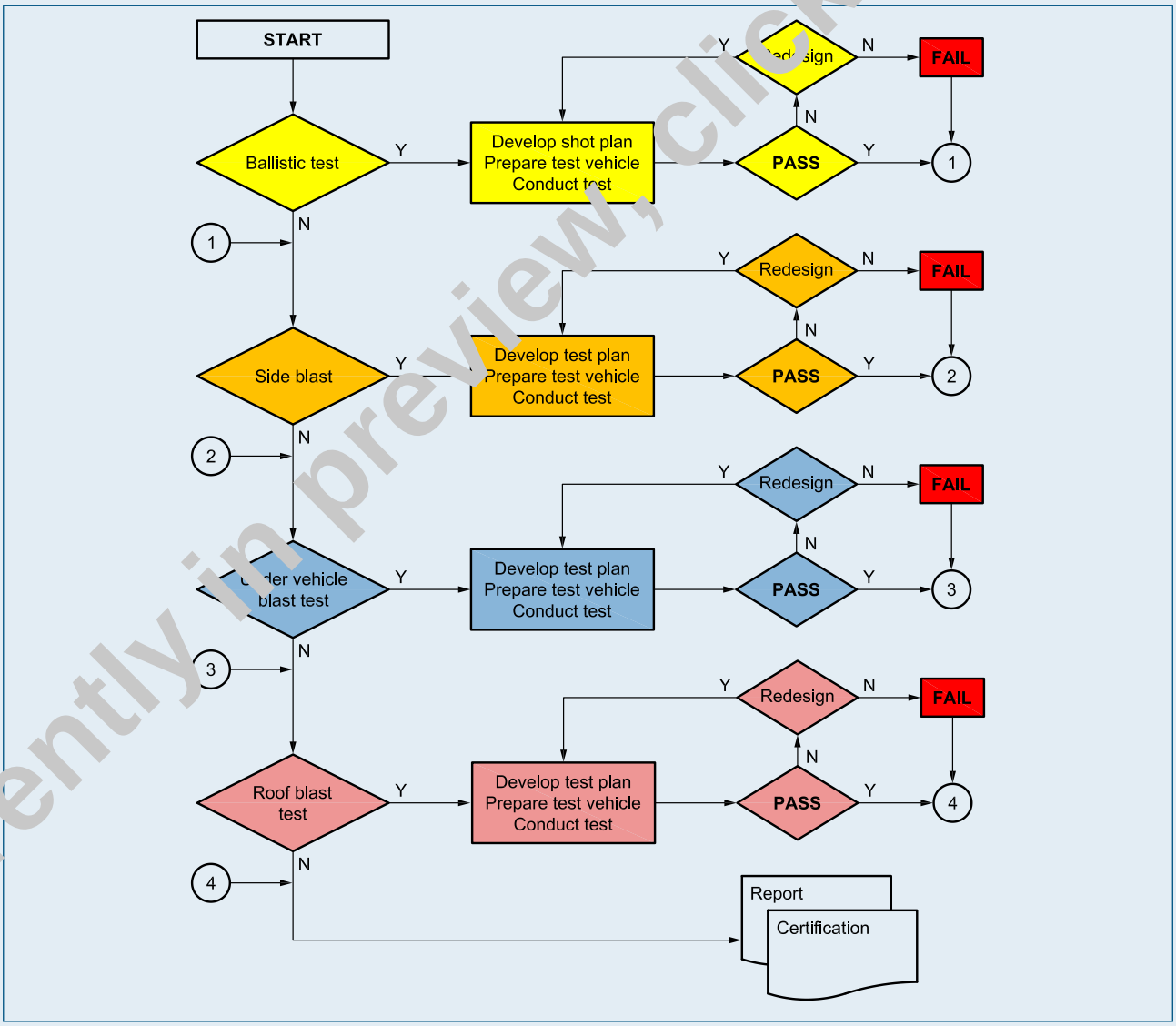
For each test, careful consideration is given to any damage sustained on the test vehicle. If there is a risk of compromising or invalidating any further testing then actions are taken to minimize this risk.

During any phase of testing it may become evident that the CAV design does not achieve a pass in accordance with the defined criteria set out in this PAS. In this situation the party requesting testing may be given the option to submit a redesign for retest. If this option is not taken the test vehicle receives a fail and the next phase of testing is conducted, if necessary.

The party requesting testing may withdraw at any time from further testing.

In line with current practice the tests may be completed with the minimum requirements set out in this PAS. The party conducting the tests seeks to test the most severe conditions. The testing process for this PAS is outlined in Figure 1 below.

Figure 1 – Testing process



1 Scope

PAS 300 describes test methods for assessing the ballistic and/or blast performance of a civilian armoured vehicle (CAV).

This PAS defines test levels for ballistic impact (including handgun, shotgun and rifle), side blast, under vehicle blast and roof blast.

It also includes fragment simulating projectile (FSP) tests as part of the ballistic test.

2 Terms, definitions and abbreviations

2.1 Terms and definitions

For the purpose of this PAS the following terms and definitions apply.

2.1.1 armour shell

structure to protect the occupant space or critical components

NOTE *For example engine parts, fuel tank, fuel lines, auxiliary battery or communication equipment.*

2.1.2 attack angle

specified angle between the reference horizontal or vertical plane of the test vehicle (**2.1.21**) and trajectory of the test projectile (**2.1.19**)

2.1.3 chest wall velocity predictor (CWVP)

parameter used to assess the likelihood of injury in the human body from blast pressure

2.1.4 complete involuntary unlatching

vehicle door opens as a result of physical damage and/or loading, other than human intervention

2.1.5 data acquisition system (DAS)

equipment used to record experimental data

2.1.6 firing system

weapon or equipment that is capable of achieving the specified test levels

NOTE *See Table 1 for ballistic (BA) test levels.*

2.1.7 fragment

2.1.7.1 primary fragment

fragment from the test device

NOTE *For example, grenade casing fragments.*

2.1.7.2 secondary fragment

fragment that might detach from the test vehicle and enter the occupant space

NOTE *For example, armour spalling, or heavy, light and soft parts from the test vehicle.*