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Standard Terminology Relating to Snow Sport Freestyle Terrain Park Jumps[1]

This standard is issued under the fixed designation F3237; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This terminology covers the terms required to describe a cross sectional profile of a snow sport freestyle terrain park jump and related parameters for a jumper using the feature and does not cover any other terrain park feature.

1.2 The terms are presented in a sequence considered to be the most logical with definitions presented later calling upon those presented earlier. This terminology standard does not require the use of any specific units; Imperial units (feet, seconds, degrees) or metric units (meters, seconds, degrees) can be used.

1.3 The depictions used in this standard are intended to aid in understanding the definitions and are not intended to depict or describe how any particular terrain park jump or its component features should be designed, built or maintained. Some terrain park jumps may use different configurations or combinations of features, or they may not incorporate all of the features depicted or defined in this standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with the use of snow sport terrain park features. Snow sports and the use of terrain park features involve inherent risks, and a terrain park feature that complies with all applicable standards or guidelines cannot eliminate all risks associated with terrain park features. Therefore, it is to be clearly understood that compliance with these applicable standards or guidelines in no way guarantees that injury can be prevented.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Significance and Use

2.1 A standard terminology is needed to allow freestyle terrain park designers, builders, ski resorts, accident investigators, and scientists to use a common language in describing freestyle terrain park jumps and related parameters for a jumper using the feature.

2.2 Angles are taken with respect to horizontal, with positive values indicating an increase in elevation and negative values indicating a decrease in elevation along the path of travel for a terrain park participant using the jump.

3. Terminology

3.1 Refer to Fig. 1.

3.2 *Definitions:*

terrain park, *n*—designated area of a ski resort or other similar facility containing natural or man-made freestyle features such as jumps and jibs.

parent slope, *n*—sliding surface within the terrain park upon which the feature is placed or constructed. The parent slope angle may vary with position.

average parent slope, *n*—straight line approximation of the parent slope angle.

ground slope, *n*—natural or man-made surface underlying the parent slope.

average ground slope, *n*—straight line approximation of the ground slope angle.

jump, *n*—man-made feature that allows a user an opportunity to become airborne, generally consisting of the jump elements given below.

jumper or jumper system, *n*—a skier or snowboarder and his or her equipment.

jump elements, *n*—parts of a jump which may include the following (refer to Fig. 1, labels in italics indicate the points on the sliding surface):

approach (a-b), n—downhill sloping surface leading into the approach transition.

approach transition (b-c), n—surface connecting the approach *(b)* to the area where the slope is horizontal. The approach transition starts where the surface angle is 75 % of the steepest approach angle, and ends where the surface angle departs zero (horizontal) closest to the lip *(c)*.

[1] This terminology is under the jurisdiction of ASTM Committee F27 on Snow and Water Sports and is the direct responsibility of Subcommittee F27.70 on Freestyle Terrain Jump Features.

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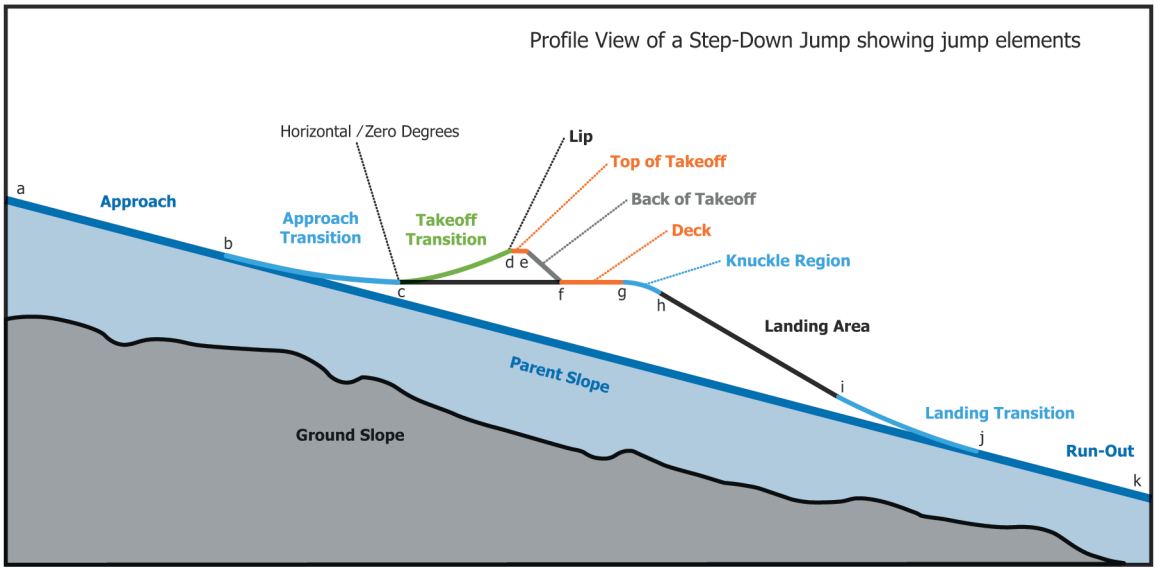

FIG. 1 Freestyle Terrain Park Jump Profile

takeoff (c-f), n—surface area of the jump consisting of the takeoff transition (c-d), lip (d), top of the takeoff (d-e), and back of the takeoff (e-f).

takeoff transition (c-d), n—surface of the takeoff which begins at the end of the approach transition and ends at the lip (d).

takeoff angle, n—angle of the takeoff transition just before the lip.

lip (d), n—end of the takeoff transition where the surface angle departs sharply from the takeoff angle (d in Fig. 1).

top of the takeoff (d-e), n—generally horizontal section after the lip and before the back of the takeoff.

back of the takeoff (e-f), n—surface connecting the downhill end of the top of the takeoff to the deck of the jump (or landing area if there is no deck).

deck (f-g), n—surface between the back of the takeoff and the start of the knuckle region.

knuckle region (g-h), n—surface between the deck and the landing surface, starting where the surface angle is 25 % of the way between the largest deck angle and the steepest landing angle, and ending where the surface angle is 75 % of the steepest landing angle.

landing area (h-i), n—surface between the end of the knuckle region and the start of the landing transition.

landing transition (i-j), n—curved surface between the landing area and the start of the runout, starting from where the surface angle is 75 % of the steepest landing angle and ending when the surface angle is 25 % greater than the average parent slope angle.

runout (j-k), n—parent slope that follows the end of the landing transition.

jumper kinematics, *n*—mechanics concerned with the motion of a jumper, without reference to the forces that produce that motion. If the jumper becomes airborne, the kinematics may include the following elements:

takeoff, n—the time and location when jumper's center-of-mass is located vertically above the lip.

takeoff linear velocity, n—the three-dimensional linear velocity of the jumper's center-of-mass at takeoff.

takeoff pop, n—the component of takeoff linear velocity that is normal to the snow surface. When the magnitude is negative, it can be called takeoff absorption.

takeoff rotational velocity, n—the three-dimensional rotational velocity of the jumper at takeoff.

jumper takeoff angle, n—at takeoff, the angle between horizontal and the line from the jumper's center-ofmass to either the center of the ski bindings for a skier or the midpoint between the bindings for a snowboarder.

landing initiation, n—the time and location when the jumper system first contacts the snow surface after being airborne.

landing initiation linear velocity, n—the three-dimensional linear velocity of the jumper's center-of-mass at landing initiation. This has components normal and tangential to the snow surface.

landing initiation normal velocity, n—the component of the landing initiation linear velocity that is normal (perpendicular) to the snow surface.

landing initiation tangential velocity, n—the two-dimensional vector of the landing initiation linear velocity comprised of the components of the landing initiation linear velocity that are along the snow surface.

landing initiation rotational velocity, n—the three-dimensional rotational velocity at landing initiation.

jumper landing initiation angle, n—at landing initiation, the angle between horizontal and the line from the jumper's