



Homologation Form CHECKLIST for Design, Construction and Re-/Homologation of Ski Jumping Hills According FIS-Rules

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ICR 414.3.	hill inspector	<input type="checkbox"/> inspection reports during design and inspection - NAME OF INSPECTOR <input type="checkbox"/> decision of Sub Committee Jumping Hills - date of protocol of Sub Comitee Jumping Hills, where Inspector has been nominated	for new hills and reconstructed hills
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TOP according ICR or NORM	TOP	question / topic	new hills = reconstructed hills
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GENERAL

411.2.	naming of design data	<input type="checkbox"/> Correct naming	for new hills and re-homologation
411.1.	classification of the hill	<input type="checkbox"/> Correct classification <input type="checkbox"/> K-point and HS-point in correct position.	for new hills and re-homologation
general	if changed after last inspection - year of last change of the hill	<input type="checkbox"/> short description, what parts of hill have been changed	for reconstructed hills
	inspection 5 years before	<input type="checkbox"/> last inspection, name of inspector at this date <input type="checkbox"/> have all demandments of last inspection been fulfilled?	for re-homologation
414.1.1	acceptance of design by Sub-Comitee-Jumping-Hills and of logistical aspects by Jumping Committee	<input type="checkbox"/> Approval by the Chair of the Sub-Committee of Jumping Hills Hills <input type="checkbox"/> Confirmation of Jumping Committee of logistical and organisational aspects <input type="checkbox"/> metorological study required as well	for new hills and reconstructed hills
414.2.1	check of the profile by a professional survey agency	<input type="checkbox"/> the correctness of the plans as built must be verified by an authorised professional survey agency	for new hills and for reconstructed hills

415.5.	measuring devices available at the hill	available at the hill: <input type="checkbox"/> a 50 m measuring tape <input type="checkbox"/> a hydrostatic balance (digital level) <input type="checkbox"/> a balance bar <input type="checkbox"/> a goniom <input type="checkbox"/> a thermometer <input type="checkbox"/> a metric tape measure (minimum 3 m)	for new hills and re-homologation
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DATA TO BE MEASURED BY INSPECTOR (at least random sample for checking surveyors' data)

411.4.	data t, s, b1, b2, bK, bA	<input type="checkbox"/> Inrun $b1 = 1.5 \text{ m}$ for $w < 30 \text{ m}$ $b1 = 1.0 \text{ m} + w/60$ for $30 \text{ m} \leq w \leq 74 \text{ m}$ $b1 = 1.5 \text{ m} + w/100$ for $75 \text{ m} \leq w \leq 99 \text{ m}$ $b1 = 2.50 \text{ m}$ for $w > 100 \text{ m}$ to maximum of 25 cm more than these values. <input type="checkbox"/> t = ? <input type="checkbox"/> s = ? <input type="checkbox"/> b2 $\geq 0,06 w$ <input type="checkbox"/> bK $\geq 0,20 w$ GH $\geq 0,19$ SFH: $\geq 0,18 w$ <input type="checkbox"/> hills constructed before 1992 (without change since then) bK $\geq 0,19 w$ <input type="checkbox"/> bA $\geq 0,22 w$ - SFH: $\geq 0,20 w$	for new hills and re-homologation
	inrun: alpha, e1, es	<u>re-homologation:</u> compare measured data with last report of TDA <u>new hills:</u> compare with measurement of surveyor and/or measure yourself <input type="checkbox"/> alpha = ? <input type="checkbox"/> e1 = ? <input type="checkbox"/> e2 = ?	for new hills and re-homologation
411.3.2.4.	length of outrun, inclination of outrun	<input type="checkbox"/> calculating additional length of 15 m for summer mats and - if existing - inclination of outrun formula according NORM <input type="checkbox"/> length of outrun (beginning at U) = ? <input type="checkbox"/> inclination of outrun (upwards is minus angle) =?	for new hills and re-homologation

INRUN

411.3.1	description of inrun - r1 formed as clothoide or as circle	<input type="checkbox"/> inrun with r1 as circle radius <input type="checkbox"/> inrun with clothoide	for new hills and re-homologation
411.5.1		<input type="checkbox"/> height of starting gates, max. 40 cm <input type="checkbox"/> width of starting gates <input type="checkbox"/> distance between starting gates <input type="checkbox"/> lowest starting gate is designated as start gate number 1. <input type="checkbox"/> compare with measurement of last report of TDA	for new hills and re-homologation
		<input type="checkbox"/> 0.5 m in height of sideboards above snow surface <input type="checkbox"/> minimal placement of the guardrails from the start till 1m from the edge of takeoff <input type="checkbox"/> distance between guardrails and prepared b1 width should not exceed an additional 25 cm in overall width.	for new hills and re-homologation
		<input type="checkbox"/> no protrusions (sharp-edged screw heads / irregular shape parts), only gaps and openings with a maximum width of 15 mm are allowed (exception: timing equipment) <input type="checkbox"/> the first guardrail section of the starting gate shall be placed at an outward angle with a rounded corner edge <input type="checkbox"/> The top edge of the guardrail material must be rounded and smooth along the entire length of the inrun on all panels <input type="checkbox"/> All constructions that extend past the end of the take-off must be covered with a stable, secured, soft material.	for new hills and re-homologation
		<input type="checkbox"/> it must be prevented to lead inrun in a trough (good sight from coaches' stands to athlete in inrun, as well from judges' tower)	for new hills
415.2	inrun speed measuring	<input type="checkbox"/> beginning of measuring distance 10 m before edge of table (seen in direction upwards) and ending 18 m before edge of table <input type="checkbox"/> distance between photocells 8 m <input type="checkbox"/> photocell's beam must be situated 0,2 m above profile (attention - difference between summer and winter)	for new hills and re-homologation

KNOLL

417.2		<input type="checkbox"/> snow cover for plastic hills is 35 cm above the mats <input type="checkbox"/> snow cover for a hill without mats 30 cm <input type="checkbox"/> If the inrun tracks are the same in summer as in winter, the difference in profile height must be taken into account. The smaller the hill, the greater the impact.	for new hills and re-homologation
411.5.2.	landing area	<input type="checkbox"/> From the bottom of the take-off, the entire designed width of the landing slope must be prepared with snow <input type="checkbox"/> No obstacles are allowed in the prepared area and movable devices must be removed when the hill is in use <input type="checkbox"/> Placement of guardrails on both sides of the landing area is required for the safety of a fallen jumper or stopping of a runaway ski <input type="checkbox"/> Guardrails shall be minimum 70 cm high above the prepared snow profile <input type="checkbox"/> Placement of guardrails on the landing shall start from 0.1 w to the end of the transition curve <input type="checkbox"/> The upper end of guardrails must run into the slope horizontally or end with max. 45° slope down (and sharp edges covered with soft material) <input type="checkbox"/> no protrusions (sharp-edged screw heads/irregular shape parts) <input type="checkbox"/> only gaps and openings with a maximum width of 15 mm may exist <input type="checkbox"/> The snow profile height as well as the distance markers (paddles) should be marked on the guardrails <input type="checkbox"/> the guardrails must be parallel to the landing slope profile. <input type="checkbox"/> The landing area within the guardrails must be free and clear of any obstructions that could endanger a fallen jumper. <input type="checkbox"/> The upper edges of all guard rails must be rounded. Guardrails must be set up in such a way that a stray ski of a fallen jumper cannot go through. Nets are not allowed <input type="checkbox"/> Guardrails constructed in concrete have to be padded with minimum 3 cm permanent soft material on the inside of the landing area.	for new hills and re-homologation
404.2.1.	area of Distance Measurers	<input type="checkbox"/> Check correct position in design and as built	for new hills
404.2.2.	place of the Distance Recorder	<input type="checkbox"/> Check correct position in design and as built	for new hills
415.1.	jumping distance markings	<input type="checkbox"/> no sharp edges and protrusions	for new hills and re-homologation
417.3.	marking on landing hill	<input type="checkbox"/> correct according regulations ?	for new hills and re-homologation

JUDGES' Tower

411.5.4	judges tower	<input type="checkbox"/> width of judges' compartments min 1 m, depth 1,2 m <input type="checkbox"/> q and d correct according NORM ? <input type="checkbox"/> height above landing area in a way, that good sight to table and landing zone is possible? In phase of design the sight of judges has to be proven by a 3d-visual-beam simulation for judge A and judge E.	for new hills
	judges tower - chief of competition and other competition officials	<input type="checkbox"/> no mutual distructions and interferences, good sight to jumping hill	for new hills
	one shared judges tower for two hills	<input type="checkbox"/> demandment fulfilled ?	for new hills
COACHES			
411.5.5	coaches' stands	<input type="checkbox"/> For jumping hill facilities, where international competitions are to be organised, coaches must have two suitable stands (for 20 persons each). <input type="checkbox"/> One stand should be in the area near the edge of the takeoff and the second should have an unobstructed view of the portion of the jumpers flight and the landing <input type="checkbox"/> For OWG, WSC and WCS events, coaches' stands for 40 coaches must be available.	for new hills

OUTRUN

411.5.3	outrun	<p><input type="checkbox"/> Guardrails with a height of at least 1 m above the snow profile must be mounted away from U around the entire outrun area until the exit gate in a stable manner, so that they are able to fulfil the function of guardrails for fallen athletes and loosened skis. Transition from guardrails 0,7 m height to guardrails 1,0 m height without sharp edges.</p> <p><input type="checkbox"/> Guardrails must be constructed in accordance with art. 411.5.2 “The Landing Area” as follows</p> <p><input type="checkbox"/> the entire designed space between the guardrails must be prepared with snow</p> <p><input type="checkbox"/> No obstacles are allowed in the prepared area and movable devices must be removed when the hill is in use</p> <p><input type="checkbox"/> no protrusions (sharp-edged screw heads/irregular shape parts)</p> <p><input type="checkbox"/> only gaps and openings with a maximum width of 15 mm may exist</p> <p><input type="checkbox"/> The area within the guardrails must be free and clear of any obstructions that could endanger a fallen jumper.</p> <p><input type="checkbox"/> The upper edges of all guard rails must be rounded. Guardrails must be set up in such a way that a stray ski of a fallen jumper cannot go through. Nets are not allowed</p> <p><input type="checkbox"/> Guardrails constructed in concrete have to be padded with minimum 3 cm permanent soft material on the inside of the landing area.</p> <p><input type="checkbox"/> Temporary solutions are possible and must be constructed in accordance with art. 411.5.2 “The Landing Area”. No nets allowed.</p>	<p>for new hills and re-homologation</p>
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SNOW PREPARATION

417.1.	snow preparation inrun and takeoff	<input type="checkbox"/> snow depth of minimally 20 cm, except specially constructed inrun tracks are used <input type="checkbox"/> The tracks must be prepared with the help of technical equipment (a track cutter, track plane or inserted profile boards or something similar) <input type="checkbox"/> Distance between both centres of tracks for Jumping hills with w over 75 m: 30 – 33 cm <input type="checkbox"/> Width of track: 13.0 – 13.5 cm <input type="checkbox"/> Depth of track: at least 3 cm for normal, large and flying hills. see: "Instructions for the Construction of Plastic Covered Jumping Hills" The following regulations are valid for OWG, WSC, SFWC, JWSC and WCS events: <input type="checkbox"/> In winter, the in-run tracks must be prepared with artificial snow, ice or in exceptional cases artificial material (i.e. china) <input type="checkbox"/> The in-run tracks prepared with artificial snow or ice have to be supported by a cooling system. The tracks have to be made by track cutters. <input type="checkbox"/> It has to be assured that surface water caused by rain or warm weather can be drained from the track. A device for covering/sheltering inrun tracks should be foreseen <input type="checkbox"/> Snow preparation machine of inrun: Is there any dangerous parts at the tracks?	for new hills and re-homologation
417	snow preparation	<input type="checkbox"/> snow making concept (incl. stands of snow making machines, power supply) <input type="checkbox"/> water source and water supply <input type="checkbox"/> pump rooms <input type="checkbox"/> hydraulic design <input type="checkbox"/> capacity of snow making machines,) <input type="checkbox"/> height of snow at natural surface 30 cm, at mats 35 cm	for new hills
417.2.	snow preparation landing slope and outrun	<input type="checkbox"/> Thickness of snow layer min. 30 cm, at hills with plastic covering min. 35 cm <input type="checkbox"/> are there enough fixing points for preparation machines? <input type="checkbox"/> If there is a snow fixing grid / snow net: Is there a statical design for snow fixing grid, concerning weight and dynamic forces of machines?	for new hills and re-homologation

PLASTIC MATS

412	plastic mat covering	<input type="checkbox"/> design and as built according "Instructions for the Construction of Plastic Covered Jumping Hills" available in English and German at FIS-homepage <input type="checkbox"/> This standard should be applied, which was valid during construction of jumping hill (difference in rules !). Old hills with a grass area between mats and sideboards of knoll (according rules before ca. 1992) may be left in this condition, if grass is kept short and if there is no changing of profile or mats). <input type="checkbox"/> Overlap of mats minimum at least 17 cm, +/- K 20% at least 22 cm (at NH and LH) <input type="checkbox"/> sub-construction of mat covering ? <input type="checkbox"/> supplier / brand of mats <input type="checkbox"/> year of installing new mats	for new hills and re-homologation
414.2.2.	plastic mats	<input type="checkbox"/> only homologated mats shall be installed <input type="checkbox"/> is there enough water for sprinkling through a competiton? <input type="checkbox"/> is there a hydraulics design for water system? <input type="checkbox"/> are there filters before spraying nozzles? <input type="checkbox"/> are alle mats covered by sprinkling? <input type="checkbox"/> is there no obstructing nozzles? <input type="checkbox"/> Is there overlay of mats as demanded by regulation ?	for new hills
Instructions for the Construction of Plastic Covered Jumping Hills	artificial inrun	<input type="checkbox"/> supplier / brand of inrun track <input type="checkbox"/> year of installing <input type="checkbox"/> width of track (max. 13,5 cm) = ? <input type="checkbox"/> distance between centre of tracks (w over 75 m - 30 - 33 cm) = ? <input type="checkbox"/> depth of tracks (min 3 cm for NH, LH and SFH) = ? <input type="checkbox"/> safety zone besides the tracks <input type="checkbox"/> irrigation elements of tracks <input type="checkbox"/> heating for winter operation available ?	for new hills

SKI FLYING HILLS

413	ski flying hills	<input type="checkbox"/> fulfilling special and particular rules ?	for new hills and re-homologation
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INFRASTRUCTURE

411.5.6		For OWG, WSC, WSFC, JWSC and WCJ competitions, the infrastructure re-quirements are regulated in the FIS "Matrix for Infrastructure Jumping Hill", available in the document library of the FIS Website. This document is an appendix to "Inspection Report" as well	for new hills and re-homologation
---	mechanical lift for OWG and WSC events	<input type="checkbox"/> capacity of lift /funicular etc. sufficient for training and during competitions ? <input type="checkbox"/> It must be taken care, that lift does not cross TV-pictures during competitions!	for new hills
416.1.	information for spectators	<input type="checkbox"/> loudspeaker system (incl. place for the speaker with good sight to the competition) <input type="checkbox"/> place of scoreboard	for new hills
416.2.	media representatives	<input type="checkbox"/> places for media representatives <input type="checkbox"/> is there enough TV-camera stands with good sight to inrun and landing area ? <input type="checkbox"/> Power supply ?	for new hills
---	night competitions	<input type="checkbox"/> is there a lightening concept ? <input type="checkbox"/> Power supply for lightening ? <input type="checkbox"/> Is there an emergency power supply system ? <input type="checkbox"/> What measures are forseen, that in case of brakedown of power supply an athlete just jumping in the air is not flying in the dark ?	for new hills
---	environment and other general demandments	<input type="checkbox"/> Have all demandments of National Environment Protection Authorities been fulfilled? <input type="checkbox"/> Is there a geological survey before beginning of design / erection ? <input type="checkbox"/> If in an earthquake zone - is statical design taking care of this fact, as well for all earth dams, excavation works etc. ?	for new hills
---	power supply	<input type="checkbox"/> How safe and secure is public power grid ? <input type="checkbox"/> Is there an emergency power supply system ?	for new hills
---	crowd managing system, access system, security concept	<input type="checkbox"/> Is there a crowd managing system to avoid accidents in case of panics ? <input type="checkbox"/> are there measures to avoid overcrowding ? <input type="checkbox"/> Is there an access system and/or security concept	for new hills