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| Telephone No. : 24622495 Telegraphic Address: Commercial : AIRCIVIL NEW DELHI Aeronautical : VIDDYAYX E Mail: dri @ dgca.nic.in Fax : 91 11 2469 2374 | GOVERNMENT OF INDIA AERONAUTICAL INFORMATION SERVICES DIRECTOR GENERAL OF CIVIL AVIATION OPPOSITE SAFDARJUNG AIRPORT NEW DELHI – 110 003 | Sl. No. 13/2008 <hr/> 8th October 2008 |
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In exercise of the powers conferred by Rule 39B and 133A of the Aircraft Rules, 1937, the following guidelines are hereby issued for information of all concerned.



(KANU GOHAIN)
DIRECTOR GENERAL OF CIVIL AVIATION

OPHTHALMOLOGICAL DISORDERS

1. Introduction. The AIC deals with ophthalmological disorders and lays down principles of assessment for civil aircrew. The P1 status pertains to pilots fully fit for all flying duties, including instructional duties and P2 status pertains to fitness for all flying duties except instructional duties and trainer captain in flight.
2. The following ophthalmological conditions are disqualifying for initial issue medical examination:
 - (i) History of recurrent keratitis or corneal ulcers, corneal scars which influence visual function and Keratoconus
 - (ii) Lattice degeneration of the retina and any macular degeneration which interferes with visual function
 - (iii) Hereditary degenerations with progressive influence on visual acuity and visual fields (e.g. retinitis pigmentosa)
 - (iv) Retinal detachment
 - (v) Vascular disorders with exudates, bleedings or ischemic retinal damage.
 - (vi) Optic neuritis, Optic atrophy and Optic nerve head drusen.
 - (vii) Central Serous Retinopathy
 - (viii) Glaucoma
 - (ix) Cataract surgery with intra ocular lens implant
3. Candidates for initial issue medical examination having corneal / congenital lenticular opacities which are non-progressive and do not interfere with vision may be considered fit for flying duties.
4. Refractive Corneal Surgery In LASIK (Laser-in-situ-Keratomileus) surgery a corneal flap is shaved by a microkeratome and a laser ablation is performed in the stromal bed. After the laser procedure the corneal shave is flapped back. The possible complications of LASIK are mostly related to the use of the microkeratome. The flap can be dislocated or be lost and it can be loosened along with glare and instability of refraction can occur. IntraLasik is exactly

like conventional Lasik, except the corneal flap is created with a laser microkeratome rather than a mechanical microkeratome with a metal blade. The advantages of IntraLasik over conventional LASIK are the higher safety and a higher predictability. It provides a vision with better contrast sensitivity. Flight crew having undergone refractive surgery will be considered for medical fitness for flying on a case-to-case basis. Such cases will be examined only after a minimum period of six months after the procedure. Medical fitness for initial issue of licence may also be considered for such cases, if the visual requirements for the license category are met with normal corneal topography, no post surgical complications like corneal opacity interfering with vision and unstable refraction. All subsequent reviews will be done at IAM / AFCME.

5. Cataract Surgery and Intra-Ocular Lens Implantation with Monofocal Intraocular Lenses.

(a) Cataract Surgery by Small Incision: Flight crew having undergone cataract surgery where such surgery is performed by phacoemulsification, medical fitness with the limitation “Fit to fly as Pilot-in-Command along with qualified experienced pilot” (P2 Status) may be considered after four weeks of surgery if there are no post surgical complications, vision is stable and within acceptable limits. May be upgraded to P1 status 12 weeks after surgery, if there are no post surgical complications, vision is stable and within acceptable limits. The visual requirements are met either with contact lenses or with intra-ocular lenses in combination with spectacles. Waivers may be granted by the appropriate authority for experienced aircrew, for visual acuity below ICAO Standards.

(b) Cataract Surgery by a Full Incision: Cases who have undergone full cataract incision will be kept in non-flying status for a period of 06 months. Thereafter, restricted flying category will be given for 03 months depending on the clinical state. 9 months post-operatively, P1 status may be considered if there are no post surgical complications, vision is stable and within acceptable limits. Waivers may be granted by the appropriate authority for experienced aircrew, for visual acuity below ICAO Standards.

6. Glaucoma The mere presence of raised IOP is called ocular hypertension, and it involves an increased risk of developing glaucoma. This latter diagnosis is not ascertained by raised IOP alone, it demands the occurrence of either disc cupping or visual field defects. Secondary glaucomas are caused by conditions which interfere with the normal passage of the aqueous in the pupil or the chamber angle (e.g. anterior uveitis). The first objective signs in the fundus are atrophy of nerve fibre bundles and cupping of the optic disc. Substantial axon atrophy is present when visual field defects are first measurable. The C/D ratio (a measure of the diameter of the cup in relation to that of the whole disc) and the rim area (the area of the outer rim of the disc with nerve fibres) is of help to record cup changes. If the disease process goes on, the cup usually first reaches the rim of the disc in either the lower or the upper pole. In severe cases, no rim of nerve fibres is seen at all, and the cup is deep or undermines the disc edges. With progression of the disease, the scotomas increase in size and coalesce. Visual field testing is essential to prove functional impairment. An increased IOP, i.e. above about 22 mm or a difference between the eyes of 6 mm Hg or more should cause a suspicion of glaucoma. The diagnosis glaucoma does not per disqualify flying duties. Aircrew with glaucoma should be free of side-effects from the local drug therapy given; the most important is the accommodative reduction of the visual acuity. Periodic follow-up examination of the visual function under the guidance of AMA is obligatory.

7. Aircrew with glaucoma controlled by non miotic drugs or surgery may be considered fit for flying duties only if the results of automated perimetry in the central 30° results conform to mild glaucomatous loss in both eyes or moderate glaucomatous loss in one eye, the other eye being absolutely normal.

The criteria for mild glaucomatous loss involves

- (a) Mean Deviation < -6 dB
- (b) Fewer than 18 points depressed below the p<5% level and fewer than 10 points below the p < 1% level.
- (c) No point in the central 5 degrees with sensitivity of less than 15 dB.

The criteria for moderate glaucomatous loss involves

- (a) Mean Deviation < -12 dB.
- (b) Fewer than 37 points depressed below the p< 5% level and fewer than 20 points below the p < 1% level.
- (c) No absolute deficit (0 dB) in the 5 central degrees.
- (d) Only one hemi-field with sensitivity of < 15 dB in the 5 central degrees.

Such aircrew will undergo six monthly reviews by eye specialist for field-testing. Aircrew with field defects will be fit for P2 status only (Fit to fly as Pilot-in-Command along with qualified experienced pilot)

8. ARMD (Age-Related Macular Degeneration) Patients with ARM are often asymptomatic or sometimes notice mild symptoms, including minimally blurred central visual acuity, contrast and color disturbances, and mild metamorphopsia. If geographic atrophy develops in the macular region, patients may notice a scotoma (blind spot), which can slowly enlarge over months to years before eventually stabilizing. Patients with exudative AMD typically describe painless progressive blurring of their central visual acuity, which can be acute or insidious in onset. Patients who develop subretinal hemorrhage from choroidal neovascularization (CNV) typically report an acute onset. Other patients with choroidal neovascular membranes (CNVM) may experience insidious blurring secondary to shallow subretinal fluid or pigment epithelial detachments (PEDs). They also report relative or absolute central scotomas, metamorphopsia, and difficulty reading. A dilated examination of the fundus with slit lamp biomicroscopy, stereo color photography of the fundus, rapid-sequence fluorescein angiography (FA), and optical coherence tomography (OCT) are performed for diagnosis of AMD. OCT provides a cross-sectional view of the retina and can identify soft drusen, RPE detachments, subretinal and intraretinal fluid, CNV, and cystoid macular edema.

9. The Amsler Grid consists of evenly spaced horizontal and vertical lines printed on black or white paper. A small dot is located in the center of the grid for fixation. While staring at the dot, the patient looks for wavy lines and missing areas of the grid. If the lines of grid do not appear straight and parallel or there are missing areas or if any changes in the appearance of the Amsler Grid are detected, the aircrew are to notify the AMA immediately. Aircrew with field defects will be fit for P2 status only (Fit to fly as Pilot-in-Command along with qualified experienced pilot). Assessment of visual fields for aircrew will be done as elaborated for Glaucoma. The aircrew should have a corrected vision of N14 at 1 m distance, to continue with flying duties. Gross metamorphopsia on Amsler Grid will be unfit for flying duties, even if visual standards are met.

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