Visual Fields in Glaucoma Management

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Objectives

- Review basic visual field concepts
- Review analysis of visual fields
- Review of the reliability indices, grayscale/sensitivity plot, probability plots and global indices are and their clinical significance
- Review of the Humphrey Visual Field Analyzer
- Review of the Octopus Visual Field Analyzer
- Compare and contrast the Humphrey and Octopus perimeters
- Review of visual fields of patients who are glaucoma suspects or have been diagnosed with glaucoma

Before we get started. . . Some "business" to tend to. . .

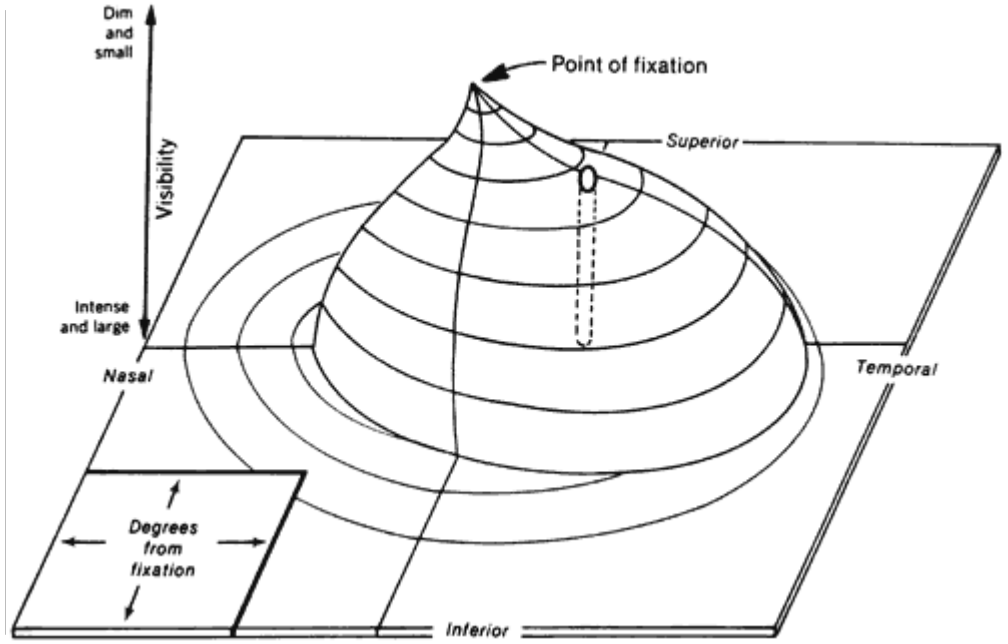
- CPT code
  - 92803 Visual Field Extended
- Reimbursement $72.83
- Unilateral or Bilateral
  - May be performed on one or both eyes, but can only bill once.
- Frequency of Testing
  - No more than 2 per year or every 6 months
  - Clinical justification

- Requires an Interpretation and Report
  - Need to address 3 areas
    - Why are you doing the test – diagnostic code
      - Is it baseline or follow-up. If follow-up, how is it compared to the previous results?
    - What did you find – your clinical analysis of the pertinent data (reliability, global indices. . etc)
    - What is your treatment/management plan

What is everyone using??

Normal Visual Field

- Extends
  - 90 degrees temporally
  - 60 degrees nasally and superiorly
  - 70 degrees inferiorly
- BUT. . Most diagnostic testing concentrates on the area within 30 degrees of fixation.

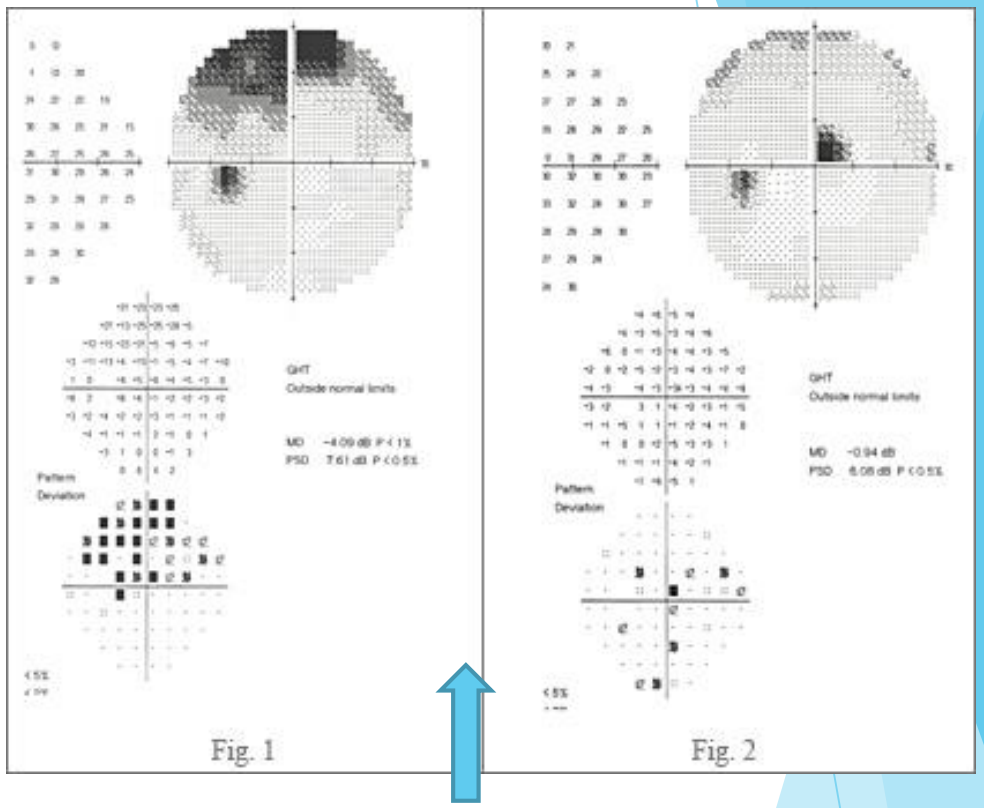


Preparing the patient

- Explaining the test to the patient
  - Testing your peripheral and central vision
  - Always look straight at the yellow light (HVF)
  - You will notice lights flashing off to the side – press the button whenever you see one
  - If you need to take a break. .
  - Advise the patient how long the test will take. . . Run the Demo Test
  - Effect that may occur. . . . *Troxler*
- Pupil size
  - Need to be at least 3 – 4 mm in size

Preparing the patient

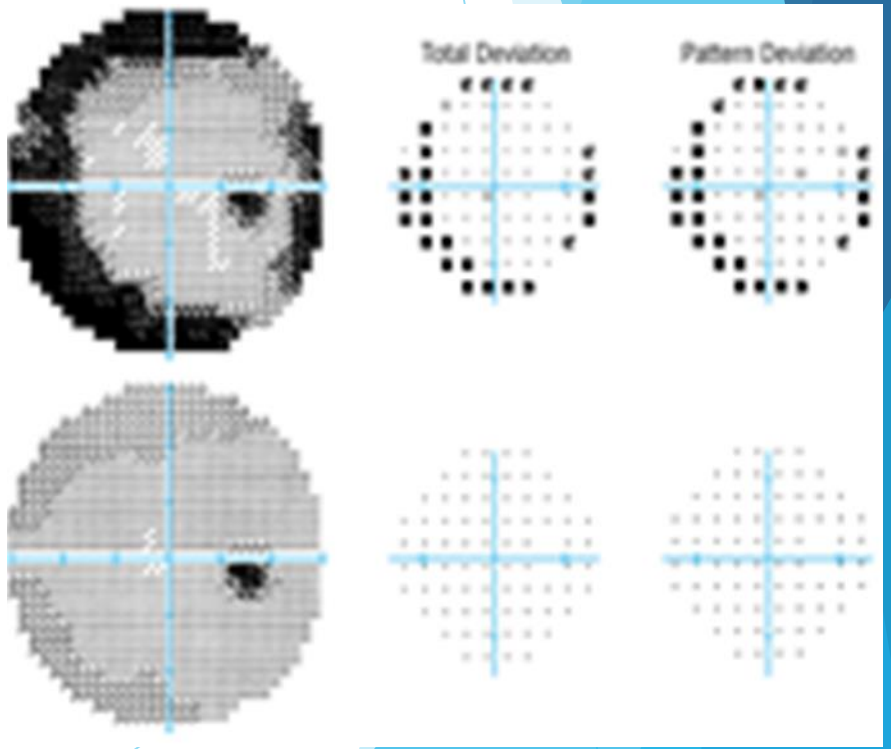
- Refractive error
  - Correction must be made for presbyopia
  - Cylinder must be corrected when > 0.75D
  - Be careful with positioning of the trial lens holder
- Physical restrictions / concerns
  - Eyelid/Eyelashes – may be taped to lift them out of the way
  - Try not to have the patient lean forward into the instrument
  - Try to use a chair with armrests



Pt w/ptosis (not taped vs taped)

What can affect the outcome of your results. . . .

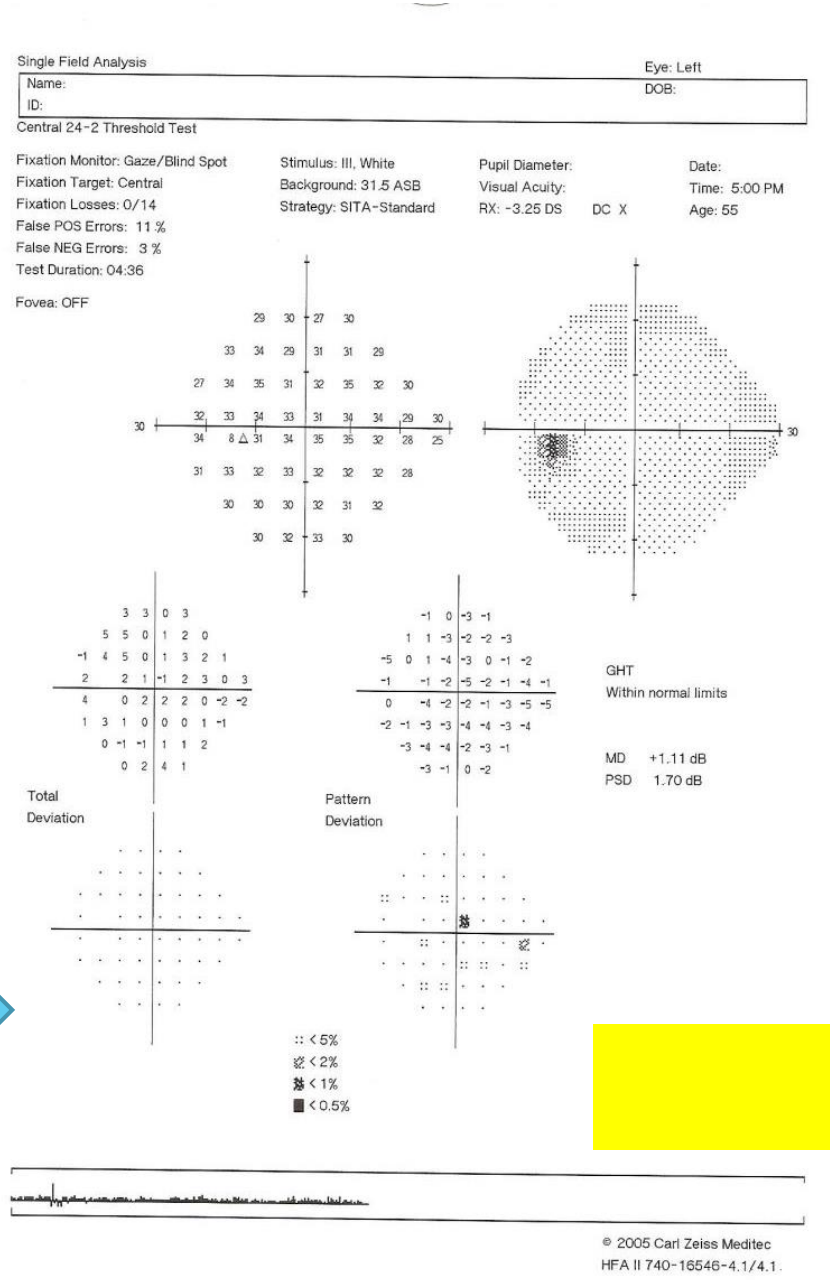
- Media opacities
  - Generalized depression / Localized depression
- Small pupils
  - Decreased retinal illumination = Generalized depression
- Uncorrected refractive error / position of trial lens holder
- Learning curve



Selecting a test

- Threshold testing
  - To diagnose and monitor visual field defects that are subtle or suspected of being progressive.
  - Standard for glaucoma, retinal and optic nerve disease.
  - Based on the determination of the visual threshold at each test point.

HVF SITA Standard 24-2 (for glaucoma)



Selecting a test

Humphrey

- 24-2
  - Full Threshold (4-2 bracketing)
  - SITA Standard
    - Reduces test time in half relative to a full threshold
  - SITA Fast
    - – 33%

Octopus

- G = physiological glaucoma test
  - Normal (4-2 bracketing)
    - 8 – 12 minutes
  - Dynamic = adaptive step size
    - 5 – 8 minutes
- TOP = tendency oriented perimetry
  - 2 – 3 minutes

Test Strategies

Humphrey

- Swedish Interactive Thresholding Algorithm (SITA)
  - By taking into account the patient's results in nearby locations, stimuli that are unlikely to be seen or extremely likely to be seen are not tested exhaustively.
  - SITA Standard vs SITA Fast
    - More variability is allowed between the repeated measurements, allowing for a faster test.

Octopus

- Dynamic
  - 2db sensitivity resolution in proximity to normal thresholds and larger steps in relative to absolute scotoma.
- TOP
  - Recommended in children and elderly patients. Shortens test duration by applying the responses to neighboring test locations.

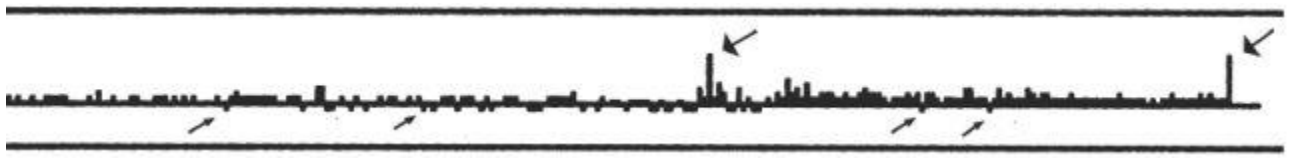
Reliability

Humphrey

- Gaze Monitor
  - Utilizes infrared light source to get corneal reflexes at beginning of the test.
    - Up = fixation loss (~10 degrees)
    - Down = Blink? (Unable to detect)
- Fixation Losses
  - Should be < 20%

Octopus

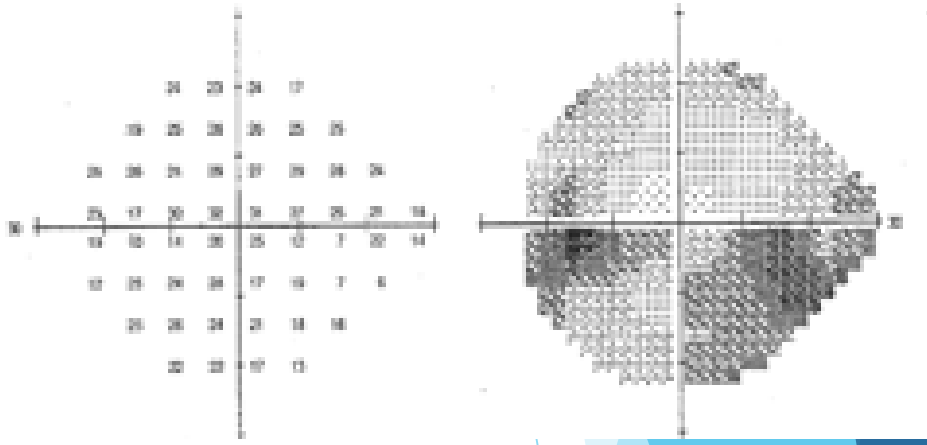
- Fixation Control
  - No stimuli is presented during a fixation loss / eye closed
- Automated Eye Tracking
  - Instrument automatically centers the patient
- Forehead Sensors
  - Test is paused if pt pulls away from the instrument
- Reliability Factor
  - Should be < 15



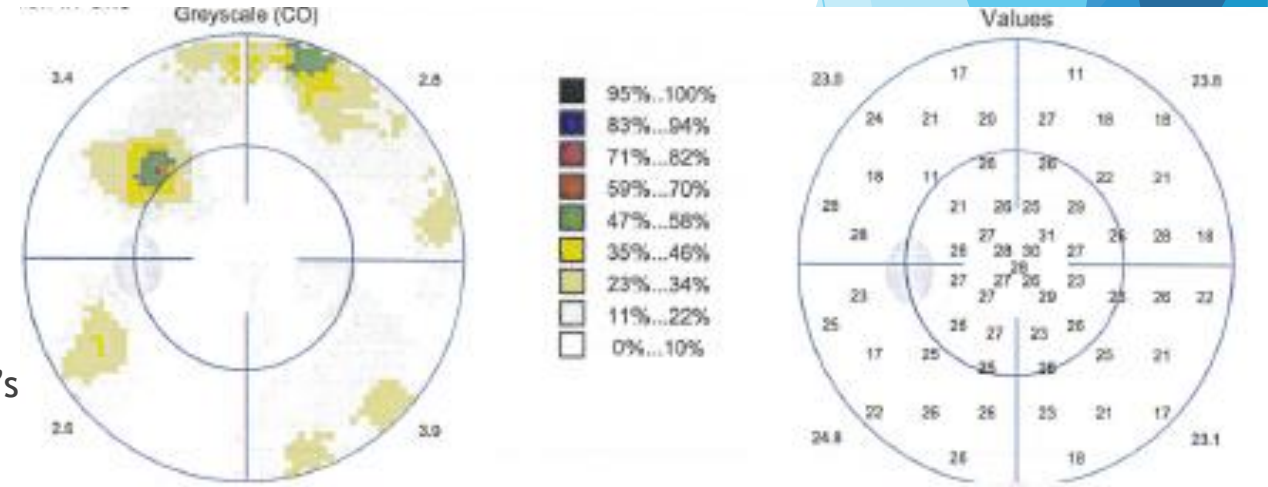
Reliability Indices

- Humphrey / Octopus
  - False Positives
    - Positive response when no stimulus is presented
    - “Trigger happy patient”
    - Make the field look “cleaner” / more “normal”
  - False Negatives
    - Negative response after the presentation of a stimulus that should have been detected
    - Patient may not be concentrating / paying attention

Grayscale / Sensitivity Plot

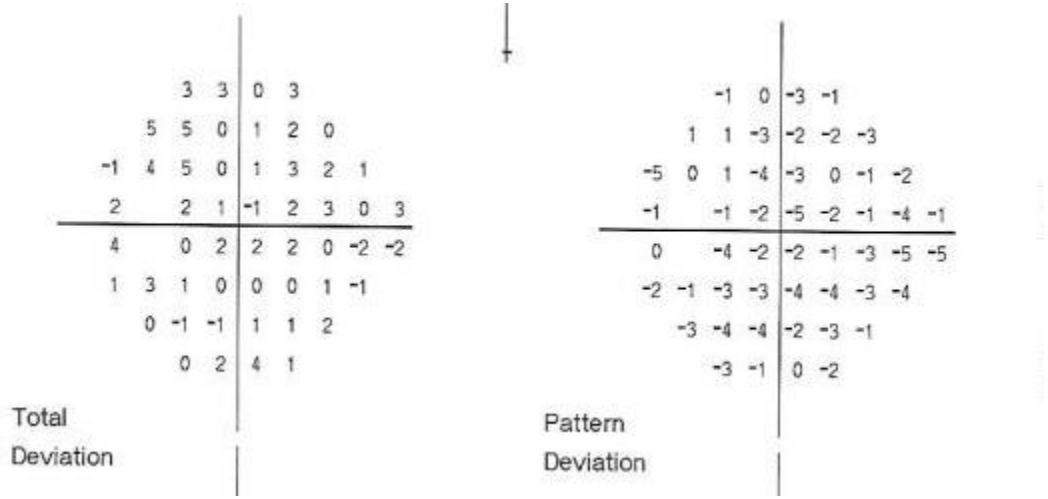


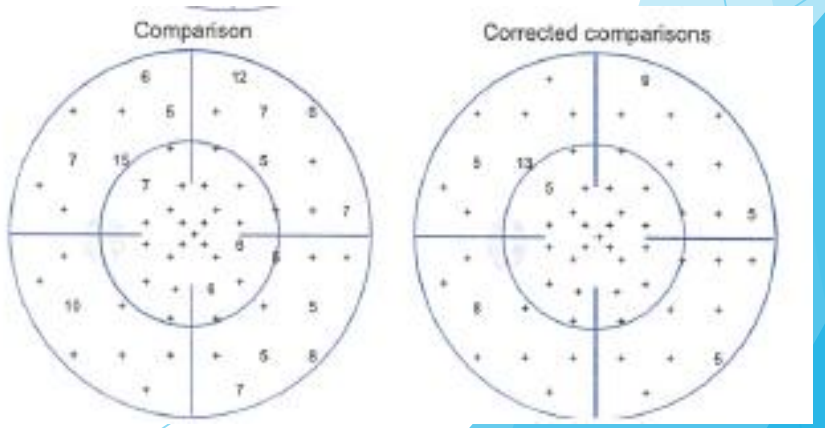
- Humphrey / Octopus
  - Grayscale
    - Start here to quickly identify potential scotomas and depressions, as well as getting a general idea of the location and size of a defect.
  - Sensitivity
    - Absolute thresholds as tested by the instrument
    - Generally Central values should be in the 30's and Peripheral values should be in the upper 20's



Humphrey / Octopus

- Total Deviation = Comparison
  - Decibel values which represent the difference from mean normal value for health patients of the same age (deviation of 5db should be considered significant)
- Pattern Deviation = Corrected Comparison
  - Adjusted analysis of test points that corrects for any OVERALL changes in the patient's Hill of Vision / "removes" any generalized visual field depression (due to cataracts, corneal opacity, miotic pupils. . .) or elevation ("trigger happy).

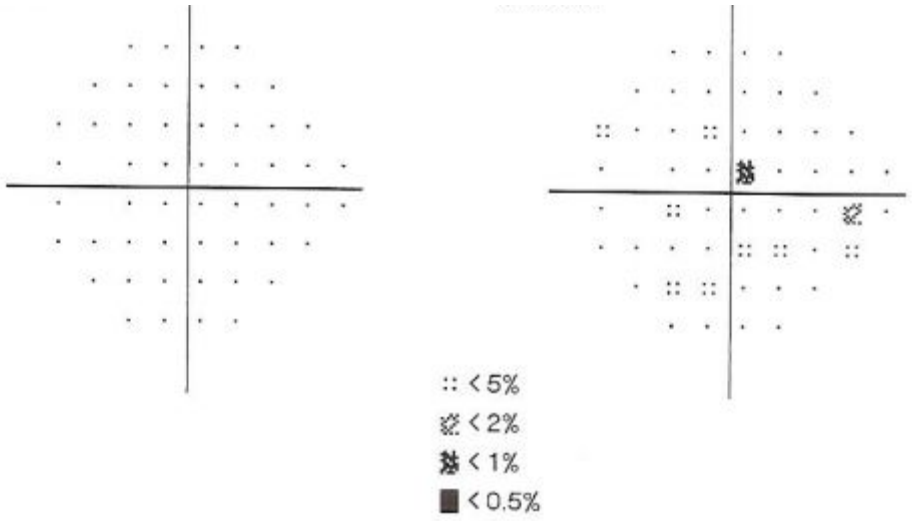


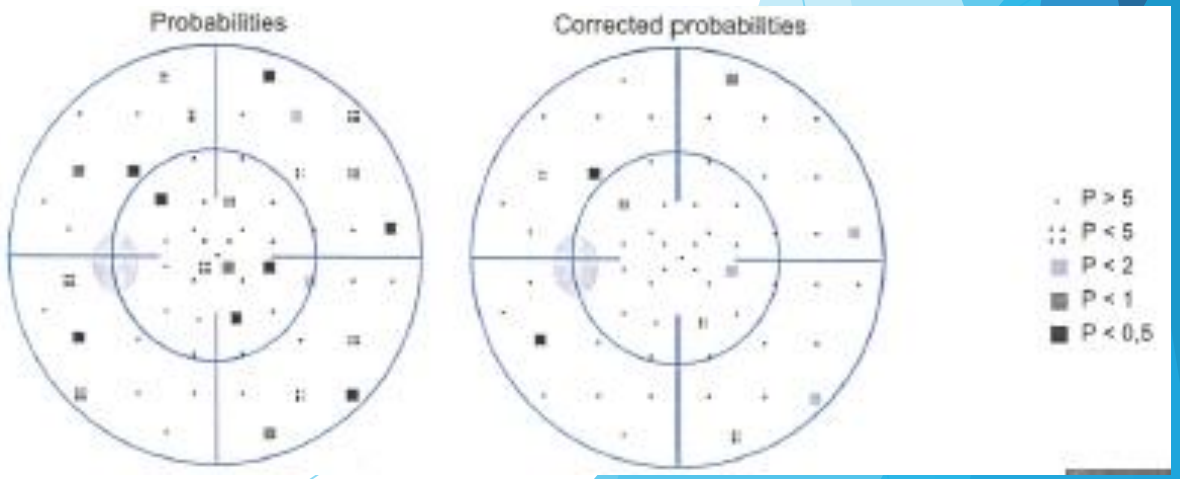


Humphrey / Octopus

- Probability Plots
  - Percentile of normality to which a local defect compares
  - Subtle abnormalities often are considerably more distinct

P < 1% = less than 1% of the normal population would have a sensitivity that low





Global Indices

Humphrey

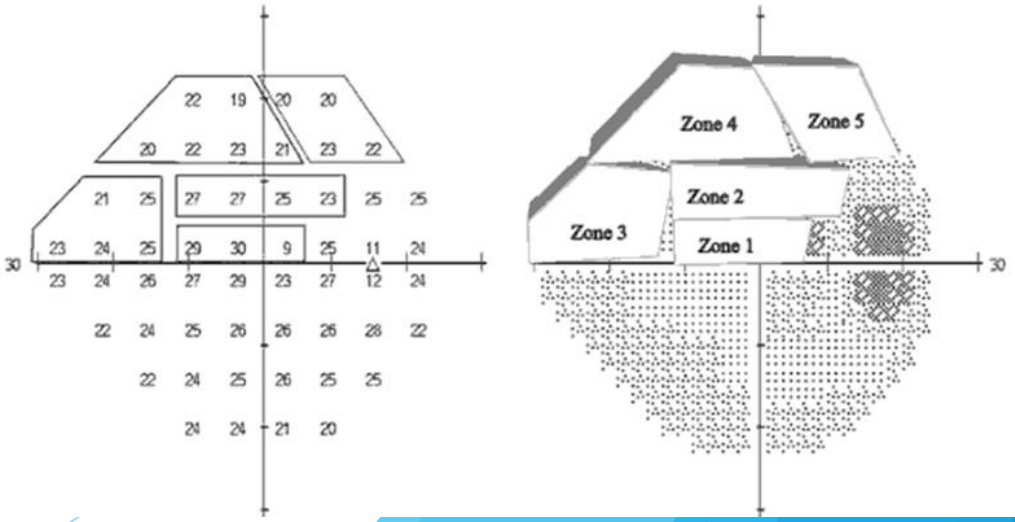
- Visual Field Index (VFI)
  - Is a staging index for the total amount of field loss. Values range from 100% (normal) to 0% (perimetrically blind)
- Mean Deviation (MD)
  - The average amount the whole field departs from age-normal
- Pattern Standard Deviation (PSD)
  - Reflects irregularities in the field. A measure of the degree which the patient's Hill of Vision departs from the norm. PSD will be abnormal (>3db) in the presence of localized defects.

Octopus

- Mean Sensitivity (MS)
  - Overall average of all measured values
- Mean Defect (MD)
  - The average amount of whole field departs from age normal
- sLV (square root of Loss Variance)
  - Equivalent to PSD

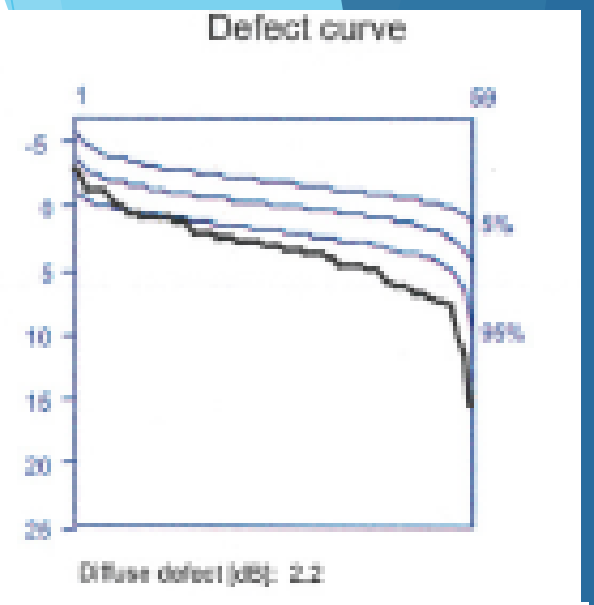
Glaucoma Hemifield Test (GHT) / Humphrey

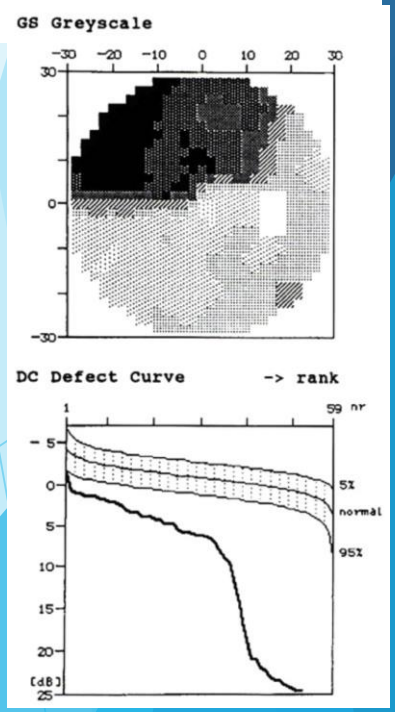
- Compares Pattern Deviation probability scores in five zones in the upper field with corresponding mirror image zones in the lower hemifield. The zone pattern is designed to be sensitive to glaucomatous visual field damage.
  - "Outside Normal Limits" – when 1 zone pair differs by an amount found in fewer than 1% of normal subjects. **P < 1%**
  - "Borderline" – whenever at least 1 zone pair differs by an amount found in fewer than 3% but more than 1% of normal subjects. **P is between 1% and 3%**
  - "General Depression" or "Abnormally High Sensitivity" – Whenever even the best test point locations are either so low or so high as to be at levels seen in fewer than 50% of normal subjects. Abnormally high more indicative of low reliability.
  - "Within Normal Limits"



Bebie curve / Octopus

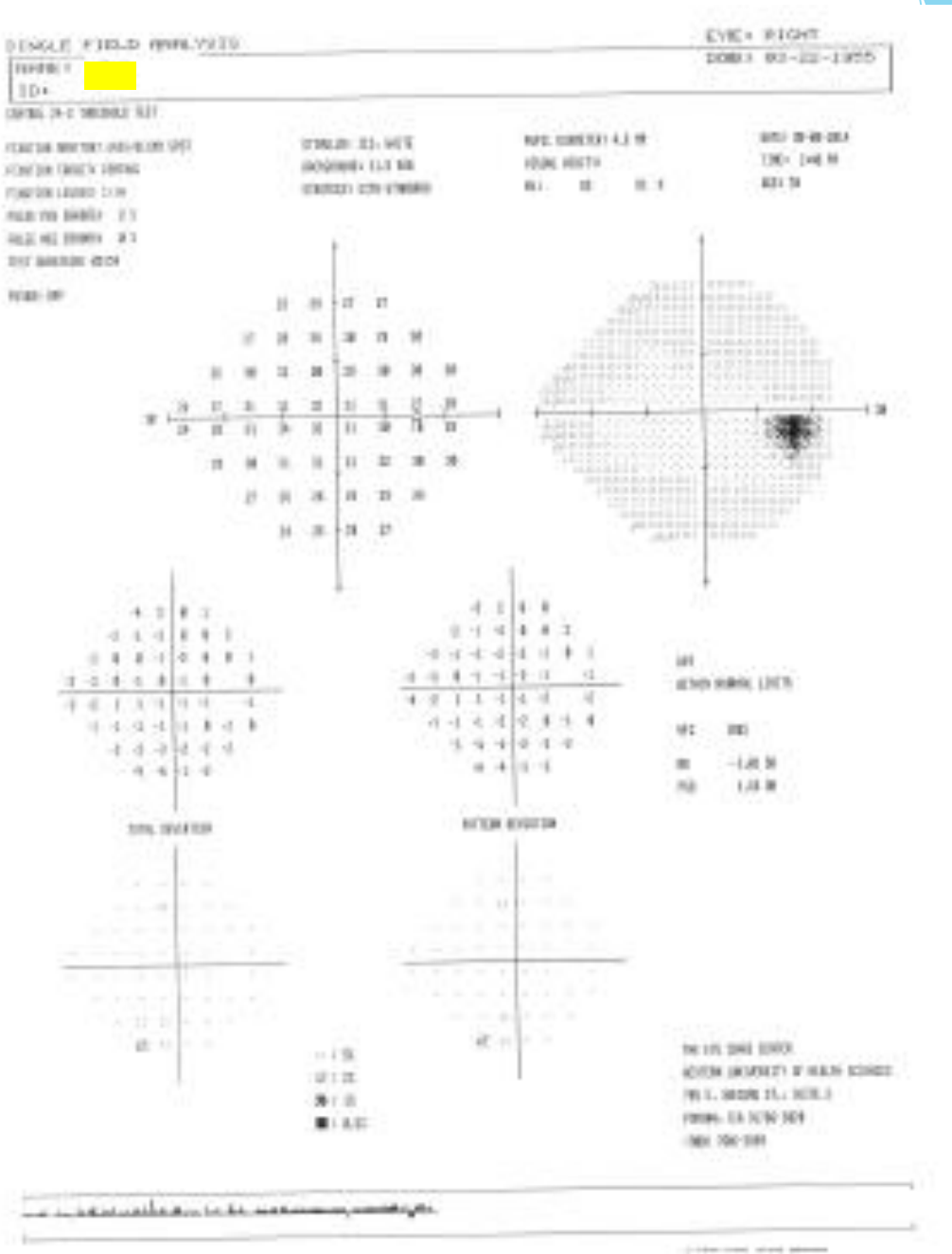
- Ranking of all defect values from left (best local deviation) to right (worst local deviation) relative to the normal bandwith.
  - Left overshoot = trigger happy
  - Parallel lowering = diffuse loss
  - Right drop = local loss
- Diffuse Defect (DD)
  - The difference between the average normal general height and the visual fields individual height expressed in db.
- Local Defect (LD)
  - Is the area between the patient's defect curve and the 50th percentile of the defect curve when shifted by DD.





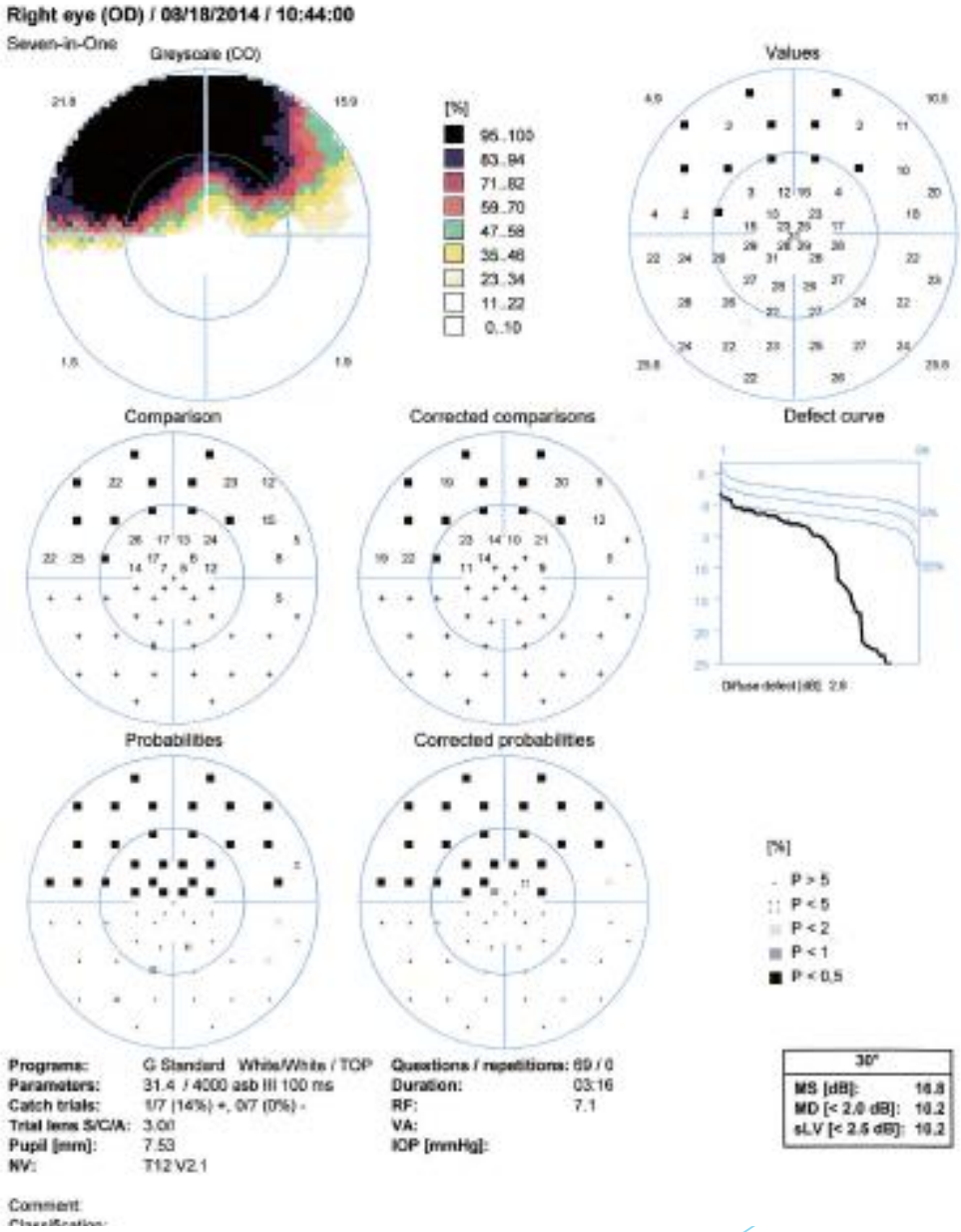
Visual Field Analysis

Humphrey



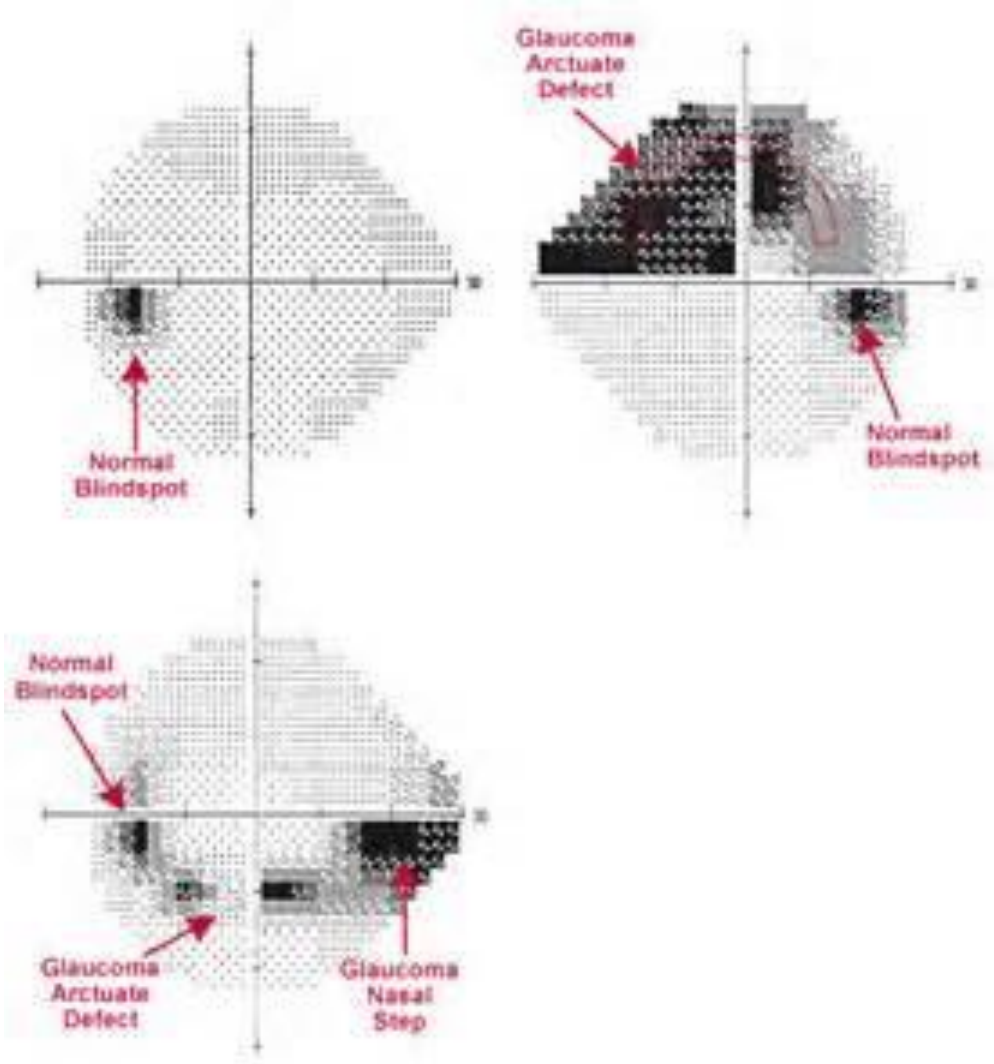
Visual Field Analysis

Octopus

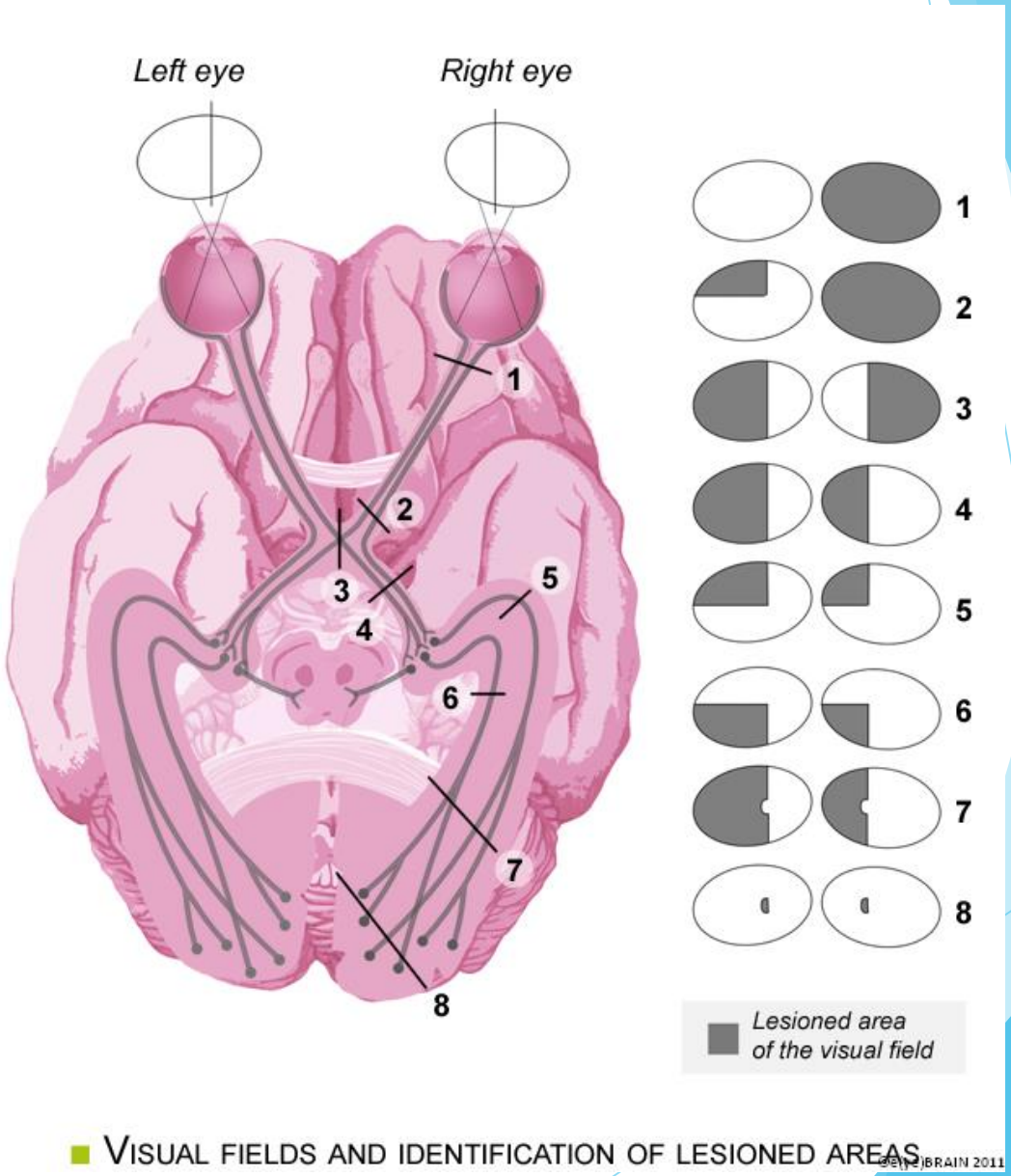


Glaucomatous Visual Field Loss

- Frequently occurs first in the Bjerrum's area and Nasal step area.
- Sensitivity should be noted across the horizontal meridian.
- Test-retest variability is a hallmark of areas of visual field affected by glaucomatous visual field loss.

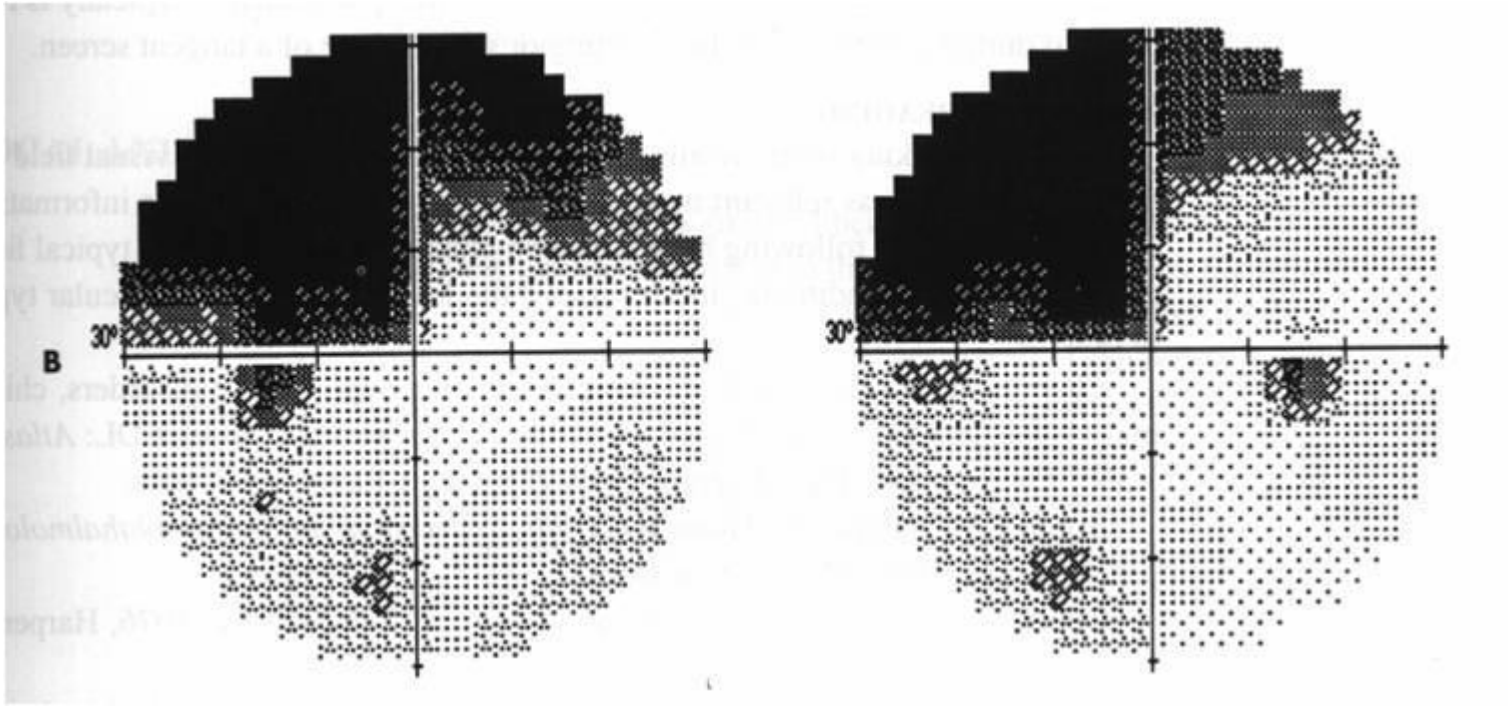


Not Glaucomatous Visual Field Defects



VISUAL FIELDS AND IDENTIFICATION OF LESIONED AREAS

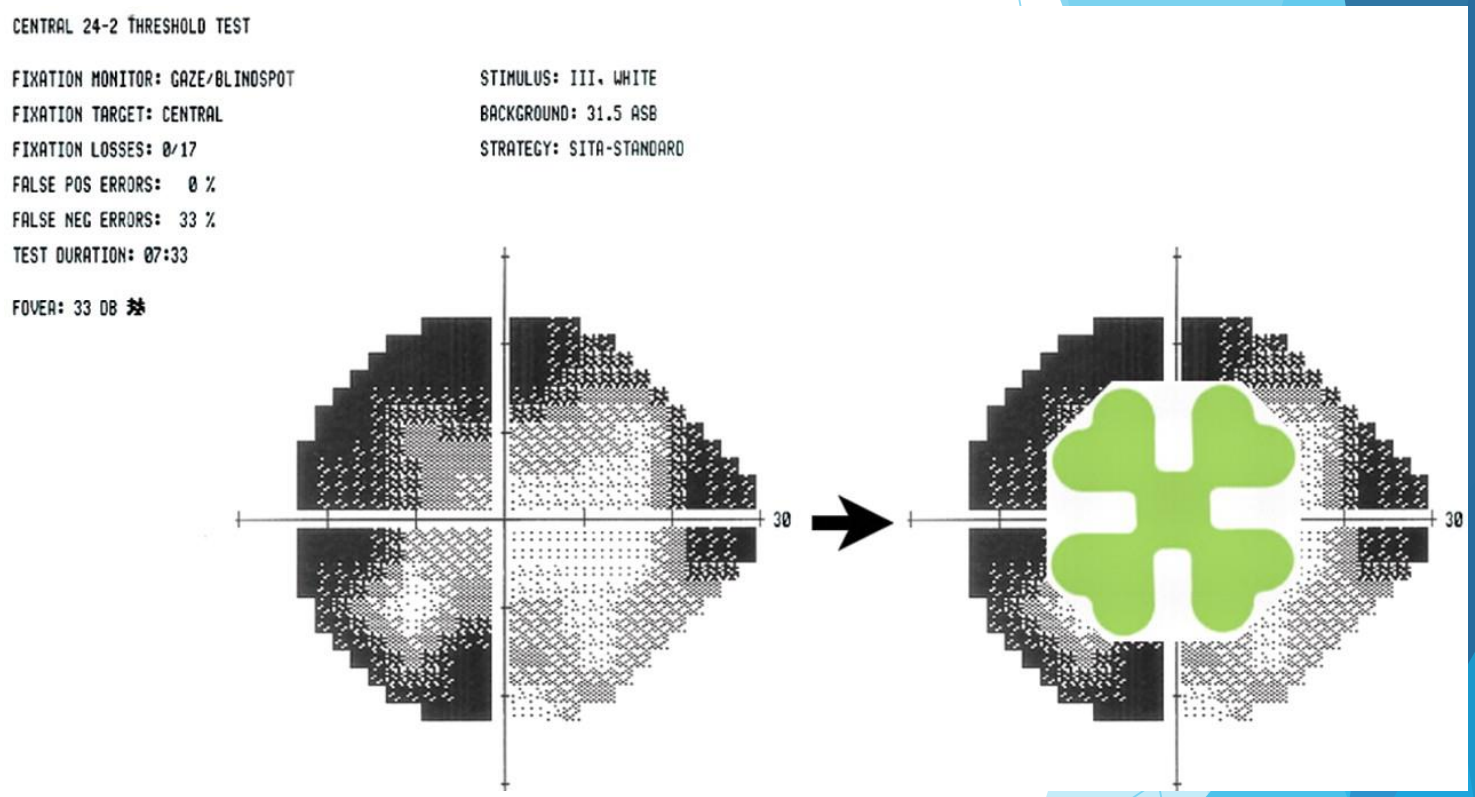
What is happening here??



Inattentive patient / Cloverleaf Field

Characteristic artifactual pattern associated with patient inattention.

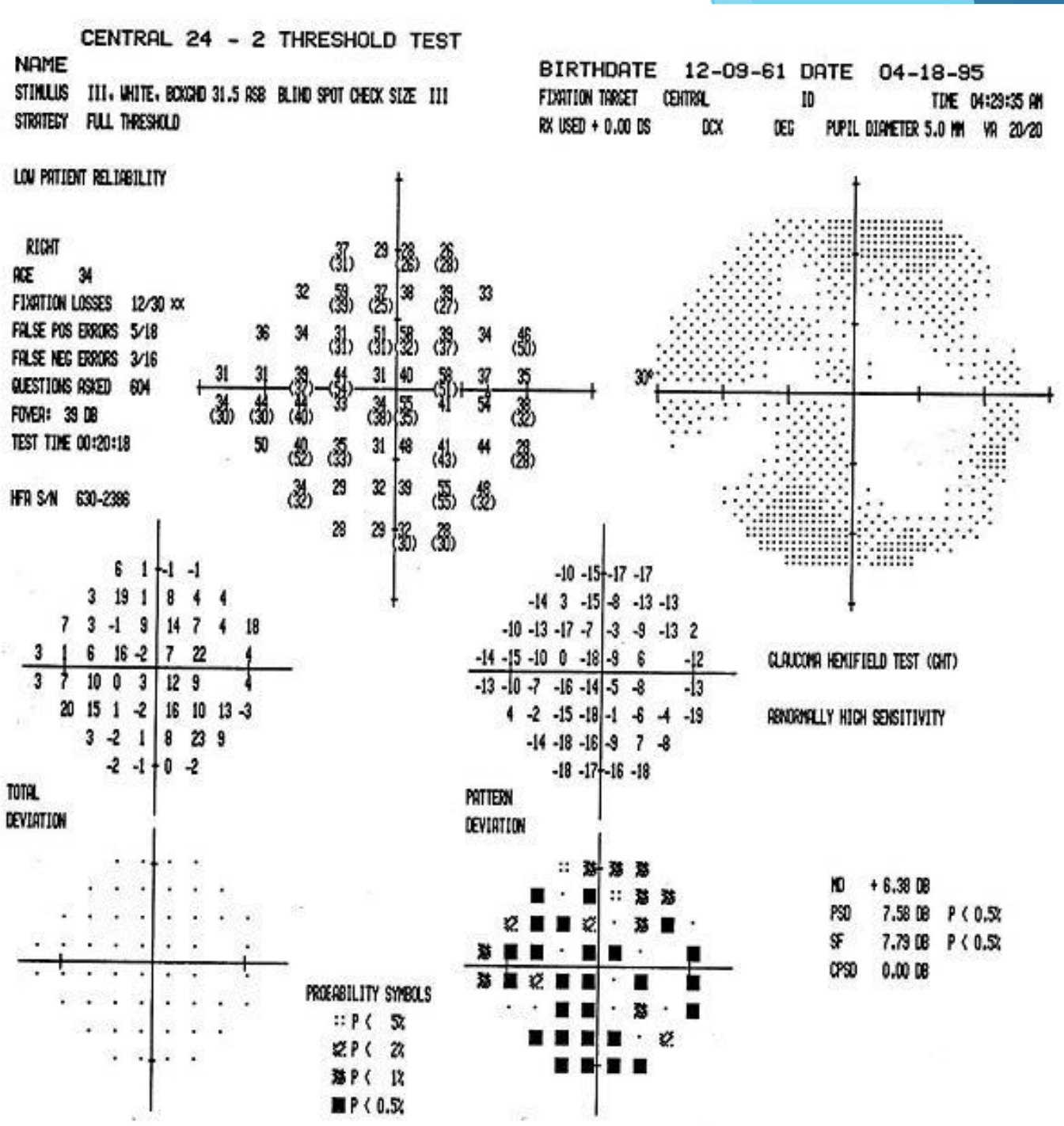
Patient has responded more or less normally during the first part of the test but. . . .



The Trigger Happy Field

Characteristics

- High False Positive Errors
- High Fixation Losses
- Threshold sensitivities are above normal
- GHT = Abnormally High Sensitivity
- More significant points on the pattern deviation than the total deviation.



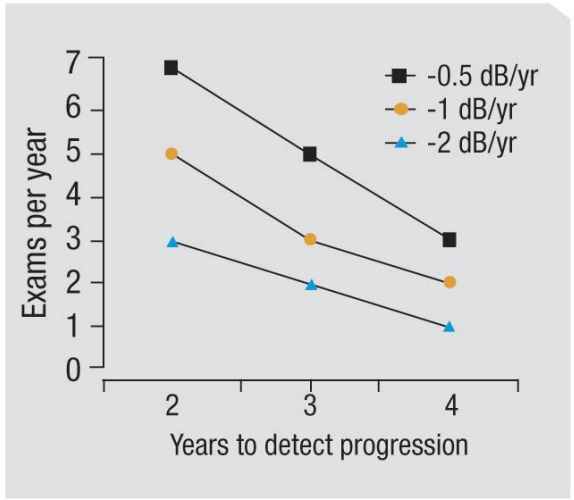
Staging glaucoma based upon visual field results

- Glaucoma Grading Scale (*see handout)
  - Hodapp-Parrish-Anderson
    - Need 2 baseline VF's
    - Early defect = ≥ -6db
    - Moderate defect = ≥ -6db to -12db
    - Advanced defect = ≥ -12db to -20db
    - Severe defect = ≥ 20db
    - End-Stage = Unable to perform threshold testing due to poor
  - Brusini
    - Based on the MD and PSD.

Assessing for progression

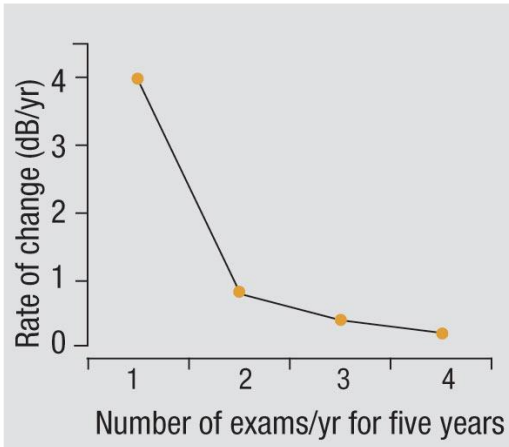
- In general, in a patient with an expected long life expectancy, you would want progression to be less than 2db / year.
  - This will vary with the age of your patient, time of diagnosis, and current visual field defects.
  - Studies show you have to do 6 visual field exams the first 2 years to be able to detect a 2db rate of progression.
  - When you start testing beyond 2-3 tests, you start to see a tapering of clinical value.

Number of Exams vs. Rates



The number of examinations required per year to detect various rates of change. (Based on Chauhan, 2008.[1])

Ability to Detect Change



With infrequent examinations the ability to detect clinically meaningful rates of change diminishes. With a higher frequency, these rates can be detected. (Based on Chauhan, 2008.[1])

Assessing for progression

- No widely accepted standard
- Most individuals agree that:
  - Deepening or expansion of an existing scotoma
  - New defect in a previously normal area
- Key things to remember . . .
  - 20% progress even with 30% decrease in IOP
  - 50% have no VF progression without tx

Humphrey – Glaucoma Progression Analysis

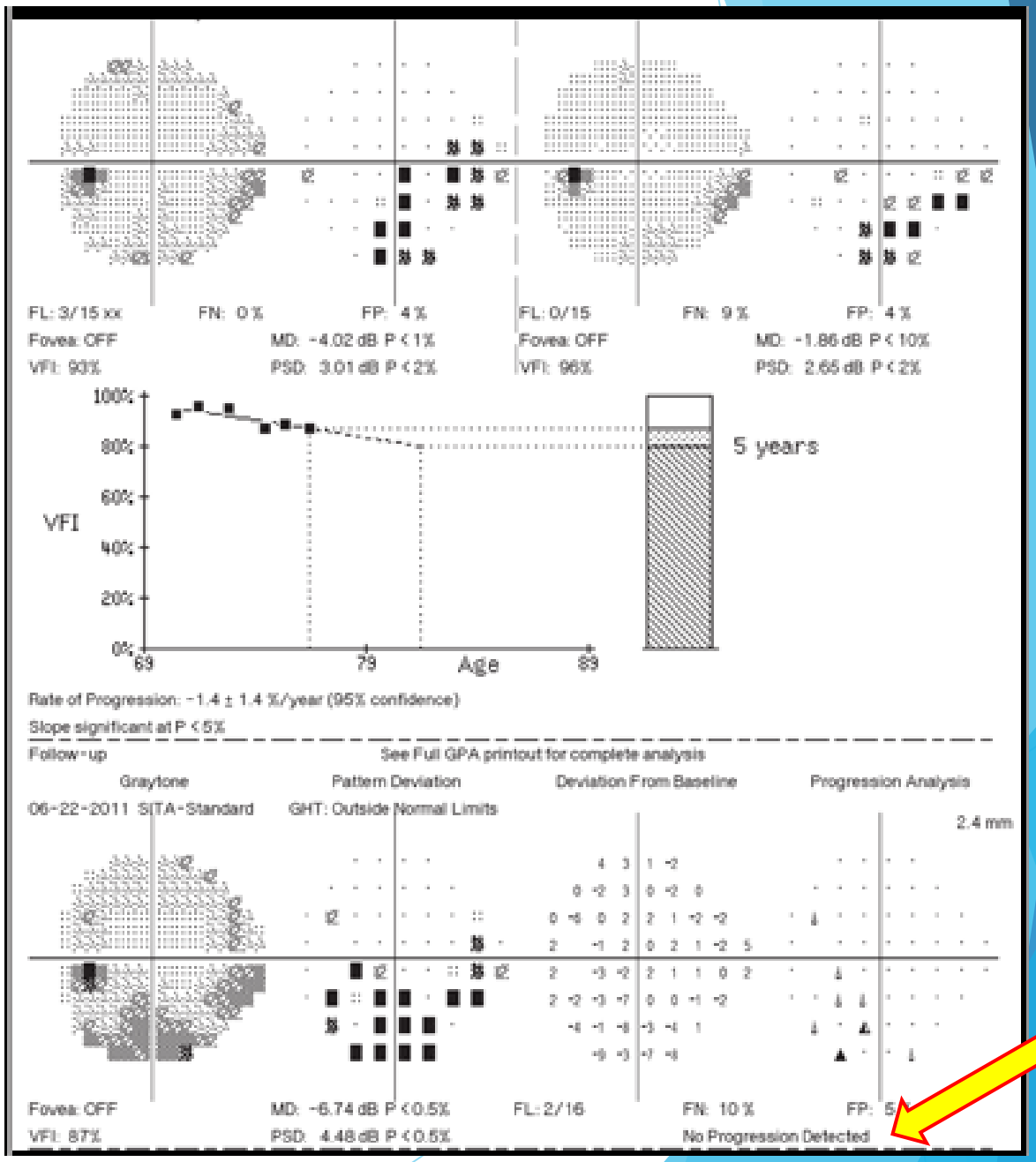
- Baseline:
  - Need 2 baseline visual fields
  - You can manually select the baseline visual fields
    - Poor initial visual field / learning curve
  - Can be used with SITA / Threshold testing

Humphrey – Glaucoma Progression Analysis

- GPA Alert
  - Possible Progression – when significant degradation is seen in the same three more or more points on two consecutive follow-up visits.
  - Likely Progression – a significant change from baseline in the same three or more points in three consecutive follow-up visits
- The Symbols
  - Open triangle = denotes points changing at the $p<0.05$ significance one time when compared to baseline exams.
  - Half-filled triangle = denotes points changing at the $p<0.05$ significance level in two consecutive follow-up exams.
  - Filled triangle = denotes points changing at the $p<0.05$ significance level in three consecutive follow-up exams.

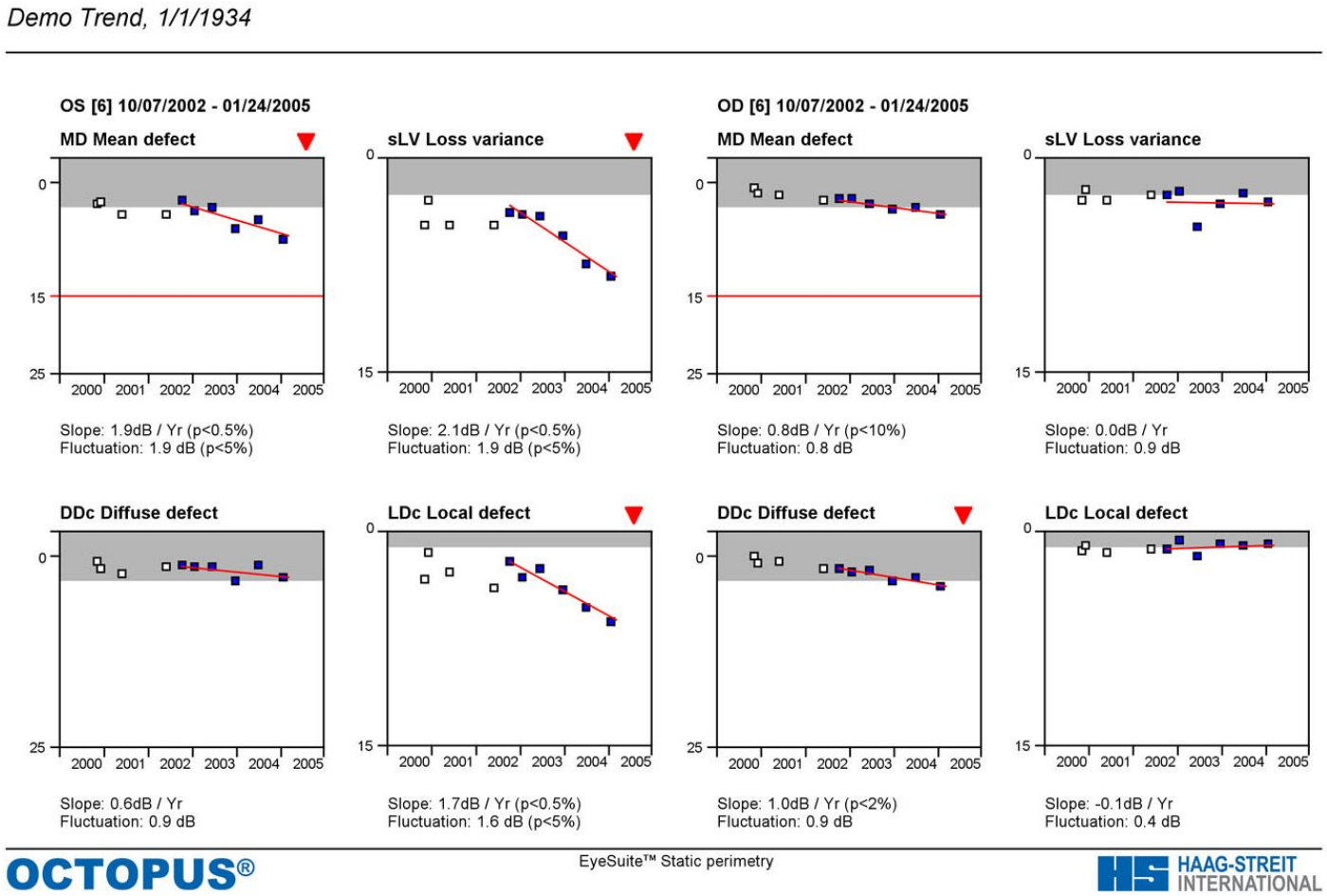
Example of printout

- On top are the 2 baseline fields.
- The most recent is on the bottom.
- In the middle is a trend line analysis, which is a regression line of the VFI values.
- Slope of line is plotted as rate of change indicator.
- For this case “No Progression detected” (see arrow)



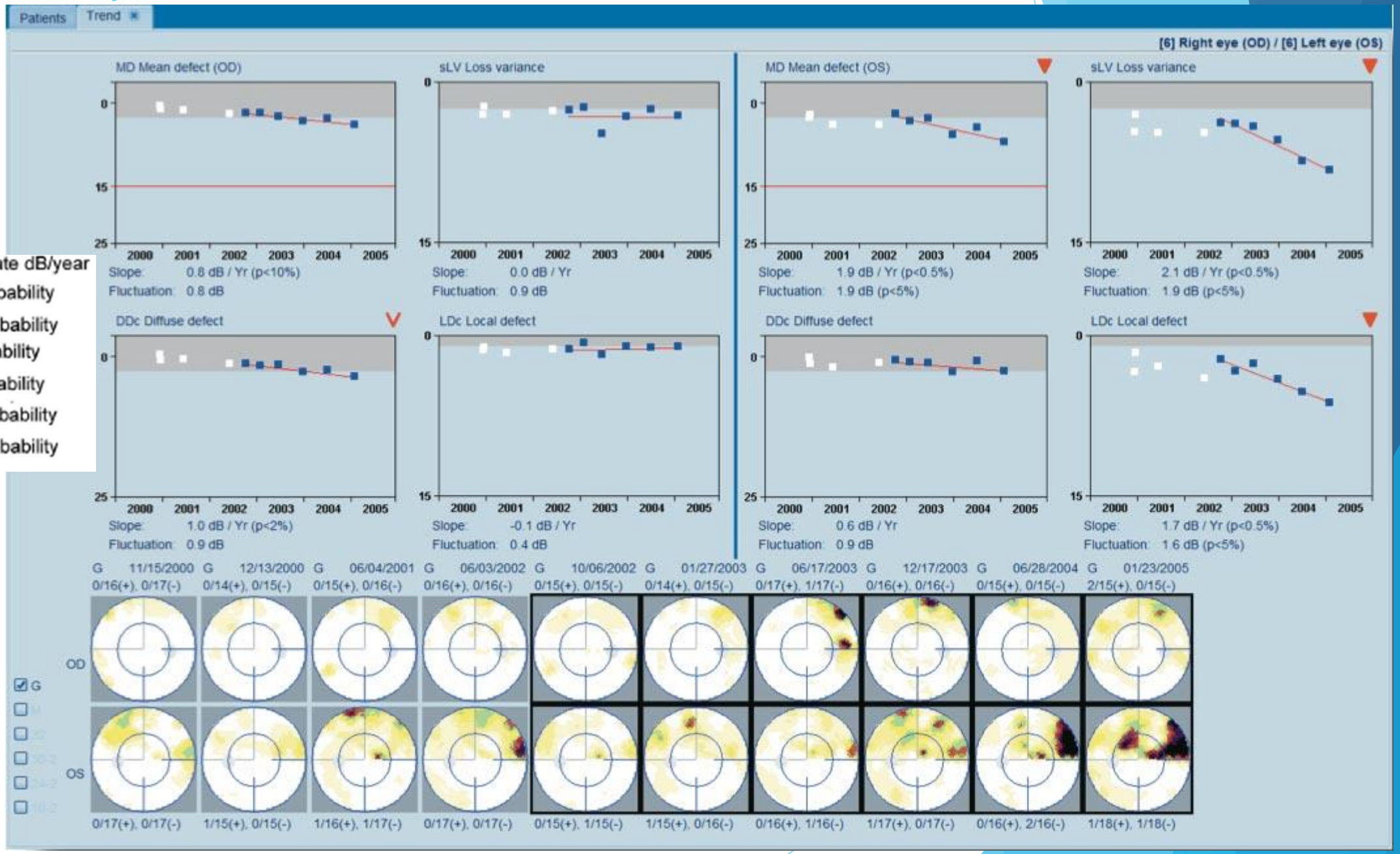
Global Trend Graph

- Indicates normality range (95%) on top as the grey band.
- Scale is 25db since a Mean Defect between 20-25db in most countries is considered legal blindness.
- 15db is considered seriously impaired vision.



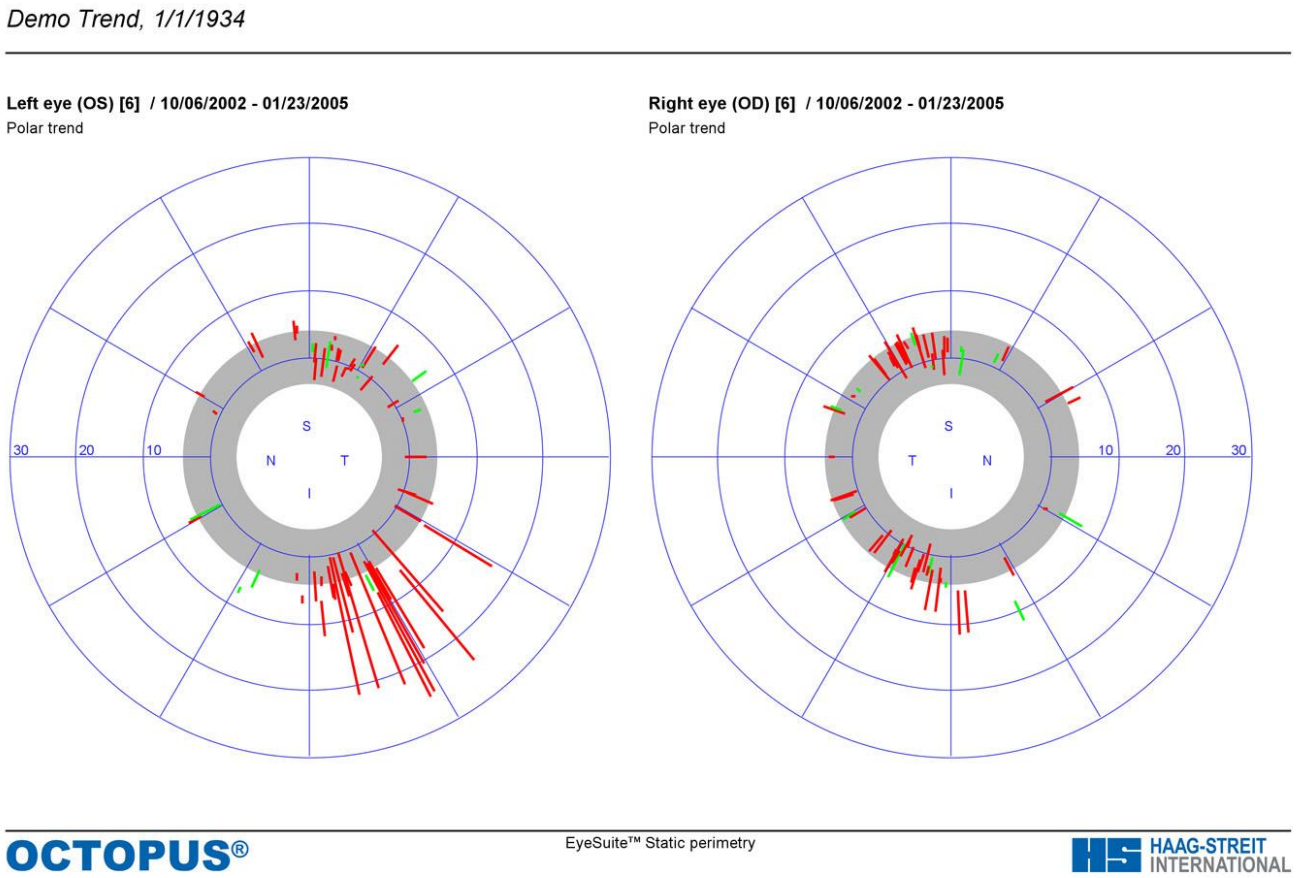
Global Trend Analysis

- Numbers: Progression rate dB/year
- ▼ worsening at 1% probability
- V worsening at 5% probability
- ▲ recovery at 1% probability
- Λ recovery at 5% probability
- ◆ fluctuation at 1% probability
- ◈ fluctuation at 5% probability

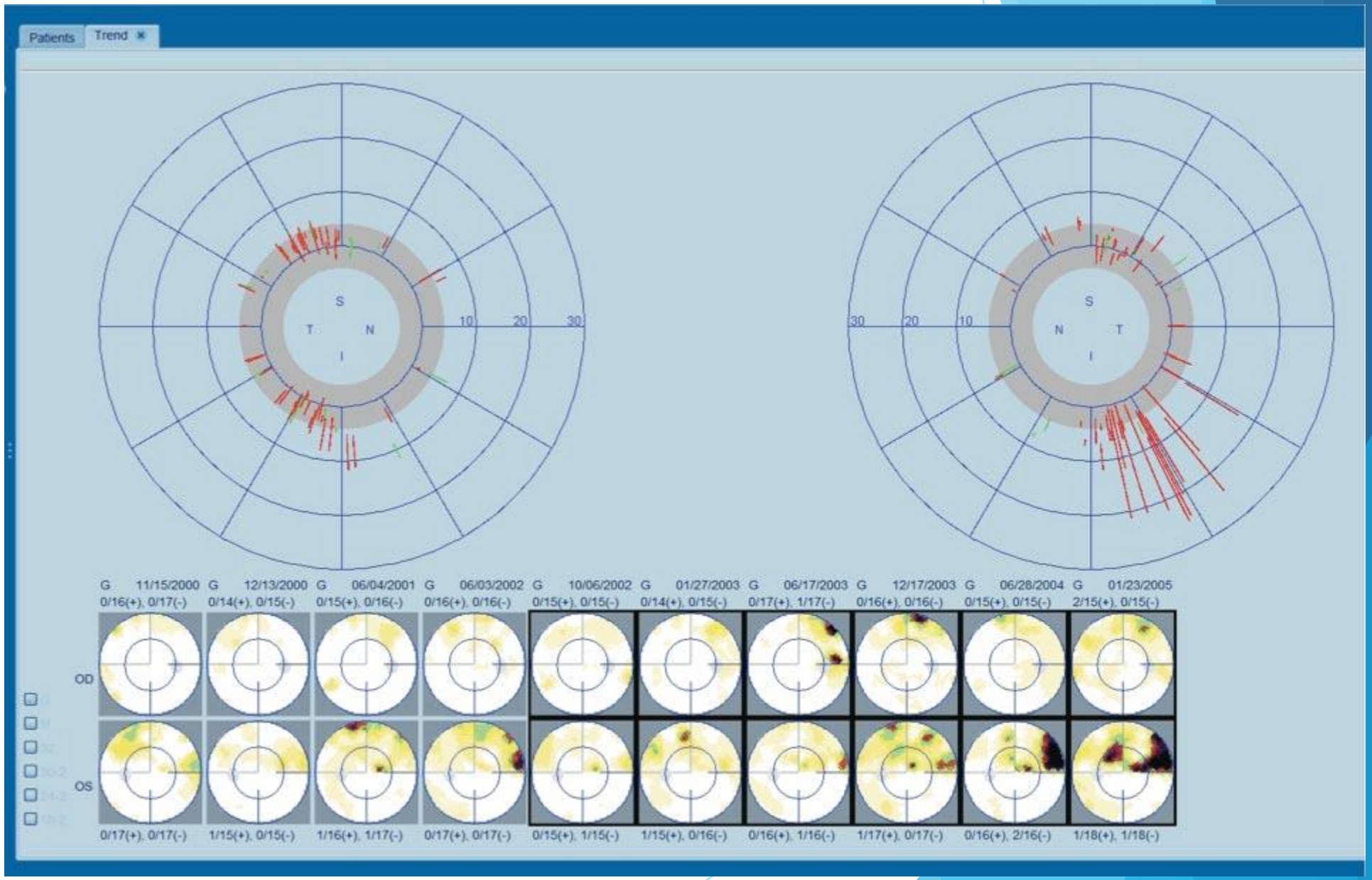


Polar Trend Graph

- Grey = normal range
- Blue Rings = 10/20/30db
- Red Line = worsening visual field defect
- Green Line = recovery / improving of the visual field defect

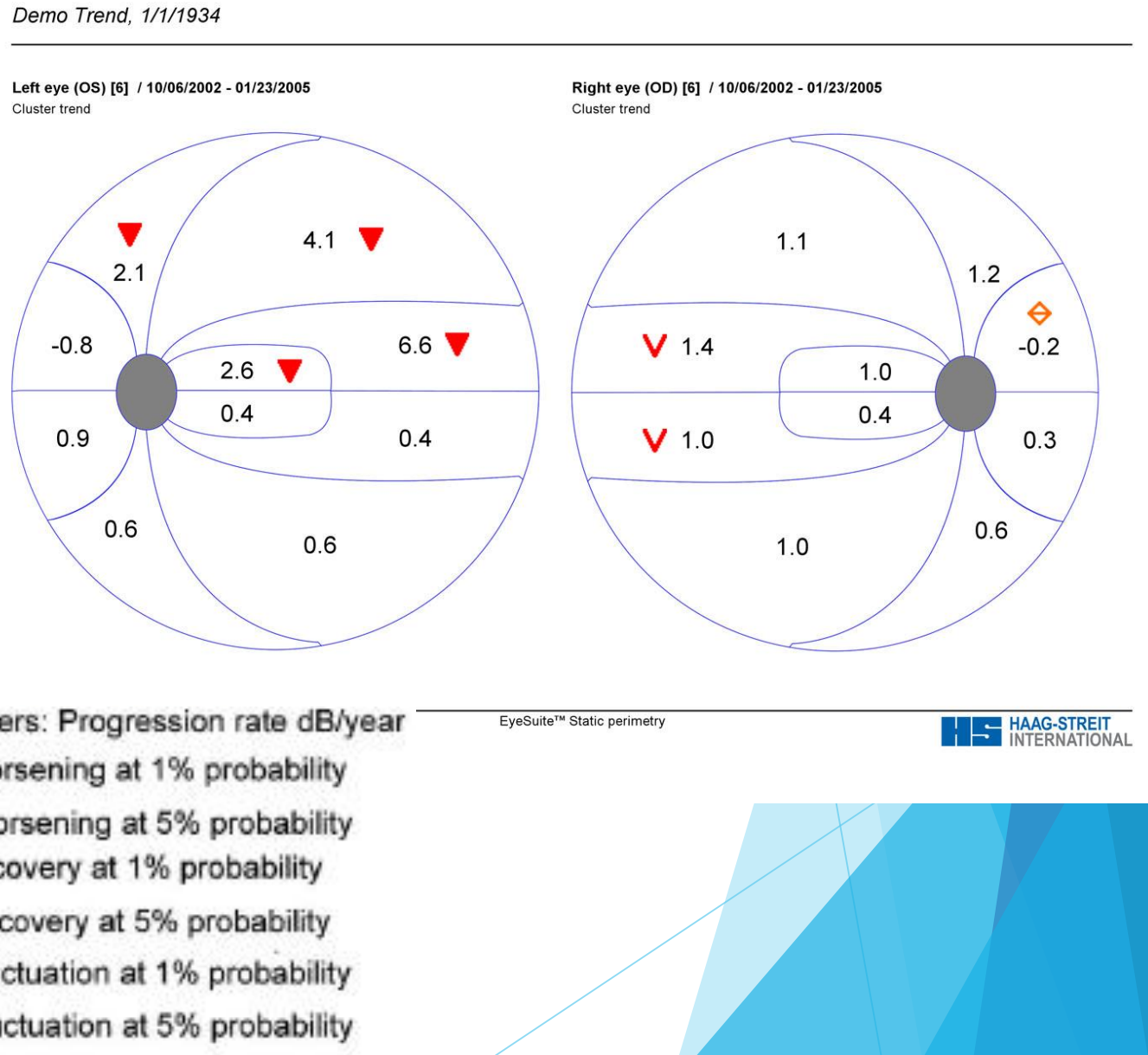


Polar Trend Analysis

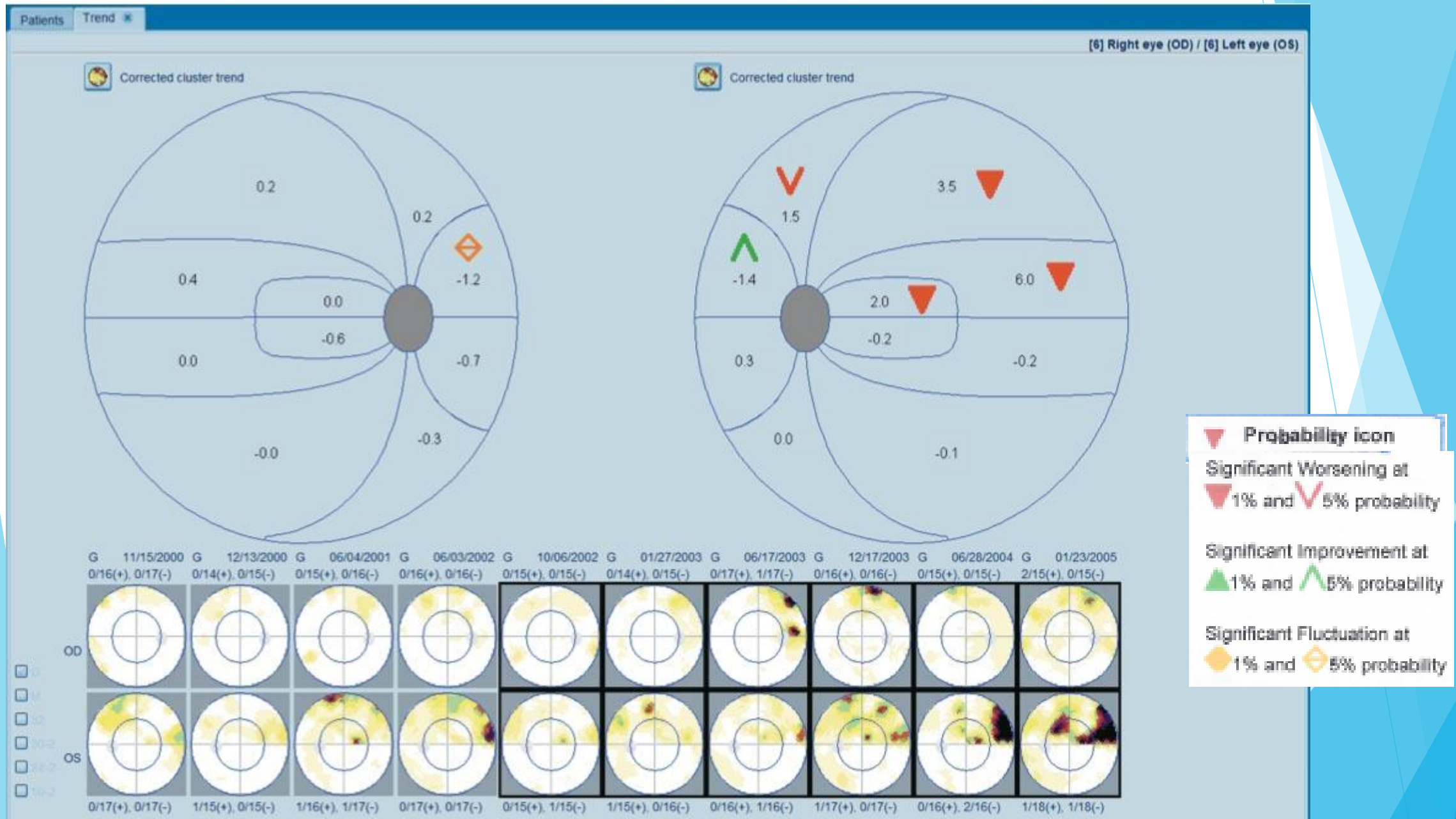


Cluster Trend Analysis

- The test locations of the visual field are grouped into 10 clusters according to their nerve fiber bundles.
- Identifies regions of change, cluster change rates and significance of trend. Areas of interest are marked with icons.



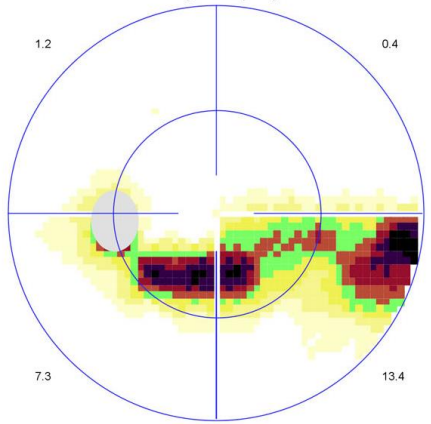
Cluster Trend Analysis



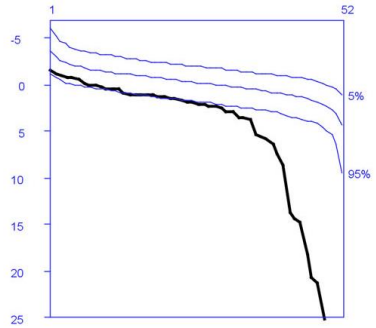
Left eye (OS) / 02/05/2010 / 12:17:09

Four-in-One

Greyscale (CO)

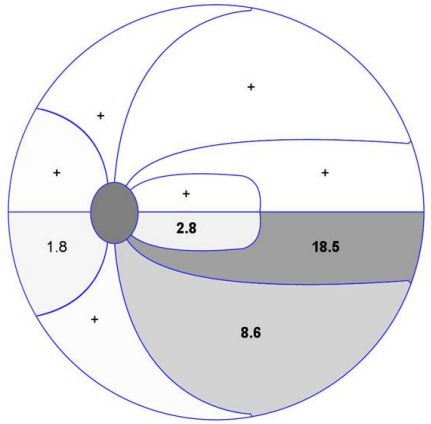


Defect curve

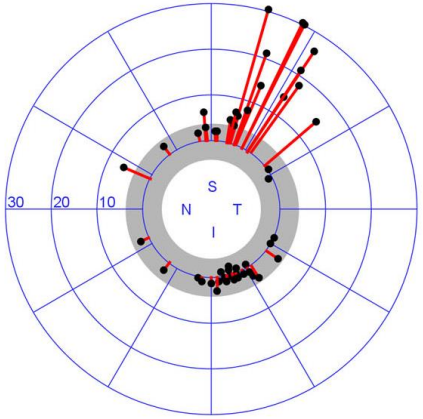


Diffuse defect [dB]: 1.9

Corrected cluster analysis



Polar analysis



Programs:	24-2 Standard White/White / Sita Standard	**Questions / repetitions:**	41 / 0
Parameters:	31.4 / 10000 asb III 200 ms	**Duration:**	06:53
Catch trials:	0/0(+), 0/15(-)	**RF:**	0.0
Refraction S/C/A:	+2.25/+1.50/163	**VA:**	
Pupil [mm]:	5.4	**IOP [mmHg]:**	

30°	
MS [dB]:	**23.1**
MD [< 2.0 dB]:	**5.7**
sLV [< 2.5 dB]:	**8.7**

Comment:
Classification:

Patient Cases

- Visual Fields
- Optic nerve correlation
- Obviously we would need more data but we will look at these 2 components for the sake of going thru a few cases.

Pt #1

SINGLE FIELD ANALYSIS

EYE: RIGHT

NAME [redacted]

ID:

DOB: 09-17-1967

CENTRAL 24-2 THRESHOLD TEST

FIXATION MONITOR: BLIND SPOT

FIXATION TARGET: CENTRAL

FIXATION LOSSES: 0/13

FALSE POS ERRORS: 0 %

FALSE NEG ERRORS: 0 %

TEST DURATION: 04:10

FOVEA: OFF

STIMULUS: III, WHITE

BACKGROUND: 31.5 ASB

STRATEGY: SITA-STANDARD

PUPIL DIAMETER:

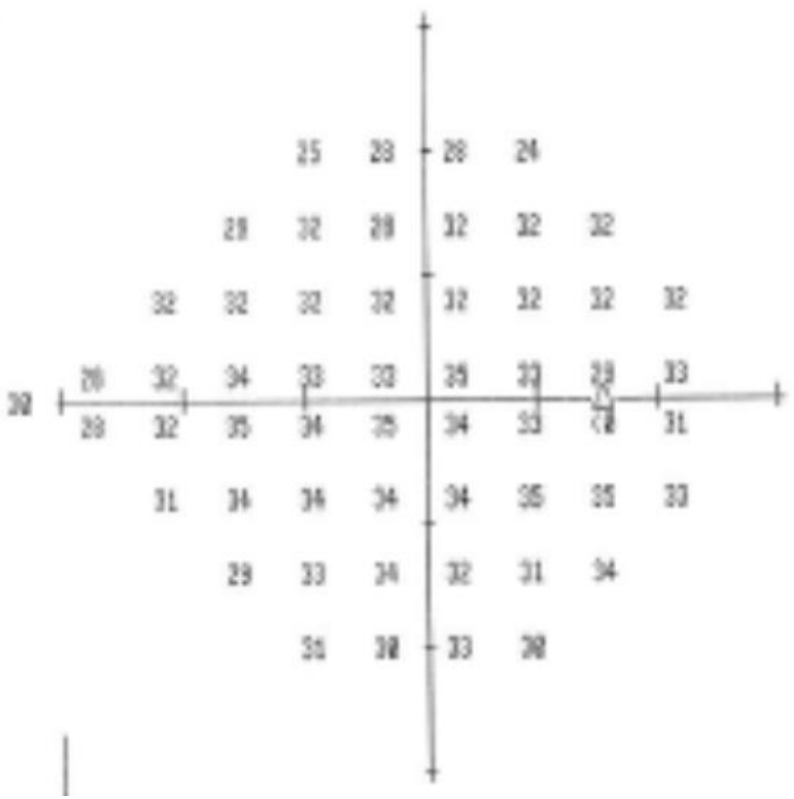
VISUAL ACUITY:

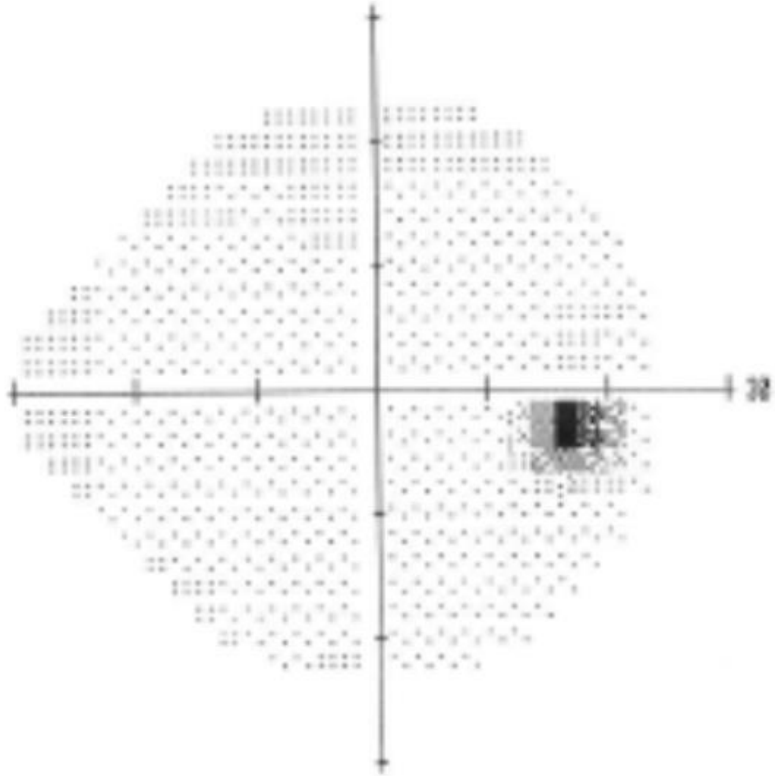
RX: +2.00 DS DC

DATE: 08-21-2014

TIME: 2:40 PM

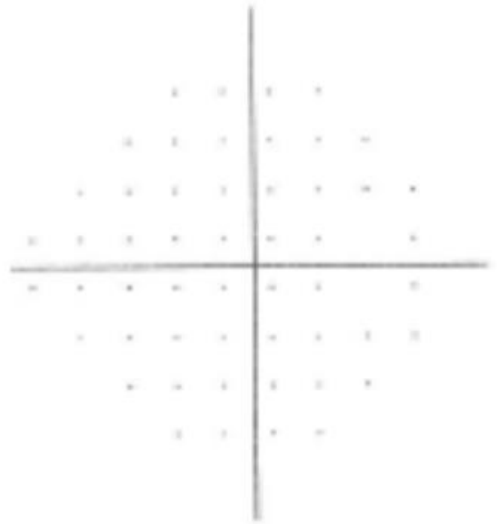
AGE: 46

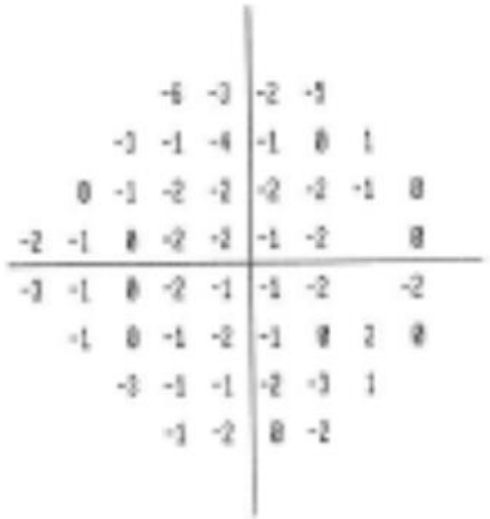




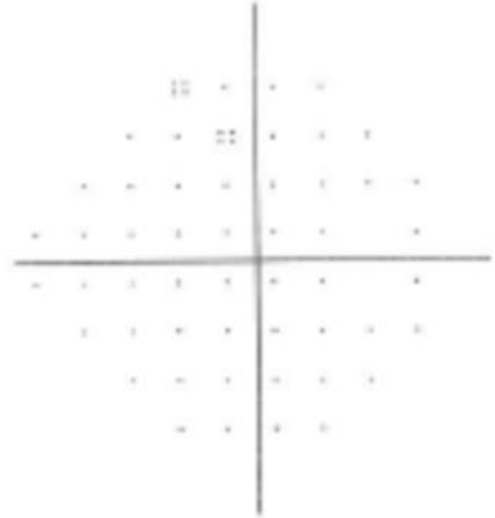
Pt #1

TOTAL DEVIATION





PATTERN DEVIATION



< 5%

< 2%

< 1%

< 0.5%

GHT

WITHIN NORMAL LIMITS

VFI 100%

MD +1.35 DB

PSD 1.28 DB

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WESTERN UNIVERSITY OF HEALTH SCIENCES
795 E. SECOND ST., SUITE 2
POMONA, CA 91766-2020
(909) 706-3900

Pt #1

Pt #1

SINGLE FIELD ANALYSIS

NAME [redacted]
ID: _

EYE: LEFT
DOB: 09-17-1967

CENTRAL 24-2 THRESHOLD TEST

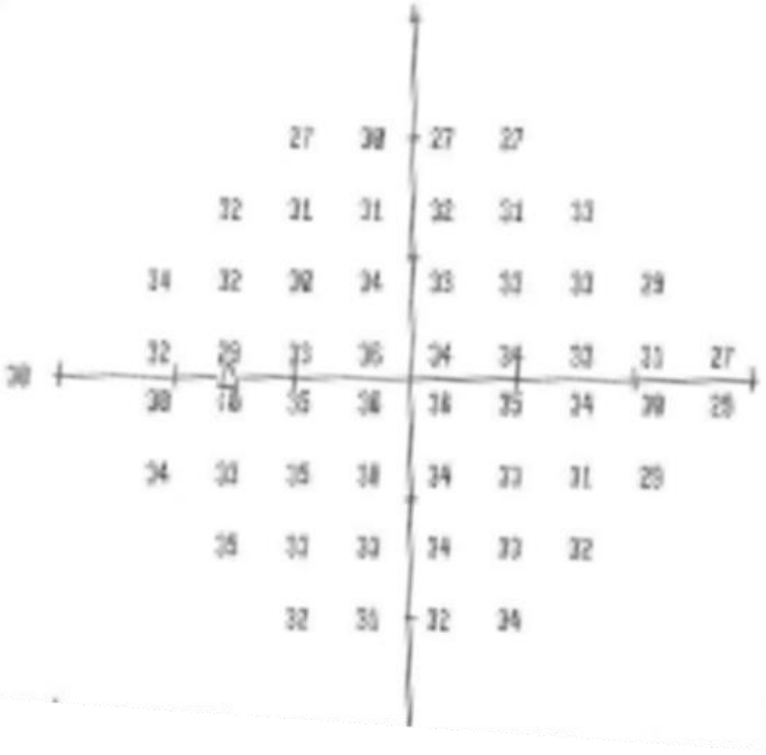
FIXATION MONITOR: GAZE/BLIND SPOT
FIXATION TARGET: CENTRAL
FIXATION LOSSES: 0/13
FALSE POS ERRORS: 0 %
FALSE NEG ERRORS: 0 %
TEST DURATION: 00:51

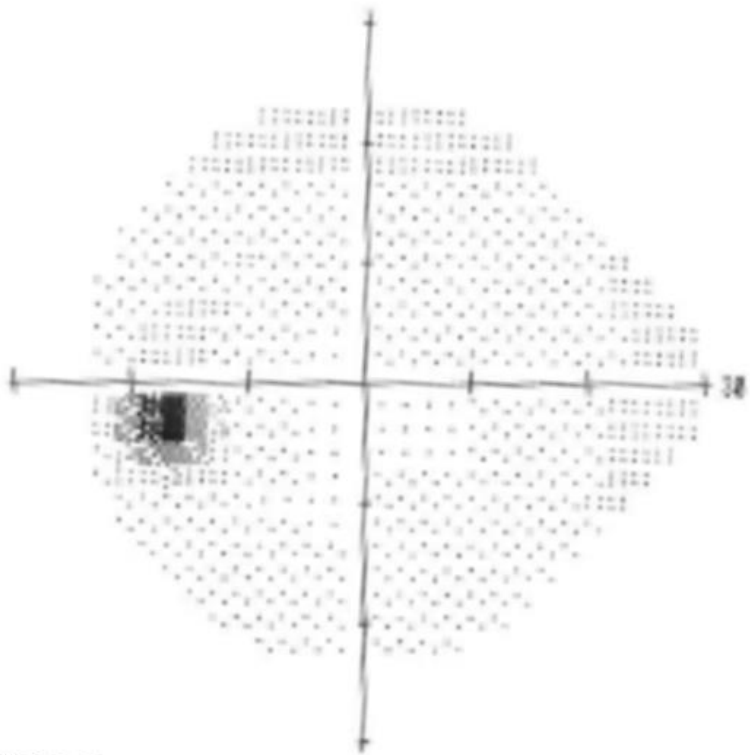
FOVEA: OFF

STIMULUS: III, WHITE
BACKGROUND: 31.5 ASB
STRATEGY: SITA-STANDARD

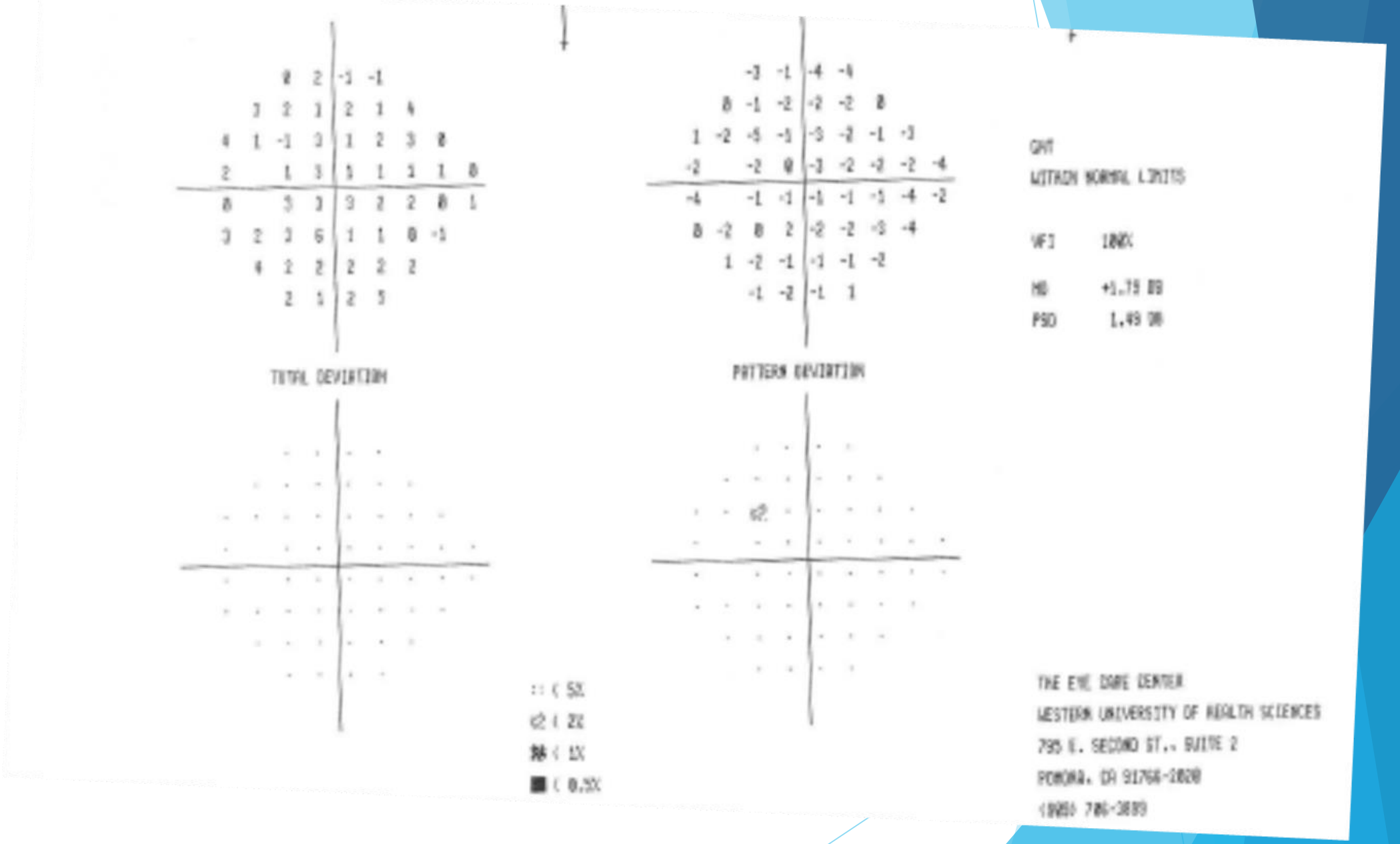
PUPIL DIAMETER: 7.7 MM
VISUAL ACUITY:
RX: +2.00 DS DC X

DATE: 09-21-2014
TIME: 2:54 PM
AGE: 46

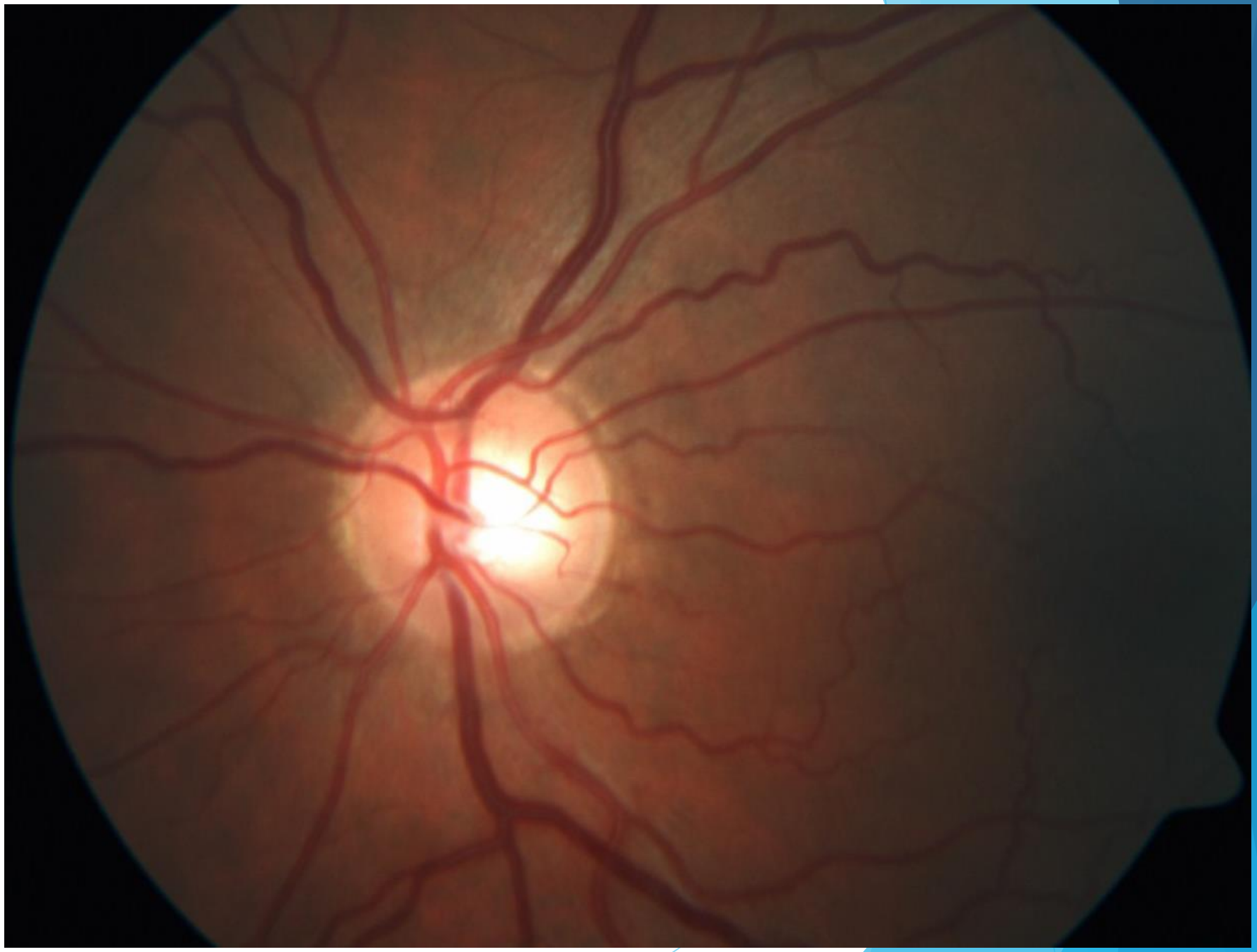




Pt #1


TOTAL DEVIATION
PATTERN DEVIATION
GHT
WITHIN NORMAL LIMITS
VFI 100%
MD +1.79 DB
PSD 1.49 DB
< 5%
< 2%
< 1%
< 0.5%
THE EYE CARE CENTER
WESTERN UNIVERSITY OF HEALTH SCIENCES
795 E. SECOND ST., SUITE 2
POMONA, CA 91766-1820
(909) 706-3819

Pt #1



Pt. #2

SINGLE FIELD ANALYSIS

EYE: RIGHT

NAM[redacted]

ID: [redacted]

DOB: 11-26-1961

CENTRAL 24-2 THRESHOLD TEST

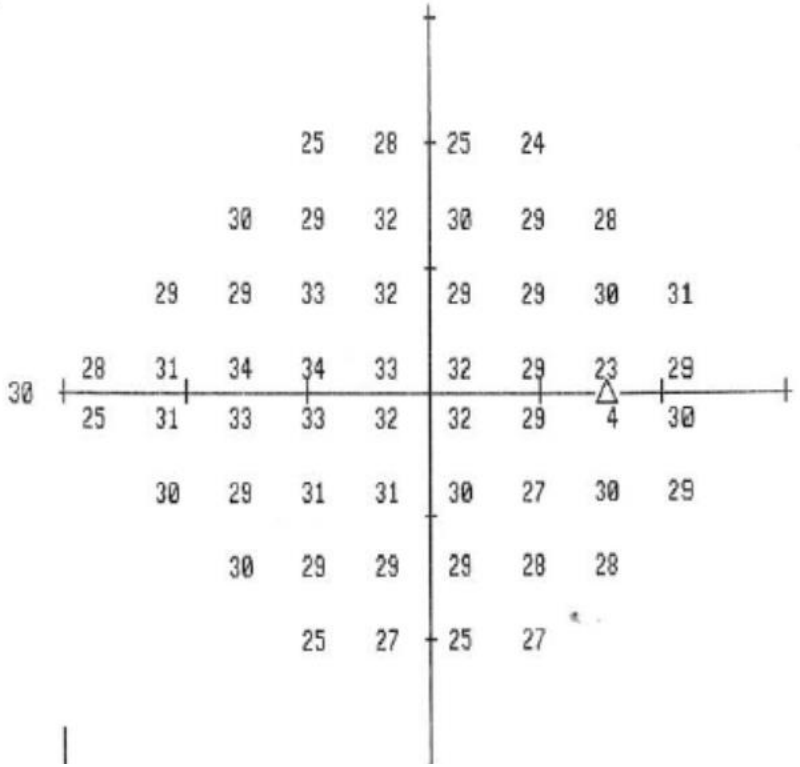
FIXATION MONITOR: GAZE/BLIND SPOT
FIXATION TARGET: CENTRAL
FIXATION LOSSES: 1/15
FALSE POS ERRORS: 1 %
FALSE NEG ERRORS: 2 %
TEST DURATION: 04:56

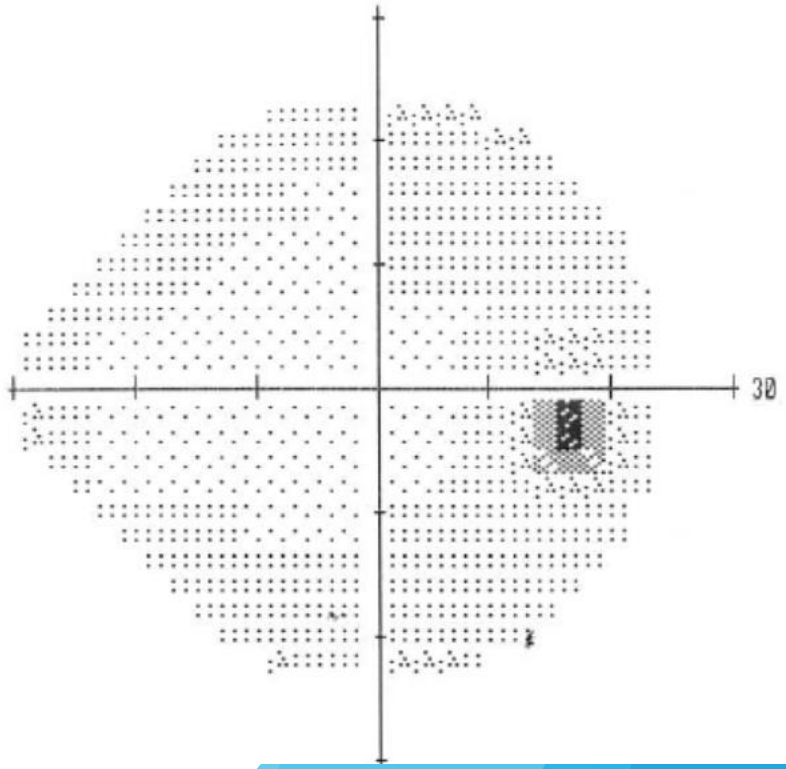
FOVEA: OFF

STIMULUS: III, WHITE
BACKGROUND: 31.5 ASB
STRATEGY: SITA-STANDARD

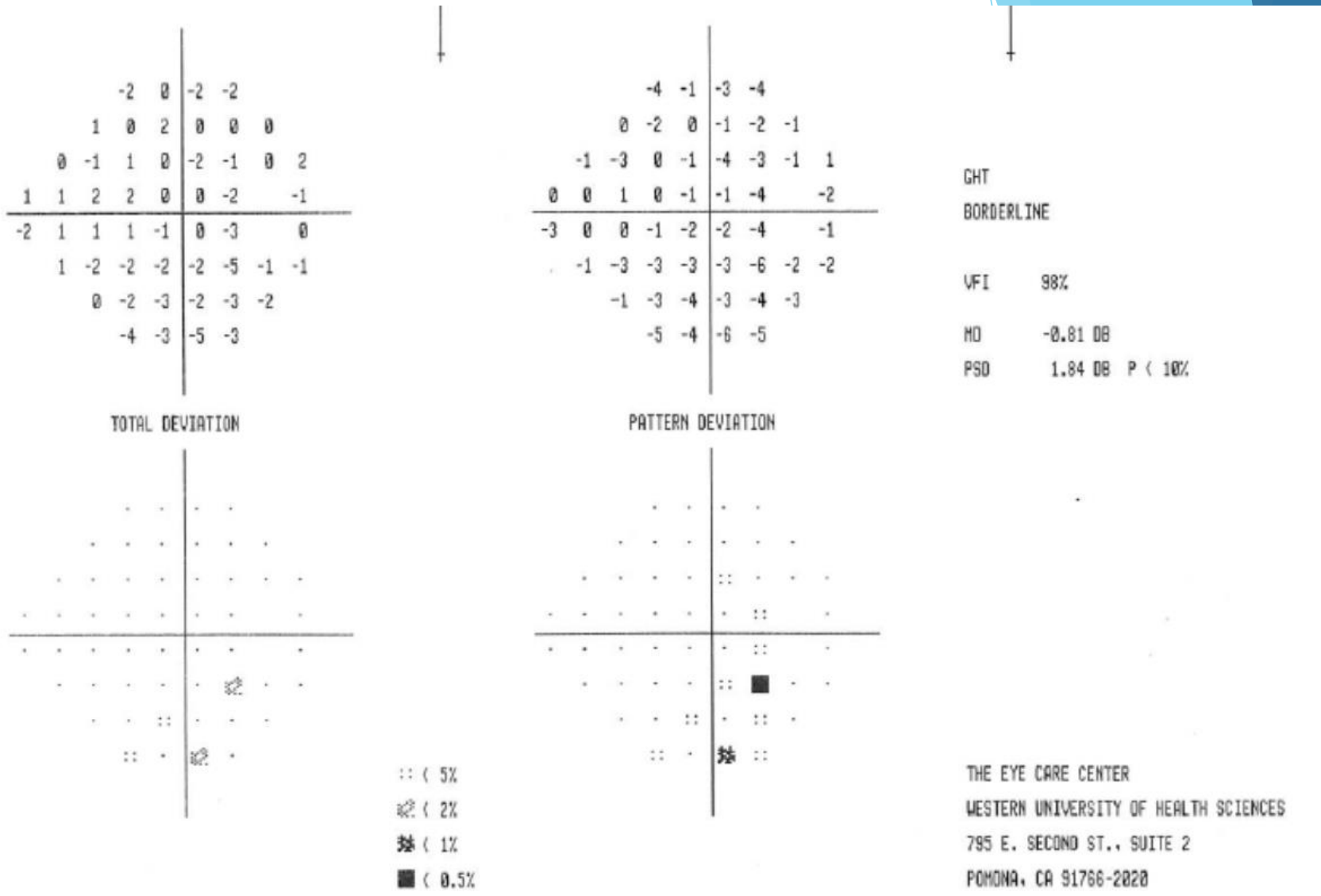
PUPIL DIAMETER: 7.3 MM
VISUAL ACUITY:
RX: -1.25 DS DC X

DATE: 05-09-2014
TIME: 1:47 PM
AGE: 52





Pt #2


TOTAL DEVIATION
PATTERN DEVIATION
:: < 5%
< 2%
< 1%
< 0.5%
GHT
BORDERLINE
VFI 98%
MD -0.81 DB
PSD 1.84 DB P < 10%
THE EYE CARE CENTER
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POMONA, CA 91766-2020
(909) 706-3899

Pt #2

Pt #2

SINGLE FIELD ANALYSIS

EYE: LEFT

NAME [redacted]

ID: [redacted]

DOB: 11-26-1961

CENTRAL 24-2 THRESHOLD TEST

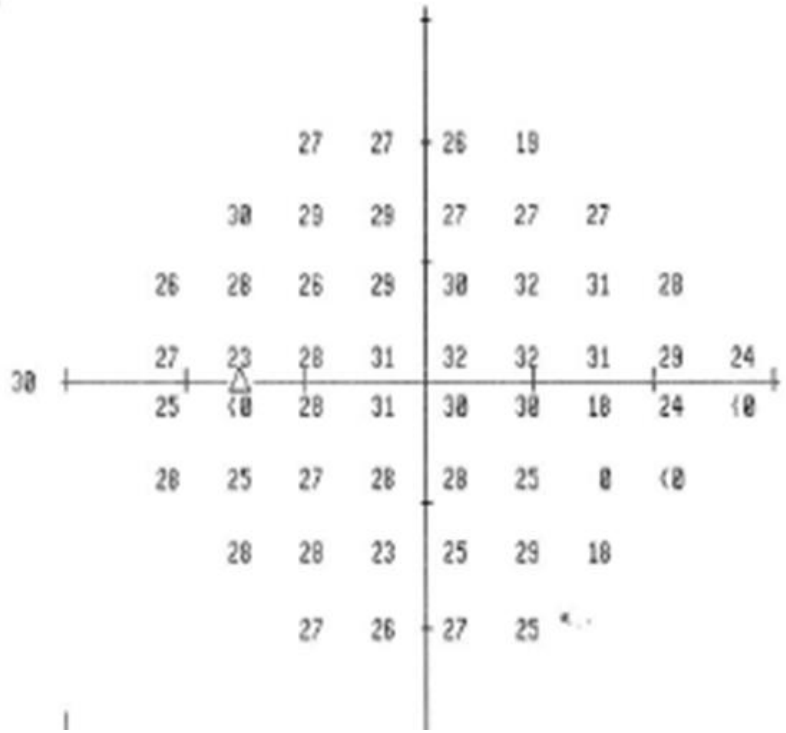
FIXATION MONITOR: GAZE/BLIND SPOT
FIXATION TARGET: CENTRAL
FIXATION LOSSES: 2/16
FALSE POS ERRORS: 5 %
FALSE NEG ERRORS: 5 %
TEST DURATION: 06:14

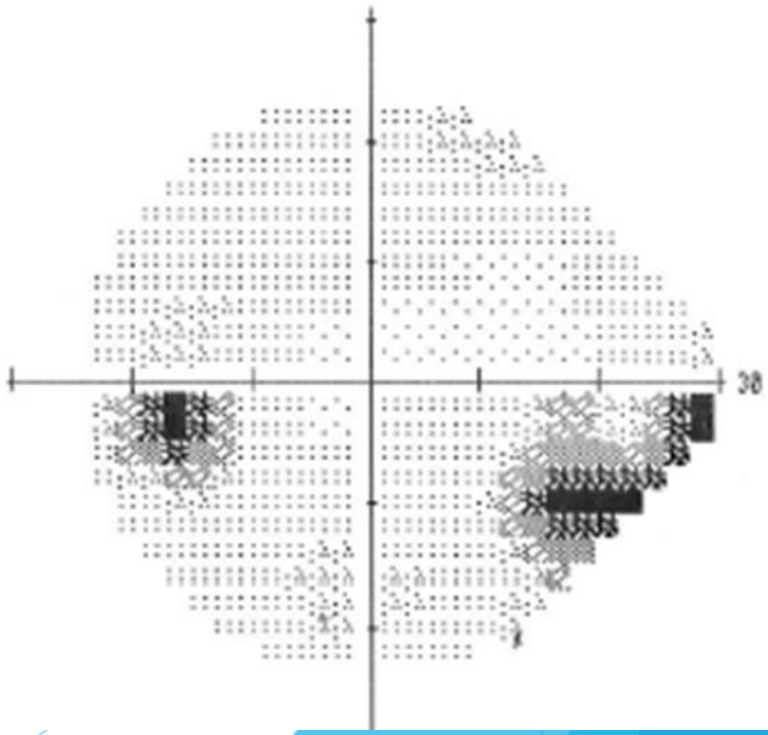
FOVEA: OFF

STIMULUS: III, WHITE
BACKGROUND: 31.5 ASB
STRATEGY: SITA-STANDARD

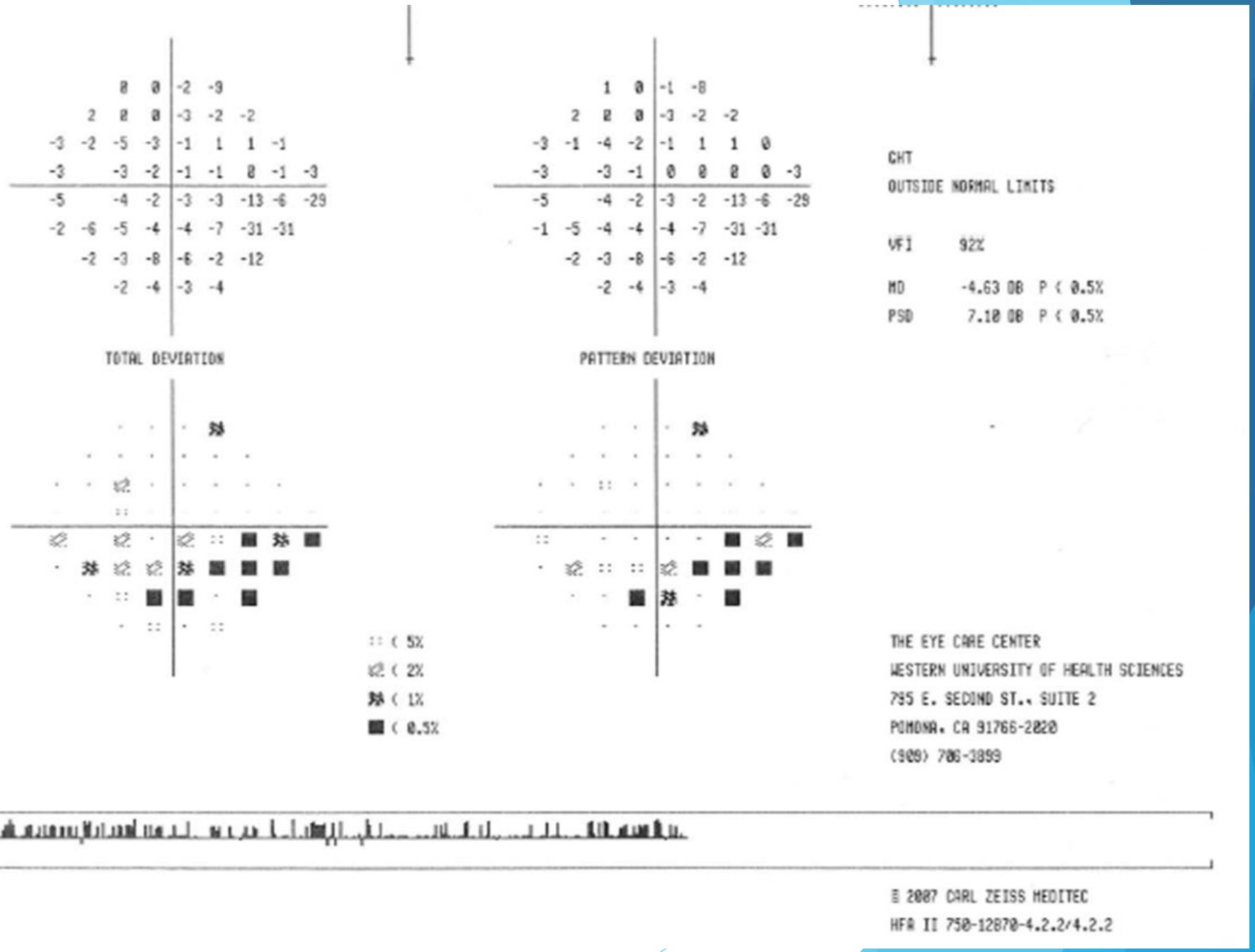
PUPIL DIAMETER: 7.2 MM
VISUAL ACUITY:
RX: -3.75 DS OC X

DATE: 05 09 2014
TIME: 1:55 PM
AGE: 52





Pt #2


TOTAL DEVIATION
PATTERN DEVIATION
:: < 5%
< 2%
< 1%
< 0.5%
CHT
OUTSIDE NORMAL LIMITS
VFI 92%
MD -4.63 dB P < 0.5%
PSD 7.10 dB P < 0.5%
THE EYE CARE CENTER
WESTERN UNIVERSITY OF HEALTH SCIENCES
795 E. SECOND ST., SUITE 2
POMONA, CA 91766-2020
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© 2007 CARL ZEISS MEDITEC
HFA II 750-12870-4.2.2/4.2.2

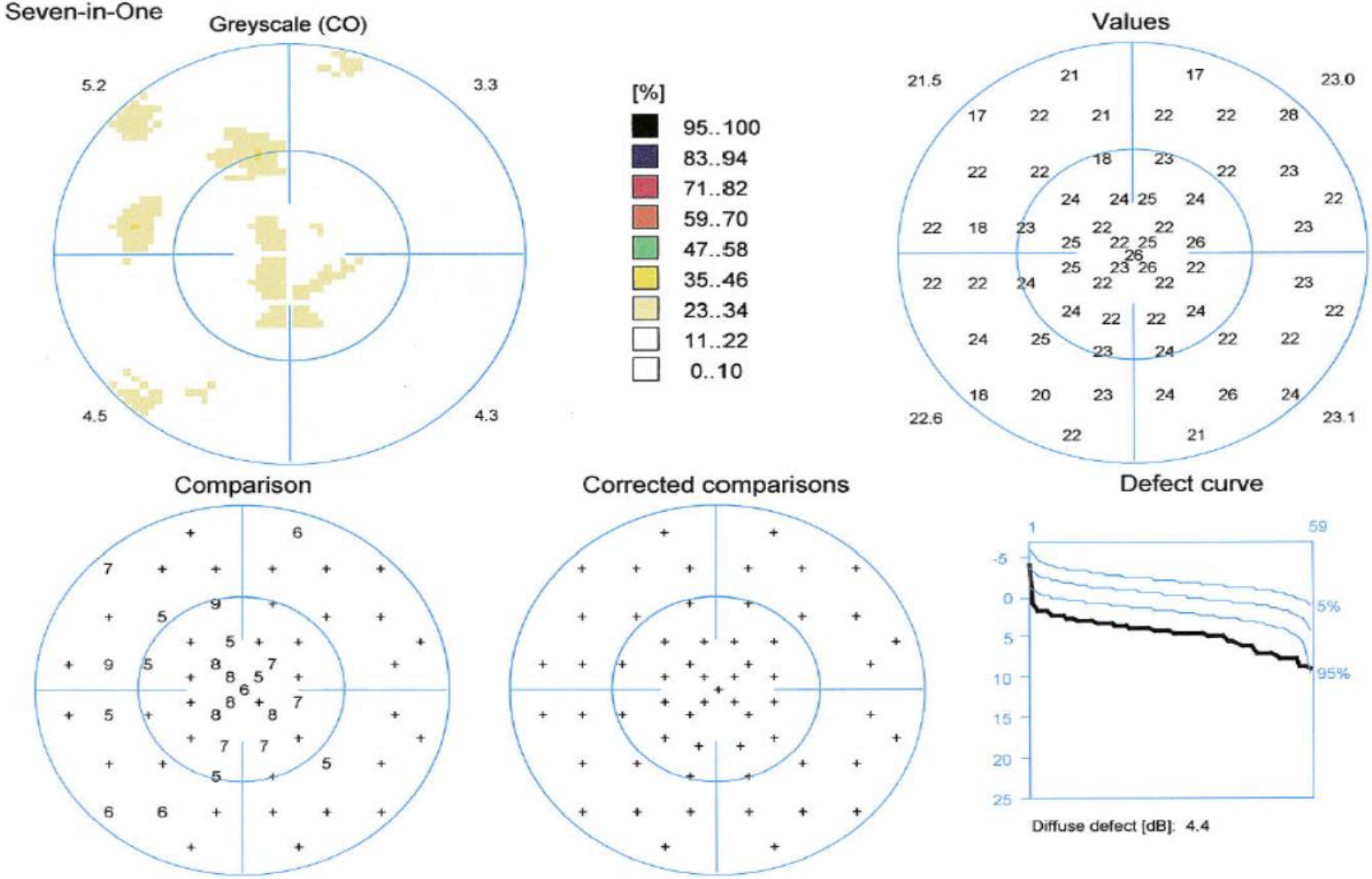
Pt #2

Pt #3

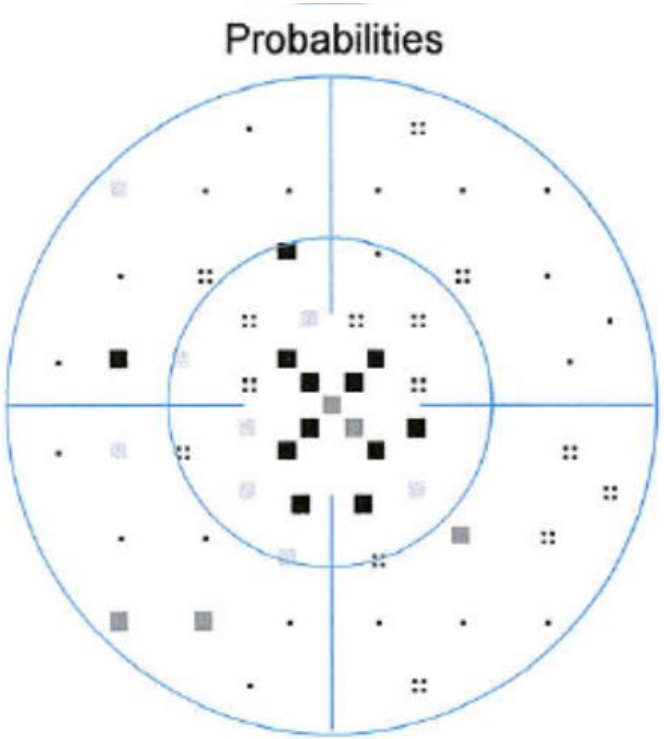
[redacted] 3/22/1955 (56yrs)

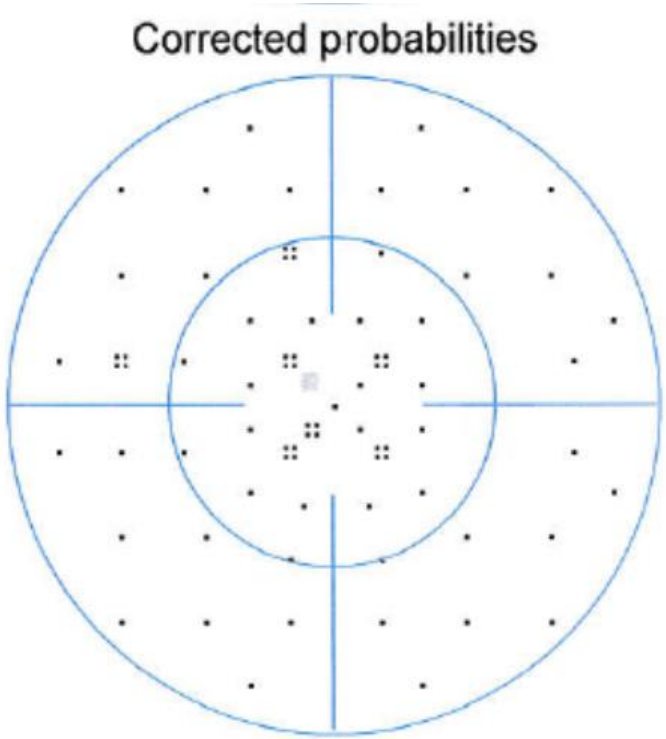
Right eye (OD) / 05/23/2011 / 22:14:50

Seven-in-One



Pt #3





[%]

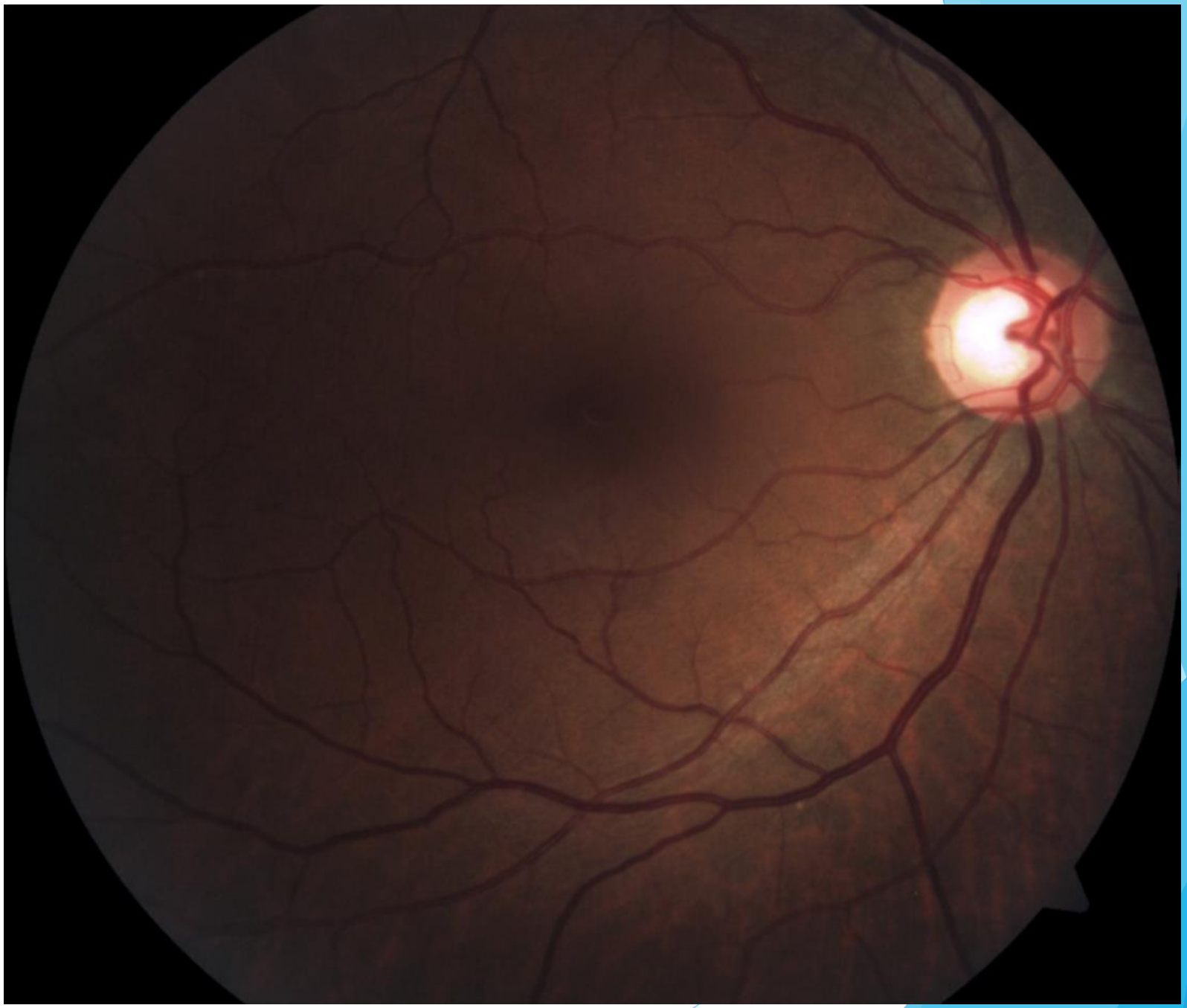
. P > 5
:: P < 5
P < 2
P < 1
P < 0,5

Programs:	G Standard White/White / Dynamic	**Questions / repetitions:**	130 / 2
Parameters:	31.4 / 4000 asb III 100 ms	**Duration:**	06:21
Catch trials:	1/6 (17%) +, 0/7 (0%) -	**RF:**	7.6
Refraction S/C/A:	//	**VA:**	
Pupil [mm]:	6.5	**IOP [mmHg]:**	
NV:	T12 V2.1		

Comment:
Classification:

30°	
MS [dB]:	**22.6**
MD [< 2.0 dB]:	**4.4**
sLV [< 2.5 dB]:	**2.2**

Pt #3

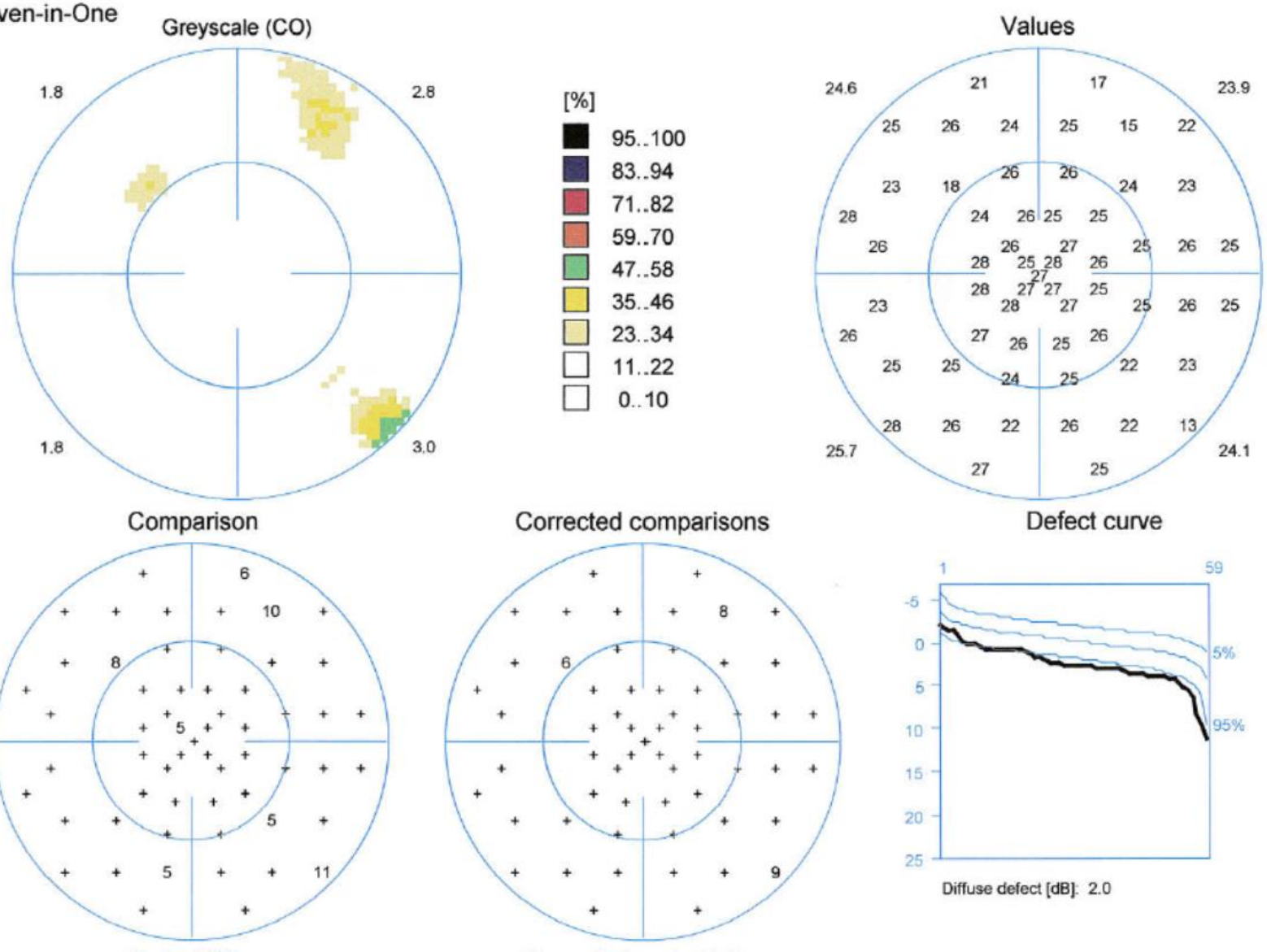


Pt #3

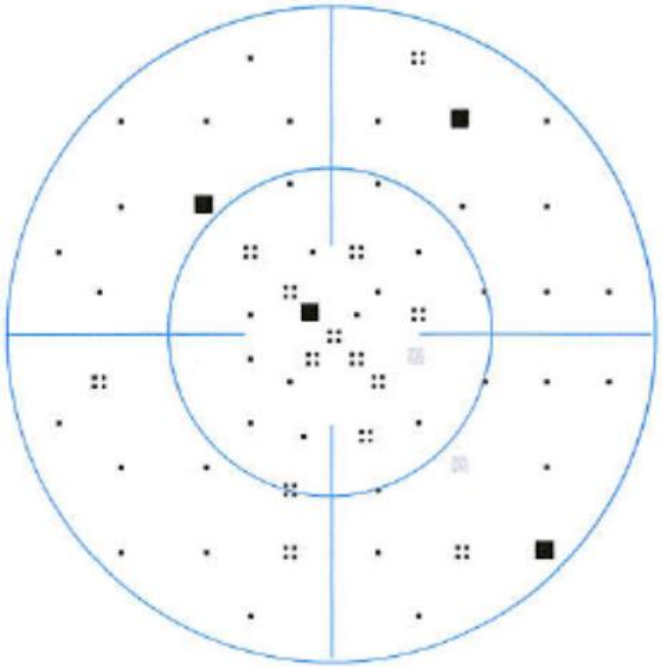
[redacted], 3/22/1955 (56yrs)

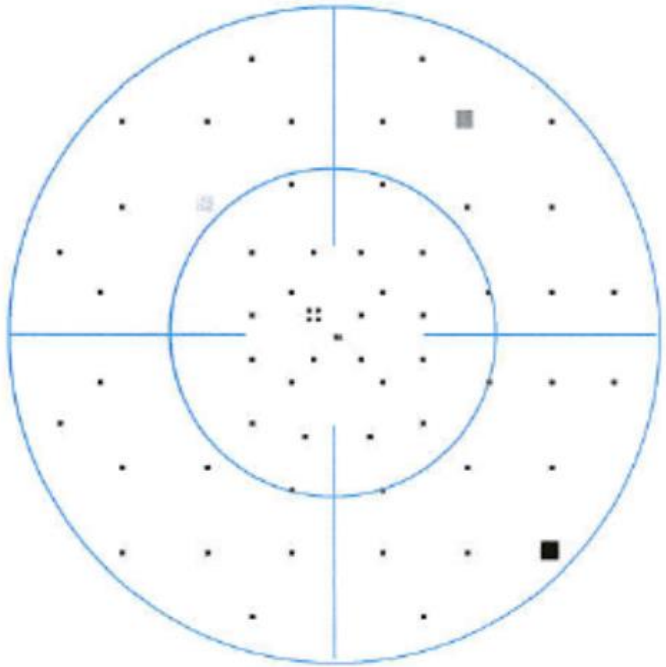
Left eye (OS) / 05/23/2011 / 22:22:48

Seven-in-One



Pt #3





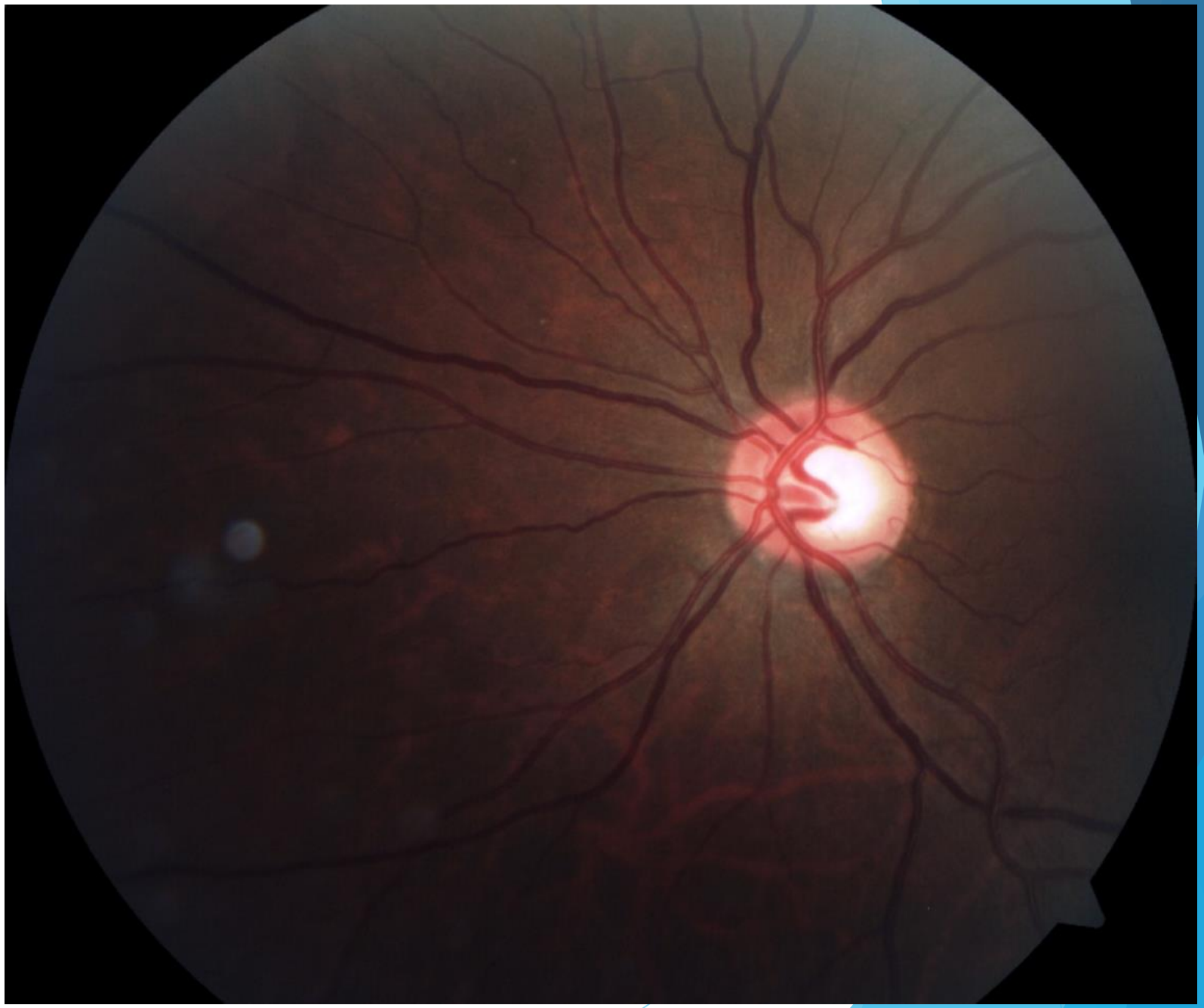
[%]
P > 5
P < 5
P < 2
P < 1
P < 0,5

Programs:	G Standard White/White / Dynamic	**Questions / repetitions:**	143 / 0
Parameters:	31.4 / 4000 asb III 100 ms	**Duration:**	06:29
Catch trials:	0/7 (0%) +, 1/8 (12%) -	**RF:**	6.6
Refraction S/C/A:	//	**VA:**	
Pupil [mm]:	4.8	**IOP [mmHg]:**	
NV:	T12 V2.1		

Comment:
Classification:

30°	
MS [dB]:	**24.6**
MD [< 2.0 dB]:	**2.4**
sLV [< 2.5 dB]:	**2.5**

Pt #3

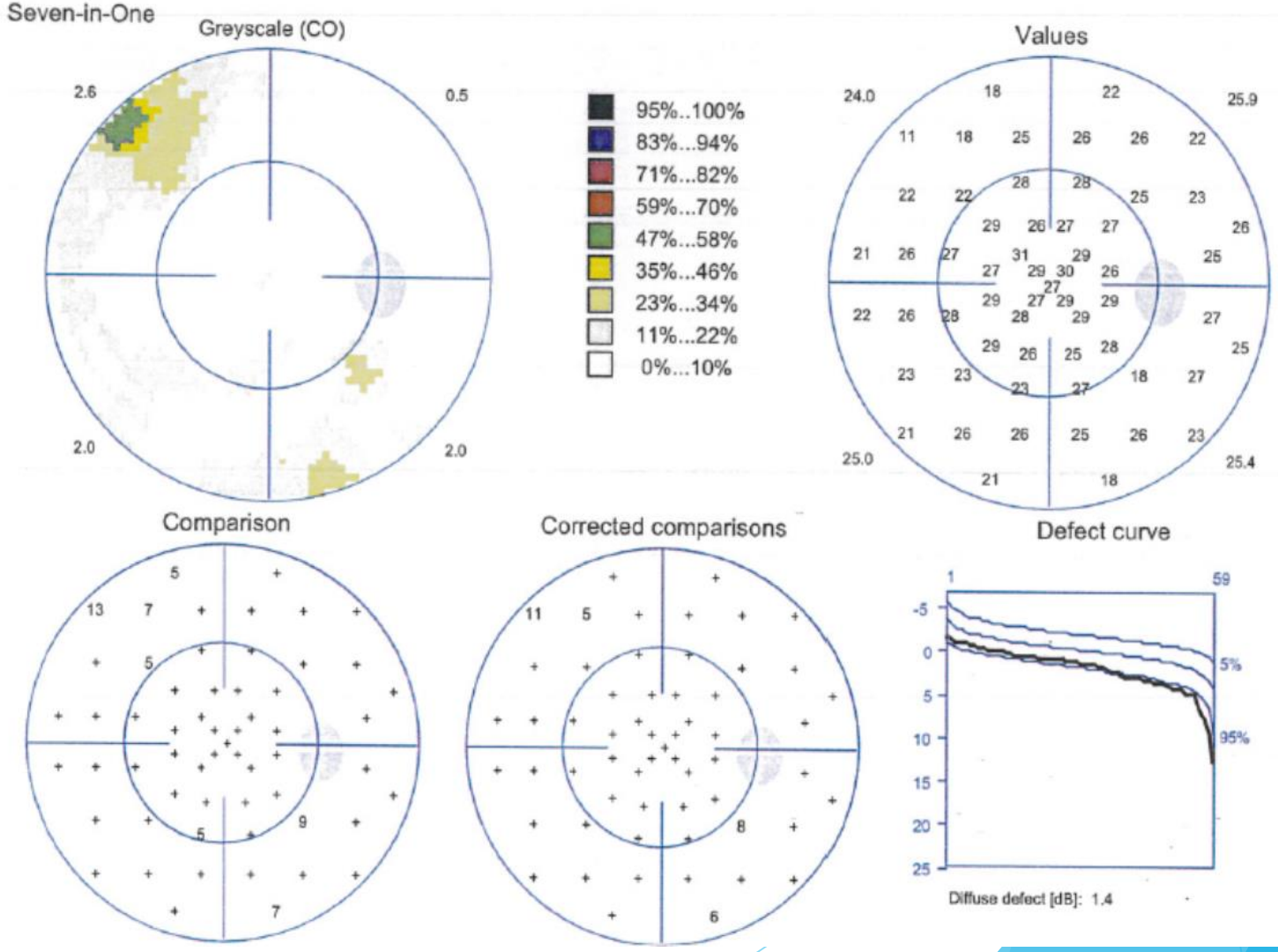


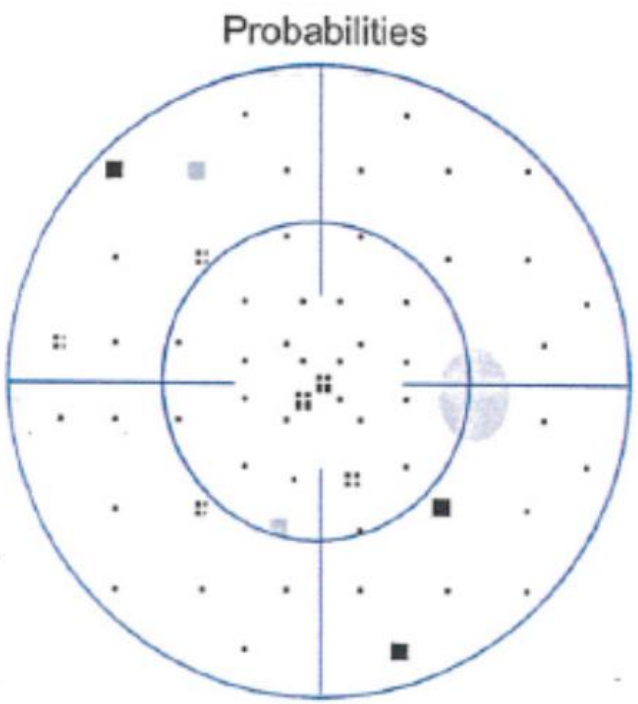
1 yr later

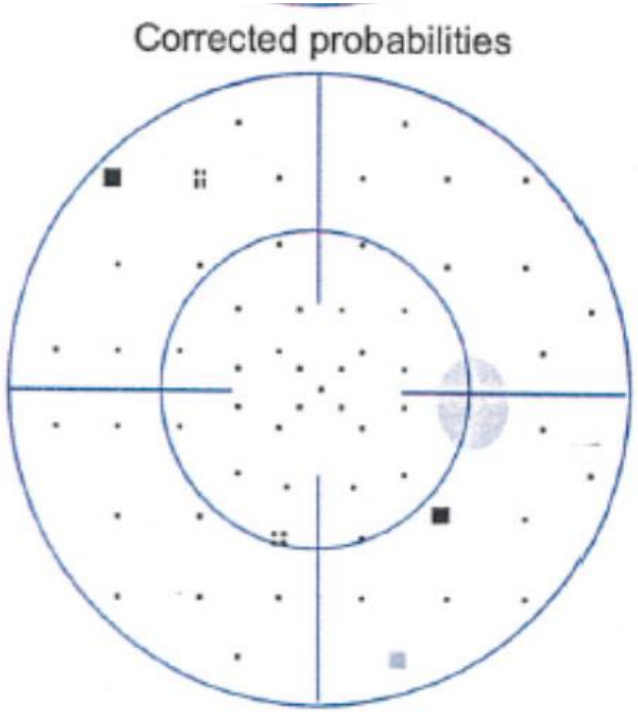
[redacted] 3/22/1955 (57yrs)

Right eye (OD) / 11/12/2012 / 15:33:10

Seven-in-One







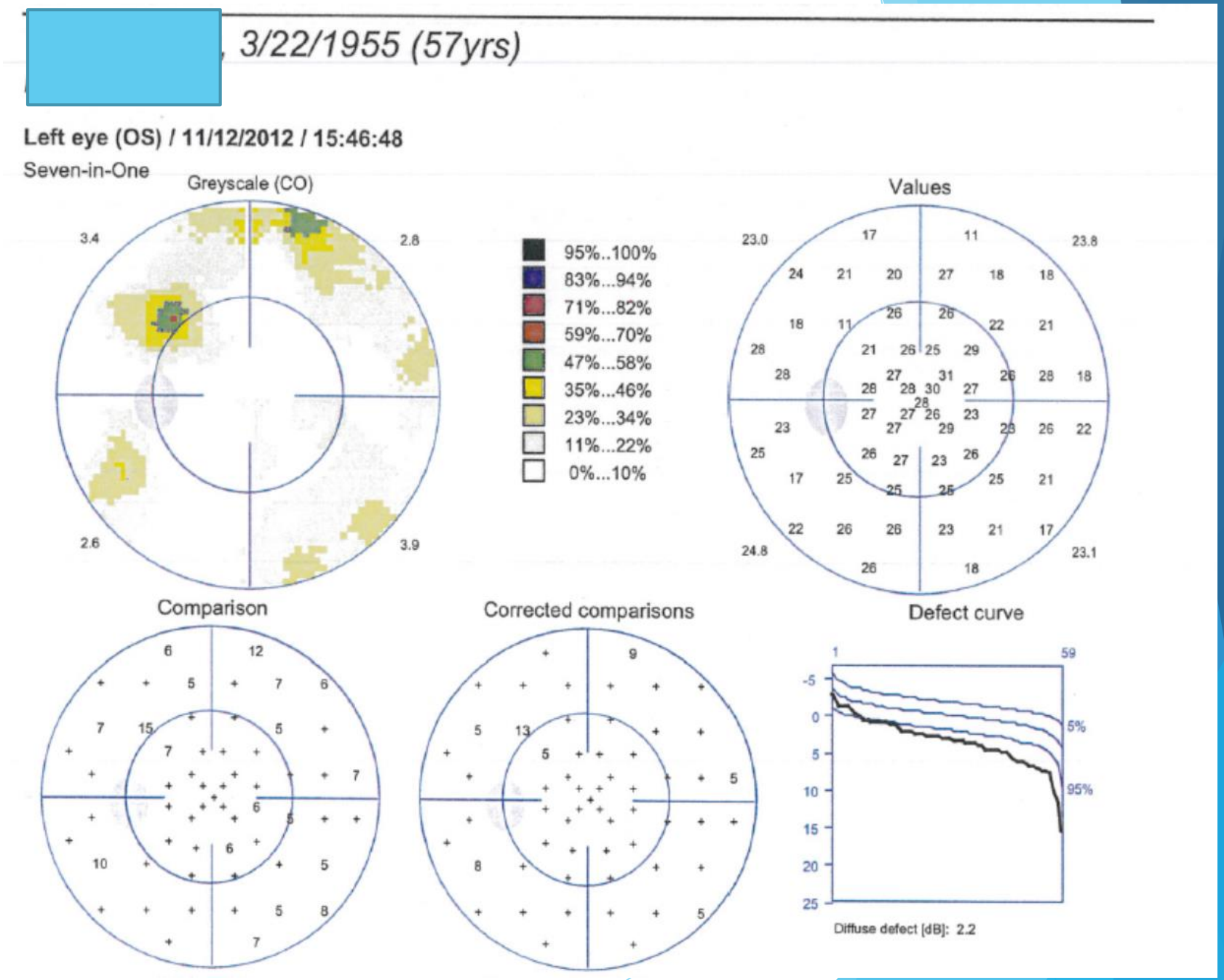
P > 5
P < 5
P < 2
P < 1
P < 0,5

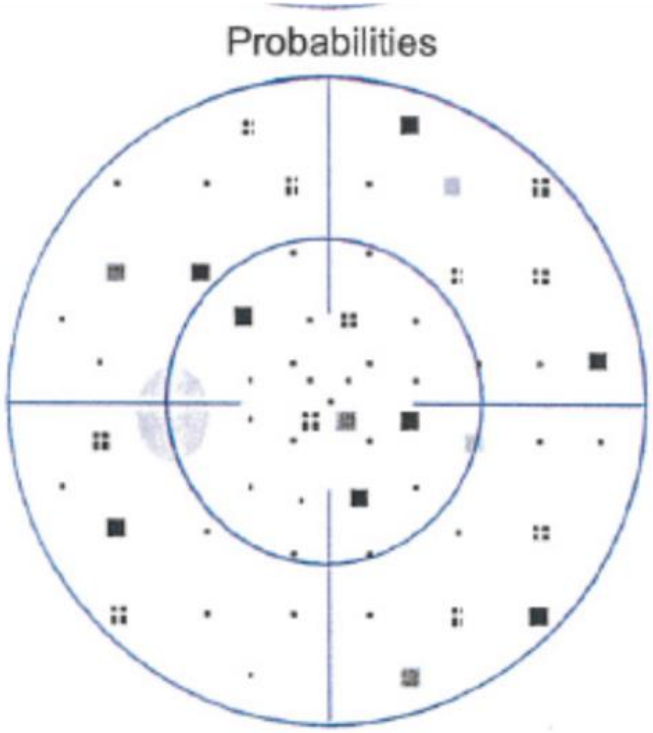
Programs:	G Standard White/White / Dynamic	**Questions / repetitions:**	148 / 8
Parameters:	31.4 / 4000 asb III 100 ms	**Duration:**	09:11
Catch trials:	1/7 (14%) +, 0/8 (0%) -	**RF:**	6.6
Refraction S/C/A:	+3.00//	**VA:**	
Pupil [mm]:	0.1	**IOP [mmHg]:**	

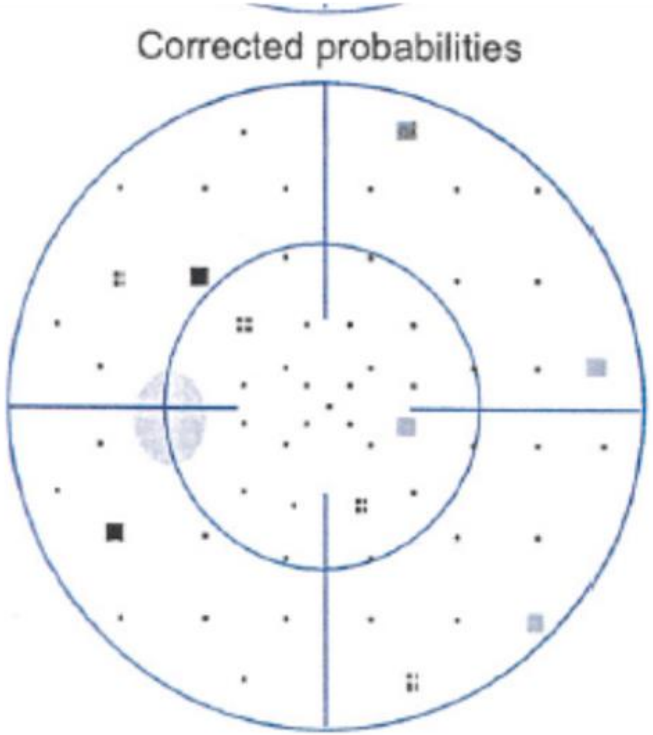
30°	
MS [dB]:	25.1
MD [< 2.0 dB]:	1.8
sLV [< 2.5 dB]:	2.6

Comment:
Classification:

1 yr later


[redacted], 3/22/1955 (57yrs)
Left eye (OS) / 11/12/2012 / 15:46:48
Seven-in-One
Greyscale (CO)
3.4
2.8
2.6
3.9
95%..100%
83%...94%
71%...82%
59%...70%
47%...58%
35%...46%
23%...34%
11%...22%
0%...10%
Values
23.0
23.8
24.8
23.1
Comparison
Corrected comparisons
Defect curve
1
59
-5
0
5
10
15
20
25
5%
95%
Diffuse defect [dB]: 2.2





P > 5
P < 5
P < 2
P < 1
P < 0,5

Programs:	G Standard White/White / Dynamic	**Questions / repetitions:**	152 / 3
Parameters:	31.4 / 4000 asb III 100 ms	**Duration:**	11:08
Catch trials:	1/7 (14%) +, 0/8 (0%) -	**RF:**	6.6
Refraction S/C/A:	//	**VA:**	
Pupil [mm]:	1.5	**IOP [mmHg]:**	

30°	
MS [dB]:	23.7
MD [< 2.0 dB]:	3.2
sLV [< 2.5 dB]:	3.3

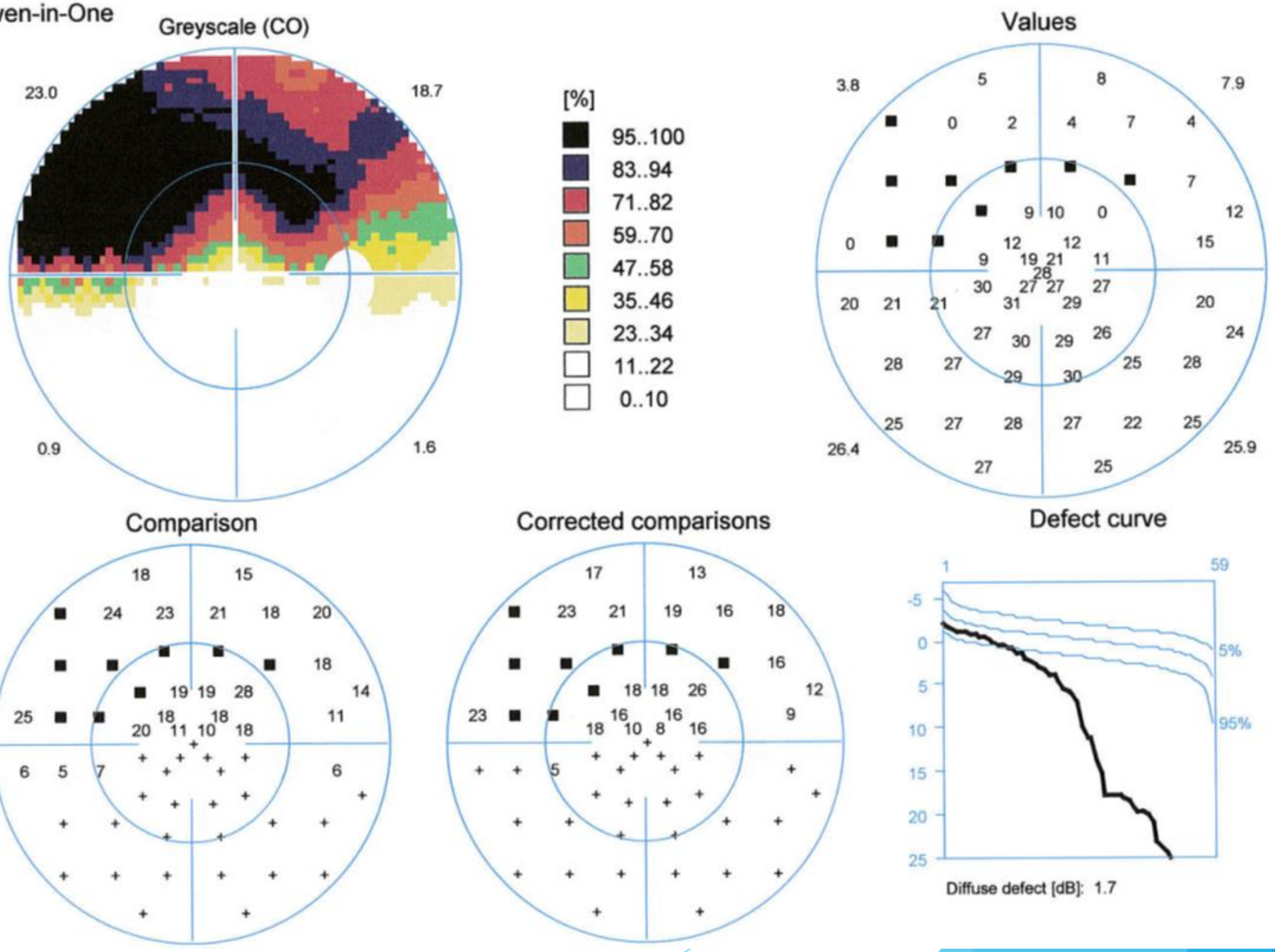
Comment:
Classification:

Pt #4

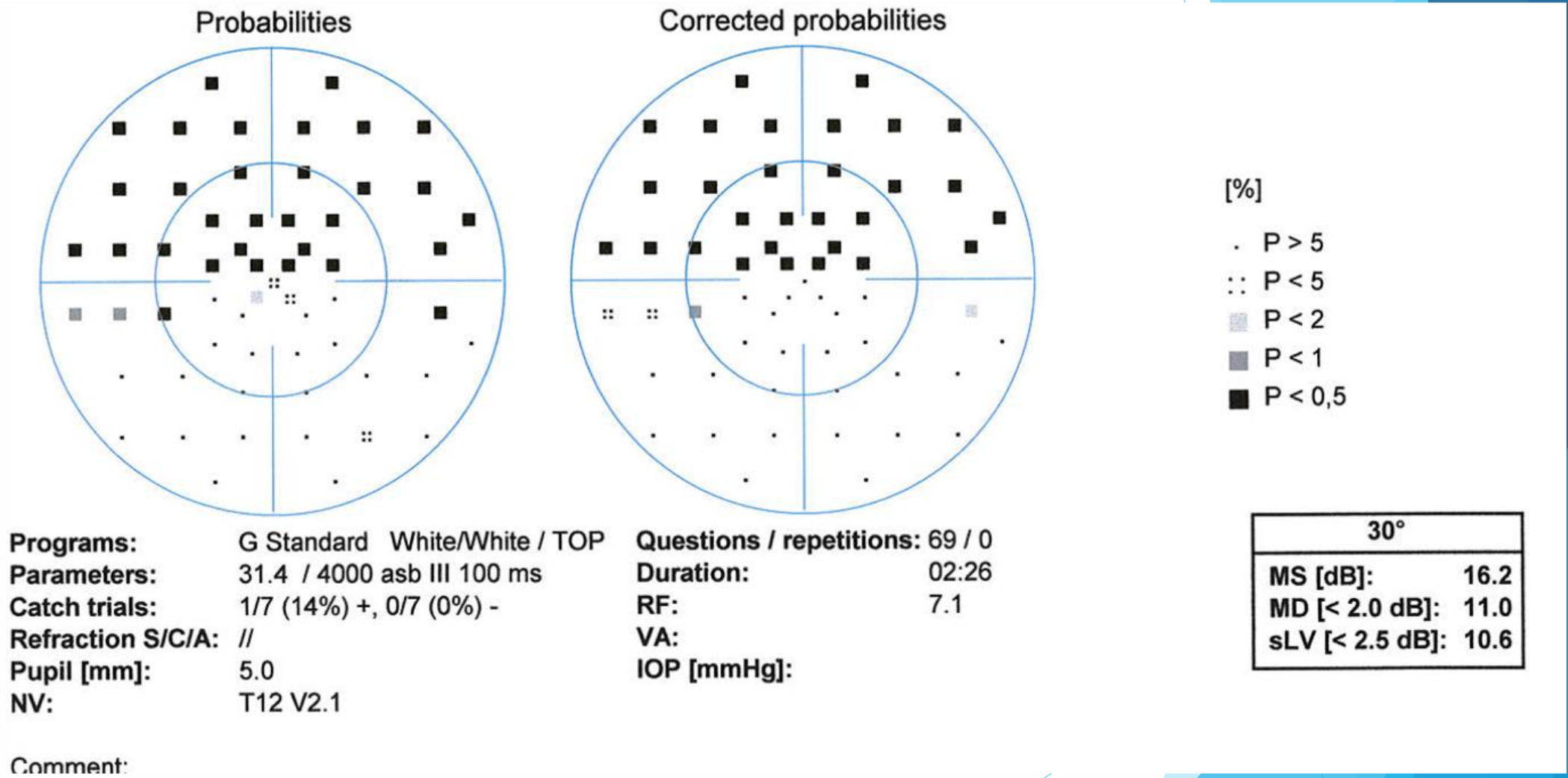
[redacted] 3/6/1958 (53yrs)

Right eye (OD) / 10/03/2011 / 23:44:53

Seven-in-One



Pt #4


Probabilities
Corrected probabilities
[%]
P > 5
P < 5
P < 2
P < 1
P < 0,5
Programs: G Standard White/White / TOP
Parameters: 31.4 / 4000 asb III 100 ms
Catch trials: 1/7 (14%) +, 0/7 (0%) -
Refraction S/C/A: //
Pupil [mm]: 5.0
NV: T12 V2.1
Questions / repetitions: 69 / 0
Duration: 02:26
RF: 7.1
VA:
IOP [mmHg]:
30°
MS [dB]: 16.2
MD [< 2.0 dB]: 11.0
sLV [< 2.5 dB]: 10.6
Comment:

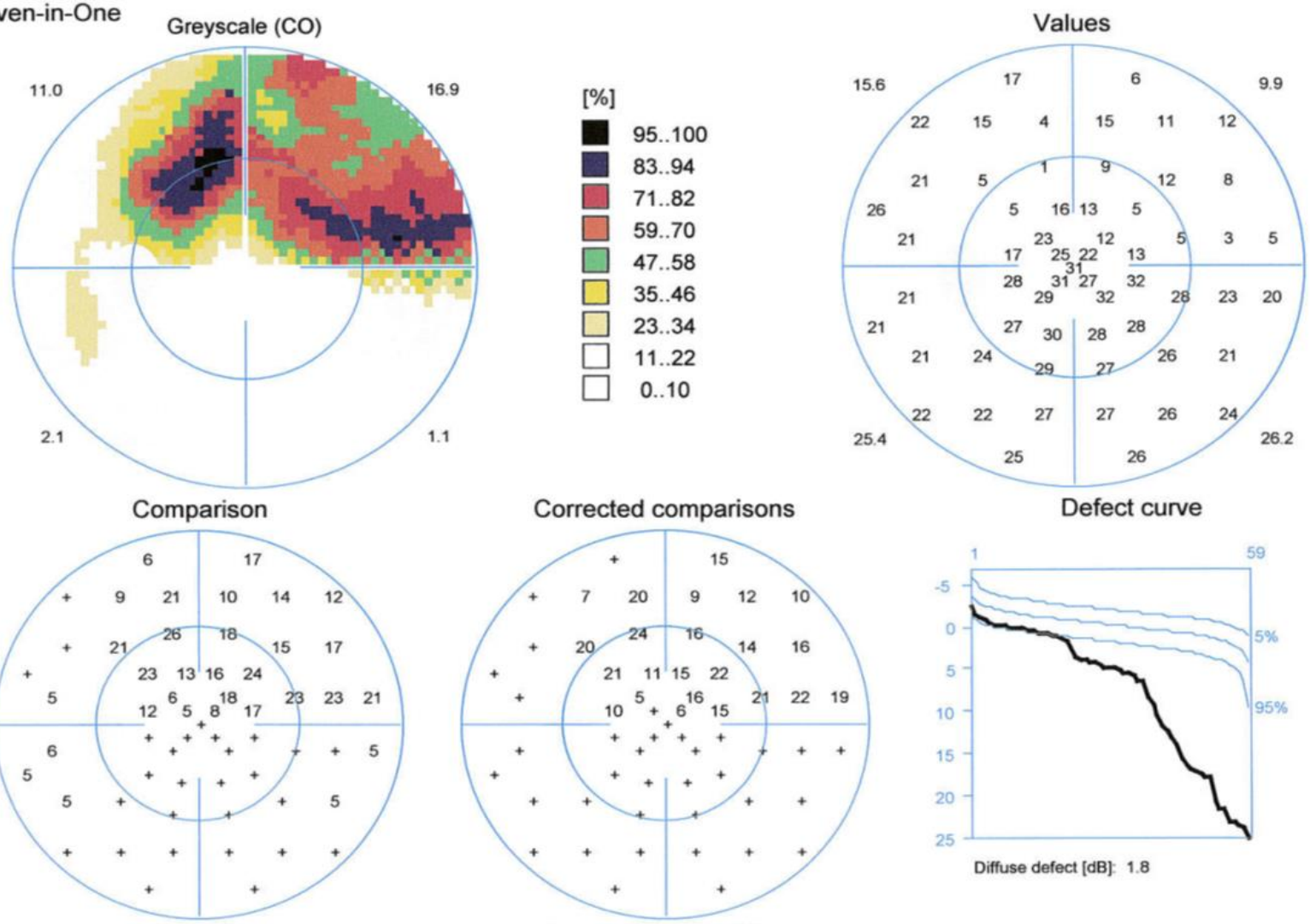
Pt #4

Pt #4

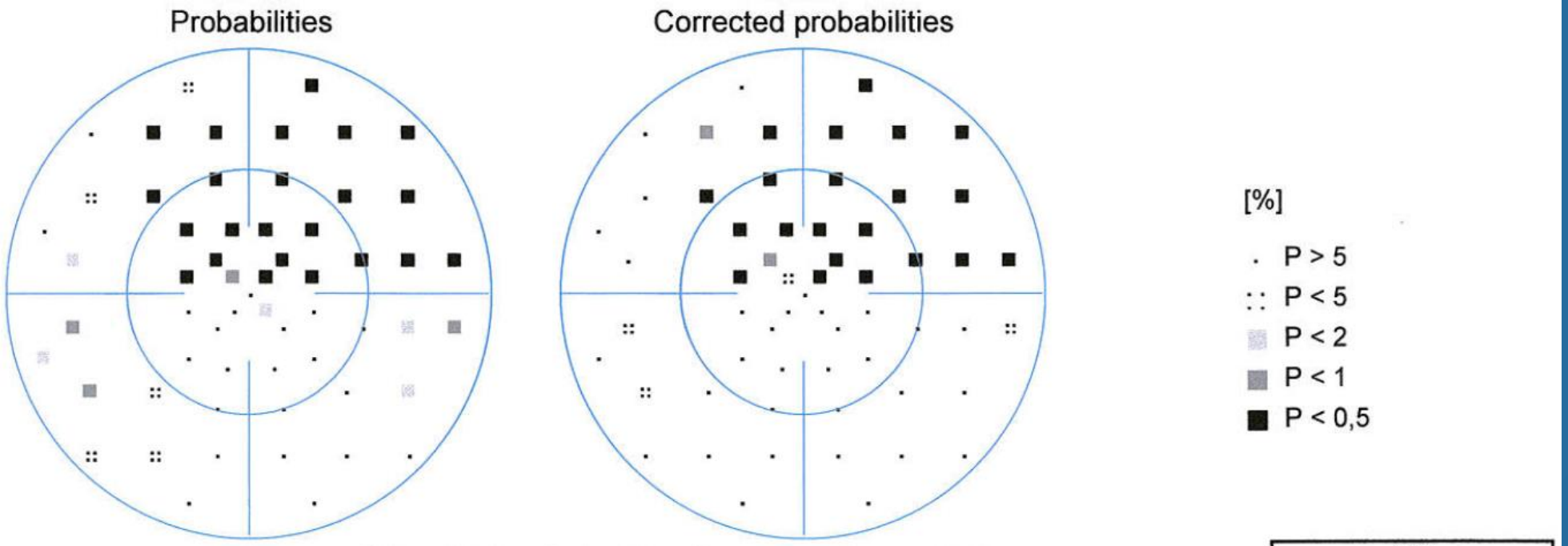
[redacted] 3/6/1958 (53yrs)

Left eye (OS) / 10/03/2011 / 23:51:39

Seven-in-One



Pt #4



Programs:	G Standard White/White / TOP	**Questions / repetitions:**	69 / 0
Parameters:	31.4 / 4000 asb III 100 ms	**Duration:**	02:28
Catch trials:	0/7 (0%) +, 1/7 (14%) -	**RF:**	7.1
Refraction S/C/A:	//	**VA:**	
Pupil [mm]:	4.4	**IOP [mmHg]:**	
NV:	T12 V2.1		

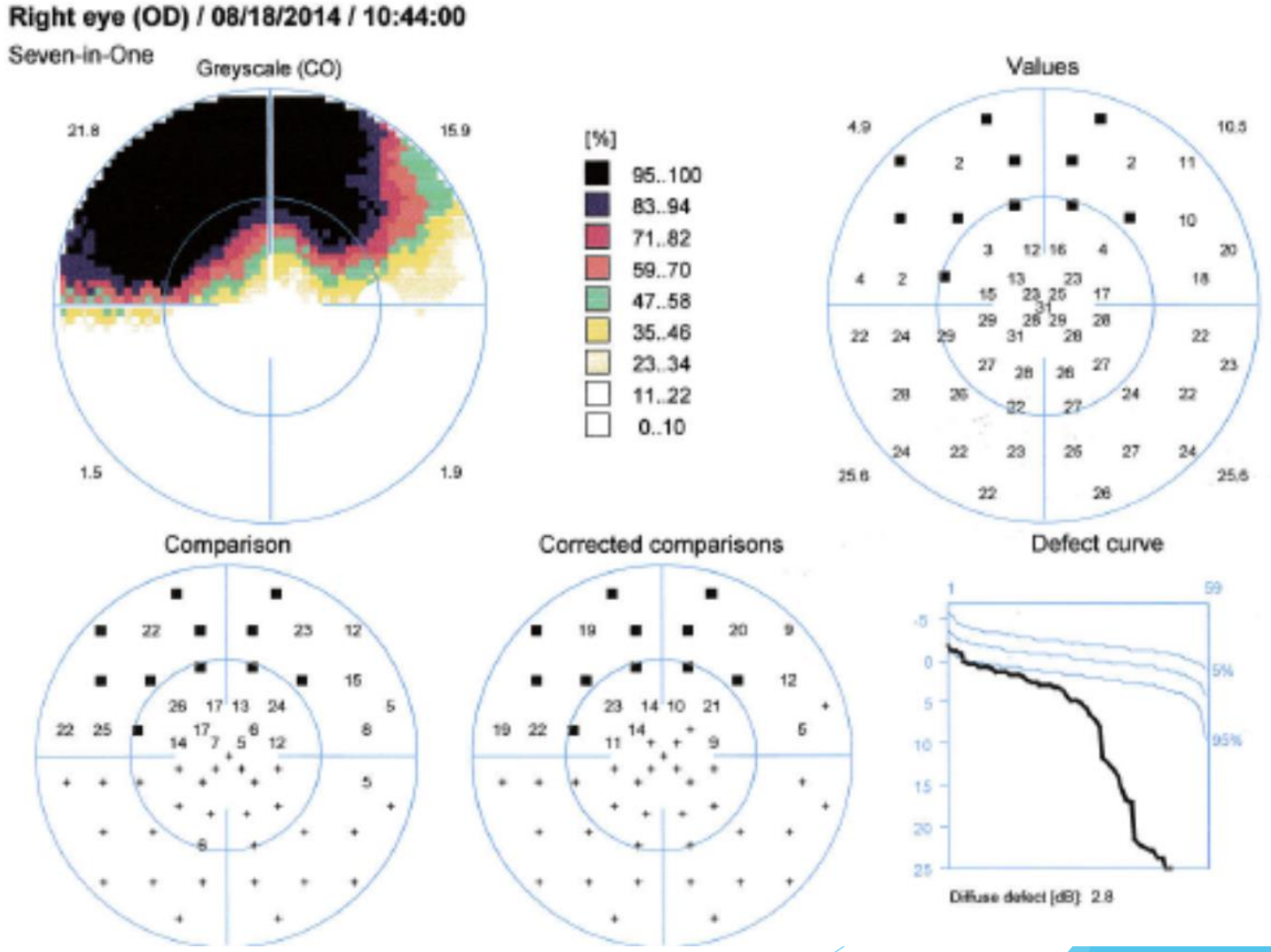
Comment:
Classification:

30°	
MS [dB]:	**19.4**
MD [< 2.0 dB]:	**7.7**
sLV [< 2.5 dB]:	**8.2**

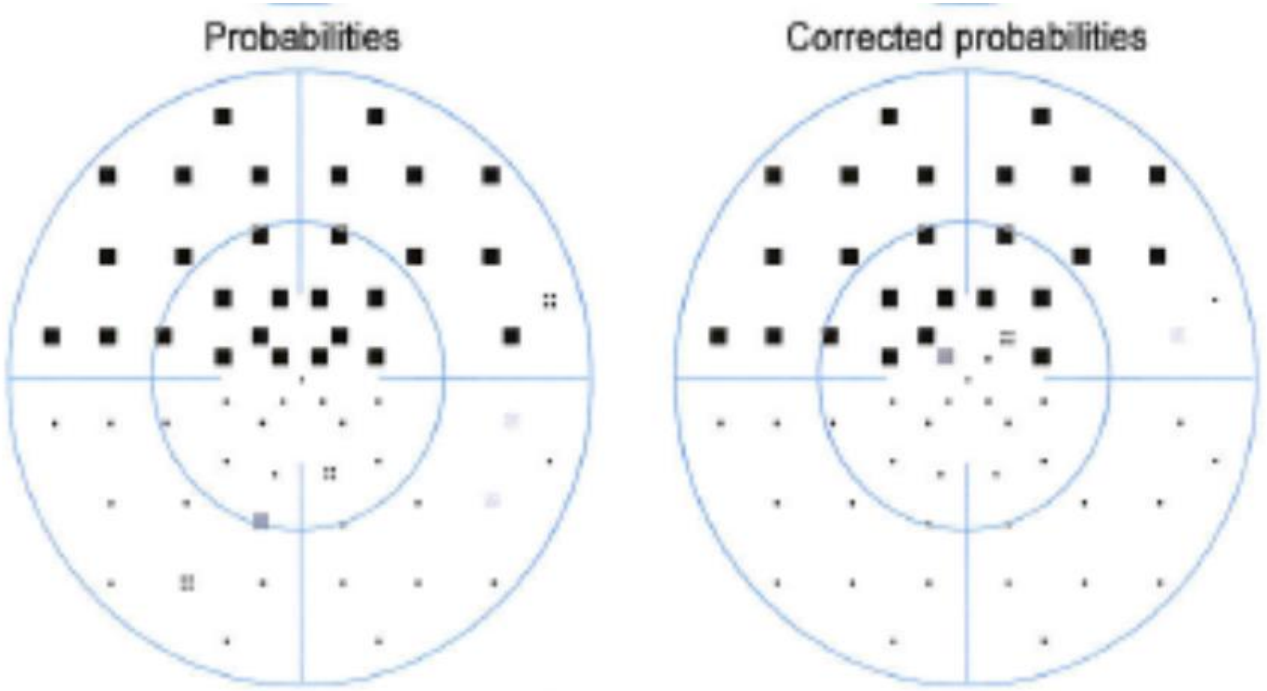
Pt #4

Pt #4
3yr.s later

(56yrs)



Pt #4

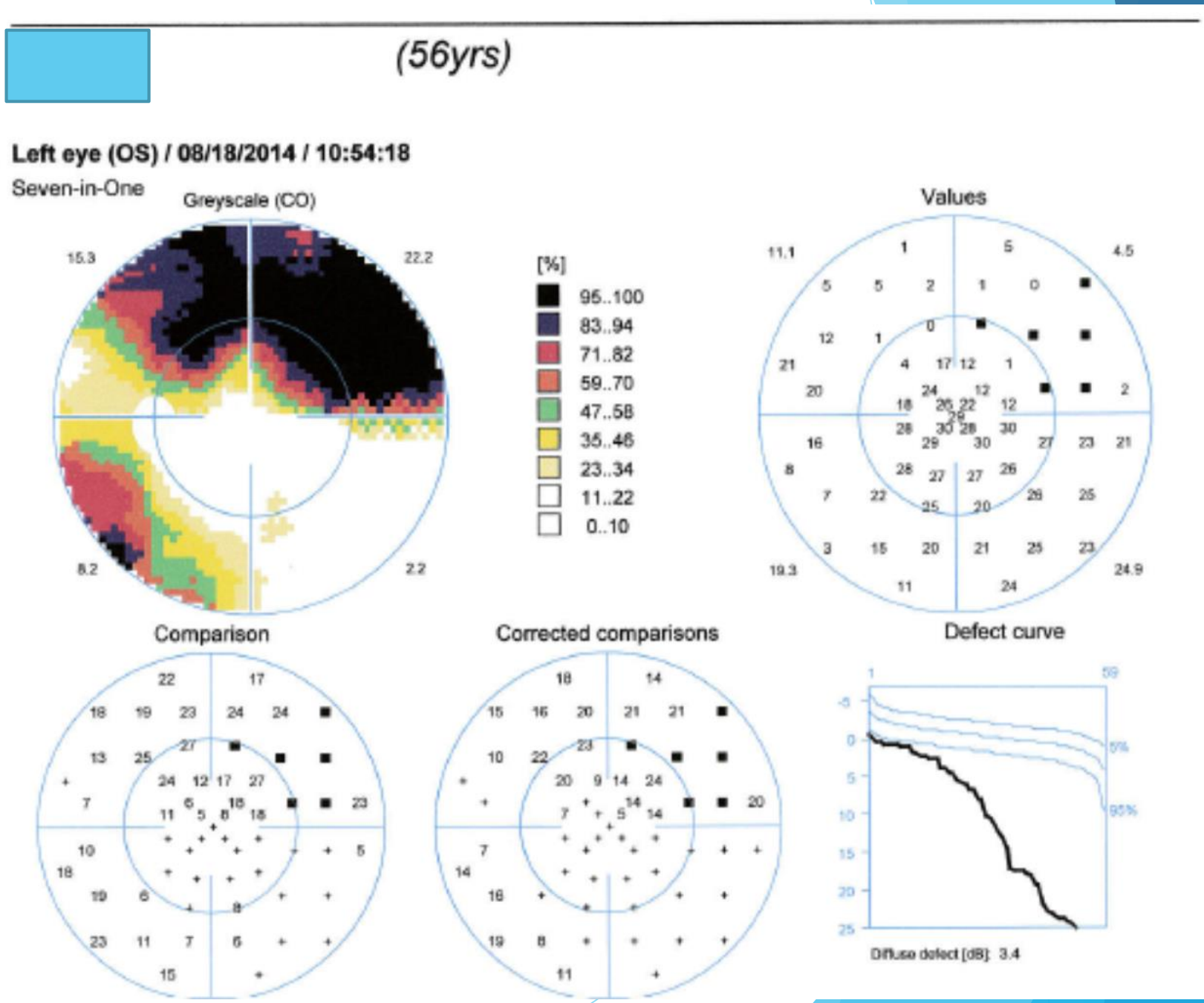


Programs:	G Standard White/White / TOP	**Questions / repetitions:**	69 / 0
Parameters:	31.4 / 4000 asb III 100 ms	**Duration:**	03:16
Catch trials:	1/7 (14%) +, 0/7 (0%) -	**RF:**	7.1
Trial lens S/C/A:	3.0//	**VA:**	
Pupil [mm]:	7.53	**IOP [mmHg]:**	
NV:	T12 V2.1		

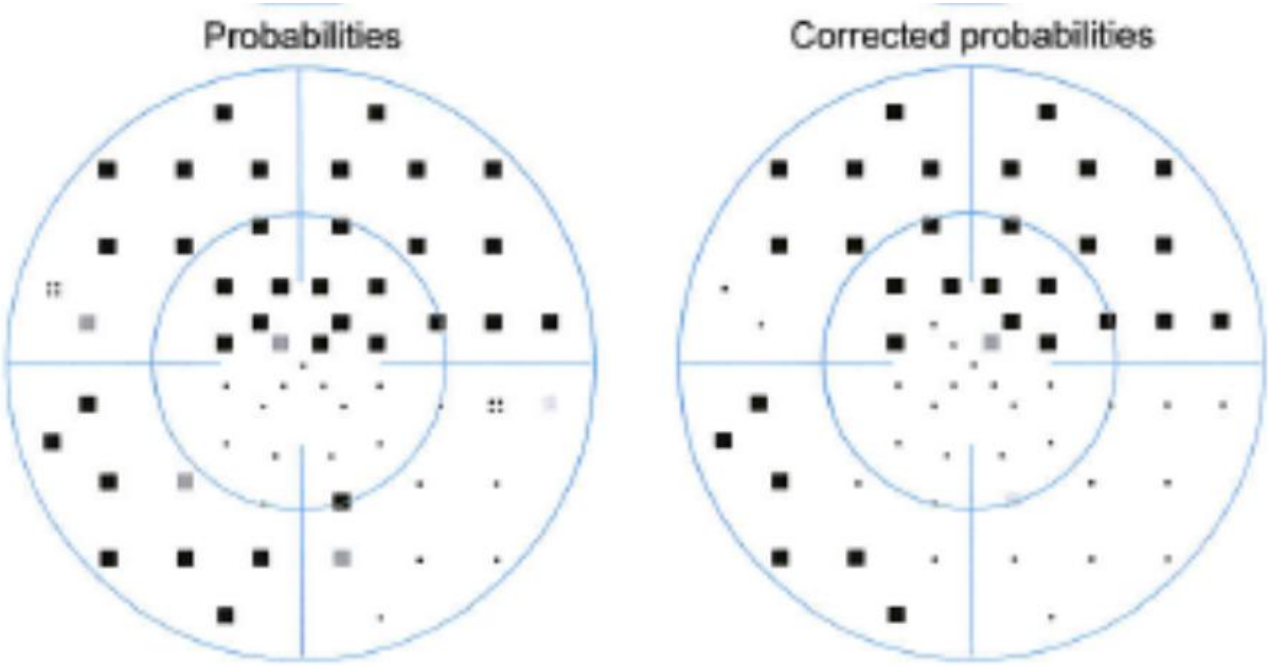
Comment:
Classification:

30°	
MS [dB]:	16.8
MD [< 2.0 dB]:	10.2
sLV [< 2.5 dB]:	10.2

Pt #4
3 yr.s later



Pt #4

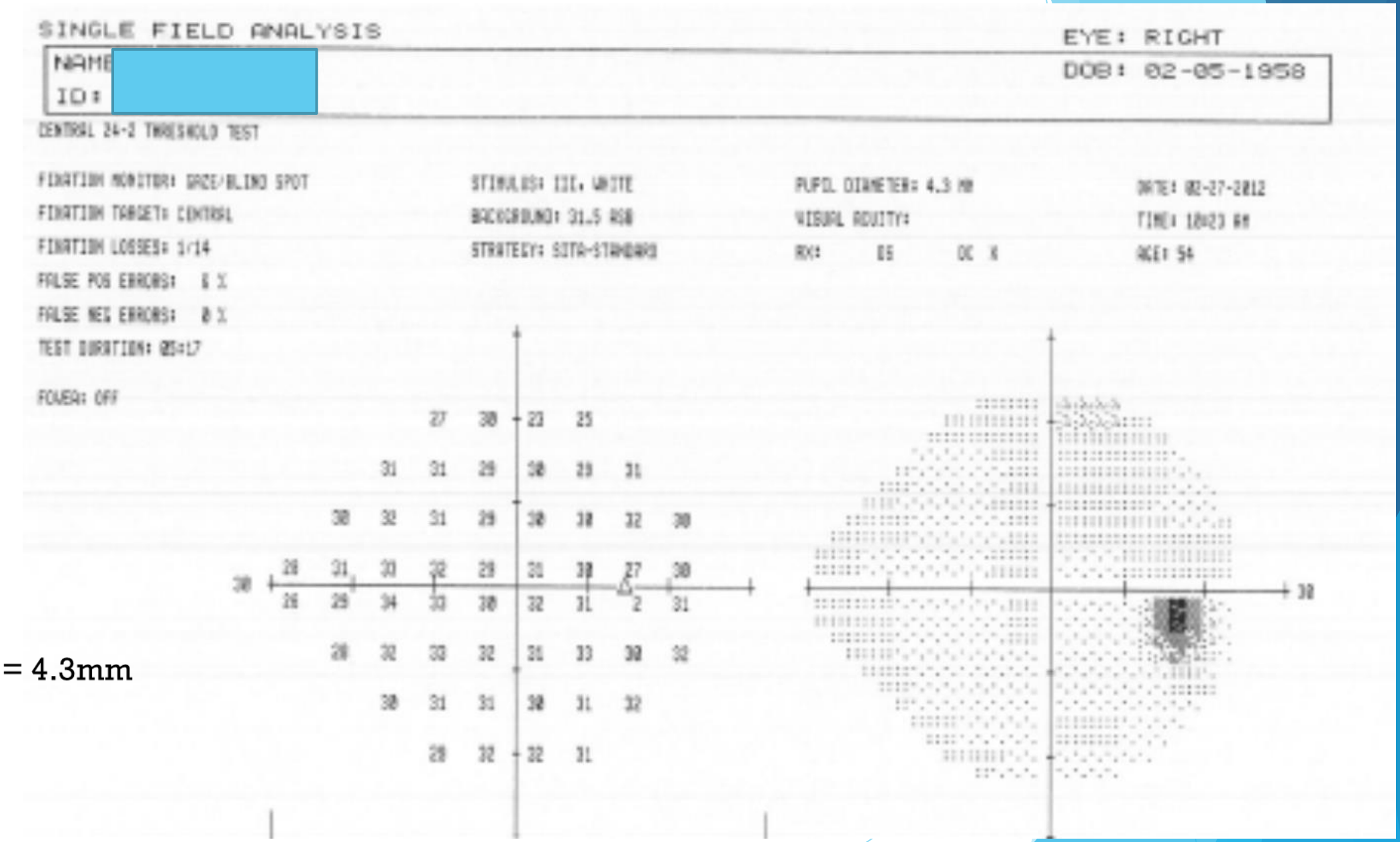


Programs:	G Standard White/White / TOP	**Questions / repetitions:**	73 / 4
Parameters:	31.4 / 4000 asb III 100 ms	**Duration:**	02:58
Catch trials:	0/7 (0%) +, 0/8 (0%) -	**RF:**	0.0
Trial lens S/C/A:	3.0//	**VA:**	
Pupil [mm]:	4.89	**IOP [mmHg]:**	
NV:	T12 V2.1		

Comment:
Classification:

30°	
MS [dB]:	15.2
MD [< 2.0 dB]:	11.8
sLV [< 2.5 dB]:	9.7

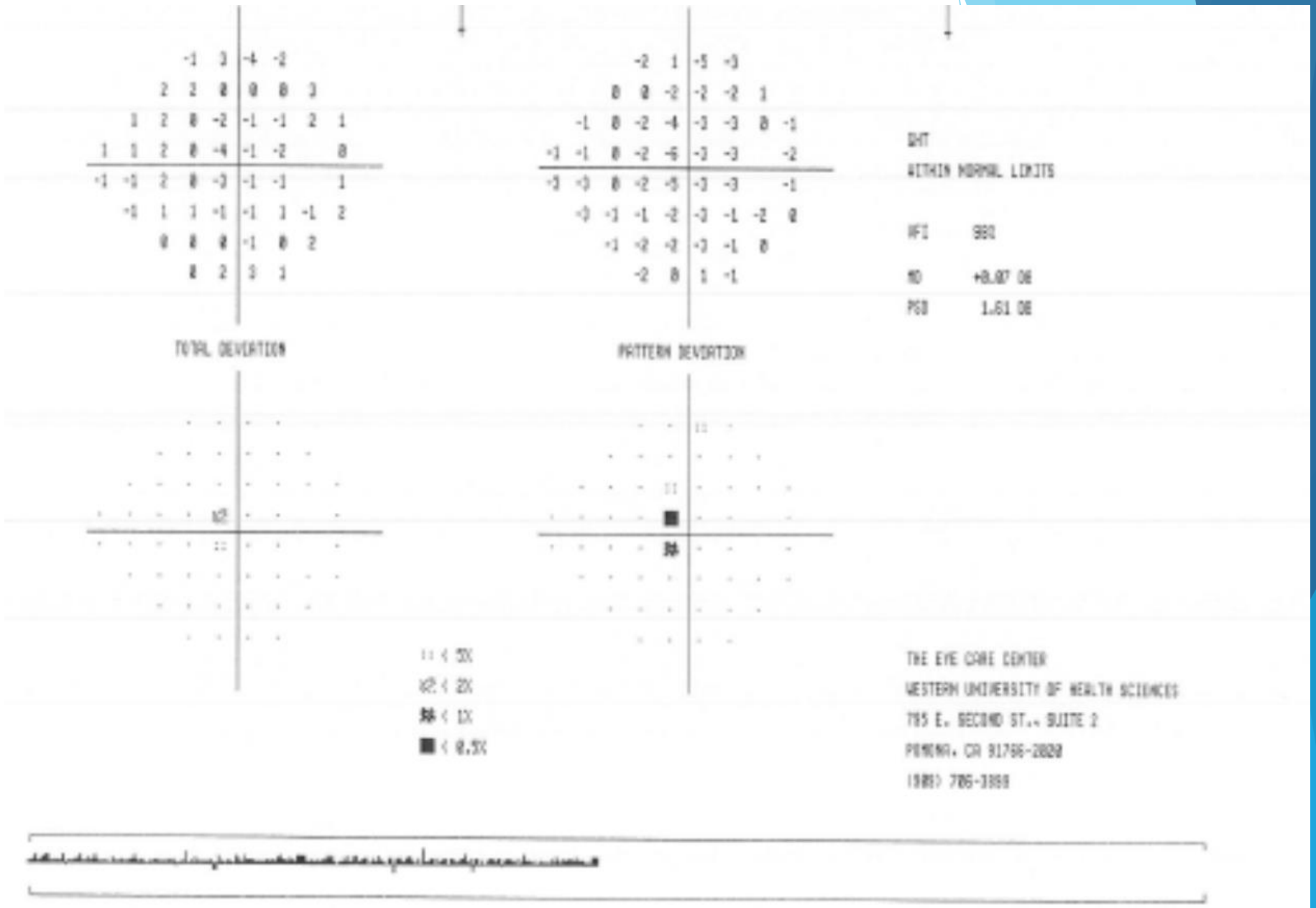
Pt #5



FL = 1/14
FP = 6%
FN = 0%
Pupil size = 4.3mm

Pt #5

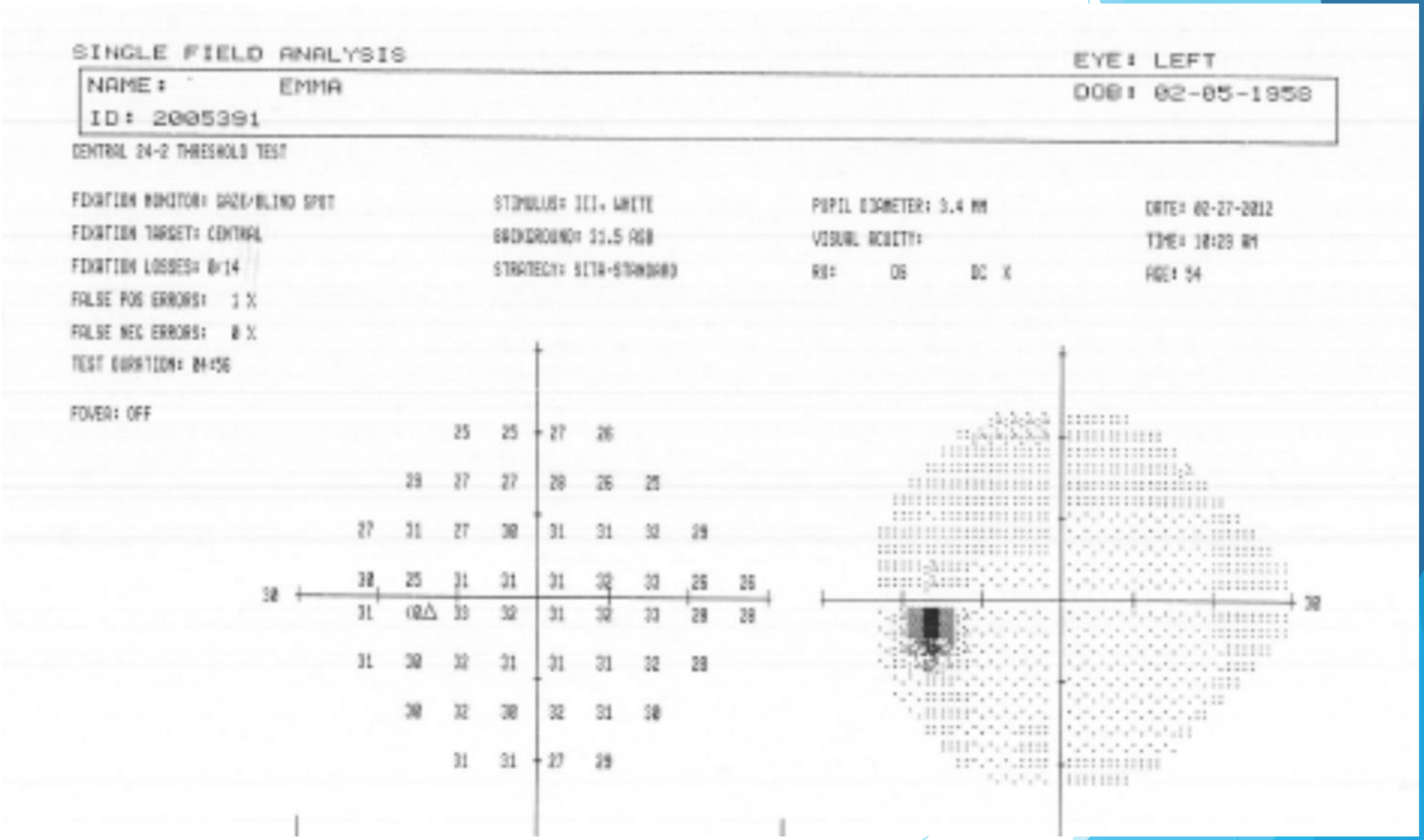
GHT = WNL
VFI = 98%
MD = +0.07db
PSD = 1.61db



Pt #5

Pt #5

FL = 0/14
FP = 1%
FN = 0%



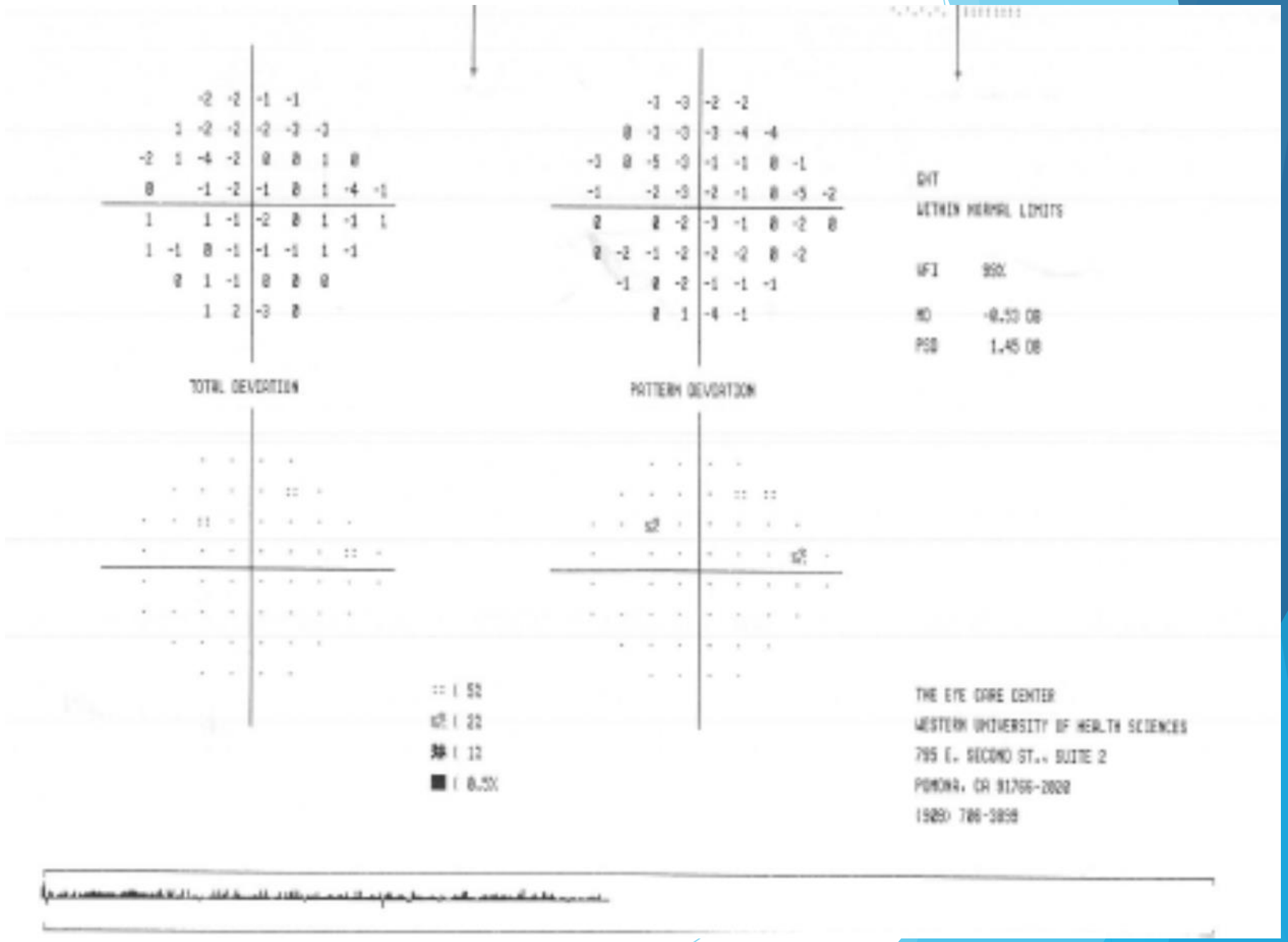
Pt #5

GHT = WNL

VFI = 99%

MD = -0.53db

PSD = 1.45db



Bottomline

- Visual Fields
  - Consistent instructions and careful observation
  - Typically need at least 2 -3 visual fields to establish a baseline
  - Test often early on to establish a rate of progression
  - Do your results correlate with clinic findings (structure and function)
  - Remember to re-establish baseline when necessary (after significant surgery / event: cataract surgery , PRP tx, vascular occlusion. . Etc)

Any questions or concerns??

For more info:
www.haag-streit.com
www.zeiss.com/meditec

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