

Sensory Quality Control

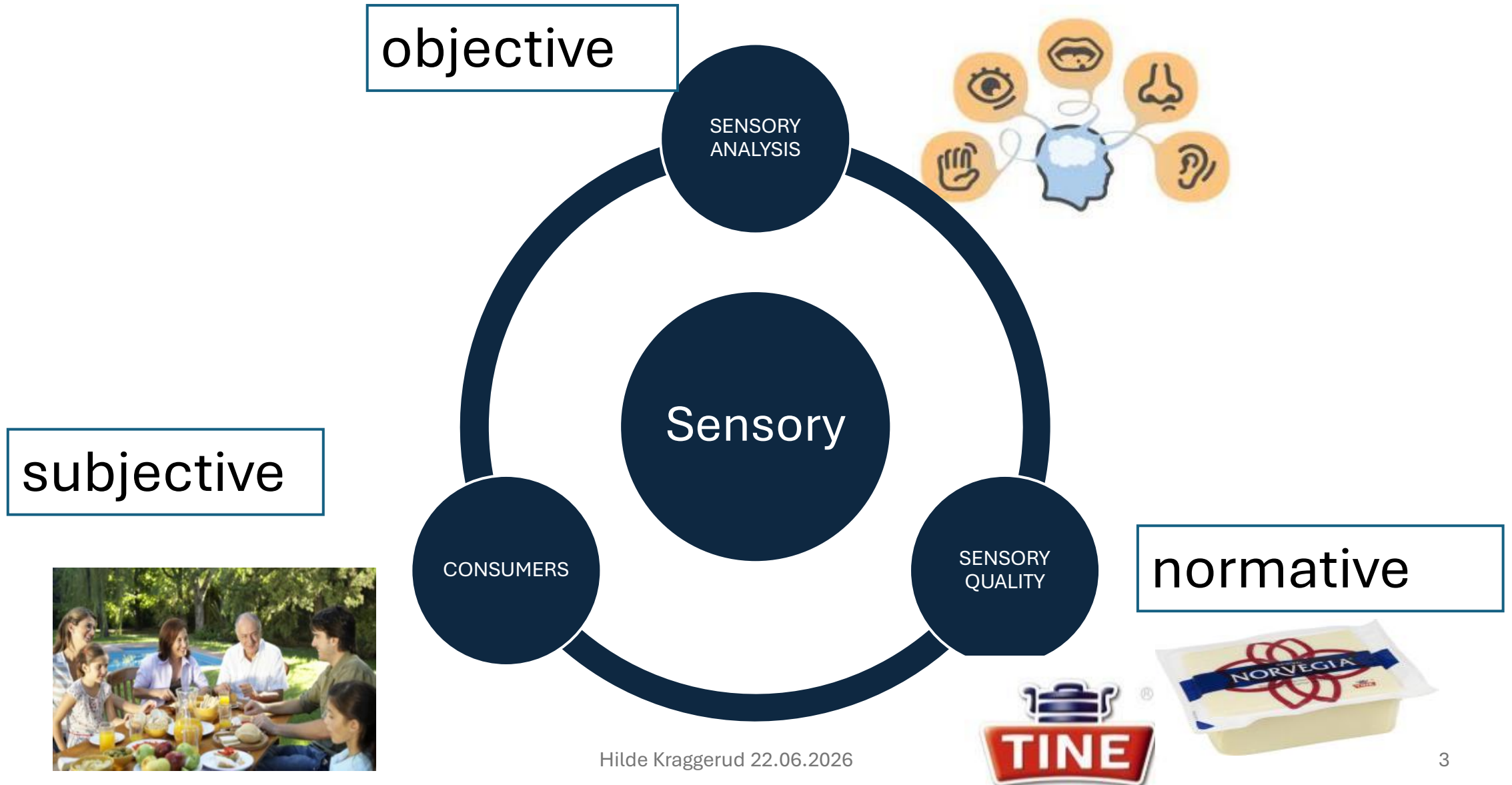
2. Methodology for sensory quality control of finished products

Methodology for sensory quality control of finished products

09:50-10:35

- **Recruitment, training and monitoring of assessors for dairy products**
- **Why is training important?**
- **How many assessors do we need?**
 - **Screening tests, materials and methods**
- **Requirements for testing**
 - **Test environment**
 - **Products. Specifications**
 - **Attributes and nomenclature of defect terms**
- **Conducting the testing**
 - **Sampling and preparation of the sample**
 - **Apparatus and materials**
 - **Assessment : Next presentation**

3 main methodologies in sensory



Recruitment, training and monitoring of assessors for dairy products

- Why is training important?
- How many assessors do we need?
- Screening tests, materials and methods

INTERNATIONAL STANDARD

**ISO
22935-1**

IDF 99-1

Second edition
2023-04

Milk and milk products — Sensory analysis —

Part 1: Recruitment, selection, training and monitoring of assessors

Lait et produits laitiers — Analyse sensorielle —

Partie 1: Recrutement, sélection, entraînement et contrôle des sujets

Forewords

Introduction

1 Scope.

2 Normative references

3 Terms and definitions

4 Recruitment

5 Screening

5.1 Screening form and requirements

5.2 Preparation of test samples for screening

5.3 Screening tests, materials and methods

5.3.1 General

5.3.2 Odour recognition

5.3.3 Basic taste recognition

5.3.4 Ranking tests

5.3.5 Difference testing

5.3.6 Descriptive ability and group discussion

5.3.7 Marking schedule summary

6 Selection

7 Requirements for assessors in the panel

8 Training and monitoring of assessors for dairy products

8.1 General

8.2 References

9 Performance

Bibliography

Assessor authorization

- The candidate is compared to a reference panel
- ✓ Number of correct answers
 - ✓ 65% of the samples must be correct in relation to the reference panel's majority ($\pm < 0,8$)
- ✓ Main opinion
 - ✓ Candidate must have the same main opinion (average points) as the ref. panel
- ✓ Correlation
 - ✓ Correlation between reference panel and candidate judgments must be satisfactory (normally $> 0,5$).
- ✓ Repeatability
 - ✓ Candidate must satisfy repeatability requirements (repeat judgment in equal samples).
- ✓ Flavour defects
 - ✓ Candidate must recognize important defects in taste and smell.



AUTORISASJON SOM PRODUKTDOMMER

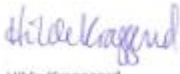
name

Tildeles herved autorisasjon som produktdommer for følgende produkt:

Smør og Brennlykt

Autorisasjonen er gitt på grunnlag av fullført opplæring og bestått autorisasjonsprøve for nevnte produkter 24.10.2013, TINE Sentrallager Heimdøl.

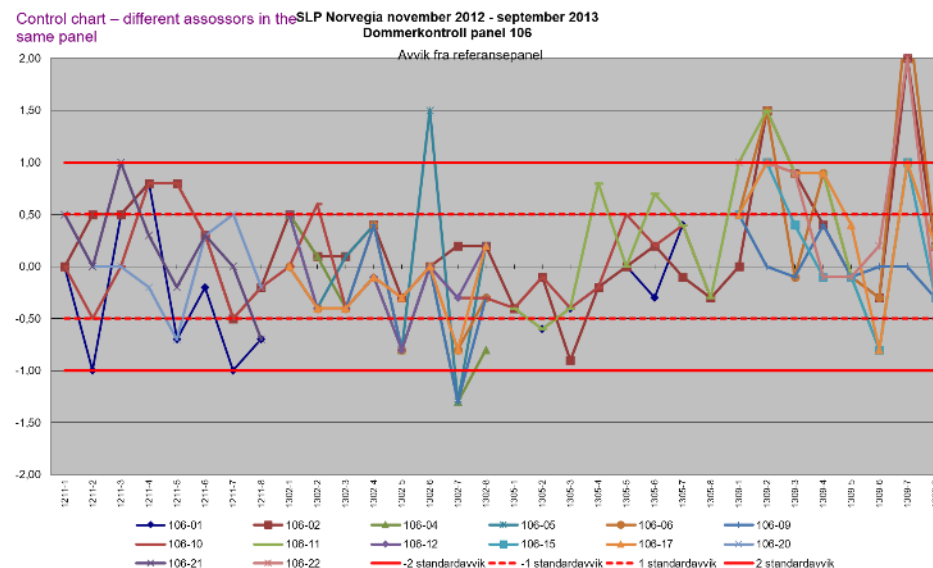
Stavanger, 15.11.2013


Hilde Kraggerud
Fagansvarlig sensorikk TINE


Willy Finkelsen
Produktansvarlig smør/spisefett

Proficiency Testing Norvegia, TINE

9 dairy plants producing the product (incl. Packaging facilities)



Routines

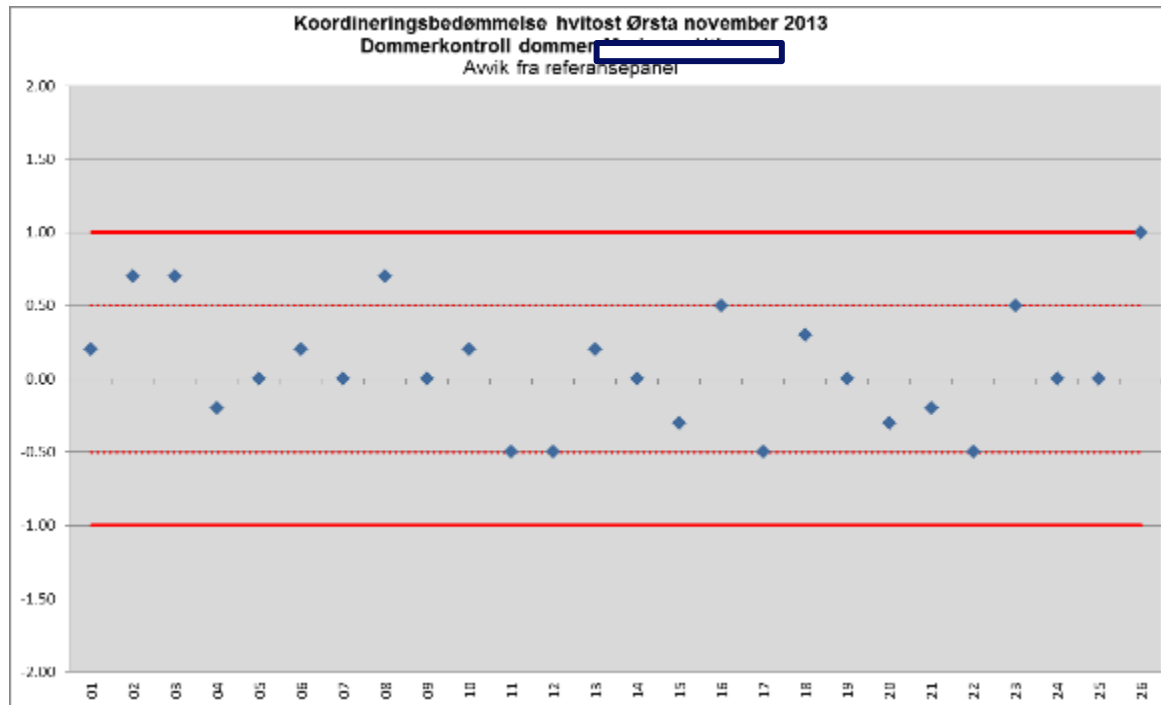
- 8 cheese samples (2,5 kg) are sent to all laboratories 4 times a year
- 2 samples are in 2 parallels
- Cheese is assessed by reference panel
- Resultat of reference assessment is sent out to all the labs / panel leaders in advance.
- Reference panel judgments are reviewed by the panels right after assessment
- Results are reported for all labs – some examples are included.

Coordinating activities

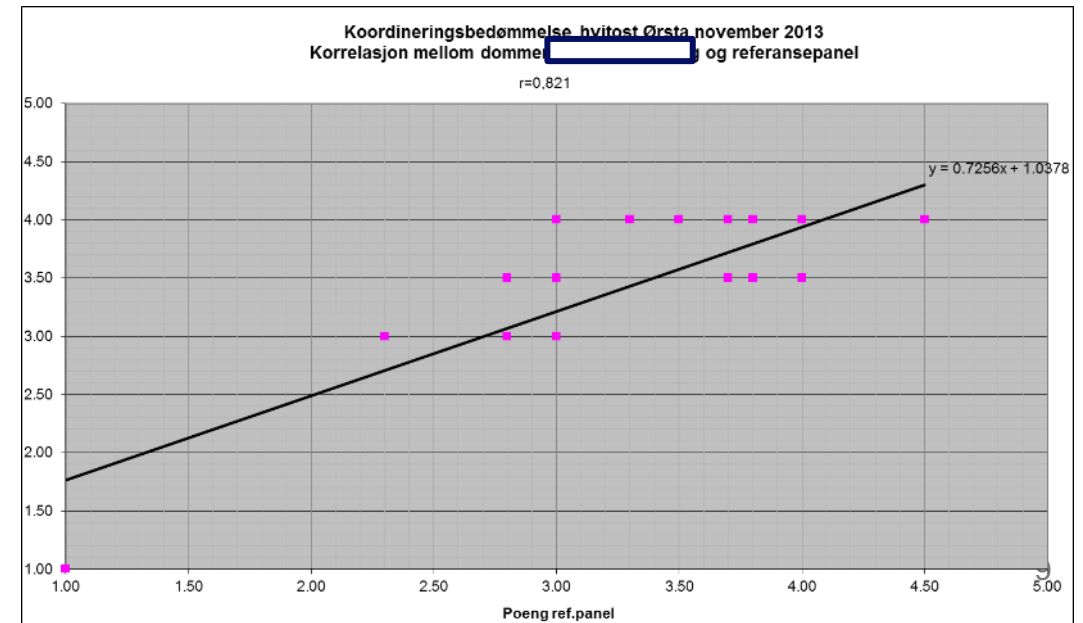
- Inter- and intra laboratory comparisons
- Statistical testing/graphics

Tabellen angir en del aktuelle nøkkeldata for din bedømmelse:

	HOVEDPOENG
Ditt gjennomsnitt for alle bedømte prøver	3,56
Gjennomsnitt referansepanel på de samme prøver	3,47
Differanse mellom ditt og referansepanelets gjennomsnitt <i>Max grense differanse ved dommerprøven: $\pm 0,29$</i>	0,08
Antall prøver med avvik (mer enn 2 standardavvik fra referansepanelets bed.) Kfr. Kontrolldiagram vedlagt - avvik er de utenfor de heltrukne røde strekene	0
Antall og andel i % "riktige" (prøver innenfor $\pm 0,5$ poeng fra referansepanelet) Kfr. Kontrolldiagram <i>Krav dommerprøve: 65 %</i>	22 84,6
Korrelasjon med referansepanel. Kfr. vedlagt korrelasjonsplott <i>Krav dommerprøve: $> 0,5$</i>	0,821
Antall prøver neddømt av referansepanel	2
Ditt antall neddømte	1
Antall neddømte som også er neddømte av referansepanelet	1



Hilde Kraggerud 22.06.2026

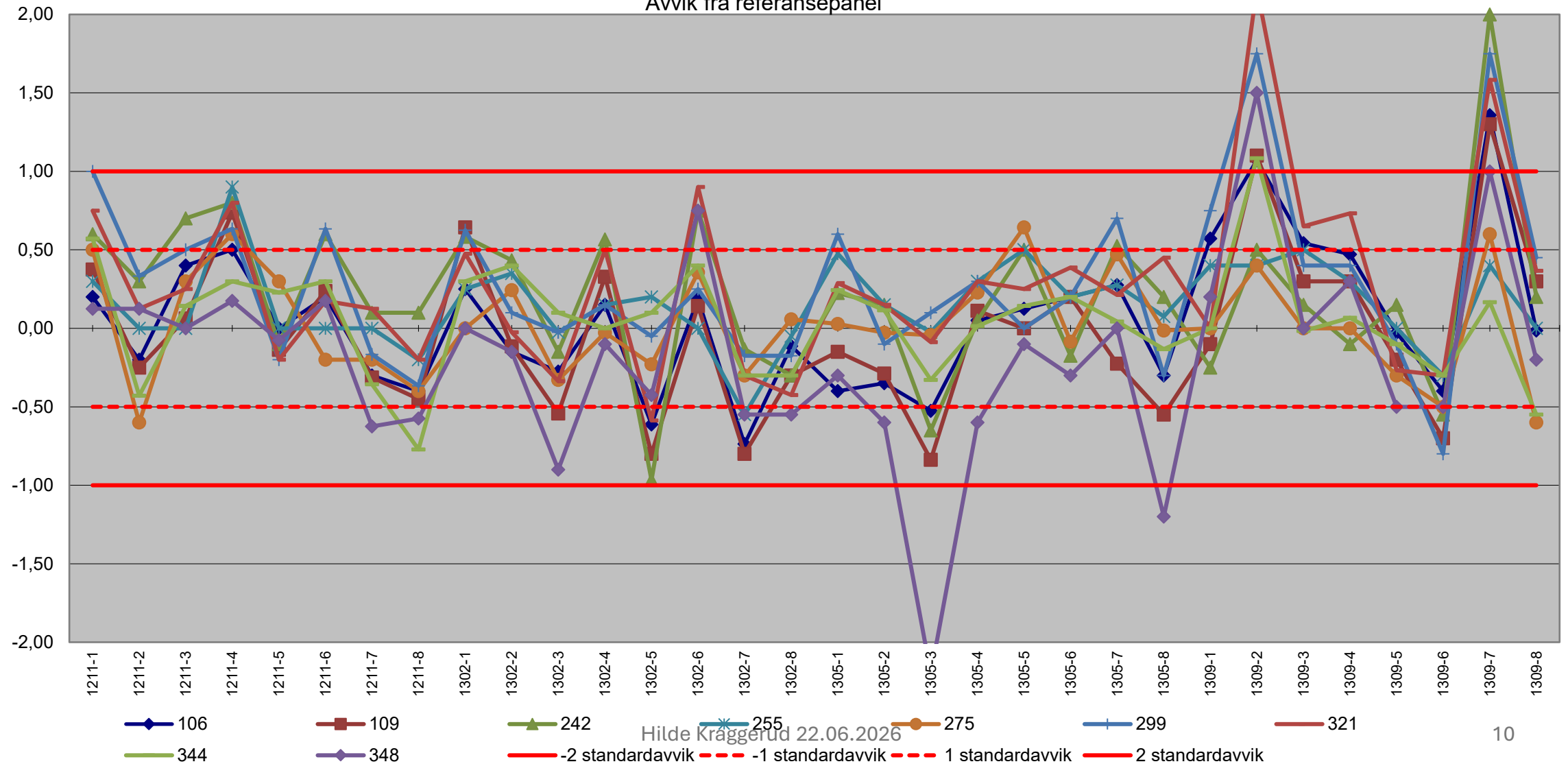


Control chart – different assessor panels (different production sites)

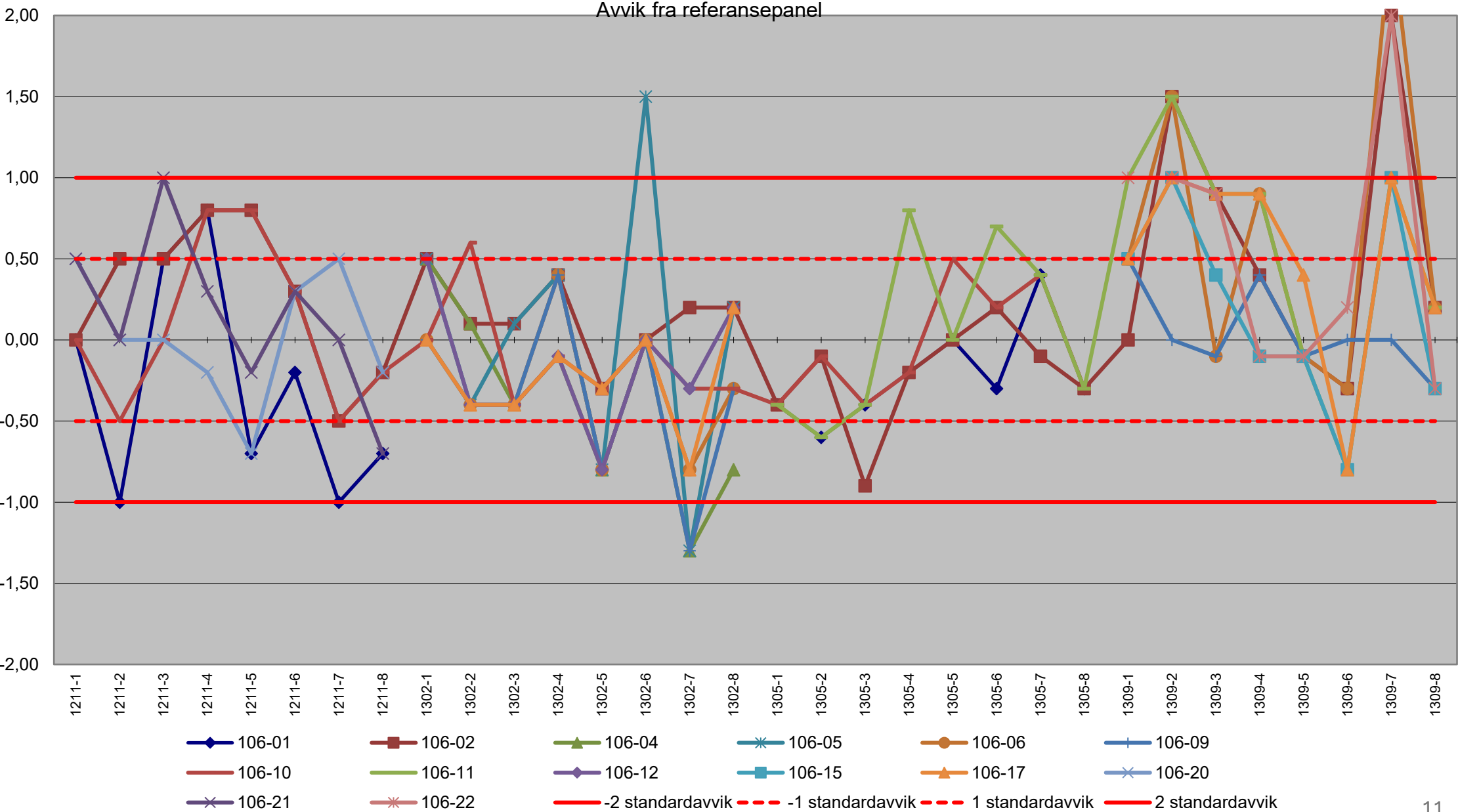
SLP Norvegia november 2012 - september 2013

Dommerkontroll alle paneler

Avvik fra referansepanel



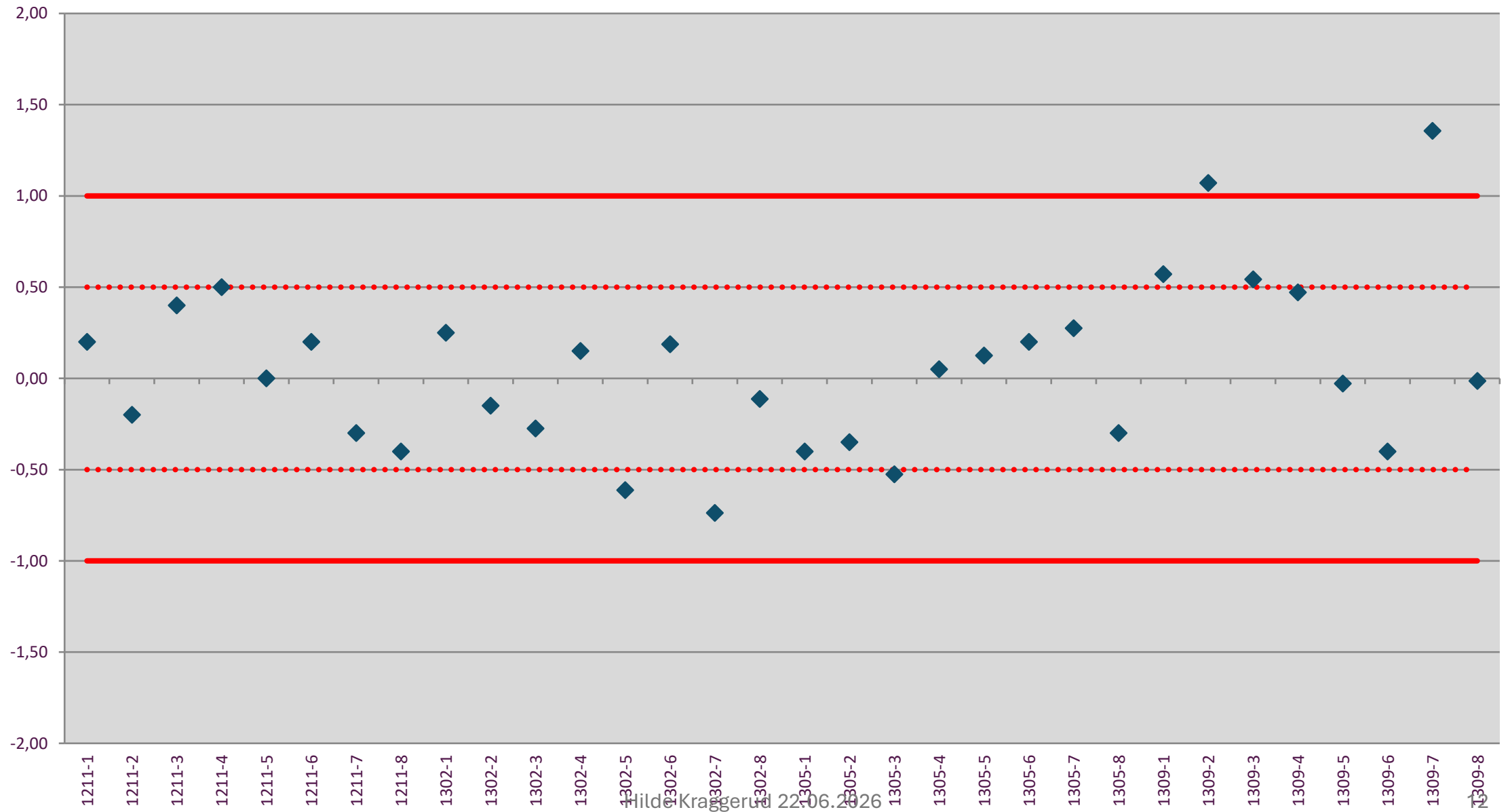
Control chart – different assossors in theSLP Norvegia november 2012 - september 2013
same panel
Dommerkontroll panel 106



SLP Norvegia november 2012 - september 2013

Dommerkontroll panel 106

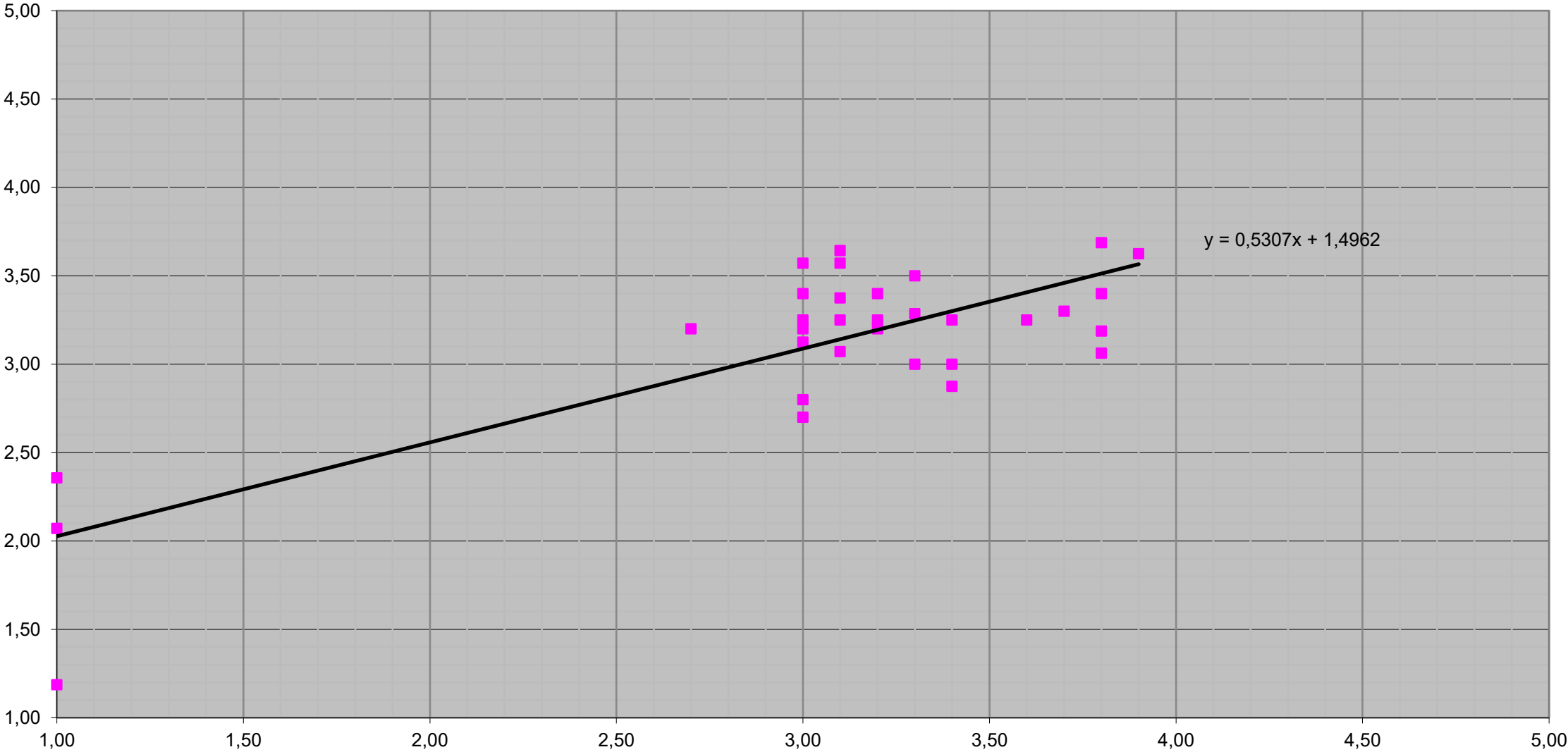
Panel Deviation from reference panel



Hilde Kraggerud 22.06.2016

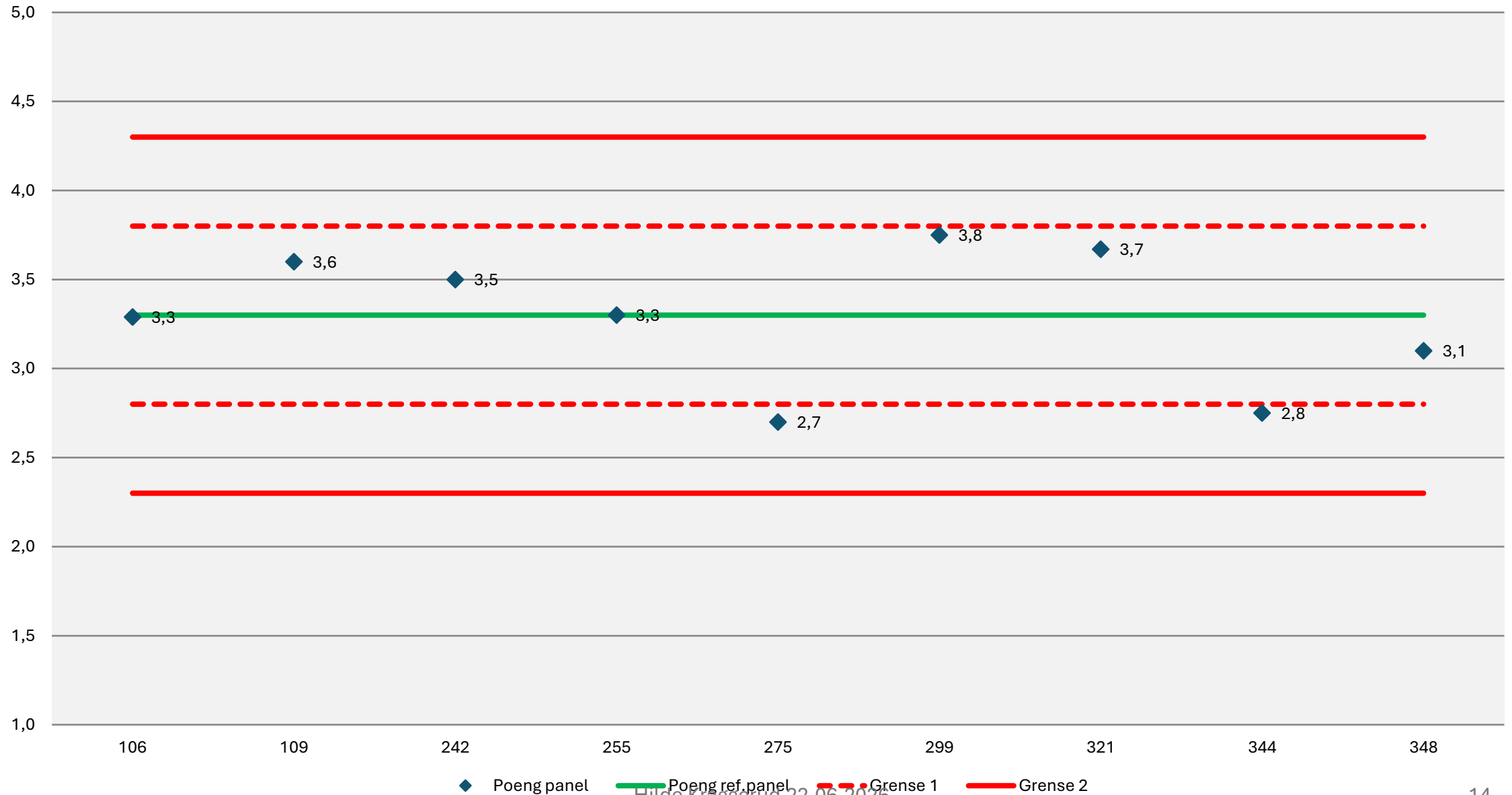
SLP Norvegia november 2012 - september 2013
Korrelasjon mellom panel 106 og referansepanel

$r=0,792$



SLP Norvegia september 2013

Sample no 8 – different panels



Duplicate samples, deviation between parallels for panel (106) and each assessor (106-1, 106-2...)

Panel/ dommer	Prøve nr							
	1211-1	1211-2	1302-3	1302-5	1305-3	1305-4	1309-2	1309-3
106	0,2	0,1	0,1	0,1	0,1	0,3	0,3	0,2
106-01	0,0	0,0			0,0	0,0		
106-02	0,5	1,0	0,0	0,5	0,5	0,5	0,5	0,5
106-04			0,5	0,5				
106-05			0,0	0,5				
106-06			0,0	0,0			1,0	0,5
106-09			0,0	0,5			0,0	0,8
106-10	0,5	0,0	0,0	0,0	0,0	0,5		
106-11					0,0	0,0	0,5	1,0
106-12			0,5	0,5				
106-15							0,0	0,5
106-17			0,5	0,5			0,0	1,0
106-20	0,0	0,5						
106-21	0,0	0,0						
106-22							1,0	0,0

Used to
follow up
assessors by
the local
panel leader

INTERNATIONAL STANDARD

ISO
22935-2

IDF 99-2

Second edition
2023-04

Milk and milk products — Sensory analysis —

Part 2: Methods for sensory evaluation

Lait et produits laitiers — Analyse sensorielle —

Milk and milk products — Sensory analysis —

Contents

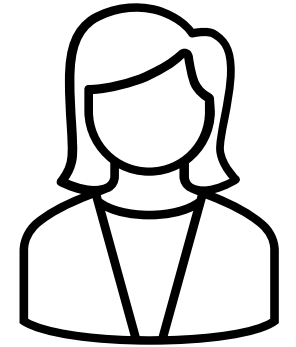
Forewords.....	
Introduction	
1 Scope	
2 Normative references	
3 Terms and definitions	
4 Principle	
5 Supervision	
5.1 Panel leader responsibilities	
5.2 Panel leader requirements	
6 Preparing for a panel	
7 Documents	
8 Test room	
9 Recommended method for sensory evaluation of butter ..	
9.1 Applicability	
9.2 Sampling and preparation of the sample	
9.3 Apparatus and materials	
9.4 Assessment	
9.4.1 Appearance	
9.4.2 Odour and flavour	
9.4.3 Consistency	
9.5 Attributes	
11 Recommended method for sensory evaluation of cheese	
Annex A (informative) International tables of common attributes	
Bibliography	

Panel leader responsibilities

A panel leader, who is familiar with sensory evaluation of the products, should be responsible for the entire evaluation, and in particular should ensure that:

- a) testing conditions are appropriate;
- b) correct evaluation forms are supplied;
- c) correct sensory protocols are used;
- d) panel results are monitored;
- e) good records are maintained of panel attendance, panel performance, session objectives, samples and sample preparation methods, response forms used, session results, comments on results, attribute definitions and references;
- f) communication is maintained with the site manager or appropriate personnel.

Panel leader requirements



The panel leader should:

- a) understand sensory evaluation principles;
- b) understand and have experience with the specific products being evaluated;
- c) be committed to a sensory quality assurance programme.

Preparing for product assessment with a panel

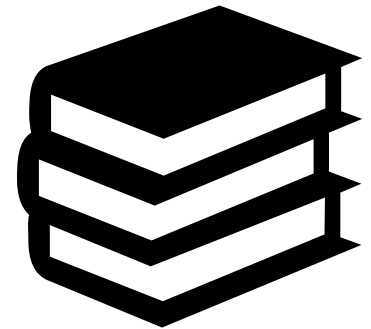
General steps for the preparation of a panel include:

- a) the invitation of panellists to the panel, informing them of the date, time and location of the session;
- b) the choice of samples for assessment in the panel session, and their preparation using specified standard procedures;
- c) labelling of samples with three-digit random numbers to disguise the sample origin (including the assignment of random codes, using a random number table or computer program, to each sample and then labelling report forms and sample containers);
- d) the performance of panel evaluations (assessments) in booths or another suitable environment and ensuring that pens, palate cleansers and spittoons are available in readiness for evaluations;
- e) checking that data are complete once assessors have completed their evaluations.

Documents

Necessary documents for the sensory evaluation of the various products should be available, e.g. the following:

- a) recommended methods;
- b) product attributes and attribute definitions;
- c) product specifications;
- d) food safety documentation.



Test room



More detailed information for a sensory evaluation area can be found in ISO 8589. Some general suggestions include provision in the test room of:

- a) walls and ceilings preferably of light (off-white or light neutral grey) and matt colours, avoiding unnecessary decorations;
- b) dividers between the places for each assessor for seated assessments;
- c) tabletops and dividers of a matt, light neutral grey colour;
- d) lighting free from strong shadows, with a colour temperature of 6 500 K, of constant and uniform intensity with illuminance between 800 lx and 1 500 lx;
- e) constant temperature;
- f) an environment free from foreign odours;
- g) a noise level maintained at a minimum during assessments;
- h) sheltering of any sample preparation area from the assessors, when it is necessary for sample preparation to take place in the assessment room;
- i) maximum convenience to assessors, especially with respect to temperature and humidity;
- j) regular monitoring of equipment and environmental conditions.

Sampling and preparation of the samples

For large cheeses, an adequate sample should be taken with a cheese trier or by cutting a sector (see ISO 707 | IDF 50) for sensory evaluation. For cheese in retail packaging, an adequate number of packages should be made available.

Before an evaluation, the test samples should be kept at the temperature mentioned on the packages or laid down in product specifications.

During the evaluation, the **test samples should have a temperature of $14\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$** . For special cheeses other temperatures may be chosen, with a tolerance of $\pm 2\text{ }^{\circ}\text{C}$.

Apparatus (some of these may apply)

- Apparatus as specified in the evaluation method chosen, and in particular the following
- **11.3.1** Incubator or chiller.
- **11.3.2** Thermometer.
- **11.3.3** Cheese trier.
- **11.3.4** Chopping board.
- **11.3.5** Knives or cutting wire of stainless steel.
- **11.3.6** Palate cleansers. EXAMPLE Water at $30\text{ }^{\circ}\text{C}$ to $40\text{ }^{\circ}\text{C}$.
- **11.3.7** Glasses.
- **11.3.8** Sampling cups.



Common attributes

ISO 22935-2:2023(E)
IDF 99-2:2023(E)

Annex A (informative)

International tables of common attributes

Table A.1 — International table of appearance attributes for specific dairy products

English	French	German	Spanish	Butter	Milk-based powder	Cheese	Milk-based liquids	Cream	Fermented milk	Ice cream
Appearance	Aspect	Aussehen	Apariencia							
air bubbles	présence de bulles d'air	Luftblasen	presencia de burbujas de aire			X			X	X
bicoloured	bicolore	zweifarbzig	bicolor	X		X				
bleached surface	halo périphérique	ausgebleichte Oberfläche	superficie decolorada	X						
brown	caramel à brun	braun	marrón		X					
clotted	granuleux	klumpig	granulosa				X			
coarse	Hi de Kraggerud 22.06.2026 granuleux	grobkörnig	granulosa/grano grueso		X					23

- All kinds of attributes – descriptive + defects

- Product group relevance

- Each company make their own nomenclature of defect terms applicable for their actual products

Common attributes

Odour and flavour

Table A.2 — International table of odour and flavour attributes for specific dairy products

English	French	German	Spanish	Butter	Milk-based powders	Cheese	Milk-based liquids	Cream	Fermented milk	Ice cream
acid	acide	sauer	acido	X	X	X	X	X	X	X
ammoniacal	ammoniacal	ammoniakalisch	amoníaco			X				
animal	animal	tierisch, animalisch	a animal	X	X	X	X	X	X	X
apple	pomme	Apfel	a manzana			X				
apricot	abricot	Aprikose	damasco			X				
astringent	astringent	astringierend	astringente			X		X	X	X
bitter	amer	bitter	amargo	X	X	X	X	X	X	X
boiled milk	lait bouilli	gekochte Milch	a leche hervida			X				
burnt	brûlé	verbrannt, brandig	a quemado	X	X	X	X	X	X	X
buttery	de beurre	buttrig	a manteca		X	X				
caramel	caramel	Karamel	caramelo		X	X	X	X		X
cardboard	de carton	kartonartig	a cartón	X	X	X	X	X	X	X
cereal	de céréale	getreidig	cereal		X		X			
chalky	crayeux	kreidig	a tiza		X		X			
cheesy	de fromage	käsigt	a queso	X				X	X	X
chemical	chimique	chemisch	a producto químico	X	X	X	X	X	X	X
cooked	de cuit	gekocht	a cocido	X	X	X	X	X	X	X
cow shed	d'étable	Kuhstall	a establo	X	X	X	X	X	X	X
cream	de crème	Sahne/Rahm	a crema	X		X				X
creamy	crémeux	cremig	a crema, cremoso		X	X	X		X	X
diacetyl	diacétyl	Diacetyl	diacetilo	X		X			X	