

Trial Hearing
WITNESS: MLI-OTP-P-0655

(Open Session)

ICC-01/12-01/18

1 International Criminal Court
2 Trial Chamber X
3 Situation: Republic of Mali
4 In the case of The Prosecutor v. Al Hassan Ag Abdoul Aziz Ag Mohamed Ag
5 Mahmoud - ICC-01/12-01/18
6 Presiding Judge Antoine Kesia-Mbe Mindua, Judge Tomoko Akane and Judge
7 Kimberly Prost
8 Trial Hearing - Courtroom 1
9 Thursday, 15 October 2020
10 (The hearing starts in open session at 9.31 a.m.)
11 THE COURT USHER: [9:31:51] All rise.
12 The International Criminal Court is now in session.
13 Please be seated.
14 PRESIDING JUDGE MINDUA: [9:32:19](Interpretation) Good morning, the Court is
15 in session.
16 Court officer, please call the case.
17 THE COURT OFFICER: [9:32:26](Interpretation) Good morning, your Honours.
18 Case in the situation in the Republic of Mali, the Prosecutor versus Al Hassan Ag
19 Abdoul Aziz Ag Mohamed Ag Mahmoud, ICC-01/12-01/18.
20 We are in open session.
21 PRESIDING JUDGE MINDUA: [9:32:44](Interpretation) Good morning, everybody.
22 We will start with the introductions, as usual. Prosecution, please.
23 MS COQUILLAUD: [9:32:52](Interpretation) Good morning, your Honours,
24 the OTP is represented by Gilles Dutertre, Dianne Luping, and myself
25 Sarah Coquillaud.

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1 PRESIDING JUDGE MINDUA: [9:33:09](Interpretation) Thank you very much,
2 Prosecution.

3 Defence, Ms Taylor.

4 MS TAYLOR: [9:33:14] Good morning, Mr President, your Honours. The Defence
5 for Mr Al Hassan is represented by Ms Sarah Marinier-Doucet, Mr Michael Rowse,
6 and myself Melinda Taylor. Thank you.

7 PRESIDING JUDGE MINDUA: [9:33:31](Interpretation) Thank you, Ms Taylor.
8 Let us now move to the Legal Representative of Victims.

9 MR LUVENGIKA: [9:33:41](Interpretation) Good morning, your Honours.
10 The Legal Representative of Victims consists this morning of Claire Laplace and
11 myself -- myself Fidel Nsita Luvengika.

12 PRESIDING JUDGE MINDUA: [9:33:59](Interpretation) Thank you very much,
13 Mr Nsita.

14 Today we are going to hear the 15th Prosecution witness, but before that the Chamber
15 would like to present a short oral decision.

16 The Chamber notes the request from the Defence to add a document to its list of
17 evidence documents to show to the Witness P-0655, and the code is
18 MLI-OTP-0078-9736.

19 Prosecution, I assume that you have no objection to this?

20 MS COQUILLAUD: [9:35:01](Interpretation) No, no objection, your Honour.

21 PRESIDING JUDGE MINDUA: [9:35:05](Interpretation) Thank you very much for
22 your cooperation.

23 In accordance with 34 of the Rules of Court, the Chamber considers that the request
24 will involve no prejudice and grants the request.

25 I would now like to turn to the witness.

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1 Good morning, Mr Witness. Can you hear me?

2 WITNESS: MLI-OTP-P-0655

3 (The witness speaks French)

4 THE WITNESS: [9:35:36](Interpretation) Yes.

5 PRESIDING JUDGE MINDUA: [9:35:39](Interpretation) On behalf of the Chamber I

6 would like to welcome you here today. You are going to testify with a view to

7 helping the Chamber to shed some light on the case involving Mr Al Hassan.

8 Protective measures have been put in place in order that your identity will not be

9 revealed to the public.

10 If you have occasion to give details which might reveal your identity, we will discuss

11 such matters in private session. In that way, nobody other than the people present

12 in the Court will be able to hear you. Have you understood this?

13 THE WITNESS: [9:36:35](Interpretation) Yes.

14 PRESIDING JUDGE MINDUA: [9:36:36](Interpretation) Thank you very much.

15 I will now proceed to your solemn declaration in accordance with the procedures of

16 court.

17 On your table, Mr Witness, I think you will see a piece of white paper. This solemn

18 engagement is the one by which you will commit to telling the truth, the whole truth.

19 I would like you to read it out loud, please.

20 THE WITNESS: [9:37:12](Interpretation) I solemnly declare that I will tell the truth,

21 the whole truth and nothing but the truth.

22 PRESIDING JUDGE MINDUA: [9:37:23](Interpretation) Thank you, Mr Witness.

23 You are now under oath. The representatives of the victims and witness aid section

24 and of the OTP will have explained to you what that means, so I won't go over that

25 again, but I would like to pass on a few practical tips for this morning.

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1 You need to remember throughout your testimony that everything said in this
2 courtroom is transcribed by court reporters and translated simultaneously into
3 a number of languages by our interpreters. It is therefore important to speak clearly
4 and slowly, please.

5 Please do not start speaking until the person asking you the question has completely
6 finished asking the question, and then perhaps count up to three in your head before
7 starting your reply. This short break is essential so that your words can be duly
8 noted.

9 Of course, if you have a question, please just raise your hand to indicate that you wish
10 to speak.

11 Have you understood this?

12 THE WITNESS: [9:39:10](Interpretation) Yes.

13 PRESIDING JUDGE MINDUA: [9:39:12](Interpretation) Thank you very much.

14 But please do not forget this short break that we need before your reply.

15 We will now move to your testimony. You will be questioned first by the Office of
16 the Prosecutor and probably also by the Legal Representative of Victims, and then by
17 the Defence who will conduct cross-examination, and there may also be occasion for
18 judges to ask you questions.

19 So we will start this morning with the representative of Prosecution. This witness is
20 appearing paragraph 68(3), so you have an hour maximum.

21 MS COQUILLAUD: [9:40:11](Interpretation) That is correct.

22 * Your Honour, I took into account the guidelines you gave yesterday about the use
23 of private session. For my examination-in-chief, I would like to ask if we could start
24 in private session and I will keep it as brief as possible.

25 PRESIDING JUDGE MINDUA: [9:40:36](Interpretation) Thank you for your

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1 cooperation, Madam Prosecutor.

2 Court officer, please could you put us into private session.

3 (Private session at 9.40 a.m.)

4 THE COURT OFFICER: [9:40:47](Interpretation) We are in private session.

5 PRESIDING JUDGE MINDUA: [9:40:53](Interpretation) Thank you very much,
6 court officer.

7 Prosecutor.

8 MS COQUILLAUD: [9:40:59](Interpretation) Thank you.

9 QUESTIONED BY MS COQUILLAUD:

10 Q. [9:41:03] Good morning, Mr Witness.

11 A. [9:41:04] Good morning.

12 Q. [9:41:05] I'm going to initially ask you to give your full identity, your name, first
13 name and place of birth.

14 A. [9:41:19] I am [REDACTED], I was born in [REDACTED] on [REDACTED].

15 Q. [9:41:31] And what is your current occupation?

16 A. [9:41:35] [REDACTED]
17 [REDACTED]

18 Q. [9:41:51] And how long have you been in this post?

19 A. [9:42:00] I have been [REDACTED]
20 I've been an engineer since [REDACTED], but I don't have the exact date in my head.

21 Q. [9:42:22] Could you please tell us what is your professional area of expertise?

22 A. [9:42:31] I'm an audio engineer. Does that answer your question?

23 Q. [9:42:37] And what does this actually involve?

24 A. [9:42:44] Well, there are a number of aspects to this. I am an expert in the area
25 of voice and sound audio, working for [REDACTED]. I am

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1 sometimes asked also to work for foreign courts. I also have some management
2 activities with a small team of audio experts. I am also a [REDACTED] of the
3 department dealing with audio-video.

4 Q. [9:43:24] As part of your expert work in processing voice and sound, you have
5 already -- have you already testified as a judicial witness?

6 A. [9:43:38] Yes, on a number of occasions.

7 Q. [9:43:46] Thank you for this clarification. I would like you to move to tab 80 in
8 your file, the penultimate document, MLI-OTP-0078-4924.

9 THE INTERPRETER: [9:44:15] The interpreter points out this document is not
10 available in the booth.

11 MS COQUILLAUD: [9:44:21](Interpretation)

12 Q. [9:44:22] Have you found this document?

13 A. [9:44:26] Yes.

14 Q. [9:44:27] Do you recognise it?

15 A. [9:44:28] Yes. This is my CV. It's the shortened version.

16 Q. [9:44:44] Is the content of your CV accurate?

17 A. [9:44:51] Yes.

18 MS COQUILLAUD: [9:44:58](Interpretation) If you are in agreement, we can move
19 to public session.

20 PRESIDING JUDGE MINDUA: [9:45:05](Interpretation) Court officer, please move
21 us to public session, open session.

22 (Open session at 9.45 a.m.)

23 THE COURT OFFICER: [9:45:15](Interpretation) We are now in open session,
24 your Honours.

25 PRESIDING JUDGE MINDUA: [9:45:23](Interpretation) Court officer, thank you

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1 very much.

2 Prosecution, thank you for your speed in dealing with these matters.

3 MS COQUILLAUD: [9:45:33](Interpretation)

4 Q. [9:45:34] Mr Witness, I would now like to look at your report, which is
5 MLI-OTP-0069-9833. This is a confidential document and it's at tab 58 of your file.

6 Do you have it in front of you?

7 A. [9:45:59] Yes, I do.

8 Q. [9:46:04] Firstly, without mentioning names, can you tell me whether you
9 conducted this operation alone?

10 A. [9:46:15] I worked according to our usual practice [REDACTED] I did
11 the whole of the analysis, interpretation and drafting of the report. I was assisted
12 only for technical operations, for example, producing the voice samples from
13 the material we were supplied with.

14 Q. [9:46:49] And the person who helped you in these technical operations, is that
15 the person whose name figures at the bottom of page 3 of your report, which is
16 0069-9835?

17 A. [9:47:07] Yes. This is somebody who works for me and whose work I
18 supervised throughout.

19 Q. [9:47:23] Who wrote this report?

20 A. [9:47:27] I did.

21 Q. [9:47:35] If you could now please turn to page 34 of your report, which is
22 0069-9866, whose is the signature that appears on this page?

23 A. [9:47:58] That is my signature.

24 Q. [9:48:08] I would now like to draw your attention to another document which is
25 at tab 77 of your report, MLI-OTP-6 -- 0074-0034 -- 0534.

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1 Do you recognise this document, Mr Witness?

2 A. [9:48:39] Yes, I do. This is the mission letter that was sent to me setting out
3 the objectives and the framework of my mission.

4 Q. [9:48:55] And can you please explain to us what was the aim of this mission.

5 A. [9:49:04] The request asked for an expertise authentication of facial recognition
6 and authentication of voice. Since I am involved in forensic vocal authentication
7 one of my colleagues dealt with the first element and I was asked to compare voices
8 appearing on a number of videos and audios which we called reference items and
9 others which were items for examination, using BATVOX-type voice recognition
10 software, and a lot of the work would be in Arabic. There was no information about
11 the various speakers to be analysed.

12 Q. [9:50:08] Can we now come back to your report, so tab 58. So
13 MLI-OTP-0069-9833.

14 In the framework of this mission, could you explain your operating methods.

15 A. [9:50:48] Do you want the list of operating modes or do you just want me to
16 explain the nature of what I have listed here?

17 Q. [9:50:59] I would like a summary of what is set out very clearly on page 5 of
18 your report, which is 0069-9837, please.

19 A. [9:51:16] The main thrust of the expertise is to use BATVOX software produced
20 by Agnitio, Nuance as it's now known. I was also asked to -- I also had to undertake
21 measures to improve the sound quality, which is iZotope RX, and also Audition from
22 Adobe CS5.5 and CS6. I also used a number of additional softwares for the file
23 formatting and the studying. I could explain how I did the comparison, if that is
24 what you are aiming at with your question.

25 Q. [9:52:10] Well, that is the question I'm due to ask any moment. *Exactly. I am

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1 coming to this question, since you have prompted me.

2 So, you carried out a voice comparison, as you mentioned, which was
3 numbered -- based on a number of samples provided by the OTP, which are listed in
4 your mission letter, and others coming from external databases, external to the case.
5 Could you please explain to us in simple terms how one carries out automatic voice
6 comparison.

7 A. [9:53:01] Automatic voice comparison is an algorithm-based system which use
8 computer calculations looking at sound processing. It doesn't individual -- examine
9 individual sounds or phonemes but looks at the voice signal as a whole. It uses an
10 initial modelling, mathematical modelling of the properties of the human brain in
11 voice processing, and based on this tool it does a statistic compression giving voice
12 models, digital files, abstract, which contain a certain amount of information about
13 the property of the voice being analysed.

14 This voice model, based on comparative items, is then compared with other voice
15 samples which are similarly processed, giving an approximation figure which gives
16 a quantitative numerical situation of a comparison between the two.

17 And then you have the intervariability. Then we segment the model and compare
18 extracts with themselves in order to give a numeric quantification of the possibility of
19 variation of the voice, the intervariability, and that gives us the likelihood ratio.

20 We use a standardisation in order to neutralise or to discount the acoustic context of
21 the piece, and we use standardisation voices which are outside the case but present
22 similar characteristics.

23 Q. [9:55:20] Thank you very much for your very full and very technical reply, and
24 I'll try and clarify it for myself and for others. So I'm going to ask you to clarify
25 a number of issues.

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1 You've just mentioned the channel effect. Could you explain what problems that
2 might occasion?

3 A. [9:55:47] When one compares two voice samples, you don't have the voice itself,
4 you have recordings which have been influenced by an acoustic context and, for
5 example, the use of a mic or a telephone. If one makes a direct comparison
6 to -- between two elements of the same voice registered on different channels, one
7 might have a falsification due to the fact you're using different channels. But if you
8 register two similar but different voices using the same mic in the same room with
9 the same background noise, you're likely to have a false positive, as we call it. So we
10 need to neutralise the channel effect.

11 Q. [9:56:44] To put it even simpler for me, is it -- is that the reason that in your
12 expertise you don't improve all the samples, it's because they're on the same channel,
13 have I understood correctly?

14 A. [9:57:05] Yes. That might create a channel -- a similar channel causing false
15 positives, so we try to avoid that sort of thing by only improving one of the sets.

16 * Q. [9:57:25 Could you move to page 7 of your report, which is
17 MLI-OTP-0069-9839. We're in the part about the modes of operation and the software
18 you used, you're explaining here how you get the results from the comparison of
19 voices. And as you did in your previous reply, you mentioned this likelihood ratio.
20 Could you tell us in layman's terms what this means, what's the point of working out
21 what this likelihood ratio is?

22 A. [9:58:11] Yes, come from layman's terms, it's part of our analysis. We can't give
23 a direct figure for the probability of two voices being the same or different, so we use
24 a ratio which explains the relationship to the document we have been given. This
25 likelihood ratio, when it's 1, says nothing at all to me, in other words, you can't draw

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1 any conclusions from this. When you have it higher or much higher than 1, it says
2 the result of the analysis supports the prior probability that the voices are the same,
3 i.e., that it's the same speaker.

4 When it's much lower or lower than 1 it supports the prior probability that we are
5 dealing with different speakers.

6 When I say prior probability, it's that is the probability completely independent of the
7 analysis, so purely theoreticals, the input of the analysis which is a context that does
8 not -- which is not within the purview of the expert.

9 Q. [9:59:44] So if I have understood correctly, this is useful to give you a result
10 which either indicates that there are different voices or that it's the same voice; is that
11 correct?

12 A. [9:59:56] Yes. It may also indicate to what extent the analysis supports
13 the hypothesis that it is the same voice or the hypothesis that it is -- that there are two
14 different voices being heard.

15 * Q. [10:00:16] Still on page 7 of your report, which is MLI-OTP-0069-9839: I
16 would like to make a correction and to ask a technical question. We can start with
17 the correction, this was discussed at the preparation section so I'm going to ask
18 a leading question, if I may. I would like you to confirm that points 3 and 4 at the
19 top of this page are redundant, are a copy of points 3 and 4 on the previous page?

20 A. [10:01:01] Yes, that is correct. It's a simple pagination error.

21 Q. [10:01:08] I now come to my technical question. This is explained in the last
22 paragraph of this page, so we are on validation and interpretation of the results, and
23 it mentions the use of two sets of tests. Why do you use two sets of tests?

24 A. [10:01:35] When comparing voices, theoretically it's a very complicated
25 operation because there are a lot of external factors involved. We need to respect

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1 the methodology and the validation, the methodology on the one hand, but there's
2 also a part which is unknown which can't be validated in advance because it depends
3 on the acoustic characteristics. So we need to validate things that one might do with
4 software on a case-by-case basis. We use sets of voices from our databases which are
5 entirely out with the matter in question. And we apply acoustic degradation similar
6 to those which we note on the samples that we're going to be working with. We
7 apply the same sort of processing that we intend to provide -- use for the processing
8 and we look at how the software behaves in that acoustic context.

9 So the sets of voices used for validation are two types. There's one set where we
10 know that the models of validation are the same as for the models to be examined.
11 So we look at the software where it seems to detect similar voices and the -- with
12 the different sets of voices, we know they're talking about different speakers, so we're
13 looking to see how the software behaves when it's looking for differences. This is
14 a way of allowing us to check how the software behaves and that it complies with
15 what we expect to encounter.

16 Q. [10:03:48] Based on requests for validation, I'm going to look at one particular
17 question, the EPP, the probability performance. If you could go to page 8,
18 MLI-OTP-0069-9840, and if you look at the third paragraph, please, which starts with
19 "the point of intersection".

20 In this paragraph you talk about the probability of equal performance, EPP. Could
21 you give us some details of what that is and why do you use that?

22 A. [10:04:33] When we trace the distributions of the results, distribution means
23 the statistical results obtained by studying this simula -- this similar. We have two
24 elements, accumulating curve and a decreasing curve. The intersection looks at the
25 behaviour of the software and how the software will react. Without that we can't

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1 make a decision. If the behaviour of the software conforms to our expectations we
2 know what we ought to expect, so we will verify that something that is as close as
3 possible to the theoretical basis, and if that's not the case we cannot use the software
4 in that particular acoustic case.

5 We need to have an intersection that is as close to 1 as possible. If it moves from that
6 we have to bear in mind our interpretation. If it moves too far away then it becomes
7 more difficult to use. The coordinates need to be very close to zero. If it's 0.5, then
8 it doesn't -- it means that the software can't distinguish true from false. That doesn't
9 happen. We start -- we don't start on such a basis.

10 In the control case it's usually 0.0-something and, if we have 0.1, then it does not
11 conform to our safety standards, because it means the capacity of the software to
12 distinguish false from true if voices are similar or if they are different. If it's too far
13 from 0, it means that it isn't so reliable.

14 Q. [10:06:48] Let me remind you to slow down a bit ---

15 A. (10:05:50) Sorry.

16 Q. (10:05:52) ---for the interpreters, because you are using rather technical language.

17 Just to make sure I understood your reply, the equal proportion probability is used in
18 the validation charts that we see here with the abscissa and the ordinate, is that correct?

19 A. [10:07:17] It measures on -- it is measured on the graph.

20 * Q. [10:07:23] And the way of reading these measurements, when you look at one
21 of the validation graphs, the more you see that the figure is closer to 0 at the
22 intersection, the better the comparison is. Conversely, if the value is high, thus close
23 to 0.5, the results can still be used, but you have to be more careful when interpreting
24 the results. Is that right?

25 A. (10:07:53) 0.5 is a pedagogical value, it cannot be used per se. If you are at 0.08 it

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1 means it might have a value, but it should be -- it should be interpreted with caution.

2 Q. [10:08:14] Could we go to annex 2 of your report, MLI-OTP-0069-9872, and that
3 has the validation graph which is specific to that case --

4 THE INTERPRETER: [10:08:38] Which the interpreters do not have.

5 MS COQUILLAUD: [10:08:42](Interpretation)

6 Q. -- which are either in French or Arabic. Could you explain to us what you
7 have found in your report and the meaning of these graphs. Was validation possible
8 in this case?

9 A. [10:08:58] The validation was possible in some of the cases, in some of the
10 samples, but not in all cases.

11 Q. [10:09:18] Let us look at those cases. Could you tell us about some of
12 the technical terms that you used. One term we've seen in your report, and in
13 particular as regards the validation and the interpretation of results, is the standard
14 population, or the -- if you look at page 8 of your report, the second paragraph,
15 MLI-OTP-0069-9840.

16 And I quote: "The calculation of ratio -- of likelihood ratio are carried out for each
17 test set by looking at the normalisation or standard population dealing with this for
18 comparison. The population is chosen as -- by the expert based on what is the most
19 relevant to the case."

20 So what is this population, what sort of -- what sort of criteria do you use?

21 A. [10:10:31] These are voice samples which are provided by our laboratory, which
22 are outside of our particular case, which have been selected in acoustic situation
23 which are similar to the voice model and will be processed digitally so that they are as
24 close as possible to the item in question. For example, if it's a telephone call, we see
25 it's a voice that comes from a telephone, and if it's from a microphone, then we know

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1 that it's a mic recording. So if we want a voice model is of a person, then we try that
2 they speak the same language or languages that are similar so that we also take into
3 account language characteristics.

4 Q. [10:11:37] Let me go back to this criteria which you've selected for, for
5 the external base sample. But before that, in your report you talk about two types of
6 population, the normalisation population which you've just described on the one
7 hand, and on the other hand, the validation population. So two different
8 populations.

9 Could you go to page 24 of your report, which is MLI-OTP-0069-9856. Please look at
10 the third paragraph at the bottom of the page and your comments which are in bold:

11 "We do not have a validation population in Arabic, we have to deal with French
12 voices."

13 End of citation.

14 I have got several questions on this. The first question is: Why do you say that you
15 do not have in this case any population -- a validation population in Arabic?

16 A. [10:13:13] Because we have 30 or 40 of high quality recordings of male voices,
17 and all those samples were used for the normalisation population, and we have to
18 have a different selection for the other validation population. Normalisation
19 population is more important, but we have to have two different test sets, so the one
20 is the speaker and the other one has to be from a different speaker. And we didn't
21 have all those elements available to us.

22 *Q. [10:14:02] So you had some samples but not enough to prepare the expert
23 report? Is that correct?

24 A. [10:14:12] In order to use ideal conditions for validations, this should have been
25 done in Arabic, that would have been the ideal situation. So we decided to do this

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1 knowing that the validation, which we wanted to be as stringent as possible, but that
2 we could not use the same sample.

3 * Q. [10:14:42] As regards rigour, could you tell us a bit more about the criteria that
4 you used to choose the samples in French?

5 A. [10:14:55] Our French samples of the validation populations are male voices
6 speaking French, free discussions, reading out texts, but a sound reading of texts,
7 recorded directly with a micro of a high quality.

8 *Q. [10:15:20] If I understood your answer correctly, as well as the one you gave a
9 few moments ago, you selected these criteria for this case because they
10 corresponded to what you noticed in the items in question and the comparison
11 items that were sent to you; is that correct? You tried to---I am not expressing myself
12 very well here---you were trying to create a mirror effect between the criteria which
13 you noticed in the samples which were sent to you and the population that you
14 were trying to create.

15 A. [10:15:49] Yes. In our expertise, the comparison, they were people who
16 were -- that recorded directly with a microphone. There were some inadequacies
17 which we had to point out, but there wasn't a -- an interview, but we used also
18 the -- either an interview or an interpreter and they were either speaking freely or
19 were reading out a text.

20 Q. [10:16:30] Let me go back to this, because you talked about interpreter. In
21 which population, in which sample did you use the Arabic voice of an interpreter?

22 A. [10:16:45] The Arabic voice did not appear in the normalisation population, nor
23 in the validation population, it is only an addition, that's to say someone who's not
24 the subject of our expertise, but we wanted to see whether it would be lower than 1,
25 that's to say a witness sample.

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1 Q. [10:17:20] So the use of an interpreter was to verify the consistency and
2 coherency of the results?

3 A. [10:17:35] It's an additional check.

4 Q. [10:17:43] I now turn to another subject, the acoustic quality of the recordings
5 which you received from the Office of the Prosecution.

6 I would like some clarification, if you could go to page 12 of your report, which is
7 MLI-OTP-0069-9844. And the last sentence, just by way of example, you say here
8 that the acoustic quality of the recordings is poor for 3 to 7 and rather bad for 11 to 17.

9 Could you explain to us what is the scale of value to reach the conclusion that
10 a recording is good, bad or very bad in quality.

11 A. [10:19:00] Contrary to the likelihood ratio, the quality is not quantifiable. We
12 can only use this in a very restricted way, so we use a scale which is based on our
13 knowledge as experts. A recording could be of high quality, good quality, medium
14 quality, or poor quality or somewhat bad quality, or very bad quality. The criteria is
15 that a recording could be of a good quality, must have no background noise or very
16 little background noise, must have no or very little ambient noise. The difference
17 between the two is the noise, for example, of the microphone and the ambience is
18 person in the background who talks, or background television, or other sources of
19 outside noise. It also means that the voice are relatively close so you can hear them
20 clearly, and you can hear them clearly and there must be no distortion. That's to say,
21 a defamation of the sound of the voice which is sometimes caused by electronic
22 equipment which has effect on the microphone.

23 And the other element which we observe, we don't always hear it with our ear, is
24 the changes brought about by compression, because that also can change the signal.
25 In this case, we had a lot of technical issues which are described in the first recording,

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1 and also we had noise vis-à-vis the signal which is poor. In addition to that,
2 the volume of the voice, which was low, either because the people were too far from
3 the microphone or because the microphone didn't really take up the sound, in that
4 case that there was a difficulty in signal-to-noise ratio and so we couldn't really
5 distinguish the sound as clearly as we would have liked to.

6 Q. [10:21:52] There are two things, there is the recording, which I can listen to with
7 my ear to assess whether it's good. But, for the expert, you have also additional
8 software as regards the acoustic quality, according to the criteria which you've
9 mentioned, which could be satisfactory or not satisfactory; is that correct?

10 A. [10:22:14] Yes. If the software uses statistics and it is not something that relates
11 to the perception of the voice, not relying on perception, so the software doesn't use
12 the same criteria as we do. It might seem correct to us, but it might not be good for a
13 comparison, and that's why the software also plays a part.

14 Q. [10:22:49] And in this case what measures have you taken to use the samples
15 which were given to you?

16 A. [10:23:01] Firstly, we tried to look at the ideal situation. We looked for samples
17 that reflected that and measured their quality, which we then said was insufficient so
18 that we couldn't do a direct comparison. And since the principal fault was
19 background noise, we used filters which reduced the background noise - I won't go
20 into details of how - to reduce background noise and preserving or enhancing
21 the voice as much as we could. But the software must be validated before it is used
22 for these filters on that type of problem.

23 Q. [10:23:58] And after having done this enhancement on the items sent to you, did
24 you reach any results?

25 A. [10:24:10] Yes, we had some results by using the comparison items. I just have

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1 to look at my notes here. The comparison items 3 to 10 in the list that we were
2 provided with are the only -- the items in question, so they're the videos which are 18
3 and 21. The others didn't have sufficient quality so that we could use them in our
4 selection criteria for giving us proper results.

5 Q. [10:24:53] I would like to talk about the results and your conclusions. I would
6 like to refer to our conclusions on page 33 and 34 of your report, which is
7 MLI-OTP-0069-9865 and 66: * So here, the result of the comparison of all the items that
8 you had at your disposal is as follows, and I am reading verbatim: "the result of this
9 comparison strongly supports the preliminary hypothesis of similarity of voice
10 between the main speaker in videos 19 (man with green turban wearing combat
11 fatigues) and 21 (man with green turban and dark clothing, h1) and Mr Al Hassan, in
12 reference recordings 3, 4, 5, 6, 7, 8, 9 and 10. My question, as regards certainty as
13 regards support, in what -- where are we on the range?

14 *A. [10:26:38] As regards the likelihood ratio, most of the likelihood ratios
15 calculated exceeded 100, which is why I said "strongly supports". We are not very far
16 from the maximum, because the interpretation scale includes -- one, two, three, four --
17 four positive scores, one neutral score and four negative scores. So here we are at the
18 third positive score. The fifth positive score is reached very rarely, and when it is,
19 generally I recheck my data several times because it is an extremely rare phenomenon.
20 So, we are... we are not very far from the maximum score that we obtain in empirical
21 practice.

22 Q. [10:27:30] We've talked about your results as regards voice identity, but you also
23 have conclusions on the differences of voices. I refer to your conclusions on page 34
24 of your report, MLI-OTP-0069-9866, and here I'm going to read it out in French:
25 "The results of this comparison slightly support the hypothesis of a difference of voice

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1 between the, the man with the face masked by a scarf in the video 21 and

2 Mr Al Hassan in the reference recordings 3, 4, 5, 6, 7, 8, 9 and 10.

3 I'd like to clarify, who is H2 who has a different voice of that to -- of Mr Al Hassan?

4 Could you point out who is Mr H2 in your report?

5 A. [10:28:55] I'm going to refer to another page, which is page 16 of my report. I

6 summed up the various films and the video 21 that you can see it corresponds to

7 the first element, that is a man who has his face hidden completely by a scarf and

8 the difference is with a man who has -- is wearing a headdress, which is on the right.

9 So H1 is the one is on the right with a green turban and H2 was a sample for the voice
10 where the face is masked by a scarf and appears here on the left.

11 THE COURT OFFICER: [10:30:11](Interpretation) I am just being informed that we
12 lost the English interpretation for that quote, so maybe it will be useful to ask
13 the witness to repeat again. Thank you.

14 MS COQUILLAUD: [10:30:29](Interpretation)

15 Q. [10:30:30] Mr Witness, could you repeat your response as regards H2?

16 A. [10:30:38] I am referring to page 16 of my report, MLI-OTP-0069-9848. And it is
17 the segments which give the contents of the video which was sent to me as regards
18 items in question, and the first segment represents the file which is 21 in the list which
19 was sent to me. And in this segment we see two men, one on the left is -- has a scarf
20 which covers his face completely and on the right there's a person with a turban,
21 a headdress and his face hasn't got a scarf. The individual H1 is on the right. It's
22 the first of the two and the one who has nothing on his face. And H2 is the one on
23 the left.

24 Q. [10:32:13] Thank you.

25 You said you used this individual for samples of the Arabic voice. You used

1 samples in Arabic and French and you said unfortunately you didn't have enough
2 samples, external samples in Arabic, you would have liked to have more samples.
3 But nevertheless you did get some results by using French samples. Is that a correct
4 summing up of your view? Is the language that is spoken, is that decisive for your
5 results?

6 A. [10:33:01] Yes and no. Let me explain, it's a bit complicated.

7 In the normalisation population we have voices in Arabic, so that doesn't worry me.

8 It's not perhaps the same Arabic which is spoken by Mr Al Hassan or other people
9 like Mr Al Hassan, but the acoustic characteristics from a linguistic point of view are
10 close, sufficiently close. However, for the validation population, where the criteria
11 of the constitution of an ideal validation population were not respected.

12 I selected to do my validation in two parts, the first part was based on the principle
13 which of all the elements which had the most influence, for example, all the acoustic
14 influences, and then try to compare that with samples in French and normalisation
15 populations in French. They were tested. The acoustic treatment which was used
16 for the files is compatible with the use of automatic comparison of voices.

17 However, the validation role is to make sure that the normalisation population is
18 adapted to our needs, and since that validation was done in French with
19 a normalisation population in Arabic, the results are indicative. The normalisation
20 population that was introduced doesn't have any of all the characteristics, but it
21 doesn't indicate to what extent there might be a change in calibration. So the witness
22 samples of the interpreter were valuable because it helped us to have an additional
23 check, and also the retro analysis of the facts was also important.

24 The second, in the second part we compared the two samples, so we carried out two
25 supplementary tests.

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1 Q. [10:35:47] Do you confirm the accuracy of your report, Mr Witness?

2 A. [10:35:51] Yes, in all elements.

3 Q. [10:35:58] And do you have any objection to your report and all its related
4 elements being submitted into the dossier?

5 A. [10:36:10] No, that was why it was produced.

6 Q. [10:36:13] Thank you very much, Mr Witness. This brings me to the end of my
7 questions for you.

8 PRESIDING JUDGE MINDUA: [10:36:24](Interpretation) Thank you very much,
9 Madam Prosecutor. Thank you very much for what you have done and also for
10 your punctuality.

11 I now look to the Legal Representative of Victims. I have your submissions of
12 5 October this year, Mr Nsita, and you said at that point that you did not intend to
13 speak. But having heard the witness answer the Prosecution questions, do you wish
14 to change your mind?

15 MR LUVENGIKA: [10:37:05](Interpretation) Thank you very much, Presiding Judge,
16 your Honours. The position of the Legal Representative of Victims related to this
17 witness has not changed, therefore we have no questions for this witness and I would
18 like to thank the witness for his testimony.

19 PRESIDING JUDGE MINDUA: [10:37:28](Interpretation) Thank you very much,
20 Mr Nsita, for your cooperation.

21 I turn now to the Defence as we approach the moment for cross-examination.

22 Ms Taylor, are you ready?

23 QUESTIONED BY MS TAYLOR:

24 Q. [10:38:09] Good morning, Mr Witness. My name is Melinda Taylor and I'll be
25 putting questions to you on behalf of the Defence for Mr Al Hassan.

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1 Now, as has been mentioned earlier, for the interpreters, if you could respect
2 the pause between questions and answers, and it would be easier as well if your
3 answers are, to the extent possible, concise.

4 Now, Mr Witness, it's correct, isn't it, that there's more than one method for
5 comparing voices? There's automatic speaker recognition, which is the method you
6 applied, but there's also auditory acoustic phonetic method, which involves
7 a phonetician analysing speech through critical listening and making measurements
8 of speech features.

9 A. [10:39:17] Yes, one could say that. I don't really like the term recognition,
10 because it's not a recognition of a voice from a database, it's a comparison. So we
11 talk sometimes about verification of a voice and we talk about voice comparison.
12 But you are right, there are several families of methods. There's the automatic
13 method with a semi-automatic variant, and there's a method which is audio acoustic
14 which uses linguistic and phonetic information.

15 Q. [10:40:03] I note your clarification. And it's correct, Mr Witness, that in
16 the mission letter you weren't asked to apply the auditory acoustic phonetic method,
17 you were only asked to apply the automatic speech comparison method and to apply
18 software of the type BATVOX?

19 A. [10:40:29] That is correct. The mission letter sent me immediately towards an
20 automatic system, but we couldn't have used the other system because we would
21 have had to (unclear) the language of the phonetics and we can only work in French,
22 but what you say is correct.

23 Q. [10:40:57] Now you spoke to the Prosecution before you received the mission
24 letter on 25 November 2019; that's correct?

25 A. [10:41:12] Yes, there are often contacts prior to establishing a mission letter so

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1 that it is the best -- so it is best suited to the mission to be undertaken.

2 Q. [10:41:27] And when discussing this issue of suitability, did the Prosecution
3 mention to you that they had BATVOX software?

4 A. [10:41:47] The BATVOX software was not supplied by the Prosecution, I
5 supplied it. It's the software we have in my laboratory.

6 Q. [10:41:59] I'm aware of that, Mr Witness. But did the Prosecution tell you that
7 they also had BATVOX software within the Court?

8 A. [10:42:13] No.

9 Q. [10:42:15] Do you recall speaking to the Prosecutor on 25 November 2019 in
10 relation to the type of material you would need for your analysis?

11 A. [10:42:36] I don't know. I don't have a full recall of the details of this
12 conversation.

13 Q. [10:42:46] Perhaps if we could tell turn to tab -- (Overlapping speakers)

14 A. [10:42:51] I didn't note it.

15 Q. [10:42:52] (Overlapping speakers) -- 75 of the Prosecution's binder. It's
16 MLI-OTP-0073-0768.

17 Actually, the French translation I think is at tab 25, I'm being told.

18 No, sorry, the translator made a mistake, it's tab 75 that you should be looking at.

19 Mr Witness, do you recall telling the Prosecution that you needed five minutes net of
20 comparison preferably comprised of at least 15 different interview files?

21 A. [10:44:20] I don't have a very clear recall of this conversation, but that would be
22 the ideal if we could have it, so it's quite possible that I did mention it in one of these
23 conversations.

24 Q. [10:44:39] Do you recall telling the Prosecution that you thought that the extracts
25 from the ICC hearing seemed too short?

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1 A. [10:44:59] I don't know whether it was in this conversation, but I was sent two
2 videos in which the voice extract of the person identified as Mr Al Hassan was too,
3 too short. We have to use an item of comparison and it's possible that these videos
4 and the length of the extracts were mentioned during -- as early as the first
5 conversation.

6 Q. [10:45:34] Well, if we could turn to the issue of the instruction letter as was
7 discussed earlier, in this letter the Prosecution identified known voice samples and
8 then questioned samples.

9 If you could turn to tab 77 of the Prosecution binder, that's MLI-OTP-0074-0534, and if
10 you turn to page 0543 it lists them, and then the known reference tracks are listed on
11 the subsequent pages.

12 Now, Mr Witness, if it's correct that the extracts from the hearings were too short, it
13 would also be correct that your report depended on the other interview recordings,
14 these would be those starting with the prefix MLI-OTP-0048; would that be correct?

15 A. [10:46:53] Absolutely.

16 Q. [10:46:56] And these were the recordings of interviews taken in July and
17 September 2017?

18 A. [10:47:14] I am not aware of the history of the files. I, as usual in my
19 methodology, to use the information provided, the date of record or internal
20 information when somebody says the date. If you say July 2017, I think I have noted
21 on page 10, 11 of my own report MLI-OTP-0069-9841 -- 42 and 43, and
22 the information I have there is from 13 July 2017 up to 17 July for the first series,
23 which is what we used for the voice modelling, and from 6 September 2017
24 to 11 September 2017 for a second series of recordings.

25 Q. [10:48:47] Thank you for that precision.

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1 Now I'm going to ask you some questions from your CV, which will not be shown to
2 the public, and I don't believe it will be necessary to go into private session. So just
3 be cautious not to mention any information that might identify you or your section.

4 Now, according to your CV, which is at tab 80 of the Prosecution's bundle, you've
5 attended expert group sessions of the ENFSI on voice recognition; that's correct?

6 A. [10:49:32] The ENFSI is a group which deals with voice comparison and voice
7 recognition and audio forensic processing of whatever type, and indeed I have
8 attended a number of groups of this type.

9 Q. [10:49:59] So are you familiar with the ENFSI methodological guidelines for best
10 practice in forensic semi-automatic and automatic speaker recognition? And a copy
11 is at tab 9 of the Defence bundle, it's MLI-D28-0004-1698.

12 A. [10:50:42] Do I know about these? Yes. Am I able to implement them
13 a hundred per cent? No. The implementation of all the good practices, best
14 practices of ENFSI is part of what we're doing in our laboratory and we're trying to
15 take on as many of these recommendations and guidelines as possible.

16 Q. [10:51:18] Can you turn to page 1753 of these guidelines, which refers to
17 the importance of documenting the methods and protocols used when doing these
18 types of examinations. And then page 175, which states - 1754, which states there
19 should be standard operating protocols addressing issues regarding the
20 documentation of examinations.

21 Mr Witness, did you follow an internal standard operating procedure or protocol
22 when you conducted this forensic analysis?

23 A. [10:52:07] Yes, I used a standard internal procedure, which I followed all of
24 what was being drafted of the protocols in the previous protocols and I added
25 a number of elements which are from the protocol company being drafted in which

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1 we are moving further towards the ENFSI practices.

2 MS COQUILLAUD: [10:52:44](Interpretation) I see that the screen, the witness is
3 looking at his screen, does he not have a copy of the Defence binder? That would
4 make his life easier.

5 PRESIDING JUDGE MINDUA: [10:53:03](Interpretation) Mr Witness, do you have
6 the Defence binder?

7 THE WITNESS: [10:53:06](Interpretation) I've only got one.

8 PRESIDING JUDGE MINDUA: [10:53:07](Interpretation) I think that's
9 the Prosecution binder.

10 Court officer.

11 Now the witness has the Defence binder, so you have the floor again, Ms Taylor.

12 MS TAYLOR: [10:53:39]

13 Q. [10:53:39] Mr Witness, can you turn to tab 2 of that binder, it's

14 MLI-OTP-0078-9278.

15 A. [10:54:02] I am somewhat confused by all these numbers, I'm not sure where I'm
16 supposed to be at the moment.

17 Q. [10:54:14] Can you look at the second tab in the Defence binder.

18 A. [10:54:22] Yes.

19 Q. [10:54:31] Are you familiar with this document?

20 A. [10:54:37] This is one of our internal documents explaining how we should carry
21 out a voice comparison using an automatic method. This is the document as it was
22 when we carried out the analysis.

23 Q. [10:55:01] And can you clarify for the Chamber whether you drafted this
24 document?

25 A. [10:55:18] I was part of the first drafting and then it was verified, so not simply

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1 reread but amended my colleagues in my laboratory who work in the same area.

2 Q. [10:55:36] So I note that you said that "This is the document as it was when we
3 carried out the analysis." Did you follow the procedures set out in this document?

4 A. [10:55:53] As always, I follow as best I could with extra elements, because as I
5 said we were currently changing, we were at the time changing our protocol so I
6 added various elements on a case-by-case basis. The document is being rewritten.
7 I mentioned the obligation to have a validation case-by-case, which was not in
8 the document at that time.

9 Q. [10:56:28] Can you turn to page 9281 of the document, looking at the fourth
10 paragraph starting "*Il procède ensuite*". Is it correct that this concerns the analysis that
11 should be done of the spoken content of the voice samples and it includes examining
12 various aspects of the voice, including the language used, accent, and the vocabulary,
13 including whether any unusual words were used; is that correct?

14 A. [10:57:13] This is correct. And we always do it when it's in French. But
15 I cannot speak for particularities of Arab vocabulary. I would add, I only know that
16 it was Arabic because it was mentioned in the mission letter. I don't speak Arabic
17 and I heard the kind of sound that makes me think that it was Arabic.

18 Q. [10:57:47] Now, Mr Witness, can you please explain for the Chamber why it's
19 necessary to follow these procedures, to examine them for these aspects?

20 A. [10:57:59] It's not necessary, but it is useful. When we are working with
21 a language with which we are familiar, French or English, for example, we have
22 observation of various elements which allow us to qualify the voices of the speakers.
23 For example, if there's overlapping speakers we can work out who has picked up
24 the conversation and that helps to us produce voice samples. This is why we don't
25 have the guide examples of this type, so I couldn't make voice samples of Arabic if

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1 the items had been more complicated in their structure. But I was guided by
2 the voice segments mentioned in the mission letter.

3 Q. [10:59:04] Mr Witness, given that you've attended these working groups, have
4 you followed the use of BATVOX in other jurisdictions?

5 A. [10:59:25] Well, regularly people report on their use of BATVOX or a similar
6 software for automatic voice comparison as part of how they work in their laboratory.
7 I know that some may work slightly differently from the way we work, but all report
8 on this usage.

9 MS TAYLOR: [10:59:56] Mr President, I have a series of about three questions, but
10 I'll be guided by you as to whether we should have the break now or whether I
11 should continue with the series of about three questions.

12 PRESIDING JUDGE MINDUA: [11:00:11](Interpretation) You are quite right,
13 Ms Taylor, it is 11 o'clock. We are therefore going to take a half hour break. We
14 will recommence at 11.30.

15 I see that the Prosecutor is on her feet.

16 MS COQUILLAUD: [11:00:26](Interpretation) A few seconds, it seems there's part of
17 the transcript missing. I don't know whether that was the problem with
18 the interpretation mentioned by the court officer. Page 23, line 14 to 20, there was
19 transcript in French but no interpreting into English. There will need to be
20 a correction applied there.

21 PRESIDING JUDGE MINDUA: [11:00:57](Interpretation) Would you like to ask
22 the question again to the witness or can the interpreters do that?

23 MS COQUILLAUD: [11:01:04](Interpretation) I think the interpreters can do that
24 based on the French version, because that's the authentic version, as that's what
25 the witness was speaking.

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- 1 PRESIDING JUDGE MINDUA: [11:01:21](Interpretation) So we will do as you
2 suggest. Thank you.
3 The hearing is adjourned.
4 THE COURT USHER: [11:01:26] All rise.
5 (Recess taken at 11.01 a.m.)
6 (Upon resuming in open session at 11.30 a.m.)
7 THE COURT USHER: [11:30:54] All rise.
8 Please be seated.
9 PRESIDING JUDGE MINDUA: [11:31:19](Interpretation) The session is resumed.
10 We will proceed with the counter-questioning of the Defence.
11 But before that, I see the Prosecution is on his feet.
12 MS COQUILLAUD: [11:31:34](Interpretation) For the report, that the team has
13 another member, Mrs Marie Claudine Umurungi.
14 PRESIDING JUDGE MINDUA: [11:31:48](Interpretation) Did she apologise?
15 MS COQUILLAUD: [11:31:51](Interpretation) No, she's come to join us for this
16 meeting, so that's Mrs Umurungi.
17 PRESIDING JUDGE MINDUA: [11:32:03](Interpretation) Thank you. Welcome,
18 welcome.
19 Ms Taylor, you have the floor.
20 MS TAYLOR: [11:32:07]
21 Q. [11:32:09] Good morning again, Mr Witness.
22 Do you wish to take your ...
23 If you could turn to tab 11 of the Defence bundle, that's MLI-D28-0004-1875, and if
24 you could turn to page 1903.
25 Specifically, this is a case in the United Kingdom and at paragraph 165, this details

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1 the testimony of a Professor French. And according to this paragraph, Professor
2 French explained that BATVOX measures the resonance characteristics of voice, but
3 this is only one aspect, and that two persons could have similar vocal tracks but differ
4 in accent or pitch.

5 Would you agree with that proposition?

6 A. [11:33:53] (Microphone not activated)

7 Q. [11:33:54] And would you agree that, unless these aspects are accounted for,
8 there could be a risk of false hits or unreliable results?

9 A. (Microphone not activated)

10 MS TAYLOR: [11:34:14] Sorry, Mr Witness, your microphone.

11 PRESIDING JUDGE MINDUA: [11:34:18](Interpretation) Your microphone,
12 Mr Witness, please.

13 THE COURT OFFICER: [11:34:20](Interpretation) Witness, could you put your
14 microphone on, please. It's on the bottom that says M-I-C, "Mic".

15 THE WITNESS: [11:34:39](Interpretation) What Peter French says is absolutely
16 correct from a theoretical point of view. The voice has many varied aspects.

17 BATVOX software, as well as others, focuses on one particular aspect to be
18 representative, but is only one characteristic of the voice.

19 Theoretically, there's no reason why that is the only qualifying point. It is possible
20 that several individuals do possess the same -- the same sequential frequency and
21 different individuals have voices that are extremely similar as far as this is concerned.

22 In the same way, if you only use the pitch, you can have two individuals that had
23 the same pitch, and if you use - what does Peter French say here? - if you look at the
24 accent, this is something that's unstable, so they could have a similar accent but
25 different voices. So, theoretically, Peter French is correct. But to say that there's

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1 a risk, likelihood ratio enables us to take a bit of distance from this. This is a result of
2 a specific analysis that does not claim to give any absolute indication as regards
3 the identity of the voice of the speaker. I think I included that in my report. If not,
4 it will be in my documents somewhere. It's not possible to indicate absolutely
5 whether two people have or have not the same voice.

6 Q. [11:36:49] (Microphone not activated)

7 A. [11:36:52] Sorry, this time I can't hear you.

8 Q. [11:36:54] I apologise. We have a microphone problem.

9 Thank you, Mr Witness, and thank you for reminding me about the microphone.

10 If we could now turn to paragraph 166 of the same document, it was put to the expert
11 that the use of different software could produce different results, which the expert
12 appeared to have accepted. And the expert further revealed that when using
13 another expert, Mr Harrison, as a test sample, BATVOX generated a likelihood ratio
14 of .8, which is not far from identifying Mr Harrison, the expert, as a suspect in
15 the case.

16 So, Mr Witness, it's correct, isn't it, that the assessment produced by BATVOX is only
17 an estimate?

18 A. [11:37:54] The BATVOX is only an estimate. I cannot answer specifically to
19 your question without knowing the details of the case. I don't know what technique
20 was used for calibration and I don't know whether 0.8 is close to the voice of the
21 witness. One is neutral, so 0.8 doesn't mean anything, just like 1.1 doesn't mean
22 anything. Furthermore, I did say it was not significant in my report. They could be
23 significant in some cases, but I don't know the details of this matter to formulate an
24 opinion. This paragraph I think is abstract and a bit out of the context of this case.
25 It's true there could be perhaps some nuances, but I cannot really give you any more

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1 details.

2 Q. [11:38:56] Well just to clarify, Mr Witness, the likelihood ratio being used in that
3 case was 1 or above, which I believe is the same as yours.

4 Now, it's correct that you have issues of extrinsic variability and intrinsic variability
5 that can impact on the reliability of the assessment?

6 A. [11:39:27] One or above, but to what extent above? 1.1 is not very significant.

7 I have likelihood ratios which is more than a hundred or 50, and that's completely
8 different. Yes, there are problems of intrinsic and intrinsic (sic) variability we often
9 in ENFSI call the calibration of the system, and in some acoustic contexts neutrality is
10 not at 1, that is what I measure with the validation on the curve.

11 So this paragraph makes sense if you have a system which is perfectly calibrated. So
12 I don't know the context of this case so I wouldn't like to comment on it. But, where
13 possible, we try to control what's going on in our particular case which we are
14 studying.

15 Q. [11:40:41] Mr Witness, I'm not putting questions on the case now. I'm asking
16 you in general, it's in terms of intrinsic variability factors, it's correct, isn't it, that
17 a person's speech or voice signature can change over time?

18 A. [11:41:07] Yes, of course. Voice variability over time is one of the elements.

19 Q. [11:41:17] And it's correct that this can lead to a mismatch if there's a gap in time
20 between the time of the questioned samples and the time that the known samples
21 were collected?

22 A. [11:41:36] Absolutely. In my personal experience, I have never met a case
23 where this effect creates as a false positive. People change their voice over time, and
24 this is the difference or gap they have in the voice, and it could either create a false
25 negative or a false positive. And then it's a question of experience.

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1 Q. [11:42:05] Now, in your report you also note that factors related to the health of
2 the speaker, their age, stress, or fatigue can affect voice patterns and lead to a possible
3 mismatch; that's correct?

4 A. [11:42:28] That's correct. The typical example is somebody who has a cold, has
5 a health problem that affects the sound problems or the system of producing
6 the sound. Regardless of analysis used, it does affect the results of the analysis. But
7 of course there are also other factors, general fatigue, the general health linked to
8 fatigue also play a part.

9 Q. [11:42:56] And whether someone is speaking freely or reading a text can also
10 impact on the results; that's correct?

11 A. [11:43:12] Correct. It depends on how the text is read. No, let me just check.
12 In my reference population, in my normalisation population, I checked that we didn't
13 only have speaking freely, I also had texts that were read out but they were texts of
14 individuals who could easily read a text, so the sound production was close to those
15 who would have a controlled read out, not a spontaneous discussion, but someone
16 which is similar to what we were studying, someone who was taking his time
17 and -- before actually responding.

18 Q. [11:44:10] Now, Mr Witness, can we turn to tab 9 of the Defence binder, that's
19 MLI-D28-0004-1698, and if you could turn to pages 1719, where it says that:
20 "Compensation for mismatched conditions is an important but difficult task in FASR
21 and FSASR. Currently, in forensic applications, it is not possible to remove
22 mismatch effects completely, but only to reduce their influence."

23 Would you agree with this?

24 A. [11:45:11] A hundred per cent.

25 Q. [11:45:15] Would you also agree that it's not possible to reduce the influence of

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1 mismatched conditions if you're not in a position to identify or assess the extent of
2 the mismatch?

3 A. [11:45:46] I don't know whether it's a difficulty in my understanding or
4 translation or whether yours is a very abstract question. It's too general for me to
5 give you a specific response.

6 Q. [11:46:02] Well, Mr Witness, you agreed that it's important to compensate for
7 mismatched conditions, and you agreed that it's not possible to remove the effects of
8 mismatch. Now, in terms of compensating for mismatched conditions, would you
9 agree that it's difficult to do that if you don't or are unable to identify the nature of
10 the mismatch?

11 PRESIDING JUDGE MINDUA: [11:46:43](Interpretation) * Madam Prosecutor.

12 MS COQUILLAUD: [11:46:45](Interpretation) For me, it is the same question that
13 has been repeated. It's too general. I think, once again, it is very difficult to answer
14 something that's so general in nature.

15 PRESIDING JUDGE MINDUA: [11:47:02](Interpretation) The question is general,
16 but I don't know. The witness expert perhaps can decide whether he can answer or
17 not.

18 Mr Witness, can you or can you not answer? At least try to answer, perhaps.

19 THE WITNESS: [11:47:20](Interpretation) In absolute terms it's never possible to
20 identify the totality of factors leading to the production of a voice sound because we
21 do not master all the equipment that was used, the sound background, if
22 the individual who is talking can use several accents or the person who is talking is
23 bilingual, multilingual, all sorts of elements which we cannot control.

24 As experts, we try to work with -- the best we can, with all the information we have,
25 as accurately as possible. I know my answer is general, but the question is

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1 open-ended.

2 MS TAYLOR: [11:48:15]

3 Q. [11:48:15] Thank you, Mr Witness.

4 Now, in the current case, all of the known voice samples that you judged to be of
5 a suitable quality came from 2017, five years after the date of the questioned samples.
6 So you had no known samples demonstrating the person of interest's voice pattern in
7 2012; that's correct?

8 A. [11:48:54] That's absolutely correct. I don't know the development of the voice
9 of Mr Al Hassan for five years. I don't know whether it's changed considerably or
10 not. I can only work on the material that was made available to me.

11 Q. [11:49:10] And the Prosecution gave you no information about the person of
12 interest's health, physical or mental circumstances in 2017; that's correct?

13 A. [11:49:33] I think it's probably dealt with initially. Those are elements which
14 we didn't have available which belong to others to include or not.

15 Q. [11:49:50] Now, in terms of extrinsic factors, I believe that you discussed this
16 earlier in terms of the impact of using different channels and variations in
17 microphones and background noise, and it's something you addressed by using
18 microphone recordings and not samples from telephone recordings; that's correct?

19 A. [11:50:28] Yes, that was the starting part. Intrinsic could also be
20 the development of the voice itself, which I cannot control in any way because I
21 haven't got the data to do so. And, in any case, I am not a physiological professional
22 so I cannot really comment further than that on that point.

23 Q. [11:50:56] Now it's correct, isn't it, that you didn't have information concerning
24 the distance of the speaker from the microphone in either the known or
25 the questioned samples?

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1 A. [11:51:17] I didn't have information on that. Often, what is hidden behind
2 the notion of likelihood ratio, that's to say I cannot quantify or qualify the distance to
3 the microphone, because that's not in my hands, but I can qualify the proper volume
4 of the voice, namely the maximum or average amplitude of the voice of the individual
5 who's being studied. And I know that amongst the volume factors there is
6 the regulation of the adaption of sound, the direction of the microphone and
7 the distance of the microphone. So I haven't got direct access to the information, but
8 I have an access to the consequences, and it's the consequences that's more important
9 to me in this process.

10 Q. [11:52:15] Now, in terms of the acoustics, your report doesn't refer to
11 information concerning the acoustics of the known samples, does it?

12 A. [11:52:34] It provides information on the observation on acoustics of the
13 recordings, because it's from the recordings that we work. And the physical
14 acoustics, namely the physical context of the microphone and the room or space is not
15 directly accessible. But we work on the basis of a recording, so not -- so we work on
16 the basis of the trace of the sound that has been produced and that's why the report
17 looks and observes the recording.

18 Q. [11:53:15] Now, in your report, you note that the use of acoustic enhancements
19 in the context of automatic voice comparison requires special precautions, and if you
20 go to tab 58 of the Prosecution binder, this is where your report is, it's
21 MLI-OTP-0069-9833 at 9854.

22 A. [11:54:15] Absolutely. By this we mean mathematical processing or computing
23 processing for a particular aim, to enhance the sound. And that means that we have
24 to use it with precaution.

25 Q. [11:54:34] Are you aware, Mr Witness, that according to the ENFSI guidelines,

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1 and they're set out at tab 9, it also has to be taken into account that, in a legal context,
2 audio enhancement might be considered as manipulation of the observed evidence?

3 And that text is at MLI-D28-0004-1698 at page 1712. Are you aware of that position?

4 A. [11:55:17] I don't know how the Court can ascertain this type of operation. I
5 did it with, to the best of my ability and detailing the methods that were used which
6 are not methods of cut and paste but algorithmic based. I provided
7 the mathematical and scientific elements which I used as a basis for the work I carried
8 out to the best of my ability. And afterwards it's up to the Court to decide.

9 Q. [11:55:57] And if they are characterised as an enhancement or a form of
10 manipulation of evidence, would that mean that a degree of caution should be
11 attached to finding based on enhanced recordings?

12 A. [11:56:23] I provided all the scientific reasoning which I used to make my
13 conclusions so that these are in accordance to what is required. Amongst the checks
14 and controls, the proceedings of validation was listed, several elements were rejected
15 because they were below elements which were deemed to be acceptable, the voice of
16 the interpreter as sample was amongst them. And there was the counter-analysis. I
17 carried out a second analysis without using any enhancement.

18 So from page 28 on the report, I only worked on one file because the others
19 were -- didn't meet our requirements. By exchanging the role of the comparison
20 piece and the questioned piece on this file, I could work without filters and obtain
21 a result which was less contrasted because the sound was less, but it went in
22 the same -- the area as regards my response.

23 And again, I did this to the best of my ability. It's up to you to decide. You, I mean
24 by that, the Court.

25 Q. [11:58:03] Thank you, Mr Witness.

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1 I'll turn to those other processes later, but I'd like to focus now on your enhancement
2 techniques. It's correct that you applied a denoising process to the samples before
3 enhancing them?

4 A. [11:58:37] Denoising is a generic term which covers all the techniques, electronic
5 or informatic techniques which not only withdraws the noise but sometimes amplifies
6 the sound which is of interest to us. The techniques we used, which is called
7 de-enhancement, or denoising, that's to say the part of sound is reduced. The noise
8 filters operate like that, for example, and the voice sound is amplified by a fixed
9 limited -- limitator and we regulate it according to the file we were working on.

10 Q. [11:59:24] Now, Mr Witness, can you turn to Defence tab 5, that's
11 MLI-OTP-0078-9236, and if you could turn to page 9247 of that document.

12 A. [11:59:49] I'm sorry, I didn't catch the number there correctly.

13 Q. [11:59:55] Tab 5 and the document in document 5, if you could turn to page 9247
14 and if you could look at the paragraph at the top, which notes that the denoising filter
15 can create distortions. It therefore recommends that it be used in the order of 10 to
16 15 decibels to avoid such distortions.

17 A. [12:00:30] Yes. Indeed, we tend to use it, the scale of 10 to 15 decibels
18 maximum in order to limit the distortion. If you go beyond 15 decibels it's what we
19 might call aggressive denoising, and that would then have to be monitored even more
20 closely.

21 Q. [12:00:55] Can you turn to your report, that's tab 58 of the Prosecution's binder,
22 MLI-OTP-0069-9833, and if we can turn to page 9869 of your report, which is the first
23 annex, it states that you used a reduction of 20 decibels when using the iZotope filter;
24 that's correct?

25 A. [12:01:37] Yes, indeed. Yes, indeed. So, in accordance with what I said, this

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1 was an aggressive denoising which we needed to use to get a true enhancement. But
2 at all times we needed to monitor it extremely closely to make sure we weren't going
3 to be deforming the voice. And so we have that audio control, but you'll see there's
4 also a lot of mathematical verification as well.

5 Q. [12:02:18] Can you turn back to -- I'm sorry to be going back and forth, but to
6 tab 5 of the Defence binder again, it's the same document you were just looking at,
7 MLI-OTP-0078-9236 and turn to page 9255. This -- 9255.
8 This lists the features of iZotope filler that are not generally used in the field of police
9 work. And of those features that are not generally used in the field of police work, it
10 includes the feature of ambient match; that's correct?

11 A. [12:03:37] Well, I would like to return immediately to this instruction to have as
12 a reference. The written indications, they were written with a view to this being
13 used for transcription. And now I'm using it in a context for which this instruction
14 was not designed, the instruction for use, for preparation for a validation population
15 has not yet been written, because the use of validation populations as we use them is
16 a fairly recent phenomenon, therefore we don't have the guidelines drafted yet. So,
17 in the context of the use of iZotope, for iZotope then 20 dB is not recommended, so we
18 don't use it very often. The Ambience Match or the equalisation match are not used
19 because they don't have any police application other than that's what has been done,
20 in other words, adding noise rather than removing it, so if we want to simulate
21 the presence of a noise and not to remove noise. This is why they're not described in
22 this document.

23 I didn't say we shouldn't use them in the document, I said that they are not useful.
24 So on this point the document is obsolete, there has now been an application found
25 which didn't exist at the time the document was drafted.

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1 Q. [12:05:46] Now, Mr Witness, it's correct, isn't it, that in your report you note that
2 you had not tested BATVOX software before for use with enhanced recordings?
3 And that's at page 9853 of your report, if you have it before you. It's tab 58 of
4 the Prosecution bundle and the full reference is MLI-OTP-0069-9833 at 9853, second
5 paragraph.

6 A. [12:06:42] I didn't say that I hadn't tested it. What this question -- this phrase
7 means is that there is no publication, no international publication in -- among
8 practitioners of this technique which is comprehensive how one would do it, this was
9 what type of regulations, what type of recording. This is because the types of
10 recording vary from case to case so this is why the ENFSI recommendation is to do
11 a validation on a case-by-case basis. It has to be done on every occasion, you have to
12 do a simulation study for every case, and that is indeed what we did.

13 Q. [12:07:42] It's also correct, Mr Witness, that your -- the standard operating
14 guidelines that you drafted, they also don't set out specific guidelines concerning
15 the use of enhanced recordings, do they?

16 A. [12:08:07] Quite so. The guidelines we wrote were written before
17 the introduction of validation on a case-by-case basis, so we only did this type of
18 acoustic enhancement to see how it went and then we didn't use it. We couldn't --
19 here, it had to be done because we couldn't carry out the analysis without this
20 auditory amelioration. So this is something that we do nowadays which we couldn't
21 do some years ago. We now have an additional monitoring tool available to us.

22 Q. [12:08:58] Now, Mr Witness, I would now like to turn to the validation exercises
23 that you conducted. So if we could go back to your report, which is
24 the Prosecution's tab 58, and if you could turn to page 9856, the full reference being
25 MLI-OTP-0069-9833 at 9856. And this is where you note that the validation should

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1 be done with models that have the same acoustic and voice patterns as the questioned
2 samples.

3 And this is where you note that the validation population should be in Arabic, but
4 because you didn't have Arabic you had to use French voices.

5 I believe you confirmed that this morning; that's correct?

6 A. [12:09:57] Yes, indeed.

7 Q. [12:09:59] Now, Mr Witness, did you take this French sample from the PTSVOX
8 database?

9 A. [12:10:24] PTSVOX, yes, indeed.

10 Q. [12:10:26] And you then tested the distribution by processing different samples
11 from the same speakers, with one sample acting as the questioned sample and one
12 sample acting as the known sample; that's correct?

13 A. [12:10:55] Any comparison means you have to have a sample for comparison
14 and a sample for examination. The two distributions are one with the samples for
15 comparison which come from the same speaker we know, and the second are
16 comparison for questions where we know that they don't come from the same
17 speaker.

18 Q. [12:11:18] And it's correct that you processed these samples in such a way to
19 reflect as closely as possible the conditions of the case?

20 A. [12:11:36] I don't know the conditions of the case. What I am simulating are
21 the acoustic conditions of the recording that comes from the case.

22 Q. [12:11:48] Now if you could turn to tab 15, this is MLI-D28-0004-2434, this
23 describes -- sorry, it's tab 15, the Defence binder.

24 A. [12:12:34] Yes.

25 Q. [12:12:35] This describes the PTSVOX database of containing the recordings of

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1 396 speakers, 225 male, 144 female, states the majority of the speakers were recorded
2 on one occasion and made both a microphone and telephone recording. A smaller
3 group of 12 men and 12 women made several recordings on different occasions.

4 Now, you took 22 male speakers from this database; that's correct?

5 A. [12:13:22] Yes, and these were not necessarily the 12 men recorded on multiple
6 occasions.

7 Q. [12:13:37] Now, because of the need to replicate conditions, you only relied on
8 recordings made with a microphone; that's correct?

9 A. [12:13:55] No. I also applied a number of simulations such as duplication of
10 background noise. As you said, using iZotope functions which are not generally
11 used by the police and also distortion using simulation functions in iZotope. I did
12 not only take microphone recordings, I also included in the simulation the part of
13 the degradation of the quality of the sound.

14 Q. [12:14:33] Just to be clear, Mr Witness, does that mean that you relied on
15 recordings that were telephone recordings?

16 A. [12:14:43] No, I based myself on a microphone recording and then downgraded
17 it.

18 Q. [12:14:52] Now, according to this document, there were only 12 men that made
19 recordings on different occasions, and you have said that you didn't necessarily rely
20 on those 12 men; that's correct?

21 A. [12:15:12] That's correct. I based myself on these 12 men, but also on others,
22 partly because the recordings of each person involved one session of spontaneous
23 conversation and one involving reading, which allows us to bring the variability of
24 the voice into the question because voice can change depending on whether you've
25 holding a spontaneous conversation or reading something. So I expanded my

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1 population to not to stick to 12 by including these and that gave me the variation
2 which was introduced by including recordings of people reading.

3 Q. [12:16:10] Now, apart from the 12 men, the others were only recorded on one
4 occasion. So to produce two samples for each speaker, did you cut the original
5 samples in two?

6 A. [12:16:32] No. Each voice recording which -- each occasion of voice recording
7 was split into two operations -- in fact, four. And the spontaneous discussion,
8 reading an easy text, spontaneous discussion on the telephone and reading the same
9 text or another text on the telephone, so I was based on the fact that each person for
10 each recording session had two distinct recordings, one being the spontaneous
11 conversation and the other reading the text, which brings into play other variations in
12 a voice because it's a different type of communication. So I used both spontaneous
13 conversation and reading of the text.

14 Q. [12:17:38] But just to be clear, Mr Witness, this one person producing these two
15 different samples was doing so on the same occasion?

16 A. [12:17:54] There were four samples for each recording. Two samples on
17 the phone and two recorded using a microphone.

18 Q. [12:18:07] Yes, and it was occurring on the same occasion?

19 A. [12:18:20] Yes, because if I were to limit myself to those with different days, I
20 would be back down to the 12 people. In the meantime, PTSVOX has expanded so I
21 would have more available to me, but I did it on the size of the database at the time I
22 carried out my analysis.

23 Q. [12:18:48] So, Mr Witness, if the samples come from the same occasion,
24 the acoustic conditions would have been the same, wouldn't they?

25 A. [12:19:04] What is identical if there is no variability is the variability, for example,

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1 minor changes in health, but we don't have that information. But if you have
2 a pause between two recordings, there might be changes in the room, movements in
3 the room, so the acoustics are not necessarily completely identical. And then of
4 course there's the variability in the voice depending on the context. So I calibrated
5 this and I calibrated as being very close to 1 so that we have a population that I
6 could use.

7 Q. [12:19:55] But, Mr Witness, would you accept that there's a difference between
8 conducting two samples on one occasion and comparing two samples which had
9 been issued over the space of five years in potentially very different conditions?

10 A. [12:20:20] Yes, there is a difference, but we can't have a validation population
11 with all these time delays so we weren't able to simulate that aspect. Particularly,
12 the evolution of a voice is very irregular, so I don't know how we would have been
13 able to simulate that.

14 Q. [12:20:42] Now, the second part of the validation test involved validating
15 the Arabic normalisation population; that's correct?

16 A. [12:20:57] Yes. This validation, as I said, was carried out on a French
17 population, so that was a mismatch between the validation population and
18 the standard population in terms of language. So there is a difference in the two, but
19 I was unable to do any better at the time.

20 Q. [12:21:30] And at page 9858 of your report, you predicted that it would be likely
21 to increase the likelihood ratios, this mismatch between languages; that's correct?

22 A. [12:21:58] I don't know whether I can express this simply, but I say that because
23 of this mismatch it is foreseeable that I would have an increase in the likelihood ratio
24 because the mismatch means there's an artificial increase and the likelihood
25 resemblance is used when the mismatch is great. And this validation did not allow

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1 me to quantify the calibration error.

2 Q. [12:22:43] Now, just to go back a little bit, when you say -- when you refer to an
3 overestimation of likelihood ratios and you say it can be seen in the graph, does this
4 mean that there was a shift to the right in the Tippett plot? At page 9858, you state
5 that the expected overestimation of likelihood ratios can be seen in the graphs. It's in
6 the last paragraph on the page.

7 A. [12:23:31] Yes, an overestimation can be seen in the graphs between 10, 12 of the
8 annexes. The Xs are somewhere between 50 and a hundred.

9 Q. [12:23:51] Now, it's correct, Mr Witness, that for the normalisation population to
10 properly perform its functions, its characteristics must match those of the known
11 recordings?

12 A. [12:24:13] Which characteristics are you referring to?

13 Q. [12:24:17] Would you accept at page 9856 you note the importance of language,
14 followed by the specific characterisations of the Arabic normalisation population?
15 It's at the top of the page.

16 A. [12:24:48] Yes, there has to be a correspondence with the models. The items for
17 comparison, they need to be as close as possible to the models. And language is not
18 a major factor, that is sex and being aware of the difference being introduced by
19 the channel. But when we say that there is a correspondence that should be as close
20 as possible, that means that sometimes you're not working with the same languages,
21 but languages which have similar properties, such as same linguistic group, and since
22 this was Arabic I worked with Arabic.

23 Q. [12:25:39] Do you recall [REDACTED]
24 [REDACTED] a Dutch expert David van der Vloed?

25 A. [12:25:57] Yes.

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1 Q. [12:25:59] (Overlapping speakers) turn to tab 10 of the Defence bundle, that's
2 MLI-D28-0004-1795, if you could turn to page 1835, [REDACTED] Mr van der Vloed
3 had important theoretical knowledge concerning studies regarding general and case
4 validation techniques; that's correct?

5 PRESIDING JUDGE MINDUA: [12:26:53](Interpretation) Prosecution.

6 MS COQUILLAUD: [12:26:55](Interpretation) I think we should be very cautious
7 here. I think this could be * identifying.

8 PRESIDING JUDGE MINDUA: [12:27:08](Interpretation) Yes, you're quite correct.
9 We should move into private session. Court officer, if you please.

10 MS TAYLOR: [12:27:15] I'm sorry, Mr President, it's not necessary to move into
11 private session as no further questions will be asked on that document.

12 THE COURT OFFICER: [12:27:28] We are still in open session, for your information.

13 PRESIDING JUDGE MINDUA: [12:27:33](Interpretation) But there is a risk of
14 identifying the expert.

15 Private session, if you please.

16 (Private session at 12.27 p.m.)

17 THE COURT OFFICER: [12:27:53](Interpretation) We are in private session,
18 your Honour.

19 PRESIDING JUDGE MINDUA: [12:27:58](Interpretation) Thank you very much,
20 court officer.

21 Ms Taylor, if you would like to put your question now.

22 MS TAYLOR: [12:28:04]

23 Q. [12:28:04] I believe it was put to the witness already. Is it correct that, [REDACTED]
24 [REDACTED] Mr van der Vloed had important theoretical knowledge
25 concerning studies regarding general and case validation techniques?

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1 A. [12:28:30] [REDACTED] I think it was -- it was the case that he had done
2 a lot of work on the validation of software, BATVOX in particular, as well as other
3 British software. And he had used it in a lot of different contexts and published
4 tables which are often used as a control when using this software. It's very
5 important for there to be general publications like that, but in particular he showed,
6 he illustrated the importance of different factors, which led us to pay particular
7 attention to the validation of process used by ENFSI. In the meantime, our protocols
8 have evolved. They're not quite drafted fully yet, but they have been stabilised.
9 And I think that the Dutch practice has also changed, needed to have -- because of the
10 description -- or, the description of the files. [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 Q. [12:30:11] Now, Mr Witness, I believe we can go into public session if we don't
14 mention [REDACTED]

15 PRESIDING JUDGE MINDUA: [12:30:26](Interpretation) Court officer, public
16 session, please.

17 (Open session at 12.30 p.m.)

18 THE COURT OFFICER: [12:30:36](Interpretation) We are in public session.

19 PRESIDING JUDGE MINDUA: [12:30:42](Interpretation) Thank you.

20 Mrs Taylor, please continue.

21 MS TAYLOR: [12:30:46]

22 Q. [12:30:46] Mr Witness, are you aware of the studies that have been conducted by
23 Mr David van der Vloed concerning the consequences of language mismatches
24 between the normalisation population and known samples?

25 A. [12:31:08] I have read his work. If you're questioning me about a detail of an

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1 article, I might not be able to answer specifically without having the article in front of
2 me.

3 Q. [12:31:20] Thankfully, we do. So if we could turn to tab 22 of the Defence
4 bundle. It's MLI-D28-0004-2812. This is an article, isn't it, concerning
5 the consequences on the likelihood ratio when using different language populations?
6 And if we could turn to page 2818, if we could look at the left column, Mr van der
7 Vloed refers to a study indicating that a right shift pattern, that is an overestimation
8 of likelihood ratios, can also apply where there's a dialect mismatch.

9 A. [12:33:08] Sorry, I can't find the bit that you're talking about.

10 Q. [12:33:15] It's on the left column, it starts with: "A right shift pattern under
11 language or dialect mismatch between text language and relevant population has also
12 been shown by Hughes & Foulkes and Morrison et al."

13 A. [12:33:39] Yes. Yes, I see it, right shift pattern where there could be a mismatch
14 when there is a gap in the language or a very heavy dialect.

15 Q. [12:34:03] Now if we could bring up tab 23 of the Defence binder, that's
16 MLI-D28-0004-2820. This is an article, 2020 article, by Dominic Watt and others, and
17 the two experts I mentioned previously, Philip Harrison and Peter French.

18 And if we could turn to page 2831. And if you could look at the second paragraph,
19 the authors note that different languages are characterised by different vocal tract
20 settings. They then address the point that within languages different accents may
21 have different vocal tract settings. They also hypothesise that this same right shift
22 effect that is seen with different language may also be seen if the reference population
23 has accents which are different from the known samples.

24 PRESIDING JUDGE MINDUA: [12:35:54](Interpretation) Madam Prosecutor.

25 MS COQUILLAUD: [12:35:55](Interpretation) I cannot follow. Could you perhaps

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1 provide us again with the paragraph on 0004-2831. Where's the exact spot?

2 MS TAYLOR: [12:36:10] It starts with:

3 "It is widely known that different languages are characterised by different vocal tract
4 settings (e.g. French has a high degree of nasalisation and lip rounding; Russian has
5 pervasive palatalisation). However, within languages different accents may have
6 their own distinctive settings."

7 Q. [12:37:08] Now, if we could turn to page 2847, they set out the results --

8 PRESIDING JUDGE MINDUA: [12:37:18](Interpretation) * Madam Prosecutor.

9 MS COQUILLAUD: [12:37:20](Interpretation) Sorry, what was the question, because
10 the witness hasn't offered any explanation?

11 PRESIDING JUDGE MINDUA: [12:37:30](Interpretation) Yes. Perhaps Mrs Taylor
12 has indicated the page, but I wasn't aware of the question that you put.

13 MS TAYLOR: [12:37:40] Mr President, I believe that the two issues need to be read
14 together. Unfortunately, we don't have the chance to sit down with the witness and
15 read articles with him so, out of fairness to him, it's better that he reads this and then
16 reads the conclusions of the authors based on their empirical studies.

17 PRESIDING JUDGE MINDUA: [12:38:01](Interpretation) You're right. Continue,
18 please.

19 MS TAYLOR: [12:38:06]

20 Q. [12:38:06] So if we can turn to page 2847, and please take your time to read it,
21 but here, after analysing the results of their empirical research, the authors conclude
22 that the same right shift effect was produced through accent mismatches. And they
23 further recommend that:

24 "Since an accent-mismatched reference population can, paradoxically, lead to
25 artificially high same-speaker likelihood ratios compared with those that would be

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1 obtained with a well-matched reference population, it may appear appropriate to
2 apply a compensatory left shift to comparison results. However, the effect seen in
3 our Tippett plots only demonstrates an overall shift in the results, and does not reveal
4 the extent of the effect for individual speakers."

5 Mr Witness, have you had a chance to read the page?

6 A. [12:39:31] Yes. Here are you referring to my work or that of Harrison? Your
7 question relates to the work or that of Peter French, Harrison.

8 Q. [12:39:53] My question, Mr Witness, is would you agree that an
9 accent-mismatched reference population or normalisation population can lead to an
10 artificially high same-speaker likelihood ratio?

11 A. [12:40:24] Yes, it's possible. Reference population is used for what I call
12 "*population de normalisation*". The dissymmetry between the reference population and
13 the speaker when it's linguistic means that's an overestimation of likelihood, which is
14 what I have written. The simulation under which I worked had a strong mismatch
15 between the reference population, which was French, and the reference population
16 which was Arabic. This meant, in a predictable way, a shift to the right and an
17 overestimation as regards likelihood. So, in my simulation, the likelihood ratio was
18 overestimated. Therefore, I cannot scientifically attest as regards the perfect match
19 between my reference population and the expression of the individual, which is
20 Mr Al Hassan, in the recordings.

21 So, there could be a shift from the observations that I was -- made, there might be
22 a slight overestimation. I use the interpreter to assess this overestimation risk and,
23 from the interpreter's point of view, I received results that we were in compliance,
24 that conformed.

25 At least in one of the videos, it was not possible that Al Hassan was the same speaker

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1 at the same time. And I noted that H1 hypothesis, the difference of the speakers was
2 only sustained for one of the speakers, so there was a slight difference between my
3 normalisation population and what I needed, so the shift wasn't enormous and didn't
4 jeopardise or question my conclusions.

5 Perhaps we could move the cursor a bit to say it supports more or less, but my
6 interpretation derive from my observations.

7 Q. [12:43:22] Now, Mr Witness, you have said today that you don't know
8 the dialect that Mr Al Hassan spoke. Is it also correct that you don't know the dialect
9 the interpreter spoke?

10 A. [12:43:40] Yes. That's why I had a second carrier. I wasn't happy to have only
11 the interpreter. But we also had H2 in the video and that helped me in my
12 interpretation. We've had to face some cases that were more difficult to interpret.
13 I am aware of all the restrictions or limits we have, but I was able to make an
14 interpretation.

15 Q. [12:44:13] But, Mr Witness, since you didn't know whether the dialect of
16 Mr Al Hassan and the interpreter were the same, you weren't in a position to assess
17 whether the software would perform in the same manner with their different
18 dialects?

19 A. [12:44:33] No, I didn't say the conditions were similar. They are similar in
20 the conditions of recording, they are similar because they are speaking the same
21 Arabic language, and they are similar because I had the same reference population.
22 If they -- different dialects, which makes a big difference, it wasn't perceptible for my
23 ear, that's all I can say. Therefore, I didn't only use the interpreter, I multiplied or
24 increased the tests I used.

25 Q. [12:45:12] So, Mr Witness, you don't understand Arabic, we've established that.

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1 And it would be correct to say you would not be in a position to identify differences
2 in Arabic dialect and you would not be in a position, therefore, to identify whether
3 the Arabic interpreter was closer to the normalisation population than Mr Al Hassan?

4 A. [12:45:43] Yes, that is correct. I can only state that there is a lesser or greater
5 similarity, but not more than that.

6 Q. [12:45:56] And with only one or two voice samples, that's not a very large
7 validation test, is it, using the interpreter and this other person?

8 A. [12:46:19] Yes, I have the studies that precedes me, I only have this. That is
9 the limits of the study that precede this. We can't be more specific than that, that's
10 why I mentioned it in my conclusions. You have to bear in mind that element in
11 the final conclusions.

12 Q. [12:46:41] Now if we can go to your conclusions -- actually, before going to your
13 conclusions, can we go to tab 9 of the Defence bundle. It's ENFSI guidelines,
14 MLI-D28-0004-1698, and if we could turn to page 1750 of tab 9.

15 A. [12:47:35] I have got the -- I haven't got the page number, could you repeat that,
16 please.

17 Q. [12:47:43] 1750. And these recommendations essentially state the conclusion
18 should be formulated as a likelihood ratio or expressed as a verbal equivalent of
19 a likelihood ratio.

20 Would you agree, Mr Witness, that in order to interpret this, it's important to have an
21 indication of the numerical scale used to reach these conclusions?

22 A. [12:49:15] Yes. The results we have in our report are not used because it creates
23 an impression of automatic elements and does away with the idea of interpretation
24 which we try to highlight. But if you want, like me, to find the scale, I can find it.

25 Q. [12:49:50] Is it the same scale that's at page 9286 of your standard operating

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1 procedure? I believe that's tab 2.

2 A. [12:50:31] 9206?

3 Q. [12:50:36] 9286.

4 A. [12:50:38] Yes, yes, yes. That's correct.

5 Q. [12:50:48] So just to confirm, Mr Witness, was this the scale you applied in this
6 analysis?

7 A. [12:50:53] Yes. Yes, that is it, with terms of H1 and H2, but it's the same scale.

8 MS TAYLOR: [12:51:10] I would just like to have permission to go into private
9 session.

10 PRESIDING JUDGE MINDUA: [12:51:22](Interpretation) Closed session, please.

11 (Private session at 12.51 p.m.)

12 THE COURT OFFICER: [12:51:29] (Interpretation) We are in closed session.

13 PRESIDING JUDGE MINDUA: [12:51:33](Interpretation) Thank you.

14 Mrs Taylor.

15 MS TAYLOR: [12:51:37]

16 Q. [12:51:38] Now, Mr Witness, at the end of your report it states that it's archived
17 with [REDACTED], could you clarify who has access to it?

18 A. [12:52:03] If you look at [REDACTED], a digital copy of the report,
19 a digital report which was transmitted with this report, and the elements are as we
20 sent to you at your request some weeks before I came here. Who has access to these
21 archives? Probably the IT maintenance section, and the members of my team. And
22 of my bosses, the audio-visual section, the head of audio-visual, and also the person
23 who's responsible for the software we use in general.

24 Q. [12:53:02] Is it possible for anyone outside these sections to access it for
25 the purpose of domestic investigations?

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1 A. [12:53:23] If "external elements" you say another member of my service, yes, it's
2 possible. The archives are done at the end of the analysis, they're not done as things
3 progress. During the work, we work with our own staff, but the copies are made for
4 when it's needed. But at the end, for archiving, amongst the individuals other than
5 me who can have access to it, for example, other members of staff, there is a hierarchy,
6 and probably people involved in the IT maintenance would have access. At least
7 those are the people involved in my section.

8 Q. [12:54:24] Mr Witness, was the contents and conclusion of your report subject to
9 any form of peer review?

10 A. [12:54:38] In my service or in my section, yes, but only people exclusively in my
11 section.

12 Q. [12:54:48] Are you able to provide their names and titles?

13 A. [12:54:58] I'm not quite sure. I have trouble with that question, but if you really
14 insist I could do it, but I hesitate a bit.

15 PRESIDING JUDGE MINDUA: [12:55:14](Interpretation) Mr Witness, you can give
16 it to us, because this is a private session and it won't go any further.

17 THE WITNESS: [12:55:27](Interpretation) Generally speaking, I don't know who
18 read it, but I think it was read -- [REDACTED], who's audio expert for voices, she
19 works with automatic recognition. And probably was also reread by my colleague
20 [REDACTED], and probably by [REDACTED], my boss, as regards
21 the comprehensivity, to see that it was understandable by someone who's not really
22 so familiar with the subject matter. It was also verified by the head of service at that
23 time to make quite sure that it was legally acceptable.

24 THE COURT OFFICER: [12:56:23] Could we have a spelling of the names, please.
25 At least the surnames, thank you. For the records.

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1 THE WITNESS: [12:56:39](Interpretation) [REDACTED]

2 [REDACTED] My boss is [REDACTED] I think there was
3 a scientific reading, but I can't remember his family name. [REDACTED]

4 [REDACTED]

5 MS TAYLOR: [12:57:25]

6 Q. [12:57:26] Do you recall when this peer review took place?

7 A. [12:57:35] When I was finalising my report. It's dated and signed
8 28 February 2020, so it should have been reread the days immediately following on
9 that.

10 Q. [12:58:00] And during this review process, did any of the reviewers make any
11 suggestions for changes.

12 A. [12:58:24] I can't remember. Sometimes it happens, but I can't remember for
13 this particular report.

14 Q. [12:58:30] Did you speak to the ICC Prosecution concerning your findings before
15 you signed and finalised the report?

16 A. [12:58:40] I don't think so. It could happen. In practice, [REDACTED], we are
17 authorised to do so, so perhaps I did it spontaneously, but I can't really remember.
18 But talking with the Prosecution or with our instructions doesn't really change much.
19 Maybe there would be a reformulation here and there, but it never meant that it
20 changed any of my conclusions.

21 Q. [12:59:28] Now, Mr Witness, the mission letter was addressed to both you and
22 [REDACTED], and I believe you're [REDACTED]. When she was preparing her
23 report, did you review it?

24 A. [12:59:51] I examined the report of [REDACTED] I think she also might have
25 looked at mine, but did not -- not signed it, but I can't quite remember. Yes, but I did

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1 read it.

2 Q. [13:00:05] Did you suggest any changes?

3 A. [13:00:15] I'll give you the same answer, I can't recall. But if I made some
4 changes, then it was just for clarification of a sentence here and there and no change
5 in the conclusion. Each expert is responsible for their own report.

6 Q. [13:00:36] Did you follow the testimony of [REDACTED] when she testified before
7 this court?

8 A. [13:00:49] No, I did not.

9 MS TAYLOR: [13:00:52] It's 1 o'clock, Mr President, we break now?

10 PRESIDING JUDGE MINDUA: [13:00:59](Interpretation) That depends, Ms Taylor,
11 how much more time do you think you would need?

12 MS TAYLOR: [13:01:06] It's hard to predict, but I would say 20 minutes.

13 PRESIDING JUDGE MINDUA: [13:01:22](Interpretation) I will consult with my
14 colleagues.

15 (Trial Chamber confers)

16 PRESIDING JUDGE MINDUA: [13:01:38](Interpretation) Ms Taylor, since we are
17 talking only about 20 minutes, the Court can continue, but the, the court officer
18 should ask the interpreters.

19 Please check with the interpreters, court officer, and the court reporters.

20 THE COURT OFFICER: [13:02:10](Interpretation) Well, there's one positive sign on
21 my right and three on my left, so I take that to mean that the interpreters are happy to
22 continue.

23 Thank you.

24 PRESIDING JUDGE MINDUA: [13:02:19](Interpretation) Thank you, court officer,
25 for this rapid consultation.

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1 So, Ms Taylor, the idea is to conclude this and not to come back for an afternoon
2 session. Please continue.

3 MS TAYLOR: [13:02:30] Excellent. Thank you very much.

4 And thank you to the interpreters for their forbearance.

5 I believe we can go into open session as well.

6 PRESIDING JUDGE MINDUA: [13:02:44](Interpretation) Open session, please,
7 court officer.

8 MS TAYLOR: [13:02:52]

9 Q. [13:02:53] Now, Mr Witness, if you could turn to --

10 (Open session at 1.02 p.m.)

11 THE COURT OFFICER: [13:02:54] We are in open session.

12 MS TAYLOR: [13:02:57] Pardon.

13 Q. [13:02:57] Mr Witness, if you could turn to tab 9 of the Defence bundle, this is
14 the ENFSI guidelines again, MLI-D28-0004-1698. If you could turn to page 1735.

15 If you could look at the last paragraph, which concerns the issue of cognitive bias.

16 Would you accept, Mr Witness, that given the human element of interpretation
17 involved in the interpretation of BATVOX results, it's important to guard against
18 cognitive bias?

19 A. [13:04:08] As soon as one carries out some form of interpretation one has to be
20 very cautious about cognitive bias, but one can never eliminate all risks of it.

21 Q. [13:04:24] And it's correct, isn't it, that during the call of 29 November 2019, that
22 the Prosecution told you about the case and it's context?

23 A. [13:04:45] Honestly speaking, that didn't really -- I don't really have much
24 memory of what I discussed with the Prosecution at that stage. I have to say that I
25 have very little information about the detail of the case and nor did I look into it very

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1 much. I know the general framework of the case. I know that appearing before
2 the International Criminal Court is important and that there are things at stake in
3 such a case.

4 Q. [13:05:30] Now, you received voice samples and photos from the confirmation
5 hearing, so you knew that the defendant was a person of interest; that's correct?

6 A. [13:05:55] That the person was a person of interest, that there had been an
7 investigation into person, yes, obviously. That comes out of the comparison items.

8 Q. [13:06:13] And at page 9843 of your report, you don't refer to him as a person of
9 interest, you refer to him by name, "Mr Al Hassan"; that's correct?

10 A. [13:06:43] It is customary in our way of writing to never write "the suspect",
11 "the person investigated", but to take a step back and to use the name of the person if
12 we have this information. The information that the person questioned was
13 Mr Al Hassan was not in the mission letter, but this is what he was called by
14 the interviewer on regular occasions, so having listened to this, having listened to
15 the recordings that had been given to me, the name appeared. It's a conventional
16 name, and one can sometimes use nicknames.

17 Q. [13:07:42] So just to be clear, Mr Witness, you listened to the recordings of
18 the interviews with Mr Al Hassan?

19 A. [13:07:53] Of course. If not, I don't know how I would have been able to have a
20 technical scientific reflection on the quality of the recordings or how I could monitor
21 the word of my colleague who was working on this under my supervision, so I did
22 listen.

23 Q. [13:08:18] Now, if we could turn to tab 2 of the Defence bundle, this is your
24 standard operating protocol, MLI-OTP-0078-9278, and if we could turn to page 9286,
25 this has the scales that we looked at before. And we can see that the numeric value

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1 of 33 to 100 equates to a finding of *renforcé*, or reinforce, and to be strongly reinforcing
2 it has to be a hundred and up; that's correct?

3 A. [13:09:05] Yes, a hundred and above is strongly reinforcing and 33 to a hundred
4 is reinforcing.

5 Q. [13:09:17] Now, if we can go to page 9287, the guidelines specify that the expert
6 may slightly modify the conclusions if, based on the expert's experience, the expert
7 believed that either a right shift or a left shift in the likelihood ratio is warranted. So
8 if there was a left shift you can increase the results upwards, and if there was a right
9 shift you can reduce it; that's correct?

10 A. [13:09:58] The verbal scale is a scale of interpretation. It takes into account
11 the likelihood ratio produced by the software and it introduces the expert's
12 interpretation, as you're talking about this right or left shift, and formulates a final
13 conclusion, a final interpretive position based on these considerations.

14 Q. [13:10:27] Now if we can go back to your report at tab 58 of the Prosecution's
15 binder, and if we could look at page 9860, and this refers to a test that you mentioned
16 earlier today where you switch things around, you use recording 19 as a known
17 sample and then use the known sample as questioned samples. And I believe again
18 you used a French validation population and again you saw a right shift of
19 the inflated likelihood ratios; that's correct?

20 A. [13:11:22] For the same reason as before, I saw that there was a right shift, so I
21 thought it came from the poor match between the French validation population and
22 the other population which was in Arabic.

23 Q. [13:11:43] Just to be clear, we saw the right shift at page 9877 using the French
24 validation population, and also at page 9878 using the Arabic normalisation
25 population.

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1 A. [13:12:12] You've moved on to the graphs, have you?

2 Q. [13:12:17] Yes.

3 A. [13:12:28] Yes.

4 Q. [13:12:32] Now, we saw a language shift here, but you didn't account for
5 the dialect shift, did you?

6 A. [13:12:53] Indeed, I answered this question for the previous analysis and my
7 answer is exactly the same. I see empirically a shift with the French normalisation
8 population in which we have an *abscisse* which is under 1, and we see the other figure
9 is Arabic with the validation in French. Like last time, we have no indication on
10 the right shift in the precise conditions of the comparison, so I couldn't quantify this
11 calibration, it was just a question of adding extra controls.

12 Q. [13:13:56] Now, if we could turn to the page 9862 of your report, doing this
13 switch, the highest value that you produced was 99.117. You therefore state that
14 these values either reinforce or likely reinforce -- or, lightly, not likely, the likelihood
15 that the speaker in the questioned video is the same as the known sample.
16 Now, it's correct, isn't it, that the results produced by BATVOX aren't affected
17 depending on whether you're comparing a known sample with a questioned sample
18 or if you switch them around?

19 A. [13:14:50] During the first comparison, in one sense one had higher likelihood
20 ratio. When we did it in the other direction, we had a likelihood ratio which we had
21 ratios which were lower. And in the inversion I -- not only the inversion, there was
22 also the fact that I removed the denoising, so we were looking -- and from
23 point -- operational point of view, this inversion classic -- this is an asymmetric result
24 with trends, tendencies. It's not necessarily, digitally speaking, exactly the same.

25 Q. [13:15:52] But you would accept, Mr Witness, that in terms of the trend,

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1 the trend was that you got a weaker result?

2 A. [13:16:06] But there's always a strengthening of the prior identification with
3 the comparison of 11 to 17, and I've got a strengthening of the difference of voice with
4 the interpreter. The difference is on the level of the scale between reinforces and
5 reinforces strongly.

6 Q. [13:16:38] Exactly. And at page 9863 of your report, even though you only got
7 a "reinforce" result, you state that your conclusion from this analysis, which equated
8 to a supporting or lightly supporting the hypothesis, strongly supports the hypothesis;
9 that's correct? At page 9863.

10 A. [13:17:14] No, no. I have said verification calculation was carried out for 19,
11 and the --

12 THE INTERPRETER: [13:17:27] I'm very sorry, he read that very fast.

13 MS TAYLOR: [13:17:32] Sorry, Mr Witness, can you slow down for the interpreters,
14 we're not getting your response. And it's possibly you're not getting questions.

15 THE WITNESS: [13:17:41](Interpretation) I wrote as follows:

16 "Verification calculations were carried out for 19, and it only. The results confirm
17 the trends which come from the comparison." I didn't say the results in this scale
18 were the same, I said that the trend that was visible was the same. I am more
19 conscious in the way I express myself. I didn't say that the results were absolutely
20 identical.

21 Q. [13:18:18] That wasn't the question I put to you, Mr Witness. In what you
22 wrote, you said that the results strongly support the hypothesis. Would you accept
23 that the word "strongly" there might be inappropriate?

24 PRESIDING JUDGE MINDUA: [13:18:34](Interpretation) Prosecution.

25 MS COQUILLAUD: [13:18:35](Interpretation) Two things:

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1 Firstly, I think that the witness did understand the question.

2 And secondly, I was on 9863 and it says results strengthen lightly -- or reinforce,

3 slightly reinforce, so there are two elements there. If reading the question, it would

4 be good to be precise and to give the exact reference, please.

5 PRESIDING JUDGE MINDUA: [13:19:19](Interpretation) Thank you, Prosecutor.

6 Ms Taylor.

7 THE WITNESS: (Overlapping speakers)

8 MS TAYLOR: [13:19:23](Overlapping speakers) We are referring, though, to

9 page 9863, so we are being quite specific here. That was the page reference I gave to

10 the witness.

11 THE WITNESS: [13:19:41](Interpretation) If I may answer the question that was

12 asked to me twice, I did not say that the results of the second analysis confirm

13 the results, but in the body of the text I said it confirms the trends that are emerging.

14 And in what I wrote here in the conclusion, I only give the first comparison which

15 was asked in the mission letter, the second control is an addition that I carried out as

16 a means of control.

17 Q. [13:20:35] Mr Witness, I wasn't talking about your conclusions, I was talking

18 about page 9863 where you inserted the word "strongly" in relation to your control

19 test.

20 But I can move on.

21 A. [13:20:56] The final paragraph, these results correspond for support of the

22 hypothesis of identity and so on, it applies to the whole of the analysis. It's a

23 summary before the summary, if you like.

24 Yes, perhaps I should have given it its only little title, this final paragraph.

25 Q. [13:21:20] Okay, so if we're going to move that paragraph on to the next page,

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1 we can address it together. Now, according to your standard operating procedures,
2 if there's a risk that the likelihood ratios have been inflated due to mismatches
3 between the evidential sample and the normalisation population, the expert should
4 consider downgrading them; that's correct?

5 A. [13:21:55] If I have to look at this, I have to follow. Let me -- I'm going to go
6 into the figures. If I have likelihood ratio there very close to a hundred, I would
7 have been more cautious in my wording. The majority of likelihood ratios are
8 higher than a hundred. I have several that are higher than 200 and I have some that
9 are even higher than 500. I felt that even amending the results I still had a very firm
10 basis. If you would like to say something support, it's something between support
11 and high strong support. If you would like me to reformulate it, it would remain in
12 those borders.

13 Q. [13:22:52] Now, Mr Witness, my question was: You observed a right shift due
14 to language mismatch; that's correct? You note this in your conclusions as well at
15 page 9865. And you say that this mismatch affected the probative value of your
16 findings lightly. But, Mr Witness, you have already testified today that you don't
17 know exactly how much it affected them, do you? You couldn't calibrate that?

18 A. [13:23:42] If I could have calibrated it, I would have included it specifically in
19 my scale of interpretation. We cannot calibrate it, then I would have to just account
20 what I have observed, for example, the comparison with the interpreter, the two
21 individuals in video 21. Bearing that in mind, I still maintain that support is strong
22 because of the consistency of all the results observed. But, I introduce this statement
23 in my conclusion that I was saying that this was an interpretation based on several
24 elements and I cannot calibrate it more specifically, because I'm in a context which
25 will not allow me to do so.

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1 I would have been surprised or very surprised, given my experience, of individuals
2 who speak Arabic with a completely different dialogue where there would be
3 a mismatch between the interpreter and Mr Al Hassan, where the mismatch would
4 lead to behaviour that was completely different than that of the software. And if
5 there was an over-calibration for Mr Al Hassan, it would have meant the same thing
6 for the interpreter. Perhaps less, because they might have spoken a different dialect,
7 but there would have been an overestimation that was high. This is my
8 interpretation on the basis of the different elements which I have included in my
9 conclusion.

10 Q. [13:25:36] Well, Mr Witness, what you have just said doesn't take into account
11 the possibility that the interpreter's dialect might have been closer to
12 the normalisation population than that of Mr Al Hassan. And you're not aware of
13 the specific dialects that we're talking about here, are you?

14 A. [13:26:01] Perhaps you haven't quite understood what I said. I have taken into
15 account this possibility, I know it exists, but with 10 years of practical experience I
16 have never seen a normalisation population, even if there's a mismatch because of
17 dialect leading to a completely different behaviour than the one you observe from
18 the one of the interpreter and the voice of Mr Al Hassan. I have never witnessed
19 that. Perhaps there might be an article who has seen that effect, but I have never
20 seen it. I think even if I have used a different population, a normalisation population
21 that was even more different, I would have still observed a result that I could have
22 interpreted. This is only my personal experience leading to a mismatch or different
23 behaviour because of the differences in the two parties.

24 Q. [13:27:15] Now, Mr Witness -- I have only got a couple of questions.

25 PRESIDING JUDGE MINDUA: [13:27:22](Interpretation) The time which you

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1 requested has now been exceeded, the recording *bandes* won't work anymore after
2 two hours. I think you need to reach your conclusions.

3 MS TAYLOR: [13:27:34] I was about to do so.

4 Q. [13:27:36] So, Mr Witness, you've accepted that a language mismatch affects
5 probative value. Now, Mr Witness, it's correct, isn't it, that your conclusions should
6 have also reflected the mismatch caused by time, the time gap between the known
7 samples and the questioned samples, the conditions that you couldn't calculate
8 regarding age, health, fatigue - and if the Prosecutor continues I won't be able to
9 finish - and also the dialect; that's correct, isn't it, Mr Witness, these are not addressed
10 in your conclusions?

11 PRESIDING JUDGE MINDUA: [13:28:16](Interpretation) Madam Prosecutor.

12 MS COQUILLAUD: [13:28:17](Interpretation) I also would like to finish.

13 (Speaks English) May I say, it's an extremely compound question and there are also
14 some statements made by the Defence in it as well, so it's a mix of compound
15 questions and statement by the Defence. So, I'm sorry, but we have to cut this down
16 or pick a question.

17 MS TAYLOR: [13:28:36] Well, Ms Prosecutor, in the decision on the conduct of the
18 proceedings (Overlapping speakers)

19 PRESIDING JUDGE MINDUA: [13:28:40](Interpretation) Mrs Taylor, please, I have
20 the floor now. I was still listening to the Prosecution.

21 Fine, I was listening to the Prosecution, so I think it's time to wind up this session.

22 Your question has several stages, so try and break it down and then we can perhaps
23 conclude.

24 MS TAYLOR: [13:29:10] Mr President, the decision on the conduct of the
25 proceedings is very clear that the Defence has to put its case to the witness.

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1 Q. [13:29:17] Our case to this witness, Mr Witness, is that, in your conclusion, you
2 note the impact on probative value of one factor, language, but it's correct that you do
3 not note the impact of other relevant factors that are being identified today as causing
4 potential mismatches.

5 A. [13:29:47] The other aspects are not specific to this case and, therefore, we
6 haven't used them in our methods. If we should have added language, then we
7 could do that, if you so wished.

8 Q. [13:30:08] I'm not sure if you understood my question. I'm not asking you to
9 add language, you've already added language.

10 A. [13:30:19] You said that in my conclusions I mentioned other elements than
11 the linguistic one and you indicated that you didn't say I talked about dialect. So, in
12 my wording, I didn't make the difference between language and dialect because we
13 were in -- big suggestion -- I could reformulate, saying "idiom" rather than "language".
14 As regards the other linguistic factors, they were not mentioned because they're
15 traditional factors, that is relating to the comparison of voice recognition in particular
16 and they are covered under methods used.

17 Q. [13:31:08] And, Mr Witness, just to be very clear, I was also referring to time gap,
18 the health of the person, potential issues concerning fatigue, these aren't mentioned as
19 factors that could impact on probative value.

20 PRESIDING JUDGE MINDUA: [13:31:29](Interpretation) I think you've already
21 asked that question and the expert witness has already answered.

22 MS TAYLOR: [13:31:35] No, I asked it, and then the Prosecutor stood up.

23 PRESIDING JUDGE MINDUA: [13:31:43](Interpretation) No, Madam Prosecutor,
24 no.

25 MS COQUILLAUD: [13:31:45](Interpretation) The question has already been put

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1 about half an hour ago.

2 PRESIDING JUDGE MINDUA: [13:31:50](Interpretation) Yes, I've already said that.

3 THE WITNESS: [13:31:55](Interpretation) It's not because -- I didn't mention in
4 the conclusion, I mention on page 6 of 37, the voice changes with time, with age, with
5 health, with stress, and if they're a smoker, not. So 637 describes the methods used.

6 MS TAYLOR: [13:32:17] Thank you, Mr Witness.

7 PRESIDING JUDGE MINDUA: [13:32:23](Interpretation) Thank you, Ms Taylor.

8 Mr Witness, we've reached the end of your testimony. The Chamber once again
9 would like to thank you for having assisted us by answering the questions very
10 clearly and with a lot of patience to all the questions put to you. Your testimony has
11 now come to an end. Once again, many thanks.

12 (The witness is excused)

13 PRESIDING JUDGE MINDUA: [13:32:57](Interpretation) I would like to remind
14 the parties that our decision on evidence for this case for this expert witness.

15 * Mr Prosecutor Dutertre, the next hearing will take place on 26 October with the 16th
16 Prosecution witness.

17 MR DUTERTRE: [13:33:22](Interpretation) That is correct. And it's -- we said 17,
18 but there is a slight gap, which you have seen, this will be the 16th who will appear
19 on the 26th.

20 PRESIDING JUDGE MINDUA: [13:33:39](Interpretation) Yes, thank you. I noted
21 that.

22 I would like to thank everybody, the court clerks, and also the interpreters, who've
23 been very patient. The security officers and, of course, our public. I hope that you
24 have a good rest of the week and take good care of yourself.

25 This session is suspended.

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1 THE COURT USHER: [13:34:08] All rise.

2 (The hearing ends in open session at 1.34 p.m.)

3 Page 4 lines 22-24

4 "Mr Judge, I took account about the guidelines you gave yesterday about moving into
5 private session. I would like to start in private session and keep it as brief as
6 possible."

7 Is corrected to

8 "Your Honour, I took into account the guidelines you gave yesterday about the use of
9 private session. For my examination-in-chief, I would like to ask if we could start in
10 private session and I will keep it as brief as possible."

11 Page 8 line 25 and page 9 line 1:

12 "So, you have replied to that question." Is corrected to "Exactly. I am coming to this
13 question, since you have prompted me. "

14 Page 10 lines 16-18:

15 "Q. [9:57:25] Could you move to page 7 of your report, which is
16 MLI-OTP-0069-9840. We're in the part having explained the mode and how you
17 work and"

18 Is corrected to

19 "Q. [9:57:25] Could you move to page 7 of your report, which is
20 MLI-OTP-0069-9839. We're in the part about the modes of operation and the software
21 you used, "

22 Page 11 lines 15-16:

23 "Q. [10:00:16] Still on page 7 of your report, which is 0069-9839, which is a technical
24 question." is corrected to

25 "Q. [10:00:16] Still on page 7 of your report, which is MLI-OTP-0069-9839: I

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1 would like to make a correction and to ask a technical question.”

2 Page 13 lines 14-18:

3 “Q. [10:06:48] Let me remind you that you try and slow down a bit for
4 the interpreters, and also to give us time to think, because it's rather technical what
5 you're saying.

6 Just to make sure I understood your reply, the probability equals probability in
7 the framework in the graphic of identification; is that it?”

8 Is corrected to

9 “Q. [10:06:48] Let me remind you to slow down a bit ---

10 A. (10:05:50) Sorry.

11 Q. (10:05:52) (...) for the interpreters, because you are using rather technical language.

12 Just to make sure I understood your reply, the equal proportion probability is used in
13 the validation charts that we see here with the abscissa and the ordinate, is that
14 correct?”

15 Page 13 lines 20-25:

16 “Q. [10:07:23] And the way of reading these measurements on the graph when you
17 look at the validation, if it's closer to 0 at the intersection more -- it means that
18 the performance is performing. But if it moves away from 0.5, the results use -- can
19 be used but you have to be more careful when interpreting the results?

20 A. [10:07:53] It's -- it's after 0.5 it cannot be used. “

21 Is corrected to

22 “And the way of reading these measurements, when you look at one of the validation
23 graphs, the more you see that the figure is closer to 0 at the intersection, the better the
24 comparison is. Conversely, if the value is high, thus close to 0.5, the results can still be
25 used, but you have to be more careful when interpreting the results. Is that right?

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1 A. (10:07:53) 0.5 is a pedagogical value, it cannot be used per se."

2 Page 15 lines 22-23:

3 "Q. [10:14:02] So you had some samples but not in sufficient numbers to be able to
4 use them in both populations?"

5 Is corrected to

6 "Q. [10:14:02] So you had some samples but not enough to prepare the expert
7 report? Is that correct?"

8 Page 16 lines 3-4:

9 "Q. [10:14:42] As regards -- how did you use your samples in French?"

10 Is corrected to

11 "Q. [10:14:42] As regards rigour, could you tell us a bit more about the criteria that
12 you used to choose the samples in French?"

13 Page 16 lines 8-14:

14 "Q. [10:15:20] If I understood, you selected this criteria in this case because it
15 corresponded to what you noted in the items in question; is that correct? You tried
16 to try and reflect the criteria which you saw in the samples you had which were sent
17 to you and the population that you were trying to create."

18 Is corrected to

19 " Q. [10:15:20] If I understood your answer correctly, as well as the one you gave a
20 few moments ago, you selected these criteria for this case because they corresponded
21 to what you noticed in the items in question and the comparison items that were sent
22 to you; is that correct? You tried to ---I am not expressing myself very well here ---
23 you were trying to create a mirror effect between the criteria which you noticed in the
24 samples which were sent to you and the population that you were trying to create."

25 Page 19 lines 8-13:

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1 ""(No interpretation) 6, 7, 8, 9 and 10.""

2 Is corrected to

3 "So here, the result of the comparison of all the items that you had at your disposal is
4 as follows, and I am reading verbatim: "the result of this comparison strongly
5 supports the preliminary hypothesis of similarity of voice between the main speaker
6 in videos 19 (man with green turban wearing combat fatigues) and 21 (man with
7 green turban and dark clothing, h1) and Mr Al Hassan, in reference recordings 3, 4, 5,
8 6, 7, 8, 9 and 10."

9 Page 19 lines 14-21:

10 "A. [10:26:38] As regards likelihood, it's here I said strongly supports, because
11 the scale of interpretation includes four positive graphs and one negative and the next
12 one is also positive. Those are the positive is reached and when it's reached I check
13 and double-check to make sure the results are correct. And this is usually what we
14 obtain in practice digitally speaking."

15 Is corrected to

16 "A. [10:26:38] As regards the likelihood ratio, most of the likelihood ratios
17 calculated exceeded 100, which is why I said "strongly supports". We are not very far
18 from the maximum, because the interpretation scale includes -- one, two, three, four --
19 four positive scores, one neutral score and four negative scores. So here we are at the
20 third positive score. The fifth positive score is reached very rarely, and when it is,
21 generally I recheck my data several times because it is an extremely rare phenomenon.
22 So, we are... we are not very far from the maximum score that we obtain in empirical
23 practice."

24 Page 35 line 11 and page 50 line 22:

25 "Madam Prosecution" is corrected to "Madam Prosecutor"

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- 1 Page 47 line 7:
- 2 “(unclear) (Overlapping speakers)” is corrected to “identifying”.
- 3 Page 69 line 4 :
- 4 “Mr Prosecution Dutertre” is corrected to “Mr Prosecutor Dutertre”