SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF SAN FRANCISCO

DEWAYNE JOHNSON,

Plaintiff,

vs. Case No. CGC-16-550128

MONSANTO COMPANY, et al.,

Defendants.

_____/

Proceedings held on Monday, July 9, 2018, Volume 5, before the Honorable Suzanne R. Bolanos, at 9:09 a.m.

REPORTED BY:

LESLIE ROCKWOOD ROSAS, RPR, CSR 3462

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Arceli Johnson

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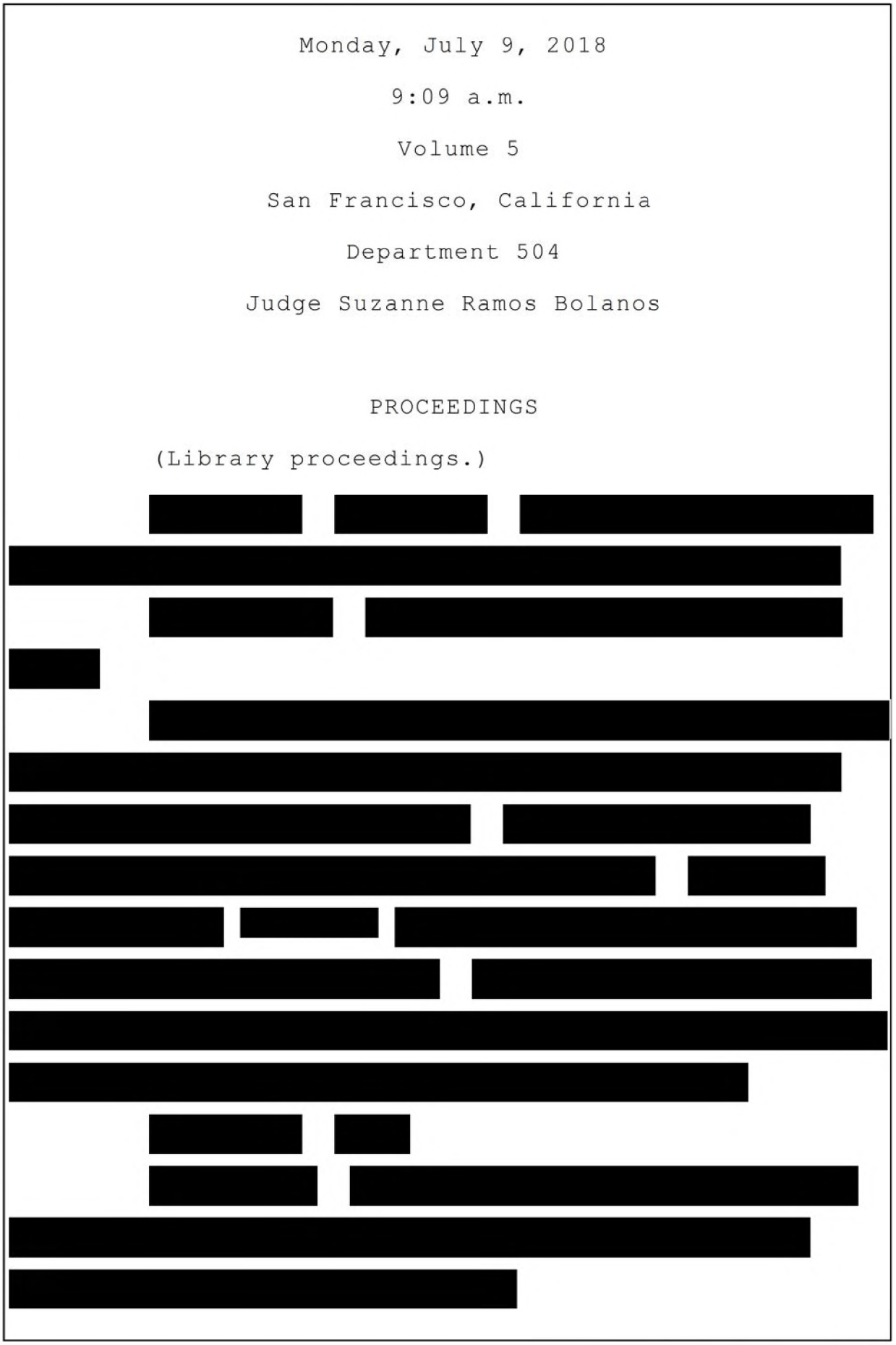

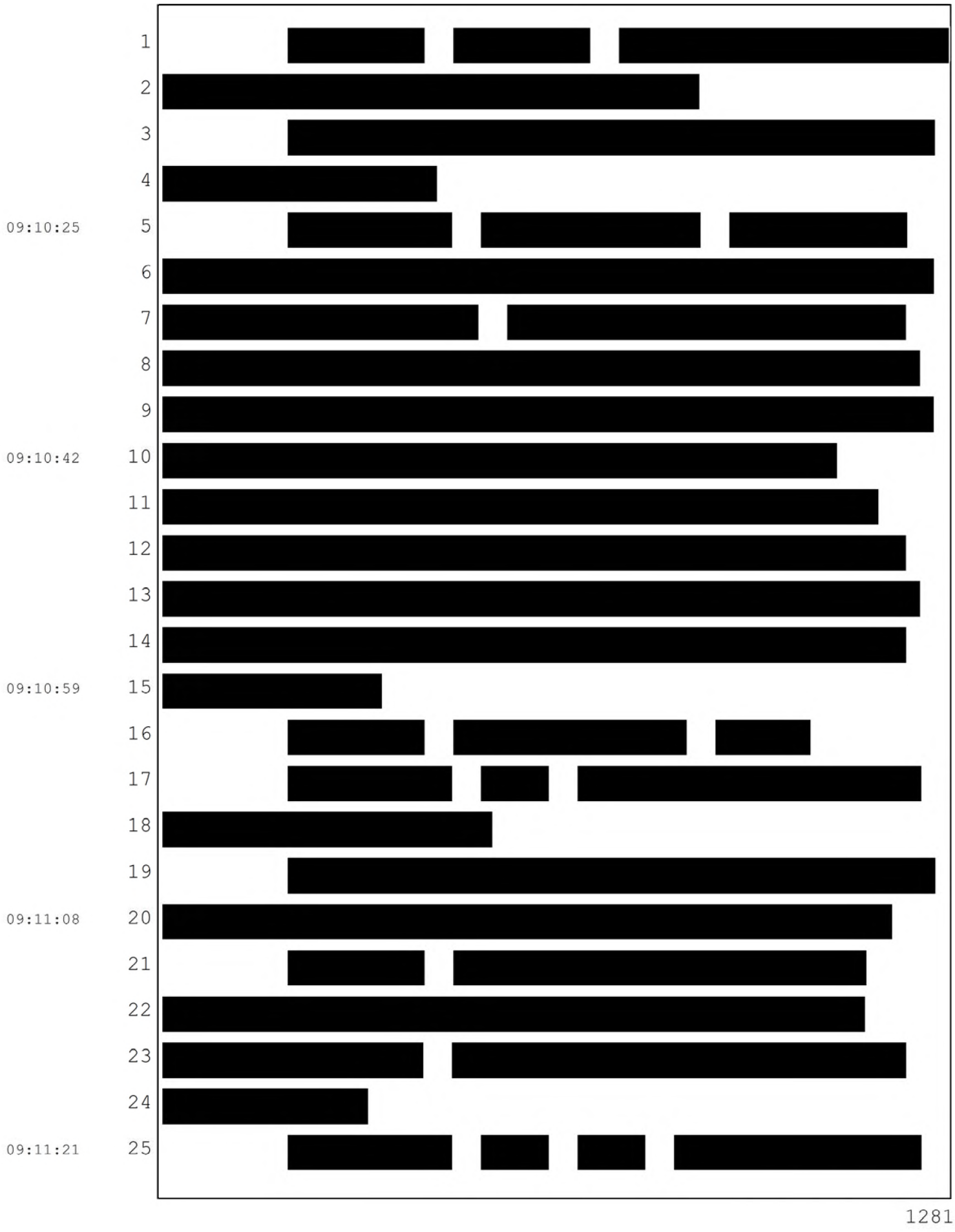
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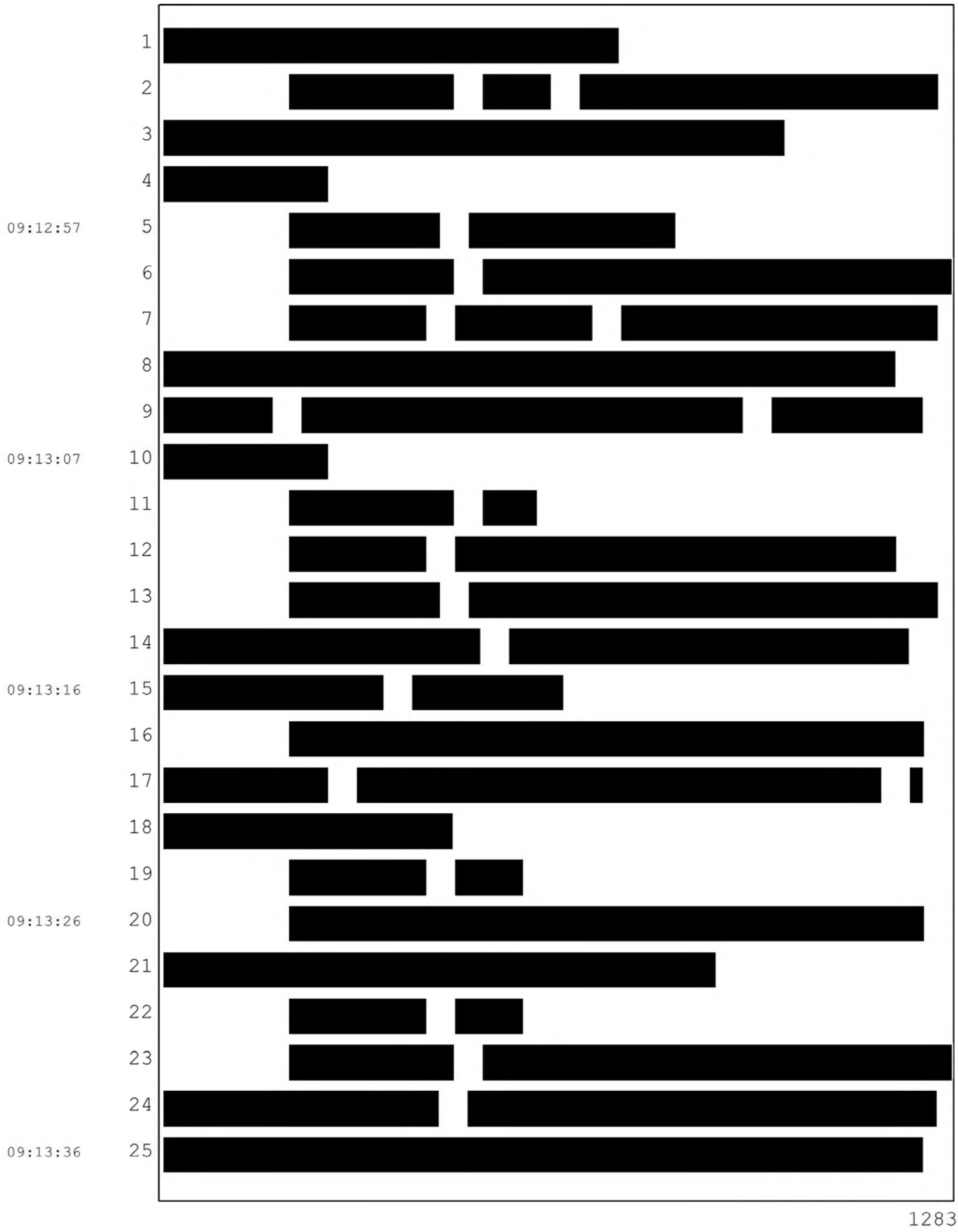
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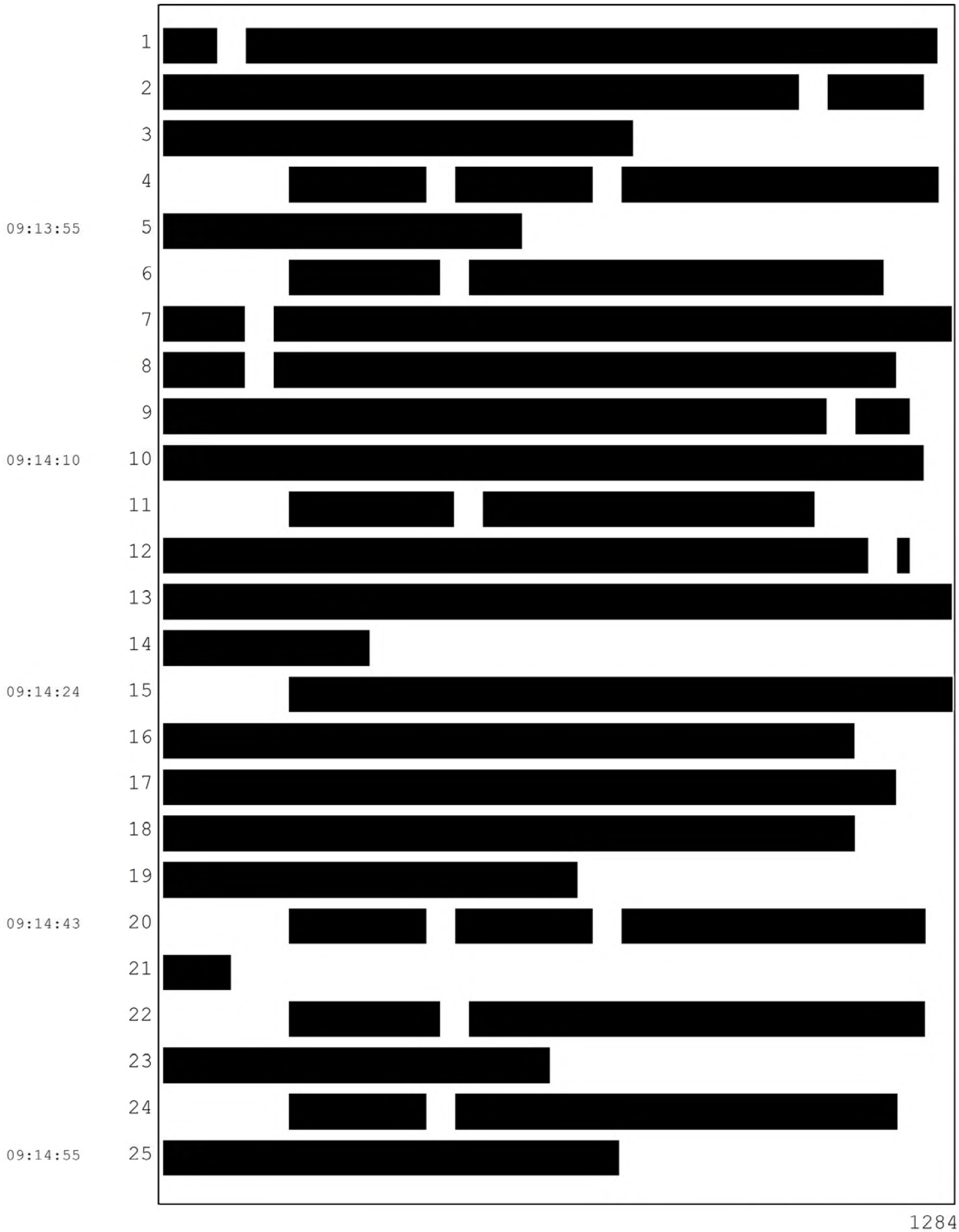
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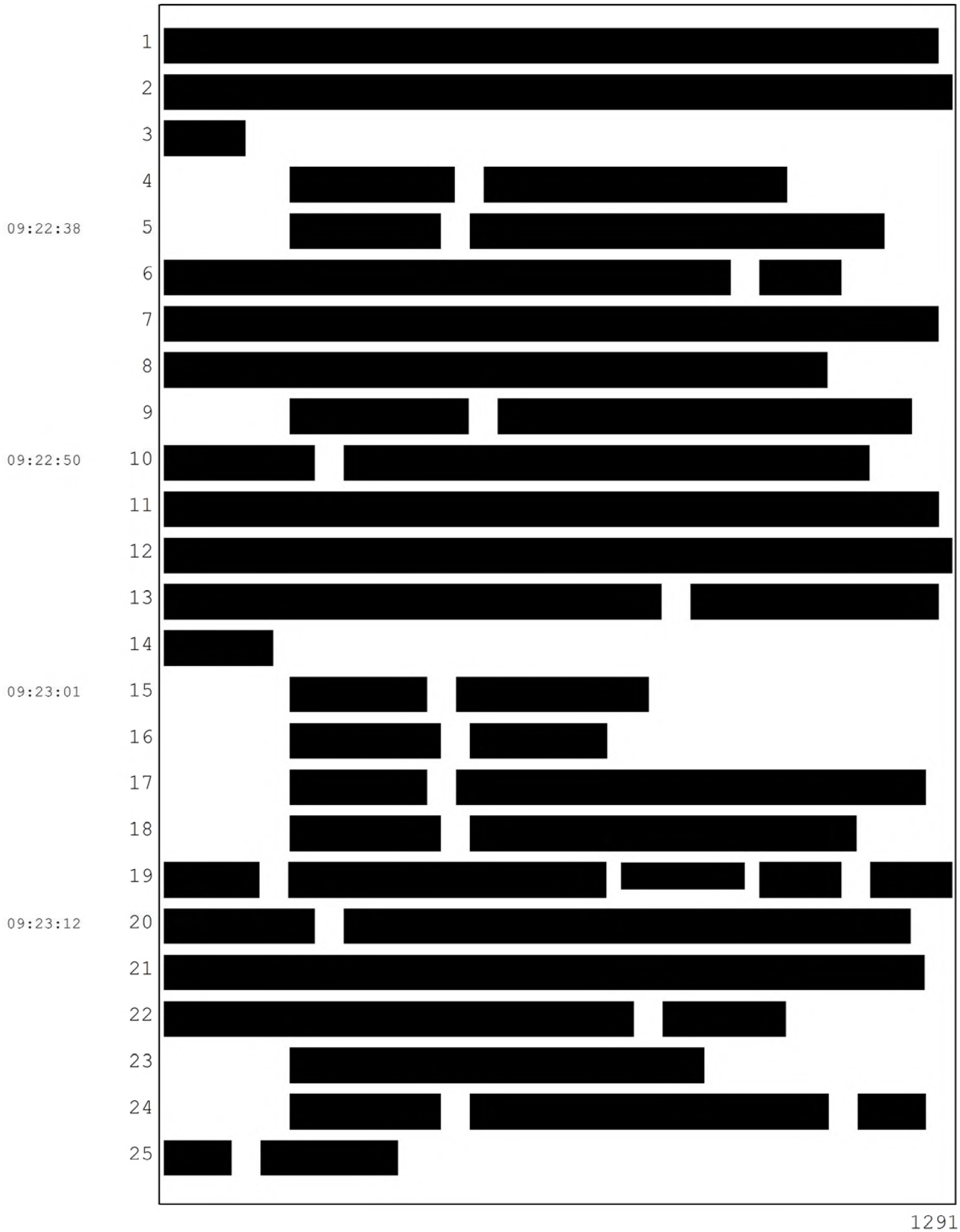
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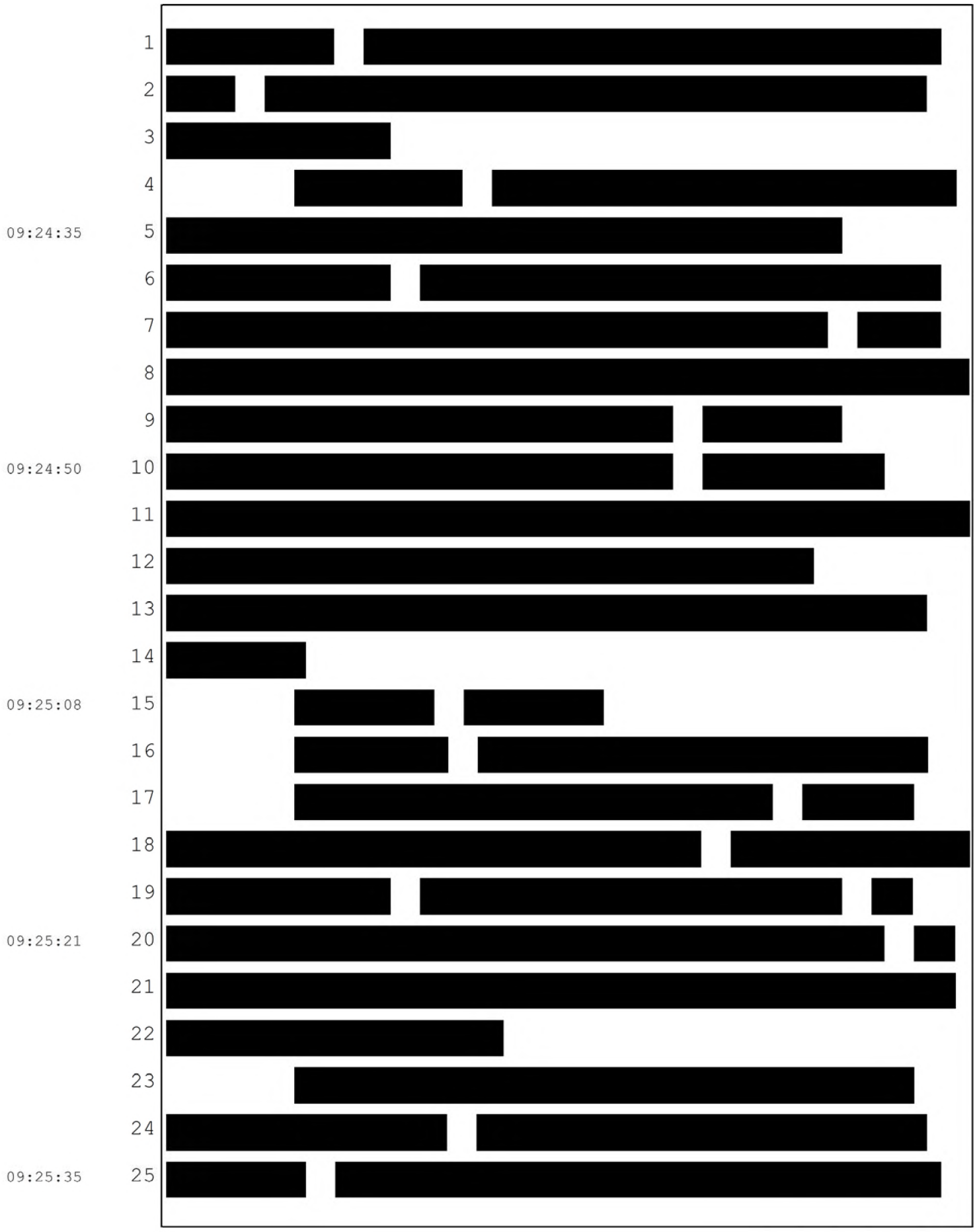
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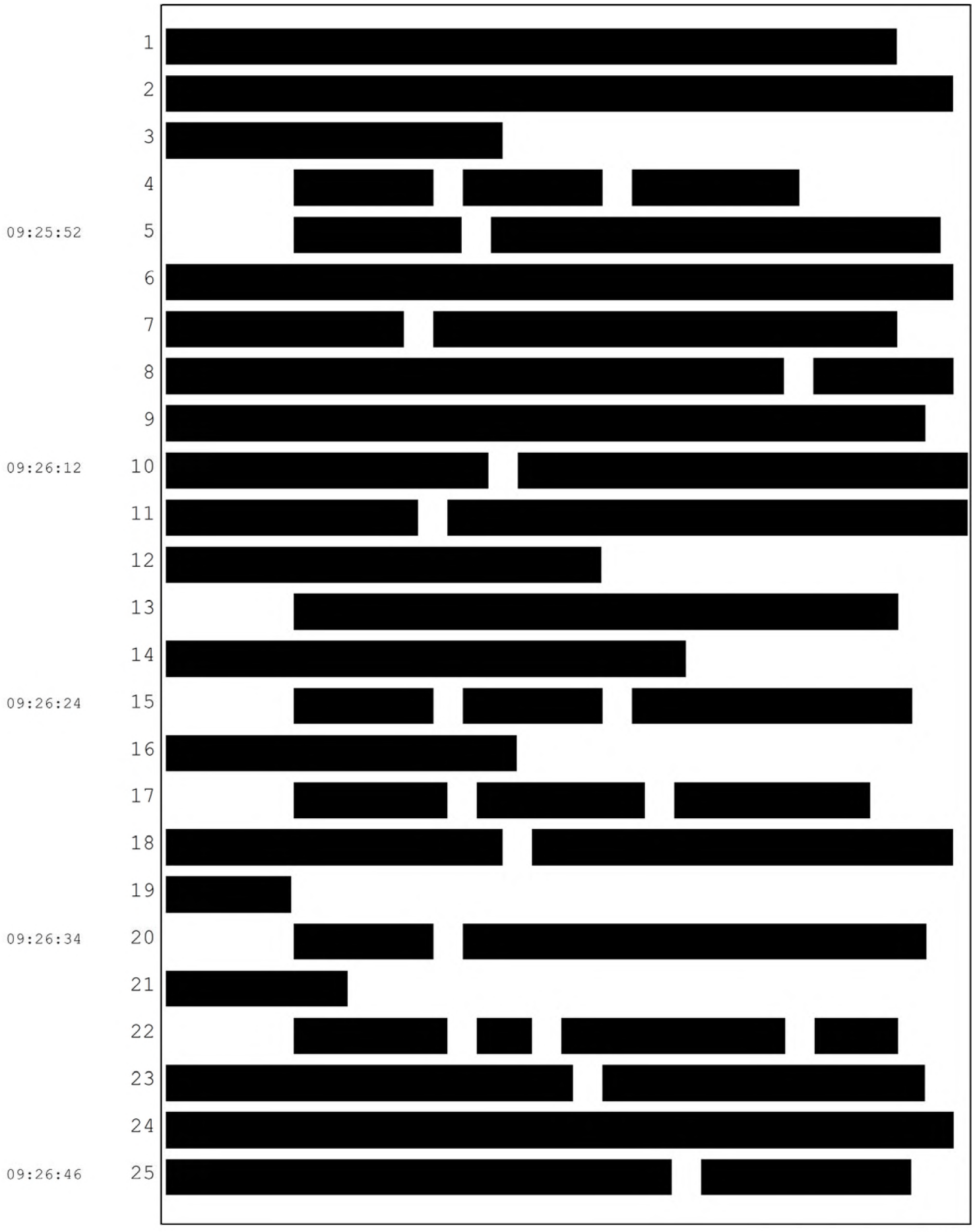
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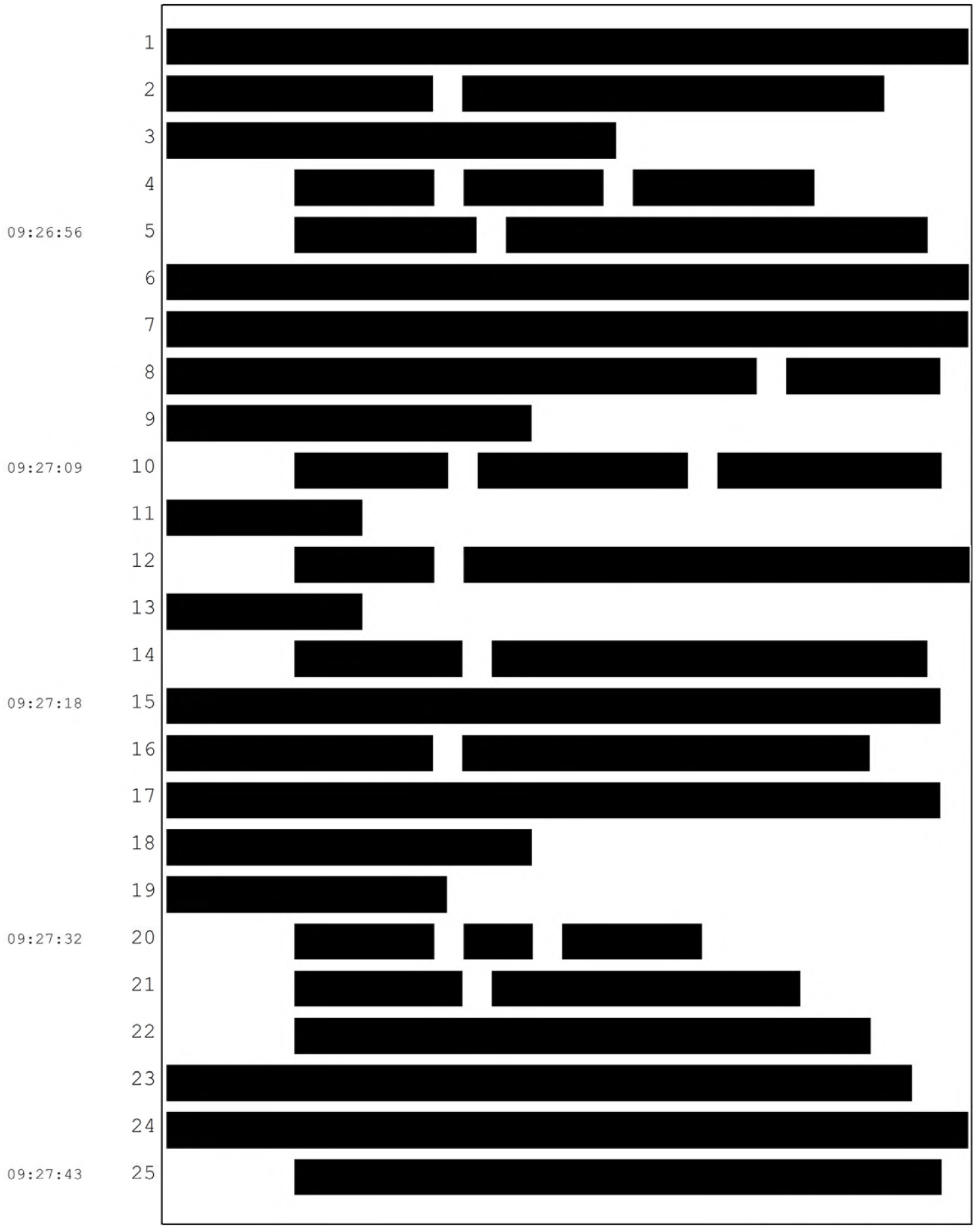
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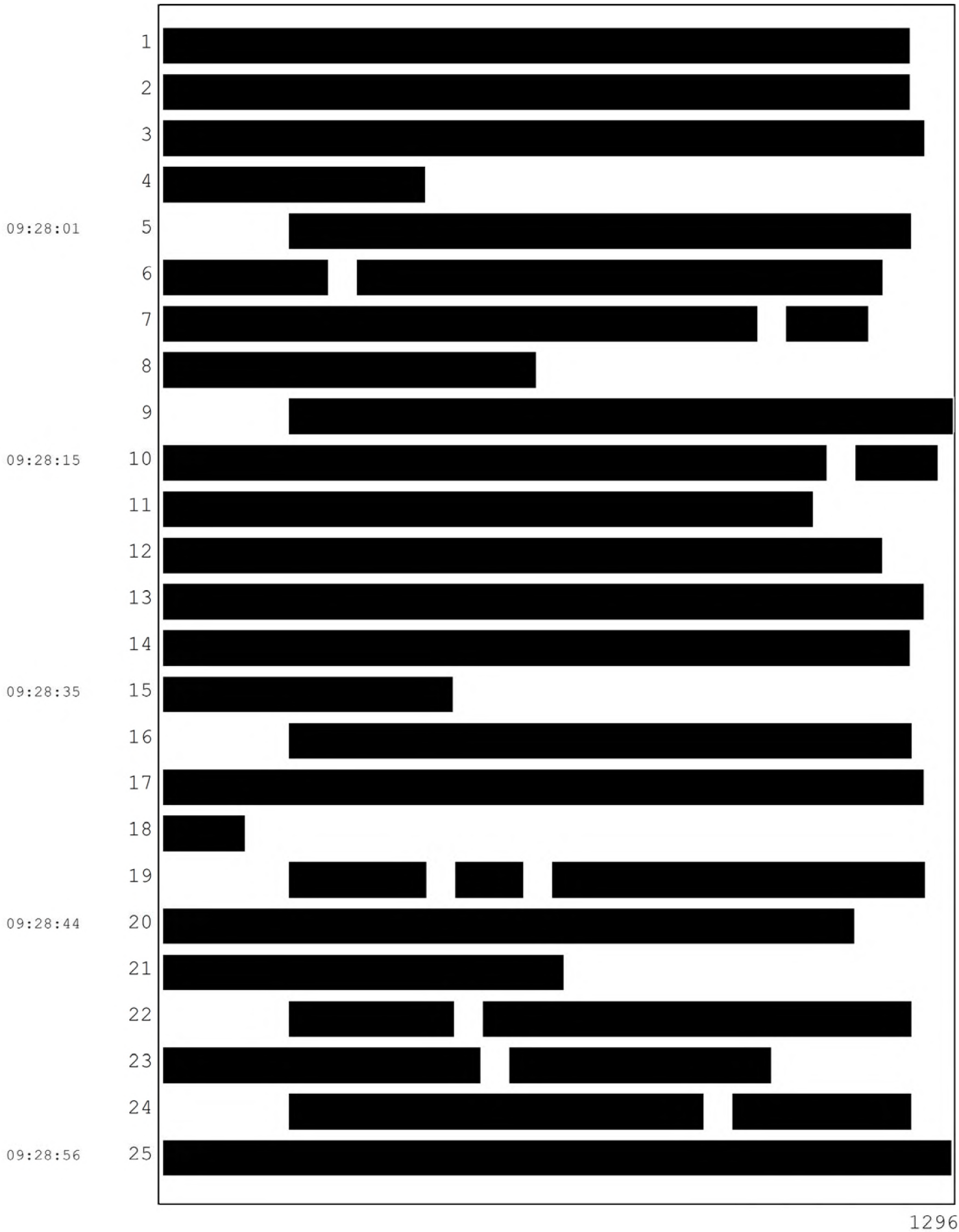
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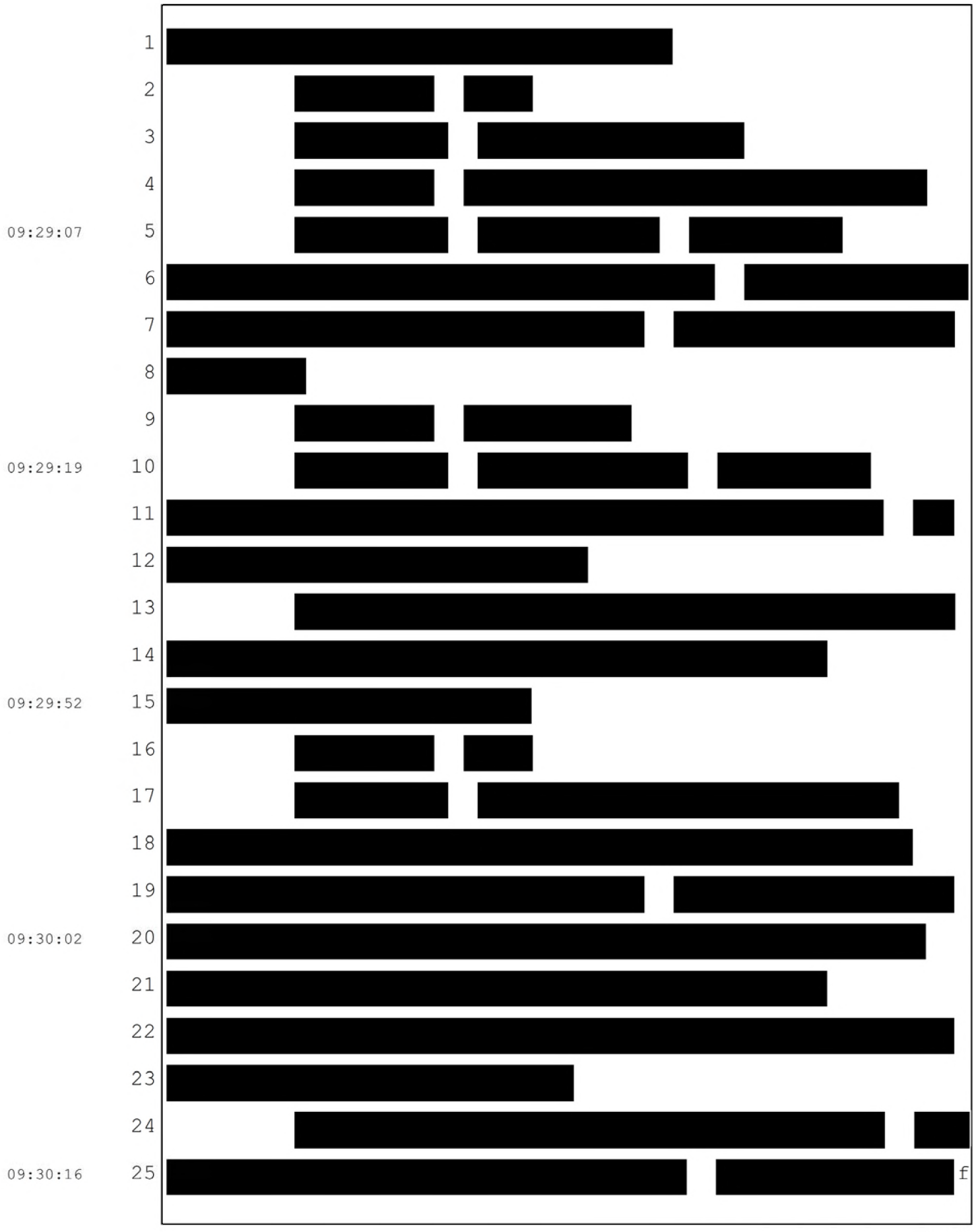
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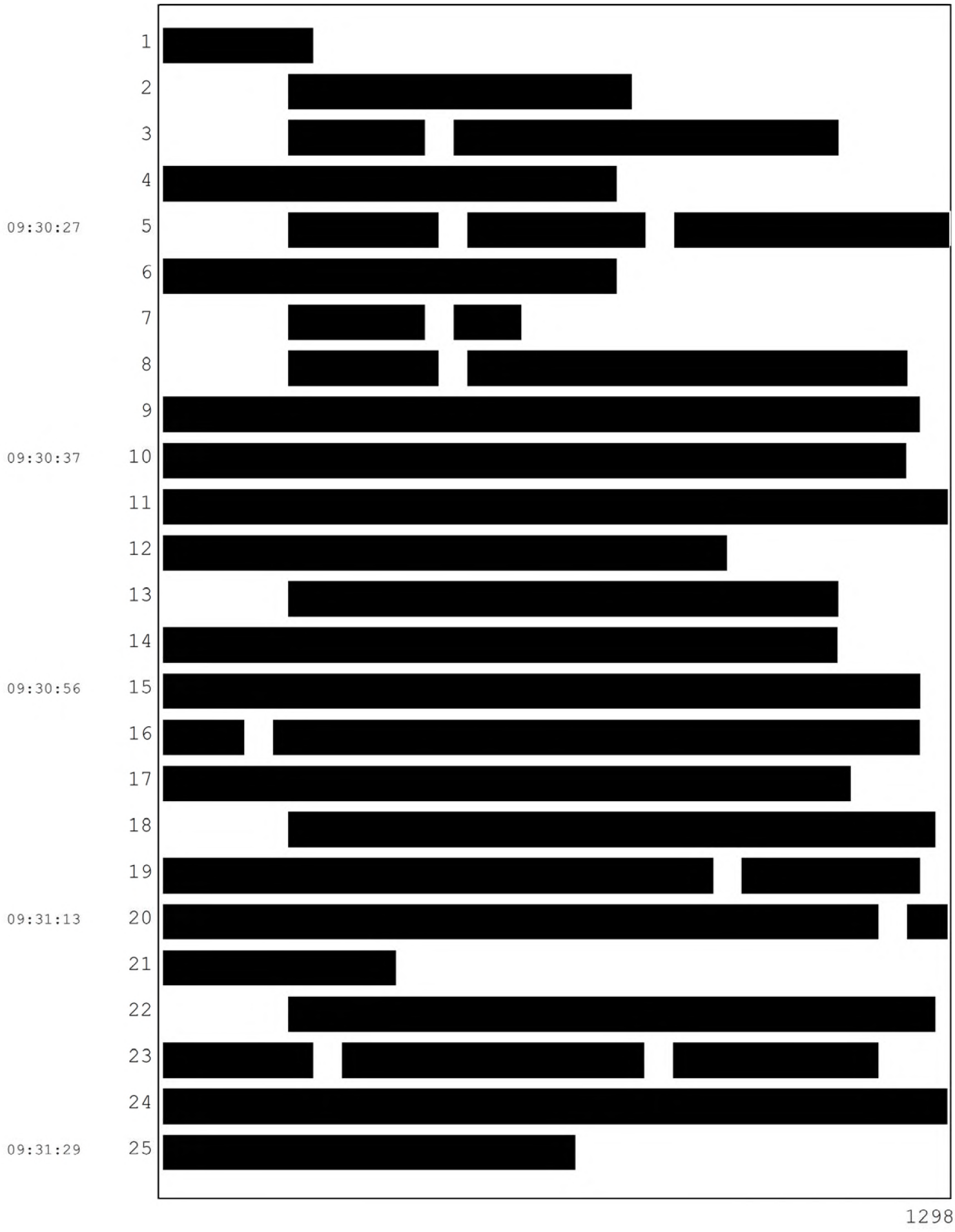
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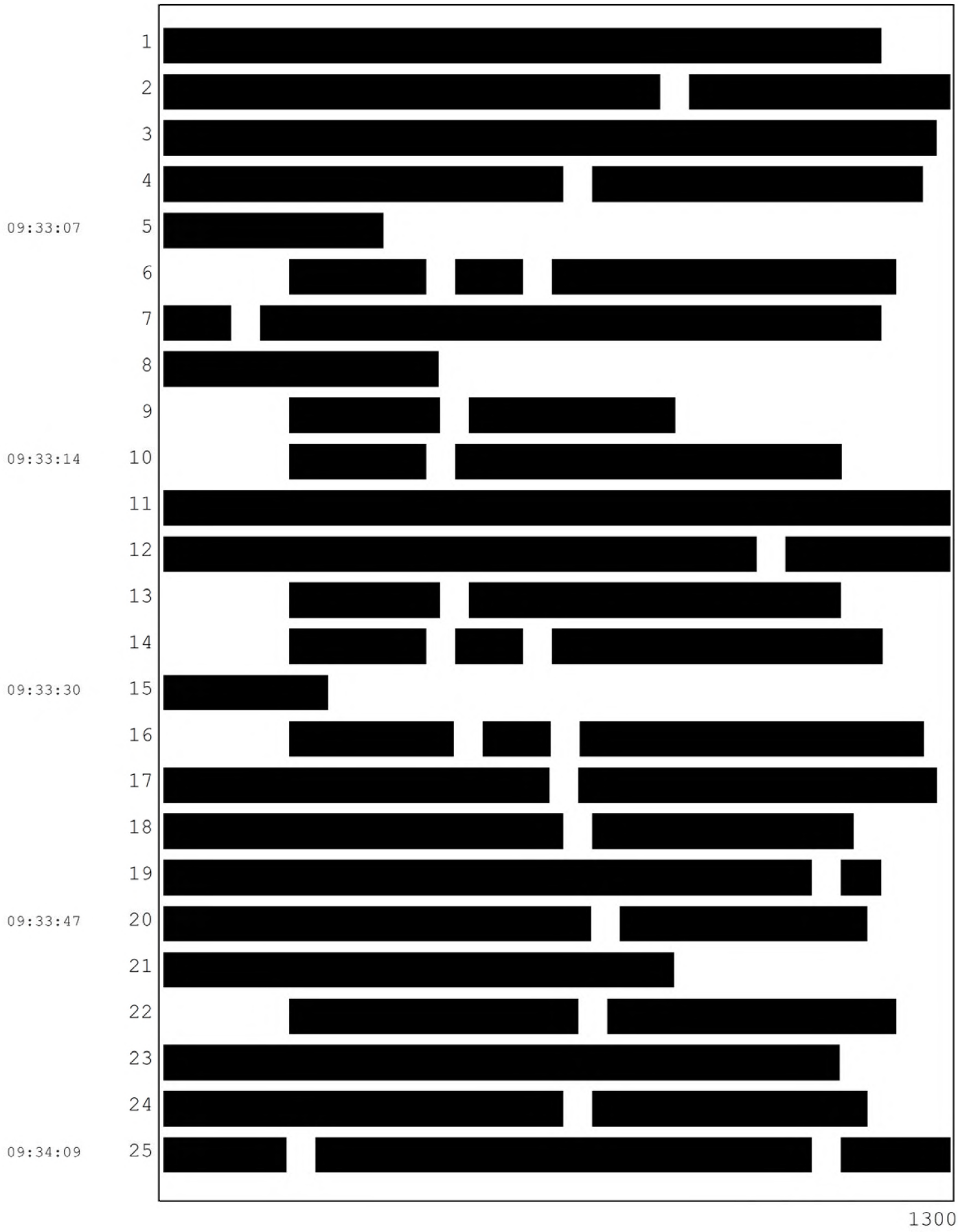
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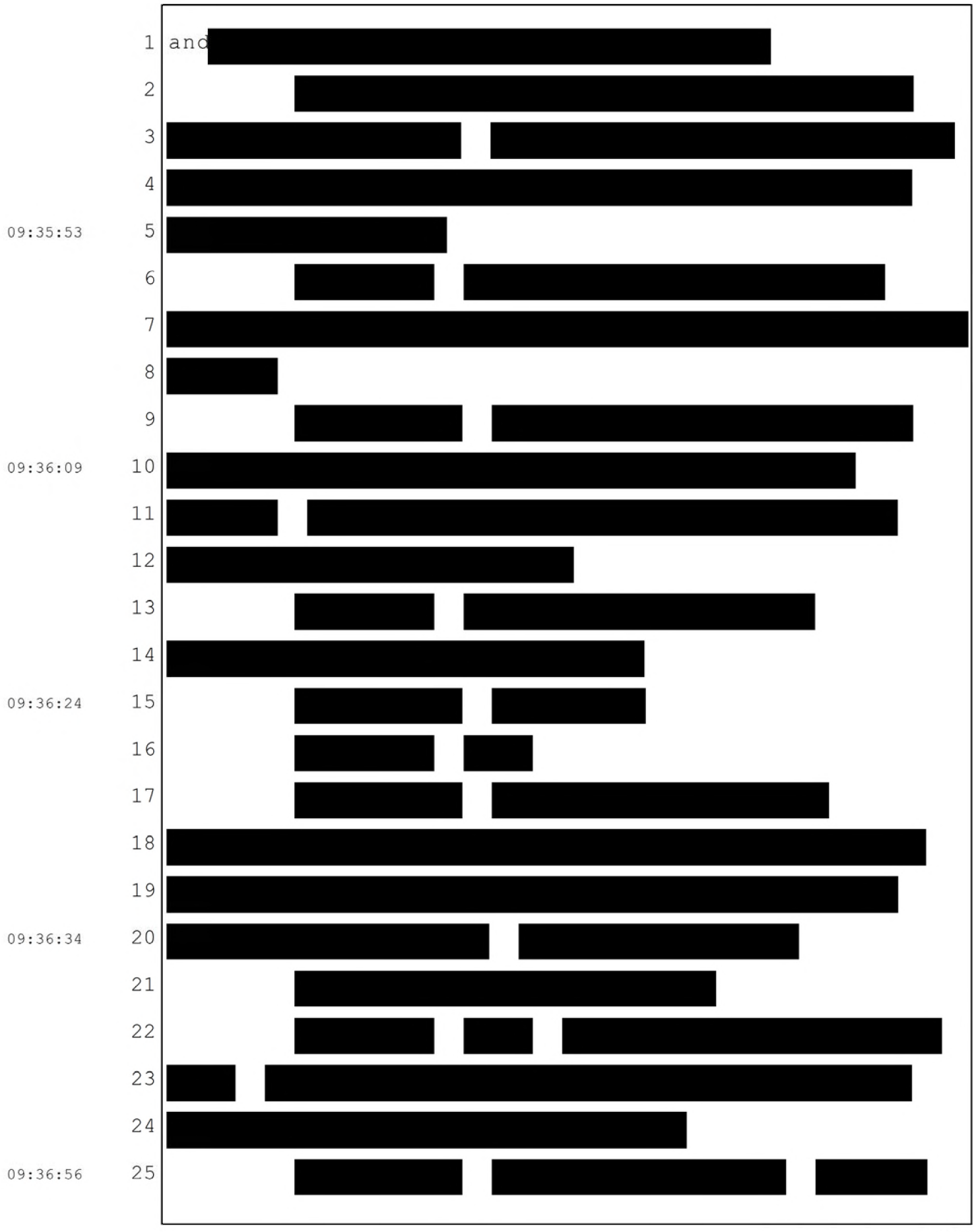
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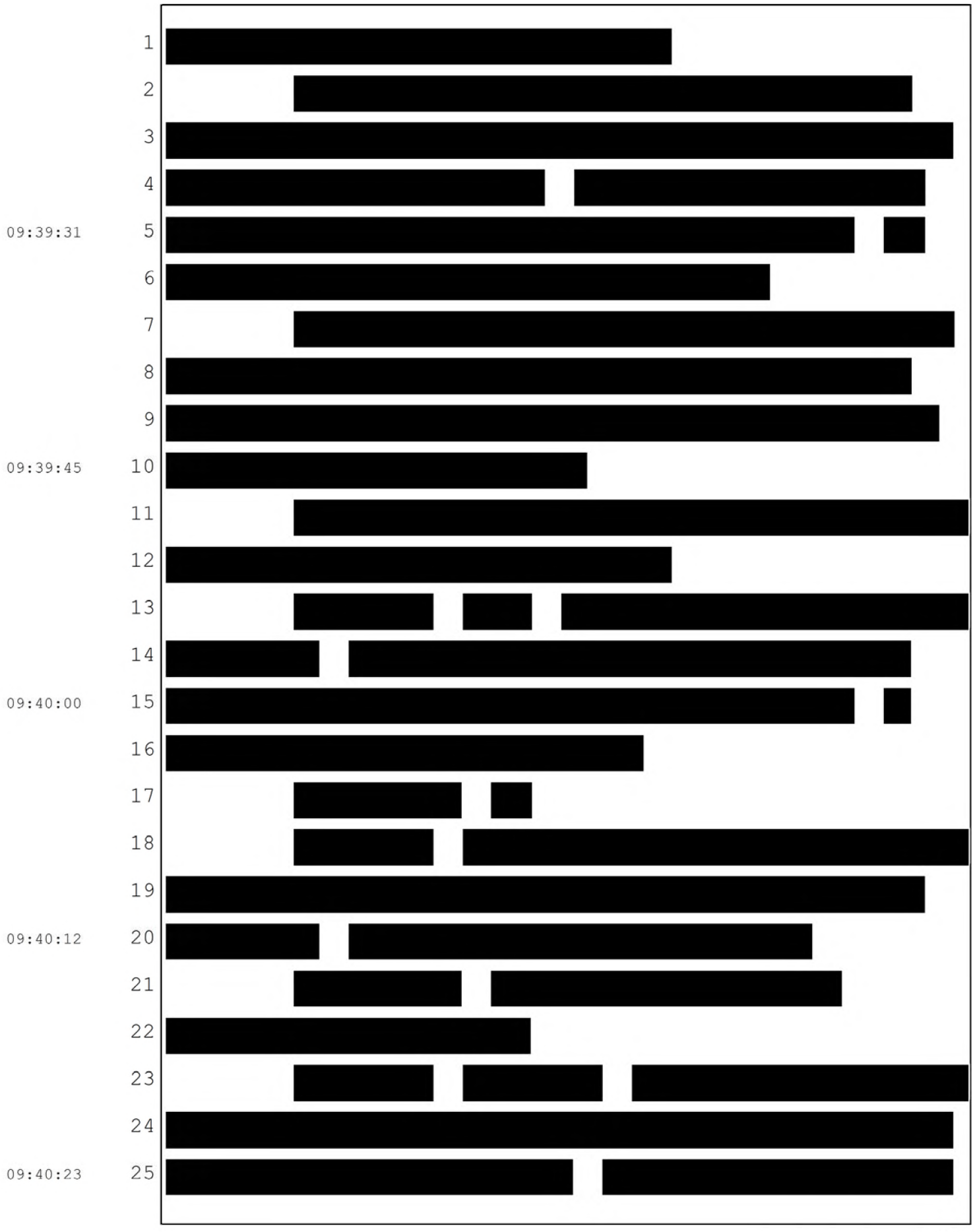
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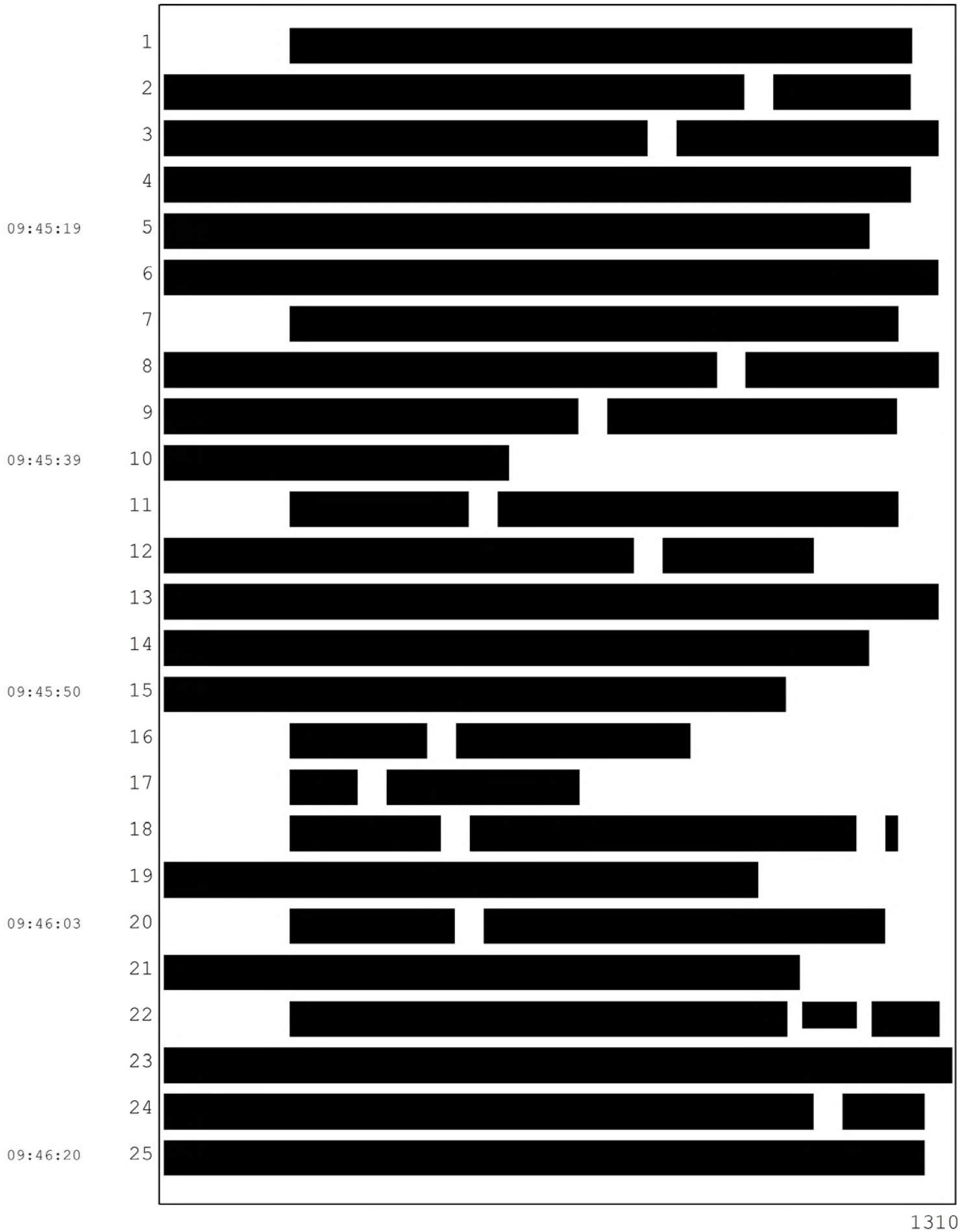
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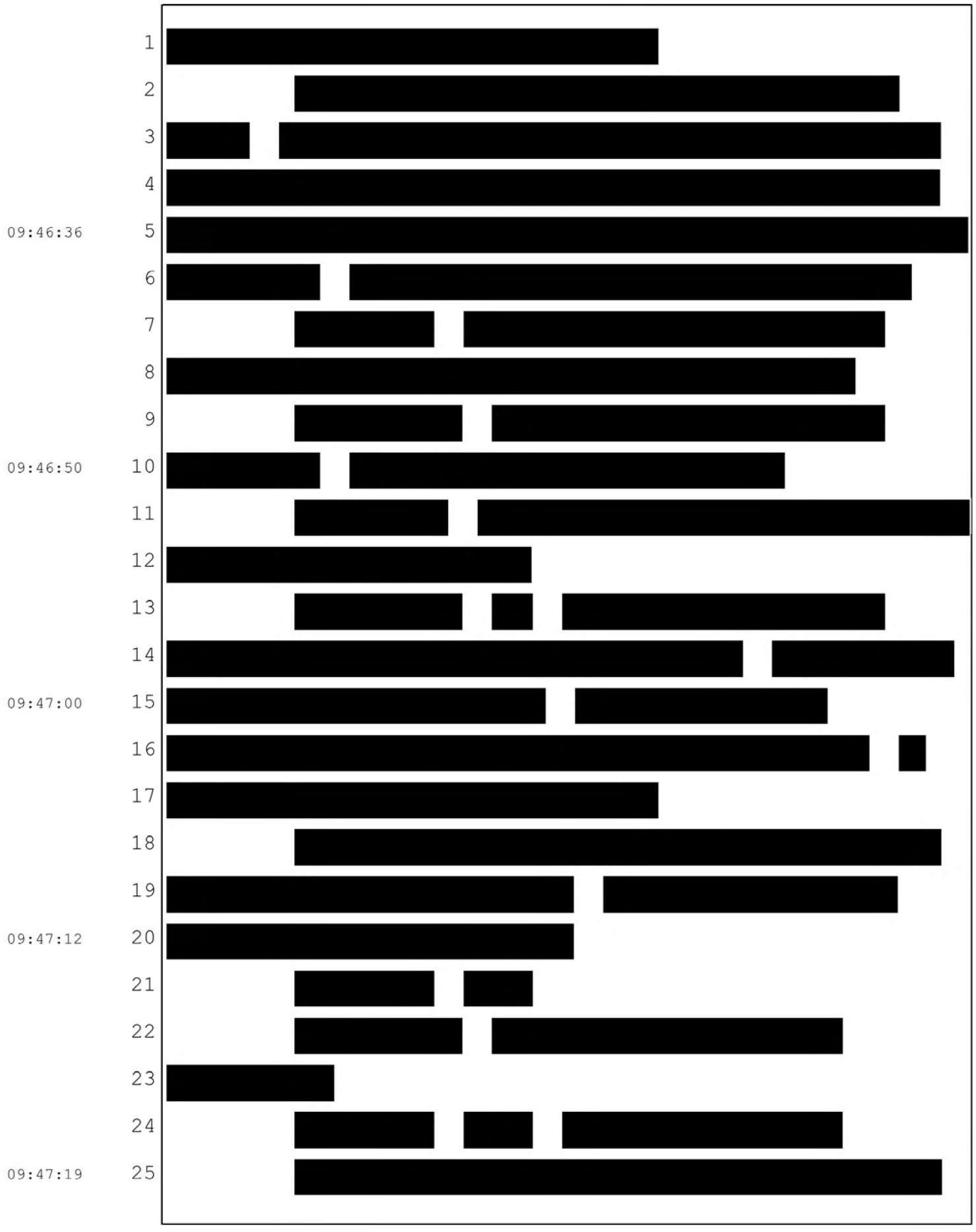
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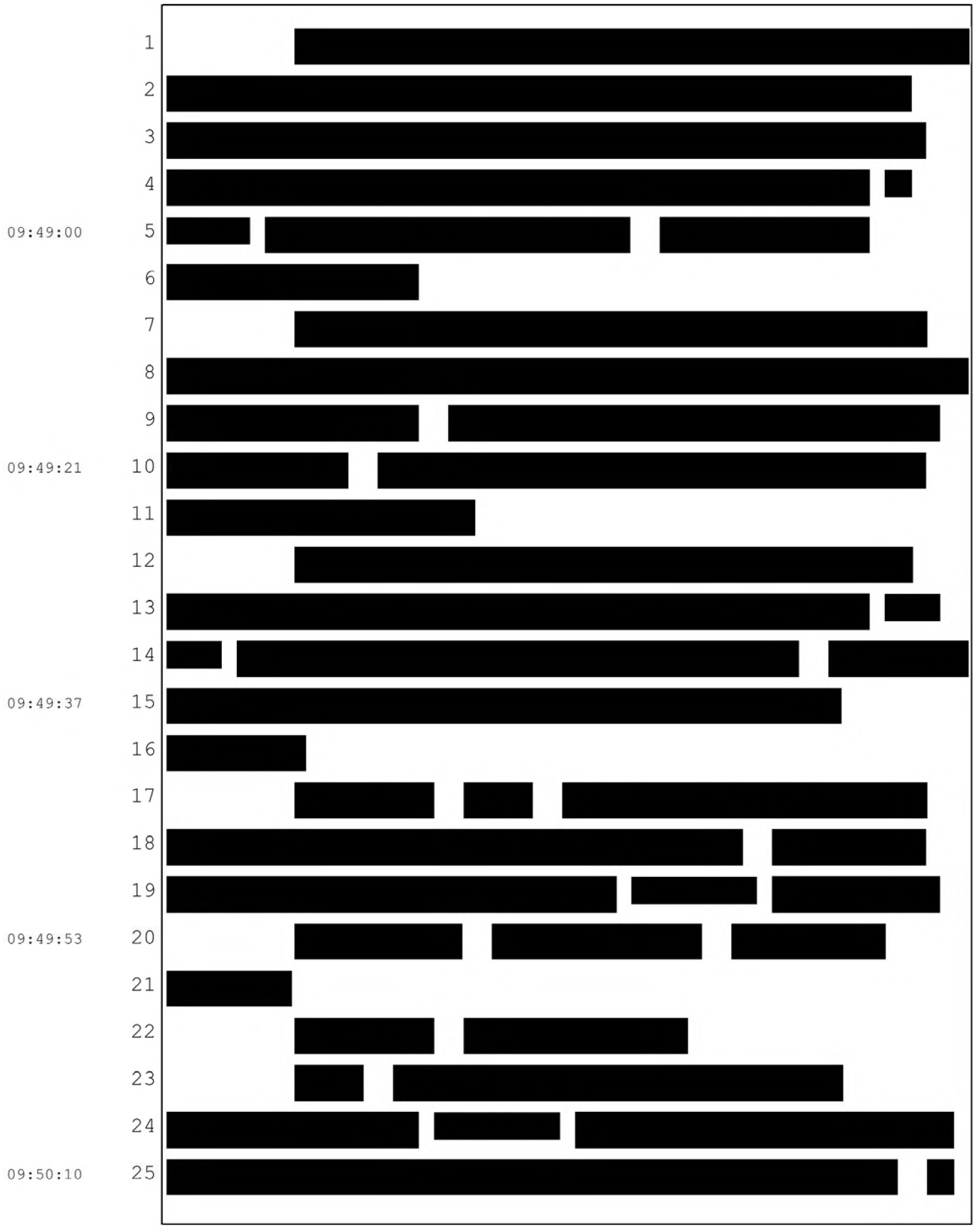
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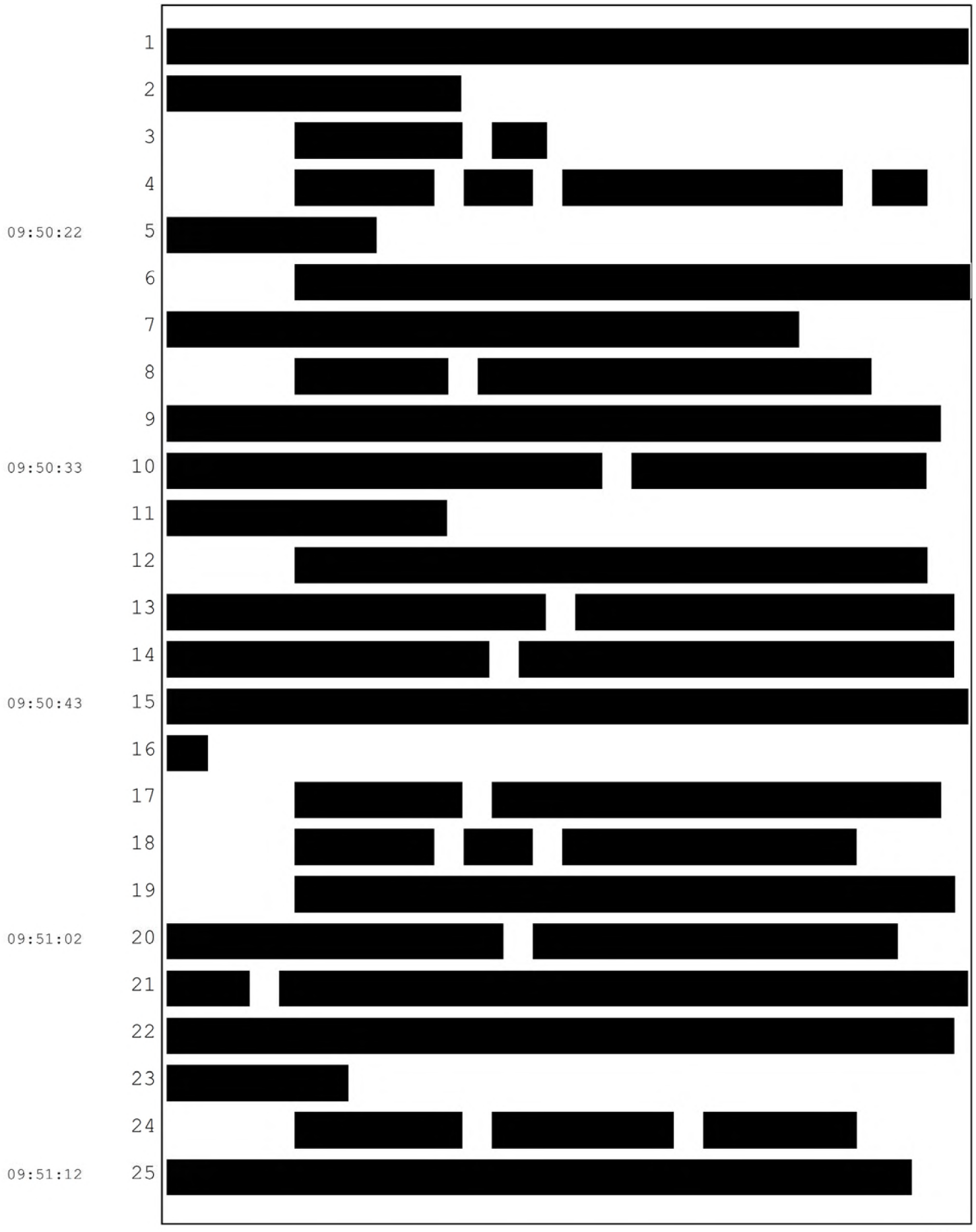
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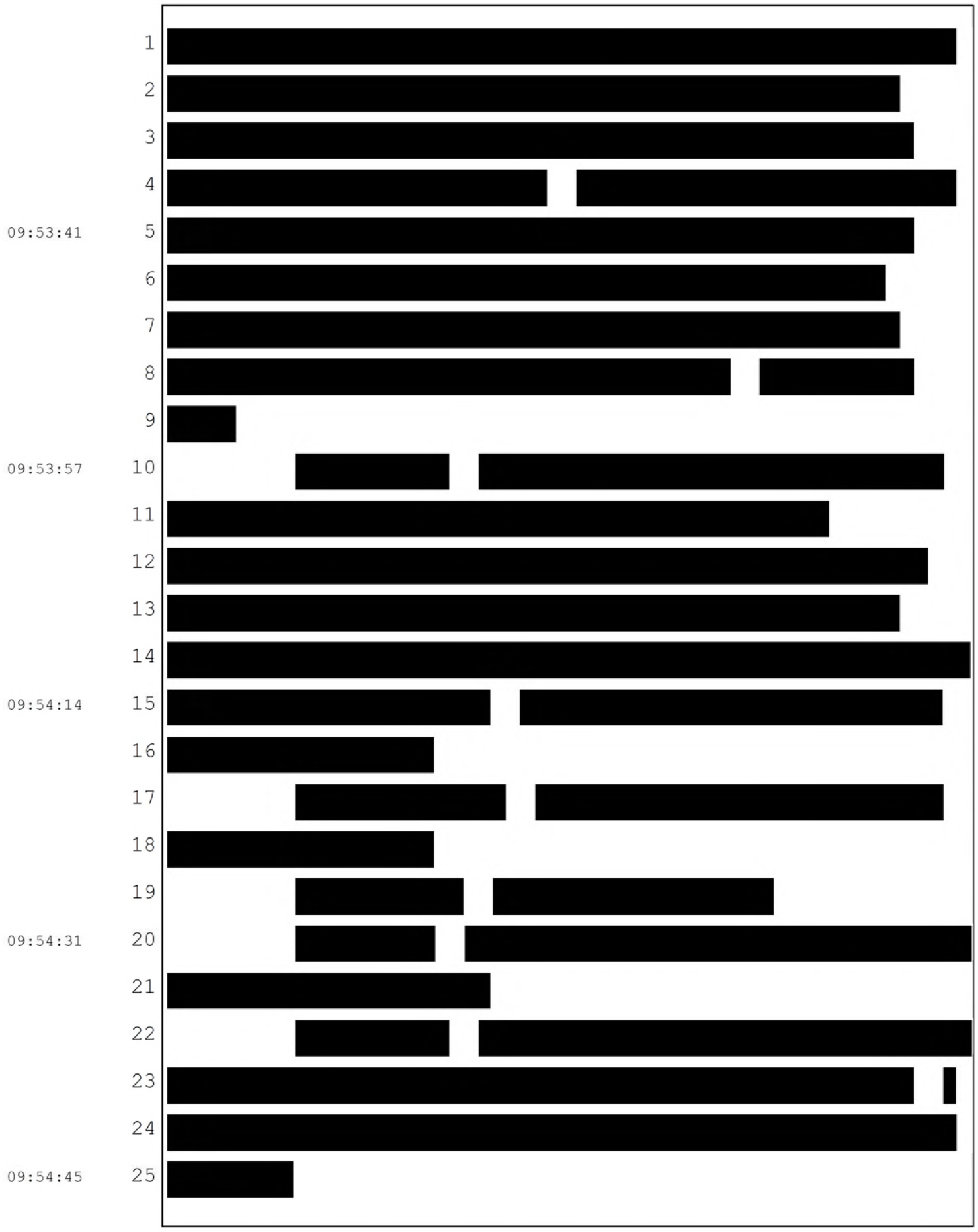
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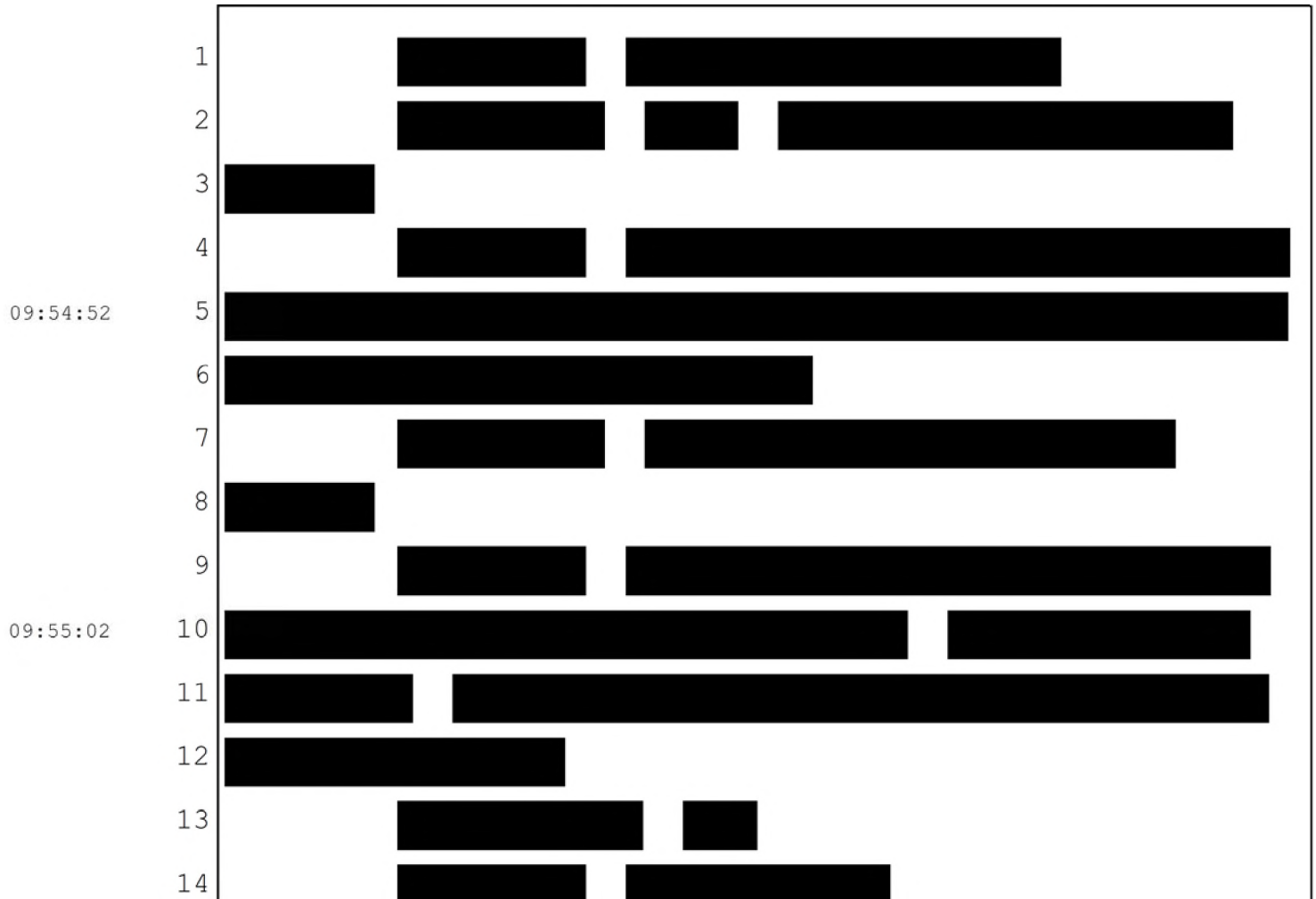
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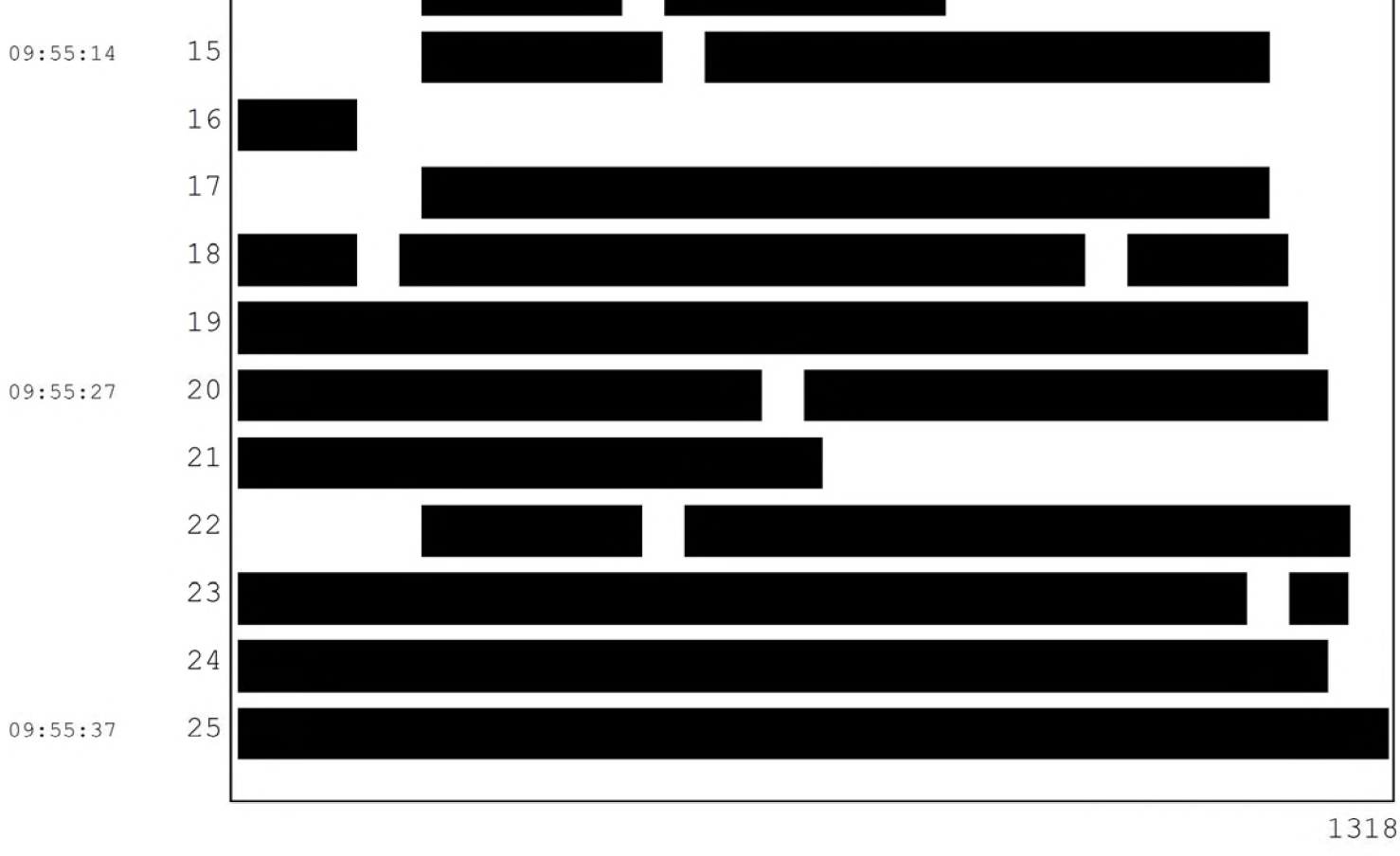
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THE COURT: Good morning. Good morning, Ladies and Gentlemen. Welcome back. I hope everyone had a nice 4th of July holiday. I apologize about the delay in getting started this morning, but there were a few final

10:07:49 matters that I had to address with the lawyers. Going forward we are going to make every effort to start promptly.

All right. So this morning you will hear the opening statements of the lawyers. Before you hear their

10:08:03 opening statements, there are just a couple of matters I wish to address with you.

First of all, during jury selection when we last met, you heard statements made both by the attorneys and perhaps by other jurors about a large variety of

10:08:21 different topics. None of these statements, whether they

were made by the attorneys or by other jurors, are evidence, and you're instructed not to consider them for any purpose whatsoever in this case. If you took notes during the process of jury selection, you are instructed
10:08:43 to destroy those notes and not to consider them for any purpose in this case.

Also the attorneys, when they make their opening statements, will be using PowerPoint presentations and will be showing you some documents. You will see some
10:08:59 redactions in those documents. You should not speculate about what has been redacted or conclude that anything relevant to this case has been withheld from you.

Okay. So with that we're going to start first with counsel for the plaintiffs.

10:09:17 Mr. Wisner.

MR. WISNER: Thank you, your Honor. May it please the Court.

Good morning. My name is Brent Wisner. I'm an attorney for Mr. Johnson. You got a chance to meet my
10:09:33 colleague, Mr. Dickens. And for this special occasion, I decided to shave. So you might not recognize me from last time.

This case really is about choice. It's about the right of every single person in this room to make a
10:09:51 choice about what chemicals they expose themselves, their

family or their children to. And, sure, some people right -- are more risky. Some people are willing to take greater risks. After all, people still smoke, and we all know smoking causes cancer. But at the end of the day, it's our choice. And really nobody has a right to take that choice away from us simply because they would deprive us of information that we need to make that choice. That's why in California it's pretty simple. If a chemical company sells a product and they know or suspect that that product can causes cancer, they have to warn you. They have to give us a choice.

MR. LOMBARDI: Your Honor, I apologize for objecting, but we're getting into legal argument which I think has been ruled on already.

MR. WISNER: I think we approved this statement.

THE COURT: We have discussed this. Please move on, Mr. Wisner.

MR. WISNER: They have to warn. And if you don't warn, if you don't give someone a choice and somebody gets hurt because of that or God forbid somebody actually gets cancer, then I personally believe, and I think you will as well, that you should be responsible for the consequences of that.

Now, the Judge is going to instruct you on the law. But this is just common sense. This case is about

a chemical company, Monsanto, and its multibillion dollar product Roundup. You are going to learn that for at least the last 40 years, since the 1980s, Monsanto has known that the primary ingredient in Roundup can induce
10:11:34 tumors in laboratory animals. And starting in 1998 and moving forward, there have been study after study showing that, in fact, the use of Roundup is associated with a specific type of cancer. That cancer is called non-Hodgkin's lymphoma. And you're going to learn it's
10:11:56 not just one study. It's been study after study after study that continuously finds an association with this specific type of cancer. The evidence will show that Monsanto has known this for over 20 years, but instead of just warning and telling consumers, "Hey, these studies
10:12:13 show this stuff can cause cancer," Monsanto has refused. They have fought science.

And you will see evidence that shows that Monsanto has specifically gone out of its way to bully scientists and to fight independent researchers who are
10:12:29 finding conclusions outside of the Monsanto corporate umbrella. And the consequences of that conduct are why we're here today.

Because of what Monsanto has done, Mr. Johnson was not given a choice about using Roundup.
10:12:53 You're going to hear testimony from him that he truly

believed it was safe. He was told -- and he'll tell you this -- that you could drink it. It's completely nontoxic. And so what did he do? He used it in his job. And his job didn't consist of spraying it in a garden in his backyard. His job consisted of spraying 50 to 60 gallons at a time on schoolyards at the Benecia School District. You're going to hear testimony from Mr. Johnson that if he had known that this stuff could be in any way associated with cancer, putting aside his own safety, he would not have sprayed it on schoolyards. The evidence will show that because he didn't have that information, he used it, and he used it for about two years. He actually used it for three. But before his cancer, he used it for about two years.

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And you're going to hear testimony that he actually would spray it in the summer seasons for the most part, you know, for about -- during the summer period when the children primarily weren't there. But he would also do it other times. And you're going to hear testimony from him that he got kind of drenched in it repeatedly. You're going to hear testimony he actually wore protective gear, way more than is required by the labeling. He wore a plastic Tyvek suit.

Do we have one of those laying around?

He wore a plastic Tyvek suit, full-body suit

(indicating). He wore a mask, and he wore goggles as well, or sunglasses, and underneath that he had a hoodie. You're going to hear testimony that this, while it can stop water, it doesn't stop Roundup because of the special way in which Roundup is formulated. We're going to talk about that in a minute.

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You're going to learn that on multiple occasions he was literally drenched through his clothes for multiple hours, and that over two years, at the end of the second spraying season, he discovered a lesion on his knee. He wasn't sure what it was. It was around August of 2014. The evidence will show that that lesion started to spread. And you're going to learn that it covered his entire body. Over 80 percent of his body was covered with these lesions, these capsules that would actually burst. And he has a type of cancer called non-Hodgkin's lymphoma and a specific type of non-Hodgkin's lymphoma called mycosis fungoides. It's a type of T-cell lymphoma. I'm going to talk to you a little bit later about different types of lymphoma. But the point is it was covering his whole body.

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You're going to learn that -- I have a really hard time talking about this with Mr. Johnson in the room. But you're going to learn that he's not supposed to be alive today. He's actually on borrowed time. And

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every doctor agrees that it's just a matter of time. Maybe two years at best. He's gone through repeated rounds of chemotherapy, radiation, UV therapy. He's done everything in his power to try to fight this. And he's actually in between treatments right now. So he's feeling a lot better. He can move around and he can walk. But chemo starts in a few weeks, and we all know how that can affect somebody.

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You're going to learn, Ladies and Gentlemen, that this is not the first lawsuit. Monsanto has been sued repeatedly over the years specifically related to the chemical glyphosate which is in Roundup -- I'm going to talk about that in just a second -- and its association specifically with non-Hodgkin's lymphoma. But I'll be clear. Although there have been prior lawsuits filed, there has never been a case that has gone to a jury. And so I want to be very, very clear. You members, as part of this jury, are actually part of something really important. Because this product has been on the market for 40 years, and without a question, each one of you, whether or not you want to be or not, are actually part of history. And the world's watching because what you do here has really important consequences. And you're going to see stuff that nobody has ever seen. Documents that have never seen the public

light, never been seen by the EPA, by any regulatory agency. Documents that until this day have really been in the hands of lawyers and Monsanto.

So let me give you sort of a quick overview of how this case is going to work. And I know some of you might have been on juries before or have seen stuff on television. And I promise you the opening statements and probably (inaudible) will probably the most entertaining part of the case. At this point, it's going to be pretty dry, pretty technical, pretty vast. And by the end of this, in about 50 hours, we're going to have to teach all of you the science of non-Hodgkin's lymphoma, of toxicology, of how chemicals interact with portions of a cell and damage DNA. I'm going to try to go through that right now in the next hour and a half. But it's a lot to cover. And so one of the things that you have at your discretion -- and the Judge will instruct you on this -- is that you can ask questions. You can write them down. You can give them to the Judge, and she can decide whether or not she wants to give them to us. Please take advantage of this. I'm more interested in answering your questions than anybody else. If some of you might be confused about a scientific issue, might be concerned about something, please let me know. And before my expert or whoever I have testifying gets off the stand,

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maybe we can try to answer that question.

So the general overview is you have opening -- you have jury section, obviously. We all have that wonderful experience. Then we have opening statements, which is what we're doing right now. Then we're going to present our case. Then Monsanto is going to present their case. Then there's a possibility of rebuttal. So if they raise something that we need to respond to in their case, we can bring in a witness and talk about it. That's possible. We don't know if that's going to happen. Then there's closing arguments. Finally, you go and have deliberations.

I like to think about a trial as kind of like putting together a jigsaw puzzle. I think that's a pretty good analogy. All the little pieces of the puzzle are evidence; right? Testimony, documents, things that are going to be taken out of the box bit by bit throughout the trial. And the opening statement, none of this is evidence, okay? This is just me talking. And so what this really is is the cover of the box of the puzzle; right? If all the evidence -- if we get all the pieces out and we put them together, this is what it should look like when it's all said and done. And we'll see what happens; right? We'll go through the process of setting evidence out. There's a lot of legal issues.

Stuff happens. But by the time of the closing arguments, hopefully there will be enough pieces of that puzzle that I can put together and you can see the picture that I'm showing you today. So that's the plan.

10:20:17 There is, however, a big limitation in this case, and that is these are ten different individuals, former or current employees of Monsanto. And none of them are going to physically appear live to testify. I can't make them. Instead they're going to be playing

10:20:38 portions of a deposition, which is a seven-hour, if not longer, question-and-answering session, where there's no judge present, and it goes on and on and on and on. And then from that seven hours of testimony that's often convoluted, taken by other lawyers in different contexts,

10:20:56 we chop up the video and we play the portions that we think are relevant to the case. The problem is that Monsanto also gets to do that. So in the plaintiffs' case, you're actually going to see a lot of video, I mean, a staggering amount of video. I apologize for

10:21:10 that. It is so unbelievably boring and dry, it makes me want to cry. But it just is what it is.

And what's going to happen is is there's going to be a lot of documents shown, and the documents are going to go up really quickly on the screen and then

10:21:29 they're going to come down. And those are actually

really important pieces of evidence. So unfortunately because these people refuse to come here and testify live, Monsanto has control of them. They're not giving me a choice. They don't want me to have my hour with him
10:21:42 or her. But at the end of the day, you're going to hear a lot of video. And so I'm just going to briefly go over who these people are just so you have a sense of what's going on.

The three probably most important people you are
10:21:52 going to hear from are these three: Dr. Donna Farmer. She has the title of product protection leader. She worked exclusively until about 2008 on Roundup, and now she works on some of the other stuff that Monsanto does.

Dr. Goldstein, he was formerly the medical
10:22:07 director. Now he's a medical scientist in outreach. His job primarily consisted of liasing with other scientists, responding to bad science that came out. And believe it or not, his job was actually to respond to people who reached out with questions about product safety. That
10:22:24 was actually his job. So he actually has a really important role in this case because you're going to learn that when Mr. Johnson first got his rash, the first thing he did is actually called Monsanto and asked them, "Hey, is this stuff associated with cancer? Let me know." And
10:22:39 that message was given to Dr. Goldstein. You're going to

hear that Dr. Goldstein just never bothered to call him back.

You're also going to learn that four months later, Mr. Johnson again call Monsanto through their poison control. He called the number on the label for Ranger Pro. And he again told them all this stuff, the exposures, that he'd never had any problems until he had this stuff on his skin. And, again, they didn't call him back. I'll get into that more later. But Dr. Goldstein was the one who didn't make the call.

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And finally you're going to hear from Dr. Heydens. Dr. Heydens, he worked on product safety, and he basically -- him and Dr. Goldstein really have their fingers on a lot of documents. You're going to see his face pop up a lot when I go through these documents in a minute.

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You're also going to hear from three sort of consulting-type scientists. These are the sort of at the executive level at Monsanto. They're sort of the specialists. You have Dr. Mark Martens. He's toxicology director, former, primarily worked out of Europe. He has a big role to play in sort of the toxicity of this stuff in cells.

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Dr. David Saltimiras, he played a big role. And you will see a lot of testimony from him about working on

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publications and doing things with science. I'll show it to you. I don't want to say it; I want to show it to you.

And Dr. Acquavella, he's an epidemiologist. I'm going to explain what epidemiologist is in a second. But he was heavily involved in that aspect of the science in this case.

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You're also going to hear from two regulatory people, and these are actually the short videos. I think total together they're an hour. So that's great. By contrast I think the other ones are probably 16 hours of testimony. It's really long. I'm sorry.

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Daniel Jenkins, he was primarily responsible for interacting with the EPA and other regulatory agencies. So he was representing the company.

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And David Heering was sort of involved in that, but he was primarily involved in strategies involving regulatory. So how to position science to get favorable reviews and whatnot.

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And then finally you're going to hear from two salespeople. Steve Gould, he is the national accounts manager. So he oversees the entire western side of the United States, including California. He's responsible for the actual distribution of Roundup and Ranger Pro as it happened in California. Actually, he's ultimately

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responsible for the stuff that Mr. Johnson was using on his job.

You're also going to hear from Dr. Acevedo. He's a former sales representative. He's kind of like a whistleblower. He's going to testify about how he was inspired to join Monsanto because it claimed it would provide green factories of the future. He was inspired by the CEO at the time, a guy named Robert Shapiro. He's going to testify about when he got to Monsanto and he did the training, he heard a different story. You're going to hear about that. It's not a very long depo either.

All right. So here's the general framework for this opening. I'm going to try to answer five questions. These are the five sort of important questions that are going to drive this lawsuit. The first question is what is Roundup? We've talked about it a lot. We've all seen commercials for it, but actually what is it? Then we're going to talk about whether or not Roundup can even cause cancer, what the science is on that. That will probably take the vast majority of my presentation because I'm going to go through all the science this morning very quickly.

All right. Then we're going to ask did this Roundup cause Mr. Johnson's cancer, which is a different question than can it generally cause cancer.

Then we're going to talk about what damages he sustained because of this and what's going to happen.

And the last question is, you know, should Monsanto be punished based on the evidence.

10:26:35 And obviously these are questions that you're going to answer through the evidence throughout this case. I'm just going to preview a big chunk of that evidence so you can know what to look out for when we proceed to trial.

10:26:48 So what is Roundup? Let's be very clear. Roundup and Ranger Pro are the same things. I know they have different names, but Ranger Pro is actually the generic version of Roundup. They don't want to sell Roundup cheaply to compete with the Chinese manufacturer.

10:27:07 So you're going to learn that they sell something called Ranger Pro, which is manufactured by Monsanto. It's just cheaper. The same exact chemicals are used in the same products. The distribution of the chemicals is slightly different, and that's what I want to talk about.

10:27:17 So if you actually look on the label for Roundup, you'll see that it says the active ingredient is something called glyphosate. We're going to talk a lot about glyphosate in a second. It constitutes 48.7 percent of the formulated product and that the other

10:27:37 ingredients is 51.3 percent. So most of it is not

glyphosate; it's other stuff. If you look at the Ranger Pro label, it actually kind of tells you what that other stuff is, sort of. It shows you glyphosate, which is the chemical, the active ingredient, and then other ingredients, including surfactant.

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And so when we talk about Roundup, we're not talking about glyphosate. It is very, very important to understand the distinction. Glyphosate is a piece of Roundup, but Roundup is both glyphosate and surfactant. And this is important because it's studied differently. It's studied completely differently. And this is something that's going to come out a lot throughout the trial, particularly when it comes to regulatory agencies because they look at glyphosate. They don't look at Roundup.

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But what are these things? Let's start out with glyphosate. Glyphosate -- this is the chemical equation for those of you who can read chemical equations. It was actually originally discovered in the 1960s, and it wasn't discovered as an herbicide or a weedkiller. It was actually used to clean out industrial boilers. It has this ability to bind to metal, and because of that, we put it into this calcium magnesium that accumulates in boilers from the minerals in our water, and it actually helps strip it out. It was patented originally as a

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stripper for industrial boilers. Then they discovered, actually, hey, this thing kills weeds. And what they discovered was that it's sort of a broad spectrum herbicide. What this really means is it really kind of
10:29:10 kills plants, most plants. Not all plants but most plants. And the way it does it is actually pretty complicated. And I wasn't planning to get into it too much, but I looked at their opening, and I think they are. So I'll give you my layman's version of it.

10:29:25 Basically a plant has to go through these various steps to generate energy. Okay? One of those steps involves something called a enzyme, which is a molecule that basically allows the cell to do something. It's like a trigger. Okay? Glyphosate comes in and
10:29:41 replaces that enzyme. And so then when the process gets to that point, it doesn't see the enzyme; it sees glyphosate, and it stops. And so the plant stops creating energy. It withers and it dies. So that's how it actually works when it comes to weeds.

10:29:59 Let's talk a little bit about the surfactant. There's a lot of different -- well, we'll talk about what a surfactant is first of all.

So a surfactant is something that's added to a lot of products. And so let's say you have a surface,
10:30:12 right, and you just put a droplet of water and it would

just kind of sit there; right? A surfactant would make it look like this. It basically allows something to spread and move out. It's called essentially an emulsifier; right? And that has a couple of important
10:30:33 facts. One: It allows it to spread all over the leaf or human skin; right? So it doesn't -- if you spray it on your hand, it doesn't drip off; it stays and it kind of sticks. It also does a couple of other important things. It actually strips away the oils that naturally protect
10:30:52 our skin from stuff so it would allow sort of a fresher skin. It causes irritation which can cause (inaudible) blood flow. So it increases absorption as well. But that's not what it's designed for. It's designed for plants.

10:31:07 So as you can see -- well, the surfactant -- and this is a Ranger Pro label. You can see it's approximately 59 percent. I don't know if all that 59 percent is surfactant. They don't tell you. But we know it's in there. And the surfactant that's used in
10:31:23 both Roundup and Ranger Pro is called polyethoxylated tallow amine. And I will never say that word again because we just call it POEA. And that's the surfactant that's used in both Roundup and Ranger Pro. You're going to hear testimony that, in fact, this substance is banned
10:31:40 in Europe for safety reasons. But it is used here in the

United States. It was used in the product that Mr. Johnson used.

And so this is sort of a visual depiction of how it works, POEA, how it basically latches onto the skin and therefore allows greater penetration into the human cell.

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This is without the surfactant, if you just sprayed glyphosate on the plant. Some of it would get through but not very much. With the surfactant, wham-bam. The same mechanism, by the way, that allows it to penetrate plants, for the most part, allows it to penetrate human skin. This is really important, actually, because there's actually been quite a few studies done. I actually think I have a document here. This is Plaintiffs' Exhibit 366. And this is dated 2015, August, and it's to Donna Farmer. She's the chief toxicologist. You can see William Heydens as well. And it's from Ashley Roberts at Intertek. Intertek is a commercial contract research organization. They do studies, and they publish papers on contract with companies.

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Anyway, they're putting together a paper here. And she sends an email to Donna and Bill saying -- about a researcher that's going to be on this panel. It says, "He has asked if you need to give any

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consideration to exposure to formulants in the commercial products, at least in applicators? I was under the impression that these were inert, but reading a response this morning in the *Ecologist* makes it sound like it's a combination that is toxic."

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In response, Dr. Heydens says, "Ashley, I think the short answer is no. The focus of this" -- referring to the publication they're talking about -- "is what is the carcinogenic potential of glyphosate." Carcinogenic means does it cause cancer, just in case anyone didn't know that. "That said, the surfactant in the formulation will come up in the tumor promotion skin study because we think it played a role there."

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This is really important because you're going to hear about in a little bit a study that was done in mice, a study that was a dermal application instead of feeding. And this is an acknowledgement to Dr. Heydens that when you add surfactant, it makes a difference.

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So this is the product. I think it's really important to note the differences when we talk about them. So, for example, in the mini opening, opposing counsel said to you glyphosate does not cause cancer. That's what she said. That is different than Roundup does not cause cancer. That's really important because the plaintiffs believe, and we intend to prove through

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the evidence, that it's not just glyphosate that's the problem. It's part of the problem. But it's glyphosate plus the surfactant, that when you put them together, they have a synergistic effect. You have all heard of
10:34:37 synergy. It's an office term, you know. It's when 1 plus 1 does not equal 2, okay? When 1 plus 1 equals 5 or 6; right? And in chemistry that's just a fact. Sometimes two agents independently do not have the same effect as two agents together.

10:34:55 Now, I'm not a scientist, but I like to think of it as like baking soda, pretty benign, vinegar, pretty benign. You put them together and you get that volcano eruption that you did in your science project in the seventh grade. So we know from science that they are not
10:35:12 the same. I think it's really important to keep this distinction in mind. I will try my best to do so throughout this case.

The next question is can Roundup cause cancer? And to answer this, we really look at three different
10:35:26 areas of science. I call them three pillars of cancer science; right? And I think this is generally agreed upon, those three areas. I don't think this is a disputed issue of science.

The first issue -- the first topic is called
10:35:34 animal carcinogenicity studies. And this essentially

looks at experiments done on rodents and rats -- mice and rats, sorry. Then we also look at mechanistic data. This looks at how glyphosate or Roundup effects the cell, whether it be human cells, animal cells, bacteria, yeast, whatever. How it effects the DNA within the cells.

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The third one is epidemiology. This is a study of disease. And I don't want to move on without defining that. The really simple way of looking at epidemiology is you have two groups. You have one group over here and you have one group over here, and they will have a disease; right? It's called NHL or non-Hodgkin's lymphoma. They all have a disease, and they all have similar characteristics. They work in the same profession. They have the same general exposure to sunlight, all the things that might be associated with with cancer. By the way, sunlight is not associated with NHL. But to the extent that it was, they're the same; right? The only real difference is that one of them has Roundup and the other one does not. And then you look and see, well, the people who are just using Roundup, that are otherwise the same, what's they're cancer rate for non-Hodgkin's lymphoma, and for the people who are not exposed, what's they're cancer rate? That is a really 30,000 foot level description of epidemiology. It's actually pretty accurate when you actually boil it

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down, particularly in most of the studies in this case.

There's another way of doing this study where you don't start off with people with NHL. You just start off with people; right? So you have a group of people over here who are not exposed, a group of people over here who are exposed, and you just follow them for years and see what happens. That's another type of study. They both have strengths and weaknesses, and we'll go over that in a bit.

10:37:38 All right. So these are the three pillars of science. To prove our science in the case, you're going to hear from two primary -- and when I say "science," I mean the general causation so does it cause cancer. You're going to hear from two experts from the

10:37:51 plaintiffs' side for sure. You may be hearing from someone else, but for sure these two are testifying, depending on time.

The first is Dr. Christopher Portier. He has a Ph.D. in biostatistics from the University of North

10:38:09 Carolina. He also has a minor in epidemiology. So he's very familiar with these issues. He actually -- his thesis was about how to do animal studies in rats and mice. And actually his original research is actually what's now used uniformly in the field of

10:38:23 science. He's a former associate director of the

National Toxicology Program, which is probably the most premier toxicology program in the United States which is government funded. It's part of NIH. He's also is a former director of the National Institute of Health. You're going to hear about that from the defendant because it's one of the studies they like that involved this institution. He's a former director of the National Center for Environmental Health and at the Centers of Disease Control and Prevention. So at the CDC, there's
10:38:52 an entire area that looks at the toxicology aspect of products. And he was director of that. He was also a former director of the Agency for Toxic Substances and Disease Registry, ATSDR. To give you a sense of the amount of work he's done in this area, he's been doing it
10:39:08 for about 40 years. And when Congress wanted to find out an herbicide -- I actually don't want to talk about that because I don't want to get in trouble.

They wanted to find out about do power lines cause cancer. They wanted to know. And so they asked
10:39:28 this agency to do it, and he's the one who figured it out. Congress has a list of substances that they use to define cancer, and when he was the director, he decided what went on that list. He is one of the most preeminent scholars and researchers in this area. And the only
10:39:45 reason why he's involved in this case, as you'll see, is

because he actually was involved in the international agency that researched this issue back in 2015. That's how he got involved. I don't think in a million years he would ever respond to my call.

10:40:01 We're also going to hear from Dr. Alfred Neugud. He's an epidemiologist. He's got an M.D. as well. He's a medical doctor, specifically in oncology. I believe he has a Ph.D. in cytopathology, which is looking at the source of diseases in cells. He has a master of

10:40:16 epidemiology from Tacoma University. He runs the epidemiology program at Columbia's medical school. And he's published over 50 peer-reviewed chapters and books. He's very well credentialed, and he's kind of a hoot. He's a character. He's sort of an older man from New

10:40:33 York, and he doesn't let you forget it. But he reviewed the science in this case, particularly the epidemiology. He's going to give you some interesting insights into the science that you should pay attention to to figure out the answers to the questions.

10:40:45 So let's look at the science.

First we have animal carcinogenicity studies. As I said, these occur in mice and rats. These only look at glyphosate. Okay? These are not Roundup studies. They're just looking at glyphosate. They typically last

10:41:01 about two years. And they have four different groups.

They have a control group which has no exposure to glyphosate. They have a low, mid and high dose. So a low dose of glyphosate, a middle dose and then a high dose. That's how it breaks down. What they do is they
10:41:17 do this for about two years, and then when the two years are done, they sacrifice all of the mice and rats, and they look at every single aspect of their body. They look at every organ. They look at every part of the body. They look for any sort of tumors or deformations
10:41:33 or whatever.

And one of the things we look at when we have multiple studies is we're looking for a couple of things. First of all, are there significant increases in the tumors in the mice in the dose groups. If there are and
10:41:48 there's nothing in the control group, that's compelling evidence. You look for replication. Are tumors appearing across different studies; right? That shows that it's not just unique to this mouse. It's happening in other animals.

10:42:00 They look for a dose response. If it's carcinogenic, you expect to see more cancers in the high dose than you would in the low dose. That's not guaranteed. But you would expect that because you want to see a dose relationship across species. You want to
10:42:16 see it both in mice and rats. The reason why the cancer

is occurring is because it's something unique to a mouse. We've all heard of studies like, oh, yeah, that only causes cancer in rats, not in humans. Respectively, don't listen to anyone who says that. You're going to hear testimony that that's not actually accurate.

They're looking for rare tumors. This is really important. If tumors are rare, meaning they're not something you would expect to see and you see a lot them in the dose group, that's also pretty compelling evidence that there's something going on with them.

So I just wanted to be clear it's been admitted by Monsanto that they have not conducted a mouse or rat study, a long-term study on cancer, whether or not it causes cancer, on glyphosate since 1991. But we have a lot of studies after 1991. That's because other companies have been doing them. But Monsanto hasn't been the one doing it.

So what do we see? This is what we call the mice study tumor chart. And this is my really pathetic way of trying to make sense of the tumor data. And I was walking through a couple of basic ones; right? So the top -- each column is a study. So there's been five mice studies; right? And they're dated. So the first one is 1983, and the next one is 1993. So you know, starting from the second one onward, those are non-Monsanto

studies because they didn't do anything after 1991.

So what are we looking at? Well, we see some replication. We see in three of the studies we have elevated rates of kidney cancers. We also see in the last four studies not done by Monsanto every single study shows malignant lymphoma. Now, we're talking about non-Hodgkin's lymphoma. You're going to hear testimony that seeing such a consistent result in these mice studies related to a specific type of lymphoma is really strong evidence about whether or not it actually can cause lymphoma in humans.

There's also multiple studies that had multiple malignant tumors. So this is not just one tumor that's potentially, you know, in the skin or whatever. This is multiple malignant ones. So the stuff is going to kill the mouse eventually.

So what we see here is we see a lot of replication. Just for your information, the first four studies involve one species of a mouse, and then the last one is a different type of mouse. Swiss albino mouse is the last one. The first two ones are CD-1 mice, I think they're called. So we actually see cross species just in this chart for the mouse studies.

In addition to those five pivotal studies, there's actually another really important study. It's

called the George Study from 2010. And the EPA doesn't consider this study, and the reason why is because you know those four different groups of mice? Normally there's 50 mice in each group. This one only had 20.

10:45:16 And you're going to hear testimony from Dr. Portier that if you have an underpowered study like that and it doesn't show any risk, then you can't use that as evidence that it doesn't cause a risk; right? But if you have an underpowered study and it shows a risk, then, oh,

10:45:34 boy, you're able to detect a signal even without enough mice. So you can't ignore it. The EPA didn't follow that standard even though they actually did their own regulation and they didn't really consider it. But it's really powerful study because it's the only study that

10:45:50 looked at dermal absorption and its effect on the skin. All the previous mice studies were in feed. They put glyphosate in food and they would calculate how much glyphosate they were ingesting. This one they applied to the mice skin twice a week, and the results were just

10:46:08 staggering. 40 percent of the mice that were exposed to glyphosate had tumors in their skin and none in the control group did. None. 40 percent/none.

Now, they didn't actually look at the tumors to see are those cancer; right? They just saw tumors. They

10:46:26 didn't count the tumors. So they don't know if it was

carcinogenic tumors. But it doesn't matter. There were 0 in the control group and 40 in the other mice. And I think this is also really important because Mr. Johnson didn't eat glyphosate; right? He sprayed it, and it got on his skin. And he was being exposed to it multiple times a week for prolonged periods of time.

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This is a 32-week study, for everyone's information. You're going to hear evidence that this study provides strong evidence that it's a tumor promoter. So what that means is if you have something that could cause -- that could lead to cancer -- we all have these in our bodies now. If you've ever smoked, there's been an assault on your cells. They attack and they sort of lay dormant. It's kind of like thinking of like a room full of sleeping children. They're all asleep and everything is fine. There's no cancer. But they all could wake up and become cancer one day. And the size of that classroom depends a lot on the stuff you expose yourself to; right? If you expose yourself to a lot of chemicals, you have a really big classroom. If you don't smoke, you have a small classroom. A promoter is coming into that classroom with symbols and waking the kids up, "Come on guys. Let's get going." And then they start running around, and that's when the cancer comes. This is really, really important for this case in

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particular because Mr. Johnson reached out to Monsanto in 2015 and said, "Hey, does this stuff cause cancer?" He reached out to them in 2014. "Could this in any way be associated with my cancer that's growing on my skin?" And they didn't respond. And you're going to hear evidence and testimony from experts that he continued to use Roundup for an entire additional spraying season compounding his own cancer that he already had. And that's just because they didn't bother to call him back and say, "Here is what the science says." And so this is really important because if it's a promoter, then the lack of disclosure in that time period is particularly problematic.

All right. Let's talk about rats. These are the rat studies. There's been seven of them. The first four were in a certain type of rats called -- I'm not going to -- Sprague Dawley. And then the last three -- I actually know this. I know how to write it, but I can't actually say it. And then the last one is Wistar. As you can see, here again, we have a lot of tumors being seen. There's a lot of repetition. You have two thyroids. Interestingly enough, we have kidney tumors in a lot of them. So now we have kidney tumors both in the mice and the rats.

You also have sort of an interesting thing. You

have a lot of skin cancer. And this isn't actually officially skin cancer. That's a tumor in the skin. And so that's actually pretty interesting, I think, for this case considering that's, quite literally, the type of
10:49:26 non-Hodgkin's lymphoma
Mr. Johnson has. The only study that didn't have any tumors that were significant at all in any way was the Suresh study from 1996.

So of the 13 mice and rat studies, there's only
10:49:40 one study that has it clean across the board. All of them have signals in some capacity or another. And Dr. Portier is going to walk you through exactly each one of those.

Let's move on to the next type of data.

10:49:53 So do we have carcinogenicity studies? Yes, we do. Checkmark.

All right. Mechanistic data. Now, this is a little more complicated. So what mechanistic data is refers to the way in which a substance can cause cancer.
10:50:07 It's pretty obvious. So how does it actually cause the cancer?

To Understand that, you actually have to look at what is cancer; right? And so you start off with normal cells. Then you proceed -- the cell gets damaged in some
10:50:19 way; right? Now, if it's a promoter, it then helps it

mutate; right? It jumps a step to mutation, and then the mutation gets out of control, and that causes a tumor. That's the cancer tumor.

Now, these different little boxes are different ways in which you can affect the cells' processes that would effectively lead to cancer; right? So, for example, if it causes DNA damage, then you increase the number of damaged cells. That increases the chances for mutation, et cetera, et cetera. If it prevents DNA repair -- right? -- then the damaged cells don't get a chance to get repair, and then it can lead to mutations of cancer. It can -- cellular replication -- it can promote the replication of the bad cells.

And there's all these other things, but it can have -- it could -- it can conceivably promote uncontrolled growth of mutated cells. We're not suggesting, and no one is suggesting that glyphosate affects all these different ways you can affect cancer. That's -- no carcinogen does that. They all have a specific mechanism.

And here we have two that are really interrelated and directly relevant to this case. And there's a lot of science on this. That's why -- that's why we talk about this. The first is called genotoxicity. This is a property of chemical agents that

damage the genetic information within the cell that can cause mutations.

So what does that mean? DNA damage, really, is what we're talking about. We're talking about interfering with the chromosomes and the building blocks of life, because that's -- I mean, that, as a mechanism, can lead to cancer.

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The second mechanism is called oxidative stress. It's an imbalance between the production of free oxygen particles and the ability of the body to counteract their harmful effects with antioxidants. You all heard antioxidants; right? They're supposed to be good for you, for your health. It's because what it does is, it combats these things called free radicals -- or I call them free -- let's just call them free radicals -- that are in your body.

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And free radicals and the proliferation of them creates stress on the cells, and that has been for a long time known to be associated with a host of diseases. Not just cancer, but, yes, cancer is one of them. And you're going to learn that that actually can lead to genotoxicity.

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So these are not just independent mechanisms. They can relate to one another. But they are studied separately; right? You look at DNA damage, and you look

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at opposite. They're the mechanisms that suggest that there's oxidative stress in the cell. And that's something, by the way, that is really important to understand.

10:52:41 The way we do these experiments, it's not like we're omniscient; right? I can't know everything that's happening in the cell, but I can see the markers that are left over if something happens; right? So if there's genetic damage, I can see the genetic damage after the

10:52:58 fact by looking at the cells. If there's oxidative stress, I can see the things you would expect to see if there's oxidative stress. So I just wanted to point that out. But it's kind of not an important detail, but I think it's important.

10:53:09 So here we go. So the chemical can affect any of these various aspects of it. And here we're talking about oxidative stress, which is here on the left with respect to genotoxicity and genotoxicity directly.

All right. So this is what we're talking about.

10:53:25 There's a whole host of different ways in which you can affect DNA; right? You can break one strand of it. You can create mismatching of the chromosomes. You can damage the base. You can have a double-strand break. You can have a chromosome kind of link over to another

10:53:43 one. I actually don't fully understand all of these

things. But, basically, there's a lot of ways that DNA could be damaged. It's not going to pretend to --

But notwithstanding, we study it in two different mechanisms; right? The first one's called *in vivo*. It's in living things; right? So we study them in living humans, in living animals. You can actually see what's happening in a living creature.

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Then there's *in vitro*, which means in a test tube; right? So that means we're looking at cells from living things and how they're kind of responding in a culture. Those are important distinctions, because, you know, there's a whole bunch of processes in a living organism that don't necessarily occur *in vitro*, although you can try to simulate them with different types of things.

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So they're both valuable pieces of data. I think you're going to hear testimony that *in vivo* is probably the most important for the purposes of understanding the cancer risk. But in mechanistic data, those are the two different areas.

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In addition to *in vivo* and *in vitro*, they studied both Roundup and glyphosate. So they studied just the glyphosate alone, and they also studied Roundup, the formulated product. They also studied humans and nonhuman mammals, like mice or rodents or other types of

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mammals.

And then in non-mammals. And that's, actually, a pretty broad category; right? Bacteria, yeast -- you name it; right? So -- even fish.

10:55:02 So there's a lot of different studies that have been done over the last 40 years since Roundup has been on the market. And so I'm going to try to give you a quick overview of what those studies show.

But before I do that, I'm going to tell you a 10:55:17 little story. So far I've just talked generally about the science. I'm going to connect it a little bit to Monsanto. Okay?

In the 1990s, there was four independently-published studies specifically related to 10:55:32 genotoxicity. It was the Rnk, Bolognesi, Lioi, and Peluso studies. They all came out in the '90s. And they were independent peer-reviewed articles not associated with industry, and it spurred a lot of concern within Monsanto. I want to show you how Monsanto dealt with it 10:55:50 and what they learned back in the '90s.

So the first article came out in January of 1998. It's Plaintiff's Exhibit 852. And this showed elevated increases in DNA damage, but it did not show that it was significant. And I'm going to talk to you 10:56:06 about statistical significance later -- it's an important

issue in this case -- but for now just accept that it wasn't a significant difference. It was elevated, but it wasn't significant. They couldn't rule out that it was just chance. That's in January 1998. That's actually
10:56:21 incorrect. That should say January 1992. So I apologize for being incomplete. That's wrong.

Then in -- about five years later, in March of 1997 -- that date is correct -- Bolognesi publishes the study. And what's going on here is, in the '90s, the use
10:56:38 of glyphosate -- sorry -- the use of Roundup dramatically increases in the world, like dramatically. Well over ten times. And it continuously just goes up after that point. I'm not going to get into why, but it does dramatically increase in the '90s.

10:56:58 One of the things that these researchers are going into, I've noticed, is that they're starting to use Roundup to spray cocoa plants in South America to kill cocaine production. It's a weed killer. It kills plants. It makes a lot of sense. It's supposedly
10:57:14 safe and --

But these researchers are growing really concerned because there's people who live in those communities, and they're just flying by and spraying with them, and they want to make sure there's no health consequences doing that.

So they start researching it, and this is the first study they do. It's actually not in living humans, but it's in human cells, as well as in mammal cells, in rodent cells. And the title of it is "Genotoxic Activity
10:57:39 of Glyphosate," and its technical formulation is Roundup.

They look at both, glyphosate and then Roundup. They recognize that there's a difference. And what they conclude is pretty interesting. They find a DNA-damaging activity as a DNA single-strand breaks, and 08 -- 08HDG,
10:58:04 and a significant increase in chromosomal aberrations were observed with both substances *in vivo* and *in vitro*. The *in vivo* was in living animals. It wasn't in humans. Not yet. A weak increment of genotoxic activity was evident using the technical formulation.

10:58:23 So what that really is saying -- and we'll go over this study later with an expert, but is that they're saying is that there's serious damages occurring with the formulator product, not just glyphosate. You really have to look at both. That's actually how the study
10:58:36 concludes.

In any event, the next study comes out two months later, in July 1998. And, again, it's the through the Lioi study. It shows that it produces oxidative stress and genotoxicity in animal cells.

10:58:47 Finally, the last study comes out for this

little story, the Peluso study, that Roundup exposure induces dose-attendant DNA damage in mice. So these studies are sort of a growing body of evidence that there's genotoxicity in animal cells, meaning that it's causing damage to DNA.

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In response, Monsanto gets together, and it decides that they need to research the issue. So this is an email dated December 1998, a meeting on mutagen at dyspathy (*sic*), which is whether or not something can cause a mutation. And it's agreed that an external global network of genotoxic experts needs to be developed as EU has an immediate need, and it's a critical area now.

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Now, it was agreed that Mark Martens -- that's the picture you're seeing right there; his name's blacked out. It says Mark Martens will contact Dr. Parry next week to discuss with him his participation in the support of glyphosate -- glyphosate-based formulation genotox issues. After initial conduct, if Dr. Perry's agreeable, then Mark will be included in discussions to outline issues, et cetera.

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So they're recognizing a problem, and they say, "Hey, let's hire an expert to look into this." Sounds pretty reasonable. So they hire Dr. Parry. Now, Dr. Parry, unfortunately, he passed away in 2001, but in this

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time he was really a prolific and well-respected genotoxicity expert. He actually wrote two of some of the more important technicals at least used in Europe, "Comparative Genetic Toxicology, Principles and Methods
11:00:21 of Genetic Toxicology," published over 300 papers that are specifically on this issue. He actually founded the journal "Mutagenesis" and the European "Journal of Molecular Genetic Toxicology," and he was president of the European Environmental Mutagen Society.

He was a very well-respected expert. I mean, he, from Monsanto -- you'll hear evidence about this, was that if they could get this guy onboard, then they could use him with regulators, and anyone who raises concerns can say, "Hey, Dr. Parry says it's safe. Clearly it's
11:00:52 got to be safe."

So what happens? They say, "Pause for a second." They go, "Well, hold on. We actually don't know if Dr. Parry is going to agree that it's not genotoxic, but we see that there's this document as
11:01:05 well."

Gee, well, Dr. Parry is a recognized genotox expert. What is not known is how he views some of the non-standard end points, such as -- whatever -- evaluated in the genotox article by Rnk, Bolognesi, et cetera. And
11:01:18 these different end points are different ways of testing

for DNA damage. Just so you know.

Therefore, it was recommended that before we asked him to get more deeply involved, reviewing all the literature, glyphosate data representative of consultants
11:01:33 with regulators, et cetera, we would ask him to review a subset of the articles.

It was proposed that Mark Martens would contact Dr. Parry and ask him for a rate review of the articles by Rnk, Bolessi -- Bolognesi, Peluso and Lioi that we
11:01:44 discussed earlier.

Based on his critique of the genotox papers, a decision would be made as to his standing or accommodating his involvement regarding somebody else. No further contact would be made at this time when a clear role has been identified for -- something I could -- this is not Dr. Parry. Money for his initial consultation will come from someone's budget. A bigger initiative will require additional funds to be located.

So they decided to do a test run with Dr. Parry. It sounds like they did four studies in the COP staff to see if he agrees that they're not helpful.

I want to point out in this document something that's interesting. This is going to come up later at the end of the story. They had expanded discussions with
11:02:35 Dr. Gary Williams on genotoxicity issues. Okay?

Remember Dr. Williams. His name's going to come up again and again and again.

So he -- oh, by the way, this is really interesting too. In this document they also have -- they
11:02:48 asked for a press release, and here's what they said: "Please comment on the draft below." Quote, "Several genotoxicity studies have been conducted on glyphosate, the surfactants in glyphosate formulations, and other closely-related surfactants. Studies have also been
11:03:03 performed on Roundup, herbicides, and other glyphosate formulations. None of these studies have shown any adverse findings. Based on all these results, we are confident that glyphosate herbicide products are not genotoxic and, therefore, do not present a mutagenic or
11:03:18 carcinogenic risk to humans and animals. We will continue to diligently consider concerns raised in this area and will support our conclusions on the safety of Roundup, herbicides, with appropriate scientific input."

And the document ends there; so I actually don't
11:03:31 know how it ends.

But what's interesting here is, in the same document we have Monsanto saying we need to hire somebody to look at this issue, and they're also issuing presses releases saying that there's no risk. Just flag that.

11:03:45 So Dr. Parry does his study. He reviews those

four, and he gives them a report. And here's the report. It's dated February 11, 1999. "You will find enclosed my evaluation of the four papers you provided concerning the potential genotoxicity of glyphosate in Roundup. Although each of the payors have weaknesses, I have avoided a report which attempts to focus upon these weaknesses. Rather, I've attempted to pull out the data, which provide an aid and understanding of the potential mechanisms of glyphosate genotoxicity and indicated how you might clarify these mechanisms. It has been my experience with regulatory agencies that a positive attitude to published data is a more productive approach than just criticizing individual studies."

He goes on. "I assume you have already had inhouse data for some of the suggested experiments."

So he assumed they have the data already in-house.

In my view, the *in vitro* micronucleus work suggests that it would be the most productive way of clarifying the question of fact-finding.

We're going to discuss micronucleus in a bit. But, basically, it's when there's DNA damage, you start seeing a separate nucleus in the cell that's not part of the original nucleus. That's indication of genetic damage occurring in a --

And let's look at his report. The overall data provided by the four publications provide evidence to support a model that glyphosate is capable of producing genotoxicity both *in vivo*, in living things, and *in vitro* by a mechanism based upon the production of oxidative damage.

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So he reads the same studies, and he goes, "Hey, guys, this stuff causes genetic damage by causing oxidative cells."

That's what I'm seeing in this data.

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He goes on to say, "Based on these studies, here's the questions that I have. What is the role of components of mixture which leads to high levels of activity for Roundup? So why is Roundup seemingly worse than just glyphosate? We should study that."

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He also says, "Is the genotoxic activity observed due to oxidative damage?"

So he's saying maybe it's not just direct DNA damage. Maybe it's this oxidative stress issue that -- but it's clearly there. Let's just figure out how it's actually happening.

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So in response -- oh, he goes on. Here's what he recommends. He says, "An assessment of the individual components of the Roundup mixture to determine whether there is any components which act synergistically to

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increase the potential of genotoxicity of glyphosate."

This is exactly the issue that I was talking about earlier. One plus one doesn't always equal two. Such studies could be designed to investigate a panel of
11:06:28 mixtures, leaving out one or more component of the mix for each individual experiment.

So he gives them the study, and Monsanto's reaction is let's give them more data. So review of Dr. Parry's analysis. What is our next step?

11:06:45 Dr. Parry concluded in his evaluation of the four articles that glyphosate is capable of producing genotoxicity both *in vivo* and *in vitro* by a mechanism based on the production of oxidative damage.

The data Dr. Parry evaluated is limited and is
11:07:02 not consistent with other better-conducted studies. In order to move Dr. Parry from his position, we will need to provide him with the additional information as well as asking him to critically evaluate the quality of all the data, including the open literature studies.

11:07:17 As a follow-up, Mark will contact Dr. Parry and discuss with him the existence of additional data and ask him to evaluate the full package. Mark will also explore his interests if we can turn his opinion around in being a spokesperson for us for these types of issues.

So they decide, okay, listen. We don't like his

report, but give him all the data. Once he sees the whole data, he'll agree that it's not genotoxic. So we give him all the data. And Dr. Parry gives them another report. This is in August of 1999. This is
11:07:48 after reviewing all the stuff that Monsanto had.

Before I get to that report, I'm going to define a new word for you. Clastogen. A clastogen is an agent that can induce mutation by disrupting or damaging chromosomes. So that's what a clastogen is.

11:08:07 So here we go. Exhibit 22. This is the full report, his specific evaluation of the genotoxicity of glyphosate. So this is not a glyphosate mixture. This is not Roundup. This is just glyphosate.

On the basis of Lioi, et al., I will conclude
11:08:22 that glyphosate is a potential clastogenic -- is a potential clastogenic *in vitro*; that is, it can cause mutations. The study of Bolognesi indicates that this clastogenic activity may be reproduced *in vivo* in somatic cells.

11:08:37 However, the dominant lethal assay of limited sensitivities indicate that this genotoxicity -- genotoxic activity is not reproduced in germ cells. The work of Bolognesi 1997 and Lioi 1998 suggests that genotoxicity as observed may be derived from the
11:08:54 generation of oxidative damage in the presence of

glyphosate.

So he looks through all the data, and he says, "Guys, it causes genotoxic effects, and it's probably because there's oxidative damage." For the formulated
11:09:07 mixture, he agrees studying the Bolognesi suggests that glyphosate mixtures may be capable of inducing oxidative damage *in vivo*.

So now he's looked at all the data. He's seen what actually Monsanto has on hand, and here's what he
11:09:20 suggests. He says, "Here is the questions we need to answer: Are there differences in the genotoxic activities of glyphosate in glyphosate formulations? Is there a difference? And do any of the surfactants contribute to the reported genotoxicity of glyphosate
11:09:38 formulation?"

So is the surfactant really causing the damage? He cautions Monsanto: If the genotoxic activity of glyphosate in its formulation is confirmed, it would be advisable to determine whether there are exposed
11:09:54 individuals in the group within the human population. If such individuals can be identified, then the extent of exposure should be determinant and their lymphocytes analyzed in the presence of chromosome operations.

So he's saying, "Listen, instead of showing you,
11:10:10 let's go out and look at humans who are being exposed and

see what's happening to their chromosomes." And, actually, that actually happens. Bolognesi and the other researchers go out and take the blood from the people who are being sprayed on in Columbia and Ecuador, and lo and behold, they find DNA damage, significantly more DNA damage than the people who are being sprayed -- exposed to Roundup.

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All right. So Mark's response, that given all the data, they tried to butter him up. What have we got? This is from Dr. Heydens, and it's sent to a bunch of individuals, including Dr. Farmer. And the subject is the Parry report. I'm actually going to read this whole email because I think it conveys the whole story.

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"I have read the report and agree with the comments. There are various things that can be done to improve the report. However, let's step back and look at what we are really trying to achieve here. We want to find/develop someone who is comfortable with the genotox profile of glyphosate/Roundup and who could be influential with regulators and scientific outreach operations when genotox issues arise.

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"My read is that Parry is not currently such a person, and it would take quite some time and money/studies to get him there. We simply aren't going to do the studies Parry suggests.

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"Mark, do you think Parry could become a strong advocate without doing this work Parry? If not, we should seriously start looking for one or more other individuals to work with. Even if we think we can
11:11:45 eventually bring Parry around, closer to where we need him, we should be currently looking for a second/backup genotox report. And your spy eventually going up, I told you to flag Dr. Williams."

That's going to pop up in a second.

11:12:02 "We have not made much progress and are currently very vulnerable in this area. We have time to fix that, but only to make this high priority now."

Your Honor, can we take a quick break? My client needs to use the restroom.

11:12:15 THE COURT: Yes. All right. Let's take a ten-minute recess.

We'll resume again in ten minutes, Ladies and Gentlemen. Thank you.

(Recess.)

11:22:52 THE COURT: All right. Welcome back, Ladies and Gentlemen.

Counsel?

MR. WISNER: Thank you, your Honor.

THE COURT: Mr. Wisner, you may proceed when
11:23:00 you're ready.

MR. WISNER: Thank you, your Honor.

So we ended up here on -- you said we aren't going to do the studies that Parry suggests. Now, I want to be clear about what Monsanto did and did not do after this.

They did do some studies, but they looked specifically at the genotoxicity of the surfactant studies slope. And then they separately looked at the genotoxicity of glyphosate alone. But they didn't do the study we care about, that Dr. Parry cared about, about seeing if there's a synergistic effect. And there hasn't been any studies done by Monsanto since this email, and that's 20 years ago.

Instead of -- oh, this is an important admission. Monsanto admits that it never sent the -- Dr. Parry's reports to the EPA. The evidence will show that Monsanto didn't share it with anybody.

Instead, you're going to learn that Monsanto sponsored the publication of something called the Williams paper. And I'm going to teach you a new word right now. It's called ghostwriting. This is when a company writes a favorable publication that pays a prestigious author to put their name on it. This is the idea of, you know, writing something and having someone sign it, and so it looks authoritative even though the

person wasn't really involved in putting it together.

They published right around this time. I think it was in December 1999 is when they received it. It was published in 2000. So this is called the Williams 2000 article whenever you see a reference. And, as you can see it here, it's written by Gary Williams, Robert Crows (phonetic), and Jan Monroe.

At the end of this article, it does say that Monsanto helped contribute to the article in the acknowledgement section, but it doesn't say anywhere in the study -- I'm not saying -- well, it doesn't say that they wrote it. Okay?

We do know, though, in an email from 2015, and this is related to a -- responding to some science that comes out in March of 2015, which we're going to talk about later, but they're talking about different approaches for creating science to help them to respond to a listing by this agency called IARC.

And if you go -- we went full board, involving experts from all of the major areas -- AE tox, Genotox, MOA, which is method of absorption, exposure -- I'm not sure who to get. We could be pushing 250K or maybe even more.

A less expensive/more palatable approach might be to involve experts only for the areas of contention --

epidemiology and possibly MOA, depending on what comes out of the IR mind.

And he ghostwrites the exposure toxicity of tox -- this is Dr. Heydens writing specifically to Dr. Farmer, saying, "Hey, we could ghostwrite something."

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And he goes, "An option would be to add this person here and this person to have their names on the publication, but we'd be keeping the cost down by us doing the writing, and they would just edit and sign their names, so to speak."

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Recall, that's how we handled Williams, Crows (phonetic), and Monroe, 2000.

So just to get the timeline of events, Monsanto gets a report from Dr. Parry saying it's genotoxic. They give him more data. He says, "Yes, it's genotoxic. You need to study the formulated product." And instead of submitting that report to the EPA or even giving it to anybody, they ghostwrite an article saying that it's not genotoxic.

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And the impact of this published article is appreciated within Monsanto. I'm going to flash forward very quickly ten years. This is April of 2010 -- I'm sorry -- December of 2010, not April. That timeline is wrong. And this is a PowerPoint created by David Saltmiras -- who you're going to hear from; he's one of

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the witnesses in this case -- to Dr. Heydens. And the PowerPoint is glyphosate toxicology activities supporting registration reviews.

And in it he specifically talks about publications. And he says, "Williams, et al., an invaluable asset. Monsanto responds to agencies, scientific affairs, rebuttals, and regulator reviews."

Oh, let me go back to the section of the report. And right here it says, "The more current external publications are now needed to support our FTO and registration reviews."

You're going to learn that "FTO" is a term of art within Monsanto that stands for freedom to operate. It is their right to sell products without any regulation or to eliminate the regulatory control of their operations. And that's done, obviously, with scientific articles, like the Williams 2000 article.

It goes on to say, "Unfortunately, we are facing regulatory reviews with increased focus on -- quote, on claims in the peer-reviewed literature irrespective of the quality of the science, stakeholder input involving activist researchers, political pressure on outcomes, for example, POEAs in Germany" -- we told you that they were banned in Europe; this was the beginning of that process -- "refused to testify at least in general."

And then he talks about, "Williams, et al., has served us well in toxicology over the last decade."

Moving on. Well, I'm not going -- I'll just stop the story from the genotox timeline for now.

11:28:59 Because after 2000, there's actually a mountain of data that comes out related to the mechanistic science. But this is all pre-2005 -- actually, that's 2010, but after 2000 it's -- there's a mountain of data, and we're going to discuss some of it.

11:29:16 But in lieu of going through all of it, which we will do with Dr. Portier -- I don't have time to do it all right now -- I wanted to show you one sort of really helpful meta-analysis that was done. I'm going to define two terms for you now.

11:29:27 The first is the micronucleus. As you can see, it's the image of a cell, and you see these little dots on the outside of the cell. Those are called micronucleus -- micronuclei. And what they are, are, they're evidence that there's genetic damage occurring;

11:29:42 right? Pieces of DNA are actually leaving the nucleus and becoming their own nucleus, those little particles.

And that's actually -- if you recall, that's actually what Dr. Parry said. Remember, he said we're going to study the micronuclear idea, and he said something that he needed to do.

Well, after Dr. Parry passed away, they did a comprehensive meta-analytic review. Just that exposure to glyphosate leads to an increase in the micronuclei frequency, a systematic and meta-analytic review.

11:30:13 Meta-analysis is a statistical approach that combines the results of multiple studies into a single summary estimate.

So what a meta-analysis does is, it has all these different studies, and it tries to put them all

11:30:26 into the same sort of way so they can be looked at the same way. There are some strengths and weaknesses to meta-analysis; right? The strength is, you're looking at a lot of data. The weakness is, you have to pick which aspects of the data you're going to look at, and that can

11:30:39 lead to the selection of stuff that either supports or refutes your position.

And so meta-analysis is an important thing to consider, but it's definitely not the end all, be all. That said, it helps summarize a lot of data.

11:30:52 And what they found here is, they went through over a hundred different micronuclei studies on glyphosate and Roundup. And they plotted them all in the different ways that they have an effect. Anything above 0 on this one, and later on you're going to see a

11:31:08 different chart that has "1." That's a different chart.

Anything above 0 here is a positive association. And so the grand mean for all these different studies is about 1.4. Okay?

They also broke it down into some different systems; right? So they have mammalian systems, so mammals. Again, that's positive, close to the grand mean. And non-mammals. It's still positive. So that tells us that the data that's dragged that's on the other side of 0 doesn't relate to mammals or non-mammals. It must relate to something else.

We also have an interesting thing here. They looked at the way glyphosate and Roundup were actually administered to these various cells. And as you can see here, oral administration actually was the lowest genotoxicity; right? But emersion, spraying, topical, and then intraperitoneal, which is injecting it into the abdomen, which is not an issue here. But spraying and topical are, because that's actually how Mr. Johnson was exposed. He wasn't eating it.

So, again, it's showing that there's a positive association with genetic damage when it's sprayed or applied topically. And that, of course, comports with that mouse study we saw, the George 2010 study, which had those tumors in the skin.

So if you look at the overall mechanistic data,

it is clearly a positive and strong association. And I think it's difficult for anyone to argue -- well, I'll let them argue. They'll argue that later.

Let's move on to the next topic, epidemiology. 11:32:46 So we talked about the epidemiology earlier. It's the study of the distribution and causes of disease in human populations. And what we're talking about here is specifically non-Hodgkin's lymphoma. So now we're out of the cellular sort of biology level or the rodent studies. 11:33:02 We're now talking about humans. We're talking about a specific type of cancer, non-Hodgkin's lymphoma.

And the only reason why we have epidemiology in this case is because it's been used for a long time; right? We actually have the ability to go and find 11:33:18 people who are actually spraying, using it, whether it be in an agricultural setting or in other settings, and look and see, "Hey, are the people who are spraying this getting more cancer, and specifically, getting non-Hodgkin's lymphoma?"

11:33:29 And a lot of researchers in this field do these broad-spectrum studies; right? They study every pesticide and see if there's any association. They study, you know, farmers, or they study pesticide applicators, and they try to find groups of people where 11:33:47 they can confirm medical diagnosis through, like, a

medical registry or other types of ways of collecting information.

So the researchers are trying to figure out how to do this. And they've been doing this since the '60s for all sorts of things. And epidemiology, for example, played a big role in the tobacco issue with cancer.

11:33:59

In any event, we see a lot of epidemiology in this case, and it's important to know that very few studies were done exclusively on Roundup. They're always involving other pesticides as well. And so I'll walk you through some of the important issues there.

11:34:14

But what's really interesting, and this is something the evidence will show unequivocally, is that all these different studies and all these different places and all these different portions of the population that they're looking at, they're not seeing random cancers; right? Occasionally there will be a result for, like, a multiple myeloma here or some other cancer here. But in all of the studies, non-Hodgkin's lymphoma keeps popping up.

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And this is really, really important for evaluating epidemiology. Because when you look at the data, and you can say, oh, this result, maybe it's not statistically significant; so we can't completely rule out cancer. Maybe it was confounded by something else --

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right? -- something else is actually causing it. Not glyphosate or Roundup. Okay, fine. That's one study. You look at another study. Okay. Maybe that one, too.

But when you start seeing them in every single
11:35:13 study, that's something researchers that researchers call specificity, that the data is specifying a specific disease state. And that's very -- as you'll hear testimony about compelling evidence, that there's something going on here, particularly in humans.

11:35:26 Oh. And non-Hodgkin's lymphoma, it's a white blood -- it's a cancer that starts in the white blood cells, specifically the lymphocytes. It's part of the body's immune system. There's two types of non-Hodgkin's lymphoma. There's B-cell, and then there's
11:35:39 T-cell. Those are the different types of white blood cells that we have in our immune system.

B-cell is without question the most common. I think only about 15 percent are T-cell. T-cell is more rare; so, therefore, facts are harder to study; right?
11:35:54 One of the issues that you deal with, right, is having enough people who are sick. And cancer is itself pretty rare, and then specific subtypes of cancer are even rarer.

So to have enough people who have the disease to
11:36:07 study requires massive populations to really effectively

study, because, otherwise, you know, you'll have two cancers here and one cancer here. Okay? I mean, that's a doubling of the risk, but is that really a doubling of the risk? We're talking about three people; right? So
11:36:22 you have to be thoughtful about it's a difficult thing to study.

So, for the most part, we just look at non-Hodgkin's lymphoma, but there are places where they actually had enough data to look at specific subtypes.
11:36:32 And I'm going to show you those.

The next issue, and it's another term before we get going, something called a confidence bound. And I keep talking about something called statistical significance; right? And what that really is, is telling
11:36:46 you whether or not the thing that -- so when you do a study, right, you're trying to predict what is the real world like out there based on the data that I have here; right?

So my data shows me a tripling of the risk.
11:36:59 That's what the data shows me. That's called the point estimate; right? That's the actual data, that no one disputes the number. It's basic arithmetic; right? There's 15 in one group, and there's 5 in the other. There's triple the -- there's triple the cancers; right?
11:37:14 That's obvious.

But how do we know that that's not just random variation, just random chance? You know what I mean? I can flip a coin three times in a row and get heads. That can happen; right? Now, can I flip a coin 15 times in a
11:37:30 row and get heads? It's a little more -- less likely. But the point is, when you look at an individual result, you have to consider is it just the product of chance.

Now, the data shows something, but can we really extrapolate that with the world outside? And to do that,
11:37:44 they create something called a confidence bound. So this is a hypothetical estimate. We have .5. So that means there's a 50 percent increase or a 150 percent elevated rate of NHL in the exposed group. Okay?

But based on the number of data, the number of
11:38:03 people in the study, our confidence bound crosses one; right? And when it crosses one, that means it's no longer considered statistically significant. And what this confidence bound says is, based on this data, we have a 95 percent confidence that the true risk that
11:38:22 exists is somewhere in this bound. Okay?

And the way statisticians -- and Dr. Portier is going to go into this in way more detail than I am. But the way that distribution works is -- is an -- it's an area under the curve. So the most likely possibility is
11:38:42 the point estimate, that center in the middle; right?

And then there's a normal distribution of likelihood as you get to the end. And then as you get towards the end, you can see that the last two-and-a-half percent we just write off. That's the end of the curve, so we -- that's not within the 95 percent confidence interval.

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But what's really important here is this results, although it's technically not statistically significant, the likelihood that it's greater than one is over 97 percent, because all of the probable outcomes are to the right of one, with the exception of that little tiny sliver right there, between the red and the line.

11:39:09

And that's an important thing to understand when you're looking at a confidence interval. When someone goes, "Oh, that's not a significant result," that -- well, hold on. How insignificant is it? Right? If this is square on one, and it's equal on both sides, okay, yeah, it's an equal possibility that's on either side of one. But when you have most of the curve to the right, you know, it's not 100 percent, but it's -- what? -- 97 percent? It's pretty close that you're confident to the right of one.

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So here is sort of a snapshot of the epidemiology in this case. Now, there's actually a lot of different studies, but there's really six core studies

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that everyone agrees is sort of what's interesting here. It's the McDuffie 2001, Hardell 2002, De Roos 2003, De Roos 2005, Eriksson 2008, Orsi 2009.

Then there was a meta-analysis done in 2014 with all of these studies, and then there's a recent publication from Andreotti 2018.

And, by the way, the De Roos 2005 and the 2000 -- Andreotti 2018 are the same study. The '18 publication is just a re-publication of a more updated data. And I'll get into that in a minute.

And to the right of it, we have these risk ratios or odds ratios, which is the point estimate. So when you see a 3.04, that shows that it's a tripling of the risk; right? And then you have the lower confidence bound is 1.08. So it's above 1. So it's statistically significant.

So in that data, for example, when there's no pesticide adjustment, you have a tripling of the risk. When you adjust for pesticide, it adds a 1.85. So it's still elevated. And most of the confidence interval is to the right of 1, but we can't definitively rule out cancer. Okay? So that's how you read these charts.

And, as I said -- okay. So the ones that are kind of the most important ones, one of the issues that's going to come up repeatedly by Monsanto's experts, and,

quite frankly, by our experts because it's something that they considered, is something called confounding.

I want to define this because it gets very muddled sometimes. So a confounder is -- we're trying to say that X -- right? -- causes Y; right? And we have an association. We have numbers that say, hey, there's a real association here. But what if there's something -- we'll call it Z -- that actually causes X and also causes Y; right? Then it would look like X is causing Y, when really it's Z that's causing Y. And that's a confounder. But to be a confounder, two things must occur; they have to occur. First, it has to actually cause Y; right? Not just maybe. It actually has to cause Y; right? Here we're talking about NHL. So for it to be a confounding study, it has to cause non-Hodgkin's lymphoma. We have to know that.

But, more importantly, we have to know that it's not equally distributed in both groups; right? So, for example, suddenly, or diesel. Here we go. Diesel. Someone says diesel's associated with NHL. I don't know if that's even true, but let's say it is. Well, for that to be a confounder, not only does it have to cause NHL, but the two groups of people you're studying have to use different amounts of diesel; right? Because if they both use the same amount of diesel, then it's a wash. The

elevated rate that you're seeing is occurring because of the additional glyphosate or Roundup.

Am I tracking here? I'm going to do it one more time because I've had a hard time explaining this to a lot of different people, including myself. Okay.

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So for it to be a confounder, you need two things. It has to be associated with the outcome, non-Hodgkin's lymphoma; right? And the second thing is that it has to be differentially occurring in the groups you're studying.

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So, for example, if you believe diesel is a confounder, you have to tell me. So I have these farmers; right? One group of farmers uses glyphosate or Roundup. One group of farmers does not.

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For diesel to be actually causing the increased rate of NHL, you have to show me that the people who are exposed to glyphosate are getting different levels of diesel exposure than the people who are not; otherwise, the effect of diesel on causing NHL would be consistent in both; right?

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Because this number is a ratio. So if there's 30 people over here, and there's 10 people over here -- right? -- and of those, diesel caused five of the NHLs, but it caused five in both, then it doesn't affect the study. It's not a confounder because it equally affects

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both sides. All right.

If you don't understand it, I'll have a couple of experts explain it again and again and again. So please pay attention because any time someone says, "what about this confounder," "what about this confounder," ask the two questions: Does it actually cause NHL, and is it differentially occurring in the groups?

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And the simple fact is, a lot of the confounders that Monsanto's experts are going to raise -- and you'll hear testimony about this -- there's no evidence that they cause NHL, and there's no evidence that it's different in the groups. And so they're not actually confounders. They're just red herrings.

11:45:00

Okay. So the -- and the way we know -- okay. So in the last -- and the reason why I talked about that that is the De Roos 2003 is a really important study. It's actually a pooled study. They looked at a lot of different exposures in northern America. They looked at farmers.

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And what they did there was, they adjusted for every possible pesticide -- over 60 pesticides; right? -- so that the number they have with regards to Roundup takes into account exposure to all the other pesticides it's controlled for. So there's no confounding in that study.

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And that study showed a statistically-significant more than doubling of the risk. And no expert that you'll hear from can explain that away. I mentioned De Roos 2005 and Andreotti 2018. These are both part of what's called the agricultural health study.

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And I'm just going to give you a quick background on this. The agricultural health study was a brainchild of a bunch of scientists in the '70s, and they realized that there was a lot of people who were getting sick in the farming industry, different types of cancers, including NHL. This even predates, by the way, Roundup use. So they're seeing all these people getting cancer, and they want to study it.

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So they come up with this really great idea. We're going to look at 50,000 -- or try to look at 50,000 people who are pesticide applicators -- that's all they do is apply pesticides -- and follow them forever, basically, and see how many of them get non-Hodgkin's lymphoma -- or, actually, the purpose of the study was not non-Hodgkin's lymphoma. It was any disease outcome; right?

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And so they studied 70 different pesticides, any disease they could imagine. And the way it works was, they'd sign up. They'd take the test for the -- for

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the -- being a pesticide applicator. And then after the test, the researcher would come up to them and say, "We need you to fill out this survey. Please do it."

All right. They'd fill it out.

11:47:13 And the question -- the survey had questions like, "List every pesticide you've been exposed to in the last 20, 30 years and state how much you've been exposed to each time." Questions that were highly impossible, I think, for anybody to be able to answer after they've

11:47:28 just taken a big test. But, more importantly, you're going to hear testimony -- this is really important -- that they asked for: Do you use protective gear when you apply pesticides? They didn't ask for that number for each pesticide. They asked for all of them. And then

11:47:43 they used whether or not they had protective gear. So they said, "Oh, yeah, I wore a respirator, because they sprayed some crazy toxic stuff."

They also used glyphosate or Roundup. They knew that was in T-shirt and gym shorts. That wouldn't be capturing them; right? Because they would say, "Oh, yeah, wear a respirator."

And so people's exposure levels would be calculated with whatever they said in that one question. And the problem with that is, it -- that equation was --

11:48:08 it was then used in an equation to estimate exposures for

the rest of their lives.

The other problem was, and I'll get into this. It has a lot of problems. Not only was it studying too many pesticides, but there was this classification issue, which is what I was just talking about, knowing which -- you know, how much exposure actually happened.

But then another problem. So they started doing the study in the early '90s. And for glyphosate and Roundup, it skyrocketed right after they started the study. And so people who -- who had enrolled in the study and said "Oh, yeah, I don't use Roundup," by the end -- but, you know, within the next five years probably were, because it pervaded the agricultural systems. So it was literally their jobs. And, you know -- and there was a bunch of other things happening too in the '90s.

So they actually tried to fix the problems. They tried to reach back all these 50,000 people and get new assessments. The problem is that only 40 -- they only got about 60 percent of them. 40 percent of them just didn't respond. We don't know what happened. And that leaves you with a pretty anemic data set, right, because why didn't they respond? If it's associated with a health problem, then a selection bias, and you have problems with it.

So they didn't know what to do. So what they

decided to do is, they fashioned this thing called education. They used the people who did respond to guess what that 40 percent would have responded if they had.

And it's actually not necessarily a bad approach. It could be very effective in a certain context, particularly if the use of a pesticide remains consistent. But when you have this drastic change, you don't know how accurate the imputation is. And you're going to hear testimony from Dr. Portier that says it's actually pretty bad, upwards of 20/40 percent inaccuracy.

And that's what -- what happens is, people who are in the exposed group -- or the unexposed group are actually exposed. Then people who are no longer exposed are now in the unexposed group. And you have this mixing up of data.

And so what happens is, when you mix with the data, it shoves the results towards the blind. It's called regression to the mean. It's what happens in the data.

And so you're going to hear a lot of testimony about how that problem affected agriculture, a health study.

Separate and apart -- and so -- and, by the way in the previous chart -- I showed you this agricultural health study Andreotti 2018. And it wasn't on this

chart, because they didn't actually provide never, ever. That means, "Have you ever used glyphosate or Roundup, or have you never used any?" They just put you in one or two categories, hard categorization; right?

11:50:50 And that's a crude estimate, but it doesn't tell you, okay, well, what about if you use it more; right? Who uses it a lot? Are they getting more diseases than the people who used it, you know, once or twice? If you used it once, technically, you would be in the exposure

11:51:04 group.

Anyway, Andreotti did not do that analysis. That's why they didn't make the chart. But they did do an intensity analysis, and that's what I put on this chart. And there's actually been three, sort of,

11:51:18 intensity, sort of, dose response studies done. One was by McDuffie. It shows that if you used it greater than two days a year, you had a doubling of a risk, and if you didn't, you used it less than two days a year, there was no risk, which was consistent with what you would expect

11:51:34 if there was actually a risk; right? That the more you use it, the more risk you see.

We see a similar thing here in Eriksson. They did ten days a year exposure. And if you're less than ten days of exposure -- and this is -- Eriksson is a

11:51:46 different population. It's in Sweden or Switzerland.

But they showed that if less than ten days exposure a year, it's still elevated. It's 1.69, but it's not statistically significant. But if it's greater than ten days, it's 2.36 and it's statistically significant. So, again, showing a dose response.

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In reality, did his analysis -- and then as you can see, no matter what intensity level you use, it's all below 1. And so what Andreotti is actually saying in the new AHS is actually not just that there's no risk, but that the data is actually suggesting that glyphosate protects you against non-Hodgkin's lymphoma.

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Now, I mean, that's a bit silly. But you're going to hear an expert, Dr. Portier, who's going to say -- or, I mean, Dr. Neugud, based on this data, you could say you should take a shot of glyphosate in the morning before you go to work. It helps protect you against cancer. Obviously that's not true.

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So what's going on here? And that's what those flaws help explain, why the data is so different, really, than everything else.

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Importantly, okay --

Your Honor, are we going to take a break at 12:00 or 12:30?

THE COURT: At noon.

11:52:55

MR. WISNER: Okay. All right. I'm going to

rush through this, because I'm really out of time.

(Interruption in proceedings.)

MR. WISNER: So the Hardell study comes out in 1999. Monsanto scientists review the study, and they state that it shows an association. This is 1999, 20 years ago. The report of weak to moderate association for glyphosate are not statistically significant and could mean a chance for a recall is confounding.

It's clear, however, that the widespread use of glyphosate and concerns about pesticide-related health effects for farmers and their families will raise, quote, "the index of concern."

So one of the things that you have to remember is it's not just does it cause cancer, but was there a reasonable suspicion that it caused cancer? And you see 20 years ago, it's raising the index of concern.

We have another study, 2001, Dr. Acquavella learns that a doctor by the name of Helen McDuffie is going to publish a study about NHL risks, and he raises concern that it shows that there's a risk associated with glyphosate for greater than two days, and he's worried about it. So he speaks with her. I'm sorry. I can't read it, because there's not enough time. But you will see it at trial and definitely at closing.

McDuffie then publishes the study, and it does

show that elevated risk for more than two days a year. But she did not discuss glyphosate in the abstract. And they comment on this.

The McDuffie article appeared in the November issue of the Journal of Cancer Epidemiology. Unlike the abstract presented at the conference, glyphosate is no longer mentioned as a risk factor in the abstract. I'll have to get the article and see what it says in the small print.

Dr. Farmer response, "John, I know we don't know yet what it says in the small print, but the fact that glyphosate is no longer mentioned in the abstract is a huge step forward. It removed it from being picked up by abstract searches.

Abstract searching is -- anybody who's worked in the science field, it's when you go on PubMed, and you look for articles related to an issue, and you search the abstracts.

And so if you're a physician looking to see if glyphosate is associated with NHL, you wouldn't find it in the searches. And Dr. Farmer's very excited about that.

Moving on. Another study comes out in May of 2002, 306 percent increased risk of NHL for Roundup published in Leukemia & Lymphoma. And then another

study -- this is the De Roos study -- comes out in March 2003. This is the one that controlled for 60 other pesticides and showed no confounding from other pesticides for non-Hodgkin's lymphoma. There's a whole
11:55:50 paragraph about it. I'm not going to read it. Oh, I'll read it.

Okay. The last sentence here says, "A few of these suggestive findings provide some impetus for further investigation into the potential health effects
11:56:03 of glyphosate. Even though one review concluded that the active ingredient is noncarcinogenic." It has a footnote 50.

So if you read this paragraph, you say, yeah, all this data is showing that it causes NHL, it's
11:56:18 associated with NHL, but there is a study out there that says it doesn't. Which study is that? Williams. It's the one we talked about earlier. Keeps popping up. They got a lot of mileage out of it.

So moving on, we have Dr. Acquavella reviews the
11:56:33 De Roos 2003 article, and he states: "I'm afraid this could add more fuel to the fire for Hardell, et al." So he's talking about the previous Hardell study. He's saying it's adding fuel to the fire. "Looks like NHL and other lymphopoietic of the blood," lymph blood cancers,
11:56:54 "continue to be the main cancer epidemiology issues, both

for glyphosate and alachlor," a pesticide. "We're assembling a panel of experts to work on this."

This is right after De Roos 2003 article. Goldstein, Farmer and Heydens are all on it.

11:57:09 Moving on, we have another study. This is the first iteration of the De Roos study -- sorry -- the AHS study. It's before they have the imputation problem, so it's pre-imputation. So it's based on the original exposure assessments.

11:57:23 Did not show any association with NHL, although it did show an interesting association with a type of cancer called multiple myeloma, which is very often considered by -- as NHL by some doctors, but not all.

Then in July of 2008, Eriksson study comes out. 11:57:39 It shows a 202 increased risk of NHL. It also shows a 236 increased use -- increased risk of NHL when used for more than ten days a year. That's that dose response we were talking about.

Monsanto's response, this is Dr. Farmer, someone 11:57:55 had sent her a news article from "Beyond Pesticides," specifically about this study. And she goes, "Thank you for forwarding this. We have been aware of this paper for a while and knew it would only be a matter of time before the activists pick it up. I have some epi experts 11:58:12 reviewing it. As soon as I have that review, we will

pull together a backgrounder for use in response."

Here's their bottom line: How do we combat this? And so the next sentence is the bottom line of the news article. It relates to Eriksson. And the bottom
11:58:26 line is, "Avoid carcinogenic herbicides in foods by supporting organic agriculture and on lawns by using non-toxic land care strategies that rely on soil health, not toxic herbicides."

I show you this so you can see that
11:58:39 Dr. Farmers' instinct when she sees this is to combat it. That's, I think, a philosophical thing that you'll see a lot on these documents from Monsanto.

2014, Schinasi & Leon, they conduct a metaanalysis. They look at all these epidemiology
11:58:58 studies that are coming out, including the AHS. And they conclude there's a 150-percent increase.

Interestingly enough, two years later, Monsanto actually pays some researchers to conduct their own metaanalysis and pays for it from this contract
11:59:15 organization. And it still found an increase in the epidemiology data in 2016.

Finally, this is the latest version of the AHS. It was published in 2017, although it's technically considered a 2018 study, and it shows right here no
11:59:31 association with non-Hodgkin's lymphoma, generally;

right? All the numbers are below 1 and are not statistically significant.

Interestingly enough, though, they do a subanalysis of lymphoma T-Cell, which is, remember, the 11:59:47 type of cancer that Mr. Johnson has. And here there's a 425 percent increase.

Now, it's not statistically significant, but if you notice all the other numbers on this chart are all below 1. But T-Cell is, like, four times everything 12:00:05 else.

Now, putting aside the flaws of this study, this is pretty shocking information. And interestingly enough, this is actually Monsanto's best study. So their best study actually shows a 425 percent elevated rate, 12:00:19 although not statistically significant.

So that's the epidemiology. It does support a relationship with cancer.

And, your Honor, this is probably a good spot to take a break. I've got about 30 minutes, and then I'm 12:00:31 done.

THE COURT: Okay. All right. Ladies and Gentlemen, so we're going to recess now for the lunch break. I want to ask you: Please do not discuss this case with each other or with anyone else during the 12:00:44 break. Please do not do any research, including internet

research, about anything that you've heard this morning from Mr. Wisner.

And we'll resume again at 1:30. All right. See you at 1:30. Thank you very much.

(Recess.)

(Library proceedings.)

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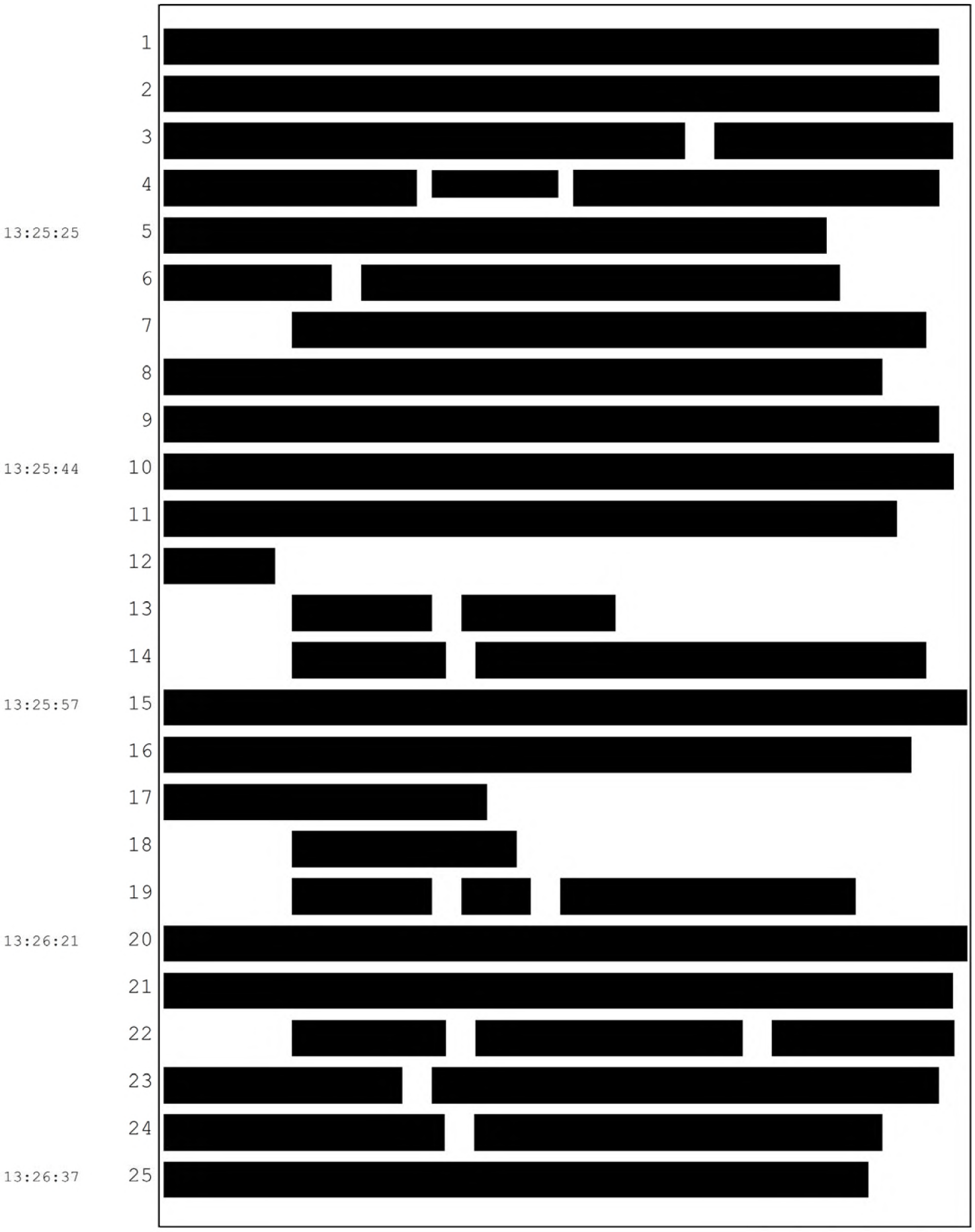
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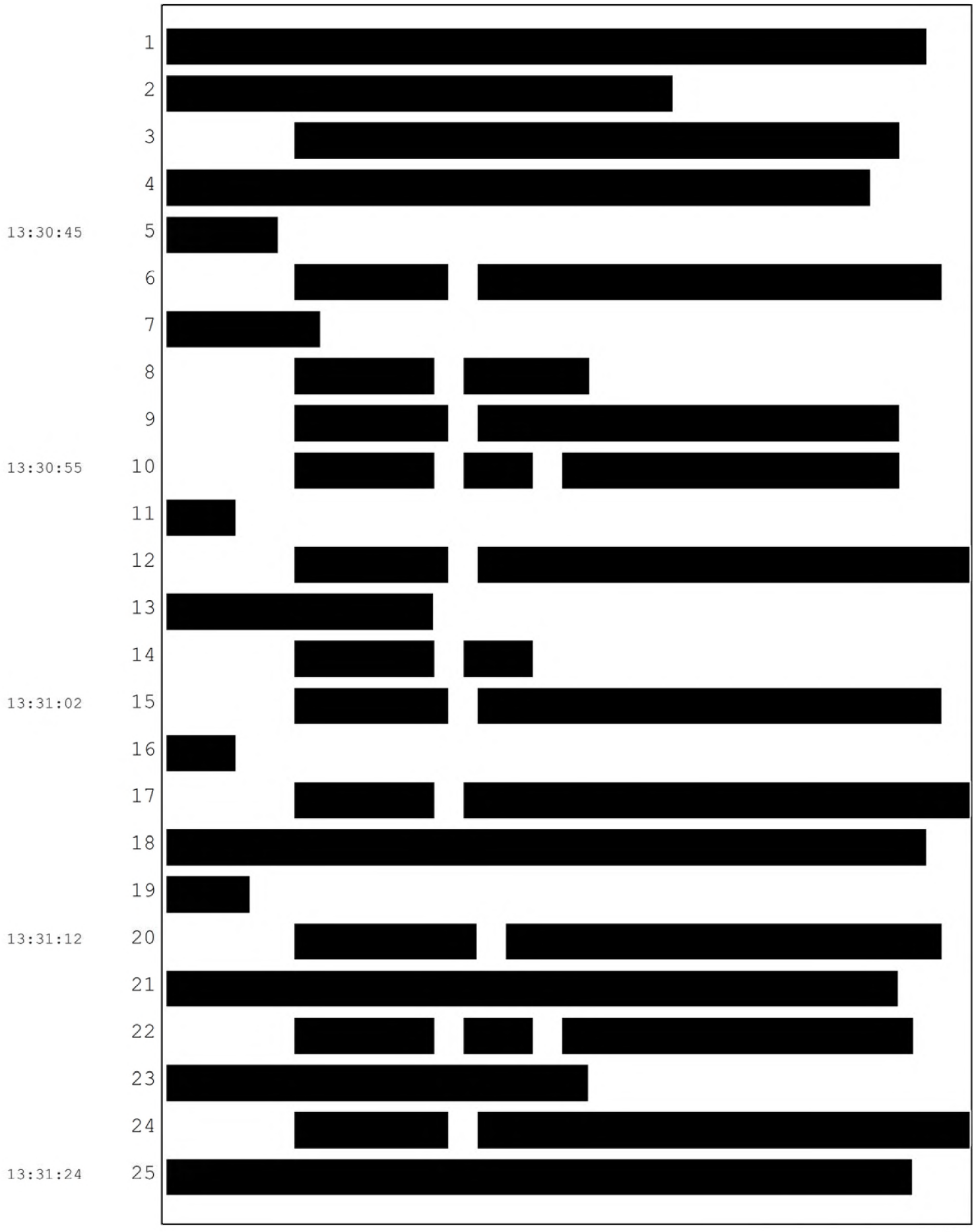
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13:34:03 (End library proceedings.)

THE COURT: Welcome back, Ladies and Gentlemen. We will now resume with the opening statements.

Mr. Wisner, you may continue when you're ready.

MR. WISNER: Thank you, your Honor.

13:34:13 Hi, everyone. I hope you had a good lunch.

So I ended off on this slide just before the break. I want to talk for a brief minute about the International Agency for Research on Cancer. Actually, let me back up.

13:34:29 So I -- I've gone through the three pillars of

cancer science here, the animal carcinogenicity studies, the mechanistic data and the epidemiology. And you've gone through a lot of the documents and science that we believe supports our position that, in fact, Roundup exposure can cause cancer. And we plan to show all the science and actually get into even more detail with respect to the witnesses.

13:34:48

But I hate playing the game of who has the most persuasive authority; right? I like to look at the documents and the evidence myself and make my own decision. But I do want to raise an important organization that has done something that really no one else has.

13:35:03

We talked about the International Agency for Research on Cancer. It is a part of the World Health Organization.

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In the 1960s, countries around the world got together and said, "You know what? Studying cancer risks is actually really difficult. It's hard to get the data. It's expensive. You don't always get cooperation from the manufacturers." And so they formed the International Agency for Research on Cancer. And its sole mission is to convene independent experts to evaluate and assess chemicals to see if they cause cancer. That's literally its entire job.

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It was formed in 1960s, and they developed what we call the preamble or the -- the, sort of, strictures that are used in assessing the carcinogenicity of a compound. And it is, without question, the most
13:36:10 prestigious organization in the world on this.

And the reason why is because they've clearly defined the parameters that they use to assess data. They're entirely transparent. And they invite only the best and most experienced researchers in the world.
13:36:26 To give you some context, if you are in the field, academic world, of cancer research, being invited to IARC is, like, something you put on your résumé as, like, a big deal. Particularly in the world of cancer investigation.
13:36:43 And I say all that because in 2016, they convened a panel that studied glyphosate specifically. And, actually, Roundup indirectly, but it was primarily about glyphosate.

They convened the panel. And I'm going to get
13:37:04 into, sort of, who was on the panel and what happened, but I want to just give you a sense of before the panel --

So -- okay. So in 2014, IARC announced that it would be investigating glyphosate. All right? And the
13:37:20 reason why -- and you'll learn about this. The reason

why IARC did that is because they had seen all the signs and stuff I have shown you, and they were really concerned. They thought there was enough there that needed to be investigated.

13:37:33 And so they announced that they would be part of the next -- it's called a monograph program. What they do is they get all these scientists together, they read all the data, they peer-review it, they critique it, they discuss it, they study all the science that's available, 13:37:47 for well over six months. And then they get together for a week in France, hash it out face-to-face, and then they vote on -- they look at all the different areas of science that we discussed today.

When it was announced in 2014 that IARC would be 13:38:01 looking at it, Dr. Heydens and Dr. Farmer and Dr. Saltmiras -- Heydens, Dr. Farmer, and Saltmiras, were discussing it -- and I just want to point out also that -- I'll show you.

This is from Dr. Heydens. The subject is "IARC 13:38:21 Evaluation of Glyphosate." You see it's dated in October of 2014. And if you read down here, he goes, "While we have vulnerability in the area of epidemiology, we also have potential vulnerabilities in the other areas that IARC will consider, namely exposure, genotox and mode of 13:38:42 action. David has the animal onco studies under control.

If there is a force working against glyphosate, there is ample fodder to string together to help the cause even though it is not scientifically justified in its purest form. Putting all of this in the proper perspective will
13:39:03 be quite resource intensive, so can we consider approaching the GTF?" Joint -- glyphosate joint task forces. All the manufacturers pool together resources on behalf of glyphosate. "Recall that PAG already agreed to fund the onco publication 2+ years ago for this exact
13:39:22 reason."

So what this shows is that even before IARC met, their own internal scientists have recognized that they have particular vulnerabilities streaming together the evidence.

13:39:33 So what did this committee consist of? Seventeen scientists from around the world were asked to participate. This included scientist from the EPA, scientists from the California EPA, world international scientists. And the interesting thing about this is they
13:39:48 all are vetted for conflicts of interest. So you are not allowed to participate in IARC if you've worked for industry. Similarly, you're not allowed to participate in IARC if you work for, I don't know, an activist group. Okay? To the extent you have any affiliations, you have
13:40:06 to disclose them.

And so the 17 voting members, none of them had any of those conflicts. And this included, I mean, scientists from the EPA, scientists from -- people from the University of California San Francisco. Really some
13:40:19 top-notch people were invited to look at this.

They get all the publicly available peer-reviewed science. It also didn't have to be published. It could just be publicly available. So, you know, if the EPA issues a bunch of reports, that's all
13:40:35 available and fair game.

They review it over a six-month period, and then they convene in France, and they have a vote. Now, the vote isn't always unanimous. It was in this case.

Here's who was there: The chair of the meeting
13:40:50 was Dr. Aaron Blair. He, at the time, I believe, was the leader of the National Cancer Institute in the US.

Also participating was a guy named Dr. Charles Jameson. I mention him, because he might come up in the case. He's a witness who was there.

13:41:09 Dr. Mark -- Matthew Martin. He was a genotox specialist. I think he's from the University -- somewhere in Ohio. I don't exactly -- remember the exact place. But Dr. Martin is actually going to testify via deposition. We recorded his deposition. He played an
13:41:30 important role in the mechanistic assessment of IARC's

process.

Lauren Zeise, she's from the California EPA. She actually runs the California EPA now. She was there. She was a voting member.

13:41:41 I'm sorry, Matthew Martin's from the EPA. I got this all mixed up. Matthew Martin's from the EPA. You're going to hear from Matthew Ross. That's why he's in green. He's the guy from Mississippi State who looked at the genotype. I got that mixed up. I'm sorry.

13:41:57 There were representatives from the EPA as well. In addition to a scientist from there, as voting member there were other groups of people. So invited specialists, representatives of the international health agencies and observers.

13:42:10 Now, these last three groups of people, they don't get to vote. They get to participate in the process, but they can't actually vote.

And the only invited specialist for the meeting was Dr. Portier, the one you're going to be hearing from.

13:42:24 And for backstory, that's actually how he got involve in this. He participated in IARC, and he saw all the data. And after the IARC ruling came down and Mr. Johnson hired us, we reached out to him and said, "Hey, since you know this stuff, will you come testify?" And he said, "Yeah,

13:42:41 I will." And he actually went and looked at a lot more

stuff, just to make sure, you know, it was all squared away.

There was a representative from the EPA there, as well as the European and a bunch of other agencies.

13:42:52 And then there was observers who also participated. And then there was observers -- Monsanto sent someone, Thomas Sorahan. There's also observers from other glyphosate makers who participated in the meeting as well.

13:43:08 I pointed out another observer was this doctor, Patrice Sutton from the University of California San Francisco. Locals. I thought I'd mention it.

So all these members participated in this program, and they looked at three pillars of science.

13:43:23 And they actually ended up publishing a hundred-page monograph going through systematically every study, assessing its weight, assessing its validity and deciding how much weight to give it or not based on what's available.

13:43:37 And they looked at the three pillars of science. They have three section -- well, they actually have four sections. The first section is exposure. But, I mean, they concluded that people are exposed. I don't think that's particularly mind boggling. But they did discuss

13:43:52 and look at real-world exposures as part of the analysis.

But the three pillars they really focused on were the animal studies, the mechanistic data and the epidemiology. And here's how they classified all three groups of that science. Okay? And they're technical
13:44:05 terms, so I'm going to define them as I go through.

For the animal carcinogen studies, they deemed them sufficient. And this is actually straight from the monograph. "There is sufficient evidence in experimental animals for the carcinogenicity of glyphosate."

13:44:23 What that actually means, though, it's defined as "The working group considers a causal relationship has been established between the agent and an increase incidence of malignant neoplasms." And it keeps going on defining the definition of sufficient evidence.

13:44:39 But what it means is -- sufficient evidence means no causation, that there's a causal link that we've observed in animal behavior.

Then there's the mechanistic data. We went over that a lot, talked about the oxidative stress and
13:44:56 genotoxicity. They looked at also oxidative stress and genotoxicity, and they concluded that the evidence was strong. "Overall, the mechanistic data provided strong evidence for genotoxicity and oxidative stress. There is evidence that these effects can operate in humans."

13:45:11 There's a lot of other studies, mechanistic

studies, that you're going to learn a lot more about when Dr. Portier takes the stand and testifies. For example, those studies, when they looked at actual human beings being sprayed with Roundup in the Ecuadoran and Columbian
13:45:28 jungles -- and they actually measured their blood and found DNA damage. So he'll talk about that.

So this is based on a lot more data than what we saw. And I stopped it at 2000 -- I stopped it at Dr. Parry, but there's actually a lot more evidence
13:45:42 afterwards.

Anyway, they concluded it's strong. And there's actually no official definition for strong. I think it's a bit self-explanatory.

Then epidemiology, they deemed it limited. This
13:45:53 is straight from the monograph -- well, no, it's not. They deemed it limited. Here it is. Okay. All right. There's a slide missing here.

Okay. They deemed it limited. They specifically found -- I don't have the part,
13:46:08 unfortunately. They deemed it was limited evidence in humans, a positive association with NHL was observed. That was the language. Okay?

And the definition of limited in IARC terminology is "A positive association has been observed
13:46:24 between exposure to the agent and cancer for which a

causal interpretation is considered by the working group to be credible, but chance, bias or confounding could not be ruled out with reasonable confidence."

So what does that mean? Well, there's a signal, but we can't guarantee that it's not just pure -- that we can't rule out chance. But there is a signal.

When you combine all three of these groups of data together, IARC classified glyphosate as a Class 2 human carcinogen, which is a probable human carcinogen.

Now, probable human carcinogen, what does that actually mean? You're going to hear from Dr. Neugud. He's been doing epidemiology for a long time. This is way over 51 percent. We're talking about the 80s, 90s percent that there's a causal link.

Now, scientists don't like to be absolute about almost anything. Now, that's really important to remember. Because one of the common tasks of IARC is that they've looked at a thousand different compounds, and they've only found one that they knew did not cause cancer.

That sounds like, "Oh, gosh. They found a lot of cancer." Until you finish the rest of the sentence. But the vast majority of the compounds that they looked at, they said, "We don't have enough data to know." So it's one thing to say, "We don't know." It's another

thing to say, "We know it doesn't cause cancer."

And so that's really important, because they're speaking in absolutes here; right? And this -- these group of scientists, you know, they're -- scientists like
13:48:01 to see cause and effect in front of them. I do, too, as well. And so it's all about how much uncertainty we have here. It's well over the 51 percent.

It's also worth noting that these 17 scientists from all over the word got together. They all looked at
13:48:19 the same data and discussed it. And they unanimously voted to classify it as a Type 2 -- Class 2 carcinogen.

I don't know if any of you know any scientists, but you put five of them in a room, you're going to walk out with 20 different views; right?

13:48:35 The fact that they could universally come together and agree on this is pretty -- pretty interesting evidence, and it's something that, you know, was relied upon.

One of the things you're also going to hear
13:48:46 about is that IARC, you know -- one thing that's really important about IARC is that they do not have a dog in the fight. All right?

So, for example, the EPA, they approve glyphosate in the '70s, and it's been on the market for
13:49:00 40 years. So for the EPA to conclude, based on this new

data, it causes cancer, they'd have to accept that they were wrong.

They don't come in with any predetermination. They look at the science as it exists, as of March 2015. And they don't have one interest one way or the other finding that it causes cancer or that it doesn't.

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That's really important to remember, because there have been attacks against IARC. For example -- that they found, for example, coffee. They looked at coffee, and they said, "Well, the science there says that it's possible to human carcinogen." Not probably, but possible. And a lot of people have used that against IARC saying, "Hey, even coffee can cause cancer." I actually don't know if it does or doesn't. There's a lot of stuff in coffee. I hear different things from different people. We're not here to talk about coffee.

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But IARC looked at the science just two years ago and actually concluded: You know what? That's actually premature. We're pulling it back. And they put it into the third category of "We don't know."

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So a very common attack of IARC is they just find everything causes cancer. And it's just not true. I think it's something you should pay attention to. And if you hear anyone saying that, listen carefully.

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In response to IARC, there was an unprecedented

reaction from media and what have you and regulators. And you're going to hear a little bit about that. And Dr. Portier was personally under attack because of his involvement with IARC.

13:50:36 We can see from this document -- this is a strategy document from Monsanto. It's Exhibit 292. And you can see under post-IARC it says, "Orchestrate outcry with IARC decision." And it's effective around March 10, 2015. And they talked about doing robust social media

13:50:57 outreach. They talk about engaging the joint glyphosate task force for published releases and letters signed by leaders of each manufacturer, push opinion leaders to keep -- in newspapers on the day of IARC ruling.

And if you read down here, it says, "Monsanto

13:51:13 responds with a strong reactive statement."

So it looks like Monsanto's, you know, ready to respond to IARC's classification. The problem is this document is actually dated February 23rd. So this is three weeks before they've even made a decision.

13:51:38 What you can infer from that is up to you. But it is interesting to note that they're already planning to orchestrate outcry and respond through reactive statement when they haven't even seen the statement.

This unprecedented outreach actually caused a

13:51:55 lot of turmoil in the scientific community. Because IARC

was so respected and they were being attacked, scientists felt they had to say something.

And this is a document, Plaintiff's Exhibit 293, and it is specifically addressing various issues. But as you can see, Dr. Portier is the first author. And if you go through here, there's over, I guess, 94 different authors, scientists who signed on to this article, in response to the attacks on IARC.

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Some of these scientists include people you might have heard of. I think De Roos is in there, Anneclaire De Roos, Number 25 at the top.

13:52:32

So there was an unprecedented attack on IARC, and you will hear evidence that there was a rallying behind IRAC. A hundred different scientists endorsed what IRAC had done. Specifically with regards to glyphosate, this is what they concluded: "The most appropriate and scientifically based evaluation of the cancers recorded in humans and laboratory animals, as well as supported mechanistic data, is that glyphosate is a probable human carcinogen. On the basis of this conclusion, in the absence of evidence to the contrary, it is reasonable to conclude that glyphosate formulation should also be considered likely human carcinogens."

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A hundred different scientists -- or 94 different scientists all agreed to this.

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IARC's influence doesn't just stop in the scientific community. If you actually go to the EPA's website and ask them for the risk associated with glyphosate -- you'll hear testimony about this -- they'll
13:53:35 send you to the national pesticide information center. It's a joint initiative with the University of -- I think it's Oregon State University, actually. And there they discuss details about the IARC's findings and how they've determined it's a probable carcinogen.

13:53:52 The American Cancer Society. This is straight from their website -- this is straight from the website. You're also going to see this testimony in trial.

In most cases, the ACS, the American Caner Society, does not directly evaluate whether a certain
13:54:04 substance or exposure causes cancer. Instead, the ACS looks to national and international organizations, such as the NTP and IARC, whose mission is to evaluate environmental cancer risks based on evidence from laboratory and human research studies.

13:54:20 So even the American Cancer Society places a lot of weight into IARC. And just so you know, to the NTP, the international toxicology program, that's what Dr. Portier was a director of, so --

Before I get to the EPA, I actually want to
13:54:35 bring up a couple of quick things. After IARC, there's

actually been some more science. Specifically two different things have happened. One was that re-release of the AHS data, which I showed you earlier in the epidemiology. And IARC, the director, they actually looked at that and said that doesn't change anything. So that didn't change anything.

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The other piece of evidence, which I wasn't actually planning to go through, but I think it's important to go through now -- I think it's something called the North American pooling project. I think that's -- yeah, the North American pool project. You'll see it's right there.

13:55:07

And what this is is they looked at all the data from North America, Canada, United States, and they pooled it all together, epidemiology data -- and it's not officially published. Okay? It's been presented at different places at different times. One of the primary authors on this -- you can see Dennis Weisenburger. He may very well be testifying in this case on behalf of plaintiffs as one of our experts if we have enough time.

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But the point is they look at it. And this is a abstract that was published in 2015. And if you look through here, the results tell you -- so it says, "Results: Cases who ever uses glyphosate had elevated NHL risks overall, 1.51." And you can see the confidence

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interval doesn't include 1, so it's statistically significant. The highest risks were found for other subtypes. We don't know what subtypes they're referring to.

13:56:29 Subjects who used glyphosate for greater than five years had increased SSL rates, which is a type of B-cell lymphoma. Compared to non-handler of those who handled glyphosate for greater than two days a year, significantly elevated odds of NHL overall.

13:56:42 The data goes on and on. And the conclusion says, "This data provides some evidence that glyphosate use may be associated with increased NHL risks. Effects may differ by ecological subtypes."

Now, since then, there's also been other

13:56:57 presentations at other conferences where they present different aspects of the data, they do different things with it. And sometimes the data shows a nonsignificant risk. Sometimes it does. It just kind of fluctuates. And we don't know what the final authors are ultimately

13:57:13 going to do. Notwithstanding the fact that Dr. Weisenburger is an expert for us.

That said, we do have a draft of the original publication. So there's been a draft circulating amongst the authors. And we do have a copy of that. This is not

13:57:32 final, so that's one of the reasons why I didn't really

have it in my PowerPoint, but I have reason to belive that it's going to be discussed, so I figured I'd just addressed it head on.

One of the -- one of the things they say in here
13:57:44 is -- this is obviously all post-IARC. Well, they go through a lot of different issues. But at the end of the day -- let me find out where it says it.

It mentions IARC, and it says -- it confirms it. I want to show it to you.

13:58:42 The other thing that I wanted to talk to you about -- let's go back to the PowerPoint. I'm going to show you the part where it says they agree with IARC in a second. I want to show it to you, but I can't find it right now at this moment.

13:58:55 So I want to talk to you about the EPA. Now, the EPA, obviously, has approved Roundup for use. It's approved glyphosate for use. And the last time the EPA made a conclusion was in 2013. An official conclusion. They said it's not likely a carcinogen based on the data
13:59:12 they have.

Now, since -- that was in 2013. Since then -- and since then there's obviously been IARC. And so the EPA has been, sort of, grappling with how to deal with this issue. And they've actually issued an issue paper
13:59:27 where they kind of present their views of it and then get

critiques from independent scientists as part of a scientific advisory panel.

So part of a scientific advisory panel. So they bring in experts and say, "Hey, critique what we're doing. Are we right or wrong?" They issued the issue paper in 2016, and they then have the SAP in 2017.

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A bunch of experts got together, and the experts kind of didn't agree. For the most part, they said they didn't agree with the EPA's analysis. They didn't agree with how to prove -- how to approach things.

14:00:03

And then since then, the EPA has responded to those criticisms. And the most recent response, I think, is in 2017. And it's not final yet. They're still soliciting comments, they're still hearing stuff. So they haven't actually decided where they're going to fall on the issue.

14:00:16

That said, let's talk about what the EPA actually did. So this is the actual issue paper. And one of the things that I think is really, really important -- this is on page 19 of it. This is the one that's dated in September. It is right up here (indicating). Right up here.

14:00:34

All right. Starting on the sentence right here, "Although there are studies available on glyphosate-based herbicide or pesticide formulations, the agencies that

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were taking advice from FIFRA SAP on this evaluation had huge carcinogenic potential for the active ingredient glyphosate only at this time."

And that -- so that's -- so that's what I wanted to get at is, there is an important distinction when you talk about the EPA between Roundup and glyphosate.

Because no one tests Roundup. They test glyphosate. And the EPA is specifically not interested in Roundup. They're interested in glyphosate, because that's the chemical that they're licensing.

And the reason why that's important -- we've talked about it. Dr. Parry mentioned it 20 years ago. There's a potential synergistic effect. And that's something you have to consider.

We also know -- to talk about the EPA, we're actually going to call an expert. His name is Dr. Charles Benbrook. He has a Ph.D. in agricultural economics. He's been involved in developing EPA guidelines on Capital Hill for a long time. He's been heavily involved in, sort of, developing the policies and proceedings that govern EPA. You're going to hear a lot from him about Monsanto's regulatory history with regard to glyphosate.

And there's an entire -- very fascinating story of stuff that happened in the '80s regarding tumors in

mice. I'm not even going to touch it today. There's not enough time.

But you're going to hear evidence how Monsanto was able to stonewall the EPA even effectively. Even
14:02:32 though EPA scientists in 1985 were saying, "This stuff causes tumors in mice," Monsanto was able to push it through. It's a pretty interesting story. It tells you a lot about, you know, just the efficacy of the EPA.

Anyway, the EPA -- some things that people don't
14:02:48 realize, the EPA actually doesn't test anything. They don't actually conduct any experiments. They don't take any measurements. Every piece of data that they review was submitted by a manufacturer. That doesn't mean all the data is bad. Okay? I'm not suggesting that. Okay?
14:03:03 But it is a fact. And people often say, "Oh, the EPA's testing stuff." They do test, like, soil and environmental stuff as part of that mission. But when it comes to pesticides, they don't do any of the test themselves.

14:03:15 And so the reliability of the data is fundamentally based on data that's submitted to them from the manufacturers. They look at stuff that's not peer-reviewed; right? So the data that the EPA is looking at has not been subjected to the critical review
14:03:31 of other scientists, just the EPA scientists. And I'm

not saying that means it's all bad. It's just something to consider.

We also know that, you know, the EPA can only see what's given to them. For example, Dr. Parry; right? We know Dr. Parry's report was never given to the EPA. So they can't actually consider what's not handed to them by the registry. Or in this case, Monsanto.

Like any political agency, it ultimately is subject to political shifts. I'm not suggesting one politics side or the other is at play here. I'm not going to have that fight. Okay?

But I will say that it's relevant; right? Because sometimes political decisions can trump scientific decisions. That's just something we should be thoughtful of.

And I think that -- well, I won't go there. Something to think about.

The EPA's scientific advisory panel in this case about glyphosate, as we currently stand, is kind of split. A lot of the scientists say, "Oh, yeah. It's clearly a possible or probable carcinogen." A lot of them say, "We don't know." A lot of them say, "No, we think you can say it's not a carcinogen." So, you know, take that for what it's worth.

One of the more interesting things is the Office

of Pesticide Programs, the OPP, is the one that oversees the reregistration of glyphosate in the United States.

But the other office within the EPA, the office of research and development, disagrees with the analysis and the way they are approaching it. And, in fact, Dr. Portier, who actually wrote many of the guidelines that the EPA uses for reviewing scientific data, actually wrote that as part of his job when he was working at the SAP.

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He can testify that the EPA hasn't even followed its own guidelines, that if you actually look at the criteria -- and I'm going to show them to you. I'm going to show you all of the things you've got to look at for animal data, and then you can see how the EPA just doesn't apply it. Why that is, we don't know. But I just wanted -- it's something to think about.

14:05:28

All right. So the question that I've been answering for, like, two hours is: Can Roundup cause cancer? And the question is: Is it more likely than not that it does? That's really the threshold issue here. I believe we're going to present evidence and testimony and a lot of science that really supports that it does.

14:05:49

That leads us to the next question, an important question. While we can say one thing causes cancer generally, it's another thing to say it caused this

14:06:07

specific person's cancer; right? Because people have different exposures and different experiences. I belive I heard the question: Dose matters? Of course it does; right? If you use Roundup one time and you get cancer, 14:06:23 that's a lot less likely than if you used it repeatedly over a couple of years. And I think that's common sense, and I don't think anyone's disputing it.

I'm just going to pause for a second. Before I move on to Mr. Johnson's cancer, I want to point out 14:06:40 something that's really important.

During jury section this came up quite a few times, and I just want to make it really clear. Nobody here is saying -- and we're not going to present evidence -- that glyphosate or Roundup should be banned. 14:06:56 Nobody is saying that. Okay? No one here -- I'm not saying it should be banned. We are saying, however -- and we plan to prove with evidence, that you should just warn; right?

Cigarettes are still on the market, but people 14:07:05 know, because it says right there on the label. And that's all this case is about. It's about giving choice. I just want to make that clear in case that gets lost.

All right. So did it cause Mr. Johnson's cancer? To prove this issue or to deal with this issue, 14:07:20 we're going to be calling two different doctors or

experts.

The first one is Dr. Chadi Nabhan. He's from the University of Chicago. He ran their medical school program, oncology program, for quite a few years. He's
14:07:32 an oncologist. He treats people with lymphoma. He's treated thousands of people with lymphoma. He's actually looked at all the data, the epidemiology, all the stuff. But he's also, most importantly, looked at Mr. Johnson. He looked at all his medical records. And he's actually
14:07:49 physically looked at
Mr. Johnson. He brought him to Chicago, and they had a full review of his symptoms and what's going on.

And he did something called a differential diagnosis. Sort of an odd term used in this way. But
14:08:03 basically he said, "Okay. What are all the possible things that could cause his cancer? All right. Which one is the most likely -- or which one is left after I rule out things"; right?

So, for example, let's say -- and this is just
14:08:15 totally hypothetical. I'm not saying this is a risk. Let's say a cancer risk for NHL is eating macaroni and cheese. I'm not saying it is, but let's say it was. You know, you put it on the list for a possible risk factor, and you go, "Well, did he eat macaroni and cheese?" No,
14:08:32 he didn't? Crosses it off. And he goes through all the

different risk factors until you come with one or two that are the most likely probable explanations.

And when we talked about did it cause Mr. Johnson's cancer, we're not talking about definitively or
14:08:46 is it the only cause. We're asking, did it substantially contribute to his physical condition? Which is an important distinction. Because we're not talking about absolutes here. This is the law. And the Judge will instruct you on the law. But that's what we're trying to
14:09:01 prove here.

So Dr. Nabhan is going to go over this in detail. He's going to come and testify live. He's a fantastic physician.

You're also going to hear from a guy named
14:09:13 William Sawyer. Dr. Sawyer. Dr. Sawyer is not an MD. He's a toxicologist by trade. But his focus is going to be specifically on exposure.

One of the big defenses that you're going to hear -- or one of the things you're going to have
14:09:27 discussion about is, he was wearing a plastic suit. How could you have gotten any Roundup on it? Right?

Dr. Sawyer is going to go into that in depth. He can talk about what his actual exposure was. And we're going to see some of that in a second for
14:09:40 ourselves. But he's going to talk about whether or not

the amount of exposure that Mr. Johnson had was sufficient to cause his cancer.

That leads to another kind of important issue. This is another, sort of, issue on the table. That's something called latency; right? That's the time between when you're first exposed to a chemical to when you get the disease; right?

And some cancers can take a really long time to develop; right? You could have smoked 30 years ago and get lung cancer 30 years later. It's fairly unlikely that that happens, but it can happen; right? There's a bell curve of probability. Again, going back to bell curves. And some people are going to get it really early, some people are going to get it in the middle -- that's when most people get it -- and some people are going to get it very late.

And the latency for NHL is actually not something that is known. But we do know that it can be as short as a year, and it can be as long as 20. So as long as you're within a year to 20, there is sufficient, and you're in -- and you're under the curve.

Anyway, Dr. Sawyer, and more so Dr. Nabhan, are going to talk about latency and some of the research we've seen and actually how fast cancer can develop.

Because Mr. Johnson had about two years of

exposure -- pretty heavy AEO exposure. But he did have two years of exposure prior to being diagnosed with cancer. So that's an issue that you should consider.

Let's talk about what happened. Mr. Johnson
14:11:10 grew up in Vallejo, California. Went to school there, met his wife there, had his children there. In 2002, he got a job at the Benicia School District. Originally, though, his job wasn't as a pest control manager or spraying anything. He actually was -- he helped deliver
14:11:28 mail and get people's lunches and delivered them. He did that part time for a few months.

But he was so good and had so much initiative, you're going to hear that they decided to actually have him interview for this, kind of, important job. It's
14:11:41 called an integrated pest control manager.

His job would be for all the different schools in the Benicia School District. He had to make sure pets were controlled. He had to -- he primarily dealt with pests. But as part of that, he also had weed management.

And something that's really important to know is that part of his job didn't involve spraying anything else. All right? He was not a pesticide applicator.

He did ultimately get licensed in that, but that wasn't his job. His job was to control pests, mice and
14:12:11 rodents, ironically. And more importantly, he also did

-- he helped keep the grounds free of weeds. And that involved the spraying of Roundup and Ranger Pro.

You'll hear testimony that he sprayed Roundup Pro Max, I think once or twice. But the vast majority of the time it was the Ranger Pro formulation. Both manufactured by Monsanto.

14:12:30

Anyway, he will testify about this job. He actually had to get interviewed by six different people before he got it. And he'll testify about how proud he was to get the job. It paid well, good benefits. You know, it really was something he was proud of. You actually get to see a video of him talking about that long before he got cancer.

14:12:43

Part of his job obviously involved spraying Roundup. And this is actually the tank that was attached to his truck where he would spray it. And when we say he's spraying it, we're talking about spraying it. Okay? This is a 50-gallon tank. I think it was 50 gallons. I'll have to verify. I think it was a 50-gallon tank.

14:12:57

And he put the solution in there. He'd dilute it and mix it himself. And he sprayed it. And he'll testify that there were actually two other people who would spray with him. There was a lot of ground to cover. But because those other two people had seniority over him, he actually had to use the truck sprayer most

14:13:14

14:13:32

of the time.

And so what was the difference? Because the backpack sprayer, you have more control over the flow as it's coming out. He'll testify this was motorized. So
14:13:37 it would come out in, like, volumes. He'd have to try to, like, not get into it.

He'll testify that even when he was spraying, you know, a gust of wind comes, it's all over his face. It would get on his skin. And there's nothing you can do
14:13:52 about that. That's just how stuff sprays.

He will also testify that one time in 2014 -- sorry. I don't know the exact date. I think it was 2013. He was spraying, and the hose that's connected to -- connected to the tank actually disconnected for
14:14:10 some reason. And it shot out and was spilling everywhere. And he had to go over and turn it off. And he got completely drenched, head to toe, in Roundup. And he'll testify that, you know, it smells. It's not like, you know, the stuff that you would -- it doesn't spell
14:14:30 like water. It has a particular chemical smell to it.

Anyway, I think we have a bottle of it here. This is a bottle of Ranger Pro, just to give you a sense of it. And here's a Tyvek suit. He'll go over it. And you're going the hear testimony that while water doesn't
14:14:43 penetrate this, Roundup does. It actually can get

through the suit because of the surfactant. It actually has a way of getting through the suit that water wouldn't normally be able to.

He did this for about two spraying seasons. And
14:14:59 he started developing a rash on his leg. He will testify that he was very rigorously trained. He actually studied to be a pesticide applicator. Way more than he needed. You don't need to have an applicator license to spray Roundup. But he did anyway. It was a hard test. He
14:15:15 failed the first couple of times, but he ultimately passed.

And he'll testify that he carefully read the label. And I just want to show you the label that we're talking about. So this is the portion of the cautionary
14:15:27 area. It says right here, "Causes eye irritation. Avoid contact with eyes or clothing." "First aid: Call poison control center or doctor for treatment advice." If it gets in your eyes, it says to call this number. This number is actually important, because he actually ended
14:15:42 up calling that number later.

But it says, "Domestic animals: This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in
14:15:59 temporary gastrointestinal irritation, vomiting,

diarrhea, colic, et cetera. If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if it persists more than 24 hours."

14:16:15 And then over here, under "Personal Protective Equipment," it says, "Long-sleeved shirt and long pants, shoes plus socks."

And then the following instructions for cleaning and maintaining personal protective gear. "There are no

14:16:25 such instructions to washables, use detergent and hot water. Keep and wash PPE separately from other laundry."

Absolutely no discussion of cancer. And you're actually going to hear testimony from him that part of his job at one point involved spraying a type of shock

14:16:41 that he later found out was associated with a different non-Hodgkin's lymphoma. It's a different cancer. He actually restricted his use of it considerably because of it.

He's also going to testify that if he had known

14:16:55 this could cause cancer, he just wouldn't have used it. Not only for himself, but because this is being used on school grounds. He's going to testify that his training, when he was -- first started to use this from the distributor, was that this stuff is completely untoxic.

14:17:11 You could drink it is what he was told.

He was also told that, you know -- you know, don't spray it on yourself, if you can avoid it. But if you do, it's no big deal.

Parents -- he'll testify to this -- would talk to him and say, "Hey, what are you doing? You can't spray this stuff around the schoolyard. Are you crazy?" He goes, "No, no, no. It's safe. Totally safe. That's what I've been told. This is all safe."

So this is testimony you're going to hear from Mr. Johnson himself.

Monsanto has admitted that it had never warned any consumer that Roundup could cause cancer. They have also admitted that it has never warned Mr. Johnson that Roundup could cause cancer. So this is actually an element of our case. We don't have to prove it. They admit they never warned.

The only question now is: Should they have warned? This is some of the protective gear. These are actually pictures that he took of himself when he was working as an integrated pest control manager.

You can see that he wore a mask. He had sunglasses or goggles sometimes. But, you know, it would get on his face, and it would get all over him a couple of times.

We know about one of these exposures, because it

was memorialized. And this is actually a document from Monsanto.

So August of 2014, after he's been spraying this for a couple of years, he notices a kind of scar on his knee. And it starts spreading and spreading. And he goes to the doctor, and they think that it might be skin cancer.

The first thing that Mr. Johnson does is he doesn't call a lawyer, he calls Monsanto. He calls them and says, "Hey, what's ongoing on?" We know, because this is a memorialization of the conversation.

So it's from Patricia Biehl. She's writing to Daniel Goldstein, RE: Ranger Pro exposure. And Patricia tells Dr. Goldstein, "Spoke with Dewayne Johnson." That's his phone number, "And this is his story."

"He told me he works for a school district in California, and about nine months ago had a hose break on a large tank sprayer. This resulted in him becoming soaked to the skin on his face, neck and head with Ranger Pro. He said he was wearing a white exposure suit, and it even went inside that. A few months after this incident, he noticed a rash on his knee, then on his face and later on the side of his head. He said he changed his laundry detergent, dryer sheets and used all creams available to him. Nothing seemed to help. His entire

body is covered in this now, and the doctors are saying it's skin cancer."

It's actually not skin cancer. It's non-Hodgkin's lymphoma on the skin. It's not the way we think of cancer normally. It's cancer on the skin.

"He's just trying to find out if it all could be related to such a large exposure to Ranger Pro, since he stated his skin was always perfect until this happened. He's just looking for answers. Thanks in advance for your assistance."

Dr. Goldstein responds: "I will call him. This story is not making any sense to me at all."

This is November 11th, 2014. This is just at the end of the second spraying season from that summer. And he did spray it occasionally, but not as intensively as the winter months. He'll testify basically that every time it rained he'd start spotting, then go spray.

So this is in November 2014. You're going to hear testimony that no one called him back. Dr. Goldstein never reached out to him, never said anything about all these studies showing non-Hodgkin's lymphoma or the animal studies showing that it caused tumor in skin. Nothing.

And so he keeps using it. I mean, he's asking them to tell him, "Hey, is this a problem?" They don't

call him back, so he just keeps using it. And it gets worse and worse and worse. Scared. He's frightened at this point, you're going to hear.

So what does he do? He calls the number on the label, which is this company -- reports for the Monsanto lawn and garden Monsanto agricultural product for the month of March 15th.

And this is the FIFRA report. So this is an email attaching the report for that month's safety issues. And as you can see, it's being sent to Dr. Goldstein. And here's what the report says -- this is March 27, 2015. This is four months later. He's still using Roundup. He's still using Ranger Pro. His cancer is getting worse and worse and worse, and he's freaking out.

Here's what it says, "Caller states he's been using Ranger Pro as part of his job for two to three years. He has recently been diagnosed with cutaneous T-cell lymphoma. He has concerns about continuing to use Roundup as part of his job and questions that Roundup can be the source of his cancer. As the call progressed, caller said that doctors are unsure how to treat his condition, and they're not even sure it was caner. The caller states he works with Ranger Pro using a 50-gallon tank and also using a

backpack sprayer. He uses at least 10 ounces of Roundup per gallon, the 3% for a 50-gallon tank, and 4 ounces of Roundup per gallon, 1.25%, when using the backpack sprayer. He recalls having been exposed to Roundup twice
14:22:41 in the past years, both from the backpack leaking and malfunctioning. In one case, he was using personal protective equipment, PPE, but it soaked through the PPE and his clothing. Recently he's had a swollen foot, and the MDs cannot figure out what is going on. The caller's
14:23:00 level of fear is rising over his continued using of Ranger Pro. He states he continues to get unexplained rashes and nodules over his body. MRCP" -- that's the poison control center that wrote this report -- "discussed the product's toxicity. The symptoms are not
14:23:18 an expected response from the product." It's not on the label. "Advise MRCP is available if he has any more questions."

So he reaches out a second time. But look at the date. This is March 27th, 2015, two weeks after the
14:23:34 IARC decision.

So at this point, Monsanto knows that ECHA, one of its preeminent organizations, has concluded it's a type of substance that can cause this type of cancer. And the evidence will show that Monsanto, again, didn't
14:23:54 call them back.

And so the next spraying season came, and you're going to hear evidence that as he sprayed more and more of it, because no one would tell him this was a problem, that this was behind his cancer, his cancer got worse. It got worse. It got worse. And you're going to hear testimony that it's no longer recoverable. Mr. Johnson is going to die.

14:24:10

And having to say this in front of him and his wife when -- you know, I want him to fight. The simple fact is he is going to die. It's just a matter of time. And between now and then, he's going to have to use more chemo, more radiation, more whatever the heck he can, to try to live another day longer. And the evidence will show that between now and then, it's just nothing but pain.

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14:24:52

His wife is amazing. You're going to hear she actually works two jobs. One job actually is in Napa, the Napa School District. And she does that specifically because it allows her kids to go to school there. They don't have to go to school in Vallejo. And because of that, they have to drive an hour or so every day over there. And he picks up his kids every day after school.

14:25:10

And his cancer got worse. Why? Well, because you're going to hear evidence that Roundup can promote cancer. That if you have cancer, it can actually make it

14:25:30

worse. And that's what that study showed on dermal exposure. Forty percent of them had tumors first.

And this is what happened. Eighty percent of his body is covered in these lesions. He's better now. He still has scars, obviously. But, you know, it's going to come back. It's going to spread again. And eventually -- he'll testify to this. The last treatment he did almost killed him. But he somehow survived, and they're not really sure what to do next, because they don't think they can do the treatment again without it actually killing him. Fighting cancer is a tough, tough battle. Maybe some of you know. And sometimes you can do more harm than good trying to fix it.

Anyway, this is -- 80 percent of his body is covered -- just a close-up of the, sort of, lesions and nodules that are coming up out of his skin. And he's going to testify this is painful. It's not as though this is a non-painful experience.

This is his scalp --

MR. JOHNSON: Stomach.

MR. WISNER: Stomach. Sorry.

And you can see some of these lesions and nodules.

So in thinking about did it cause Mr. Johnson's cancer, these are, sort of, the issues I highlighted

earlier: Think about exposure. Did he have enough exposure? You'll see Monsanto's own internal documents that they ultimately ignored showing that he was drenched several times. And he'll testify it got dripped on him all the time.

14:27:13

Latency. Is two years enough? Clearly it is. I mean, I think it's pretty -- pretty compelling that he got his first rash in August of 2014, at the very end of an aggressive spraying season.

14:27:30

Are there other possible causes? Well, no. He doesn't have other chemical exposures. You're going to hear testimony that we've gone through all the possibilities. There's nothing there.

And what's really interesting, you'll hear

14:27:43

science about this, data about this, but this type of cutaneous T-cell lymphoma is essentially unheard of in African men. It just doesn't happen. The only reasonable explanation -- you'll hear testimony -- is that it was exposure to a chemical.

14:28:05

And the last issue is warning. Now, the question is: If Monsanto even warned, would it have made a difference? And he'll testify that it would have. Not just for himself, but for the kids that he was also exposing it to.

14:28:18

And he'll also testify -- and this is really,

really interesting. When he talked to his supervisors at work, he said, "Hey, maybe this stuff is behind my cancer." He had cancer while he was still working and spraying stuff. They said, "No. It's not on the label." That's actually a conversation they had.

14:28:36

So is there evidence that more likely than not this Roundup and Ranger Pro exposure caused Mr. Johnson's cancer? We believe the evidence will show that, yes, it did.

14:28:48

What are his damages? When you talk about damages, there's really two types of damages. And my colleague,
Mr. Dickens, talked about them a lot. I'm not going to belabor it too much.

14:29:00

There's two groups. One's called compensatory damages. And this is the damages to make Mr. Johnson and his family whole. And there's two aspects to that. The first part is the economic damage. That's the hard number; right? Lost wages, medical expenses. These are

14:29:17

things that are easily quantifiable. We're currently working this out with the defendants. I think we're going to have an agreed-upon number what that is at some point. So that will be concrete. That wouldn't be in dispute.

14:29:28

The more difficult type of damages are

noneconomic damages. And there's a lot of different things to consider. Like physical pain; right? What is -- what is the value of watching your skin blister like this?

14:29:44 Mental suffering, loss of enjoyment of life? You know, this is Mr. Johnson and his kids, his wife. They're snowboarding. What's the loss of not being able to do those kind of things anymore? At least in the way you used to be able to.

14:29:59 And the mental suffering that he has to live with knowing that he's going to die. Not seeing his kids go to college or get married or wherever that goes.

Disfigurement, physical impairment. You can see from Mr. Johnson's face he's scarred. Not just

14:30:17 emotionally, but physically. And what is the value of being disfigured? I mean, I don't know if Mr. Johnson really cares. I think he likes to live. But the point is it's something to consider.

Physical impairment, not being able to do things

14:30:31 you wanted to do before. Grief, anxiety, humiliation, emotional stress. These are all very difficult things to, sort of, come up with; right? How do you put a number on that?

And so one of the things that you're going to

14:30:47 have to do is you're going to have to listen to the

testimony, listen to Mr. Johnson's testimony, listen to his wife, listen to the doctors, and make up your own mind about what is that worth.

And at the end of this case, we will present you, I think, with a number. I'm going to leave that on the table for now, but we will say what we think it should be worth. And obviously you can go lower or higher. It's your decision.

14:31:00

The second aspect of the damages is not about Mr. Johnson particularly. It's about Monsanto, whether or not Monsanto should be punished for its conduct.

14:31:14

You're going to learn that Monsanto's net worth is $6.6 billion. That means, basically, if they were to just liquidate, they'd have $6.6 billion in cash. You're going to hear -- you're going to hear other testimony about the financial status of Monsanto.

14:31:34

And you're going to learn that Roundup is a big part of their success as a company. And it's one of the things you have to consider. Because when you ask if Monsanto would be punished for its conduct, you have to come up with a number that will punish somebody; right?

14:31:48

So if I have a person who has $100 in their pocket and make them pay a nickel, is that going to deter future conduct? Probably not. So what's that number that comes out of what they have in the pocket that will

14:32:05

make a difference? That's something we'll talk about later. Obviously at the end of trial.

But before I let off for the day, I just want to finish off on a couple of things. And this is something -- it's a document that I find really important for this case.

It's an email from Dr. Farmer in 2009. And she's actually talking to a distributor in, I think, Australia or something about what information they have on their website and why they need to correct certain things.

And she says here, and this is in 2009, "You cannot say that Roundup does not cause cancer. We have not done the carcinogenicity study with Roundup."

I want you to think about what that sentence really means. Dr. Parry said you have to study Roundup 10 years before this. And you just learned that they have $6.6 billion. Why didn't they study?

And so when deciding this issue, I think there are some questions that should be running through your head as we proceed through this case. First, why did no one from Monsanto call Mr. Johnson back, even after IARC? And just say, "Hey, listen. IRAC concluded this. We disagree. We think IARC is wrong, but we'll just let you know that this institution has found this. Take that

with a grain of salt." Why didn't they do that?

Why did Monsanto not send the Parry reports to the EPA, and then, instead, go strike the Williams paper?

Why did Monsanto refuse to study the Roundup formulation, like Dr. Parry suggested 20 years ago?

14:33:58

And why did Monsanto feel the need to combat polished articles raising concerns about the safety? Remember the email from Dr. Farmer? How are we going to combat this? Why is that the philosophy?

14:34:14

And to really answer this question, I'm just going to play for you exactly a minute. It's not very long. A video of Dr. Kirk Azevedo. He is a former sales representative of Monsanto, and he was drawn to work at Monsanto because Robert Shapiro had this vision of green factories. And he ultimately ended up leaving and -- because of what he was told by the company. I'm just going to play that for you.

14:34:33

(Video played.)

Q. Good morning, Dr. Azevedo. Is that a comfortable title for me to call you?

14:34:47

A. That works fine, too.

Q. You understand we're here today to talk mostly about your experience working at Monsanto?

A. Yes.

Q. Okay. Did you have any interactions that seemed

14:34:56

to contradict in any way those visions that Robert Shapiro set forth?

A. Yeah, there are a couple experiences that I had that really, kind of, changed my mind on these things for safety. One of which was -- well, the first one was doing local market manager training in St. Louis, Missouri. And at some point during that time, we had a meet-and-greet with the vice presidents of the company and different managers and so forth. And in sharing, you know, some of this information with one of the vice presidents, I remember, you know, talking about the vision of Robert Shapiro. Like, talking about reducing of processed waste and the factories of the future not being these pollution factories but, you know, being these plants. They're going to be green. And we could, you know, help save the world in this regard. And speaking of this vision, kind of quoting from the prospectus, where Robert Shapiro is speaking on, you know, the vice president pulled me aside and says, 'Hey, we don't know what Robert Shapiro is really talking about here. He's just kind of this visionary guy. And this sort of thing isn't what we're really about. We're about making money. So get it straight.'"

(End of video.)

MR. WISNER: I asked a lot of questions about

why Monsanto did something or did not. I think that's the answer.

So the question: Should Monsanto be punished for its conduct? We believe, when the evidence is fully in, you'll be believing that they should.

Thank you for your attention so far. This was a long opening. It was supposed to be, like, an hour and a half. Clearly I have no concept of time. I apologize for that. There's a lot of science and a lot of data to discuss. And, quite frankly, we've only scratched the surface of it. We're going to see more throughout trial.

I really do appreciate you guys listening carefully, taking notes. By all means, if you have questions as we move forward, please ask them.

I think it's really quite awkward, I know, but do it, because I think it's really important that if we're talking about something that you don't care about, but there's something that you really need clarification on, we need to give you clarification. That's part of my job.

So thank you for your time, and I appreciate having you guys for the next month or so and look forward to speaking to you again at closing arguments. Thank you.

THE COURT: Thank you, Mr. Wisner.

All right, Ladies and Gentlemen. Before we hear from defense counsel, we're going to take our afternoon recess. So we'll be in recess for 15 minutes. Please do not discuss the case. Please do not do any research. And we'll resume again at 2:55, five to 3:00. Thank you.

(Recess.)

THE COURT: Welcome back, Ladies and Gentlemen. We are now going to hear defense counsel's opening.

Mr. Lombardi.

MR. LOMBARDI: Thank you, your Honor. May it please the Court, Counsel, Ladies and Gentlemen of the jury.

Once again, my name is George Lombardi. I was introduced to you during jury selection. And together with Ms. Edwards, who you've all had a chance to talk with, and
Mr. Griffis, I'm going to represent Monsanto and be presenting Monsanto's evidence and Monsanto's case to you throughout this trial.

Also with us in court is Ms. Robin Buck, if you can stand up, please. Ms. Buck is with the law department at Monsanto. She was here throughout the jury selection process, and she'll be here every day of the trial with us as well. So you'll see her in the courtroom.

Now, I have to confess to you that it was not my foremost desire to be the guy that stands up at 3 o'clock to start talking to you, but that's where we are. And I appreciate in advance your attention. I know you've had
14:58:45 long sits through the jury selection process and a long sit today, but I appreciate your attention.

I want to start where Ms. Edwards started when she started jury selection with you. Cancer is a terrible disease. Mr. Johnson's cancer is a terrible
14:59:05 disease. We all do, and we all should, have great sympathy for what he's going through and what his family is going through.

But we're here today because Mr. Johnson's lawyers have sued Monsanto, and they've said that
14:59:26 Monsanto's products, mainly Ranger Pro, mainly Ranger Pro, caused Mr. Johnson's cancer. And so that's what we're going to focus on in our case.

We're going to focus on the evidence that relates to whether Mr. Johnson's cancer was caused by
14:59:46 Ranger Pro or other glyphosate-based products. But mainly Ranger Pro.

And we're going to be very focused on that question. We're going to be very focused on trying to efficiently provide you with the evidence that you'll
15:00:02 need to answer that question.

And the evidence really breaks down into two basic areas. Excuse me. One is the product -- glyphosate-based product Ranger Pro and what are its characteristics and whether it causes cancer -- whether
15:00:19 the scientific evidence shows it causes cancer.

And the other part is Mr. Johnson's disease, non-Hodgkin's lymphoma, the kind called mycosis fungoides, his exposure and whether his exposure led to his disease.

15:00:36 Now, plaintiffs have the burden of proof on all those points. And they're not going to be able to satisfy it. And they're not going to be able to satisfy the burden of proof, because the evidence is overwhelming -- the scientific evidence is overwhelming that
15:00:56 glyphosate-based products do not cause cancer and did not cause Mr. Johnson's cancer.

Now, why do I say the evidence is overwhelming? It's because the evidence is large. There's a large database of evidence available. We're sitting here in
15:01:16 2018, and we're looking back at literally decades of use of this product, of studies of this product, of testing of this product. We have that whole database to look at, and we have it right up until today. Right up until 2018. The most recent data we will have in court today.

15:01:40 Why do I say it's overwhelming? I say it's

overwhelming because of the variety of people who have done the testing, who have done the studies, who have looked at this product and made the determination that it's not carcinogenic.

15:01:57 It's not just Monsanto that's done the testing. Monsanto hasn't even done most of the testing. It's done its share, but it hasn't done most of the testing. The testing has been done by independent scientists, by university scientists, by government scientists. It's

15:02:16 been evaluated by the EPA. Lots of people have looked at this over time.

Why do I say the evidence is overwhelming? I say it's overwhelming because of the breadth of evidence that's available to evaluate these products. You're

15:02:35 going to hear about human studies. You're going to hear about animal studies. You're going to hear about cell studies.

Those are the studies that scientists in this area want in order to evaluate a product like this.

15:02:53 They're the studies that the EPA specifically asked for to determine whether something's carcinogenic or not. You're going to have a great breadth of studies to look at.

And why do I say it's overwhelming? Because the

15:03:11 single most important study, the single most relevant

study, is a human study. After all, we're talking about whether Mr. Johnson, his cancer, as he worked out there in the real world, was caused by Ranger Pro.

15:03:28 And that study, the single most relevant study, the biggest study, the best study of human beings, who, like Mr. Johnson, are licensed pesticide applicators, concludes that glyphosate has no association with

15:03:47 non-Hodgkin's lymphoma, Mr. Johnson's cancer. And we're going to talk about that. We'll talk about that.

How about Mr. Johnson and his cancer? Mr. Johnson has non-Hodgkin's lymphoma, and we're going to talk about that. But it's going to be plaintiff's burden

15:04:02 to connect up his non-Hodgkin's lymphoma to his exposure. And they're not going to be able to do that. They don't have the science to do it. It's just not true.

Mr. Johnson's cancer began years before he took on this job at the school district. Cancers like

15:04:28 non-Hodgkin's lymphoma take years to develop. They start to develop under your skin, inside your body. You can't see it.

By the time Mr. Johnson's symptoms became apparent, his cancer had been developing for years in his

15:04:43 body. And

Mr. Johnson, when his symptoms did appear, he fortunately has had excellent medical care. His treating doctors, the people who actually take care of Mr. Johnson through this ordeal that he's involved in, not one of them has told him that his cancer was caused by Ranger Pro.

Now, we've heard about a lot of other things this morning. A lot of other things that don't relate to the issue that's before you. The issue is whether Mr. Johnson's cancer was caused by Ranger Pro.

We've heard about a lot of other things. We've seen the Monsanto emails, little snippets from them. We've seen snippets from Monsanto documents. We've saw a snippet from a deposition. And we'll talk about that. Because you're entitled to the context for those things. And the context provides you with the whole story.

So I'm going to talk about some of that this afternoon. I won't talk about all of it. But through the trial, we'll be doing that.

But the most important thing about that evidence, it's not going to help you answer the question of whether
Mr. Johnson's cancer was caused by Ranger Pro. It won't help you answer that question.

It's the science that's going to answer that question for you. And it's the science that has guided

the scientists at Monsanto. It's the science that has guided the scientists at the EPA and lead them to the conclusion right up till today that glyphosate-based products, like Ranger Pro, do not cause cancer and have led the EPA not to require a warning -- cancer warning on the label. So that's what the evidence overall is going to be.

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I'm going the jump into it. I told you I would try to be efficient. Let me jump into it and get going here. Let's start with: What is glyphosate? We'll spend a few minutes giving you some background on glyphosate. We talked a lot about the product, and you're gonna hear more about it.

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Glyphosate is what's known as a herbicide. Some people say "herbicide," some people say "herbicide." I say it both ways, so we'll just see how that works out.

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But it's important to know that it's a herbicide, which means that it kills plants. And you'll see sometimes in this case it gets categorized as a pesticide for bureaucratic purposes in government or for classification purposes. But it really is a herbicide.

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So why do we need herbicides? I'll take you back to middle school biology. We all know that plants need water. They need nutrients, and they need sun. And weeds, or invasive plants, compete with the plants we

15:07:50

want to grow for water, for nutrients and for sun.

And when they do that, they crowd out the plants or they kill the plants. And the plants can't grow. We can't grow as much.

15:08:07 So as long as we've done agriculture as human beings, we've tried to find ways to get rid of weeds. When we get to the 1900's, this was done mostly by plowing and tilling the soil. You're all familiar with plows. It's just you physically go up and down the rows, 15:08:26 and you turn the soil over, and you get rid of the weeds as a consequence.

But what happened was in the 1930s or thereabouts, it was discovered that that kind of plowing, tilling, was harmful to soil. And something called the 15:08:42 no-till movement started, the no-till conservation movement.

What happened with tilling and plowing is you turned over the soil, but the soil eroded. The nutrients diminished. The soil began to get thinner. And so you 15:09:03 got a -- you might remember from some of your high school or junior high classes the dust bowl back in the 1930s in the United States. There were books written about it, novels. And there's a couple pictures just to remind you.

15:09:19 But tilling was at least partially responsible

for what happened during the dust bowl. Drought was part of it as well. But the reason that you had winds that blew and got dust and got the soil all up in the air was because the soil had been eroded, because the soil wasn't as good as it had been before.

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And so in the 1930s and 1940s, scientists started to think, "What can we do to come up with a no-till form of getting rid of weeds?" And that's when scientists started to think about chemicals.

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Now, chemicals are tricky in this context, because you want to have a chemical that can kill weeds, but you also have to have chemicals that are safe for humans.

And so that was the sweet spot that scientists were looking for back in that time period. Back in the '30s and '40s is when they started to look for it. And they weren't all that successful at first.

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There were a lot of chemicals that weren't very good at killing weeds. And the ones that were good at killing weeds were frequently very harmful to people. Some were banned. The government banned some of them because of that.

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And that's the context in which glyphosate was invented and came into being. Glyphosate was invented by Monsanto. And it was first sold in products like Roundup

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or Ranger Pro back in the 1970s. And what is unique about glyphosate is the way that it works.

So what I put up here is the weeds on the left, and on the right is a series of chemical reactions that
15:11:05 happen in plants. And those chemical reactions lead -- if you follow, they start at the top. If you lead -- all the way down to the bottom, they result in the creation of amino acids, which are nutrients for the plants.

And what glyphosate does is it interacts with an
15:11:25 enzyme called EPSPS. And when it interacts with EPSPS, it prevents the remainder of the chemical reactions from occurring. And what happens then is that the amino acids aren't made. The plant doesn't get its nutrients, and the plant dies. The weeds die.

15:11:46 And that's unique mechanism of action. That's the word scientists use, a unique mechanism of action for glyphosate.

Now, this chemical -- this series of chemical reactions happens in plant cells. It doesn't happen in
15:12:08 animal cells, and it doesn't happen in human cells.

What became clear over time, with years and years of testing, is that glyphosate hit the sweet spot. Glyphosate killed weeds very effectively. But glyphosate was also safe for humans to use. And there are other
15:12:34 benefits to glyphosate.

Glyphosate stays in the soil for a short period of time. It has something called a shorter half-life compared to other chemicals. Glyphosate doesn't leach down to the groundwater because of the way it interacts with the soil. And glyphosate fulfilled the promise of no-till conservation, no-till farming.

Because now you could use a chemical that enabled you not to have to plow at least as frequently, and enabled you to kill the weeds and preserve the farmland.

So that's how glyphosate came into being. Now, Monsanto was the first -- Monsanto invented glyphosate and was the first to sell it. But today lots of companies sell it. A lot of people manufacture glyphosate-based products.

Monsanto's product has been approved by the EPA. So have other people's. The EPA constantly reviews products. They've reviewed glyphosate a few times, reviewed glyphosate again, and will continue to review glyphosate, because that's what the statute says they have to do. And they do it by looking at all the science.

And glyphosate-based products are also sold in Europe, also sold in other foreign countries. And they're sold without cancer warnings. So that's a

background for you on glyphosate-based products, how they came to be and, really, I guess, the start of how we got here today.

Now, I want to go right to the science, because I told you this is a case about science. I want to go right to the science, and I want to go right to the science that's most important in this case. And that's the human studies.

There are three types of science. You've heard about them already, but just to repeat, there's human studies, there's animal testing and there's cell testing. Those are the three types of science you're going the hear about, and those are the three types of science that people have used to evaluate glyphosate-based products, as well as many other things. But obviously here, glyphosate-based products are the most important.

Human studies refers to epidemiology. And you heard that word earlier today. A couple of things about epidemiology, just so you know right up front.

Epidemiology studies the actual product as it's used in the real world. So you heard a lot of discussion this morning about we need to know whether there's a synergy between glyphosate and surfactants. We need to know how they work together. Well, human studies study the product as a whole. They study glyphosate with

surfactants, with everything else.

Human studies also -- as you've heard a lot of talk about Monsanto here, none of these studies were performed by Monsanto. Monsanto didn't fund these studies. Monsanto read them like everybody else did, but these are not Monsanto studies.

Now when I say "epidemiology," I'll give you my example of epidemiology. Just very basic example. You heard a slightly different one this morning, but mine is when you want to study the effect of glyphosate, you take two populations. One population is exposed to glyphosate, the other population is not. And you look to see what diseases arise in the two populations. And you look to see whether the glyphosate exposed population got any more disease, had any risk, any higher risk of disease than the not exposed population. That's the basic idea. And it gets, obviously, much more complicated than that.

And we'll have experts in this case who will come and explain that to you. I'm not going to spend time now introducing you to them, because they will come here, and they will introduce themselves to you. But highly, highly respected epidemiologists and other experts that you're going the hear from.

Now, I have -- I've given you a very simplistic

example about how epidemiology works. But in the real world, it gets a lot more complicated than that. And it gets more complicated than that because there's nobody who's just exposed to glyphosate. Nobody. People are
15:17:17 exposed to lots of different things. And people who are exposed to glyphosate are exposed to a lot of different things.

And so the job of the epidemiologist is to sort out and figure out: What are the things that are causing
15:17:36 whatever the disease is that you're studying? What is it? And does the epidemiology study provide you with the ability to make a determination of whether one particular thing causes the study?

So, as an example, if somebody is exposed to
15:17:53 glyphosate and five other chemicals, and you do a study, you have to do something to show that whatever effect you're seeing is due to the glyphosate.

And some epidemiology studies don't do that. When they do it, it's called adjusting. Making an
15:18:10 adjustment. For instance, for other pesticides. You're going to hear that term a lot. That's why I wanted to say it. Adjustments for other pesticides is a key factor in making sure that an epidemiology study is telling you what people are telling you it does.

15:18:30 So when I put the number 63 up there -- there

are other things about epidemiology that we'll talk about. But you heard about statistical significance. Extremely important. That's something that all scientists are familiar with. And statistical
15:18:44 significance is something you look at. You look at the size of the study. Bigger is better, because the more people that you're studying, the more people that you see that have been exposed to something, the more information you have. The more trustworthy information.

15:19:01 You're going to hear about all these kinds of things as the case goes on. Now, the number 63 that I put up there, that is the number of epidemiology studies that the EPA has considered up to this point in time, up to 2018, that deal with glyphosate.

15:19:20 Now, we're not going to look at 63 studies here, because some of those studies don't relate to non-Hodgkin's lymphoma. So we're really going to be focused on the studies that relate to non-Hodgkin's lymphoma. And that's a much smaller number. It's
15:19:35 depending on -- on who's talking and who's testifying. It's around ten or smaller. But it will depend on who the witness is at the time. But that's the universe.

But the point is that the EPA has looked at a lot of epidemiology studies. Now, how did this all
15:19:55 start? How did these epidemiology studies all get

started concerning glyphosate?

Well, it started with an observation that took place back in the '50s and '60s. An observation was that farmers were getting non-Hodgkin's lymphoma more often than others. Farmers were getting non-Hodgkin's lymphoma more often than others back in the '50s and '60s. And this is just an example of an article that you'll see. The abstract of the article, which is, kind of, the summary of the article, talks about raised death rates that have been reported for non-Hodgkin's lymphoma and Hodgkin's disease among white male residents of Hancock County, Ohio. That's a rural county in Ohio. And then you'll see the clip I've put there. "The small study adds to the growing body of reports linking farming and malignant lymphoma, particularly non-Hodgkin's lymphoma."

There was a growing body of evidence. And what's significant here is the timing. Because this observation that non-Hodgkin's lymphoma was associated with farming occurred before glyphosate was invented. Occurred before glyphosate-based products were on the market. Something was causing farmers to get non-Hodgkin's lymphoma, and it wasn't glyphosate.

And so epidemiologists, having made this general observation, took the next step. And they said, "Okay. Let's start to look at various things and see if we can

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figure out what it is that causes farmers to get non-Hodgkin's lymphoma more than others."

And so they started to do more specific tests. And one of the tests or studies that they did was of pesticides generally. And they started that in the late 1970s and early 1980s. They studied populations for a period of time. Very shortly after glyphosate even went on the market.

But they started studying pesticides generally. And they did what epidemiologists call exploratory pesticide studies. And what I mean by exploratory pesticide studies -- what epidemiologists mean by exploratory pesticide studies is that they're not quite sure what to look at yet. They're exploring to see what to look at.

So they did studies that weren't designed to figure out the effect of a particular pesticide or herbicide. They did studies just generally to see if they could pick up any association with pesticides and herbicides generally.

And that's what these early studies were all about. That's what these early studies were all about. They tended to be small. They tended -- and frequently didn't adjust for other pesticides. Frequently didn't have statistically significant results. But they were a

first step in the science, a first step for seeing whether something in the pesticide world might be responsible for non-Hodgkin's lymphoma.

Now, you heard Counsel say -- I think Counsel talked about a couple of these. But he said -- this De Roos 2003 up there at the top, you might remember. He said that's a particularly important one. He said -- and I think he put a really big number next to that. And I think it was something like 200 percent greater risk in De Roos for people that were exposed to glyphosate.

So let me just say this: Dr. De Roos never said she thought she had established that there was that kind of risk for glyphosate. In fact, what Dr. De Roos did was she said, "We ought to do some more studies. We ought to do studies that relate specifically to glyphosate."

And that's where the epidemiologists went. They started to do studies of particular pesticides and particular herbicides, and among those was glyphosate.

And so Dr. De Roos, who did the study up there at the top, two years later did another study. She didn't conclude that glyphosate raised the risk of cancer, non-Hodgkin's lymphoma, 200 percent. Here's what she concluded: "No association was observed between non-Hodgkin's lymphoma and glyphosate exposure in any

analysis."

Now, a couple of things about this study. I told you that these studies -- the studies turned to studies that were specifically focused on glyphosate.

15:24:53 And so this says, "Cancer Incidence Among Glyphosate-Exposed Pesticide Applicators in the Agricultural Health Study." I'm going to talk about the Agricultural Health Study more in just a second, but for right now, it's significant that this study was

15:25:09 specifically designed to determine the effects of glyphosate-exposed pesticide applicators. Like Mr. Johnson, licensed pesticide applicators.

And what they concluded in this study, which was much bigger than any of the exploratory studies, was that

15:25:28 there was no association observed between non-Hodgkin's lymphoma and glyphosate in any analysis.

Just to remind you, there were -- we were talking about glyphosate pooled studies and glyphosate cohort studies. These are the glyphosate specifically

15:25:47 directed towards glyphosate studies. It talks about the De Roos. That was a glyphosate cohort study. You're going to hear what cohort studies are as we go along. I'm not going to take the time to burden you with that now, but the experts will explain that to you. It is, in

15:26:05 short, considered the gold standard by epidemiologists.

The best kind of study. We'll talk more about that soon.

That NAPP study 2015 was also a glyphosate-directed study targeting glyphosate. The NAPP study was funded by our government, the National Institutes of Health. It's the North American Pooled Project. The places that are lit up there in various colors are Canadian provinces from which some of the participants were taken and states from which some of the participants were taken. You can see a heavy concentration on agricultural states. And counsel showed you the earliest results from that, but we'll show you the latest results from that. And what NAPP concludes is that people who were ever exposed to glyphosate had no greater risk of non-Hodgkin's lymphoma than people who were never exposed to glyphosate. That's what the targeted pooled study -- which by the way is pool -- it's taking some of those exploratory studies and pooling them together so that they're bigger so that you have more people in the studies so that the studies are stronger, more powerful and give you better results. That's what the glyphosate-targeted study says.

Now I'm going to talk about the last -- the glyphosate cohort study, the last one, JNCI 2018, this year. It came out this year. JNCI is the Journal of the National Cancer Institute. And in science there's kind

of a hierarchy as to the best journals to be published in and the worst journals to be published in. And everybody wants to be published in the best and most prestigious journals. The Journal of the National Cancer Institute
15:28:10 is an enormously prestigious journal. The title of the study that they did in 2018 was called Glyphosate Use in Cancer Incidence in the Agricultural Health Study. It is a study that's targeted towards glyphosate, targeted to determine the effect of glyphosate on cancer incidence.

15:28:33 Now, it's a cohort study. I mentioned that before. Cohort studies -- you may have read about it just in your day-to-day reading of the newspaper or whatever. Cohort studies are studies of large numbers of people who are followed over time, and you wait and you
15:28:47 track what their health habits are. You track what their diet is, for instance, or you could track what their exposures are. You could track what they drink. You could track all kinds of things. And then you look to see what diseases they get over time, and you draw
15:29:04 conclusions from that.

So there are some really famous cohort studies that you'll see reports on all the time. The Nurse's Health Study is one. The California Teachers Study is one. The Health Professionals Followup Study is another.
15:29:18 There's a Framingham, Massachusetts study about

cardiovascular health that's frequently reported on. Cohort studies are significant. And so the Agricultural Health Study was put together because of the concern about the health of Farmers. And so the Agricultural
15:29:36 Health Study was started back in the 1990s, and it asked farmers -- it asked, actually, licensed pesticide applicators about their habits, about a lot of things, but specifically, for our purposes in this case, about their use of glyphosate-based products and what that use
15:29:56 was, and then they tracked them going forward.

And so this study -- again not a Monsanto study, this study was put together by the National Institutes of Health, the National Cancer Institute, our country's foremost institution for studying cancer. The National
15:30:15 Institute of Environmental Health Sciences, also of the National Institutes of Health, the EPA and the National Institute of Occupational Safety and Health. These are people who put together the Agricultural Health Study.

Now, the authors of this particular article, the
15:30:33 2018 article, also come from these organizations. I'm not going to read through all of them. I'll just point out to you that the National Cancer Institute -- Debra Silverman is the branch chief of occupational environmental epidemiology. Dale Sandler is the chief of
15:30:50 the epidemiology branch of NIEHS. People from

universities were involved in this. And so this is a prestigious group that did this study. And what was the size of the study? 54,000 participants. Dwarfs, dwarfs the size of any particular -- any previous study. And
15:31:16 who were the people they were studying? I mentioned this earlier. It says "licensed pesticide applicators," like Mr. Johnson. These are people who went in to the State and got a license to be able to apply pesticides. It's thought to be a particularly good population to study
15:31:32 glyphosate use because these are folks that do it for a living, and they know what they've been exposed to. They know how much they use. And it's considered a particularly good source for epidemiology studies.

And so what did this study conclude in 2018,
15:31:54 this year? In our study we observed no associations between glyphosate use and NHL overall or any of its subtypes. That is the most up-to-date science. It's the biggest study. It's the most sophisticated study. And it's the one that came out just a few months ago.

15:32:26 Now, I've got some notes. I've tried to keep track of what counsel said here. Counsel focused on the exploratory pesticide studies. And you remember -- I'll try to get the numbers here, but I don't think I got them down. But he
15:32:44 said -- McDuffie, he said that was some, you know,

200 percent increase in risk for people exposed to glyphosate. For Hardell and Eriksson, he said somewhere between 2 and 400 increase in risk. For all of those that he called out he said there was this enormous
15:33:02 increase in risk, but what he didn't tell you about was the details of the study. McDuffie didn't adjust for other pesticides. McDuffie, how many people -- remember we got the JNCI study from 2018, 50,000 people. 51 in McDuffie. Hardell and Eriksson, where he came up with a
15:33:27 huge number, eight people. Eight exposed cases in Hardell and Eriksson. In Hardell, four exposed cases. JNCI, 50-some-odd thousand. Eriksson, 29 exposed cases, not adjusted, except Eriksson did do an adjustment ultimately to try to ferret out the actual effects of
15:33:57 glyphosate. And when Eriksson did that adjustment, do you know what the result was? No effect. No effect of glyphosate.

And you don't have to just understand the science to understand what's going on here because there
15:34:16 are commonsense things you can look at. If McDuffie and Hardell and Eriksson and Hardell and Eriksson really believed that there was a 400 percent increase in risk associated with use of glyphosate, they would have said so. But they don't say that. They don't say that in
15:34:38 their studies. There was no outcry when these studies

came out saying, "Oh, my gosh. We've got to do something to glyphosate."

What that tells you as a matter of common sense is that these studies don't actually show an effect of
15:34:55 glyphosate and getting cancer. The studies that targeted glyphosate show no association, and those are the better studies.

Now, you heard a lot of talk about IARC this morning, remember, and counsel went through IARC's
15:35:18 evaluation of various forms of evidence. IARC -- we're going to talk about IARC later. But when IARC considered the epidemiology, IARC concluded that that epidemiology, those red boxes up there, was not sufficient to conclude that glyphosate causes cancer in itself. That's what
15:35:40 IARC said. That's who Plaintiffs' counsel touts as a prestigious organization. They said that evidence is limited and not sufficient to come to the conclusion that glyphosate-based products cause cancer. The conclusion of the people who actually wrote this study, counsel said
15:36:02 that this is a horribly flawed study, terrible study, whatever other adjectives were used, but this is the best study, the most up-to-date study, the most recent study. And these people used the most sophisticated epidemiology techniques to look to see if they could find any
15:36:27 association between glyphosate and non-Hodgkin's

lymphoma, and they couldn't find it.

So that's what the most important evidence tells you. And I say this is the most important evidence because this is of human beings using glyphosate in the real world in ways that are similar to Mr. Johnson. That's what the scientific evidence will show you about the human studies.

So let me turn to the animal studies. And if you'll excuse me, I'm going to get a quick drink of water. Sorry about that.

And so animal studies you've already heard refer essentially to rodent testing, to rat and mouse testing. And rat and mouse testing is done in a lot of areas, not just with herbicides and pesticides, but it's clearly done in the realm of herbicides and pesticides as well. And the way animal testing works is you subject the animal to a huge dose of what you're studying. So you subject the animal to a huge dose of glyphosate in this instance. And it might be injected. It might be that they're fed the glyphosate. It varies from study to study. But they get a huge dose. And so when I say "huge dose," what I mean is if you compare the size of a rat or mouse to a human, the rat or mouse is getting thousands of times more glyphosate, more -- exposed a thousands times more glyphosate than a human would ever

be exposed to. And that's a very intentional thing because what the scientists are trying to do is they're trying to see if there's any way they can provoke a reaction, a cancerous reaction in the mice and the rats. And so they give them huge doses as a way to try to do that.

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Now, the way that the animal testing is done, and this is because the EPA tells people how they want it done, is you only test glyphosate in the animal testing. You only test glyphosate in the animal testing. And why is that? Because they're trying to determine -- this is a test to determine the effect of glyphosate. Everybody believes that glyphosate is the thing that is most likely in the product to cause some kind of adverse reaction because it's the thing that's the active ingredient. The other components are things that are routinely used in other things. I'll talk about that more in a minute.

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So the way the EPA says to do the testing is just to do it with glyphosate. And not only do they tell you just to do it with glyphosate; they tell you in enormous detail how you should do these studies. The EPA controls the way the science is done. They tell you how to do it. There's something called Good Laboratory Practices, a huge book. They tell you exactly how to do it. And the EPA audits you to make sure you're doing the

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studies the way they want it done. So Monsanto doesn't control this testing.

And by the way -- by the way, you're going to hear that 14 animal tests is a extraordinary amount in this world. It's a lot of animal testing. Monsanto -- you've heard a lot about Monsanto. You saw document clips, email clips about Monsanto and animal testing. Monsanto did three of those, three of those. This is testing from a wide variety of people. And the EPA has reviewed it carefully, and the EPA has concluded that animal testing does not have any evidence that glyphosate is causing cancer. That's what they've concluded.

So let me show you -- counsel talked about a memo written by a Monsanto employee called Donna Farmer.

Can I get the Elmo, please. I'm always the first person that gets to try to make that work.

Donna Farmer -- you might remember this. This is towards the end of counsel's opening. This is the Donna Farmer memo. He read -- and he read this to you at a time when he was telling you how bad Monsanto is. Do you remember that? He said she says, "You cannot say that Roundup does not cause cancer. We have not done carcinogenicity studies with Roundup."

Now, if you took that sentence just by itself, that snippet by itself, you might come to one conclusion.

But let's look at what the whole email says because what Donna Farmer was doing -- Donna Farmer is a scientist, Ph.D. scientist at Monsanto. She's a scientist. Her job is to do science but also to talk to people at Monsanto
15:41:45 who talk publicly about their products to make sure that they talk accurately about their products.

And so the way this email is organized is -- number 2, there is a question she got from somebody in Australia, I believe. She was trying to answer a press
15:42:02 inquiry. And she says -- and I apologize. I think that might be my underline there. So I apologize. On number 2 the question is: Can I say this? Can I say this publicly about Roundup?

15:42:20 And what he's asking, if you can say this, in long-term exposure studies of animals, Roundup did not cause cancer, birth defects and so forth. And so that's the context for what Donna Farmer says. And she says, "You cannot say that Roundup does not cause cancer in
15:42:40 those kind of tests. We have not done carcinogenicity studies with Roundup."

That happened to be the truth. Why was it the truth? Because the EPA didn't want you to test Roundup -- didn't want you to test Roundup in animal
15:42:55 studies because -- for a scientific reason because if you

did, you wouldn't be able to determine -- you wouldn't be able to get the mice and the rats to consume enough of the Roundup to determine whether glyphosate was causing cancer and what the EPA wanted to focus on, which is glyphosate. So she was being rigorously honest, the way a good scientist is. That's what was happening there.

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Another thing counsel was outraged that Monsanto hasn't done this kind of test with Roundup, hasn't put Roundup in the animal studies. There's no regulator in the world that wants you to do the testing. That's what the evidence is. And that's why I say you have to look at more than the snippet from a document because when you look at the whole document and you look at the whole context, it's a different story.

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Now, another thing that Donna Farmer said and that you'll hear from Donna Farmer about when she testifies is that she was still very comfortable that Roundup doesn't cause cancer, still very comfortable, because the test regime at the EPA ensures that you test not only the active ingredients in the animal studies but you test all the components. You test surfactants. You test all the ingredients. You can't sell Roundup or any other glyphosate-based product without having all the ingredients approved by the EPA. And so all of these were tested. All of them were passed on by the EPA and

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all of them were determined to be safe and not carcinogenic.

Now, you've heard about surfactants a little bit. Surfactants is really -- I'm just going to talk about it for a minute because I just want you to know there's no mystery about surfactants. Surfactants are in shampoos, soaps, cosmetics and a lot of other products. And the way surfactants function in Roundup or in Ranger Pro is a very specific way. It helps spread -- ensure that the product spreads over a leaf. A leaf has a very different consistency than a human hand. And so it's helpful -- it's helpful to ensure that the product is able to work as a surfactant. But as I said, surfactants are tested. Surfactants are approved. It's not Monsanto secretly putting surfactants somewhere. It's right there on the label.

Let me turn to the next type of study. And this is cell testing. You heard about this. This is where -- I'm going to be very simple again. But you take a test tube or a petri dish and you put some kind of cell in the petri dish. It could be human. It could be bovine. There are all kinds of things that you hear. You may even see in this case a study where shark cells are put into petri dishes or onion tips are put into petri dishes. But the idea is you put cells into petri dishes,

and you put the substance that you want to test, say glyphosate, in the petri dish or test tube, whatever it might be, and you look to see what the effect of the substance is on the cells, and you look to see whether they effect the DNA.

15:46:44

Now, a cell in a petri dish is obviously different than a cell in a human body. It's different than a cell in a mouse body. And nobody will tell you that just because a substance does damage to DNA in a cell test means that it causes cancer. Nobody will say that. But it is more information for you. It's more information that you can use as a scientist to come to conclusions.

15:47:03

Now, this morning -- well, just to give you an example now, the EPA sets forth the group of cell tests as its standard that it wants people like Monsanto to do. And Monsanto has done those tests and done those tests and done those tests. Just to give you an example of one, there's one called an Ames assay. An Ames assay is a test that is there to determine whether mutagenicity occurs, whether the substance that's put in the test causes DNA to change. The Ames assay has been performed on glyphosate any number of times. I think over 30 times. It always shows that glyphosate is not mutagenic. And it's similar for the other studies.

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Now, counsel put up on the screen four studies. Four studies. Four cell testing studies. The EPA has considered 140-plus studies, 140-plus. Cherry picking four studies is not going to give you the full picture of how glyphosate performs under the real science.

15:48:29

So the EPA has looked at cell testing for decades, and they've come to the conclusion that glyphosate is not mutagenic. Glyphosate is not genotoxic. Genotoxic means it has an affect on the DNA, causes damage to the DNA. That's what the EPA has concluded.

15:48:50

Now, counsel -- one of the studies that counsel put up -- remember this one? It was important because he said glyphosate is a tumor promotor. He put up a study called the George study that he said showed that glyphosate was a tumor promotor. But let me show you what IARC said about the George study.

15:49:09

I'll move this to make it a little bit easier. But I want you to see up there on the left. You can see this is the IARC monograph, page 112. In the parent, it says George, et al, 2010. That is the George study. What does IARC say? What does IARC say about the George study? And I'll blow this up a little bit more for you.

15:49:36

IARC says: The design of the study was poor, with short duration of treatment, no solvent controls,

15:50:02

small number of animals, a lack of histopathological examination. The working group concluded that this was an inadequate study for the evaluation of glyphosate.

That's IARC talking, not me. But that's the

15:50:25 study that Plaintiff chose to put up in front of you and say this establishes -- this establishes that glyphosate is a tumor promotor. Not according to IARC.

And you remember we had Plaintiffs' counsel refer to it as -- he told you a story. That was his

15:50:44 word, told you a story about a scientist named Parry, P-A-R-R-Y, a scientist that worked with Monsanto. And he said that Parry did some consulting, had some communications with Monsanto about cell testing. And he said Parry did some reports, and Parry said that Monsanto

15:51:06 should do testing that was of not just glyphosate but the whole formulation in cell testing. Do you remember that? That's what he said.

A couple of things about Parry that I want to tell you about, just to put it in context so you have the

15:51:22 whole story. When we say that Dr. Parry did a report, Dr. Parry didn't do any testing himself. What Dr. Parry did was he was given some publicly available reports that the EPA already had and asked what he thought about them. And so he wrote back to Monsanto and said that.

15:51:42 Then he was given some other reports that

weren't public but were what Monsanto had already submitted to the EPA and asked what he thought about that.

And it's true that Monsanto didn't work with Mr. Parry to do testing of glyphosate and the whole formulation in cell testing, but when counsel said that, that testing has not been done, that was not accurate.

MR. WISNER: Can I get a copy?

MR. LOMBARDI: This is -- you see on the screen --

MR. WISNER: That's fine. No objection.

MR. LOMBARDI: This is an article called Genotoxic Potential of Glyphosate Formulations Mode of Action Investigations. And you can see it's written by some of the people that you've heard about. Dr. Heydens is there. He's from Monsanto. Martens. Farmer. You can see Monsanto is right there. This is a published article by Monsanto. And let's look at what it says.

"A broad array of *in vitro* and *in vivo* assays has consistently demonstrated that glyphosate and glyphosate-containing herbicide formulations are not genotoxic."

What's the keyword phrase there? "Glyphosate-containing herbicide formulations." That means they're testing the formulations. These are

Monsanto scientists. They're not just testing them; they're publishing them. So the whole story? The evidence is a little different.

What else? Counsel talked as if testing the whole product -- "We don't know whether surfactants are synergistic with glyphosate." Do you remember that? Well, we do know from the epidemiology studies because the whole product is tested, surfactant and all. But the EPA has this kind of testing. I'll show you the first page.

Glyphosate issued paper. EPA's Office of Pesticide Programs, September 12, 2016. EPA document. And if you go back to Appendix F, here's what the EPA says. "Appendix F is made up of genotoxicity studies with glyphosate-based formulations." The whole formulation.

And what follows? A chart -- I'll just show you quickly -- of about 90 different tests. 90 different tests.

So it's not accurate to say that this kind of telling wasn't done.

Now, EPA doesn't require that testing but they have it. And they've looked at it, and they've looked at it in evaluating glyphosate-based products. There's no mystery about whether there is some kind of synergistic

effect. There's not. That testing is negative. That testing does not show genotoxicity. It does not show mutagenicity. That's what the whole story will show you.

So the EPA as of today has looked at a vast array of testing, vast array of testing. This is not the epidemiology testing. It would be too much to put on one slide. But these are the rodent studies and the cell testing that's been considered by the EPA over time. The EPA has called this a large database. Large database. And that's what the EPA has drawn on through the regulatory history of this product.

Now, I'm not going to talk about everything to do with the EPA today. You're going to hear about this through the evidence. But the bottom line here is that Roundup went on the market back in the '70s. The EPA has looked at this product over and over again, has looked at 140-plus cell tests, has looked at 14 animal tests, has looked at all that epidemiology, and all the way through, the EPA has concluded that Roundup glyphosate-based products do not cause cancer and that no warning is necessary.

MR. WISNER: Your Honor, sidebar.

(Sidebar.)

MR. LOMBARDI: And the conclusion of the EPA 2016, based on all the available data, the weight of the

evidence clearly do not support the descriptors carcinogenic to humans and likely to be carcinogenic to humans at this time. The strongest support is for not likely to be carcinogenic to humans at doses relevant to
15:58:33 human health risk assessment. And the same conclusion has been reached this year.

Counsel made some reference to the EPA being subject to politics. And clearly the top of the EPA is subject to politics, but what's striking about the EPA
15:58:49 history here is the EPA has come to the same conclusion through different administrations, through different generations of EPA scientists, through the accumulation of testing.

This is from the previous administration. I
15:59:13 could have put up one from 2017 with the same conclusion from this administration. The reason the conclusion is the same is the science has been consistent. The science has been consistent that glyphosate is not carcinogenic.

Now, let me take a couple minutes to talk about
15:59:35 IARC because you heard a lot about IARC this morning, and I want to give you some context for what IARC is and what IARC does.

So IARC is an organization that looks at and reports on lots of different things and determines
16:00:00 carcinogenicity in a way, in their special way, which

we're going to talk about. But they've looked at things like lifestyle, beverages, food. You name it, they've looked at it and done reports on how that relates to carcinogenicity. But if you're going to understand IARC, you have to understand what IARC is actually doing. And here, this is from IARC's own documents, and this is what they say publicly about what it is they're actually doing. They say -- I'm actually going to read from the top first.

"A cancer hazard is an agent that is capable of causing cancer under some circumstances while the cancer risk is an estimate of the carcinogenic effect expected from exposure to a cancer hazard."

What IARC looks at is cancer hazards, not cancer risks. And they go on to say that this is an important distinction. This is the highlighted part.

"The distinction between hazard and risk is important. And the monographs identify cancer hazards even when risks are very low at current exposure levels because new uses or unforeseen exposures could engender risks that are significantly higher."

So they're looking for something -- they're just looking to determine whether they could call something a hazard even when the risks are very low at current exposure levels. They're not determining the issue that

we're looking at here today. We're determining whether Mr. Johnson's exposure was sufficient to cause his cancer. That's not what IARC's considering. IARC does not determine a level of exposure at which glyphosate could cause cancer. That's not what they're doing. They're just saying, "Hey, I'm going to put up a red flag. I think there's enough here that we ought to take a look at this and be careful."

Now, what happened with this particular -- well, IARC has been doing this for a while. They've looked at something -- over a thousand different things, and they have various categories. One category is they say something is definitely a carcinogen, and there is a series. But the last category is "Probably Not Carcinogenic." And over all the years that IARC has been doing this, they've only considered one thing probably not carcinogenic. Now, they didn't put glyphosate in the definitely carcinogenic category. They didn't do that. They put it in probable carcinogens. And these are some of the things that are in the probable carcinogen category. Very hot beverages. That's different than the coffee question. This is just they're hot and what effect that has. Nightshift workers. Emissions from combustion of biomass. Those are the kind of things that IARC calls probable carcinogens after they do their

study.

Now, the way it worked with this case, they put together something called working group 112. Working group 112. That's the group of scientists that worked on this particular issue, glyphosate. And working group 112 actually was drawn from -- 17 scientists drawn from around the world. You don't have to have any experience studying glyphosate to be on the working group. You can. Some certainly did; some didn't. But working group 112 actually got together for one week in Lyon France to talk about not just glyphosate but three other chemicals. So they were talking about four chemicals over the course of one week. And you're going to hear testimony that they spent two days talking about glyphosate, and that's how they came to their conclusion.

Now, when you're talking for just two days, you obviously aren't doing your own testing. IARC working group 112 did not do any testing. They didn't go into a laboratory. They didn't do cell testing. They didn't do animal testing. They didn't do an epidemiology study. What they did was they reviewed publicly available testing. Some of it, not all of it, publicly available testing.

So just to give you a basis for comparison, this is the chart we looked at that showed what the EPA has

considered over time. That's what IARC considered. That's what working group 112 considered. They're looking at a much smaller universe. IARC didn't look at the Journal of the National Cancer Institute Study from 16:04:41 2018 because it happened after IARC's report came out, working group 112's report came out.

So what we're talking about here is something very different, something very different than IARC's doing, than what the EPA is doing or than what we're 16:04:58 doing in this courtroom. The EPA is trying to determine what is the actual risk level of glyphosate at levels that are actually relevant to people using it in the real world. That's how they make their regulatory decision. And that's what you're going to be doing here. You're 16:05:16 going to be determining what the risk level was for Mr. Johnson in the real world, where he was using glyphosate products in a real world way.

So IARC was doing something different. IARC will not prove Plaintiffs' case. And the EPA, its looked 16:05:34 at glyphosate and glyphosate-based products since IARC came out. This is again the glyphosate issue paper. I'm showing you one of them, but they're the same for both 2016 and 2017. And here's what the conclusion is. And this is scientists at the EPA. This is scientists at the 16:05:57 EPA. "Overall, there is remarkable consistency in the

database for glyphosate across multiple lines of evidence."

How about the epidemiology?

"For non-Hodgkin's lymphoma, observed associations and epidemiological studies were nonstatistically significant and were of relatively small magnitude."

The epidemiology doesn't prove any association.

How about the animal studies?

"Across species" -- rats and mice -- "strain and laboratory tumor incidence was not increased at doses less than 500 mg per day."

No showing of carcinogenicity in animals.

How about the cell test?

"The genotoxicity studies demonstrate that glyphosate is not directly mutagenic or genotoxic *in vivo*."

That's what the EPA says today. That's what the people who are charged with determining the appropriate level, the risk level associated with glyphosate in the real world concluded about all the science. All the science.

So let me talk to you a little bit about Monsanto because Plaintiffs spent a fair amount of time going through emails and so forth. And I've already

showed you how the context makes a difference to that. But one thing that counsel said -- they first said it during jury selection; they said it again today. They said Monsanto has known -- I think they said for
16:07:38 20 years. Maybe it was 40 years. I'm not sure, but for a long time that glyphosate and glyphosate-based products cause cancer. Let me say unequivocally that that is false. That is false. You're not going to be shown one document; you're not going to be shown one email; you're
16:08:00 not going to hear one witness testify that they believe that glyphosate or glyphosate-based products cause cancer. It's not going to happen. Plaintiffs had access to a huge volume of Monsanto documents. If they had it, they would have shown it to you.

16:08:24 And I'm going to ask you one thing -- you are going to hear a lot of depositions, and you're going to see videos of these depositions. These depositions are of a lot of people, some of whom are in Europe; some have retired from Monsanto; some have moved on to other
16:08:42 employment. But Plaintiffs' counsel gets an opportunity to sit down and ask them questions for hours. Hours. So you'll see them, and you will see all the questions that they want to ask will get answered. One thing I'll tell you that is those questions aren't going to provide you
16:08:59 with any information about the question that's at the

heart of this lawsuit, whether Mr. Johnson's cancer was caused by glyphosate. It's not going to provide you with any information about that. I ask you to listen to those depositions because a lot of those folks are asked "Does glyphosate cause cancer? Do you think glyphosate-based products cause cancer," and the answer is universally "No." That's what the evidence is going to be. And the evidence -- the reason they say that is, they, like the EPA, are guided by the science. That's the conclusion that the science will lead you to. And that's what the Monsanto employees and the Monsanto scientists believe.

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Now, you heard talk about something. Plaintiffs' counsel called it ghost writing. And he put one paper, one article up on the screen. Do you remember that? And he said, "Well, this was ghost writing. You're trying to obscure Monsanto's involvement in this article."

16:09:54

Well, let's just put it in context again. We're talking about one article out of hundreds of studies and articles and so forth that you've already heard reference to with respect to glyphosate. One: The article wasn't of original science. It's what's called a review article, a scientific review article, which means that the authors gather together other publications, other

16:10:09
16:10:28

science, and summarize it. Nobody's going to say that the science was wrong in that article.

But let's go to the point. Did Monsanto obscure its involvement -- this is the article that was up on the
16:10:49 screen before just so you can see it. It's the evaluation risk assessment of the herbicide Roundup and its active ingredient, glyphosate for humans. And Gary M. Williams, remember that was the name that was thrown around? Here -- back here on the face of the article in
16:11:21 the acknowledgements, what do they say? "We thank the Monsanto folks who made significant contributions. The authors were given complete access to toxicological information at Monsanto in St. Louis, key personnel at Monsanto who provided scientific support," and so on.

16:12:03 There's nothing about this article that obscures Monsanto's involvement in it. But the most important question is what is this article going to tell you about whether
Mr. Johnson's cancer was caused by glyphosate? What is
16:12:20 this allegation of ghost writing going to tell you about that? Nothing. Nothing. It will be irrelevant.

Now let me show you another document that was discussed during Plaintiffs' opening. This is the one you saw just at the end. And this is the one which is
16:12:59 the email that records that Mr. Johnson called Monsanto.

And somebody at Monsanto answered the phone and took down his story, as she put it, and he described, as she put it down there, exactly what his concern was. And he said, "I was exposed to glyphosate," essentially, and he started to have a rash and so forth. And she was not able to answer the question. So she forward it to Dr. Goldstein.

Your Honor, we had an agreement about phone numbers being redacted in public documents. Mr. Johnson's personal phone number is on this and it's being displayed to the media.

MR. LOMBARDI: I'd be happy to take that off. I apologize.

MR. WISNER: Yeah. There's also some Monsanto employees.

MR. LOMBARDI: For the record, this is Plaintiff's Exhibit 135.

MR. WISNER: Yes. And a redacted version was given to you last week.

MR. LOMBARDI: And on the -- and I do apologize for the phone number. That was my error.

And so Ms. Beale conveyed Mr. Johnson's story to Dr. Goldstein. And there are a couple of things that are important about this, although Dr. Goldstein's response is short. The first thing Dr. Goldstein says, "The story

is not making any sense to me at all."

So when Dr. Goldstein's hearing a story about could glyphosate-based products have actually caused Mr. Johnson's cancer, this is not -- this is an internal
16:15:02 Monsanto document. He says, "That doesn't make sense to me." Does that show that Monsanto believed that glyphosate-based products cause cancer? No.

And the second thing is Dr. Goldstein says, "I will call him." That indicates that Dr. Goldstein
16:15:25 intended to call him. Now, Dr. Goldstein is going to testify very honestly that as of this time, he doesn't recall a conversation with Mr. Johnson. That is what he's going to say. But to try to turn this memo into something that says that Monsanto believed that
16:15:41 glyphosate caused cancer or that Monsanto never intended to call Mr. Johnson is just wrong. And, in fact, you saw a separate phone call. Mr. Johnson called a number that was on the label, and Mr. Johnson talked to somebody; he talked to somebody in Missouri. I think it's Missouri
16:16:04 Regional Poison Control Center, which are representatives of Monsanto for purposes of answering questions. And the people there gave Mr. Johnson -- it says right on the memo -- information about glyphosate-based products and about its causes. And the people there said, "If your
16:16:21 doctor has a question, have your doctor call." Have your

doctor call. So that's the whole story on Mr. Johnson and his phone call to Monsanto.

Now, why didn't Monsanto warn? Monsanto didn't warn because the science says that glyphosate-based products don't cause cancer. Monsanto didn't warn because that was the conclusion that the EPA had come to. The EPA had concluded that no warning was necessary. So Monsanto didn't warn because that's where the science took them.

16:16:59 Now, Monsanto didn't warn about cancer, but Monsanto did have warnings on the label. By the way, there's nothing on this label that's going to say you should drink Roundup or Ranger Pro. It says, "Keep out of the reach of children. Caution: Causes eye

16:17:24 irritation. Avoid contact with eyes or clothing," gives some phone numbers to call if you have a problem. These are appropriate warnings given the profile of this product. It says, "The most effective way to reduce drift" -- now drift, you heard some mention of it -- is

16:17:42 when you're spraying and the wind gets the spray. And so you want to avoid that when you're spraying. It gives instructions on how to do it. It tells you that drift potential is lowest at certain wind speeds. You shouldn't do it at other wind speeds. It talks about

16:18:01 personal protective equipment, what you should wear.

Applicators and other handlers must wear long-sleeved shirt, long pants, shoes and socks, and if they get wet, you should discard that clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them. And it says if you do get wet, you should wash your hands before eating, drinking, chewing gum, et cetera, and you should remove the clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

16:18:38 And so it's not that there's no warning on the label. It's that there's an appropriate warning on the label. It's the label that the science justifies.

So let's turn now to Mr. Johnson and let's turn now to that part of the case because Mr. Johnson, the

16:18:57 evidence is going to be, actually went well beyond what the label requires. He wore that Tyvek suit. That's the kind of suit that people who deal with hazardous materials wear. He had chemically resistant gloves, rubber gloves. He had chemically resistant boots. He

16:19:17 wore a sweatshirt with a hoodie that he pulled tight. So Mr. Johnson did a great job of minimizing his exposure to Ranger Pro. Mr. Johnson -- this is one of the ways that Mr. Johnson sprayed, was with a backpack sprayer. I'm not sure if this is literally the one he used or one that

16:19:41 he said is a closely resembling one. I think it's the

one that he used. But the basic idea is that it goes on your back. And the reason you have a wand is to help keep it farther away from your body and help avoid the drift problem and help you apply the Ranger Pro directly, directly to the weed. And Mr. Johnson knew how to use that.

Mr. Johnson will testify that he knew about drift and he took steps to avoid drift. So all the evidence is going to be that Mr. Johnson did a good job of minimizing his exposure.

Ranger Pro -- just to put this in context for you, when Mr. Johnson sprayed, he's not spraying a hundred percent glyphosate. He's not spraying a hundred percent glyphosate, some small -- or 90 percent glyphosate, some small -- what he's actually spraying is a dilution of 97 percent water and 3% range of -- glyphosate is a small part of that. But that gives you -- that gives you some context for his exposure.

Now, Plaintiffs are not going to be able to make a connection between that exposure and Mr. Johnson's disease. Plaintiffs actually don't have anybody who has analyzed
Mr. Johnson himself's exposure. We do. We do. And you'll hear our expert testify about that and give you some estimates of how successful Mr. Johnson was at

minimizing his exposure.

Now, Mr. Johnson's disease -- non-Hodgkin's lymphomas, they are a broad category, something like 60 to 70 different subgroups of non-Hodgkin's lymphomas. 16:21:32 Mr. Johnson's is one called mycosis fungoides. And mycosis fungoides and non-Hodgkin's lymphoma have been observed for a long time. They go back over a century. They go back long before -- long before Ranger Pro or glyphosate was invented. Long before that. And so 16:21:54 that's what Mr. Johnson has. And counsel made a statement, and I think I heard him correctly. I think he said it's unheard of for an African-American man to get mycosis fungoides. And just so that we have all the facts out there, Dr. Sawyer, one of Plaintiffs' experts, 16:22:18 one of their experts, says African-Americans reveal a significantly increased risk of presenting with a higher T stage of mycosis fungoides. That's what their experts say. So I just wanted to correct the record for you on that.

16:22:39 Now, Mr. Johnson's cancer actually started well before he started his work at the school district. This is obviously a very simplistic timeline for Mr. Johnson. He was born in 1972, and he was promoted to the integrated pest manager in June of 2012. That's when he 16:22:58 started his spraying. And so Mr. Johnson's symptoms

showed up after he started working, a couple years after he started in that job. But the evidence is going to be that non-Hodgkin's lymphoma generally starts years before. And from Plaintiffs' own experts you're going to
16:23:19 hear numbers like 6 to 7 years, 10 years, 20 years, maybe even 30 years. So Mr. Johnson's cancer began before he started work in the school district, before he started working in the school district. He couldn't have known he had cancer. And then his symptoms showed up. And
16:23:40 they showed up afterwards.

So you can understand why Mr. Johnson might think it had something to do with the spray. But the fact is -- the fact is -- the scientific fact is that it did not.

16:23:53 Now, when Mr. Johnson's symptoms showed up, fortunately, he has excellent medical care. He has two oncologists at Stanford -- Dr. Hoppe and Dr. Kim. He has Dr. Pincus at UCSF, Dr. Truong at Kaiser Permanente.

Dr. Hoppe and Dr. Kim in particular are
16:24:16 considered experts on mycosis fungoides. And Dr. Hoppe and Dr. Kim are not just experts around here. They're nationally-known experts. Their internationally-known experts on mycosis fungoides.

And what's important is, in the real world these
16:24:37 real treating physicians, these people that actually have

taken care of Mr. Johnson, none of them have told Mr. Johnson that his cancer was due to Ranger Pro or any other glyphosate-based product. The only doctor who's going to say that is a fellow that is a paid expert for plaintiffs and came to that conclusion for the first time after he was hired in this case.

16:24:59

So that's the facts that we think you're going to see in this case and what the facts that we think are relevant to your consideration of the key question, which is, was Mr. Johnson's cancer caused by Ranger Pro? Was Mr. Johnson's exposure to Ranger Pro what caused him to get mycosis fungoides? And we believe the scientific evidence, the relevant evidence, will show you it was not.

16:25:19

Thank you again for your attention today. It was a long time to sit and watch people talk. But I appreciate it. Mr. Griffis and Ms. Edwards, and I look forward to presenting our case to you as we go forward. Thank you very much.

16:25:34

THE COURT: Thank you, Mr. Lombardi. All right.

16:25:50

Ladies and Gentlemen, we're going to adjourn now for the day. Please remember to not discuss this case with each other, with anyone else. Please, please, do not do any research regarding any of the issues you heard about today.

16:26:07

Tomorrow morning we will resume here in this courtroom at 9:30, and you'll begin hearing the plaintiff's evidence. All right? So we'll see you all tomorrow morning at 9:30. Thank you.

16:26:19 And, Counsel, may I see you in the library, please.

(Library proceedings.)

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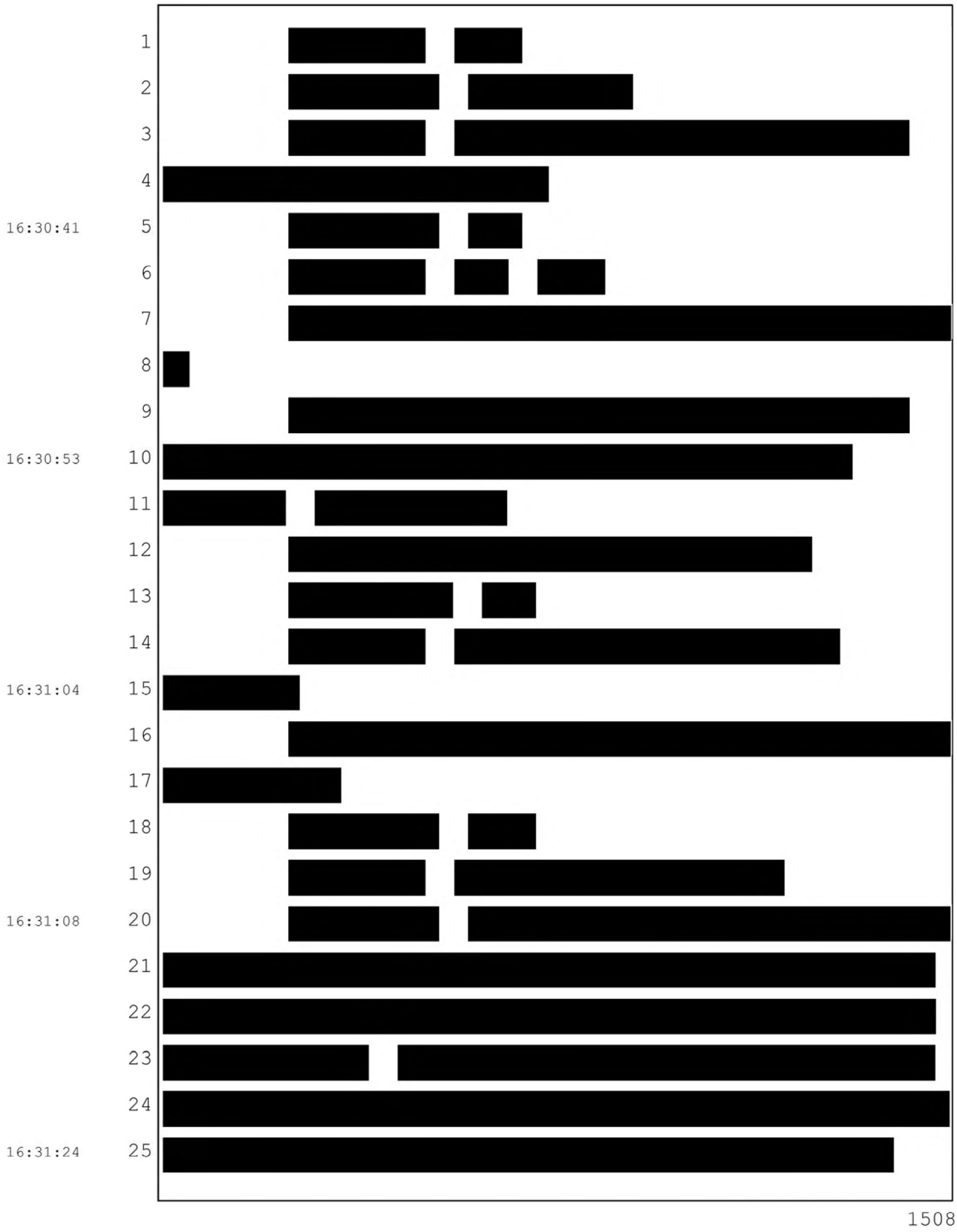
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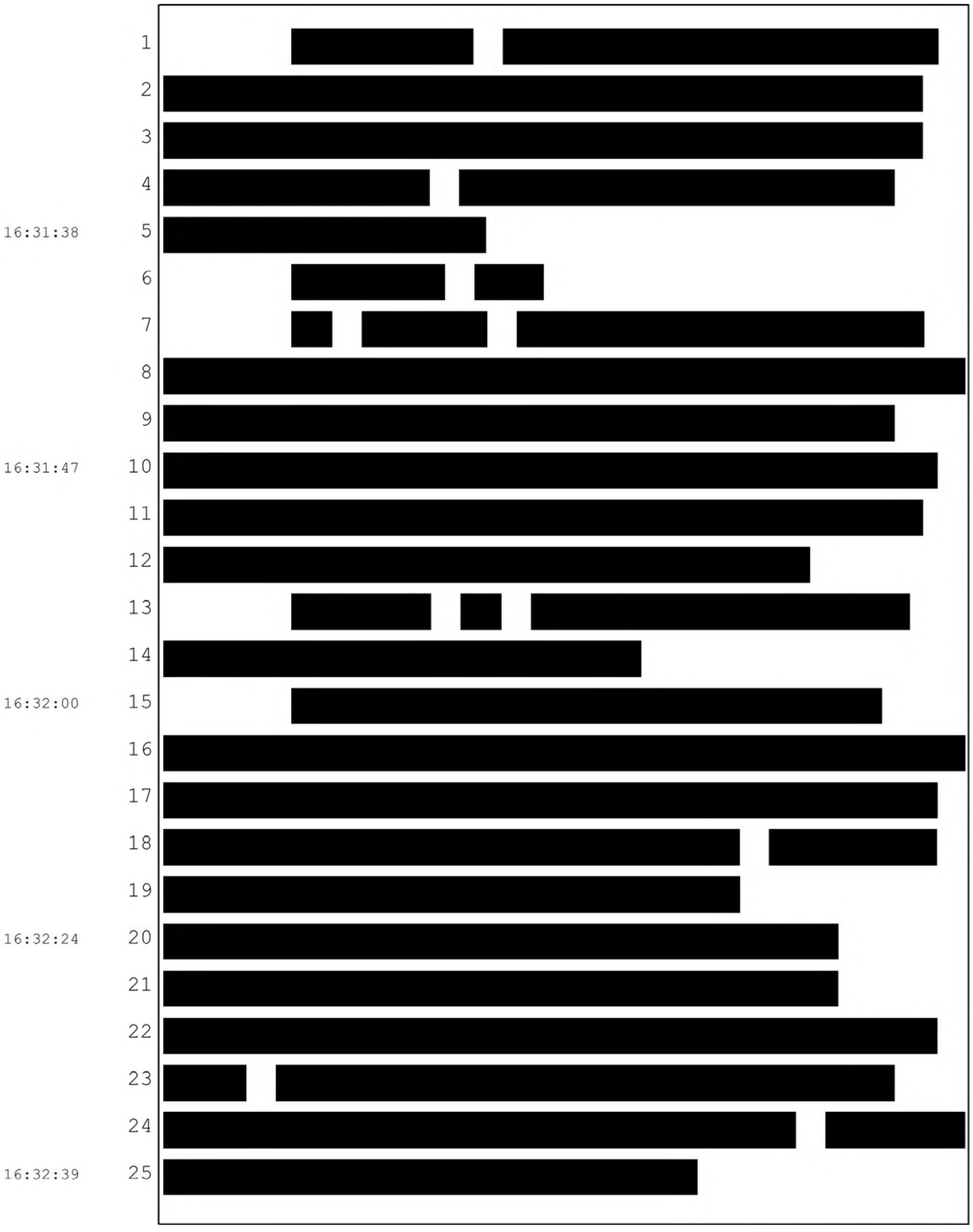
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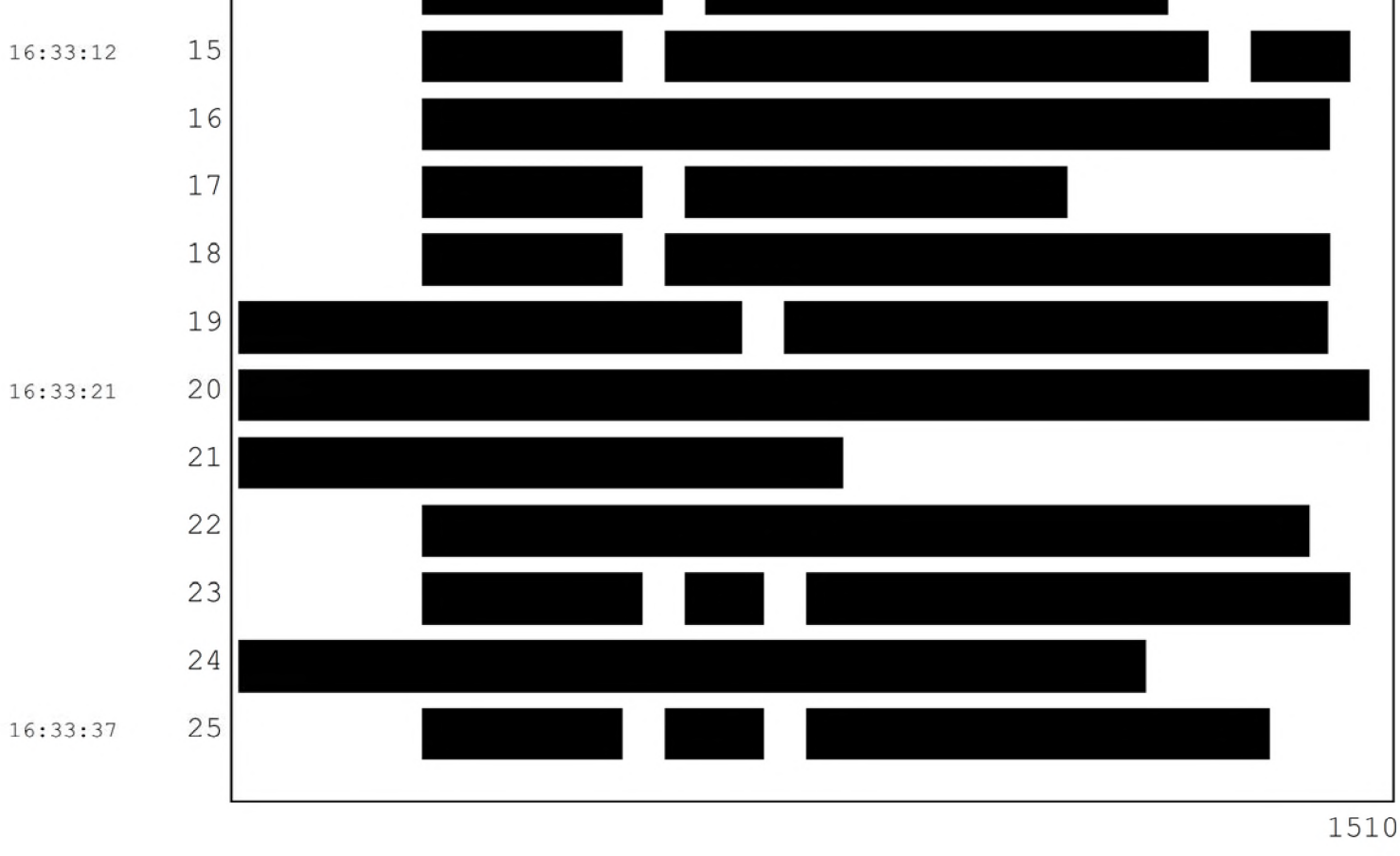
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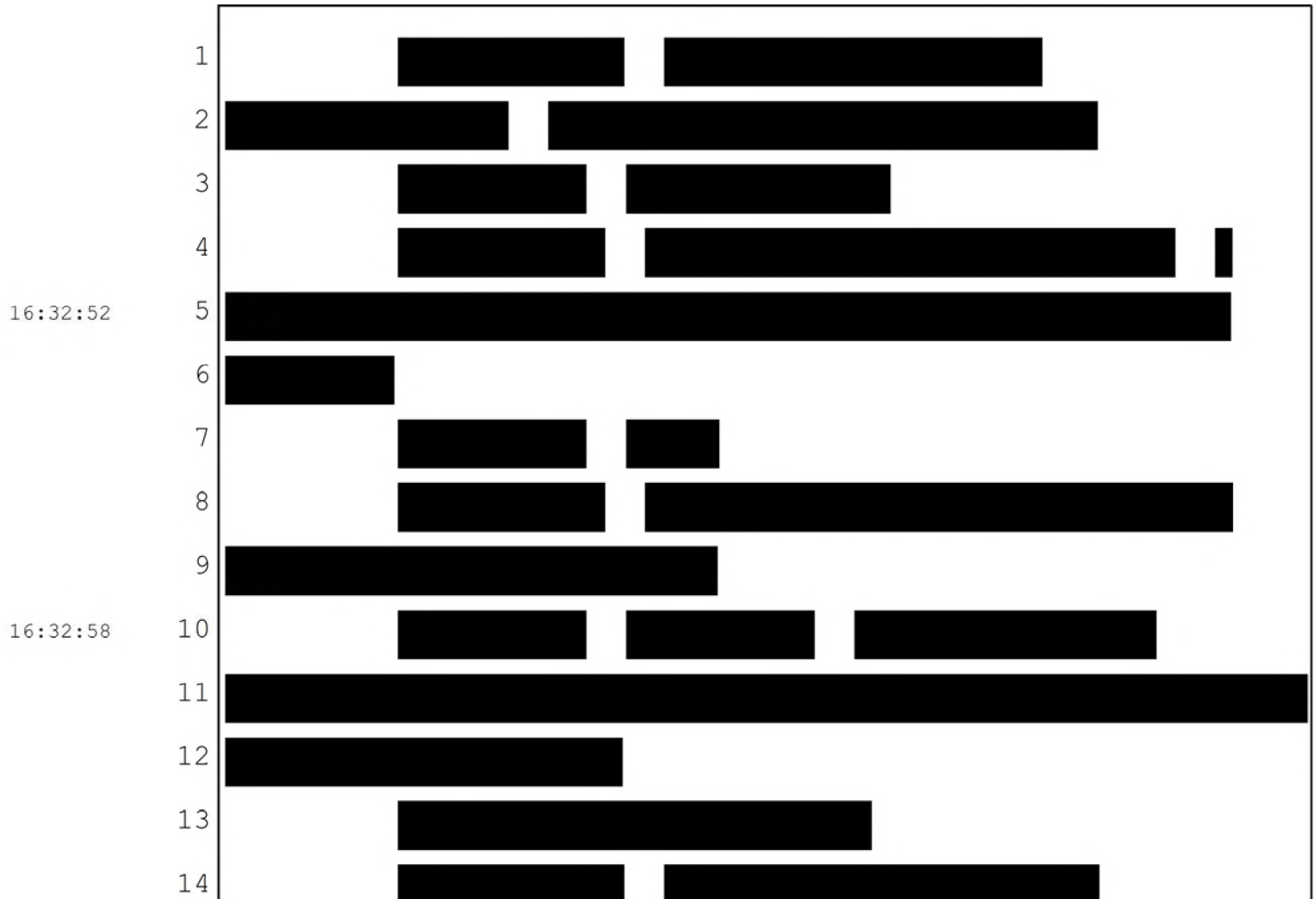
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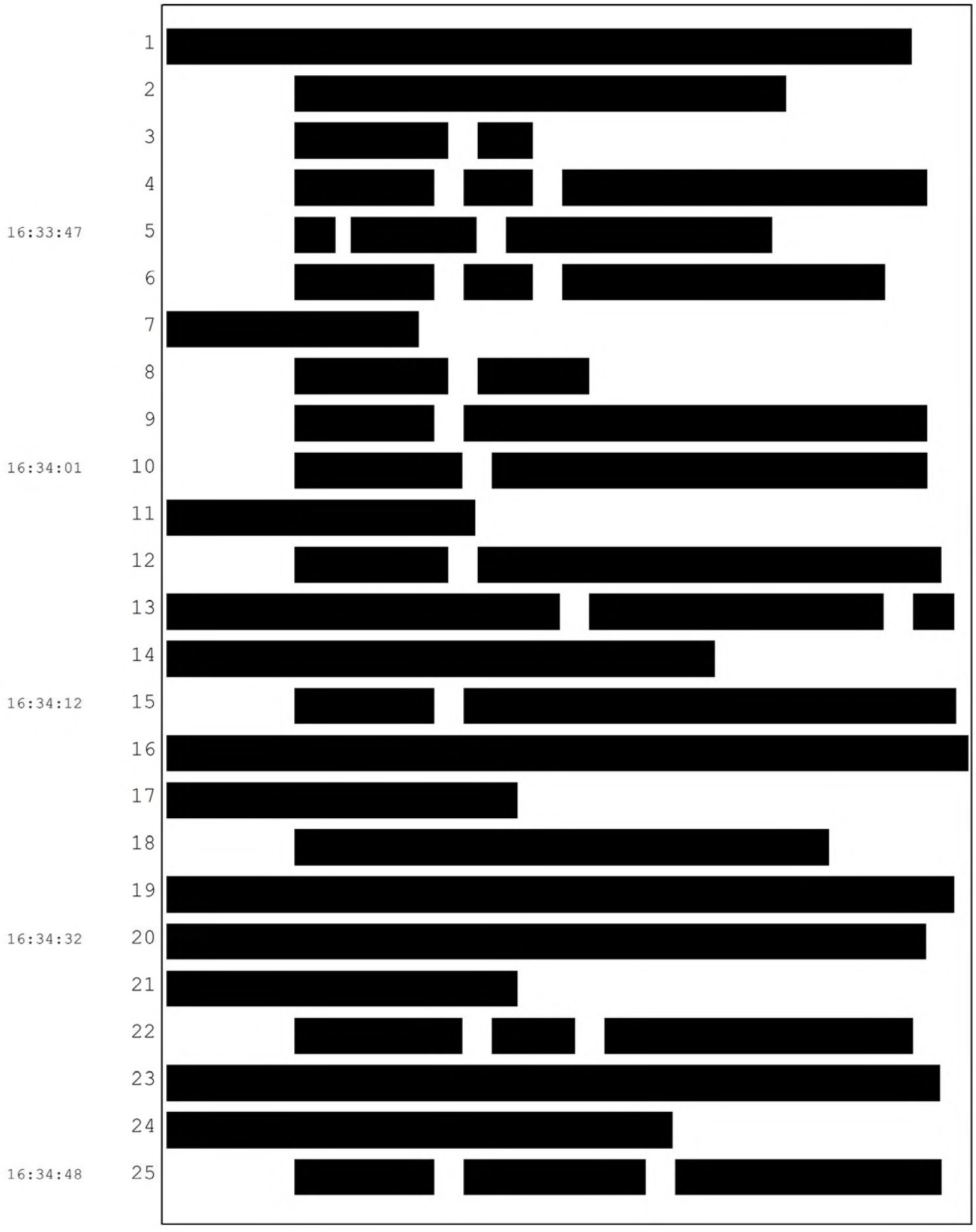
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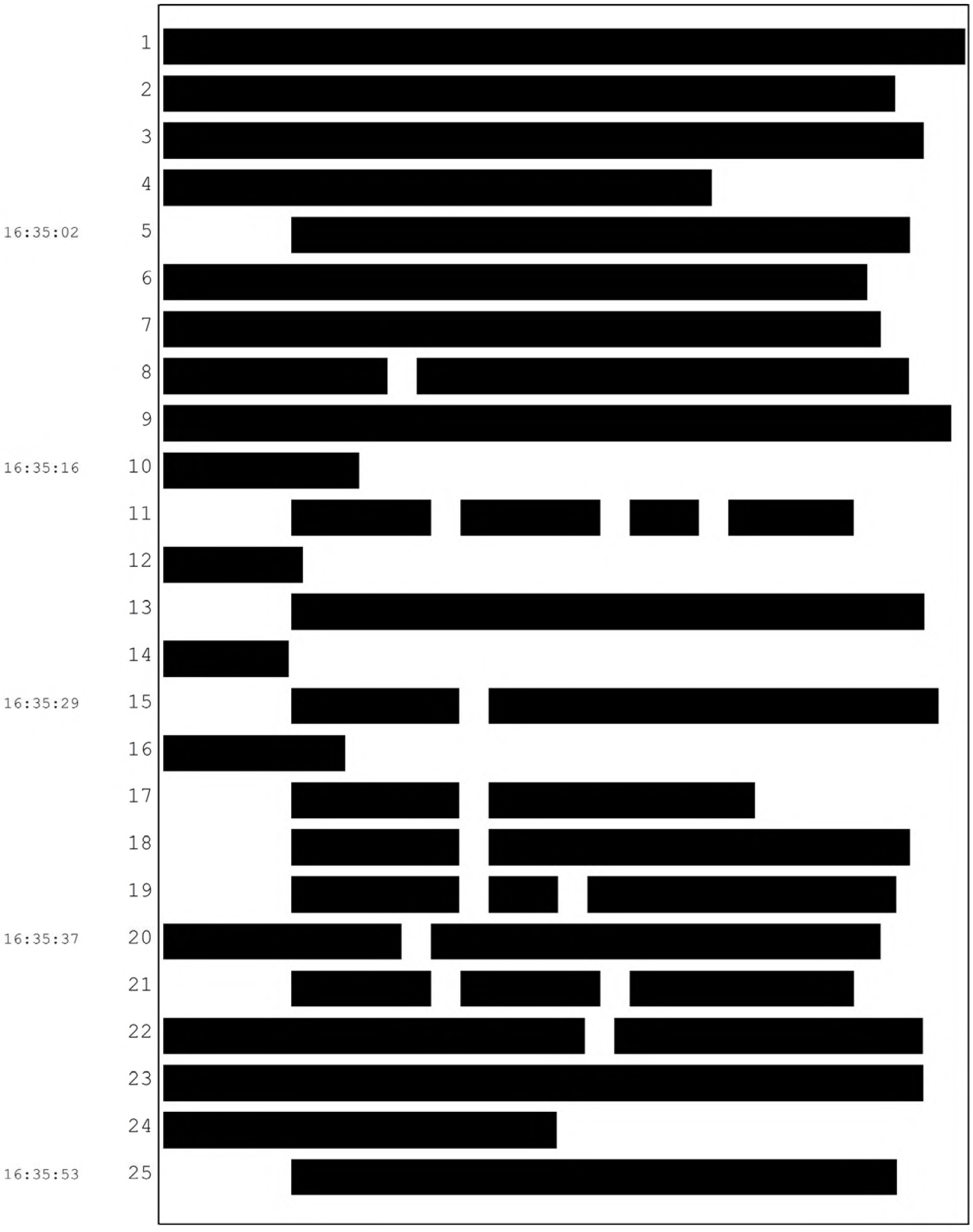
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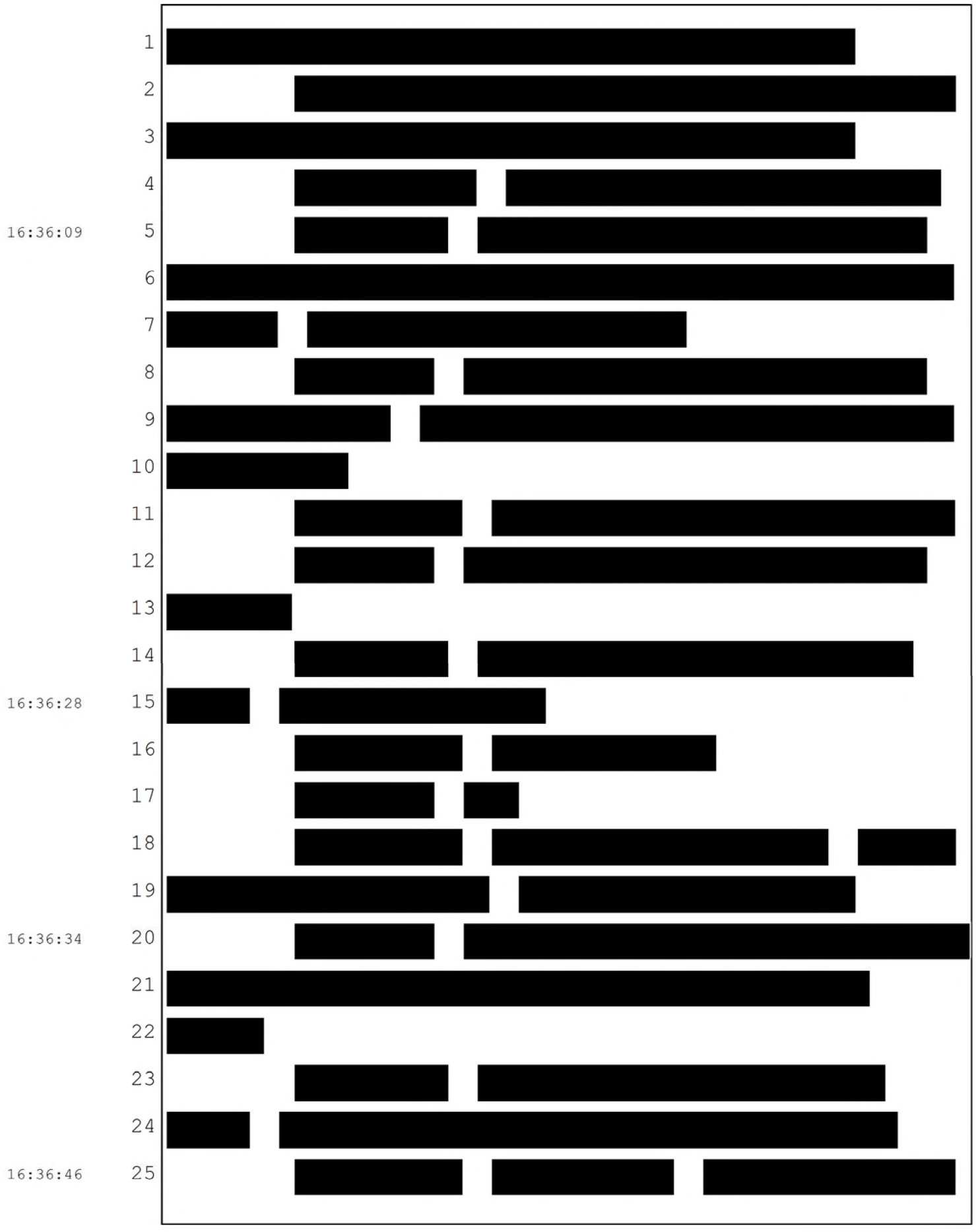
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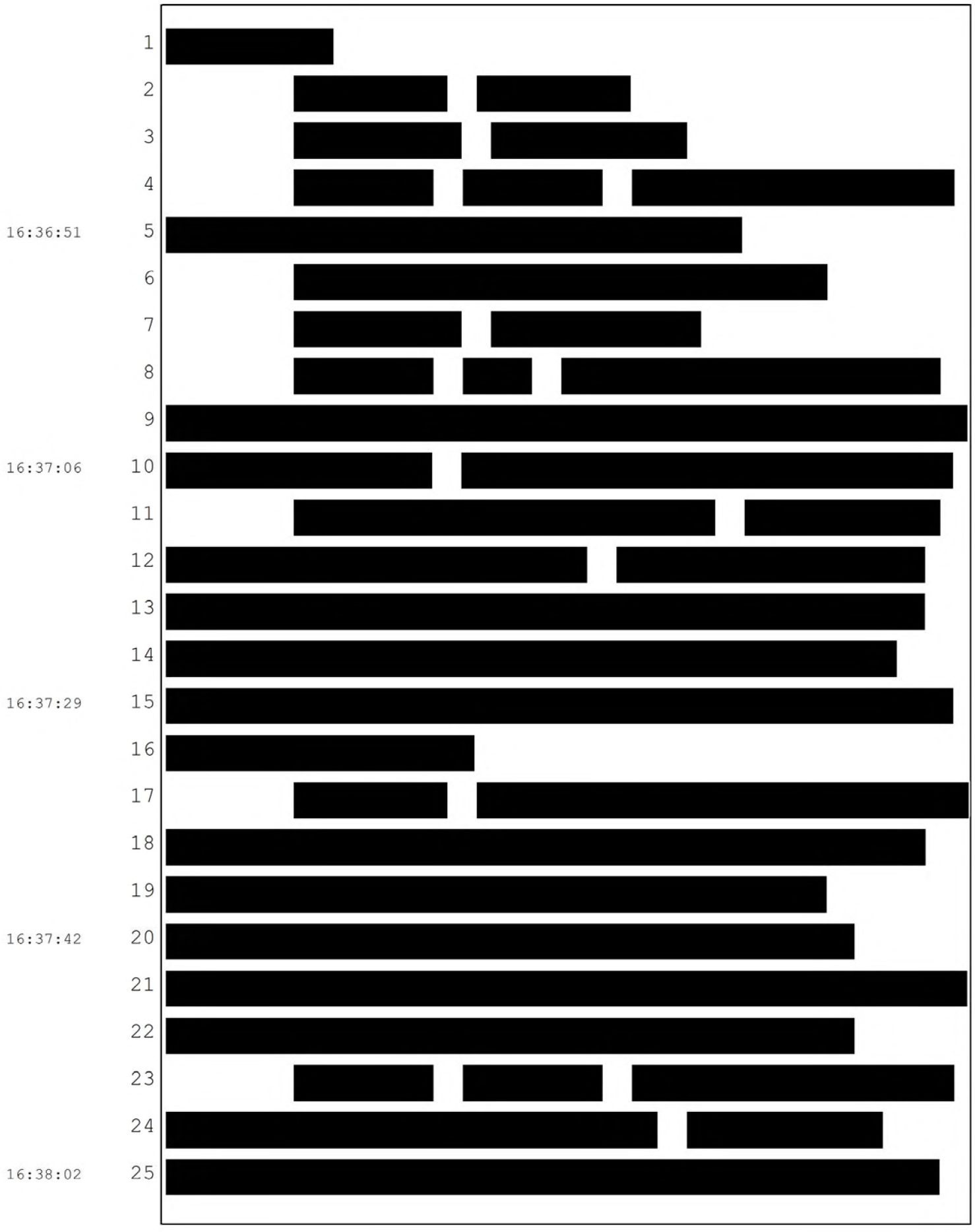
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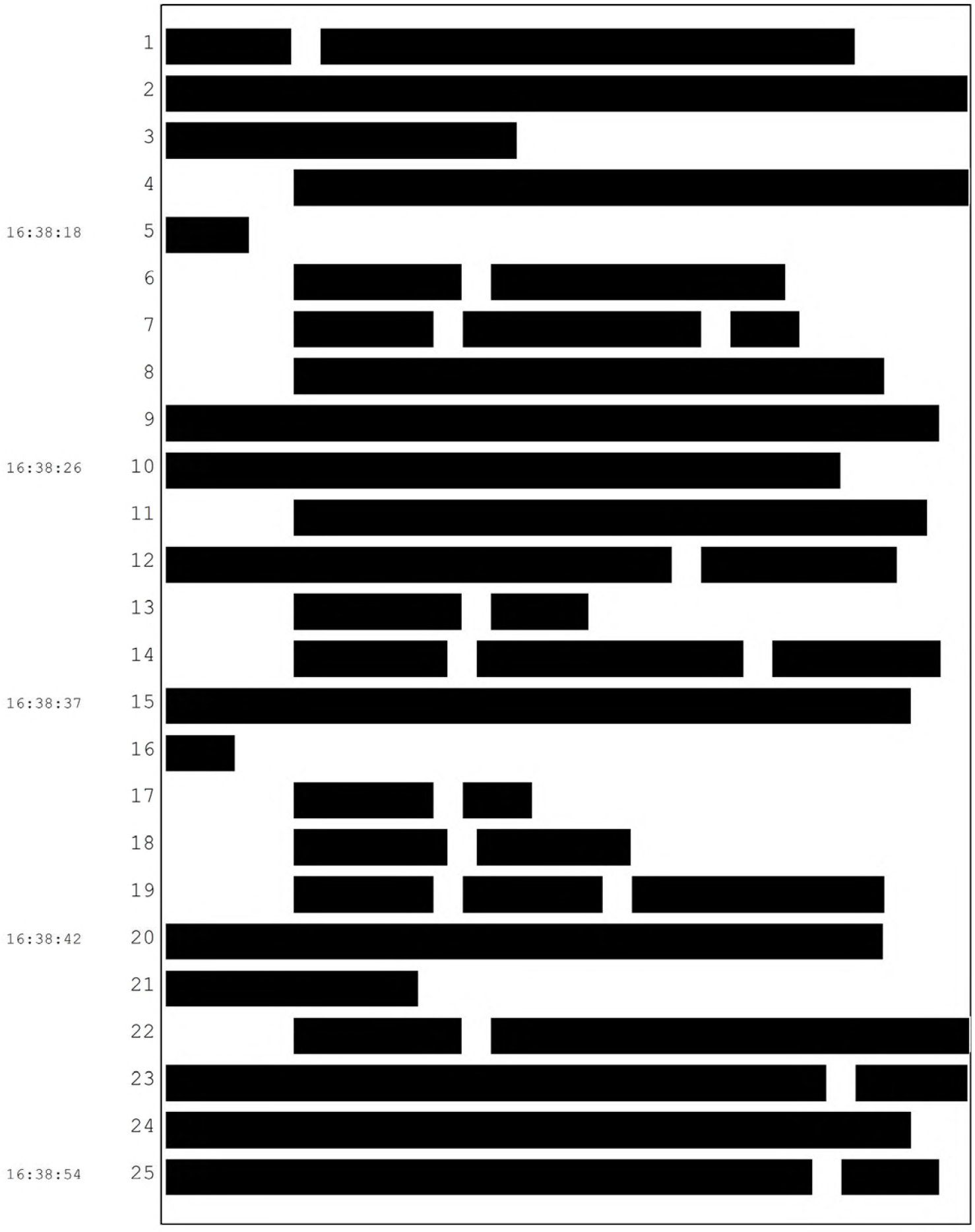
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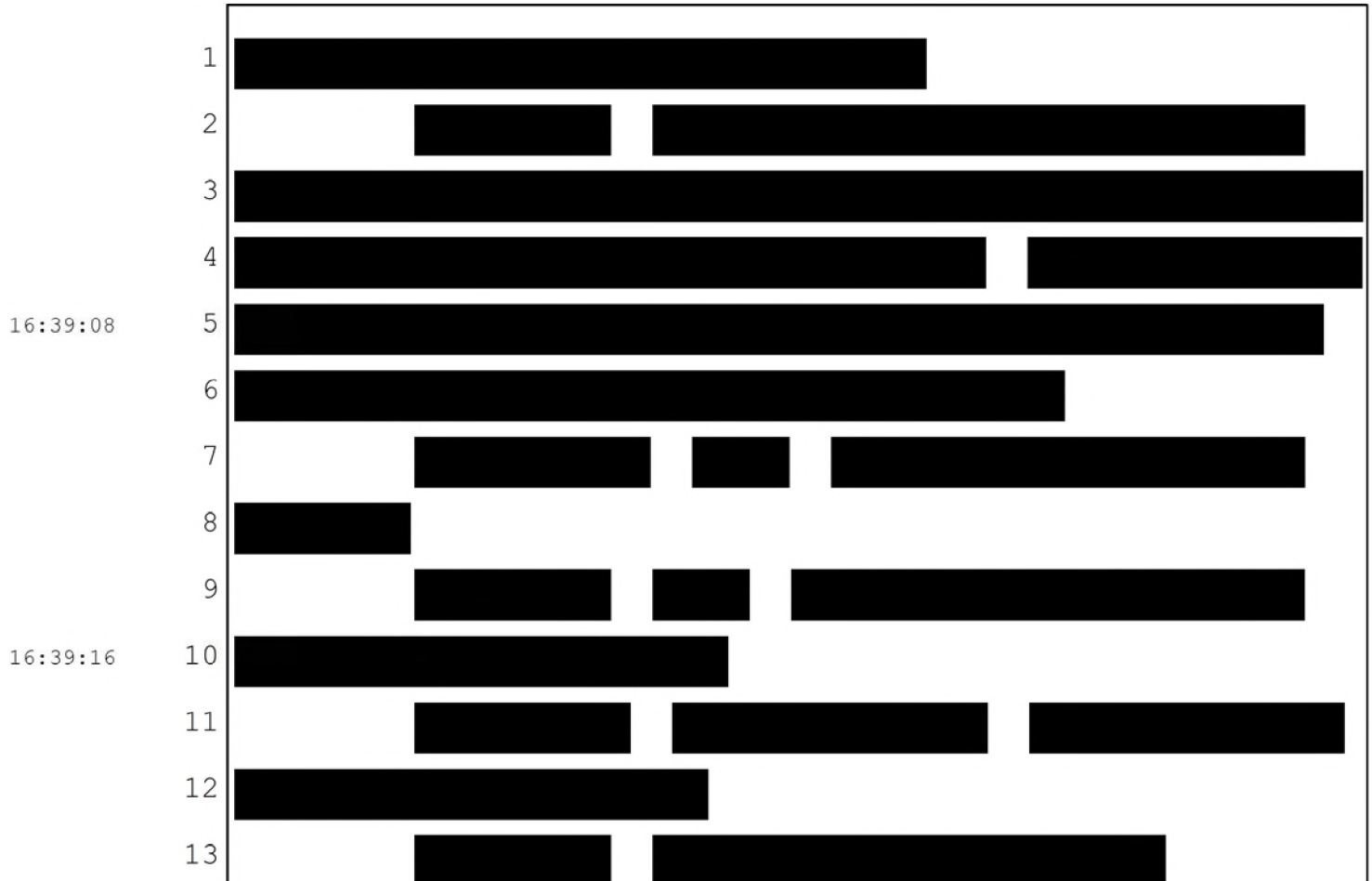
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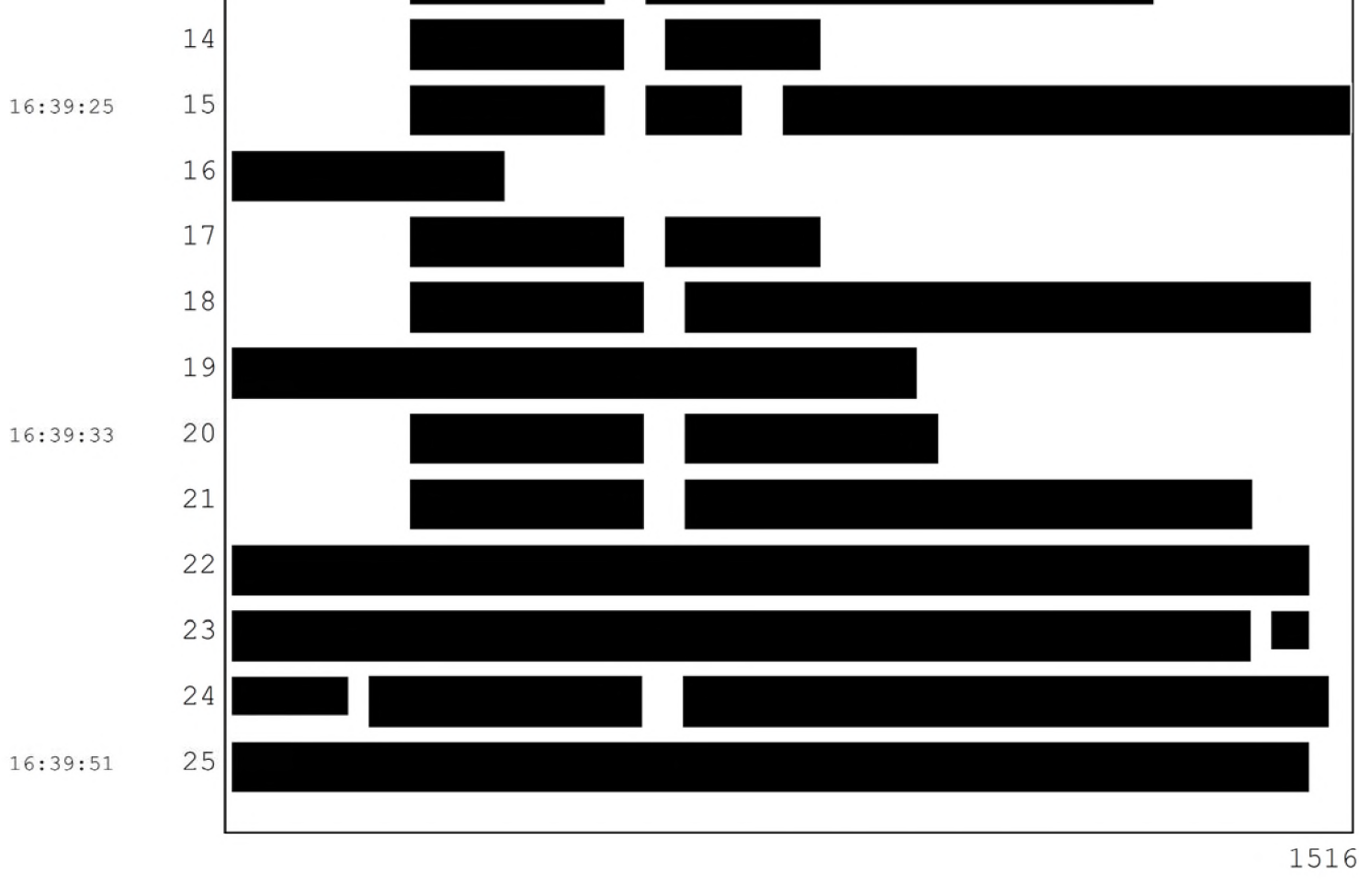
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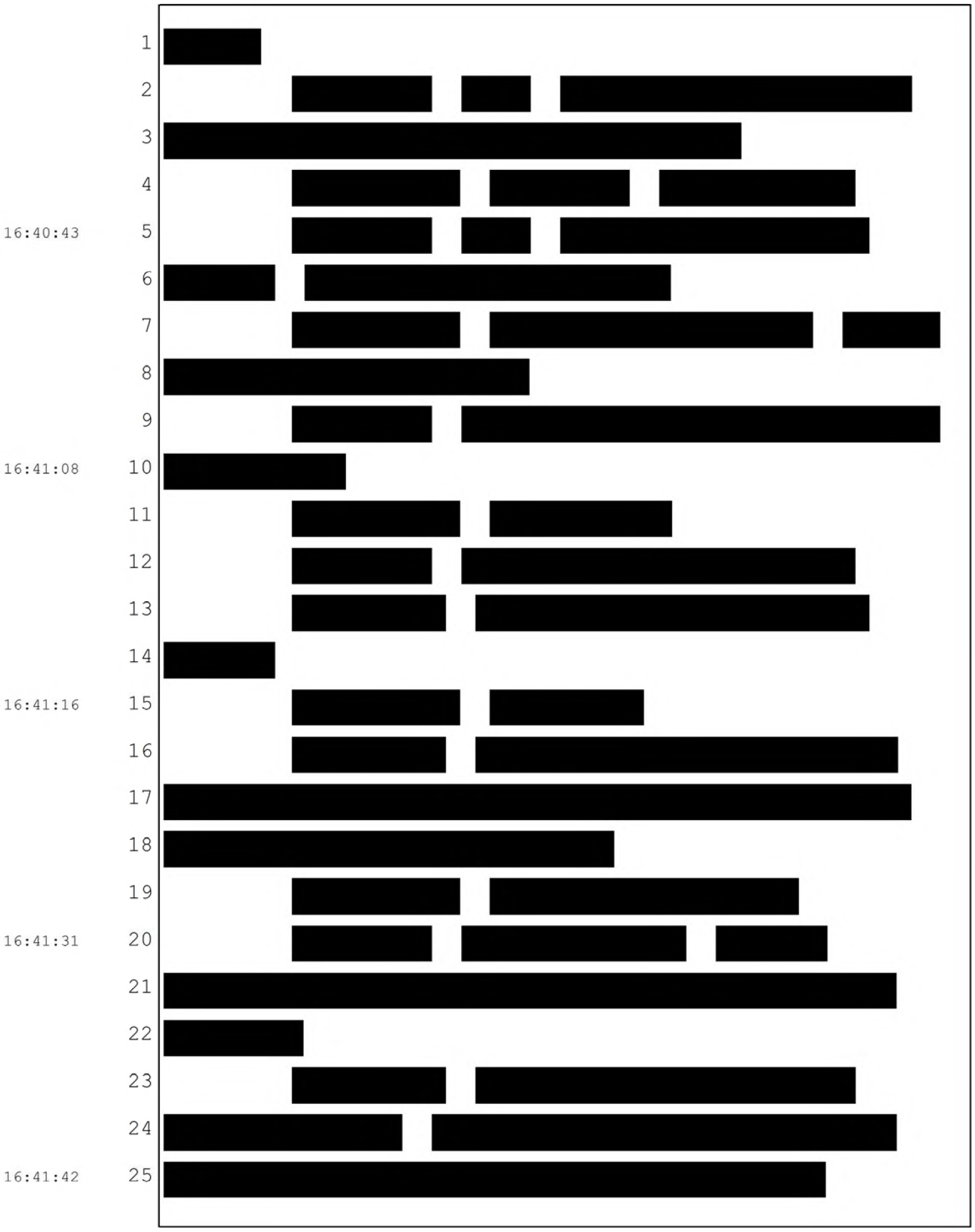
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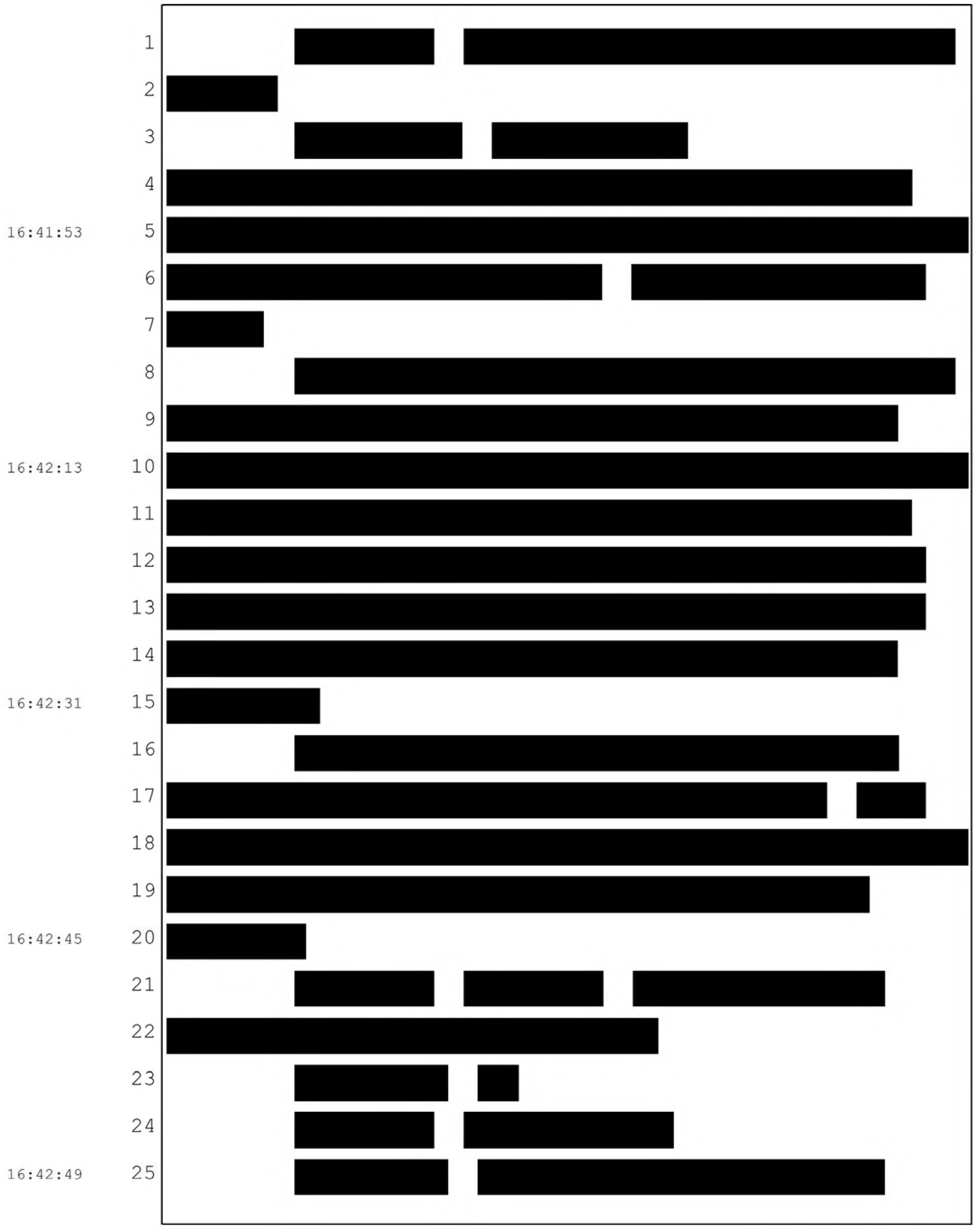
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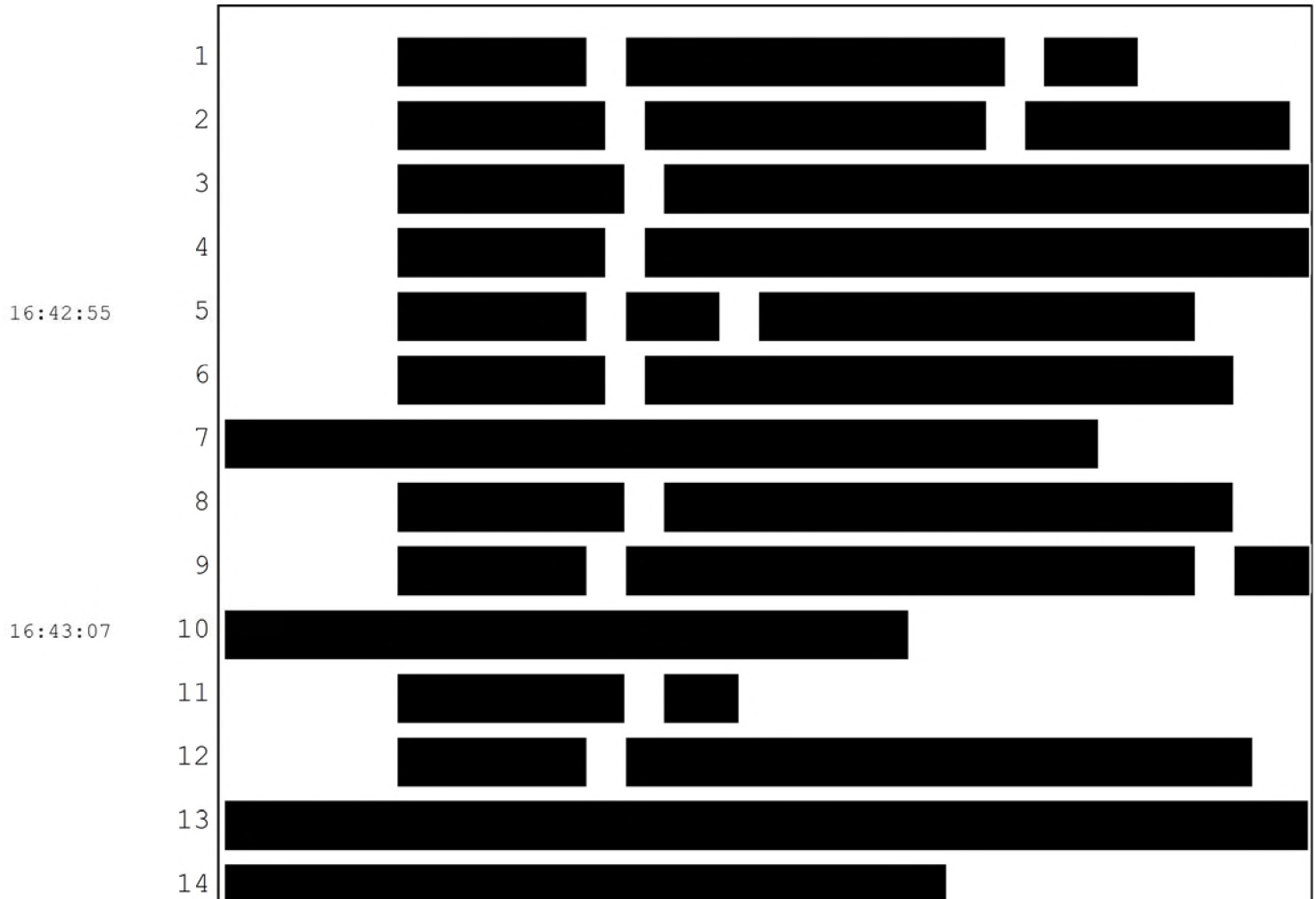
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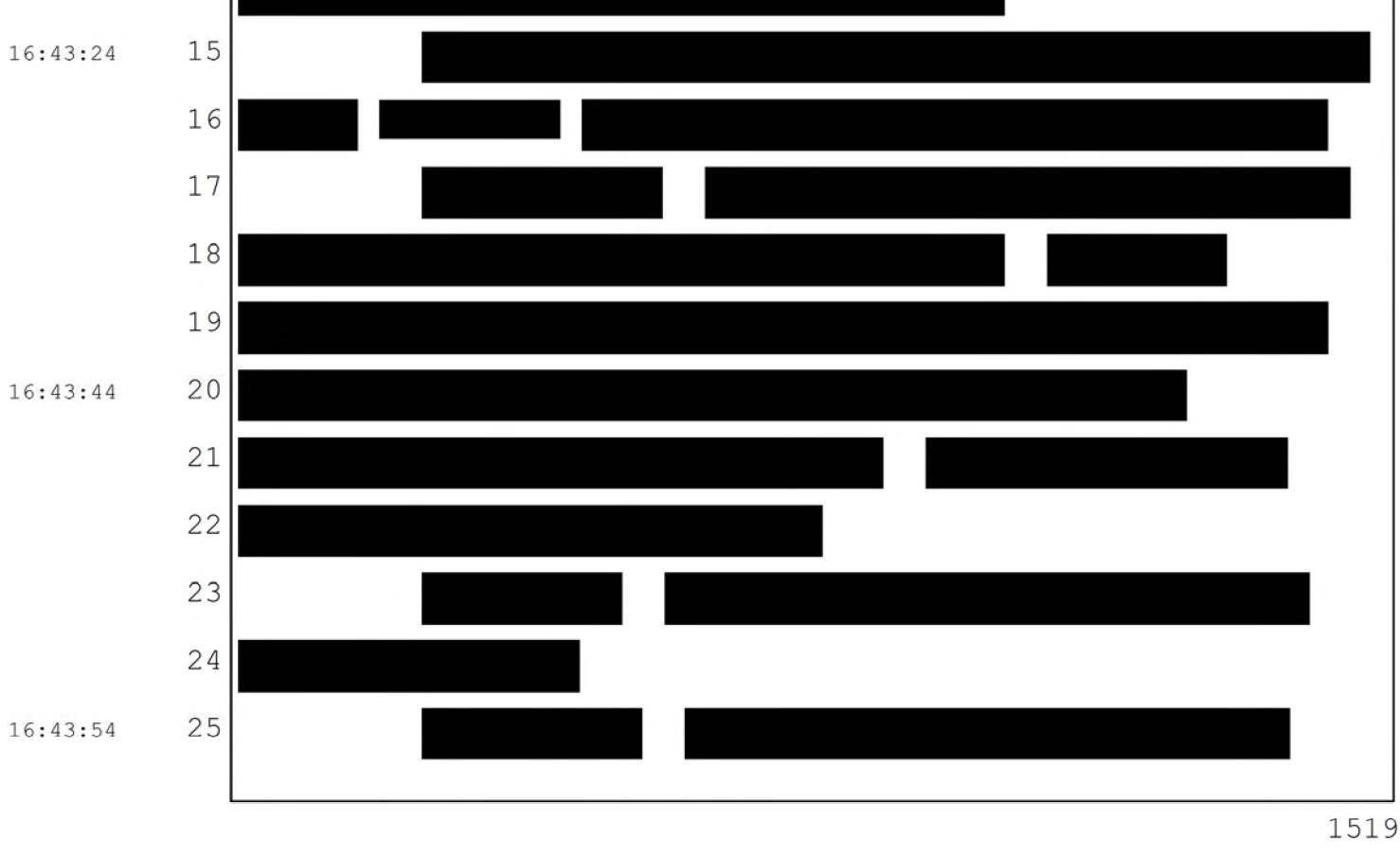
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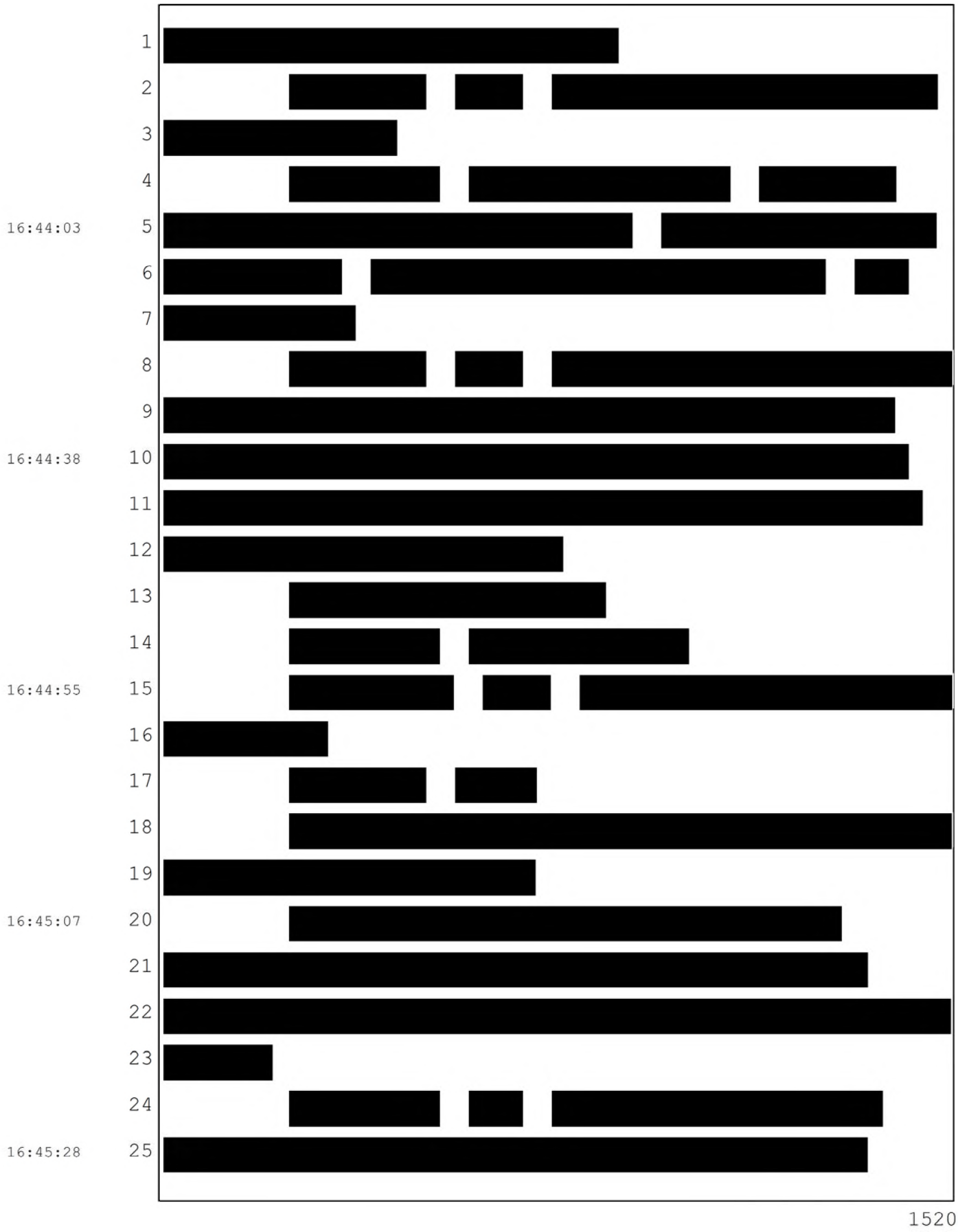
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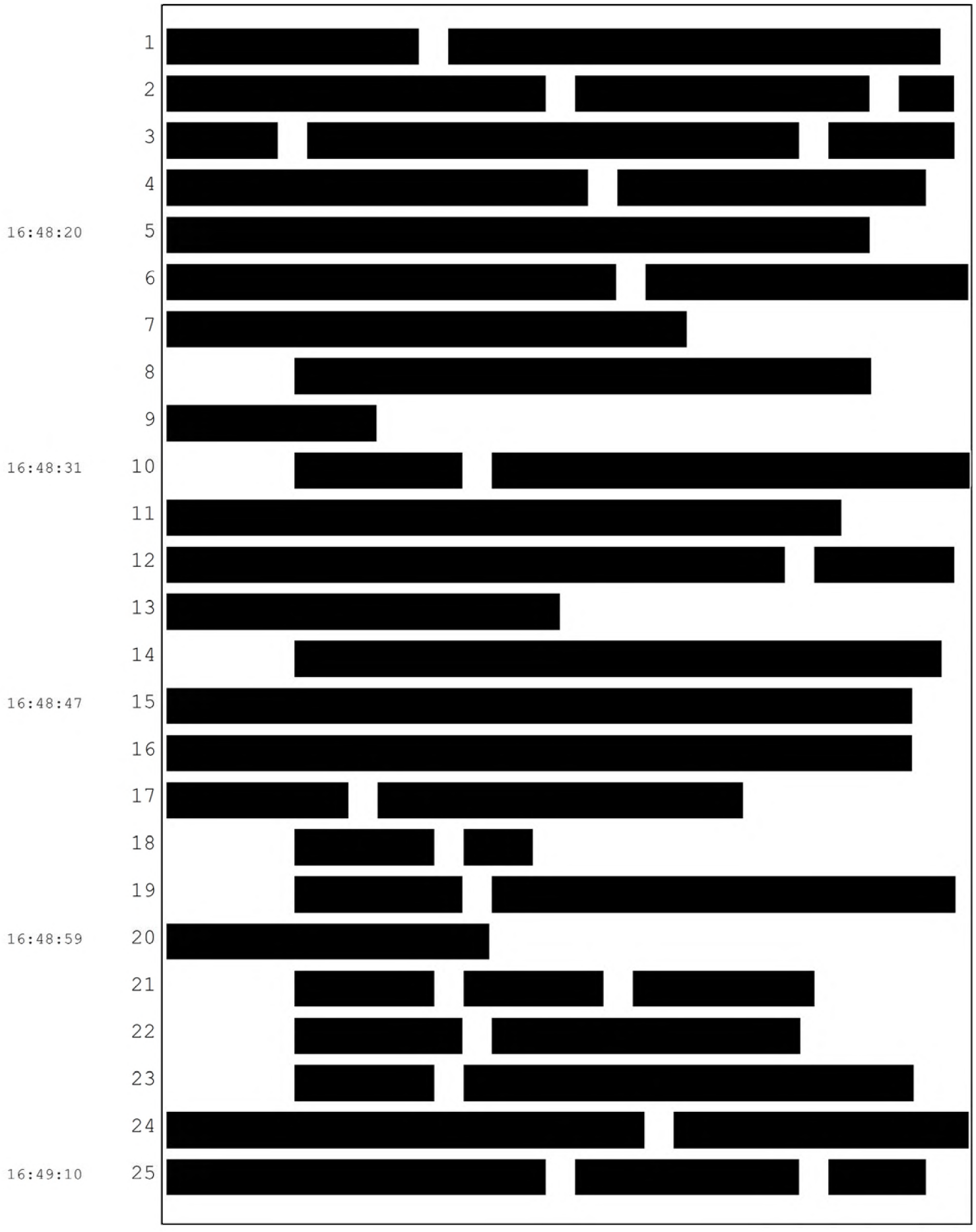
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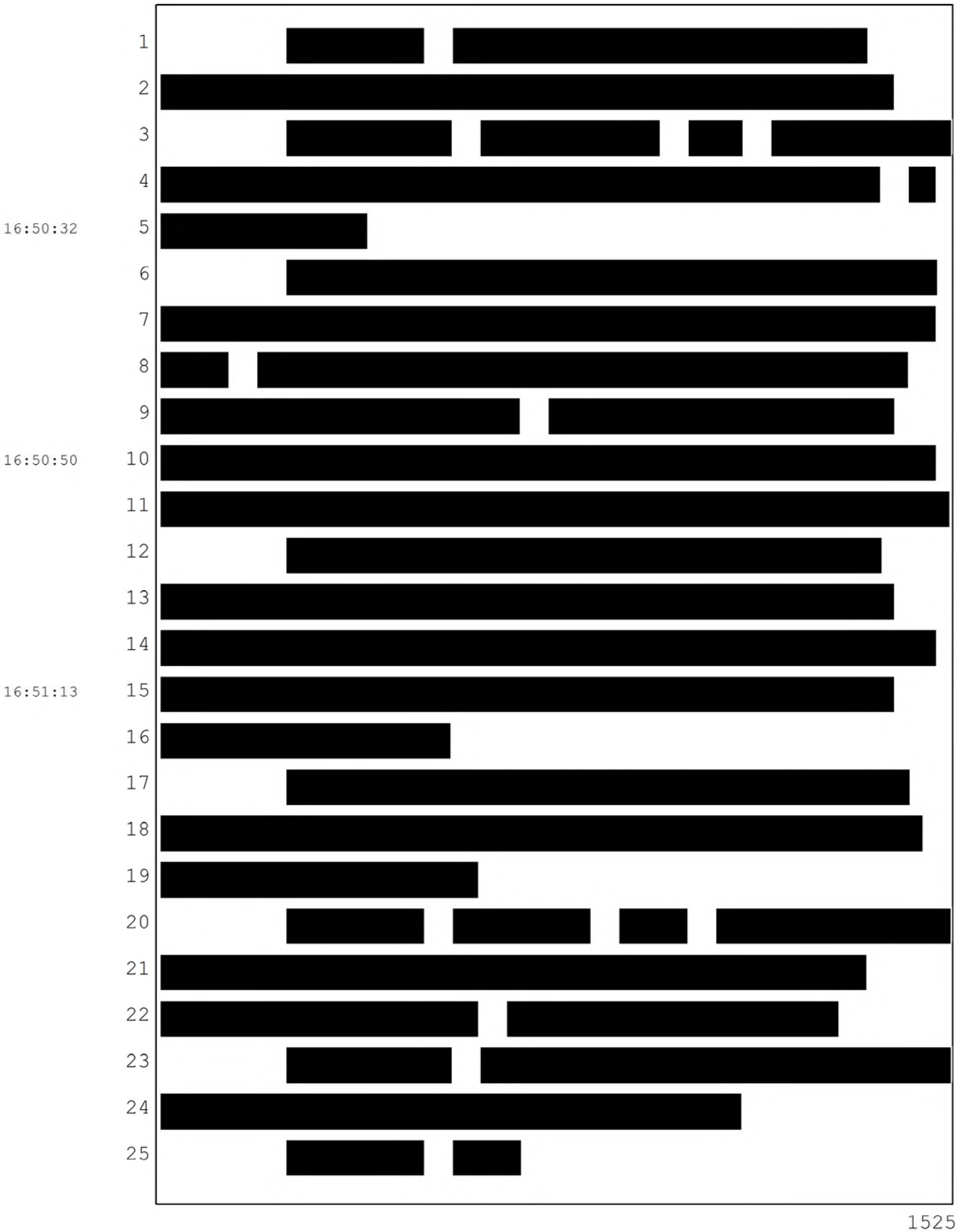
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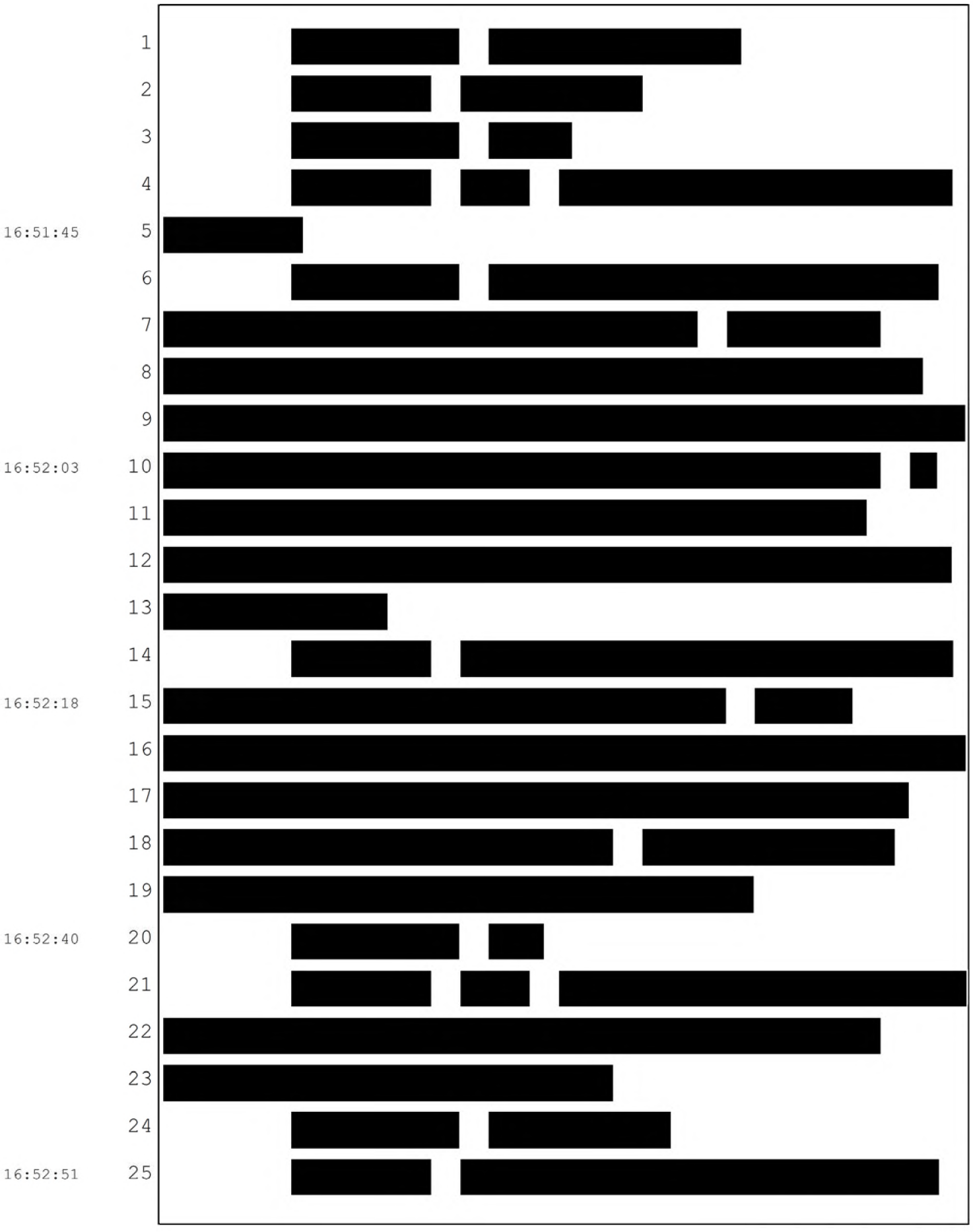
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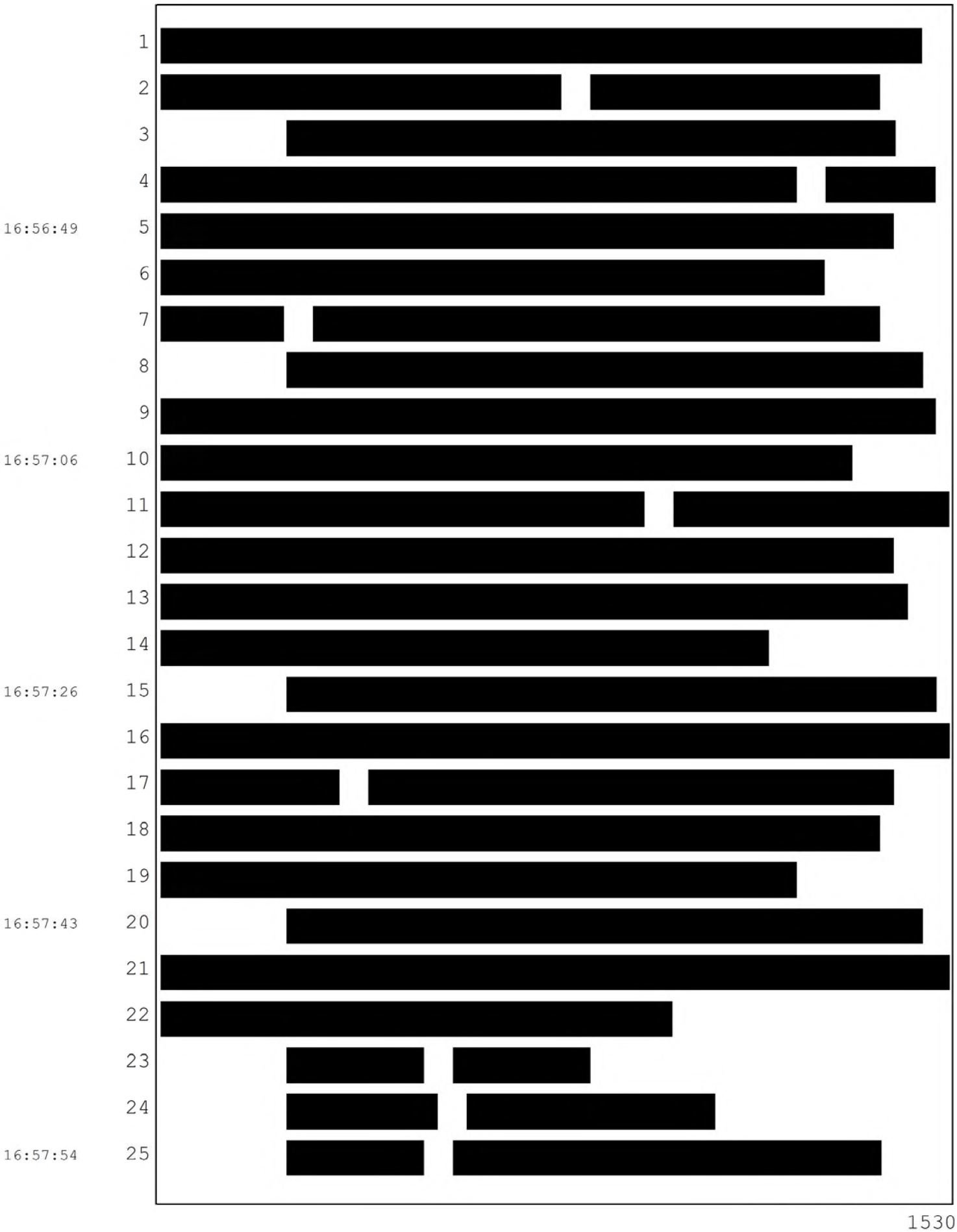
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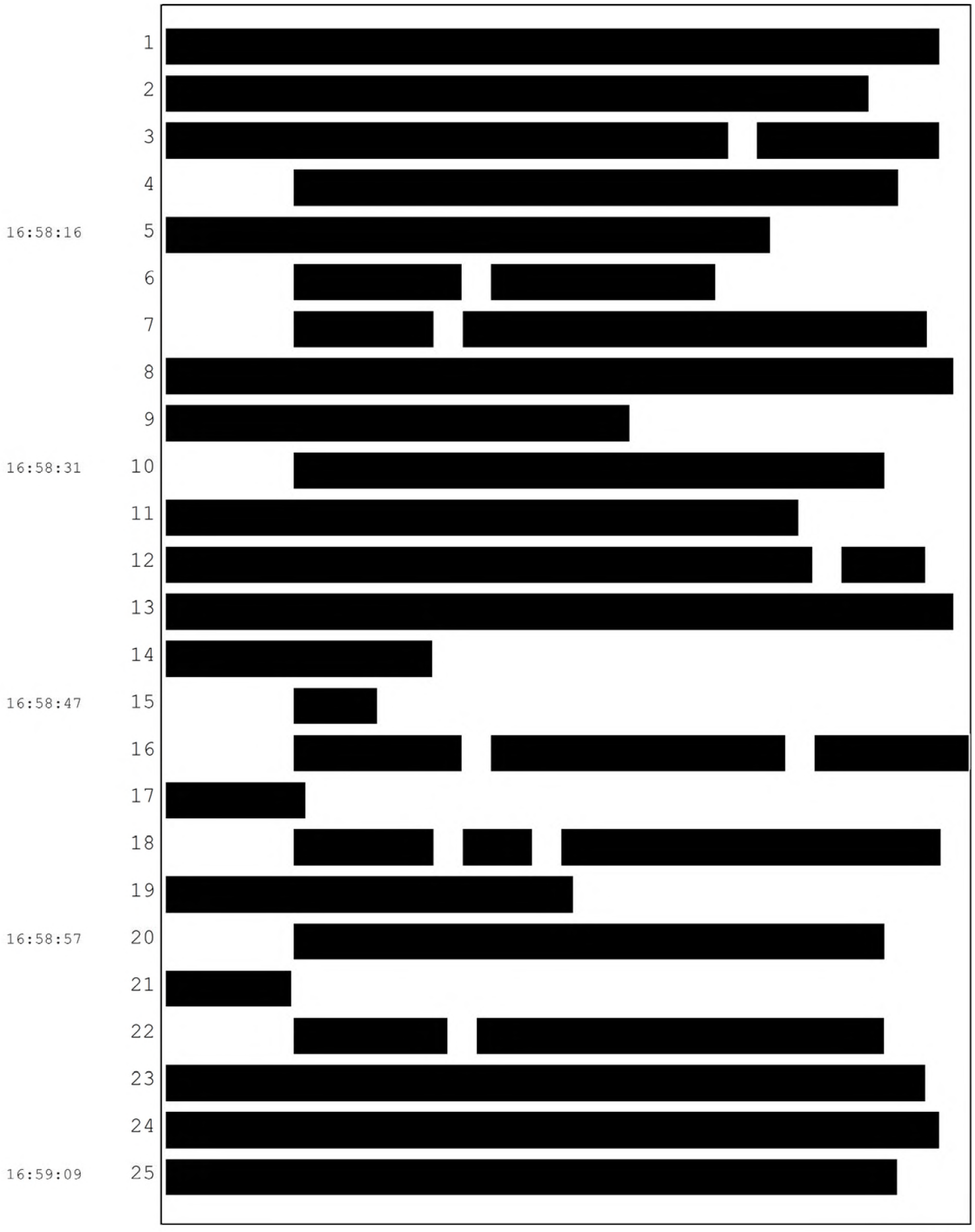
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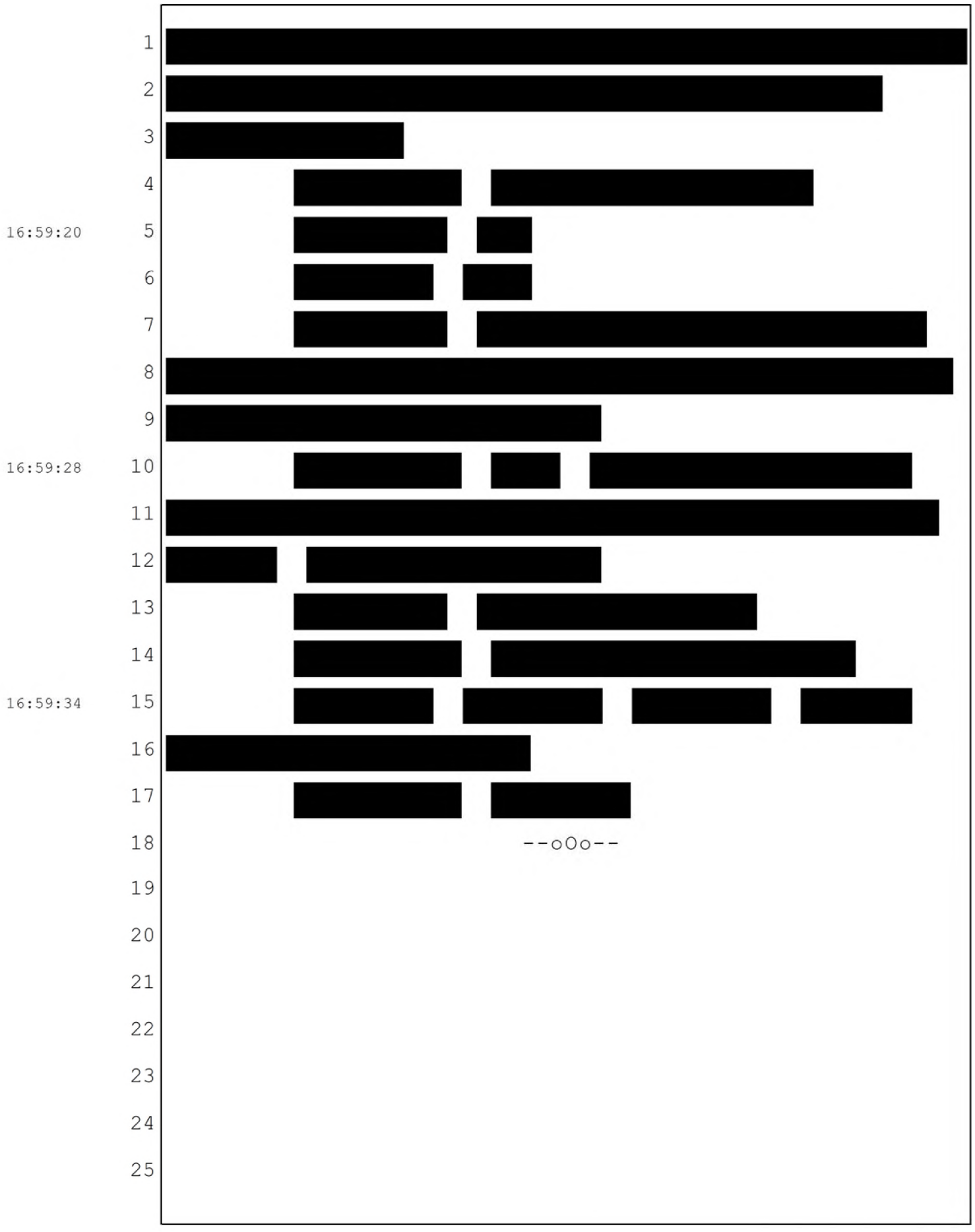
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REPORTER'S CERTIFICATE

I certify that the proceedings in the within-titled cause were taken at the time and place herein named; that the proceedings were reported by me, a duly Certified Shorthand Reporter of the State of California authorized to administer oaths and affirmations, and said proceedings were thereafter transcribed into typewriting.

I further certify that I am not of counsel or Attorney for either or any of the parties to said Proceedings, not in any way interested in the outcome of the cause named in said proceedings.

IN WITNESS WHEREOF, I have hereunto set my hand: July 10th, 2018.

<%signature%>
Leslie Rockwood Rosas
Certified Shorthand Reporter
State of California
Certificate No. 3462