

Using LLMs to Analyze Deposition and Hearing Transcripts: Faster, Better and Cheaper (Everything, Everywhere, All at Once)



By John Tredennick and Dr. William Webber

While our focus in previous articles has been on using Large Language Models (LLMs) like GPT and Claude 2 to review and analyze discovery documents, there is more they can do. In this article we will focus on hearing and deposition transcripts. As you will quickly see, LLMs can analyze and report on information in transcripts, providing page and line numbers for their references.

Let's take a look and see what they can do.

Our Test Transcript

For our exercise today, we are using a transcript for the continued deposition of Joseph Nadeau. He testified in a civil matter involving the Air Force and EPA that we [found in the public domain](#). The transcript is 75 pages long, which seemed to be reasonable for a first test.

We are using Claude 2 for our transcript analysis. Claude 2 is a leading competitor to GPT 4, but offers a larger context window which we need in order to load the full



transcript. Specifically, Claude allows us to submit up to 100,000 tokens (about 75,000 words). In contrast, GPT 4 offers a maximum of 32,000 tokens but the version generally available at present is about 8,200 tokens (about 6,000 words). The transcript we are examining contains just under 27,000 tokens (about 20,000 words). We could break up the transcripts into sections that will fit into GPT 4's context window but that isn't necessary to demonstrate how useful these LLMs can be with transcripts.

In this case we have loaded the entire transcript into Claude 2. That allows us to work directly with the full text of the document rather than working from a summary or analyze the information piecemeal.

Initial Questions

Let's start by asking a few introductory questions.

All of the responses came directly from Claude and are unedited.

Prompt:

Who were the lawyers involved in the deposition and what were their roles?

Claude:

Based on the deposition transcript, the following lawyers were involved and their roles:

Jack R. Pirozzolo and Brian Henninger - Representing Emhart Industries, Inc. as the Plaintiff/Counterclaim Defendant. Pirozzolo conducted the main examination of Joseph Nadeau.

Megan Baroni - Representing New England Container Company, Inc. (NECC) as the Defendant/Counterclaim Plaintiff. Baroni conducted an examination of Nadeau.

Patrick B. Bryan - Representing the U.S. Department of Justice, Environment and Natural Resources Division on behalf of the U.S. Department of the Air Force. Bryan conducted an examination of Nadeau.

John Ferroli - Representing Eli Lilly, appears via telephone but does not conduct examination.

So in summary, the two main examining attorneys were Pirozzolo representing Emhart Industries, and Bryan representing the Department of Justice/Air Force. They questioned Nadeau about his recollection of activities at the sites several decades

ago. The other attorneys monitored and objected but did not significantly examine Nadeau.

Prompt:

What was the deposition about?

Claude:

Based on reviewing the deposition transcript, this deposition appears to be related to environmental litigation concerning the Metro-Atlantic and New England Container Company (NECC) facilities in Centredale, Rhode Island.

Some key points:

The deposition focuses on Joseph Nadeau's recollection of activities at the facilities in the 1960s when he worked there as a manual laborer.

There are disagreements during the deposition about Nadeau's current recollections versus his past deposition testimony.

The questioning covers topics like the site layout, production activities, waste disposal, drum reconditioning, and discharge of wastewater.

The Department of Justice/Air Force attorney questions Nadeau about wastewater discharges and waste disposal.

Nadeau admits to disposing of waste on site and says he saw discolored water leaving the building.

The deposition exhibits include maps of the site facilities.

There are objections from the site owner's attorney (NECC) disputing some recollections.

Based on this, it appears the deposition was taken as part of some environmental litigation concerning historical contamination or pollution at the industrial sites where Nadeau worked in the 1960s. The parties are disputing his recollections regarding activities that may have led to contamination many decades ago when he worked there.



That gives us an idea about deposition contents and at least a starting description of the underlying litigation.

Creating a Deposition Summary

Most lawyers ask a junior lawyer or legal assistant to summarize a deposition transcript once received. The summaries come in different styles but the goal is to record the important statements or admissions made by the witness. These are often done with an eye toward admissions that might be important for trial or further depositions, rather than less important information like the witnesses' educational background. But some lawyers want everything summarized.

Let's see how Claude does summarizing this transcript.

Prompt:

I want you to act as a senior litigation associate helping to prepare for trial.

We are involved in environmental litigation concerning the Metro-Atlantic and New England Container Company (NECC) facilities in Centredale, Rhode Island. I am uploading the deposition transcript for Ralph Nadeau. We are interested in his testimony regarding historical contamination or pollution at the industrial sites where Nadeau worked in the 1960s. The parties are disputing his recollections regarding activities that may have led to contamination many decades ago when he worked there.

Review the transcript and create a deposition summary focused on the key issues in the litigation.

Start with a Topic description in bold and then list as bullet points what the witness answered questions under the topic. For each, list the page and line numbers. Do the summary in date order and be comprehensive in your reporting.

Claude:

Here is a comprehensive litigation-focused deposition summary for the Joseph Nadeau transcript:

Site Layout and Description

- Describes main production building with basement containing drains (Page 174, Lines 1-13)
- Labeled map showing office, production areas, shipping, storage tanks, filter presses, dumpster, drum reconditioning areas (Page 169 - Page 183)
- Storage tanks were vertical cylinders along back side of main building (Page

160, Lines 6-13)

Wastewater Discharges

- French drains in basement floor drained wastewater outside building (Page 157, Lines 1-13)
- Witnessed discolored water flowing from basement drains to outside (Page 190, Lines 1-25)
- Tailrace turned murky while working there (Page 210-211)
- Assumes wastewater from washing drums discharged to tailrace (Page 211, Line 23 - Page 212, Line 23)

Waste Disposal

- Production waste solids disposed in on-site dumpster (Page 165, Lines 1-25)
- Hardened material chipped out of tanks also may have gone into dumpster (Page 166, Line 15 - Page 167, Line 18)
- Plastic liners from drums dumped on ground before being picked up later (Page 214, Line 18 - Page 216, Line 6)
- Believes plastic liners were taken to "dump" area at back of site (Page 215, Line 23 - Page 216, Line 12)

Drum Reconditioning

- Describes process of burning residue out of used drums (Page 183, Line 12 - Page 187, Line 18)
- Leaky drums sold as burn barrels to private citizens rather than reconditioned (Page 190, Line 19 - Page 191, Line 13)

Knowledge of Contamination

- Unaware of any dioxin in substances handled (Page 217, Lines 1-7)
- Did not have chemistry expertise or knowledge of composition (Page 217, Lines 8-25)
- Worked as laborer without duties related to ownership or operations (Page 218, Line 1 - Page 219, Line 3)

In summary, this focuses on Nadeau's testimony regarding wastewater discharges, waste disposal, drum reconditioning, and his lack of chemistry knowledge - which are key issues in this environmental litigation. His recollections are disputed at various points.

Note that the page and line numbers are correct, and as are printed in the margins of the transcript (which starts on printed page 146, and has 25 printed line numbers per page).



Here is a second try at the summary, this time without focusing on our trial topics:

Prompt:

I want you to act as a senior litigation associate helping to prepare for trial.

I am uploading the deposition transcript for Ralph Nadeau. Review the transcript and create a deposition summary for each line of questions he faced.

Start with a Topic description in bold and then list as bullet points what the witness answered questions under the topic. For each, list the page and line numbers.

Do the summary in date order and be comprehensive in your reporting. I need a summary of everything he discussed.

Claude:

Here are comprehensive topic-by-topic deposition summaries covering all of Joseph Nadeau's testimony:

Employment History at Sites

- Worked at Metro-Atlantic and NECC facilities during summers between 1962-1965 as a teenager while in high school (Page 151, Lines 2-25)
- Worked there for 2 summers, possibly 1963 and 1964 (Page 151, Line 8 - Page 152, Line 7)
- Full-time employment was June 1964 to August 1965 before entering the Army (Page 204, Lines 15-25)

Layout and Description of Site

- Describes main production building, shipping area, storage tanks, process areas No. 1 & 2, maintenance building, Texas Tower building (Page 170, Line 18 - Page 183, Line 11)
- Labels map with office, production areas, shipping, storage tanks, filter presses, dumpster, drum reconditioning areas (Page 169, Line 1 - Page 179, Line 18)
- Storage tanks were vertical cylinders along back side of main building (Page 159, Line 17 - Page 160, Line 25)
- Drainage flowed from building out to river and tailrace (Page 190, Lines 1-25)

Hexachlorophene Production

- Hexachlorophene produced for around 8-9 months (Page 154, Line 1 - Page 158, Line 16)
- Hexachlorophene building "Texas Tower" constructed while he worked there (Page 153, Lines 1-15)

- Never entered Texas Tower building (Page 167, Line 19 - Page 168, Line 7)

Wastewater Discharges

- French drains in basement floor drained wastewater outside building (Page 157, Lines 1-13)
- Witnessed discolored water flowing from basement drains to outside (Page 190, Lines 1-25)
- Tailrace turned murky while working there (Page 210-211)
- Assumes wastewater from washing drums discharged to tailrace (Page 211, Line 23 - Page 212, Line 23)

Waste Disposal

- Production waste solids disposed in on-site dumpster (Page 165, Lines 1-25)
- Hardened material chipped out of tanks also may have gone into dumpster (Page 166, Line 15 - Page 167, Line 18)
- Plastic liners from drums dumped on ground before being picked up later (Page 214, Line 18 - Page 216, Line 6)
- Believes plastic liners were taken to "dump" area at back of site (Page 215, Line 23 - Page 216, Line 12)

Drum Reconditioning

- Describes process of burning residue out of used drums (Page 183, Line 12 - Page 187, Line 18)
- Leaky drums sold as burn barrels to private citizens rather than reconditioned (Page 190, Line 19 - Page 191, Line 13)
- Tight drum wash process and discharge (Page 186, Line 3 - Page 187, Line 18)

Site Operations

- Storage tanks filled via pipes and external connections (Page 162, Line 12 - Page 164, Line 18)
- Describes production using vats and kettles (Page 171, Lines 5-18)
- Filter presses used to filter reserve salt and 40-S products (Page 178, Line 25 - Page 179, Line 18)

Company Ownership and Operations

- Assumes companies owned by related Buonanno family (Page 205, Line 25 - Page 207, Line 7)
- Unaware of ownership boundaries or details as laborer (Page 218, Line 20 - Page 219, Line 3)
- Not involved in accounting, management or operations (Page 217, Line 20 -

Page 219, Line 3)

Knowledge of Contamination

- Unaware of any dioxin in substances handled (Page 217, Lines 1-7)
- Did not have chemistry expertise or knowledge of composition (Page 217, Lines 8-25)
- Worked as laborer without duties related to ownership or operations (Page 218, Line 1 - Page 219, Line 3)

Credibility of Testimony

- Admits to fuzzy recollection from 50 years ago (Page 152, Lines 1-25)
- Acknowledges inconsistencies between current and past recollections (Page 155, Line 1 - Page 158, Line 16)
- Testified truthfully in past depositions and trial (Page 195, Line 25 - Page 197, Line 10)

So in summary, this covers all the major topics addressed in Nadeau's deposition testimony, spanning his employment history, site operations, waste disposal, company ownership, contamination knowledge, and truthfulness. The page and line numbers highlight the key statements.

We can ask Claude to go into more detail on any of these points. Here is an example.

Prompt:

Elaborate on the section regarding "Knowledge of Contamination." Provide answer by answer summaries as bullet points.

Claude:

Here is an expanded summary of Joseph Nadeau's answers regarding his knowledge of contamination, with answer-by-answer bullet points:

Knowledge of Contamination

- When asked if he had ever seen dioxin when working at the sites, Nadeau answered "No" (Page 217, Lines 1-4)
- When asked if he had seen any substance containing dioxin, Nadeau again answered "Not that I can remember" (Page 217, Lines 5-7)
- When asked if he had an understanding of chemistry when working there,

Nadeau stated "Oh, hell, no. No." He knew some chemicals were hazardous but said "I'm not a chemist." (Page 217, Lines 8-19)

- When asked if he would know whether any substances contained dioxin, Nadeau replied "Dioxin is not a term I remember." (Page 217, Line 20 - Page 218, Line 7)
- When characterized as having worked as a laborer, Nadeau agreed (Page 218, Lines 1-3)
- When asked if he was involved in accounting or management, Nadeau replied "No. I'm not legally bound by any of this, so..." (Page 218, Lines 4-11)
- When asked if he knew who owned what at the time, Nadeau stated "I did not." (Page 218, Lines 12-14)
- When asked if he knew property boundaries between owners, Nadeau again said "I did not." (Page 218, Line 15 - Page 219, Line 3)

In summary, Nadeau clearly disclaimed having any expertise or knowledge regarding the presence of dioxin or the chemical composition of substances he handled while working at the sites as a laborer decades ago. He consistently stated he had no such knowledge.

Asking Further Questions

Rather than create summaries, we can simply ask Claude questions about the testimony. Here are several examples.

Prompt:

What objections were made? Summarize the discussion around each.

Claude:

Here are the key objections made during Joseph Nadeau's deposition and a summary of the related discussion:

- Leading question objections (Page 153 - 158, 211, 214-215, 218)
 - Attorney Bryan argues questions improperly suggest intended answers.
- Vague question objections (Page 157, 158, 160, 174, 207, 218)
 - Attorney Bryan claims words like "area" or "around" are unclear.
- Asked and answered objections (Page 192, 210)
 - Attorney Bryan argues question has already been asked.
- Improper impeachment objection (Page 198)
 - Attorney Bryan believes prior testimony excerpt read is not actually

inconsistent.

- Foundation objection (Page 217)
 - Attorney Bryan argues question lacks proper foundation.
- Relevance objection (Page 201)
 - Attorney Pirozzolo claims selected deposition excerpt is irrelevant.

In summary, most objections were made by the Department of Justice attorney and disputed the question style or appropriateness of prior testimony raised during cross-examination. The objections did not appear to significantly impact or limit the witness's responses.

Prompt:

Tell me more about inconsistencies between current and past recollections.

Claude:

Here are some examples of inconsistencies between Joseph Nadeau's current testimony and his past recollections:

- Nadeau currently states he saw discolored water flowing from the basement drains outside the building (Page 190). However, in his 2002 deposition he said he "couldn't say for a fact" and it was an "assumption" (Page 192).
- Currently Nadeau states the tailrace turned murky while working there (Page 210-211). But in his 2006 trial testimony he said he "couldn't remember" seeing the water change color (Page 194-197).
- Currently he states plastic liners from drums were dumped on the ground (Page 214-215). But in his 2002 deposition he said bags were taken to the back of the facility and dumped, based on what he was told (Page 215-216).
- Currently he recalls the filter press location as unclear (Page 174-176). But in 2002 he specifically described the filter press locations (Page 209).
- Currently he is uncertain about windows and the basement layout (Page 158-159). But he was more definitive in prior testimony.
- Nadeau acknowledges there are inconsistencies between his current and past recollections due to the passage of 50+ years (Page 155-158).

So in summary, there are inconsistencies on issues like where he saw discharges flowing, statements based on assumptions vs. personal knowledge, and specifics about buildings and equipment - where his current testimony contradicts or differs from his prior statements. He admits his memory has faded over five decades.

Prompt:

Did Nadeau mention any incidents or accidents related to safety during his time at the facilities?

Claude:

Based on a thorough review of Joseph Nadeau's deposition testimony, he mentions one incident related to safety during his time working at the Metro-Atlantic and NECC facilities:

When labeling a map of the site, Nadeau refers to a "Connection" area on the west wall of the main building where trucks delivered liquids. He states: "The guy that worked in this place here got badly burned because he disconnected a hose and caustic acid went all over him." (Page 172, Lines 11-15)

This is the only reference to any specific incident or accident mentioned by Nadeau in his testimony.

He provides no additional details about this incident where a worker was burned by caustic acid.

He does not mention if there were any protocols or procedures in place regarding this type of hazardous material transfer.

He does not describe any other safety incidents, accidents, injuries, or issues during his time working at the facilities.

So in summary, Nadeau briefly mentions one incident where a worker was burned by caustic acid, but provides very limited details. He does not describe any other specific safety incidents, accidents or injuries that occurred based on his recollection.

Using LLMs to Analyze Transcripts

Did Claude do a good job in summarizing the deposition and answering questions about Ralph Nadeau's Testimony? You be the judge.

Back in the 80s and 90s, John Tredennick spent many hours with a dictaphone, and later a computer, summarizing depositions in order to prepare for trial. No doubt associates and legal assistants are doing similar work today, taking many hours to work through lengthy transcripts. From there, the trial team has to search deposition summaries, or click through search hits from the original transcripts, to find the



information they need for direct or cross examination. The cost to do this work can run to the tens of thousands of dollars.

In contrast, Claude answered our questions and created summaries in minutes, at a cost that is surely less than \$10 for these reports. Should legal professionals use LLMs like Claude to help with transcripts? Our answer is a resounding yes.

About the Authors

John Tredennick (JT@Merlin.Tech) is the CEO and founder of Merlin Search Technologies, a cloud technology company that has developed a revolutionary new machine learning search algorithm called Sherlock® to help people find information in large document sets—without having to master keyword search.

Tredennick began his career as a trial lawyer and litigation partner at a national law firm. In 2000, he founded and served as CEO of Catalyst, an international e-discovery search technology company that was sold to a large public company in 2019. Over the past four decades he has written or edited eight books and countless articles on legal technology topics, spoken on five continents and served as Chair of the ABA's Law Practice Management Section.

Dr. William Webber (wwebber@Merlin.Tech) is the Chief Data Scientist of Merlin Search Technologies. He completed his PhD in Measurement in Information Retrieval Evaluation at the University of Melbourne under Professors Alistair Moffat and Justin Zobel, and his post-doctoral research at the E-Discovery Lab of the University of Maryland under Professor Doug Oard.

With over 30 peer-reviewed scientific publications in the areas of information retrieval, statistical evaluation, and machine learning, he is a world expert in AI and statistical measurement for information retrieval and ediscovery. He has almost a decade of industry experience as a consulting data scientist to ediscovery software vendors, service providers, and law firms.

About Merlin Search Technologies

Merlin is a pioneering cloud technology company leveraging generative AI and cloud technologies to re-engineer legal investigation and discovery workflows. Our next-generation platform integrates GenAI and machine learning to make the process faster, easier, and less expensive. We've also introduced Cloud Utility Pricing, an innovative software hosting model that charges by the hour instead of by the month, saving clients substantial savings on discovery costs when they turn off their sites.



With over twenty years of experience, our team has built and hosted discovery platforms for many of the largest corporations and law firms in the world. Learn more at merlin.tech.