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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/106,817	04/15/2005	Andrew B. Covit	AMI 3.0-002 (11)	4506

147311	7590	12/26/2019	

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ART UNIT	PAPER NUMBER
3686	

NOTIFICATION DATE	DELIVERY MODE
12/26/2019	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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Ex parte ANDREW B. COVIT, MARK E. FAMILANT, and
STUART COVIT
_____

Appeal 2018-003431
Application 11/106,817
Technology Center 3600
_____

Before JOSEPH L. DIXON, ST. JOHN COURTENAY III, and
LARRY J. HUME, *Administrative Patent Judges.*

HUME, *Administrative Patent Judge.*

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant,[1] Andrew B. Covit et al., appeals from the Examiner's decision rejecting claims 1, 2, 4–14, 17–27, and 29–34, which are all claims pending in the application. Appellant has canceled claims 3, 15, 16, 28, and 35–38. *See* Appeal Br. 28–36 (Claims App.). We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Artificial Medical Intelligence, Inc. Appeal Br. 2.

STATEMENT OF THE CASE[2]

The claims are directed to a system and method for automatic assignment of medical codes to unformatted data. *See* Spec. (Title). Further, "[a]lthough the present invention is a system and method for automatic assignment of medical codes to unformatted or uncoded document data, which is particularly well suited for implementation as an independent software systems and shall be so described, the present invention is equally well suited for implementation as a functional/library module, an applet, a plug in software application, as a device plug in, and in a microchip implementation." Spec. ¶ 29.

Claims 1 and 5, reproduced below, are representative of the subject matter on appeal (*emphases* added to contested prior-art limitations):

Exemplary Claims

1.   An automated system for determining medical codes from unformatted medical document data comprising:

memory and a processor, wherein the memory is configured to store:

a data structure including medical codes data associated with medical terminology data; and

processor searching control instructions configured to:

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receive an unformatted medical document that includes raw document data generated in response to a medical examination;

preprocess the raw document data to analyze beginning and ending of sentences in the document;

search the preprocessed raw document data to automatically identify medical terminology data of the data structure located in sentences of the document;

automatically select one or more medical codes of the data structure that are associated with the identified medical terminology data;

automatically apply a set of expressions to context data structures that categorize the context data of a sentence as terminology preceding and succeeding the identified medical terminology data;

automatically determine, using the categorized context data, the selected one or more medical codes that are applicable to a patient,

wherein one or more medical codes are automatically removed from the selected one or more medical codes based on at least one restriction rule that represents a logical relationship between the set of expressions applied to the context data;

automatically substitute one or more medical codes of the selected medical codes with a further selected medical code based on a previously selected medical code and vague medical terminology of the sentences of the document, the vague medical terminology contained in a context table and having multiple medical code associations so as to not be uniquely associated with one particular medical code of the data structure,

wherein the previously selected medical code in context of the vague medical terminology serves to disambiguate the vague medical terminology according to the context table to permit selection of the further selected medical code; and

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processor output control instructions configured to generate output comprising the selected medical codes that are applicable to the patient,

wherein the processor is operable to execute the processor search control instructions and the processor output control instructions, and

wherein the processor searches the raw data in the unformatted medical document to identify the medical terminology data and processes the identified medical terminology data from the unformatted medical document to determine the applicable medical codes in the context of the unformatted document.

5.   The system of claim 1 wherein:

the restriction rule comprises a kinship phrase identifying that the selected medical codes are for a relative of the patient, and

the processor searching control instructions: configured to automatically determine the selected one or more medical codes that are applicable to the patient comprise processor searching control instructions configured to: distinguish at least one of the selected one or more medical codes as a result of the context data including the kinship phrase.

Prior Art

The Examiner relies upon the following prior art as evidence in rejecting the claims on appeal:

Ryan	US 5,809,476	Sept. 15, 1998
Doerr et al. ("Doerr")	US 2002/0147615 A1	Oct. 10, 2002
Heinze et al. ("Heinze")	US 6,915,254 B1	July 5, 2005

Rejections on Appeal

R1.　Claims 1, 2, 4–14, 17–27, and 29–34 stand rejected under 35 U.S.C. § 101 as being directed to a judicial exception (i.e., a law of nature, a natural phenomenon), without significantly more. Final Act. 2.

R2.　Claims 1, 2, 4–14, and 17–27, and 29–34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Heinze, Ryan, and Doerr. Final Act. 5.[3]

CLAIM GROUPING

Based on Appellant's arguments (Appeal Br. 7–27) and our discretion under 37 C.F.R. § 41.37(c)(1)(iv), we decide the appeal of patent-ineligible subject matter Rejection R1 of claims 1, 2, 4–14, 17–27, and 29–34 on the basis of representative claim 1; and we also decide the appeal of obviousness Rejection R2 of claims 1, 2, 4, 6–14, 17–27, and 29–34 on the basis of representative claim 1.

We address separately argued Rejection R2 of dependent claim 5, *infra*.[4]

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[3]　We note the explicit statement of Rejection R2 erroneously includes claim 28, which has been canceled. *See* Appeal Br. 34 (Claims App.).

[4]　"Notwithstanding any other provision of this paragraph, the failure of appellant to separately argue claims which appellant has grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately." 37 C.F.R. § 41.37(c)(1)(iv). In addition, when Appellant does not separately argue the patentability of dependent claims, the claims stand or fall with the claims from which they depend. *In re King*, 801 F.2d 1324, 1325 (Fed. Cir. 1986).

ISSUES AND ANALYSIS

In reaching this decision, we consider all evidence presented and all arguments actually made by Appellant. To the extent Appellant has not advanced separate, substantive arguments for particular claims, or other issues, such arguments are waived. 37 C.F.R. § 41.37(c)(1)(iv).

We agree with particular arguments set forth by Appellant with respect to subject matter eligibility Rejection R1 of claims 1, 2, 4–14, 17–27, and 29–34, and obviousness Rejection R2 of claim 5.

However, we disagree with Appellant's arguments with respect to obviousness Rejection R2 of claims 1, 2, 4, 6–14, 17–27, and 29–34 and, unless otherwise noted, we incorporate by reference herein and adopt as our own: (1) the findings and reasons set forth by the Examiner in the action from which this appeal is taken, and (2) the reasons and rebuttals set forth in the Examiner's Answer in response to Appellant's arguments. We highlight and address specific findings and arguments regarding claims 1 and 5 for emphases as follows.

1.   § 101 Rejection R1 of Claims 1, 2, 4–14, 17–27, and 29–34

Issue 1

Appellant argues (Appeal Br. 7–17; Reply Br. 2–6) the Examiner's rejection of claim 1 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter is in error. These contentions present us with the following issue:

Under the USPTO's Revised Guidance, informed by our governing case law concerning 35 U.S.C. § 101, is claim 1 patent-ineligible under § 101?

Principles of Law

A.   35 U.S.C. § 101

An invention is patent-eligible if it is a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101.[5] However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70 (2012) (brackets in original) (citing *Diamond v. Diehr*, 450 U.S. 175, 185 (1981)).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217–18 (2014) (citing *Mayo*, 566 U.S. at 75–77). In accordance with that framework, we first determine what concept the claim is "directed to." *See Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.,* the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk . . . .").

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611);

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[5] This threshold analysis of whether a claim is directed to one of the four statutory categories of invention, i.e., a process, machine, manufacture, or composition of matter, is referred to as "*Step 1*" in the USPTO's patent-eligibility analysis under § 101. MPEP § 2106.

mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as "molding rubber products" (*Diehr*, 450 U.S. at 191); "tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores" (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diehr*, 450 U.S. at 187; *see also id.* at 191 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Having said that, the Supreme Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.").

Abstract ideas may include, but are not limited to, fundamental economic practices, methods of organizing human activities, and mathematical formulas or relationships. *Alice*, 573 U.S. at 217–21. Under this guidance, we must therefore ensure at step one that we articulate what the claims are directed to with enough specificity to ensure the step one

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inquiry is meaningful. *Id.* at 217 ("[W]e tread carefully in construing this exclusionary principle lest it swallow all of patent law.").

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an '"inventive concept"' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (citation omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

B.   USPTO Revised Guidance

The PTO recently published revised guidance in the Federal Register concerning the application of § 101. *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (January 7, 2019) (hereinafter "Revised Guidance") (https://www.govinfo.gov/content/pkg/FR-2019-01-07/pdf/2018-28282.pdf).

Under the Revised Guidance, we first look to whether the claim recites:

> (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes);[6] and

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[6] Referred to as "*Revised Step 2A, Prong 1*" in the Revised Guidance (hereinafter "*Step 2A(i)*").

(2) additional elements that integrate the judicial
exception into a practical application (*see* Manual for Patent
Examining Procedure ("MPEP") §§ 2106.05(a)–(c), (e)–(h)).[7]

See Revised Guidance 52–53.

Only if a claim (1) recites a judicial exception and (2) does not
integrate that exception into a practical application, do we then look to
whether the claim:

(3) adds a specific limitation beyond the judicial
exception that is not "well-understood, routine, conventional"
in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine,
conventional activities previously known to the industry,
specified at a high level of generality, to the judicial exception.[8]

See Revised Guidance 56.

Step 2A(i) – Abstract Idea

Informed by our judicial precedent, the Revised Guidance extracts and
synthesizes key concepts identified by the courts as abstract ideas to explain
that the abstract idea exception includes the following groupings of subject
matter, when recited as such in a claim limitation:

(a) Mathematical concepts—mathematical relationships,
mathematical formulas or equations, mathematical calculations;

(b) Certain methods of organizing human activity —
fundamental economic principles or practices (including
hedging, insurance, mitigating risk); commercial or legal
interactions (including agreements in the form of contracts;
legal obligations; advertising, marketing or sales activities or

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[7] Referred to as "*Revised Step 2A, Prong 2*" in the Revised Guidance
(hereinafter "*Step 2A(ii)*").

[8] Items (3) and (4) continue to be collectively referred to as "*Step 2B*" of the
Supreme Court's two-step framework, described in *Mayo* and *Alice*.

behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions); and

(c) Mental processes—concepts performed in the human mind (including an observation, evaluation, judgment, opinion).

Revised Guidance 52 (footnotes omitted).

Under the Revised Guidance, if the claim does not recite a judicial exception (a law of nature, natural phenomenon, or subject matter within the enumerated groupings of abstract ideas above), then the claim is patent-eligible at *Step 2A(i)*. This determination concludes the eligibility analysis, except in situations identified in the Revised Guidance.[9]

However, if the claim recites a judicial exception (i.e., an abstract idea enumerated above, a law of nature, or a natural phenomenon), the claim requires further analysis for a practical application of the judicial exception in *Step 2A(ii)*.

Step 2A(ii) – Practical Application

If a claim recites a judicial exception in *Step 2A(i)*, we determine whether the recited judicial exception is integrated into a practical application of that exception in *Step 2A(ii)* by: (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluating those additional elements individually and

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[9] In the rare circumstance in which an examiner believes a claim limitation that does not fall within the enumerated groupings of abstract ideas should nonetheless be treated as reciting an abstract idea, the procedure described in of the Guidance for analyzing the claim should be followed. *See* Revised Guidance, Section III.C.

in combination to determine whether they integrate the exception into a practical application.

The seven identified "practical application" sections of the MPEP,[10] cited in the Revised Guidance under *Step 2A(ii)*, are:

(1)   MPEP § 2106.05(a) Improvements to the Functioning of a Computer or To Any Other Technology or Technical Field

(2)   MPEP § 2106.05(b) Particular Machine

(3)   MPEP § 2106.05(c) Particular Transformation

(4)   MPEP § 2106.05(e) Other Meaningful Limitations

(5)   MPEP § 2106.05(f) Mere Instructions To Apply An Exception

(6)   MPEP § 2106.05(g) Insignificant Extra-Solution Activity

(7)   MPEP § 2106.05(h) Field of Use and Technological Environment

See Revised Guidance 55.

If the recited judicial exception is integrated into a practical application as determined under one or more of the MPEP sections cited above, then the claim is not directed to the judicial exception, and the patent-eligibility inquiry ends. *See* Revised Guidance 54. If not, then analysis proceeds to *Step 2B*.

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[10] *See* MPEP §§ 2106.05(a)–(c), (e)–(h). Citations to the MPEP herein refer to revision [R-08.2017]. Sections 2106.05(a), (b), (c), and (e) are indicative of integration into a practical application, while §§ 2106.05(f), (g), and (h) relate to limitations that are not indicative of integration into a practical application.

Step 2B – "Inventive Concept" or "Significantly More"

Under our reviewing courts' precedent, it is possible that a claim that does not "integrate" a recited judicial exception under *Step 2A(ii)* is nonetheless patent eligible. For example, the claim may recite additional elements that render the claim patent eligible even though one or more claim elements may recite a judicial exception.[11] The Federal Circuit has held claims eligible at the second step of the *Alice/Mayo* test (USPTO *Step 2B*) because the additional elements recited in the claims provided "significantly more" than the recited judicial exception (e.g., because the additional elements were unconventional in combination).[12] Therefore, if a claim has been determined to be directed to a judicial exception under *Revised Step 2A*, we must also evaluate the additional elements individually and in combination under *Step 2B* to determine whether they provide an inventive concept (i.e., whether the additional elements amount to significantly more than the exception itself).[13]

Under the Revised Guidance, we must consider in *Step 2B* whether an additional element or combination of elements: (1) "Adds a specific

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[11] *See, e.g., Diehr*, 450 U.S. at 187.

[12] *See, e.g., Amdocs Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1300, 1304 (Fed. Cir. 2016); *BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349–52 (Fed. Cir. 2016); *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257–59 (Fed. Cir. 2014).

[13] The patent eligibility inquiry may contain underlying issues of fact. *Mortg. Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1325 (Fed. Cir. 2016). In particular, "[t]he question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact." *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).

limitation or combination of limitations that are not well-understood, routine, conventional activity in the field, which is indicative that an inventive concept may be present;" or (2) "simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception, which is indicative that an inventive concept may not be present." *See* Revised Guidance, Section III.B.[14]

In the *Step 2B* analysis, an additional element (or combination of elements) is not well-understood, routine or conventional unless the examiner finds an evidentiary basis, and expressly supports a rejection in writing with, one or more of the following:

> 1. A citation to an express statement in the specification or to a statement made by an applicant during prosecution that demonstrates the well-understood, routine, conventional nature of the additional element(s). . . .
>
> 2. A citation to one or more of the court decisions discussed in MPEP § 2106.05(d)(II) as noting the well-understood, routine, conventional nature of the additional element(s).

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[14] In accordance with existing *Step 2B* guidance, an Examiner's finding that an additional element (or combination of elements) is well-understood, routine, conventional activity must be supported with at least one of the four specific types of evidence required by the USPTO *Berkheimer* Memorandum, as shown above. For more information concerning evaluation of well-understood, routine, conventional activity, *see* MPEP § 2106.05(d), as modified by the USPTO *Berkheimer* Memorandum (USPTO Commissioner for Patents Memorandum dated Apr. 19, 2018, "Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (*Berkheimer v. HP, Inc.*)" (hereinafter "*Berkheimer Memo*").

　　　　3.　　A citation to a publication that demonstrates the
well-understood, routine, conventional nature of the additional
element(s). . . .

　　　　4.　　A statement that the examiner is taking official
notice of the well-understood, routine, conventional nature of
the additional element(s). . . .

See Berkheimer Memo 3–4.

If the Examiner or the Board determines under *Step 2B* that the element (or combination of elements) amounts to significantly more than the exception itself, the claim is eligible, thereby concluding the eligibility analysis.

However, if a determination is made that the element and combination of elements do not amount to significantly more than the exception itself, the claim is ineligible under *Step 2B*, and the claim should be rejected for lack of subject matter eligibility.

　　Analysis

Step 1 – Statutory Category

Claim 1, as a system (machine) claim, recites one of the enumerated categories of eligible subject matter in 35 U.S.C. § 101. Therefore, the issue before us is whether it is directed to a judicial exception without significantly more.

Step 2A(i):　Does the Claim Recite a Judicial Exception?

The Examiner determined that the claims "are directed to the abstract idea of analyzing a document to determine applicable medical codes, as explained in detail below." Final Act. 2. "[T]he description in claims 1, 14,

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27, and 32 of analyzing a document to determine applicable medical codes is an abstract idea." Final Act. 4.

We conclude claim 1 does not recite the judicial exceptions of either natural phenomena or laws of nature. We evaluate, *de novo*, whether claim 1 recites an abstract idea based upon the Revised Guidance.

First, we look to the Specification to provide context as to what the claimed invention is directed to. In this case, the Specification discloses that the "invention is a system and method for automatic assignment of medical codes to unformatted data." Spec. ¶ 5.

Appellant's Abstract describes the invention as:

> A system and method for automatic assignment of medical codes to unformatted data is, for example, a computer software module or engine. The engine automatically assigns medical codes such as ICD codes (ICD9 and ICD10 as well as other versions) to unformatted or uncoded medical documents (*e.g.* medical notes, discharge summaries, etc.). The system reads a document and then scans (assesses) it for diagnoses associated with the medical codes. When diagnosis is identified, the system can also examine the language context in which the diagnosis appears. Using rules derived from syntactic and semantic usage, the system decides whether to apply an identified ICD code to the document being processed or not. The output of the module, a set of medical codes and the corresponding diagnoses that conform to the widely accepted syntactic and semantic rules associated with coding, can then be stored in or applied to a number of different mediums, such as data base entries, attachments to the document itself, email to the owner of the document, electronic or paper forms, etc.

Spec. 42 (Abstract).

In TABLE 1 below, we identify in *italics* the specific claim limitations in claim 1 that we conclude recite an abstract idea. We

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additionally identify in **bold** the additional (non-abstract) claim limitations that are generic computer components and techniques, and underline limitations representing extra or post-solution activity:

TABLE 1

Independent Claim 1	Revised Guidance
An automated system for determining medical codes from unformatted medical document data comprising:	A system (device) is a statutory subject matter class. *See* 35 U.S.C. § 101.
[L1] **memory and a processor**, wherein the memory is configured to store:	A memory and a processor are generic computer components.
[L2] **a data structure** including medical codes data associated with medical terminology data; and processor searching control instructions configured to:	Storing data using a data structure is a well-understood, routine and conventional computer technique.
[L3] <u>receive an unformatted medical document that includes raw document data</u> generated in response to a medical examination;	Receiving information, i.e., data gathering, is merely insignificant extra-solution activity that does not add significantly more to the abstract idea to render the claimed invention patent-eligible. *See In re Bilski,* 545 F.3d 943, 962 (Fed. Cir. 2008) (*en banc*), *aff'd on other grounds,* 561 U.S. 593 (2010) ("[T]he involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity"); *see also* MPEP § 2106.05(g); *and see buySAFE, Inc. v. Google, Inc.,* 765 F.3d 1350, 1355 (Fed. Cir. 2014) (computer receives and sends information over a network).

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Independent Claim 1	Revised Guidance
[L4] preprocess the raw document data to *analyze beginning and ending of sentences* in the document;	Analyzing a sentence is an abstract idea, i.e., an "observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.
[L5] search the preprocessed raw document data *to* automatically *identify medical terminology data* of the data structure located in sentences of the document;	Identifying particular data or data type is an abstract idea, i.e., an "observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.
[L6] automatically *select one or more medical codes of the data structure that are associated with the identified medical terminology data*;	Selecting one or more codes (information) associated with particular data is an abstract idea, i.e., an "observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.
[L7] automatically *apply a set of expressions to context data* structures that categorize the context data of a sentence as terminology preceding and succeeding the identified medical terminology data;	Applying information, e.g., a set of expressions, to a context data structure for categorization purposes is an abstract idea, i.e., categorizing and applying information is an "observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.
[L8] automatically *determine*, using the categorized context data, *the selected one or more medical codes that are applicable to a patien*t,	Determining a medical code applicable to a patient is an abstract idea, i.e., an "observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.
[L9] wherein *one or more medical codes are* automatically *removed from the selected one*	Removing medical codes based upon a rule is an abstract idea, i.e., certain methods of organizing human activity

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Independent Claim 1	Revised Guidance
or more medical codes based on at least one restriction rule that represents a logical relationship between the set of expressions applied to the context data;	in the form of managing relationships or interactions, including following rules or instructions. *See* Revised Guidance 52.
[L10] automatically *substitute one or more medical codes* of the selected medical codes *with a further selected medical code based on a previously selected medical code and vague medical terminology* of the sentences of the document, the vague medical terminology contained in a context table and having multiple medical code associations so as to not be uniquely associated with one particular medical code of the data structure,	*See* Step 2A(ii) analysis, *infra*.
[L11] wherein the previously selected medical code in context of the vague medical terminology serves to disambiguate the vague medical terminology according to the context table to permit selection of the further selected medical code; and	*See* Step 2A(ii) analysis, *infra*.
[L12] **processor output control instructions configured to generate output** comprising the selected medical codes that are applicable to the patient,	Computer instructions to generate output are well-understood, routine, and conventional computer activity.
[L13] wherein **the processor is operable to execute the**	A processor executing instructions, including search control instruction, is

Independent Claim 1	Revised Guidance
processor search control instructions and the processor output control instructions, and wherein the processor	well-understood, routine, and conventional computer activity.
[L14] *searches the raw data in the unformatted medical document to identify the medical terminology data* and	Searching a set of data to identify specific data is an abstract idea, i.e., an "observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.
[L15] processes the identified medical terminology data from the unformatted medical document *to determine the applicable medical codes in the context of the unformatted document*.	Determining an applicable code is an abstract idea, i.e., an observation, evaluation, judgment, opinion" which could be performed as a mental process. *See* Revised Guidance 52.

Appeal Br. 28–29 (Claims App.).

Under the broadest reasonable interpretation standard,[15] we conclude the limitations above recite actions and/or functions that would ordinarily occur when analyzing a document to determine and assign medical codes to unformatted data. *See* Final Act. 2. In particular, we find limitations L4–

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[15] During prosecution, claims must be given their broadest reasonable interpretation when reading claim language in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Under this standard, we interpret claim terms using "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

L8, L14, and L15 recite abstract ideas as identified, *supra*. For example, searching and analyzing information contained in the beginning and ending of sentences containing medical terminology, i.e., unformatted data, and selecting medical codes to apply to the medical terminology, is an operation that generally occurs when determining which code or codes is/are applicable to a particular medical procedure or condition. Further, we conclude such identification, analysis, and selection of codes, as in claim 1, recites an abstract idea, whether initiated person-to-person, on paper, or using a computer.

We determine that claim 1, overall, recites a mental process that may also be performed by pen and paper. This type of activity, i.e., assignment of medical codes to unformatted data, as recited in the claim limitations and, aside from any computer-related aspects, includes longstanding conduct that existed well before the advent of computers and the Internet, and could be carried out by a human with pen and paper. *See CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1375 (Fed. Cir. 2011) ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*.").[16]

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[16] Our reviewing court recognizes that "[a]n abstract idea can generally be described at different levels of abstraction." *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1240 (Fed. Cir. 2016). That need not and, in this case does not, "impact the patentability analysis." *Id.* at 1241. Further, "[t]he Board's slight revision of its abstract idea analysis does not impact the patentability analysis." *Id.* Moreover, merely combining several abstract ideas does not render the combination any less abstract. *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) ("Adding one abstract idea (math) to another abstract idea . . . does not render the claim non-abstract."); *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1093–94 (Fed.

Thus, under *Step 2A(i)*, we agree with the Examiner that claim 1's "system for determining medical codes from unformatted medical document data" recites a judicial exception. We conclude claim 1, under our Revised Guidance, recites a judicial exception of assignment of medical codes to unformatted data, i.e., a mental process, and thus is an abstract idea.

Step 2A(ii): Judicial Exception Integrated into a Practical Application?

If the claims are directed to a judicial exception, as we conclude above, we proceed to the "practical application" *Step 2A(ii)* in which we determine whether the recited judicial exception is integrated into a practical application of that exception by: (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception(s); and (b) evaluating those additional elements individually and in combination to determine whether they integrate the exception into a practical application.

As to the specific limitations, we find limitations L4–L8, L14, and L15 recite abstract ideas as delineated in TABLE 1, above, and limitation L3 recites insignificant data gathering. *See* MPEP § 2106.05(g). Data gathering, as performed by the steps or function in Appellant's claims, is a classic example of insignificant extra-solution activity. *See, e.g.*, *In re Bilski*, 545 F.3d 943, 963 (Fed. Cir. 2008) (en banc), *aff'd sub nom*, *Bilski v. Kappos*, 561 U.S. 593 (2010).

In addition to the abstract steps identified in Step 2A(i), *supra*, and the extra-solution activity recited by limitation L3, claim 1 further recites: "[L10] automatically substitute one or more medical codes of the selected

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Cir. 2016) (determining the pending claims were directed to a combination of abstract ideas).

medical codes with a further selected medical code based on a previously selected medical code and vague medical terminology of the sentences of the document, the vague medical terminology contained in a context table and having multiple medical code associations so as to not be uniquely associated with one particular medical code of the data structure," and "[L11] wherein the previously selected medical code in context of the vague medical terminology serves to disambiguate the vague medical terminology according to the context table to permit selection of the further selected medical code."

For the reasons discussed below, we conclude limitations L10 and L11 integrate the abstract idea into a practical application as determined under at least one of the MPEP sections cited above.[17]

Appellant argues, "[t]he present application can also be resolved of at the first step of the *Mayo/Alice* framework. The claims of the present application are rooted in computer technology in order to overcome a problem specifically arising in computer medical records processing." Appeal Br. 8.

In support of Appellant's argument, we note the Specification discloses:

> [0033]   Descriptive health-related data can comprise an unlimited number of combinations of terms and is, therefore, inherently intractable. To handle descriptive data, each individual clinician develops his or her own preferred terminology and approach to recording the data, ranging from

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[17] *See, e.g.*, MPEP § 2106.05(a) "Improvements to the Functioning of a Computer or To Any Other Technology or Technical Field," and § 2106.05(e) "Other Meaningful Limitations."

transcription to handwriting, to hiring staff to write or record for them. Automating such unruly data has not been efficient. Moreover, because of the wide variety of methods adopted by individual clinicians for handling such data, efforts to automate the collection of descriptive data typically disrupt the established work patterns of the clinicians.

[0034]   On the other hand, functional data, such as diagnoses and care plan elements, are described by a limited set of enumerable terms, such as the diagnoses promulgated in the ICD classification and codes. Care plan items, such as ordering a specific test or carrying out certain procedures, can be described by a limited number of enumerated terms. Even prescription of medication follows codified rules and highly defined data sets. Moreover, while descriptive data is critically important to the thought processes of the clinician in assessing the patient, and is used for later review by clinicians, insurance companies, and occasionally attorneys, the functional data is more directly related to the actual practice and business of medicine. . . .

[0039]   Generally, as illustrated in FIG. 2, the present system and method contemplates automatic assignment of medical codes to unformatted or uncoded data such as the unformatted data contained in medical documents or reports generated by physicians or medical practitioners during medical examination which must subsequently be converted to specific codes for subsequent processing or analysis.

Spec. ¶¶ 33–34, 39.

Appellant further argues:

[T]he solution provided by the present invention is tethered to the technology that created the problem and is designed to improve medical coding, (See also Appellant's specification ¶¶ [00531-[0064] and [0064]-[0072] concerning methods for mitigating machine under-coding and over-coding respectively.) . . . . *the methods and instructions recited in Applicant's claims improve the ability of processors to identity and process medical procedures from the human created*

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> *medical .records data so as to associate them with standard*
> *industry medical codes. Applicant's claims are directed at*
> *solving this particular problem, not some vague abstract idea.*

Appeal Br. 10 (emphasis added).

We are persuaded by Appellant's argument that carrying out the functions recited in limitations L10 and L11 provide improvements to the underlying technology or technical field, namely, medical coding systems. *See* MPEP § 2106.05(a) or, alternatively, § 2106.05(e) "Other Meaningful Limitations."

With respect to these other meaningful limitations, we find guidance in MPEP § 2106.05(e), which summarizes and relies upon the Supreme Court's holding in *Diehr*, cited *supra*, and our reviewing court's holdings in *Classen Immunotherapies*, *Inc. v. Biogen IDEC*, 659 F.3d 1057 (Fed. Cir. 2011) (decision on remand from the Supreme Court, which had vacated the lower court's prior holding of ineligibility in view of *Bilski v. Kappos*).

In *Diehr*, the Court evaluated the additional non-abstract limitations, and found them to be meaningful, because they sufficiently limited the use of the (abstract idea) mathematical equation to the practical application of molding rubber products. MPEP § 2106.05(e) (citing *Diehr*, 450 U.S. at 184, 187).

In *Classen*, the Federal Circuit held that, although the analysis step was an abstract mental process that collected and compared known information, the (practical application) immunization step was meaningful because it integrated the results of the analysis into a specific and tangible method that resulted in the method "moving from abstract scientific

principle to specific application." MPEP § 2106.05(e) (citing *Classen*, 659 F.3d at 1066–68).

We find these other meaningful limitations L10 and L11 identified above provide a technological improvement to medical coding systems. Appeal Br. 10. Accordingly, we conclude, when the claim is considered as a whole, the recited judicial exception is integrated into a practical application as determined under either MPEP sections 2106.06(a) or 2106.05(e), cited above, such that the claim is patent-eligible.

Because the claims are directed to a patent-eligible concept, this concludes the patent-eligibility inquiry.

Therefore, based upon the findings and legal conclusions above, on this record and in consideration of the Revised Guidance, we are persuaded the claims are directed to patent-eligible subject matter, such that we do not sustain the § 101 rejection of claim 1, and grouped claims 2, 4–14, 17–27, and 29–34 which stand therewith. *See* Claim Grouping, *supra*.

2.   § 103(a) Rejection R2 of Claims 1, 2, 4, 6–14, 17–27, and 29–34

Issue 2

Appellant argues (Appeal Br. 18–25; Reply Br. 6–11) the Examiner's rejection of claim 1 under 35 U.S.C. § 103(a) as being obvious over the combination of Heinze, Ryan, and Doerr is in error. These contentions present us with the following issues:

Did the Examiner err in finding the cited prior art combination teaches or suggests "[a]n automated system for determining medical codes from unformatted medical document data" wherein the processor control instructions are configured to, *inter alia*:

(a) "automatically apply a set of expressions to context data structures that categorize the context data of a sentence as terminology preceding and succeeding the identified medical terminology data;" wherein,

(b) "one or more medical codes are automatically removed from the selected one or more medical codes based on at least one restriction rule that represents a logical relationship between the set of expressions applied to the context data," as recited in claim 1?

Analysis

(a) Applying a set of Expressions to Context Data Structures

The Examiner finds Ryan teaches or suggests contested limitation (a), i.e., "automatically apply a set of expressions to context data structures that categorize the context data of a sentence as terminology preceding and succeeding the identified medical terminology data to identify context for determining whether the selected one or more medical codes are applicable," as recited in claim 1. Final Act. 7 (citing Ryan col. 6, ll. 35–67, col. 7, ll. 1–35). "It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize context data in light of identified medical terminology data to improve speed of operation." *Id.* (citing Ryan col. 8, ll. 64–67).

Appellant contends, "[t]he Examiner's reliance on *Ryan* is misplaced," because "*Ryan* merely describes . . . <u>certain words require reanalysis to express their meanings in context</u> . . . and <u>compared to surrounding</u> <u>information</u> by the Lexicon Application's context resolver algorithm, program, procedure, table, array or other method to interpret the

word in context." Appeal Br. 19–20 (quoting Ryan col, 6, ll. 35–67 and

col. 7, ll. 1–35. Appellant further argues:

> In these paragraphs, the *Ryan* reference is merely describing a
> consideration of surrounding text in "clusters" with no
> indication that such text or information should have data
> structures limited to a particular "sentence" as claimed. (See,
> Appellant's Specification at ¶¶ 60–62.) Moreover, that
> surrounding information in the data structures is not
> "categorized" as claimed in "preceding and succeeding"
> fashion. The *Ryan* reference merely considers "surrounding"
> information with no concern for its relative orientation as
> claimed.

Appeal Br. 20.

> The Examiner responds by determining:

> *Ryan* discloses a system that determines a medical code based
> on input text recorded by a surgeon. In column 3, *Ryan*
> discloses that the "clusters" may represent a sentence and
> therefore that the data input by the surgeon is in a form built of
> sentences. In column 6 lines 35–67 and column 7 lines 1–35,
> *Ryan* teaches that the "words" can be compared to surrounding
> text in a single cluster (if the system determines "if the cluster
> is still incomplete . . ." then the first iteration is performed on
> the single cluster). Additionally, Appellant argues that *Ryan*
> merely considers "surrounding" information with no concern
> for its relative orientation as claimed. However, categorizing
> the data as terminology preceding and succeeding the identified
> terminology does not require determining a relative orientation,
> rather, determining surrounding data determines the conjunctive
> "preceding and succeeding" category.

Ans. 7.

We find Ryan's teaching of comparing words to surrounding text in

the form of a cluster, and then iterating the cluster, teaches or at least

suggests the recited "apply[ing] a set of expressions to context data

structures that categorize the context data of a sentence as terminology preceding and succeeding the identified medical terminology data."

We are not persuaded by Appellant's arguments concerning the purported errors in the Examiner's findings concerning the teachings and suggestions of Ryan and, under the broadest reasonable interpretation standard,[18] we agree with and adopt as our own the Examiner's claim construction (quoted above) applied with respect to disputed limitation (a).

(b) Removal of Medical Codes Based upon a Restriction Rule

The Examiner cites to paragraph 60 of Doerr as teaching or suggesting disputed limitation (b), i.e., "the one or more medical codes are automatically removed from the selected one or more medical codes based on at least one restriction rule that represents a logical relationship between the set of expressions applied to the context data," as recited in claim 1. Final Act. 8. Doerr discloses:

> Selecting any of the Edit links in the left column takes the physician 12 to a screen (not shown) allowing the physician to suppress the display of that diagnosis entry (so as to simplify the display) without removal, however, of the diagnosis or treatment from the underlying database. General conditions for automatic removal of certain diagnosis codes lines (for example, for certain diagnoses older than a predetermined

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[18] During prosecution, claims must be given their broadest reasonable interpretation when reading claim language in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d at 1364. Under this standard, we interpret claim terms using "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d at 1054.

number of months) can also be used. Further, diagnoses can be deleted with their treatments merged into another indicated diagnosis.

Doerr ¶ 60.

Appellant contends, contrary to the Examiner's findings cited above, the combination of Heinze, Ryan, and Doerr does not teach or suggest disputed limitation (b). Appeal Br. 23. In particular, Appellant argues:

> [The] cited portion of *Doerr* merely concerns (i) an editing screen which allows a physician to "suppress the display of that diagnosis entry (so as to <u>simplify</u> the display) <u>without removal</u>, however, of the diagnosis or treatment from the underlying database, and (ii) the automatic removal of diagnosis codes lines, based on a time constraint." These features are plainly irrelevant to Applicant's system for determining applicable medical codes. Nevertheless, neither are sufficient to render Appellant's invention obvious or make up for what is admitting missing in *Heinze* and *Ryan*.

Appeal Br. 24.

The Examiner responds, and we agree, "Appellant's claims do not require that the code be removed from the underlying database, the removal of a code from the graphical user interface meets the language of the claim." Ans. 8. We agree with the Examiner because Appellant's argument is not commensurate with the scope of the claim which does not explicitly recite a database, or removal of one or more medical codes from a database.[19]

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[19] "Applicant concedes that the present claims do not require that the recited medical codes be removed from an underlying database. However, the present claims do explicitly recite a type of data structure that the medical codes need to be 'removed' from." Reply Br. 10. We find Doerr teaches or at least suggests the recited "one or more medical codes are automatically removed from the selected one or more medical codes based on at least one

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Therefore, based upon the findings above, on this record, we are not persuaded of error in the Examiner's reliance on the cited prior art combination to teach or suggest the disputed limitation of claim 1, nor do we find error in the Examiner's resulting legal conclusion of obviousness.

Accordingly, we sustain the Examiner's obviousness rejection of independent claim 1, and grouped claims 2, 4, 6–14, 17–27, and 29–34 which fall therewith. *See* Claim Grouping, *supra*.

3.   § 103(a) Rejection R2 of Claim 5

Issue 3

Appellant argues (Appeal Br. 25–27; Reply Br. 12–13) the Examiner's rejection of claim 5 under 35 U.S.C. § 103(a) as being obvious over the combination of Heinze, Ryan, and Doerr is in error. These contentions present us with the following issue:

Did the Examiner err in finding the cited prior art combination teaches or suggests "[t]he system of claim l wherein . . . the restriction rule comprises a kinship phrase identifying that the selected medical codes are for a relative of the patient," as recited in claim 5?

Analysis

The Examiner finds Heinze teaches or suggests the disputed limitation of claim 5. Final Act. 9 (citing Heinze col. 10, ll. 28–54).

In response to the Examiner's finding, Appellant responds by asserting "the relied upon portions of *Heinze* describe that '[a]natomical

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restriction rule that represents a logical relationship between the set of expressions applied to the context data."

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terms used in reference to other people . . . are <u>morphed</u> to a form that will not be confused with the patient's anatomy.'" Appeal Br. 26 (quoting Heinze col. 10, ll. 28–54). Appellant further argues their "system by contrast, uses the context in which the kinship phrase exists and this context allows distinguishing of <u>the selected code</u> because it is associated with a relative 'rather than the patient who is the subject of the document. Thus, the system may distinguish a <u>determined code</u> from absolute assignment as discussed above because <u>in the context</u> of the sentence it would be describing the medical condition of a mother, father, brother, sister, grandparent, etc.'" *Id.* (quoting Spec. ¶ 87); *see also* Reply Br. 12–13.

We have reviewed Heinze at the portions cited by the Examiner, and also the entirety of Heinze, and find no teaching or suggestion of utilizing a kinship, i.e., a familial relationship, in the manner claimed in claim 5, or as contemplated by Appellant's Specification.

For essentially the same reasons argued by Appellant, above, we reverse the Examiner's rejection of dependent claim 5.

REPLY BRIEF

To the extent Appellant *may* advance new arguments in the Reply Brief (Reply Br. 2–13) not in response to a shift in the Examiner's position in the Answer, arguments raised in a Reply Brief that were not raised in the Appeal Brief or are not responsive to arguments raised in the Examiner's Answer will not be considered except for good cause (*see* 37 C.F.R. § 41.41(b)(2)), which Appellant has not shown.

CONCLUSIONS

(1)   Under our Revised Guidance, governed by relevant case law,
we conclude the Examiner erred in concluding claims 1, 2, 4–14, 17–27,
and 29–34 are patent-ineligible under 35 U.S.C. § 101, and we do not sustain
the rejection.

(2)   The Examiner did not err with respect to obviousness Rejection
R2 of claims 1, 2, 4, 6–14, 17–27, and 29–34 under 35 U.S.C. § 103(a) over
the cited prior art combination of record, and we sustain the rejection.

(3)   The Examiner erred with respect to obviousness Rejection R2
of claim 5 under 35 U.S.C. § 103(a) over the cited prior art combination of
record, and we do not sustain the rejection.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Basis / References	Affirmed	Reversed
1, 2, 4–14, 17–27, 29–34	101	Subject Matter Eligibility		1, 2, 4–14, 17–27, 29–34
1, 2, 4–14, 17–27, 29–34	103(a)	Obviousness Heinze, Ryan, Doerr	1, 2, 4, 6–14, 17–27, 29–34	5
Overall Outcome			1, 2, 4, 6–14, 17–27, 29–34	5

FINALITY AND RESPONSE

No time period for taking any subsequent action in connection with
this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37
C.F.R. § 41.50(f).

AFFIRMED IN PART

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