

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Disclosure for Claims 1, 3-6 and 8-13

The invention relates to a data compression and encryption system for monitoring and controlling an automated manufacturing process. The system translates the outputs of various sensors from an automated plant's manufacturing process into digital data signals. The system then processes the digital data signals into a compressed signal of various length codewords, encrypts the compressed signal, and transmits the compressed and encrypted signal to a remote supervisory location. At the remote supervisory location, the signal is decrypted and decompressed. The remote supervisory location then compares the decrypted and decompressed digital data signals to the preset ranges for the respective operating parameters of the automated plant's manufacturing process, generates a digital correction signal on the basis of the comparison, compresses and encrypts the correction signal, transmits the correction signal back to the plant location, and applies the correction signal to the disclosed process controllers, such as valves and motors, to maintain the automated plant's operation within its design parameters.

The automated plant's manufacturing process is controlled with a general purpose computer system. In the plant's general purpose computer system, various memory sections are included to store the plant's operating parameters and the sensor's outputs. The plant's various sensors and sensing systems are disclosed.

The remote supervisory location's process is implemented on a general purpose computer system. The remote supervisory location's general purpose computer system must have the identical compression and encryption capabilities of the automated plant's general purpose computer system.

The general purpose computer systems of the automated manufacturing plant and the remote supervisory location are programmed by a data signal transmitted from a remote main office location. The data signal includes a carrier wave and the source code segments for both the compression and encryption computer programs.

In the preferred embodiment for data compression, the general purpose computer system at each site is programmed with a computer program to compress/decompress a digital signal into variable length codewords in accordance with the Huffman code algorithm. The general purpose computer system has both an encoder and a decoder on which are stored identical Huffman code books. The use of compressed signals allows for reduced transmission time between the sites.

In the preferred embodiment for data encryption, the general purpose computer system at each site is programmed with a separate computer program to encrypt/decrypt a digital signal in accordance with the Data Encryption Standard (DES) algorithm. The DES algorithm uses an encryption key stored in a read-only memory to produce a digital signal whose content is protected and secured for transmission. In another embodiment for data encryption, the general purpose computer system has an application specific integrated circuit (ASIC). The various components of the ASIC are incorporated by reference from U.S. Patent No. *,***,***.

The disclosure contains both self-documenting source code for the preferred embodiments of the computer programs and high-level written descriptions of the computer programs with flow charts. There is correspondence between the written descriptions, the flow charts, and the specific software. The disclosure states that alternate computer programs based on the high-level written descriptions and flow charts are within the skill of a routineer in the art.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Disclosure for Claims 2 and 7

The invention relates to a data compression and encryption system for monitoring and controlling an automated manufacturing process. The system translates the outputs of various sensors from an automated plant's manufacturing process into digital data signals. The system then processes the digital data signals through a series of equations for calculating codewords, then compresses the calculated codewords subsequently encrypts the compressed signal, and transmits the compressed and encrypted signal to a remote supervisory location. At the remote supervisory location, the signal is decrypted and decompressed. The remote supervisory location then compares the decrypted and decompressed digital data signals to the preset ranges for the respective operating parameters of the automated plant's manufacturing process, generates a digital correction signal on the basis of the comparison, processes, compresses and encrypts the correction signal, transmits the correction signal back to the plant location, and applies the correction signal to the disclosed process controllers, such as valves and motors, to maintain the automated plant's operation within its design parameters.

The automated plant's manufacturing process is controlled with a general purpose computer system. In the plant's general purpose computer system, various memory sections are included to store the plant's operating parameters and the sensor's outputs. The plant's various sensors and sensing systems are disclosed.

The remote supervisory location's process is implemented on a general purpose computer system. The remote supervisory location's general purpose computer system must have the identical compression and encryption capabilities of the automated plant's general purpose computer system.

The general purpose computer systems of the automated manufacturing plant and the remote supervisory location are programmed by a data signal transmitted from a remote main office location. The data signal includes a carrier wave and the source code segments for both the compression and encryption computer programs.

In the preferred embodiment for data compression, the general purpose computer system at each site is programmed with a computer program to process a digital signal into codewords wherein the codewords are then compressed/decompressed in accordance with Bluffman code (for this example a hypothetical compression algorithm well known to those of ordinary skill in the art) The general purpose computer system has both an encoder and a decoder on which are stored identical Bluffman code books. The use of compressed signals allows for reduced transmission time between the sites.

In the preferred embodiment for data encryption, the general purpose computer system at each site is programmed with a separate computer program to encrypt/decrypt a digital signal in accordance with the Data Encryption Standard (DES) algorithm. The DES algorithm uses an encryption key stored in a read-only memory to produce a digital signal whose content is protected and secured for transmission. In another embodiment for data encryption, the general purpose computer system has an application specific integrated circuit (ASIC). The various hardware components of the ASIC are incorporated by reference from U.S. Patent No. *, ***, ***.

The disclosure contains both self-documenting source code for the preferred embodiments of the computer programs and high-level written descriptions of the computer programs with flow charts. There is correspondence between the written descriptions, the flow charts, and the specific software. The disclosure states that alternate computer programs based on the high-level written descriptions and flow charts are within the skill of a routinier in the art.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 1

A computer system for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. means for receiving a data signal;
- b. means for processing the data signal into codewords; and
- c. means for outputting the processed data signal.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 1

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	NO	GoTo: Q.9	
BOX 9	Q.9. Is claimed invention a product for performing a process?	YES	GoTo: Q.10	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?	NO	GoTo: Q.12a	Note 3
BOX 12	Q.12a. Does process have post-computer process activity?	NO	GoTo: Q.12b	Note 4
	Q.12b. Does process have pre-computer process activity?	NO	GoTo: Q.13a	Note 5
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?	NO	GoTo: Q.13b	
	Q.13b. Does process solve math problem w/o limitation to a practical application?	NO	GoTo: END	Note 6

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 1

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Claimed invention encompasses any and every machine embodiment of the underlying process. Means a. recites means for receiving. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for performing this function. Means b. recites means for processing. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts. Means c. recites means for outputting. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for performing this function.
- Note 4: Means c. merely conveys the direct result of means a. and b. *See* Guidelines, Section IV.B.2(d)(iii).
- Note 5: Means a. merely provides the data signal for use in the mathematical operation of means b. It does not measure physical objects or activities. *See* Guidelines, Section IV.B.2(d)(ii).
- Note 6: Means b. corresponds to the compression of a digital data signal into various length codewords. This correspondence is determined from the express recitation in the disclosure that "the system then *processes* the digital data signals into a compressed signal of various length codewords." A compressed data signal requires less memory or takes less time to transmit. Thus, the claimed invention is limited to a practical application.

NOTE: When an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. When the claim has been determined to define statutory subject matter based upon a specific interpretation of the claim language, it would be appropriate and helpful for the Examiner to explain this position in the next Office communication. This analysis should be compared to the analysis for Claim 2 at Note 6 to demonstrate the importance of interpreting claim language in light of the disclosure.
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 2

A computer system for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. means for receiving a data signal;
- b. means for processing the data signal into codewords; and
- c. means for outputting the processed data signal.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 2

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	NO	GoTo: Q.9	
BOX 9	Q.9. Is claimed invention a product for performing a process?	YES	GoTo: Q.10	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?	NO	GoTo: Q.12a	Note 3
BOX 12	Q.12a. Does process have post-computer process activity?	NO	GoTo: Q.12b	Note 4
	Q.12b. Does process have pre-computer process activity?	NO	GoTo: Q.13a	Note 5
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?	NO	GoTo: Q.13b	
	Q.13b. Does process solve math problem w/o limitation to a practical application?	YES	GoTo: END	Note 6

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 2

- Note 1: Disclosed invention monitors and control an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Claimed invention encompasses any and every machine embodiment of the underlying process. Means a. recites means for receiving. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for performing this function. Means b. recites means for processing. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts. Means c. recites means for outputting. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for performing this function.
- Note 4: Means c. merely conveys the direct result of means a. and b. *See* Guidelines, Section IV.B.2(d)(iii).
- Note 5: Means a. merely provides the data signal for use in the mathematical operation of means b. It does not measure physical objects or activities. *See* Guidelines, Section IV.B.2(d)(ii).
- Note 6: Means b. corresponds to the calculation of codewords from a series of equations. This correspondence is determined from the express recitation in the disclosure that "the system then processes the digital data signals through a series of equations for calculating codewords." Thus, the claimed invention merely converts one set of numbers into another set of numbers. Also, the preamble language is a statement of intended use that does not limit the claim to the practical application of monitoring and controlling an automated manufacturing plant *See* Guidelines, Section IV.B.2(d)(i). The claim should be rejected under 35 U.S.C. § 101.
NOTE: When an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. In this disclosure, "processing" is defined as a means separate and distinct from the means for compression. This analysis should be compared to the analysis for Claim 1 at Note 6. In the disclosure for Claim 1, "processing" is defined to include calculating the codewords and compressing those codewords.

Because the claimed invention is directed solely to a process for solving a mathematical algorithm, in addition to performing the above analysis the Freeman-Walter-Abele test may also be relied upon to verify that the claim defines non-statutory subject matter.

THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 3

A computer system for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. means for generating a data signal from output sensors of the automated manufacturing plant;
- b. means for compressing the data signal into variable length codewords in accordance with Huffman code; and
- c. means for encrypting the compressed data signal in accordance with the Data Encryption Standard algorithm.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 3

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	NO	GoTo: Q.9	
BOX 9	Q.9. Is claimed invention a product for performing a process?	YES	GoTo: Q.10	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?	NO	GoTo: Q.12a	Note 3
BOX 12	Q.12a. Does process have post-computer process activity?	NO	GoTo: Q.12b	
	Q.12b. Does process have pre-computer process activity?	YES	GoTo: END	Note 4
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 3

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Claimed invention encompasses any and every machine embodiment of the underlying process. Means a. recites means for generating. The specification discloses use of a general purpose computer system with various memory sections. It does not disclose specific hardware, specific software, or a combination thereof for this function. Means b. recites means for compression. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts. Means c. recites means for encryption. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with an ASIC in another embodiment, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts.
- Note 4: The transformation occurs when the outputs of the plant's sensors are converted to a digital data signal. *See* Guidelines, Section IV.B.2(b).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 4

A computer system for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. means for decrypting a compressed and encrypted data signal in accordance with the Data Encryption Standard algorithm;
- b. means for decompressing the decrypted data signal in accordance with Huffman code; and
- c. means for controlling the physical processes of the automated manufacturing plant in accordance with the information conveyed by the decrypted and decompressed data signal.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 4

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	NO	GoTo: Q.9	
BOX 9	Q.9. Is claimed invention a product for performing a process?	YES	GoTo: Q.10	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?	NO	GoTo: Q.12a	Note 3
BOX 12	Q.12a. Does process have post-computer process activity?	YES	GoTo: END	Note 4
	Q.12b. Does process have pre-computer process activity?		GoTo:	
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 4

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Claimed invention encompasses any and every machine embodiment of the underlying process. Means a. recites means for compression. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts. Means b. recites means for encryption. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with an ASIC in another embodiment, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts. Means c. recites means for controlling. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for this function.
- Note 4: The transformation occurs when the plant's physical processes are modified. *See* Guidelines, Section IV.B.2(b).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.
- For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 5

A computer system for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. means for compressing a data signal into variable length codewords in accordance with Huffman code; and
- b. an application specific integrated circuit for encoding the compressed data signal comprising . . .
.[recites hardware components of the circuit disclosed in U.S. Patent No. *,***,***.].

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 5

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	NO	GoTo: Q.9	
BOX 9	Q.9. Is claimed invention a product for performing a process?	YES	GoTo: Q.10	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?	YES	GoTo: END	Note 3
BOX 12	Q.12a. Does process have post-computer process activity?		GoTo:	
	Q.12b. Does process have pre-computer process activity?		GoTo:	
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 5

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Claimed invention recites specific hardware components of application specific integrated circuit (ASIC). *See* Guidelines, Section IV.B.2(a)(ii).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 6

A method for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising the steps of:

- a. receiving a data signal;
- b. processing the data signal into codewords; and
- c. outputting the processed data signal.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 6

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	YES	GoTo: Q.12a	
BOX 9	Q.9. Is claimed invention a product for performing a process?		GoTo:	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?		GoTo:	
BOX 12	Q.12a. Does process have post-computer process activity?	NO	GoTo: Q.12b	Note 3
	Q.12b. Does process have pre-computer process activity?	NO	GoTo: Q.13a	Note 4
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?	NO	GoTo: Q.13b	
	Q.13b. Does process solve math problem w/o limitation to a practical application?	NO	GoTo: END	Note 5

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 6

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Step c. merely conveys the direct result of steps a. and b. *See* Guidelines, Section IV.B.2(d)(iii).
- Note 4: Step a. merely provides the data signal for use in the mathematical operation of step b. It does not measure physical objects or activities. *See* Guidelines, Section IV.B.2(d)(ii).
- Note 5: Step b. corresponds to the compression of a digital data signal into various length codewords. This correspondence is determined from the express recitation in the disclosure that "the system then *processes* the digital data signals into a compressed signal of various length codewords." A compressed data signal requires less memory or takes less time to transmit. Thus, the claimed invention is limited to a practical application.

NOTE: When an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. When the claim has been determined to define statutory subject matter based upon a specific interpretation of the claim language, it would be appropriate and helpful for the Examiner to explain this position in the next Office communication. This analysis should be compared to the analysis for Claim 7 at Note 5 to demonstrate the importance of interpreting claim language in light of the disclosure.
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 7

A method for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising the steps of:

- a. receiving a data signal;
- b. processing the data signal into codewords; and
- c. outputting the processed data signal.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 7

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	YES	GoTo: Q.12a	
BOX 9	Q.9. Is claimed invention a product for performing a process?		GoTo:	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?		GoTo:	
BOX 12	Q.12a. Does process have post-computer process activity?	NO	GoTo: Q.12b	Note 3
	Q.12b. Does process have pre-computer process activity?	NO	GoTo: Q.13a	Note 4
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?	NO	GoTo: Q.13b	
	Q.13b. Does process solve math problem w/o limitation to a practical application?	YES	GoTo: END	Note 5

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 7

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Step c. merely conveys the direct result of steps a. and b. *See* Guidelines, Section IV.B.2(d)(iii).
- Note 4: Step a. merely provides the data signal for use in the mathematical operation of step b. It does not measure physical objects or activities. *See* Guidelines, Section IV.B.2(d)(ii).
- Note 5: Step b. corresponds to the calculation of codewords from a series of equations. This correspondence is determined from the express recitation in the disclosure that "the system then processes the digital data signals through a series of equations for calculating codewords." Thus, the claimed invention merely converts one set of numbers into another set of numbers. Also, the preamble language is a statement of intended use that does not limit the claim to the practical application of monitoring and controlling an automated manufacturing plant. *See* Guidelines, Section IV.B.2(d)(i). The claim should be rejected under 35 U.S.C. § 101.

NOTE: When an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. In this disclosure, "processing" is defined as a step separate and distinct from the step of compression. This analysis should be compared to the analysis for Claim 6 at Note 5. In the disclosure for Claim 6, "processing" is defined to include calculating the variable length codewords and compressing those codewords.

Because the claimed invention is directed solely to a process for solving a mathematical algorithm, in addition to performing the above analysis the Freeman-Walter-Abele test may also be relied upon to verify that the claim defines non-statutory subject matter.

THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 8

A method for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising the steps of:

- a. generating a data signal from output sensors of the automated manufacturing plant;
- b. compressing the data signal into variable length codewords in accordance with Huffman code; and
- c. encrypting the compressed data signal in accordance with the Data Encryption Standard algorithm.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 8

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	YES	GoTo: Q.12a	
BOX 9	Q.9. Is claimed invention a product for performing a process?		GoTo:	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?		GoTo:	
BOX 12	Q.12a. Does process have post-computer process activity?	NO	GoTo: Q.12b	
	Q.12b. Does process have pre-computer process activity?	YES	GoTo: END	Note 3
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 8

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: The transformation occurs when the outputs of the plant's sensors are converted to a digital data signal. *See* Guidelines, Section IV.B.2(b)(i).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 9

A method for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising the steps of:

- a. decrypting a compressed and encrypted data signal in accordance with the Data Encryption Standard algorithm;
- b. de-compressing the decrypted data signal in accordance with Huffman code; and
- c. controlling the physical processes of the automated manufacturing plant in accordance with the information conveyed by the decrypted and decompressed data signal.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 9

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	YES	GoTo: Q.12a	
BOX 9	Q.9. Is claimed invention a product for performing a process?		GoTo:	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?		GoTo:	
BOX 12	Q.12a. Does process have post-computer process activity?	YES	GoTo: END	Note 3
	Q.12b. Does process have pre-computer process activity?		GoTo:	
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 9

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: The transformation occurs when the plant's physical processes are modified. See Guidelines, Section IV.B.2(b)(i).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 10

A computer system apparatus for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. a first data portion embodying the compressed and encrypted operating parameters of the automated manufacturing plant;
- b. a second data portion embodying the compressed and encrypted physical outputs of the plant;
- c. a third data portion embodying a first encryption key for the encrypted operating parameters embodied on the first data portion; and
- d. a fourth data portion embodying a second encryption key for the encrypted physical outputs embodied on the second data portion.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 10

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	Note 3
	Q.6c. Is claimed invention non-functional descriptive material?	YES	GoTo: END	Note 4
	Q.6d. Is claimed invention a natural phenomenon?		GoTo:	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?		GoTo:	
BOX 9	Q.9. Is claimed invention a product for performing a process?		GoTo:	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?		GoTo:	
BOX 12	Q.12a. Does process have post-computer process activity?		GoTo:	
	Q.12b. Does process have pre-computer process activity?		GoTo:	
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 10

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Elements a. through d. do not define a physical or logical relationship between the claimed data that is designed to support a specific function, *i.e.*, a data structure. *See* Guidelines, Section IV.B.1(a)-(b).
- Note 4: Claimed invention is unclear as to whether it claims a machine, an article of manufacture, or an arrangement of data. In particular, it is unclear whether: (1) the preamble defines an arrangement of data, a machine, or an article of manufacture, (2) the body of the claim defines an arrangement of data, a machine, or an article of manufacture, and (3) how the phrase "data portion" in the body of the claim relates to the preamble. The claim should be rejected under 35 U.S.C. § 112, ¶ 2 for failure to distinctly point out and claim the invention.

Also, the claim should be rejected under 35 U.S.C. § 101. As either a machine, an article of manufacture, or an arrangement of data, the claimed invention recites non-functional descriptive material, *i.e.*, mere data. Non-functional descriptive material does not impart functionality to either the data as claimed or the computer system. The allowance of such a claim would exalt form over substance. *See* Guidelines Section IV.B.1(a)-(b).

THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 11

A computer program for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. means for compressing a data signal into variable length codewords in accordance with Huffman code; and
- b. means for encrypting the compressed data signal in accordance with the Data Encryption Standard algorithm.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 11

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	YES	GoTo: END	Note 3
	Q.6b. Is claimed invention a data structure <i>per se</i> ?		GoTo:	
	Q.6c. Is claimed invention non-functional descriptive material?		GoTo:	
	Q.6d. Is claimed invention a natural phenomenon?		GoTo:	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?		GoTo:	
BOX 9	Q.9. Is claimed invention a product for performing a process?		GoTo:	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?		GoTo:	
BOX 12	Q.12a. Does process have post-computer process activity?		GoTo:	
	Q.12b. Does process have pre-computer process activity?		GoTo:	
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 11

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Claimed invention is unclear as to whether it claims a computer program *per se* or a computer program embodied on a computer-readable medium. In particular, the preamble phrase "computer program" defines a set of instructions for execution on a computer, *i.e.*, a computer program *per se*. The body of the claim, however, recites means plus function language which defines at least a set of instructions embodied on a computer-readable medium to perform the recited functions. The claim should be rejected under 35 U.S.C. § 112, ¶ 2 for failure to distinctly point out and claim the invention.

The claim should also be rejected under 35 U.S.C. § 101. One reasonable interpretation of the claim is that it recites a computer program *per se*. A computer program *per se* does not define any structural and functional interrelationships that permit the computer program's functionality to be realized. *See* Guidelines, Section IV.B.1(a)-(b).

NOTE: The Examiner should explain this claim interpretation as the basis for the rejection under 35 U.S.C. § 101. Also, the Examiner should suggest how the ambiguity can be corrected and how the claim can be amended to recite statutory subject matter, *i.e.*, amend the claim to recite a computer-readable medium.

THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 12

A computer program embodied on computer-readable medium for monitoring and controlling an automated manufacturing plant using a telemetered processed data signal comprising:

- a. a compression source code segment comprising . . . [recites self-documenting source code]; and
- b. an encryption source code segment comprising . . . [recites self-documenting source code].

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 12

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	NO	GoTo: Q.9	
BOX 9	Q.9. Is claimed invention a product for performing a process?	YES	GoTo: Q.10	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?	YES	GoTo: END	Note 3
BOX 12	Q.12a. Does process have post-computer process activity?		GoTo:	
	Q.12b. Does process have pre-computer process activity?		GoTo:	
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 12

Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.

Note 2: Disclosed invention uses a general purpose computer system.

Note 3: Claimed invention recites specific software. *See* Guidelines, Section IV.B.2(a)(ii).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim 13

A computer data signal embodied in a carrier wave comprising:

- a. a compression source code segment comprising . . . [recites self-documenting source code]; and
- b. an encryption source code segment comprising . . . [recites self-documenting source code].

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table for Claim 13

BOX 2	Q.2a. Does disclosed invention have practical application?	YES	GoTo: Q.2b	Note 1
	Q.2b. Is disclosed invention in technological arts?	YES	GoTo: Q.6a	Note 2
BOX 6	Q.6a. Is claimed invention a computer program <i>per se</i> ?	NO	GoTo: Q.6b	Note 3
	Q.6b. Is claimed invention a data structure <i>per se</i> ?	NO	GoTo: Q.6c	
	Q.6c. Is claimed invention non-functional descriptive material?	NO	GoTo: Q.6d	
	Q.6d. Is claimed invention a natural phenomenon?	NO	GoTo: Q.8	Note 4
BOX 8	Q.8. Is claimed invention a series of steps to be performed on a computer?	NO	GoTo: Q.9	
BOX 9	Q.9. Is claimed invention a product for performing a process?	YES	GoTo: Q.10	
BOX 10	Q.10. Is claimed invention a specific machine or manufacture?	YES	GoTo: END	Note 5
BOX 12	Q.12a. Does process have post-computer process activity?		GoTo:	
	Q.12b. Does process have pre-computer process activity?		GoTo:	
BOX 13	Q.13a. Does process manipulate abstract idea w/o limitation to a practical application?		GoTo:	
	Q.13b. Does process solve math problem w/o limitation to a practical application?		GoTo:	

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Table Notes for Claim 13

- Note 1: Disclosed invention monitors and controls an automated plant's manufacturing process.
- Note 2: Disclosed invention uses a general purpose computer system.
- Note 3: Claimed invention recites specific software embodied on a computer-readable medium, *i.e.*, specific software embodied in a carrier wave.
- Note 4: Most likely, the "data signal" does not occur as a natural phenomenon. The Examiner bears the burden of establishing that a claimed invention is a natural phenomenon. Therefore, absent object evidence to support the position that the "data signal" is a natural phenomenon, such a position would be untenable.
- Note 5: Claimed invention recites specific software. *See* Guidelines, Section IV.B.2(a)(ii).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.

EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS

Example: AUTOMATED MANUFACTURING PLANT

Claim Analysis

Claims 1-13 are pending in the application. Claims 1-13 recite computer-related invention

CLAIM 1:

Claim 1 is a machine claim. It recites three claim limitations in means plus function language:

- a. Means a. recites means for receiving. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for this function;
- b. Means b. recites means for processing. Processing is defined as compressing the digital data signal into variable length codewords. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts; and
- c. Means c. recites means for outputting. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for this function.

Reviewed as a whole, and given its broadest reasonable interpretation, the claim is not limited to a specific machine. Thus, the claim is presumed to encompass any and every machine embodiment of the underlying process. Accordingly, the claim has been analyzed on the basis of the underlying process. If applicant believes the claim is limited to a specific machine, please provide specific information on how the claim is so limited, including references to the specification in support of the limitation[s].

The underlying process does not require any pre-computer process activity. Means a. merely provides the data signal for use in the mathematical operation of means b. It does not measure physical objects or activities. The underlying process also does not require any post-computer process activity. Means c. merely conveys the direct result of means a. and b. Thus, as a computer-related invention, the claim must be limited to a practical application.

Means b. recites means for processing. Means b. corresponds to the compression of a digital data signal into variable length codewords. A compressed data signal requires less memory or takes less time to transmit. Thus, the claimed invention is limited to a practical application. Claim 1 is a statutory machine claim.

CLAIM 2:

Claim 2 is a machine claim. It recites three claim limitations in means plus function language:

- a. Means a. recites means for receiving. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for this function;
- b. Means b. recites means for processing. Processing is defined as the calculation of codewords from a series of equations. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for this function; and
- c. Means c. recites means for outputting. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for this function.

Reviewed as a whole, and given its broadest reasonable interpretation, the claim is not limited to a specific machine. Thus, the claim is presumed to encompass any and every machine embodiment of the underlying process. Accordingly, the claim has been analyzed on the basis of the underlying process. If applicant believes the claim is limited to a specific machine, please provide specific information on how the claim is so limited, including references to the specification in support of the limitation[s].

The underlying process does not require any pre-computer process activity. Means a. merely provides the data signal for use in the mathematical operation of means b. It does not measure physical objects or activities. The underlying process also does not require any post-computer process activity. Means c. merely conveys the direct result of means a. and b. Thus, as a computer-related invention, the claim must be limited to a practical application.

Means b. recites means for processing. Means b. corresponds to the calculation of codewords from a series of equations. Thus, means b. recites a mathematical operation. As noted above, means a. and c. do not impose

independent limitations on the claim beyond those required by the mathematical operation of means b. Therefore, the claimed invention merely converts one set of numbers into another set of numbers. Also, the preamble language is a statement of intended use that does not limit the claim to the practical application of monitoring and controlling an automated manufacturing plant. Claim 2 is rejected as a non-statutory machine claim under 35.S.C. § 101. Also, the Freeman-Walter-Abele test has been relied upon in analyzing the claimed invention. Under the test, the claimed invention is rejected as a non-statutory process because it is a process directed solely to solving a mathematical algorithm.

The following amendments to claim 2 would render claim 2 a statutory machine claim

- a limitation to one of the practical applications disclosed in the specification (e.g., monitoring and controlling an automated manufacturing plant or encryption of data signals to protect and secure contents);
- a limitation to a pre-computer process activity; or
- a limitation to a post-computer process activity.

CLAIM 3:

Claim 3 is a machine claim. It recites three claim limitations in means plus function language:

a. Means a. recites means for generating. The specification discloses use of general purpose computer system with various memory sections. It does not disclose specific hardware, specific software, or a combination thereof for this function;

b. Means b. recites means for compression. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts; and

c. Means c. recites means for encryption. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with an ASIC in another embodiment, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts.

Reviewed as a whole, and given its broadest reasonable interpretation, the claim is not limited to a specific machine. Thus, the claim is presumed to encompass any and every machine embodiment of the underlying process. Accordingly, the claim has been analyzed on the basis of the underlying process. If applicant believes the claim is limited to a specific machine, please provide specific information on how the claim is so limited, including references to the specification in support of the limitation[s].

The underlying process requires pre-computer process activity. Means a. transforms the outputs of the plant's sensors into an electrical signal for use in the computer system. The electrical signal is an intangible representation of the plant's outputs. Claim 3 is a statutory product claim.

CLAIM 4:

Claim 4 is a machine claim. It recites three claim limitations in means plus function language:

a. Means a. recites means for compression. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts;

b. Means b. recites means for encryption. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with an ASIC in another embodiment, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts; and

c. Means c. recites means for controlling. The specification discloses use of a general purpose computer system. It does not disclose specific hardware, specific software, or a combination thereof for this function.

Reviewed as a whole, and given its broadest reasonable interpretation, the claim is not limited to a specific machine. Thus, the claim is presumed to encompass any and every machine embodiment of the underlying process. Accordingly, the claim has been analyzed on the basis of the underlying process. If applicant believes the claim is limited to a specific machine, please provide specific information on how the claim is so limited, including references to the specification in support of the limitation[s].

The underlying process requires post-computer process activity. Means c. controls the outputs of the automated manufacturing plant on the basis of the information contained in the decrypted and decompressed data signal. Claim 4 is a statutory product claim.

CLAIM 5:

Claim 5 is a machine claim. It recites two claim limitations with one claim limitation in means plus function language:

- a. Means a. recites means for compression. The specification discloses specific software in a preferred embodiment. It also discloses use of a general purpose computer system with encoders and decoders, and the creation of alternate computer programs based on the disclosed high-level written descriptions and disclosed flow charts;
- b. Element b. recites an application specific integrated circuit with its various hardware components for encryption.

Reviewed as a whole, and given its broadest reasonable interpretation, the claim is limited to a specific machine. Claim 5 is a statutory machine claim.

CLAIM 6:

Claim 6 is a process claim. It is directed to the same process as the underlying process analyzed in the machine claim of claim 1. Thus, claim 6 is a statutory process claim for the reasons stated above for claim 1.

CLAIM 7:

Claim 7 is a process claim. It is directed to the same process as the underlying process analyzed in the machine claim of claim 2. Thus, claim 7 is rejected as a non-statutory process claim under 35 U.S.C. § 101 for the reasons stated above for claim 2. Also, the Freeman-Walter-Abele test has been relied upon in analyzing the claimed invention. Under the test, the claimed invention is rejected as a non-statutory process claim because it is a process directed solely to solving a mathematical algorithm.

The following amendments to claim 7 would render claim 7 a statutory process claim:

- a limitation to one of the practical applications disclosed in the specification (e.g., monitoring and controlling an automated manufacturing plant or encryption of data signals to protect and secure contents);
- a limitation to a pre-computer process activity; or
- a limitation to a post-computer process activity.

CLAIM 8:

Claim 8 is a process claim. It is directed to the same process as the underlying process analyzed in the machine claim of claim 3. Thus, claim 8 is a statutory process claim for the reasons stated above for claim 3.

CLAIM 9:

Claim 9 is a process claim. It is directed to the same process as the underlying process analyzed in the machine claim of claim 4. Thus, claim 9 is a statutory process claim for the reasons stated above for claim 4.

CLAIM 10:

Claim 10 is unclear as to whether it claims a machine, an article of manufacture, or an arrangement of data. In particular, it is unclear whether: (1) the preamble defines an arrangement of data, a machine, or an article of manufacture, (2) the body of the claim defines an arrangement of data, a machine, or an article of manufacture, and (3) how the phrase "data portion" in the body of the claim relates to the preamble. The claim is rejected under 35 U.S.C. § 112, ¶ 2 for failure to distinctly point out and claim the invention.

Claim 10 is also rejected under 35 U.S.C. § 101. As either a machine, an article of manufacture, or an arrangement of data, the claimed invention recites non-functional descriptive material, i.e., mere data. For example, embodied on the "first data portion" of the "computer system apparatus" is the plant's operating parameters. Non-functional descriptive material does not impart functionality to either the data as claimed or the computer system. The allowance of such a claim would exalt form over substance.

Claim 10 is further rejected under 35 U.S.C. § 103 as obvious. The embodiment of mere data on a "computer system apparatus" would have been obvious to a person of ordinary skill in the art at the time of invention.

CLAIM 11:

Claim 11 is unclear as to whether it claims a computer program *per se* or a computer program embodied on a computer-readable medium. In particular, the preamble phrase "computer program" defines a set of instructions for execution on a computer, *i.e.*, a computer program *per se*. The body of the claim, however, recites means plus function language which defines at least a set of instructions embodied on a computer-readable medium to perform the recited functions. The claim is rejected under 35 U.S.C. § 112, ¶ 2 for failure to distinctly point out and claim the invention.

Claim 11 is also rejected under 35 U.S.C. § 101. It is reasonable to presume that applicant seeks to claim a computer program *per se*. A computer program *per se* cannot define any structural and functional interrelationships that permit the computer program's functionality to be realized.

The following amendment to claim 11 would render claim 11 a statutory article of manufacture claim:

- embodying the computer program on a computer-readable medium.

Claim 11 could also be amended to recite a statutory process.

CLAIM 12:

Claim 12 is an article of manufacture claim. It recites a computer program with two claim limitations:

- a. Element a. recites a specific source code segment for compression; and
- b. Element b. recites a specific source code segment for encryption.

Reviewed as a whole, and given its broadest reasonable interpretation, the claim is limited to a specific article of manufacture. Also, the computer program is embodied on a computer-readable medium. Thus, claim 12 is a statutory article of manufacture claim.

CLAIM 13:

Claim 13 is an article of manufacture claim. It recites a computer program with two claim limitations:

- a. Element a. recites a specific source code segment for compression; and
- b. Element b. recites a specific source code segment for encryption.

Reviewed as a whole, and given its broadest reasonable interpretation, the claim is limited to a specific article of manufacture. Also, the computer program is embodied on a computer-readable medium--the carrier wave. Thus, claim 13 is a statutory article of manufacture claim.