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THE BEST MODE REQUIREMENT IN UNITED STATES PATENT PRACTICE IN 1993

by KENNETH R. ADAMO*

I. INTRODUCTION

Section 112 of the United States Patent Act requires that:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and *shall set forth the best mode contemplated by the inventor of carrying out his invention.*¹

The explicit statutory requirement of this last phrase is substantially unique to United States patent law.² It must be satisfied by every utility patent application filed with the United States Patent and Trademark Office, including applications made by foreign inventors claiming priority pursuant to the Paris Convention.³ Failure to honor the best mode disclosure requirement will result in the invalidation of at least the claims directed to the invention relating to the withheld mode, and may result in the invalidation of all of the claims in the patent.

The United States Court of Appeals for the Federal Circuit (Federal Circuit) has rendered a number of decisions discussed in this article that have clarified and refined the best mode requirement, and have ap-

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1. 35 U.S.C. § 112 (1984) (emphasis added).

2. *But see* James A. Forstner, *International Implications of the U.S. Best Mode Requirement*, 21 AIPLA QUARTERLY JOURNAL 157 n. 2 (1993).

3. *See* Yasuko Kawai v. Metlesics, 480 F.2d 880 (C.C.P.A. 1973); 35 U.S.C. § 119 (1984). The best mode requirement is not applicable, however, to design patent applications filed pursuant to 35 U.S.C. § 171 (1984). *Racing Strollers, Inc. v. Tri Indus., Inc.*, 878 F.2d 1418 (Fed. Cir. 1989).

plied it specifically to patents in the field of computer technology, such as *In re Hayes Microcomputer Products*.⁴ These holdings have added a certain new complexity to an already difficult area of United States patent law.⁵

II. THE BASICS

Three different requirements that must be met by the specification of every United States patent application are stated in the first paragraph of Section 112: enablement, description, and disclosure of the best mode. Enablement, although related to the best mode disclosure requirement, is *not* the same concept; the presence of an enabling disclosure does not *per se* mean that the best mode disclosure requirement has been satisfied. The Federal Circuit's predecessor court stated that:

The essence of [enablement] is that a specification shall disclose an invention in such a manner as will enable one skilled in the art to make and utilize it. *Separate and distinct* from [enablement] is ["best mode"], the essence of which requires an inventor to disclose the best mode *contemplated by him . . .* of carrying out his invention. Manifestly, the sole purpose of this latter requirement is to restrain inventors from applying for patents while at the same time concealing from the public preferred embodiments of their inventions which they have in fact conceived.⁶

The distinctions between the enablement requirement and the best mode disclosure requirement have also been articulated by the Federal Circuit in *Spectra-Physics, Inc. v. Coherent, Inc.*:

[C]ompliance with the best mode requirement focuses on a different matter than does compliance with the enablement requirement. Enablement looks to placing the subject matter of the claims generally in

4. *In re Hayes Microcomputer Prod., Inc.*, 982 F.2d 1527, 25 U.S.P.Q.2d (BNA) 1241 (Fed. Cir. 1992).

5. For additional commentary on the best mode disclosure requirement, see Jur Strobos, *The Best Mode Inquiry: Resolution of Legal Issues by the Court of Appeals for the Federal Circuit*, 75 J. PAT. OFF. SOC'Y 260 (1993); Christopher Marchese, *Confusion, Uncertainty and the Best Mode Requirement*, 2 FED. CIRCUIT BAR J. 1 (Spring 1992); Monte L. Falcoff, Note, *The Best Mode Requirement Refined: the Federal Circuit's Objective Standard, Mandate for Detail and Penalty for Nondisclosure*, 37 WAYNE L. REV. 1721 (1991); Mark Gebhardt, Comment, *Patent Law - Patent Law Policy and the Best Mode Requirement: Randomex, Inc. v. Scopis Corp.*, 14 J. CORP. L. 1015 (1989); Charles Gholz, *Best Mode - Intent to Conceal*, 65 J. PAT. OFF. SOC'Y 436 (1983); William F. Herbert, *Failure to Disclose the 'Best Mode': What the Public Doesn't Know Will Hurt Them*, 64 J. PAT. OFF. SOC'Y 12 (1982); Dale L. Carlson, *The Best Mode Disclosure Requirement in Patent Practice*, 60 J. PAT. OFF. SOC'Y 171 (1978); J. Phillip Anderegg, *The Best Mode Requirement of 35 U.S.C. Section 112*, 6 AM. PAT. L.A.Q.J. 219 (1978); Dugald S. McDougall, *The Courts Are Telling Us: 'Your Client's Best Mode Must be Disclosed'*, 59 J. PAT. OFF. SOC'Y 321 (1977).

6. *In re Gay*, 309 F.2d 769, 772 (C.C.P.A. 1962).

the possession of the public. If, however, the applicant develops specific instrumentalities or techniques which are recognized at the time of filing as the best way of carrying out the invention, then the best mode requirement imposes an obligation to disclose that information to the public as well.⁷

The purpose of the best mode disclosure requirement is to ensure that the public, in exchange for the exclusionary rights given the inventor under the patent law, receives a full and fair disclosure of the preferred embodiment of the invention.⁸ Satisfaction of the best mode disclosure requirement is judged by what, if anything, the inventor subjectively regarded as his best mode at the time the application for the patent was filed. It is not up to a court to mandate how a patent applicant displays information disclosing the best mode; a court only reviews whether the applicant has done so adequately under the statute.⁹

The critical date with regard to disclosing the best mode is the filing date of the application. Because of convention priority claims pursuant to 35 U.S.C. § 119, and the continuing application practice in the United States under 35 U.S.C. § 120, "the application" whose filing date controls has several possible meanings. When an inventor files a United States application in a foreign country claiming priority and later files an application in the United States claiming a right of priority under 35 U.S.C. § 119, the issue is whether the applicant disclosed the best mode known to him or her as of its foreign filing date, not as of the later United States filing date.¹⁰

With respect to a continuation application, there is conflicting precedent on whether the best mode disclosure requirement is measured as of the parent filing date,¹¹ or as of the filing date of the continuation.¹² For a continuation-in-part application, the filing date of that application controls if a later-developed best mode is necessary to practice the invention and relates to the new matter not present in the parent applica-

7. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1532 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987).

8. *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 418 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1067 (1989); *DeGeorge v. Bernier*, 768 F.2d 1318 (Fed. Cir. 1985); *In re Nelson*, 280 F.2d 172 (C.C.P.A. 1960) (essential element of the patent system that the applicant not disclose only what is second best and keep the best for himself).

9. *In re Sherwood*, 613 F.2d 809 (C.C.P.A. 1980), *cert. denied*, 450 U.S. 994 (1981) (citing *Weil v. Fritz*, 601 F.2d 551 (C.C.P.A. 1979)). See *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 871 F.2d 1054, 1061 (Fed. Cir. 1989) (drawings may be included in considering compliance with the best mode requirement).

10. *Standard Oil Co. v. Montedison, S.p.A.*, 494 F. Supp. 370, 387 (D. Del. 1980), *aff'd*, 664 F.2d 356 (3d Cir. 1981), *cert. denied*, 456 U.S. 915 (1982).

11. *Sylgab Steel & Wire Corp. v. Imoco-Gateway Corp.*, 357 F. Supp. 657 (N.D. Ill. 1973).

12. *Transco Prod., Inc. v. Performance Contracting Inc.*, 821 F. Supp. 537 (N.D. Ill. 1993); *Carter-Wallace, Inc. v. Riverton Lab., Inc.*, 433 F.2d 1034, 1038 (2d Cir. 1970).

tion.¹³ A reissue application, in contrast, is governed as to the best mode disclosure requirement by the application leading to the original patent because no new matter may be added during reissue.¹⁴

For a court to conclude that the best mode disclosure requirement has not been satisfied, it must determine what the inventor knew, *i.e.*, "contemplated," and whether the inventor concealed a better mode than was disclosed. The focus for a best mode analysis is not simply on whether the patent discloses the most suitable manner of carrying out the claimed invention. There is no objective standard by which the adequacy of a disclosure of the best mode is judged. In *Spectra-Physics*, the Federal Circuit stated that:

Because the best mode provision of § 112 speaks in terms of the best mode "contemplated by the inventor," there is no objective standard by which to judge the adequacy of a best mode disclosure. Instead, only evidence of "concealment," whether accidental or intentional, is considered. The specificity of disclosure required to comply with the best mode requirement must be determined by the knowledge of facts within the possession of the inventor at the time of filing the application.¹⁵

Whether a specific disclosure is adequate for best mode disclosure purposes is determined by comparing that disclosure with the facts concerning the invention known to the inventor at the time the application was filed. An inventor does not violate the best mode disclosure requirement by failing to disclose a better mode known to an assignee at the time of the application if the inventor did not know of the better mode.¹⁶ Notwithstanding the mixed nature of the best mode inquiry, the Federal Circuit has consistently treated the question as one of fact. "Compliance with the best mode requirement, because it depends on the applicant's state of mind, is a question of fact subject to the clearly erroneous standard of review."¹⁷

13. *Johns-Manville Corp. v. Guardian Indus. Corp.*, 586 F. Supp. 1034 (E.D. Mich. 1983), *aff'd mem.*, 770 F.2d 178 (Fed. Cir. 1985).

14. *Dow Chem. Co. v. American Cyanamid Co.*, 615 F. Supp. 471, 482 (E.D. La. 1985), *aff'd*, 816 F.2d 617 (Fed. Cir.), *cert. denied*, 484 U.S. 849 (1987). For an application to be entitled to the benefit of an earlier filed application under 35 U.S.C. § 120, the disclosure of the parent application must comply with the enablement, description, and best mode requirements of § 112. *Pall Corp. v. Micron Separations, Inc.*, 792 F. Supp. 1298, 1315 (D. Mass. 1992).

15. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1535 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987) (citations omitted).

16. *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 871 F.2d 1054, 1061 (Fed. Cir. 1989).

17. *Spectra-Physics*, 827 F.2d at 1535-36 (citing *McGill, Inc. v. John Zink Co.*, 736 F.2d 666, 676 (Fed. Cir.), *cert. denied*, 469 U.S. 1037 (1984)); *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1578 (Fed. Cir. 1991); *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 680 (Fed. Cir. 1988).

The best mode does not have to be the optimum mode of carrying out the invention:

A patentee must disclose the best method known to him to carry out the invention. *Even if there is a better method, his failure to disclose it will not invalidate his patent if he does not know of it or if he does not appreciate that it is the best method.* It is enough that he act in good faith in his patent disclosure. On the other hand, if he knows at the time the application is filed, of a better method to practice the invention and knows it for the best, it would make no difference whether or not he was the discoverer of that method.¹⁸

The best mode disclosure requirement does not require an inventor to obtain further knowledge but only to disclose what one knows or, at least, contemplates.¹⁹

An inventor may not subjectively have a best mode to disclose as of the filing date of his application. According to *Atlas Powder Co. v. E.I. Du Pont de Nemours & Co.*:

[The inventor] had not decided on a single preferred formulation at the time the patent was filed, but rather believed that there were a number of characteristics that contributed to an effective explosive. He put examples in his patent to demonstrate these characteristics. . . . Failure to cite the marketed version of the . . . product did not violate the best mode requirement.²⁰

The scope of the best mode disclosure obligation must be measured

18. *Benger Lab., Ltd. v. R.K. Laros Co.*, 209 F. Supp. 639, 644 (E.D. Pa. 1962), *aff'd*, 317 F.2d 455 (3d Cir.), *cert. denied*, 375 U.S. 833 (1963) (emphasis added). *See also* *Plastic Container Corp. v. Continental Plastics of Okla., Inc.*, 607 F.2d 885, 897 (10th Cir. 1979), *cert. denied*, 444 U.S. 1018 (1980); *Honeywell, Inc. v. Minolta Camera Co. Ltd.*, 1991 U.S. Dist. LEXIS 4222 (D.N.J. 1991).

19. *In re Bundy*, 642 F.2d 430 (C.C.P.A. 1981).

20. *Atlas Powder Co. v. E.I. Du Pont de Nemours & Co.*, 588 F. Supp. 1455, 1467 (N.D. Tex. 1983), *aff'd*, 750 F.2d 1569 (Fed. Cir. 1984); *see also* *Shearing v. Iolab Corp.*, 975 F.2d 1541, 24 U.S.P.Q.2d (BNA) 1133, 1137 (Fed. Cir. 1992) (court affirms jury verdict, finding substantial evidence to support the finding of no best mode violation; Shearing testified no best implantation mode for open-loop lens when first did surgery to implant them; had conceived of no better way to practice the invention at time the application was filed, than what was disclosed; court noted that, if superior loop compression was alleged best mode, jury had heard testimony that specification did suggest that technique); *GTE Prod. Corp. v. Kennametal, Inc.*, 772 F. Supp. 907, 911-12 (W.D. Va. 1991) (court denies JNOV motion, where jury found no best mode violation; inventor did not disclose specific grade of carbide for inserts, but jury could have reasonably inferred that he considered the shape of the insert to be the best mode, that any type of carbide grade could be used, and that he could not have known of a particular grade of carbide as best for the invention, because the insert supplier was at that time testing general carbide grades to be used with the insert); *Union Carbide Corp. v. Dow Chem. Co.*, 213 U.S.P.Q. (BNA) 128 (S.D. Tex. 1981), *aff'd*, 682 F.2d 1136 (5th Cir. 1982) (no violation of best mode disclosure requirements where there was active controversy over which of two methods was the superior embodiment, at the time the application was filed).

against the claimed invention, as Section 112 states that the inventor ". . . shall set forth the best mode contemplated . . . of carrying out his invention."²¹ For example, in *Cosden Oil & Chemical Co. v. American Hoechst Corp.*,²² the claimed invention was a styrene polymer composition. At the time of the filing of the initial 1958 application, Hoechst was using a sequential addition/dual catalyst system in which two different catalysts were added in sequence, in two stages. That information was treated by Heinig, one of the inventors, as "proprietary information," and Example 1 of the 1958 application referred to a single addition of another catalyst.²³ The court noted that "this was done because [Hoechst] believed the process for making high impact polystyrene which involved the two step technique had commercial value."²⁴

No violation of the best mode requirement was found:

*It does not follow, however, that the 1958 application violated Section 112. The requirement is of disclosure of the best mode of carrying out the invention and the character of the claimed invention must be kept in mind in applying this section. The alleged invention of Westphal and Heinig was a composition, not a process. Consequently, all claims of both patents in suit are directed to styrene polymer compositions, not to the method or process of making such compositions. The best styrene polymer compositions known to the inventors at the time they filed their 1958 application were fully disclosed in that application, and contrary to Cosden's assertions, nothing in this record establishes that the process described in Example 1 produces a composition which is in any way inferior to compositions made with the sequential addition/dual catalyst system being used by AHC in 1958 in its commercial production.*²⁵

The presence of the best mode disclosure requirement in Section 112 does not mandate that the inventor concoct a best mode simply to satisfy a disclosure requirement directed to a mode that is otherwise non-existent. If joint inventors are involved, both must agree that a particular embodiment is the preferred embodiment to give rise to a best mode disclosure requirement. But the best mode need not have been developed by the inventor himself. A co-worker may develop a preferred embodiment or an improvement jointly with or independently of the inventor. Such embodiments or improvements, if known to the inventor at the time of filing and otherwise constituting the best mode, must be disclosed.²⁶

21. 35 U.S.C. § 112 (1984).

22. *Cosden Oil & Chem. Co. v. American Hoechst Corp.*, 543 F. Supp. 522 (D. Del. 1982).

23. *Id.* at 533.

24. *Id.*

25. *Id.* (emphasis added).

26. *Aktiebolaget Karlstads Mekaniska Werkstad v. United States Int'l Trade*

The disclosure of the best mode must be of a quality sufficient to satisfy the purpose of the statute. If the quality of the disclosure is so poor that the best mode is effectively concealed, then the claims will be held invalid.²⁷ In *Spectra-Physics*, Coherent contended that there was no requirement under the law to describe "every detail" in order to satisfy the best mode disclosure requirement. The Federal Circuit did not accept that broad blanket contention:

In support of its position, Coherent cites *In re Gay*, which states that "[n]ot every last detail is to be described, or else patent specifications would turn into production specifications, which they were never meant to be." In doing so, however, Coherent was not discussing whether it had complied with the best mode requirement because the court had held in its favor on that issue; it was discussing whether it had complied with the enablement requirement on which the court had held against it. First, it is not up to the courts to decide *how* an inventor should disclose the best mode, but *whether* he has done so adequately under the statute. Second, far from being a "production specification," Coherent did not disclose *any* details about its brazing process. It is this complete lack of detail which effectively resulted in its concealment.²⁸

Each patent application filed need not disclose the dimensions, tolerances, manufacturing, and other mass production details that are needed to commercially produce the product but are not necessary to enable one skilled in the art to practice the invention.²⁹ In *Christianson*, the Federal Circuit noted that:

Thus *the law has never required that a patentee who elects to manufacture its claimed invention must disclose in its patent the dimensions, tolerances, drawings, and other parameters of mass production not necessary to enable one skilled in the art to practice (as distinguished from mass-produce) the invention.* Nor is it an objective of the patent system to supply, free of charge, production data and production drawings to competing manufacturers. And that is well, for such a requirement would be irrational. Many inventions are never manufactured; the decision to manufacture may be taken well after the patent has issued; printing a thousand or more documents in the patent would often be required. For those and other reasons, *the law requires that patents disclose inventions, not mass-production data, and that patents enable the practice of inventions, not the organization and operation*

Comm'n, 705 F.2d 1565 (Fed. Cir. 1983); *see also* Checkpoint Sys., Inc. v. Knogo Corp., 490 F. Supp. 116, 122 (E.D.N.Y. 1980).

27. *United States Surgical Corp. v. Hospital Prod. Int'l PTY. Ltd.*, 701 F. Supp. 314 (D. Conn. 1988).

28. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1536-37 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987) (citations omitted).

29. *Christianson v. Colt Indus. Operating Corp.*, 822 F.2d 1544 (Fed. Cir. 1987), *vacated on other grounds*, 486 U.S. 800 (1988).

of factories.³⁰

There is no requirement that the disclosure of the best mode be labelled or specifically identified. In fact, the best mode may be indiscriminately disclosed with other embodiments or be buried in a series of items disclosed in the specification.³¹ There is no proper validity attack under Section 112 merely because the inventor does not pinpoint within the specification, some specific portion that represents his best mode.³²

There is no requirement that any working example, or disclosure identified as a working or hypothetical example, appear in a United States patent application where sufficient disclosure and/or working procedure has been set forth showing that one skilled in the art may prepare the claimed invention without undue experimentation.³³ In *In re Honn*, the court stated that:

the absence of a specific working example is not necessarily evidence that the best mode has not been disclosed, nor is the presence of one evidence that it has. It seems to us that an inventor may represent his contemplated best mode just as well by a preferred range of conditions or group of reactants as by a working example which employs unitary values of each variable involved.³⁴

The use of examples may in some cases support a contention of invalidity for failure to disclose the best mode, if the examples produce operable but poor quality results, in comparison to the product produced by an undisclosed method: "Since [the inventor] knew of a better method than was disclosed in the Examples to practice the invention, at the time the application was filed, it follows that the patent is invalid

30. 822 F.2d at 1562 (emphasis added).

31. See *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 589 (Fed. Cir. 1988) (citing *Ernsthausen v. Nakayama*, 1 U.S.P.Q.2d (BNA) 1539, 1549 (Bd. Pat. App. & Int. 1985), *aff'd*, 809 F.2d 787 (Fed. Cir. 1986)) ("There is no requirement in 35 U.S.C § 112 that an applicant point out which of his embodiments he considers his best mode; that the disclosure includes the best mode contemplated by the applicant is enough to satisfy the statute."); *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 13 U.S.P.Q.2d (BNA) 1737, 1773 (D. Mass. 1989), *aff'd in part, rev'd in part, vacated in part*, 927 F.2d 1200 (Fed. Cir. 1991) ("[T]he indiscriminate disclosure . . . of the preferred best mode along with one other possible mode satisfies the best mode requirement."); *Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc.*, 783 F. Supp. 413, 415 (D. Minn. 1991) (best mode, brazing to attach coil of angioplasty catheter; alleged failure to adequately disclose; "Scimed's claim of concealment rings hollow when one analyzes the actual applications. The patent notes the use of brazing at the juxtaposition of the guide wire and the coil. Although it also explicitly discusses the use of an epoxy to bond the guide wire to the coil, . . . the question before the court is concealment"; summary judgment refused).

32. *In re Bosy*, 360 F.2d 972 (C.C.P.A. 1966).

33. *In re Gay*, 309 F.2d 769 (C.C.P.A. 1962); *In re Long*, 368 F.2d 892 (C.C.P.A. 1966).

34. *In re Honn*, 364 F.2d 454, 462 (C.C.P.A. 1966); see also *In re Stephens*, 529 F.2d 1343, 1345 (C.C.P.A. 1976) ("A working example . . . is not always necessary The test is whether there is sufficient working procedure for one skilled in the art to practice the claimed invention without undue experimentation.").

for failure to set forth the best method known.”³⁵

Failure to properly disclose the best mode known to the inventor at the time of filing of the application will invalidate only those claims that cover inventions affected by the non-disclosure.³⁶ If the failure to properly disclose the best mode was not simply an act of omission, intentional or otherwise, but involved the inventor's disclosure of an inoperative mode, or a fictitious or “made up” mode, this might provide a basis for a finding of inequitable conduct that would render unenforceable *all* the claims of the patent.³⁷ Liability under the United States antitrust laws might also arise if attempts are made to enforce a patent that is fatally defective for failure to satisfy the best mode disclosure requirement.³⁸

The United States will most likely continue to require disclosure of the best mode if a WIPO patent harmonization treaty is adopted. The current WIPO draft treaty, as considered by the Committee of Experts on the Harmonization of Certain Provisions in Laws for the Protection of Inventions, states in *Article 3 - The Disclosure and Description*, that:

3. Contracting parties cannot require description in addition to the requirements . . . of the following Rule 1.
4. Rule 1 - Contents And Order Of Description
 - a. The description must . . . set forth at least one mode for carrying out the invention in terms of examples.
 - b. *Best Mode* - Contracting parties may at their option provide that the mode for carrying out the invention be in fact the “best mode” known to the inventor at the priority date of the application.

During the June 1990 Committee of Experts meeting, a recommendation deleting the possibility of electing “best mode” disclosure was presented. The United States delegation, although standing alone, argued that it viewed the disclosure of the “best mode” as a *quid pro quo* for granting exclusive rights under United States law. Faced with that position, the Committee agreed to retain the Rule 1 right of election of “best mode” disclosure in the draft treaty.³⁹

During the June 1991 Diplomatic Conference in The Hague, however, the positions expressed by those participating seemed to admit that there was now some possibility that the United States might have

35. *Engelhard Indus., Inc. v. Sel-Rex Corp.*, 253 F. Supp. 832, 837 (D. N.J. 1966), *aff'd on other grounds*, 384 F.2d 877 (3d Cir. 1967).

36. *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 940 (Fed. Cir.), *cert. denied*, 111 S. Ct. 296 (1990).

37. *Consolidated Aluminum Corp. v. Fosco Int'l Ltd.*, 910 F.2d 804, 807-09 (Fed. Cir. 1990).

38. *See Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172 (1965).

39. *See Edward G. Fiorito, WIPO Experts Make Progress on Patent Harmonization Draft*, 41 PAT. TRADEMARK & COPYRIGHT J. (BNA) 231 (Jan. 10, 1991).

to eliminate the best mode disclosure requirement, or at least eliminate it from Convention priority applications. It is expected, however, that the United States will continue to press to preserve the best mode disclosure requirement in any harmonization treaty.

Under the WIPO patent harmonization treaty, contrary to the current United States practice, the best mode may need to be disclosed in a portion of the specification denominated as an "example."

III. THE STANDARDS FOR DETERMINING ADEQUACY OF BEST MODE DISCLOSURE

A two-part analysis is necessary to determine compliance with the best mode disclosure requirement. The Federal Circuit set out the analysis in *Chemcast Corp. v. Arco Industries Corp.*:

In short, a proper best mode analysis has two components. The first is whether, at the time the inventor filed his patent application, he knew of a mode of practicing his claimed invention that he considered to be better than any other. This part of the inquiry is wholly subjective, and resolves whether the inventor must disclose any facts in addition to those sufficient for enablement. If the inventor in fact contemplated such a preferred mode, the second part of the analysis compares what he knew with what he disclosed — is the disclosure adequate to enable one skilled in the art to practice the best mode or, in other words, has the inventor "concealed" his preferred mode from the "public"? Assessing the adequacy of the disclosure, as opposed to its necessity, is largely an objective inquiry that depends upon the scope of the claimed invention and the level of skill in the art.⁴⁰

Non-compliance with the best mode requirement is found only

40. *Chemcast Corp. v. Arco Indus. Corp.*, 913 F.2d 923, 927-28 (Fed. Cir. 1990) (emphasis added). Strobos suggests that the best mode requirement became a three-fold inquiry after *Spectra-Physics*:

First, is there a best mode contemplated by the inventor [of making or using the invention]? This is a subjective test from *Gay* that inquires into the state of mind of the inventor at the time of the filing of the application for the existence of a best mode. Second, if such a best mode exists, has information relevant to the public's access to the preferred mode of a claimed invention been withheld? [Was there relevant information about the best mode of the claimed invention that was not disclosed?] Finally, is the [substantive content of the incomplete] disclosure of that mode adequate nonetheless [objectively adequate] to permit the public to practice that mode? The actual holding, in *Spectra-Physics*, is that the complete absence of any disclosure of the best mode, despite the existence of enabling disclosure for other modes, renders the patent invalid.

Strobos, *supra* note 5 at 282.

Chemcast, under that view, "explicitly lays out the parameters of the first and third steps . . . The second step is also discussed although not enumerated." *Id.* at 279. In other words, "when the disclosure, although incomplete, is enabling of the best mode, the patent is valid, as in *Hybritech* and *Sherwood*; when not enabling the patent is invalid, as in *Spectra-Physics*, *Chemcast*, *Northern Telecom*, and *Dana*." *Id.* at 282.

when the evidence shows that the inventor has concealed, either accidentally or intentionally, the preferred embodiment of his claimed invention at the time of filing of the application.⁴¹ Non-disclosure alone, however, without reference to the level of skill in the art, is not sufficient to invalidate the patent.⁴² When the component of the invention allegedly withheld is proprietary, a high degree of disclosure is required to satisfy the best mode requirement.⁴³

As an example of the best mode requirement, given by the *Randomex* court, consider that if one should invent a new and improved internal combustion engine, the best mode requirement would require the patentee to divulge the fuel on which it would run best, but would not require him to disclose the formula for refining gasoline or any other petroleum product. Every requirement would be met if the inventor truthfully said that his engine ran smoothly and powerfully on Brand X superpremium lead free or an equivalent.⁴⁴

The specific claims against which the best mode disclosure requirement is gauged are thus central to the analysis, as is the question of enablement. The *Chemcast* court treated these factors and their interplay at some length:

The best mode inquiry focuses on the inventor's state of mind as of the time he filed his application — a subjective, factual question. But this focus is not exclusive. Our statements that "there is no objective standard by which to judge the adequacy of a best mode disclosure," and that "only evidence of concealment (accidental or intentional) is to be considered," assumed that both the level of skill in the art and the scope of the claimed invention were additional, objective metes and bounds of a best mode disclosure.

Of necessity, the disclosure required by [S]ection 112 is directed to those skilled in the art. Therefore, one must consider the level of skill in the relevant art in determining whether a specification discloses the best mode. We have consistently recognized that whether a best mode disclosure is adequate, that is, whether the inventor concealed a better mode of practicing his invention than he disclosed, is a function of not only what the inventor knew but also how one skilled in the art would have understood his disclosure.

41. *In re Sherwood*, 613 F.2d 809 (C.C.P.A. 1980), *cert. denied*, 450 U.S. 994 (1981).

42. *McNeil - PPC, Inc. v. Procter & Gamble Co.*, 767 F. Supp. 1081, 1083-84 (D. Col. 1991).

43. *KLA Instruments Corp. v. Orbot, Inc.*, No. C-90-20318-RFP, 1992 U.S. Dist. LEXIS 8544 (N.D. Cal. Mar. 31, 1992) (patent-in-suit for KLA Klassic 3000, which included multi-layered coated mirrors produced by Newport; Klassic 3000 mirrors were proprietary to Newport, who was not mentioned by name or otherwise in the patent; "[N]either the name of the vendor nor a description of the mirrors were included in the KLA patent. In fact, KLA, like the patentee in *Chemcast*, did nothing to reveal either its preferred mode or the characteristics thereof"; denial of summary judgment reversed).

44. *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 589 (Fed. Cir. 1988).

....

The other objective limitation on the extent of the disclosure required to comply with the best mode requirement is, of course, the scope of the claimed invention. "It is concealment of the best mode of practicing the *claimed invention* that [S]ection 112 ¶ 1 is designed to prohibit."⁴⁵

Chemcast reiterated the principle that a best mode inquiry focuses on the inventor's "state of mind" at the time he filed his application — a subjective factual question. The court clarified, however, that this subjective, state-of-mind focus was not exclusive and that past application of the standard assumed preliminarily that both the level of skill in the art and the scope of the claimed invention were additional, objective metes and bounds of a best mode disclosure. These preliminary considerations are now identified as the second part of the best mode test and are applied to determine if the inventor concealed what he knew by examining what he disclosed in light of the scope of the invention and the level of skill in the art. Broadly stated, the best mode that must be disclosed need not in all cases be an element of the claim. Failure to disclose some other unclaimed feature in the specification for which a better mode was known does not violate the best mode disclosure requirement unless it is a feature necessary to the performance of the claimed invention.

The conflict between the enablement requirement and satisfaction of the best mode disclosure requirement is illustrated by *Spectra-Physics*.⁴⁶ Two patents relating to gas lasers were in issue, one directed to a laser discharge tube structure, the other to a method of making the tube. The disclosed method for connecting parts of the laser involved fastening a tungsten disc to center openings of copper cups, which were in turn attached to the inside wall of a ceramic laser discharge tube, using the alternative procedures of moly-manganese brazing and pulse soldering. Brazing was disclosed as the preferred method, and the preferred brazing material was taught as being Ti Cu Sil alloy. This disclosure was enough to satisfy the enablement requirement of Section 112, first paragraph.⁴⁷

The inventor, however, had withheld details of his actual, preferred brazing method, which used the Ti Cu Sil alloy brazing material in a six-stage active metal brazing cycle.⁴⁸ These techniques were actually

45. *Chemcast Corp. v. Arco Indus. Corp.*, 913 F.2d 923, 926-27 (Fed. Cir. 1990) (citations omitted).

46. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987).

47. *Id.* at 1533.

48. *Spectra-Physics*, 827 F.2d at 1536. Particularly, there was a failure to cite the specific conditions and brazing techniques used on brazing copper to ceramic with that alloy.

contrary to other prior art techniques known for brazing, and contrary to known techniques for the use of Ti Cu Sil disclosed in the literature that one of ordinary skill would turn to in any attempt to practice the invention.⁴⁹ The lack of any teaching in the prior art led to the finding that the description was so incomplete as to the necessary specific details to effectively result in concealment of the best mode.⁵⁰

The court found the patent invalid for failing to satisfy the best mode disclosure requirement.⁵¹ The undisclosed best mode item was not an element of any of the claims of the patent in issue.

A review of the Federal Circuit's recent decisions is instructive of the specific application of the best mode analysis and standards, and of the pitfalls and dangers that failure to honor the disclosure requirement present.

IV. ILLUSTRATIVE PRECEDENT - BEST MODE DISCLOSURE REQUIREMENT SATISFIED

In *Randomex*, the issue was whether the failure to provide the specific chemical formula for a cleaning compound used with the claimed portable apparatus for cleaning computer discs violated the best mode disclosure requirement, where a generic disclosure of cleaning compounds had otherwise been presented.⁵² The inventor in *Randomex* had disclosed in the patent specification the trade name for the preferred cleaner to be used with the cleaning apparatus, along with other embodiments.⁵³ There was no claim to a cleaning fluid, but such fluid was necessary to practice the invention.⁵⁴

The inventor testified that he had intentionally omitted the formulation of his proprietary brand, stating that it was "a good advertising gimmick" that might induce users of the claimed cleaners to purchase his cleaning solution.⁵⁵ The court found that the inventor did not have a duty to supply the chemical formula for the cleaning compound, because it had disclosed the contents of the fluid as "a nonresidue detergent solution," the same solution as the surgical detergent solution used in the prior art.⁵⁶

Judge Mayer strenuously dissented, because the patentee disclosed

49. *Id.*

50. *Id.*

51. *Id.* at 1537.

52. *Randomex Inc. v. Scopus Corp.*, 849 F.2d 585 (Fed. Cir. 1988).

53. *Id.* at 586 ("The cleaning solution should be of a type adequate to clean grease and oil from the disc surfaces, such as a 91 percent alcohol solution or a non-residue detergent solution such as *Randomex Cleaner No. 50281.*").

54. *Id.* at 585-86.

55. *Id.* at 588.

56. *Randomex*, 849 F.2d at 589-90 (citation omitted).

solutions that he knew could be harmful and even dangerous, and buried his best mode in a list of less satisfactory ones.⁵⁷

Depending upon specific circumstances, the use of a trade name alone may be inappropriate in a best mode disclosure, such as when suitable substitutes are unavailable. If commercial substitutes are readily available in the prior art, the tradename may be surplusage — and unnecessary in addition to the generic disclosure.⁵⁸

In *Engel Industries, Inc. v. Lockformer Co.*, the court reversed a trial court holding of invalidity for failure to satisfy the best mode requirement, and, based upon that failure to disclose, a finding of inequitable conduct.⁵⁹

The invention in issue was a system for connecting the ends of sheet metal ducts, made on roll-forming machines, which did not involve rivets or spot welds.⁶⁰ Heilman and McElroy developed duct sections formed with an integral flange, configured so as to engage corner connectors, which were simply snapped into place.⁶¹ The snap-fit made the use of rivets or spot welds unnecessary.⁶²

The district court found that there was more to it than that - that crimping the corner connectors after they were snapped onto the ducts was the best mode of carrying out the invention.⁶³ Judge Newman, writing for the panel, noted that the district court "did not address particular claims or distinguish between apparatus and method, but held all the claims invalid on this ground."⁶⁴

The court focused its review on the claims, setting the bounds of the invention and concomitantly delimiting the scope of the best mode disclosure requirement:

57. *Id.* at 591-92.

58. *Id.* at 589-90; see *Linear Films of Okla., Inc. v. Mobil Oil Corp.*, 22 U.S.P.Q.2d (BNA) 1380 (N.D. Okla. 1991) (summary judgment motion on basis of best mode disclosure violation denied; inventors knew two specific Dow resins were the best mode for skin layers and core layer of stretch film, Mobilrap X; didn't disclose supplier and experimental resin number, but did disclose their melt indices, and densities, which alleged to be more accurate disclosure; also alleged no evidence of concealment).

59. *Engel Indus., Inc. v. Lockformer Co.*, 946 F.2d 1528 (Fed. Cir. 1991). The inequitable conduct holding was reversed, in view of the court's holding that the best mode disclosure requirement was not violated, although it was also noted that "[a] holding of inequitable conduct . . . does not flow simply from failure to meet the requirements of patentability. Culpable conduct is required, such as intentional concealment of the best mode under the mask of a fictitious mode, as in *Consolidated Aluminum Corp.* . . . No finding of culpable conduct was here made or could be supported by the evidence." *Id.* at 1533.

60. *Id.* at 1528-29.

61. *Id.* at 1529-30.

62. *Id.* at 1530.

63. *Id.* at 1531.

64. *Engel Indus.*, 946 F.2d at 1531.

The best mode inquiry is directed to what the applicant regards as the invention, which in turn is measured by the claims. *Unclaimed subject matter is not subject to the disclosure requirement of § 112; the reasons are pragmatic: the disclosure would be boundless, and the pitfalls endless.* See *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 588, 7 U.S.P.Q.2d 1050, 1053 (Fed. Cir. 1988) (“It is concealment of the best mode of practicing the claimed invention that section 112 para. 1 is designed to prohibit”) (emphasis in original). It has been explained that a patent disclosure is not a “production specification”, . . . and that technical details apparent to a person of ordinary skill need not be included in the patent specification.⁶⁵

With that precedential foundation, the court proceeded to tell the trial court exactly why it had reached the wrong conclusion:

The district court found that the inventors did not disclose that the corners should be crimped to hold them securely in place. The court found that the inventors “knew that crimping might be necessary” at the time the patent application was filed . . . The evidence was generally undisputed that the inventors’ concept, and their preferred mode, was to snap in the corners without the need for any other fastening step, and to avoid the rivets or other procedures that were previously needed. . . . *Gale’s suggestion at or after a conference with the inventors that crimping “may be required” is not clear and convincing evidence of either (1) the inventors’ belief that crimping was the preferred mode of carrying out the claimed invention, or (2) concealment of the preferred mode.*

. . . .

Compliance with the best mode requirement of § 112 is governed by the inventors’ state of mind with respect to the invention that is described and claimed in the patent application. There was no evidence that the inventors believed at the time of filing their patent application that crimping was the preferred mode of carrying out the claimed invention. *The undisputed evidence shows that, at the time of application, their preferred mode was simply to snap in the corners without crimping.*⁶⁶

That being the case, and the trial court having found no evidence of concealment, reversal was required.⁶⁷ In other words, the inventors had never reached a pre-filing conclusion that crimping was part of the invention. Just as a specification does not become dis-enabling by post-filing developments, a proper disclosure of the best mode is not defeated by post-filing developments of a different or better mode.

Summary judgment of invalidity for failure to satisfy the best mode disclosure requirement was reversed by the court in *Wahl Instruments*,

65. *Id.* at 1531-32 (emphasis added) (citations omitted).

66. *Id.* at 1532-33 (emphasis added).

67. *Id.* at 1533.

*Inc. v. Acvious, Inc.*⁶⁸ The invention in issue was an egg-timer, comprising thermochromic material capable of changing color at a known temperature, which was placed into a clear plastic thermal analog of the object whose cooking was being timed, the egg.⁶⁹ An embedment molding technique, consisting of layering plastic into a mold, followed by an adhesive pouring onto which the thermochromic layer was placed, followed by a third pouring to complete the device, was developed for manufacturing the claimed invention at some time prior to the filing of the application.⁷⁰ When the inventor, Parker, submitted his invention disclosure to a patent attorney, it was accompanied by a prototype wherein two sections of the device were bonded together using a transparent adhesive, an assembly technique different than embedment molding.⁷¹

Wahl Instruments had an unusual trip through the legal system prior to reaching the Federal Circuit. Initially, the trial court denied a best mode summary judgment motion.⁷² The case was tried, but then the court decided *Dana Corp.*⁷³ The trial court then reversed itself and granted the summary judgment motion in view of *Dana Corp.*, on the basis that Parker knew at the time of the invention that embedment molding was the best technique for making the device; that polyester resin was the best transparent material to use (which allowed the user to see the thermochromic color change); that the best technique to put the thermochromic material into the device was to silk screen it onto a thin substrate such as Mylar® film, cut out oval shaped pieces and use the pieces as inserts in the embedment molding; and that the best thermochromic paints or inks known to Parker for the silk screening step were made by two specific companies, none of which was disclosed in the application.⁷⁴

On appeal, Wahl's position was that the best mode requirement was satisfied inasmuch as the techniques used to manufacture the Parker device were old and well known, and, further, that Parker had not come to a conclusion as to whether there was, in 1979, a "best" method to make the egg-timer.⁷⁵

Chief Judge Nies focused the best mode inquiry on the undisclosed manufacturing technique by which commercial versions of the egg-timers were made and to the materials and sources of supply for materials

68. *Wahl Instruments, Inc. v. Acvious, Inc.*, 950 F.2d 1575, 1577 (Fed. Cir. 1991).

69. *Id.*

70. *Id.*

71. *Id.* at 1577-78.

72. *Id.*

73. *Dana Corp. v. Nok, Inc.*, 882 F.2d 505 (Fed. Cir. 1989).

74. *Wahl Instruments*, 950 F.2d at 1578.

75. *Wahl Instruments*, 950 F.2d at 1578.

used in them.⁷⁶ The attack was thus on the nondisclosure of a best mode, but it was not sufficient to hold the patent invalid.

The court noted that a description of particular materials or sources or of a particular method or technique selected for manufacture may or may not be required as part of a best mode disclosure respecting a device, and that the particulars of making a prototype or even a commercial embodiment do not necessarily equate with the "best mode" of "carrying out" an invention.⁷⁷ The inventor's manufacturing materials or sources or techniques used to make a device may vary from wholly irrelevant to critical. Under the law, there is no mechanical rule that a best mode disclosure violation occurs because the inventor failed to disclose particular manufacturing procedures beyond the information sufficient for enablement:

One must look at the scope of the invention, the skill in the art, the evidence as to the inventor's belief, and all of the circumstances, in order to evaluate whether the inventor's failure to disclose particulars of manufacture gives rise to an inference that he concealed information which one of ordinary skill in the art would not know.⁷⁸

Once the mode in question is categorized as "manufacturing information," or as a commercial process, or as "particulars of manufacture," however, an innate skepticism creeps into the best mode disclosure analysis, whereby the burden of proof upon the putative invalidator becomes more critical.

An exhaustive analysis of each of the four alleged failures to disclose best mode information was made. The burden was on the infringers to show that the thermochromic inserts were (1) part of the best mode of the invention and not simply a manufacturing choice, and (2) that if part of the best mode, those skilled in the art were not likely to know from the disclosures that were made in the specification, drawings, and claims that such inserts should be used to carry out the invention.⁷⁹

Consideration of the particular analysis of the failure to disclose the embedment molding technique is instructive, because the court gave particular attention to the question of impaired or reduced operability due to the alleged lack of access to the best mode information as central to its conclusions:

The patent specification fairly read describes a sectional device, two parts, between which a layer of temperature indicating material is placed. . . . *There is no evidence that the working of the invention, unlike in Dana, was affected in any way by how the two halves were*

76. *Id.* at 1579.

77. *Id.*

78. *Id.* at 1579-80 (citations omitted).

79. *Id.* at 1584.

joined. . . . There is abundant testimony that embedment molding would be utilized if one in the business of fabricating solid plastic articles were asked to make the egg-timer device depicted in the drawings in the patent; and further that this technique was well known at the time the subject application was filed.

While admitting it was a simple device for a plastics fabricator to manufacture, appellees argue that those of skill in the art of making temperature indicating devices would not be skilled in the art of molding and, therefore, the absence of information with respect to embedment molding cannot be cured by reference to skill in the art to which the invention pertains. [Parker's] . . . *invention does not claim a method of manufacturing but the device itself, regardless of how actually put together, and also a method of using the device.* As appellees indicate, one of skill in the art of temperature indicating devices would not be expected to be skilled in commercial fabrication of plastics. However, as McMillan's own expert agreed, anyone seeking to make the device commercially would have to do no more than present the drawings in the patent to an experienced plastics fabricator to learn that the device lent itself to embedment molding. The device differs little from the commonly made solid plastic paperweights with novelty items inside.⁸⁰

Continuing, the court noted a particular confusion of the trial court, how it led to misinterpretation of the best mode disclosure requirement, and offered a picture of the "Catch-22" scenario that any other approach might force upon an inventor:

The district court apparently believed that Parker's "admission" of embedment molding being "the best technique for the manufacture of the egg-timer" was an admission that such technique was the best mode of carrying out the invention within the meaning of the statute. His "admission" does not carry such legal weight. Any process of manufacture requires the selection of specific steps and materials over others. The best mode does not necessarily cover each of these selections. To so hold would turn a patent specification into a detailed production schedule, which is not its function. Moreover, a requirement for routine details to be disclosed because they were selected as the "best" for manufacturing or fabrication would lay a trap for patentees whenever a device has been made prior to filing for the patent. The inventor would merely have to be interrogated with increasing specificity as to steps or material selected as "best" to make the device. A fortiori, he could hardly say the choice is not what he thought was "best" in some way. Thus, at the point he would testify respecting a step or material or source or detail which is not in the patent, a failure to disclose the best mode would, ipso facto, be established. However,

80. *Wahl Instruments*, 950 F.2d at 1580-81 (emphasis added). The comment about the invention's "simplicity" as having impact on the question of proper best mode disclosure bears noting.

the best mode inquiry is not so mechanical. *A step or material or source or technique considered "best" in a manufacturing circumstance may have been selected for a non-"best mode" reason, such as the manufacturing equipment was on hand, certain materials were available, prior relationship with supplier was satisfactory, or other reasons having nothing to do with development of the invention.*⁸¹

Wahl clarifies the best mode disclosure requirement in regard to *Christianson's* "no production specification" comments, and holds as it does only on the specific facts there before the court. It clearly does not, on its face, comprise a holding based merely on the involvement of "unclaimed elements," absolving strictly and absolutely all inventors from disclosure responsibility simply because such a label may be attached to the information not placed in the public's possession.

In *Spalding & Evenflo Cos. v. Acushnet Co.*, Acushnet contended that the patent in issue, which contained claims for an improved golf ball cover, was invalid for failure to satisfy the best mode disclosure requirement.⁸² Acushnet maintained that the patent had failed to disclose the golf ball core material used in Spalding's two-piece Top Flite ball, on which the cover material of the invention (a blended ionic copolymer) provided the greatest performance advantage, and failed to disclose the process conditions required to produce the best exemplar of the golf ball.⁸³

Stating that "[t]he law is not so foolish as to require that a patent for an improvement in a single part of a product include instructions on how to make the product when prior art teaches how to make the product," the court held that Spalding did not have to disclose the best mode of processing the exemplar.⁸⁴ The specification pointed out in twenty-two places that the cover was the invention.⁸⁵ In reliance on *Christianson*, the court emphasized that the best mode of relevance is only that of the claimed invention; because the best mode of practicing the claimed cover improvement was the blended ionic copolymer which had been disclosed, the requirement was satisfied.⁸⁶

81. *Wahl Instruments*, 950 F.2d at 1591 (emphasis added).

82. *Spalding & Evenflo Cos. v. Acushnet Co.*, 718 F. Supp. 1023, 1048 (D. Mass. 1989).

83. *Id.*

84. *Id.* at 1049.

85. *Id.* at 1048.

86. *Id.* at 1049; see also *Cobrace Mfg. Co. Inc. v. Valley View Specialties Co.*, 1992 U.S. Dist. LEXIS 5663 (N.D. Ill. 1992) (citing *Wahl* and *Engel*, to the effect that "if one ordinarily skilled in the art would be able to produce the item without the missing information, then that information need not be disclosed"; summary judgment denied, because the factual record did not provide the trial court with enough information to decide whether the '473 patent-in-suit, for polyethylene lawn edging, satisfied the best mode requirement: "As explained in *Wahl*, whether a patent adequately provides the best mode of production is a fact-intensive inquiry, which depends on a number of different factors. The

Similarly, in *Fromson v. Imperial Metal & Chemical Co.*, the court held that the non-disclosure of a graining step in a patent to a photographic plate, where that step was not claimed, did not invalidate the patent.⁸⁷ The step was well-known to one of ordinary skill in the art as being used in plate preparation. Because Fromson was under no requirement to disclose the graining step, the fact that the step produced a better product, which Fromson knew, did not establish a best mode disclosure violation.⁸⁸

The somewhat cryptic issue of referring to or relying upon the ordinary skill in the art to satisfy the best mode disclosure requirement was explained at length by the court in *Honeywell, Inc. v. Minolta Camera Co. Ltd.*,⁸⁹ where no best mode disclosure violation was found. There, the issue was the lack of disclosure of a particular IC chip, referred to by Honeywell personnel as the "Stadia IC chip."⁹⁰ After holding that there was a factual dispute prohibiting the grant of summary judgment as to which mode of IC chip Stauffer, the inventor, preferred, the court addressed the issue of disclosure adequacy:

Minolta's argument of inadequacy as a matter of law is that Honeywell's disclosure of the IC processes to be used refers solely to the skill in the art and therefore is insufficient. *In general, a general reference to the best mode may be so poor as to result in concealment.* (citation omitted) *The inventor may not rely on the fact that the best mode of carrying out an invention is known in the art.* Thus, in *Dana Corp.*, the inventor's failure to disclose a surface treatment known to the art constituted concealment. (citation omitted) The Federal Circuit expressly rejected the district court's holding that the fact that the surface treatment was known in the art at the time of filing precluded a best mode violation. (citation omitted) "*The best mode requirement is not satisfied by reference to the level of skill in the art, but entails a comparison of the facts known to the inventor regarding the invention at the time the application was filed and the disclosure in the specification.*" *Id.* at 418 (citing *Spectra-Physics*, 827 F.2d at 1535); *see also Wahl Instruments*, (citation omitted) (following *Dana Corp.* where inventor failed to disclose best mode known to the art).

scanty factual record presented to us does not provide enough information to make this decision. Valley View's mere citation to Reum's deposition, in which Reum [the inventor] describes ways to manufacture the edging, does not alone suggest that the '473 Patent is invalid under a best mode argument. In a similar situation, the Federal Circuit has recognized that summary judgment is inappropriate when questions of law turn in significant part on the underlying factual record, which the parties have not adequately developed.")

87. *Fromson v. Imperial Metal & Chem. Co.*, 12 U.S.P.Q.2d (BNA) 1204 (E.D. Pa. 1989).

88. *Id.*

89. *Honeywell, Inc. v. Minolta Camera Co. Ltd.*, 1991 U.S. Dist. LEXIS 4222 (D.N.J. 1991).

90. *Id.* at *6.

Minolta argues that Mr. Stauffer's endorsement of "known . . . processes and techniques" does not satisfy the best mode because it refers solely to what was known in the art. (citation omitted) *Minolta's argument misinterprets these cases, which do not mean that a general reference to the known art can never satisfy the best mode requirement. Their meaning, rather, is that concealment cannot be excused by the inventor's proof at trial that the mode concealed was known to the art at the time of filing.* (citation omitted) "Reference" to the level of skill in the art, in the sense rejected in *Dana Corp. and Wahl Instruments*, does not mean "mention in the application" but "proof at trial." Indeed, where only one mode is known at time of application, and that mode is obvious to one skilled in the art, the applicant need not mention it at all. *W.L. Grove & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1556-57 (Fed. Cir. 1983) (definition of "stretch rate" not required where stopwatch only existing mode of calculating stretch rate), *cert. denied*, 469 U.S. 851, 105 S. Ct. 172 (1984).

Honeywell, unlike the patentees in *Dana Corp. and Wahl Instruments*, does not attempt to excuse a concealment by showing that the best mode Mr. Stauffer contemplated, but did not disclose in the application, was known in the art at the time of filing. Honeywell contends that the application's description of the circuitry, which it argues was the best mode known to Mr. Stauffer, adequately discloses that mode. Nothing in the record goes to whether one skilled in the art, using Mr. Stauffer's application, could have carried out the best mode of the invention (assuming, as this discussion does, that the mode disclosed, and not the Stadia IC chip, was the best mode). See *Chemcast*, 913 F.2d at 928 (test for adequacy whether disclosure would enable one skilled in art to practice best mode). Without such evidence, there can be no finding of inadequacy of disclosure.⁹¹

V. ILLUSTRATIVE PRECEDENT — BEST MODE DISCLOSURE REQUIREMENT VIOLATED

Early cases demonstrate that, if an undisclosed material or method was not necessary or critical to the qualities of the claimed product or process, the courts were reluctant to find patent invalidity for failure to disclose the best mode.⁹² The Federal Circuit has been consistent in its

91. *Honeywell, Inc.*, 1991 U.S. Dist. LEXIS 4222 at *20-23 (emphasis added).

92. See, e.g., *International Tel. & Tel. Corp. v. Raychem Corp.*, 538 F.2d 453, 459-60 (1st Cir.), *cert. denied*, 429 U.S. 886 (1976) (failure to disclose materials used in the production of a wire not violative of best mode disclosure requirement since materials had no effect on the properties of the finished wire and were not crucial to its production); *Flick-Reedy Corp. v. Hydro-Line Mfg. Co.*, 351 F.2d 546, 550-51 (7th Cir. 1965), *cert. denied*, 383 U.S. 958 (1966) (invalidated product patent for failure to disclose the specifications of a special tool essential to the successful reproduction of the product); *Honeywell, Inc. v. Diamond*, 499 F. Supp. 924 (D. D.C. 1980) (failure to disclose specific clock motor used in thermostat was not violative of best mode disclosure requirement because similar motors were widely available and widely advertised).

application of the *Chemcast* principles, particularly in requiring that omitted disclosure relating to an unclaimed material, device, or element be necessary to carrying out the invention for there to be invalidity under the best mode disclosure requirement. Where the facts have demonstrated necessity of the undisclosed element to the best mode of the claimed invention, however, the court has not hesitated to find invalidity.

In *Dana Corp. v. IPC Ltd. Partnership*, the question was whether the patentee had satisfied the best mode disclosure requirement in a patent directed to a valve stem seal composed of an elastomeric material.⁹³ The seal needed surface treatment of the elastomeric material by a fluoride compound to achieve satisfactory performance.⁹⁴ This necessary treatment was omitted in the patent specification and was not claimed, although the specification did disclose that other types of surface coatings might be useful in some instances.⁹⁵ The defendant argued that the omission of the fluoride treatment effectively concealed the best mode and thus invalidated the claims.⁹⁶ The inventor argued that the best mode requirement was satisfied because the fluoride treatment at issue was known to the public long before the filing date of the application.⁹⁷ Finding the inventor's position unpersuasive, the Federal Circuit held the patent claims invalid for failure to disclose the best mode:

The best mode requirement is not satisfied by reference to the level of skill in the art, but entails a comparison of the facts known to the inventor regarding the invention at the time the application was filed and the disclosure in the specification.⁹⁸

In other words, the best mode disclosure requirement cannot *per se* be satisfied simply by relying upon information known to one of ordinary skill in the art, to bootstrap the specification into a state of disclosure-completion it otherwise lacks. The withheld *Dana Corp.* fluoride treatment, in comparison to *Spectra-Physics*, was known to those of ordinary skill in the art, such that a person could have practiced the best mode had they known of the need for that specific treatment.⁹⁹

93. *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 417 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1067 (1989).

94. *Id.* at 418.

95. *Id.*

96. *Id.* at 419.

97. *Id.* at 418-19.

98. *Id.* at 419.

99. PATRICIA N. BRANTLEY, 1989-90 PATENT LAW HANDBOOK § 1.04[3], at 38, suggests that *Dana* and *Randomex* are reconcilable:

At first blush, *Randomex* would appear to conflict with the literal holding in *Dana*, for clearly the Federal Circuit in *Randomex*, with its reference to the prior art, did resort to the level of skill in the art to determine compliance with the

The trial court in *Consolidated Aluminum Corp. v. Foseco International Ltd.*, also distinguished *Randomex*, on the basis that the *Consolidated* applicant failed to include crucial ingredients pertinent to what was claimed as the invention, and there was no evidence that a readily available commercial substitute existed.¹⁰⁰

In *Northern Telecom, Inc. v. Datapoint Corp.*, the invention of the patent in issue was a programmable processor-based, batch data entry terminal.¹⁰¹ In accordance with the patent, the data were keyed into a form displayed on a screen, the operator being guided by screen-displayed names and instructions.¹⁰² A storage area or buffer held the data as it was entered.¹⁰³ When the buffer held a complete and correct record, the data were transferred to a magnetic tape cassette.¹⁰⁴ The magnetic tape cassette gave rise to the best mode disclosure requirement issue because one set of claims involved cassette drive technology as a key feature.¹⁰⁵

The court noted that the specification of the patent stated that one of the objectives of the disclosed invention was to capture data on magnetic tape cassettes of the general type "presently finding extensive and widespread usage in audio entertainment equipment, but never heretofore used in data-handling apparatus."¹⁰⁶ The specification also stated that the invention includes cassettes of the type that are almost universally available for audio purposes.¹⁰⁷

Sycor knew before it filed the patent application, however, that standard audiotape was not the best mode for carrying out the invention: it had purchased tape and cassettes of its own design and specifications, which were different from standard audiotapes in their yield

best mode requirement. A closer view of the *quality* of the disclosures in both cases would appear to allow the cases to be reconciled. In *Dana*, the Federal Circuit, in *dictum*, noted that the best mode requirement cannot be met "solely" by what was known in the prior art. In *Dana*, the patentee had failed to disclose not only the steps and procedures necessary for the fluoride treatment, *but the identity of the treatment itself*. *Randomex*, on the other hand, involved only the failure to furnish the chemical formula of a disclosed compound.

Thus reconciled, the test for the satisfaction of the best mode requirement would appear to entail a complete disclosure of the existence of a step or function necessary for operation, but not necessarily the details of such a step if such details are readily known to those skilled in the art.

100. *Consolidated Aluminum Corp. v. Foseco Int'l Ltd.*, 716 F. Supp. 316, 322-23 (N.D. Ill. 1989), *aff'd*, 910 F.2d 804 (Fed. Cir. 1990).

101. *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 933 (Fed. Cir. 1990).

102. *Id.*

103. *Id.*

104. *Id.*

105. *Northern Telecom*, 908 F.2d at 940.

106. *Id.*

107. *Id.*

strength and magnetic characteristics.¹⁰⁸ (The court did not say that these "different" tapes were the "best" tapes, or even that they were "better" than the standard audiotapes; it simply noted that they were necessary to effectuate the invention.)

The Federal Circuit affirmed the trial court's holding of invalidity:

Sycor argues that, at the time of the patent application, the 3M commercial audio tape that was on the market met its specifications. If so, it is this tape (or Sycor's own specifications) that had to be disclosed to satisfy the best mode requirement of 35 U.S.C. § 112, para. 1. While Sycor's argument may be relevant to enablement, it does not establish the best mode "contemplated by the inventor," which is a subjective inquiry.¹⁰⁹

A strong dissent was written by Judge Newman, based upon the argument that, because *Hybritech Inc. v. Monoclonal Antibodies, Inc.*¹¹⁰ had established a need to prove, by clear and convincing evidence, that the inventor knew of and concealed a better mode than the mode that was disclosed, to invalidate for failure to observe the best mode disclosure requirement, "[i]t is facile, and erroneous, to infer that information not included in a patent application was necessarily concealed."¹¹¹ There was no clear and convincing evidence of concealment nor any finding of concealment, the dissent continued, and that in fact a "specification of commercial audio tape parameters was prepared by Sycor for distribution"; "[d]istribution is inimical to concealment," but this specification was *not* in the patent specification.¹¹² The factual considerations necessary to determine whether an asserted omission amounts to concealment include, according to the dissent, whether the omitted information was publicly known or readily ascertainable; whether there was any benefit to the patentee of concealment — or the absence of benefit; the materiality of the information; whether the interested public was actually prejudiced; and any evidence tending to show good or bad faith.¹¹³

In *Chemcast Corp.*, the Federal Circuit affirmed the trial court's finding that the patent was invalid for failure to honor the best mode disclosure requirement for the claimed grommet, used for sealing an opening in a panel.¹¹⁴ The grommet had an annular base portion and an annular locking portion, with the base portion comprising an elasto-

108. *Northern Telecom*, 908 F.2d at 940.

109. *Id.*

110. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384-85 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

111. *Northern Telecom*, 908 F.2d at 946.

112. *Id.*

113. *Id.*

114. *Chemcast Corp. v. Arco Indus. Corp.*, 913 F.2d 923, 924 (Fed. Cir. 1990).

meric material, the locking portion being more rigid than the base portion.¹¹⁵ The inventor failed to specify: (1) the particular type; (2) the hardness; and (3) the supplier and trade name of the material used to make the locking portion of the grommet.¹¹⁶

Chemcast contended that the trial court erred in two respects: first, by failing to focus on the claimed invention, and second, by erring in concluding that the inventor, Rubright, concealed a better mode than he disclosed.¹¹⁷

In support of its first contention, Chemcast stated that because the patent did not claim any specific material for making the locking portion of the grommet, Rubright's failure to disclose the particular material that he thought worked the best did not violate the best mode requirement.¹¹⁸ The court rapidly disposed of that position, finding that it improperly confused best mode and enablement: "Indeed, most of the cases in which we have said that the best mode requirement was violated addressed situations where an inventor failed to disclose non-claimed elements that were nevertheless necessary to practice the best mode of carrying out the claimed invention."¹¹⁹

Chemcast's claim interpretation argument was also incorrect, the court held, because it had claimed some grommet material meeting the claim limitations directed to the locking portion. The fact that the claim was broad was not a reason for noncompliance with the best mode requirement:

Here, the information the applicant is accused of concealing is not merely necessary to practice the claimed invention, as in *Dana* fluoride surface treatment was "necessary to satisfactory performance" of the claimed valve stem seal . . . ; it also describes the preferred embodiment of a claimed element, as in *Spectra-Physics* the undisclosed braze cycle was the preferred "means for attaching" and "securing" claimed in the patents at issue.¹²⁰

Chemcast's second argument — that Rubright had reached no conclusion on any mode being the "best" — simply was not accepted by the court.¹²¹ The trial court had found that Rubright selected the material for the locking portion of the grommet, a specific rigid PVC plastisol composition, and purchased it under the tradename R-4467 from Reynolds, which had spent 750 man hours developing the compound for

115. *Chemcast Corp.*, 913 F.2d at 924.

116. *Id.* at 926.

117. *Id.* at 928.

118. *Id.*

119. *Id.* (citations omitted).

120. *Id.* (citations omitted).

121. *Id.* at 928-29.

him.¹²² Furthermore, the court found that at the time the application was filed, the only embodiment of the claimed invention known to Rubright was a grommet composed of R-4467, having a specific Shore D hardness.¹²³

The specification disclosure of the locking portion of the grommet, the court concluded, was manifestly deficient in failing to disclose the best mode R-4467 compound: Given the level of ordinary skill in the art, there was no implicit disclosure of the preferred material hardness, and the disclosure of a list of generic potential materials was not an adequate disclosure of R-4467.¹²⁴ The Federal Circuit stated:

The question is not whether those skilled in the art could make or use the . . . grommet without knowledge of Reynosol compound R-4467; it is whether they could practice Rubright's contemplated best mode which, the court found, included specifically the Reynosol compound. . . . Because Chemcast used only R-4467, because certain characteristics of the grommet material were claimed elements of the . . . invention, and because Rubright himself did not know the formula, composition, or method of manufacture of R-4467, section 112 obligated Rubright to disclose the specific supplier and trade name of his preferred material.¹²⁵

Chemcast raised two other factors as excusing the need for Rubright's disclosure of R-4467.¹²⁶ Non-disclosure was supposedly justified because Reynosol considered the formulation of R-4467 to be a trade secret, and sold it only to Chemcast.¹²⁷ The court said that this fact did not bear on the state of Rubright's knowledge or the quality of his disclosure.¹²⁸

Non-disclosure was also justified on the ground that Rubright developed his preferred mode with the requirements of a specific customer in mind.¹²⁹ That, the court said, was not correct, because compliance with the best mode disclosure requirement does not turn on

122. *Chemcast Corp.*, 913 F.2d at 929.

123. *Id.*

124. *Id.*

125. *Id.* (citation omitted).

126. *Id.* at 930.

127. *Id.*

128. *Id.*

Whatever the scope of Reynosol's asserted trade secret, to the extent it includes information known by Rubright that he considered part of his preferred mode, section 112 requires that he divulge it. Second, whether and to whom Reynosol chooses to sell its products cannot control the extent to which Rubright must disclose his best mode. Were this the law, inventors like Rubright could readily circumvent the best mode requirement by concluding sole-user agreements with the suppliers of their preferred materials.

Id. (citation omitted).

129. *Id.*

why or for whom an inventor develops his invention.¹³⁰

In *Consolidated Aluminum Corp. v. Foseco International Ltd.*, Consolidated sued Foseco for infringement of patents relating to the manufacture and use of ceramic foam filters for molten metals, particularly aluminum.¹³¹ The trial court found Consolidated's basic patent to be unenforceable, due to Consolidated's intentional withholding of the best mode for the claims of that patent and its deliberate disclosure of a fictitious, inoperable mode instead.¹³² In addition to holding that patent unenforceable, the trial court held that Consolidated's conduct in failing to disclose the best mode and in disclosing the fictitious inoperable mode constituted inequitable conduct sufficient to render the other related patents unenforceable as well.¹³³

Consolidated challenged the trial court's finding of inequitable conduct on appeal, arguing that although the court found intentional non-disclosure of the best mode, there was no express finding of an "intent to deceive" for purposes of finding Consolidated's conduct to be inequitable.¹³⁴ The Federal Circuit disagreed, noting that Consolidated had misinterpreted prior case authority and that the trial court need not have made its finding in terms stating an explicit "intent to deceive."¹³⁵

In affirming the trial court's findings, the court held that, as a matter of first impression, inequitable conduct in prosecuting one patent, *viz.*, Consolidated's failure to disclose the best mode and its disclosure of a fictitious, inoperative mode, had an immediate and necessary relation to the equity sought, enforcement, under the other related patents so as to render those patents unenforceable as well.¹³⁶ The Federal Circuit concluded that Consolidated's concealment of best mode for one patent so "permeated the prosecution of the other patents [that it] renders them unenforceable."¹³⁷ The court had earlier held that a deliberate attempt to withhold disclosure of the best mode is likely to evidence inequitable conduct.¹³⁸

130. *Chemcast Corp.*, 913 F.2d at 930.

An inventor need not disclose manufacturing data or the requirements of a particular customer *if* that information is not part of the best mode of practicing the claimed invention, but the converse also is true. Whether characterizable as "manufacturing data," "customer requirements," or even "trade secrets," information necessary to practice the best mode simply must be disclosed.

Id. (citation omitted).

131. *Consolidated Aluminum Corp. v. Foseco Int'l Ltd.*, 716 F. Supp. 316 (N.D. Ill. 1989), *aff'd*, 910 F.2d 804 (Fed. Cir. 1990).

132. *Id.* at 806.

133. *Id.* at 807.

134. *Id.* at 808.

135. *Id.* at 809.

136. *Id.*

137. *Id.* at 812.

138. *Dana Corp. v. Nok, Inc.*, 882 F.2d 505 (Fed. Cir. 1989); *see also* *Vieau v. Textron*,

The Federal Circuit affirmed, without opinion, a summary judgment holding of best mode invalidity in *Refac International, Ltd. v. IBM*.¹³⁹ There, the patent-in-suit involved a design for comparing a secret code word known by a cardholder, with information encoded on a credit card, thereby giving the cardholder access to credit or cash.¹⁴⁰ The process used to encode the card was the crux of the issue. The patent specified that the card was encoded in a "random manner," but there were two methods for generating random numbers, random with replacement and random without replacement.¹⁴¹ The inventor in fact used and considered random with replacement to be the best mode.¹⁴² When challenged by defendants for failure to explicitly disclose that fact, the plaintiff maintained that "[T]he system presented is random with replacement because otherwise the 'system would be no system at all.'" ¹⁴³ Defendants moved for summary judgment.¹⁴⁴ Faced with the language of the patent, the conflicting deposition testimony of the inventor, and the affidavit statement of plaintiff's expert, the court found no genuine issue of material fact, and granted the motion.¹⁴⁵

Plaintiff's expert testified that the plaintiff's system did encompass a random with replacement system, but he arrived at his conclusion "after he had extrapolated from the system presented by the plaintiff in his application."¹⁴⁶ In doing so, said the court, "Dr. Hammer appears to have ignored what the patent stated and . . . looked at the patent as if he were deciphering a code; *i.e.* he looked for an invention and did not consider the invention that was described."¹⁴⁷

Particularly, the examples of the patent reflected a random *without* replacement system, which Dr. Hammer ignored, to the loss of all persuasiveness before the court:

Inc., 230 U.S.P.Q. (BNA) 500, 512 (E.D. Mich. 1985), *aff'd in part, vacated in part sub nom.* Vieau v. Japax, Inc., 823 F.2d 1510 (Fed. Cir. 1987) ("Nowhere in the specification is the specific shape, size or positioning of the take-up rollers, the critically important pinch rollers . . . described, and nowhere does the patent describe the hardened tool steel which the plaintiffs found after experimentation would work best [W]hen the plaintiffs designed certain elements because there was nothing available on the market, their design became the best mode of practicing their invention [G]iven plaintiffs' testimony on the problems they encountered, particularly in designing the pinch rollers for their machine, there is clear and convincing proof of their concealment of best mode.").

139. *Refac Int'l, Ltd. v. IBM*, 689 F. Supp. 422, 424 (D. N.J. 1988), *aff'd mem.*, 891 F.2d 299 (Fed. Cir. 1989).

140. *Id.* at 425.

141. *Id.* at 428.

142. *Id.*

143. *Id.*

144. *Refac Int'l*, 689 F. Supp. at 428.

145. *Id.*

146. *Id.* at 429.

147. *Id.*

*The patent stands or falls on what is said, not what the holder of the patent hoped he said, nor what an expert speculates in hindsight about what the patent holder might have meant. Words mean what they mean and not what we want them to mean. In summary then, this Court finds unpersuasive the speculative testimony of Dr. Hammer, and confines the use of his testimony to the explanation of what actually is in the patent and not what might be read into the application. The examples given in the patent are clear on their face, and show a system utilizing a random without replacement process. The meaning given to the patent by Dr. Hammer is at variance with the patent's clear language. As such, this Court will rely upon the plain clear language of the patent.*¹⁴⁸

Plaintiff's testimony was similarly found to be sorely lacking.¹⁴⁹

The court's overall conclusion of what the facts and evidence showed was not favorable to the plaintiff:

This Court is convinced that the patent claimed and illustrated is a random without replacement system. *Both the patentee and the expert engaged by the plaintiff have engaged in litigation hindsight. The contradictory testimony of the expert is based on post-facto speculation as to a system that the inventor might have invented. The contradictory testimony of the patentee is based on self-proclaimed mistakes that were made in the application itself.* This Court finds totally unpersuasive the attempt by the plaintiff to read into the patent that which is not there. . . .¹⁵⁰

After reviewing the basics of best mode precedent,¹⁵¹ the court ex-

148. *Refac Int'l*, 689 F. Supp. at 430 (emphasis added).

149. *Id.* at 431.

The attempt by the plaintiff in his deposition to assert that a random with replacement system was utilized in the patent was based on his contention that the examples in the patent were not his invention but were, instead, merely illustrative of the concepts he was trying to promote. Nowhere, however, in the patent application, nor in the specifications, nor in the claims, does Mr. Cook make clear that he had narrowed his invention to be a random with replacement system and that the examples given were not examples of his supposed system. . . . *However, what was said is what was said - no more, no less. This Court will not stray from the written words of the patent to a jungle of hyperbole.*

Id. (emphasis added).

150. *Id.* (emphasis added).

151. *Id.* at 431-32.

The essence of the best mode condition "requires the inventor to disclose the best mode contemplated by him, as of the time he executes the application, of carrying out his invention." . . . Even though a patent is not required to teach that which is already well-known in the art, . . . when there is a failure to disclose the best mode, the Court must look to evidence of "concealment," whether accidental or intentional. . . . If the quality of the disclosure is poor, the result may be effective concealment. . . . If the inventor knows, at the time the application is filed, of a better method to practice his invention than the one set forth in his application, the patent can be ruled invalid."

Id.

plained its reasoning for finding a violation of the disclosure requirement:

There is no reason why this principle should not be applied to what is essential for carrying out the invention . . . itself. *A patentee is required to disclose the system which makes the patent run if that system is important in the disclosure of the "best mode."* As in *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 589-90 (Fed. Cir. 1988), a patentee is required to divulge the "fuel" that makes his invention run. *Randomex* involved a system which cleaned disk packs with a cleaner fluid. While the lower court held that patent invalid for failure to particularly specify the components of the fluid, the Federal Circuit reversed because it felt that disclosure of a generic type of cleaner sufficed. However, as the court held, there remains a requirement for sufficient specificity under the best mode requirement that the patentee disclose the best method that would allow one skilled in the art to utilize the claimed invention. *Id.* p. 590, n*.

In the case at bar, the patent has failed to affirmatively disclose the best mode as testified to by the patentee. *The mode revealed by the patent is a system of encoding a card using a random without replacement. However, according to Mr. Cook, this is "no system at all."* Additionally, the plaintiff was aware at the time of filing that his patent application was not precise and that it did not disclose the optimal system. It is for this reason that the Court holds that the patentee has not complied with the "best mode" requirement of § 112.¹⁵²

Summary judgment on the basis of failure to satisfy the best mode disclosure requirement was granted and affirmed by the Federal Circuit in *Acme Resin Corp. v. Ashland Oil Inc.*, despite an "unclaimed elements" defense.¹⁵³ The invention at issue there was a process of making foundry cores and molds for the casting of metal that were formed through a "cold box" process, where sand was mixed with two binding components, a polyhydroxy compound and a polyisocyanate compound, which was stored until needed. The mixture was then blown into a cold box and cured with a gaseous catalyst.¹⁵⁴ The catalyst caused the binder components to react and bond into the desired shape.¹⁵⁵

The problem that the inventor solved was the premature reaction of the binder components, before the gaseous catalyst was introduced.¹⁵⁶ Acme's research disclosed that certain organic phosphorus compounds, added to the binder composition, acted as "bench life" extenders, bench

152. *Refac Int'l*, 689 F. Supp. at 432 (emphasis added).

153. *Acme Resin Corp. v. Ashland Oil Inc.*, 20 U.S.P.Q.2d (BNA) 1305, 1306 (S.D. Ohio 1991), *aff'd*, 954 F.2d 735, 24 U.S.P.Q.2d (BNA) 1475, 1992 U.S. App. LEXIS 1475 (Fed Cir. 1992).

154. 20 U.S.P.Q.2d (BNA) at 1305-06.

155. *Id.* at 1306.

156. *Id.*

life being the time between preparation of the sand mixture and when it could be used satisfactorily.¹⁵⁷ The claimed process was directed to the incorporation of those organic phosphorus compounds as bench life extenders in the cold box system.¹⁵⁸

After discovery, Ashland moved for summary judgment, alleging, *inter alia*, violation of the best mode disclosure requirement. Ashland argued that the patent failed to disclose the preferred best binding components, the polyhydroxy and polyisocyanate components, for use in the invention.¹⁵⁹

The court first addressed and resolved the general issues of propriety of summary judgment.¹⁶⁰ The specific challenge to the availability of summary judgment where the issue was violation of the best mode disclosure requirement was turned aside, on general principles.¹⁶¹

The issue was plainly whether best mode law, applied to the claimed invention, required the disclosure of the best polyhydroxy and polyisocyanate components despite the "unclaimed elements" contentions.¹⁶² The court found that it did:

At oral argument Acme's counsel put forth a more general argument that since the invention claimed is the addition of the organic phosphorous compound as a bench life extender, the particular polyisocyanate and polyhydroxy compounds used have nothing to do with the invention, and thus the best mode requirement would not necessitate disclosing any particular polyhydroxy or polyisocyanate as the "best."

...

[T]he testimony and exhibits which have been presented clearly show that the effectiveness of the organic phosphorus additive as a bench life extender *depends not only on the particular organic phosphorus compound used but also on the other components in the cold box system with which the organic phosphorus additive is designed to interact. The "best mode" of practicing the invention would thus entail not only the preferred organic phosphorus compound, BPOD, but also the preferred binder components which, when the phosphorus compound is added, produce the optimal results in terms of bench life extension.* Although use of a polyhydroxy component and a polyisocyanate component in the binder composition is not in and of itself the invention and is plainly known in the prior art, "[a] patent applicant must disclose the *best* mode of carrying out his claimed invention, not merely a mode of making and using what is claimed." Accordingly, *identification of any commercially available polyhydroxy and polyisocyanate*

157. *Acme Resin Corp.*, 20 U.S.P.Q.2d (BNA) at 1306.

158. *Id.*

159. *Id.*

160. *Id.* at 1306-07.

161. *Id.* at 1309-10.

162. *Id.* at 1309.

would not necessarily be sufficient in this case, and to the extent Mr. Laitar contemplated use of preferred polyhydroxy and polyisocyanate components in his invention, the best mode requirement would demand that those preferred embodiments be disclosed.¹⁶³

Analysis of the two allegedly withheld best modes for the polyhydroxy component and the polyisocyanate component reached different conclusions.¹⁶⁴ First, the court addressed the polyhydroxy component, finding no failure to disclose for straightforward reasons, in part because Ashland misconstrued the level of disclosure required:

The only specific example of a polyhydroxy component identified in the specifications is "Acme Flow 2030 Part 1 Resin, a phenolic resole resin solution available from The Acme Resin Corporation, Forest Park, Ill." *Defendant claims that this violates the best mode requirement for two reasons: (1) because it fails to explain the procedure for making Acme Flow 2030 Part 1 Resin, which is apparently made by a confidential procedure and which, according to Mr. Laitar's deposition testimony, cannot be reverse engineered; and (2) because, at the time the application was filed Mr. Laitar knew that another Acme Resin, 2035 Resin, provided better bench life properties than the 2030 Resin.* With respect to the first argument, it appears undisputed that Acme's 2030 Resin is a material which is commercially available, and *the Court does not read the cases cited by defendant to support the proposition that an inventor is required to set forth in his patent application the manufacturing procedure for a component which is commercially available. . . .* Regarding the second argument, although 2035 Resin may be a "better" polyhydroxy compound for use in Laitar's invention in the sense that it has better life properties than 2030 Resin when used under some circumstances, *it appears from the evidence presented that the 2035 Resin is a specialty resin not suited for general casting use.* 2030 Resin, on the other hand, is a "general purpose" resin which overall would produce better casting results. The court finds that defendant has not established that plaintiff failed to meet the best mode requirement in the disclosure of 2030 Resin, as opposed to 2035 Resin, as the preferred polyhydroxy component.¹⁶⁵

The conclusion as to the resin is less than clear: even if 2035 Resin was a specialty resin, it would still have to be disclosed if it was the best mode, whether otherwise suitable out of the context of the invention for general molding or not.

The result reached by the court was quite different, however, for the polyisocyanate:

Defendant has a much stronger argument with respect to the al-

163. *Acme Resin Corp.* 20 U.S.P.Q.2d (BNA) at 1310-11 (emphasis in original and added).

164. *Id.* at 1311.

165. *Id.* (emphasis added).

leged failure to disclose the best polyisocyanate compound. The only polyisocyanate described in the patent application is a compound produced by the Upjohn Company and designated PAPI135. *Defendant claims that at the time the patent application was filed Mr. Laitar had tested a different polyisocyanate, produced by the German company BASF, and determined that the BASF material was substantially better than the Upjohn material.* Plaintiff argues that the BASF polyisocyanate was still being tested at the time the patent application was filed, and that it was *only after* the application was filed that Acme reached the conclusion that the BASF polyisocyanate was "better."

In resolving this disputed issue, the Court has thoroughly reviewed the exhibits and testimony presented. Particular emphasis must be given to the affidavit of Mr. Laitar which has been submitted, his pertinent deposition testimony, and the several memoranda prepared by Mr. Laitar which have been submitted, since it is Mr. Laitar's knowledge that is critical to the best mode inquiry. *Having reviewed this evidence, the Court finds it beyond question that Mr. Laitar knew, at the time he filed the patent application, that the BASF polyisocyanate, as opposed to any other usable polyisocyanate compound, was the best for use in the invention.*

....

Accordingly, although it appears that it was not until shortly *after* the patent application was filed that Acme switched to BASF polyisocyanate for its own commercial use, plans to switch to the BASF material were made prior to the application, and prior to the application Mr. Laitar, the inventor, knew that the BASF polyisocyanate was the best for use in his invention. *The date on which Acme ultimately approved the BASF material for commercial use is, as defendant correctly points out, irrelevant to the question of what Mr. Laitar knew at the time the application was filed.*¹⁶⁶

Acme attempted to counter the evidence of Laitar's contemporaneous state of mind by offering the Seeney deposition, to question whether Laitar had in fact obtained better results with the BASF isocyanate such that, prior to filing the application, Laitar contemplated use of the BASF isocyanate as the best mode of carrying out his invention.¹⁶⁷ The court turned away the attempt to substitute Seeney's alleged state of mind for the inventor's.¹⁶⁸ The court also turned away the argument that the specific best mode material only led to a trivial process improvement, implying that such a small help couldn't be truly a "best mode."¹⁶⁹

On appeal, the Federal Circuit confirmed the trial court's analysis

166. *Acme Resin Corp.*, 20 U.S.P.Q.2d (BNA) at 1311-12 (emphasis added).

167. *Id.* at 1312-13.

168. *Id.*

169. *Id.*

in all respects, and affirmed the grant of summary judgment.¹⁷⁰ Reviewing the trial court's assessment of the knowledge requirement, the court took a somewhat different approach to the "unclaimed element" issue that had been presented below:

Likewise, Acme argued on appeal that it is not required to disclose the best polyisocyanate component because Mr. Laitar's invention was not directed to the polyisocyanate component but merely to a phosphorus additive for a well-known prior art composition of which the polyisocyanate component was only a part. This argument has no merit for it misapprehends the requirements of the case law on best mode.

The best mode requirement of 35 U.S.C. § 112 applies to the "claimed invention." . . . *Claims 6, 17, and 28 of the '881 patent each specifically further limit the polyisocyanate component set forth in the respective independent claims from which they depend. As clearly part of the claimed invention, the best chemical for the polyisocyanate component had to be disclosed.* In view of what he claimed, Mr. Laitar's subjective view as to the scope of his invention is legally irrelevant.¹⁷¹

Arguably, this alternate ruling weakens *Acme Resin* as being authority for finding a best mode disclosure violation based upon non-disclosure of an "unclaimed element."

The trend of these cases plainly is one of rigorous application of the best mode disclosure requirement by the Federal Circuit. The court also has looked closely to and condemned non-disclosure of necessary elements which, although not explicitly claimed, are essential to the practice of the preferred embodiment known to the inventor at the time of filing of the application.

VI. BEST MODE DISCLOSURE REQUIREMENTS IN COMPUTER TECHNOLOGY

The same basic rules and concepts governing the best mode disclosure requirement apply in cases involving computer technology, with the addition of the technical nuances that the technology brings to the issue.

In *Mendenhall v. Astec Industries, Inc.*, for example, the patent claimed a method of weighing and dispensing asphalt from a surge bin with an interrupt circuit as a safety device.¹⁷² The defendant contended that the patent was invalid for failing to honor the best mode disclosure requirement because the patent failed to disclose the actual computer program used by the patentee in the commercial embodiment of the

170. *Acme Resin Corp. v. Ashland Oil, Inc.*, 954 F.2d 735, 24 U.S.P.Q.2d (BNA) 1475, 1476 (Fed. Cir. 1992).

171. *Acme Resin Corp.*, 24 U.S.P.Q.2d (BNA) at 1477 (emphasis added).

172. *Mendenhall v. Astec Indus., Inc.*, 14 U.S.P.Q.2d (BNA) 1134 (E.D. Tenn. 1988), *aff'd*, 891 F.2d 299 (Fed. Cir. 1989) (unpublished).

method disclosed.¹⁷³ The court rebuffed that defense:

The evidence indicated that the patent disclosed sufficient information that a person skilled in the art of industrial process controls could write a computer program to carry out the steps called for in the patent. . . . *The patent simply discloses that the best mode for practicing the invention would be with a microprocessor control system* which was "within the skill of the art" — meaning, presumably, the art of designing computer programs for microprocessors not the art of engineering asphalt plants. . . .

[T]he patent . . . discloses the best method of its performance (*i.e.*, — with a microprocessor) and gives sufficient information to enable others to practice the invention. The computer circuitry actually required to practice this "best method" appears to have been well within the skill of the art at the time of the invention.¹⁷⁴

Arguably, the court was leaning close to the enablement/best mode line, but went no further than *Randomex* in its best mode disclosure analysis, particularly focusing on the claimed invention. Query, however, whether microprocessor technology, if the best mode, must inherently include the embedded programming, without which the device does not function to carry out the claimed method (assuming a general purpose microprocessor).

In *In re Sherwood*, the court did not sustain an *ex parte* rejection for failure to disclose an existing computer program useful for carrying out the claimed invention.¹⁷⁵ The specification disclosure was slanted towards an analog computer apparatus.¹⁷⁶ The inventor had stated, however, that "the best mode contemplated by the inventor" was to carry out the inventor's data processing steps on a digital computer.¹⁷⁷ An exemplification of the data resulting from such data processing was set out.¹⁷⁸ In response to a best mode rejection, the inventor had provided evidence that the exemplary data and the description in the specification were sufficient to enable a skilled programmer to write the suitable program.¹⁷⁹ The court agreed that this was sufficient, and reversed the rejection.¹⁸⁰

Where a claim did not include a word processor *per se*, with which the claimed circuitry interfaced, there was no requirement to disclose the specific engineering level of word processor with which it was con-

173. 14 U.S.P.Q.2d (BNA) at 1140.

174. *Mendenhall*, 14 U.S.P.Q. (BNA) at 1140 (emphasis added).

175. *In re Sherwood*, 613 F.2d 809, 204 U.S.P.Q. (BNA) 537 (C.C.P.A. 1980), *cert. denied*, 450 U.S. 994 (1981).

176. 204 U.S.P.Q. (BNA) at 540.

177. *Id.*

178. *Id.*

179. *Id.* at 543.

180. *Id.* at 545.

templated that the claimed invention would be used.¹⁸¹ In contrast, invalidity for failure to honor the best mode disclosure requirement was found in *White Consolidated Industries, Inc. v. Vega Servo-Control*.¹⁸² In *White Consolidated*, a control device utilized a language translator means to convert blocks of source language instructions into blocks of machine language instructions.¹⁸³ Vega maintained that the only language translator means discussed was "a known translator capable of converting, in a single pass, a part program in programming language form into a part program in machine language form, as for example SPLIT (Sundstrand Program Language Internally Translated)."¹⁸⁴ The inventors knew that the SPLIT processor was required in the best mode contemplated for practicing the invention; it was the only programming language known for the operation of the claimed invention in the conversational mode.¹⁸⁵ The SPLIT processor was not disclosed; it was proprietary to Sundstrand and a trade secret, which, the trial court found, frustrated the best mode disclosure requirement.¹⁸⁶

White contended that the evidence showed that the best mode contemplated by the inventors for practicing the "language translator means" was any known single pass translator for converting a part program in source language into machine language.¹⁸⁷ White said the SPLIT processor was only an example and there were in fact other known single pass languages.¹⁸⁸

The trial court held that the best mode had not been disclosed, stating in part that:

While it is true there were other known single pass languages available in 1968, there is simply no credible evidence to support a finding that the inventors had ever used any of them or knew whether they would work in the '653 system. . . . Each of the claims depends on two-way communication, which utilizes the conversational mode of the '653 patent. The conversational mode, so far as the inventors knew, depended on SPLIT. The portions of the record cited by White do no more than demonstrate the existence of a variety of single pass part programming languages. They do not demonstrate that any one of them could be used in the '653 system or, more properly, that the inventors had any knowledge any language other than SPLIT would

181. *DeGeorge v. Bernier*, 768 F.2d 1318, 226 U.S.P.Q. (BNA) 758 (Fed. Cir. 1985).

182. *White Consol. Indus., Inc. v. Vega Servo-Control*, 214 U.S.P.Q. (BNA) 796 (S.D. Mich. 1982), *aff'd on other grounds*, 713 F.2d 788 (Fed. Cir. 1983).

183. 214 U.S.P.Q. (BNA) at 798.

184. *Id.* at 816.

185. *Id.* at 818.

186. *Id.*

187. *Id.*

188. *White Consol.*, 214 U.S.P.Q. (BNA) at 817.

work. There is no basis for a finding that a person skilled in the art would know that another single pass language would work

....

[W]hen a computer program held proprietary by maintaining its processor as a trade secret is the only known way of practicing an invention of which it is an integral part, there has been a failure to disclose the best mode of practicing the invention.¹⁸⁹

This result is factually analogous to *Chemcast*, where the only operable embodiment known to the inventor at filing was the one withheld from the specification.

Recently, *In re Hayes Microcomputer Products, Inc.*, involved an invention relating to a mechanism for controlling the mode of operation of a modem.¹⁹⁰ A modem has two operating modes: a transparent mode, in which it performs the modulation-demodulation function, and a command mode, in which the modem responds to pre-determined commands and performs operations by executing a set of instructions "stored in Read-Only-Memory (ROM) or firmware." An escape command tells the modem when to switch between transparent and command modes.¹⁹¹ A jury found the patent not invalid and willfully infringed. Ven-Tel appealed, arguing, *inter alia*, that no reasonable jury could have concluded that the best mode of practicing the invention was disclosed.¹⁹²

Ven-Tel's contention was that Heatherington, the inventor, considered firmware to be the best mode of implementing his invention, but had failed to disclose the details of the firmware which he considered to be part of his best mode.¹⁹³ Reciting eleven (11) features of the Hayes SmartModem, a commercial embodiment of the claimed invention, only one of which was disclosed, Ven-Tel argued that these features were all part of the best mode of implementing the firmware, and had improperly been maintained as trade secrets, being part of the specific software timer used in the SmartModem.¹⁹⁴

After reciting the *Chemcast* two-part test, the court focused on Ven-Tel's key assertion that Heatherington had repeatedly admitted that he had a best mode of implementing his invention, and that firmware was the best mode.¹⁹⁵ The patentee contended that substantial evidence had been placed before the jury that Heatherington's best

189. *Id.* at 825.

190. *In re Hayes Microcomputer Prod., Inc.*, 982 F.2d 1527, 25 U.S.P.Q.2d (BNA) 1241 (Fed. Cir. 1992).

191. *Id.* at 1531.

192. *Id.* at 1530.

193. *Id.* at 1533.

194. *Id.* at 1534.

195. *Id.* at 1536.

mode had been disclosed.¹⁹⁶ The court agreed.¹⁹⁷ In summary, it stated that:

"Firmware" is a generic term used to describe *any* computer program permanently stored in ROM associated with a microprocessor. A "firmware listing" is a specific written computer program. Substantial evidence was introduced at trial in support of the conclusion that Heatherington did not consider the specific firmware listing he used to implement his invention, either in its entirety or in its subparts, to be better than any other firmware listing that implemented his invention. Rather, he believed that the best mode of his invention was to store a firmware listing in firmware, and not that the various details of the specific firmware listing used in the Hayes SmartModem were the best mode. Thus, he was not required to disclose the details of the Hayes SmartModem firmware listing for a person of ordinary skill in the art to practice the invention.¹⁹⁸

Ven-Tel relied upon *In re Sherwood*, noting that the specification there taught general mathematical equations for implementing the invention, which Heatherington did not disclose, and, lacking that disclosure, failed to disclose the best mode.¹⁹⁹ While the court agreed that the patent "only discloses the general function of the firmware without teaching mathematical formulas, flow charts or a firmware program listing," it concluded that "no more was needed here."²⁰⁰

Heatherington believed that the best mode of implementing the escape sequence with a guardtime mechanism was with a microprocessor which contained firmware that included instructions to execute the escape sequence described in the patent. That was disclosed. The evidence supports the conclusion that a person of ordinary skill in the microprocessor art could develop such a firmware listing.²⁰¹

Ven-Tel raised a number of other allegedly undisclosed features of the best mode, but none persuaded the court. Ven-Tel said that a software timer loaded with guardtime was part of the best mode; Heatherington testified that both hardware and software timers were disclosed in the specification, which they were, and that neither type was necessarily better than the other.²⁰² That constituted substantial evidence supporting the conclusion that a software timer was not part of the best mode.²⁰³ Specific details of the software timer's operation — that it counts down one second to zero from the last keyboard interrupt,

196. *Id.* at 1536-37.

197. *Id.* at 1537.

198. *In re Hayes Microcomputer*, 982 F.2d at 1537.

199. *Id.*

200. *Id.*

201. *Id.*

202. *Id.* at 1538.

203. *Id.*

at zero it idles at zero until the next keyboard interrupt, and resets each time a character interrupt is received, were allegedly withheld.²⁰⁴ Heatherington said that the specification was descriptive enough to enable one of ordinary skill in the microprocessor art to implement those features.²⁰⁵ Ven-Tel said that Heatherington should have disclosed the specific details of the escape command, such as that it was a single escape character repeated three times.²⁰⁶ The court agreed that there was substantial evidence that Heatherington did not consider that part of his best mode.²⁰⁷ Finally, Ven-Tel contended that, because the SmartModem firmware allowed for programmable guardtime and escape character, that that too, was part of the best mode.²⁰⁸ The court disagreed, because the "record evidence indicates that whether the escape sequence was pre-programmed or not was not part of Heatherington's best mode."²⁰⁹

The court finished its analysis of the best mode issues with a reference to *Wahl*:

Whether the best mode requirement is met depends on the scope of the invention, the skill in the art, evidence as to the inventor's belief, and other surrounding circumstances. *Wahl Instruments, Inc. v. Acvius Inc.* Substantial evidence supports the jury's finding that the best mode requirement was not violated.²¹⁰

VII. THE GUIDELINES

From the statute and case precedent, rough guidelines as to the best mode disclosure requirement may be drawn:

1. The best mode of carrying out the claimed invention must be disclosed, if one has been contemplated by the inventor. Disclosure is not optional. Every U.S. utility patent application must disclose the best mode, if one has been contemplated by the inventor.
2. The existence of a best mode or preferred embodiment for the claimed invention is determined as of the time of filing of the application. If priority is claimed under the Paris Convention, the time of filing for purposes of determining the existence of a best mode will likely be the filing date of the foreign priority application. Preferred embodiments that are developed after filing may not need to be disclosed, unless a continuation-in-part application is filed.
3. Whether a best mode exists is a subjective question, determined by investigation of the inventor's state of mind at the time of filing. A

204. *Id.*

205. *Id.*

206. *In re Hayes Microcomputer*, 982 F.2d at 1538 (citation omitted).

207. *Id.* at 1539.

208. *Id.*

209. *Id.*

210. *Id.*

best mode or preferred embodiment need not have been developed by the inventor himself, and must be disclosed so long as the inventor subjectively believes that that mode or embodiment is the best way to practice the claimed invention. If there are multiple inventors, each inventor must subjectively believe the same method or form of product is the best mode or preferred embodiment for a disclosure obligation to occur.

4. The best mode or preferred embodiment may include an unclaimed element or process that is necessary to the practice of the claimed invention, if the inventor subjectively believed that element or process to be part of the necessary steps in best carrying out, making or using the invention.

5. The best mode need not be specifically set out, placed in an example, or identified as such, so long as it is disclosed in the application. If the best mode is known to or exists in the prior art, but is not disclosed in the application, the best mode disclosure requirement has most likely not been satisfied.

6. If the inventor contemplated a best mode or preferred embodiment, an objective comparison is made between what he knew and what the application discloses to one of ordinary skill in the art. The question is whether the inventor concealed the best mode, judged by that objective standard, when he should have made a disclosure sufficient to enable one of ordinary skill in the art to practice the best mode.

7. Failure to disclose the best mode, if shown by clear and convincing evidence, will invalidate at least the claims to the invention affected. If the best mode was deliberately concealed, or a false, inoperative mode was disclosed in its place, inequitable conduct/violation of the (statutory) duty of disclosure may be found, and all claims in the patent may be found unenforceable and/or invalid. If other patents are related to such a patent rendered unenforceable or invalid for deliberate concealment or disclosure of a false, inoperative mode, they, too, may be rendered invalid or unenforceable.

8. Disclosure of a best mode or preferred embodiment through use of a proprietary tradename may not be adequate. Disclosure of a best mode in certain computer subject matters may require disclosure of programming for the microprocessor or other computer hardware.

9. Concealment of the best mode may be accidental. It will still constitute a failure to honor the best mode disclosure requirement, and invalidity of related claims will result.

10. The best mode or preferred mode does not in fact have to be the objectively optimum way to practice the claimed invention. Commercialization is not dispositive of the existence of a best mode, nor is failure to commercialize proof that no best mode existed.

11. Operatively, the scope of the claimed invention to which the best mode disclosure requirement applies must first be determined, then:

- a. If the withheld "better mode" concerns a feature which is neither an element of the claimed invention nor needed for the

proper performance (making or using) of the claimed invention, failure to disclose that mode may not violate the requirement; the issue is one of fact as to whether or not the withheld feature is necessary to the making or using of the claimed invention;

b. If the withheld "better" mode concerns a feature which is either an element of the claimed invention or needed for the proper performance of the claimed invention, failure to disclose that mode may violate the requirement if it is a better mode than that disclosed in the specification to perform the necessary claim function, and/or it is a better mode than what the prior art would teach one of ordinary skill to use to perform the necessary claim function.

The best mode disclosure requirement often is broader in its disclosure obligations than is apparent at first glance. When in doubt, particularly where a non-claimed, but necessary product or process is part of the making or using of the best mode or preferred embodiment, discretion mandates that disclosure of that information be made in the specification.

VIII. CONCLUSION

The recent Federal Circuit decisions addressing the best mode disclosure requirement make clear that the court gives serious scrutiny to charges of patent invalidity based upon failure to satisfy this explicit statutory requisite for patentability. The inventor's testimonial or written statements disclosing his subjective state of mind remain central to deciding whether a best mode disclosure obligation existed in the first instance. Once it is determined that the inventor contemplated a specific, preferred mode for effecting the claims of his patent, *Chemcast* mandates that a court objectively view the required disclosure of that preferred mode in light of the level of skill in the art and the scope of the invention to determine whether the inventor concealed what he knew. The inventor's testimony is not controlling for purposes of determining concealment.

Full satisfaction of the best mode disclosure requirement will continue to be emphasized in validity determinations under U.S. law, particularly as concealment of a known, preferred embodiment is an issue that a jury finds readily understandable in the context of a trial, and decides as a question of fact. With an understanding of the *Chemcast* test for satisfaction of the statutory requirement, and with the guidance of the Federal Circuit's decisions, inventors and their attorneys or agents should be able to draft U.S. patent applications that will pass "best mode" muster and lead to valid, enforceable patents.

