ENCLOSURE 3

SHINE TECHNOLOGIES, LLC

REVISION TO APPLICATION FOR ORDER APPROVING TRANSFERS OF CONSTRUCTION PERMIT AND CONFORMING ADMINISTRATIVE AMENDMENTS

APPLICATION FOR ORDER APPROVING TRANSFERS OF CONSTRUCTION PERMIT AND CONFORMING ADMINISTRATIVE AMENDMENTS

(PUBLIC)

19 pages follow

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APPLICATION FOR ORDER APPROVING CONSTRUCTION PERMIT TRANSFERS AND CONFORMING ADMINISTRATIVE CONSTRUCTION PERMIT AMENDMENTS

1.0 INTRODUCTION

Pursuant to Section 184 of the Atomic Energy Act of 1954, as amended ("AEA"), and 10 CFR § 50.80, Illuminated Holdings, Inc. ("Illuminated") and its wholly owned subsidiary SHINE Technologies, LLC ("SHINE Technologies") (together, "Applicants") submit this Application for Order Approving Transfers of Construction Permit and Conforming Administrative Amendments ("Application") requesting the U.S. Nuclear Regulatory Commission ("NRC") consent to the direct and indirect transfers of control of Construction Permit No. CPMIF-001 (the "CP") for the SHINE Technologies' medical isotope production facility held by SHINE Technologies. Applicants also request that the NRC issue conforming administrative amendments described in the Application and amend the CP to reflect the transfers of control.

The Application and requested consent are necessitated by an advanced loan application with the U.S. Department of Energy ("DOE") to provide funds for the completion of construction of the medical isotope facility. To facilitate the loan application and DOE loan, Illuminated will create a new wholly owned subsidiary, SHINE Chrysalis, LLC ("SHINE Chrysalis") to complete financing and construction of the medical isotope production facility. The direct transfer of control will occur when Illuminated transfers the CP and assets relied on for the medical isotope production facility and personnel with responsibility for construction and associated permitted activities from SHINE Technologies to SHINE Chrysalis. The indirect transfer of control will occur concurrently with the direct transfer of control as SHINE Chrysalis Holdings, LLC ("Chrysalis Holdings"), a direct subsidiary of Illuminated, becomes the direct parent company of

SHINE Chrysalis. Following the transfers of control, SHINE Chrysalis will be an indirect subsidiary of Illuminated.

In addition, pursuant to 10 CFR § 50.90, Applicants also request NRC approval of certain administrative amendments to conform the CP to reflect the proposed transfers. The proposed conforming amendment is essentially a name change; there are no changes to the facility or qualifications of the CP holder.

Additional information pertaining to the proposed transfers of the CP, including the information required under 10 CFR § 50.80, is included in this Application. This information demonstrates that: (1) SHINE Chrysalis will continue to have the requisite managerial, technical, and financial qualifications to be the holder of the CP; (2) the material terms of the CP will not be affected; and (3) the transfers of the CP will not result in any impermissible foreign ownership, control, or domination. Therefore, the proposed transfers of the CP will not be inimical to the common defense and security or result in any undue risk to public health and safety, and the transfers will be consistent with the requirements of the AEA and NRC regulations.

1.1 TIMING

Applicants respectfully request that the NRC review the Application and complete the requested action expeditiously. ***Applicants request the NRC issue an order granting its consent to the proposed transfers of control of the CP by April 30, 2026***. This expedited review request is consistent with the current executive direction to develop domestic industrial nuclear infrastructure and enable nuclear innovation.[1] Applicants are prepared to work closely with the NRC Staff to facilitate the Application review.

[1] *See* Executive Order 14302 of May 23, 2025, Reinvigorating the Nuclear Industrial Base, 90 Fed. Reg. 22,595 (May 29, 2025).

2.0 THE PARTIES

2.1 ILLUMINATED HOLDINGS, INC.

Illuminated is the parent holding company of SHINE Technologies, Chrysalis Holdings, and SHINE Chrysalis. Illuminated is a Delaware corporation and its shares are not publicly traded. Illuminated is headquartered at 3400 Innovation Court, Janesville, Wisconsin 53546. The general company information required by 10 CFR § 50.33(d)(3) for Illuminated is provided in Exhibit A.

2.2 SHINE TECHNOLOGIES, LLC.

SHINE Technologies is a Delaware limited liability company. SHINE Technologies was founded in 2010 to manufacture radioisotopes for nuclear medicine applications. SHINE Technologies developed a new method to manufacture medical isotopes through a non-reactor-based, sub-critical fission process. SHINE Technologies applied for a construction permit in March 2013, and the NRC issued CP No. CPMIF-001 for the medical isotope production facility located in Janesville, Wisconsin.[2] SHINE Technologies has applied for an operating license for that facility.[3]

2.3 SHINE CHRYSALIS HOLDINGS, LLC

Chrysalis Holdings is a Delaware limited liability company. Chrysalis Holdings is a direct subsidiary of Illuminated and an intermediate holding company and the direct corporate parent of SHINE Chrysalis. The general company information required by 10 CFR § 50.33(d)(3) for Chrysalis Holdings is provided in Exhibit B.

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[2] Construction Permit for Medical Isotope Facility, Construction Permit No. CPMIF-001, Amend. 5 (December 4, 2025) (ML25318A056).

[3] The NRC issued its final Safety Evaluation Report and final Environmental Impact Statement for SHINE's operating license application in February 2023. *See* SHINE Technologies, LLC – Safety Evaluation Report: Operating License Application for a Medical Radioisotope Production Facility (Feb. 2023) (ML23047A025); NUREG-2183, Supp. 1, "Environmental Impact Statement Related to the Operating License for the SHINE Medical Isotope Production Facility" Final Report (Feb. 2023) (ML23026A312).

2.4 SHINE CHRYSALIS, LLC

SHINE Chrysalis is a Delaware limited liability company. SHINE Chrysalis is a wholly owned subsidiary of Chrysalis Holdings, which is a direct wholly owned subsidiary of Illuminated. Illuminated will create SHINE Chrysalis to receive the DOE loan and complete the construction of the facility. The general company information required by 10 CFR § 50.33(d)(3) for SHINE Chrysalis is provided in Exhibit C.

3.0 THE FACILITY

SHINE Technologies is constructing the medical isotope production facility in Janesville, Wisconsin pursuant to the CP. The facility consists of two sub-facilities: the irradiation facility and the radioisotope production facility. The irradiation facility will produce molybdenum-99 through the irradiation of a low enriched uranium ("LEU") target using a neutron source. This accelerator-driven process will induce fission in the LEU target to create molybdenum-99 as a byproduct. The radioisotope production facility is where irradiated material is processed to separate medical isotopes and then packaged and shipped to customers. SHINE Technologies began constructing the medical isotope production facility in May 2019.

4.0 STATEMENT OF PURPOSE OF THE TRANSFERS

To request the transfer of a construction permit, NRC regulations require a statement regarding the "purposes for which the transfer of the license is requested and the nature of the transaction necessitating or making desirable the transfer of the license." 10 CFR § 50.82(b)(2). The purpose of the requested transfers is to facilitate the financing needed to complete the construction of the medical isotope production facility. The Application thus seeks consent for two transfers: (1) the direct transfer of the CP from SHINE Technologies to SHINE Chrysalis and

(2) the indirect transfer that will result from Chrysalis Holdings becoming an intermediate holding company and direct corporate parent of SHINE Chrysalis.

As to the financing for the construction of the medical isotope production facility, SHINE Technologies has applied for a loan from the DOE's Office of Energy Dominance Financing. If approved, the DOE will loan up to $263 million to support the completion of the construction of the radioisotope production facility in accordance with the CP. The terms of the loan being discussed with the DOE required the creation of Chrysalis Holdings and SHINE Chrysalis and the transfers of the CP to SHINE Chrysalis. After the NRC approves the CP transfers and the loan closes, DOE will provide financing that SHINE Chrysalis will be able to draw upon in several tranches. Chrysalis Holdings will be an intermediate holding company and direct corporate parent of SHINE Chrysalis, which will operate as a wholly owned indirect subsidiary of Illuminated.

Exhibit D provides an organization chart showing the corporate structure before the transfers of control. Exhibit E provides an organization chart showing the corporate structure of after the transfers of control.

5.0 TECHNICAL QUALIFICATIONS

NRC regulations require that an application to transfer a CP include "as much of the information described in [10 CFR §]50.34 … with respect to the identity and technical qualifications of the proposed transferee as would be required … if the application were for an initial license." 10 CFR § 50.80(b)(1). Information about SHINE Chrysalis is provided above in Section 2.3 and in Exhibit C.

SHINE Chrysalis is technically qualified to hold the CP for the same reasons the Commission found SHINE Technologies to be "technically … qualified to engage in the activities

authorized" by the CP.[1] The creation and transfers of the CP to a new subsidiary does not raise any questions about SHINE Chrysalis' technical qualifications because they will be the same as SHINE Technologies' technical qualifications.

The transaction will not result in any changes to the management and technical personnel responsible for licensed activities under the CP. At the close of the transaction, all SHINE Technologies managers and personnel responsible for permitted activities will be transferred to SHINE Chrysalis. These managers and personnel include, but are not limited to:

- Vice President of Projects
- Director of Engineering-Construction
- Construction Manager
- Field Engineering Manager
- Construction Coordinators
- Construction Quality Control Inspectors
- Director of Engineering
- I&C Manager
- Process Engineering Manager
- Procurement Manager
- Director of Project Controls
- Senior Director of Regulatory Affairs

SHINE Chrysalis will continue to employ the same practices, staffing, management, programs, plans, procedures, and oversight currently implemented by SHINE Technologies under

[1] *Shine Medical Tech. Inc.* (Medical Radioisotope Production Facility), CLI-16-4, 83 NRC 58 (2016) (ML16056A094).

the CP. SHINE Technologies will also transfer supplier contracts to SHINE Chrysalis, including contracts for technical consulting services, further supporting retention of technical capabilities.

SHINE Chrysalis will adopt SHINE Technologies' procedures for the permitted activities with only an administrative change to change references from SHINE Technologies to SHINE Chrysalis. Similarly, SHINE Technologies' NRC-approved Quality Assurance Program Description ("QAPD") will be adopted by SHINE Chrysalis with only an administrative change to change references from SHINE Technologies to SHINE Chrysalis. In sum, SHINE Chrysalis is technically qualified to hold the CP for the same reasons SHINE Technologies was found to be technically qualified.

6.0 FINANCIAL QUALIFICATIONS

NRC regulations require that an application to transfer a CP include "as much of the information described in [10 CFR §] 50.34 … with respect to the … financial qualifications of the proposed transferee as would be required … if the application were for an initial license." 10 CFR § 50.80(b)(1). The Commission determined that SHINE Technologies is financially qualified to hold the CP. The transfers of the CP do not change the Commission's finding, and the transfers will have no adverse impact on the financial qualifications of the CP holder. In fact, as stated above, the purpose of the transfers is to facilitate a loan from the DOE to provide up to $263M to complete construction of the medical isotope production facility. Thus, approving the CP transfers will result in strengthened finances of the CP holder.

To demonstrate the financial qualifications for SHINE Chrysalis, the following provides the budgetary estimate of the remaining costs for the construction of the medical isotope production facility and related fuel cycle costs:

Table 1

Remaining construction costs	$[ ]
Initial low-enriched uranium inventory cost	$[ ]
Total estimated remaining cost	$[ ]

Remaining construction costs provide an estimate of those costs associated with completion of the facility structure, completion of support facilities, installation of piping/process system, and the remaining mechanical, electrical, and plumbing installation scopes. The estimate also includes the cost of remaining equipment procurements and other start-up costs, such as the purchase of tritium gas and consumables that support initial facility operations. This remaining construction costs estimate also includes a construction contingency reserve and commissioning reserve to account for the cost impacts associated with the challenge of constructing a first-of-its-kind medical isotope production facility.

SHINE Technologies' estimate of remaining construction costs is informed by (1) its construction group's assessment of actual prior construction costs, including commodity and construction labor costs, scaled to remaining scopes of work; (2) its engineering group's estimates of process equipment costs are based on contracted agreements with suppliers to fabricate and supply certain process equipment or estimated from prior quotes and estimates received for process equipment not yet under contract; and (3) quotes for consumables and other equipment required for the operation of the radioisotope production facility received from SHINE Technologies' vendor partners.

Initial low-enriched uranium inventory cost is an estimate of the cost associated with procuring the quantity of low-enriched uranium required to produce initial target solution batches and the necessary make-up volumes to support initial facility operations. SHINE Technologies' estimate is based on agreement upon costs and charges defined in the lease contract between the DOE, National Nuclear

Security Administration (NNSA) and SHINE Technologies for the supply of low-enriched uranium for domestic molybdenum-99 production (Lease Contract No. NNSA-LC20-Y12-1004).

Additional uses of loan funds to account for the gap between the total estimated remaining costs and the maximum value of the loan include capital expenditures related to maintenance of the facility during facility ramp-up and other required financial assurance.

7.0 FOREIGN OWNERSHIP, CONTROL, OR DOMINATION

AEA section 104d (42 USC § 2133(d)) provides that "[n]o license [for a reactor] may be issued to any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government." 42 USC § 2134(d). The transaction will not result in Illuminated or SHINE Chrysalis being owned, controlled, or dominated by an alien, foreign corporation or foreign government.

As stated in Section 2.0 above, Illuminated is a Delaware corporation. Its principal officers are all U.S. citizens and all but one of its board members are U.S. citizens. *See* Exhibit A. The non-U.S. board member is a Canadian citizen. Under Section 301 of the ADVANCE Act,[1] the AEA's prohibition on foreign control does not apply to a citizen of a country that is a member of the Organisation for Economic Development ("OECD"), and Canada is an OECD member. *See* Exhibit A.

Chrysalis Holdings is a Delaware limited liability company, and its members and principal officers are all U.S. citizens. *See* Exhibit B. SHINE Chrysalis is a Delaware limited liability company. Its members and principal officers are all U.S. citizens. *See* Exhibit C. Accordingly, the

[1] Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy ("ADVANCE") Act, Pub L. No. 118-67 (2024).

proposed transfers of control raise no issues related to foreign ownership, control, or domination within the meaning of the AEA and are also not inimical to the common defense and security of the United States.

8.0 MISCELLANEOUS

8.1 RESTRICTED DATA AND CLASSIFIED NATIONAL SECURITY INFORMATION

This Application does not contain any Restricted Data or other classified National Security Information, and it is not expected that such information will become involved in the licensed activities. If such information does become involved, and in accordance with 10 CFR § 50.37, Applicants agree that they will appropriately safeguard such information and will not permit any individual to have access to such information until the individual has been appropriately approved for such access under the provisions of 10 CFR Part 25 and/or 10 CFR Part 95.

8.2 ANTITRUST INFORMATION

AEA section 105(c)(9) (42 USC § 2135), states that the need for an NRC antitrust review "does not apply to an application for a license to construct or operate a utilization facility or production facility under section 103 or 104b that is filed on or after the date of enactment of this paragraph." The CP issued to SHINE Technologies was issued under AEA section 103 because it is a utilization facility.[2] In addition, the Commission exempts transfers of construction permits from antitrust review.[3] Accordingly, no antitrust review of this Application is required.

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[2] 10 CFR § 50.2 (definition of utilization facility). The NRC specifically amended the definition of a utilization to include SHINE Technologies' facility under Docket No. 50-608.

[3] *Kan. Gas & Elec. Co.* (Wolf Creek Generating Station*),* CLl-99-19, 49 NRC 441 (1999) (ML020560606). *See also* NUREG-1574, Rev. 2, Standard Review Plan on Transfer and Amendment of Antitrust License Conditions and Antitrust Enforcement, (Dec. 2007) (ML072260035) (explaining that "[i]n light of the Wolf Creek decision, no ["significant changes"] analysis or antitrust review is undertaken when there is a license transfer application, regardless of whether it involves a direct or indirect license transfer.").

8.3 PRICE-ANDERSON AND FINANCIAL PROTECTION

Pursuant to 10 CFR Part 140, SHINE Chrysalis will file with the Commission proof of the financial protection required by the Commission before the Commission issues it an Operating License under 10 CFR Part 50.

8.4 ENVIRONMENTAL REVIEW

This Application is exempt from environmental review, pursuant to a categorical exclusion contained in 10 CFR § 51.22(c)(21). Thus, neither an environmental assessment nor an environmental impact statement is required. Moreover, the proposed transfers do not directly affect the actual conduct of activities under the CP in any substantive way. The proposed transfers do not involve an increase in the amounts, or a change in the types, of any radiological effluents that may be released off-site, and involves no increase in the amounts or change in the types of non-radiological effluents that may be released off-site. Further, there is no increase in the individual or cumulative operational radiation exposure.

8.5 REGULATORY SAFETY ANALYSIS

The changes proposed for the CP are provided in Enclosure 4 and clean pages are provided in Enclosure 5. The requested changes to the CP are to reflect the new name of the CP holder: SHINE Chrysalis, LLC. Consistent with the generic determination in 10 CFR § 2.1315(a), the proposed conforming CP amendment involves no significant hazards consideration because it does no more than conform the CP to reflect the transfer action. The proposed CP amendment does not involve any change in the design, licensing basis, or status of the permitted facility, or the requirements of the CP. Therefore, the proposed approval does not: (1) involve an increase in the probability or consequences of an accident previously analyzed; (2) create the possibility of a new

or different kind of accident from the accidents previously evaluated; or (3) involve a significant reduction in a margin of safety.

8.6 QUALITY ASSURANCE (QA) PROGRAM

Upon consummation of the transfer, SHINE Technologies will transfer, and SHINE Chrysalis will assume, responsibility for the overall QA program requirements associated with maintaining ownership of the CP. The NRC-approved SHINE Technologies QA Plan (2000-09-01, Quality Assurance Program Description [QAPD]) contains the QA program requirements for the permitted facility and is compliant with ANSI/ANS 15.8, Quality Assurance Program Requirements for Research Reactors. SHINE Chrysalis will implement the same SHINE Technologies QA Plan, including review and audit functions. SHINE Chrysalis will not change the substance of the plan but will make administrative changes to change references to SHINE Technologies to SHINE Chrysalis. Enclosure 6 provides a copy of SHINE Chrysalis's QA Plan showing the administrative changes made to QA Plan. A clean copy of SHINE Chrysalis's QA Plan is provided in Enclosure 7.

9.0 CONCLUSION

In summary, the proposed transfers of control of the CP are consistent with the requirements of the AEA, NRC regulations, and regulatory guidance. Chrysalis Holdings will operate as a wholly owned subsidiary of Illuminated. SHINE Chrysalis will be a wholly owned subsidiary of Chrysalis Holdings and an indirect subsidiary of Illuminated. There will be no adverse impact on public health and safety. The transfers of control of the CP will not be inimical to the common defense and security and do not involve foreign ownership, control, or domination. Applicants therefore requests that the NRC consent to the transfers of the CP in accordance with 10 CFR § 50.80.

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AFFIRMATION

I, Jeff Bartelme, do hereby declare under penalty of perjury under the laws of the under the laws of the United States of America that the following is true and correct: (1) I am the Senior Director of Regulatory Affairs of SHINE Technologies, LLC ("SHINE"), (2) I am duly authorized to execute and file this affirmation on behalf Applicants, and (3) the statements set forth in the attached Application for Order Approving Transfers of Construction Permit and Conforming Administrative Amendments regarding Applicants are true and correct to the best of my information, knowledge and belief.

SHINE Technologies, LLC

By: DocuSigned by: Jeff Bartelme 6041540560D0450...

Jeff Bartelme

Date: 4/13/2026 | 1:03:27 PM CDT

EXHIBIT A

GENERAL COMPANY INFORMATION FOR ILLUMINATED HOLDINGS, INC.

NAME:	Illuminated Holdings, Inc.
ADDRESS:	3400 Innovation Ct. Janesville, WI 53546
STATE OF INCORPORATION:	Delaware
MEMBERS OF BOARD OF DIRECTORS:	Dr. Gregory Piefer Dr. Thomas Mackie * David Newberg Frederick A. Robertson Ray Rothrock Paul Ryan Greg Sorenson
PRINCIPAL OFFICERS:	Dr. Gregory Piefer, Chief Executive Officer Christopher Lee, Chief Financial Officer Christine Wu, Secretary

* Canadian citizen and U.S. Permanent Resident.

EXHIBIT B

GENERAL COMPANY INFORMATION FOR SHINE CHRYSALIS HOLDINGS, LLC

NAME:	SHINE Chrysalis Holdings, LLC
ADDRESS:	3400 Innovation Ct. Janesville, WI 53546
STATE OF INCORPORATION:	Delaware
MANAGING MEMBERS:	Dr. Gregory Piefer
PRINCIPAL OFFICERS:	Dr. Gregory Piefer, Chief Executive Officer Christopher Lee, Chief Financial Officer Christine Wu, Secretary Eric Schutt, Chief of Staff, VP of Government Affairs

EXHIBIT C

GENERAL COMPANY INFORMATION FOR SHINE CHRYSALIS, LLC.

NAME:	SHINE Chrysalis, LLC.
ADDRESS:	3400 Innovation Ct. Janesville, WI 53546
STATE OF INCORPORATION:	Delaware
MANAGING MEMBERS:	Dr. Gregory Piefer
PRINCIPAL OFFICERS:	Dr. Gregory Piefer, Chief Executive Officer Christopher Lee, Chief Financial Officer Christine Wu, Secretary Eric Schutt, Chief of Staff, VP of Government Affairs

EXHIBIT D

ORGANIZATION CHART BEFORE THE TRANSFERS OF CONTROL

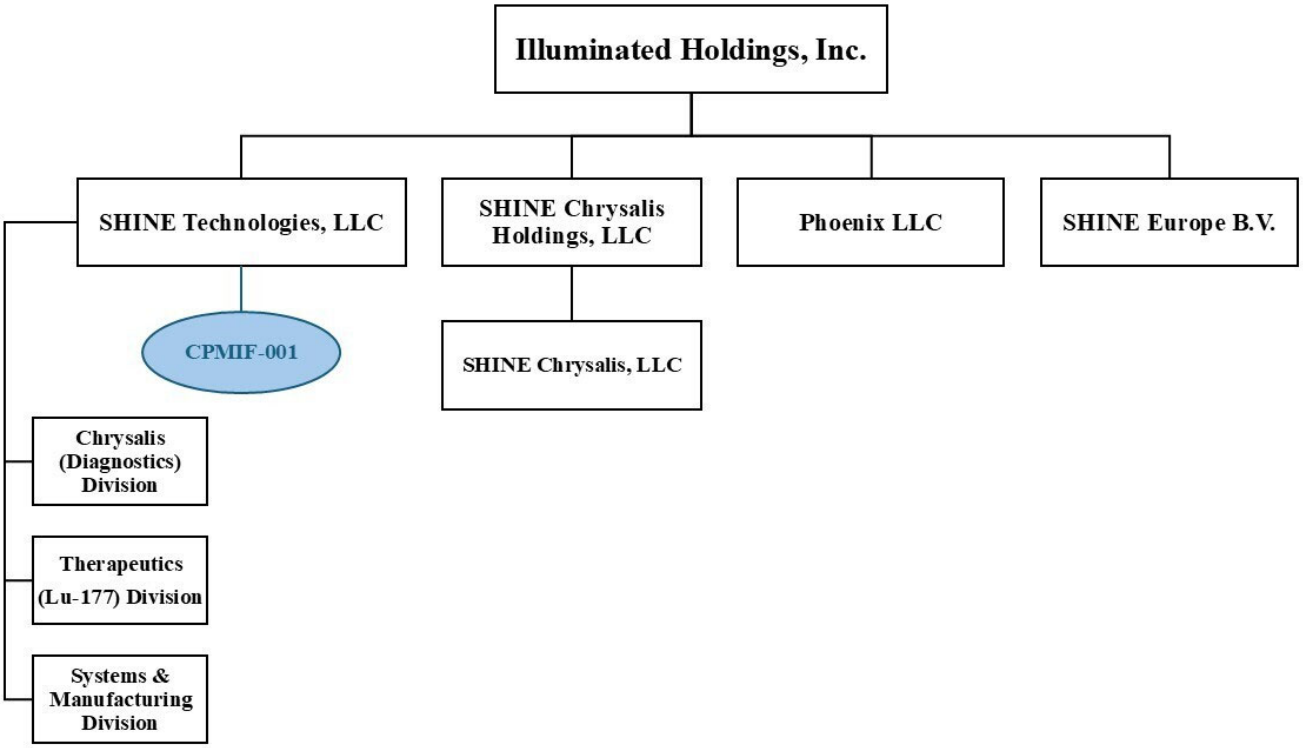
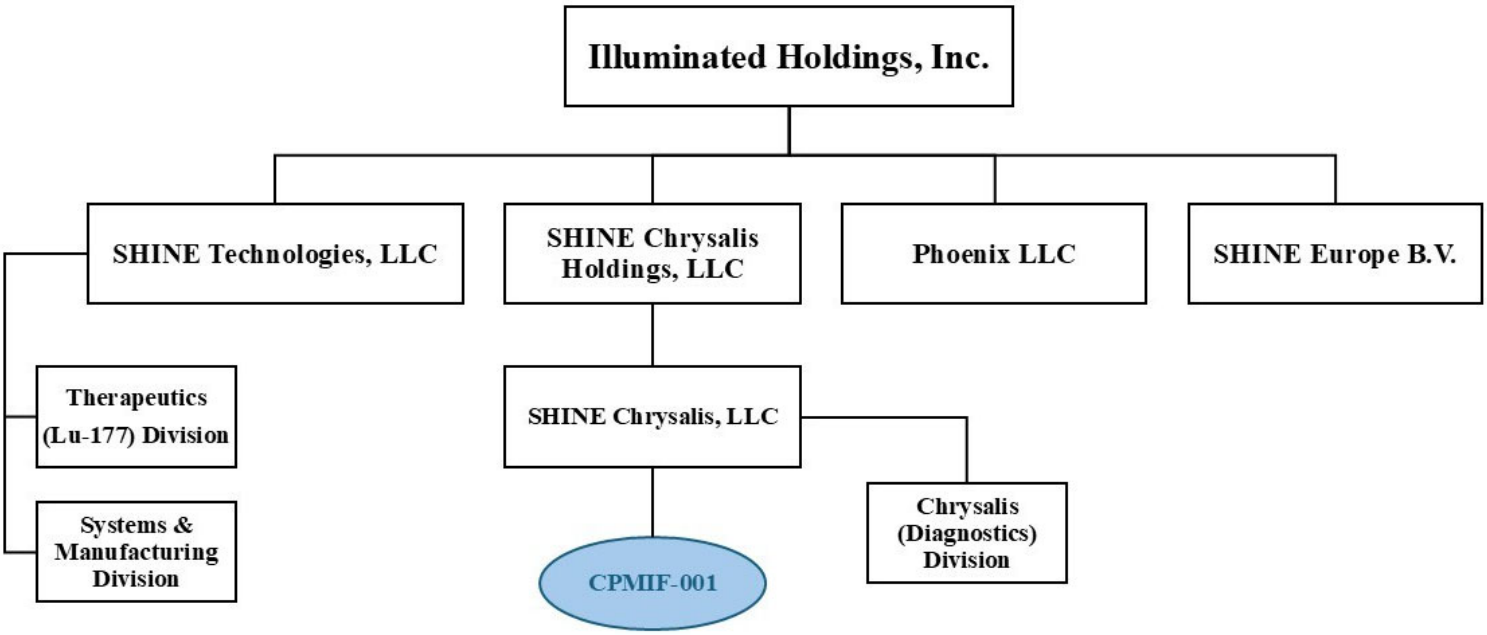


EXHIBIT E

ORGANIZATION CHART AFTER THE TRANSFERS OF CONTROL