TABLE OF CONTENTS

SUMMARY

This was an ad hoc inspection to follow up eight product recalls reported to FDA by Depuy Orthopaedics since May 2005. Depuy Orthopaedics, Inc. is a large manufacturer that designs, manufactures, and distributes orthopedic implants listed as Class II and III medical devices. Products affected by Depuy's eight product recalls are all Class II medical devices for orthopedic use. Depuy is a Johnson & Johnson Company, New Brunswick, NJ. The previous FDA inspection of Depuy was completed on October 18, 2007 and classified as no action indicated (NAI).

The scope of this current inspection focused on Depuy's post market surveillance and recall activities for eight product recalls listed in FDA's Recall Enterprise System database under event numbers 45478, 44893, 38464, 36849, 36348, 34018, 32282, and 32192. Documents reviewed during this inspection included the firm's electronic complaint files and procedures, medical device

reporting (MDR) files and procedures, root-cause investigation reports, health hazard evaluation reports, risk assessments reports, corrective and preventive action (CAPA) files and procedures.

My review of post market surveillance and recall activities required by Depuy's Warsaw facility was found to be sufficient and complete for each product recall. All customers were promptly notified and product inventories returned. Each of the eight product recalls has been terminated.

One of the eight product recalls (event number 34018) was under the direct responsibility of Depuy's Warsaw, IN facility. An FDA-483 "Inspectional Observations" form was issued to Depuy management in Warsaw, IN for a design flaw that involved their Acclaim™ Total Elbow System. Depuy's design validation did not ensure that the devices conform to defined user/patient needs and intended uses. Specifically, Depuy's design validation test method (b) (4) did not did not (b) (4) (b) (4) (b) (4) As a corrective action the firm redesigned the Acclaim™ Total Elbow System and filed a special 510(k) for humanitarian use in March 2006. No design-related complaints or adverse events have been reported against the redesigned version of the device since being commercially available in April 2006.

Seven of the eight product recalls covered during this inspection were caused by manufacturing and quality system deficiencies that occurred under the direct responsibility of Depuy's manufacturing plants in Raynham, MA; Cork, Ireland; Blackpool, England, and Le Locle, Switzerland. I discussed with Depuy management about the following manufacturing and quality system deficiencies noted during this inspection.

In 2007 Depuy's Le Locle, Switzerland plant manufactured two lots of TK2 Compression Hip Screw trauma plates that were not according to design specifications.

In 2007 Depuy's CMV plant in Blackpool, Lanshire, UK manufactured multiple lots of SmartSeal Wedge Femoral Pressurisers with outer pouch seals that were creased which may introduce the potential for sterility to be compromised during use of the device in surgical suites.

In 2006 Depuy's Cork Ireland plant manufactured Preservation Uni-Compartmental Knee Fixed Tibial Trays that were difficult to assemble. Process validation did not include verification that the chamfer detail was flat.

In 2006 Depuy's Cork, Ireland plant had clean and pack operations that were insufficient to prevent packaging and labeling mix-ups. PFC Sigma Oval Dome Patella units containing size 32 mm patellas were mislabeled as 38 mm patellas.

In 2005 Depuy's Cork, Ireland plant manufactured multiple lots of Depuy brand LCS Complete Metal Backed Patellas with oversized inside diameters by 0.005 to 0.006 thousands of an inch, resulting in reduced fit between the base plate and the polyethylene articular bearing.

In 2005 Depuy's Raynham, MA plant packaged various polyethylene tibial insert components with incomplete seals on inner pouches which may result in oxidation and would affect long-term performance of the implant. In addition, the scope of Depuy's root-cause investigation was insufficient that resulted in an extended recall of the same products in 2007.

Samples were not collected during this inspection.

ADMINISTRATIVE DATA

Inspected firm:	Depuy Orthopaedics, Inc.
Location:	700 Orthopaedic Drive Warsaw, IN 46582-3994
Phone:	574-267-8143
FAX:	
Mailing address:	700 Orthopaedic Drive Warsaw, IN 46582-3994
Dates of inspection:	12/03/2007, 12/04/2007, 12/05/2007, 12/06/2007, and 01/22/2008
Days in the facility:	5
Participants:	Calvin K. Cook, Investigator

On November 28, 2007, I called the firm and spoke to Dennis Gwaltney, Quality Manager, who agreed to the start date of this inspection. Upon my arrival to the firm on December 3, 2007, I presented my federal credentials to Mr. Steve K. Dowell, Director of Regulatory Compliance. During the opening meeting I issued the FDA-482 "Notice of Inspection" form to Juan C. Causillas, U.S. Director of Quality and Compliance, who was acting in place of David Floyd, President. Mr. Floyd is the firm's highest ranking management official onsite and was not present during this inspection. Present during the opening meeting were Steve K. Dowell, Juan C. Causillas, Jeffery M. Kaser, Director of Quality Systems (Trauma and Extremities), and Jim G. Sheets, Manager of Clinical Quality Assurance. I also issued the firm a copy of an Attachment to FDA 482 Resource for FDA Regulated Businesses.

On December 6, 2007, management personnel present during the initial closing meeting of this inspection were Steve K. Dowell, Juan C. Causillas, and Jeffery M. Kiser. Sara Deegan, VP of Quality and Compliance, participated via teleconference call.

On January 4, 2008, as requested by my supervisor, I contacted Depuy management by telephone to inform them I would be returning to their Warsaw, IN plant to draft and issue an FDA-483 "Inspectional Observations" form for the design control deficiency that resulted in the recall of their Acclaim™ Total Elbow System device. Steve Dowell agreed to my return visit on January 7th. Later that day on January 4th I was instructed by my supervisor to hold off on my return visit to the firm until further notice, so I immediately called the firm to cancel my return visit until further notice. On January 16th I was instructed by my supervisor to return to Depuy. On January 17th I contacted the firm by telephone and scheduled my return visit on January 22nd.

Depuy management that were present during the January 22nd opening and closing meetings included Steve K. Dowell, Jeffery M. Kaser, Dennis R. Gwaltney, and Sara A. Deegan.

Depuy Orthopaedics, Inc. is a Johnson & Johnson Company and they have no subsidiaries. The firm's Warsaw, IN facility serves as their headquarters in the U.S, has a workforce of (b) (4) employees and generates an annual volume in sales of approximately (b) (4) Their normal business hours are from (b) (4) . Depuy's Warsaw, IN facility manufactures over (b) (4) production shifts, (b) (4) days a week. Depuy is registered with FDA as medical device manufacturer and holds active 510(k) registrations for Class II and III medical devices.

Depuy's Warsaw, IN plant serves as the firm's headquarters in the U.S and is responsible for importing their finished device products manufactured by their plants in Europe. Depuy has manufacturing plants in Raynham, MA; New Bedford, MA; Leeds, England; Cork, Ireland; Blackpool, England; and Le Locle, Switzerland.

Depuy International, Inc. of Leeds, England is a separate legal business entity that is part of Depuy Orthopaedics, Inc. Depuy International, Inc. serves as the firm's headquarters in Europe and performs some manufacturing operations.

Exhibit #1 presents Depuy's organizational chart that shows the firm's operating divisions and their respective manufacturing plants in the U.S. and Europe.

All FDA correspondence should be directed to Steve Dowell who can be reached at the firm's address listed above.

HISTORY

The previous FDA inspection of the Depuy Warsaw facility was completed on October 18, 2007 and classified as no action indicated (NAI).

INTERSTATE COMMERCE

According to Depuy's management, their sales are (b) (4) wholesale to distributors and user facilities (i.e., hospitals and surgical clinics) in the U.S., Canada, and Latin America. The firm estimates about (b) (4) of the firm's finished product devices are sold outside the State of Indiana. Depuy distributes their medical device products to (b) (4) distributors in the U.S. The firm's top (b) (4) customers are (b) (4)
(b) (4)

Depuy markets their medical devices by way of their own sales staff at Depuy company stores, contract sales distributors, Johnson & Johnson marketing units located in Europe, Canada, and Latin America, and their website at www.depuyorthopaedics.com.

JURISDICTION

Depuy designs, manufacturers, and distributes a wide variety of orthopedic implant devices. The firm is registered with FDA as a medical device manufacturer and holds active 510(k) registrations for Class II and III medical devices. All products affected by the eight Class II recalls are Class II sterile, implantable medical devices. Much of Depuy's finished products are imported from their manufacturing facilities in Europe. The firm also distributes finished products manufactured by their facilities in Raynham, MA and New Bedford, MA.

Exhibit #2 presents product labeling and instructions for use for the TK2™Compression Hip Screw System. This product is representative of Depuy's latest recall in 2007.

INDIVIDUAL RESPONSIBILITY AND PERSONS INTERVIEWED

Steve K. Dowell, Juan C. Causillas, and Jeffery M. Kaser provided information about their product recalls, recall activities, production operations, quality control activities, and company history.

Steve K. Dowell and Juan C. Causillas provided information about their firm's post-market surveillance activities for each of the eight product recalls. Mr. Steve Dowell provided information about Depuy's customer service activities, particularly how consumer complaints are received, logged and handled. Mr. Dowell also provided information about MDRs and adverse events for the eight product recalls.

Depuy's central complaint handling unit, led by Steven Dowell at the Warsaw, IN facility, is responsible for handling consumer complaints, adverse events, MDRs, CARs, and assigning root-cause investigations and corrective actions for all Depuy products distributed in the United States, Canada, and Latin America. The complaint handling unit in Warsaw assigns investigations based on where a problem may have occurred. The complaint handling unit in Leeds, England handles complaints and MDRs from European markets and shares the information with the Warsaw, IN facility. Complaints and investigations are tracked and managed by an electronic database.

On December 5, 2007, by teleconference call I interviewed a group from Depuy CMW of Blackpool, England that included group quality manager Gordon Taylor, quality systems manager Eleanor Holman, and general manager Tim Anderson. These individuals provided information about validation activities for the manufacture of the SmartWedge Femoral Pressuriser device.

Exhibit #3 presents a chart of roles and responsibilities at Depuy's Warsaw, Raynham, Cork, Le Locle, and Blackpool facilities. The information provided in the chart pertains specifically to products affected by the eight recalls. The chart also provides information on raw material suppliers and sterilization contractors.

FIRM'S TRAINING PROGRAM

Depuy's employee training programs at their respective manufacturing plants were not covered during this inspection.

MANUFACTURING/DESIGN OPERATIONS

Production and Process Controls

Only one of the eight recalls involved a medical device manufactured by the Warsaw, IN plant. Because seven of the eight product recalls involved device products manufactured at Depuy's other plants, my review of production and process controls was limited to interviewing management personnel by teleconference call, and reviewing electronic and faxed documents forwarded from respective manufacturing facilities where the root-cause of manufacturing and quality system deficiencies originated.

Exhibit #4 presents a general process flow chart of how Depuy's TK2™ Compression Hip Screw Trauma Plates are manufactured and distributed by Depuy's Le Locle, Switzerland plant.

Exhibit #5 presents the process flow chart of how Depuy's P.F.C.® E Knee System Stabilized tibial Inserts (STAB) are manufactured and distributed by Depuy's Raynum, MA plant

Exhibit #6 presents the process flow chart of how Depuy's SmartSeal Wedge Femoral Pressurisers are manufactured and distributed by Depuy's Blackpool, England plant

Exhibit #7 presents the process flow chart of how Preservation Uni-Compartmental Knee Fixed Tibial Tray products are manufactured and distributed by Depuy's Cork, Ireland plant

Exhibit #8 presents the process flow chart of how P.F.C. Sigma Patella devices are manufactured and distributed by Depuy's Cork, Ireland plant.

Exhibit #9 presents the process flow chart of how LCS Metal-Backed Patella devices are manufactured and distributed by Depuy's Cork, Ireland plant.

In addition, **Exhibit #3** provides information on raw material suppliers and sterilization contractors.

Depuy Orthopaedic, Inc. in Warsaw, IN receives finished devices from their respective manufacturing facilities and distributes them via express mail couriers to distributors and user facilities throughout the U.S., Canada, and Latin America.

Depuy's finished device inventory is often stored at distributors and user facilities such as hospitals. When Depuy's finished devices are stored at distributors, Depuy still owns the device and consider the device to be under their direct control. When Depuy brand devices are stored at user facilities Depuy considers the devices not under their direct control, but they still own the products until opened and implanted during surgeries. Finished devices are stored at user facilities for the benefit of surgeons who may require a variety of different device sizes on an as needed basis during surgeries.

Based on my review of root-cause investigation reports and risk assessment reports, I noted several manufacturing and quality system deficiencies by Depuy's operating divisions that resulted in the seven product recalls covered during this inspection. Details of the deficiencies are presented in the "General Discussions With Management" section of this report.

Quality Control Activities

Quality assurance activities covered during this inspection was limited to the review of root-cause investigations and health hazard evaluation reports.

I had a discussion with Depuy management about in-process and final inspection deficiencies noted that contributed to products recalls. Details are presented in the "General Discussion With Management" section of this report.

Management Controls

Management reviews and internal audits were not covered during this inspection.

No inspectional observations were noted under the management control subsystem.

Corrective and Preventive Actions (CAPA)

I reviewed Depuy's complaint handling procedures and files, MDR procedures and files, CAPA procedures and files, and recall procedures. I used the procedures as guides to determine how they completed post market surveillance activities and recall activities. Steven K. Dowell, Director of Regulatory Compliance and Bernard Newton, Quality Systems Manager, explained how the firm handles MDRs, CARs, medical device tracking, and customer complaints.

My review of the firm's MDR files found 62 MDRs been filed against the original design of the Acclaim™ Total Elbow System device. The last MDR was reported on February 9, 2007. None of the MDRs were filed late. Depuy's post market surveillance and recall activities were effective. All customers were promptly contacted and recalled devices returned. The recall has been officially closed since June 2006.

I had a discussion with Depuy management about the insufficient scope of their root-cause investigation of a 2005 recall involving polyethylene tibial insert components that resulted in an extended recall of the same products in 2007. The device was manufactured by Depuy's Raynham, MA plant. Details are presented in the "General Discussion With Management" section of this report.

Design Controls

Depuy management provided for my review of device history records (DHRs) and the design history file (DHF) for the Acclaim™ Total Elbow System. My review ensured DHFs and device history records (DHRs) were complete and included all required information and documentation (i.e., signatures, dates, lots numbers, labeling, and documentation of acceptance activities).

The firm's DHF included a design plan that identified major tasks, activities, responsibilities, and interfaces among different groups. My review ensured procedures were in place for design inputs, design outputs, design verification, design validation, design reviews, design transfer, and for design changes. My review focused on design inputs, particularly clinical rationale, packaging, labeling, performance requirements, biocompatibility, and customer complaint reviews. Design validation included failure-modes and effect analysis (FMEA) report for risk analysis and four trial production runs.

Depuy's Warsaw facility was directly responsible for one of eight product recalls covered during this inspection. The product recall of their Acclaim™ Total Elbow System (constrained version only) was under the direct responsibility of Depuy Orthopaedics in Warsaw, IN. In November 1999 the Acclaim™ Elbow System (constrained and semi-constrained versions) was first 510k approved. In 2000 Depuy's Warsaw facility began manufacturing and distributing Acclaim™ Total Elbow System. In 2002 the firm received its first and only complaint on the Acclaim™ Total Elbow System device during that year. In 2003 the firm sold (b) (4) Acclaim™ Total Elbow Systems worldwide and received two complaints on the device. In 2004 the firm sold (b) (4) Acclaim™ Total Elbow Systems worldwide and received four complaints on the device. In 2005 the firm sold (b) (4) Acclaim™ Total Elbow System devices worldwide and received five complaints on the device. The total number of complaints on the Acclaim™ Total Elbow System was restricted to U.S. customers because they were the only market that used the constrained version of the Acclaim™ Total Elbow System.

In July 2005 Depuy began complaint trending analysis and a health hazard evaluation to determine root-cause of failures. The firm was able to duplicate the failure-mode. The firm determined a design flaw of Acclaim™ Elbow System's ulnar bearing and assembly. The design flaw was the result of design validation test method (b) (4) that failed to identify the failure-mode of the pin assembly backing out due to wear on polyethylene material. **Exhibit #10** presents a copy of design validation test method (b) (4)

On September 16, 2005, Depuy's New Product Development group initiated a failure investigation that was completed on March 31, 2006. **Exhibit #11** presents a copy of the firm's Failure Investigation Report.

In November 2005 initiated a Class II product recall of the Acclaim™ Total Elbow System and concurrently and ceased production.

Depuy's corrective and preventive action involved redesigning the ulnar bearing and assembly of the Acclaim™ Total Elbow System, and then a special 510(k) for humanitarian use was filed to CDRH on March 15, 2006. **Exhibit #12** presents a copy of the 510(k). The redesign included adding a (b) (4) (b) (4) (b) (4) The redesign also included replacing the device's

(b) (4)

Design validation test method (b) (4) was also changed to simulate (b) (4) of the device. **Exhibit #13** presents validation test method (b) (4) which is an updated version of validation test method 990163.

The new design is made available as a revision kit for patients having the Acclaim™ Total Elbow System devices previously implanted and in need of revision surgery if the device failed. The first shipment of the redesigned product was made available in April 2006.

The redesigned version of the Acclaim™ Total Elbow System is now only available via direct order from Depuy's Warsaw, IN plant.

MANUFACTURING CODES

Depuy manufacturing codes and lot numbers are computer generated using logarithmic functions. Lot numbers have no specific meaning or codes. Lot numbers uniquely identify each device and are included with the device history records to track potentially problem products.

COMPLAINTS

Depuy management provided for my review of electronic complaint files for all device products affected by the eight recalls covered during this inspection. I queried and trended complaint data to identify discrepancies and missing information reported on each of the devices affected by the product recalls. All complaints reviewed were examined for MDR reportable events.

During my return visit on January 22, 2008 the firm provide for my review of complaint files and MDR reportable events against the newly designed Acclaim™ Total Elbow System. No design-related complaints or adverse events have been reported against the redesigned version of the device since being commercially available in April 2006.

My review of FDA's FACTS database found no recent or additional complaints entered against Depuy Orthopaedics, Inc.'s Warsaw, IN plant.

RECALL PROCEDURES

I reviewed and obtained a copy of Depuy's written product recall procedure number (b) (4) titled "(b) (4) " which is presented as **Exhibit #14**.

OBJECTIONABLE CONDITIONS AND MANAGEMENT'S RESPONSE

A FDA-483 "Inspectional Observations" form was issued to Depuy management in Warsaw, IN for a design flaw that involved their Acclaim™ Total Elbow System. Depuy's design validation did not ensure that the devices conform to defined user/patient needs and intended uses. Specifically, Depuy's design validation test method (b) (4) did not did not simulate the full range of clinical performance while articulating through the (b) (4) which may cause the device to fail. As a corrective action the firm redesigned the Acclaim™ Total Elbow System and filed a special 510(k) for humanitarian use in March 2006.

The inspectional observation was corrected by the firm and verified by me.

I also noted several inspectional observations for Depuy's manufacturing plants in Raynham, Cork, Blackpool, and Le Locle that have direct responsibility for manufacturing and quality system deficiencies that caused seven product recalls. Manufacturing and quality system deficiencies are presented in the "General Discussion With Management" section of this report.

REFUSALS

No information was refused during this inspection.

GENERAL DISCUSSION WITH MANAGEMENT

The following are manufacturing and quality system deficiencies I noted and discussed with Depuy management in Warsaw, IN.

In 2007 Depuy's Le Locle, Switzerland facility manufactured two lots of TK2 Compression Hip Screw trauma plates that were not according to design specifications. "Standard" barrel TK2 Compression Hip Screw Trauma Plates under lot DHDB73 were miss-etched as "short" barrel TK2 Compression Hip Screw Trauma Plates under, and "short" barrel TK2 Compression Hip Screw Trauma Plates under lot DHDB6P were miss-etched as "Standard" barrel TK2 Compression Hip Screw Trauma Plates. This deficiency resulted in a voluntary Class II product recall in October 2007 of both product lots. Nineteen (19) standard barrel units and 23 short barrel units and were distributed to the U.S.

In 2007 Depuy's CMV facility in Blackpool, Lanshire, UK manufactured multiple lots of SmartSeal Wedge Femoral Pressurisers with outer pouch seals that were creased and may introduce the potential for sterility to be compromised during use of the device in surgical suites. This deficiency resulted in a voluntary Class II recall in July 2007 of 529 distributed to the U.S. In addition, inspection procedures to identify creases on pouch seals were not in place before the product recall. Inspection procedures were established as a CAPA.

In 2006 Depuy's Cork Ireland facility manufactured Preservation Uni-Compartmental Knee Fixed Tibial Trays that were difficult to assemble during surgery. Based on the firm's root-cause investigation, process validation did not include verification that the chamfer detail was flat.

In 2006 Depuy's Cork, Ireland plant had clean and pack operations that were insufficient to prevent packaging and labeling mix-ups. PFC Sigma Oval Dome Patella units (lot #2203528) containing size 32 mm patellas were mislabeled as 38 mm patellas. This deficiency resulted in a Class II recall in September 2006 of Depuy brand PFC Sigma Oval Dome Patella (Part Number 960100) 3-Peg, 32 mm. Thirty (30) of the recalled products were distributed in the U.S.

In 2005 Depuy Cork, Ireland facility manufactured multiple lots of Depuy brand LCS Complete Metal Backed Patellas with oversized inside diameters by 0.005 to 0.006 thousands of an inch, resulting in reduced fit between the base plate and the polyethylene articular bearing. One hundred and seventy-five the devices were distributed to the U.S. The cause of the oversized condition was attributable to the inspection methods as well as the tool wear that produced a slight burr which resulted in a false-acceptable when inspecting with a (b) (4)

In 2005 Depuy's Raynham, MA facility packaged various polyethylene tibial insert components with incomplete seals on inner pouches which may result in oxidation and would affect long-term performance of the implant. In addition, the scope of Depuy's root-cause investigation was insufficient that resulted in an extended recall of the same products in 2007.

ADDITIONAL INFORMATION

Exhibit #15 presents Depuy's Recall Summary Inventory.

SAMPLES COLLECTED

Samples were not collected during this establishment inspection.

VOLUNTARY CORRECTIONS

To address the design defect of the Acclaim™ Total Elbow System, Depuy's corrective and preventive action involved redesigning the ulnar bearing and assembly, and filing a special 510(k) for humanitarian to CDRH on March 15, 2006.

EXHIBITS COLLECTED

Exhibit #1: Depuy's organizational chart

Exhibit #2: Product labeling and brochures for TK2™Compression Hip Screw System

Exhibit #3: Roles and responsibilities at each Depuy manufacturing plant

Exhibit #4: Process flow chart of how Depuy's TK2™ Compression Hip Screw Trauma Plates are manufactured and distributed by Depuy's Le Locle, Switzerland plant

Exhibit #5: Process flow chart of how Depuy's P.F.C.® E Knee System Stabilized tibial Inserts (STAB) are manufactured and distributed by Depuy's Raynum, MA plant

Exhibit #6: Process flow chart of how Depuy's SmartSeal Wedge Femoral Pressurisers are manufactured and distributed by Depuy's Blackpool, England plant

Exhibit #7: Process flow chart of how Preservation Uni-Compartmental Knee Fixed Tibial Tray products are manufactured and distributed by Depuy's Cork, Ireland plant

Exhibit #8: Process flow chart of how P.F.C. Sigma Patella devices are manufactured and distributed by Depuy's Cork, Ireland plant

Exhibit #9: Process flow chart of how LCS Metal-Backed Patella devices are manufactured and distributed by Depuy's Cork, Ireland plant

Exhibit #10: Design validation method (b) (4)

Exhibit #11: Failure Investigation Report

Exhibit #12: Special 510(k): Acclaim™ Total Elbow System

Exhibit #13: Design Validation Test Method (b) (4)

Exhibit #14: Depuy Orthopaedics' "(b) (4)
(b) (4)

Exhibit #15: Recall Summary Inventory

ATTACHMENTS

FDA 482 "Notice of Inspection" form issued to Juan C. Causillas, U.S. Director of Quality Systems, on December 3, 2007.

FDA 482 "Notice of Inspection" form issued to Sara A. Deegan, Worldwide Vice President, on January 22, 2008.

FDA 483 "Inspectional Observations" form issued to Sara A. Deegan, Worldwide Vice President, on January 22, 2008.

Exhibits #1 thru #15

Calvin K. Cook

Calvin K. Cook, Investigator