

Becton-Dickinson
Route 7 and Grace Way
Canaan, CT 06018
(203) 824-5487

**BECTON
DICKINSON**

August 15, 1988

D30-06891

U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Enclosed: B-D Check #77459, for \$230.00

To whom it may concern:

In reference to our Materials License, number 06-13514-01,
please amend as follows:

1. Organizational Chart, revised 8/10/88
2. Add Item 7.0, "Cobalt Operator Training" - a complete in-house training program for "Responsible Individuals".
3. Revised Item 10.4 - "Notice to Workers"
4. Revised Item 10.4 - "Daily, Weekly, Monthly, Quarterly, Semi-annual and Annual Checksheets".

W R Case
W. R. Case
Radiation Safety Officer
Canaan Facility

WRC/sac
(NRC/LTR)

Enclosure:

8912060292 881020
REG1 LIC30
06-13514-01 PDR

RECEIVED
SEP 14 1988

Log	<i>Dep. 8</i>
Remitter	
Check No.	<i>077459</i>
Amount	<i>\$230.36</i>
Fee Category	
Type of Fee	<i>A.M.D.</i>
Date Check Made	<i>9/21/88</i>
Date Completed	<i>9/21/88</i>
By	<i>J. Kimberly</i>

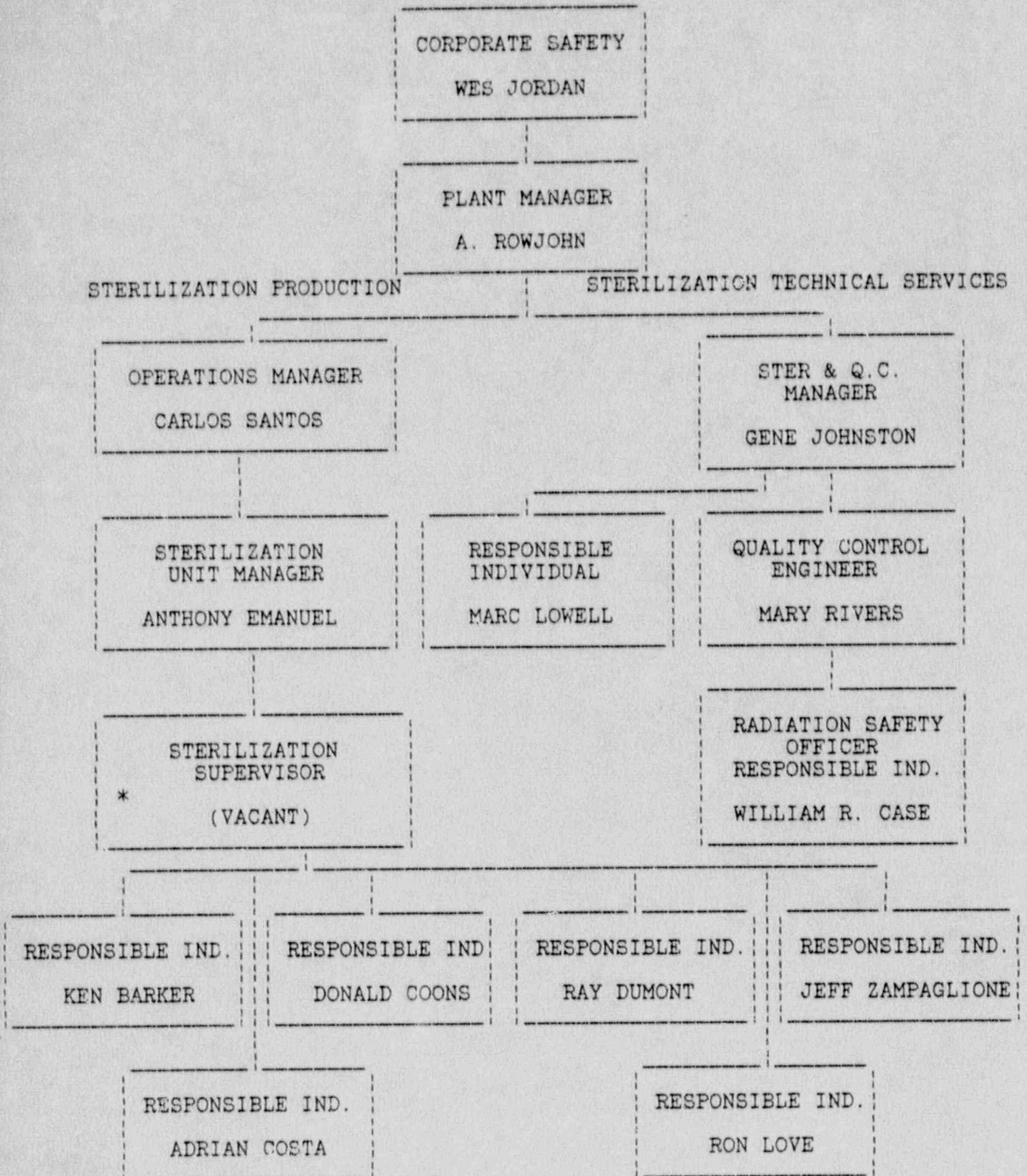
109481

OFFICIAL RECORD COPY, M110

AUG 29 1988

CONSULT 60 ORGANIZATIONAL CHART
BECTION DICKINSON & CO.
NORTH CANAAN, CT. 06018

REVISED 08/10/88



ITEM 10.4

Pursuant to Section 206 of the Energy Reorganization Act of 1974, the following procedures are to be followed in the event of a discovery of any deviation or defect which could possibly present a substantial safety hazard.

1. An entry describing the failure or defect is to be made in the irradiator log book by the Licensed Operator.
2. Notification is to be given immediately to the following persons in the order given:
 - a. Radiation Safety Officer Home
William R. Case Ext. 220
 - b. Unit Manager Home 203-753-9242
Anthony Emanuel EXT. 294
 - b. Sterilization Supervisor
(VACANT) EXT.
 - c. Responsible Individuals
Kenneth Barker EXT. 280/339 or 203-542-5144
Donald Coons EXT. 290 or 518-851-7841
Adrian Costa M.L.O.A.
Raymond Dumont EXT. 280 or
Ronald Love EXT. 339 or
Jeff Zampaglione EXT. 339 or 203-567-3764
Marc Lowell EXT. 224 or 413-229-8494
 - d. Sterilization/Quality Control Manager
Gene Johnston EXT. 214 or 203-824-0108
 - e. Plant Manager
Andrew P. Rowjohn EXT. 254
 - f. Corporate Safety Director
C. W. Jordan 201-967-3754 or 914-496-4125
3. Within 24 hours, the above personnel must meet (by phone, if necessary) to evaluate the deviation to determine if a substantial safety hazard exists.
4. If it is determined that a safety hazard exists, a responsible individual or a designated back-up, must send a written report to the N.R.C. within 48 hours (including weekends and holidays). Copies are to be sent to the Plant Manager and the responsible officer assigned by the Corporation.

Item 10.4

Attached are check sheets that are performed on a daily, weekly, monthly, quarterly, semi-annual and annual basis.

Revised 3-18-88

DAILY CHECK SHEET
CANAAN COBALT FACILITY

Date_____

Initials of Person
Completing Check

- _____ 1. Cell Exhaust Operating
- _____ 2. Water Pump Operating---No Leaks--Water flow should be greater than 2.5 G.P.M.
- _____ 3. Dosimeter Reader Calibrated
- _____ 4. "High Radiation" Lights Working
- _____ 5. Dosimeters From Previous Night Read
- _____ 6. Chiller Operating, Correct Setting--68 - 72 degrees F.
- _____ 7. Oil Level in Air-Line Lubricator Exhaust Bowl, Drain if Necessary
- _____ 8. 60 Second Timer Check Actual Seconds_____
- _____ 9. Cell Door Interlock Operational Check
- _____ 10. Conductivity:
 _____ Before Demineralizer
 _____ After Demineralizer
Change Resin Sags if Reading is 10 Micromhos or Greater

Revised 3-18-88

WEEKLY CHECK SHEET
CANAAN COBALT FACILITY

Week Ending _____

Initials of Person
Completing Check

- _____ 1. PH of Pool Water -- Reading _____
- _____ 2. Pool Float Switch -- Check for Proper Functioning -- Pump
Should Shut Off and City Water Should Enter Demineralizer
- _____ 3. Change Bristol Chart -- File in Specified Folder
- _____ 4. Air Line Leak Check (In Cell)--Repair All Leaks Immediately
- _____ 5. Cylinder Air Leak Check -- (Leaking Air Cylinder Should Be
Repaired or Changed)
- _____ 6. Rapistan Side-Transfer Cable Check
- _____ 7. P103 & P104 Doors -- Check for Tightness of Door Bracket
Bolts and Cylinder Rod Nut, and Proper Opening and Closing
- _____ 8. Inspect Carriers per Process Control Description Entitled.
"Cobalt60 Tote Inspection Program" This is An-Ongoing
Inspection by Loaders/ Unloaders and Operators. Book is At
Load or Unload Station. (Operators Should Audit Weekly
to Ensure Proper Logging)

MONTHLY CHECK SHEET
CANAAN COBALT FACILITY

Month _____

Initials of Person
 Completing Check

- _____ 1. Zero Productalog (1st of Month)
- _____ 2. Check (DL2) Monitors Behind Resin Bed With Check Source
- _____ 3. Check (DL2) Monitors at Output Station With Check Source
- _____ 4. Smoke Detector Test
- _____ 5. "Stop" Button Check -- There Are 3 Stop Buttons:
- _____ 5.1 Outside Office Door
- _____ 5.2 Near Electrical Boxes -- North Wall -- Inside Cage
- _____ 5.3 Irradiator Console
- _____ 6. "High-Temperature" Sensor Check
- _____ 7. Safety Cable Check -- Set "Safety Interlock Switch", pull "Safety Cable", alarm should stop sounding and console must be reset.
- _____ 8. Check source-hoist cables for fraying.
- _____ 9. Air Flow check on Manometer
- _____ 10. Change 1 cylinder cyl.# _____ Rebuild same cylinder
- _____ 11. Cylinder speed check. Replace cylinder if slower than specified times.
- _____ 12. Monitor test using check source
- _____ 13. Check air filters with G-M counter. G-M counter reading _____
- _____ 14. Check power-failure. Turn circuit breaker off and then on. Alarm should sound.
- _____ 15. Low air switch check. Turn air supply off. Source should return to pool.
- _____ 16. Check shut-down alarm operation. Alarm should sound while source returns to stored position
- _____ 17. L-118 Monitor -- reference L-118 Monitor revised test procedure
- _____ 18. Check Abnormal Water Level switch for visual and audible alarm.
- _____ 19. Change film badges

QUARTERLY CHECK SHEET
CANAAN COBALT FACILITY

Initials of Person
and Date Completed

Quarter Ending _____

- _____ 1. Air exhaust pre-filter change
- _____ 2. Lubricate monorail chain. Check belt for wear
- _____ 3. Spare parts inventory
- _____ 4. Time cycle and time interval between cycles
- _____ 5. Replace battery in dosimeter charger
- _____ 6. Clean out pool skimmer. Check hose connections

SEMI-ANNUAL CHECK SHEET

Revised 3-18-88

CANAAN COBALT FACILITY

Initials of Person
and Date Completed

Quarter Ending _____

- _____ 1. Rapistan belt and roller adjustment check sheet
- _____ 2. Change absolute filter in exhaust
- _____ 3. Leak test on source pencils -- fill out proper leak test survey form and file in proper folder
- _____ 4. Lube and inspect exhaust motor
- _____ 5. Clean cell mirror
- _____ 6. Check monorail speed
- _____ 7. Check Manual Fire Suppression System for proper functioning

ANNUAL CHECK SHEET

Revised 3-18-88

CANAAN COBALT FACILITY

YEAR _____

- _____ 1. Lube conveyor gear box
- _____ 2. Source hoist check for oil
- _____ 3. Source hoist check for air leaks
- _____ 4. Graphite source-pass side transfer rollers
- _____ 5. Connecticut registration
- _____ 6. Vacuum pool
- _____ 7. Calibrate pocket dosimeters
- _____ 8. Personnel monitoring report for N.R.C.
- _____ 9. Calibrate geiger counter

COBALT OPERATOR TRAINING

PART I.

- I. BASIC MATHEMATICS (1.0 HR)
 - A. Equations
 - B. Solutions of Linear Equation
 - C. Scientific Notation
 - D. Equation Involving Powers of Numbers
 - E. Graphs
- II. HISTORY (1/2 HR)
- III. THE ATOM (1/2 HR)
 - A. Structure of the Atom
 - B. Isotopes
 - C. Ions and Ionization
- IV. CHARACTERISTIC OF RADIATION (1/2 HR)
 - A. Alpha Particles
 - B. Beta Particles
 - C. X and Gamma Rays
- V. INTERACTION OF X-AND GAMMA RAYS (1/2 HR)
 - A. Photo-Electric Effect
 - B. The Compton Effect
 - C. Pair Production
 - D. Attenuation of X-and Gamma Radiation
- VI. RADIATION QUANTITIES AND UNITS (1 HR)
 - A. Introduction
 - B. Activity - Curie
 - C. Specific Activity
 - D. Exposure - Roentgen
 - E. Absorbed Dose - RAD
 - F. Dose Equivalent - REM
 - G. Quality Factor
- VII. BIOLOGICAL EFFECTS OF RADIATION (2 HR)
 - A. Latent Period
 - B. Recovery Period
 - C. Special Effects
 - D. Acute Effects
 - E. Genetic Effects
 - F. Somatic Effects
- VIII. DOSE GUIDE LEVELS (1 HR)

- IX. PRINCIPLES AND MATERIALS USED FOR REDUCING RADIATION LEVELS (3 HRS)
- A. Time
 - B. Distance
 - C. Shielding
 - D. Shielding Materials
- X. PRINCIPLES OF RADIATION DETECTION (1 HR)
- A. Purpose of Measurement
 - B. Methods of Measurement
 - C. Ion Chamber
 - D. Proportional Counter
 - E. Geiger-Mueller Counters
 - F. Scintillation Detector
- XI. CALIBRATION OF INSTRUMENTS (2 HRS)
- A. X- and Gamma Instruments
 - B. Calibration
 - C. Adjustment
 - D. Maintenance and Care
 - E. Outside Service
- XII. PERSONNEL DOSIMETRY (1 HR)
- A. film
 - B. TLD
 - C. Chirpies
- XIII. SAFE HANDLING OF SEALED SOURCES (1 HR)
- A. Gamma Irradiators
- XVI. DETECTION OF LEAKAGE FROM SEALED SOURCES (1 HR)
- A. Causes of Leakage
 - B. Methods for Leak Testing
 - C. Wipe Test
 - D. DL-2 Monitors
- XV. USNRC REGULATIONS (4 HRS)
- Parts 19 & 20 Title 10 CFR
- XVI. COBALT-60 FROM THE GROUND UP (1 HR)
- A. Manufacturing of Cobalt-60 Source
 - B. Transportation of Cobalt-60
 - C. Cherenkov Radiation

XVII. DOSIMETRY (1 HR)

- A. Review of Different Dosimeter Types
- B. Which Dosimeter to Use When
- C. Dosimeter Placement
- D. Dosimeter Reading

XVIII. QUESTION PERIOD (2 HR)

XIX. EXAM

XX. REVIEW EXAM

ITEM 7.0

COBALT OPERATOR TRAINING

PART II

I. FAMILIARIZATION TOUR OF FACILITY (1/2 HR)

II. MONITORS

1. Ratemeter (1/2 HR)
 - A. Its Purpose
 - B. Location of Monitor
 - C. Location of Sensor
 - D. Check for Proper Functioning
2. Eberline Geiger Counter (1/2 HR)
 - A. Purpose
 - B. Scale Reading
 - C. Calibration Procedure

III. CONTROL CONSOLE (1 HR)

1. Key Switches
 - A. Purpose
2. Pilot Lights
 - A. Description
 - B. Purpose
3. Relays

IV. OPERATOR SAFETY (1/2 HR)

1. Key attached to Geiger Counter
2. Check Source

V. PNEUMATIC CYLINDERS (1/2 HR)

1. Sequence of Operation
2. Maintenance

VI. EMERGENCY AND SAFETY DEVICES (2 HRS.)

1. Emergency Stop Controls
2. Power Failure
3. Maze Door Interlock
4. Source Storage Rack
5. Source Rack Guide Cable
6. Temperature Sensing Device
7. Conveying System
8. Pool Water Level Switch (2)
9. Source Hoist
10. Source Alarm
11. Air Pressure
12. Start-up Safety Delay Timer
13. Source Interlock

VII. NORMAL START-UP PROCEDURE (2 HRS.)

VIII. NORMAL SHUTDOWN PROCEDURE (1 HR)

IX. CONTAMINATION DETECTION (1.5 HRS.)

1. Ozone
 - A. Detection
 - B. Measurement
 - C. Time Delay
2. Leak Test of Source
3. Emergency Action Following a Suspected Radiation Accident
4. Decontamination Procedure

X. CELL EXHAUST SYSTEM (1/2 HR)

1. Procedure for Changing Filter

XI. CHILLER (1/2 HR)

1. Purpose
2. Correct Setting

XII. DEIONIZER (1.0 HR)

1. PH of water
2. Procedure for Changing Resin Sags
3. Conductivity Meter

XIII. EMERGENCY CONDITION (1.5 HRS)

1. Personnel in Maze at Start-up
2. Monitor Alarm Signals
3. Momentary Power Failure
4. Prolonged Power Failure
5. Safety Pilot Illumination
6. Internal Conveyor Pilot Illumination
7. Air Pressure Light Illumination
8. Box on Conveyor Pilot Light
9. Source Rack Pilot Light Illumination
10. Only One Source Up Pilot Light Illumination

XIV. MAINTENANCE (1.5 HRS)

1. Checklist

XV. Clearly understand the persons to contact whenever there is any trouble with the mechanical operation of the sterilizer.

XVI. REVIEW (2 HRS)

XVII. EXAM

109481

(FOR LFMS USE)
INFORMATION FROM LTS

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

PROGRAM CODE: 03521
STATUS CODE: 0
FEE CATEGORY: 3G
EXP. DATE: 19900930
FEE COMMENTS: -----
.....

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: BECTON, DICKINSON
RECEIVED DATE: 880829
DOCKET NO: 3006891
CONTROL NO.: 109481
LICENSE NO.: 06-13514-01
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: \$230.00
CHECK NO.: 077469

3. COMMENTS

SIGNED _____
DATE 9/13/88

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED 1/1)

1. FEE CATEGORY AND AMOUNT: 3G \$230

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT _____
RENEWAL _____
LICENSE _____

3. OTHER _____

SIGNED _____
DATE 9/21/88