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DETAILED OPERATING DESCRIPTION COBALT 60 IRRADIATCP TYPE IR68

ISOMEDIX, CHICAGO

EDITION NO. 1, MAY 1973



8604090156 860109 PDR FDIA ROBINOW85-774 PDR

DETAILED OPERATING DESCRIPTION

NOTES:

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+ Line Voltage

115 VAC is present at all times (barring power failure) through the 15 AMP Line Fuse (F1).

+ Power Switch (SW1)

The spring-loaded Main Power Switch (SW1) ... located on the control console, must be turned from the ON position through to RESET, then released to ON to condition the unit. The Power Switch is spring-loaded to the right of centre position.

+ Machine Switch (SW3)

The Machine Switch (SW3) ... a three position key switch with an "Off", "On" and a spring-loaded "Start" position. This switch controls both the source hoist and source pass mechanism for automatic batch operation. With SW3 in the OFF position, the machine is ready for "MANUAL" operation.

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AUTOMATIC OPERATING PROCEDURE

(Refer to Elementary AECL Drawing A10434A9).

In the Equipment Room

Turn on the main power supply to the control power transformer.

At the Control Console

Power Switch (SW1) ... Turn the "Power" key switch from "Off", through the "On" position to the "Reset" position and release to "On". The following circuit descriptions applies:

- A) SW1 in the "On" Position (from "Off" to "On")
 - 115 VAC is fed through the 15 AMP fuse F1, through lines 2 and 4 of SW1, to the Primary of transformer T1.
 - 2) 12 VAC is fed through the 10 AMP fuse F2 through lines 202 and 203 of relay K100 to the Reset lamp (yellow) which will illuminate.
- B) SW1 in the "Reset" Position (from "Off" through "On" to "Reset")
 - Control relay K102 will energize via lines 4 and 13 of SW1B.
 - Power relay K100 will energize via lines 2 and 4 of SW1A and closed lines 4 and 5 of K102.

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K100 Contacts will close lines:

- a) 4 and 5 self-locking the relay.
- b) 2 and 3 applying power to the 115 VAC circuits.
- c) 202 and 204 applying power to the 12 VAC circuits in the control console and source pass mechanism.
- d) K100 will open lines 202 and 203 removing 12 VAC from the "Reset" lamp (LP1) which will extinguish.
- 3) 12 VAC will be applied through limit switch LS??, line 204 and 205. The source down lamp (LP2, green) will illuminate. This same circuit also applies 12 VAC to the source down relay K17. The relsy K17 will be in an energized state, but the contacts in lines 3 and 33 are <u>held open</u> while the source rack is in the down (safe) position (source moving alarm and radiation warning light systems). K17 contacts will close lines 3 and 8 and 115 VAC will be fed to the monitor circuit.
- 4) Relay K50 will energize, 12 VAC fed from K100 closed contacts, lines 202 and 204, through closed relay contacts K51 lines 204 and 252. K50 contacts close lines 3 and 22 feeding 115 VAC to the machine key switch (SW3) contacts B and C. (SW3 in "Off" position ... no circuit effect).
- 5) K100 contacts will close lines 2 and 3 applying 115 VAC to line 3 to the following 115 VAC circuits:

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- a) Pin 1 of the monitor circuit which will apply 115 VAC to the monitor test switch (S2).
- b) The source down relay K17 is energized; limit switch LS17 is located on the source hoist mechanism and is closed with the source rack down, lines 3 and 8 will apply 115 VAC to condition the monitor and door interlock circuits.
- c) LS111 irradiation room door switch will apply 115 VAC through lines 3 and 12 to the door interlock circuit. LS111 is located above the irradiation room door and is held closed when the door is shut. The door solenoid (L1), can now be actuated when the irradiation room door keyswitch (SW2) is turned.
- 6) 115 VAC is applied to the "A" contact of machine
 switch (SW3) to line 21 and relay K106 which will energize.

With K106 energized, the contacts will close lines 249 and 401 applying 12 VAC to the pneumatic solenoid valve pushbuttons, S1 to S30 inclusive. The pushbuttons are located on the source pass mechanism switch stations, and are used for maintenance check procedures.

7) Relay K102 will energize via lines 3 and 4 of SW1B, closing its contacts to lines 3 and 29 and will

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feed 115 VAC to the overdose timer (ST1). Reset coil of the overdose timer will energize, and actuate the red hand from zero position to the black time setting hand. At this point, the overdose timer is conditioned for the automatic operation of the unit.

- C) SW1 released from "Reset" to "On"
 - K100 will remain energized through its self-locking contacts and lines 4 and 5.
 - 2) K102 will de-energize opening the contacts to lines 3 and 29 to the overdose timer (ST1). (Still conditioned").
 - 3) 12 VAC is fed from lines 204 and 250 of SW1C to the safety interlock circuits.
 - 4) The unit is now "conditioned" for automatic operation, as 12 VAC is felt at the control console and the source pass mechanism circuits (transformer T5), and 115 VAC is fed to the remaining circuits. (Toggle switch S40, located on the relay panel, is in the "Auto" position).
- NOTE: Perform the following procedures before actuating machine switch (SW3) for automatic operation:

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- a) Preparatory to Entering the Irradiation Room,
- b) In the Irradiation Room,
- c) Leaving the Irradiation Room.

Preparatory to Entering the Irradiation Room

The operator must establish that the Irradiation Room Monitor is functioning properly (located on the wall near the Maze door).

The following describes the correct check-out procedures:

- Press monitor test switch and hold until the monitor indicates an alarm condition. (Buzzer above maze door sounds and monitor scale moves above 80%).
- Release the monitor test switch, the monitor test light will remain ON.
- The monitor alarm light extinguishes, and the memory light remains ON.
- 4. Press the memory light switch to clear the monitor circuit.
- Memory light ramains illuminated until the maze door is opened, and LS111 is opened (lines 3 and 12 open).

Entering the Irradiation Room

Irradiation room door key switch (SW2) - (Refer to monitor AECL drawing A12986).

- The operator must insert the "Master" key into the irradiation room door lock switch (SW2).
- The key must be turned clockwise to ON which will energize the door solenoid (L1) releasing the door latch.
- 3. Open the door and remove the "Master" key.
- 4. The door solenoid (L1) will now be de-energized.

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 Limit switch (LS111) will close the circuit to relay K111 with the irradiation room door open. (The circuit to K111 will open with the door closed).

In the Irradiation Room

Safety Interlock Switch (SW6) ... SW6 is springloaded and is located in the irradiation room. The operator checks product boxes, and that personnel are not left in the room when he leaves.

- Insert the "Master" key into the safety interlock switch (SW6) and turn clockwise to "Momentary On".
 12 VAC will be applied to relay K21 via line 210.
- At this point, with the irradiation room door open limit switch LS111 contacts are closed, closing lines 3 and 15 and energizing relay K111.
- 3. 115 VAC will now be applied through closed contacts K21 lines 3 and 16, through closed contacts K111 lines 16 and 17, through closed contacts K50 lines 17 and 18, through closed contacts 18 and 19 of TD1 to relay K104 and safety delay timer TD1. The safety delay timer TD1 will run down to zero from 90 seconds. K104 energized, contacts will close lines 3 and 17 to self-lock relay K104.
- Machine start relay K105 will remain de-energized as K111 is now energized (irradiation room door open), and K111 contacts open lines 17 and 20 to relay K105.

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- Safety interlock relay K104 will remain energized as the delay timer TD1 runs down to zero time, via TD1 contacts closed, lines 18 and 19.
- 6. With K104 contacts 204 and 211 closed, 12 VAC is fed to the alarm bell (BZ1) which will sound. The bell is located in the switch box in the irradiation room.

Product Boxes

The product boxes should be properly loaded into the source pass mechanism as described and illustrated in the IR68 Instruction Manual.

The box sensing limit switches (located in the source pass mechanism) will "condition" the unit for automatic operation.

Leaving the Irradiation Room

- Closing the irradiation room door will lock the door and open LS111 lines 3 and 15 and relay K111 will be de-energized.
- The door solenoid (L1) is now de-energized, and the door will lock when the operator closes the door.
- Machine start relay K105 will energize through relay K104 self-locking contacts lines 3 and 17, K111 closed contacts lines 17 and 20 to relay K105.
- K105 closed contacts will feed 12 VAC to the machine start lamp LP4 (blue) which will illuminate.

- Should the operator fail to arrive at the machine ready switch (SW3) in the allotted time, as determined by TD1;
 - a) TD1 contacts will open lines 18 and 19 to the safety interlock relay K104 which will de-energize.
 - b) With K104 de-energized, the contacts will open lines
 3 and 17 to machine start relay K105 which will
 de-energize.
 - c) Open contacts of K105 will open lines 204 and 215 to the machine start lamp (LP5) (blue) which will extinguish.
 - d) Open contacts of K105 would open the 115 VAC lines 26 and 24A on the machine switch (SW3). This would prevent the operator from operating the machine keyswitch for automatic operation.
- 6. Assuming the operator arrives at the machine ready switch (SW3) in the allotted time as determined by the safety delay timer (TD1) items 1 to 4 of heading, Leaving the Irradiation Room will apply and the unit conditioned for automatic operation.

AUTOMATIC OPERATION

At the Control Console

 Ensure the toggle switch S40 (located behind the control panel) is in the "Auto" position.

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This will close the 12 VAC lines 204 and 217 to relay

K23 which will energize. K23 contacts will now close the 115 VAC timer (TT1) and source hoist circuits for automatic operation. 2. Machine key SW3 turned from OFF through ON to START, and

released to ON.

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Arm "C" of SW3

115 VAC will be applied through relay K50 lines 3 and 22, through arm "C" of 26 and 24A, closed a) contacts K23 lines 24A and 35, through closed contacts CT2 contacts 9 and 10 (shuifle counter relay CT2 energized), energizing relays K107 and

> K107A. Relay K107 will self-lock through its contacts and close lines 23 and 24A. K107 closes lines 204 and 206 and the machine on lamp LP5 (blue) will flluminate. Relay K107A contacts will close lines 497 and 498 in the pneumatic cylinder circuit. The overdose timer (ST1) will have 115 VAC applied through closed contacts K102 lines 3 and 29 (SW1 Reset), 3 and 29A (SW3 Start). The timer coil will energize, closing the circuit to the shuffle counter (CT2) coil and close contacts 9 and 10 energizing the relays K107 and K107A as described previously.

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The maste, timer (TT1) will not be actuated until the source rack reaches the UP position, then the scurce rack will actuate limit switch LS18, energizing relay K18 and closing the contacts to lines 24A and 25 to complete the circuit to TT1 (master timer now running down to zero). Relay K120 will energize with the master timer at time zero.

- b) This same circuit will energize the source hoist solenoid valve L2 and the source rack will begin to travel up.
- c) The power tailure timer TD4 will also be actuated by this closed circuit, closing its lines 4 and 40 to relay K113. (Pneumatically released). K113 will energize closing lines 4 and 5 to form a parallel circuit to the main power relay K100. In the event of a power failure, the unit operation will automatically re-commence if the power failure is of less than 30 seconds duration.

Arm "B" SW3

- d) 115 VAC will be applied through arm "B" of SW3 through closed contacts K107 lines 23 and 24A providing an alternate circuit to the timer circuits and source hoist mechanism.
- e) Source Rack Moving Up the following circuit action will result:

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- Source down limit switch LS17 will open, and the source down lamp LP2 will extinguish.
- Relay K17 will de-energize opening up the lines 3 and 8 to the cell monitor.
- TD3 safety timer (90 sec) will now begin III) operating through closed contacts K17 lines 3 and 33, K18 contacts lines 33 and 34. The same circuit actuates the source moving alarm BZ2, and the radiation warning light LP10. If at the end of its preset time (90 sec) the source rack has not reached its upper limits, TD3 contacts will close the lines 250 and 251 to the main relay K51. With K51 energized, the contacts will open lines 204 and 252 to relay K50. With K50 de-energized lines 3 and 22 will open, removing 115 VAC to SW3, and the source rack will lower automatically. The unit must now be Reset and the start-up procedure initiated as previously described.
- f) Source Rack in the Up Position -
 - Limit switch LS18 closes lines 204 to 207 and illuminates the source up lamp LP3 (red).
 - Relay K18 will also energize closing lines
 24A and 24 completing the 115 VAC circuit to
 master timer TT1.

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- iII) TTI controls relay K120, the contacts making or breaking lines 402 and 499 to relay K14 which in turn opens or closes lines 3 and 31 to the back-up timer TD2A, which controls back-up timer TD2 through lines 3 and 32. TD2 contacts control lines 250 and 251 which will initiate the emergency stop circuit should a single shuffle cycle be exceeded. K120 contacts also control lines 402 and 403 ensuring that pusher P1 goes to the discharge position.
- iv) The following conditions must be met for the source pass mechanism to operate:
 - Machine key ON position ... relay K106 deenergized completing circuit through closed contacts to lines 249 and 496.
 - b) No emergency conditions ... K51 deenergized completing circuit to lines 496 and 497.
 - Machine keyswitch ON ... relay K107A
 energized, completing circuit to lines
 497 and 498.
 - d) Source UP ... K18 de-energized closing lines 498 and 402.
 - Master timer at time zero ... K120 energized, contacts close lines 402 and 403.

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- f) Relay K12 de-energized ... (No product
 box in position two) contacts K12 remain
 closed to lines 403 and 404.
- g) Product box in elevator P16 ... closing limit switch LS16 to lines 404 and 405.
- h) Elevator P16 down ... closing limit switch
 LS16D to lines 405 and 406.
- P2 in receive position ... limit switch
 LS2R closed to lines 406 and 407 through
 S1 to P1 (SVP1) which will discharge the
 two product boxes from elevator P16 and
 the loading station into box position two.
- j) When a product box arrives at position two,
 iimit switch LS2 will close lines 402 and
 412 to relay K12, energizing, closing the
 line to relay K14. K14 contacts close
 lines 3 and 31 to safety timer TD2A.
 With TD2A energized, the closed contacts
 will close lines 3 and 32 to the back-up
 timer TD2. TD2A will operate during the
 time the product conveying system is
 running and acts as a safety timer.
 K12 contacts will open lines 403 and 404
 in P1 discharge circuit. As P1 cylinder

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relay K13 closing lines 27 and 29A to the overdose timer ST1. When ST1 actuates, coil CT2 of the shuffle counter will also actuate beginning its count down to zero. Elevator P8 will go to the UP position via circuit LS2 lines 402 through LS1D, LS9R (closed), LS8R (closed), S15 and P8 (SVP8).

P1 will travel to the reserve position via circuit LS8R, S2 and P1 (SVP1). LS1R will then close the circuit through to LS16 (closed), LS16D (closed), and P16 (SVP16) will go UP (receive) position. Through limit switch action (product box sensors), the conveying system automatically shunts the boxes sequentially as described in the IR68 Instruction Manual. When the main timer runs out to zero time the facility will re-cycle as pusher P1 starts its receive action. LSIR will close, actuating K20 relay, resetting the master timer TT1. The overdose timer (ST1) is also reset by LS1D. Each time ST1 actuates, (P1 discharge position), the counter coil (CT2) will also actuate

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beginning its count-down to zero. Pusher No 1 in the discharge position will energize K13, lines 27 and 29A, through K22 lines 29A and 29 which will reset ST1. Facility operation will not be Interrupted.

When the shuffle counter reads zero, CT2 pins 10 and 9 in the source hoist circuit remain open and the source rack will automatically lower.

The overdose timer (ST1) is designed to shut V) down the facility in the event of a malfunction in the master timer (TT1). The overdose timer should be set to approximately 5 minutes longer duration than the setting on the master timer. In the event the master timer fails during the pre-set time period then the overdose timer will continue to time out. With the master timer in a non-reset condition the overdose timer will run out to zero time and close the circuit to pins 4 and 3 of ST1, and close lines 250 and 251, the emergency shutdown circuit will operate and lower the source plaque.

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Should the automatic operation of the product conveying system exceed the normal time as preset by TT1, TD2 will run out, closing lines 250 and 251, relay K51 will energize opening lines 204 and 252 de-energizing relay K50 which will open lines 3 and 22 to the machine switch SW3.

The source rack will automatically lower, the alarm bell will ring and the radiation hazard light will illuminate. When the source reaches the bottom of the pool, the green "Source Down" light on the control panel will illuminate, the radiation hazard lamp will extinguish and the warning alarm will stop.

HAND OPERATION OF UNIT MAINTENANCE OR INSPECTION PURPOSES

After performing all the operations previously described including Entering the Irradiation Room, the pneumatic cylinders P1 to P16 may be independently operated by depressing the pushbuttons S1 to S30.

The pushbuttons are located on four stations located on the source pass mechanism in the irradiation room.

NOTE: No product boxes to be in source pass mechanism.

Pushbutton Operation

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The following conditions must be met before operating the pushbuttons:

- "Power" keyswitch SW1 through to the Reset position and released to "On". The circuit action has been previously described.
- 2. "Machine" keyswitch SW3 in the "Off" position. Relay K106 will energize through lines 3 and 21 of SW3A. Closed contacts of K106 will close lines 249 and 401. and apply 12 VAC to the pushbutton stations.
- 3. Toggle switch S40 in "Auto" position. Relay K23 will energize through S40, lines 411 and 402 of relay K23 will open permitting individual pushbutton operation.

One Complete Shufile Cycle

Perform all the operations previously described including Entering the Irradiation Room.

The following conditions must be met before automatic operation with the source down is carried out

- Product boxes loaded into proper position. (Box sensing limit switches closed).
- "Power" keyswitch SW1 through to the "Reset" position and released to "On". The circuit action has been previously described.

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- 3. Toggle switch S40 from "Auto" to "Test". Relay K23 will now de-energize opening lines 24A, 35, 25 and 27, that will electrically remove the source hoist and timer circuits from the system.
- 4. "Machine" keyswitch to the "On" position. Relay K106 will de-energize, lines 249 and 496 will complete the circuit through K51 lines 496 and 497, K17 lines 497 and 411 through K23 lines 411 and 402, K120 lines 402 and 403 (closed at time zero) through the box detector limit switches to SVP1 beginning one complete cycle of operation.

NOTE: Ensure S40 is switched to "Auto" after "Test".

SAFETY

Emergency Shut-Down Operation

The unit can be stopped in an emergency by:

- Depressing the pushbutton stop switch S50 (located on the control panel).
- Depressing the safety switch S51 (located in the irradiation room).

Shut-Down Operation - Other Than Emergency

The unit will also shut down for the following reasons:

3. Delay of internal conveyor operation. (TD2 timed out).

- Source rack does not reach full up position. (TD3 timed out).
- 5. Low Air Pressure (Fneumatic Switch (S57) closes).
- High Cell Temperature (Thermal Switch (S56) closes at 40°F above ambient temperature).
- Irradiation room door opened (Source Up) (Relay K111 will energize).

The following circuit description applies for either Emergency Shut-Down Operation or, Shut-Down Operation - Other than Emergency:

- a) With the unit operating normally, 12 VAC is applied through contact Arm "C" of the power switch SW1 to line 250.
- b) For any of the conditions listed in items 1 to 17 inclusive, the 12 VAC lines 250 and 251 will close the circuit to the stop light S50 (red) which will illuminate. K51 will energize.
- NOTE: An additional Safety feature has been previously

described in, Leaving the Irradiation Room. closing lines 250 and 251, through its self-locking contacts, which will keep S50 illuminated until the relay K51 is de-energized by clearing the "emergency" or "other" condition initiating shut-down of the unit. (To start unit operation after clearing the condition, SW1 must be Reset).

- c) With K51 energized, the contacts will open lines 204 and 252 to safety relay K50 which will de-energize. K51 will also open lines 496 and 497 to the source pass mechanism which will stop functioning.
- d) With K50 de-energized the contacts will open the 115 VAC lines 3 and 22 to the machine switch SW3.
- e) The source hoist solenoid L2 will de-energize which will exhaust the pneumatic air supply, and the source rack will begin to lower (gravity controlled).
- f) The timer circuits are now disabled but will resume their function in normal operation. (K50 de-energized, lines 3 and 22 open).

Source Rack Moving Down

The following circuit description will apply as the rack begins its travel down:

- a) The source up limit switch (LS18) will open, and the "Source Up" lamp LP3 (red) will extinguish.
- b) Relay coil K18 will de-energize and 115 VAC through closed K17 contacts lines 3 and 33 through closed K18 contacts lines 33 and 34 to the alarm buzzer (BZ2) which will sound.
- c) The 90 second delay timer (TD3) will also be actuated.
- d) The radiation warning light will remain illuminated through closed K17 contacts, lines 33 and 0.

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Source Rack Down

With the source rack in the fully down position the following circuit description will apply:

- a) The source down limit switch (LS17) completes the circuit through lines 204 and 205 to the indicator lamp LP2 (green) which will illuminate.
- b) Relay K17 will energize through lines 205 and 200 closing K17 contacts to lines 3 and 8. 115 VAC will now be applied to the wall mounted single probe cell monitor system.

Irradiation Room Door

Emergency Exit From the Irradiation Room

A mechanical interlock release inside the irradiation room will permit personnel to leave if the door is shut accidentally.

Normal Operation

With the irradiation room door closed, K111 is de-energized and the contacts will open the 12 VAC lines 253 and 251.

Relay K111 coil will be energized through the barrier door switch (LS111) lines 3 and 15.

Emergency Exit

The following circuit action will apply: a) Opening the barrier door, limit switch LS111 will close lines 3 and 15 to relay K111.

- b) K111 will energize. (Source Up).
- c) K111 closed contacts will complete the circuit to lines 253 and 251 completing the circuit to the safety interlock relay K51.
- d) The circuit action will now continue as described in "Emergency" or "Other" shut-down procedures.

Single Probe Wall Mounted Monitor

The irradiator room is inaccessible when an irradiation cperation is in process.

Also, an irradiation operation cannot be started, or entry to the irradiation room effected, until the monitor test sequence has been properly carried out.

Refer to Operating Instructions, Single Probe Wall Mounted Monitor, Catalogue No. L118.

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NRC Forn 374 (3-82) U.S. NUCLEAR REG	ULATORY COMMISSION AGE 1 OF 3 PAGES				
MATERIALS LICENSE					
Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Act of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34 heretofore made by the licensee, a license is hereby issued author source, and special nuclear material designated below; to use such deliver or transfer such material to persons authorized to receive import such byproduct and source material. This license shall be Atomic Energy Act of 1954, as amended, and is subject to all Commission now or hereafter in effect and to any conditions special context.	ergy Reorganization Act of 1974 (Public Law $93-438$), and Title 10, 4, 35, 40 and 70, and in reliance on statements and representations fizing the licensee to receive, acquire, possess, and transfer byproduct, the material for the purpose(s) and at the place(a) designated below; to it in accordance with the regulations of the applicable Part(s); and to be deemed to contain the conditions specified in Section 183 of the applicable rules, regulations and orders of the Nuclear Regulatory cified below.				
Licensee	÷ · · .				
1. Iscnedix Inc. (New Jersey)	3. Litense number				
, 80 South Jefferson Road					
Whippeny, New Jursey 07981	4. Expiration date				
10-	5. Docket or Reference No.				
 B. Cesium 137 B. Cesium 137 B. Cesium Association Association Authorized use Calific Configuration A. For use in AECL Main Association A. For use in AECL Main Association B. For use as instrument check sources. 	2,000,000 curies total 137 (Nuclear E. Not to exceed 10 milli- ates Incorporated curies per source 62-103) tor for irradiation of materials, other than ts.				
10. Licensed material shall be used only Markey Park, Grovegore, Ohio	Marketing Place, Hamilton/33 Industrial at Apollo Drive, Barover Touriship, Heipping.				
11. The licensee shall comply with the part Federal Regulations, Part 19, "Notic Inspections" and Part 20, "Standards	rovisions of Title 10, Chapter 1, Code of es, Instructions and Peports to Workers; for Protection Against Padiation."				
12. Licensed material shall be used by, presence of, George Dietz, George Bai William M. Owens, or other individua February 20, 1903 and latter dated of Corporate Padiation Protection Offic September 15, 1983 and 1stan dated becenter	or under the supervision and in the physical ker, Ponald Llewellyn, John Masefield, ls trained according to application dated 36 23, 1993, and designated by George Dietz, er.				

N.L.N.

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(A-82)	R REGULATORY COMMISSIO	N PAGE 2 OF 3 PAGES
		License number
	MATERIALS LICENSE	Docket or Reference number
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1000	(Linec)	
13.	Licensed meterial shall not be used in or on to the public.	human beings or in products distributed
14	Irradiation of foods and the distribution of	fords for huma concention shall be
1.4.	in accordance with the rules and reculations	of the Rood and Drug Administration
	U. S. Department of Health and Human Services	
	- 7 7 -	^ .
15.	A. Each sealed source containing, licensed m	aterial, shall be tested for
6	To the absence of a containation at interval	s not to exceed six menths.
(1)	test has been made within giv months pri	or to the transfer, a sealed
	source received from another person shall	1 not be put into use until
	tested.	
	69 × -	
	B. The test shall be capable of detecting t	he presence of 0.05 microaurie
	or contamination on the test sampler in	e test samples shall be taken
	active is paramently of semipermanently	acounted or stored. Peopris of
	leak test results shall be kept-in-units	of microuries and maintained
	for inspection by the Commission.	S S 1/1 S Res TI
	C. If the test reveals the presence of 0.05	microcurie or more of removable
	contanination, the Electione shall inned	actery withdraw the sealed source
	disposed of in accordance with Commissio	reculations."A recort shall
	be filed within 5 days of the test with	the U. S. Muclear Regulatory
	Commission, Region by Office of Inspecti	on and Enformment, 691 Park
	Avenue, King of Prussia, Perusylvania 1	9406, describing the equipment
	involved, the test results, and the corr	action taken.
	D. Tests for leakage and/or contamination s	hall be performed by the licensee
	or by other persons specifically authori	zed by the Commission or an
	Agreement State to perform such services	•
	sea in C	Jegt no- 15, 170)
16.	Written instructions contained in Section 90	application dated February 20, 1983
6	individual maine or having reconcibility for	use of licensed material. Any
(74)	chances in these instructions shall have the	prior approval of the Material Licensing
	Branch, Division of Fuel Cycle and Material S	afety, U.S. Muclear Peculatory
***	Commission, Mashington, D. C. 20555.	
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-----NCC Form 374A U.S. M **R REGULATORY COMMISSION** 3 PAGES License number 29-19769-03 MATERIALS LICENSE Docket or Reference number SUPPLEMENTARY SHEET CODITIO'S (continued) DLF 17. This license does not authorize repairs or alterations of the irradiator involving removal of shielding or access to the licensed material except as provided otherwise by specific condition of this license. Renoval, replacement and discosal of sealed sources shall be performed only by ADL or by other persons specifically authorized by the Commission or an Agreement State to rerform such activities. After installation of the irradiator and Cesium 137 or Cobalt 60 source and prior 12. to initiation of the irradiation program, a radiation survey shall be conducted to determine radiation levels around, above, and below the irradiator with the source in the irradiate position and with the source in the shielded position. A detailed report of the results of the surveys shall be sent to Material Licensing Branch, Division of Fuel Cycle and Material Safety, U. S. Nuclear Perulatory Commission, Mashington, D. C. 20555, not later than thirty (30) davs following installation of the source. A copy of such report shall also be sent to the U. S. Muclear Regulatory Concission, Region 7, Office of Inspection and Inforcement, 631 Park Avenne, King of Prusaia, Pennsylvania 19486. C ing I Except as specifically provided otherwise by this license, the licensee shall 19. possess and use licensed material described in Items 6, 7, and 8 of this license. in accordance with statements (representations; and procedures contained in application dated Fabrary 20, 1983; and letter dated June 23, 1983. The Nuclear Regulatory Commission's regulations shall govern the licensee is statements in applications or letters, unless the statements are more restrictive than the De 22, 1783 reculations. Septer 15, MB FOR THE U. S. MUCLEAR REGULATORY COMMISSION "original signed by Joseph C. Wang" 11 19 1983 Paterial Licensing Branch Date Division of Fuel Cycle and Material Safety Washington, D. C. 20555