

UNITED STATES GOVERNMENT

Memorandum

TO : Files

DATE: FEB 6 1964

FROM : ^{DMH} Daniel B. Howell, Isotopes Branch
Division of Licensing and Regulation

SUBJECT: TRIP TO DICK X-RAY COMPANY, ST. LOUIS, MISSOURI

SYMBOL: DLR:IB:DBH

ca. 1/16/64
A visit was made to Dick X-Ray Company by D. B. Howell to obtain information on their "Commando" teletherapy unit pertinent to explaining the source drive malfunction recently reported at Insight Medical Research Foundation, Incorporated, (Insight), St. Petersburg, Florida. Mr. F. B. Niedner (Vice President) was the primary contact at Dick X-Ray Company.

Mr. Niedner explained that examination of the source drive mechanism during disassembly of the Insight teletherapy unit at the Budd Company did not reveal significant wear or damage to any part. They could, therefore, only conclude that the molecular structure of the petroleum lubricant used by Insight on the source drive mechanism had broken down under Cobalt 60 radiation causing increased friction in the drive tube which the return spring could not overcome. Although the return drive spring of the Insight unit showed no defects, it was replaced during reassembly at the Budd Company as a routine maintenance precaution. It was determined through a series of leak tests at Budd Company that the source in the Insight teletherapy machine was leaking. The source was, therefore, replaced at the Budd Company.

Mr. Niedner said that when Dick X-Ray installs a teletherapy unit they recommend to the customer the use of graphite lubricant in the source guide tube and that at Insight this recommendation was not followed. He said, however, that in order to prevent similar failures occurring in the future he would reiterate this recommendation, by letter, to all "Commando" owners and send a copy of the letter to the Atomic Energy Commission.

Mr. Niedner and Mr. C. R. Anderson explained the design and exhibited the operation of the "Commando" with a unit they had set up in their plant. The drive assembly was broken down for inspection. There appeared to be no "weak" design areas which would cause recurrent failure of the assembly. The drive assembly return action was demonstrated by returning the source to the "off" position as would normally be done at the control

B127

panel and by disconnecting electrical power from the unit which simulated a power failure. In the normal operation using the control panel, the driving motor unwinds the cable drum and the spring drives the source to the "off" position against the restraining tension of the drive cable. This is a smooth return whereas the loss of power to the unit slams the source to the "off" position when a magnet clutch is released on the cable drum.

Mr. Niedner said that Dick X-Ray would no longer manufacture teletherapy units and that the unit presently in their plant was the last one they would sell. It would fulfill an order in the near future placed by the Poplar Bluff Hospital, Incorporated. He said, however, that Dick would continue to service the ten (10) units that are presently in operation. Servicing is conducted out of the St. Louis office and normally includes only installation of loaded teletherapy units and source installation and replacement. Budd Company presently fabricates their sealed sources and performs special services where a hot cell is required.

Mr. Niedner said that he knows of only three (3) Dick teletherapy sources that have evidenced leakage. One was a silver-soldered source at Mallinckrodt; another was a welded source at Mallinckrodt; the third was the Insight welded source. After the second source failure at Mallinckrodt, Dick had the Missouri School of Mines and Engineering investigate the cause of leaking. The School determined that the type 416 stainless steel that was used for the capsule did not readily accept heliarc welding and recommended a change to type 430f stainless steel. All sources presently supplied by Dick are of 430f stainless. Mr. Niedner could not readily locate correspondence with Missouri School of Mines pertinent to this determination but said he would send copies later. Mr. Niedner gave me a comprehensive list, by serial number, of each teletherapy sealed source that Dick X-Ray has had fabricated. The list also includes the present disposition of each source.

When questioned, Mr. Niedner said that there was no corporate relationship between Dick X-Ray Company, Nuclear Consultants, and Designs for Tomorrow (Deft) except that of separate companies providing services that the others used on occasion. Dick X-Ray had in the past a contractual relationship with NRD Instrument Company to build the "Commando" units. Nuclear Consultants and Designs for Tomorrow (Deft) were founded by former constituents of NRD, Dr. W. R. Konnecker and Mr. Carl P. W. Wolf, respectively.

Mr. Niedner was asked if he had investigated whether or not the present configuration of his source link would permit double welded containment of the Cobalt 60 source. He said that the physical size of the source drive tube of the present "Commando" units would not accommodate a source link of larger outside dimensions and that the space requirements of low specific activity Cobalt 60 had in the past prevented using double containment. He said, however, that recently AECL had suggested that they (AECL) could provide double containment with high specific activity Cobalt 60 using a source link of the present external dimensions. Mr. Niedner said he would pursue this approach to double containment with AECL and possibly the Budd Company; and, if cost was not prohibitive, the doubly welded capsule might be used in the future.

cc: Division of Compliance (Headquarters)
Insight Medical Foundation, Inc. (General File)
Dick X-Ray Company (License No. 24-6566-1)