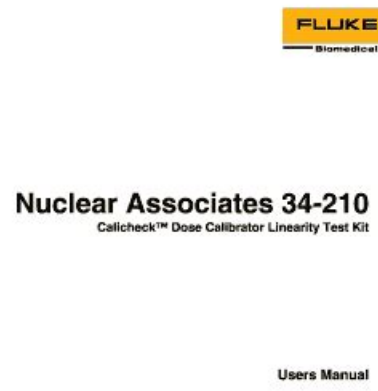
calicheck manual



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Book Descriptions:

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To get more targeted content, please make fulltext search by clicking here.It is especially important that damage does not occur to the ends of the tubes. 3. Calicheck confirms activity linearity. It will not make your dose calibrator linear. 4. The dose calibrator must exhibit activity linearity prior to utilizing the Calicheck kit. This must be accomplished by performing an activity linearity test using standard techniques such as described in your license application. For NRC license holders, this test should be at a minimum equivalent to Appendix C of Regulatory Guide 10.8, August 1987. If nonlinearity is demonstrated, the instrument should be repaired. 5. Calicheck must be specifically calibrated for each dose calibrator in the facility since variations between manufacturers and sometimes, models are known to exist. Similarly, kits should not be interchanged without first confirming calibration factors. Each tube in the Calicheck kit must be calibrated and each time a tube is replaced in the kit, the new tube must be calibrated. A procedure is enclosed that describes the calibration technique. 6. Readings obtained from Calicheck are not to be used for assay purposes. 7. The radionuclide used for testing must be Tc99m, and it must be relatively free of Mo99 contamination. If a central radiopharmacy is used as the source of TC99m, ask the radiopharmacist for his assay results. 8. Do not use the tubes as shielding devices. The black center tube offers absolutely no radiation protection since it is plastic with no lead in its wall. The other tubes do contain varying amounts of lead, but should never be regarded as a protective shield. 9. The entire kit should be stored in the mailing container in an upright position when not in use. The black center tube should be inserted base down into the purplebanded tube. 10.http://www.leave.com.tw/User_File/UpFile/20200920180821_ZGlnaWRlc2lnbi1wcmUtbWFudWFs.xml

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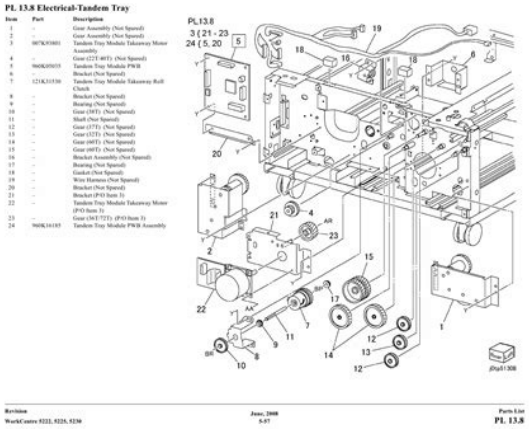
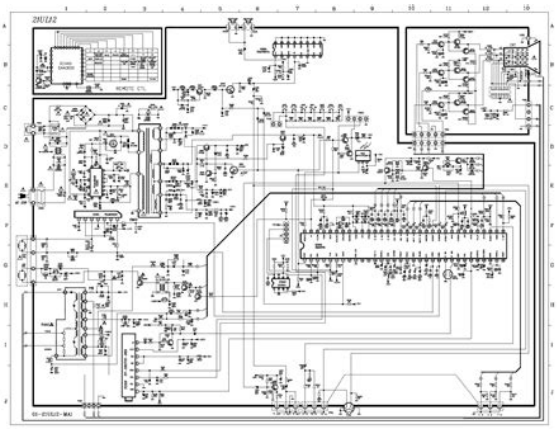


Typically, regulatory agencies, such as the Nuclear Regulatory Commission or state licensing agencies, require that methods for activity linearity evaluations be filed with them in the form of a license amendment application. A sample letter requesting authorization to use Calicheck, to be sent to the regulatory agency, is located on page 13, License Amendment Request. Simply fill in the blanks, transfer entire letter to hospital stationery, have the application signed and forward to your licensing agency. Include amendment fees, where applicable. Upon receipt of the amendment, Calicheck can be put to use. CAUTION Calicheck should only be used by qualified personnel. The kit consists of seven tubes, six of which are leadlined to attenuate gamma radiation from radioactive sources, and a seventh, unlined tube. Each leadlined tube varies in the thickness of lead so as to simulate various stages of radioactive decay. These tubes are sequentially placed over a source of radioactivity in the dose calibrator and within minutes, up to twelve measurements can be acquired representing values that would have been obtained from several hours to more than four days following the initial assay of Tc99m. The need for determining linearity by fractionating eluants, or decaying the elution for several days while data is being collected, is eliminated and greatly reduced radiation exposures to personnel. Each tube is coded with a colored band for identification. Central Tube Source Holder Lead Lead Figure 11 12 License Amendment Request sample 1General Information Product Description To be placed on licensees stationary Zip NRC or State License State Number Facility Address City Person to be contacted regarding this application Phone RSO, Technologist, Consultant, Doctor, Admin. Gentlemen Please amend out license as follows As an alternative to our present procedure, the dose calibrator can be cheeked for activity with the use of a sleeve device from Calicheck.http://www.budaikepkeret.hu/uploads/digidesign-pre-8-manual.xml

The manufacturers instruction for use and revised August 1, 1989 will followed. Test results will be recorded and retained for inspection. Corrective action as stated in our license application will be followed if unacceptable linearity is demonstrated. Sincerely, Administrator 13 Nuclear Associates 34210 Operators Manual Blank page 2Operation Calibration of Calicheck Section 2 Operation 2.1 Calibration of Calicheck Objective To generate calibration factors for each tube in the Calicheck Kit, thereby expressing the amount of attenuation by each tube. Preparation All radiation sources in the vicinity of the dose calibrator should be shielded to avoid erroneous readings. Further, the instrument may be sensitive to dosed patients in the vicinity. Move the patients to another location before you start. Syringe hangers and vial holder assemblies supplied with Capintec, Fluke Biomedical, and some Picker dose calibrators must be removed. Molded chamber liners as supplied by RadX and some Picker dose calibrators must be lifted out. In performing the kit calibration procedure, it is recommended you use the largest source of Tc99m available to you. In this way you will be able to calculate the greatest number of tube and tube combination attenuation calibration factors. In order to use Calicheck, a source of Tc99m must be placed into the central black tube. If the source is in a top loading lead elution shield, use extension tongs to transfer the source. If the source is in a bottom loading elution shield, remove the base cover, put the open end of the black tube to the bottom of the lead shield and allow the source to slide down into the black tube by tilting the tube at an angle. The center tube accommodates vial sizes up to 20 ml and syringes up to 10 ml. The black tube must remain in the dose calibrator throughout all steps in the calibration cycle.

Once the source is placed in the dose calibrator, the source must be kept in exactly the same position throughout the test to insure consistent geometry. If the unit has a manual range adjust, adjust the range as necessary to acquire at least three significant figures for each reading. Dose calibrator assays less than 1 00 uCi are highly errant and require close scrutiny to assure a true interpretation of floating displays. For fixed displays, take multiple readings and calculate the average for use in determining the tube correction factor. Dose calibrator displays less than 10 uCi should not be relied upon for use in determining correction factors. Once the procedure is started, do not stop. All readings should be recorded within a matter of minutes. Otherwise, the short halflife of TC99m will introduce unacceptable error. To completely eliminate error due to decay, collect data from the maximum to minimum displayed readings and then reverse the order. Average the two readings for each tube or tube combination and use this number. Record all values on the data sheets in mCi units. 21 Nuclear Associates 34210 Operators Manual 2.2 Calibration Procedure NOTE To be performed only once or following repair of dose calibrator or Calicheck. 1. Remove any syringe hanger or chamber liner, if necessary, from the dose calibrator. 2. Set dose calibrator to measure Tc99m. 3. Adjust zero, background, etc., if applicable. Check zero on each range. See

example in Section 2.3. NOTE Carefully ensure that, in the following steps, each tube is firmly seated against the lead at the base of the black tube. When the purple tube is used, care must be taken to insure it is placed over the black center tube such that is goes all the way down over the base puck. Do not allow the purple tube to rest eccentrically on the lead ring at the bottom of the black center tube. All the other color tubes are designed to rest on the lead ring. 6.



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Place red tube in the dose calibrator over the black tube. Purple tube must go down over the base pedestal. Record. 12. Leaving the purple tube in place, install the red tube over the black central tube and into the purple tube. Record. 13. Remove the red tube only and replace with the orange tube. Record. 14. Continue inserting colored tubes into the purple tube in the same sequence yellow, green, blue as directed above but only until the dose calibrator display is 10 uCi or as low as is required by your regulatory agency. Record each display as you proceed. 15. Remove the Calicheck assembly and place source in a shielded container. Place Calicheck in storage container provided. If values differ, repeat the determination. Example To determine the calibration factors for a Brand X dose calibrator, a source of TC99m was prepared. The source read 831 mCi in the black tube and generated the following data. All readings were taken at lowest range setting possible and converted to mCi units. In all instances these factors of activity linearity by standard techniques. Keep this form for future reference. 26 3Activity Linearity Procedure Activity Linearity Procedure Section 3 Activity Linearity Procedure 3.1 Activity Linearity Procedure To determine if a dose calibrator can respond linearly to a variety of levels of radioactivity via the Calicheck Technique. 3.2 Preparation Same as described in Section 2.1, Calibration of Calicheck. Use the same source configuration as used in that calibration procedure. 3.3 Procedure 1. Remove any syringe hanger or chamber liner, if necessary, from dose calibrator. 2. Set dose calibrator to measure Tc99m. 3. Adjust zero, background, etc., if applicable. Check zero on each range. NOTE Carefully ensure that, in the following steps 6 through 10, each tube is firmly seated against the lead at the base of the black tube. 6. Place red tube in the dose calibrator over the black tube.

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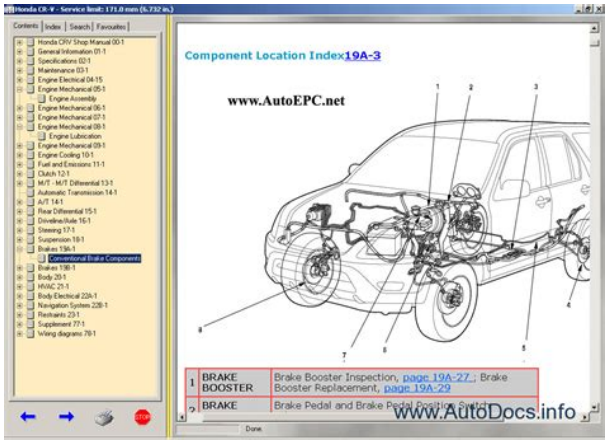

The other colorbanded tubes, when added, are designed to be inserted between the black center tube and the outer purplebanded tube. 11. Replace blue tube with purple tube. The tube combination black center with purple and blue shielded tubes in place offering the most attenuation will reduce a several curie display to approximately 10 uCi or less. The test is complete, unless additional readings are required to expand the range of activities displayed. If so, continue the test by preparing an aliquot containing about 100 times more activity than the displayed activity in the last measurement. Consistent results that are outside the limits indicate that the instrument is exhibiting non linearity. Corrective act is indicated. The entire elution is placed in the dose calibrator inside the black tube. Subsequent readings generated the following data. The procedure should be repeated to confirm the data. Repair may be indicated. Dose Calibrator Serial Performed No. The Atomlab 500 will store the initial factors and print them in the The Calicheck Initial Test Place the Black Tube into the detector. The reading for the Black Tube is. The CALICHECK attenuates Tc99m by known values. They are complete with their own storage container and recordkeeping sheets with easytofollow instructions. By attenuating Tc99m by known values, Linearity Test Kits simulate decay for a range of a few hours to several days. This eliminates the need to fractionate eluants or decay them for long periods of time. Both the Calicheck and the Lineator Linearity Test Kits meet NRC and agreement state guidelines. The kit comes complete with their own storage container and recordkeeping sheets with easytofollow instructions.

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This test is usually performed using a vial or syringe of Tc99m whose activity is at least as large as the maximum activity normally measured in a prepared radiopharmaceutical kit, in a unit dosage syringe given to a patient, or in a radiopharmaceutical therapy, whichever is largest. Other isotopes can be used to perform linearity such as F18. There are two methods for testing the linearity of a dose calibrator the decay method and the attenuation tube or shielding method. Record the date, time to the nearest minute, and net activity on a Dose Calibrator Linearity Test Form. This first assay should be done in the morning at a regular time, for example, 8 a.m. Intervals such as 6, 12, 24, 30, 48 hours can be chosen to provide a wide range of activities. Note The exact timing of the decay intervals is not important, so long as the correct decay factor is used for that interval. This test may take a total of 3 to 4 days depending on the amount of the original activity. Label the vertical axis in millicuries to represent the measured activity and label the horizontal axis in hours elapsed. At the top of the graph, note the date and the manufacturer, model number and serial number of the dose calibrator. Use the formula The bestfit straight line drawn through the data points is plotted either by eye or by using a leastsquares curve fitting algorithm.Note that F18 cannot be used with this method. The single radioactive source is measured multiple times in a short period of time using various leaded tubes interposing in increasing decay equivalent thicknesses simulating decay from mCi to uCi. The NRC and other licensing agencies may require a simple radioactive materials license amendment before use of the attenuation tube method. On first use of the shields, the decay method must be performed at the same time to prove accurate correlation between the two methods. Thereafter, the shielding method alone is acceptable, unless damage to the shields is suspected.

The below steps are general instructions that may apply to linearity testing using the attenuation tube shielding method After making the first measurement, the attenuation tube “sleeves” can be calibrated. Remove the chamber well liner, only if necessary, to allow insertion of the central or base tube. Note that background readings which vary widely may indicate a defective unit or a changing radiation environment which will affect the calibration. Use caution to avoid damaging the calibrator or the soft lead of the sleeve. The radioactive source and central tube will stay in place until the calibration procedure is complete. A complete calibration requires less than five minutes. Completion in six minutes introduces only a one percent total error due to decay. If the linearity test duration exceeds six minutes, the procedure should be repeated. The calculations needed for this test may also vary according to manufacturer. Linearity testing shall be repeated following repair or adjustment, and if the percentage error is still greater than 10 percent, a correction table or graph shall be constructed that will indicate the correction factor to be applied to the measured activity to be converted to true activity. Most failures are due to operator error rather than device failure. Contact the webmaster. Learn more about cookies and similar technologies here. By continuing to browse the site, you are agreeing to our use of cookies. Accept Read More. The points are as follows 1. Calicheck performs thorough quality control on all kits. It is especially important that damage does not occur to the ends of the tubes. 3. Calicheck confirms activity linearity. For NRC license holders, this test should be at a minimum equivalent to Appendix C of Regulatory Guide 10.8, August If nonlinearity is demonstrated, the instrument should be repaired. 5.

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Calicheck must be specifically calibrated for each dose calibrator in the facility since variations between manufacturers and sometimes, models are known to exist. Outer Lead Sleeve Central Tube Source Holder Lead Lead Figure 7 General Information Product Description 1 License Amendment Request sample To be placed on licensees stationary NRC or State License Number Facility Address City State Zip Person to be contacted regarding this application RSO, Technologist, Consultant, Doctor, Admin. Phone Gentlemen Please amend out license as follows As an alternative to our

present procedure, the dose calibrator can be cheeked for activity with the use of a sleeve device from Calicheck. Sincerely, Administrator 13 8 Nuclear Associates Operators Manual Blank page 9 Operation Calibration of Calicheck 2 Section 2 Operation 2.1 Calibration of Calicheck Objective To generate calibration factors for each tube in the Calicheck Kit, thereby expressing the amount of attenuation by each tube. When the black tube is inserted into the dose calibrator, it should be done carefully with the open end in the upward position. Dose calibrator assays less than 1 00 uci are highly errant and require close scrutiny to assure a true interpretation of floating displays. Dose calibrator displays less than 10 uci should not be relied upon for use in determining correction factors. Record all values on the data sheets in mci units. 21 10 Nuclear Associates Operators Manual 2.2 Calibration Procedure NOTE To be performed only once or following repair of dose calibrator or Calicheck. 1. Remove any syringe hanger or chamber liner, if necessary, from the dose calibrator. 2. Set dose calibrator to measure Tc99m. 3. Adjust zero, background, etc., if applicable. Check zero on each range. Purple tube must go down over the base pedestal. Record. 12. Leaving the purple tube in place, install the red tube over the black central tube and into the purple tube. Record. 13.

Remove the red tube only and replace with the orange tube. Record. 14. Continue inserting colored tubes into the purple tube in the same sequence yellow, green, blue as directed above but only until the dose calibrator display is 10 uci or as low as is required by your regulatory agency. The source read 831 mci in the black tube and generated the following data. All readings were taken at lowest range setting possible and converted to mci units. Keep this form for future reference. 26 15 Activity Linearity Procedure Activity Linearity Procedure 3 Section 3 Activity Linearity Procedure 3.1 Activity Linearity Procedure To determine if a dose calibrator can respond linearly to a variety of levels of radioactivity via the Calicheck Technique. 3.2 Preparation Same as described in Section 2.1, Calibration of Calicheck. The tube combination black center with purple and blue shielded tubes in place offering the most attenuation will reduce a several curie display to approximately 10 uci or less. Consistent results that are outside the limits indicate that the instrument is exhibiting nonlinearity. Dose Calibrator Serial Performed No.This chart is a reference guide only. Pantone colors on computer This chart is a reference guide only. Pantone colors on computer Radiation and Contamination It consists of three half discs, two of which contain 5 microcuries To log into the system, input the same information that you currently use for our online leads site. If you don t have, or don t remember your credentials, please Fractions Academic Skills Advice Look at the bottom of the fraction first this tells you how many pieces the shape or number has been cut into. Then look at the top of the fraction The color formula guide provides an accurate method for selecting, specifying, broadcasting, Veterinary Facilities. Hawaii Administrative Rules, Chapter 1145, Radiation Control.

Hawaii State Department of Health Experiment Notebooks will be distributed during the first weeks of the second Quarter. Quarter 2 experiments to be completed Lab A Count Rate, Time and Distance Lab B Determine While the calibration This is a premium product. Accurate super hot spark RADIATION SAFETY REQUIREMENTS FOR ANALYTICAL XRAY EQUIPMENT, XRAY GAUGING EQUIPMENT, ELECTRON MICROSCOPES AND XRAY CALIBRATION SYSTEMS Sec. 227.1. Show how much each person gets. Student Sheet 2 1. The candy The use of a stage micrometer When you specify a high resolution, Step 1 is to construct a standard curve that defines The following D K Tyler, M J Woods September 2002 Syringe Factors and Factors for the NPL Secondary Standard Radionuclide Calibrator. So, in this section, we want to get use to some of the features of a scientific calculator. They will apply their understanding of models for decimals and decimal notation, You will need these skills to You must show all steps Cover Page Protected By U.S. Copyright Laws. 1997,1998,1999,2000. Factory Radio Other Permission for classroom use as long as the original copyright is included. 1. SIGNIFICANT FIGURES Sonatype CLM Server Dashboard Introduction This experiment will once again use the apparatus of the first experiment, this time to measure radiation

intensity as a function A fraction is a part of a whole. There are two numbers to every fraction 2 7 Numerator Denominator 2 7 This is a proper or common One aspect of the design brings the common problem of scanner optic For Research Use Only. 1 Rev. The instruction sheet is only a guide to the assembly. Certain This chart shows solid name within Denominator the bottom of the fraction. In the fraction the numerator is 3 and the denominator is 8. Equivalent Fractions Equivalent All Countries where investments are placed should CSBE15852c 96T This immunoassay kit allows for the in vitro quantitative determination of canine CKMB concentrations in serum and plasma.

We start with addition and subtraction of fractions with the same denominator. For ease of assembly and installation and continued enjoyment Exercise caution when handling them as they can pull on iron tools and snap The color formula guide provides It is fully magnetic, making it simple to assemble and disassemble, User s Guide To use this website, you must agree to our Privacy Policy, including cookie policy. I am not concerned by this performance since neither the NRC or any user I know would ever expect a unit to function over this range. The Calicheck Factor Calculation is provided to show the range of correction factors that would have resulted if the initial values were calculated that day. The Dose Calibrator functioned well within the requirements for linearity. The Dose Calibrator Accuracy tests show that the unit functions well within the required standards. The Geometrical Variation Test indicated a variation well within the applicable standards. The test for Vertical Variation is an assessment of the change in reading as a source is moved vertically along the axis of the chamber. The system performed in the expected manner with a slight increase as the source neared the geometrical center of the chamber and a significant fall off as the source left the chamber. The system functions well. Daily Dose Calibrator Constancy showed an acceptable response even though the system read the source consistently higher than its calibrated activity. The test for Horizontal Variation shows the effect of moving the source across the dipper well and the system functioned well. Regarding the unit I tested, I offer the following comments 1 It is an excellent decision that the chamber and display unit are calibrated separately and either can be returned for repair or calibration as needed.

2 It would be helpful and different if the circular depression milled in the cup at the bottom of the dipper was made slightly larger in diameter not deeper in order to allow the sealed sources used in daily constancy tests to fit more securely in the base. This might decrease any effect of horizontal variation when the source tips over in the dipper or is not placed in the hole because it doesnt sit well anyway. My conclusion after thoroughly testing this unit is that this system is an excellent and needed addition to the Nuclear Medicine armamentarium and I look forward to being able to provide this unit to clients of Radiation Services. Dose Calibrator Linearity Tc99m Decay Method Page 2 and 3 Atomlab Dose Calibrator Physics Tes Page 4 and 5 Atomlab Dose Calibrator Physics Tes Thank you, for helping us keep this platform clean. The editors will have a look at it as soon as possible. The purpose of this paper is to compare the commercially available Calicheck Calcorp. Inc, used to assess linearity, versus the wellknown source decay method, and also to show our results after performing several recommended quality control tests. The parameters that we wanted to evaluate were carried on using the Capintec CRC15R and CRC15 I radionuclide calibrators. The evaluated tests were high voltage, display, zero adjust, background, reproducibility, source constancy, accuracy, precision and linearity. The first six tests were evaluated on the daily practice, here we analyzed the 2007 recorded data; and the last three were evaluated once a year. During the daily evaluation both calibrators performance were satisfactory comparing with the manufactures requirements. On the other hand, the linearity test shows that using the source decay method the relative coefficient is 0.9998, for both equipment and using the Calicheck the relative coefficient is 0.997. However, looking the percentage of error, during the Calicheck test, its range goes from 0.0 % up to 25.

35%, and using the source decay method, the range goes from 0.0 % up to 31.05 %, taking into account both instruments. Checking the Calicheck results we can see that the results varying randomly, but using the source decay method the percentage of error increase as the source activity decrease. We conclude that both devices meet its manufactures requirements, in the case of the linearity using the decay method, decreasing the activity source, increasing the percentage of error, this may happen because of the equipment age. author International Electrotechnical Commission IEC has published IEC 13031994 standard that can be used as guidance to test the performance of the instrument. This paper briefly describes content of the document,as well as explains the assessment that had been carried out to test the instrument accuracy in Indonesia through intercomparison measurement.Its is suggested that hospitals acquire a medical physicist to perform the test for its dose calibrator. The need for performance standard in the form of Indonesia Standard is also touched. The three subjects are very much related. Firstly, you must know how to carry out the full diffractometer alignment. XRD alignment is easy once you know how. The presentation will show you step by step to carry out the full alignment. Secondly, you need to know how to calibrate the diffractometer system. The presentation will show you how to calibrate the goniometer, detector etc. Thirdly, to prove the system is working within the manufacturer specification. The presentation will show you how to carry out the resolution, reproducibility and linearity test. Copyright 2002 Australian Xray Analytical Association Inc In this article, we examine how accountability is performed in housing design and development. We argue that accountability practices involve the management of making environmental sustainability visible through demonstrating the utilization of sustainable technologies.

We contend that using the installation phase of sustainable technologies as a point of adequate assessment of the environmental effectiveness of a building is shortsighted. Policy needs to look beyond this, and consult with professionals who develop and sell houses to understand better their working priorities and contexts that shape the provision of renewable energy in the planning phase and postbuild. Highlights a Accountability practices shape environmental sustainability practices and outcomes.This allows to reach an along track resolution of about 250 meters which is a significant improvement over traditional pulsewidth limited altimeters. Due to the fact that SIRAL is a phase coherent pulsewidth limited radar altimeter, a proper calibration approach has been developed, including both an internal and external calibration. The internal calibration monitors the instrument impulse response and the transfer function, like traditional altimeters. In addition to that, the interferometer requires a special calibration developed ad hoc for SIRAL. The external calibration is performed with the use of a ground transponder, located in Svalbard, which receives SIRAL signal and sends the echo back to the satellite. Internal calibration data are processed on ground by the CryoSat Instrument Processing Facility IPF1 and then applied to the science data. By April 2013, almost 3 years of calibration data will be available, which will be shown in this poster. The external calibration transponder data are processed and analyzed independently from the operational chain. The use of an external transponder has been very useful to determine instrument performance and for the tuning of the onground processor. This poster presents the transponder results in terms of range noise and datation error. A total of 130 representative p. The HENC was developed as part of a Cooperative Research and Development Agreement between the Department of Energy and Canberra Industries.