

Tales of the Resolution!

EPISODE 3:

**RESOLUTION
RELOADED**

VOL. I, NUMBER 3
JUNE 2009

*FOLLOW THE CONTINUING ADVENTURES OF
THE JOIDES RESOLUTION AT:*

WWW.LDEO.COLUMBIA.EDU/BRG/TALES

BY EARLY 2009, THE RENOVATION OF THE JOIDES RESOLUTION WAS COMPLETE. BUT BEFORE SHE COULD BE USED ON ACTUAL SCIENTIFIC EXPEDITIONS, IT WAS IMPERATIVE TO MAKE SURE THAT SHE WAS SEAWORTHY AND THAT ALL OF HER SYSTEMS FUNCTIONED PROPERLY.

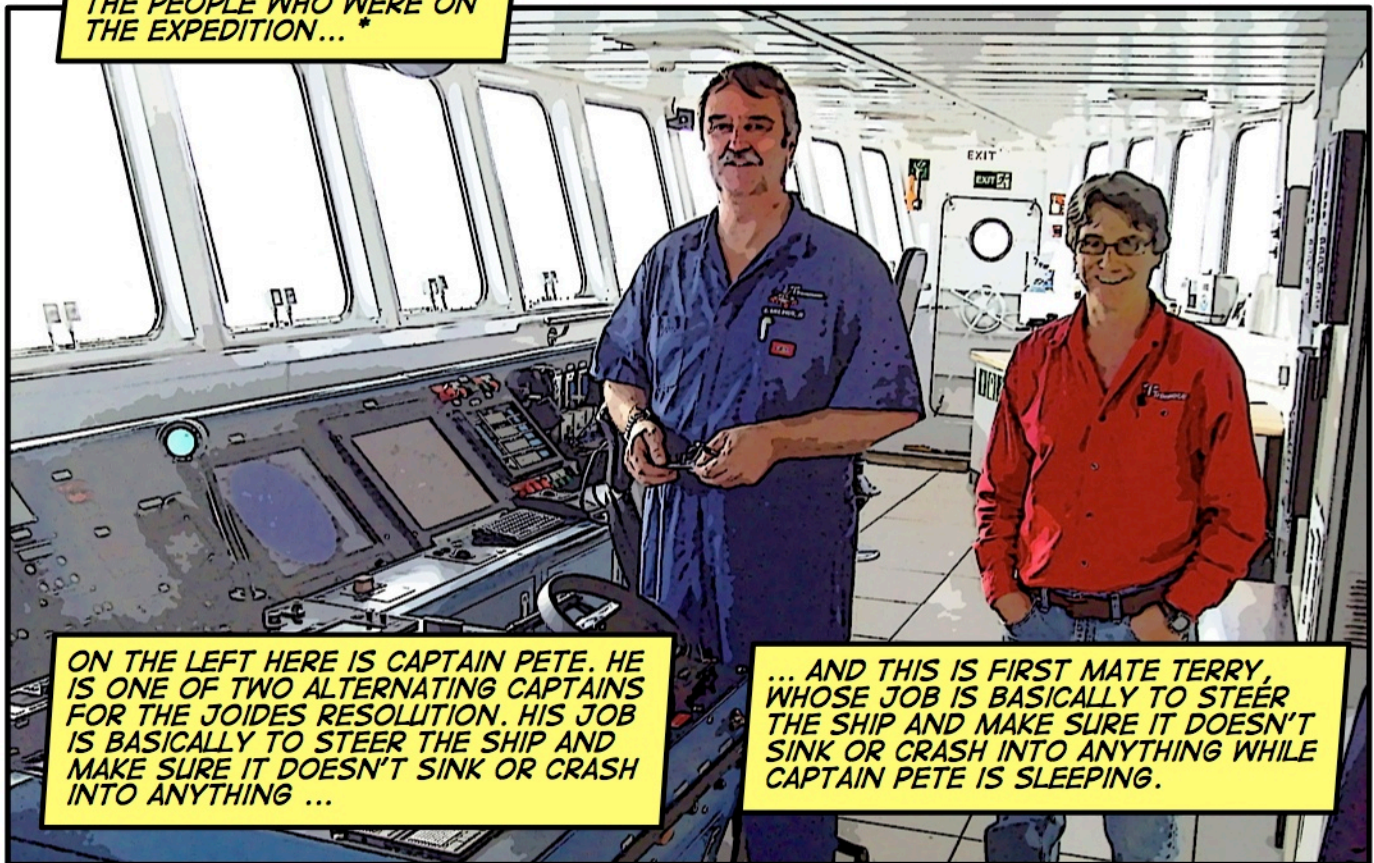


SO ON JANUARY 25TH, THE RESOLUTION LEFT ITS SINGAPORE PORT TO BEGIN SEA TRIALS.

THE PLAN CALLED FOR THE SHIP TO TRANSIT TO GUAM, TAKE ON ADDITIONAL STAFF, AND PERFORM DRILLING AND LOGGING TESTS AT A SITE ON THE ONTONG JAVA PLATEAU IN THE WESTERN PACIFIC.



LET'S INTRODUCE SOME OF THE PEOPLE WHO WERE ON THE EXPEDITION... *



ON THE LEFT HERE IS CAPTAIN PETE. HE IS ONE OF TWO ALTERNATING CAPTAINS FOR THE JOIDES RESOLUTION. HIS JOB IS BASICALLY TO STEER THE SHIP AND MAKE SURE IT DOESN'T SINK OR CRASH INTO ANYTHING ...

... AND THIS IS FIRST MATE TERRY, WHOSE JOB IS BASICALLY TO STEER THE SHIP AND MAKE SURE IT DOESN'T SINK OR CRASH INTO ANYTHING WHILE CAPTAIN PETE IS SLEEPING.

THIS IS TIM, THE OFFSHORE INSTALLATION MANAGER. HIS JOB IS TO RUN THE DRILLING OPERATION WHEN THE SHIP IS ON SITE.

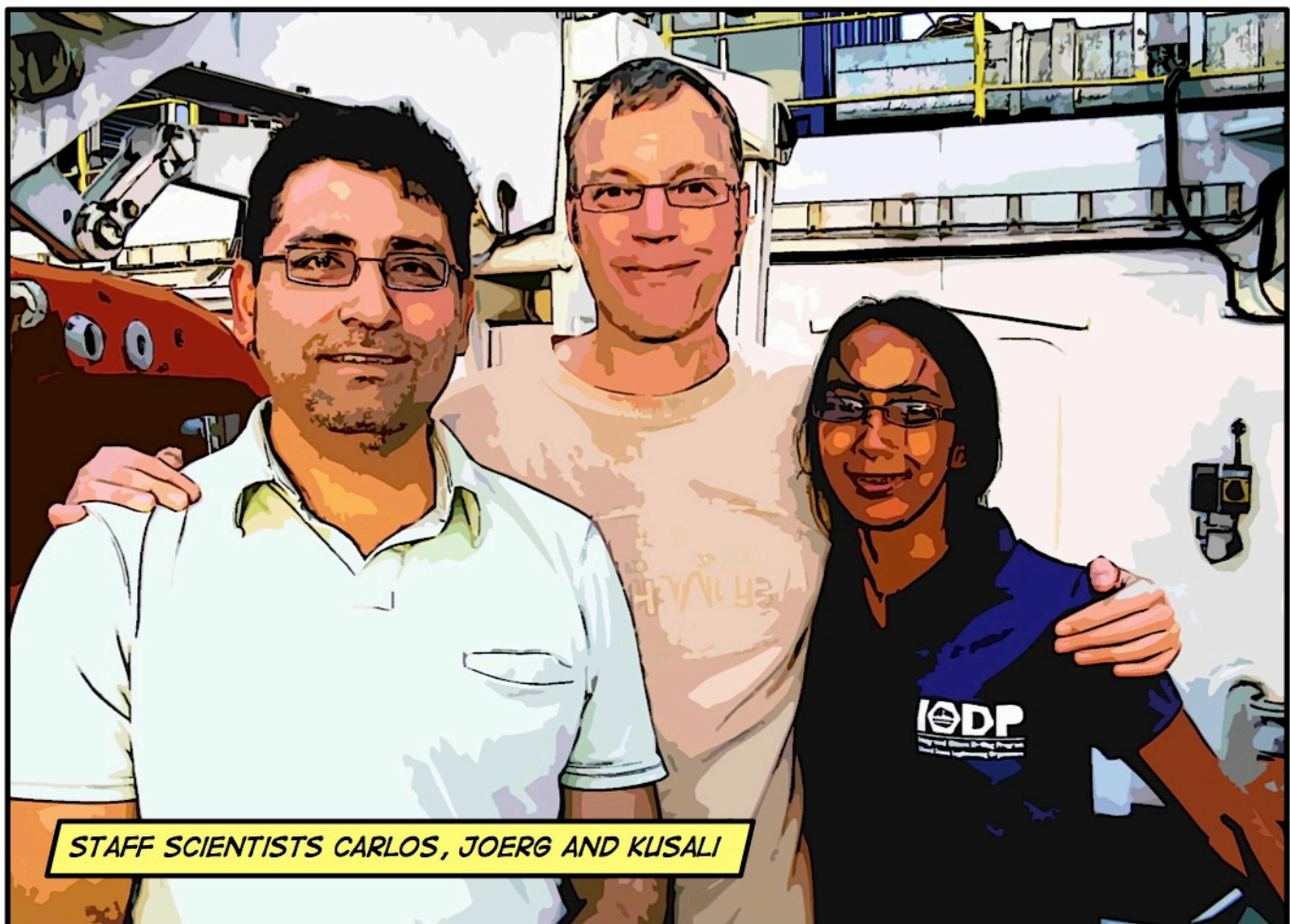
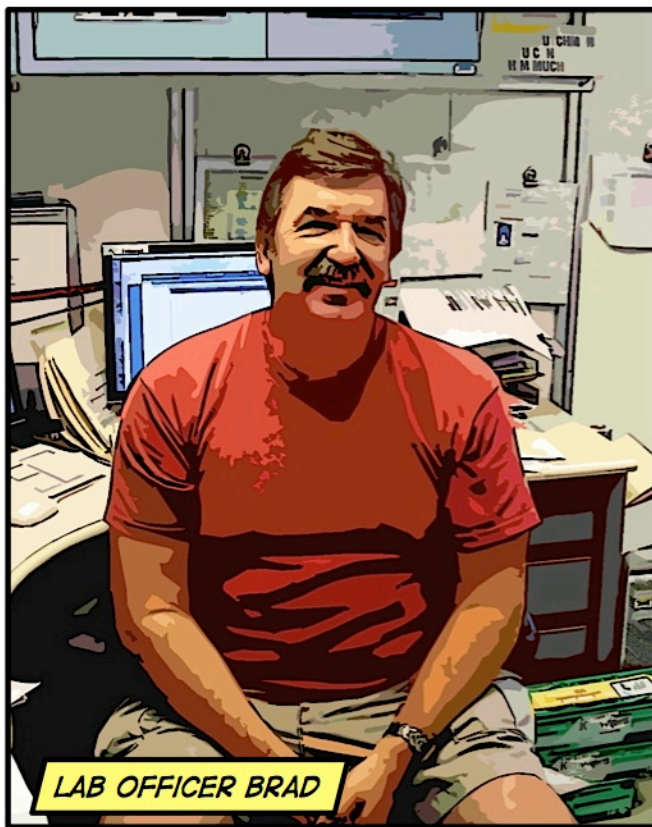


AND HERE IS SAM, THE SENIOR TOOL PUSHER, WHO RUNS THE DRILLING OPERATION WHEN TIM IS SLEEPING.

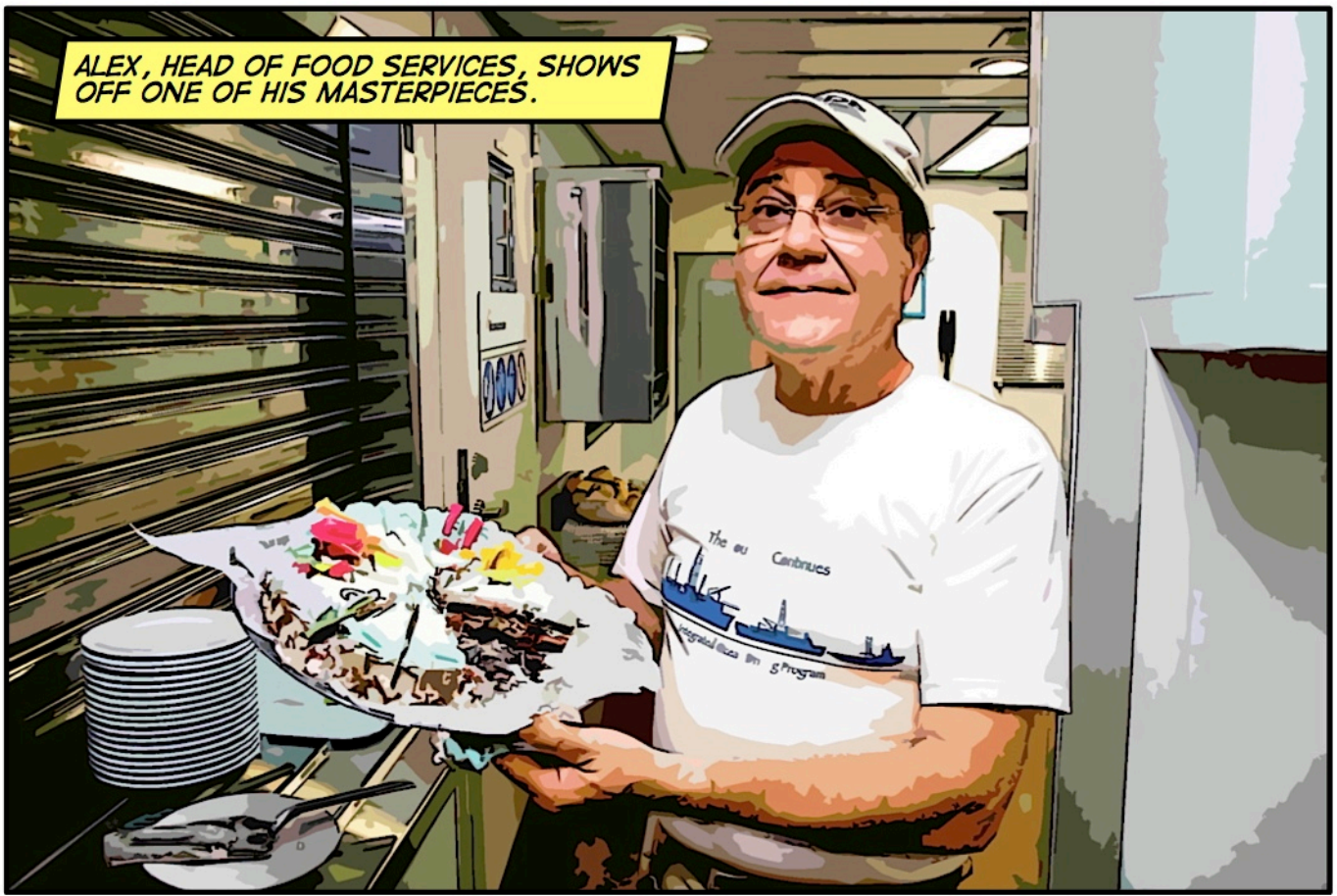


(THIS EXTREMELY RARE PHOTO IS ONE OF THE FEW IN EXISTENCE IN WHICH SAM IS NOT WEARING A HARDHAT!)

* APPEARANCE IN THIS COMIC WAS DETERMINED AT LEAST IN PART BY PICTURE AVAILABILITY. NO INFERENCES SHOULD BE DRAWN AS TO THE IMPORTANCE OF ANY OF THE PARTICIPANTS BASED ON INCLUSION OR LACK THEREOF IN THIS DOCUMENT. ALL CHARACTERS ACTUALLY EXIST, AND THEY REALLY DO BEHAVE THIS STRANGELY.



ALEX, HEAD OF FOOD SERVICES, SHOWS OFF ONE OF HIS MASTERPIECES.



JAY, THE PROJECT MANAGER OF THE SHIP'S CONVERSION.

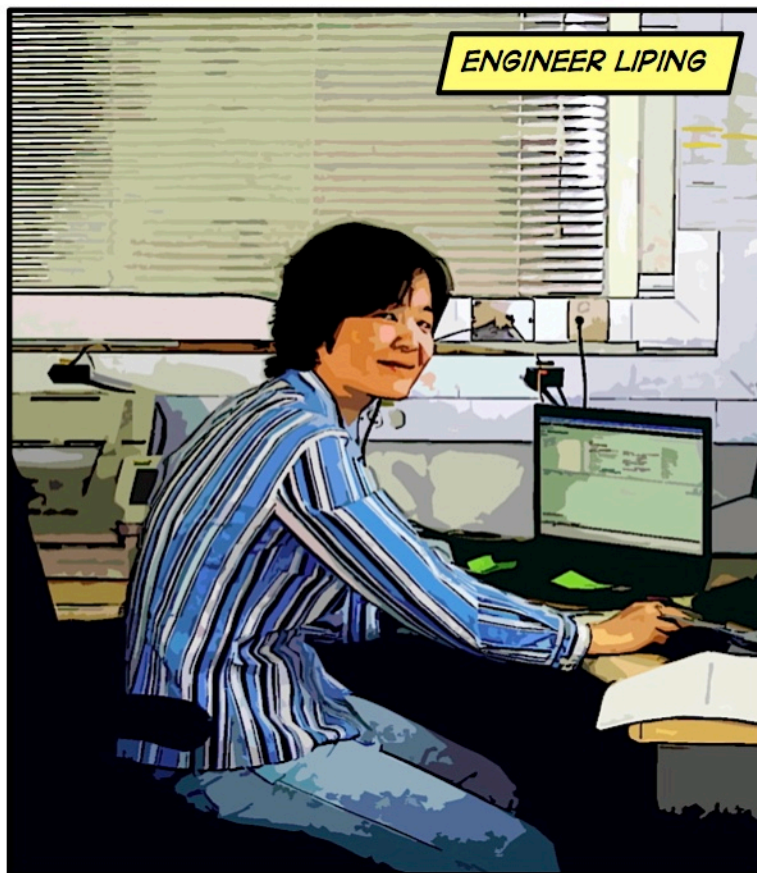


(HE DOESN'T ALWAYS LOOK THIS SAD.)

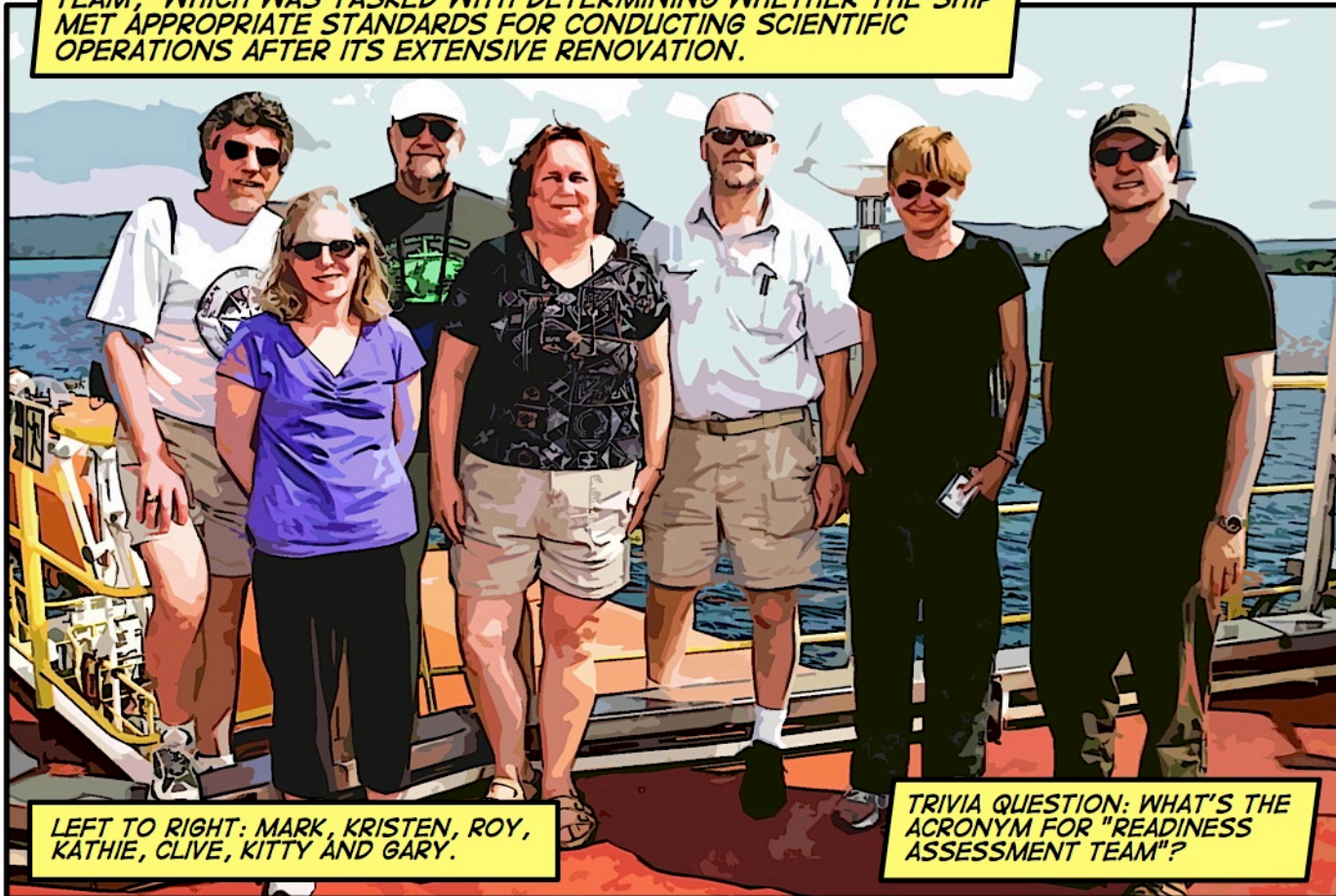
LOGGING STAFF SCIENTIST JENNY.



(SHE PRETTY MUCH ALWAYS LOOKS THIS HAPPY.)



THERE WAS ALSO A SEVEN-MEMBER "READINESS ASSESSMENT TEAM," WHICH WAS TASKED WITH DETERMINING WHETHER THE SHIP MET APPROPRIATE STANDARDS FOR CONDUCTING SCIENTIFIC OPERATIONS AFTER ITS EXTENSIVE RENOVATION.



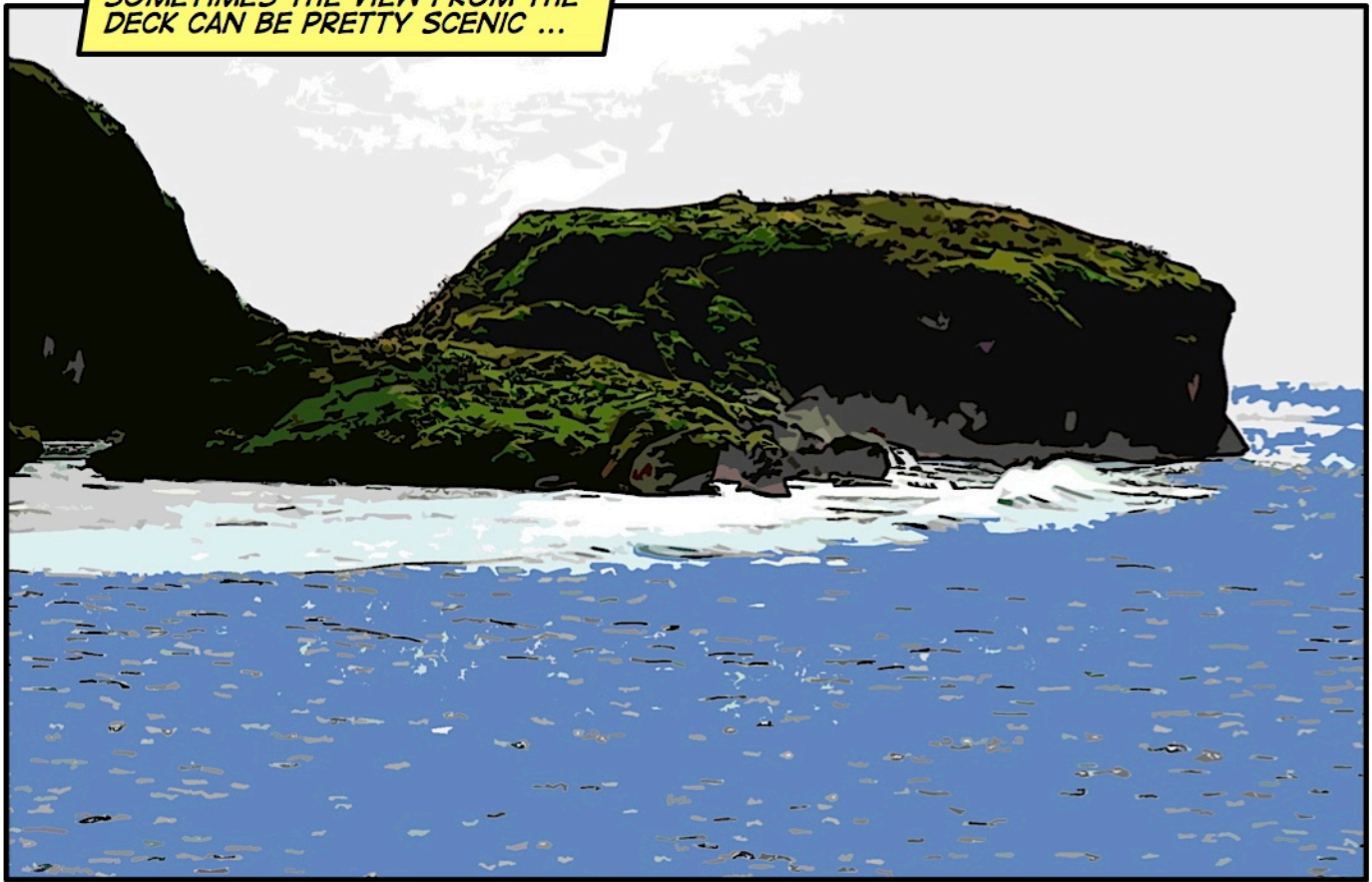
SO, YES, NATURALLY THEY WERE
REFERRED TO AS THE "R.A.T.S."

HAVE A GREAT DAY!

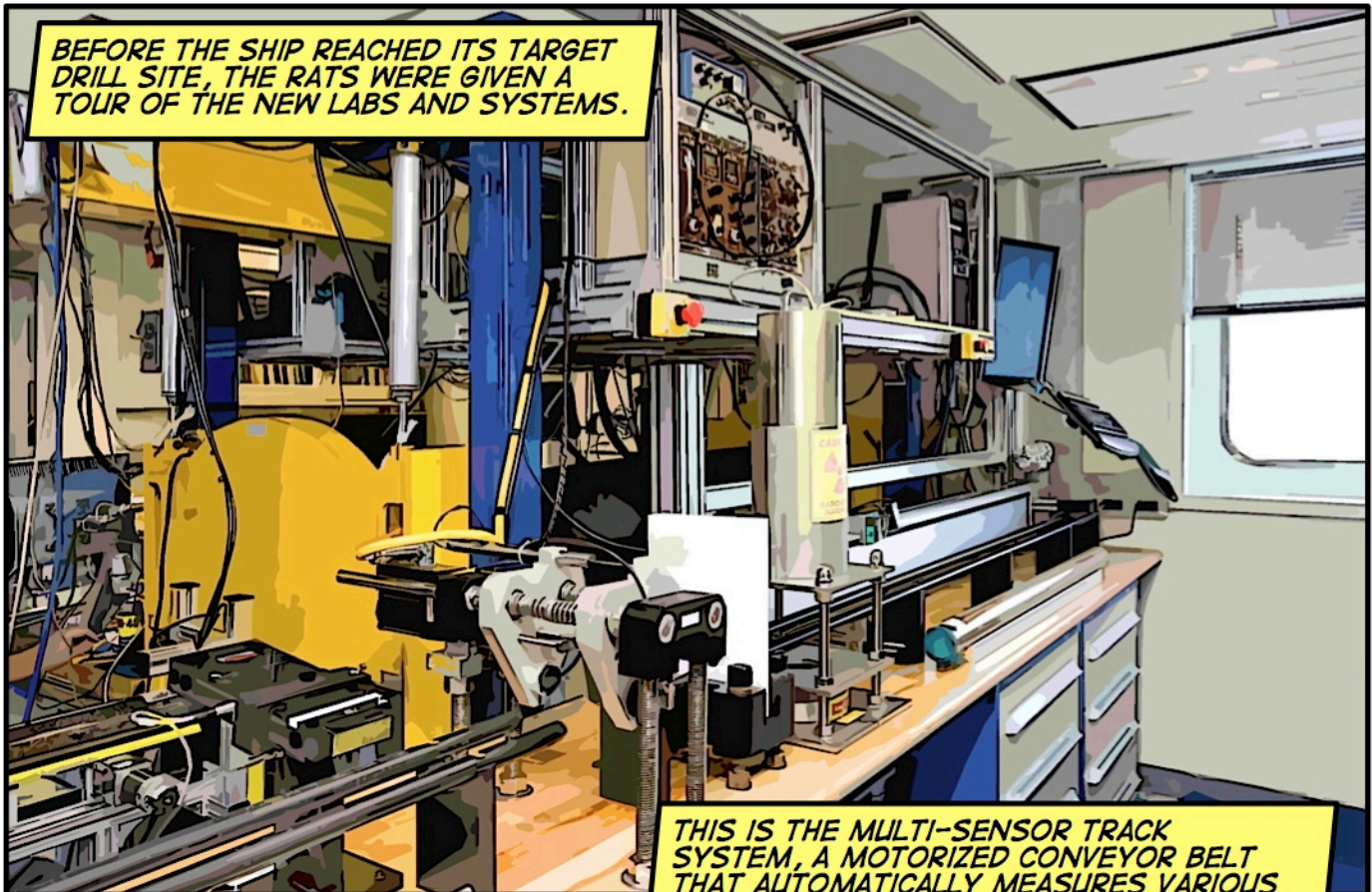
THE RATS BOARDED THE SHIP IN GUAM AND
IMMEDIATELY BEGAN THEIR EVALUATIONS
OF ITS SYSTEMS AND PROCEDURES.

AS THE RESOLUTION LEFT GUAM,
IT WAS ESCORTED BY A TUGBOAT.

SOMETIMES THE VIEW FROM THE DECK CAN BE PRETTY SCENIC ...

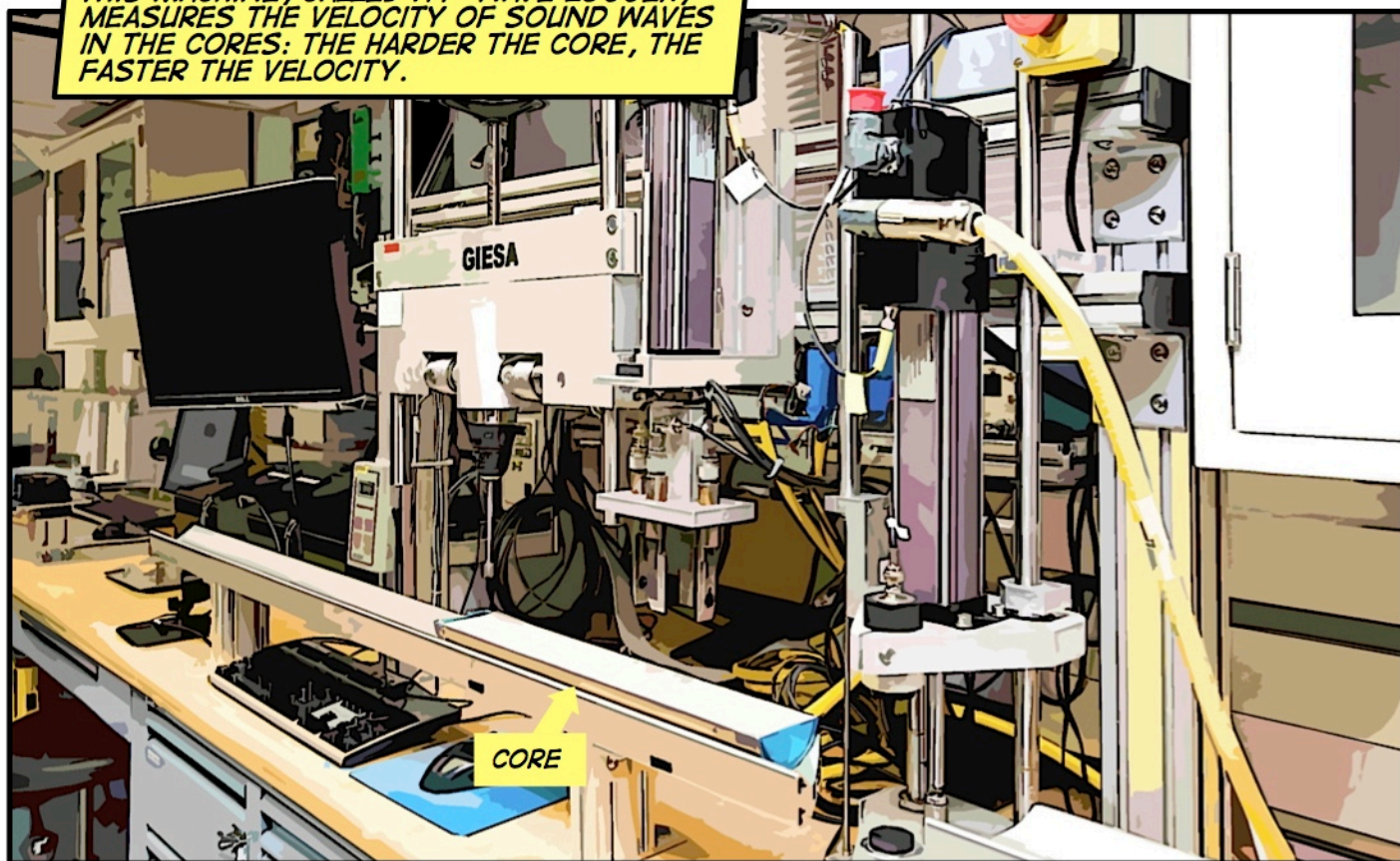


BEFORE THE SHIP REACHED ITS TARGET DRILL SITE, THE RATS WERE GIVEN A TOUR OF THE NEW LABS AND SYSTEMS.

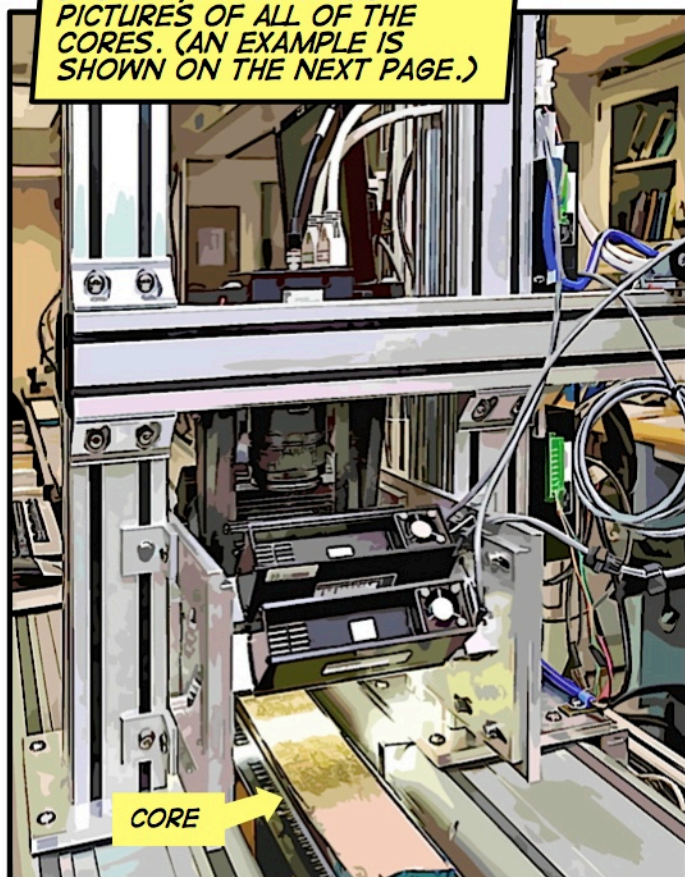


THIS IS THE MULTI-SENSOR TRACK SYSTEM, A MOTORIZED CONVEYOR BELT THAT AUTOMATICALLY MEASURES VARIOUS PHYSICAL PROPERTIES OF THE CORES.

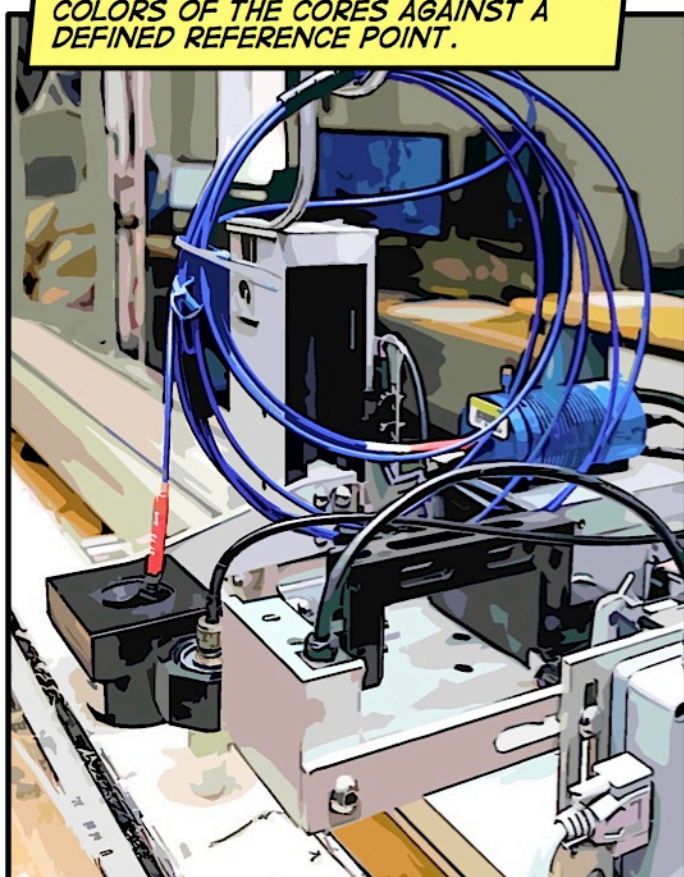
THIS MACHINE, CALLED A P-WAVE LOGGER, MEASURES THE VELOCITY OF SOUND WAVES IN THE CORES: THE HARDER THE CORE, THE FASTER THE VELOCITY.



THIS IS THE DIGITAL IMAGING SYSTEM, WHICH TAKES PICTURES OF ALL OF THE CORES. (AN EXAMPLE IS SHOWN ON THE NEXT PAGE.)



AND THIS IS THE COLOR REFLECTANCE SYSTEM, WHICH MEASURES THE COLORS OF THE CORES AGAINST A DEFINED REFERENCE POINT.



HERE'S AN EXAMPLE OF THE KIND OF PHOTO PRODUCED BY THE DIGITAL IMAGING SYSTEM. THIS PARTICULAR CORE, RETRIEVED ON AN EARLIER EXPEDITION OF THE JOIDES RESOLUTION, DOCUMENTS AN IMPORTANT MOMENT IN EARTH'S HISTORY THAT OCCURRED AROUND 65 MILLION YEARS AGO, WHEN AN ASTEROID ABOUT 10 KM WIDE CRASHED INTO THE YUCATAN PENINSULA IN MEXICO.

5

FINALLY THE SEDIMENTS BECOME WHITISH AGAIN (ALTHOUGH THE FOSSILS AFTER THE IMPACT ARE MUCH TINIER)

4

A FIREBALL IS CREATED BY THE IMPACT. EVENTUALLY THE DUST AND ASH FROM THE FIREBALL ALSO SETTLE ON THE SEAFLOOR.

3

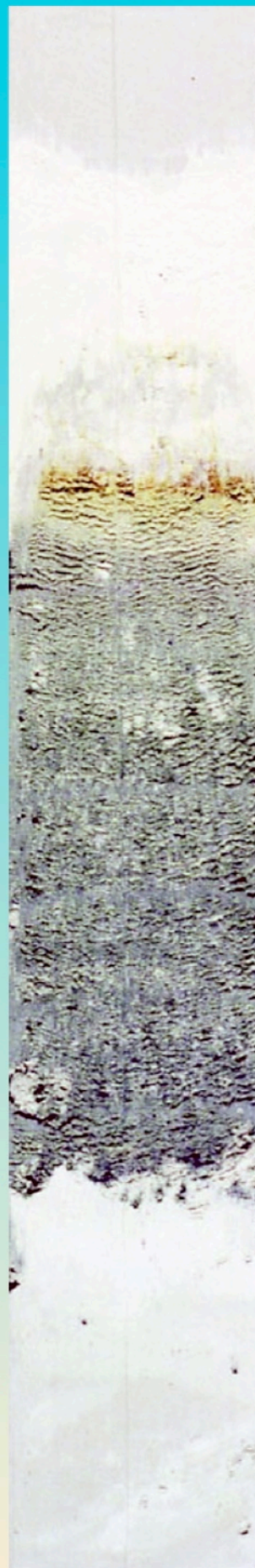
DEBRIS FROM THE IMPACT IS THROWN INTO THE SKY AND RAINS DOWN, ULTIMATELY SETTLING ON THE OCEAN FLOOR.

2

MOMENT OF IMPACT

1

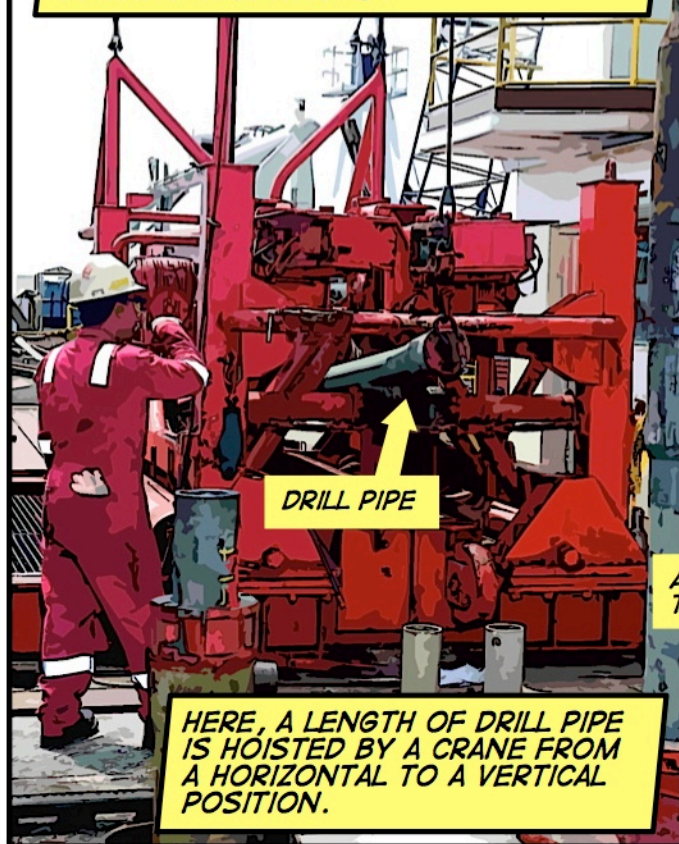
BEFORE THE IMPACT: MOSTLY WHITISH OOZE CONTAINING TINY FOSSILS OF ANCIENT OCEAN ORGANISMS.



SHALLOWER SEDIMENTS
(YOUNGER)

DEEPER SEDIMENTS
(OLDER)

ON FEBRUARY 13TH, THE RESOLUTION REACHED ITS TARGET SITE AND BEGAN DRILLING OPERATIONS.



DRILL PIPE

HERE, A LENGTH OF DRILL PIPE IS HOISTED BY A CRANE FROM A HORIZONTAL POSITION TO A VERTICAL POSITION.

THE PIPE IS SWUNG OVER TO THE "MOUSEHOLE," WHERE IT IS STORED, OR "STAGED," FOR DRILLING.



ADDING PIPE TO THE MOUSEHOLE.

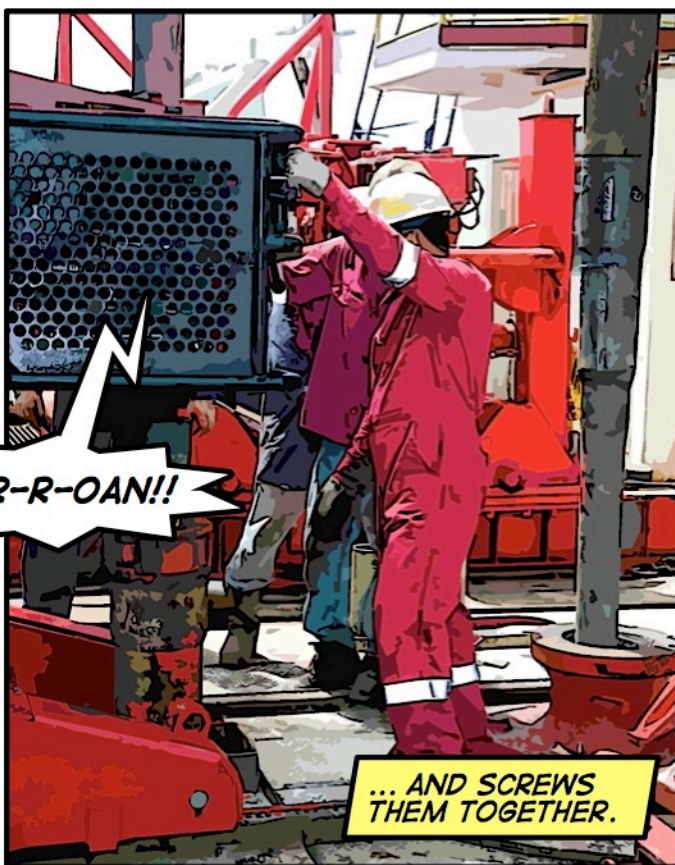
MOUSEHOLE WITH STAGED PIPE.

A DEVICE CALLED THE IRON ROUGHNECK GRABS BOTH LENGTHS OF PIPE ...



IRON ROUGHNECK (ALSO KNOWN AS "BIGFOOT")

G-R-R-OAN!!



... AND SCREWS THEM TOGETHER.

A CORE BARREL IS THEN DROPPED THROUGH THE PIPE AND "FREE FALLS" ALL THE WAY TO THE DRILL BIT AT THE BOTTOM OF THE HOLE.



IN THE DEEPEST HOLES, THIS CAN TAKE AS LONG AS 20 MINUTES.

AFTER DRILLING, THE CORE BARREL, WITH THE RECOVERED CORE INSIDE, IS REMOVED FROM THE DRILL STRING.



THEN THE CORE CATCHER (WHICH KEEPS THE CORE FROM SLIDING OUT OF THE CORE BARREL WHILE IT'S BEING PULLED UP) IS REMOVED.



THE CORE LINER, WITH THE CORE STILL INSIDE, IS REMOVED FROM THE CORE BARREL ...

... AND IS THEN CARRIED
ONTO THE CORE RECEIVING
PLATFORM.



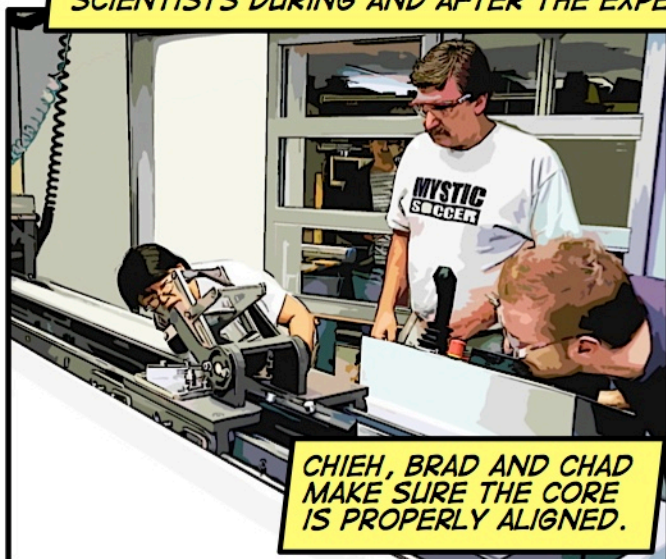
THE 9.5-METER LONG CORE IS MEASURED
AND THE CURATOR MARKS OFF 150 CM-
LONG SECTIONS.



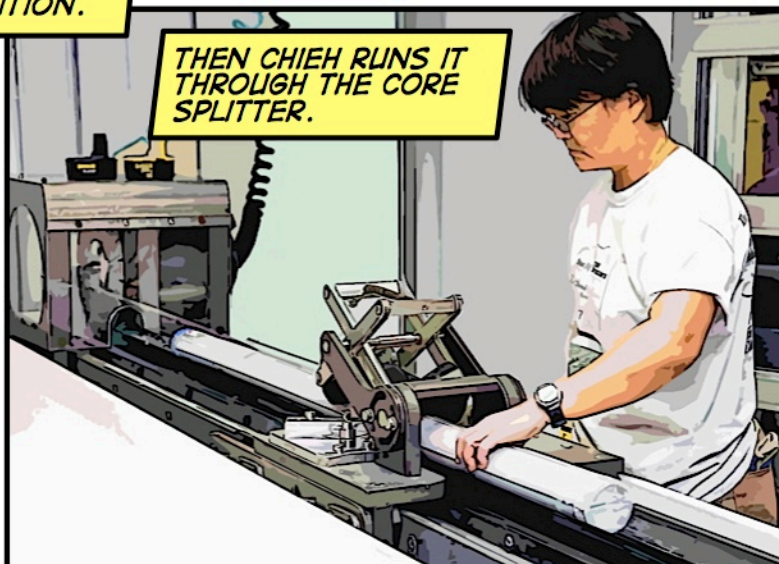
THEN THE CORE IS CUT INTO SECTIONS AND
TEMPORARILY STORED ON A NEARBY CORE RACK.



NEXT THE CORES ARE SPLIT LONGITUDINALLY. ONE HALF OF THE CORE IS PERMANENTLY ARCHIVED, AND THE OTHER IS SAMPLED AND STUDIED BY SCIENTISTS DURING AND AFTER THE EXPEDITION.



CHIEH, BRAD AND CHAD MAKE SURE THE CORE IS PROPERLY ALIGNED.

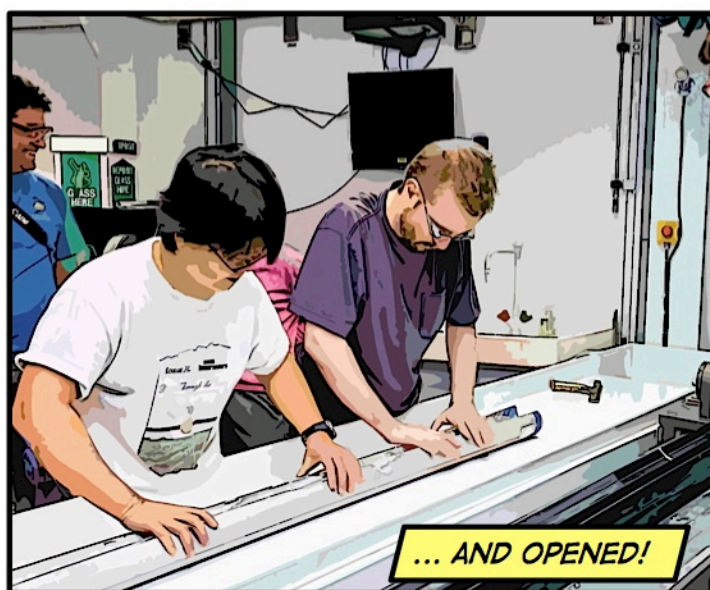


THEN CHIEH RUNS IT THROUGH THE CORE SPLITTER.



THE CORE IS THEN PLACED ON AN ADJACENT TABLE ...

PLEASE DON'T DROP IT.



... AND OPENED!



THE CORE LINERS ARE CYLINDRICALLY SHAPED AND MOST CORES CONSIST OF HEAVILY PACKED SEDIMENTS. AS A CONSEQUENCE, MOST CORES ARE SHAPED LIKE CYLINDERS AS WELL. BUT THE INITIAL MATERIAL THAT COMES OUT OF THE CORE CATCHER CAN BE ODDLY SHAPED. IN FACT, ON THE VERY FIRST CORE OF THE EXPEDITION, THE FIRST BIT OF SEDIMENT FROM THE CORE CATCHER LOOKED LIKE ... WELL ...

... AN EGG!



(THE ACTUAL CORES WERE BEAUTIFUL, THOUGH, AND THE DRILLING EQUIPMENT FUNCTIONED ALMOST PERFECTLY.)

CLOSE-UP OF
THE "SPLIT" EGG



AFTER CORING, IT WAS TIME TO TEST THE WIRELINE LOGGING SYSTEM, IN WHICH SPECIALIZED TOOLS ARE LOWERED INTO THE HOLE TO GATHER ADDITIONAL MEASUREMENTS.

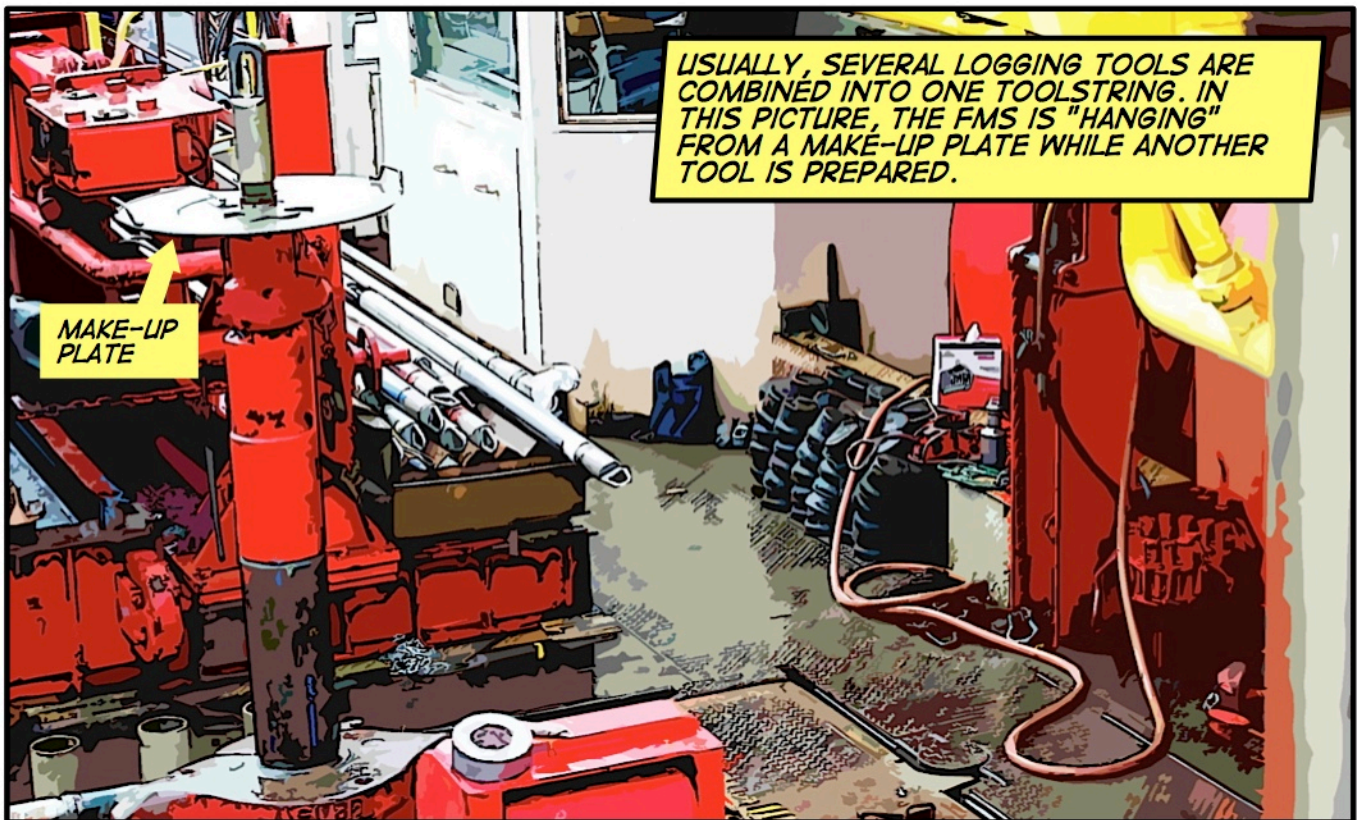


THIS TOOL, THE FORMATION MICROSCANNER (FMS), HAS FOUR PADS WITH MICROELECTRIC SENSORS.



PADS WITH SENSORS

THE PADS ARE ON ARMS THAT EXPAND IN THE BOREHOLE SO THE SENSORS WILL BE IN DIRECT CONTACT WITH THE BOREHOLE WALL.



MAKE-UP PLATE

USUALLY, SEVERAL LOGGING TOOLS ARE COMBINED INTO ONE TOOLSTRING. IN THIS PICTURE, THE FMS IS "HANGING" FROM A MAKE-UP PLATE WHILE ANOTHER TOOL IS PREPARED.

THE NEXT TOOL IS
PREPARED ...



... AND HOISTED OVER TO
THE DRILL HOLE, WHERE IT
IS ATTACHED TO THE FMS.



WITH THE LOGGING TOOL
STRING FULLY ASSEMBLED,
THE DRILL CREW PREPARES TO
LOWER IT TO THE BOTTOM OF
THE HOLE --- IN THIS CASE
ALMOST TWO MILES BELOW
THE SEA SURFACE!



THE MICROELECTRIC SENSORS ON THE FMS MEASURE THE RESISTANCE OF THE BOREHOLE WALL TO AN ELECTRICAL CURRENT. EACH OF THE FOUR PADS RECORDS A SWATH OF DATA, AND WHEN THEY ARE DISPLAYED TOGETHER, THEY FORM A NEARLY-COMPLETE "PICTURE" OF THE BOREHOLE WALL.

MEASUREMENTS FROM THE FMS AND OTHER LOGGING TOOLS PROVIDE COMPLEMENTARY DATA THAT HELP SCIENTISTS CONSTRUCT A MORE COMPLETE PICTURE OF THE LOCAL GEOLOGY.

THIS LAYER "DIPS" TO THE SOUTH.

LIGHT BANDS LIKE THIS INDICATE A HIGHER RESISTANCE, MEANING A HARDER SEDIMENT LAYER -- SUCH AS LIMESTONE OR CHALK.

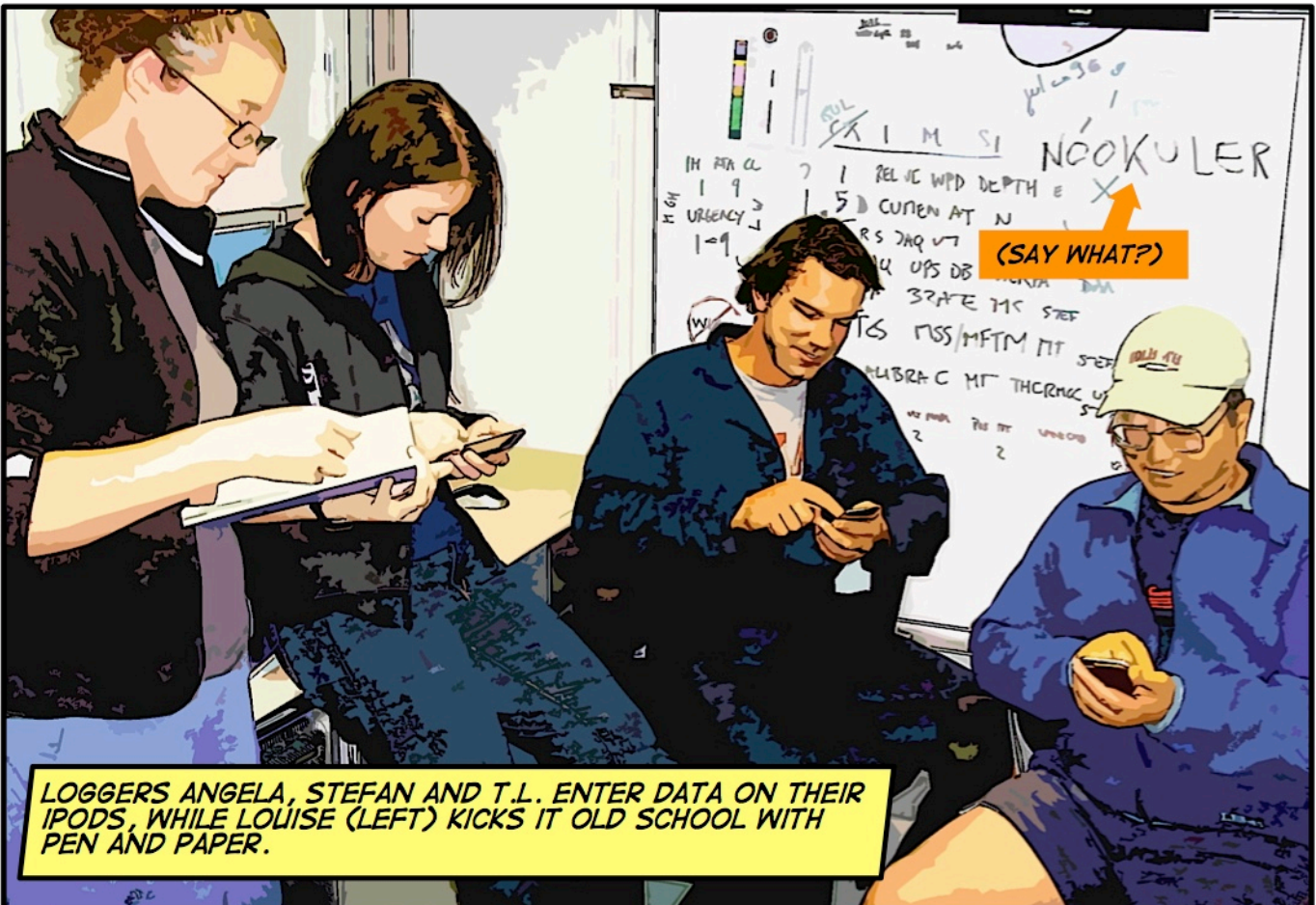
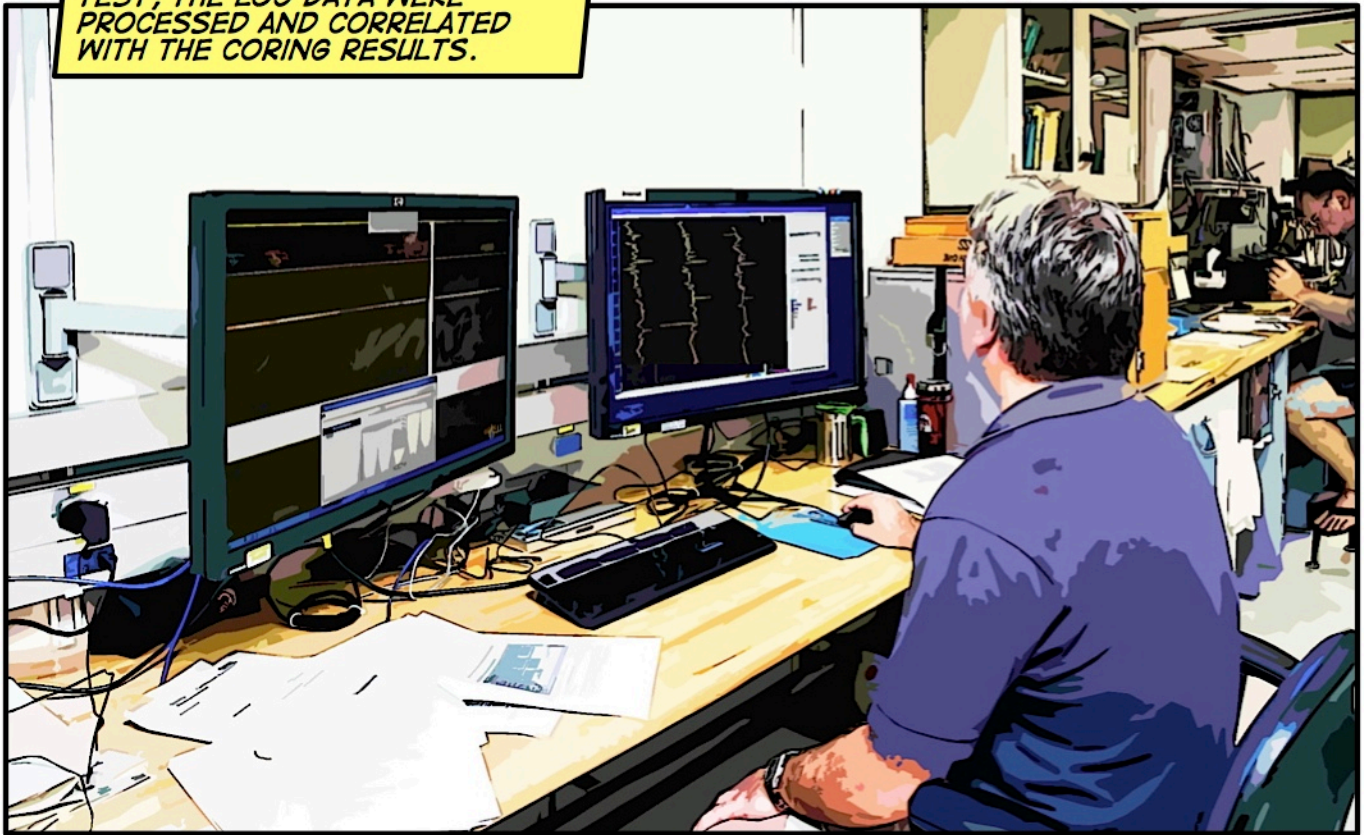
DARK BANDS ARE AN INDICATION OF A SOFTER SEDIMENT, SUCH AS CLAY.

N E S W

SHALLOWER (YOUNGER)

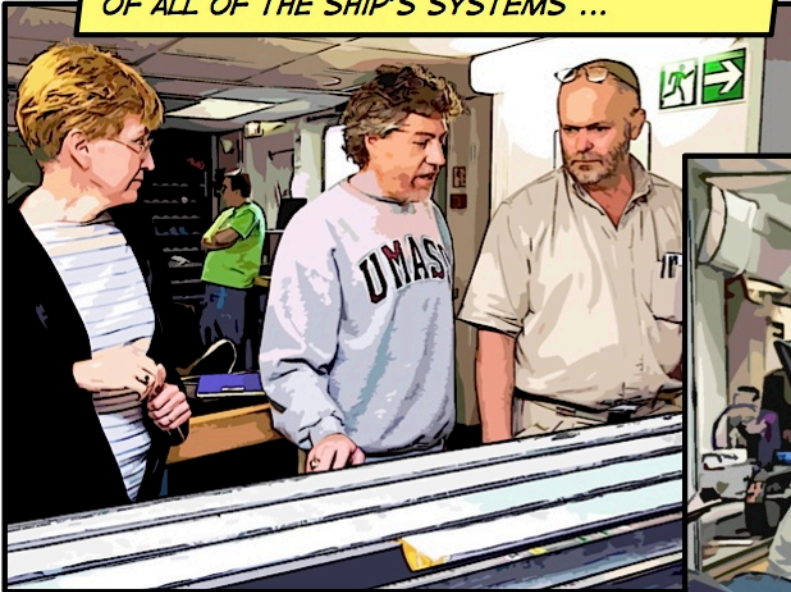
DEEPER (OLDER)

AFTER THE SUCCESSFUL LOGGING TEST, THE LOG DATA WERE PROCESSED AND CORRELATED WITH THE CORING RESULTS.

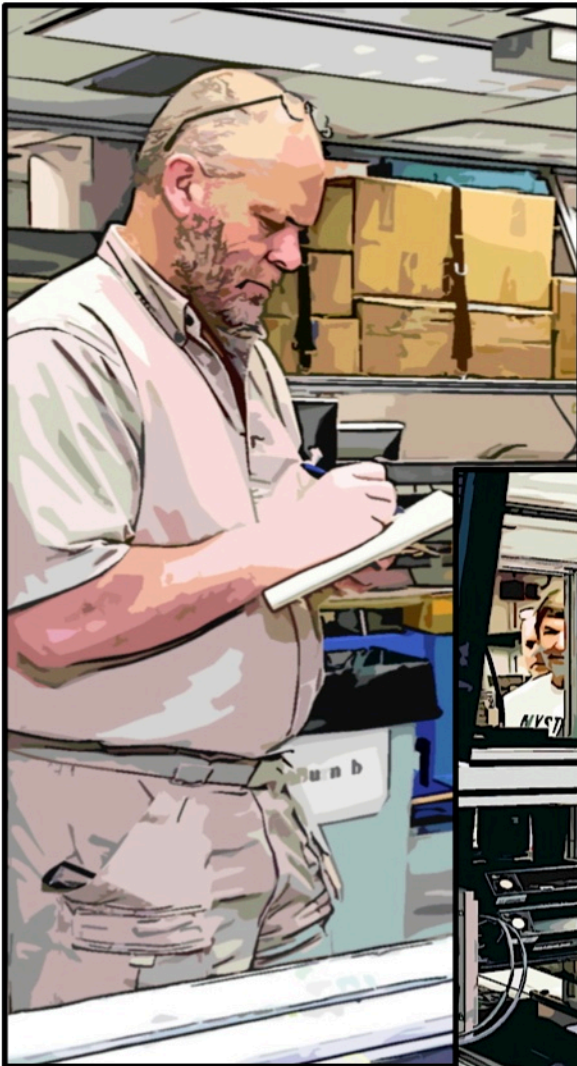


LOGGERS ANGELA, STEFAN AND T.L. ENTER DATA ON THEIR IPODS, WHILE LOUISE (LEFT) KICKS IT OLD SCHOOL WITH PEN AND PAPER.

THROUGHOUT THE EXPEDITION, THE RATS
MONITORED THE EFFICIENCY AND READINESS
OF ALL OF THE SHIP'S SYSTEMS ...



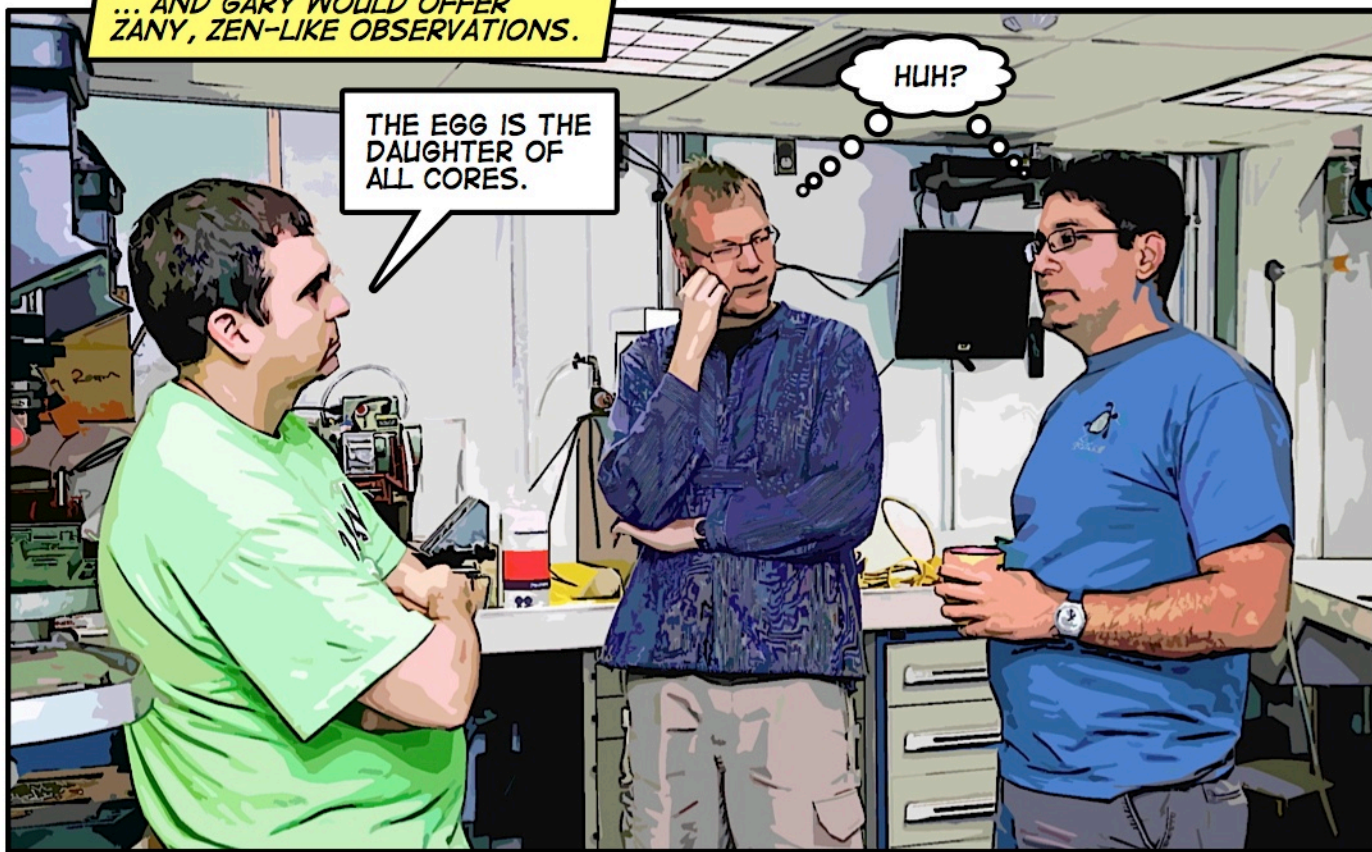
* EXTREMELY RARE PHOTO
IN WHICH ROY IS NOT
WEARING A HAWAIIAN SHIRT!



... AND GARY WOULD OFFER
ZANY, ZEN-LIKE OBSERVATIONS.

THE EGG IS THE
DAUGHTER OF
ALL CORES.

HUH?



ONCE THE OPERATIONS AT THE
TEST SITE WERE COMPLETED,
THERE WAS TIME TO RELAX ON
THE "STEEL BEACH" (I.E., THE
SHIP'S DECK) ...

... AND FOOD
WAS ALWAYS
PLENTIFUL.

THE MOTHER OF
ALL SAMPLES IS
THE HOLE.

HUH?



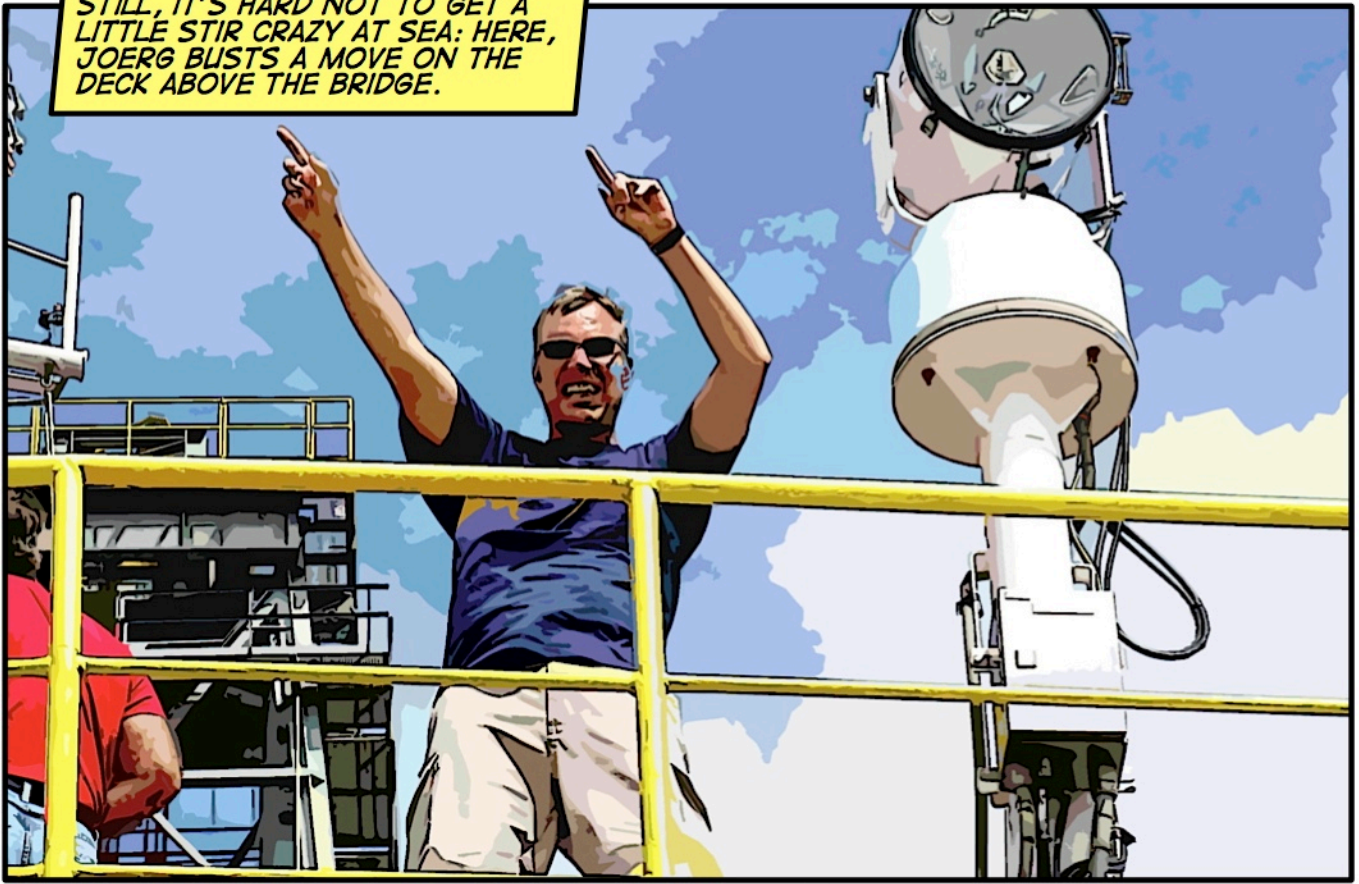
THERE WERE OUTDOOR BARBECUES EVERY SUNDAY. IN THIS PHOTO, BENJI (LOOKING COOL IN HIS AVIATORS) SERVES UP SOME DELICIOUS SAUSAGE TO SEAN.



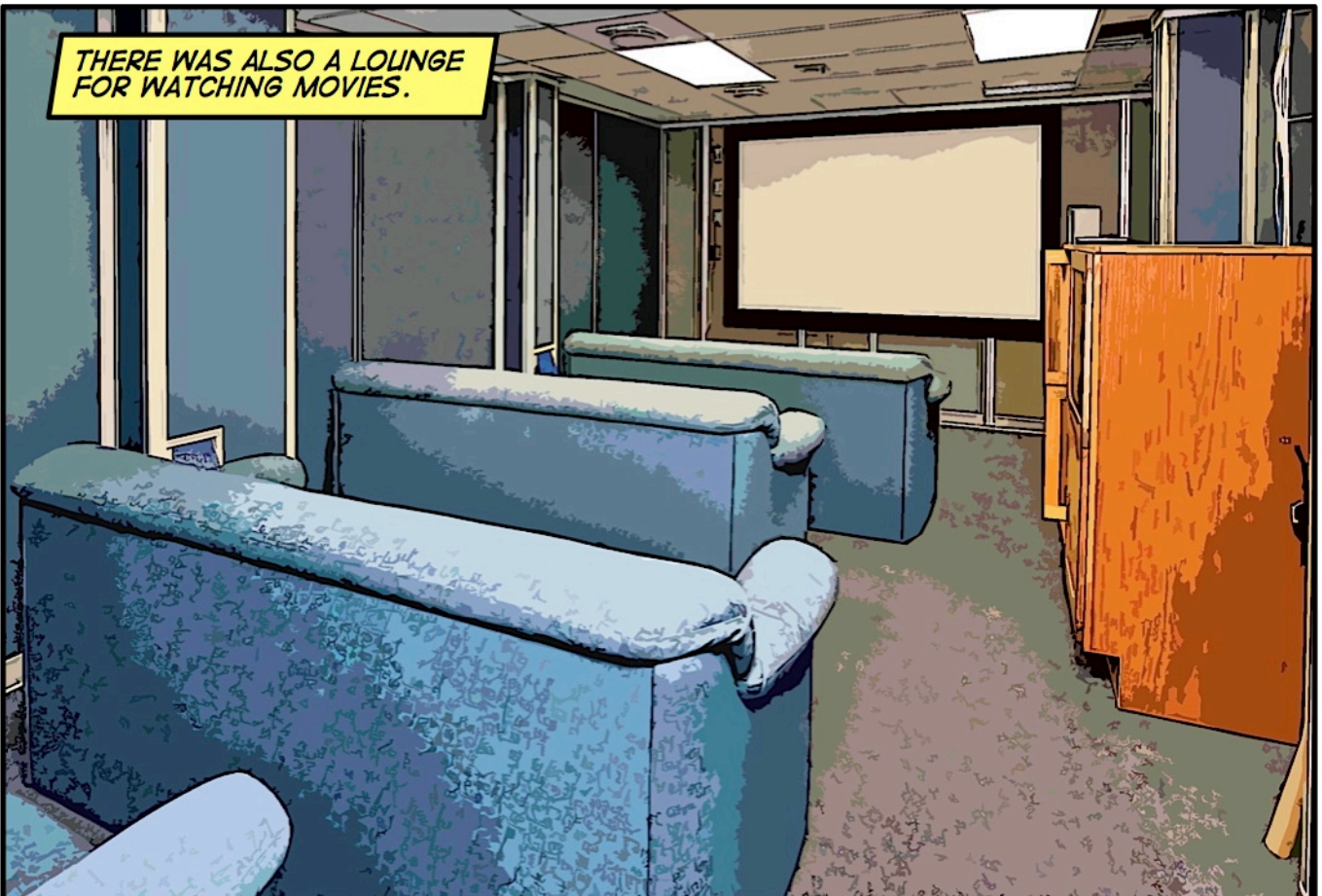
DAVID (RIGHT) IS INTO IT, BUT CHAD LOOKS SKEPTICAL.



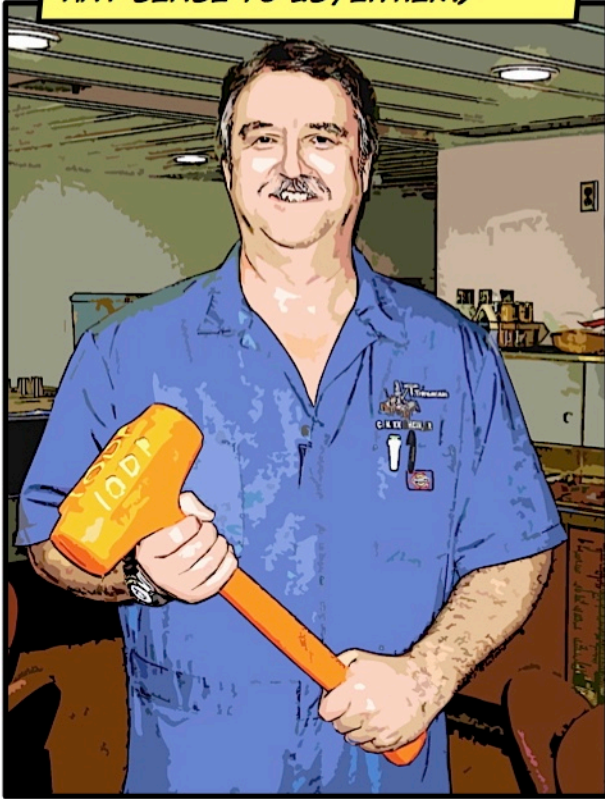
STILL, IT'S HARD NOT TO GET A
LITTLE STIR CRAZY AT SEA: HERE,
JOERG BUSTS A MOVE ON THE
DECK ABOVE THE BRIDGE.



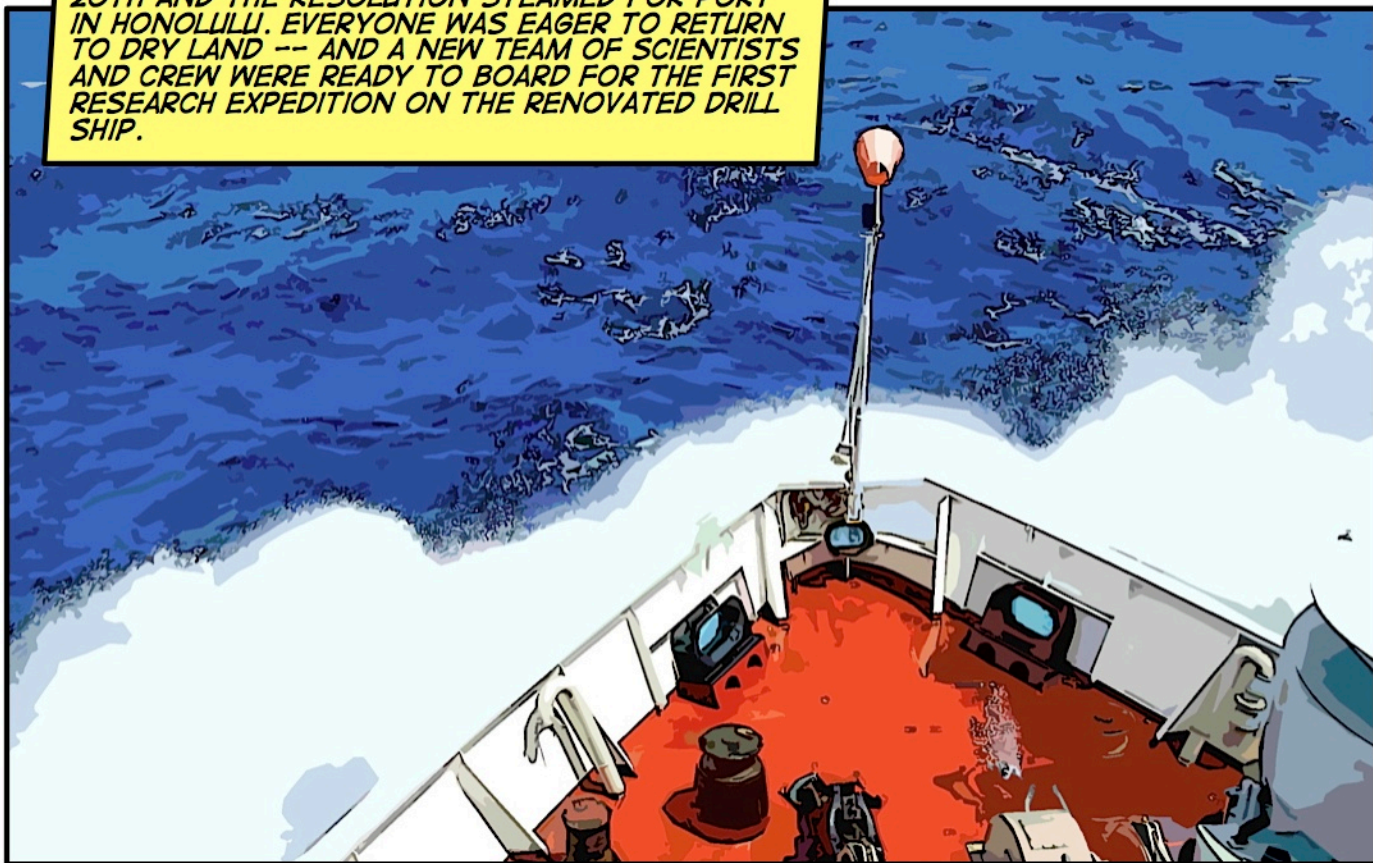
THERE WAS ALSO A LOUNGE
FOR WATCHING MOVIES.




OTHERS WORKED OFF STRESS BY
TOTING AROUND A BIG ORANGE
HAMMER. (NO, IT DOESN'T MAKE
ANY SENSE TO US, EITHER.)



SEA TRIAL OPERATIONS CONCLUDED ON FEBRUARY 20TH AND THE RESOLUTION STEAMED FOR PORT IN HONOLULU. EVERYONE WAS EAGER TO RETURN TO DRY LAND -- AND A NEW TEAM OF SCIENTISTS AND CREW WERE READY TO BOARD FOR THE FIRST RESEARCH EXPEDITION ON THE RENOVATED DRILL SHIP.



A woman with short brown hair and glasses is shown from the chest up. She is wearing a white long-sleeved shirt with a floral pattern on the shoulders and a black watch on her left wrist. She is holding a large, thick orange book with both hands, and her mouth is wide open in a shout or cheer. The background is a simple indoor setting with a grey wall and a yellow pencil hanging on the wall behind her.

DON'T FORGET TO READ THE
NEXT INSTALLMENT OF
"TALES OF THE RESOLUTION"!

NEXT ISSUE: EXPLORING 50 MILLION
YEARS OF CLIMATE HISTORY ...