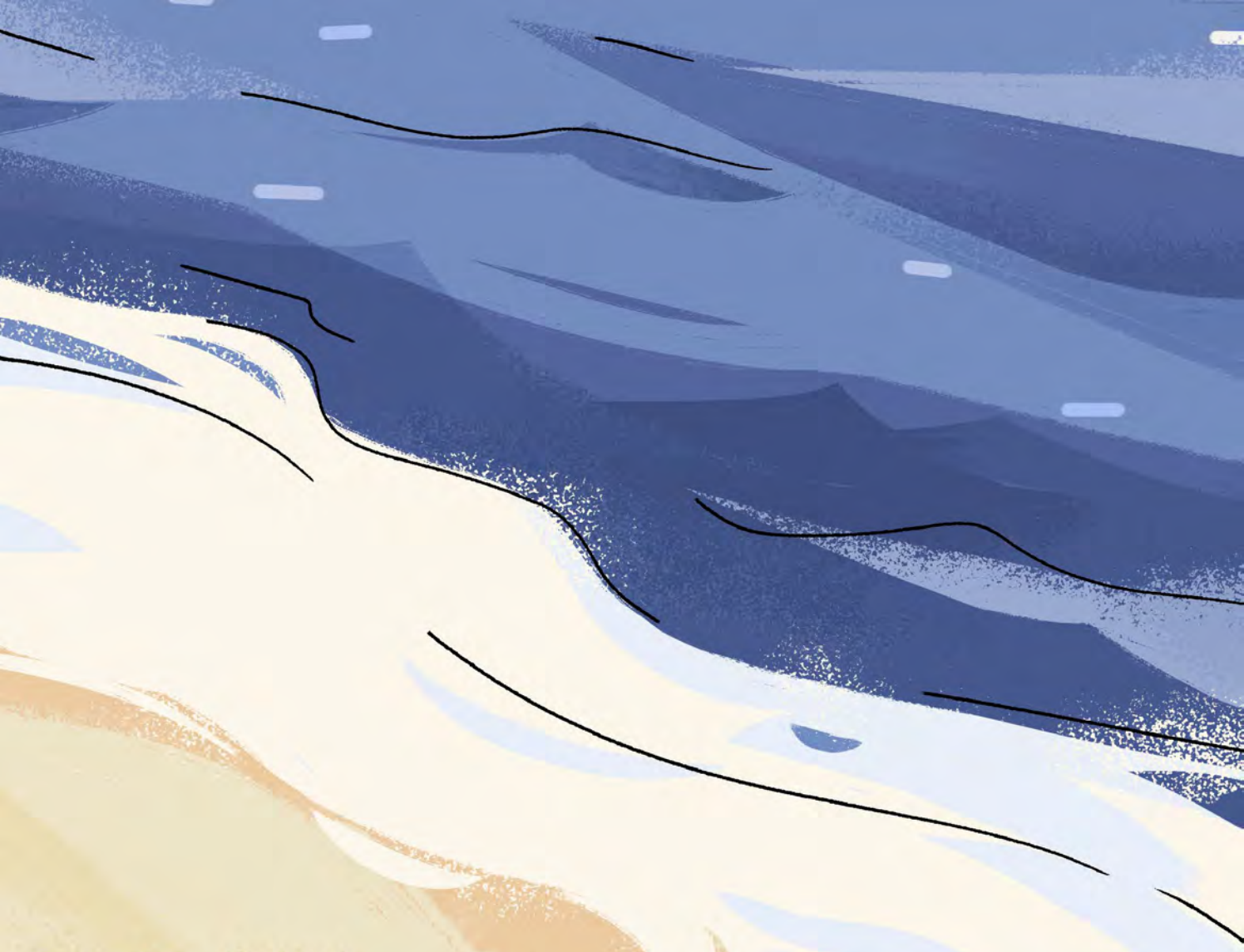
SPARK SQUAD
A STORY FROM THE NATIONAL LABORATORY OF THE ROCKIES
NAUHLAD, NC



National Laboratory of the Rockies

U.S. DEPARTMENT of ENERGY | Office of Critical Minerals and Energy Innovation

Hydropower and Hydrokinetic Office

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A BRIEF INTRODUCTION TO ENERGY

HI! I'M POWER OFFICER GINA AND I'M HERE TO TALK ABOUT ENERGY!

WE USE ENERGY TO POWER ALMOST EVERYTHING IN OUR LIVES!

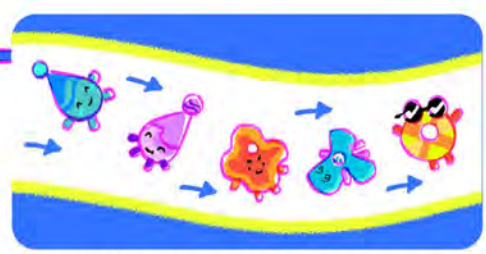
ENERGY COMES FROM ALL DIFFERENT KINDS OF PLACES

POWER OFFICERS AND THE SPARK SQUAD USE SPECIAL GOGGLES TO SEE ENERGY AS...

JOULES!

THE JOULES ARE PLAYFUL AND FULL OF ENERGY! WE USUALLY FIND THEM ENJOYING VARIOUS OUTDOOR ACTIVITIES

USING GENERATORS SUCH AS HYDROPOWER TURBINES, WE CAN CAPTURE THESE JOULES IN BATTERIES AND STORE THEIR ENERGY TO USE LATER!



WHEN WE'RE READY TO USE THE ENERGY FROM THE JOULES, THEY TRAVEL THROUGH WIRES...

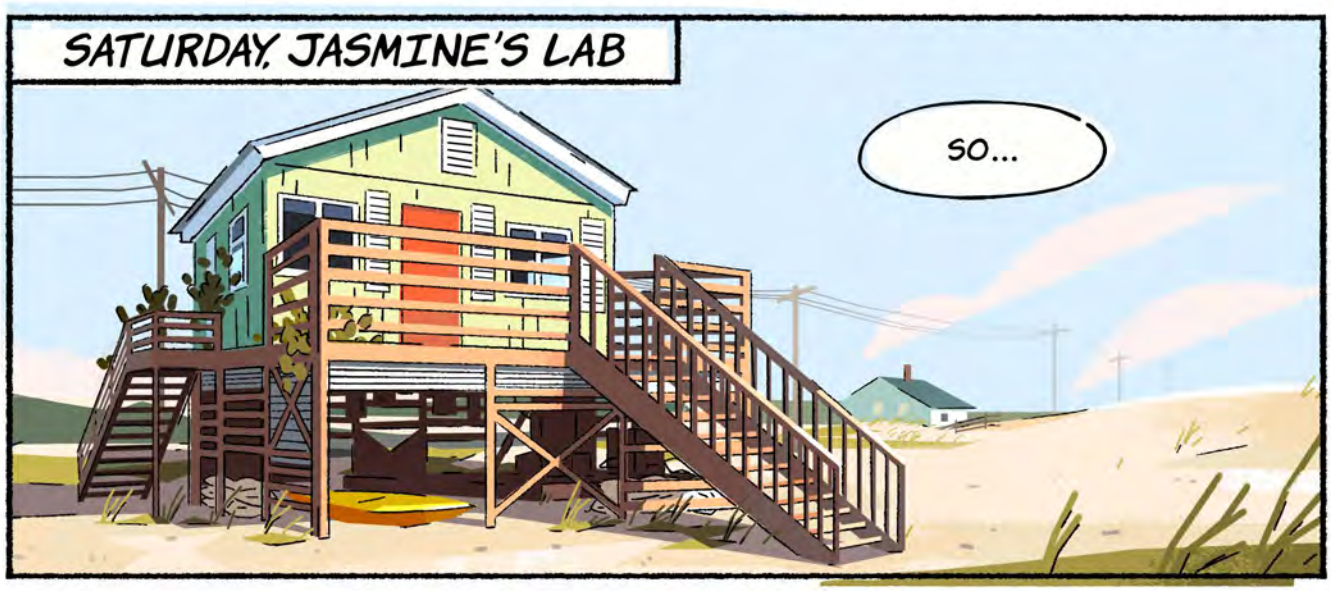
AND USE THEIR ENERGY AND EXCITEMENT TO POWER OUR DEVICES!

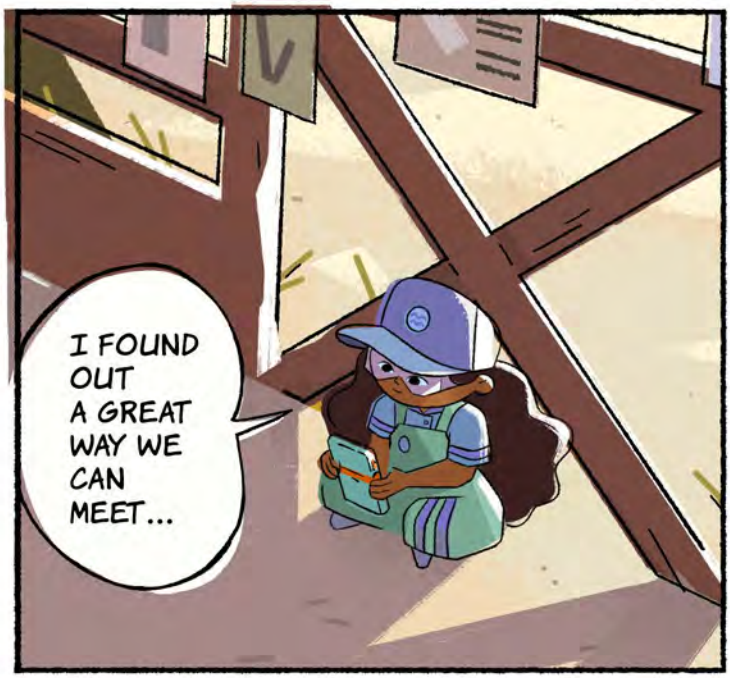
ONCE A JOULE HAS BEEN USED TO POWER SOMETHING, IT GETS REALLY TIRED...

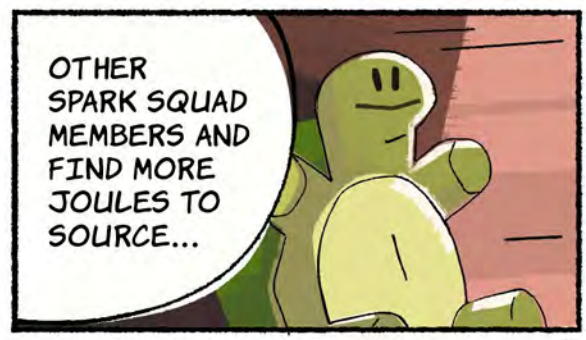
BUT AFTER A REST, THE JOULE RETURNS TO DOING WHAT IT LOVES TO DO!

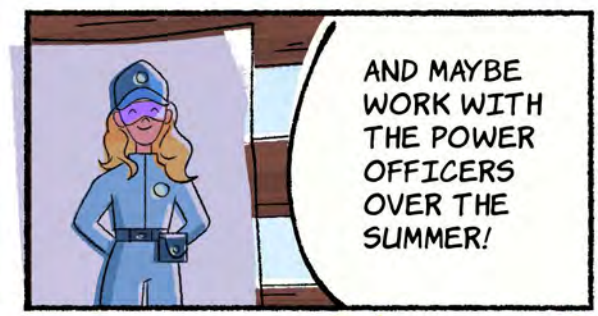
THEN THE WHOLE PROCESS CAN START AGAIN!

IF YOU THINK YOU WOULD LIKE TO LEARN MORE ABOUT ENERGY AND JOULES, CONSIDER JOINING THE SPARK SQUAD!

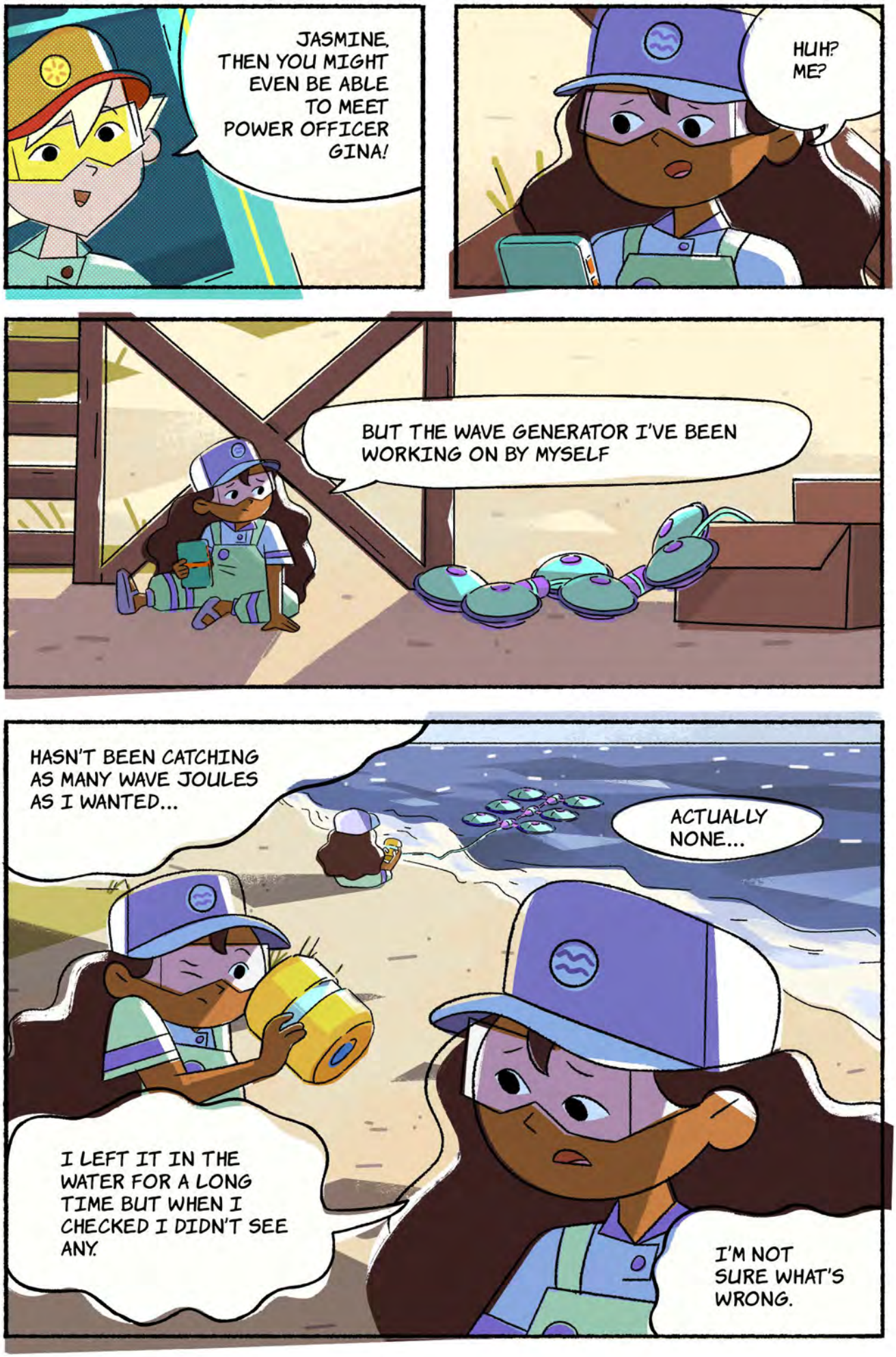

SATURDAY, JASMINE'S LAB
SO...


I FOUND OUT A GREAT WAY WE CAN MEET...


OTHER SPARK SQUAD MEMBERS AND FIND MORE JOULES TO SOURCE...


AND MAYBE WORK WITH THE POWER OFFICERS OVER THE SUMMER!

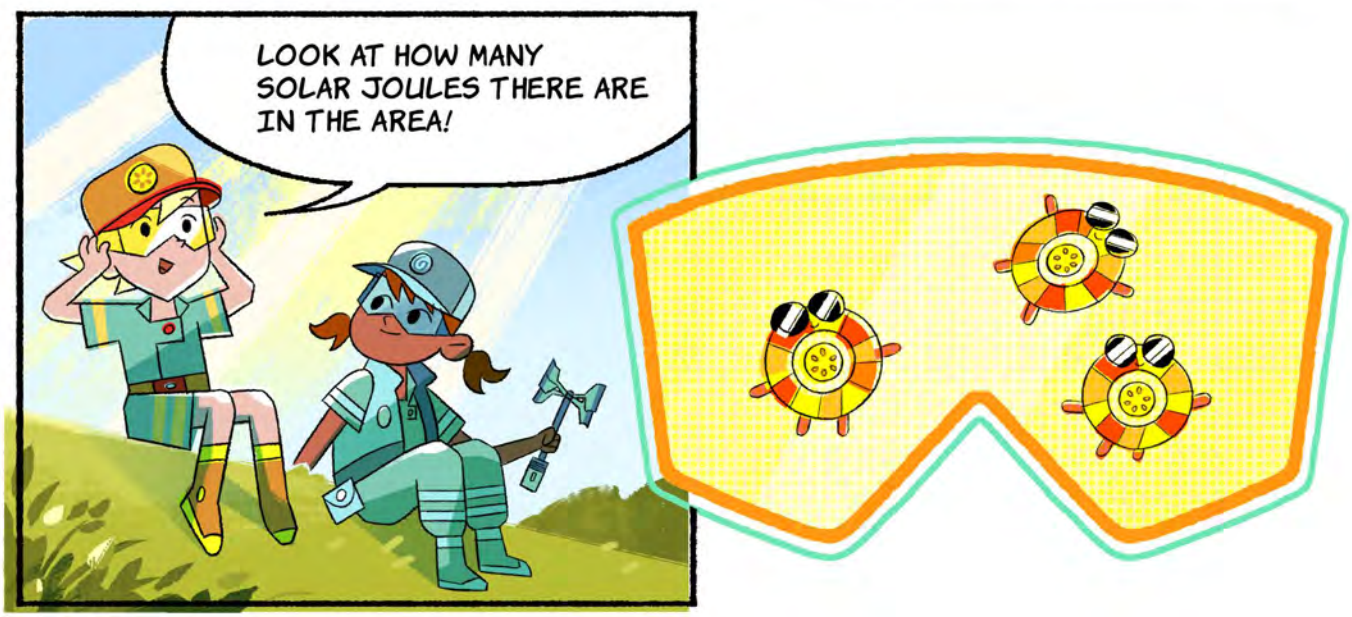
I THINK THE THREE OF US SHOULD JOIN
THE POWER FAIR!
JASMINE
ARIA
THOMAS

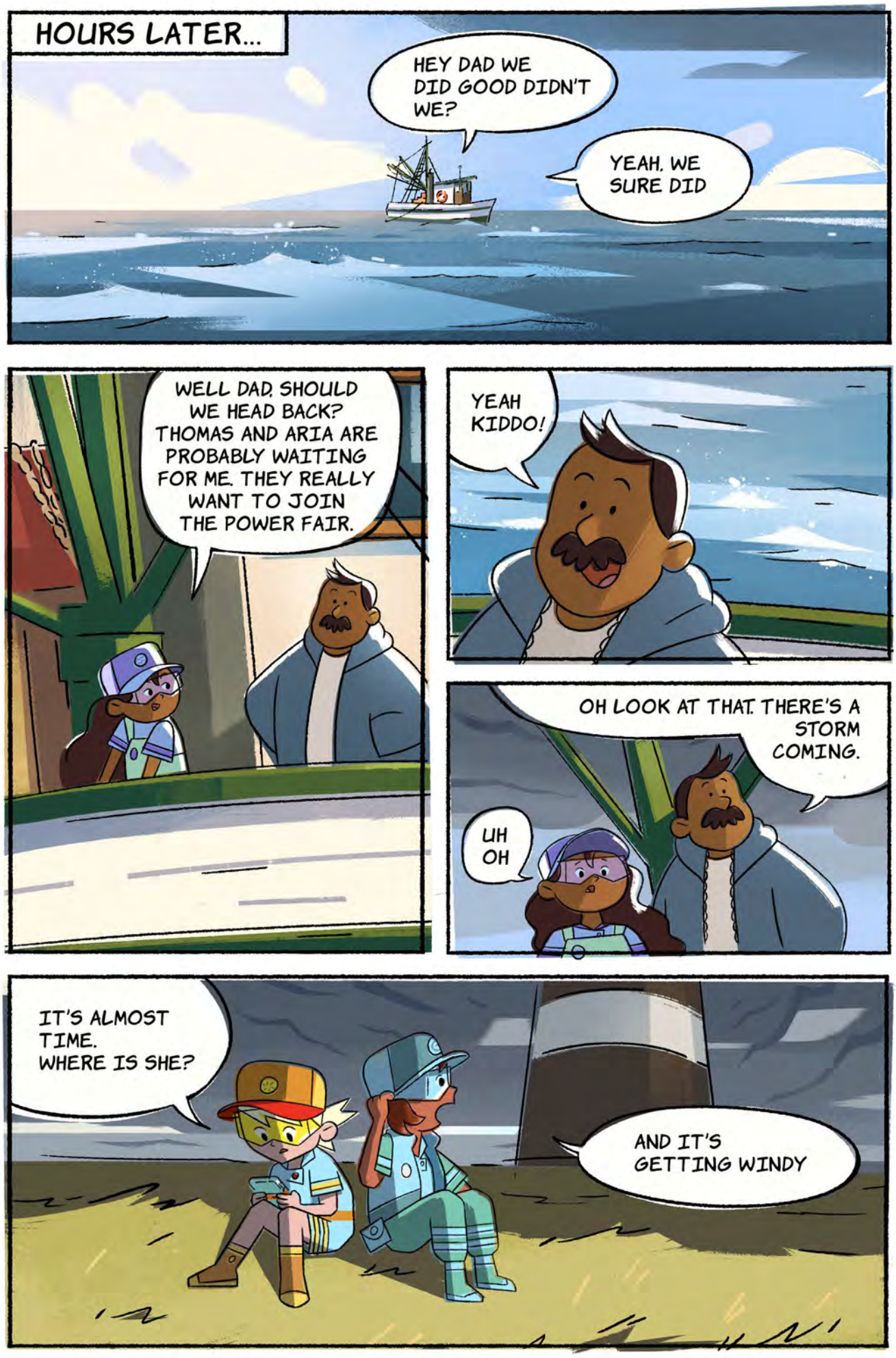

JASMINE, THEN YOU MIGHT EVEN BE ABLE TO MEET POWER OFFICER GINA!
HUH? ME?
BUT THE WAVE GENERATOR I'VE BEEN WORKING ON BY MYSELF
HASN'T BEEN CATCHING AS MANY WAVE JOULES AS I WANTED...
ACTUALLY NONE...
I LEFT IT IN THE WATER FOR A LONG TIME BUT WHEN I CHECKED I DIDN'T SEE ANY.
I'M NOT SURE WHAT'S WRONG.

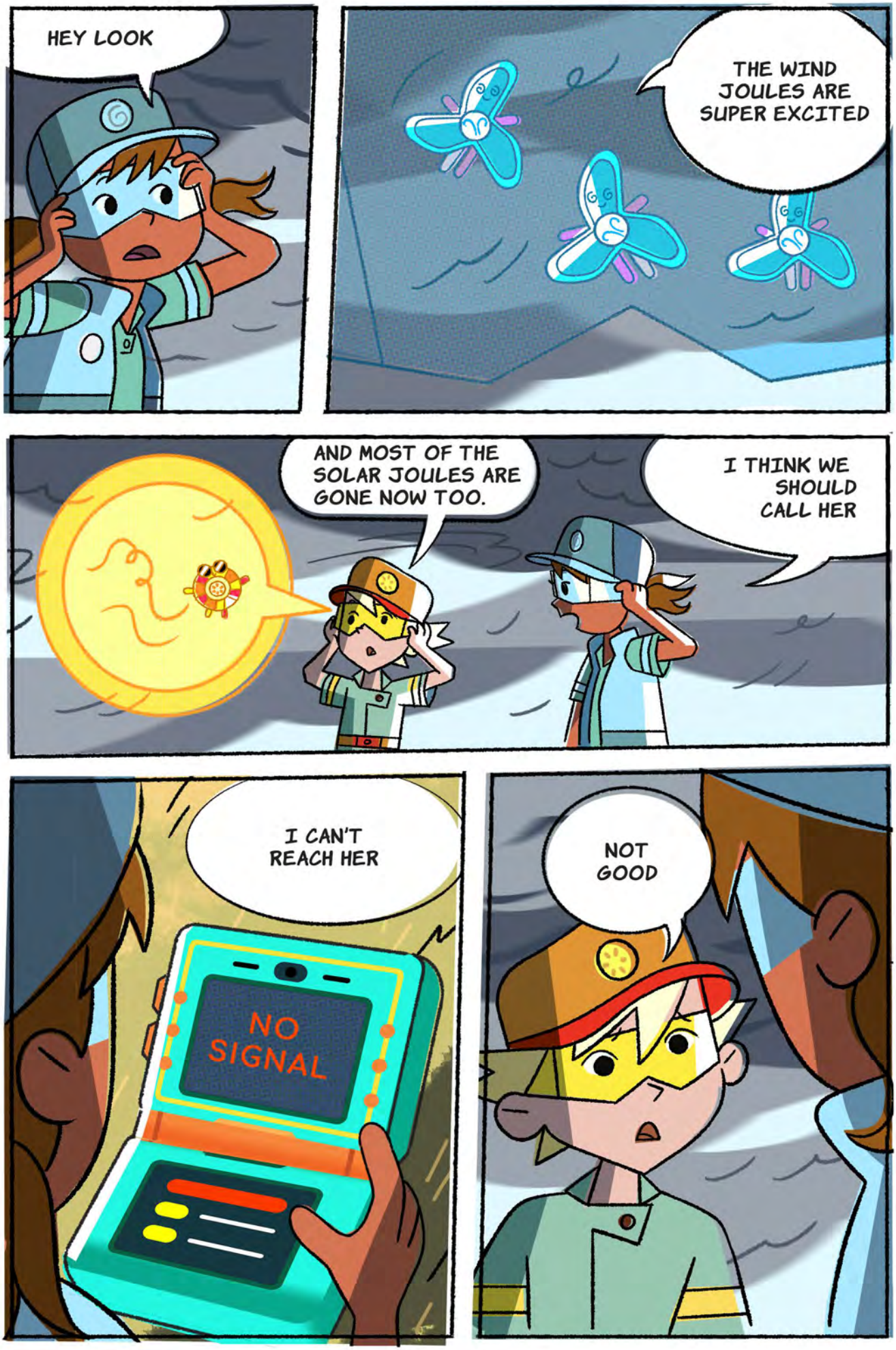
HOW ABOUT THOMAS AND I MEET YOU AFTER YOU GO FISHING WITH YOUR DAD AND WE CAN TALK ABOUT IT?
YEAH, IT WOULDN'T BE THE SAME WITHOUT YOU!
OKAY. I'LL CATCH YOU BOTH LATER THEN.
BY THE LIGHTHOUSE?
YEAH!
SEE YA THERE!
CLICK!
THE POWER FAIR, HUH?
LATER
YOU KNOW, JASMINE, IT'S REALLY GREAT YOU'VE BEEN LOOKING INTO ENERGY WITH YOUR FRIENDS.
I'M PROUD OF YOU.

COME ON LET'S GO!
WE'VE GOT SHRIMP TO CATCH.

ELSEWHERE
LET'S SIT HERE WHILE WE WAIT FOR JASMINE.


LOOK AT HOW MANY SOLAR JOULES THERE ARE IN THE AREA!


HOURS LATER...
HEY DAD WE DID GOOD DIDN'T WE?
YEAH, WE SURE DID
WELL DAD, SHOULD WE HEAD BACK? THOMAS AND ARIA ARE PROBABLY WAITING FOR ME. THEY REALLY WANT TO JOIN THE POWER FAIR.
YEAH KIDDO!
OH LOOK AT THAT. THERE'S A STORM COMING.
UH OH
IT'S ALMOST TIME. WHERE IS SHE?
AND IT'S GETTING WINDY

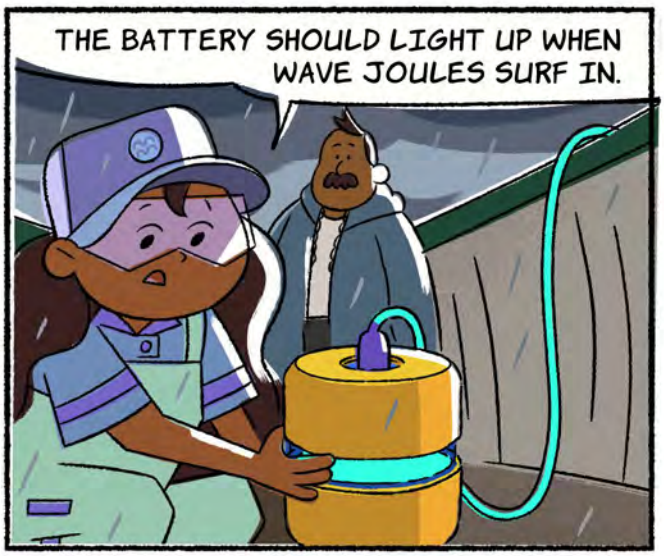

HEY LOOK
THE WIND JOULES ARE SUPER EXCITED
AND MOST OF THE SOLAR JOULES ARE GONE NOW TOO.
I THINK WE SHOULD CALL HER
I CAN'T REACH HER
NO SIGNAL
NOT GOOD

BOOM!
SHH
SHHH
CAN YOU HEAR ME?
THE RADIO AND GPS HAVE CUT OUT!
AND MY TABLET BATTERY RAN OUT!
WE CAN'T NAVIGATE THE SHIP
WHAT SHOULD WE DO?
LET'S SEE...

WAIT DAD!
I'VE BEEN WORKING ON A WAVE POWER DEVICE BUT IT HASN'T WORKED SO FAR.
WELL IT DOESN'T HURT GIVING IT A TRY.
C'MON DAD, GIVE ME A HAND.

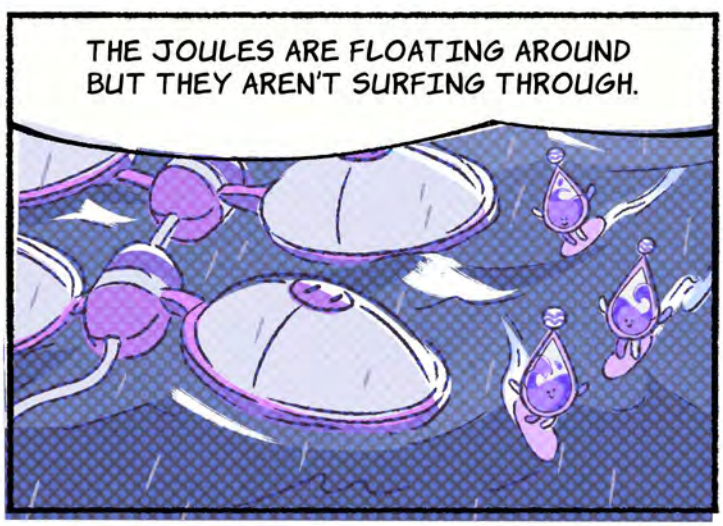
SO IT'S DESIGNED TO ATTRACT WAVE JOULES IN THE OCEAN TO GENERATE POWER?

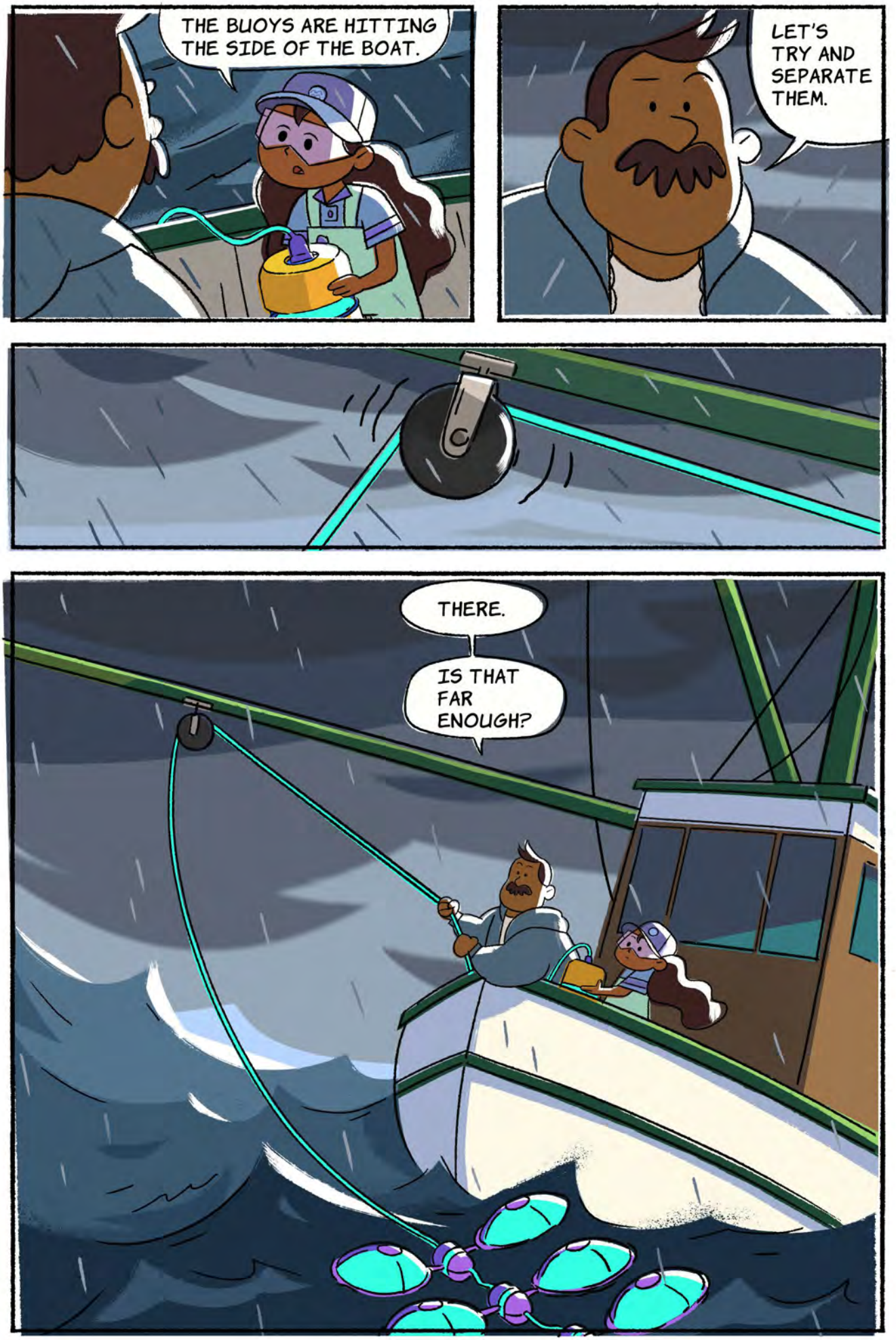
IT'S SUPPOSED TO...

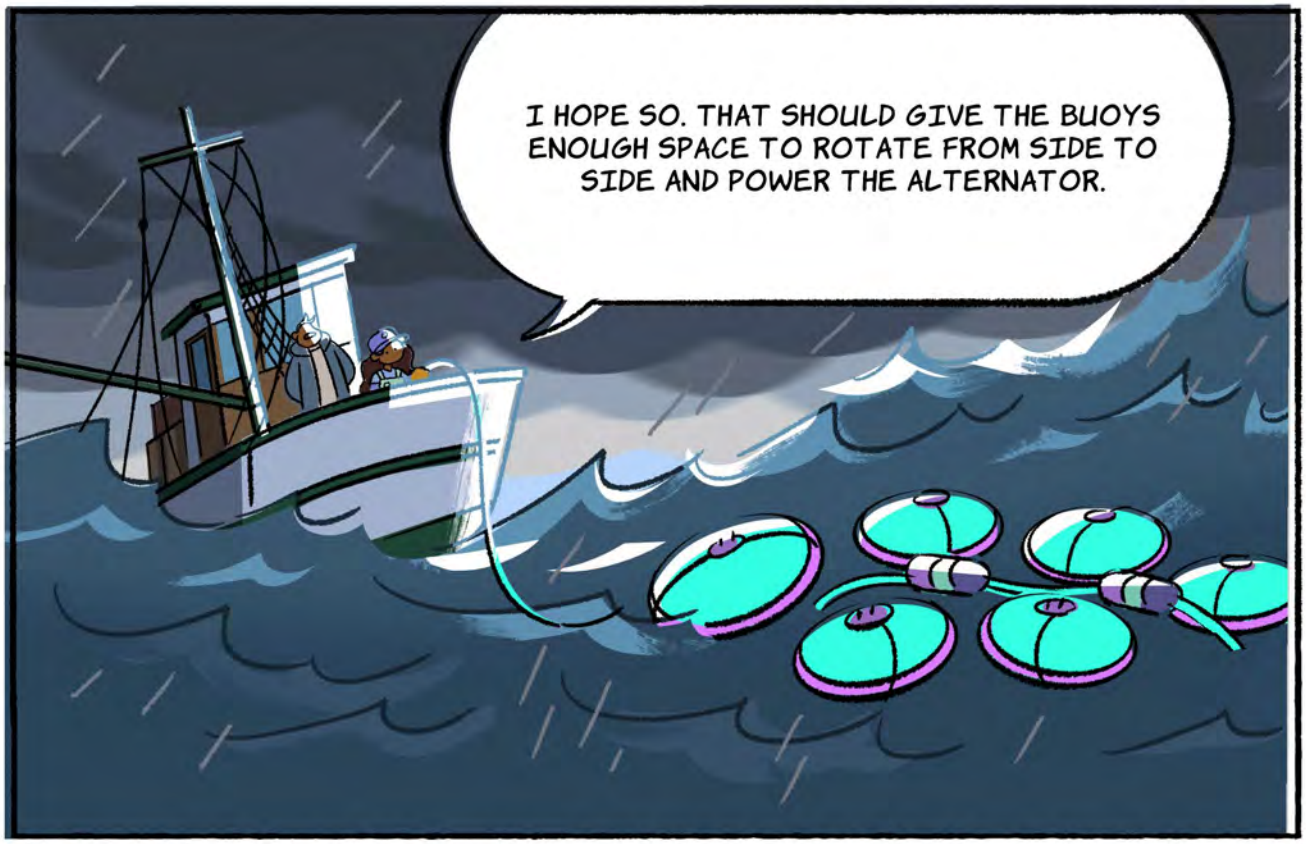

THE BATTERY SHOULD LIGHT UP WHEN WAVE JOULES SURF IN.

CLUNK
CLUNK

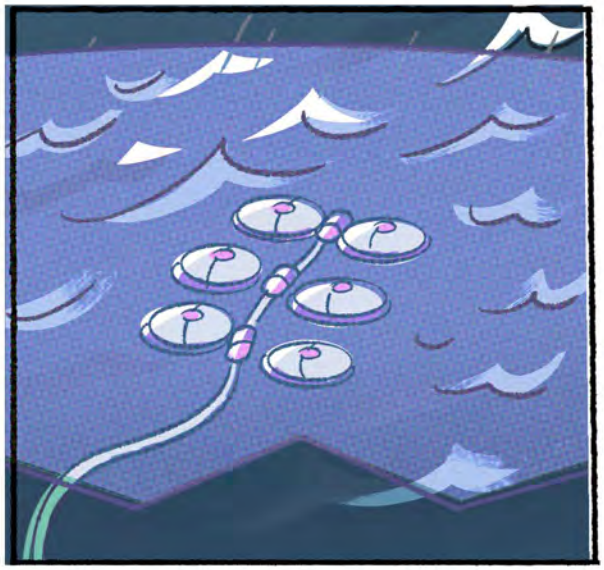
I DON'T THINK IT'S WORKING.

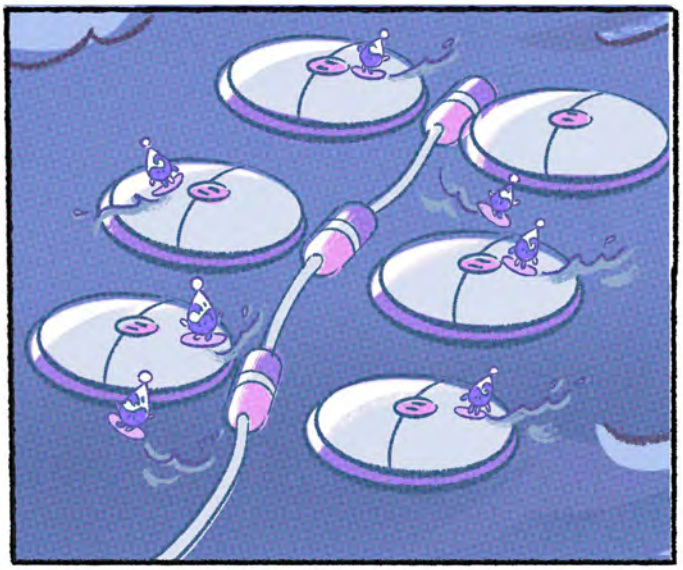

THE JOULES ARE FLOATING AROUND BUT THEY AREN'T SURFING THROUGH.


THE BUOYS ARE HITTING THE SIDE OF THE BOAT.
LET'S TRY AND SEPARATE THEM.
THERE.
IS THAT FAR ENOUGH?


I HOPE SO. THAT SHOULD GIVE THE BUOYS ENOUGH SPACE TO ROTATE FROM SIDE TO SIDE AND POWER THE ALTERNATOR.

ANYTHING?



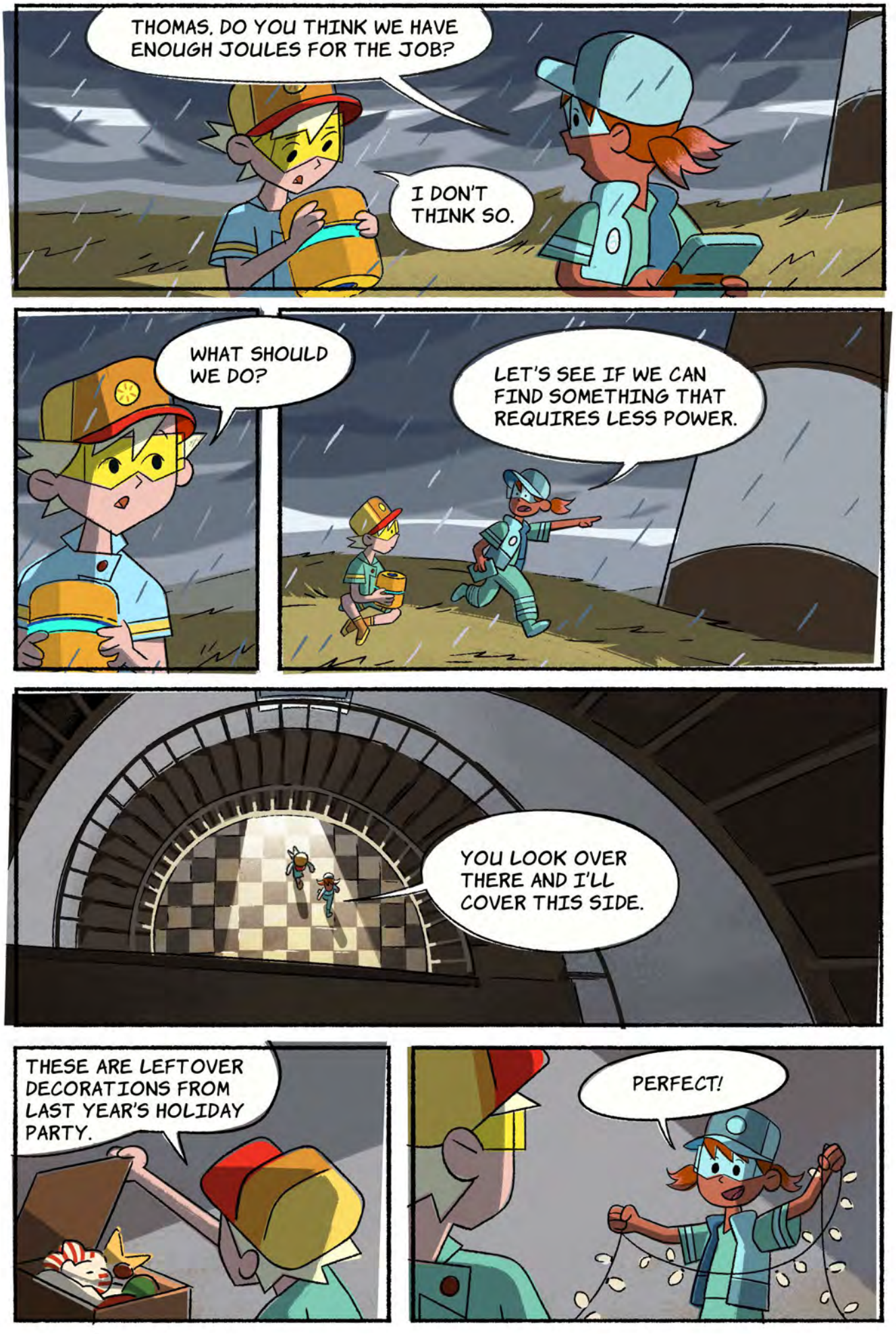


YES!
IT'S WORKING! THE WAVES ARE MOVING THE GENERATOR AND IT'S CAPTURING THE JOULES!
GREAT! LET'S PLUG IT INTO THE RADIO!
COMING!

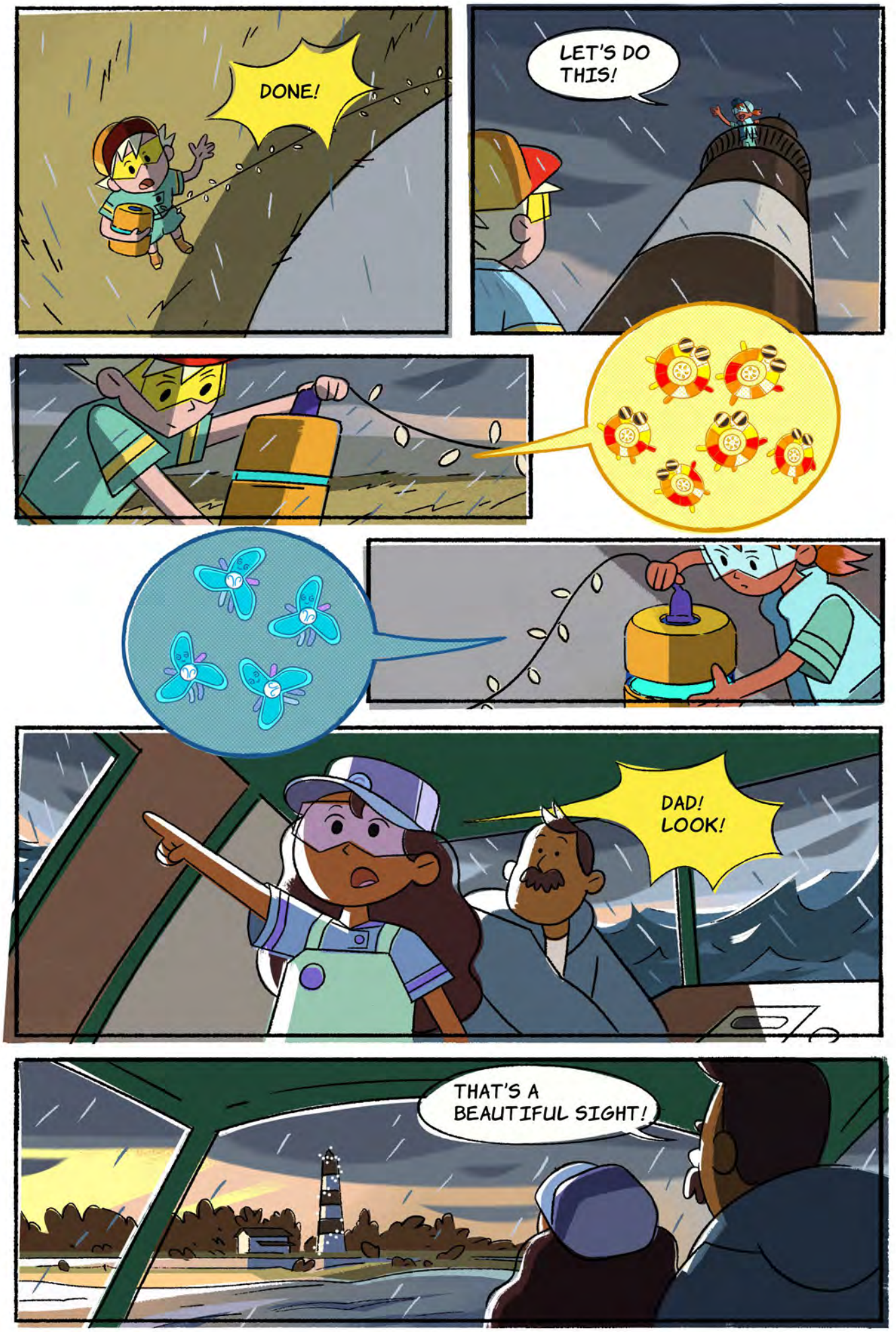
SPLASH!
OH NO!
SPLOSH!
I GOT THIS JASMINE!

YAY!
CLICK!
UH-HUH
UH-HUH
JASMINE, THE COAST GUARD SAID THE LIGHTHOUSE IS DOWN.
IT'S GOING TO TAKE A WHILE FOR THEM TO GET IT WORKING AGAIN.

WAIT, DAD! ARIA AND THOMAS ARE BY THE LIGHTHOUSE! LET ME TRY AND REACH THEM!
RING RING!
JASMINE! ARE YOU OKAY?
BACK ON LAND...
THE LIGHTHOUSE POWER WENT OUT!
I KNOW! CAN YOU HELP US!?
THE LIGHT REQUIRES A LOT OF ENERGY...


THOMAS, DO YOU THINK WE HAVE ENOUGH JOULES FOR THE JOB?
I DON'T THINK SO.
WHAT SHOULD WE DO?
LET'S SEE IF WE CAN FIND SOMETHING THAT REQUIRES LESS POWER.
YOU LOOK OVER THERE AND I'LL COVER THIS SIDE.
THESE ARE LEFTOVER DECORATIONS FROM LAST YEAR'S HOLIDAY PARTY.
PERFECT!

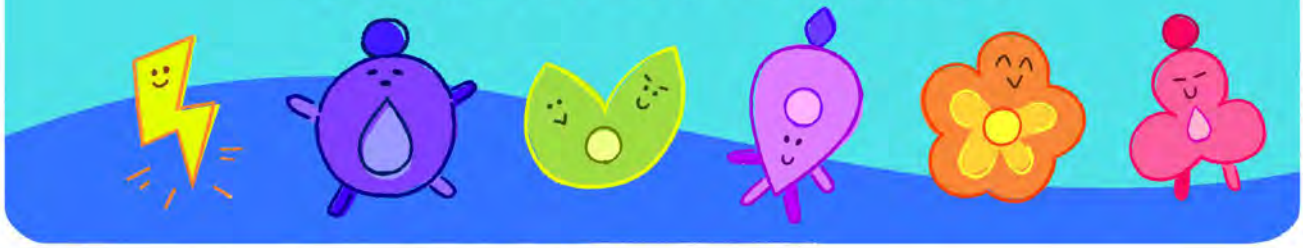
I'M GONNA FEED YOU THE LIGHTS FROM THE TOP.
AND I'LL WRAP THEM AROUND THE OUTSIDE
GOT IT!
HEADS UP!
HURRY
HURRY


DONE!
LET'S DO THIS!
DAD! LOOK!
THAT'S A BEAUTIFUL SIGHT!

HANG ON JASMINE, WE'RE GOING HOME!
YAY! YOU MADE IT!!
THANK YOU GUYS!
THANK THE JOULES!
YEAH, AND MY DAD HELPED ME GET MY WAVE DEVICE TO WORK!
WE'RE GOING TO DO GREAT AT THE POWER FAIR!

WHAT KIND OF ENERGY SOURCES DO YOU LIVE NEAR?

WHAT DO YOU IMAGINE JOULES IN YOUR COMMUNITY MIGHT LOOK LIKE?



DRAW YOUR OWN JOULE!

JASMINE AND HER FRIENDS ARIA AND THOMAS ARE THREE OF THE NEWEST MEMBERS OF THE SPARK SQUAD - A GROUP THAT TEACHES KIDS ABOUT ENERGY AND THE EMERGING FIELD OF "JOULE STUDIES". TOGETHER THEY GO ON EXCITING ADVENTURES, FIND AND IDENTIFY NEW JOULES, AND HOPEFULLY ONE DAY MAKE IT TO THE POWER FAIR - THE ULTIMATE GATHERING OF BUDDING YOUNG ENERGY SCIENTISTS!
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