The restoration activity of the disaster corresponding headquarter



UKIMA CHEMICAL CO., LTD. Photo:taken in 3.11.2011

When the great east Japan earthquake occurred at 3.11.2011, we established



We started to make the plan for restoration against it and act for it.

The map of organization of the head quarter against disaster



To restart our plant,

- 1. No damage with utilities
- 2. No damage with process equipment and no problem at restart of it process equipment
- 3. Restoration of electricity, public water service and water for industrial use service
- 4. No damage with waste water treatment plant

It is important for us how quickly to recover this 4 points.

we need the above 4 points to be completed. Soon after disaster occurred, it was almost dark, and power and water supply was cut and earthquake continued to occur.



We decided not to stay here and to get our stuff to go home safely, and the day after that, to make them able to come investigate plant and utilities.

The situation of the investigation of our plant 3.12





One of our damage : 1.Office







One of our damage : 2.entrance and exit of U-1 plant









One of our damage : 3.entrance and exit of D-1&2 plant







One of our damage : 4. The cutting of pipes







One of our damage : 5. The Land subsidence









One of our damage : 6. Other damages







One of our damage : 7.our plant's traffic damages







One of our damage : 8. The damages with process equipment





About our plant's equipment, there was only the damage with pipes because I thought that our plants were built on the solid rock.

making the summary for resumption of production 3.12

高吉成形小佐荒松森山木田山山沿区川本国山山	安香確認。 9 0	·米 3元以降は整備状況を考えて 生勤者を調整 3/4(R) 15(X) 16(*) 17(木) (8(金) U-1 整理 D-12 整理 S-1·2 整理 U-1 確認できたらい履次実施 C-1・2 整理 レー1 確認できたらい履次実施 C-1・2 整理 レー1 確認できたらい履次実施 エーーーーーーーーーーーーーーーーーーーーーーーーーーーーーーーーーーーー
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The plan of restoration of Onahama plant

plants/date	Mar 11	12	13 14 15 16 17 18 19 20 21 22 23 24 25 26	27 28 29 30 31	Apr	1 2 3	4 5	6 7	8	9 10	11 12	13 1	14 15 1	6 17	18	19 20	21 22 23	8 24	25
U-1	T h e	0	cleaning up and tidying investigation repairing(by ourselves) asking for special repair	confirmation of safty of process equipment,facilities,pip eline and utilities		repairing some parts of it e		repairing plant's roads repairing A process J equipment,fa I cilities,pipeli ne and w utilities t		repa		repairing specially ppairing(by ourselves)		resumption of producing according to the order		g to	T h e		
D-1-2	e a r	i n v e	cleaning up and tidying investigation repairing(by ourselves) asking for special repair	confirmation of safty of process equipment,facilities.pip eline and utilities		repairing some parts of it	plant rep pr equip ciliti n	pairing e r's roads w pairing o ocess r oment,fa k es,pipeli s e and c ilities o			repairin, repairing(b	g specially y ourselve	s)			ducing	ption of accordir order	g to	c o m
S-1·2	h q u	s t i	cleaning up and tidying investigation repairing(by ourselves) asking for special repair	confirmation of safty of process equipment,facilities,pip eline and utilities		repairing some parts of it	plant rep pr equit ciliti n	pairing p L's roads pairing e ocess e oment,fa r es,pipeli d e and ilities	repairi specia repairing ourselv	y (by					1	ducing	ption of accordir order	g to	p I e t
C-1·2	k e ,	g a t e	cleaning up and tidying investigation repairing(by ourselves) asking for special repair			resumpt	tion o	f produ	cingj	ust af	fter co	mfirm	nation c	of res	storat	tion of	electric	зy	e r
waste water treatment plant	h e	a n	cleaning up and tidying investigation repairing(by ourselves) asking for special repair	confirmation of safty of process equipment,facilities,pip eline and utilities		repairing some parts of it	plant rep pr equip ciliti	pairing t's roads pairing occess oment,fa es,pipeli e and illities	U 8.2	resur	nption	of pr	oducin	g acc	cordin	ng to th	ne order		e s t o
the overhaul and inspection of boiler required by law	h e a d	d t o	to wait the repair and engineering companies	come back		to wait the companies	o h i n s b b b b	No 1.110000	chine the		IDanies.	1	resump	tion (of no	rmal d	riving		r a t i
electricity	q u a	m a k	to wait electricity to be restored			completed !	c o m P c o com	pleted ! e r w o r	со прал – е з				com	plete	ed!				o n o
public waterworks	r t e r	e t	to wait public waterworks to be rest	ored		wait for restoration	r wi	et for o dration m I e e	that repai				com	plete	ed!				f o u
waterworks for industrial use	o r g n	h e p	to wait waterworks for industrial use to be	restored		wait for restoration		ait for distion	and ensi-				com	plete	ed !				r P
fuel	i z d	a I	to wait the delivery of fuel to be rest	ored		wait for restoration	e r r rost	eit for Coration	e e .				comp	leted	1!				a n t

We intended to resume our production according to the above plan from Mar.14.



The explosion of Fukushima 1st nuclear power plant occurred.

Tracks did not come to deliver something in our area because they thought that the radiation substances would cover around here at that time.



We could not get foods, gasoline and other daily necessities.

We couldn't only go to work but also live.

So, we kept our stuff stay their home.

The president, the manager of the headquarter of the restoration of the plant ,and executive stuffs only ensured the plant safety , the live of activated sludge process ,and waited restoration of electricity, public water service and water for industrial use , with considering the situation of nuclear power plant.

Of course, the member of the department of sales and development explained situation of our plant and how long time to resume to produce, and did the following activity.

To appeal the safety of Iwaki city
To confirm the order that clients would be able to
To adjust delivery time of the orders that we already got

We acted to work quickly and hardly after resumption.

In Tokyo, we got some foods, and so the member of the department of sales and development, delivered them to our plant.

We could only act like that one week after the earthquake.

In that period, public utilities were being restored.

◆ electricity→restoration at Mar.19



Electricity
resumed the
fastest of all.

We confirmed it in the presence of the Tohoku Electrical Safety Inspection Association not to leak the electricity. \Rightarrow to complete one of 4 points \Rightarrow resumption of waste water treatment facility \Rightarrow to complete No.4 point.

We conducted electricity to every plants and facilities from Mar.22.

•At that time, about the products that made by using only electricity, we could confirm that making process and could make them \Rightarrow We could restart to produce something by only using electricity. \Rightarrow To complete No.2 point.

•We could communicate with Tokyo branch office.

We got electricity again and could communicate with another and could use machines that it is necessary to resume,

From Mar.21, the stuffs that could came to our plant, went to work and put breakages and falling objects away and repaired utilities and equipment.

And we could contact some companies that resume plant by using specialized machines.

Especially, about investigation of utilities of plant,

That companies delayed and so, we investigated them by ourselves and repaired as well as possible. We could repair almost utilities by ourselves.

⇒To complete No.1 point

The companies that escaped from the explosion of the nuclear power plant ,came back Iwaki city from Mar.21,and so, public utilities were resumed more and more.

♦Waterworks→restoration at Mar.28



Waterworks were restored according to the previously plan.

- Then, we could fill the rectors with water and test the resumption of driving.
 - ⇒To complete some parts of
- No.3 point
- ⇒To complete some parts of No.2 point
- •We could use laboratory facilities.

♦ water for industrial use—The plan for restoration from April.4 to 8



Water for industrial use were delayed.

- We could pour water into condensers and get water to be boiled and to be refluxed. And so, we could dream the restoration of our plant.
- ⇒To complete all part of No.3 point, and at the same time,
 - ⇒To complete important part of No.2 point, and We could restart to produce.

About restoration work and constructions for repairs...

About paving work by concrete and asphalt, we decided not to order them to big plant engineering company and to order local small and medium companies in Iwaki city.

The situation for restoration : 1





The situation for restoration : 2





Although all facilities and equipment of our plant have not completed in late March, we assumed the following stories.

- Waterworks for industrial use→to Apr.8
- •Kerosene \rightarrow to get it from other prefecture \rightarrow to Apr.5
- Final check of facilities and equipment—to Apr.15
- to get all materials that might not be supplied \rightarrow Apr.8

To assume all above points,

We aimed to restart the production from Apr.18.

Public waterworks were restored according to previously plan, and we waited to get only waterworks for industrial use in order to produce...

but, at Apr 11 and 12, the day that the restoration were almost completed...

We had a big earthquake, "aftershock", as seismic intensity 6 earthquake, again Those were inland Earthquakes. In Iwaki city, we had bigger earthquake than 3.11.Of course, we had to make our activity start again.

But,

We had no time to spook and got the previous plan to be changed quickly.

The plan of restoration of Onahama plant (because of the after shock)

plants/date	Mar	11 12	13 14 15 16 17 18 1	20 21 22 23 24 25 26 27 28 29 30 31	Apr 1 2 3 4 5 6 7 8 9	10 11	12 13 14	15 16 17 18 19 20 21 22 23 24	25 26 27 28 29 30 May 1		
U—1		T h e t o	to stay our home	cleaning up and tidying investigation repairing(by ourselves)	repairing some repairing plant's roads speci- parts of it oursel	ally ig(by	c c l l e e a a n	repairing specially repairing(by ourselves)	resumption some parts of the plant by restoration of the waterworks and repairing		
D-1·2		e a i r n t v	to stay our home	cleaning up and tidying investigation repairing(by ourselves)	repairing some repairing plant's reads repair parts of it repairing plant's reads repair oursel	f ally g(by	f n n t g g e u u	repairing specially repairing(by ourselves)	resumption some parts of the plant by restoration of the waterworks and repairing M		
S-1·2		h e q s u t a i	to stay our home	cleaning up and tidying investigation repairing(by ourselves) procurment of material	repairing some repairing plant's roads repair parts of it oursel	ves) D	s h a a n n O d d	repairing specially start to gather ma repairing(by ourselves)	iterials again e t		
C-1·2		k g e a , t	to stay our home	cleaning up and tidying investigation repairing(by ourselves) procurment of material	resumption of producing	c k",	C k t t d d , y y	repairing specially repairing(by ourselves) ^{resump}	tion of normal driving r e		
waste water treatment plant	I	h e a n	cleaning up and tidying, di for emergency	cleaning up and tidying investigation repairing(by ourselves) resumption of driving some parts of it	cleaning up and tidying investigation repaining by ourselve) resumption of driving some parts of it	of nal ing S		resumption of normal driving			
the overhaul and inspection of boiler required by law		h d e a t d o	to wait for the repu	ir and engineering companies coming back	to wait for the repair and engineering companies doming (e i s m	e a a i i i s n n m	resumption of norm	nal driving t		
electricity		q m u a a k	to wait electricity to be restored	completed ! resumption of normal driving	completed !	i c	I C I I N N V V	to wait electricity to comple be restored	ted !		
public waterworks		re t et rh	to wait public we	terworks to be restored completed !	completed !	n t e n	n e e t s s t t e i i n g g	te sel polici administra (c.b. rational	^{mpleted} ! O		
waterworks for industrial use		o e r g p n a	to wait water	orks for industrial use to be restored	to wait waterworks for industrial use be restored	s i t y	saa it too ynn	to wait waterworks for industrial use to be restored	completed ! P		
fuel		i I z n e d	to wait t	e delivery of fuel to be restored	completed !	6	6 a a g g a a i i n n	completed !	a n t		

We considered whether we were good or not to get our plant to be restored as before, because we were during shutdown for a long time.

We decided to change one reactor at this opportunity in order to raise our production capacity. What is called, all's grist that comes to his mill. About restoration after Apr.11,12 earthquakes,

Activities for restoration against Mar.11 earthquake were being achieved. And so, the restoration against this new earthquake were being forward than we had thought.

⇒To complete some part of No.3 point, at the same time, we started to investigate utilities and process equipment.

 \Rightarrow To complete No.1&2 points of all.

And...

Waterworks for industrial use were planed to connect to our plant at Apr.25 at last,

to complete No.3 point finally,

After we confirmed that the waterworks were restored, we got some part of the production line to be restarted.

⇒To complete all points for the restoration of our plant!!!

We got administrative inspection for the change of reactor to be finished at May.10.

At May.11, two menthes after the earthquake,

Complete restoration of our plant

is achieved!!

The actual history of the plan of restoration of Onahama plant

plants/date	Mar 11	12	13 14 15 16 17 18 19 20	21 22 23 24 25 26 27 28 29 30 31 A	or 1 2 3	4 5 6 7 1	8 9 10	11	12	13	14	15 16 17 18 19 20 21 22 23 24 25 26 27 28 <mark>29</mark> 30 M	ay 1 2 3 4 5 6 7 8 9 10	11
U-1	T h e	t	to stay our home	cleaning up and tidying investigation repairing(by ourselves)	repairing som parts of it	^e repairing plant's road	repairing specially repairing(by ourselves)	" a	" a	c I e a n	c I e a n	repairing specially repairing(by ourselves) some parts of the plant by restoration	resumption some parts of the	T h e
D-1·2	e a r	i n	to stay our home	cleaning up and tidying investigation repairing(by ourselves)	repairing som parts of it	e repairing plant's road	repairing specially repairing(by ourselves)	f t e	f t e	i n g u	i n g u	repairing specially and repairing by ourselves)	plant repairig	c o m
S-1+2	h q u	v e s t	to stay our home	cleaning up and tidying investigation repairing(by ourselves) procurment of material	repairing som parts of it	e repairing plant's roadi	repairing specially repairing(by ourselves)	r s h o c	r s h o c	p a n d	p a n d	repairing specially repairing by ourselves)	resumption of normal driving	p I e t
C-1·2	a k e	r g a t e	to stay our home	cleaning up and tidying investigation repairing(by ourselves)	re	sumption of producin	ıg	י יאס י	い * ・ ・	t i d y i	t i d y i	repairing specially repairing(by ourselves)	resumption of normal driving	e r e
waste water treatment plant	h e	a n	cleaning up and tidying, driving for emergency	cleaning up and tidying investigation repairing(by ourselves) resumption of driving some parts of it	cleaning up and tidying investigation repairing(by ourselves) resumption of driving some parts of it	repairing plant's road: f	resump tion of normal driving	a s s	a s s	n g a g	n g a	resumption of normal driving	resumption of normal driving	s t o
the overhaul and inspection of boiler required by law	h e a d	d t o	to wait for the repair and	l engineering companies coming back	to wait for the r	epaix and angineering company		e i s m:	e i s m:			resumption of normal driving	resumption of normal driving	a t i
electricity	q u a	m a k	to wait electricity to be comple restored	eted! resumption of normal driving		completed !		i c	i c			to wait electricity to completed ! be restored	completed !	o n o
public waterworks	r t e r	e t h	to wait public (waterworks to be restored	water	rait public works to be astored	omplete d !	n t e n	n t e n	e stig	e stig	completed !	completed !	f o u
waterworks for industrial use	o r g n	e p a	to wait waterworks	for industrial use to be restored		vaterworks for ir se to be restore		s i t y	s i t y	a i o n	a t o n	to wait waterworks for industrial was to be mattered . completed !	completed !	r P
fuel	i z d	l n	to wait the deli	ivery of fuel to be restored		completed !		6	6	a g a i n	a g a i n	completed !	completed !	a n t