Annexures

Annex-C1

Sample Warning Letter

DAEWOO E&C

36

SAFETY VIOLATOR WARNING LETTER

Name: Muhammad Khurshead.	**Signature:**
Section: Construction.	**Job Title:** Labor.
ID No: 42203-3082302-1	**Company:** Daewoo E&C
Date: 28 July 2013	**Time:** 8:50AM

Warning Reason(s)	**Tick here**
1. Fall Protection Violation	
2. PPE Violation (Eye Goggle, Safety Shoes, Hard Hat).	✓
3. Crossing Barriers.	
4. Unsafe behavior.	✓
5. Using Faulty Tools/ Equipment.	
6. Failure to Supervise.	
7. Operating without Authorization.	
8. Refusal to Show I.D. Card	
9. Others	

Observation Detail: He was working in the slope without body harness while body harness were provided to them.

Name	Signature	Position	Recommendations
Addil Yusaf		HSE Asst. Engr	
Mr. AftabAlam		Manage HSE	

Distribution: HSE Manager, Copy to Violator

Pakistan Patrind Hydropowerproject.

Annex-D1

Gas Concentration (H_2S, LEL, O_2)

GAS TEST RECORD

Location : Adit Tunnel And HRT, Power House Area

P1 : Inlet of the adit tunnel.

P2 : Inlet of HRT.

P3 : Middle of HRT.

P4: Near The Face Of Tunnel

Marking

DATE:		17-09-2013 GAS TEST RESULT &ALLOWABLE LIMIT							DAILY VALIDATION		
TIME	STATION	LEL	H2S	CO2	NO2	NO	Co	O2	Area Gas Tester	HSE Manager.	O.E: (Rep)
		0-10%	0-10 PPM	0-5000PPM	0-5PPM	0-35PPM	0-100PPM	19.5%-21.5%	SIGN	SIGN	SIGN
07:40PM	P1	0	0	800	0-3	0-4	44	20:9			
7:44	P2	0	0	1200	0-2	0-3	52	20:9			
7:48	P3	0	0	500	0-2	0-3	35	20:9			
7:52	P4	0	0	400	0-1	0-2	16	20:9			

ACTIVITY:

marking work

11:50PM	P1	0	0	800	0-2	0-3	40	20:9			
11:54PM	P2	0	0	700	0-1	0-2	28	20:9			
11:56	P3	0	0	600	0-0	0-1	20	20:9			
12:00	P4	0	0	500	0-0	0-0	12	20:9			

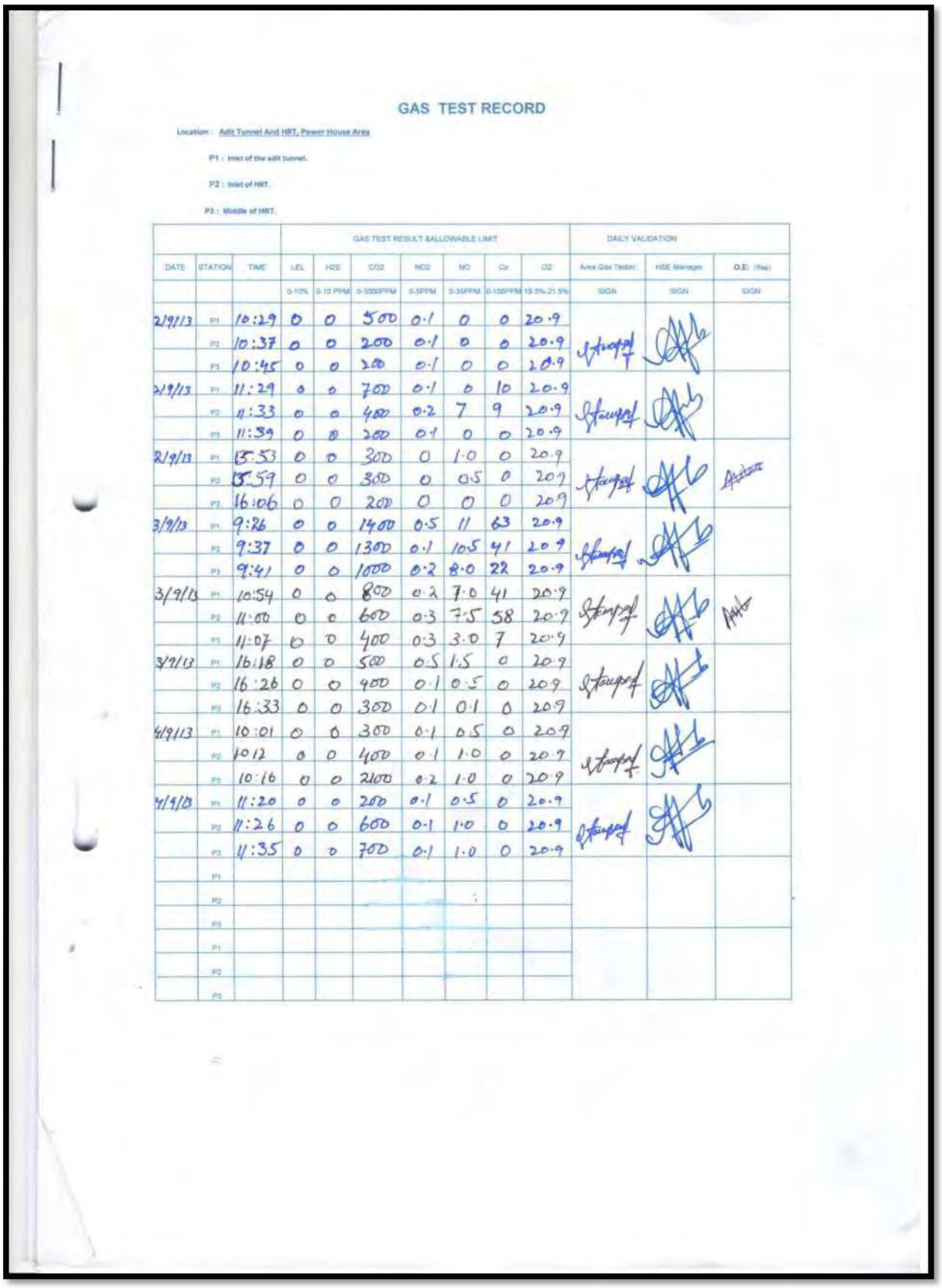
ACTIVITY:

18.09.2013 Drilling work

Drilling

~~18:09~~ 5:10	P1	0	0	500	0-2	0-2	20	20:9			
03:15	P2	0	0	400	0-1	0-1	14	20:9			
03:20	P3	0	0	400	0-0	0-0	0	20:9			
03:24	P4	0	0	300	0-0	0-0	0	20:9			

ACTIVITY:



GAS TEST RECORD

Location : Adit Tunnel And HRT, Power House Area

P1 : Inlet of the adit tunnel.

P2 : Inlet of HRT.

P3 : Middle of HRT.

			GAS TEST RESULT &ALLOWABLE LIMIT							DAILY VALIDATION		
DATE	STATION	TIME	LEL	H2S	CO2	NO2	NO	Cl2	O2	Area Gas Tester:	HSE Manager	O.E: (Rep)
			0-10%	0-10 PPM	0-5000PPM	0-5PPM	0-35PPM	0-100PPM	19.5%-21.5%	SIGN	SIGN	SIGN
2/9/13	P1	10:29	0	0	500	0·1	0	0	20·9			
	P2	10:37	0	0	200	0·1	0	0	20·9			
	P3	10:45	0	0	200	0·1	0	0	20·9			
2/9/13	P1	11:29	0	0	700	0·1	0	10	20·9			
	P2	11:33	0	0	400	0·2	7	9	20·9			
	P3	11:39	0	0	200	0·1	0	0	20·9			
2/9/13	P1	15:53	0	0	300	0	1·0	0	20·9			
	P2	15:59	0	0	300	0	0·5	0	20·9			
	P3	16:06	0	0	200	0	0	0	20·9			
3/9/13	P1	9:26	0	0	1400	0·5	11	63	20·9			
	P2	9:37	0	0	1300	0·1	10·5	41	20·9			
	P3	9:41	0	0	1000	0·2	8·0	22	20·9			
3/9/13	P1	10:54	0	0	800	0·2	7·0	41	20·9			
	P2	11:00	0	0	600	0·3	7·5	58	20·9			
	P3	11:07	0	0	400	0·3	3·0	7	20·9			
3/9/13	P1	16:18	0	0	500	0·5	1·5	0	20·9			
	P2	16:26	0	0	400	0·1	0·5	0	20·9			
	P3	16:33	0	0	300	0·1	0·1	0	20·9			
4/9/13	P1	10:01	0	0	300	0·1	0·5	0	20·9			
	P2	10:12	0	0	400	0·1	1·0	0	20·9			
	P3	10:16	0	0	2100	0·2	1·0	0	20·9			
4/9/13	P1	11:20	0	0	200	0·1	0·5	0	20·9			
	P2	11:26	0	0	600	0·1	1·0	0	20·9			
	P3	11:35	0	0	700	0·1	1·0	0	20·9			
	P1											
	P2											
	P3											
	P1											
	P2											
	P3											

GAS TEST RECORD

Location: Adit Tunnel and HRT,Power House Area NIGHT SHIFT

P1: Inlet Adit tunnel
P2: Inlet of HRT
P3:Middle of HRT

			Gas Test Result&Allowable Limit				Daily Validation		
Date	Station	Time	LEL	H2S	CO	O2	Gas Tester	HSE Manager	O.E. (Rep.)
			0-10%	0-10PPM	0-50PPM	19.15-21.5%	Sign	Sign	Sign
17/07/13	P1	12:43	0	0	6	20.9			
	P2	12:46	0	0	10	20.9			
	P3	12:55	0	0	22	20.9			
18/07/20	P1	10:36	0	0	22	20.9			
	P2	10:40	0	0	26	20.9			
	P3	10:51	0	0	45	20.9			
19/07/200	P1	11:25	0	0	0	20.9			
	P2	11:27	0	0	0	20.9			
	P3	11:30	0	0	0	20.9			
20/07/203	P1	11:10	0	0	0	20.9			
	P2	11:13	0	0	0	20.9			
	P3	11:19	0	0	0	20.9			
21/07/13	P1	11:23	0	0	28	20.9			
	P2	11:26	0	0	21	20.9			
	P3	11:30	0	0	34	20.9			
23/07/13	P1	12:00	0	0	0	20.9			
	P2	12:03	0	0	0	20.9			
	P3	12:08	0	0	0	20.9			
24/07/13	P1	10:38	0	0	6	20.9			
	P2	10:38	0	0	0	20.9			
	P3	10:7	0	0	0	20.9			
25/07/2013	P1	10:58	0	0	16	20.9			
	P2	11:02	0	0	10	20.9			
	P3	11:05	0	0	0	20.9			
26/07/20	P1	12:60	0	0	17	20.9			
	P2	12:62	0	0	20	20.9			
	P3	12:65	0	0	05	20.9			
27/07/2013	P1	09:30	0	0	0	20.9			
	P2	09:33	0	0	15	20.9			
	P3	09:36	0	0	0	20.9			
28/07/200	P1	10:30	0	0	0	20.9			
	P2	10:33	0	0	0	20.9			
	P3	10:37	0	0	0	20.9			

Annex-D2

Dust Test, CO_2, N_2O, NO_2

Night

DUST TEST RECORD

Location : **Adit Tunnel And HRT, Power House Area**

P1 : Inlet of the adit tunnel.
P2 : Ini Middle of HRT.
P3 : Near the face of tunnel.

DATE: 11-09-13		GAS TEST RESULT &ALLOWABLE LIMIT				DAILY VALIDATION			
TIME	STATION	PM1	PM2.5	PM4	PM10	Area Gas Teste	HSE Manager.	O.E: (Rep)	
						SIGN	SIGN	SIGN	ACTIVITY
10:05AM	P1	21.2	487.2	1339.7	2189.2	HAROON AKHTAR			Shaleacting
10:10PM	P2	26.3	204.7	345.0	474.1				
10:20PM	P3	15.9	80.9	150.5	248.5				

Activity Inside The Tunnel:

Date 12-09-13

3:55am	P1	22.1	155.4	726.4	2038.8	HAROON AKHTAR			Blasting
4:00am	P2	29.2	222	36.6	47.5				
4:10am	P3	10.2	24.6	33.8	44.1				

Activity Inside The Tunnel:

	P1								
	P2								
	P3								

Annex-D3

(HIRAC)

DAEWOO E&C

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Mobile Elevated Work Platform (Charging Cart)

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Mobile Elevated Work Platform (Charging Car)	MEWP Supervisor/in charge	Collision with other vehicular traffic	Staff working	3	3	9		Barriers or cones or fencing will be placed around machine operating area when necessary. Ensure adequate clearance between equipment & use the signaler for narrow spaces. Machine be driven by competent perso
02			Contact with live overhead wires		3	5	15	Medium Risk	Machine must only be used on suitable surfaces and operatives must be in possession of necessary information etc. to enable safe
03			Fall from cart		2	5	10		All operatives will wear safety harness which will be slipped onto cage, as necessary.
04			Material falling from cart		2	2	4	Tolerable Risk	Less Material should be kept on MEWP & toe boards are used to avoid failing material from MEWP.
05			Entanglement of person in moving parts of MEWP		4	4	16	High Risk	Guards and fencing on moving parts must always be in place.
06			Fire		3	4	12	Medium Risk	Do not recharge the machine while smoking or near the open flame.

DAEWOO E&C

07			overturning		3	4	12	Medium Risk	Machine must only be used on suitable surfaces and operatives must be in possession of necessary information (manual)
08			Oil Spillage		2	3	6		Enable safe operation of machines. Proper maintenance to avoid any oil spillage

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

DAEWOO E&C

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Transportation of Heavy Items

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Transportation of heavy material	Area Supervisor/in charge	overturning	Staff working	4	5	20	High Risk	Ensure ground & roads are prepared properly, stable &able to support the load carrying vehicles before commencement. Vehicle be driven by competent person
02			Accidents		5	5	25	High Risk	Implementation of safe driving policy at site, Motion alarms & mirrors should be fitted. Warning signs located around the workplace.
03			Contact with other vehicles		2	5	10	Low Risk	Ensure Adequate clearance between equipment. Motion alarms mirrors & beacon lights should be fitted.
04			Contact with overhead		3	5	15	Medium Risk	Cranes must not operate within 6m of overhead power cables when boom is fully extended.
05			Unauthorized operation of Machine		5	4	20	High Risk	Authorized persons are allowed to operate & the doors of the cabin be properly locked and return key to in charge of heavy equipment after the completion of job.

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

DAEWOO E&C

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Excavation At Power House

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Excavation At Power House	Area Supervisor/in charge	Noise	Staff Working	3	3	9	Low Risk	Provision of ear plugs & ear Muffs, Monitoring of Noise according to IFC standards.
02			Accidents due to movement of Vehicles		3	5	15	Medium Risk	Frequent Training sessions for the drivers, Provision of banksman , Provision of PPE`s .
03			Dust & emissions		3	3	9	Low Risk	Regular water sprinkling to avoid dust emissions. Dust monitoring by using dust analyzer of different particulate sizes. Provision of PPE`s.
04			Loss of vegetation		2	2	4	Tolerable Risk	Avoid unnecessary cutting of trees. Implementation of tree plantation.
05			Slips & Falls		4	5	20	High Risk	Provision of Safety shoes & harness. Training sessions for workers

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

DAEWOO E&C

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Blasting in Power House

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Blasting in Power House	Blasting Supervisor/In charge	Noise & Vibration	Staff working	3	3	9		Provision of ear plugs & ear Muffs, Monitoring of Noise & vibration according to IFC standards. one ton sand bags & conveyer belts used to reduce the impact of noise & vibration
02			Charging of Explosive material		4	5	20	High Risk	Authorized and trained persons do charging & holes for blasting. Necessary PPE's provision to the workers.
03			Area Evacuation		3	5	15	Medium Risk	Adjacent Villages should be informed before blasting & area needs to be evacuated (no human or cattle's of villagers)
04			Unauthorized Entry		2	5	15	Medium Risk	No unauthorized person from any department allowed entering the area. Sign boards of no unauthorized entry should be installed.
05			Unauthorized Blasting operator		4	4	16	High Risk	Training sessions for the blasting operator & blasting staff. Supervision of blasting operation.

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL
HIRAC
Job Description: Risks for Residential Area

DAEWOO E&C

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Electrification	M & E incharge	Electric Shock	Community & Pedestrians	3	3	9		Take care to keep wire untangled and free from under feet
			Slip/trip/fall		4	3	12	Medium Risk	Implementation and monitoring of Electric Safety Plan Provision of circuit brakers Provision of trainings & necessary PPE
			Fire		4	4	16		Provision of mandatory PPEs Implementation and monitoring of Electrical Safety Plan, Provision of training, Provision of PPE
02	Blasting at power house & HRT	Area supervisor	Noise/Vibration		2	5	10		Community aware by using high volume sirens before blasting. one ton sand bags & conveyer belts used to reduce the impact of noise & vibration.
			Area Evacuation		4	4	16		Adjacent Villages should be informed before blasting & area needs to be evacuated (no human or cattle's of villagers)
03	Excavations	Area Supervisor	Falling hazard/excavation collapse	Community & Pedestrians	4	5	20		Excavations should be barricaded & supported to avoid collapse , Safety awareness sign boards for public awareness

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Risks for Residential Area

DAEWOO E&C

04	Dust & Vehicle emissions	HSE Engineer/Supervisors	Asthima/dust allergy /Respiratory problem	Community & Pedestrians	5	3	15	Medium Risk	Access roads & Public roads should be sprinkled frequently during the day to suppress the dust. Vehicles needs to be inspected monthly to ensure emissions.
05	Excessive Heavy Vehicle Movement	HSE Engineer/signalman	Vehicle collision/Pedestrians Hit by Vehicle		4	5	20	High Risk	Pedestrians Pathways for Public & workers, HSE Signalman to control the traffic flow .

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

DAEWOO E&C

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Excavation At Power House

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Excavation At Power House	Area Supervisor/in charge	Noise	Staff Working	3	3	9	Low Risk	Provision of ear plugs & ear Muffs, Monitoring of Noise according to IFC standards.
02			Accidents due to movement of Vehicles		3	5	15	Medium Risk	Frequent Training sessions for the drivers, Provision of banksman , Provision of PPE`s .
03			Dust & emissions		3	3	9	Low Risk	Regular water sprinkling to avoid dust emissions. Dust monitoring by using dust analyzer of different particulate sizes. Provision of PPE`s.
04			Loss of vegetation		2	2	4	Tolerable Risk	Avoid unnecessary cutting of trees. Implementation of tree plantation.
05			Slips & Falls		4	5	20	High Risk	Provision of Safety shoes & harness. Training sessions for workers

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Risks for Residential Area

DAEWOO E&C

04	Dust & Vehicle emissions	HSE Engineer/Supervisors	Asthima/dust allergy /Respiratory problem	Community & Pedestrians	5	3	15	Medium Risk	Access roads & Public roads should be sprinkled frequently during the day to suppress the dust. Vehicles needs to be inspected monthly to ensure emissions.
05	Excessive Heavy Vehicle Movement	HSE Engineer/signalman	Vehicle collision/Pedestrians Hit by Vehicle		4	5	20	High Risk	Pedestrians Pathways for Public & workers, HSE Signalman to control the traffic flow .

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL
HIRAC
Job Description: Use Of Dump Trucks

DAEWOO E&C

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Working With Dumper	Heavy Equipment Supervisor/in charge	Overturning	Driver / Banksman /Staff working	3	4	12	Medium Risk	Ensure ground is prepared properly, stable and Able to support dumper before commencement. Keep dumper at a safe distance from Excavations or trenches. Dump truck is driven by competent person.
02			Collision with other vehicles		4	5	20	High Risk	Ensure adequate clearance between equipment. Motion alarms, mirrors and beacon lights should be fitte
03			Pedestrians & workers endangered by dumper		3	5	15	Medium Risk	Bystandars to be kept well clear all the time, Motion alarms, mirrors and beacon lights should be fitted. Passengers will not be carried on dumper unless seat and handholds are fitte
04			Contact with live overhead cables		4	5	20	High Risk	Dumper must not operate within 6m of overhead power cables when boom is fully extende
05			Unauthorized operation of machine		3	4	12	Medium Risk	Authorized persons are allowed to operate & the doors of the cabin be properly locked and return key to In charge Heavy Equipment.

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL
HIRAC
Job Description: Use Of Excavators

DAEWOO E&C

Sr.	Activities	Responsibility	Hazard Identified	People at Risk	Likelihood/ Probability	Severity	RPN	Priority Level	Control
01	Working With Excavators	Heavy Equipment Supervisor/In charge	Working on soft ground , tip over	Driver / Banksman /Staff working	5	4	20	[illegible]	Ensure ground is prepared properly, stable and Able to support dumper before commencement. Keep dumper at a safe distance from Excavations or trenches. Dump truck is driven by competent person.
02			Contact with other vehicles		4	5	20	[illegible]	Ensure adequate clearance between equipment. Motion alarms, mirrors and beacon lights should be fitted
03			Pedestrians & workers endangered by dumper		3	5	15	Medium Risk	Bystanders to be kept well clear all the time, Motion alarms, mirrors and beacon lights should be fitted. Passengers will not be carried on dumper unless seat and handholds are fitted
04			Contact with live overhead cables		4	5	20	[illegible]	Dumper must not operate within 6m of overhead power cables when boom is fully extended
05			Unauthorized operation of machine		3	4	12	Medium Risk	Authorized persons are allowed to operate & the doors of the cabin be properly locked and return key to In charge Heavy Equipment.

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL
HIRAC
Job Description: Use Of Dump Trucks

DAEWOO E&C

06			Noise		3	2	4	Tolerable Risk	Proper maintenance and conduct noise analysis to measure the noise
07	Working With Dumper	Heavy Equipment Supervisor/in charge	Fire	Driver / Banksman /Staff working	2	5	10		Do not Refuel the machine while smoking or near the open flame
08			Oil spillage		2	2	4	Tolerable Risk	Proper maintenance to Avoid any oil. Ensure the use of dip trays during oil change or any maintenance.
09			Vibration		2	3	6		Machine Operated stationary, padded Suspension seats.
10			Hot Temperature		3	4	12	Medium Risk	Fully enclosed cabin with air condition & inspection of Engine to avoid over heating .
11			Dust & Smoke emission		3	3	9		Maintained emission system of each dump truck & frequent monitoring & Dust suppression.

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL
HIRAC
Job Description: Use Of Excavators

DAEWOO E&C

06			Noise		3	1	3	Tolerable Risk	Proper maintenance and conduct noise analysis to measure the noise
07	Working With Excavator	Heavy Equipment Supervisor/in charge	Fire	Driver / Banksman /Staff working	2	5	10		Do not Refuel the machine while smoking or near the open flame
08			Oil spillage		2	2	4	Tolerable Risk	Proper maintenance to Avoid any oil. Ensure the use of dip trays during oil change or any maintenance.
09			Vibration		2	3	6		Machine Operated stationary, padded Suspension seats.
10			Hot Temperature		3	4	12	Medium Risk	Fully enclosed cabin with air condition & Inspection of Engine to avoid over heating .
11			Dust & Smoke emission		3	3	9		Maintained emission system of each dump truck & frequent monitoring & Dust suppression.
12			Opening the cylinders without bleeding pressure		3	5	15	Medium Risk	Implement manufacturers instruction

HAZARD IDENTIFIED, RISK ASSESSMENT, CONTROL

HIRAC

Job Description: Use Of Excavators

DAEWOO E&C

13			Open the radiator cap when hot		2	2	4	Low Risk	Always use appropriate maintenance practice
14	Working with Excavator	Heavy Equipment Supervisor/In charge	Stand on engine hood	Driver / Banksman /Staff working	2	2	4	Low Risk	Never Stand on Engine hood.
15			Slabbig of counter weight		3	4	12	Medium Risk	Unauthorized modification of counterweight is not permitted

HSE Engineer
Haroon Akhtar

HSE Manager
Chung Myung Hun

Annex-D4

(Nearmiss)

It's Possible
DAEWOO E&C

INITIAL INCIDENT REPORT

Name of Immediate Supervisor: Mr Addil yousaf

1. Date : 15 Aug, 2013	**2. Time : 10:30 am**	**3. Location : Access Road near the Adit Tunnel**
4. Type of Incident : Near Miss		**5. Nationality :** AJK (Pakistan)
6. Involved Person : **Kyung Dong Staff**	**7. Job Title:** Mucking	**8. ID No.**

9. Incident Detailed Description :

On August 15, 2013 Kyung dong staff was working in the Adit Tunnel. Mucking activity was on going and limited staff was working that day . Due to the heavy rainfall access road gets blocked due to the land sliding . Workers were working near the adit tunnel .One Dumper Truck was driving on the access road & slided material struck against the dumper. Dumper Truck driver Reversed his truck and no damage was observed . Daewoo HSE Assistant Engineer Mr Addil took an immediate action and gathered the workers at the muster point . No injury was observed as a result of the land sliding . Access road was blocked which was further cleared by the construction department .

10. Witness of the Incident: Kyung Dong Staff & Daewoo HSE Assistant Engineer

11. Immediate Action Taken:

1. The HSE Department took notice about the incident, effected area was barricaded with soft warning tape and a man posted on place to inform and control traffic mobilization. Concerned Construction department informed for immediate rectification

12. Corrective Action to be taken :

- Staff needed to be trained properly in case of land sliding & Steep slopes near the tunnel needs to be stabilized to avoid any serious incident as the workers working near it.
- One high volume emergency siren needs to be installed near the tunnel and power house to warn people in case of any emergency.

REPORTED BY:

Mr. Haroon Akhtar, HSE Engineer

NOTED BY:

Mr. Aftab Alam, HSE Manager

15. What was the injury or illness? - No any harm or injury.
16. What object or substance directly harmed the employee? **Nill**
17. Recommendations and Actions Taken to Prevent Recurrence: • Ensure the stability of the steep slopes before attempting any operation or task which would involve with site workers. In this case, high volume siren is installed near the Adit tunnel to aware the workers & gathered them at the muster point. • Install warning signs such as cones, and/or light barricades to mark the point of the incident and to avoid the recurrence of the same incident. • Disseminate the information about the incident to all workers and the lessons learned from the incident through Tool Box Talks/Meetings.

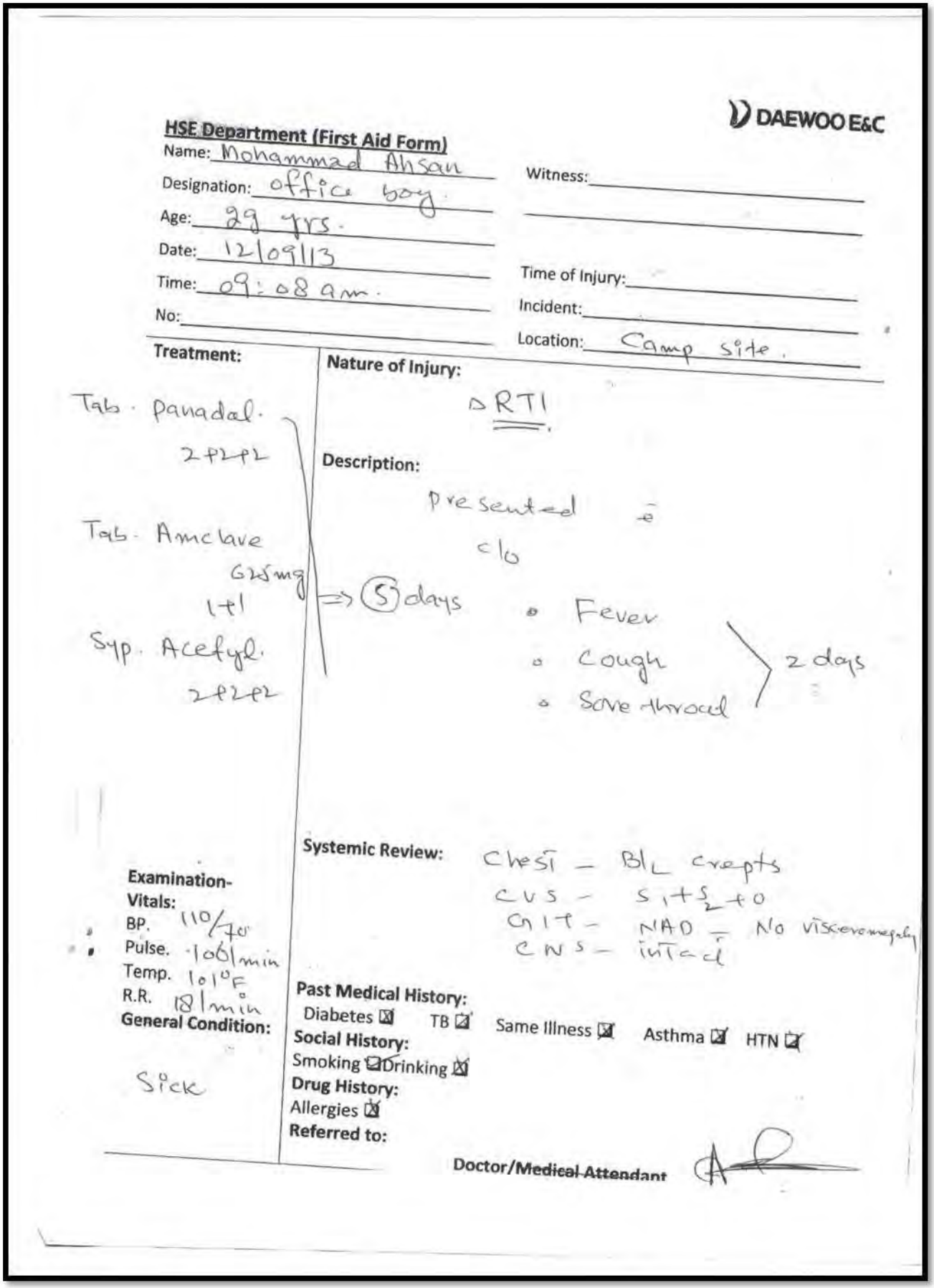
Investigated and Prepared By (HSE Engineer): Haroon Akhtar	**Date/Time:** 15 Aug,2013
Area Manager recommends further investigation by an independent committee : ☐ Yes ☒ No	
Approved By (HSE Manager) : Aftab Alam	**Date/Time:** 15 Aug,2013

Annex-D5

(Medical Treatment Record List and OPD Form)

No.	Name	Age	Date & Time	Occupation	Place of Incident	Medical illness/ Nature of Injury	Description	Treatment Given	Name of Person Making entry
47.	Almas kazmi	27	01:50pm 21/9/13	Mech helper	L.site	APD	Pain epigastrium vomiting	Cap.risek Tab.gravinate	Dr.bilal
48.	Naeem ahmad	30	03:02pm 21/9/13	Electrician	L.site	APD	Pain epigastrium Chest pain	Tab.diclo Tab.movax Cap.risek	Dr.bilal
49.	Saleem	32	04:19pm 21/9/13	Sec.guard	L.site	URTI	Fever GBA Headache	Tab.panadol Tab.levo Syp.acefyl	Dr.bilal
50.	Nisar ahmad	20	08:40am 23/9/13	Labour	L.site	URTI	Fever Headache	Tab.panadol Tab.amclave Syp.acefyl	Dr.bilal
51.	Waheed ahmad	43	09:45am 23/9/13	Office boy	L.site	URTI	Fever Headache	Tab.panadol Tab.erytab	Dr.bilal
52.	M.azam	23	09:48am 23/9/13	Cook helper	L.site	APD	Pain epi Nausea	Cap.risek Tab.gravinate	Dr.bilal
53.	Ammar	24	10:20am 23/9/13	N.W Engg	L.site	Constipation	Constipation	Syp.lilac	Dr.bilal
54.	M.anwar	35	12:30pm 23/9/13	Dumper DVR	L.site	Minor wound	Minor wound on hand	ASD Tab.brufen Tab.amclave	Dr.bilal
55.	Khalid hussain	42	10:00am 24/9/13	DVR	L.site	Itching	Itching on leg	Tab.piriton	Dr.bilal
56.	M.junaid	19	01:10pm 24/9/13	Ex.operator	L.site	URTI	Fever Headache	Tab.panadol Tab.amclave Tab.piriton	Dr.bilal
57.	Own abbas	22	01:14pm 24/9/13	Dumper DVR	L.site	URTI	Fever Headache	Tab.panadol Tab.amclave Tab.piriton	Dr.bilal
58.	Syed rizwan	27	01:35pm 24/9/13	Electrician	L.site	Backache	Backache	In.diclo Tab.nise	Dr.bilal

Doctor/ Medical Attendant:_____ HSE Manager:_____



DAEWOO E&C

HSE Department (First Aid Form)

Name: Mohammad Ahsan

Designation: office boy

Age: 29 yrs.

Date: 12/09/13

Time: 09:08 am.

No:

Witness:

Time of Injury:

Incident:

Location: Camp site.

Treatment:

Tab. panadol. 2+2+2

Tab. Amclave 625mg 1+1

Syp. Acefyl. 2+2+2

Nature of Injury:

RTI

Description:

presented c/o

⇒ (5) days

- Fever
- Cough
- Sore throat

> 2 days

Systemic Review:

Chest – BL crepts

CVS – S_1+S_2+0

GIT – NAD – No visceromegaly

CNS – intact

Examination-

Vitals:

BP. 110/70

Pulse. 106/min

Temp. 101°F

R.R. 18/min

General Condition:

Sick

Past Medical History:

Diabetes ☒ TB ☒ Same Illness ☒ Asthma ☒ HTN ☒

Social History:

Smoking ☑ Drinking ☒

Drug History:

Allergies ☒

Referred to:

Doctor/Medical Attendant

Annex-D6

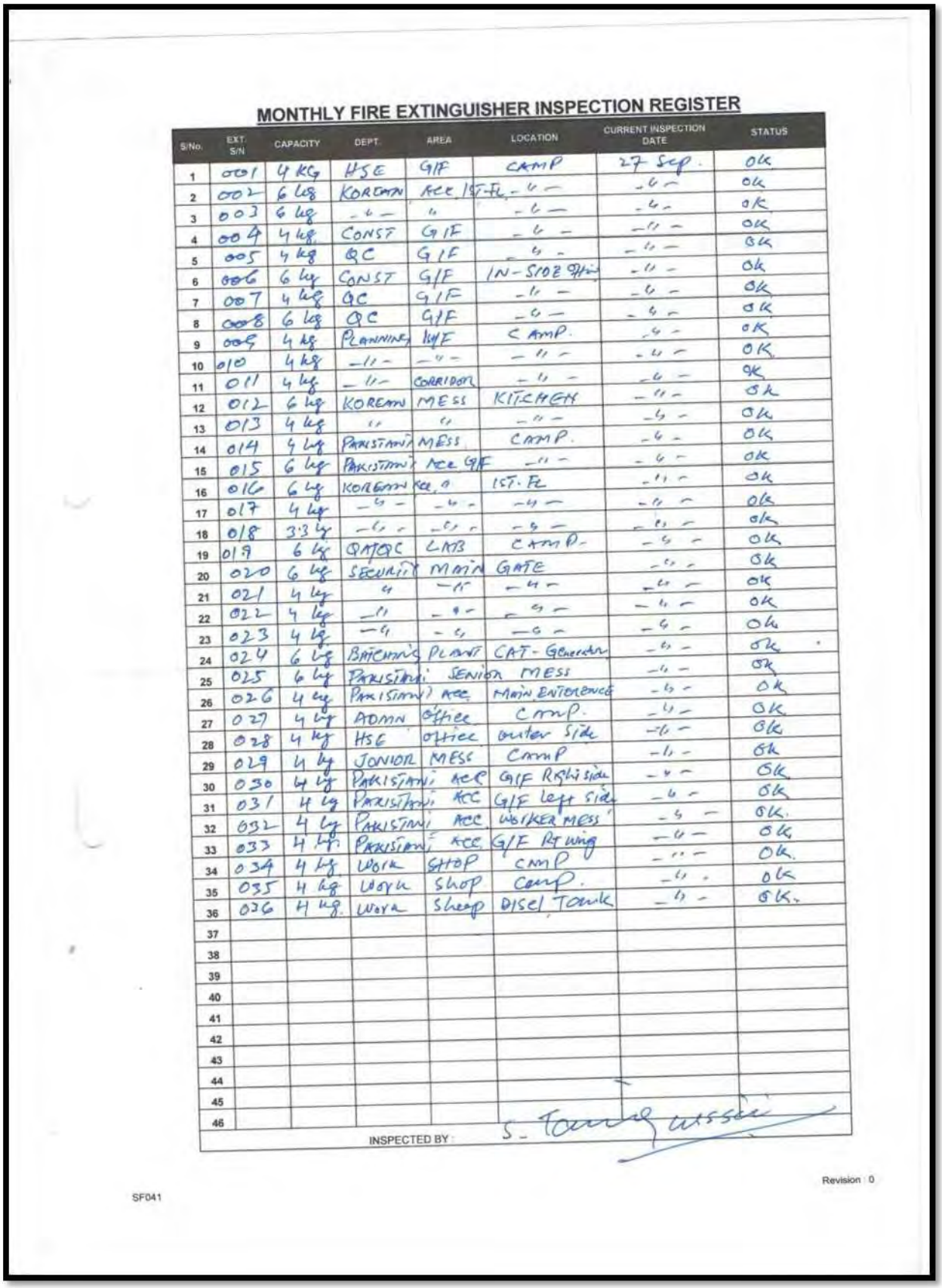
(Inspection Checklists)

MONTHLY FIRE EXTINGUISHER INSPECTION REGISTER

S/No.	EXT. S/N	CAPACITY	DEPT.	AREA	LOCATION	CURRENT INSPECTION DATE	STATUS
1	001	04 KG	HSE/G	OFFICE	CAMP	27 AUG-13	OK
2	002	06 KG	-11-	1ST/F.	-11-	-11-	OK
3	003	06 KG	-11-	1ST F	-11-	-11-	OK
4	004	04 KG	CONSTRUCTION	G/F	-11-	-11-	OK
5	005	04 KG	QC.	GF	-11-	-11-	OK
6	006	06 KG	CONSTRUCTION	GF	INNER SIDE	-11-	OK
7	007	04 KG	QC	INNER SIDE	-11-	-11-	OK
8	008	06 KG	-11-	11-	-11-	-11-	OK
9	009	04 KG	PLANNING	1st FLOOR.		-11-	OK
10	010	04 KG	-11-			-11-	OK
11	011	04 KG	-11-	CORRIDOR		-11-	OK
12	012	06 KG	KOREN	MESS	KITCHEN	-11-	OK
13	013	04 KG	-11-	11-	KITCHEN (IN SIDE	-11-	OK
14	014	04 KG	PAKISTANI	MESS	CENTER SIDE	-11-	OK
15	015	06 KG	PAKISTANI	REC.	G.F	-11-	OK
16	016	06 KG	-11-	-11-	1ST FLOOR	-11-	OK
17	017	04 KG	-11-	-11-	-11-	-11-	OK
18	018	3.3 KG	-11-	-11-	-11-	-11-	OK
19	019	06 KG	QA/QC	LAB		-11-	OK
20	020	06 KG	SECURITY	MAIN GATE		-11-	OK
21	021	04 KG	-11-	-11-	-11-	-11-	OK
22	022	04 KG	-11-	-11-	-11-	-11-	OK
23	023	04 KG	-11-	-11-	-11-	-11-	OK
24	024	06 KG	BATCHING	PLANT	(GEN-CAT-125KV	-11-	OK
25	025	06 KG	~~ADMN OFFICE~~		PAKISTANI OFFICE MESS	-11-	OK
26	026	04 KG	PAKISTANI	REC	(MAIN ENTERANCE)	-11-	OK
27	027	04 KG	ADMN	OFFICE		-11-	OK
28	028	04 KG	HSE	office outer side			OK
29	029	04 KG	LABOR	MESS	CAMP	01 SEP-13	OK
30	030	04 KG	PAKISTANI	REC	G/F RT SIDE		OK
31	031	04 KG	PAKISTANI	REC	G/F LT SIDE		OK
32	032	04 KG	PAKISTANI	REC	WORKERS MESS		OK
33	033	04 KG	PAKISTANI	REC	G/F RT WING	01 Sep-13	OK
34	034	04 KG	WORK	SHOP			OK
35	035	04 KG	WORK	SHOP			OK
36	036	04 KG	DURBAR	SHOP	Diesel	Tank	OK
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							

INSPECTED BY: SYED TARIQ HUSSAIN

SF041 Revision : 0



MONTHLY FIRE EXTINGUISHER INSPECTION REGISTER

S/No.	EXT. S/N	CAPACITY	DEPT.	AREA	LOCATION	CURRENT INSPECTION DATE	STATUS
1	001	4 KG	HSE	G/F	CAMP	27 Sep.	Ok
2	002	6 kg	KOREAN	ACC. 1ST. FL.	-"-	-"-	Ok
3	003	6 kg	-"-	-"-	-"-	-"-	OK
4	004	4 kg	CONST	G/F	-"-	-"-	OK
5	005	4 kg	QC	G/F	-"-	-"-	OK
6	006	6 kg	CONST	G/F	IN-SIDE Office	-"-	Ok
7	007	4 kg	QC	G/F	-"-	-"-	OK
8	008	6 kg	QC	G/F	-"-	-"-	OK
9	009	4 kg	PLANNING	1ST F	CAMP.	-"-	OK
10	010	4 kg	-"-	-"-	-"-	-"-	OK
11	011	4 kg	-"-	CORRIDOR	-"-	-"-	OK
12	012	6 kg	KOREAN	MESS	KITCHEN	-"-	OK
13	013	4 kg	-"-	-"-	-"-	-"-	OK
14	014	4 kg	PAKISTANI	MESS	CAMP.	-"-	OK
15	015	6 kg	PAKISTANI	ACC G/F	-"-	-"-	OK
16	016	6 kg	KOREAN	ACC. 0	1ST. FL	-"-	OK
17	017	4 kg	-"-	-"-	-"-	-"-	OK
18	018	3.3 kg	-"-	-"-	-"-	-"-	OK
19	019	6 kg	QA/QC	LAB	CAMP.	-"-	OK
20	020	6 kg	SECURITY	MAIN	GATE	-"-	OK
21	021	4 kg	"	-"-	-"-	-"-	OK
22	022	4 kg	-"-	-"-	-"-	-"-	OK
23	023	4 kg	-"-	-"-	-"-	-"-	OK
24	024	6 kg	BATCHING	PLANT	CAT - Generator	-"-	OK
25	025	6 kg	PAKISTANI	SENIOR	MESS	-"-	OK
26	026	4 kg	PAKISTANI	ACC.	MAIN ENTERENCE	-"-	OK
27	027	4 kg	ADMN	Office	Camp.	-"-	OK
28	028	4 kg	HSE	Office	outer Side	-"-	OK
29	029	4 kg	JUNIOR	MESS	Camp	-"-	OK
30	030	4 kg	PAKISTANI	ACC	G/F Right side	-"-	OK
31	031	4 kg	PAKISTANI	ACC	G/F left side	-"-	OK
32	032	4 kg	PAKISTANI	ACC	WORKER MESS	-"-	OK
33	033	4 kg	PAKISTANI	ACC	G/F Rt wing	-"-	OK
34	034	4 kg	Work	SHOP	CAMP	-"-	Ok
35	035	4 kg	Work	Shop	Camp.	-"-	Ok
36	036	4 kg	Work	Shop	DISEL Tank	-"-	OK.
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							

INSPECTED BY: S. Tauqeer Hussain

SF041

Revision : 0

HEAVY EQUIPMENT INSPECTION CHECKLIST

COMPANY NAME: ~~Daewoo E&C~~ Kyungdong				DATE: 12July, 2013	
EQUIPMENT DETAILS:- Chain Excavator				Operator Name: Abdual Hameed.	
MANUFACTURER:	MODEL:			PLANT NUMBER:(IF APPLICABLE)	
YEAR OF MANUFACTURE:	TECHNICAL INSPECTION EXPIRY DATE:			OVERALL PASS/FAIL	
	PASS	FAIL	N/A	REMARKS	
Tyre size/type			✓		
Tyre condition			✓		
Roadwheels			✓		
Exhaust system	✓				
Exhaust emissions (smoke)	✓				
Fuel system	✓				
Battery and terminals	✓				
General condition (corrosion etc.)		✓			
Operator Visibility good	✓				
Windscreen wipers effective	✓				
Maintenance Check-list available?		✓			
Equipment log-book available?		✓			
Grounding cable and clamp/rod in good condition	✓				
Safety signs attached and in good condition	✓				
Equipment guards in place and in good condition	✓				
Emergency Stop accessible and working	✓				
Operating instruments legible and in English	✓				
Hydraulics in good condition	✓				
Hoses and fittings in good order	✓				
No oil, hydraulic fluid or fuel leaks	✓				
Tracks & Rails		✓		Chain is not in good condition.	
Front Idlers	✓				
Top & Bottom Rollers	✓				
Drive Sprockets	✓				
Pins & Bushings	✓				
Main springs	✓				
Adjusting screws	✓				
Swing frame	✓				
Steering linkages	✓				
Master and Steering clutches			✓		
Final Drive					
Bellows seals	✓				
Dozer Blade	✓				
Bucket(s)	✓				
Outriggers & mats	✓				
Comments : Chain of the excavator having cracks in its strips which could have dangerous results in future. It can break down or slips from the wheel chain must be repaired or replaced.					

INSPECTION BY	SIGNATURE	OVERALL REMARKS
Mr.Addil Yusaf		
Manager HSE		
Mr.Aftab Alam		

Revision : 0

HYGIENIC INSPECTION OF KITCHEN AREA AND FOOD

Pakistan Patrind Hydro Power Project — Date: Sep02, 2013

Sr.	PARAMETERS	☑/☒
1.	Cleanliness	✗
2.	Housekeeping	✓
3.	Flies / Any other insects	✗
4.	Food Stock handling	✓
5.	Hygiene	✗
6.	Food Quality	✓

Others

Observations:

condition of mess is bad.

- No proper cleanliness.
- No proper Hygienic condition outside. The Mess where cooking took place.

Recommendations:

- proper covered area of cooking shed needed
- proper stove room needed.
- No proper sanitation, need proper sanitation system

HSE Doctor
Bilal Ahmed

HSE MANAGER
Chung Myung Hun

MONTHLY HYGIENIC INSPECTION OF KITCHEN STAFF

Pakistan Patrind Hydro Power Pj

Dated: 11.9, 2013

Sr.	Names	Location	Parameters						Comments
			Smoking	Nails	Clothes	Hair	Skin Disease	Sneezing	
1.	Mr. Oh	Camp Office	Yes	OK	OK	OK	OK	OK	
2.	Liaqat Abbasi	Camp Office	No	OK	OK	OK	OK	OK	
3.	Tanveer Ahmed	Camp Office	No	OK	OK	OK	Yes	OK	
4.	Raja Azkar	Camp Office	Yes	OK	OK	OK	OK	OK	
5.	Ahsin	Camp Office	Yes	OK	OK	OK	OK	OK	
6.	Zaheed Ahmed	Lower Site	No	OK	OK	OK	OK	OK	
7.	M Azam	Lower Site	Yes	OK	OK	OK	OK	OK	
8.	Waqas Ahmed	Camp Office	No	OK	OK	OK	OK	OK	
9.	Iftikhar	Camp Office	No	OK	OK	OK	OK	OK	
10.	Amjad Khan	Camp Office	No	OK	OK	OK	OK	Yes	
11.	M. Pervaiz	Camp Office	Yes	OK	OK	OK	OK	Yes	
12.	M. Khursheed	Camp Office	Yes	OK	OK	OK	OK	OK	
13.	Falak Sher	Camp Office	Yes	OK	OK	OK	OK	OK	
14.	Safeer Ahmed	Camp Office	No	OK	OK	OK	OK	OK	
15.	Waheed Iqbal	Camp Office	No	OK	OK	OK	OK	OK	
6.	Khaqan Abbasi	Camp Office	No	OK	OK	OK	OK	OK	
17.	Sawal Khan	Camp Office	No	OK	OK	OK	OK	OK	
18.	Adeel	Camp Office	No	OK	OK	OK	OK	OK	

CHECKED BY

Dr. Bilal

HSE MANAGERS

Annex-E1

(Labour Dispute Report)

Labour Strike at Adit Tunnel of Weir Site

It's Possible DAEWOO E&C

Patrind Hydropower Project

☐ **Date & Time of Strike** : 7th July 2013 at 07:00 a.m.

☐ **Location** : Adit Tunnel at Weir Site

☐ **Duration of Strike** : Seven (7) hours (07:00 a.m. ~ 14:00 p.m.)

☐ **Description of Strike**

- Mr.Arif, chief of daytime labour shift among other twelve labours interrupted six labours working at Sunday shift, in fact kept insisting for payment of 843Rs/day for holiday salary in addition to deployment of tunnel team for Sunday shift.
- The strikers demanded 537Rs/day for weekday salary insisting that working hours during the ramadan are seven hours for daytime, 07:00 a.m. to 14:00 p.m., eight hours for nighttime, 23:00 p.m. to 07:00 a.m.
- The strikers kept insisting that a wage increase asserting publication of wage increase in June 2013.
- From the above it is confirmed that instigation of strike took place for fulfillment of unilateral demands.

☐ **Details of Strike**

- 07:00 a.m. : Mr.Arif and twelve labours instigated the strike interrupting and threatening six labours working at Sunday.
- 07:20 a.m. : Mr. Arif, Chief of daytime labors along with Mr.Jamil, Chief of nighttime labour, demanded fullfillment of above mentioned points of demand.
- 07:30 a.m. : The strikers blocked nighttime labours, not allowing them to leave for work so police assistance was requested.
- 08:30 a.m. : The strikers interrupted and threatened labours working at cable-trolley.
- 09:30 a.m. : Meeting was held with attendees : Mr.Park (PM of Kyungdong), Mr.Arif and one labour, police
  - Mr. Park notified that working hours during ramadan should be as follows ;
    Working hours during ramadan : ten (10) hours for daytime shift (05:00 a.m. to 15:00 p.m.), ten (10) hours for nighttime shift (15:00 p.m. to 01:00 a.m.) and five (5) times pray per day.
  - In addition to this, no more menace to holiday shift labours and publication of wage increase will be ascertained.
  - The strikers were notified that eight (8) hours salary will be paid against eight (8) hours working. And unless company's policy is followed, labours, not following it, are not allowed to work in our site.
- 11:30 a.m. : The strike was stopped with promise that work will resume from 14:00 p.m.
- 14:00 p.m. : Work was resumed.

☐ **Local Labour Laws**

- Kyungdong's minimum salary is more higher than current local labour law and also announcement of AJK cabinet meeting at 31st May 2013.
  ⇒ Kyungdong's current salary : Rs 537/day ÷ (8hours + 3hours x 2times) = **RS 38.36/hour**
- According to current local labour law, the minimum wages of unskilled workers is Rs7,000 per month.
  ⇒ Current local labour law minimum salary : Rs 7,000/month ÷ 26days ÷ 8hours = **Rs 33.65/hour**
- The AJK government has raised the minimum wages of unskilled workers from Rs7,000 to Rs9,000 per month. The decision was taken at a cabinet meeting which was presided over by Prime Minister Chaudhry Abdul Majeed here on Thursday but not stated yet on the labour law.
  ⇒ announced minimum salary by AJK cabinet meeting : Rs 9,000/month ÷ 26days ÷ 8hours = **Rs 43.27/hour**

☐ **Photographs**

Annex-E1

(Blood Test Sample)

سپر لیب ہیلتھ سروسز

SUPER LAB HEALTH SERVICES
PATHOLOGY LABORATORY

Name:	**Tariq Mahmood**	**Rank:**	Stor Cap
Lab No	**43**	**Sex**	Male
Date:	**30-08-2013**	**Kyun Dong 2 S.No**	**10**

Complete Blood Count

Test	Result	Ref Range
ESR	08	0 – 12 mm/1st hr
Hemoglobin	15.2	M: 13----17 g/dl F: 12------15 g/dl
Total White Cell	8.5	4.0-11.0 x 103/µl
Red Cells	----	4.2-5.2 x 103/µl
Platelet Count	262	150-450 x 103/µl
Differential Count		
Polymorphs	%	40 – 75 %
Lymphocytes	%	20 – 45 %
Eosinophils	%	01 – 06 %
Monocytes	%	02----10 %
Basophils	%	0----01 %
Blood Group & Rh Factor		
ABO Group	**Rh Factor**	
"OOO"	Positive	

M. SHABIR SHAKIF
M.Sc. Haem, M. Phil (Microbiology)
Microbiologist
AIMS/CMH, Muzaffarabad

Chemical Pathology	Haematology	Clinical Pathology	Microbiology	Histopathology	Serology	Hepatitis Profile
Hormones	Thyroid Profile	Immunoglobulins	Drug Levels	Tumor Markers	VMA	C3, C4

Sibtain Medicose Street Near Markazi Imam Bargah Opp. AK CMH MZD AK.
سپر لیب سبطین میڈیکوز اسٹریٹ نزد مرکزی امام بارگاہ بالمقابل اے۔کے،سی۔ایم۔ایچ،مظفر آباد(اے۔کے)
Ph: 446499

Not For Court OR Medicolegal Use

سپر لیب ہیلتھ سروسز

SUPER LAB HEALTH SERVICES
PATHOLOGY LABORATORY

Name:	Tariq Mehmood	Rank:	Stor Keeper
Lab No	43	Sex	Male
Date:	31-08-2013	Kyun Dong S.No	10

BLOOD SUGER

Test	Result	Reference Range
Blood Glucose (F)	-----	3.3 – 6.3 mmol / L
Blood Glucose (R)	6.0	Up to 10 mmol / L

HbsAg & Hcv

Test	Result
HBsAg	Non Reactive
Anti HCV	Non Reactive

Liver Function Test:

Test	Result	Reference Range
Total Billirubin	14.5	3.7 – 17.1 µmol/l
S.G.P.T (ALT)	36	Up to---- 40 U/L
Alkaline Phosphatase	265	64 ----- 306 U/L

M. SHABIR SHA[illegible]
M.Sc. Haem. M. Phil (Microbiology)
Microbiologist
[illegible]abad

Chemical Pathology | Haematology | Clinical Pathology | Microbiology | Histopathology | Serology | Hepatitis Profile
Hormones | Thyroid Profile | Immunoglobulins | Drug Levels | Tumor Markers | VMA | C3, C4

Sibtain Medicose Street Near Markazi Imam Bargah Opp. AK CMH MZD AK.
سپر لیب سبطین میڈیکوز اسٹریٹ نزد مرکزی امام بارگاہ بالمقابل اے۔کے،سی۔ایم۔ایچ،مظفرآباد(اے۔کے)
Ph: 446499

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Annex-F1

(Meeting Agenda)

Meetings

1-	**Weekly HSE Meeting with Construction Team Weir Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
24/07/2013 Weir Site	**Daewoo (HSE):** 1. Chung Myung Hun 2. Yasir Ghauri 3. M. Javed 4. M. Kamran 5. Abdul Hameed 6. Haroon Akhtar **Sub Contractor:** 1. Sang Chull Lee 2. Mushtaq Ahmed	**Action Status of Last Meeting:** Sungbo Purchased more PPEs for its workers on HSE recommendations and provision of PPEs to workers made proper **Site Inspection:** During site inspection, it was observed that one of the Sungbo workers was throwing loose material in river, he was issued with a warning letter and also guided properly on site **Incident investigation and recurrence prevention:** Some of the workers were standing near the dangerous edges and handrail was not properly completed, their site engineer was informed regarding the matter. **Other concerns of HSE:** Generally put all issues to the managers of subcontractor companies and manager QA/QC during weekly meetings with them.
2-	**Weekly HSE Meeting with Construction Team Weir Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
17/07/2013 Weir Site	**Daewoo (HSE):** 1. Chung Myung Hun 2. Yasir Ghauri 3. M. Javed 4. M. Kamran **Daewoo (QA/QC):** 1 Abdul Manan	**Action Status of Last Meeting:** Housekeeping and other issues resolved but other issues like telecom installation are still pending **Site Inspection:** During site inspection HSE team observed that Some of the workers of Subcontractor company (Sungbo) were working without PPEs and at

	Sub Contractor: 1. Sang Chull Lee 2. Choi Byeng Gum 3. Jong Yong Sik	sandtrap unsafe cutter was being used with broken disc. **HSE Statistics and Performance:** HSE observes all issues on site regularly and identifies hazard at workplace and do proper mitigation measures against them **Other concerns of HSE:** Recommendations to Sungbo to provide proper PPEs to their workers
3-	**Weekly HSE Meeting with Construction Team Weir Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
10/07/2013 Weir Site	**Daewoo (HSE):** 1. Chung Myung Hun 2. Yasir Ghauri 3. M. Javed 4. M. Kamran **Daewoo (QA/QC):** 1. Abdul Manan **Sub Contractor:** 1. Sang Chull Lee 2. Choi Byeng Gum 3. Attique ul Rehman 4. Mushtaq Ahmed 5. Jong Yong Sik	**Action Status of Last Meeting:** Kyung Dong made proper walkway in Adit Tunnel in response of NCR, Housekeeping made proper, Ventilator extended but emergency telecom not in working condition and some issues regarding electric panels **Site Inspection:** During site inspection HSE team observed some issues like poor housekeeping of Electric panels and earthing of generators barrication near river edges concrete waste and electric cables arrangement problems **HSE Statistics and Performance:** All HSE Issues were pointed out during weekly meeting with sub contractors site construction teams and proper recommendations given **Incident investigation and recurrence prevention:** On July 6th 2013, fire incident happened due to short circuiting of electric wires in Sungbo office. **Other concerns of HSE:** Sub. Contractors were recommended to Get corrective actions on NCR issued and other

		remedial actions on issues discussed during meeting
4-	**Weekly HSE Meeting with Construction Team Lower Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
20/08/2013 Camp Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Aftab Alam 3. Haroon Akhtar **Daewoo (QA/QC):** 1. Abdul Manan **Kyung Dong:** 1. Sang Chull Lee 2. Choi Byeng Gum 3. Sim Sang Hun	1. No drilling for blasting or loading of the face should occur until all other activities at the rock face are completed; ad only related personnel should be present in the vicinity. 2. The tunnel should be cleaned out at more regular intervals to maintain conditions more suitable for working in, and all personnel should be provided with the necessary PPEs, including waterproof rubber boots with metal-lined toe caps and soles.
5-	**Weekly HSE Meeting with Construction Team Lower Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
13/08/2013 Camp Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Aftab Alam 3. Addil Yusaf **Daewoo (QA/QC):** 1. Muhammad Adnan Baber **Kyung Dong:** 1 Kim Tae Jin	**Site Inspections:** 1. Cleaning of sedimentation tank is required near adit tunnel. 2. Do not wash heavy equipment and machinery inside the tunnel. 3. Housekeeping is required in batching plant area. 4. Provision of shelters in power house area. 5. Provision of barrier on bridge near power house. **HSE Statistics and performance:** 1. All the issues have to be addressed to sub con and construction department. Before next meeting all issues will be checked again on site area. **New Hazards:** 1. Waste material from tunnel is going into river due to the overfilling of the sedimentation tank. 2. Excavator having iron pieces instead of

		proper bolting/ 3. Placement of electrical cable on non designated area in tunnel.
6-	**Weekly HSE Meeting with Construction Team Upper Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
14/08/2013 Weir Site Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Yasir Ghauri 3. M. Javed 4. Kamran Khan **Daewoo (QA/QC):** 1. Asim Riaz 2. Annas Gillani 3. Abdul Raheem **Kyung Dong:** 1. Jung Yong Sik	1. Electric earthing and loose connection. 2. Concrete work and house keeping 3. Safe access and repair of stair case 4. Status of ID board at Adit-Tunnel **Site Inspection:** 1. During site inspection, HSE Team observed that some workers of Sungbo work without PPE, and safety induction and some other HSE Issues pending till yet. 2. HSE Statistics and Performance: 3. HSE team observed the unsafe act and unsafe condition time to time and discussed all these issues with Sub Con. HSE team during meeting. 4. New Hazards:
7-	**Weekly HSE Meeting with Construction Team Upper Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
28/08/2013 Weir Site Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Yasir Ghauri 3. M. Javed 4. Kamran Khan **Kyung Dong & Sungbo:** 1. Lee Gang Jee 2. Lee Jong Hen 3. Sung Jong Kil 4. Annas Gillani 5. Waqas Naseem 6. Jang Yong Sik	Intercom system and ID board status in HRT Road cracks near sand trap area Electric system (Earthing and Electric Equipments) **Site inspection:** HSE Team observed during site visit that some of the workers are working without mask inside HRT and ID board status is incorrect **HSE Statistics and Performance:** HSE highlights these issues in weekly meetings and provides masks and other PPEs, Checks the

		ID board status in HRT and then allow the work **Other concerns of HSE:** Check daily gas and ID board status, Permit to work and PPEs.
8-	**Weekly HSE Meeting (Internal)**	
Date/ Location	**Attendance**	**Main Issued Discussed**
09/09/2013 Camp Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Aftab Alam 3. Doctor Bilal Ahmed 4. Haroon Akhtar 5. M. Kamran 6. Syed Tariq Hussain 7. Nisar 8. Addil Yusaf 9. Kiran Latif	Some HSE internal Issues regarding Induction Trainings, Safety Campaigns, NCRs, Noise Calibration, Medical screening prior to induction, Trenches, MOU with MCM for waste management were noticed.
9-	**Weekly HSE Meeting with Construction Team Lower Site**	
Date/ Location	**Attendance**	**Main Issued Discussed**
10/09/2013 Camp Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Aftab Alam 3. Haroon Akhtar 4. Syed Tariq Hussain 5. Addil Yusaf **Daewoo(QA/QC):** 1. Abdul Manan **Daewoo (Admin):** 1. Kim, Tae-Hyo **Kyung Dong:** 1. Lee Sung Chull 2. Choi Byung Gum 3. Sim Sang Hun	1. Regular inspection of Construciton equipments/ vehicles by competent inspectors. 2. PPEs compliance 3. For every new employee induction concerned section shall give request to the HSE section with the documental evidence, signed by sectional head, furthermore time management for induction should be followed strictly, first batch in morning 7:00-8:00, afternoon 13:00-14:00hrs, all departments are requested to more cooperative for a systematic run and exceptional induction may be treated anytime. 4. Segregation of waste material before dumping
10-	**Weekly HSE Meeting with Construction Team Lower Site**	

Date/ Location	Attendance	Main Issued Discussed
17/09/2013 Camp Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Aftab Alam 3. Haroon Akhtar 4. Syed Tariq Hussain 5. Addil Yusaf 6. Kamran **Daewoo (Admin):** 1. Kim, Tae-Hyo **Kyung Dong:** 1. Kim Byung yong 2. Choi Byung Gum	1. PPE Provision 2. HTV Emissions 3. House Keeping 4. Electrical Hazards 5. Slip Hazard on Access road **Site Inspection:** Site inspection is carried out by Mr. Chung HSE Manager and Mr. Tae Hyo Kim Admin Manager

11-	Weekly HSE Meeting (Internal)

Date/ Location	Attendance	Main Issued Discussed
23/09/2013 Camp Office	**Daewoo (HSE):** 1. Chung Myung Hun 2. Aftab Alam 3. Doctor Bilal Ahmed 4. Haroon Akhtar 5. Syed Tariq Hussain 6. Addil Yusaf	Introducing induction cards for new employees (HSE Trainer), Oil Spillage in workshop area needs to be reduced, fuel pump installation within few days.

Annex-F2

(Sample Training Record)

HSE TRAINING ATTENDANCE RECORD

Course title:	Drinking Water Training	Trainer's Name:	HAROON AICHTAR
Training Location:	DAEWOO Site office (near Bridge)	Trainer's Signature:	
Date	09-09-13	Time	03:45

Sr.	Name	Company	Designation	Signature
1				
2			S/C DIAL	
3	M Iqbal	K.D	Jumbo op	
	Abdul baseer	K.D	S/C op	
4	MATid ABBASI	K.D	HSE	
5	Bashir	K.D	B/H Helper	
6		K.D	Diesel Cool op	
7	Nusrat	Daewoo	Sprinkle Truck Driver	
8	NAEEM	Kashmir Security	Security Guard	

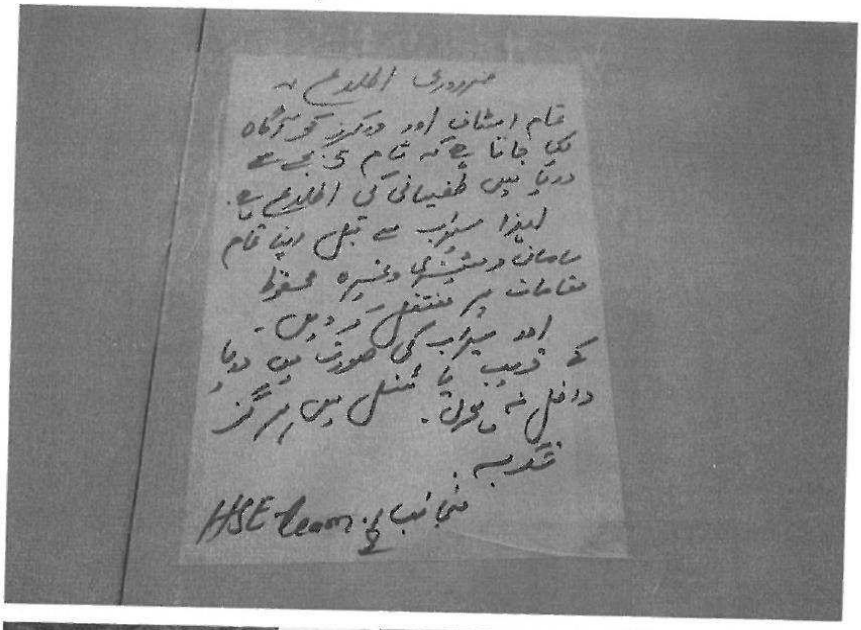
HSE TRAINING ATTENDANCE RECORD

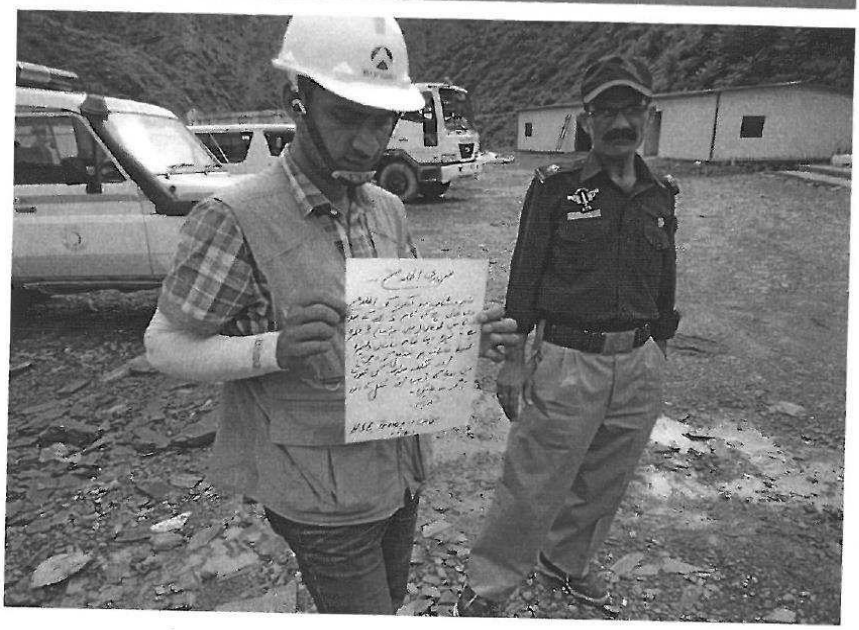
Course title:	Drinking Water Training	Trainer's Name:	HAROON AKHTAR
Training Location:	HRT (Lower side)	Trainer's Signature:	
Date	09-09-13	Time	04:00 PM

Sr.	Name	Company	Designation	Signature
1	Jameel	K.D	Labour	
2	Liaqat	K.D	Labour	
3	Razzaq	K.D	Labour	
4	Agmat H Shah	EJ tech	Surveyr	
5	ASSAD MUSHTAQ	K.D	Geologist	
6	Ahmed Ashfaq	EJ Tech	Surveyer	
(7)	Leeim Sulk	K.D	Foreman	

HSE Training (Emergency Response) on 14/08/2013

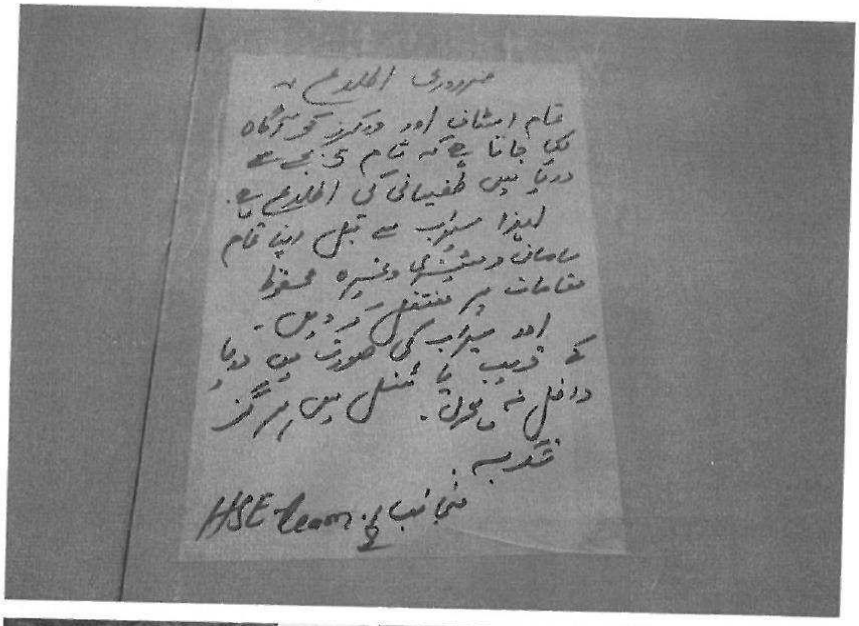
Project: Pakistan Patrind Hydropower Project.

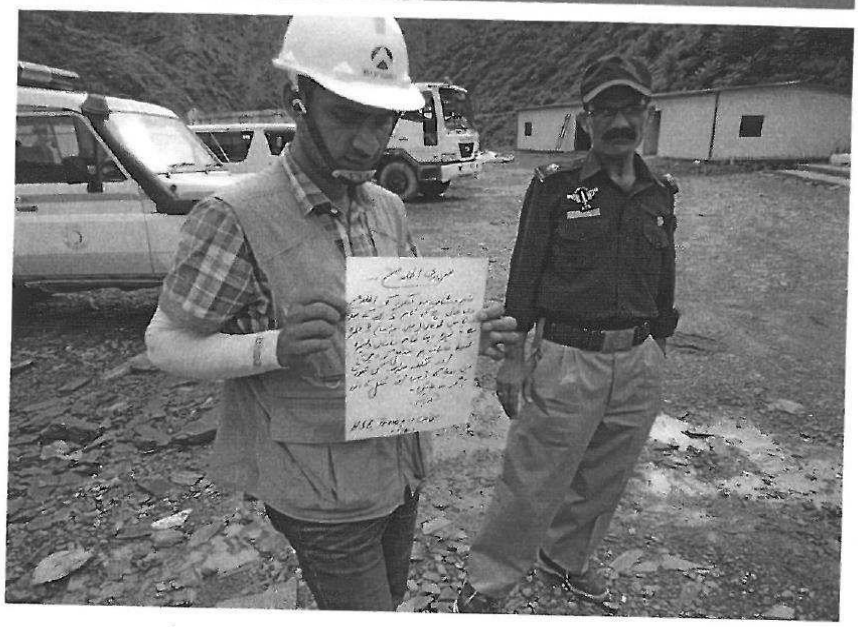




HSE Training (Emergency Response) on 14/08/2013

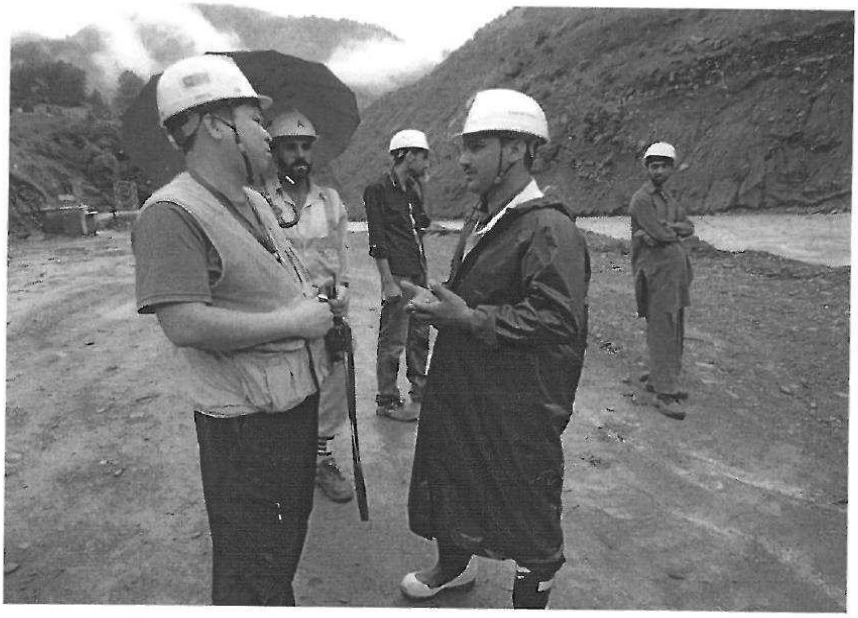
Project: Pakistan Patrind Hydropower Project.

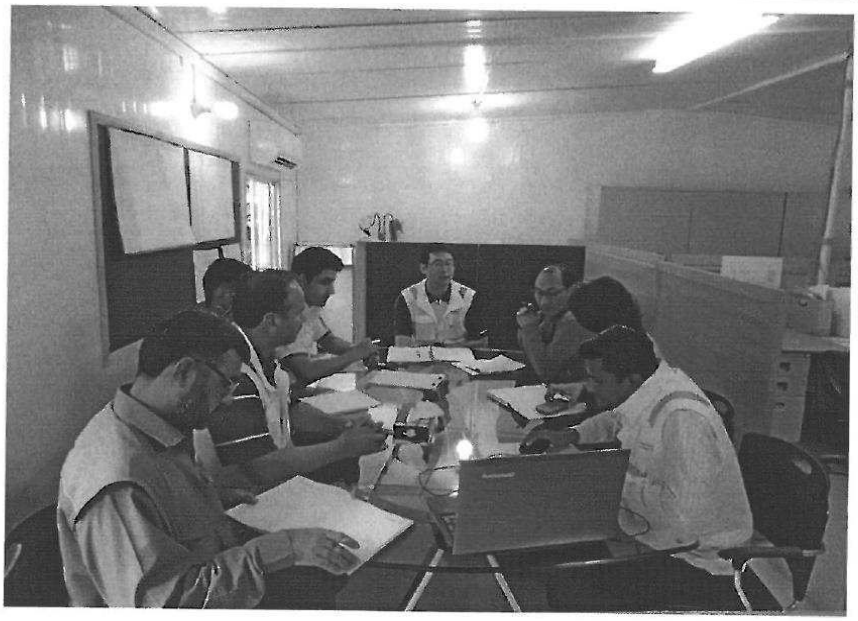




HSE Training (Emergency Response) on 14/08/2013

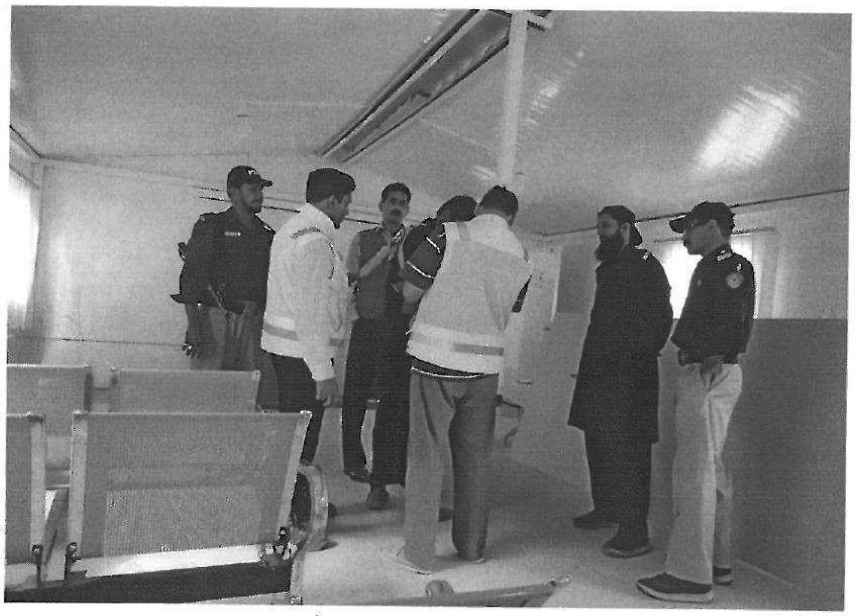
Project: Pakistan Patrind Hydropower Project.

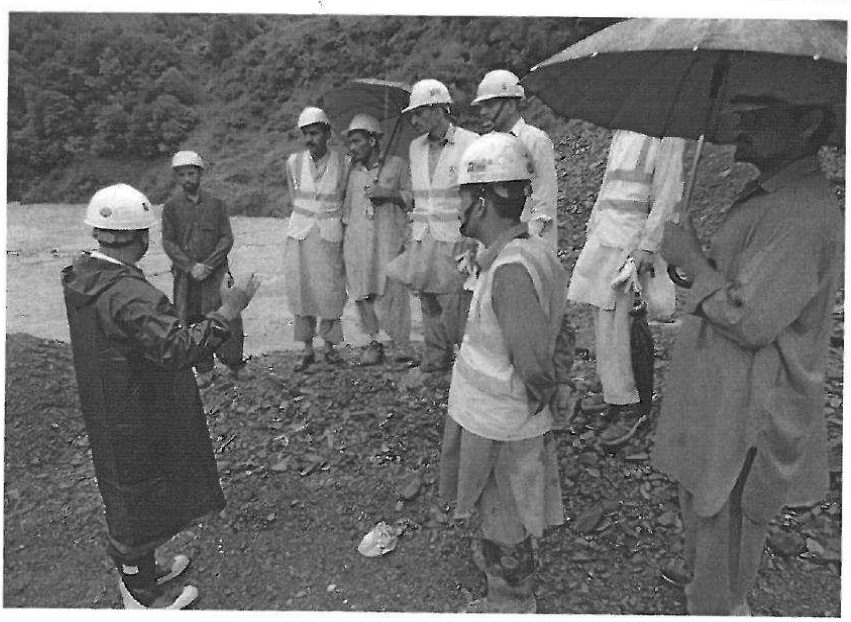




HSE Training (Emergency Response) on 14/08/2013

Project: Pakistan Patrind Hydropower Project.





3/12

Confined space Entry Training Session for Subcontractor staff.

19 Sep, 2013

Daewoo E&C HSE team has arranged a confined space entry training session for Subcontractor staff in compliance with HSE procedures.

Summary of training session is as under:

1. Introduction
2. Definition of confined space
3. Hazard identification , i.e. electrical, mechanical ,pressure, noise, toxic gases, deficiency or enrichment of oxygen,
4. Controls, how to minimize the above hazard
5. Use of PTW system , including isolation and blinding
6. Lock out , Tag out system, small brief
7. Communication method
8. Training of all entrant
9. Regular monitoring of all gases
10. Warning signs and posters placement for good awareness
11. Use of adequate PPE's
12. Arrangement of proper ventilation
13. Responsibility of hole watcher or attendant
14. Emergency and rescue plan awareness

6. We need your assistance to make this project safe and injury free

Thank you for your attendance

Syed Tariq Hussain

HSE Trainer

Chung Myung Hun

HSE Manager

HSE TRAINING ATTENDANCE RECORD

Course title:	Confined Space Entry	Trainer's Name:	S.Tariq Hussain
Training Location:	HSE Training Hall	Trainer's Signature:	S. Tariq
Date	19. 9. 2013	Time	9:00

Sr.	Name	Company	Designation	Signature
1	Noh. Jae Kyun	Kyungdong Co	[illegible]	[signature]
2	Tabizar	-"-	HTV. Driver	
3	Hizar Ahmed	-"-	Asst. Surveyor	
4	Niaz Ahmed	-"-	Elect. Engr.	
5	Ghulam Farid	-"-	Labor.	
6	Talal Ahmed	-"-	-"-	
7	Iqbal Ahmed Gelani	"	HTV. Drvr.	
8	Farid Qureshi	-"-	Labor	
9	M. Shah Zaman	-"-	Labor.	
10	Adnan Qureshi	-"-	-"-	
11	S. Iftikhar Kazmi	-"-	Elect.	
12	Tanveer Abbas	-"-	Ex. Optr.	
13	M. Anwar	-"-	Dump-Optor	
14	Own Abbas	-"-	Dump Driver	
15	Khurshid.	-"-	Ex. Optr.	
16	Shah Zada	-"-	Dump-Drvr	
17	Saeed Ur Rehman	-"-	-"-	
18	Usman Javeed	-"-	Safety Helper	
19	Gul Fraz	-"-	HTV Drvr	
20	M. Nazir	-"-	Drvr.	

BASIC RIGGING Training Session for DAEWOO & Subcontractor staff.

12 Sep, 2013

Daewoo E&C HSE team has arranged a Basic Rigging training session for Daewoo E&C and Subcontractor staff in compliance with HSE plan and procedures

Training session summery is as under.

1. The handling, setting and erection of materials and equipment are a hazardous occupation. Each operation presents its own problems and no two jobs are alike. With proper consideration taken, each job can be performed free of bodily harm to the employee and without damage to the equipment.
2. Who is responsible for the rigging?

- Is the equipment in safe condition?
- Are the working load limits adequate?
- Will the load be under control?
- Are there any unusual loading or environmental conditions?

3. Load weight shall be within rated capacity of the sling
4. Load information:

- Size,Weight,Center of gravity

5. Rigging Attachments

   Shackles, Hooks, Eye bolts, Spreader beam

6. Pre-use and periodic inspection is required on all sling and rigging components
7. Rigging equipment shall not be loaded beyond its recommended working load limit (WLL)
8. When not in use, rigging shall be removed from work area and properly stored
9. Personnel shall not ride the sling (or load)
10. Personnel should stand clear of suspended load

We need your assistance to make this project safe and injury free

Thank you for your attendance

Syed Tariq Hussain
HSE Trainer

Aftab Alam
HSE Manager

HSE TRAINING ATTENDANCE RECORD

Course title:	BASIC RIGGING TRG.	Trainer's Name:	S. TARIQ HUSSAIN
Training Location:	HSE TRAINING HALL	Trainer's Signature:	S. Tariq
Date	12-9-13	Time	0700-0800

Sr.	Name	Company	Designation	Signature
1	SHUJAAT ALI	K. DONG	CRANE OPTR	
2	GULFAM	K. DONG	HTV. DRIVER	
3	M. MISKEEN	-11-	LABOR	
4	NABEEL	-11-	LABOR	نبیل
5	M. JAHANGIR	-11-	-11-	Jahangir
6	SARFARAZ MUGHAL	-11-	LAB. F/M.	
7	LIAQUAT ABBASI	-11-	LAB	
8.	NIAZ AHMED	-11-	MASON	
9	JAMIL AHMED	-11-	LABOR	Jamil
10	A. RAZZAQ	-11-	-11-	
11	S. IQTIDAR	-11-	Elect	
12	NIAZ AHMED	-11-	Elect.	
13	SHERAZ AHMED	-11-	LABOR	
14	ARSHAD ABBSI	-11-	LABOR	
15	BILAL QURAISHI	-11-	LABOR	
16	KHURAM ABBSI	-11-	LABOR.	
17	NISAR AHMED	DAEWOO	LABOR.	
18	Khizar Ahmed	K. DONG.	Asst. surveyor	
19	Mashab Jamil	K. Dong.	Crain Helper	mashab
20	MAJID ABBSI	-11-	HSE ENGR	

HSE TRAINING ATTENDANCE RECORD

Course title:	ELECTRICAL SAFETY	Trainer's Name:	S. TOUFIQ HUSSAIN
Training Location:	HSE TRAINING HALL	Trainer's Signature:	
Date	05 Sep, 2013	Time	1330-1430

Sr.	Name	Company	Designation	Signature
1	Ansin Gilani	Daewoo E&C	Electrical Engr.	
2	Niaz Ahmed	Kyung Dong	Electrical Engg.	
3	Akhtar Kazmi	Kyung Dong	Electrical Eng	
4	MUSHTAQ AHAMED	Daewoo E&C	Electrian	
5	Syed Rizwan Kazmi	Daewoo	Electrican	

0300-728 1211

MOTORBIKE Safety Training Session for DAEWOO & Subcontractor staff.

3 Sep, 2013

HSE Daewoo E&C has arranged a training session for Subcontractor and its own staff in view compliance of LET/PES-ST-EPCC/144 Dated 30Aug, 2013.

a. Instruction for Bike riders from Consultant

1. Company Bike riders are not allowed to drove their bikes at the Project Site
2. Helmet are MANDOTORY for bike Riders while travelling from their home to reach office
3. Each respective department will arrange transport for staff and workers to reach tunnel site area
4. Parking area is designated near camp office; No other area is permitted for parking

b. Training session summery is as under.

1. Daily and regular inspection of bike shall be held regarding Engine Oil, Fuel, Condition of Tyre & required air pressure, Head Light and Indicator, Horn, Checking of Battery water, regular tuning & Changing of Engine oil and filters.
2. Before starting your trip, ensure wearing of safe and secure dress, fit to your body.
3. Bike one wheeling is not permitted for Project employees
4. Ensure that speed limit should be maintained, and the speed limit is 20 km/h alongside the office
5. Drive safely till completion of this Project.
6. We need your assistance to make this project safe and injury free

Thank you for your attendance

Syed Tariq Hussain

HSE Trainer

Aftab Alam 9/9/13

HSE Manager

MOTORBIKE SAFETY TRAINING Dated: Sep 03, 2013 @ 0730-0830

Daewoo E&C – Kyung Dong – Camp Security– Universal Associate- Naveed Brothers Staff were attended this training






HSE TRAINING ATTENDANCE RECORD

UNIVERSAL ASSOCIATE

Course title:	MOTORBIKE SAFETY	Trainer's Name:	S. TARIQ HUSSAIN
Training Location:	HSE TRAINING HALL	Trainer's Signature:	S. Tariq
Date	08 Sep, 13.	Time	13:00 : 1400

Sr.	Name	Bike No. / Cell	Designation	Signature
1	SYED MUJAHID Hussain	0341-8906978	Site Engineer	
2	waseem Hassan Raja	0344 5809172	site Supervisor	
3	QAZI MOHTASHIM	0345-9472631	Surveyore	

HSE TRAINING ATTENDANCE RECORD

DAEWOO

Course title:	MOTOR BIKE SAFETY	Trainer's Name:	S. TARIQ HUSSAIN
Training Location:	HSE TRAINING HALL	Trainer's Signature:	S. Tariq Hussain
Date	03 Sep, 2013	Time	0730-0830

Sr.	Name	Bike No.	Designation	Signature
1-	M. HAMEED ZAMI	1444	Mahanic Plant	
2.	M. SADEEQ	0536	OPERATER	
3.	SHABIR	3627	Halpack Loder	SHABIR
4-	SYED RIZWAN	DQ 996	ELECTRICAN	
5	Mushtaq Ahmad	MD-229	Comp Officer	
6	~~Mehmood Mir~~	A/For	~~coordinator~~	

HSE TRAINING ATTENDANCE RECORD

KYUNG DONG

Course title:	MOTOR BIKE SAFETY	Trainer's Name:	S. TARIQ Hussain
Training Location:	HSE TRAINING HALL	Trainer's Signature:	
Date	03 Sep, 2013	Time	0730 - 0830

Sr.	Name	Bike No.	Designation	Signature
1	MIR. MEHBOOB	LRH: 3843	Waste Packer	
2	ABBAS MUGHAL		Asst. Surveyor	
3	FAHAD MANZOOR	A.P.F	Electrition	
4			Labour	
5	WAZIR SHAH	APF		
6	HAROON Qureshi	MP. JD. 941		
7	Khizar Ahmed		Asst. Surveyor.	
8	Khurram Abbasi	A. P. F	Labour	
9			Labour Foreman	
10	Mehmood Mir	A-P-F	Coordinator	

HSE TRAINING ATTENDANCE RECORD

SECURITY DEPT

Course title:	MOTOR BIKE SAFETY	Trainer's Name:	S. TARIQ HUSSAIN
Training Location:	HSE TRAINING HALL	Trainer's Signature:	S. Tariq
Date	3 Sep. 13	Time	13:00 - 14:00

Sr.	Name	Bike No. / Cell	Designation	Signature
1	Arif-H Kazmi	0345-9C14645	SUB Inspector	Sup
2	Shabbar Khan	0344-6735394	Security Sup. KSS	

It's Possible
DAEWOO E&C

توجہ فرمائیے!

ڈائیوو انجینئرنگ اینڈ کنسٹرکشن کمپنی اور سب کنٹریکٹر کمپنیز کے تمام موٹر بائک ڈرائیور حضرات کو مطلع کیا جاتا ہے کہ کل مورخہ 03 ستمبر 2013 بروز منگل
بوقت 07:30-08:30 "بائک ڈرائیونگ سیفٹی"
کے موضوع پر معلوماتی سیشن ایچ ایس ای ٹریننگ ہال کیمپ آفس میں منعقد ہوگا۔
متعلقہ سٹاف اور کرز کی شرکت اشد ضروری ہے

Attention Please

All Motor Bike Drivers of Daewoo E&C / Sub Contractor Companies
are being informed that an awareness session on
"Bike Driving Safety"
will be held tomorrow on 3rd of September 2013, Tuesday at 07:30-08:30
Location: HSE Training Hall Camp Office (Lower Site)
Attendance of the relevant staff/ workers is mandatory.

HSE Trainer

HSE Manager

PAKISTAN PATRIND HYDROPOWER PROJECT

Join a Prayer and Safety Campaign!

Scenario:

As part of Environmental and Social Management Plan and company CSR activity, liaison with key stakeholders is required to be established constantly for smooth working environment. Project Management is keen to convene a campaign with regard to local traditional prayer for project safety and success.

Objective:

To initiate and sustain constructive external relationships with project stakeholders' particularly with civil society organizations, consultation is an important tool to enhance the social performance of the project.

Participants:

Project Management, staff and workers including sub contractors, local religious leaders (both Shia & Sunni), Local Police Officers.

Schedule:

Date: 30th August, 2013 **Venue:** **Near Brdge/HRT**

Time: 11:00 am-12:00

Annex-F3

(Daily Tool Box Talk Schedule)

DAEWOO E&C

Camp Site Daily Toolbox Talk

(FOR THE MONTH OF AUGUST, 2013)

PATRIND HYDROPOWER PROJECT

DATE	DAY	DEPARTMENT	REMARKS
1/8/2013	Thursday	CONSTRUCTION	
2/8/2013	Friday	ADMIN	
3/8/2013	Saturday	QA/QC	Weekend
4/8/2013	Sunday	HSE	Weekend
5/8/2013	Monday	PLANNING	
6/8/2012	Tuesday	M&E	
7/8/2013	Wednesday	DESIGN	Monthly Safety Campaign
8/8/2013	Thursday	ADMIN	
9/8/2013	Friday	CONSTRUCTION	
10/8/2013	Saturday	HSE	Weekend
11/8/2013	Sunday	CONSTRUCTION	Weekend
12/8/2013	Monday	QA/QC	
13/8/2013	Tuesday	PLANNING	
14/8/2013	Wednesday	CONSTRUCTION	
15/8/2013	Thursday	ADMIN	
16/8/2013	Friday	CONSTRUCTION	
17/8/2013	Saturday	HSE	Weekend
18/8/2013	Sunday	PLANNING	Weekend
19/8/2013	Monday	QA/AC	
20/8/2013	Tuesday	CONSTRUCTION	
21/8/2013	Wednesday	ADMIN	
22/8/2013	Thursday	CONSTRUCTION	
23/8/2013	Friday	ADMIN	
24/8/2013	Saturday	QA/QC	Weekend
25/8/2013	Sunday	HSE	Weekend
26/8/2013	Monday	ADMIN	
27/8/2013	Tuesday	PLANNING	
28/8/2013	Wednesday	M&E	
29/8/2013	Thursday	QA/QC	
30/8/2013	Friday	CONSTRUCTION	
31/8/2013	Saturday	HSE	Weekend

Jong Hyuk Park
(Project Manager)
Patrind HydroPower PJ

Annex-G1

(Qayyum Abbasi House)

Construction site view before fencing

construction site view after fencing

Front view before fencing

Front view after fencing

Before fencing

After fencing



Close external view after fencing



Internal view after fencing - privacy of house hold has completely been secured

Annex-G2

(Survey of Schools)

Road Safety awareness training session with local community children of Government Primary School Lower Chattar

Date: 20 Sep, 2013 Time: 09:00-10:00

Venue: Government Primary School Lower Chattar

DAEWOO E&C following honourable staff has witness this moment

Mr. Chung Myung Hun	HSE Manger(Korean)	DAEWOO E&C
Mr. Aftab Alam	HSE Manager	DAEWOO E&C
Miss Jee Hae Park	Civil Engineer	DAEWOO E&C
Mr. S.Tariq Hussain	HSE Trainer	DAEWOO E&C
Miss Kiran Latif	HSE Doc Controller	DAEWOO E&C
Mr. Farid Ahmed- cell-0343-5207058	School Head	Govt Primary School
Miss Shafqat	School Teacher	Govt Primary School
Miss Asfa	School Teacher	Govt Primary School
Qari Huzafa Aziz-cell-0321-8989782	School Teacher	Govt Primary School
30 Students		Govt Primary School

Purpose:

This training is arranged to set awareness about Road Safety to the school staff, parents and school students, following steps would be leads students to save their precious life and become a part of safety.

Control measures:

1. Parents or guardian must always companied and hold their children hands, while pick n drop of their kids to and from the school building, do not leave your children un-attendant or unsupervised while crossing the road
2. Use ZEEBRA crossing for crossing of main roads or highways
3. Wear bright colour cloths to become more visible
4. Do not use anything, that reduce your visibility or hearing ability, i.e. I pods
5. STOP, LOOK, LISTEN & THINK
6. Make Eye contact with the Driver in front of you
7. Use Right side of road while walking on single road
8. Do not assume the vehicle will stop in wet condition, vehicle might be slipped, which can be a reason for collision
9. Do not cross in the middle of the road or street or between parked cars, drivers are not expecting pedestrian to cross
10. Check either side of road before crossing the road carefully.
11. Safety Slogan ' **Safety First**'

Syed Tariq Hussain

HSE Trainer

Chung Myung Hun

HSE Manager

HSE TRAINING ATTENDANCE RECORD

Course title:	ROAD SAFETY TRAINING	Trainer's Name:	S TARIQ HUSSAIN
Training Location:	GOVT Primary School LC	Trainer's Signature:	S. Tariq Hussain
Date	20-9-13	Time	0900-1000

Sr.	Name	Company	Designation	Signature
1	Parveen Ahmed	Primary School	Head. School	
2	Shafqat	"	ECE Teacher	
3	Asifa	"	Primary Teacher	
4	Huzaifa AZIZ	"	Qari	
5	Razia Ahmad	"	STUDENT	
6	Hamza Nadeem	"	"	
7	Muqdas Khurshid	"	"	
8	Ashtar Abbas	"	"	
9	Razia Parveen	"	"	
10	Muneba Khurshid	"	"	
11	Heekma	"	"	
12	Mohd. Altaf	"	"	
13	Muqdas Gulzar	"	"	
14	Jafar Ali	"	"	
15	Mohd. Imran	"	"	
16	Abdul Rehman	"	"	
17	Asam Awan	"	"	
18	Saleema	"	"	
19	Mubarak Ali	"	"	
20	Uzma Abid	"	"	
21	Azad Kazmi	"	"	
22	Sakeena zara	"	"	
23	Rida Fatima	"	"	
26	Rameen	"	"	
27	Ahmad	"	"	
28	Sonia	"	"	

HSE TRAINING ATTENDANCE RECORD

Course title:	Road Safety Training	Trainer's Name:	S. Tajammul
Training Location:	Govt Primary School Lc	Trainer's Signature:	S. Tajammul
Date	20-9-13	Time	0900-1000

Sr.	Name	Company	Designation	Signature
29	Ahsan	Sewer Chalta	STUDENT	
30	Fatima		-"-	
31	Abdul Hadi		-"-	
32	Nazia		-"-	
33	Hajra		-"-	
34	Sohail		-"-	
35	Sabeel Ahmad		-"-	


SAFE WORK CAMPAIGN
محفوظ کام کی مہم
SAFE WORK CAMPAIGN
DAEWOO E

HSE TRAINING ATTENDANCE RECORD

Course title:	Road Safety	Trainer's Name:	Sr. Tanzila Hussain
Training Location:	First step School	Trainer's Signature:	
Date	09/06/2013.	Time	08:30 A.M.

Sr.	Name	Badge	Signature
SS	Anees Ahmed		
	Teaching Staff of FIRST STEP School. L. Chatter		
	Administrator Nazir Kazmi FIRST STEP School		
1	Nazia Riaz	Principal	Nazia
2	Sumaira Kazmi	Voice Principle	Sumaira
3	Farzana Kazmi	Teacher	
4	Fozia Alwan	Teacher	
5	Amber Kazmi	Teacher	Amber.

HSE TRAINING ATTENDANCE RECORD

Course title:	Road Safety	Trainer's Name:	Syed. Tariq Hussain
Training Location:	First Step School	Trainer's Signature:	
Date	09/06/2013	Time	8:30 AM.

Sr.	Name	Badge	Signature
01	Nazia Riaz	Principal	Nazia
2	Rehan Kazmi		
3	Amana kibi		
4	Noor-ul-Ain		
5	Mirab fatima		
6	Hafiza Tariq		
7	Urwa batool		
8	Zanib fatima		
9	Areesha Adil		
10	Sohail Shiraz		
11	Usman Tariq		
12	Alina Saqib		
13	Haider Ali Kazmi		
14	Usman Shafiq		
15	Taqeadus fatima		
16	Mahir Ali Anwar		
17	Bisma Adil		
18	Hunay Rehaib		
19	Jawad Naqvi		
20	Ambrish Kapur		
21	Sabaar Ali		
22	Asma Bibi		
23	Hina Javaid		
24	Saleha Jamil		
25	Shafat Shakil		
26	Habeeb Kapur		
27	Alina Kazmi		

HSE TRAINING ATTENDANCE RECORD

Course title:	Road Safety	Trainer's Name:	Sir Tayyab Hussain
Training Location:	FIRST STEP School	Trainer's Signature:	
Date	09/06/2013	Time	08:30 AM.

Sr.	Name	Badge	Signature
28	Aqsa Kazmi		
29	Masood-ur-Rehman		
30	Haida Khan		
31	Sana Gull		
32	Kaif-ul-Islam		
33	Huria Kazmi		
34	Nisar Khan		
35	Faiza Siraj		
36	Moniba Sofia		
37	Jannat Kazmi		
38	Eman Zara Kazmi		
39	Huma Tariq		
40	Tayyab Ahmad		
41	Awais Ahmad		
42	Abdul Rafay		
43	Abdul Basit		
44	Kainat Nisar		
45	Haider Ali Kazmi		
46	Saad Jamil		
47	Vinash Rathore		
48	Aiyan Kazmi		
49	Attia Batool		
50	Munib Ahmed		
51	Ahsan Javaid		
52	Zamnaer Muniz		
53	Ayesha Khan Zada		
54	Amina Kazmi		

Road Safety Training with STEP-ONE School Staff and Students dated: 06 Sep 2013 time @ 0830-0930






Annex-H1

(MSDS)

MATERIAL SAFETY DATA SHEET

O X Y G E N

Chemical Product

PRODUCT NAME: **OXYGEN**

Physical & Chemical Properties

MOLECULAR WEIGHT: 32 g/mole.
MOLECULAR FORMULA: O2.
BOILING/CONDENSATION POINT: -183°C (-297.4°F).
MELTING/FREEZING POINT: -218.4°C (-361.1°F).
SPECIFIC VOLUME (FT3/LB): 12.0482.
GAS DENSITY (LB/FT3): 0.083.

Hazards Identification

PHYSICAL STATE :
Gas.
EMERGENCY OVERVIEW :
DANGER!
GAS.
OXIDIZER.
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.
CONTENTS UNDER PRESURE.
Do not puncture or incinerate container.
May cause severe frostbite.
ROUTES OF ENTRY :
Inhalation.
POTENTIAL ACUTE HEALTH EFFECTS EYES:
May cause eye irritation. Contact with rapidly expanding gas may cause burns.
SKIN:
May cause skin irritation.
INHALATION:
Respiratory system irritation after overexposure to high oxygen concentrations.
MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

First Aid Measures

EYE CONTACT:
Check for and remove any contact lenses. Immediately flush eyes with plenty of water.
SKIN CONTACT :
None expected.
FROSTBITE:
Try to warm up the frozen tissues and seek medical attention.
INHALATION:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

Fire-Fighting Measures

FIRE HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES: Extremely flammable in the presence of the following materials or conditions: Reducing Materials, combustible materials and organic materials.
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:
Use an extinguishing agent suitable for the surrounding fire.
SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS:
Fire-fighters should wear appropriate protective equipment and self-contained breathing.
Apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Accidental Release Measures

PERSONAL PRECAUTIONS:
Immediately contact emergency personnel. Keep unnecessary personnel away.
ENVIRONMENTAL PRECAUTIONS: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
METHODS FOR CLEANING UP:
Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Handling & Storage

HANDLING:
High pressure gas. Do not puncture or incinerate container. Close valve after each use and when empty .Store in tightly-closed container. Use a suitable hand truck for cylinder movement.
STORAGE:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinder temperatures should not exceed 52 °C (125 °F).

MATERIAL SAFETY DATA SHEET

A C E T Y L E N E

Chemical Product

PRODUCT NAME : Acetylene

Physical & Chemical Properties

MOLECULAR WEIGHT: 26.04 g/mole.
MOLECULAR FORMULA: C2-H2.
VAPOR PRESSURE: 635 (psig).
MELTING/FREEZING POINT: -Sublimation temperature: -81.8°C (-115.2 to °F).
SPECIFIC VOLUME (FT $_3$/LB): 14.7058.
GAS DENSITY (LB/FT $_3$): 0.0691 (-80°C / -112 to °F).

Hazards Identification

PHYSICAL STATE :
Gas.
EMERGENCY OVERVIEW :
WARNING!
FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.
ROUTES OF ENTRY:
Inhalation.
POTENTIAL ACUTE HEALTH EFFECTS EYES:
May cause eye irritation. Contact with rapidly expanding gas may cause burns skin. Contact with rapidly expanding gas may cause burns.
Inhalation Acts as a simple asphyxiate.
POTENTIAL CHRONIC HEALTH EFFECTS CHRONIC EFFECTS: May cause target organ damage, based on animal data.
TARGET ORGANS MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS:
Lungs, upper respiratory tract, central Nervous system (CNS).
MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

First Aid Measures

EYE CONTACT:
Check for and remove any contact lenses. Immediately flush eyes with plenty of water.
SKIN CONTACT:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical.
FROSTBITE:
Try to warm up the frozen tissues and seek medical attention.
INHALATION:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

Fire-Fighting Measures

FIRE HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES: Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:
In case of fire, use water spray (fog), foam or dry chemical.
SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS:
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Accidental Release Measures

PERSONAL PRECAUTIONS:
Immediately contact emergency personnel. Keep unnecessary personnel away.
ENVIRONMENTAL PRECAUTIONS:
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
METHODS FOR CLEANING UP:
Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Handling & Storage

HANDLING:
Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. High pressure gas. Do not puncture or incinerate
Container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Keep container closed. Keep away from heat, sparks and flame.
STORAGE:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinder temperatures should not exceed 52 °C (125 °F).

مادی تحفظ ڈیٹا شیٹ

ایسیٹائیلین

کیمیائی مصنوعات

مصنوعہ: ایسیٹائیلین

کیمیائی اور جسمانی خصوصیات:

سالماتی وزن:26.04g/mole

سالماتی فارمولا:C2-H2

بخاری دباؤ:635(psig)

جمانے / پگھلانے کا درجہ حرارت:F 81.8 C(-115.2 to

مخصوص مقدار: (FT3/LB) 14.7058

گیس کثافت(I):(LB/F3) 0.0691(-80 C/-112 to C)

خطرات کی شناخت:

جسمانی حالت: گیس

ایمرجنسی کا جائزہ:

خبردار!

آگ پکڑنے والی گیس

شعلہ آگ کا سبب بن سکتا ہے

جانوروں پر تحقیق سے ثابت ہوا ہے کہ یہ گیس انسانی اعضاء کو نقصان پہنچا سکتی ہے۔

اندراج کے راستے:

سانس کے ذریعے

صحت پر ممکنہ اثرات:

آنکھوں پر زیادہ پریشر پڑنے پر آنکھوں کو جلا سکتی ہے۔ سانس کے ذریعے دم گھٹنے کا سبب بن سکتی ہے۔

دائمی صحت پر ممکنہ اثرات:

جانوروں پر تحقیق سے ثابت ہوا ہے کہ یہ گیس انسانی اعضاء کو نقصان پہنچا سکتی ہے۔

اعضاء جن پر یہ گیس اثر کر سکتی ہے:

پھیپھڑے، سانس کی نالی، مرکزی اعصابی نظام۔

زیادہ مقدار میں گیس کے طبعی اثرات:

اعضاء جو اس MSDS میں بتائے گئے ہیں ان کو یہ گیس نقصان پہنچا سکتی ہے۔

فرسٹ ایڈ کی صورت میں (امدادی کاروائی):

آنکھوں کے لیے:

عینک یا کنٹیکٹ لینز کو ہٹائیں اور فوراً آنکھوں کو پانی سے دھوئیں۔

جسم پر اثرات:

اگر جسم پر اثر کرے تو فوری طور پر پانی سے 15 منٹ تک دھوئیں اور آلودہ کپڑے اور جوتے اتار دیں۔ طبی امداد کے لیے ایمرجنسی پر رابطہ کریں۔

فروسٹبائیٹی:

اعضاء جیسے کہ ناک، ہاتھ، پاؤں کا سردی کے اثر سے ماؤف ہو جانا۔

سانس پر اثر:

متاثرہ فرد کو تازہ ہوا میں لے جائیں۔ اگر سانس بحال نہیں ہو رہی تو مصنوعی سانس دیں اور طبی امداد کے لیے رابطہ کریں۔

آگ کا مقابلہ کرنے کے اقدامات:

مختلف مواد کی موجودگی میں:

درج ذیل مواد کی موجودگی میں آگ بھڑک سکتی ہے جیسے کہ نامیاتی مواد، پٹرول، پلاسٹک

آگ لگنے کی صورت میں ہدایات اور اقدامات:

آگ کی صورت میں پانی، فوم تا خشک کیمیکل سپرے کریں۔

آگ کی صورت میں خصوصی حفاظتی آلات:

مناسب حفاظتی سامان اور سانس لینے والا آلہ پہنیے۔

حادثاتی اقدامات:

ذاتی احتیاطی تدابیر:

فوری طور پر طبی امداد کے لیے رابطہ کریں اور غیر متعلقہ افراد کو دور کر دیں۔

ماحولیاتی اقدامات:

مواد کو مٹی، آبی گزرگاہوں جس میں نالیاں، گٹر اور نالے میں گرنے سے روکے۔

صفائی کا طریقہ کار:

فوری طور پر ایمرجنسی پر رابطہ کریں۔ اگر خطرہ نہ ہو تو لیک روکنے کی کوشش کریں۔ چنگاری والے آلات استعمال نہ کریں۔

ذخیرہ اور استعمال کرنے کا طریقہ:

محفوظ استعمال:

کھلی ہوا میں رکھیں۔ چنگاری والے آلات استعمال نہ کریں۔ یہ ہائی پریشر گیس ہے، گیس سلینڈر کو ٹھوکر اور ٹیک سے بچائیں۔ صرف منظور شدہ آلات پریشر سلینڈر کے لیے استعمال کریں۔ ہر استعمال کے بعد والو کو اچھی طرح بند کریں۔ سلینڈر کو بند رکھیں اور گرمی شعلے اور چنگاری سے دور رکھیں۔

ذخیرہ (سٹور) کرنے کا طریقہ:

سلینڈر کو باندھ کر رکھیں تا کہ وہ نہ گریں۔ سلینڈر کو کھلی جگہ اور ٹھنڈی ہوا والی جگہ میں رکھیں۔ سلینڈر کا درجہ حرارت 52 سینٹی گریڈ سے زیادہ نہ ہونے دیں۔

Annex-H2

(Fauna Study/ Monitoring Report)

147 MW PATRIND HYDRO POWER PROJECT PAKISTAN

Fish Study of Kunhar River at the project Area of Patrind Power Project September 2013

ABSTRACT

Kunhar river fish is limited to few species because of its low temperature ranges all the year round. The temperature goes up to 17 degrees maximum during three months of the year i.e., July, August and September. The fish found here other than the trout have very low economic value as their growth is very low and small fish have many small lateral spines due to which people mostly hesitate to use it. Exotic brown trout is common in the upper reaches of the river Kunhar and streams and in many of them it established self-reproducing populations. Government of Khyber Pakhtunkhwa has established hatcheries for the production of rainbow trout. At present sufficient seed is claimed to be available for further expansion in the still small private sector producing table-size rainbow trout. Indigenous fish, mainly schizothoracine carps, support an unknown level of subsistence fishery. The famous game fish mahseer (Tor tor, Tor putitora) and schizothoracines are becoming rare due to overfishing and the disappearance of spawning grounds destroyed by the floods. Impact due to the Project will be not significant as Mahsher fish has not been caught from the river Kunhar for the last 10 years (Knowledge from the interviews of the locals). Their artificial production in hatchery conditions has not done and is yet to be initiated. At present, all cold-water fishery development effort concentrates on rainbow trout production for markets and on maintaining healthy stocks of brown trout in streams and rivers for anglers.

INTRODUCTION

Pakistan situated between latitudes 24 and 37^{o} N, covers a total area of 803,940 km^{2} (Fig. 1). Based on the type of landscape, one can distinguish the Northern High Mountainous Region (NHM), the Western Low Mountainous region, the Baluchistan Plateau, The Potwar Uplands, and the plains of Punjab and Sind. The NHM, which covers about 15 percent of the country, has a temperate climate. Three mountain systems - the Karakoram, Himalayas and Hindu Kush, extend from the east to the west through the north of the NHM, and part of them form the Pakistan border with Afghanistan and China. In the northern mountains of Pakistan the Indus River receives a number of tributaries, viz. Gilgit, Swat, Kunhar, Neelum and Jhelum. Further downstream, already in the plains, the rivers Chenab, Ravi and Sutlej, all of which arise from the Indian Himalayas, join the Indus River from the east.

Waters of the NHM region and of the high-elevation areas of the Western Low Mountainous region are cold and hence can be characterized as cold waters. They harbor cold-water fish species, both native and introduced. The cold-water areas are situated in five administrative areas: the federally administered Northern Areas, the state of Azad Jammu and Kashmir, and three provinces, i.e. Khyber Pakhtunkhwa, Punjab and Baluchistan. Each of these administrative areas has its own independent

fisheries administration (Department of Fisheries). There is little collaboration among the areas, and hence poor coordination of inland fisheries (Akhtar, 1992).

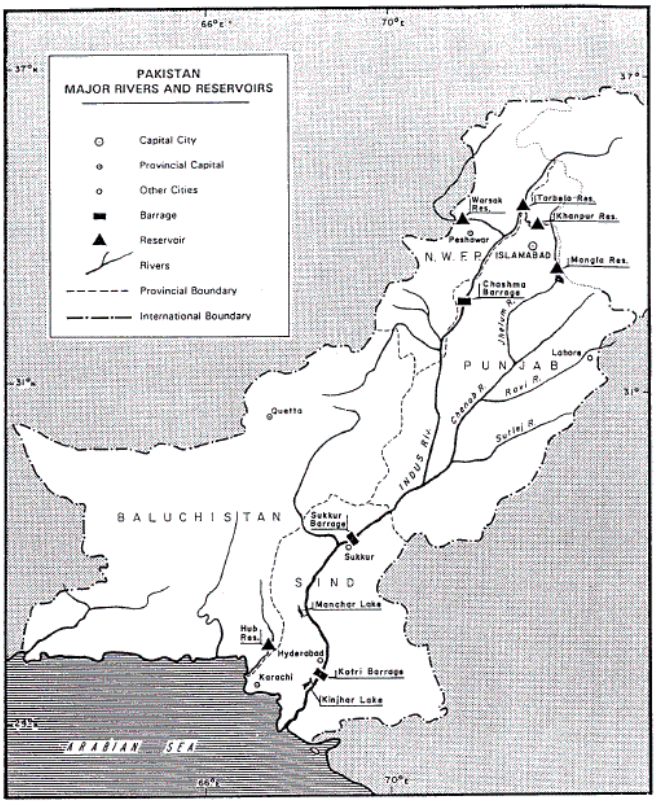


Fig. 1. Pakistan: location of major reservoirs

Khyber Pakhtunkhwa is located in the north of Pakistan, between 31.1° and 37.1°N latitude. The northern part of the province is snowy in winters, and also experiences heavy rain falls. Its valleys Swat, Kaghan, Chitral and Kohistan are surrounded by rugged mountains and have temperate climate, including cold winters. Rivers in these valleys carry clean cold water and are suitable for trout and schizothoracines (snow trout). Several lakes and reservoirs also provide suitable conditions for coldwater fish. As one moves to south, transitional or semi-cold waters are present, with snow trout and mahseers present. Further south and at lower altitude warm water fish species prevail.

There is subsistence cold-water capture fishery, but no statistical data are available on its extent. Recreational/sport fishery has been steadily increasing. In 1990 cold-water fish catches were estimated at about 200 t yr^{-1} (Akhtar, 1992), with the bulk formed by snow trout and indigenous small fish. In the same year Madyan fish farm produced 7.5 t and the private sector about 5 t of trout. With the completion of two more fish farms in Swat and Kaghan, the private sector was expected to produce 50 t by 1993.

Brown trout introduction and subsequent stocking in Kaghan and Chitral at the beginning of the 20th century were very successful. Starting in 1962 at least three schemes initiated the development of trout in five districts, i.e. Mansehra, Swat, Dir, Chitral and Kohistan, resulting in five trout hatcheries. It is estimated that about 40 percent of the total fry produced from these hatcheries are released in various natural water bodies. Sport fishery has promoted tourism and its economic role is well established (Akhtar, 1992). It is recognized that at present the trout industry in Khyber Pakhtunkhwa is more advanced than elsewhere in Pakistan. There are now three trout hatcheries in Chitral Valley. The largest trout hatchery-cum-farm is in Madyan in Swat Valley. There is a hatchery at Kalkot in Dir, and the Shinu hatchery in Kaghan, the oldest one in the Province. A new hatchery has been completed at Dobar in Kohistan. Both brown and rainbow trout are produced in the hatcheries.

In 1992 the private sector owned nine trout farms (7 in Swat and 2 in Kaghan), and 4 farms were under construction. In 1992 the private farm production amounted to about 10 t. Private farmers were receiving seed from state-owned hatcheries, but two farmers were developing their own broodstock with the intention of entering into hatchery production as well Kunhar River flows through Kaghan valley. Starting from Naran (2,362 m amsl) in Khyber Pakhtunkhwa, it has a length of 129 km up to weir site (755 m amsl). It is spread over a catchment area of 2,429 Km2. The 13 Km reaches of the Kunhar River from weir site to its confluence with Jhelum River at Domishahi has a catchment area of 256 Km^2

FISH STUDY

Fish study was carried out at 6 pockets of the Kunhar River 10 km up and down stream of the Patrind Weir point. Study area of 4 pockets was stretched to 500 meters each while two pockets were spotted at outlet and inlet of the diversion tunnel.

Pocket-4 Outlet of the diversion tunnel

Point-5 Inlet of the diversion tunnel

Pocket -3: 3km downstream of Patr

Pocket-1: Below town of Boi

Pocket-2: Confluence of Nallah Boi

Pocket-6: Below Village Dalola

FIELD RESULTS

Pocket-1

The fish caught was of comparatively small. The biggest size of the only fish caught was 168 grams and length was 25 centimeters from point 3. Total 3 fish could be netted during the 2 hours of spell in pocket 1 with a weight of 168, 36 and 52 grams respectively. The only species was Schizothorax curvifron (snow trout)

Pocket-2

This spot has a tremendous potential of fish production but most probably, due to heavy fishing pressure, the fish concentration observed to be very low. 4 small size fish could be netted from the confluence and below, but no fish was caught above this point. The size of the fish was 6 inch with weight 28 grams, 9 inch with 39 grams, 5 inch with 22 grams 10 inches 47 grams, 5 inches with 18 grams, 8 inches with 32 grams. No big fish was caught.

Pocket-3:

This is point situated at about 3 km downstream of Patrind weir point. Two fishermen took 2 hours to catch 4 small fish and a comparatively large fish of 120 grams. All the fish caught were snow trout only.

Pocket 4:

This point is at the outlet of the diversion tunnel. No fish, as expected, could be caught as the flow of the river water is very fast.

Pocket-5

This point is at the inlet of the diversion tunnel making a small lake type of water body providing opportunity to the fish to make home ground. At this part of the year (Late August) the water body is small but will grow with the increase in the river water flow. Water temperature will also increase to some extent providing opportunity to other native fish species like Labeo rohit) (Rohu), Cyprinus carpio (Gulfam) and to some extent brown and rainbow trout. When this lake will grow after the construction of Patrind weir, this can serve as a breeding ground for the Rainbow and Brown trout. If carefully planned, this can become commercial activity but needs expert input. Only one fish of small size could be netted. It will have a great impact on the fish species combination. The species loving stagnant water will dominate and survive better.

Pocket-6

This is a point of zero water level of the expected lake. The fish population is low as per sampling of continuous 3 hours netting. This will have little impact by the construction of dam.

WATER QUALITY SAMPLING

The water samples were also collected at all 6 selected sites and analyzed for Temperature (^{o}C), pH, and dissolved oxygen.

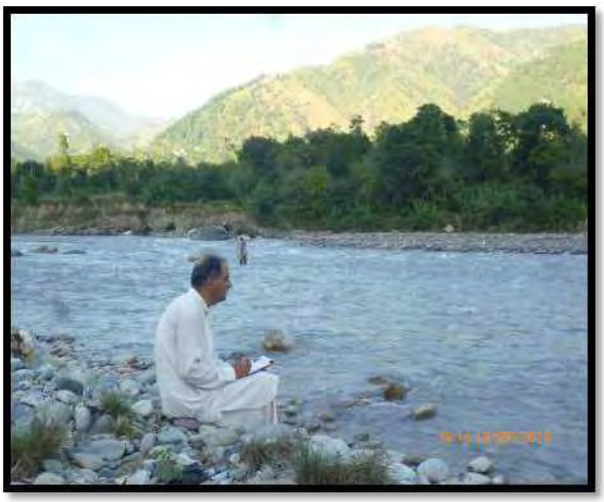
Water quality was found conducive to fish culture except for turbidity and critical Temperature regime for cold water fish.

Water Temperature: Water temperature at points 1-3 was 11.5^{o}C $\pm$5% with dissolved oxygen level of 8.1 -8.2. Air temperature was 31.3 ^{o}C and pH of 6.3

Water temperature at points 3-6 i.e., upstream of the weir was 10.8 ^{o}C $\pm$5% with dissolved oxygen of 8.3 and pH 6.3.

There has been no rain during the past 7 days of the study time so the water turbidity was recorded low.

Interview with local



Fish Data Collection in the field

Interview with fisherman Mr. Arshad

IMPACTS AND MITIGATION MEASURES

Since the fish population is already low in the river, most likely by the heavy floods of 1992 and the 2010, the impact of construction and operation activities on the economical fish fauna would be insignificant.

Minimum 2 comics of water from the head pond will be released as ecological flow throughout the year. This flow (2 comics) is in addition to the flow which joins Kunhar River in the form of various

large and small streams downstream of the weir thus providing mitigation measures for aquatic flora and fauna in the reach downstream of the weir. The headpond will hold a considerable fishery potential after the construction of the dam. Inputs from the fishery expert if taken, appropriate management of this potential can be achieved and this can lead to a big economic activity. Fish fauna combination will definitely be changed but, it will not have a serious impact on the larger area of the river Kunhar.

LOCAL KNOWLEDGE

The local knowledge on fishery in river kunhar has been observed very low mostly because the consumption of the fish by people is very less. Very few professionals are involved in the netting. Fishing gears used are cast nets, gill nets, rod and line. Illegal means of fishing like use of explosives, poisoning and electric currents are also reported in the area especially few years back when the fish population was comparatively high in the river. It was conceived through the discussion with the locals that professional fishery is almost negligible in the Project area. When asked about the cause of the less fish population in the river, 90% reply was 'due to heavy floods'. 5% also held responsible the use of explosives and electric current at some places and 5% did not reply.

The fishing is mostly done in winter because the fish demand is higher during these months with the concept of hot impact of the fish and also due to lower turbidity, low speed and depth of the river water.

When asked about the availability of trout, the answer of majority of the public was no with occasional evidences of trout availability in the Project area after many years.

They revealed that the Trout was restricted mainly above the Balakot area of KP.

The evidence supports the findings of the fish fauna survey.

The professional fishermen were also interviewed. According to them, the floods have damaged the fish and due to low rate of growth in local snow trout fish, the edible fish is no longer available in the area. Sometimes, with a good fortune they find brown trout paying them good return sold to the rich people. **Kunhar River Fish is not sold in any market of the area.**

STUDY OF FISH FAUNA

The fish fauna of water bodies located in the areas under Pakistan is known through a number of comparatively recent studies conducted at different places and times (Mirza, 1975, 1978, 1980, 1990, 2003, Rafique and Qureshi, 1997; Rafique, 2000; Rafique, 2001; Rafique et al., 2003). These studies are useful in providing baseline information on species distribution and diversity in different areas, yet

are deficient in many ways as none of these studies exclusively encompass the species of special importance and their conservation status.

Through the review of the literature/reports, the following main freshwater fish species are reported available in the upper and lower portions of Kunhar. The IUCN conservation status of none of the endemic fish fauna, however, has yet been determined except one species,

Glyptothorax kashmirensis, which is declared as 'Critically Endangered' among the other local fish species of Kunhar river indigenous fish species of special importance (Tor putitora) is declared Endangered. The local indigenous fish found in the area is mostly endemic to Kashmir and KPK.

Family: Salmonidae

Oncorynchus mykiss {Salmo gairdneri }(Rainbow Trout

Salmo trutta (Brown Trout)

Family: Cyprinidae

Schizothorax esomus

Schizothorax plagiostomus

Schizothorax micropogon

Schizothorax curvifrons (Snow Trout)

Tor putitora

Cyprinus carpio

Family: Sisoridae

Glyptothorax kashmirensis

MONTH WISE AVERAGE TEMPERATURE RANGES OF KUNHAR RIVER

MONTH TEMPERATURE (°C)

Kunhar River near Garhi

Habibullah (1980-1993) (WAPDA)

January 6.1

February 7.2

March 10.2

April 11.4

May 12.0

June 12.3

July 14.9

August 17.9

September 16.5

October 13.6

November 9.8

December 7.0

POTENTIAL IMPACTS AND MITIGATION MEASURES

Aquatic ecology is affected by water quality, quantity, availability of breeding habitat (such as spawning and rearing grounds), foot access to the river, fishing methods and terrestrial activities along the river banks and in the watershed (Helland-Hansen et. al., 1995). The existing aquatic habitat of the Kunhar River in the Project area is continuous, fast flowing where water quality and quantity are seasonally affected, primarily by monsoon runoff and snowmelt.

Flow rates, water quality and fish habitat in the Kunhar River and its tributaries, above the reservoir will not be affected by the Project.

The weir upstream/at the weir will create a deep, still water aquatic habitat, replacing about 7km of existing reverine habitat. Water quality in the reservoir was found suitable for the protection of aquatic ecosystems. The most productive parts of the reservoir will be the shallower sections where light is able to penetrate to the bottom and allow the growth of attached aquatic macrophytes.

The creation of the pond will provide a large open water fish habitat that could be used for promotion of fish culture especially for cold water fish. The harvesting of fish culture, if it proves viable will be an offset to the lost production. This will also increase the fish fauna and their density to be exploited locally for the socio-economic uplift of local communities.

Due to the low availability of fish fauna in the Project area as shown by the study results, the impact shall not be significant. Furthermore, it should be noted that the topography of Kunhar River valley downstream of the weir is characterized by high river banks with relatively deeper bed levels that prevent the use of the Kunhar River for agricultural irrigation and drinking water supply. The operation of the Project for hydropower generation will reduce flows downstream of the weir. A minimum of 2 m3/s of water will be released downstream of the weir as ecological flow throughout the year. This flow will increase further downstream as numerous medium and small streams enter the Kunhar River, thus providing mitigation measures for aquatic flora and fauna in the reach downstream of the weir.

CONCLUSION

It can be concluded that the Project will have minimal impact on the available fish fauna as well as the economy of the professionals dependent on Kunhar river fish. Local economy can be improved by the introduction of intensive fish culture in the reservoir emerging through the construction of weir. Indirectly, tourism can also flourish through trout fishing.

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Annex-H3

(Flora Study/ Monitoring Report)

Vegetation Study on the Patrind Hydro Project Area

Sep19 to Sep 21, 2013

ABSTRACT

The sustainable management of forests is of central concern to the local people who depend on forest resources for their livelihood, to international conservation agencies, and to the legal custodians of the forests, the forest services. During the last three decades, the mainstream view of deforestation in the Hindukush-Himalayan region attributed the phenomenon to increased local use due to population growth. This view has been contested in recent years by those who see deforestation rather as a result of complex changes in the socioeconomic conditions of the region.

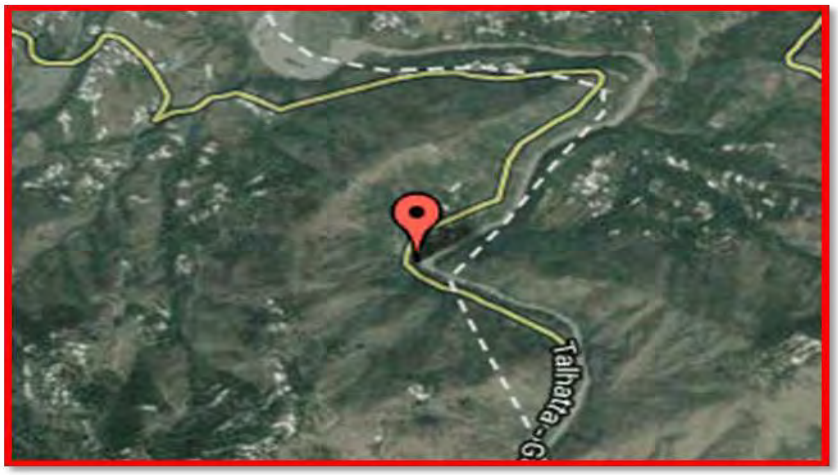
Some of the issues relevant to low vegetative cover are common property management, including political ecology, property rights, and co-management. Main tree uses are firewood consumption and timber extraction from the private, guzara and State land. The loss of vegetation is not compensated fully by reforestation resulting into more forest depletion due to population growth. The local firewood collection is not the only main cause of deforestation but it has also occurred due to commercial harvesting and mismanagement by the government Forest Department.

There is no land use policy implemented in Pakistan, due to which the steep slopes are not wisely used resulting into the massive vegetation loss which ultimately causes the land destabilization. Patrind is not the only area which has become so prone to land erosion, instead all adjacent areas on both sides of the river Kunhar, Jhelum and Neelum are showing the same picture.

Forest cover in Pakistan is only 5% of the total land area (gop 1991) and is said to be rapidly deteriorating due to unsustainable use of the resources, especially in the mountain regions (IUCN 2002). Another main reason for low tree cover is the high demand for grazing land and fodder for the animals. Local people in the area burn the land after cutting the grass in the month of October and November. This leads to the loss of all vegetative cover on the steep slopes and leaving behind the exposed surface to the mercy of the Nature. The soil looses the water peculation capability hence, giving support to start of gully making and erosion on larger scales. Thus we can say that due to the heavy grazing, lopping, poor agricultural practices and urbanization, the original vegetation is almost destroyed. In the result of the shortage of vegetation cover, the area is very badly suffering from soil erosion.

Introduction

The study area is about 10 km up and downstream of river Kunhar from the weir point at Patrind (34° 20′ 36" N and 73° 25′ 10" E at an elevation of 2516 ft) and around the outlet at Alda (34° 20′ 06.05" N, 73° 27′ 18.6" E) in AJK. It covers both the eastern aspects on the right bank of river Kunhar in KPK and river Jhelum in AJK and Western aspect on the left bank of river Kunhar.



Patrind project Location

The headpond will be created 7km upstream due to the construction of the weir. Mountains are steep and covered with very poor vegetation. The catchment of Kunhar River is about 1625 km^2 and river water flow mostly depends on the snow on the mountains and some rain water streams contribute in the lower reaches during the monsoon. Annual rain fall of the catchment area is above 60".

Flood in Kunhar River

The agricultural production system consists of upper catchments and gullied areas (wastelands), covering some 56% of the area, terraced fields along hillsides (39% of area) and irrigated agriculture (5%). Natural forests and rangelands are the major land use in the upper catchments.

Agricultural production on the terraced fields depends on runoff water harvesting and soil moisture conservation. These terraced fields were created by leveling with bulldozers/manual labor during the last 3-4 decades. Subsidized machinery encouraged the farmers to level the hillsides without considering the requirements for water harvesting and safe disposal of surplus runoff during high rainstorms.

Forest Types (Ecological Zonation):

The Patrind project area falls in the Sub-tropical ecological zone of the country. This zone is again classified in:

A) - Subtropical Scrub forest with broad leave tree species in the foot hills and

B) - Subtropical Chir pine Forest with a major tree species of Chir Pine.

Lower Chatter with Powerhouse site

Vegetation Cover

Project site vegetation does not contain any species listed as endangered or threatened by the Government of Pakistan or IUCN. Only two species Celtis austarlus (Batculd) and Ficus carica (Enjeer) were found rare in Pakistan but they are listed as common for the rest of the world. The presence of these two species will not be disturbed as they were found above the submerged area and away from the area where trees needed to be felled down. The rest of the vegetation species were found protected and common in Pakistan and for the rest of the world. So it is concluded that there

will be no negative impacts of Patrind Hydropower Project on conservation status of the vegetation of the area.




Following Tree species were documented in the project area both in Patrind and in Alda:

Common Name	Botanical Name	Type Of Tree	Status
Phagwarr	Ficus Palmata	Soil Binder	Common
Anjeer	Ficus Carica	Fruit	Rare
Dhaman	Grewia Oppositifolia	Fodder	Common
Drawa	Ailianthus Anus	Firewood	Common
Robinia	Robinia Pseudoacacia	Firewood	Common
Drek	Melia Azadrach	Firewood	Common
Batculd	Celtis Australis	Soilbinder	Rare
Kangarr	Pistacia Khunjak	Soil Binder	Rare
Talli (Shisham)	Dalbergia Sisso	Furniture Wood	Common
Phulai	Acacia Modesta	Firewood	Common
Sherol	Alnus Nitida	Firewood	Common
Shahtoot	Morus Alba	Fruit	Common
Akhrot (Wallnut)	Juglans Regia	Fruit	Common
Nim	Azadirachata Indica	Firewood	Common
Kau	Olea Cuspidate	Firewood	Common
Chir	Pinus Roxburglii	Timber	Common
Pipal	Ficus Religiosa	Firewood	Common
Kiker	Acacia Nilotica	Firewood	Common
Beence	Salix Spp	Firewood	Common
Batang	Prunus Patia	Fruit	Common
Ber	Zizyphus Mauritiana	Fruit	Common
Snatha	Dodonaea Viscosa	Soil Binder	Common

The main contributor grass species were Heteropogon contortus (Sariala), Cenchrus ciliaris (Dhaman), Desmostachya bipinnata (Dab ghaas), and Cynodon dactylon (Khabbal).

Comparatively low vegetation cover was recorded in the flat area and highest from steep slope areas (74.29%) followed by gentle slope and gully bed areas.

OUTCOME OF THE STUDY

The Project site comes in the Guzara/Community owned forests and is far away from the Reserved/Protected forests. On left bank of river Kunhar in Muzaffarabad District no reserved forest exists anywhere near the Project site.

While the Reserved forests on the right bank of river Kunhar in Abbotabad District, Doga Reserve Forest and Shoal Reserve Forests are at least about 3-5 km away from the Project site. Thus the project has no influence on Reserved/Protected forests.

Most of the Chir trees in the area to be submerged were found in Pole stage (age 20-30 years) with few at tree stage. The same is the case with other broadleaved species. So all in all not much cutting was found involved due to the implementation of the Project.

Tree harvesting was observed on the inlet and outlet of the tunnel where land has also been affected to some extent which needs a careful treatment suggested below.

Project site vegetation does not contain any species listed as endangered or threatened by the Government of Pakistan or IUCN. Only two species Celtis

Austarlus (Butculd) and Ficus carica (Enjeer) were found rare in Pakistan but they are listed as common for the rest of the world. The presence of these two species will not be disturbed as they were found above the submerged area and away from the area where trees needed to be felled down. The rest of the vegetation species were found protected and common in Pakistan and for the rest of the world. So it is concluded that there will be no negative impacts of Patrind Hydropower Project on conservation status of the vegetation of the area except to a limited extent for which suggestions have been given below.

It was also observed that most of the submerged area comprised of rangelands of Guzaras forest area with few trees here and there. The Project site consisted of Guzara forests owned by the people/community and they exploit it according to their needs of timber, firewood and fodder for livestock rather than visualizing its protective/environmental role. Due to this the area was in degraded form. Heavy uncontrolled grazing and clearance of area for cultivation also affected the area badly.

The present status of vegetation does not depend upon the river Kunhar water but it depends on precipitation available in the area. So reduction in water regime downstream will not affect the vegetation of the area. The average biomass for forage that will be submerged under water after the Construction of weir was calculated as 3,468 Kg/ha. The total biomass to be inundated is estimated to about 200 tons. (Farmer Study Report for Patrind project)

The area affected on the weir site due to inundation is 57.2 ha and on the powerhouse site is 5.5 ha which will come under construction.

The results

The result indicate that landscape, the nature of the rock and the redistribution of rainfall water by run-off are the main sources of spatial variation in the study area. The construction of the dam will positively affect the groundwater. At some locations, the groundwater table will rise and the old springs that were once dry will become functional allowing the farmers to extract water using simple animal traction.

Suggestions

Since the area close to the tunnel and inlet and outlet of the tunnel where working concentration is high, the impact on the vegetation and water courses will have some impact. Similarly the headpond will submerge some of the vegetation due to rise in water level. There is a need to compensate this loss by some possible means listed below:

1. Tree species of alternate requirement of water and soil should be planted in these area like shrole, salix be replaced by robinia, walnut

2. At the area of high working concentration (in-let and outlet of the tunnel) to mitigate the soil erosion, Bio-engineering works should be initiated including vegetated soft gabions, vegetated loose stone walls, gabion check dams, live brush wood check dams, planting, sowing and tufting, dry seeding, hydro seeding, hay seeding, grass sodding, sowing with geo- textile sheets, brush wattles, brush layering, hedge layering, semi-dead fences with live hedges,

Snatah hedge (Dodonia viscosa)

Annex-H4

(Blast Permit)

Permit No: 213

PTW-DC-001

BLAST PERMIT

To be delivered to Contractor Authorized Representative.

Date of Blast:	11 September, 2013	Blast Times:	① 3:30pm ② 5:30pm
Exact Location:	Power House Area.	Sound/vibration	① 1.33 mm/s - 66.4dba / 1.56mm/s - 68.0dba ② 0.64mm/s / 61.2dba / 1.21mm/s - 53.2dba
Total number of charged holes:	40	Estimate total kg of explosives	16.88 kg *
Fencing/ Barricading has been done around the 100m of the blast area	YES ☑ NO ☐	Siren alarming to aware employees & community	YES ☑ NO ☐
Electric wires attached with the detonator are in good conditions.	YES ☑ NO ☐	Area Evacuated Before Blasting	YES ☑ NO ☐
Name of Shot Firer in Charge of blasts:	MATIULLAH ABBASI	Phone No:	0300-5558491
Name of Person in Charge of Work:	MATIULLAH ABBASI	Phone No:	0300-5558491
Signature of Person in Charge of Work: **			

APPROVAL

Permission is granted to conduct blasting operations as outlined above. Changes may not be made without the prior consent of the undersigned.

	Print Name:	Signature:	Date:
HSE Representative	Abdul yusuf		11Sep, 2013
HSE Manager Authority:	Chung Myung Hun		11 Sep, 2013

* **NOTES:**

** **Signature is required. If sent electronically document is to be printed, signed and scanned.**

*** **Required when blasting to occur within 400m of any facility including pipeline. Area Authority is the designated person in charge of the area.**

A copy of this permit must be faxed to applicable Area Authorities if working under SIMOPS conditions.

Permit flow:

1. To be completed by the Explosives Person in Charge of Work (Typically the Shot Firer)
2. Senior Engineer reviews for impact on facilities (vibration) and signs off (if applicable)
3. Manager Authority checks for engineering approvaland impact on Operations (radio silence, etc.) and signs off then forwards a COPY back to Person in Charge of Work
4. Checklist to be completed by Shot Firer – Permit filed by Person in Charge of Work

SF003

Revision : 0

Permit No: 032

PTW-DC-001

BLAST PERMIT

To be delivered to Contractor Authorized Representative.

Date of Blast:	19Sep,2013	Blast Times:	11:04AM 12:34PM 3:38PM
Exact Location:	power house	Sound/vibration	① 64.4/0.54mm/s Bridge 43.0/0.13mm/s Village
Total number of charged holes:	40/40/40/30	Estimate total kg of explosives	47.6 kg-47.6-47.6-35.
Fencing/ Barricading has been done around the 100m of the blast area	YES ☑ NO ☐	Siren alarming to aware employees & community	YES ☑ NO ☐
Electric wires attached with the detonator are in good conditions	YES ☑ NO ☐	Area Evacuated Before Blasting	YES ☑ NO ☐
Name of Shot Firer in Charge of blasts:	[illegible]	Phone No:	0323-9599085
Name of Person in Charge of Work:	[illegible]	Phone No:	0323-9599085
Signature of Person in Charge of Work: **			

APPROVAL

Permission is granted to conduct blasting operations as outlined above. Changes may not be made without the prior consent of the undersigned.

	Print Name:	Signature:	Date:
HSE Representative	Adil Yusaf		19-Sep-2013
HSE Manager Authority:	Chung Myung Hun		19 Sep-2013

* **NOTES:**

** **Signature is required. If sent electronically document is to be printed, signed and scanned.**

*** **Required when blasting to occur within 400m of any facility including pipeline. Area Authority is the designated person in charge of the area.**

A copy of this permit must be faxed to applicable Area Authorities if working under SIMOPS conditions.

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4. Checklist to be completed by Shot Firer – Permit filed by Person in Charge of Work

Bridge Village

② 58.4dba/0.29mm/s — 47.6dba/1.57 mm/s

③ 30.0dba/0.70mm/s — 60.0dba/1.22mm/s

④ 30dba/0.76mm/s — 56.4dba/0.54mm/s

SF003

Revision : 0

Annex-H5

(Community Complaints)

Complaints Status
Pakistan Patrind Hydropower Project

Sr.	Start Date	Finish Date	Site	Company	Description	Action by EPCC
1.	01/07/2013	01/07/2013	P/H Site	Kyung Dong	Alda Villagers take the deforcement requesting more and more demand (misc. Material, supply, support).	Commit to support the material (Cement, Brick etc.) to repair the crack
2.	03/07/2013	03/07/2013	P/H Site	Kyung Dong	Thori villagers request the working day with payment, even though the company doesn't have the work process.	Not possible to work without duty. Company will request labour when the duty happen
3.	04/07/2013	04/07/2013	P/H Site	Kyung Dong	Alda Villagers take the deforcement requesting material and labour to repair house crack	EPCC investigated the houses and it was found that the cracks were not due to the blasting activities. In order to maintain good relations with local community, EPCC decided to provide them with the enforcement material but no labor was provided.
4.	07/07/2013	07/07/2013	P/H Site	Kyung Dong	Request to increase the wage rate for Sunday work. Request to pay same salary (10hrs) for 8 hours work	Sunday is not a regular day in Pakistan for regular or full time employment, however working with the consent of the workers if an activity is being done on Sundays wage of 10 hrs is being paid for work of 8 hrs as per workers requests.

5.	09/07/2013	10/07/2013	P/H Site	Sungbo C&E	Strike for the wages increase during the Ramadan by Patrind villagers	Agree the Ramadan wage rate (Work hrs:07, Paid Wage: 10 Hrs)
6.	10/07/2013	10/07/2013	P/H Site	Kyung Dong	Some Labour from Thuri village that have the complaint overtime rate threat H- Equipment operator to practice in the strike. They also swing the steel pipe to threat the Korean staff	Announce and explain how to calculate the overtime rate. Accuse prime mover (Kazmi, Faizan from Thuri village) of the threat.
7.	24/07/2013	24/07/2013	P/H Site	Sungbo C&E	Request to change the wage condition as monthly payment (Worker for S/C Nozzle)	EPCC decided to accept the request after checking his skills for shotcrete work
8.	25/07/2013	25/07/2013	P/H Site	Sungbo C&E	That work refuse to test for S/C nozzle work, blackmail to site worker (including the Korean staff)	As the worker was not skilled for the shotcrete nozzle works therefore claim and the salary demanded could not be fulfilled

Annex-H6

(Noise and Vibration Record)

Instantel

Event Report

Date/Time	Vert at 17:01:20 September 5, 2013
Trigger Source	Geo: 0.127 mm/s
Range	Geo: 254 mm/s
Record Time	1.0 sec at 1024 sps
Notes	
Location:	
Client:	0
User Name:	
Converted:	September 6, 2013 04:22:00 (V10.30)

Extended Notes

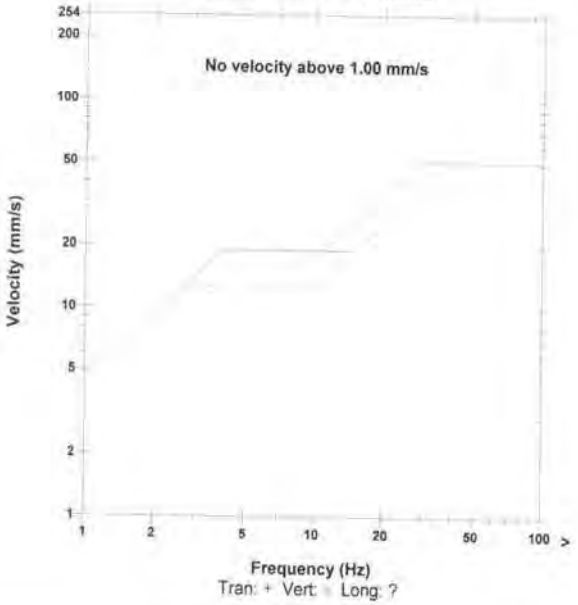
Microphone	'A' Weight
PSPL	<50 dB(A) at 0.271 sec
ZC Freq	N/A
Channel Test	Passed (Freq = 20.0 Hz Amp = 487 mv)

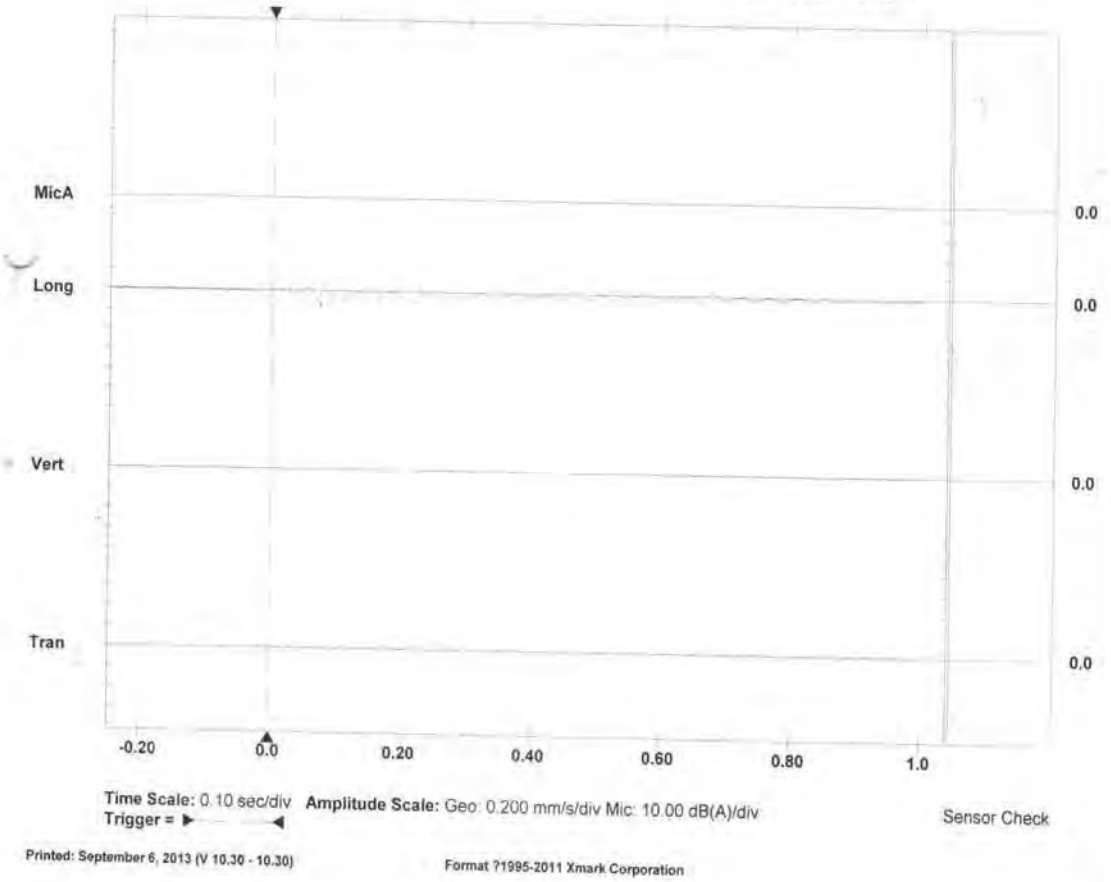
	Tran	Vert	Long	
PPV	0.175	0.222	0.175	mm/s
ZC Freq	28	64	57	Hz
Time (Rel. to Trig)	0.081	0.092	0.089	sec
Peak Acceleration	0.00497	0.00994	0.00497	g
Peak Displacement	0.00079	0.00057	0.00093	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.7	8.1	7.6	Hz
Overswing Ratio	3.7	3.4	3.8	

Peak Vector Sum 0.238 mm/s at 0.092 sec
N/A: Not Applicable

Serial Number	3476 V 5.52 BlastMate II/477
Battery Level	5.9 Volts
Unit Calibration	May 31, 2013 by Baytech Korea Inc.
File Name	E476EYVG.M80

USBM RI8507 And OSMRE





Printed: September 6, 2013 (V 10.30 - 10.30)

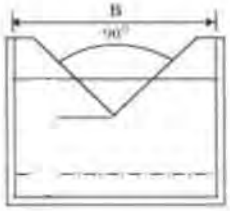
Annex H-7

(Estimation of Water Flow from HRT)

HRT ESTIMATED INFLOW AT POWER HOUSE SIDE

1.Estimation of Flow

B=Width of open channel=	0.7	m
H=Water head on the V-Notch=	0.060	m
h1=Depth of the V-Notch from the water way=	0.106	m
Q=Flow rate=	?	m^3/min.
L1=Excavated length=	500	m



Co-efficeient of Discharge=K:

$$= 81.2 + 0.24/h + (8.4 + 12/\sqrt{D}) \times (h/B - 0.09)^2$$
$$= 81.2 + 4.000 + 0.00$$
$$= 85.20$$

Q1=Flow rate= $= Kh^{5/2}$

=	0.08	m^3/min.
=	0.00125	m^3/sec.
=	4.508	m^3/HR
=	108.2	m^3/day

2. Area calculation

Q1=Hydraulic capacity of channel= = AV

Manning Equation

V	=	$(R^{0.66} \times S^{0.5}) /n$		
n	=	0.035	...	Irregular rock(Roughness coefficient)
R	=	0.088	...	Hydraulic radius
S	=	0.009819	...	Slope

Hence

V = 0.57 m/sec.

Therefore,

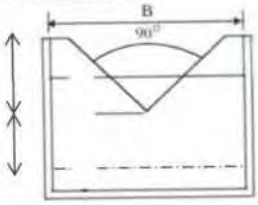
A = 22.0 cm^2

3. Flow calculation from HRT Junction to Sandtrap and Surge Shaft

Q2=HRT Junction to Surge shaft (L=33m)=	L1	:	Q1	=	L2	:	Q2	
	500	:	0.08	=	33	:	?	
Q2=HRT Junction to Surge shaft (L=33m)=	0.0053	m^3/min.	<	Pump capacity=	0.16	m^3/min.		OK
Q3=HRT Junction to Sandtrap (L=1200m)=	L1	:	Q1	=	L3	:	Q3	
	500	:	0.08	=	1200	:	?	
Q3=HRT Junction to Sandtrap (L=1200m)=	0.192	m^3/min.						
Total discharge=Q2+Q3=	0.1973	m^3/min.						
	0.00329	m^3/Sec.						
Hence A =	57.8	cm^2	<	Conc' Sump area=	5000	cm^2		OK

V-Notch (ø=90°) Weir at Powerhouse Side

B= **70cm** **h2=** **25cm** **h1=** **10.6cm**

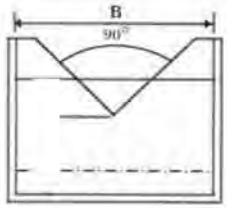


Date	Time	H(cm)	Photogrpah	Remarks
	7:05:00 AM	5		Grouting
28/09/2013	1:05:00 PM	3		Mucking
	7:10:00 PM	2		Survey and marking rib

HRT ESTIMATED INFLOW AT WEIR SIDE

1.Estimation of Flow

B=Width of open channel=	0.540	m	
H=Water head on the V-Notch=	0.025	m	h2= 0.202 m
h1=Depth of the V-Notch from the water way=	0.080	m	
Q1=Flow rate=	?	m^3/min.	h1= 0.080 m
L1=Excavated length=	100	m	



Co-efficeient of Discharge=K:

$$= 81.2 + 0.24/h + (8.4 + 12/\sqrt{D}) \times (h/B - 0.09)^2$$
$$= 81.2 + 9.600 + 0.10$$
$$= 90.90$$

Q1=Flow rate= $= Kh^{5/2}$

$= 0.02$ m^3/min. < Pump capacity= 0.16 m^3/min. OK

$= 0.00030$ m^3/sec.

$= 1.078$ m^3/HR

$= 25.87$ m^3/day

: Pump capacity is 10 times higher than inflow

2. Area calculation

Q1=Hydraulic capacity of channel= $= AV$

Manning Equation

$V = (R^{0.66} \times S^{0.5}) / n$

n = 0.035 ... Irregular rock(Roughness coefficient)

R = 0.0714 ... Hydraulic radius

S = 0.009819 ... Slope

Hence

V = 0.50 m/sec.

Therefore,

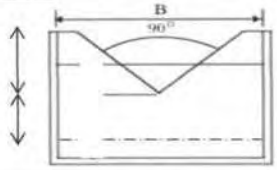
A = 6.0 cm^2 < Steel sump area= 15000 cm^2 OK

V-Notch (ø=90°) Weir at Weir Side

B= 54cm

h2= 20.2cm

h1= 8cm



Date	Time	H(cm)	Photogrpah	Remarks
9/10/2013	7:30:00 AM	1.9cm		
	2:00:00 PM	2.1cm		
	6:00:00 PM	2.2 cm		

Annex H-8

SAMPLE INDUCTION FORM

DAEWOO E&C

INDUCTION TRAINING FORM

Employee: ملازم	SABIR Hussain Shah	Company Name: کمپنی کا نام	ZK
Induction date: انڈکشن کی تاریخ	9-10-13	Time: وقت	8:20
CNIC NO: قومی شناختی کارڈ نمبر	38137-5578595-9	Blood Pressure:	110/70
Next of Kin:	Riaz Hussain	Contact No:	0343-6887236

1.	Project Overview منصوبے کا جائزہ	✓	
2.	**Position and Authorities:** پوزیشن اور اتھارٹی	SURVEYOR	
3.	Working Conditions کام کرنے کے حالات	✓	
4.	Environmental Awareness ماحولیاتی شعور	✓	
5.	**Environmental Management Action Plan:** ماحولیاتی مینجمنٹ ایکشن پلان	✓	
	• Emergency Preparedness and response ایمرجنسی تیاری اور جواب	✓	
	• Incident reporting حادثے کی اطلاع	✓	
	• Community consultation and complaint handling procedures کمیونٹی کی مشاورت اور شکایات کا طریقہ کار	✓	
	• Site environmental procedures سائٹ کے ماحولیاتی طریقہ کار	✓	
6.	• Road Safety سڑک پر چلنے کے حفاظتی اقدام	✓	
	Sign. دستخط	Employee ملازم	Inductor انڈکٹر

Safety Helmet: حفاظتی ہیلمٹ	✓		Safety Jacket: حفاظتی جیکٹ	✓	
Safety Shoes: حفاظتی جوتے	✓		Ankle Band: ٹخنوں کا بیلٹ	✓	

1) In case of loss of PPE's no new PPE's will be issued and the staff/workers will be charged for the loss.
2) In case of damage sub contractors shall be responsible for the replacement of PPE's. Daewoo E&C is responsible to provide PPE's to the new employer only for the first time.
3) Employee will have to return PPE's before leaving the company.

پی پی ای گم ہو جانے کی صورت میں دوبارہ پی پی ای کا اجرا نہیں ہوگا اور ورکر سے جرمانہ وصول کیا جائے گا۔
پی پی ای ناکارہ ہو جانے کی صورت میں سب کنٹریکٹران کی تبدیلی کے ذمہ دار ہوں گے۔ ڈیوو سے ملازمین کو صرف ایک بار پی پی ای دینے کی ذمہ داری ہوگی۔
ملازمین کو کمپنی چھوڑنے سے پہلے پی پی ایز جمع کروانی ہوں گی۔

Prices of the PPE, s provide to the employees. مہیا کردہ پی پی ایز کی قیمتیں

Shoes	بوٹ	2500	Helmet	ہیلمٹ	1000
Helmet (Yellow)	ہیلمٹ (پیلا)	450	Goggles	گاگلز	250
Mask (Dust Protection)	ماسک (دھول سے بچاؤ کا)	15	Mask (Respiratory)	ماسک (ریسپائریٹری)	2500
Welding Protection Screen	ویلڈنگ سے بچاؤ کی سکرین	1200	Ankle Band	ٹخنوں کا بیلٹ	200
Summer Jacket	گرمیوں کا جیکٹ	1000	Winter Jacket	سردیوں کا جیکٹ	3000
High Vision (Green Jacket)	ہائی وژن (سبز جیکٹ)	850	High Vision	ہائی وژن	1200


Present Address
Permanent Address
Sabir Hussain Shah
is entitled visa free entry into Pakistan
I<PAK383037557<09558XPPN1<<<<<
8806013M2102207PAK90CBTS<<<<<7
SHAH<<SABIR<HUSSAIN<<<<<<<<<<


Government of Pakistan
National Identity Card
Overseas Pakistanis
Name

DAEWOO E&C

INDUCTION TRAINING FORM

Employee: نام ملازم	MD JAVEED ABBASI	Company Name: کمپنی کا نام	DAEWOO
Induction date: شامل ہونے کی تاریخ	19. 9. 13	Time: وقت	7:30
CNIC NO: قومی شناختی کارڈ نمبر	42203-8362606-3	Blood Pressure:	110/70
Next of Kin:	DILDAR ABBASI - Brother - 0334-5705118	Contact No:	0342-5530297

1.	Project Overview منصوبے کا جائزہ	✓	
2.	Position and Authorities: پوزیشن اور اتھارٹی	Welder	
3.	Working Conditions کام کرنے کے حالات	✓	
4.	Environmental Awareness ماحولیاتی شعور	✓	
5.	Environmental Management Action Plan: ماحولیاتی مینجمنٹ ایکشن پلان	✓	
	• Emergency Preparedness and response ایمرجنسی تیاری اور جواب	✓	
	• Incident reporting حادثہ کی اطلاع	✓	
	• Community consultation and complaint handling procedures کمیونٹی کی مشاورت اور شکایات کا طریقہ کار	✓	
	• Site environmental procedures سائٹ کے ماحولیاتی طریقہ کار	✓	
6.	• Road Safety سڑک پر چلنے کے حفاظتی اقدام	✓	
	Sign. دستخط	Employee ملازم	Inductor انڈکٹر

Safety Helmet: حفاظتی ہیلمٹ	✓	Safety Jacket: حفاظتی جیکٹ	✓
Safety Shoes: حفاظتی جوتے	✓	Ankle Band: ٹخنوں کا بیلٹ	✓

1) In case of loss of PPE's no new PPE's will be issued and the staff/workers will be charged for the loss.
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پی پی ای ناکارہ ہو جانے کی صورت میں سب کنٹریکٹران کی تبدیلی کے ذمہ دار ہوں گے۔ ڈائیو نئے ملازمین کو صرف ایک بار پی پی ای دینے کی ذمہ دار ہوگی۔
ملازمین کو کمپنی چھوڑنے سے پہلے پی پی ای جمع کروانی ہوں گی۔

Prices of the PPE, s provide to the employees. مہیا کردہ پی پی ای کی قیمتیں

Shoes	جوتے	2500	Helmet	ہیلمٹ	1000
Helmet (Yellow)	ہیلمٹ (زرد)	450	Goggles	گاگلز	250
Mask (Dust Protection)	ماسک (دھول سے بچاؤ کا)	15	Mask (Respiratory)	ماسک (ریسپائریٹری)	2500
Welding Protection Screen.	ویلڈنگ سے بچاؤ کی سکرین	1200	Ankle Band	ٹخنوں کا بیلٹ	200
Summer Jacket	گرمیوں کا جیکٹ	1000	Winter Jacket	سردیوں کا جیکٹ	3000
High Vision (Green Jacket)	ہائی وژن (گرین جیکٹ)	850	High Vision	ہائی وژن	1200

Jmd.