सत्यमेव जयते

NDRF • INDIA
Saving Lives & Beyond...

STANDARD OPERATING PROCEDURE
ON
Bore well Incident Response

National Disaster Response Force
Government of India

"We cannot stop natural disasters but we can arm ourselves with knowledge: so many lives wouldn't have to be lost if there was enough disaster preparedness."

Petra Nemcova

Foreword

S. N. Pradhan, IPS
Director General, NDRF

In the past few years, there have been many deadly incidents of children accidentally falling into Bore wells, most of which were uncovered, abandoned and illegally drilled in order to extract water in areas where groundwater is depleting. Bore well rescue operation is one of the difficult, complicated and lengthy which requires due diligences and care. Often requirement of heavy machinery is also felt. Though with great efforts NDRF and other agencies have been able to save some precious lives, but still prevention through awareness can help in preventing such incidents.

NDRF, being a specialized force in disaster response, has responded in many Bore well incidents and saved precious lives across the country. The force has also taken several initiatives to enhance its capabilities as far as Bore well incidents are concerned.

The compilation of this SOP is based on the lessons learnt by NDRF and other stakeholders during past incident. I hope that this SOP on Bore well rescue will prove to be helpful not only to NDRF rescuers but other stakeholders as well. It will also guide all the stakeholders to adopt a certain level of uniformity in response. All stakeholders are requested to suggest changes and additions if any, to HQ NDRF, New Delhi, which can be incorporated into future editions of this SOP.

Contents

Sl. No.	Content	PAGE NO.
1	Introduction	4
2	Aim	5
3	Purpose	5
4	Objectives	5
5	Scope	5
6	Role and Responsibilities during Borewell incident	5-6
7	Decision of Deployment	6
8	Execution of Borewell Disaster Response	6
	8.1 Preparedness Phase	7-11
	8.2 Activation and Mobilization Phase	11
	8.3 Borewell Rescue Operations Phase	11
	8.4 De-Activation Phase	12
	8.5 Post Operation Phase	12
9	Administration and Logistic Arrangements	12-13
10	Conclusion	13
11	Appendix-A	14-17
12	Appendix-B	18
13	Appendix-C	19
14	Appendix-D	20
15	Appendix-E	21
16	Appendix-F	22
17	Appendix-G	23-24
18	Appendix-H	

Abbreviation

BP	Blood Pressure
CPR	Cardio Pulmonary Resuscitation
DC	Deputy Collector
DM	District Magistrate
DTH	Down the Hole Hammering
DDMA	District Disaster Management Authority
GPS	Global Positioning System
GPH	Gallons Per Hour
HCB	High Capacity Borewell
KVA	Kilo Volt-Ampere
LCB	Low Capacity Borewell
LPG	Liquefied Petroleum Gas
MHA	Ministry of Home Affairs
MCB	Medium Capacity Borewell
MT	Motor Transport
NCMC	National Crisis Management Committee
NEC	National Executive Committee
NDRF	National Disaster Response Force
NDMA	National Disaster Management Authority
NiMH	Nickel Metal Hydride
OBM	Out Board Motor
OPS	Operation
PPE	Personal Protective Equipment
MFR	Medical First Responder
PTSD	Post Traumatic Stress Disorder
QDA	Quick Deploy Antenna
SAR	Search and Rescue
SOP	Standard Operating Procedure
SS	Stainless Steel
SDMA	State Disaster Management Authority
TEA	Tool Equipment & Accessories
UHF	Ultra High Frequency
VHF	Very High Frequency

1. INTRODUCTION:

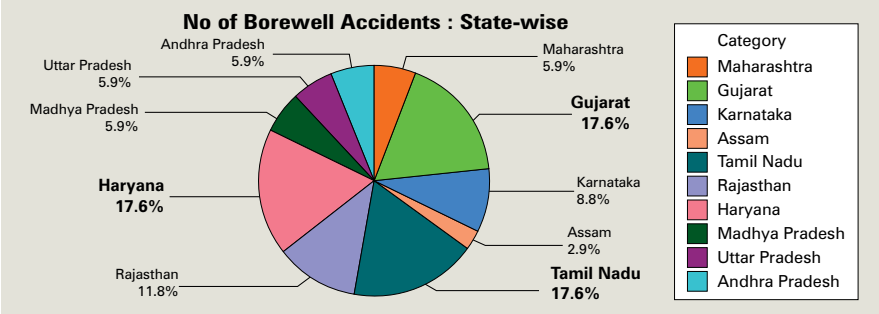
India is the biggest user of ground water in the world which is drawing around 230 cubic kilometer per year. There are approximately 27 million bore wells in India. Due to water scarcity, low rain fall, drought and depletion of underground water, large number of bore wells are dug. When the water gets dried, the motor along with casing pipe are removed and outer surface of bore well is not properly covered or sealed. Reports say that since 2009, more than 40 children fell into the bore well. On an average 70% of the conventional child rescue operation fails.

India, recently has witnessed some of the most tragic but helpless incidents which touched us deeply and forced us to look after the matter seriously. As the statistics suggest in the consecutive years starting from 2006, still more than 33 deaths occurred while stuck in bore well. The most mournful fact in that figure is that 92% of that victim is under the age of 10. The children were playing around the bore well unaware of the fact that the bore well was waiting for them in the form of a death trap. After slipping in the rotten congested pitch-black environment they were waiting for the help to come. But the lack of oxygen and deadly atmosphere has taken their life slowly before the rescue team can reach them.

The incident of losing lives trapped in Bore well was highlighted in 2006 where a 5-years-old child named Prince was rescued after a tough combat which lasted 49 hours. Another incident in Indore took place in the same year where a child name Deepak stuck in the pit hole and died for the lack of oxygen. After that, there were number of incidents happened in the various parts of the country of falling of child in a Bore well, where depth of Bore well varies from 50 feet to 250 feet.

In rural regions of the States, bore wells are widely used due to lack of water supply or unavailability of ponds, rivers etc. Almost all Government programmes seek to supply water through tube wells. With the falling water level, most of these tube wells are abandoned and are usually left uncapped and open. A survey sponsored by the Ministry of Water Resources in 2008 discovered that 85 percent of rural, 50 percentage of urban drinking and industrial needs, and 55 percent of irrigation needs were met through bore wells. Incidents of bore well deaths will stop only when consistent water supply where needed is ensured.

The statewise data of bore well incident is given below in the pie-chart.



2. AIM:

The aim of this SOP is to lay down guidelines for NDRF Bns for responding to bore well emergencies.

3. PURPOSE:

The purpose of this SOP is to establish the procedure for the response of the SAR team(s) of the Bns of NDRF in the States/UTs for bore well incident. The SOP prescribes guidelines and assigns responsibility for adopting various executive actions to ensure prompt response during incident.

4. OBJECTIVES:

This SOP shall be used to formulate NDRF action plans and procedures for launching specialized Rescue response which should be instrumental in saving precious lives. The objective of this SOP is to establish operating procedures for addressing all aspects of managing during bore well incident.

These are as follow:

a) Guidelines for troops for rescue operation during the bore well incident.
b) Achievement of best result through well planned rescue operations.
c) Reducing reaction time of the teams in responding to such incidents.
d) Coordinating and collaborative instructions during bore well incident.

5. SCOPE:

To define a 'Standard Operating Procedure' for bore well incident response in the country. The SOP applies to all elements of the Command while performing bore well incident response operations. This SOP is a guideline and shall be subject to be reviewed periodically.

6. ROLE AND RESPONSIBILITIES DURING BORE WELL INCIDENT

6.1 Role: Bore well incident preparedness provides a platform to design effective, realistic, coordinated planning and reduces duplication of efforts. The SOP unifies support for all functional areas to support a disaster requiring a coordinated response. The expertise of NDRF in strengthening the coordination amongst the various stakeholders is also very instrumental and important for effective response. Incidents of children falling into bore well/well are increasing in various parts of the

country due to lack of awareness of people and do not follow the guidelines issued by Hon'ble Supreme Court. NDRF has not sufficient equipment to carry out the bore well rescue operation. However, NDRF responds in bore well incidents to rescue the precious life.

6.2. Responsibilities:

a) Executives/Supervisors/Commanders: It shall be the responsibility of all the Executives/ Supervisors/ Commanders at all levels of the chain of the command of NDRF who are involved in the bore well incident response to ensure that all aspects of this SOP are adhered to.

b) Responders: It shall be the responsibility of all the responders to know, understand and follow the directions of the SOP in the letter and spirit.

7. DECISION OF DEPLOYMENT:

7.1 SAR team(s) of NDRF shall be mobilized:

a) On the request of the incident States/UT Govt., or

b) On directions of Central Govt. Authorities (NCMC, NEC, NDMA)

7.2 The procedure of making requisition for services of NDRF is given below:

a) The State Govt. is required to make a telephonic request to Control Room, HQ NDRF for sending SAR team(s) for disaster response followed by a written requisition through fax/email/dak on the prescribed Performa duly filled up in all respects to the HQ, NDRF-New Delhi.

b) Under exigencies, on getting the direct request from the State Authority, Commandant of the local BN after due appreciation of the situation shall mobilize his SAR team(s) for the bore well incident response without wastage of time and simultaneously seek formal approval from the HQ, NDRF-New Delhi.

c) In case, the Govt. of the bore well incident State/UT makes a direct requisition to the Central authorities (NCMC, NEC, NDMA), the SAR Team(s) of NDRF will be mobilized by the DG, NDRF as per the directions of Central authorities.

d) Following authorities of the State Govts./UTs can place requisitions for the team (s) of the NDRF during disaster:

   i. The Chief Secretary/Principal Secretary Disaster Management /Relief Commissioner or higher authority of SDMA.

   ii. Collectors/DCs/DMs of the DDMA can request for the response of the NDRF Battalion which falls in jurisdiction of local district.

e) Finally, deployment of SAR team(s) of NDRF at the bore well incident site shall be executed under the directions of the DG, NDRF in the quickest possible time after having receipt of the requisition from the States/UTs and the same shall be intimated to the NDMA/MHA.

8. EXECUTION OF BORE WELL DISASTER RESPONSE

India pre-dominantly being an agricultural economy relies on monsoon rains to fulfill the needs of irrigation as well for various other needs like industrial, household etc. But

the erratic nature of monsoon rains and its unequal distribution has led to severe water shortage across the country.

With increase in cultivable land and increase in population the demand for water is rising day by day. This has led to use of underground water by digging mechanical bore wells which are fast replacing traditional wells. With water level deepening due to unhindered extraction of water, surpassing the recharge rate, such bore wells are getting deeper day by day. This has given rise to the phenomena of infants and children falling into such bore wells.

NDRF teams have responded successfully to various Bore well / well rescue incidents. The details of operations carried by NDRF are as attached Appendix- 'F'. Response to such incident is completed in five phases viz.

i. Preparedness Phase
ii. Activation and Mobilization Phase
iii. Operation Phase
iv. Deactivation and Demobilization phase
v. Post Operation Phase

8.1 Preparedness phase:

Following preparation level is expected from all the battalions of NDRF at any given time for launching bore well incident response.

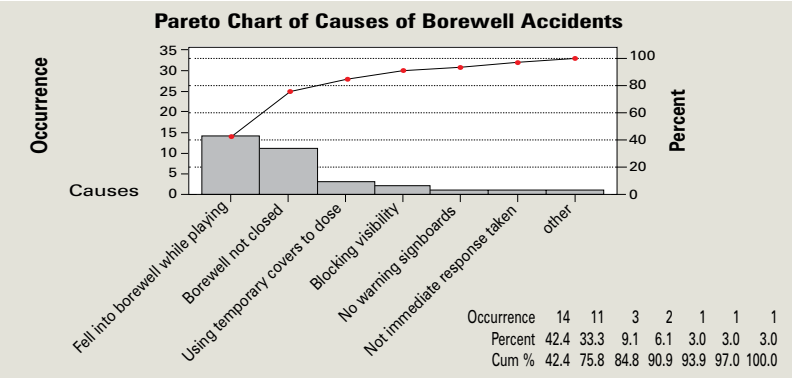
i. Training of rescuers regarding bore well rescue equipment.
ii. Practices of different methods and approaches in different situation/work site.
iii. Practices of vertical and horizontal shoring of vertical wall of ditch
iv. Community Awareness- Pre-Bore well incident preparedness also includes awareness programmes for community. These programmes are conducted to focus on creating an awareness among the community. Keeping in view that Bore well incidents are increasing in various parts of the country, all NDRF units have been directed that while conducting various community awareness programmes, our teams should also spread awareness about Bore well and safety measures to be taken to avoid recurrence of such incidents. During the awareness, the villagers are advised to take following safety measures:-

- The simplest solution is to seal the mouth of the hole the moment it is not in use.
- Erection of barbed wire fencing or any other suitable barrier around the Bore well.
- Placing a big flat stone to cover the hole of Bore well or construction of cement/concrete platform
- Capping of well assembly by welding steel plate
- In case of pump repair, the tube well should not be left uncovered
- Filling of mud pits and channels after completion of construction/repair work
- Filling of abandoned bore well by clay/sand/boulders/pebbles/drill cuttings etc. from bottom to ground level.

- Do's and Don'ts for the bore well incident are attached as Appendix 'G'
- Guidelines regarding bore well safety measures by Supreme court are attached as Appendix 'H'

In addition to above, to prepare ourselves, it is also necessary to discus various aspects about borewell incidents in detail:

8.1.1. Main Causes of Bore well Accidents:



8.1.2. Bore well- Death Trap

- Unused Bore well are kept open
- Children of different age went around due to curiosity
- Children falling in the bore well
- Confined space
- Hypoxia, unavailability of water and food

8.1.3 Classification of Bore well

Bore wells are also classified according to yield as under:

i. High Capacity Bore well (HCB) :Bore wells of casing pipe diameter 10 or 12 inches and depth >80m with design yield in the range of 20,000 gph to 45,000 gph.

ii. Medium Capacity Bore well (MCB) : Bore wells of casing pipe diameter 8 inches and depth >80m with design yield in the range of 10,000 gph to 20,000 gph.

iii. Low Capacity Bore well (LCB) : Bore wells of casing pipe diameter 6 inches and depth 30m to 50m with design yield in the range of 1500 gph to 5,000 gph.

8.1.4 Types of Bore well

Distinguished by the diameter of the bore hole.

8.1.4.1 Bore wells

- Low yielding groundwater sources are found relatively close to the surface, usually under 30 m (100 ft)

- Bore wells are constructed using a rotary bucket auger.
- Usually completed by perforating the casing or using a sand screen with continuous slot openings.
- One advantage of bored wells is the large diameter of the casing, from 450-900 mm which provides a water storage reservoir for use during peak demand periods.
- A disadvantage is of utilizing a shallow groundwater aquifer and water shortages may occur following long dry periods in summer. It is also more susceptible to contamination from surface land-use activities.

8.1.4.2 Drilled wells

- Smaller in diameter, usually ranging from 100-200 mm,
- Greater depths than bored wells, up to several hundred meters.
- The producing aquifer is generally less susceptible to pollution from surface sources because of the depth.
- Also, the water supply tends to be more reliable since it is less affected by seasonal weather patterns.

8.1.4.3 Most commonly used types of drilling methods

i. Water Jetting - Shallow bores in alluvial formations
ii. Augur Drilling - Shallow bores in alluvial formations
iii. Calyx Drilling - Shallow bore wells in both hard rock and alluvial formation
iv. Percussion Drilling – Deep bores in boulder formation
v. Rotary Drilling - Most common method used for drilling large and deep bores in alluvial formations.
vi. Down the Hole Hammering (DTH) Drilling – Most common method for drilling large and deep Bore well in hard rock formations.

8.1.5 Challenges in bore well rescue:

i. Tender and small age of victims
ii. Remoteness of bore well locations
iii. Lack of supportive infrastructure
iv. Confined space
v. Low visibility
vi. Law and order issues
vii. Operation against time
viii. Weather condition
ix. Fallen derbies on child during rescue.
x. Lack of immediate oxygen supply.

8.1.6 Rescue Methods/Techniques:

As of now there is no scientific or reliable method is available, only manual rescue method is used to save the child fell into the bore well, where a big hole is dug beside the bore well to the depth of the child stuck. But this process

requires large amount of human resources such as rescuers, heavy machinery such as tractors, JCBs etc., even if there is a little delay in accumulating these resources reduces the chances of the child being saved alive. If in case there is a huge rock at certain depth in a bore hole results in re-initiation of whole process. This process consumes more time, in such cases the chances of saving child alive is very less. If the child is closer to the surface a rescuer gets in and pulls them out. However, if the child has fallen to greater depths, a camera is sent into the hole and then a parallel bore is dug. From there another horizontal bore is dug. Quiet often the rescue succeeds but not always. A lot of Geology is involved and rescue plans must be fast and precise. But even with the best geophysical instruments, it is not easy to estimate the type and size of rock that blocks access to the point where the child is stuck. Moreover, drilling through rock can make the entire Bore well collapse.

As on date the simplest solution should be to seal all the holes the moment they are not used. Sadly, this negligence and ineptitude devours a child.

8.1.6.1. Bore Well Rescue Techniques:

i. Vertical and Horizontal drilling:- In this method a parallel hole is dug adjacent to the bore well depending on geology of the area and once the vertical digging reaches the depth at which the child is stuck a horizontal hole is drilled to reach the child and before reaching near stuck child and cover the bore well hole through pointed Iron rod or wood beneath the child. To ensure that less time is wasted in horizontal drilling, the vertical hole drilling should always be planned in a manner that it is slanting towards the bore-well, instead of being perpendicular to earth and parallel to the bore-well. This makes it easier to extricate the child by reaching about 3 feet underneath the child at a distance of 1-2 feet from bore-well. This saves a lot of time in horizontal drilling and subsequent earth removal. This requires proper centering while drilling to ensure that we at exact place where the child is stuck.

   This is just suggestion based on the successful operations conducted by NDRF in the past. However, this is not sacrosanct and drilling technique may be adopted as per the ground reality and the depth where victim is trapped. The success of such operations also depends on the nature of soil and rock structure.

ii. Techniques adopted by NDRF:-

   Based on the past experiences by NDRF teams, some of the techniques adopted during such incidents may be one or combination of the following techniques:-

   a. Rope rescue
   b. Magic ball
   c. Umbrella tool
   d. Cloth bucket
   e. Cameras (with LED Light along with minimum 100 ft. wire and display)

f. Pendant jhula
g. Robotic machine(with camera & audio)
h. Iron Rod in "L/J/U" shape (Dada ji ki chhadi with Iron Rod)
i. Aluminum wire with hook
j. Life Jacket of plastic sheet with wire

8.2 Activation and mobilization phase:

After receiving of information or call for help from the authenticated source this phase activates. Team has to obtain all information about incident through control room/ops officer in charge:

i. Incident type, place, date and time.
ii. Depth and dia of bore well and location of trapped victim.
iii. Nature of soil (Rocky, Sandy or soft soil etc,)
iv. Incident site condition, whether confined or in open area, in case of confined area nearby adjacent houses and its distance from incident site.
v. Availability of heavy equipment like JCB, Pokeland for digging.
vi. Availability of ambulance, doctors, oxygen cylinder oxygen flow pipe.
vii. Any other agency involved.
viii. Availability of lighting facilities.

On the basis of above information team will pack/load additional required equipment like shoring materials, Iron plate, Wooden sheet & Iron pole etc. Team comdr should be in constant touch with civil administration for latest on site development.

8.3 Bore well Rescue Operations phase: On arrival at the incident site,

i. Team shall establish base of operation & secure the scene.
ii. Consult with local authorities and gather all required info/data.
iii. Team comdr will assess the situation/condition of victim, availability of heavy equipment, depth at which victim trapped.
iv. Officer in charge/team commander will assess the nature and condition of soil with the help of irrigation department specialist/engineers.
v. In case of confined space, officer in charge/team commander will also evaluate the condition of adjacent building/construction with the help of civil engineer and representative of civil administration before execution of approach strategy to trapped victim.
vi. Additional requirement of shoring material.
vii. Additional requirement of equipment.
viii. On site availability of medical staff ambulance etc.
ix. Confirm and update all info obtained in the activation/mobilization phase.
x. Make/fix strategic, planning and priorities to approach and safe evacuation of victim.
xi. Assign tasks to rescue squad.
xii. Reassess the situation and make necessary adjustments.
xiii. Keep providing psychological support to victim as well as the family members.

xiv. If the victim is conscious, seek his help to pull with improvised equipment (Loops, Rice Ball etc.)

xv. Gain access to the victim by break/breach/dig or any other way as accordance with situation.

xvi. When using parallel digging method, safety precautions for the rescuers must be ensured.

xvii. Make sure that the endeavor of approach, the walls of borewell do not collapse and remain intact, parallel digging should be far enough in case of loose soil.

xviii. When the pipe of the bore well has already been removed do not use improvised rescue umbrella, the sticks may get hooked with the bore well wall.

xix. Extricate and stabilize the victim, provide ventilation.

xx. Send the victim for higher medical care immediately.

8.4 De-Activation Phase :

a) The clearance from State and districts must be taken after termination of Ops.

b) Request administration for early filling of dug earth.

c) The Bns shall collect feedback, needs improvement and make brief report for submission to NDRF HQ within 15 days after termination of operations.

d) The Bn shall thoroughly check all TEAs used during Ops and report of breakage/ loss/theft and malfunction shall be brought to the notice of NDRF HQ.

e) The Chief Medical Officer shall ensure to conduct medical examination of all the rescuers after arrival from the operational area and shall give prescription and shall take action, as required.

f) Bns shall conduct Post Trauma Stress Disorder (PTSD) and stress related classes on regular basis of Bn People. Where required help of the psychiatrics shall be taken from the nearest medical authorities.

8.5 Post Operation Phase:

A suggested format for submitting the post operation report is attached as Appendix 'E'. During this phase.

i. De-briefing should be done.

ii. Check TEAs thoroughly.

iii. Lesson learnt and things to improve.

iv. Proper documentation should be done.

v. Case study must be prepared.

9 ADMINISTRATION AND LOGISTIC ARRANGEMENTS:

9.1 The unit Commandant, DC(Ops) and other supervisory officers will coordinate the administrative and logistic arrangements with the distt. Administration and other stakeholders, even before the team reaches the site.

9.2 Any additional requirements of equipment and stores has to be coordinated in advance.

9.3 Timely replenishment of essential stores be arranged so that the rescue efforts continue non-stop.

9.4 Equipment, Tools, Communication stores & other misc. stores:

The equipment, tools, communication stores and other misc stores which are required to be carried by a SAR teams are suggested at Appdx 'A'.

9.5 List of personal belongings of responders:

The personal belongings which are required to be carried by the members of the SAR Team members is suggested at Appdx 'D'.

9.6 Media Management:

Media and other people who do not have a direct role in the rescue work should be kept at a safe distance. Periodical briefing by the incident commander/team commander can be done to maintain the flow of information. However, it should be ensured that such information is restricted strictly to ongoing/concluded rescue efforts only.

9.7 Following points should be kept in mind by the SAR team members in the mind:

a) Always wear PPE during Operation.
b) Work in Buddies.
c) Always follow safety instructions.
d) Drink plenty of water
e) Be optimistic and have patient.
f) Work professionally.
g) Update the teams and squads about incident response.
h) Follow local protocol.
i) Follow the SOP.
j) Victims and bystanders.
k) Handle equipment with safety and follow manuals.
l) Behave gently.
m) Share your plan of rescue with team members.
n) Convey frequently what is going on and the next step.

10 CONCLUSION:

This SOP has been prepared with the objective that all the required and approved procedures are followed in the rescue operations and all the processes and activities continue uninterruptedly and simultaneously so that the entire tasks are completed in prescribed schedule. This SOP also aims at fixation of accountability at all the stages. Efforts have been made to make this SOP exhaustive. In case of any ambiguity and for more clarifications of instructions on any issue, the Unit shall issue separate orders and instructions. This SOP shall be revised regularly as and when the procedures mentioned here are reviewed or becomes obsolete with time.

CHECK LIST OF MINIMUM ITEMS WHICH SHALL BE CARRIED BY A TEAM WHEN MOVING FOR RESCUE OPERATIONS IN THE BORE WELL INCIDENT.

The list mentioned below is just indicative. Team may carry equipment as per the requirement and ground reality. Unit may add or exclude any equipment which they feel appropriate:-

S. No.	EQUIPMENTS	QUANTITY
A.	Bore well Rescue Equipment's	
1.	Life Detector Type-I & II with Sufficient Wire	As per requirement
2.	Victim location equipment and Breaching System	As per requirement
3.	Video Camera with Accessories	As per requirement
4.	Thermal Imaging Camera	As per requirement
5.	Inflatable Lighting Tower	As per requirement
6.	Portable Generator 5.5 KVA	As per requirement
7.	Portable Generator 2.2 KVA	01 Nos.
8.	Rope Rescue	As per requirement
9.	Magic Ball	01 Nos.
10.	Umbrella Tool	01 Nos.
11.	Cloth Bucket	01 Nos.
12.	Cameras (with LED Light along with minimum 100 ft. Wire and display)	01 Nos.
13.	Pendant Jhula	01 Nos.
14.	"L, J & U" Type Hook with Extension Rod (10x5 ft.)	As per requirement
15.	Aluminum Wire with Hook	As per requirement
16.	Life Jacket of Plastic Sheet with Wire	As per requirement
17.	Chipping Hammer	As per requirement
18.	Rotary Hammer Drill Machine	As per requirement
19.	Ladder	01 Nos.
20.	Come a Long	01 Nos.
21.	Pointed Iron Rod	05 Nos
22.	Plastic Sheets	As per requirement
23.	Mats (Dari) with Round Hole	Minimum 02 Nos.
B.	MFR Equipment	
1.	PPE	All Rescuers
2.	Stethoscope (Lit Man/Tycs /Welchyal)	01
3.	B P Apparatus Digital	01
4.	B P Apparatus Mercury	01
5.	Oxygen Cylinder 680 (Oxidized) Light Weight Oxygen Cylinder with minimum 150 ft. Oxygen Passing Pipe.	02

6.	Thermometer Digital	04
7.	Otoscope and Nasal Speculum	01
8.	Torch	04
9.	Pen Light	02
10.	Laryngoscope	02
11.	Tongue-Depressor	02
12.	Cervical Color (Regular Short)	06
13.	Splints (Pneumatic, Flexible)	04
14.	Dressing Gauze	12
15.	Dressing Abdominal	02
16.	Dressing Multi Trauma	10
17.	Sponge Sterile	30
18.	Cotton Bundle	06
19.	Bandage Kling 6"	30
20.	Bandage Kling 3"	30
21.	Bandage Triangular 40"X 40"	30
22.	Bandage Elastics 3"	06
23.	Bandage Elastics 6"	06
24.	Cup Paper	10
25.	Surgical Tape	06
26.	Hand Towel	04
27.	CPR Mask	05
28.	Bag Valve Mask Adult (Silicon, Stem Autoclavable)	02
29.	Bag Valve Mask Child (Silicon)	02
30.	Bag Valve Mask Infant (Silicon)	02
31.	Sterilizing Drum	01
32.	Suction Unit with Accessories (Manual)	01
33.	Foldable Stretcher/Spine Board with Accessories	03
34.	Expendable Medicines /Surgical /Lab items	As per Auth
35.	MFR Kit Bag with Medicine	01
36.	MFR Box	01
37.	Reflex Hammer	01
38.	Glucometer	01
39.	Emergency Tray with Lid SS	01
40.	Tray with Lid SS	02
41.	Scissors Sharp	02
42.	Scissors Tissue Cutting	01
43.	Scissors Suture Cutting	02
44.	Artery Forceps Straight	04

45.	Artery Forceps Curved	06
46.	Sponge Holding Forceps	04
47.	Cheatles Forceps	01
48.	Sinus Forceps	01
49.	Basin Stainless Steel (Large)	01
50.	Basin Stainless Steel (Medium)	02
51.	Kidney Tray SS	02
52.	Urine Cane SS	02
53.	Bawl Cane SS Small	01
54.	BP Handle	03
55.	Reflex Hammer	01
56.	Expendable Medicines/Surgical / Lab Items	01
57.	Tissu Holding Forceps	06
C.	Miscellaneous Items	
1.	Tents Extendable	06 Nos
2.	Long Picket	10 Nos
3.	Short Picket	10 Nos
4.	Jerricane (20 ltr Plastic / Fiber)	10 Nos
5.	Water Filter (100 ltr)	01
6.	Kerosene Oil	50 Ltrs
7.	LPG Cylinder	04 Nos
8.	LPG Stove	02 Nos (1+1)
9.	Iron Cot Tin (Mini Hospital-02, Team Comdr-01)	07 Nos
10.	Folding Table	03 Nos
11.	Chair Plastics	06 Nos
12.	Scene Tape 100 mtrs	02 Nos
13.	Safety Cones	05 Nos
14.	Safety Vest	05 Nos
15.	Loud Hailer	02 Nos
16.	Crow Bar	04 Nos
17.	Pry Bar 6'	02 Nos
18.	Bolt Cutter (24"& 30")	02 Nos
19.	Hack Saw	01 No
20.	Carpenter Saw	01 No
21.	Saw for Cutting Wooden Log	01 No
22.	Hammer (Small, Medium, Large)	03 Nos
23.	Pick Mattock	04 Nos
24.	Shovel	04 Nos
25.	Spade	04 Nos

26.	Dah	02 Nos
27.	HHSL with Charger	02 Nos
28.	Head Light	06 Nos
29.	Safety Torch	25 Nos
30.	Working Lamp	04 Nos
31.	Inflatable Lightening Tower	01 No
32.	Extension Cord	04 Nos
33.	Sand Bags	1500 Nos
34.	GPS	01 No
35.	Multi Cable Winch	01 No
36.	Canvas Water Tank 200 Ltrs	02 Nos
37.	Tarpaulin	04 Nos
38.	Buckets	06 Nos
39.	Digital Camera	01 No
40.	Generator Lubricant Engine Oil	02 ltr
41.	Khurpi/Rake	As per requirement
D.	Communication Equipment	
1.	Inmarsat	01 No (with Assys)
2.	Tx/ Rx HF 15 Watt	01 No (with Assys)
3.	UHF/VHF - 20 W	01 No (with Assys)
4.	H/Held Radio Set 1-4 W (VHF)	13 Nos (with Assys)
5.	Nimh Btys	26 Nos
6.	Nimh Bty Charger	06 Nos
7.	Secy Btys 12 V	04 Nos
8.	Main Bty Charger	01 No
9.	Portable Gen Set	01 No (with sufficient POL)
10.	Tubular Mast 36 ft	01 No
11.	Electric Ext. Board	01 No
12.	Qda Set	01 No
E.	Ordnance stores (For security personnel)	
1.	INSAS Rifle	04 Nos.
2.	Magazines	12 Nos.
3.	Ammunition	240 Rounds
F.	MT Vehicles	
1.	Light Vehicle	01
2.	Medium Vehicle	04 OR (Heavy bus= 01, Heavy veh= 01, Medium veh= 01)

CHECK LIST OF MINIMUM DRY RATION ITEMS WHICH SHALL BE CARRIED BY A TEAM WHEN MOVING FOR RESCUE OPERATIONS

The list mentioned below is just indicative and team may carry ration items as per requirement, distance involved and mode of transport. Unit may add or exclude any item which they feel appropriate.

S. No.	EQUIPMENTS	QUANTITY
1.	Atta (Flour)	270.000
2.	Rice	149.000
3.	Refined Oil	61.000
4.	Sugar	41.000
5.	Tea	05.000
6.	Dal (Pulses)	61.000
7.	White Chana	02.000
8.	Kala Chana	03.000
9.	Mirch Powder	03.000
10.	Imli	02.000
11.	Haldi Powder	02.000
12.	Sambar Masala	02 Pkt
13.	Papad	10 Pkt
14.	Kismis	01.000
15.	Khopra	01.000
16.	Milk Powder	10.000
17.	Nutry	05.000
18.	Besan	05.000
19.	Salt Semiyan	14.000
20.	Achar	20 Pkt
21.	Sujee	05.000
22.	Dhaniya Powder	02.000
23.	Green Matar	02.000
24.	Meat Masala	03 Pkt
25.	Kasturi Methi	02 Pkt
26.	Garam Masala	03 Pkt
27.	Mungfali	02.000
28.	Maida	05.000
29.	Zeera	01.000

CHECK LIST OF MINIMUM UTENSILS AND COOK HOUSE STORES WHICH SHALL BE CARRIED BY A TEAM WHEN MOVING FOR RESCUE OPERATIONS

The list mentioned below is just indicative and team may carry utensils and cook house stores as per requirement. Unit may add or exclude any store which they feel appropriate.

S. No.	EQUIPMENTS	QUANTITY
1.	Tiffin Carrier	02
2.	Cooker (15 Ltr)	01
3.	Ketli (Big)	01
4.	Jharna	01
5.	Parat (Aluminium)	01
6.	Parila (All Size with Lead)	03
7.	Bucket (Iron)	03
8.	Bucket (Steel)	01
9.	Tawa (Iron)	01
10.	Chakla Belna Set	01
11.	Gas Bhatti	01
12.	Gas Chulha for Chapati	01
13.	Gas Cylinder	04
14.	Karchi (Steel)	03
15.	Tea Dallu	01
16.	Tea Container	01
17.	Karahi (Iron)	01
18.	Sintex (or Water Tank (500 Ltr)	01
19.	Chapati Jali Box	01
20.	Rice Spoon	01
21.	Fry Pan	01
22.	Table (Plastic)	01
23.	Chairs (Plastic)	06
24.	Crockery Set	01
25.	Mug (Plastic)	02
26.	Glasses	06
27.	Hot Case	01
28	Thermos (Steel)	01
29.	Steel Plates	05
30.	Steel Glasses	05
32.	Steel Katori	05
32.	Steel Spoon (Small)	05
33.	Tray	01
34.	Knife	02
35.	Palta (Iron)	01
36.	Vegetable Tray	03
37.	Jug (Steel)	01
38.	Filter (100 Ltr)	01
39.	Harricane Lamp	03

LIST OF PERSONAL BELONGINGS OF NDRF RESPONDERS

The list mentioned below is just indicative and team members may carry personal belongings as per requirement, weather conditions and ground reality. Unit may add or exclude any item which they feel appropriate.

S. NO	ITEMS	QUANTITY	REMARKS
1.	NDRF Uniform (With Shoes)	1 Set	
2.	Rescue Uniform (With Shoes)	1 Set	
3.	P.t Dress Complete	2 Sets	
4.	Raincoat/Water Proof Jackets	1 No.	
5.	Slippers	1 Pair	
6.	Undergarments	4 Sets	
7.	Civil Dress/Shoes	2 Sets	
8.	Track Suit	1 Set	
9.	Torch With Battery	1 Nos	
10.	Shaving Set Complete		
11.	Ruck Sack/Trolley Bag/Suit Case	1 No.	
12.	Bed Roll (Naka Style Bedding and Polythene Wrapped Bed Rolls not permitted) as per climate	1 Set	
13.	Whistle	1 Set	
14.	Self Sufficient Amount/ATM Card		
15.	Soaps and Shampoos	2 Sets	
16.	Socks	3 Pair	
17.	Dry Fruits/(for Self)		
18.	Mosquito Net	1 No.	
19.	I Card And Mobile		

POST OPERATION REPORT (POR)

A Post Mission Report, in the format given below, is to be completed and submitted to the Commandant, _____ BN, NDRF immediately on arrival from a mission. The same has to be submitted to NDRF HQrs:-

SUGGESTED PROFORMA:

1. Team Name:
2. Details of Mission (duration, area, purpose, provider of information etc.):
3 Preparation Done:
4. Type of Move:
5. Mobilization:
6. Strength:

Search Element	Rescue Element	Command Element

7. Stores Carried:
8. Details of Vehicles:

Light	Medium	Heavy	Ambulance

9. Coordination with Civil Authorities:
10. Topographical Information:
11. Map Details:
12. Any other information:
13. Cooperation with Other Teams:
14. Base of Operation:
15. Team Management:
16. Search / Rescue /Medical:
17. Work Done:
18. Demobilization:
19. Lesson Learnt:
20. Shortcomings Found:
21. Photographs and Details (Computer file No):
22. Contact Details:
23. Suggestions /recommendations, if any:

(Signature of mission
Leader with name)

BORE WELL/WELL RESCUE OPERATIONS CARRIED BY NDRF

NDRF has successfully conducted 37 operations across the country in which 15 victims were rescued alive and 16 dead bodies retrieved. The details of some operations in which NDRF teams rescued victim alive are as under:-

i. On 31/11/14 at Vill-Neemgaon, Teh-Sri Rampur, Distt-Ahmednagar where a 18 month old kid named Vishal Nikam was rescued alive.

ii. On 23/1/14 in Vill- Takalihaji, Teh-Shirur, Distt-Pune, where a 02 year old child namely Subham Vilas More was rescued alive.

iii. On 05/08/2015 in vill- Malsirus (Hamlet - Lolewadi) Teh-Purandar, Distt.-Pune, where a 2½ year old child namely Soham Rahul Yadav was rescued alive.

iv. On 25.04.2016, a 02 years old child namely Fulki, D/o Dev Singh Vill- Ghanshyamgarh, Tehsil-Dhaeandra, Distt-Surendranagar, (Gujarat) trapped into bore well and rescued the alive.

v. On 30.04.2016 at Tehsil- Shirur, Distt- Pune, MH a child fallen into Bore well was rescued alive.

vi. On 15.08.2017, at Distt.-Guntur, Andhra Pradesh, a 02 years old child fallen into Bore well was rescued alive.

vii. On 14.11.2017, Vill- Raniyala Malwana, Distt.-Sawai Madhopur, Rajasthan where a 03 years old girl child fallen into Bore well and rescued alive.

viii. On 01st August, 2018, a 03 years girl fell down into a bore well at District Munger, Bihar and rescued alive.

STATE WISE SUMMARY OF BORE-WELL INCIDENTS

State	No. of Ops	Rescued/Evacuated	Dead bodies Retrieved
Maharashtra	10	07	01
Tamil Nadu	03	0	03
Rajasthan	09	04	04
Karnataka	03	0	03
Gujarat	04	01	02
Telanagana	02	0	01
Uttar Pradesh	03	01	01
Madhya Pradesh	01	0	01
Andhra Pradesh	01	01	0
Bihar	01	01	0
Total	37	15	16

MEASURES BEFORE BORE WELL INCIDENT

Do's

- The owner of the land/premises, before taking any steps for construction bore well/tube well must inform in writing at least 15 days in advance to the concerned authorities in the area.
- Registration of all the drilling agencies, viz., Govt./Semi Govt./Private etc. should be mandatory with the district administration or Statutory Authority wherever applicable.
- Erection of signboard at the time of construction near the well is mandatory. The following details should be included on the signboard:-(a) Complete address of the drilling agency at the time of construction/rehabilitation of well. (b) Complete address of the user agency/owner of the well.
- Erection of barbed wire fencing or any other suitable barrier around the well during construction.
- Construction of cement/concrete platform measuring 0.50x0.50x0.60 meter (0.30 meter above ground level and 0.30 meter below ground level) around the well casing.
- Capping of well assembly by welding steel plate or by providing a strong cap to be fixed to the casing pipe with bolts and nuts.
- In case of pump repair, the tube well should not be left uncovered.
- Filling of mud pits and channels after completion of works.
- Filling up abandoned bore wells by clay/sand/boulders/pebbles/drill cuttings etc. from bottom to ground level.
- On completion of the drilling operations at a particular location, the ground conditions are to be restored as before the start of drilling.
- District Collector should be empowered to verify that the above guidelines are being followed and proper monitoring check about the status of boreholes/tube wells are being taken care through the concerned State/Central Government agencies.
- District/Block/Village wise status of bore wells/tube wells drilled. In the rural areas monitoring of these should be done through village Sarpanch and the Executive from the Agriculture Department. In case of urban areas, the monitoring should be done through Junior Engineer and the Executive from the concerned Department of Ground Water or Public Health or Municipal Corporation.
- If a bore well/tube well is 'Abandoned' at any stage, a certificate from the concerned department of Ground Water/Public health/Municipal Corporation/Private contractor must be obtained by these agencies.
- Information on all such data on the above are to be maintained in the District Collector/Block Development Office of the State.

MEASURES AFTER BORE WELL INCIDENT

- Secure the scene by cordoning the bore well to avoid any unwanted objects falling into the bore well and causing harm to the child and thus hamper the rescuing efforts.
- Cordon the affected area and control unnecessary movements/crowd gathering near the bore well.
- Try to stabilize the victim, if possible, with the help of rope.
- Make arrangements for supplying of oxygen to the child with the help of pipe.
- Arrangement of sufficient lights in the area for the night operation.
- Immediately contact the nearby NDRF Unit.
- As per the direction of NDRF unit, start digging earth vertically and parallel to the depth of bore well at the sufficient distance from the bore well or as directed by the NDRF.
- Keep motivating the victim by regular talking of parents or relatives.
- District medical officer should be made aware about the compartment compression syndrome and action to be taken in such cases.

Don'ts

- Don't leave the tube well/bore well uncovered after repair/daily work done.
- Do not throw any food article or pour water in the Bore well.
- Do not allow underground water seepage in bore well.
- Do not allow heavy machines to work at full power to avoid heavy vibration which may result in loosening of surrounding soils and collapse of the bore well.
- Do not allow crowd to gather around the incident site.

GUIDELINES REGARDING BORE WELL SAFETY MEASURES BY SUPREME COURT:

Safety measures/guidelines as given in the Order dated 11.02.2010 of Hon'ble Supreme Court is to be observed by all the States: -

i) The owner of the land/premises, before taking any steps for construction bore well/tube well must inform in writing at least 15 days in advance to the concerned authorities in the area, i.e., District Collector/District Magistrate/Sarpanch of the Gram Panchayat/ Concerned officers of the Department of Ground Water/ Public Health/Municipal Corporation, as the case may be, about the construction of bore well/tube well.

ii) Registration of all the drilling agencies, viz., Govt./Semi Govt./Private etc. should be mandatory with the district administration.

iii) Erection of signboard at the time of construction near the well with the following details:-(a) Complete address of the drilling agency at the time of construction/ rehabilitation of well. (b) Complete address of the user agency/owner of the well.

iv) Erection of barbed wire fencing or any other suitable barrier around the well during construction.

v) Construction of cement/concrete platform measuring 0.50x0.50x0.60 meter (0.30 meter above ground level and 0.30 meter below ground level) around the well casing.

vi) Capping of well assembly by welding steel plate or by providing a strong cap to be fixed to the casing pipe with bolts and nuts.

vii) In case of pump repair, the tube well should not be left uncovered.

viii) Filling of mud pits and channels after completion of works.

ix) Filling up abandoned Bore wells by clay/sand/boulders/pebbles/drill cuttings etc. from bottom to ground level.

x) On completion of the drilling operations at a particular location, the ground conditions are to be restored as before the start of drilling.

xi) District Collector should be empowered to verify that the above guidelines are being followed and proper monitoring check about the status of boreholes/tube-wells are being taken care through the concerned State/Central Government agencies.

xii) District/Block/Village wise status of bore wells/tube-wells drilled viz. No. of wells in use, No. of abandoned bore wells/tube wells found open, No. of abandoned Bore wells/tube wells properly filled up to ground level and balance number of abandoned Bore wells/tube-wells to be filled up to ground level is to be maintained at District Level. In rural areas, the monitoring of the above is to be done through village Sarpanch and the Executive from the Agriculture Department.

xiii) If a Bore well/tube-well is 'Abandoned' at any stage, a certificate from the concerned department of Ground Water/Public health/Municipal Corporation/Private contractor etc. must be obtained by the aforesaid agencies that the 'Abandoned' Bore well/tube-well is properly filled up-to the ground level. Random inspection of the abandoned wells is also to be done by the Executive of the concern agency/department. Information on all such data on the above are to be maintained in the District Collector/Block Development Office of the State.

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